

ALL THINGS CONSIDERED

Exploring options
for Victoria's 30-year
infrastructure strategy





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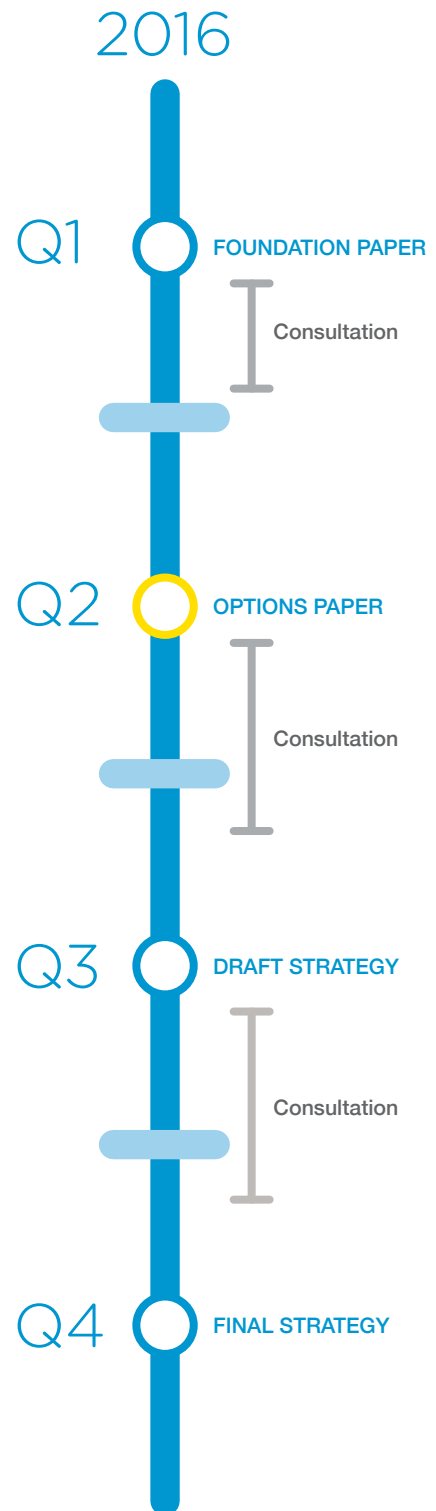
Why you should read this paper

This paper discusses the options that Infrastructure Victoria is considering in preparing its 30-year strategy.

If you are interested in learning about the possible solutions that could meet Victoria's infrastructure needs over the short, medium and long-term, you should keep reading. If you have views about what the next major transport project should be or whether road pricing is a reasonable response to congestion, you should keep reading. If you care about how school facilities are used or how technology can transform health care, you should keep reading. If you are interested in how the state can manage precious water resources or help transition energy supply away from ageing coal-fired power plants, you should keep reading.

There are literally hundreds of options to meet Victoria's infrastructure needs. Each option has its own advantages and disadvantages. This paper is about starting a conversation around how we weigh these up. The development of the 30-year infrastructure strategy will be a contest of ideas that we encourage everyone to get involved in. This is your chance to have a say on solutions and trade-offs. Your feedback will help us identify and consider what matters most to people.

We can't do this without you.



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Overview

THERE ARE MANY OPTIONS TO ADDRESS OUR INFRASTRUCTURE NEEDS.

Not all solutions will be about building new things.

THERE IS NO PERFECT SOLUTION. THERE WILL ALWAYS BE TRADE-OFFS.

All the options have different impacts. We need to consider what we are willing to change, and what we want to stay the same.

THESE ARE ONLY OUR PRELIMINARY VIEWS. WE WANT TO HEAR WHAT YOU THINK.

We will be engaging with the community and stakeholders through May and June 2016 on these options and welcome any additional options you think should be considered.

The purpose of this paper is to put all the options we've thought of for meeting Victoria's infrastructure needs on the table and to invite you to contribute your views and ideas.

We've considered a broad range of options, including non-build solutions. We know that there is no silver bullet. Options must be considered from different perspectives to fully understand their impacts. By considering the options together, we can have a conversation about the trade-offs we are willing to make.

We stress that the options presented in this paper are not recommendations. That will come later. This phase of the strategy development is about considering all the options and getting your input.

HOW TO NAVIGATE THIS PAPER

The most important section of this paper is the one on options for meeting the state's infrastructure needs. If you read anything, read this (pages 34 to 123).

If you'd like to understand some of the different ways we could help pay for these options, read the section on funding and financing (pages 124 to 130).

To find out how to provide feedback, go to the section on getting involved (pages 132 to 135).

If you are interested in how we came up with the options and our assessment approach, see the section on the options methodology (pages 14 to 33).

WANT TO FIND OUT MORE?

All of our thinking so far is available for you to review and challenge.

This paper is complemented by a *Draft options book*, which provides a summary assessment of every option we have looked at to date. This is version one of the book. It will be updated after consultation to reflect how the assessments have progressed.

These preliminary assessments of options have been informed by technical documents prepared by Deloitte/Aurecon and AECOM/PwC.

If you want to know more about funding and financing mechanisms refer to *Funding and financing – additional information*.

All these documents will be available at yoursay.infrastructurevictoria.com.au. We welcome you bringing your ideas to the table and invite you to challenge our thinking.





STRATEGY FOUNDATIONS



THE FINAL FRAMEWORK FOR THE 30-YEAR STRATEGY WAS CONFIRMED FOLLOWING CONSULTATION IN FEBRUARY AND MARCH.

The response to our discussion paper, *Laying the foundations*, showed that people in Victoria are passionate about long-term infrastructure planning.

THE FRAMEWORK SETS OUT A VISION, GUIDING PRINCIPLES, OBJECTIVES AND NEEDS FOR THE STRATEGY.

It recognises that good infrastructure is not an end in itself, but an enabler of better social, economic and environmental outcomes.

THE OPTIONS DISCUSSED IN THIS PAPER DIRECTLY RESPOND TO THE FRAMEWORK.

In the options phase, we are considering possible solutions for meeting the infrastructure challenges identified in the foundation phase.

The final framework

Earlier this year, we released a discussion paper entitled *Laying the foundations*. This paper provided contextual information for the strategy, outlined Infrastructure Victoria's guiding principles and proposed a set of draft objectives and needs for consultation.

Overall, the framework presented in *Laying the foundations* was broadly supported. However, we also received many constructive suggestions for improvement.

In response to feedback we:

- prepared a vision statement based on the themes of opportunity, community, prosperity and sustainability
- added a new guiding principle on integrating land use infrastructure planning
- made the objectives more positive and proactive
- significantly revised the list of needs, in part to give the strategy a stronger regional and rural focus

The final framework (outlined on pages 12-13) takes a cross-sectoral, statewide view of infrastructure planning. At its core, it is about improving social, environmental and economic outcomes. Further detail on the framework can be found in the consultation report at yoursay.infrastructurevictoria.com.au.

This framework sets the stage for the options discussed in this paper.



The final framework

VISION

By 2046, we see a Victoria where everyone can access good jobs, education and services regardless of where they live, where communities are held together by strong bonds, where industries and businesses thrive, and where the environment is valued and protected.

Guiding principles

- Consult and collaborate
- Drive improved outcomes
- Integrate land use and infrastructure planning
- Draw on compelling evidence
- Consider non-build solutions first
- Promote responsible funding and financing
- Be open to change

Objectives

- Prepare for population change
- Foster healthy, safe and inclusive communities
- Reduce disadvantage
- Enable workforce participation
- Lift productivity
- Drive Victoria's changing, globally integrated economy
- Promote sustainable production and consumption
- Protect and enhance natural environments
- Advance climate change mitigation and adaptation
- Build resilience to shocks

Needs

- | | | | |
|----|--|----|--|
| 1 | Address infrastructure demands in areas with high population growth | 11 | Improve access to middle and outer metropolitan major employment centres |
| 2 | Address infrastructure challenges in areas with low or negative population growth | 12 | Improve access to jobs and services for people in regional and rural areas |
| 3 | Respond to increasing pressures on health infrastructure, particularly due to ageing | 13 | Improve the efficiency of freight supply chains |
| 4 | Enable physical activity and participation | 14 | Manage threats to water security, particularly in regional and rural areas |
| 5 | Provide spaces where communities can come together | 15 | Manage pressures on landfill and waste recovery facilities |
| 6 | Improve accessibility for people with mobility challenges | 16 | Help preserve natural environments and minimise biodiversity loss |
| 7 | Provide better access to housing for the most vulnerable Victorians | 17 | Improve the health of waterways and coastal areas |
| 8 | Address expanded demand on the justice system | 18 | Transition to lower carbon energy supply and use |
| 9 | Provide access to high-quality education infrastructure to support lifelong learning | 19 | Improve the resilience of critical infrastructure |
| 10 | Meet growing demand for access to economic activity in central Melbourne | | |



OPTIONS METHODOLOGY



OPTIONS ARE NOT RECOMMENDATIONS.

There are a range of possible solutions to address the infrastructure needs.

WE HAVE TAKEN A HOLISTIC VIEW TO FRAMING OUR NEEDS.

There are multiple ways and sectors that can contribute to meeting these needs.

IT IS ABOUT BEING OPEN TO DIFFERENT IDEAS.

But we must also ensure that these options are credible.

OPTIONS ARE FOCUSED ON WHAT COULD BE DONE, NOT DETAILED DESIGN

In thinking about options, we know there is always another level of detail about how they could be delivered. For example, one of our options relates to the completion of all level crossing removals in Melbourne. We know that there are a range of possible design solutions, but it is not our role in developing this strategy to make detailed recommendations on, for example, above-ground or below-ground design solutions.

We are thinking about how options will work, to the extent that it will affect the potential range of costs and outcomes, both positive and negative. However, each option will have unique considerations and require detailed design and consultation with the community. Our focus is on whether an option should go ahead.

Considering options

When you are trying to solve a problem, there are often many possible solutions. Similarly, when thinking about infrastructure needs, there are many options. The options presented in this paper are a selection of options that have progressed through our assessment process, as well as other options we have considered. We stress these are not the only possible solutions. We recognise that there are many more and welcome your contributions.

How we came up with options

There is already a significant amount of work underway across government and the private sector to plan for our future infrastructure needs. The options presented here draw upon these existing plans, as well as examples from other jurisdictions and some of our thinking about how we could address the state's infrastructure needs.

As a result our infrastructure needs cannot be resolved with one solution. The needs are of state significance, impact a wide range of people and usually have long-term implications. These complex issues must be considered from multiple perspectives. We have looked at a number of options that can credibly address the infrastructure needs, by either managing the demands put on infrastructure, getting better use out of our existing assets or strategically expanding and building new assets, in that order. You will be familiar with some of these projects as they have been raised in previous strategies and plans but have yet to be implemented. Others are new, drawing from examples across Australia and internationally, responding to future trends or building upon contemporary research.

Some of the demand management options, for example those related to preventative health, are not directly related to how infrastructure is used, but have an impact on whether it is needed in the first place. We are considering what role these options should have in our strategy; at a minimum they are important context.

We have also looked at funding mechanisms that not only raise revenue but provide incentives to help us get more out of infrastructure. This includes 'spreading' and shifting demand or changing behaviour.

Our cross-sectoral perspective means that we have been able to consider how different sectors can play a role in addressing these needs. For example, when thinking about how to open up more public spaces, we have looked at how schools and other facilities can be used out of hours by the community. This cross-sectoral perspective extends across levels of government and between governments and the private and community sectors. This has assisted us in identifying issues across the sectors such as governance and coordination mechanisms, which may impede the sharing of information or create barriers to the uptake of technology.

Ultimately, some of these options may not be viable. This may be due to particularly negative impacts, costs that far exceed their impact or simply because some options are not as important as others. The important thing is to start by putting everything on the table.

Changing behaviour, managing demand

Many of the needs can be addressed by changing behaviours to manage the demands placed on infrastructure. These solutions are appropriate where use of infrastructure is heavy at different times of the day or across particular parts of the network, but much lower at other times or locations, in other words, to rationalise our use of infrastructure to its highest value. Rather than building something new, and providing additional capacity during peak periods and locations, the intention of these types of options is to shift demand on infrastructure, either by spreading it more evenly or reducing it overall.

Obviously just telling people to do something differently is not the answer and there can be good reasons why many people choose to use infrastructure the way they do. There are many tools available that can provide incentives or disincentives for how people use infrastructure. These include:

- regulatory changes that enable or prohibit certain choices, such as reducing regulations to open up the use of public spaces, or setting energy-efficiency standards for new developments
- pricing to influence decision-making, for example, pricing energy to flatten demand at peak times
- providing better information to help people make informed choices, such as real-time information across the entire transport network to help people plan their journey



Better use of existing assets

There are many opportunities to use existing infrastructure in better, more efficient ways. Often we become complacent about how we use our infrastructure because it has worked well enough in the past – why fix something that's not broken? Yet as the population grows and changes, how people prefer to access or use a service also changes. Most of the infrastructure we will have in the future is the infrastructure we have now. This means we need to be smart about how we operate and maintain our existing infrastructure to ensure it lasts and is responsive to changing needs.

Better use of infrastructure means changing the way the asset operates to be more efficient and responsive to user demands. These changes can be achieved through:

- better coordination and governance processes so an asset can be used for different purposes, such as shared use agreements that allow for joint use of recreation facilities
- technological innovations to adapt to changing service delivery models, for example, delivering health services through digital platforms to improve access to these services
- refurbishment, modifications or whole-of-life maintenance that improve the operation and efficiency of the infrastructure, such as maintenance of school facilities



Expanding assets or building new ones

Infrastructure Victoria considers expanding or building assets as the last option. Choosing to build new infrastructure is appropriate when the demand management and better use solutions have been exhausted or found not to be viable. There are two primary responses:

- expansion of existing infrastructure, such as extending the rail network to high growth areas
- building a new asset, where there is no existing infrastructure, or the current assets are unable to meet the projected demand, for example building more social housing stock

IT IS UNLIKELY ANY OPTION WILL FULLY MEET A NEED.

We need to think about a broad range of credible solutions, how they interrelate and the different impacts.

THESE ARE OUR PRELIMINARY ASSESSMENTS.

All options we considered are included here and in the *Draft options book* to show you our thinking.

THE OPTIONS PRESENTED HERE HAVE PROGRESSED THROUGH A TWO-STAGE ASSESSMENT.

Our assessment is based upon the evidence we have today. We welcome any ideas or information you can contribute.

How we assessed options

Infrastructure Victoria's mandate is clear: to develop a 30-year infrastructure strategy for the whole state that makes clear recommendations to meet our social, economic and environmental objectives. We are about finding solutions to the challenges and leveraging the opportunities that we have as a state. Rather than starting with a range of projects and how they fit together, we have started by considering what the most significant needs are and thinking about the different roles for infrastructure in addressing these.

The options have been assessed by asking two simple, but fundamental, questions.

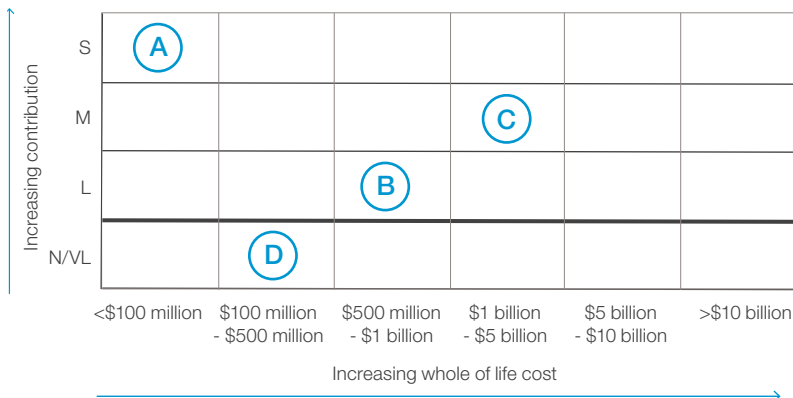
1. How well does this option meet the need relative to its cost?

Given the large number of options, each option was first assessed on its contribution to addressing the need. This was a measurement of whether an option made a significant (S), moderate (M), low (L) or very low to negative (VL/N) contribution to the need. As we further develop and investigate these options, these assessments could change.

In keeping with our guiding principle to promote responsible funding and financing (and more generally, getting value for money) we have also looked at the whole-of-life cost range of each option, including both capital and ongoing operating costs. This is important as these ongoing operating costs, such as maintenance, are often overlooked when new projects are announced. These costings are only provisional. Although we have assumed the whole-of-life cost here, during the next phase of prioritisation we will consider the scalability of these costs and how it can be programmed over a 30-year period. We will also consider the differences in costs as they relate to reforms and projects.

By looking at these factors, we can determine whether an option makes a large enough contribution relative to its cost to be further considered as an option in the strategy. Figure 1 shows, conceptually, how this assessment works.

Figure 1 – Example cost and contribution chart



Option A is low cost and makes a significant contribution to meeting the need, so there is no question that it proceeds through this initial filter.

Option D, relatively low cost, makes a very low or negative contribution to the need and therefore would be filtered out at this stage. The discussion about trade-offs occurs for **Options B and C**, where the contribution needs to be balanced against the cost on a case-by-case basis, and so warrants further investigation to determine if they would proceed to the next stage.

It's also important to remember that some options meet multiple needs. Therefore, an option might not contribute much to one need, but it may perform better in relation to another need. While we have tried to capture where some options might meet multiple needs, this is not comprehensive. If you think an option should be assessed under another need, let us know.



CONCEPTS REQUIRING FURTHER DEVELOPMENT

For some options we have been unable to undertake a full assessment. This may be because an option is not well developed enough at this stage or because we have not had time to properly assess it against all relevant needs. We still think there may be merit in these ideas and, therefore, they should be kept in play to allow for further assessment. They have been listed for each need under 'Concepts requiring further development'. We encourage you to comment on these as well and provide information to assist us in understanding how the option would or wouldn't work.

2. What is the economic, social and environmental (ESE) impact of this option?

For those options that passed through the cost and contribution filter, we also evaluated how they could influence a broad set of economic, social and environmental indicators. This presents us with a preliminary understanding of the broader impacts of one option, which we can then compare against other options. This assessment was used to determine the positive or negative economic, social and environmental impacts of an option, and these were evaluated on a case-by-case basis.

Where we have filtered things out on the basis of either of these two questions, the reasoning is presented under the sub-section 'Other options Infrastructure Victoria considered'.

These two filters are just the starting point in considering options. We have also looked at:

- **Relationship mapping** - How the options might enable, complement or inhibit one another.
- **Scenario analysis** - How options would perform under alternative future scenarios.
- **Risks and opportunities** - Any risks or opportunities that affect an option's intent or implementation.
- **Community support** - What the community thinks of an option.

Although these other considerations were not a basis for filtering options at this stage, it provided us with a better understanding of the complexity and interrelationship between the options. You can refer to the *Draft options book* and technical reports at yoursay.infrastructurevictoria.com.au if you are interested in more detail on these assessments. The insights from these assessments will be further considered during the next phase of the strategy.

In this paper, we are presenting a selection of options for consultation, as well as other options that we considered but do not believe, at this stage, should be taken any further. The assessment of these options is based upon the evidence available to us. We encourage you to challenge these assessments and bring information to our attention that can inform conversations about all the possible ways to achieve the objectives and needs.

UNDERSTANDING ECONOMIC, SOCIAL AND ENVIRONMENTAL IMPACT

For each option that passed through our cost and contribution filter, we have measured it against a set of economic, social and environmental indicators to understand its broader impacts. The outcomes of these assessments can be viewed in the *Draft options book* and supporting technical reports at yoursay.infrastructurevictoria.com.au

Economic impact

Some of the factors we have looked at to assess economic impact include whether an option would influence:

- access to jobs
- business cost savings
- contribution to Gross State Product
- avoided costs to the State
- attraction of additional tourists or increasing international trade
- the reduction of risk or minimise the likelihood of disruption

Social impact

Some of the factors we have looked at to assess social impact include whether an option would influence:

- access to education
- housing supply and affordability
- health and safety
- access to culture/ sporting/ recreation facilities
- support for low socio-economic areas
- support for remote or regional communities

We have also looked at whether the option would benefit all Victorians or a selected cohort, and the scale of this impact.

Environmental impact

Some of the factors we have looked at to assess environmental impact include whether an option would influence:

- resource use
- energy use
- greenhouse gas emissions
- water use
- water, air and waste
- noise pollution and visual amenity
- impact on ecosystems and habitat



WE ARE NOT STARTING FROM SCRATCH.

We have made a number of assumptions about what Victoria is like today, and what it will be like tomorrow and beyond.

WE ASSUME THAT ANY EXISTING COMMITMENTS WILL BE IMPLEMENTED.

Our interest is in the potential solutions for tomorrow and over the next 30 years.

OUR FULL BASE CASE CAN BE FOUND IN THE DRAFT OPTIONS BOOK.

This base case will be progressively updated throughout the development of the strategy.

Our assumptions

To generate and assess options, we've had to make assumptions about the infrastructure we have now and what we expect we will need in the future. These have been drawn from the best available information about the expected population and employment projections across the state, as well as committed programs and projects.

There are a range of initiatives in different stages of implementation, which we have not considered as options in this strategy. Our perspective is that where the government has committed funding to implement a policy, project or program within the forward estimates (four years out) that this will form part of the 'base case' for the strategy. This approach also applies for funding commitments made by local government or the private sector. The base case helps us better understand the impact of any options, beyond the current commitments.

Government also has a range of policy levers that impact on the use of infrastructure. In some cases, Infrastructure Victoria is considering policy changes, however, to focus the scope of our options many existing policy levers are considered as part of the base case.

SOME OF THE THINGS THAT INFORM OUR BASE CASE:

- Current and future state reports (Deloitte Access Economics and SGS Economics and Planning)
- Infrastructure capability assessments (Deloitte Touche Tomatsu and Aurecon)
- *Victoria in Future 2015*
- *Plan Melbourne*, the *Plan Melbourne refresh* discussion paper and the *Regional Growth Plans*
- Infrastructure Australia Audit 2015
- Construction of Western Distributor
- Construction of Melbourne Metro (noting we are considering an option for a metro station at South Yarra)
- Implementation of the Level Crossing Removals Program (as committed to in the forward estimates)
- Roll out of the National Broadband Network
- Commitments made in the 2016-17 commonwealth and state budgets

A comprehensive list is provided in the *Draft options book*.

**BY TAKING A HOLISTIC VIEW,
SOME COMMON THEMES
COME INTO FOCUS.**

This is the benefit of Infrastructure Victoria's all-sector, whole of state approach.

**THERE ARE SOME SYSTEMIC
ISSUES ACROSS ALL SECTORS.**

These include things like maintenance, governance and using new technology.

**THESE HAVE BEEN ADDRESSED
THROUGH INDIVIDUAL OPTIONS.**

These common issues are reflected in the spread of options for each need.

SOME OPTIONS INCLUDE:

Urban development in established areas (UDC) – See page 39

Active lifestyle infrastructure regulation (ALR) – See page 53

Strategic transit-oriented development corridors (STO) – See page 78, 85

Common themes

While *Laying the foundations* illustrated some of the future trends that may influence infrastructure, the generation of options has also revealed some common themes across sectors. As the *Infrastructure capability assessments* indicated, there are some common barriers and impediments, which are affecting how well our infrastructure is working across many sectors.

Although these themes are raised through individual options, discussing them here highlights where there may be some general areas of focus for infrastructure planning and management in the future.

Land use planning and infrastructure planning

Land use planning and infrastructure planning are deeply interrelated. Land use planning informs infrastructure requirements, while infrastructure enables the achievement of land use objectives. Unfortunately these processes often happen in isolation and remain an ongoing point of frustration. This was a common theme during the consultation on *Laying the foundations*. The *Infrastructure Australia Plan 2016* calls for greater integration of land use and infrastructure planning across all levels of government. We agree that this is a significant issue and a direct challenge in developing a 30-year infrastructure strategy. Changes to Victoria's urban form and settlement patterns would have significant consequences for how we currently use infrastructure, as well as the infrastructure we will need in the future. Our options identify some of the key tensions within the system, based on how land use plans are affecting the requirements for future infrastructure by dispersing or consolidating population growth, and how different options could influence these outcomes.

For the purposes of our strategy we have adopted the figures in *Victoria in Future 2015* about where population growth is expected, as well as the *Plan Melbourne refresh* discussion paper and the *Regional Growth Plans* as the settlement plan for Victoria. Where we think these have significant infrastructure implications or there might be opportunities to get a better overall outcome we are raising a flag. The map on pages 30-31 illustrates some of the commonalities and differences between current land use planning policies and some of the options identified by Infrastructure Victoria. One of these is the approach to Need 10. *Meet growing demand for access to economic activity in central Melbourne* (see the case study on the next page). This is an opportunity to think through whether there is a bigger solution to the integration of land use planning and infrastructure planning in Victoria.

CASE STUDY CENTRAL CITY EMPLOYMENT GROWTH

Trend-based, policy neutral projections for employment in Melbourne's central city indicate the concentration of jobs and economic activity will only increase. There is a range of factors that will continue to drive this growth, and it is a common growth pattern for cities around the world. This presents challenges to the transport system to manage the periods of peak demand as people commute into the city from across Melbourne and Victoria.

