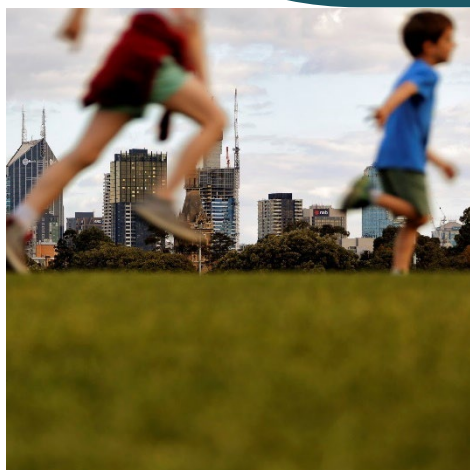


INFRASTRUCTURE
VICTORIA

November 2025

Victoria's infrastructure strategy 2025–2055



About us

Infrastructure Victoria is an independent advisory body with 3 functions:

- preparing a 30-year infrastructure strategy for Victoria, which we review and update every 3 to 5 years
- advising the government on specific infrastructure matters
- publishing research on infrastructure-related issues.

Infrastructure Victoria also helps government departments and agencies develop sectoral infrastructure plans.

Infrastructure Victoria aims to take a long-term, evidence-based view of infrastructure planning, and we inform community discussion about infrastructure provision.

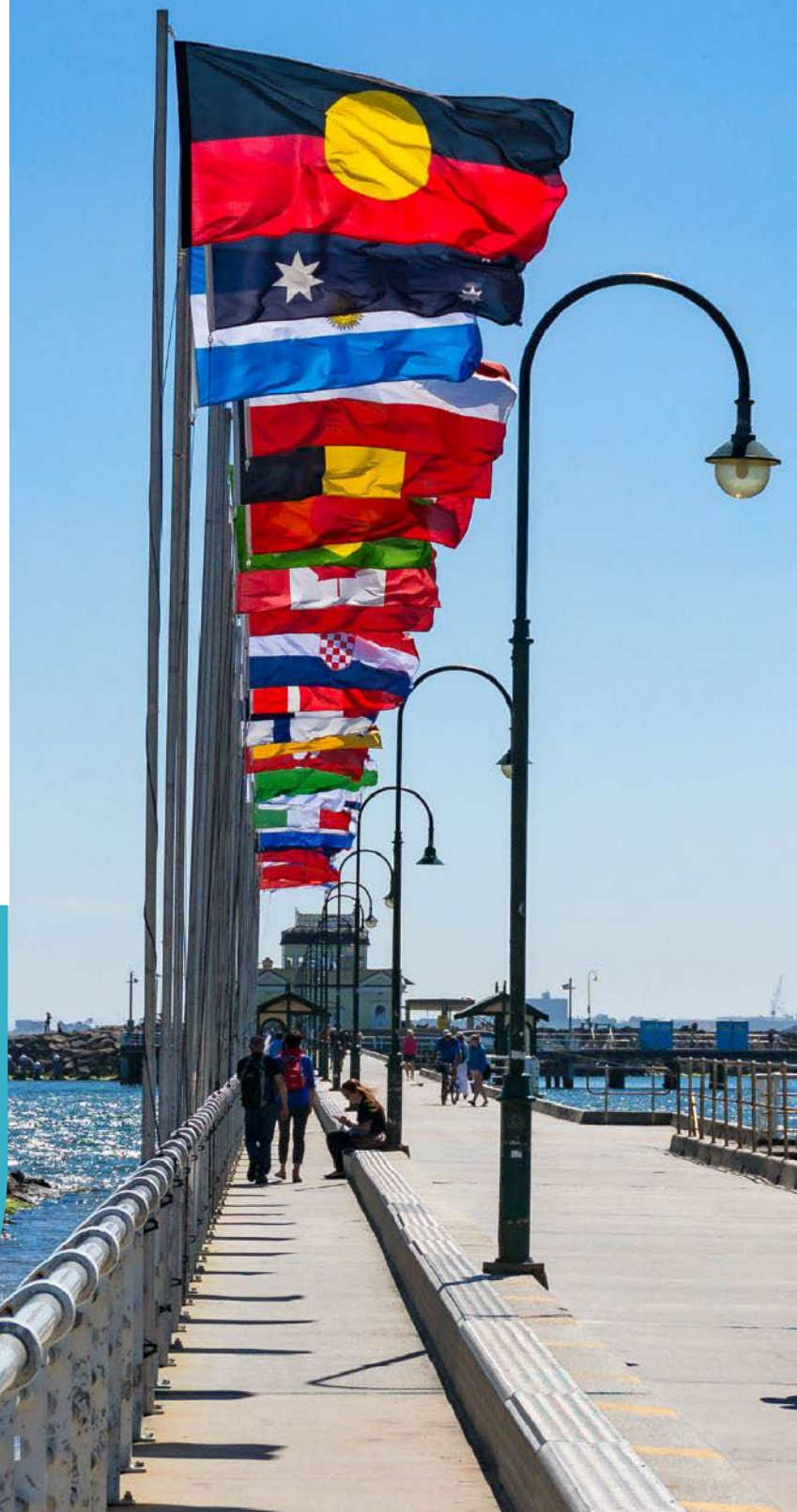
Infrastructure Victoria does not directly oversee or fund infrastructure projects.

Main cover image: Warrnambool Breakwater, Gunditjmara Country. Photographer: Robin Sharrock.

Secondary image: Royal Park, Melbourne, Wurundjeri Country, Photographer: Pete Glenane.

Acknowledgement

Infrastructure Victoria acknowledges the Traditional Owners of Country in Victoria and pays respect to their Elders past and present, as well as Elders of other First Peoples' communities. We recognise that Victoria's infrastructure is built on land that has been managed by Aboriginal people for millennia.





Contents

Summary	4
Summary of recommendations and future options	6
Victoria's infrastructure strategy objectives	11
Victorians have good access to housing, jobs, services and opportunities	14
Victorians are healthy and safe	60
First Peoples have self-determination and equal outcomes to other Victorians	82
Victoria has a thriving natural environment	90
Victoria is resilient to climate change and other future risks	103
Victoria has a high productivity and circular economy	132
How we developed the strategy	172
Endnotes	180

Summary

Infrastructure helps Victorians live prosperous, purposeful lives

Every Victorian depends on infrastructure. They use roads, paths or rail to reach work, study and services. They use public facilities and spaces to learn, play, exercise, socialise and receive care. And they depend on infrastructure to get energy and water to their homes, and to connect with each other by phone and internet.