Both *Plan Melbourne* and the *Plan Melbourne refresh* discussion paper set a vision for a polycentric city, with the national employment centres (Monash, Parkville, Dandenong, Sunshine, La Trobe and East Werribee) accommodating a greater number of jobs. The desire to see greater growth concentrated in multiple centres not just across Melbourne, but also across Victoria, was a common theme during our consultation in *Laying the foundations*.

At this stage, we have looked at the different infrastructure implications of these as options under Needs 10. *Meet growing demand for access to economic activity in central Melbourne*, 11. *Improve access to the middle and outer major metropolitan employment centres* and 12. *Improve access to jobs and services in regional and rural Victoria*.

The outcomes of these assessments are on page 77-93 of this paper.



SOME OPTIONS INCLUDE:

Arterial road network
employment centre
enhancements (ARN)
– See page 39, 86

School regional maintenance
contracts (SRM1)
– See page 74

Public high rise housing
estate renovation (PHR)
– See page 65

Asset management and maintenance

Asset management is the process of making best use of your assets to maximise the investment and to provide the best possible benefits from the asset. The asset management process extends from the initial planning stage – to ensure the assets are the right assets in the first place – through to final decommissioning.

Infrastructure Victoria is adopting an asset management approach to developing the 30-year strategy. We started by defining Victoria's needs so that we have a strong basis for assessing if we are investing in the right assets. We then considered every asset in the context of its whole-of-life cost, assessing the cost of an asset when it is created, operated and finally decommissioned.

An important aspect of asset management is to ensure the potential value of the asset is being maximised by the scope of the project and how it will be operated. For example, the project scope for the construction of a new train station should also include the coordination of transport services at that station and provision of real-time travel data to passengers, to get passengers to where they are going in the shortest time possible.

Another important aspect of asset management is maintenance. The level of service provided by infrastructure is strongly affected by how it is maintained. Expenditure on infrastructure maintenance will continue to grow over time, as existing assets age and the introduction of new assets increase the total stock of assets requiring maintenance. Deferring maintenance only amplifies the number of issues that need to be addressed, including the size of the task and the costs. Trends like climate change and population growth are putting additional pressure on our assets and have led to a focus on the need for more costly, frequent and earlier maintenance efforts.

Determining an appropriate level of maintenance for each piece of infrastructure is a complex task. It varies depending on how an asset functions, how it has been built, how it is operated and how it will be used in the future. There is not a one-size-fits-all response. For example, the maintenance requirements for the modern E-class tram servicing metropolitan Melbourne are very different to the W-class trams that were built between 1923 and 1956. Given this strong connection between how an asset is used and its maintenance requirement, applying prescriptive standards is not effective and can be cost-prohibitive.

The adoption of efficient asset management practices is integral to many of the options presented in the paper. There are also some specific options presented that respond to a 'maintenance gap' that needs to be addressed now or in the future, where infrastructure has significantly deteriorated because funding is not always prioritised or directed towards maintaining our assets. This can lead to some assets being underused and considered to be surplus to requirements (see the section on consolidating surplus assets on the next page).

SOME OPTIONS INCLUDE:

Health care alternative delivery options (HCA) – See page 46, 50, 92

Mobile police workforce (MPW) – See page 45, 69, 91

School resource sharing through technology (SRS) – See page 74

Adapting to new service delivery models

Many factors and trends are driving changes in how services are being delivered. Sometimes this is because we invent new ways to do things, perhaps due to a new technology. At other times it is because we realise existing methods and approaches will not be viable in the future, for example, due to a growing population. The key question is whether the existing assets support or can be modified to meet the new delivery model, or if the assets are no longer fit-for-purpose or needed.

Unfortunately in many cases, infrastructure is a barrier to these new service models. Often new models are not embraced as the focus is on how the existing service can be moulded to fit the existing structures and facilities. We need to remember that infrastructure is an enabler. Being willing to change or get rid of those assets that are no longer fit-for-purpose and won't be required in the future needs to be made more attractive.

CONSOLIDATING SURPLUS ASSETS

While we have identified that there are some underused or surplus government assets that could be consolidated, it is important to understand the reasons why agencies continue to hold onto these assets.

One of the reasons is the community's view about the importance of an asset. We can take a system-wide view about whether it is economically sensible to continue to maintain underused assets in areas with declining populations or where the profile of a community has changed and will continue to change, such that existing assets no longer meet the community's needs and will not be required in the future. However, we know this is not the only perspective. Assets have a social value; they employ local residents and connect people to their community.

Some people also hold the view that we should not sell surplus assets. This is because we might need them in the future and it will be more expensive to buy them when we need them later, than to hold onto old and unused assets now. The conversion of the former Collingwood Technical College into the Collingwood Creative Precinct, including the new home of CircusOz, is one illustration of how a site can be repurposed to meet the needs of another sector. These views are important, but should also be balanced with consideration of whether a different approach would deliver a better outcome for the community.

Another reason why surplus or underused assets are retained by agencies is that some proceeds from the sale are returned to the government's central fund or 'consolidated revenue'. As a result, there is little incentive for an agency to sell.

Our first concern should be 'Do we need the asset over the short, medium, and long-term?' and then considering whether it can be repurposed for different uses.

SOME OPTIONS INCLUDE:

Integrated shared use community and recreation facilities (RFC) – See page 53

Social housing government role change (SHG) – See page 65

Water infrastructure optimisation through governance arrangements (WIO2) – See page 100

Governance

The scope of the options is not restricted to state government. They have implications for local governments and the Commonwealth, as well as the private sector and not-for-profit organisations. We share many of the same challenges in relation to infrastructure and the implication of a decision in one area can have profound implications for another.

The division of responsibility between agencies, governments and organisations has a significant impact upon how the infrastructure is used. The *Infrastructure capability assessments* highlight that there are some sectors where the communication and coordination between organisations works well and others where it does not, and therefore the opportunity to make the best use of assets is missed. This is slowly changing as organisations realise the benefits of integrated service delivery models.

There are, however, still barriers. Changes can be as simple as improving what information is shared and who is around the table when decisions are being made, while other options require regulatory amendments to change who is responsible for the management of the asset.

ROLE OF LOCAL GOVERNMENT

Local government plays a fundamental role in the planning, funding, procurement and management of community infrastructure. Much of the smaller-scale infrastructure we encounter on a daily basis, such as libraries, local sporting fields and waste disposal, are within their scope of responsibilities. Local government has a wealth of knowledge about how people use this infrastructure and how it integrates with other sectors.

Many of the options affect areas of responsibility for local government. These vary in their scale and impact. For example, some look at ways to strengthen coordination and governance mechanisms between different levels of government, as well as the government and private and community sectors. Other options suggest these areas are of state significance while typically the state government does not play a role in these areas. We are putting these on the table for your response.

We will be speaking with local government bodies during this consultation phase to understand their views on these options proposed, as well as additional options they would like considered. We welcome their submissions.

SOME OPTIONS INCLUDE:

Access to services through technology and ICT (AST) – See page 39, 91

Health care smart facilities (HCS) – See page 49

Increased telecommuting (ITT) – See page 78

Preparing for new technology

Changing and evolving technology is expected to have a significant impact on Victoria's infrastructure needs. Part of the issue is understanding that technology has a dual role, as both a solution to some of our infrastructure needs, as well as a mechanism for shaping demand. We can think of a range of ways that technology could enable better use of infrastructure, by improving information sharing across government to enable services to be delivered remotely. Technology such as digital connectivity and automated vehicles present challenges and opportunities in their own right.

Preparation and planning for the future needs to be open to the possibilities presented by new technologies. We have looked holistically at how these technologies can be best used across all needs. We can't prepare for everything. It is about ensuring there is flexibility in our assets to adapt to these changes.

CASE STUDY AUTOMATED VEHICLES

The future of transport is digital, but how will it start?

Actually, it has already begun. VicRoads has been playing a leading role in introducing Managed Motorways, which have shown an ability to improve traffic flows on our most important roads.

Even beyond our motorways, transport users can benefit now from better access to information such as smart phone apps, and, for drivers, in-vehicle systems that can access real-time information via the internet (and other information and communication technology (ICT) connections), which could soon improve the safety, efficiency and quality of journeys. Many countries are already making the step to driverless cars with Singapore announcing a trial of the technology late last year.

Automotive vehicles will progressively become more automated and connected. The challenge for government is to work out how to best support the deployment of these new technologies as they become available, minimising barriers and ensuring their value to the community is maximised. Commonwealth and state and territory governments will have a role in setting the appropriate standards, establishing transport strategies and mediating between the different types of transport. While the private sector may be the principal driver for this process of development, government, as the manager of the transport system, can be a catalyst for change and play an important supporting role.

CASE STUDY SMART HOSPITAL FACILITIES

The 2015 Travis review of the Victorian public hospital system identified that:

'while the supply of public hospital beds has almost halved since the early 1980s (a 46 per cent per capita reduction), the number of patients admitted to public hospitals is not only keeping pace with population growth but is outstripping it'.

Improvements to technology and medical breakthroughs have changed the way patients are cared for and how health care services are delivered. Rather than a patient having to stay in hospital for several days after an operation, there are now many procedures where patients only come to the hospital on the morning of their operation and go home on the same day. In addition, many services that used to be provided in hospital beds are now delivered in other places within the hospital, the community or even in people's homes. Today, chemotherapy treatment for cancer patients, for example, does not require admission to the hospital but can take place in a satellite care facility.

Changing technology and service models mean we are able to treat a greater number of people in a more accessible way, with fewer hospital beds. To get the benefit from developments in technology and patient care, we need to build smart facilities that are flexible and able to adapt to support innovation when opportunities arise.

Taking a spatial view

One of Infrastructure Victoria's guiding principles is to integrate land use and infrastructure planning. Infrastructure Victoria's options have been developed with regard to *Plan Melbourne* and the *Regional Growth Plans*. The map below indicates some of the alignments between the strategy's need and options and the infrastructure directions articulated in these land use plans. As it shows, we are all cognisant of the pressing issues for Victoria, often we just express them slightly differently. Just as the infrastructure needs and options in this paper are often relevant to many parts of Victoria, several of the recommendations related to infrastructure in these land use plans are shared by several regions.

LODDON MALLEE NORTH

REGIONAL GROWTH PLAN	INFRASTRUCTURE NEEDS AND OPTIONS
Investigate social infrastructure needs for the region and target facilities to particular settlements where the need is greatest or planning identifies a strategic need.	This is covered under <i>Address infrastructure demands in areas with high population growth</i> (1), and <i>Address infrastructure challenges of areas with low or negative growth</i> (2) depending upon the nature of the strategic need.
Support projects that increase the use of recycled water and reduce demand for potable water.	Options are considered under <i>Manage threats to water security, particularly in rural and regional areas</i> (14), which proposes approaches that encourage more recycling of water.
Support freight and logistics precincts with the capacity to grow and adapt to changing needs.	Options are considered under <i>Improve the efficiency of freight supply chains</i> (13).

WIMMERA SOUTHERN MALLEE

REGIONAL GROWTH PLAN	INFRASTRUCTURE NEEDS AND OPTIONS
Improved connectivity and access to the region and around the region.	Options are explored under <i>Improve access to jobs and services for people in regional and rural areas</i> (12).
Develop infrastructure that supports diversification of energy generation and supply.	Options are explored under <i>Transition to lower carbon energy supply and use</i> (18).
Providing for enhanced freight distribution to markets.	Options are considered under <i>Improve the efficiency of freight supply chains</i> (13).

GREAT SOUTH COAST

REGIONAL GROWTH PLAN	INFRASTRUCTURE NEEDS AND OPTIONS
Encourage the early provision and take-up of the National Broadband Network (NBN) by households and industry across the region.	The NBN forms part of our base case. Options to leverage this capability are discussed under <i>Improve access to jobs and services for people in regional and rural areas</i> (12).
Support the sustainable development of the region's marine environment and infrastructure for industry and recreational uses.	Marine environments are discussed under <i>Help preserve the natural environments and minimise biodiversity loss</i> (16) and <i>Improve the health of waterways and coastal areas</i> (17).
Plan and capture developer contributions and coordinate the delivery of infrastructure to ensure it is supplied efficiently and when required to support growth.	The options are explored under <i>Address infrastructure demands in areas with high population growth</i> (1).

CENTRAL HIGHLANDS

REGIONAL GROWTH PLAN	INFRASTRUCTURE NEEDS AND OPTIONS
Ensure access and connectivity between settlements within and external to the region.	Options are explored under <i>Improve access to jobs and services for people in regional and rural areas</i> (12).
Develop integrated freight precincts and related networks as a means of improving the distribution and collection of goods across the region.	Options are considered under <i>Improve the efficiency of freight supply chains</i> (13).
Consider technological advancements in the transport network.	The role of ICT has been considered across all sectors, including the transport network.

LODDON MALLEE SOUTH

REGIONAL GROWTH PLAN	INFRASTRUCTURE NEEDS AND OPTIONS
Improve transport connections between Geelong, Ballarat and Bendigo (via Maryborough and Castlemaine).	This is considered as an option under <i>Improve access to jobs and services for people in regional and rural areas</i> (12).
Support ongoing investment in water infrastructure and management of water resources to enhance security and efficiency of water supply to irrigators, farms and urban areas.	Options are considered under <i>Manage threats to water security, particularly in rural and regional areas</i> (14).
Agree on a target for regional energy generation.	While a target has not been explored, options for regional energy generation are considered under <i>Transition to lower carbon energy supply and use</i> (18).

HUME

REGIONAL GROWTH PLAN	INFRASTRUCTURE NEEDS AND OPTIONS
Plan for transport services and infrastructure provision that keep pace with growth and change in the key urban areas and respond to changes.	Options are explored under <i>Address infrastructure demands in areas with high population growth</i> (1).
Support provision of adequate facilities to manage the Hume region's solid waste, including resource recovery facilities.	Options are explored under <i>Manage pressures on landfill and waste recovery facilities</i> (15).
Promote the Hume region's network of tracks and trails and support activities that complement and extend their use.	Options are explored under <i>Help preserve natural environments and minimise biodiversity loss</i> (16).

GIPPSLAND

REGIONAL GROWTH PLAN	INFRASTRUCTURE NEEDS AND OPTIONS
Support the development of freight and logistic precincts in Morwell and Bairnsdale.	Options for the planning of logistics precincts are discussed under <i>Improve the efficiency of freight supply chains</i> (13).
Plan for flexible and/or mobile provision of essential services for dispersed and remote communities.	Options are explored under <i>Address infrastructure challenges of areas with low or negative growth</i> (2).

MELBOURNE










PLAN MELBOURNE	INFRASTRUCTURE NEEDS AND OPTIONS
Proposes a polycentric city model to provide more jobs in the suburbs, such as employment clusters.	Options to support a polycentric model are under <i>Meet growing demand for access to economic activity in central Melbourne</i> (10) and <i>Improve access to middle and outer metropolitan major employment centres</i> (11).
The ability to meet everyday, non-work needs locally, primarily within a 20-minute walk.	Options are explored under <i>Enable physical activity and participation</i> (4).
Implement an expanded central city.	Options that support an expanded central city are explored under <i>Address infrastructure demands in areas with high population growth</i> (1).

GEELONG (G21)

REGIONAL GROWTH PLAN	INFRASTRUCTURE NEEDS AND OPTIONS
Provide infrastructure services for planning growth areas and infill development.	Options are considered in <i>Address infrastructure demands in areas with high population growth</i> (1).
Build on the region's capability in education, knowledge and research.	Options are considered under <i>Provide access to high-quality education infrastructure to support lifelong learning</i> (9).
Maintain and improve natural infrastructure.	Considered under both <i>Help preserve natural environments and minimise biodiversity loss</i> (16) and <i>Improve the health of waterways and coastal areas</i> (17).

Taking a sectoral view

The table below indicates how the sector-specific options are spread across the needs. The contrast between the distribution for different sectors reflects how some needs can be met by sector-specific infrastructure, such as education under Need 9. Provide access to high-quality education infrastructure to support lifelong learning while other needs can be addressed by a range of sectors such as Need 1. Address infrastructure demands in areas with high population growth.

SECTOR	OVERVIEW	Page 38	Page 44	Page 48	Page 52
 Cultural, Civic, Sporting, Recreation and Tourism	The options related to this sector have been spread across needs that relate to social and community cohesion and use of public space.				
 Education and Training	The education and training options are mostly clustered under one need, reflecting the specific issues related to that sector.				
 Energy	Given supply constraints in this sector, the key focus is transition to environmentally sustainable sources.				
 Information and Communications Technology (ICT)	There are many ICT options that relate to changes to service delivery models and improving our use of existing assets.				
 Health and Human Services	The health and human services options encompass a broad range of services and therefore are spread across a diverse range of needs. These are primarily related to social outcomes.				
 Justice and Emergency Services	Justice and emergency services options largely respond to needs related to changes in the population and resilience of critical infrastructure.				
 Science, Agriculture and Environment	These options have been clustered under the environmentally focused needs, as well as issues related to freight.				
 Transport	Many of the needs focus on accessibility and connection. As a result the transport options are spread across multiple needs.				
 Water and Waste	Options related to the water and waste sector are associated with needs that focus on sustainable use of resources and maintaining a healthy environment.				

	Page 56	Page 60	Page 64	Page 68	Page 72	Page 77	Page 84	Page 90	Page 94	Page 98	Page 102	Page 106	Page 110	Page 114	Page 120
Provide spaces where communities can come together															
Improve accessibility for people with mobility challenges															
Provide better access to housing for the most vulnerable Victorians															
Address expanded demand on the justice system															
Provide access to high-quality education infrastructure to support lifelong learning															
Meet growing demand for access to economic activity in central Melbourne															
Improve access to middle and outer metropolitan major employment centres															
Improve access to jobs and services for people in regional and rural areas															
Improve the efficiency of freight supply chains															
Manage threats to water security, particularly in regional and rural areas															
Manage pressures on landfill and waste recovery facilities															
Help preserve natural environments and minimise biodiversity loss															
Improve the health of waterways and coastal areas															
Transition to lower carbon energy supply and use															
Improve the resilience of critical infrastructure															



OPTIONS TO MEET OUR INFRASTRUCTURE NEEDS



Things we considered

This section contains all the options we have considered for each of the 19 needs, including those which we propose should be filtered out through our preliminary assessment process. The ordering does not in any way reflect a prioritisation or ranking of needs or options. That will be considered in the next phase of the strategy's development following consultation on these options.

The first page provides some context about the need as well as a summary of how we assessed these options. This is followed by a list of the options we view as credible to meet the need. We have also laid out the other options that we considered, which are either still being developed or which we have assessed and do not think should progress further. Finally, for each need we have also chosen one example of an additional assessment, such as relationship mapping or social impact, to give you an insight into our assessment tools and how we are thinking about the options.

If you are interested in more detail on an option and how it has been assessed, we encourage you to read the *Draft options book* and technical reports. Each option has been assigned a code to assist you in cross-referencing the documents.

Some of our assessment criteria:

- **Economic, social and environmental impact** – What are the economic, social and environmental impacts of an option.
- **Relationship mapping** – How options might complement or inhibit one another.
- **Scenario analysis** – How options would perform under alternative future scenarios.
- **Risk and opportunities** – Any risks or opportunities that affect an option's intent or implementation.
- **Community support** – If known, whether the community support an option.

Things you may want to consider

All the options presented here, including those we considered but filtered out at this stage, are open for consultation.

For each of the 19 needs, we ask you to consider the following questions:

- Do the options address the need?
- If so, which of these best address the need? If you had to prioritise the options, which would be your top picks?
- Are there any options that should not be included? Why?
- Do you have any feedback on the options we think need further development or have been filtered out?
- Are there any alternative options that will better address the need? How will they address the need?
- What evidence can you provide to support these alternative options?

Your feedback on our assessments, the options you like or dislike (and the reasons why) and the options you think we have missed will be used to inform the next phase of the strategy's development.

1.

ADDRESS INFRASTRUCTURE DEMANDS IN AREAS WITH HIGH POPULATION GROWTH

Strong population growth in some parts of Victoria, particularly the inner and outer/peri-urban areas of Melbourne and some regional cities, is expected to continue. Infrastructure across a range of sectors, from health and education to transport, is struggling to keep pace with demand. This need seeks to address the deficits that already exist in these areas and better prepare for future growth.

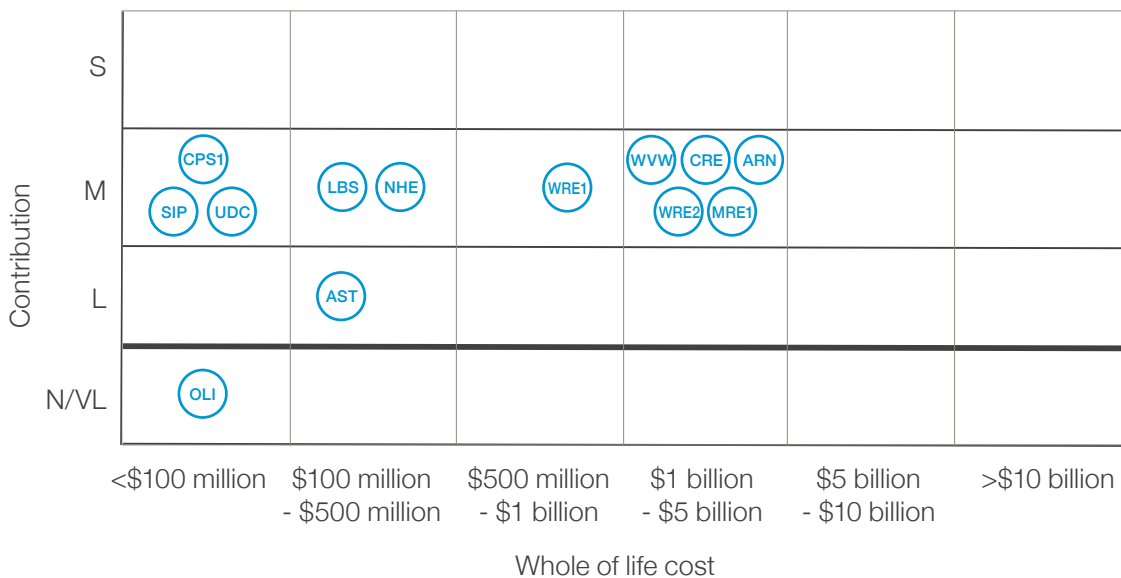
While some of the options to meet this need are targeted to specific areas, such as rail extensions, many options are common across all high growth areas, such as improvements to the coordination and sequencing of infrastructure. There are also several options here related to changes in the planning controls. These interventions would seek to better manage where residential development occurs to align it with either planned or existing infrastructure.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce the gap between infrastructure and services available to people in high-growth areas and what they need; and
- reduce the distance people need to travel to access core infrastructure, such as schools, public transport and health and social services.

Of the 25 that we have considered, 12 have undergone our two stage assessment and are presented on the next page.

Figure 2 – Cost and contribution assessment for options to address infrastructure demands in high growth areas



Options to address infrastructure demands in high growth areas

Better use

Centralised planning scheme (CPS1) – Deliver a centralised planning scheme with aligned governance that is controlled and delivered by a central authority.

Growth area bus service expansion (LBS) – Provide 20 minute local bus services in growth areas. Implement minimum local bus service levels of 20 minute frequency, seven days a week, from at least 6am to 9pm.

Subregional infrastructure planning (SIP) – Formalise and simplify a whole-of-government subregional infrastructure planning process. This would bring together (when and where required) three levels of government to jointly plan for infrastructure.

Urban development in established areas (UDC) – Apply residential or other zoning that can facilitate greater residential development in specific areas where there is existing or planned infrastructure.

New and expanded assets

Access to services through technology and ICT (AST) – Provide the ICT infrastructure necessary to support people to access online services.

Arterial road network employment centre enhancements (ARN) – Improve the road network surrounding major employment centres to meet growing demand, such as the Westall Road extension from Princes Highway to Monash Freeway, which aims to improve connectivity and support the Monash employment centre.

Clyde rail extension (CRE) – Extend the metropolitan rail network to Clyde from the current terminus at Cranbourne in Melbourne's south-east.

Melton rail electrification (MRE1) – Extend the electrified suburban rail network from Sunshine to Melton, including the quadruplication of tracks between Sunshine and Deer Park. The works would also include the removal of three level crossings on the Ballarat line between Sunshine and Deer Park West.

Northern metropolitan corridor health service expansion (NHE) – Provide health facilities to the Melbourne north growth corridor to provide access to health services in this high growth region.

Wallan rail electrification (WRE1) – Extend the electrified metropolitan rail network to Wallan.

Wollert rail extension (WRE2) – Extend the electrified metropolitan rail network to Wollert.

Wyndham Vale to Werribee rail extension (WVW) – Extend the electrified metropolitan rail network from Wyndham Vale to Werribee.

We are interested in your perspectives on these options.

What do you think of these options?

Is there anything we have missed?

Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, this option has been filtered out for this need.

An option for an **Online liveability infrastructure platform (OLI)**, which would provide people with information about the availability and location of community infrastructure, was considered. While the option may make some contribution to managing demand for assets and services, this is expected to be quite low, and we consider it will not address the identified infrastructure backlog in high growth areas.



Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Community space refurbishment or rationalisation (CSR) – Refurbish or rationalise public community spaces across Victoria, which are no longer fit-for-purpose or meeting community need.

Cultural and sports major infrastructure investment framework (CSM) – Deliver a framework that helps with making robust investment decisions to ensure that major cultural and sporting infrastructure meets the needs of elite sports or arts and is also a place where people can come together for wider community use.

Greenfield development sequencing (GFS) – Further improve the coordination, sequencing and delivery of infrastructure through the controlled release of land to ensure investment in infrastructure can keep pace with development.

Growth area train station upgrade and provision (GAT) – Provide new stations in growth areas such as Truganina, Black Forest, Sayers, Davis and Dohertys Roads and upgrades to existing over capacity stations.

International airport in the south-east of Melbourne (IAS) – Construct a third international airport in the south-east of Melbourne.

Organic waste management (OWM) – Develop and implement measures to manage organic waste closer to the point of generation. This includes organic waste recovery measures and re-use of organic waste for other beneficial purposes, such as gardening.

Police station supersites (PSS) – Move to larger police station ‘supersites’ supporting police service points within local communities, supported by a central hub (or hubs).

Relocatable community infrastructure (RCI) – Use relocatable buildings as ‘pop-up’ solutions to address the community needs before permanent facilities can be funded and constructed.

Schools with low performance (SLP) – Improve the desirability of low performing Victorian government schools, through programs such as, the School Improvement Framework.

South Yarra Metro Station (SYM) – A new station near the existing South Yarra Station, on the alignment of the Melbourne Metro tunnel.

Sport and recreational facility investment framework (SRF) – Increase the capacity of existing sport and recreation facilities through the application of a number of upgrades and changes to management approaches and deliver new local sports facilities in areas where there is identified need.

Wastewater system augmentation in high growth areas (WWS) – Increase sewerage and wastewater treatment capacity to manage future demands in Melbourne and regional cities and diversify wastewater management options.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these further?

INSIGHT:

Address infrastructure demands in areas with high population growth – Scenarios

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > **Scenarios**

A key challenge with high population growth rates is adequate and timely investment in infrastructure to meet rising demands. The models we currently use to plan for and fund infrastructure services at times don't match the needs of new communities or, for existing communities, they can be too complex to apply.

There are variations in how infrastructure contributions and charges from developers are levied across Victoria. In greenfield sites, there are established methods to collect contributions and charges from developers to fund relevant infrastructure. However, these collections do not cover maintenance costs, leaving local councils to try to fill funding gaps. Issues can arise when new residents settle in an area before important local infrastructure is in place.

In inner city areas there has been limited application of planning mechanisms due to their cost and complexity. This is a missed opportunity to improve infrastructure in established areas experiencing high growth. While infrastructure may already exist in these areas, some is old, not fit-for-purpose or constrained on very small sites. Regional infrastructure tends to be funded in whole or in part by state government. Given the different scenarios for population growth across Victoria, there is a need to consider whether having different funding mechanisms supports an efficient and equitable delivery of infrastructure.

A useful way forward may be to re-frame our planning and funding models. This can involve exploring joint infrastructure planning across all levels of government and the private sector, collecting contributions and charges from those who profit from land development, but doing so in a manner that does not negatively impact on housing affordability, and considering options that better spread growth across the whole of Melbourne, regional cities and rural areas. Scenario analysis can play an important role in understanding the breadth and linkages between these important options. A useful objective may be to provide basic levels of infrastructure provision in planning and funding frameworks and utilise a range of signals to trigger additional infrastructure development for the future.



2. ADDRESS INFRASTRUCTURE CHALLENGES IN AREAS WITH LOW OR NEGATIVE GROWTH

While there is much discussion about the pressures of population growth, less attention is given to parts of Victoria that are experiencing low growth or even decline. The distribution of population is a complex story. There is a need to think about the most efficient and equitable means of using infrastructure to support these communities.

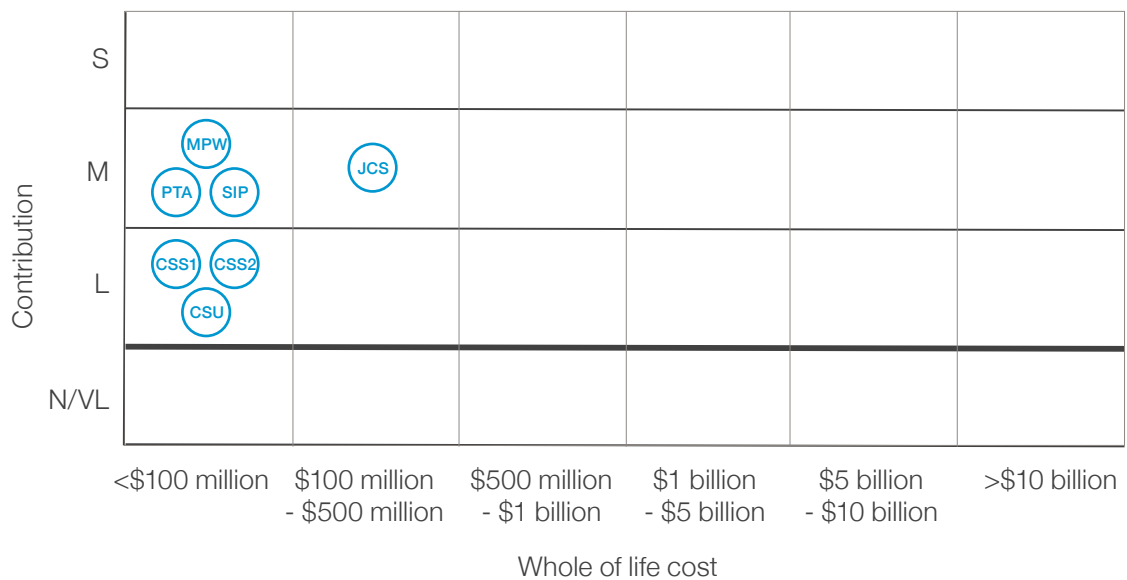
The options to meet this need raise some difficult questions about the consolidation and location of infrastructure and services. These must be considered alongside other approaches that will still enable people to access these services in other locations or in another way.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce the gap between the availability of infrastructure and services and what these communities need.

Of the 12 that we have considered, 7 have undergone our two-stage assessment and are presented on the next page.

Figure 3 – Cost and contribution assessment for options to address infrastructure challenges in areas with low or negative population growth



Options to address infrastructure challenges in areas with low or negative population growth

Better use

Community space shared use agreements (CSS1) – Improve resources and governance processes to assist in establishing shared-use agreements for community spaces and facilities between different agencies and associations across Victoria.

Community space statewide event planning (CSS2) – Develop a local annual community activities calendar for public spaces, ensuring that the events align with the needs and demographics of local residents.

Community and public space utilisation deregulation (CSU) – Improve the use of community or public spaces through changes to planning regulations. The program would target existing underutilised public spaces and seek to increase their use through standardisation and streamlining of permit processes for hosting activities and events, as well as use by community enterprises.

Justice and human services co-location (JCS) – Co-locate services delivered by the justice and human services sectors to provide clients with all necessary services in one location.

Public transport alternative use of taxis or hire cars (PTA) – Change bus and taxi/hire car regulations to encourage alternative transport services, particularly in rural and regional areas.

Mobile police and justice workforce (MPW) – Roll out ICT infrastructure that enables police officers to conduct their job from police vehicles.

Subregional infrastructure planning (SIP) – Formalise and simplify a whole-of-government subregional infrastructure planning process. This would bring together (when and where required) three levels of government to jointly plan for infrastructure.

We are interested in your perspectives on these options.

What do you think of these options?

Is there anything we have missed?



Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, no options have been filtered out for this need at this stage.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Community space refurbishment or rationalisation (CSR) – Refurbish or rationalise public community spaces across Victoria, which are no longer fit-for-purpose or meeting community need.

Health care alternative delivery options (HCA) – Deliver a mobile and e-health network throughout Victoria, enabling people to be treated in a coordinated and controlled way, by multiple practitioners across the health service.

Justice service delivery through new technology (JSD) – Deliver a strong technology base for the delivery of justice services including reform to Victoria Police's core information technology systems.

Police station supersites (PSS) – Move to larger police station 'supersites' supporting police service points within local communities, supported by a central hub (or hubs).

Schools with low enrolments in rural areas (SLR) – Consider the closure of schools, or temporarily adapt, re-use or share facilities, where there is successive low enrolment/attendance and stagnant or decreasing growth forecasts.

INSIGHT:

Address infrastructure challenges in areas with low or negative growth – Social impact and relationship mapping

- > Community support
- > Economic impact
- > Environmental impact
- > **Social impact**
- > Risks and opportunities
- > **Relationship mapping**
- > Scenarios

Victoria has not had a consistent or agreed strategy to support rural communities in decline. These communities have experienced closures of public and private facilities such as schools and banks, which can contribute to further population decline. When a few families leave a small community it can also have a significant social impact. There are fewer volunteer fire fighters, fewer members of local sporting teams, fewer teachers, health workers and bankers. These changes can reduce the level of social cohesion in a community. Keeping services running can have an important role to play in local job creation.

It is, however, difficult to fund infrastructure to support services for fewer people. Running bus services may be increasingly inefficient and health and educational facilities may be underutilised. An option is to consolidate services, but there is then a trade-off on the accessibility of those services. Difficult choices may need to be made to reduce the quality or quantity of services to enable us to afford them. This also raises the question of equity in the level of services and supporting infrastructure for all Victorians.

There are new and innovative infrastructure solutions that can be beneficial. These include how we use assets through co-sharing arrangements or multi-purpose use. They also challenge how we view opportunities. Information technology can be used to make rural communities more attractive places to do work. It can also enable people to stay in rural areas and work elsewhere. For example, provision of kindergarten services in nursing homes can lead to positive social outcomes as the older generation spends more time with the young. School rooms can be used as offices for the delivery of community health services and multiple community facilities can be rationalised to reduce operational costs.

There is also a more difficult conversation to be had around the level of subsidy to support small rural communities. It is important to consider the value and important role of rural and regional communities in tourism, agriculture and land management for the state.

We will be exploring innovative options to ensure that our rural communities remain viable. In many instances this may not be about, business as usual, approaches.

3. RESPOND TO INCREASING PRESSURE ON HEALTH CARE, PARTICULARLY DUE TO AGEING

Over the coming decades, government expenditure on health is expected to increase significantly due to population growth and ageing (as people consume more health services with age), as well as the rise of chronic diseases. Innovative approaches will be needed to respond to increasing pressures on hospitals and community health and aged-care infrastructure.

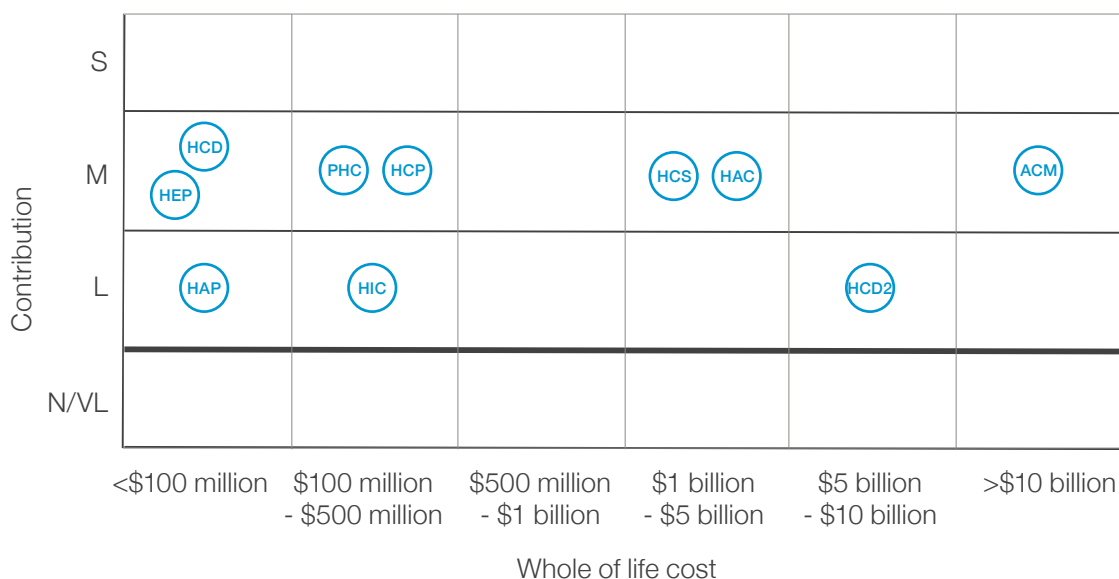
The options to meet this need are about more than simply increasing the supply of health services and infrastructure. Responding to growing pressure on the health care system is also about making sure these services are sustainable. This is one particular need where the options for the future of health care need to be different from the approaches we have today. These options, in particular, are more focused on service changes to stop people from entering a hospital in the first place to manage demand on existing hospitals. We are considering what role these options should have in our strategy – at a minimum they are important context.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce total real annual health expenditure per capita in Victoria;
- improve:
 - the average time to clear waiting lists;
 - the percentage of people treated within a clinically appropriate time; and
 - the average waiting time from referral to first consultation in outpatient clinics.

Of the 15 that we have considered, 9 have undergone our two-stage assessment and are presented on the next page.

Figure 4 – Cost and contribution assessment for options to respond to increasing pressures on health care, particularly due to ageing



Options to respond to increasing pressure on health care, particular due to ageing

We are interested in your perspective on these options

What do you think of these options?

Is there anything we have missed?

Changing behaviour, managing demand

Health care patient subsidised travel program extension (HCP)

– Extend the existing patient travel subsidy program to people in regional communities to enable them to access health services that cannot efficiently be provided in their local community.

Health education programs (HEP) – Deliver preventative health education programs targeted at the 15-25 years old age group to reduce future demand for health care.

Preventative health care awareness (PHC) – Invest in technology that supports preventative health, for example remote health monitoring and self-monitoring equipment.

Better use

Aged care and mental health residential care investment (ACM)

– Respond to the growing need for residential aged care and mental health facilities by supporting people to remain in their homes and when this is not possible, providing new purpose-built facilities.

Health care not-for-profit and private sector involvement (HAP) – Increase the involvement of the not-for-profit and private sector in the provision of infrastructure through regulatory reform and structured health service delivery planning.

Health care delivery role change (HCD) – Shift some health service delivery from traditional sources to nurses, pharmacists and allied health professionals to reduce the demand on hospitals.

Health infrastructure coordinated planning (HIC) – Develop a 30-year health infrastructure strategy that responds to forecast population growth and supports all components of the health system.

New and expanded assets

Health and aged care repurposing of facilities (HAC) – Relocate health service points of care to meet demand for these services using new or existing facilities.

Health care smart facilities (HCS) – Invest in the renewal of health infrastructure to remain fit for purpose and be flexible to respond to innovations in technology and models of care.

Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, this option has been filtered out for this need at this stage.

An option for **Health care decentralised delivery model (HCD2)** was considered. However, it will make a low contribution to the need as Victoria's geographic spread means it is unlikely that we will have sufficient density to benefit from the efficiencies of a further decentralisation of our health care services.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment or are sufficiently developed but have not yet been assessed against this need.

Advanced driver assistance applications (ADA) – Invest in connected vehicle technology and conduct trials to support Advanced Driver Assistance Systems (ADAS) applications. This technology has the ability to reduce accidents and road trauma and in turn reduce demand for emergency medical services.

Health care alternative delivery options (HCA) – Deliver a mobile and e-health network throughout Victoria, enabling people to be treated in a coordinated and controlled way, by multiple practitioners across the health service.

Health care big data leverage (HCT1) – Make better use of data and use new technologies to improve prevention, service access and system integration.

Major inner city hospital refurbishment or replacement (THR) – Refurbish or provide new tertiary hospital facilities in Melbourne's central subregion to replace assets at the end of their asset life and respond to inner city population growth.

Regional road upgrades (RRU) – Upgrade a number of smaller scale projects to relieve bottlenecks and improve safety on regional and outer suburban roads. Bottlenecks will be reduced through infrastructure projects such as new and upgraded rest areas and truck turn around areas.

INSIGHT:

Respond to increasing pressure on health care, particular due to ageing – Risks and opportunities

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

Planning for our health care infrastructure is complex, as there are many different ways that outcomes can be achieved. This is further complicated by a growing awareness that how we have delivered health care in the past will not be the same as it will be in the future. Today we are managing both the impacts of an ageing population as well as the unexpected mini-baby boom of the mid-2000s. There are risks associated with making health investment decisions that respond to the demand for services today, while being flexible to the needs of future generations, particularly when demands are likely to be quite different.

People's health issues change over generations. Half a century ago polio was one of the major diseases affecting people. Today it is the impacts of poor nutrition and sedentary lifestyles that bring about a range of chronic diseases. Investment decisions need to be made, but they need to be flexible to potential changes in the health services we require.

There are a range of new service delivery models that use emerging technology to improve the effectiveness and efficiency of health care services. These facilities should be built with flexibility to adapt to changes in different service delivery models. One option is to renew our existing assets as smart facilities. This means rather than building new hospitals we should consider how technology can make the existing operations more efficient and responsive to changing health services. Another is testing alternative delivery options that enable people to access healthcare through mobile and e-health networks. This could reduce the need for people to travel and wait in hospitals to see a health practitioner. Some services are already provided in community centres so people don't have to travel to hospitals.

Future investments in health infrastructure need to weigh up the risks and opportunities of different options to understand if the benefits of that facility or service will be realised under different scenarios. Being mindful of potential changes in health care technology and building flexibility into our assets at the beginning will be key.

4. ENABLE PHYSICAL ACTIVITY AND PARTICIPATION

In addition to responding to pressures on the health system, infrastructure can help prevent them. With risk factors like obesity on the rise, encouraging physical activity and participation in organised sport and recreation can play an important role in preventing chronic disease and promoting health and wellbeing.

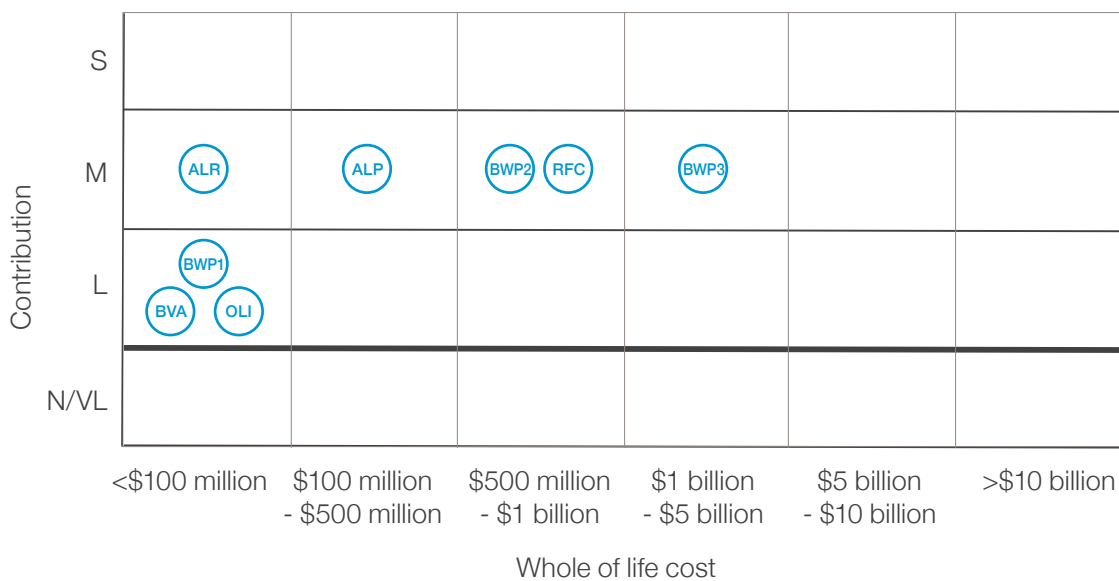
The options to address this need look at different ways to make it more attractive for people to engage in physical activity. This includes regulatory changes that make it safer and easier for people to exercise, and asset improvements that provide higher quality infrastructure for physical activity.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which an option would:

- increase the percentage of adults and children who engaged in regular physical exercise or participate in sporting activities.

Of the 11 that we considered, 7 have undergone our two-stage assessment process and are presented on the next page.

Figure 5 – Cost and contribution assessment for options that enable physical activity and participation



Options to enable physical activity and participation

Changing behaviour, managing demand

Active lifestyle infrastructure regulation (ALR) – Amend planning regulations to require that principles of ‘active design’ are incorporated into the construction of new residential developments. This would involve providing cycle ways, parks and pedestrian infrastructure.

Bicycle and vehicle accident fault allocation (BVA) – Change current regulations and legislation in line with a number of European countries where drivers/vehicles are assumed to be at fault in all accidents with bicycles unless fault can be proven otherwise.

Better use

Active lifestyle infrastructure provision (ALP) – Make improvements to the amenity of public spaces by improving lighting and streetscapes and providing facilities like water bubblers, showers, bike racks and lockers.

Bicycle and walking path data capture (BWP1) – Make better decisions about asset investment and maintenance by drawing on the information provided by enhanced data capture infrastructure.

Integrated shared use community and recreation facilities (RFC) – Improve coordination and governance processes to encourage the co-location and/or integration of arts, sporting and recreation activities in multi-purpose, shared-use facilities.

New and expanded assets

Bicycle and walking path expansion and improvement (BWP2) – Expansion of the biking and walking paths network, particularly where there are missing links. For example, cycling lanes on Palmers Road to link Point Cook and Sanctuary Lakes near Williams Landing railway station.

Bicycle and walking path separation (BWP3) – Modify existing road, bike and walkway infrastructure to separate cycling and pedestrian use. In some places this may require widening of paths or providing additional footpaths or cycling infrastructure.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?



Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, this option has been filtered out for this need at this stage.

An option for an **Online liveability infrastructure platform (OLI)** was considered. There is limited evidence to demonstrate that increasing the information available about open spaces and recreational facilities will influence people's willingness to engage in physical activity.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Active established areas (AEA) – Improve the planning and delivery of walking and cycling paths in established areas, that are traditionally car-based neighbourhoods.

Cultural and sports major infrastructure investment framework (CSM) – Deliver a framework that helps with making robust investment decisions to ensure that major cultural and sporting infrastructure meets the needs of elite sports and/or arts and also deliver wider community benefits.

Sport and recreational facility investment framework (SRF) – Increase the capacity of existing sport and recreation facilities through the application of a number of upgrades and changes to management approaches and deliver new local sports facilities in areas where there is identified need.

INSIGHT:

Enable physical activity and participation – Opportunities

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

Having community spaces such as local sports grounds where a full range of physical activities can occur is important. The location and design of this infrastructure may need to cater to different age groups, cultural backgrounds and levels of ability. Many of the options suggested here look at improving the governance and coordination of this infrastructure to deliver multi-purpose and shared use spaces. Indeed, in areas with high rates of population growth and high land values it will become increasingly difficult to secure land for sports grounds.

There are opportunities to maximise the use of the assets we already have. For example, a school sports field can be made available to the wider community when it is not in use by the school. Sporting assets that serve the needs of professional athletes can also be used by the wider community, as was done with the Melbourne Sports and Aquatic Centre. We can also be more innovative with how we use underused public spaces. Land under freeways can be used for compact sports like wall climbing. Or we can think about the materials we use for our facilities. For example, a football field can be converted from grass, which is only used for about 25 hours a week to allow for resting time, to synthetic turf, which can be used for up to 60 hours a week. Trade-offs, however, will be required between the popularity of these changes and the additional facilities created.

Early planning will help us to develop shared spaces that are flexible and can meet the diverse needs of the community. We may need to review how we provide sport and recreation infrastructure. This can ensure that we include new ways of being active, such as spaces for informal sporting activities.

5. PROVIDE SPACES WHERE COMMUNITIES CAN COME TOGETHER

Public spaces, and the community connections they enable, have been recognised as central to social cohesion. These spaces can include parks, libraries, community centres, sports facilities and arts and culture venues. As Victoria’s population grows and densification increases, access to public spaces is likely to come under pressure.