We consulted Victorians on the infrastructure goals most important to them. They told us they want infrastructure to help them access opportunities and stay healthy and safe. They want it to help Victoria's natural environment to thrive. And they want it to enable a more productive economy, minimise the ongoing effects of climate change and protect them from risks.

This updated 30-year infrastructure strategy provides recommendations to the Victorian Government to help achieve these goals. No single recommendation will address the hopes of all Victorians, nor can infrastructure solve all of Victoria's challenges. But our recommendations aim to meet the infrastructure needs of current and future Victorians. When governments provide people with the infrastructure they need, communities can thrive and be more resilient.

We considered existing and new infrastructure in our recommendations

Our recommendations include infrastructure policies, reforms and projects that will bring long-term benefits.

Since the last version of this strategy in 2021, the Victorian Government has invested in major infrastructure projects. It has built new roads and rail, improved access to healthcare by building and upgrading hospitals, and separated trains from traffic by removing level crossings. We reviewed the recommendations in the 2021 strategy and found that the government has implemented or made progress on more than 80% of them.

Victoria already has a lot of high-quality infrastructure, including world-class cultural and sporting facilities. But there are areas where existing infrastructure does not meet Victoria's needs, such as in social housing, public transport, and community infrastructure like libraries and aquatic centres.

To develop our recommendations, we researched the biggest challenges and opportunities facing Victoria's infrastructure. We analysed these alongside existing government policy directions and recent developments to identify the infrastructure priorities where Victorian Government action is most needed to make a difference.

We released a draft version of this strategy in March 2025. We held an 8-week consultation and heard from communities and organisations across Victoria. We received over 300 written submissions on the draft strategy and over 2,500 individual points of feedback. We then refined and updated our recommendations.

Our recommendations respond to the immediate needs in Victoria's largest cities and regional areas. They also identify ways to harness population growth and help the Victorian Government sustainably plan for the infrastructure that communities will need over the coming decades. Well-managed population growth can bring new skills into Victoria's economy, enhance economic prosperity and make Victoria a better place to live.

Infrastructure can help to overcome Victoria's future challenges

The Victorian Government will need to use its infrastructure to overcome some major challenges over the next 30 years. Victorians will need infrastructure to work in a warmer, drier climate and withstand more extreme weather events. And as Victoria's population grows and changes, more Victorians will need to use many types of infrastructure. The shape of Victoria's cities affects how quickly the government can provide this infrastructure. It is often more expensive to deliver infrastructure in new suburbs on the outskirts of Victoria's cities, compared to upgrading existing infrastructure in established suburbs.

The Victorian Government has already set out some ambitious targets. It is investing in projects and changing policies to help achieve a target of 800,000 new homes by 2034. It has set energy targets of 95% renewable electricity generation by 2035. And it has a legislated target of net zero emissions by 2045.

Transitioning to renewable energy is critical for reducing greenhouse gas emissions. But it is a major challenge for Victoria. Victoria will need to move quickly to achieve its targets, and the government will need to make large investments in partnership with the Australian Government and private investors.

However, the Victorian Government cannot build everything, everywhere, all at once. Rising debt levels and high material and labour costs make it more important than ever for governments in Australia to carefully prioritise and deliver new infrastructure. The government can find smarter and more efficient ways to use existing infrastructure and maintain its assets. This can help prioritise sustainability and equity in allocating and using resources. For example, the government can change public transport fares to encourage better use of the transport network, or use digital technologies to improve care and ease demand on public hospitals. Digital technologies can also improve productivity by helping the government better design, build, operate and maintain Victoria's infrastructure.

This strategy is a foundation for action

Delivering the recommendations in this strategy will help to create a prosperous, more inclusive and sustainable Victoria over the next 30 years. The recommendations can help the government create a more productive economy in which people and businesses prosper. Public transport, roads and digital infrastructure help Victorians access well-paid jobs, services and other opportunities. Infrastructure helps businesses create the goods and services that drive economic growth and enables them to send goods across Victoria and beyond.

The government does not need to start implementing all our recommendations immediately. But our recommendations focus on actions the government can start in the next 5 years. The government can deliver many of these recommendations quickly and at low cost. Others can be delivered in stages. In some cases, delaying action will cost more in the long run. The Victorian Government can partner with local governments, the Australian Government, and the private and not-for-profit sectors to help fund and operate some of the infrastructure we recommend.

We estimate that the cost to the Victorian Government of implementing all 45 recommendations is around \$65 billion to \$75 billion. Around three quarters of this is attributable to a small group of capital-intensive projects to improve social housing, kindergartens, schools, public transport and hospitals. Long-term infrastructure planning can help achieve a stable investment profile. Our cost estimates allow the government to make informed decisions about infrastructure investment, project sequencing and delivery timelines.

The Victorian Government could reduce the costs of implementing the recommendations to around \$60 billion by partnering with the Australian Government and other organisations, along with smarter use of existing government land. This \$60 billion costing includes an average of approximately \$5 billion of infrastructure spending by the Victorian Government each year for the next 10 years, and the rest afterwards. Our recommendations can generate over \$166 billion worth of benefits and help achieve the strategy objectives.

Our 6 infrastructure strategy objectives reflect the goals that Victorians told us they value. Most recommendations advance more than one objective across different infrastructure sectors. Some recommendations focus on Victoria's largest cities or regional towns, others apply statewide.

Infrastructure projects and policies are long-term investments. And yet the future is uncertain. Changes in demand and capacity will affect the types of infrastructure that Victorians need most. This strategy aims to meet this challenge by making recommendations that produce good results in different possible futures. These recommendations can help the Victorian Government make informed decisions about infrastructure investment. They focus on the outcomes that Victorians want and set out Victoria's future infrastructure needs.

Summary of recommendations and future options

This strategy contains 45 recommendations and 8 future options that affect many infrastructure sectors.

Recommendations propose actions for the Victorian Government to start in the next 5 years. They are projects, policies and reforms that Victoria will need before 2030 or actions that help government plan early for long-term challenges. The *Infrastructure Victoria Act 2015* requires the Victorian Government to respond to our recommendations.