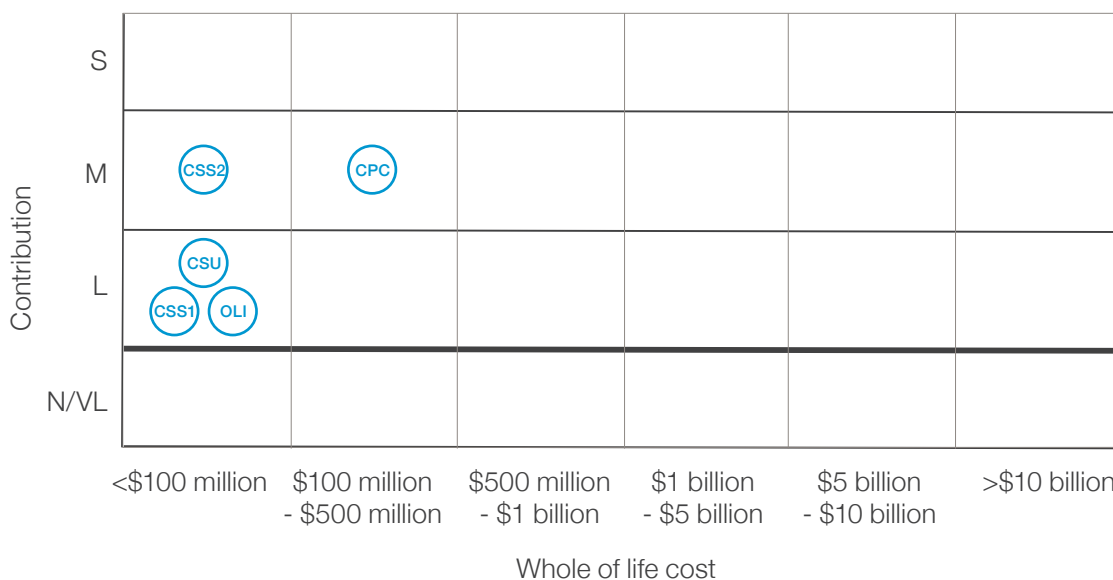
The options to meet this need have focused on how existing public spaces and facilities can accommodate multiple uses. This might be through better planning to ensure that public spaces are well used by the community, or changing regulations to repurpose vacant spaces for public use.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- increase the proportion of a local government area considered to be open, civic or public space; and
- increase community facilities in local areas and increase the use of these spaces.

Of the 10 that we have considered, 4 have undergone our two stage assessment process and are presented on the next page.

Figure 6 – Cost and contribution assessment for options to provide spaces where communities can come together



Options to provide spaces where communities can come together

Better use

Community space shared use agreements (CSS1) – Improve resources and governance processes that will assist in establishing shared-use agreements for community spaces and facilities between different agencies and associations across Victoria.

Community space statewide event planning (CSS2) – Develop a local annual community activities calendar for public spaces across Victoria. The events would align with the needs and demographics of local residents.

Community and public space utilisation deregulation (CSU) – Improve the use of community or public spaces through changes to financial and planning regulations. The program would be targeted at underused public spaces and standardise and streamline permit processes for hosting activities and events, installation of community infrastructure as well as use by community enterprises to increase their use.

New and expanded assets

Melbourne arts and sports precinct connectivity (CPC) – Build a pedestrian walkway between Melbourne's sporting and cultural precincts to improve integration between these venues and activate the public space in these precincts. The path would also include space for cyclists, and pass through Domain Gardens, South Melbourne, the Yarra River, Federation Square and Birrarung Marr.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?



Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, this option has been filtered out for this need at this stage.

An option for an **Online liveability infrastructure platform (OLI)** was considered. However, it makes a low contribution to the need, as evidence suggests that the primary issue is that people do not have enough quality public spaces, rather than a lack of information about where they are located.

What are your thoughts on these concepts that require further development?

Concepts requiring further development

Is there information or issues we should consider in examining these concepts?

These options may have merit, but are either not well developed enough to undertake a full assessment or are sufficiently developed but have not yet been assessed against this need.

Community infrastructure accessibility (CIM) – Application of universal design principles to ensure that new and upgraded infrastructure enables higher levels of accessibility to support Victoria’s ageing and diverse population.

Community space refurbishment or rationalisation (CSR) – Refurbish or rationalise public community spaces across Victoria, which are no longer fit-for-purpose or meeting community need.

Cultural and sports major infrastructure investment framework (CSM) – Deliver a framework that helps with making robust investment decisions to ensure that major cultural and sporting infrastructure meets the needs of elite sports and/or arts and also be a place where people can come together for wider community use.

Greenfield development sequencing (GFS) – Further improve the coordination, sequencing and delivery of infrastructure through the controlled release of land to ensure investment in infrastructure can keep pace with development.

Sport and recreational facility investment framework (SRF) – Increase the capacity of existing sport and recreation facilities through upgrades and changes to management approaches and deliver new local sports facilities in areas where there is identified need.

INSIGHT:

Provide spaces where communities come together – Risks and opportunities

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

Community and public spaces are expected to come under strain as the population grows. This will be particularly evident in dense inner city areas where more people will be accessing existing public spaces and facilities. The high cost of land in these areas will make it particularly difficult to acquire land for public spaces.

As in the case of spaces for sporting and recreation activities, we need to be smarter and more efficient in how we use existing community facilities. This means providing flexible, multi-purpose spaces that can be used by a range of people in the community. Developing community shared use space agreements is one of the options suggested here to achieve better use of our assets.

Shared use agreements are already in place for some schools. There is an opportunity to expand these to include other sites such as recreation venues, community facilities and sporting venues. However, it is important to make sure these agreements are framed by a clear vision for the space and there is clarity about the division of responsibility. There is a risk that if the appropriate governance and coordination mechanisms aren't in place, the full benefits of these agreements won't be realised. There is also need to develop clear processes for developing agreement to incorporate new uses in the future. Being clear at the outset of a project about who is involved, who has access, and when they will be using it, is important to avoid conflicts later on.

Simply because there might be a risk in pursuing an option, does not mean we should filter it out. Instead we need to think through the different ways of mitigating against these risks.

6. IMPROVE ACCESSIBILITY FOR PEOPLE WITH MOBILITY CHALLENGES

For people with mobility challenges due to age, disability or other reasons, infrastructure can act as a powerful barrier to (or enabler for) accessing jobs and services and participating in community life. This need seeks to address legacy issues with existing infrastructure and explore new ways to improve accessibility.

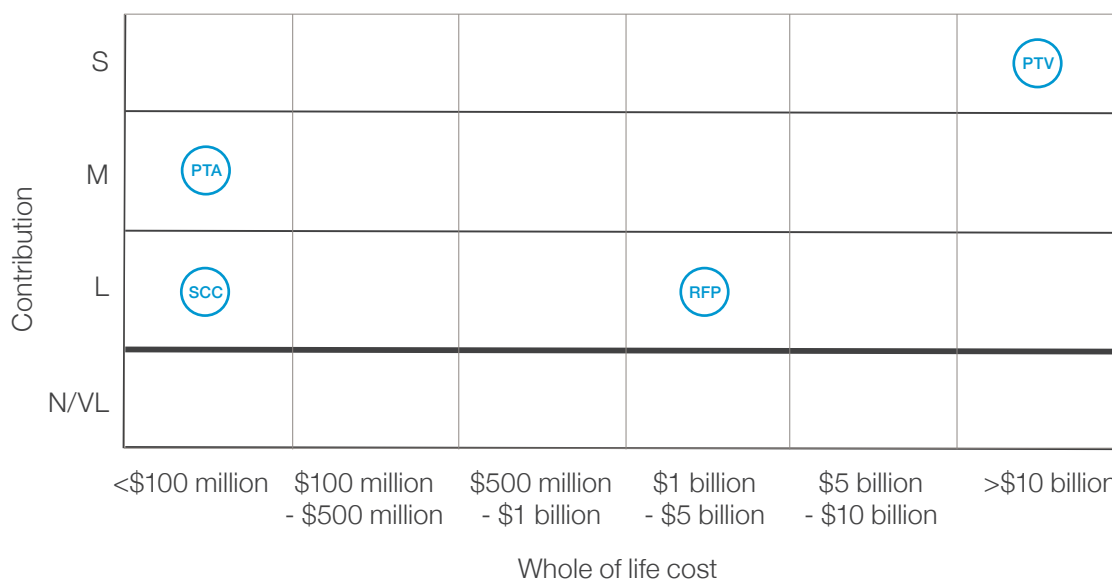
The options to meet this need target improvements and refurbishment of existing infrastructure to improve accessibility. There are also some alternative services delivery models, which use ICT to overcome barriers to access and are raised in the Concepts requiring further development.

The preliminary assessment of the contribution rating to address this need has considered the extent to which an option would:

- improve people’s satisfaction with the accessibility of transport and social services infrastructure.

Of the 5 that we have considered, 3 have undergone our two-stage assessment process and are presented on the next page.

Figure 7 – Cost and contribution assessment for options to improve accessibility for people with mobility challenges



Options to improve accessibility for people with mobility challenges

Better use

Public transport alternative use of taxis or hire cars (PTA) – Change bus and taxi/hire car regulations to encourage alternative transport services, particularly in rural and regional areas.

Community health facility access (SCC) – Implement regulatory amendments to ensure accessibility is incorporated into the planning for new developments, using principles of universal design.

New and expanded assets

Public transport accessibility (PTV) – Upgrade public transport assets across all modes (trains, trams, buses) to provide accessibility for all Victorians. This would include, for example, full roll out of low floor buses across the network.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?



Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, this option has been filtered out for this need at this stage.

An option to increase **Residential facilities for people with disabilities (RFP)** was considered. This option makes a relatively low contribution to the need, as residential support services are only one type of service and we believe this issue needs to be considered more broadly.

What are your thoughts on this concept that requires further development?

Concepts requiring further development

This option has merit, but is not well developed enough to undertake a full assessment.

Community infrastructure accessibility (CIM) – Application of universal design principles to ensure that new and upgraded infrastructure enables higher levels of accessibility to support Victoria's ageing and diverse population.

Is there information or issues we should consider in examining this concept?

INSIGHT:

Improve accessibility for people with mobility challenges – Risks and opportunities

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

Many Victorians experience mobility challenges; sometimes this is throughout their lives and for others it may be temporary. We are seeking to ensure that infrastructure does not inhibit their social and economic participation. However, sometimes in seeking to solve one problem, we can unintentionally create another.

Evolving technology that brings services into people's homes via the internet is often seen as a 'silver bullet' for accessibility issues. Given the physical barriers to accessing services, bringing services into the home through connective technology is often seen as an ideal solution.

However, as cautioned in the 2015 Victorian Parliamentary *Inquiry into social inclusion and Victorians with a disability*, there are risks associated with becoming overly reliant on ICT solutions. Many people who are mobility challenged often already experience social isolation. While bringing services into the home may meet their service needs, it may have unintended consequences of affecting their wellbeing and social participation. As a result, this option should be considered alongside others which continue to improve accessibility to public places and facilities. Furthermore, we cannot assume that simply providing the ICT platform means that it will be used. People may require some support to use the platform or may not have access to the core technology that supports the platform.

This analysis does not suggest we should filter out an option, but highlights where we need to further develop an option to more effectively meet the need. Using a risk and opportunity assessment enables us to identify where an option may be impacted by other factors and how it may need to be reframed to achieve the desired outcome. Relationship mapping can be complementary here, by helping us to understand how options can work together to produce greater benefits, or potentially offset some of their unintended consequences.

7. PROVIDE BETTER ACCESS TO HOUSING FOR THE MOST VULNERABLE VICTORIANS

Rising housing costs have become a significant pressure point for vulnerable Victorians. Access to affordable properties for low income households, particularly in areas with good access to jobs and services, is limited, and demand for social housing is growing at the same time that existing stock is nearing obsolescence.

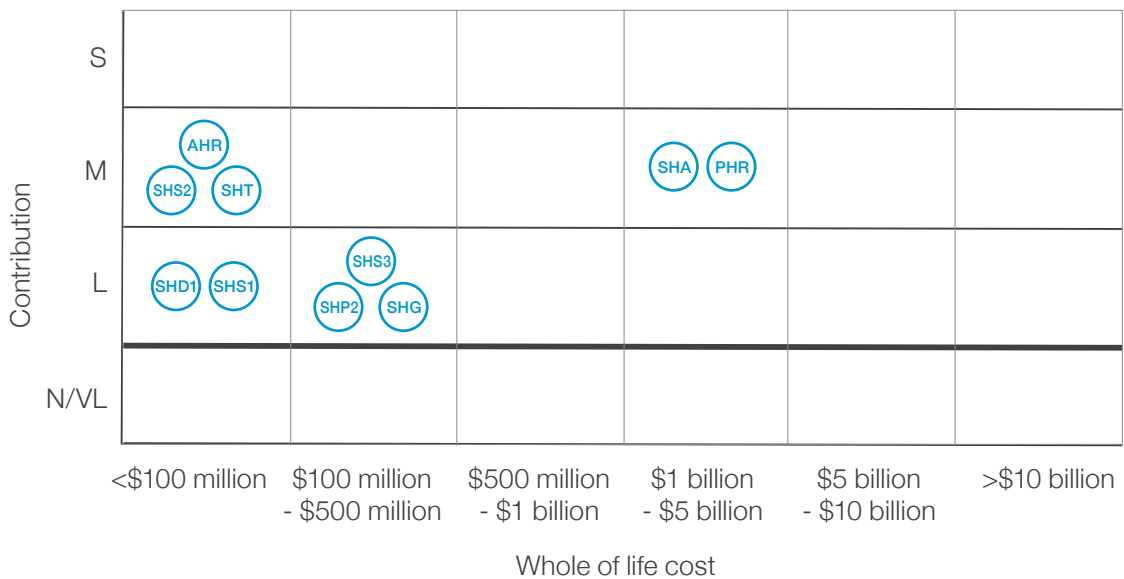
There are a wide range of options to meet this need from governance changes, to different delivery models to increasing the quantity of social and public housing stock. Many involve changes to how social and public housing is built and managed.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce the percentage of low-income households that spend more than 30 per cent of their income on rent; and
- improve current tenants' satisfaction with the quality of their social and community housing.

Of the 18 that we have considered, 9 have undergone our two-stage assessment process and are presented on the next page.

Figure 8 – Cost and contribution assessment for options to provide better access to housing for the most vulnerable Victorians



Options to provide better access to housing for the most vulnerable Victorians

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?

Changing behaviour, managing demand

Affordable housing sector regulatory amendment (SHS1) – Use the Victoria Planning Provisions to provide affordable housing in strategic urban renewal precincts and other areas of significant change.

Better use

Affordable and social housing targeted development (AHR) – Introduce inclusionary zoning, or the mandatory provision of more affordable rental housing through amendments to the State Planning Policy Framework and appropriate legislation.

Public high rise housing estate renovation (PHR) – Undertake a comprehensive refurbishment of existing high rise public housing tower estates to provide more functional and fit-for-purpose public housing stock.

Social housing utilising the Defence Housing Australia rental model (SHD1) – Apply the Defence Housing Australia model for social housing to enable available non-government apartment and housing stock to be leveraged.

Social housing government role change (SHG) – Shift the government's role to focus on providing a sufficient supply of social housing and as a broker rather than as a provider and property manager.

Social housing "Social Rental" model (SHS2) – Open up underutilised assets in the community through policy and regulatory change to provide an increase in social housing. This would include offering incentives to landlords who could rent their property under a social housing rental scheme.

Social housing stock transfer model (SHS3) – Transfer some of the buildings and land titles of existing public housing assets to the private sector or community housing organisations to enable the non-government sector to operate and manage the facilities.

Social housing tenant transfer within a community (SHT) – Enable existing tenants to move into different housing within the community that meets their needs, to maintain the continuity of service.

New and expanded assets

Social housing asset rationalisation and refresh (SHA) – Refresh suitable assets and invest in better purpose-built accommodation dwellings through the sale of old unsuitable assets.

Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, this option has been filtered out for this need at this stage.

An option to improve tenants' skills to assist with **Social housing tenant transition to private stock (SHP2)** was considered. This option would make a low contribution to the need, as upskilling individuals to navigate the private rental market would not affect the quality of the current social and community housing stock and is unlikely to significantly improve supply.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment or are sufficiently developed but have not yet been assessed against this need.

Affordable and social housing development incentives and fund (SAH) – Develop and implement a planning policy which requires a proportion of new construction be affordable to people on low and moderate incomes (inclusionary zoning), and provide grants to developers for public improvements (incentive zoning).

Affordable housing community land trusts (AHC) – Promote the formation of community land trusts (CLTs) through funding further research to determine a sustainable model for Victorians and through subsidised provision of land.

Government owned and managed social housing provision to increase stock (GOM) – Provide additional government-funded, built and managed public housing stock.

Housing rental assistance program extension (HRA) – Extend and introduce new rental subsidies to support households to be able to rent in the private rental market.

Public high rise housing estate regeneration (PHG) – Regenerate existing high rise public housing tower estates through significant reconfiguration and development, to provide more functional and fit-for-purpose housing stock that is suitable for a combination of uses.

Social housing flexible use (SHF) – Ensure future public housing construction is designed to enable cost effective reconfiguration to meet alternative uses in the future.

Social housing infrastructure investment framework (SCP) – Develop and publish a 30-year infrastructure strategy for social housing, that responds to forecast population growth and demographic change.

Social housing private provision to increase stock (SHP1) – Increase levels of non-government provision of social housing stock, through the use of non-government organisations to create and operate affordable permanent and transition housing.

INSIGHT:

Provide better access to housing for the most vulnerable Victorians – ESE Assessment

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

Victoria's social housing stock is under pressure, with a growing number of people needing social housing. At the same time there is a need to refresh and renew our existing stock. While government is a significant player in this sector, others such as not-for-profit organisations and the private sector can also play a role.

Inclusionary zoning is one option that involves greater private sector involvement in the social housing sector. Essentially, this means that all new developments must have a proportion of dwellings set aside as social housing for people on low incomes. This approach has been introduced successfully in a number of other countries. In the United Kingdom, for example, national planning policy since the late 1970s has included inclusionary zoning.

While this may significantly contribute to the need, there are broader impacts which need to be considered in assessing this option. It is likely to make housing generally more expensive, as the additional costs of providing this housing might dampen development, or those cost increases could be passed on to other people seeking to buy houses in that development. Attempting to provide social housing for one group of people may ultimately have detrimental impacts for affordability overall.

Some of this can be managed through the design of the regulation. Another option is proposed in the *Plan Melbourne refresh* discussion paper for the introduction of incentive zoning where there are benefits to developers for including social housing, such as reducing building height restrictions. This, however, also needs to be balanced against community impacts of increased development.

As this illustrates, ultimately the costs or impacts of an option are felt somewhere. It is about ensuring that these are managed equitably and efficiently.

8. ADDRESS EXPANDED DEMAND ON THE JUSTICE SYSTEM

Demands on the justice system are expected to grow, driven by population growth, community expectations and new forms of crime (such as cyber-crime). Increased demands for justice services also flow across the system, from police to courts to prisons. There is a need to consider how infrastructure can meet expanded demands on the system and support changing service delivery approaches.

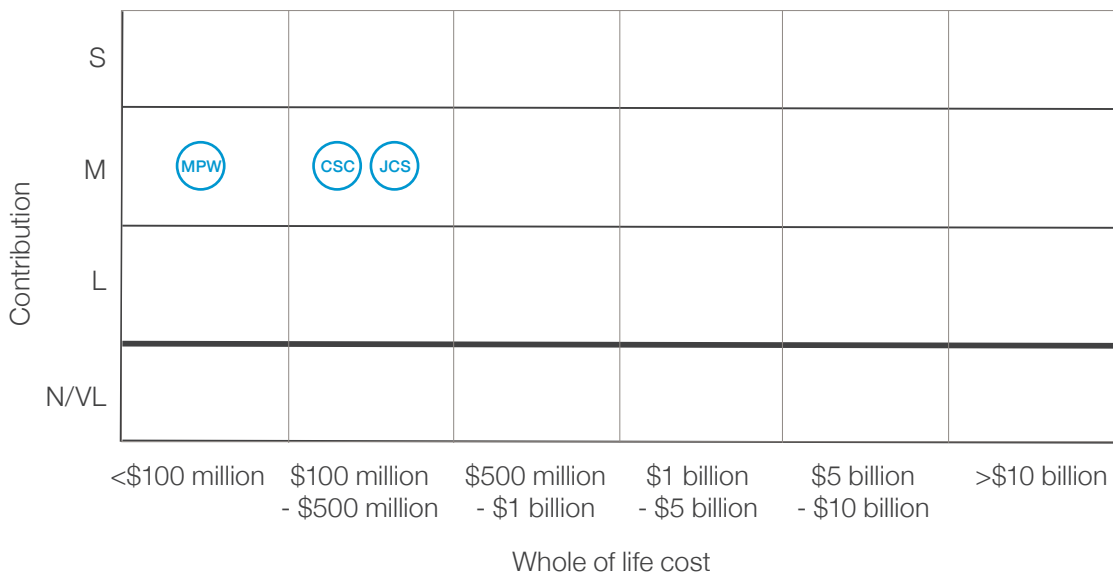
The options to meet this need are targeted to supporting changing models of service delivery to improve outcomes and get better use from existing infrastructure. In particular, there is scope to consider how technology can be used to expand access to justice services across the community.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- improve service delivery outcomes in the public justice sector.

Of the 14 that we have considered, 3 have undergone our two-stage assessment process and are presented on the next page.

Figure 9 – Cost and contribution assessment for options to address expanded demand on the justice system



Options to address expanded demand on the justice system

Better use

Justice case management system (CSC) – Roll out a case management system across Victorian court jurisdictions to integrate and standardise document management, and create one view of the client.

Justice and human services co-location (JCS) – Co-locate services delivered by the justice sector to provide clients with all necessary services in one location.

Mobile police and justice workforce (MPW) – Roll out ICT infrastructure that enables police officers to conduct their job from police vehicles.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?



Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, no options have been filtered out for this need at this stage.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Courts maintenance (CMD) – Meet ongoing maintenance requirements for courts to support increasing demand, improve access and deliver more flexibility in their use.

Justice and human services joint planning (JHS) – Establish joint infrastructure planning of justice operations and services (including courts and police) with human services.

Justice court CBD legal precinct (JLP) – Consider a number of areas that have arisen as priorities for the CBD precinct including a new or redeveloped Supreme Court of Victoria.

Justice delivery in growth areas (JDG) – Consider the development priorities in areas of high growth including Wyndham, Melton, Dandenong, Officer, Whittlesea/South Morang and Craigieburn.

Justice delivery in regional areas (MJC) – Address the needs for justice in regional areas, including Bendigo Law Courts.

Justice diversion policy and programs (JDP) – Reduce the number of offenders sentenced to prison by strengthening diversion pathways for young people.

Justice family violence response (JFV) – Respond to the infrastructure implications of the Royal Commission into Family Violence including the need for specialist courts and appropriate environments.

Justice service delivery through new technology (JSD) – Deliver a strong technology base for the delivery of justice services including reform to Victoria Police's core ICT systems.

New or expanded men's prison (NMP) – Construct a new male prison or expand an existing prison to accommodate increased demand on the prison system.

New or expanded women's prison (NWP) – Construct a new female prison or expand an existing prison to accommodate increased demand on the prison system.

Police station supersites (PSS) – Move to larger police station 'supersites' supporting police service points within local communities, supported by a central hub (or hubs).

INSIGHT:

Address expanded demand on the justice system - Relationship mapping

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

The local police station has been a common site in Victorian towns and suburbs for decades. However, there is a question as to whether this infrastructure supports a service that meets community needs.

There is a need to reconsider the infrastructure requirements of the justice sector to better meet service requirements. To realise the full benefit of this approach it needs to be coupled with other complementary initiatives.

As we highlighted in *Laying the foundations*, there is growing complexity in the crimes police need to respond to, and a growing expectation about how rapid this response will be. In particular, there is an increasing focus on non-street crimes, such as family violence. This challenges existing approaches and changes the way police are expected to engage with the community. Sometimes the station can be a constraint rather than an enabler of these services. However, consolidation of local police stations and the establishment of larger sites makes efficient use of assets but does not necessarily achieve better service outcomes.

Relationship mapping helps us to understand those options that are complementary and those that are in conflict. In this case, the police station 'supersites' option has strong linkages with a mobile police workforce. This mobile police workforce would make use of technological developments that enable police to perform their duties from the car by linking them to information remotely. The larger police stations would still provide the central site for the police force to interact with colleagues, as well as for the community to access services of a more administrative nature.

This combination of options that use technology to deliver more effective police supersites and support mobile police officers enables a more dynamic police force. Considering these options in isolation risks them being discounted as not making a significant contribution to the need, or even having negative outcomes by reducing services through consolidation. But by looking at the options together we can think about where they can begin to be bundled to maximise benefits for the community and achieve a better service outcome. Thinking about these relationships will be part of the next phase of our assessments.

9. PROVIDE ACCESS TO HIGH-QUALITY EDUCATION INFRASTRUCTURE TO SUPPORT LIFELONG LEARNING

Our economy and society are changing so rapidly that education is paramount to ensuring Victoria’s global competitiveness and enabling workforce participation. There is a need for education infrastructure to provide opportunities for people across all phases of their lives, as well as be responsive and adaptable to rapid change.

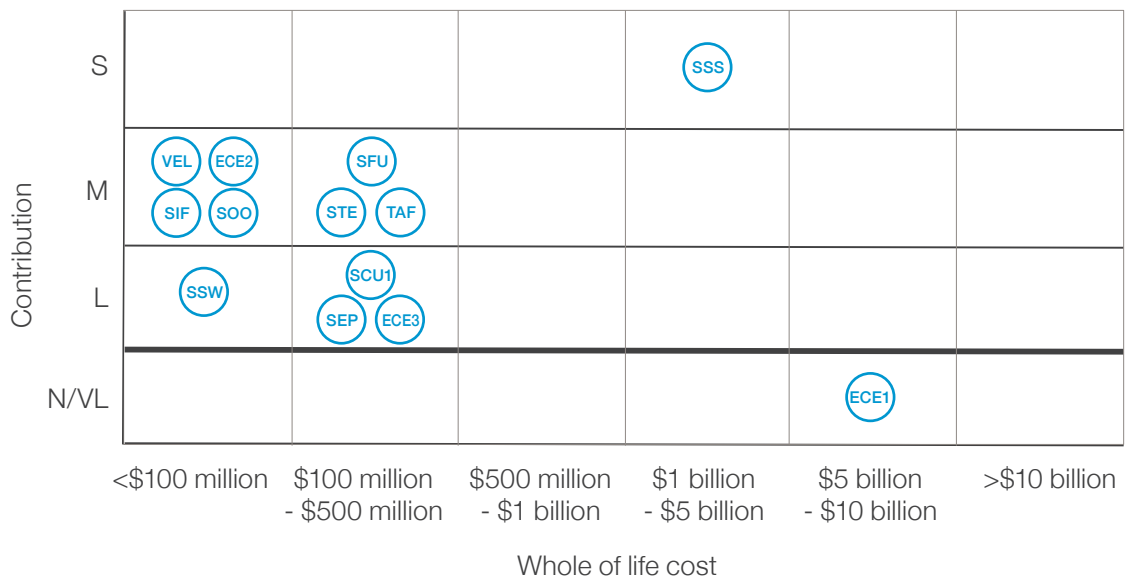
The options to address this need encompass the early childhood, schools and tertiary education sub-sectors of the education system. Each of these sub-sectors has very distinct challenges, and therefore the options range from changes to regulation to encouraging different service delivery models in the tertiary education sector, through to building new schools where demand for places outstrips supply.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- increase the number of Victorians of all ages who participate in learning;
- reduce waiting times for early childhood facilities;
- address mismatches in supply and demand in school enrolments; or
- address the mismatch between supply and demand for the skills and training required by Victorian industry.

Of the 19 that we have considered, 12 have undergone our two-stage assessment process and are presented on the next page.

Figure 10 – Cost and contribution assessment for options that provide access to high-quality education infrastructure to support lifelong learning



Options to provide access to high-quality education infrastructure to support lifelong learning

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?

Changing behaviour, managing demand

School sector-wide planning information (SSW) – Introduce regulation that makes information about private school assets more readily available to improve sector-wide planning about where new schools will be needed.

Education and medical research precincts linking with the private sector (SEP) – Establish new education precincts that brings sectors together, driven by private sector demand for increased collaboration with the education sector.

TAFE recapitalisation (TAF) – Separate asset management funding for TAFEs and dual sector universities from market driven funding.

Better use

Early childhood education centralised planning model (ECE2) – Establish a body to oversee and coordinate funding across levels of government to ensure resources are spent in the areas which need it most.

Early childhood education corporate office facilities (ECE3) – Offer incentives (tax concession or similar) for building owners to offer discounted rental/purchase agreements to accommodate early childhood education facilities in areas with high demand for these facilities.

School and tertiary education cooperation (STE) – Encourage partnerships between schools and tertiary education providers to share buildings through specific educational programs, to strengthen pathways for school students to transition to tertiary education.

School campus utilisation (SCU1) – Deliver more than one stream of education within the same school building with start and finish times staggered throughout the day.

School facility use for Out of School Hours Care (SFU) – Increase the flexible use of schools as sites for out of school hours care.

School infrastructure funding certainty (SIF) – Deliver effective long-term capital and maintenance funding for schools by removing school maintenance expenditure from short-term budget cycles. This would enable long-term maintenance contracts to be established.

School boundary enrolment (SOO) – Review the legislation, policy and enforcement of school zone boundaries to assist in managing capacity, as well as planning issues.

Vocational education long-term funding certainty (VEL) – Similar to School infrastructure funding certainty (SIF), provide certainty to the vocational education sector by removing funding from short-term budget cycles. This would enable strategic and long-term planning and investment in assets.

New and expanded assets

School shortages (SSS) – Plan and deliver new schools where localised demand exceeds supply.

Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, this option has been filtered out for this need at this stage.

An option for **Early childhood education availability (ECE1)** was considered. It would make a very low contribution to the need as extending coverage of subsidies for another year would likely increase demand for places, without addressing the underlying issue about the lack of available places.

What are your thoughts on these concepts that require further development?

Concepts requiring further development

Is there information or issues we should consider in examining these concepts?

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Greenfield development sequencing (GFS) – Further improve the coordination, sequencing and delivery of infrastructure through the controlled release of land to ensure that investment in infrastructure can keep pace with development.

Lifelong learning hubs (LLH) – Provide appropriate infrastructure that can support lifelong learning. This would cover the whole spectrum of life from youth to senior, and will benefit all generations.

School region level maintenance contracts (SRM1) – Devolve management for regional maintenance and cleaning contracts to individual schools.

School resource sharing through technology (SRS) – Use technology, such as videoconferencing platforms, to share resources or curricula across schools and give students access to greater choice of subjects (e.g. Specialist Maths).

Schools with low enrolments in rural areas (SLR) – Consider the closure of schools, or temporarily adapt, re-use or share facilities where there is successive low enrolment/attendance and stagnant or decreasing growth forecasts.

Schools with low performance (SLP) – Improve the desirability of low performing Victorian government schools through programs such as the School Improvement Framework.

INSIGHT:

Provide access to high-quality education infrastructure to support lifelong learning - ESE assessment

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

We are acutely aware of the demand for school places, particularly in areas experiencing high growth. It is projected that there will be a gap between the availability and demand for school places. This can be linked to the 'mini' baby boom in the mid-2000s. One way to address the gap is to make better use of buildings to increase the number of enrolments schools can offer.

One option for better school campus utilisation proposes that schools are used more flexibly to make more efficient use of the buildings and increase the number of educational services that can be delivered. This is more commonly known as 'double-bunking', where school services are staggered throughout the day.

On paper this seems like a great idea. There are, however, broader impacts that need to be considered. For most working parents there is a delicate balancing act between work and family, fulfilling daily drop-off and pick-up duties or ensuring someone is home after school. Therefore an unintended consequence of implementing a policy for school 'double bunking' might be that people need to reduce their working hours or even leave the workforce to ensure someone is at home, particularly for primary school students.

Although the contribution rating indicates that this would be a great way to address the infrastructure need, the ESE assessment of this option suggests that it would likely be extremely disruptive for the community. We have kept this option in to gauge community and stakeholder views.

There are a range of innovative ways to make better use of existing assets, but these need to be designed to integrate with people's existing usage rather than negatively impacting on people's lives and activities. Therefore this option would need to be further refined to address these issues if it were to progress further.



10. MEET GROWING DEMAND FOR ACCESS TO ECONOMIC ACTIVITY IN CENTRAL MELBOURNE

Victoria’s high productivity industries are typically concentrated in central Melbourne. The centralisation of economic activity is only expected to continue as the economy is increasingly services-driven. Demand for central city access from all parts of Melbourne and many regional areas is likely to grow strongly, leading to increasing capacity constraints on the transport system, which are particularly pronounced in Melbourne’s west and north.

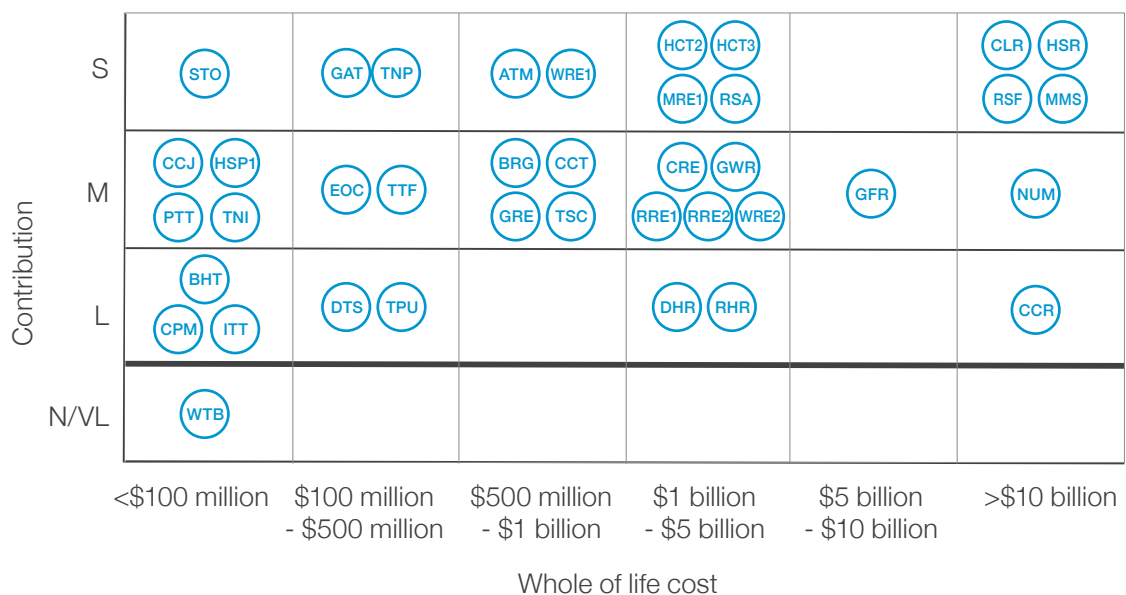
The options presented to meet this need include a range of different modes, locations and types of interventions. While some are about pricing and regulation to change how and why we access the central city or improve the use of existing infrastructure, many seek to expand the existing network.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce the gap between supply and demand in the transport system for trips into the central city from across Victoria.

Of the 55 that we have considered, 34 have undergone our two-stage assessment process and are presented on the next two pages.

Figure 11 – Cost and contribution assessment for options to meet growing demand for access to economic activity in central Melbourne



Options to meet growing demand for access to economic activity in central Melbourne

Changing behaviour, managing demand

Car parking management (CPM) – Reduce the attractiveness of commuting by car to the CBD by using the government congestion levy more effectively to increase parking prices. Changes to pricing could be done in conjunction with regulations to limit the physical availability of car parking in the CBD in future developments.

Increased telecommuting (ITT) – Increase telecommuting by providing CBD businesses with financial incentives to keep employees working from home, to reduce demand on the transport network.

Transport network information centralisation (TNI) – Roll out ICT infrastructure that provides centralised real-time information across the transport network (both private and public transport) to support commuters to make real-time multi-modal decisions about their journey.

Transport network price regime (TNP) – Overall pricing review to manage demand for travel at peak/non-peak times across the entire transport network.

Better use

Employment outside central city incentivisation (EOC) – Provide planning and financial incentives to encourage businesses to locate outside the central city.

High capacity trains – 7-car (HCT3) – Procurement of 7-car high capacity trains for the metropolitan network. This option will include associated minor upgrades to track and stations and the upgrade and electrification of the existing line to Baxter where the stabling and maintenance will be located.

High capacity trains – 10-car (HCT2) – Procurement of 10-car high capacity trains for the metropolitan network. This option would include associated major upgrades to power, stabling yards, platform lengths and other ancillary assets.

Hoddle Street/Punt Road public transport prioritisation (HSP1) – Prioritise public and active transport traffic flows along and across Hoddle Street/Punt Road using traffic management systems and changes to road space allocation.

Public transport train timetabling (PTT) – Deliver new timetabling across the train system to realise all available capacity, by reconfiguring service to better meet patronage demand.

Rail signals and fleet upgrade (RSF) – Upgrade the signalling system across the entire metropolitan train network to accommodate more trains on the existing network.

Road space allocation changes (RSA) – Prioritise public transport and active transport on the road network into the central city and employment centres.

Strategic transit-oriented development corridors (STO) – Designate a set of strategic public transport corridors that are suited for increased development. These would be located around existing transport services, like train stations and tram routes, to better connect employment centres and join these employment centres to the central city.

Train platform utilisation (TPU) – Encourage more even use of train platforms when boarding and alighting to boost train capacity.

Tram and train fleet modifications (TTF) – Improve train and tram capacity, including modifying existing train and tram fleets through reduced seating.

New and expanded assets

Advanced traffic management (ATM) – Expand the use of traffic management tools (such as lane use management, access ramp signalling and CCTV) to manage freeway flows and achieve higher levels of efficiency and reliability.

Bicycle highways through the central city (BHT) – Build dedicated bike lanes to facilitate better travel into and across the CBD.

Burnley rail group upgrades (BRG) – Upgrade the Burnley group of lines to support the development of a metro rail system. This would include 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.

Central city tram network extension (CCT) – Extend tram lines within the central city area including to the new redevelopment areas of E-Gate and Fishermans Bend and the missing tram link between Dynon and Footscray.

City loop reconfiguration (CLR) – Reconfigure the Melbourne Underground Rail Loop (MURL) to increase capacity, particularly on the Upfield, Craigieburn and South-East rail lines.

Clyde rail extension (CRE) – Extend the metropolitan rail network to Clyde from the current terminus at Cranbourne in Melbourne's south east.

Doncaster tram service (DTS) – Extend the Route 48 tram from Balwyn Road/Doncaster Road intersection through to Doncaster shopping centre.

Geelong and Werribee rail upgrade (GWR) – Provide a new track pair to quadruplicate the tracks from Deer Park to West Werribee via Tarneit and Wyndham Vale stations.

Geelong fast rail (GFR) – Implement a fast rail service (less than 30 minutes) between Geelong and Melbourne (Southern Cross Station).

Geelong rail electrification (GRE) – Electrification of the Geelong line and operation of high-capacity electrified rolling stock from Grovedale via the recently constructed Regional Rail Link to improve capacity and reliability.

Growth area train station upgrade and provision (GAT) – Provide new stations in growth areas such as Truganina, Black Forest, Sayers, Davis and Dohertys Roads and upgrades to existing over capacity stations.

High speed rail from Sydney to Melbourne (HSR) – Construct a high speed rail line between Melbourne and Sydney to provide an alternative to air travel.

Melbourne Metro 2 (MMS) – Construct a heavy rail connection between Clifton Hill and the CBD through to Fisherman's Bend and Newport via two new rail tunnels.

Melton rail electrification (MRE1) – Extend the electrified suburban rail network from Sunshine to Melton, including the quadruplication of tracks between Sunshine and Deer Park. The works would also include the removal of three level crossings on the Ballarat line between Sunshine and Deer Park West.

Regional rail eastern corridor dedicated rail track (RRE1) – Build dedicated regional rail tracks on the south-east corridor to separate regional passengers and freight from metropolitan trains.

Regional rail electrification (RRE2) – Electrification of passenger rail services to Geelong (Sunshine to Waurn Ponds), Ballarat (Sunshine to Wendouree) and Bendigo (Sunshine to Epsom and Eaglehawk) to increase line capacity and reliability.

Train station carparking improvement (TSC) – Construction of new or expanded rail station car parks to increase capacity or park-and-ride facilities across regional and metropolitan networks.

Wallan rail electrification (WRE1) – Extend the electrified metropolitan rail network to Wallan.

Wollert rail extension (WRE2) – Extend the electrified metropolitan rail network to Wollert.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?

Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, these options have been filtered out for this need at this stage.

An option for a **Central city job cap (CCJ)** was considered for this need, but filtered out on an ESE assessment. This option would have multiple highly detrimental impacts including reducing Victoria's Gross State Product (GSP). Also it is likely that any jobs lost from the central city would move to other cities, interstate or overseas rather than disperse to other employment centres.

An option for a **Cross city road tunnel (CCR)** was considered. This option is extremely costly and may in fact produce an adverse outcome by creating greater road congestion by re-routing traffic from south and north cross city routes to a tunnel entrance located closer to the CBD.

The **Doncaster heavy rail line (DHR)** was considered as an option to meet to this need. This option has a high cost, and feasibility studies indicate that few people will change to public transport if a heavy rail service were available compared to the existing bus service.

An option for a **New underground metro rail system (NUM)** was considered. This option for a decoupled metro-style subway system does not make a significant enough contribution to the need relative to the expected cost of over \$10 billion. Other options raised would be more effective and less costly.

The **Rowville heavy rail line (RHR)** was considered as an option to meet this need. Feasibility studies have suggested the line will have a minimal impact on mode shift.

An option for **Water taxis/buses/ferries to the central city (WTB)** was considered. The option makes a low contribution to the need as the expected travel time for these trips would not make them an attractive option to people seeking access to the city. Should a commercial operator proceed, government may have a minor role in addressing any planning or regulatory barriers.



Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Automated car technology (ACT) – Introduction of regulations to permit the use of automated driverless vehicle technology on Victorian roads.

Advanced driver assistance applications (ADA) – Invest in connected vehicle technology and conduct trials to support Advanced Driver Assistance Systems (ADAS) applications.

Avalon Airport bus dedicated road priority (AAB) – Implement a dedicated priority lane for bus services for the entire journey connecting Southern Cross Station and Avalon Airport.

Bendigo rail full metropolitan separation (BRF) – Fully separate Bendigo regional services from metropolitan services between Sunbury and Sunshine by quadruplicating tracks to release capacity along the corridor.

Big data leveraging (BDL) – Develop governance arrangements and technological capability to collect, manage and analyse big data to improve service delivery and make better use of existing assets.

Doncaster bus improvement (DBI) – Enhance Doncaster Area Rapid Transit (DART) bus services in inner Melbourne by improving the frequency and efficiency of the area's bus network through the provision of better peak hour priority for DART buses.

Driverless car and ride sharing (DCR) – Incentivise and facilitate the take up of fully driverless cars as a shared mobility option for transport users.

Gippsland–Pakenham rail shuttle (GPR) – Provide increased services on the Gippsland line that connect with metropolitan services at Pakenham.

Key movement corridor incident management (CRR1) – Develop a contingency plan to ensure transport access to the CBD is maintained in the event of a major disruptions.

Metropolitan bus network reform (MBN) – Substantial restructure of the existing metropolitan bus network, building on the approach taken in Brimbank in 2013.

Metropolitan level crossing removal completion (MLC) – Remove the approximately 130 level crossings on the metropolitan train network after the current program of 50 removals (as it stands in 2018).

Mildura passenger rail restoration (MPR) – Restore passenger rail services to north-west Victorian communities between Mildura and Maryborough with connection through to Melbourne.

Multimodal interchange improvements (MII) – Improve the physical layout of transport interchanges to facilitate better multimodal trip-making.

Punt Road Traffic Management Systems (HSP2) – Use traffic management systems to prioritise traffic flow on Punt Road at a number of intersections, including Dandenong Road, High Street, Commercial Road, and Toorak Road.

Regional rolling stock expansion (RRS) – Procure new rolling stock to support additional services on regional lines.

South Yarra Metro Station (SYM) – A new station near the existing South Yarra Station, on the alignment of the Melbourne Metro tunnel.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

INSIGHT:

Meeting growing demand for access to economic activity in the central city – Community support

- > **Community support**
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

Transport pricing has been raised in many forums before. Typically the discussion is shut down by a perception that the intention of this regulation would be to raise revenue. Pricing, though, can have two objectives:

1. raising revenue by recovering costs from those that use infrastructure
2. encouraging better use of infrastructure by managing demand

For the purpose of our infrastructure needs, we have considered transport pricing as a demand management option that can address congestion across the different transport modes.

There is already a pricing regime or user charges in place across parts of the transport network, however, this is not targeted at managing demand on the network. Victorians experience a form of user charges when they use toll roads, though this is generally set to recoup the capital cost of the road rather than affect demand. Similarly, public transport fares are generally not structured to encourage efficient use of the network, and most of the road network is only priced through taxation and registration, with no link to the time or place that people choose to drive.

We want to talk about this option with the community in a broader sense – to help people understand that we all pay for transport services in some way (through fuel excises, registration, council rates, public transport fares and as taxpayers). The key question is whether what we pay for transport helps us make decisions on what transport we use, and how often we use it. The questions for the community to discuss are:

- does the current price we pay for driving on roads or using public transport encourage us to take public transport instead of driving in peak hours?
- does the price we pay encourage us to carpool for trips to work?
- does the price we pay encourage us to use public transport or roads at different times?

With population growth and the low density of Melbourne, our transport networks are struggling to cope with increasing demand, particularly around the peaks but also beyond the peaks and into the weekend. An option is to build new roads and new railways to provide more capacity, but this is expensive and we will all ultimately pay in increased taxes, or suffer diminished government services in other sectors such as health or education.

According to the Bureau of Infrastructure, Transport and Regional Economic, the current avoidable cost of congestion (if roads were priced to get best value) is \$4.6 billion in Melbourne (2015). To put this in perspective, this would mean by 2030 the average one-hour trip will be 28 minutes longer than it would be if optimally priced. Changing the community profile of this option will be about shifting the debate to how we can get more out of our infrastructure and highlights that we are unable to build our way out of the transport demand challenge.



11. IMPROVE ACCESS TO MIDDLE AND OUTER METROPOLITAN MAJOR EMPLOYMENT CENTRES

While central Melbourne is a significant source of economic activity, employment centres in middle and outer metropolitan Melbourne, such as Monash, Dandenong South, Sunshine, East Werribee, Latrobe and Melbourne Airport (and surrounds), will also be critical to the state’s economy over the long term. These centres are particularly important employment destinations for people living in surrounding areas, but access will need strengthening.

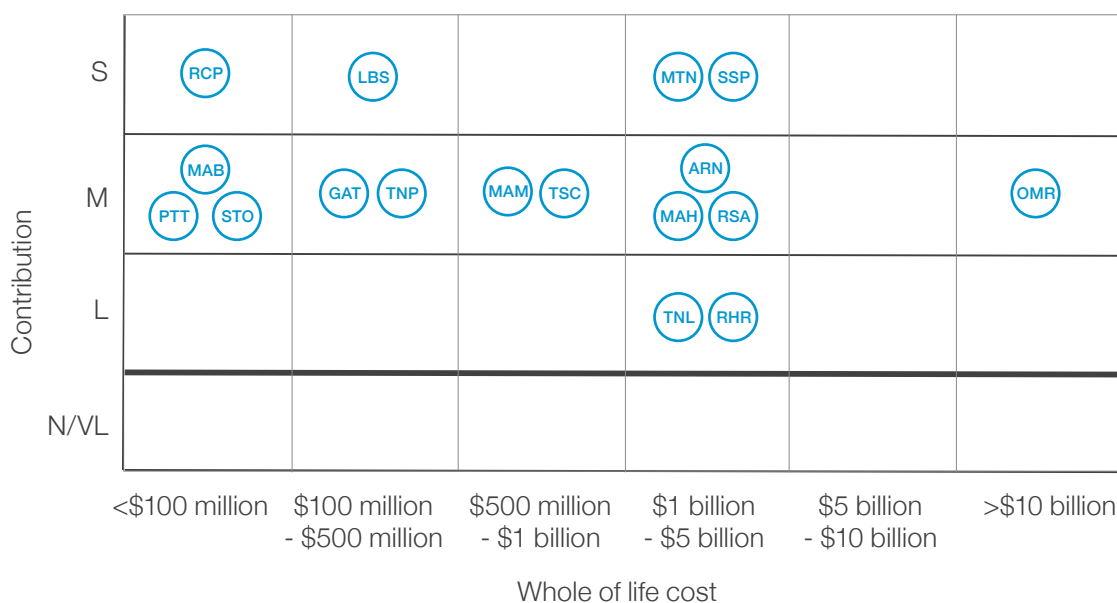
The options we have looked at include some system-wide interventions, which would improve access to the national employment centres, however, in some instances there is a need to target specific areas of the network where there are identified pinch points.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- improve the number of Melbourne residents who can access a national employment centre within thirty minutes (for Melbourne Airport this has been extended to one hour).

Of the 24 that we have considered, 15 have undergone our two-stage assessment process and are presented on the next two pages.

Figure 12 – Cost and contribution assessment for options to improve access to middle and outer metropolitan major employment centres



Options to improve access to middle and outer metropolitan major employment centres

Changing behaviour, managing demand

Road space allocation changes (RSA) – Give road space priority to public transport and active transport corridors into the central city and employment centres to achieve the best and most efficient use of road network.

Transport network price regime (TNP) – Overall pricing review to manage demand for travel at peak/non-peak times across the entire transport network.

Better use

Growth areas bus service expansion (LBS) – Provide 20 minute local bus services in growth areas. This would include implementing minimum local bus service levels of 20 minute frequency, seven days a week, from at least 6am to 9pm.

Melbourne Airport bus dedicated road priority (MAB) – Provide dedicated road priority for the Skybus for the entire journey between Southern Cross Station and Melbourne Airport.

Melbourne Airport metropolitan public transport connections (MAM) – Expand SmartBus services to Melbourne Airport to improve public transport access from suburban areas and complement access from the CBD via SkyBus.

Public transport train timetabling (PTT) – Deliver new timetabling across the train system to realise all available capacity, by reconfiguring service to better meet patronage demand.

Residential and commercial property densification (RCP) – Increase residential and commercial density at employment centres through changes to the planning scheme.

SmartBus service provision increase (SSP) – Expand the existing SmartBus premium network to connect employment centres to more residential catchments to provide a higher frequency public transport network with a focus to increase the percentage of Melbourne residents who can access non-central employment centres within 30 minutes.

Strategic transit-oriented development corridors (STO) – Designate a set of strategic public transport corridors that are suited for increased development. These would be located around existing transport infrastructure, such as train stations and tram stops, to better connect employment centres and join these employment centres to the central city.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?