Future options are projects, policies and reforms that Victoria will likely need over the next 30 years, show clear benefits, but do not necessarily require immediate government action. The Victorian Government does not have to respond to future options.

Victorians have good access to housing, jobs, services and opportunities

#	Recommendation / Future option
1	Build more social homes Invest in a long-term program to build 60,000 new social homes to provide more Victorians on low incomes with secure and affordable housing.
2	Facilitate markets and invest in kindergarten infrastructure Facilitate markets for private and not-for-profit investment in kindergarten infrastructure. Share regularly updated information about the demand for and supply of kindergarten places. Publish priorities for government investment and deliver kindergartens in communities that will have the greatest need.
3	Plan and deliver expanded and new schools Identify schools to expand and confirm areas that will need new schools. Fund expansions of existing schools and begin delivery of new schools. Minimise costs by expanding the built capacity of existing schools and building larger new schools.
4	Expand TAFE in Melbourne's growth areas and some large regional centres Expand TAFE campuses in Melbourne's west, north and south-east growth areas, and some large regional centres. Train more students at these TAFEs to fill skills gaps, especially in construction, energy and health.
5	Build libraries and aquatic centres for Melbourne's growing communities Fund councils to plan and build libraries and aquatic recreation centres in Melbourne's growth areas.
6	Make government infrastructure more accessible Complete priority public transport stop upgrades to meet legal accessibility requirements and fund further upgrades. Provide better public information on accessibility in government buildings.
7	Rezone locations near existing infrastructure for more home choices Change all relevant planning schemes to rezone for more homes in established areas of Victoria's cities and reach housing targets. More homes should be close to public transport and open space, with good access to services.
Future option	Make more homes affordable near existing infrastructure Choose a consistent mechanism that makes more new homes affordable for low-income households, close to public transport, open space and services.

Future option	<p>Phase out residential stamp duties</p> <p>Over the long term, phase out residential stamp duties and phase in residential land tax.</p>
8	<p>Extend Melbourne's trams to encourage more new homes nearby</p> <p>Increase services on key tram routes in activity centres that the government selected for more housing development. Extend trams in Melbourne's established suburbs in areas that can support more new homes. Rezone land around the extended tram lines so more homes can be built.</p>
9	<p>Run faster bus services, more often, in Victoria's largest cities</p> <p>Run buses more often, for longer hours, and give buses priority on the road. In stages, straighten out existing bus routes so they are fast and direct. Add routes in growth areas that do not have any services.</p>
10	<p>Build a new bus rapid transit network</p> <p>Build a new bus rapid transit network in Melbourne, starting with routes that connect train stations and busy destinations. Extend the new Eastern Busway along Hoddle Street.</p>
11	<p>Extend metropolitan trains and run more services in Melbourne's west</p> <p>Extend and electrify metropolitan trains to Melton. Build 2 more tracks from Sunshine to Caroline Springs and new train stations at Thornhill Park and Mount Atkinson. Reallocate V/Line trains that serve Melton to other areas in Melbourne's west and regional Victoria. Deliver a new train station at Altona North and rezone nearby land.</p>
12	<p>Upgrade train infrastructure and run more services in Melbourne's north</p> <p>Duplicate single track sections of the Upfield line and upgrade power and signalling for more train services. Rezone land around stations on the Upfield line to support more new homes, and build a new station at Campbellfield. Build a new station at Beveridge on the Seymour line.</p>
Future option	<p>Extend metropolitan trains to growth areas in Melbourne's north and south-east</p> <p>Extend and electrify metropolitan trains to Clyde and to at least Kalkallo to improve access in new suburbs.</p>
13	<p>Run more bus and coach services in regional Victoria</p> <p>Deliver more bus services in regional centres. Run more V/Line coach services to better connect small towns to regional cities. Start with routes that best improve access to jobs, education and healthcare.</p>
14	<p>Make off-peak public transport cheaper and simplify regional fare zones</p> <p>After upgrading the myki ticketing system, charge lower fares for off-peak travel on Victoria's buses, trains and trams. Simplify fares and reduce the number of regional fare zones.</p>

Victorians are healthy and safe

#	Recommendation
15	<p>Make local streets safer for children and communities</p> <p>Reduce speed limits to 30km/h on local streets, starting in places that children often visit including around schools, playgrounds, childcare centres and kindergartens.</p>
16	<p>Build safe cycling networks in Melbourne and regional cities</p> <p>Build more protected and connected cycle corridors in Melbourne, Geelong, Ballarat, Bendigo and Wangaratta. Publish regular updates to the strategic cycling corridor network.</p>
17	<p>Help government schools share their grounds</p> <p>Prioritise which government school sports fields and facilities could deliver the greatest benefits if they were shared with local communities outside school hours. Give these schools extra help for maintenance if they voluntarily share their grounds for informal community use outside school hours. Offer funding for upgrades to incentivise shared access outside school hours.</p>
18	<p>Invest in maintenance, upgrades and expansions of community health facilities</p> <p>Develop and fund 5-year priorities for Victorian Government investment in community health facilities.</p>

19	Build more residential alcohol and other drug treatment facilities Build residential rehabilitation and withdrawal facilities to meet the demand for alcohol and other drug treatment.
20	Invest in digital healthcare Expand digital healthcare to improve access to quality care and ease demand on public hospitals. Deliver a statewide medical image sharing system and a statewide virtual care service that remotely monitors suitable patients at home.
21	Fix critical public hospital infrastructure Redevelop the Alfred, Austin and Royal Melbourne hospitals.
22	Deliver corrections facilities and transition housing that reduce reoffending Invest more in prison health facilities, culturally safe corrections facilities and post-release transition housing.

First Peoples have self-determination and equal outcomes to other Victorians

#	Recommendation
23	Invest in secure homes for First Peoples Fund a 10-year program to build social homes for First Peoples and provide secure and sustainable tenancies. Work with Aboriginal housing providers and Traditional Owner corporations to develop capacity across the Aboriginal housing and homelessness sector.
24	Fund better health and wellbeing infrastructure for First Peoples Fund and start health and wellbeing infrastructure projects identified by Aboriginal Community Controlled Organisations (ACCOs). Provide additional annual funding to health and wellbeing ACCOs to grow their existing skills and capacity to plan, develop and deliver new and upgraded infrastructure in a self-determined way. Continue to fund minor works and repairs until a self-determined infrastructure fund is introduced.

Victoria has a thriving natural environment

#	Recommendation / Future option
25	Reduce greenhouse gas emissions from infrastructure Adopt carbon values and measure carbon in infrastructure projects to reduce emissions.
26	Advance integrated water management and use more recycled water Work with partners to fund and deliver integrated water management projects. Determine the costs and benefits of introducing recycled drinking water in Victoria and pilot a recycled drinking water facility. Deliver a community education campaign on the need for investment in more water sources.
Future option	Plan for and invest in manufactured water Plan for and invest in manufactured water. Return more water to Traditional Owners and the environment.
27	Better use government land for open space and trees Open up more public land in fast-growing suburbs. Plant more trees on local streets to help get to 30% tree canopy cover in urban areas.

Victoria is resilient to climate change and other future risks

#	Recommendation / Future option
28	Better prepare infrastructure for climate change Fund high-priority, cost-effective infrastructure adaptation actions when climate adaptation action plans are updated in 2026. Produce an energy sector adaptation plan.
29	Use new flood maps to revise planning schemes Produce a common set of flood projections based on the latest climate data. Use this information to update flood studies and maps and apply them in planning schemes. Minimise building in areas at high risk of flooding.
30	Coordinate faster delivery of key energy infrastructure Establish an energy transition project pipeline and publish annual progress assessments to improve transparency and manage risks. Fast-track key energy projects and coordinate enabling infrastructure.
31	Improve environmental assessments and site selection for energy projects Reform environmental assessments and help energy project proponents select good sites.
32	Encourage household energy efficiency and electrification Support low-income households to go all-electric. Complete social housing energy upgrades, including electrification, energy efficiency and solar panels. Require Victorian homeowners to disclose the energy efficiency of their homes at the time of sale or lease.
33	Invest in home, neighbourhood and big batteries for more energy storage Fund more batteries in social homes and provide incentives to encourage people to join a virtual power plant. Expand the neighbourhood batteries program, or similar. Facilitate more investment in big batteries for the transmission network.
34	Determine long duration energy storage needs Determine the most efficient policy or investment options to provide enough long duration energy storage to meet Victoria's needs.
35	Develop an area-based energy plan and support renewable gas production Develop an energy plan that combines future electricity and gas needs for each metropolitan and regional area. Set a renewable gas target to support renewable gas production.
Future option	Plan for gas infrastructure changes Plan for future changes to gas infrastructure, including reconfiguring networks for industrial use and decommissioning in places where gas use is in decline.

Victoria has a high productivity and circular economy

#	Recommendation / Future option
36	Prepare and publish infrastructure sector plans Agree a set of assumptions for future population, jobs and land use to achieve more compact cities. Require each department that owns infrastructure to develop an infrastructure sector plan as soon as possible, based on these assumptions, and publish strategic-level plans. Use the finished sector plans to decide government infrastructure project funding.
37	Reform infrastructure contributions Simplify Victoria's infrastructure contribution schemes to cover all types of housing developments statewide and reflect the cost of infrastructure in different development settings.
38	Improve asset management of government infrastructure Fund asset managers to better understand the condition, use and performance standards of government infrastructure. Use this information to develop asset management strategies and prioritise funding.

39	Prepare for more recycling and waste infrastructure	Identify and map locations for new recycling and waste infrastructure where it is needed and publish them in the next update to the <i>Victorian recycling infrastructure plan</i> .
40	Set future waste levy prices and audit landfill	Publish waste levy rates for the next 5 years to provide investment certainty for waste and recycling infrastructure. Conduct a waste audit to document which materials go into landfill.
41	Use digital technologies on government infrastructure	Pilot digital technologies to better design, build, operate and maintain government infrastructure and report on progress. Use building information modelling on major infrastructure and housing projects. Improve capabilities in government agencies and change procurement processes to promote greater use of digital technologies.
42	Use modern traffic control technology for efficient and safe journeys	Further extend modern traffic control technology like sensors and cameras along arterial roads in Victoria's largest cities. Begin expanding smart motorways into Melbourne's growth area freeways.
Future option	Charge people fairly to use roads	Introduce road charges that help manage congestion and improve productivity. Consider options such as car parking levies, off-peak freeway tolls, congestion pricing trials, or road user charging for all motorists with lowered fixed road charges. Work with the Australian Government and other state governments on road pricing options.
43	Make rail freight competitive, reliable and efficient	Develop and publish a 30-year integrated rail freight network plan and fund a 10-year rail freight maintenance program. Implement a freight network coordination policy.
44	Encourage off-peak freight delivery in urban areas	Prepare for growing freight volumes in urban areas by piloting an off-peak freight delivery program in high-density areas of Melbourne. If successful, expand off-peak delivery for more productive and sustainable freight movement.
Future option	Plan for more efficient and sustainable urban freight	Develop a network of urban delivery zones in Melbourne to improve freight productivity and reduce emissions.
45	Create and preserve opportunities for future major infrastructure projects	Create and preserve opportunities to build major infrastructure projects that might be required in the long term. This includes expanding desalination capacity, more hospital capacity in Melbourne's outer north, City Loop reconfiguration, extending and electrifying metropolitan trains to north and south-east Melbourne growth areas, Melbourne Metro 2, the Bay West port, the outer metropolitan road and rail corridor and connecting western intermodal freight terminal.
Future option	Reconfigure the City Loop for more frequent and reliable trains	Reconfigure the City Loop by splitting 2 City Loop tunnels into 2 separate cross-city train lines. Build around 3 kilometres of new train tunnels and upgrade related power and signalling. Increase service frequency on the Craigieburn, Upfield and Frankston lines.

Victoria's infrastructure strategy objectives

We consulted Victorians on the objectives

We asked Victorians to help us shape the objectives of this updated infrastructure strategy. They told us about infrastructure goals that are important to them. We first consulted Victorians on updating this strategy in 2023.¹ The consultation feedback informed the following objectives, as shown in Figure 1. We documented this consultation in our [Strategy objectives engagement report](#).

Figure 1: Victoria's infrastructure strategy objectives are equally important



Source: Infrastructure Victoria, [Strategy objectives engagement report](#), 2023, p 5, accessed 5 September 2024.