New and expanded assets

Arterial road network employment centre enhancements (ARN)

– Improve the road network surrounding major employment centres to meet growing demand, such as the Westall Road extension from Princes Highway to Monash Freeway, which aims to improve connectivity and support the Monash employment centre.

Employment centre mass transit network (MTN) – Deliver a mass transit public transport system tailored for each employment centre (mode, frequency, design based on employment and population growth) that complements the existing heavy rail system.

Growth area train station upgrade and provision (GAT) – Provide new stations in growth areas such as Truganina, Black Forest, Sayers, Davis and Dohertys Roads and upgrades to existing over capacity stations.

Melbourne Airport heavy rail line (MAH) – Deliver a rail link between Melbourne (Tullamarine) Airport and the central city.

Outer metropolitan ring road (OMR) – Construct the outer metropolitan ring road to improve cross-Melbourne freight vehicle access and/or connections to the north and east from key freight precincts in the west.

Train station car parking improvement (TSC) – Construction of new or expanded rail station car parks to increase capacity for park-and-ride facilities across regional and metropolitan networks.



Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, these options has been filtered out for this need at this stage.

The **Rowville heavy rail line (RHR)** was considered as an option to meet this need. However, it is expected to make a low contribution as it would not make a material improvement in access to Monash from the broader catchment around the south-east.

Tram network link extensions (TNL) were considered as an option to meet this need. While this option could have positive network effects in the localised area, no small extensions have been identified that would benefit the middle and outer suburban employment centres.

Is there any evidence that would make us reconsider our assessment?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Active established areas (AEA) – Improve the planning and delivery of walking and cycling paths in established areas that are traditionally car-based neighbourhoods.

Advanced driver assistance applications (ADA) – Invest in connected vehicle technology and conduct trials to support Advanced Driver Assistance Systems (ADAS) applications.

Big data leveraging (BDL) – Develop governance arrangements and technological capability to collect, manage and analyse big data to improve service delivery and make better use of existing assets.

Driverless car and ride sharing (DCR) – Incentivise and facilitate the take-up of fully driverless cars as a shared mobility option for transport users.

Metropolitan bus network reform (MBN) – Substantial restructure of the existing metropolitan bus network, building on the approach taken in Brimbank in 2013.

Metropolitan level crossing removal completion (MLC) – Remove the remaining 130 level crossings on the metropolitan rail network after the current program of 50 removals are complete.

Multimodal interchange improvements (MII) – Improve the physical layout of transport interchanges to better facilitate multimodal trips. For example, ensuring that bus stops are located close to the train station.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

INSIGHT:

Improve access to middle and outer metropolitan major employment centres – Relationship mapping

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

Our roads are one of our most important transport assets. We are using roads more intensely. To manage our roads for efficient and productive use, we can make choices about who has priority on our roads.

Melbourne is growing quickly. With this growth comes an increasing pressure on road space that carries a variety of traffic. Congestion in Melbourne is also increasing bus and tram running times and reducing the reliability of these services during peak hours. Currently 85 per cent of the tram network is shared with cars.

Road space allocation explores who can have access to roads and under what circumstances. This has implications not just for road users but also for the broader transport network and land use planning. For this reason relationship mapping is a critical tool for exploring how road space allocation could, in combination with other options, bring about strong benefits. One way it does this is by indicating which options, when combined with road space allocation, produce stronger benefits. For example, it is arguable that, when combined with improved transport frequencies, road space allocation to buses and trams in the form of bus lanes or tramways can have positive flow-on benefits for the wider transport network. This would include:

- improving travel times for public transport users and increasing the flow of people (rather than cars) on the road system
- enabling the maintenance of current service levels with fewer trams and buses, improving the 'value for money' of public transport investments
- improving service reliability and coordination, encouraging more people to use public transport by reducing waiting times when transferring between services
- encouraging more people to live closer to public transport, and thus be less car dependent

However, reallocating road space away from general traffic could have potential adverse implications for certain road users, particularly those who are less able to shift to public transport or travel at other than peak times, such as users of commercial or freight transport. Where the creation of dedicated bus or tram lanes is combined with clearways, this can also have implications for traders in strip-shopping centres along transport corridors.

Relationship mapping can help us identify how options can work better together, and enable us to address these trade-offs in seeking first, a more coherent strategic approach to challenges and, secondly, the strongest alignment between possible options and the desired outcomes. The transport network is integral to ensuring the middle and outer metropolitan major employment centres are able to attract new businesses and workers. These options will support the competitiveness of these centres.



12. IMPROVE ACCESS TO JOBS AND SERVICES FOR PEOPLE IN REGIONAL AND RURAL AREAS

Along with Melbourne, Victoria’s regions play an important role in the state’s economy, making significant contributions to sectors such as agriculture, tourism and energy production. Some of Victoria’s regional cities are also growing strongly (in line with the broader trend towards urbanisation). There are, however, barriers to accessing jobs and services in the regions including comparatively poor digital and transport connectivity.

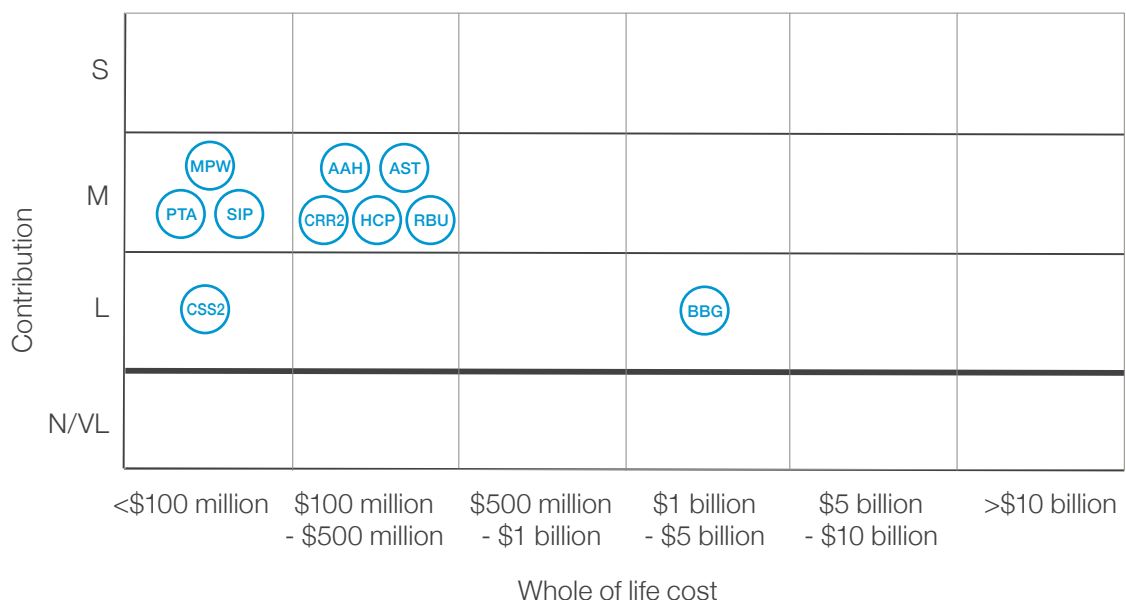
The options to meet this need focus on how transport and ICT can be used to increase regional Victorians’ access to jobs and services. There are also a number of regional transport maintenance projects that would be significant in addressing this need.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce the gap between the services available to regional Victorians and what they require;
- increase the number of jobs regional Victorians can access in 30 minutes; and
- improve connectivity to ICT in regional Victoria.

Of the 17 that we have considered, 8 have undergone our two-stage assessment process and are presented on the next page.

Figure 13 – Cost and contribution assessment for options to improve access to jobs and services for people in regional and rural areas



Options to improve access to jobs and services for people in regional and rural areas

Changing behaviour, managing demand

Health care patient subsidised travel program extension (HCP)

– Provide subsidised transport to people in regional communities to enable them to access health services that cannot efficiently be provided in their local community.

Better use

Community space statewide event planning (CSS2) – Develop a local annual community activities calendar for public spaces across Victoria. The events would align with the needs and demographics of local residents.

Mobile police and justice workforce (MPW) – Roll out ICT infrastructure that enables police officers to conduct their job from police vehicles.

Public transport alternative use of taxis or hire cars (PTA) – Change bus and taxi/hire car regulations to encourage alternative transport services, particularly in rural and regional areas.

Subregional infrastructure planning (SIP) – Formalise and simplify a whole-of-government subregional infrastructure planning process. This would bring together (when and where required) three levels of government to jointly plan for infrastructure.

New and expanded assets

Access to services through technology and ICT (AST) – Provide the ICT infrastructure necessary to support people to access online services.

Central regional rail control centre (CRR2) – Establish an integrated regional rail control centre to manage movements of passenger and freight trains.

Regional bus upgrades (RBU) – Deliver new and expanded bus networks throughout regional Victoria including Geelong–Bellarine, Bendigo, La Trobe Valley, Grampians, Ballarat and Shepparton, with a focus on the provision of adequate capacity and connections with rail services.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?

Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, these options have been filtered out for this need at this stage.

An option for the **Avalon Airport heavy rail line (AAH)** was considered. This makes a low contribution to the need as there is low demand for this service, which does not support the construction of a high-cost heavy rail link in the next thirty years.

An option for **Bendigo-Ballarat-Geelong rail service (BBG)** was considered. The feasibility study by Public Transport Victoria has suggested this connection would be better provided by buses.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Gippsland–Pakenham rail shuttle (GPR) – Provide increased services on the Gippsland line that connect with metropolitan services at Pakenham.

Health care alternative delivery options (HCA) – Deliver a mobile and e-health network throughout Victoria, enabling people to be treated in a coordinated and controlled way, by multiple practitioners across the health service.

High speed rail from Sydney to Melbourne (HSR) – Construct a high speed rail line between Melbourne and Sydney to provide an alternative to air travel.

Mildura passenger rail restoration (MPR) – Restore passenger rail services to north-west Victorian communities between Mildura and Maryborough with connection through to Melbourne.

Regional rail gauge standardisation (RRG) – Convert the remainder of the regional rail network across Victoria including the passenger network, from broad gauge to standard gauge.

Regional rail electrification (RRE2) – Electrification of passenger rail services to Geelong (Sunshine to Waurn Ponds), Ballarat (Sunshine to Wendouree) and Bendigo (Sunshine to Epsom and Eaglehawk) to increase line capacity and reliability.

Regional rolling stock expansion (RRS) – Procure new rolling stock to support additional services on regional lines.

INSIGHT:

Improve access to jobs and services for people in regional and rural areas – Economic and social impact

- > Community support
- > **Economic impact**
- > Environmental impact
- > **Social impact**
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

We often assume that improving access to jobs and services are one and the same; that by improving access to services there will also be an improvement in accessing jobs. But as two of the options presented here highlight, this is not always so.

Improving access to jobs and services for regional and rural Victoria encompasses a range of different challenges for these communities. For regional centres experiencing strong growth, these accessibility issues might be related to growth constraints, while more remote communities face challenges in the provision of core infrastructure and services.

There are many ways that access can be improved either by improvements to transport services or encouraging the relocation of jobs and services to these communities by situating assets in these communities. One approach is to provide subsidised travel for people on low to middle incomes who live in remote, underserved communities to access centralised services. For example, the two options, health care subsidised travel and alternative use of taxis or hire cars in lieu of providing more public transport. These options are about providing a more cost-effective means of connecting people to services.

However, looking at the economic and social impact of these options indicates where there are potential broader flow-on effects. While subsidised travel can make a contribution to people's ability to connect to services, it can also have detrimental impacts on access to jobs, as this option supports further centralisation of jobs into city centres. This would likely increase travel time to work. Conversely, centralising services, can deliver better outcomes for people by co-locating different specialists in one building. This might mean being able to see your physio and general practitioner during the same visit rather than having to travel to different locations on different days.

This analysis helps us to understand the overall effect of an option for regional and rural Victorians, balancing the contribution of an option to meet the need with its broader impacts.

13. IMPROVE THE EFFICIENCY OF FREIGHT SUPPLY CHAINS

Freight volumes across Victoria are expected to increase over the coming decades, though demand will be influenced by a number of factors including technological advances (such as 3D printing) and the consumer shift from goods to services. There is a need to plan ahead for port capacity and address pressures across the freight network to improve transport efficiency.

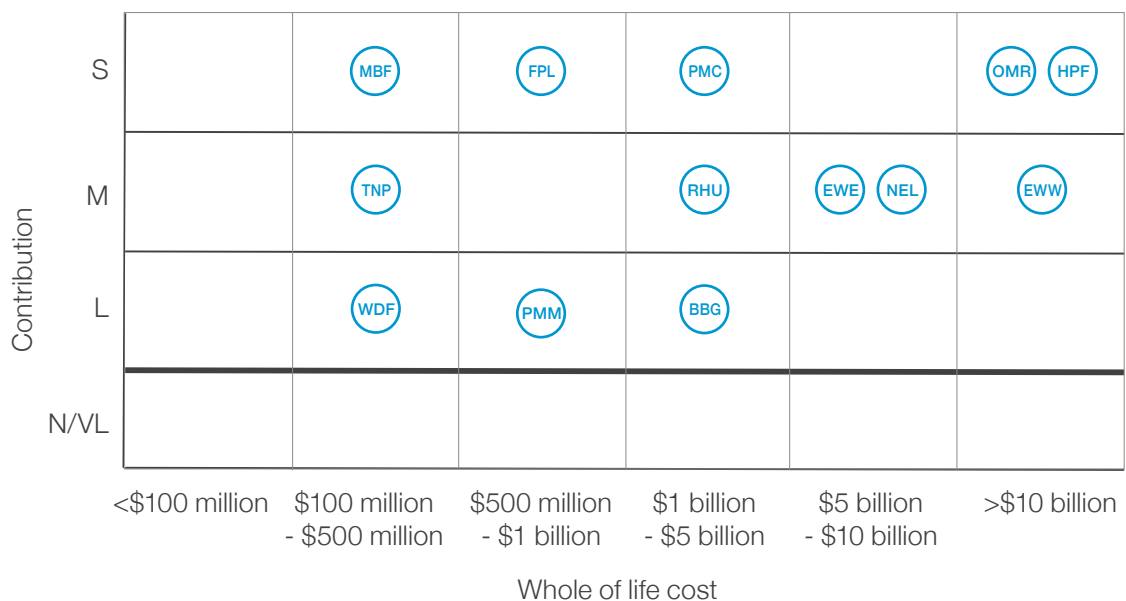
These options are largely targeted at specific pinch points in the freight network to increase capacity and improve efficiency.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce the total business costs for freight from origin to destination.

Of the 20 that we have considered, 12 have undergone our two-stage assessment process and are presented on the next page.

Figure 14 – Cost and contribution assessment for options to improve the efficiency of freight supply chains



Options to improve the efficiency of freight supply chains

Changing behaviour, managing demand

Transport network price regime (TNP) – Introduce a pricing regime to manage demand for peak/non-peak times across the entire transport network, including roads.

Better use

Freight precinct land use planning (FPL) – Ensure appropriately zoned land is available for freight and logistic activities around key freight infrastructure.

New and expanded assets

Eastern Freeway to Citylink connection (EWE) – Improve connectivity across the city from east to west linking the Eastern Freeway to CityLink.

CityLink to Western Ring Road connection (EWW) – Improve connectivity across the city from west to east, linking CityLink with M80. This option targets east–west links for road freight movement, including in and around the Port of Melbourne.

HPFV network completion (HPF) – Deliver the statewide High Productivity Freight Vehicles (HPFV) network in accordance with the Victorian Freight and Logistics Plan. This will allow larger vehicles access to a more comprehensive road network and will reduce overall freight vehicle kilometres and improve freight efficiency.

Melbourne to Brisbane freight rail line (MBF) – Construct a high performance and direct interstate freight rail corridor between Melbourne and Brisbane, which would also link south-east Queensland with Perth and Adelaide (via Parkes).

North-East link (NEL) – Construction of the North-East Link between the Eastern Freeway and the M80 to improve outer north–south links for road freight movement and improve travel time and reliability.

Outer metropolitan ring road (OMR) – Construct the outer metropolitan ring road to improve cross-Melbourne freight vehicle access and connections to the north and east from key freight precincts in the west.

Port of Melbourne container terminal expansion (PMC) – Expand the capacity of the Port of Melbourne through a range of measures, including the extension of berths, use of Webb Dock exclusively for containers, relocating the car import/export trade, landside investment and technology improvements.

Port of Melbourne to metropolitan container shuttle (PMM) – Implement a port–rail shuttle to move international containers from the Port of Melbourne to hubs across the Melbourne metropolitan area.

Regional highway upgrades (RHU) – Deliver upgrades and bypasses on regional highways.

Webb Dock freight rail access (WDF) – Improve rail access to Webb Dock to manage the growth in container capacity and reduce the number of freight vehicles kilometres.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?

...A NEW PORT?

The option for a new port is listed as a concept requiring further development.

Currently the location and timing of a new port has not been assessed in detail and it will take time to do this evaluation. The 30-year infrastructure strategy, which must be developed by the end of 2016, is being developed taking into account the uncertainty regarding the timing of when we will need a new port and its location. We are also looking at how to manage the impacts of freight movements around the existing port. There's a cost in keeping options open, but there is also a big cost and many risks to making the decision prematurely, without the right information, and so getting it wrong.

Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, this option has been filtered out for this need at this stage.

An option for **Bendigo-Ballarat-Geelong rail service (BBG)** was considered. The feasibility study by Public Transport Victoria has suggested this connection would be better served by buses.

What are your thoughts on these concepts that require further development?

Concepts requiring further development

Is there information or issues we should consider in examining these concepts?

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Driverless freight vehicles (DFV) – Support the deployment of driverless freight vehicles, including facilitating trials of driverless technologies.

Melbourne Airport new road link (MAN) – Construct a new road from the M80 to the west of Melbourne Airport to connect with the freight precinct, improve travel times and reliability for road freight vehicles.

New port (NCP) – Construct a new port to complement the Port of Melbourne and meet demand to import goods into Victoria.

Regional rail eastern corridor dedicated rail track (RRE1) – Build dedicated regional rail tracks on the south-east corridor to separate regional passengers and freight from metropolitan trains.

Regional rail electrification (RRE2) – Electrification of passenger rail services to Geelong (Sunshine to Waurn Ponds), Ballarat (Sunshine to Wendouree) and Bendigo (Sunshine to Epsom and Eaglehawk) to increase line capacity and reliability

Regional rail gauge standardisation (RRG) – Convert the remainder of the regional rail network across Victoria, including the passenger network, from broad gauge to standard gauge.

Western intermodal freight terminal (WIF) – Develop a new interstate terminal and freight precinct at Truganina in Melbourne's west as well as a rail link to the interstate rail freight network.

INSIGHT:

Improve the efficiency of freight supply chains – Scenarios

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > **Scenarios**

There is a great deal of uncertainty about the impact of advanced and emerging technologies, such as 3D printing and robotics, on the freight and logistics sector. These technologies could be extremely disruptive to how we manufacture and transport goods across the state.

As many of these technologies are still in the piloting phase or are not 'mainstream', it is difficult to assess first how they might affect future freight supply chains, and secondly, how these changes would impact upon other sectors, and therefore infrastructure planning as a whole.

This is where scenarios become an important assessment tool to understand the scope of different impacts and the flow-on effects of these changes. For example, 3D printing may reduce our importation of goods or change the things we import if people can manufacture goods in their own homes. However, 3D printers require raw materials for personal manufacturing, and therefore we might be replacing one set of imports with another.

The impact of these technologies will only be known after the fact. However, there are tools which we can use to test the resilience of our options under different futures. Scenario development and testing can be an important tool for identifying the scope of an impact and teasing out the flow-on effect of these impacts. This means thinking through a scenario where demand for freight goes down as well as one where business continues as usual or higher growth is realised. Should demand on the road network decrease, some of the options for rail freight may no longer be necessary if there is sufficient capacity on the existing road network.

We cannot be certain about what the future will hold. However, these possible impacts need to be factored into our forward planning. Being aware of the alternative future freight needs helps us to keep our options open so they are flexible and responsive to change.

14.

MANAGE THREATS TO WATER SECURITY, PARTICULARLY IN REGIONAL AND RURAL AREAS

Victoria’s history of drought makes us acutely aware of how important it is to manage water resources sustainably. The demands of a growing population and climate change will put this resource under further pressure. The impacts of water scarcity affect the state as a whole, but are most acutely felt in regional and rural areas.

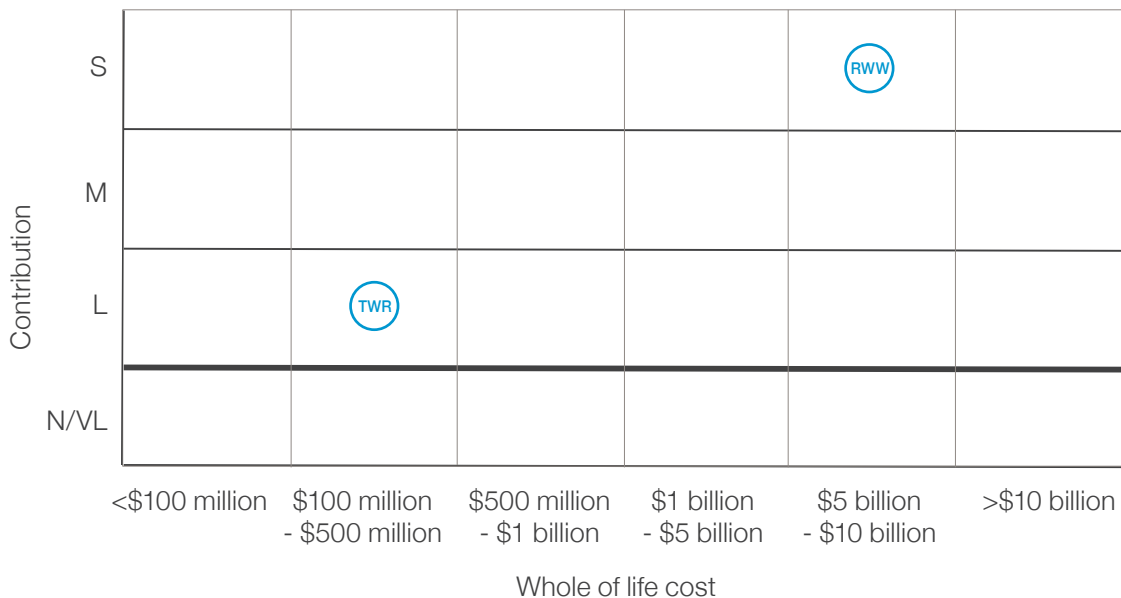
Many of the options presented here are concepts requiring further development. They encompass many different approaches, such as better use of water infrastructure through coordination processes, technological innovation, new or expanded assets to allow sharing of water or create new supply sources, and initiatives to influence how people value and use water.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce the percentage of the rural and regional population who experience high-level water restrictions over the long term; and
- reduce inefficient water use across the state and ensure that water demand does not exceed supply.

Of the 13 that we have considered, 2 have undergone our two-stage assessment process and are presented on the next page.

Figure 15 – Cost and contribution assessment for options to manage threats to water security, particulars in regional and rural areas



Options to manage threats to water security, particularly in rural and regional areas

New and expanded assets

Recycled treated wastewater for non-potable peri-urban agricultural use (TWR) – Greater use of recycled wastewater for new agricultural activities in peri-urban areas.

Recycled treated wastewater for drinking (RWW) – Treat wastewater to a quality suitable for drinking to supplement drinking water supplies.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, no options have been filtered out for this need at this stage.



What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Recycled treated wastewater for non-potable agricultural use (RTA) – Greater use of recycled wastewater to meet existing agricultural water demands.

Recycled treated wastewater for non-potable household use (RTH) – Increase the use of recycled wastewater for non-potable household use through purple pipe schemes in new and existing estates.

Stormwater harvesting and re-use for non-potable purposes (SRH) – Harvest stormwater in Melbourne and regional cities for use in a range of non-potable purposes such as watering of public spaces and meeting water demands at urban and industrial sites.

Water pricing reform (WPR) – Reform the water pricing process to increase incentives for efficiency and innovation at the retail water supply level.

Water delivery efficiency in irrigation (WDE) – Improve water delivery efficiency in open channel systems.

Water infrastructure optimisation through increased network connectivity (WIO1) – Increase connections between water supply systems and water sources across Victoria to improve supply reliability.

Water infrastructure optimisation through governance arrangements (WIO2) – Update governance arrangements to allow greater sharing of infrastructure and ensure role clarity.

Water market expansion (WME) – A major expansion of the water market in Victoria to incorporate all water users at the bulk water supply level.

Water supply augmentation (WSA1) – Provide major augmentation of water supply through non-rainfall dependent technology.

Water supply augmentation through building new dams (WSA2) – Build new dams to provide additional water supply for Victoria.

Wonthaggi Desalination plan expansion (WDP) – Expand the capacity of the Wonthaggi Desalination Plant to provide a greater water security.