In developing this strategy, we engaged with the community and stakeholders in several ways:

- We hosted a Young People's Forum to hear from Victorians aged between 15 and 25, because a 30-year infrastructure strategy will most affect their futures.
- We heard from regional Victorians at stakeholder workshops and learnt directly from local community representatives about their distinct infrastructure challenges and opportunities.
- We held discussions with First Peoples' representatives including Registered Aboriginal Parties and Aboriginal Community Controlled Organisations, who shared First Peoples' perspectives and goals.
- We consulted with experts in different infrastructure sectors and government departments to get accurate and up-to-date information about Victoria's infrastructure.

- We asked for feedback on a draft version of our strategy. This included by calling for submissions and hosting webinars and workshops. We document this in our [Consultation summary](#) report.

See the section – [How we developed the strategy](#) for more information on our strategy engagement and methodology.

These objectives can help guide Victoria's future

We used 6 objectives to guide the development of our recommendations. These objectives helped us prioritise the most important issues for Victorians. They helped us navigate the trade-offs involved in recommending infrastructure projects and policies to help steer Victoria's future.

The recommendations can help Victoria achieve these objectives. Many recommendations support multiple objectives. These recommendations give the Victorian Government practical advice for infrastructure to meet Victoria's current and future needs.

Victoria faces challenges in achieving these objectives

Infrastructure is vulnerable to climate change and other risks

Since we released *Victoria's infrastructure strategy 2021–2051*, Victorians have continued to live with the health and economic impacts of a global pandemic. Geopolitical tension and instability have affected Victoria, as have global economic challenges. Catastrophic events can happen suddenly and have devastating impacts.

Victorians have recently faced the challenges of bushfires, storms and floods. Climate change means Victoria will have more extreme weather events.²

Governments need to plan, build and maintain Victoria's infrastructure to be resilient to climate change and other risks. The Victorian Government has a legislated target of net zero emissions by 2045.³ Infrastructure is needed to achieve this target. It supports Victoria's transition to renewable energy generation.⁴

Climate change also threatens many of Victoria's natural ecosystems. Building infrastructure can further harm the natural environment. But governments can avoid this impact by planning for and designing infrastructure that minimises disruption to the natural environment. People and wildlife receive many benefits from healthy ecosystems. For example, protecting and increasing vegetation helps improve air and water quality, reduce soil erosion and maintain biodiversity.⁵

A growing population places more demand on infrastructure

Victoria's population is growing faster than the national average.⁶ By 2055, the government projects Victoria's population will reach up to 11.5 million.⁷ This means Victoria's population will grow by about one million people each decade, for the next 3 decades.

Population growth places extra demands on Victoria's infrastructure. But harnessing this growth can help build a more prosperous economy and society. Well-planned, efficient and targeted infrastructure can help Victoria benefit from population growth.

A growing population can make it easier for businesses to find workers with the right skills.⁸ Businesses also have access to more customers, helping to grow the economy and make it more productive.⁹ People moving here from other countries can bring new ideas, and make Victoria more culturally diverse and vibrant.¹⁰

Planning for future growth means Victoria can make the most of its unique regions.¹¹ Well-planned population growth can help Victoria continue to compete in the global economy.¹²

Governments can only build so much infrastructure

The high cost of materials makes new infrastructure expensive to deliver.¹³ Australia also does not have enough skilled workers to build its current pipeline of housing, energy and transport infrastructure.¹⁴

The Victorian Government expects its net debt will reach \$167 billion by mid-2026.¹⁵ This debt may restrict future budget spending. The government will need to carefully prioritise its infrastructure investments to deliver what Victorians need most.

But the government can take actions other than building more infrastructure. For example, it can better plan for the infrastructure Victorians need and investigate ways to improve the use of existing infrastructure. The government can also use more digital technologies, including artificial intelligence.¹⁶ This can make Victoria's infrastructure more productive and has other benefits for Victoria's people, businesses and economy.¹⁷

Over time, the government can work with industries to help workers develop the skills needed to tackle future challenges. This includes skills to build infrastructure and housing, deliver healthcare, and transition to renewable energy and a circular economy.¹⁸ Improving access to vocational education and training will help address skill shortages.¹⁹

The current shape of Victoria's cities makes it more expensive to deliver infrastructure

The shape of Victoria's cities influences Victorians' quality of life.²⁰ More compact cities, in which people live and work closer together, are better for the economy, people and the environment.

Victoria's cities have historically expanded outwards. Landowners built new homes in new suburbs on city edges. But these places do not always have good access to infrastructure until many years after the homes are built. Spread out cities affect the ease with which Victorians can access health and social services.²¹ They limit people's options to travel for work and study and restrict where they can rent or buy an affordable home.

Spread out cities cost the Victorian Government more.²² Building infrastructure in new suburbs on a city's fringes can be up to 4 times more expensive than adapting existing infrastructure in established suburbs.²³ It also produces worse social outcomes, fewer economic benefits and negatively impacts the natural environment.²⁴

People live closer to jobs and services in cities that are more compact. Compact cities can give Victorians the best chance of living close to family and friends, jobs, education, shops and services.²⁵ It can also mean businesses have more opportunities to find skilled workers and be closer to their markets and customers.²⁶

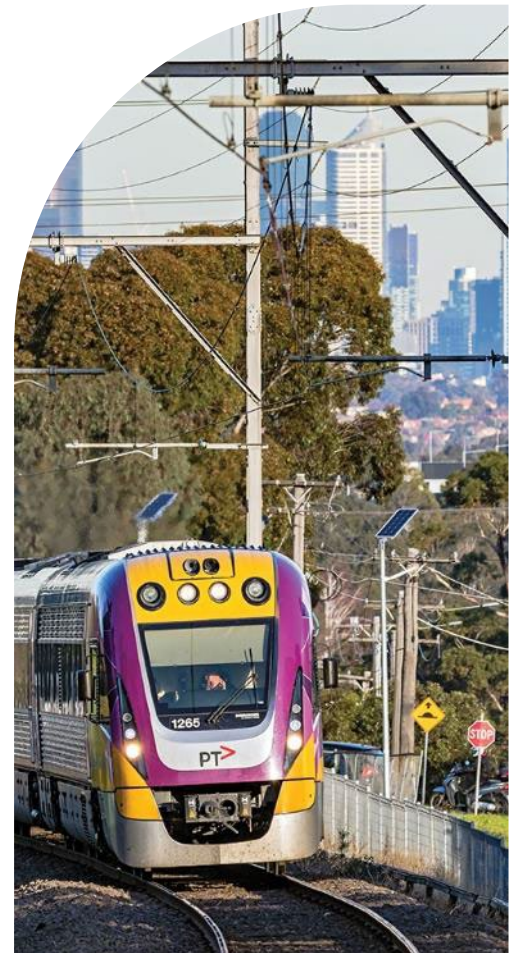
Achieving compact cities in Victoria will require a sustained and coordinated effort in many infrastructure sectors, but the benefits will be substantial. By 2056, we estimate a more compact city can generate \$9 billion more in economic activity, and Victorians can earn an extra \$5 billion in wages and profits, compared to a spread out city.²⁷



Objective

Victorians have good access to housing, jobs, services and opportunities

Victorians can access housing, jobs, services and opportunities to develop their capabilities, support their wellbeing, connect with other people, and take part in civic, community and cultural life.