INSIGHT:

Manage threats to water security, particularly in regional and rural areas – Scenarios

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > **Scenarios**

The millennium drought (1996-2010), was the worst drought on record in Victoria and in Australia. By 2007 major storages in Victoria held less than a third of total capacity. The government used a range of measures to mitigate the impacts of that drought, including improving water security for the environment, allowing irrigators to better manage risks through water trade and carryover, public campaigns to target voluntary household water use reduction, staged water restrictions, investments to minimise irrigation water losses, and construction of a desalination plant.

In the future, it is likely that Victoria's climate will be hotter and drier. The degree of these climate shifts will have varying impacts on our water storages. Through scenario analysis we have been able to consider how the range of options to meet this need might become more or less important.

The government has released a discussion paper on managing water for the future, *Water for Victoria*. It proposes to improve connectivity through a water grid and also proposes expansion of the water market, starting with a trial in southern Victoria. We can build upon this by improving the connectivity and governance of water infrastructure. We can also consider a more sophisticated water market that incorporates every type of water use. This market would price water to move it to highest value uses, however, it may also result in significant equity challenges. For example, under an extreme climate change scenario with frequent record-breaking droughts, spatially dispersed household water use may not be able to compete with high-value agriculture water use. Getting the market design right would be essential.

Over time, if Victoria's population increases significantly, the agricultural sector continues to prosper and dry conditions persist, improved connectivity in our water network may increase efficiency but have a limited impact on overall water supply security. Under this scenario increasing the use of non-rainfall dependant water sources appears more attractive. Examples of these water sources are recycled treated wastewater and desalinated sea water. As we consider a range of options to improve water security, we should consider how well various options or combinations of options allow us to adapt to future population growth and climate change scenarios.

15. MANAGE PRESSURES ON LANDFILL AND WASTE RECOVERY FACILITIES

Despite increasing rates of recycling across Victoria, growth in population and industries will mean more waste. Current trends indicate that total waste generation could almost double over the next 30 years, placing pressures on landfills and resource recovery centres. How waste is minimised and managed will be a continuing challenge for the state, particularly in the medium to long term.

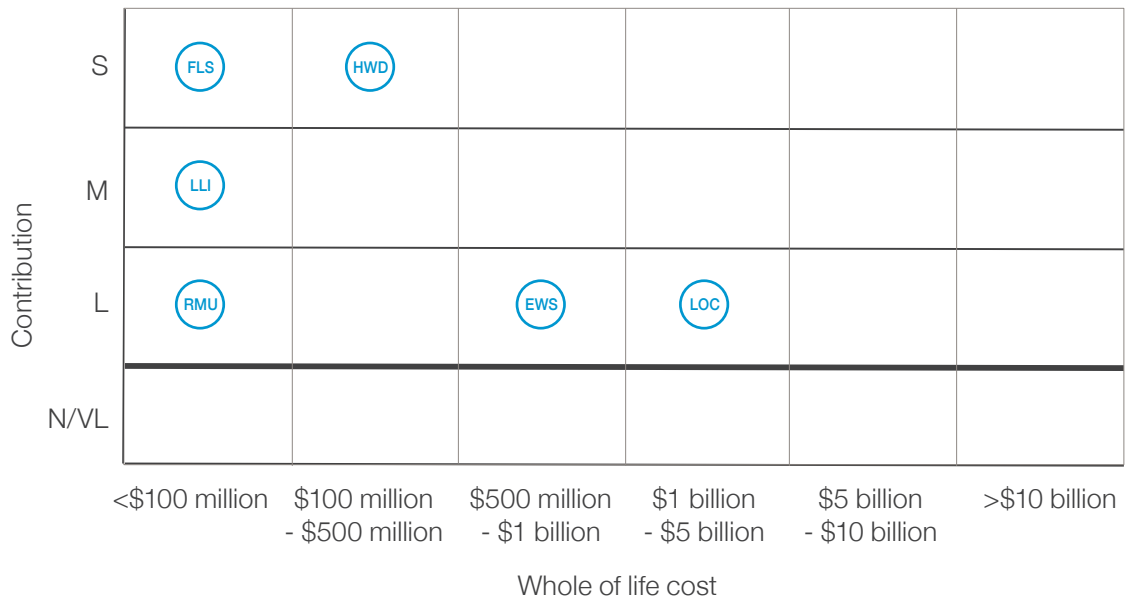
The options to meet this need seek to take a more sustainable approach to waste through changes to behaviour, rather than providing new landfill sites.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce the gap between the forecast amount of waste to be generated and the number of sites, which can process or store it.

Of the 8 that we have considered, 4 have undergone our two-stage assessment process and are presented on the next page.

Figure 16 – Cost and contribution assessment for options to manage pressures on landfill and waste recovery facilities



Options to manage pressures on landfill and waste recovery facilities

Changing behaviour, managing demand

Household waste disposal fees (HWD) – Re-structure waste disposal fees from a fixed fee to a variable charge based on the amount of waste generated by a household.

Landfill waste levy increase (LLI) – Increase the landfill levy charge to reduce the amount of waste sent to landfill and promote recycling.

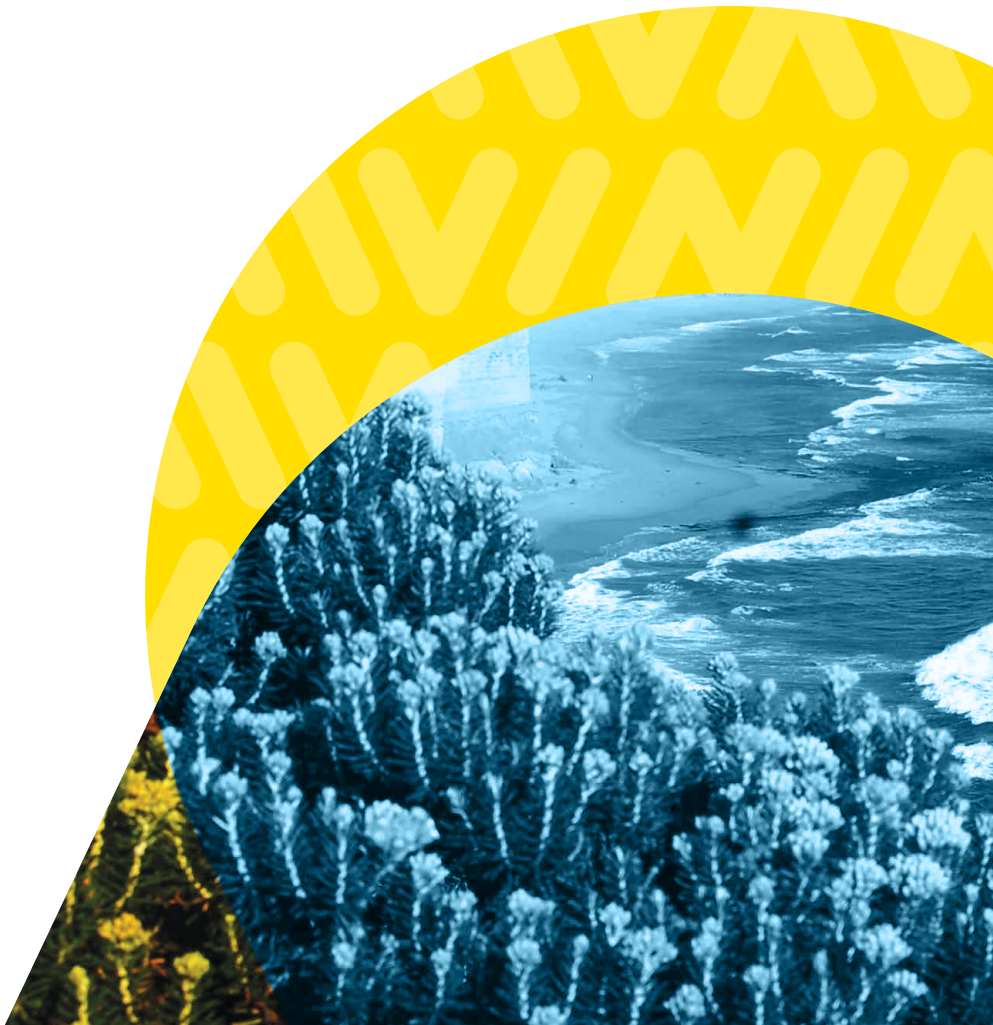
Recycled material usage in building construction (RMU) – Make the incorporation of recycled materials mandatory, creating stronger market drivers for using recycled products in new construction.

Waste landfill site land buffers (FLS) – Increase landfill site buffer zones to secure landfill capacity and avoid land use conflicts.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?



Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, these options have been filtered out for this need at this stage.

An option for **E-waste services (EWS)** was considered. This option involves government investment in e-waste management infrastructure. It makes a low contribution to the need relative to its cost. While e-waste does present problems for the existing system, the current issues for the sector are largely associated with market uptake.

An option for **Landfill site consolidation (LOC)** was considered. This option proposes consolidation of landfill sites in Victoria. It makes a low contribution to the need relative to its cost. Though it may improve business efficiency there is little evidence it will improve resource efficiency.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Future waste landfill site locations (FWL) – Increase the distance between existing landfill sites and future landfill sites to prevent land use conflicts, minimise visual and odour related issues and secure landfill locations.

Organic waste management (OWM) – Develop and implement measures to manage organic waste closer to the point of generation. This includes organic waste recovery measures and re-use of organic waste for other beneficial purposes.

INSIGHT:

Manage pressures on landfill and waste recovery facilities – Risks and opportunities

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

Landfill sites in and around our major cities are under increasing pressure to manage waste generated by a growing population. In addition to funding waste management activities, landfill levies can act as an incentive for investment in alternative waste management measures.

Currently landfill levies are collected from Victorians through local council rates. Figures from the Environmental Protection Authority indicate that over \$180 million was collected from Victorians as landfill levies in 2014-15. Two thirds of this amount was transferred to the Sustainability Fund, which had a balance of \$430 million as at 30 June 2015. There can also be additional fees to drop waste at landfill sites or arrange for the collection of certain types of waste. There is a public perception that the monies being collected are not being used on relevant projects as promptly as they should be. Increases to landfill levies in the short term may exacerbate this issue, but there may be benefits if implemented in the longer term.

One of our options is to change landfill levies to align these to the amount of waste generated per household. A sufficiently high landfill levy could encourage the development of waste management measures that reduces the volume of waste sent to landfill. This aligns with the waste management hierarchy, which gives priority to the prevention of waste generation over measures to manage waste disposal. Proponents of this hierarchy say that it allows for better environmental protection by conserving resources and lowering greenhouse gas emissions.

There are some potential risks if the landfill levy is too high. It could lead to a rise in illegal dumping sites, particularly if alternative waste management measures are not readily available or are not supported through a holistic framework.

An option for a change to the landfill levy requires awareness of both the risks and opportunities of its implementation. This can also inform how these pricing mechanisms are designed to achieve the outcome we are seeking.

16. HELP PRESERVE NATURAL ENVIRONMENTS AND MINIMISE BIODIVERSITY LOSS

Conservation areas, such as national and state parks, seek to preserve biodiversity and healthy ecosystems. They also provide ‘ecosystem services’ such as water catchment and filtration and are part of the state’s environmental and cultural heritage (including Victoria’s Aboriginal heritage). Pressure on these areas is expected to grow due to urbanisation and increased visitation.

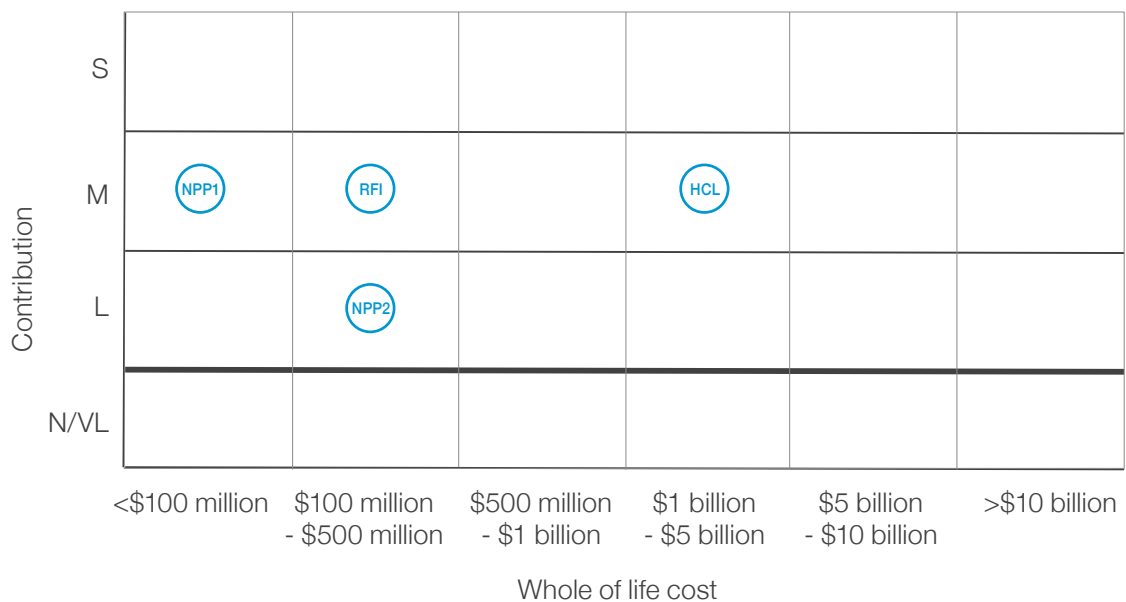
We have identified a limited number of options to address this need, as infrastructure provides few direct contributions to minimising biodiversity loss. In fact in some cases, when incorrectly managed, it can increase the loss of biodiversity. The options here focus on protective mechanisms that minimise development and industry impeding on natural environments.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- improve the condition of native vegetation in Victoria’s national parks and other critical biodiversity areas.

Of the 6 that we have considered, 4 have undergone our two-stage assessment process and are presented on the next page.

Figure 17 – Cost and contribution for options to help preserve natural environments and minimise biodiversity loss



Options to help preserve natural environments and minimise biodiversity loss

Better use

Habitat corridor link expansion and improvement (HCL) –

Develop and implement mechanisms to better link key habitat areas and improve the migration of key species.

National park pricing and expenditure regime (NPP1) – Review the regulatory regime for parks to determine the necessary balance between upgrades, maintenance and revenue requirements (which could come from park fees or other means).

National park private management (NPP2) – Use financial incentives for private park managers to deliver environmentally beneficial outcomes for national parks and protected areas. This would involve the establishment of measurable performance targets.

New and expanded assets

Riparian fence investment (RFI) – Invest in riparian fencing along rivers and waterways to prevent stock entering these areas and causing damage such as erosion, sedimentation and destroying vegetation.

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Environmental water delivery infrastructure (EWD) – Further develop the use of infrastructure to deliver effective watering for the environment.

National park access management (NPA) – Use non-price related mechanisms to manage access to parks. Examples include partial access to park areas or the use of ballot systems during peak visitor periods.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?



INSIGHT:

Help preserve natural environments and minimise biodiversity loss – Community support

- > **Community support**
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

We know that people will respond strongly to the option for privatisation of national parks management. However, it is important to have a conversation about the nuances of this option.

The outsourcing of parks management has been developed as an option that responds to the infrastructure need to preserve natural environments and minimise biodiversity loss. While national parks are about public access, they are also sites to conserve the parts of our environment we believe need protection. As Tim Flannery highlighted in his 2012 Quarterly Essay, *‘the truth is that things are now so dire that we cannot afford to persist with business as usual: a change of direction is essential if we’re to head off the great impending wave of extinctions.’*

Existing management models are not meeting the task for several reasons including decreasing budgets for capital and operation expenses. These expenses include staff costs and maintenance of physical assets. Private management could explore opportunities to generate revenue, which could then be reinvested in the protection of natural assets. However, increasing environmental performance requirements would need to be mandated through proper regulation or contractual obligations. This could protect our natural assets and ensure that assets built to attract tourists, for example visitor centres and roads, are not installed at the expense of our natural assets.

Community support plays an important part in assessing these options. It provides us with a sense of the community’s values and the things people consider to be important. Our initial understanding of community support is based on previous public discussions on related issues. However, we expect that following consultation with the community this initial understanding will be updated to reflect what you have told us.

This community feedback will be an important input to how we prioritise options in the draft strategy. But there will be other inputs to consider, such as environmental impact or contribution to meeting the need.

17. IMPROVE THE HEALTH OF WATERWAYS AND COASTAL AREAS

Some waterways and coastal environments in Victoria are already in poor condition. This issue is likely to be exacerbated as development increases across catchments and coastlines and the likely impacts of climate change are felt, including hotter, drier weather and sea level rise. Improving waterway and coastal health is important because it affects ecosystems and habitats, water quality and quantity.

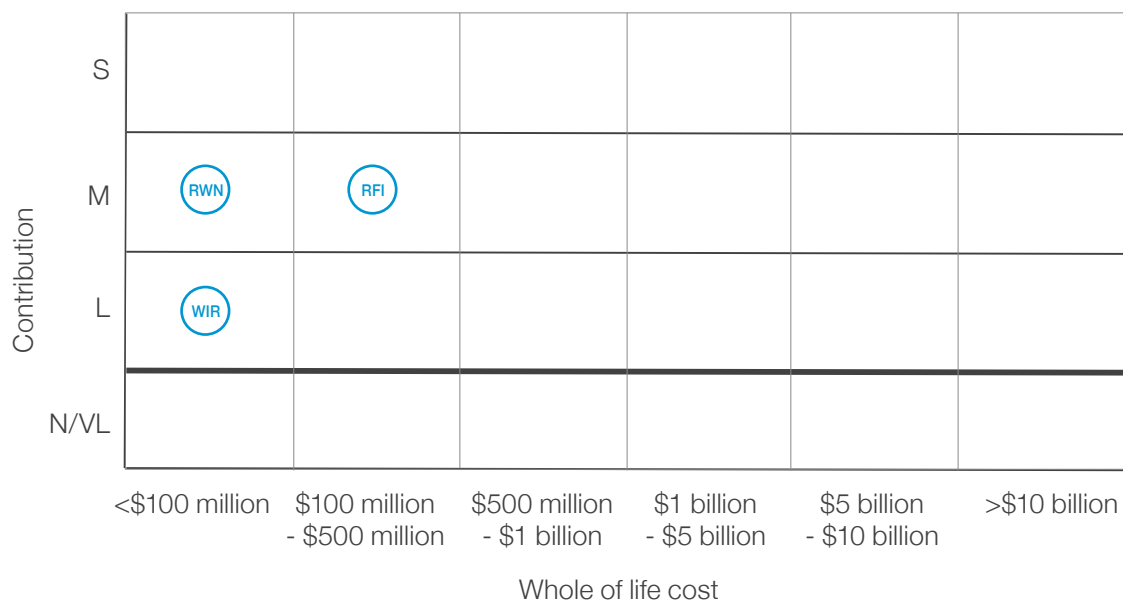
Like minimising biodiversity loss, we have only identified a few options to meet this need. However, there are some changes that could be made through minor investments and regulatory changes.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- increase the percentage of Victorian rivers and coasts considered to be in good or excellent condition.

Of the 8 that we have considered, 3 have undergone our two-stage assessment process and are presented on the next page.

Figure 18 – Cost and contribution assessment of options to improve the health of waterways and coastal areas



Options to improve the health of waterways and coastal areas

Better use

River and waterways natural flow regimes (RWN) – Assess the opportunities to improve environmental outcomes, for example, through optimising flow releases for the environment from storages.

New and expanded assets

Riparian fence investment (RFI) – Invest in riparian fencing along rivers and waterways to prevent stock entering these areas and causing damage such as erosion, sedimentation and destroying vegetation.

Waterway infrastructure to remove pollutants (WIR) – Provide new pollutant/litter traps along waterways to remove pollutants from and enhance river water quality.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?



Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, no options have been filtered out for this need at this stage.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Environmental water delivery infrastructure (EWD) – Further develop the use of infrastructure to deliver effective watering for the environment.

Recycled treated wastewater for non-potable agricultural use (RTA) – Greater use of recycled wastewater to meet existing agricultural water demands.

Stormwater harvesting and re-use for non-potable purposes (SRH) – Harvest stormwater in Melbourne and regional cities for use in a range of non-potable purposes such as watering of public spaces and meeting water demands at urban and industrial sites.

Stormwater water quality management (SRQ) – Collate, coordinate and implement a suite of measures to improve stormwater quality prior to drainage in waterways or coastal areas. These measures would include all development types and investigation of suitable mechanisms for existing developments.

Water pricing reform (WPR) – Reform the water pricing process to increase incentives for efficiency and innovation at the retail water supply level.

INSIGHT: Improving the health of waterways and coastal areas – Environmental impact

- > Community support
- > Economic impact
- > **Environmental impact**
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

Assessments of the health of Victorian waterways found that a significant number of our basins have less than 10 per cent of their total river length in good or excellent condition. Victorians enjoy a range of benefits from healthy waterways which include the provision of water supplies. Victorians also enjoy and value the coastline because it is in good condition and is near pristine in some areas.

One of the more pressing impacts on waterway and coastal health, however, is increasing resource use, development and activity near these areas. For example, heavier road use can lead to rainfall runoff carrying more pollutants into drains and ultimately into our waterways and coastal areas. This is made worse by the increase in synthetic ground surfaces, which reduces the time available for rain water to soak into the ground and filter out pollutants before draining into waterways. We have also continuously extracted significant amounts of water from Victoria's waterways leaving them with little time to naturally recover.

Climate change can also impact the health of our coasts. Longer drier conditions may impact on water availability and the health of species who use them, while more intense storms can erode river banks and lead to poor water quality.

Options to improve waterway and coastal health should be assessed against their ability to provide a direct benefit for the environment. In some cases this may mean coordinated measures to improve stormwater quality or further investment in infrastructure to improve environmental outcomes.

18. TRANSITION TO LOWER CARBON ENERGY SUPPLY AND USE

Transitioning to a lower carbon future will present a number of challenges and opportunities for Victoria over the coming decades. This change is not simply about moving to more sustainable energy generation, but also about reconsidering energy consumption across all infrastructure sectors.

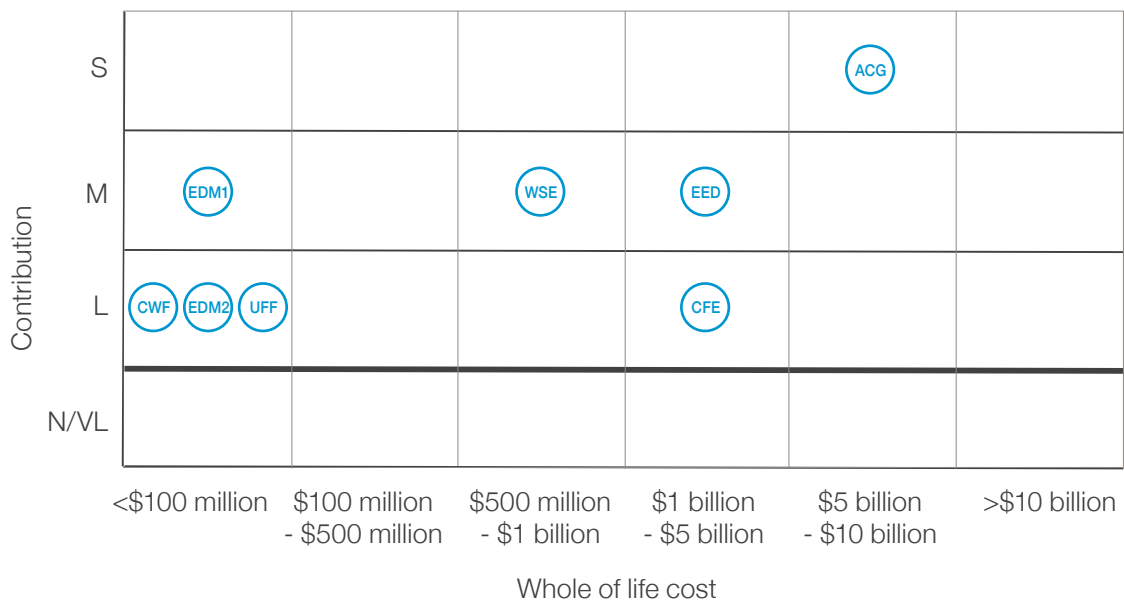
We have identified limited options for government intervention in Victoria's energy markets. Therefore these options focus on providing financial incentives, changing user behaviour or the development of new assets to influence the market.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- reduce Victoria's greenhouse gas emissions.

Of the 19 that we have considered, 5 have undergone our two-stage assessment process and are presented on the next page.

Figure 19 – Cost and contribution assessment for options to transition to a lower carbon energy supply and use



Options to transition to lower carbon energy supply and use

Changing behaviour, managing demand

Energy demand management efficiency schemes (EDM1)

– Develop energy efficiency programs within the industrial and commercial sectors.

Energy demand management tariff reform (EDM2) – Change energy tariff structures to target peak energy use.

Energy efficient development (EED) – Revise building regulations to improve energy efficiency across existing and new stock.

Better use

Ageing coal generation asset transition (ACG) – Provide subsidies for the development and use of lower emission energy sources instead of brown coal power plants.