Infrastructure influences how Victorians live

Victorians interact with infrastructure every day. It includes the roads they use to get to work, the education facilities that help them to learn and grow, and the health facilities where they receive care.

Victorians receive essential services from infrastructure like the pipes that supply their water and the lines that supply their electricity. Infrastructure also supports people and communities to connect, such as at libraries, parks and community facilities.

Victorians told us they want transport infrastructure that better connects them with opportunities.²⁸ People preferred more space for public transport, cycling lanes and walking paths over road space for cars.²⁹

But some people who live in Melbourne's growth areas and regional Victoria said they cannot easily access services and opportunities.³⁰ Victorians also mentioned the negative impacts of high housing costs, particularly for people experiencing disadvantage.³¹

Access to high-quality transport infrastructure varies across Victoria

Different types of transport can help people get to the places they need to go. Victorians collectively take over 16 million trips every day.³² They might be driving long distances, taking public transport to central locations, or making local trips by walking or cycling.

Public transport, walking and cycling help ease traffic congestion and can sometimes be faster than driving.³³ This is especially the case for inner city workers who catch public transport. But in some parts of Victoria people have few alternatives to driving.³⁴ They also might be delayed by road repairs or construction of big transport projects.³⁵

It can be hard for people to reach jobs in middle and outer suburbs, such as for people working in retail, hospitality, schools, hospitals and factories.³⁶ People typically have fewer public transport services to reach these jobs.³⁷ If people cannot or do not drive, some might struggle to get to work, services or education.³⁸

Victorians might not make a trip at all if public transport has few services each day or if the fare is too high.³⁹ Some people, including some women, young and older people, might not use public transport if they do not feel safe.⁴⁰ Many Victorians can only use infrequent and indirect bus networks to get to jobs, services, education and recreation.⁴¹

Walking or riding a bike can be good for shorter trips, but in some places people might not feel safe.⁴² Some people, including women and gender-diverse Victorians, can find streets, public parks and trails unsafe, especially when walking.⁴³

Established suburbs have good access to infrastructure, but many Victorians cannot afford to live in them

People who live in established suburbs often have more infrastructure near their home, like public transport, schools and libraries.⁴⁴ The Victorian Government has a target for 70% of new homes to be built in these suburbs.⁴⁵ When people live closer to existing infrastructure, jobs and services, they have better health.⁴⁶ They spend less time travelling to work and other destinations.⁴⁷ This means they can spend more time with family or doing social activities.⁴⁸ More than half of the people living in Melbourne's inner suburbs get involved in cultural and creative experiences, compared to less than 40% of those living in new suburbs.⁴⁹

But homes in established suburbs in Victoria's cities are expensive to buy and rent.⁵⁰ People with moderate and low incomes find it hard to afford to live in these suburbs.⁵¹ Planning rules can make it difficult for property owners and developers to build new homes in places that have good existing infrastructure. Most homes that Victorians can afford are in new suburbs.⁵² These places are only slowly getting public transport services, childcare, education facilities, libraries and aquatic centres.⁵³

Access to infrastructure is worth investing in

Good access to infrastructure has social, economic and environmental benefits. Children who participate in high-quality early childhood education, and then regularly attend school and complete year 12, have better health and employment outcomes.⁵⁴ They also have higher incomes during their lives than those who do not.⁵⁵

Workers can more easily reach jobs in places that have good transport options. Infrastructure also lets businesses connect with customers, markets and skilled workers. Businesses in compact cities with good access to infrastructure are more productive than in spread out cities.⁵⁶

If people can live in places that already have good infrastructure access, Victoria does not need to build so many homes in new suburbs. The edges of cities and towns can stay as farms producing food or natural habitats for animals and plants.⁵⁷

Access to infrastructure means people can easily travel to see their friends, family, and community.⁵⁸ This creates social connection and improves happiness and health.⁵⁹ Avoiding social isolation can be as beneficial to health as giving up smoking.⁶⁰

Some Victorians need access to specific types of infrastructure and services. Easily getting in and out of buildings with government services is especially important for people with mobility challenges. This is even more critical in regional Victoria, where a higher proportion of people have disabilities.⁶¹

Some people cannot find homes they can afford to rent in Melbourne, and in regional centres like Ballarat, Bendigo and Geelong.⁶² Social housing can provide them with a safe and secure home.⁶³ Social housing can return up to \$1.25 in social and economic benefits for every \$1 invested.⁶⁴



Build more social homes

Invest in a long-term program to build 60,000 new social homes to provide more Victorians on low incomes with secure and affordable housing.

Victoria needs more social homes

Many Victorians are finding it harder to afford a suitable, secure and safe home. Increasing numbers of low-income households are paying more than 30% of their income in rent.⁶⁵ Between 2016 and 2021, homelessness increased by 24% to over 30,000 people.⁶⁶ Without government investment, more people will experience homelessness and financial hardship. More people will also live in inadequate housing.

Access to safe and secure housing supports individual and community wellbeing. It provides a stable base for people and allows them to participate in society.⁶⁷ When people cannot find a secure home that they can afford, it affects their health, wellbeing, relationships and job opportunities.⁶⁸ Social housing can help by offering low-income households homes with more affordable rents. It also offers a secure home to households in crisis, such as those experiencing homelessness or fleeing family violence.⁶⁹

Victoria does not have enough social homes for all the people who need them.⁷⁰ Over 55,500 households were on the waiting list for social housing in March 2025.⁷¹ In 2023–24, people with the most urgent housing needs had to wait more than 19 months for a home.⁷² Long wait times can affect people's wellbeing, for example by making their mental health worse.⁷³

Victoria is building social homes at a slower rate than private homes.⁷⁴ Social housing makes up only 2.8% of homes in Victoria compared to a national average of 4%.⁷⁵ This is the lowest of any Australian state or territory. Victoria needs an additional 60,000 social homes to meet the backlog of demand for homes.⁷⁶ Building this number will also get Victoria closer to reaching the national average.⁷⁷

Providing more social homes will help lower healthcare costs, increase productivity and cut demand for support services.⁷⁸ For example, every \$1 spent to tackle youth homelessness can return an estimated \$2.80 in benefits to the Victorian community.⁷⁹

A long-term program to provide more social homes can be more cost-effective

The Victorian Government should invest in a 15-year program to build 60,000 new social homes. It can start by adding 3,000 homes a year and ramp up over time to add 6,000 homes a year. A long-term pipeline of homes will give certainty to Homes Victoria and registered housing providers to secure land, develop supply chains and find workers.⁸⁰

High material and land costs, labour shortages and lower construction productivity make it harder to grow the number of social homes.⁸¹ But growth in construction costs is slowing.⁸² Our recommendation makes up only a minor part of the approximately 60,000 new homes built each year.⁸³

A 15-year pipeline of projects can make work more predictable for developers, including local small and medium businesses.⁸⁴ The government can use prefabricated parts and modular construction for social homes, to reduce costs and on-site labour needs.⁸⁵ The government built almost 3,000 social homes in 2023–24, but it also divested over 1,600 by selling, transferring or knocking them down.⁸⁶ The government will need to continue to replace or refurbish assets that are ageing or in poor locations, but for every home it divests it will need to build even more to grow the available supply.

Better maintaining social homes will make them last longer and reduce the need to build new homes in the future (see [recommendation 38](#)).⁸⁷ Using high-quality and low-maintenance materials can keep ongoing

running costs lower.⁸⁸ Upgrading existing homes can produce fewer emissions compared to building new (see [recommendation 25](#)).⁸⁹

The government should locate new social homes in places close to jobs, transport and services in Melbourne and regional Victoria.⁹⁰ It can give priority to Victorians who are homeless, Aboriginal Victorians, people escaping family violence, living with disability or mental ill-health.⁹¹

The Victorian Government can partner with others to develop and manage social homes

Upfront investment is the most cost-effective way to build social homes.⁹² The Victorian Government, not-for-profit and for-profit organisations finance, develop and manage social housing.⁹³ The new program should fund both Homes Victoria and registered housing providers.

The Australian Government also funds social housing in Victoria. The Victorian and Australian governments can work together to grow the supply of homes through the National Agreement on Social Housing and Homelessness and the Housing Australia Future Fund.⁹⁴

The government can build more public housing on well-located government land.⁹⁵ It can also fund registered housing providers to build more homes by expanding the Social Housing Growth Fund.⁹⁶ The government should work with registered housing providers and local governments to decide the best places for more social homes.⁹⁷ It should also partner with Aboriginal housing providers to build homes for First Peoples (see [recommendation 23](#)).⁹⁸

The 15-year program will reduce homelessness and housing stress in Victoria, but it will not end it.⁹⁹ The government will need to keep investing in social housing. It can create a longer-term pipeline to continue to grow the number of social homes over time.

Cost range, timing and funding

We estimate that building 60,000 new social homes will cost the Victorian Government \$12 billion to \$19.5 billion over 15 years.¹⁰⁰ However, costs to the government will vary depending on how land is provided, the extent to which existing social homes are demolished to build new homes and how much the Australian Government contributes. General Victorian Government revenue can partly fund this recommendation.

We have assumed that the government can build all new homes on land it already owns, or on land owned by local government or not-for-profit housing organisations.¹⁰¹ If the government needs to buy land to build social homes on, it might cost \$6 billion to \$9.5 billion extra.

The Australian Government can partner with the Victorian Government to fund this recommendation. We have assumed that the Australian Government will fund at least \$1 billion based on existing levels of funding continuing for the next 15 years, including the Housing Australia Future Fund.¹⁰² There is an opportunity for the Australian Government to increase its share of the costs to deliver social homes.¹⁰³

We estimate that each new home will cost \$240,000 to \$580,000 to build new, depending on size and location.¹⁰⁴ The government can make the most of available public land by identifying and prioritising suitable sites and streamlining transfers between public and private land owners. It can support registered housing providers to buy land next door to existing sites so they can build more homes on bigger lots.¹⁰⁵ Strategic planning and development can deliver better value and more diverse housing models.

The Victorian Government can continue to use public private partnerships and ground lease models so that not-for-profit and private sectors can build social and private homes in mixed developments.¹⁰⁶

Maintaining these social homes will cost around \$500 million each year. Rents collected can cover some operating costs including maintenance.¹⁰⁷ The financial sustainability of social homes in Victoria is under review.¹⁰⁸

We also recommend building more social housing for First Peoples in this infrastructure strategy. See [recommendation 23](#) for further detail on social homes specifically for First Peoples. The cost of [recommendation 23](#) is included as a component of the total cost to build social homes in this recommendation.

Recommendation 2

Facilitate markets and invest in kindergarten infrastructure

Facilitate markets for private and not-for-profit investment in kindergarten infrastructure. Share regularly updated information about the demand for and supply of kindergarten places. Publish priorities for government investment and deliver kindergartens in communities that will have the greatest need.

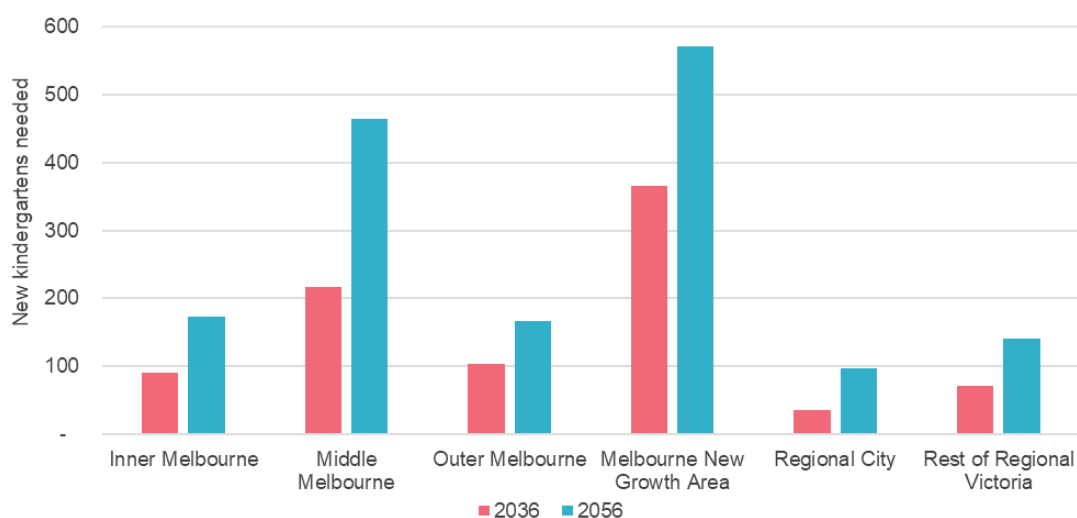
Early years education improves children's lives