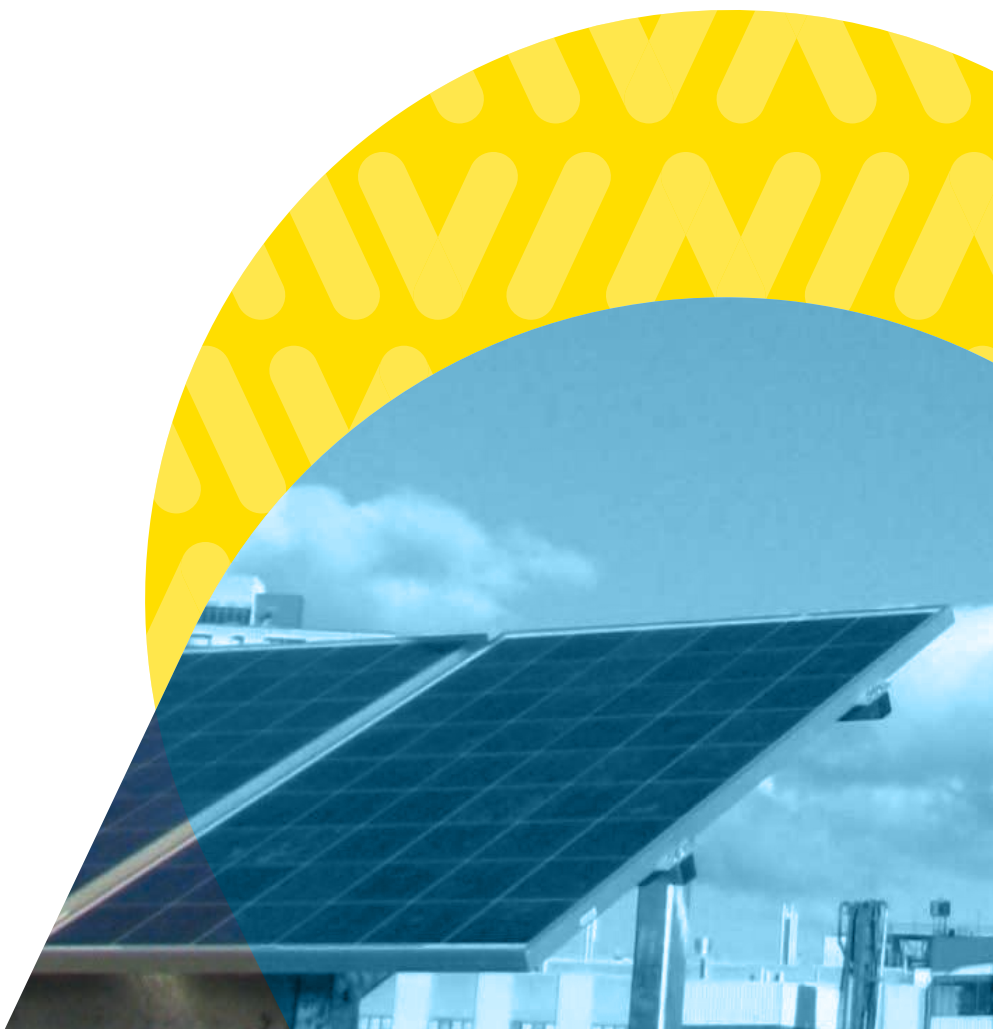
Wind and solar energy generation large-scale investments (WSE)

– Establish a targeted grants program for investments in wind and solar energy infrastructure.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?



Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, these options have been filtered out for this need at this stage.

An option for **Coal fired electricity plant conversion to gas fired plant (CFE)** was considered. This option makes a low contribution to the need relative to its cost. International examples also suggest that this option may not be viable.

An option for **Community windfarms (CWF)** was considered. While this option is relatively low cost, the proposed scale of community windfarms will have limited effect on displacing the amount of energy generated via brown coal.

An option for **Urban forest (UFF)** was considered. This option makes a low contribution to the need as it will have a minor impact on emissions.



Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment, or are sufficiently developed but have not yet been assessed against this need.

Active established areas (AEA) – Improve the planning and delivery of walking and cycling paths in established areas, which are traditionally car-based neighbourhoods.

Alternative energy vehicles (AEV) – Based on what we have learnt from the electric vehicle trial, support the deployment of new charging infrastructure to encourage the take up of electric vehicles, work to bring electric vehicles into the current government vehicle fleet, and provide incentives to individuals and companies to adopt environmentally-friendly transport.

Brown coal licences (BCL) – Setting an end date for the extension of brown coal licences to allow long-term withdrawal of these licences and provide a clear signal for industry.

Energy storage infrastructure (ESI) – Increase opportunities for development of energy storage facilities.

Geothermal power supply (GPS) – Further development of geothermal energy in Victoria. This provides a reliable low-carbon emission energy supply.

Integrated power supply augmentation (IPS) – Provide an integrated power supply framework that relies on low-emission energy sources.

Local solar energy generation (LSE) – Further development of solar generation projects at the residential, commercial and industrial building level.

Organic waste to energy (OWE) – Use organic waste to generate energy. Significant amounts of organic waste are sent to landfill. This waste can be used as a resource to generate electricity and/or heat.

Organic waste management (OWM) – Develop and implement measures to manage organic waste closer to the point of generation. This includes organic waste recovery measures and re-use of organic waste for other beneficial purposes.

Nuclear plant construction (NPC) – Move to nuclear energy as Victoria's primary source of energy.

Tidal and wave energy (TWE) – Generate an energy supply from tides and waves. This involves converting the energy in tidal movements and ocean waves or swells into electricity.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

INSIGHT:

Transition to lower carbon energy supply and use - Relationship mapping

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

The average age of Victorian coal power plants is more than 34 years. As these assets reach the end of their useful life, investments are required to either refurbish or replace them. In Victoria, the cost to replace our four main coal power plants range from \$2.5 to \$5 billion per plant.

There is also growing momentum to transition to low-carbon emission energy sources. In recent times this has culminated in the development of the 2015 *Paris Agreement*, which outlines the need for countries to tackle mitigation of greenhouse gas emissions. Reducing or eliminating greenhouse gas emissions from coal-based energy plants in Victoria can significantly contribute to Australia's climate change mitigation efforts.

There is a choice to be made as to whether we invest in the replacement and refurbishment of existing coal-based power plants or transition to cleaner energy sources. These lower carbon emission energy sources represent a range of different technologies and different energy sources. This could involve use of renewable sources such as solar and wind.

The energy market is largely privatised in Victoria, which means that re-directing investment may not be a simple process. Victoria also operates in a national electricity market, and in fact some low-emission energy options have better potential in other jurisdictions such as South Australia.

There are a number of challenges in considering options to respond to ageing coal assets. The closure of coal-based plants will mean job losses, although the development of low-carbon emission energy sources also creates new economic opportunities. Low-carbon emission energy sources could mean that energy supply can sometimes be decentralised and even traded at a local household level. Given the range of challenges, strategic decisions will be required in considering the options that will best transition Victoria to low-carbon energy generation.



19. IMPROVE THE RESILIENCE OF CRITICAL INFRASTRUCTURE

There is a need for Victoria’s infrastructure, and particularly critical assets, to be more resilient and adaptable in the face of creeping challenges (such as climate change), and unexpected disruptions, both large and small.

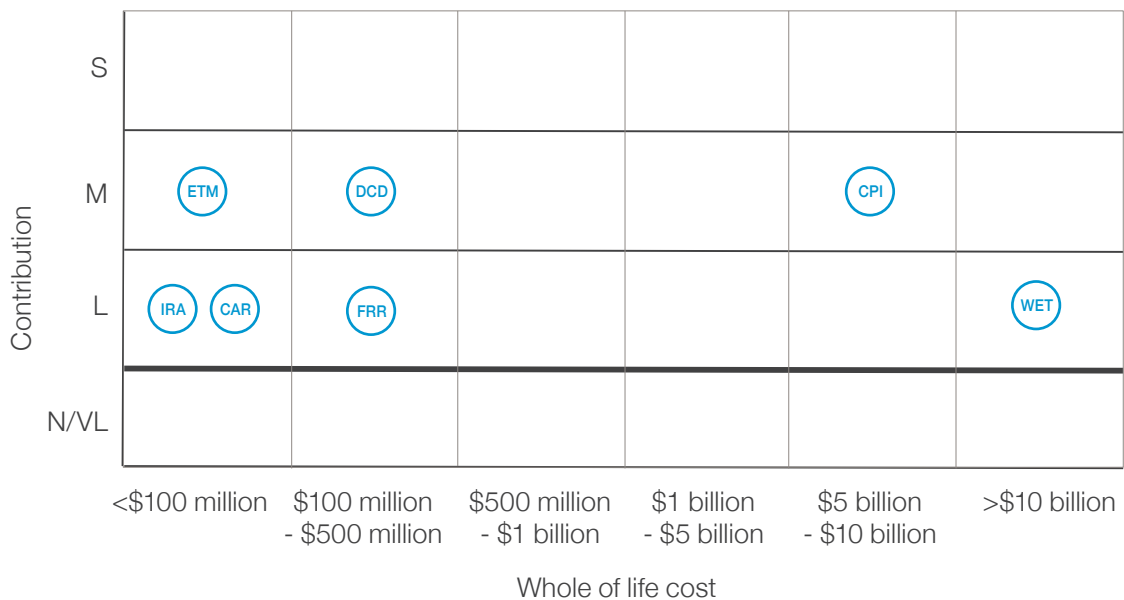
We have identified a limited range of options to meet this need, including a couple of key points across infrastructure sectors. However, we think that improving the resilience of our critical infrastructure is largely related to improve planning, coordination and governance.

Our preliminary assessment of the contribution rating to address this need has considered the extent to which the option would:

- improve the risk rating of key economic infrastructure; and
- improve the ability of major infrastructure in agriculture, water, energy, ICT and transport sectors to adapt to increased temperatures, decreased rainfall, and rising sea-levels.

Of the 12 that we have considered, 5 have undergone our two-stage assessment process and are presented on the next page.

Figure 20 – Cost and contribution assessment for options to improve the resilience of critical infrastructure



Options to improve the resilience of critical infrastructure

Changing behaviour, managing demand

Critical asset centralised risk management (CAR) – Develop a centralised approach to risk management for critical assets, including a list of critical state infrastructure and a centralised risk mitigation strategy.

Emergency traffic management (ETM) – Introduce new technology that enables emergency management services to control the flow of traffic to improve emergency response times.

Better use

Infrastructure resilience assessment test (IRA) – Develop an infrastructure resilience assessment test. This would require that proposals for new major capital works are subject to modelling that indicates, through siting, design, specifications and construction, the infrastructure will be able to withstand a range of major shocks.

New and expanded assets

Coastal protection infrastructure (CPI) – Maintain and provide new coastal protection infrastructure to prevent beach erosion and asset damage in critical locations to deal with rising sea levels and extreme weather and tidal events.

Data centre location diversification (DCD) – Relocate data centres, where appropriate, away from central Melbourne to ensure that there is a greater balance across the state so that back-ups can be provided in different locations.

We are interested in your perspective on these options.

What do you think of these options?

Is there anything we have missed?

Is there any evidence that would make us reconsider our assessment?

Other options that Infrastructure Victoria considered

Based upon the evidence available to Infrastructure Victoria, these options have been filtered out for this need at this stage.

An option for **Fuel reserve regulation (FRR)** was considered. This would make a low contribution to the need, as there is already fuel stock owned by local companies, which could be accessed in the event of a shortage.

An option to improve **Western and Eastern treatment plant resilience (WET)** was considered. This option is highly costly and would make a low contribution as upgrades are already being undertaken to improve the ability to cope with a significant disruption to either plant.

What are your thoughts on these concepts that require further development?

Is there information or issues we should consider in examining these concepts?

Concepts requiring further development

These options may have merit, but are either not well developed enough to undertake a full assessment or are sufficiently developed but have not yet been assessed against this need.

Big data leveraging (BDL) – Develop governance arrangements and technological capability to collect, manage and analyse big data to improve service delivery and make better use of existing assets.

Integrated transport control centre (ITC) – Facilitate better system-wide management of transport, by establishing a fully integrated metropolitan control centre encompassing road traffic and public transport.

Key movement corridor incident management (CRR1) – Develop a contingency plan to ensure that maintenance of transport access to the CBD is maintained if major disruptions happen.

New port (NCP) – Construct a new port to complement the Port of Melbourne and meet demand to import goods into Victoria.

Public transport network resilience (PTN) – Upgrades, refurbishment and new infrastructure assets to increase the resilience of the public transport network.

INSIGHT:

Improve the resilience of critical infrastructure – Risks and opportunities and Scenarios

- > Community support
- > Economic impact
- > Environmental impact
- > Social impact
- > Risks and opportunities
- > Relationship mapping
- > Scenarios

The *Infrastructure capability assessments* highlight that when dealing with critical assets ‘alternative infrastructure solutions need to be assessed in the context of the probabilities and magnitudes of potential disruption’. Essentially this is a basic risk analysis; how likely is the event to occur and how greatly would it affect Victoria.

We cannot afford to build infrastructure to respond to every possible challenge, nor can we predict what all these challenges might be. Rather than considering discrete assets, we have taken the view that there is a need to build resilience into our infrastructure systems so that should one asset be compromised by a major event, the overall system can adapt to these changes.

Thinking about improving resilience is inherently about thinking about different scenarios. Sometimes these scenarios occur regularly, such as when a car accident closes lanes of a freeway and therefore shifts people from that freeway onto other roads. Similarly, when there is a disruption to the train network, there are contingency plans in place to shift people onto either trams or buses. Particularly when we think about networked infrastructure, such as electricity and water, it is about how people will continue to access these services in the event of a disruption. Others might be more extreme, such as a major pandemic, which could potentially disrupt the operation of all infrastructure. The possibilities and forms of these shocks are endless.

It is at the planning phase that resilience needs to be considered. As a result, we have suggested options that go towards improving the resilience of our infrastructure systems across all sectors through better planning, coordination and communication.



FUNDING AND FINANCING



FUNDING AND FINANCE ARE SEPARATE BUT RELATED CONCEPTS.

Funding is all the revenue needed to pay for infrastructure.

Financing affects when we pay for infrastructure.

Funding and financing

When choosing options to meet our infrastructure challenges and opportunities, government also needs to consider how we pay for or 'fund' these options, and when we use financing arrangement to pay for them.

Funding and financing are separate but related concepts. How we pay for and finance infrastructure can significantly affect which community needs are met, who can access infrastructure, how we use it, and when we pay for it.

We have looked at funding and financing options that could help us get more out of our infrastructure and increase value for money. This includes:

- changing behaviour and managing demand
- getting better use from our infrastructure

If you want to know more about funding and financing mechanisms refer to *Funding and financing - Additional information* which will be available at yoursay.infrastructurevictoria.com.au.

FUNDING AND FINANCING ARE SEPARATE CONCEPTS THAT AFFECT HOW WE USE OUR INFRASTRUCTURE

Funding represents all the revenue needed to pay for infrastructure. It ultimately comes from the community through existing cash surpluses or by increasing revenue (through increasing taxation or user charges) or reducing expenditure.

Financing affects when we pay for our infrastructure. We can finance using our cash surpluses now, or by borrowing (which we need to service and repay later). Debt is a financing tool, not a funding source. It enables a purchase (such as a new asset) to be brought forward and be paid for later.

For example, when we purchase a house, if we don't have enough available funds to pay for it all now, we arrange finance, via a mortgage. Financing allows the capital cost to be covered up front. We then must repay the mortgage (including interest) from our future household income stream.

Ultimately, our household income from working or other investments, funds the cost of our home, including mortgage costs.

Funding

All public infrastructure funding ultimately comes from the community. Funding comes from:

- existing cash surpluses;
- increasing revenue, which means the community pays more via taxation or charges; or
- reducing expenditure, which means reducing funding for services (such as health or education), or improving productivity.

This is the case for all governments.

There is no silver bullet for raising all the revenue we need to fund the infrastructure we want.

When thinking about how to fund infrastructure, a balance needs to be struck between raising more revenue, using our infrastructure efficiently and encouraging businesses and individuals to be productive, which helps create jobs and economic growth. Keeping this in mind, any assessment of revenue options to fund infrastructure must consider how to:

- change behaviour and manage demand
- promote the highest and best use of our infrastructure
- optimise our infrastructure (including its maintenance) and services
- align the cost of infrastructure with users and those who privately benefit from it
- implement easy, and relatively cheap revenue options

Options to raise revenue

There are many ways to raise revenue to fund infrastructure. Different revenue options affect who pays and who benefits, how we pay for and use our infrastructure. These include:

1. **User charges** — increasing or introducing more direct fees for using infrastructure such as roads, utilities, and public transport. This helps to recover costs from those actually using the infrastructure.
2. **Beneficiary charges** — increase contributions from individuals or businesses that indirectly and privately benefit from government infrastructure or planning decisions because of their proximity, whether they use infrastructure or not. Beneficiary charges are also sometimes called ‘value capture’ funding approaches. This is because they seek to capture some of the extra value created for individuals and businesses. Under current taxation arrangements, some of the benefit of economic activity created by state infrastructure investment accrues to the commonwealth through income and company taxes, and GST receipts.

Beneficiary charges could be applied to new or major infrastructure upgrades or planning and zoning changes. There are different types of beneficiary charges:

- **Land value uplift** — new or increased charges to capture the benefit of improved land values
- **Betterment levies** — new charges on individuals and businesses in a defined catchment
- **Developer contributions** — increasing and expanding up-front contributions from individuals or developers

OPTIONS TO RAISE REVENUE

1. User charges
2. Beneficiary charges
3. Property development
4. Asset sales
5. Donations and bequests
6. General commonwealth and state government revenue
7. General local government revenue

3. **Property development** — increase revenue from selling development rights (air or land rights) around or as part of public infrastructure projects. This includes commercially leasing premises within publicly owned infrastructure.
4. **Asset sales** — sell, lease or privatise more state assets, including land and enterprises.
5. **Donations and bequests** — voluntary contributions from individuals, community organisations, charities and businesses. Although always welcome, they make an extremely low contribution. Donations and bequests rarely cover all capital costs or ongoing operating and maintenance costs, which become an additional cost for government.
6. **General commonwealth and state government revenue** — this funding can come from state and commonwealth governments through increasing general taxation revenue such as income tax, business taxes, and land tax or regulatory charges such as fees and fines. Changes to taxation arrangements are determined by governments, not Infrastructure Victoria.
7. **General local government revenue** — remove rate capping to allow local government flexibility to set rates to raise more revenue, which could be used to provide more local infrastructure. However, councils can already seek approval, if justified, for a higher annual increase from the Essential Services Commission.

Financing

Financing changes how cash inflows and outflows required to meet the cost of building new infrastructure are spread over time. Government can arrange finance itself or via other parties such as private financiers who must be repaid. How we finance our infrastructure changes depending on how much is paid and when.

Options for financing infrastructure

Government can finance infrastructure by either:

1. using existing resources by using existing cash surplus, **reducing expenditure** or **increasing revenue** via taxation and user charges; or
2. **borrowing** by 'issuing' or increasing its debt.

Government can decide which of these options it chooses.

Borrowing is a financing option not a funding source. It helps us 'bring forward' investment in infrastructure. Borrowing comes at a cost and it must be repaid. When we borrow, the costs associated with debt, such as interest expenses and repayments, need to be paid by either reducing expenditure or increasing revenue via taxes.

Borrowing instruments to finance infrastructure

How we borrow and procure our infrastructure changes the risks we incur, the price we pay (including finance costs) and the infrastructure and services we receive.

If it chooses to do so, government can borrow to finance infrastructure in a number of ways.

We have looked at how we can borrow and procure to minimise risks and maximise the value we get from infrastructure and the services it delivers over time. This includes looking at the total price we pay to finance, as well as the standard of infrastructure and services we get, and the risks we incur.

1. **State government issued bonds** — continue to take advantage of governments' ability to borrow cheaply using its overall AAA credit rating. In Victoria, this process is managed by the state's central financing authority, the Treasury Corporation of Victoria.
2. **Social impact bonds** — use private financiers to raise capital (debt/equity) and partner with service providers to deliver social outcomes. Government makes bonus payments for achieving agreed targets. In the 2016-17 State Budget, the government allocated funding for the market testing and procurement phases of a pilot program.

BORROWING INSTRUMENTS TO FINANCE INFRASTRUCTURE

1. State government issued bonds
2. Social impact bonds
3. Borrowing by private financiers
4. Tax increment financing
5. Concessional loans from the commonwealth government
6. Local government borrowing
7. Tailor finance for specific investor groups

3. **Borrowing by private financiers** — government engages private financiers to deliver public infrastructure and services (including maintenance). This approach is often paired with Public Private Partnership (PPP) procurement models. Financiers raise capital (debt and equity) to finance infrastructure delivery. Government still needs to pay the financiers (or allow them to levy a charge on users) over time for delivering and maintaining infrastructure and services to an agreed standard. They also use this revenue stream to service the debt as well as equity. It can drive innovation, provide incentives to better manage risk and can provide for maintenance of an asset.

The state government uses this approach now. It could be expanded and applied more often to provide frontline services, such as healthcare in hospitals or custodial services in prisons.

4. **Tax incremental financing** — divert and quarantine a portion of future tax revenue from a defined revenue stream as security to finance or borrow for infrastructure.
5. **Concessional loans from the commonwealth government** — co-financing arrangements which allow the state government to access marginally cheaper commonwealth debt, particularly for major transport infrastructure. This option could be structured in many different ways from a loan to direct capital contributions.
6. **Local government borrowing** — this doesn't need to be expanded because local government can already access debt to bring forward infrastructure investment.
7. **Tailor finance for specific investor groups** — raise finance by bundling and issuing debt or providing equity or 'ownership' in an asset (such as Islamic bonds) for particular investors, such as individuals, retail investors, superannuation funds or Islamic finance groups. We expect the costs will outweigh the benefits. Given the low cost of other forms of finance available to the state we don't think this should be pursued.





GETTING INVOLVED



THIS IS YOUR OPPORTUNITY TO HAVE YOUR SAY.

We are open to new ideas and better ways of delivering the infrastructure we need.

WE ARE NOT RULING ANYTHING IN OR OUT.

Based on our evidence we have begun assessing options. Tell us if you agree or disagree.

OUR DECISION-MAKING WILL BE EVIDENCE-BASED.

We encourage you to support your position with evidence.

How can I get involved?

Visit yoursay.infrastructurevictoria.com.au

- Share a thought
- Take our survey
- Make a submission

Making a formal submission

- Submissions should focus on the consultation questions on page 37
- Use evidence to support your submission
- Keep your submissions concise and use clear, simple language. Remember, all submissions will be provided to the citizen juries for consideration with permission
- Clearly identify if your submission responds to a particular option or options
- If your submission suggests an alternative option, be clear which objective and need it would help to meet
- Submissions close on Friday 17 June

Online submissions are preferred but submissions can also be posted to Infrastructure Victoria, Level 34, 121 Exhibition Street, Melbourne, Victoria 3000.

We can't make these decisions without your help

There are literally hundreds of possibilities for improving our infrastructure to meet the needs of Victoria over the next 30 years. Each option has its own advantages and disadvantages, and community sentiment is an important consideration in how we weigh up these pros and cons. That's why your input is vital. Your feedback will help us identify and consider what matters most to people.

The importance of evidence

In developing the options within this paper, we have drawn on the information, evidence and research available to us. Infrastructure initiatives are expensive, complex and time-consuming, and we can't commit to options without a solid evidence base. In providing your feedback to us, especially in a formal submission, we ask you to do the same. Infrastructure debate brings out much opinion and emotion but we urge you to base your submissions on facts, data and analysis. Evidence is the strongest weapon we all have in mounting our case.

How your input will be used

All feedback received will be considered in the development of the draft strategy. A consultation report summarising key themes and ideas will be released in August. All formal submissions will also be provided to the citizen juries for consideration as part of their deliberations (with permission).

What's next?

Two citizen juries – one in metropolitan Melbourne and one in regional Victoria – are considering what we should do to meet Victoria's infrastructure needs. The juries will provide a report of recommendations to Infrastructure Victoria in late July. This report, along with the outcomes of this consultation program, will be considered as an important input into the draft strategy.

The draft strategy will be released in September 2016 for another phase of stakeholder and community input.

The final strategy will be formally presented to parliament by the end of 2016.

The Victorian Government is required to respond to the strategy with a five-year plan outlining its priority major projects within 12 months.

Infrastructure Victoria will update the 30-year infrastructure strategy every three to five years, setting the direction for long-term infrastructure planning.

Stay up to date

Join the consultation register at yoursay.infrastructurevictoria.com.au



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About us

Infrastructure Victoria is an independent advisory body, which began operating on 1 October 2015 under the *Infrastructure Victoria Act 2015*.

It has three main functions:

- preparing a 30-year infrastructure strategy for Victoria, to be refreshed every three to five years
- providing written advice to government on specific infrastructure matters
- publishing original research on infrastructure-related issues

Infrastructure Victoria will also support the development of sectoral infrastructure plans by government departments and agencies.

The aim of Infrastructure Victoria is to take a long-term, evidence-based view of infrastructure planning and raise the level of community debate about infrastructure provision.

Infrastructure Victoria will not directly oversee or fund infrastructure projects.



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