Children who attend quality early childhood education have better life outcomes.¹⁰⁹ For every \$1 invested in early childhood education, the community receives \$2 of value.¹¹⁰ This is because these children will have better skills, earn more and need fewer health, welfare and justice services during their lives.¹¹¹

The Victorian Government started offering free kindergarten in 2022 to all 3-year-olds for at least 5 hours a week. This will increase to 15 hours by 2029. All 4-year-olds will get 30 hours each week by 2036.¹¹²

Victoria needs more kindergartens to meet future demand for these longer hours. We estimate that Victoria will need around 900 new kindergartens by 2036 (see Figure 2).¹¹³ This is a big task, but it can be achieved through a variety of providers and funding sources.

Figure 2: Victoria needs more kindergartens



Source: The Centre for International Economics, *Part 2: kindergarten provision projection*, report to Infrastructure Victoria, 2024, p 18, accessed 16 July 2025.

Active market facilitation is needed

Private businesses, not-for-profit organisations and local governments all deliver kindergarten programs. This combination gives families different options for the diverse needs of their children, including First Peoples families and children. The government can make its funding more effective by focusing on areas where other providers are unlikely to build new kindergartens.

The Victorian Government should do more to facilitate delivery of kindergarten infrastructure in a market with so many different providers. This involves building trusted and open relationships with private and not-for-profit providers and local governments to encourage them to share information. This can help create a stronger kindergarten system that is more inclusive and competitive.¹¹⁴

The government should provide timely information about the demand for and supply of kindergarten places. It should update this information regularly so all sectors can better plan and invest. The current kindergarten infrastructure and services planning process is a good start.¹¹⁵ Engaging with local governments to prepare plans provides an opportunity to include community preferences for different providers and understand local government capacity to run kindergartens.¹¹⁶

To make this information easy to access, the government should develop this into an online open-data platform that combines statewide information from all sectors. This will allow all providers to understand supply and demand for kindergartens.¹¹⁷

Good market facilitation will allow all providers to decide where and when they invest. It will give more time before kindergarten projects start for providers to align co-investment, such as from local governments. There will also be more time to collaborate on building design, including for new early learning centres that will consider co-locating other government services with kindergartens.¹¹⁸

Target government investment in places with the greatest need to deliver better outcomes

The Victorian Government should publish clear priorities for kindergarten investment over the next 5 years. It should update these plans as other providers' activities become clear. This includes deciding which school sites will host government-funded kindergartens to avoid duplicating existing or planned facilities.

Targeted direct investment and grants will deliver more infrastructure where it is most needed, such as lower-income and regional areas where the private sector is unlikely to invest.¹¹⁹ It will help ensure enough kindergarten places in Melbourne's fast-growing new suburbs.¹²⁰ It can also deliver Aboriginal Community-controlled early childhood education infrastructure to help close the gap in education outcomes between First Peoples and non-Aboriginal and Torres Strait Islander children.¹²¹

Cost range, timing and funding

We assume that the Victorian Government will invest in between 300 and 600 of the new kindergartens Victoria needs by 2036.¹²² We estimate that this will cost the government \$3.9 billion to \$7.2 billion over 10 years, noting that the level of government contribution for kindergarten infrastructure differs by sector.

The government can build new kindergartens itself or give grants to local government and not-for-profit providers. General government revenue can fund new kindergartens. A reformed infrastructure contributions system can also help to fund new facilities (see [recommendation 37](#)).

If the government needs to buy land for these kindergartens, it might cost \$2.2 billion to \$3.8 billion extra.¹²³ Expanding existing kindergartens or co-locating them with schools and other services on public land can help reduce or avoid these land costs. For example, co-locating kindergartens on TAFE campuses where there is demand can help parents balance study with other commitments.¹²⁴

The Australian Government has announced a \$1 billion Building Early Education Fund which can also fund some new and expanded kindergartens in areas of need, including in outer suburbs and regional areas.¹²⁵ Using public private partnerships can also help share costs, as happened in the 2008 to 2018 Victorian school building programs.¹²⁶

Once built, these new kindergartens will cost \$200 million to \$300 million a year to maintain.

Our cost estimates include \$5 million to \$10 million over 10 years for Victorian Government staff to help develop markets for private and not-for-profit groups. Staff can oversee, monitor and take responsibility for the whole kindergarten education system. This includes predicting demand, looking at infrastructure needs each year and showing where new kindergartens should go.

Plan and deliver expanded and new schools

Identify schools to expand and confirm areas that will need new schools. Fund expansions of existing schools and begin delivery of new schools. Minimise costs by expanding the built capacity of existing schools and building larger new schools.

Population growth means Victoria needs more school places

A good education gives people more life choices. School infrastructure supports teachers, parents and the wider school community to deliver good teaching and learning outcomes.¹²⁷

The Victorian Government has almost completed its 2018 promise to open 100 new schools between 2019 and 2026, with 81 schools already open and 19 to open by 2026.¹²⁸ It has committed to opening 2 more new schools in 2027 and funding to buy land for 10 new and expanded schools in future.¹²⁹

We used official 30-year population forecasts to look at Victoria's future government school needs (see Figure 3).¹³⁰ If the population grows as forecast, government schools will need many more student places. Some schools in inner Melbourne and new suburbs are already running out of space for more students.¹³¹

The government can meet this demand in different ways. It can add more relocatable buildings, build new classrooms in existing schools or design new schools of different sizes. This affects how many schools Victoria will need and how much they will cost.

Some existing schools have space to grow

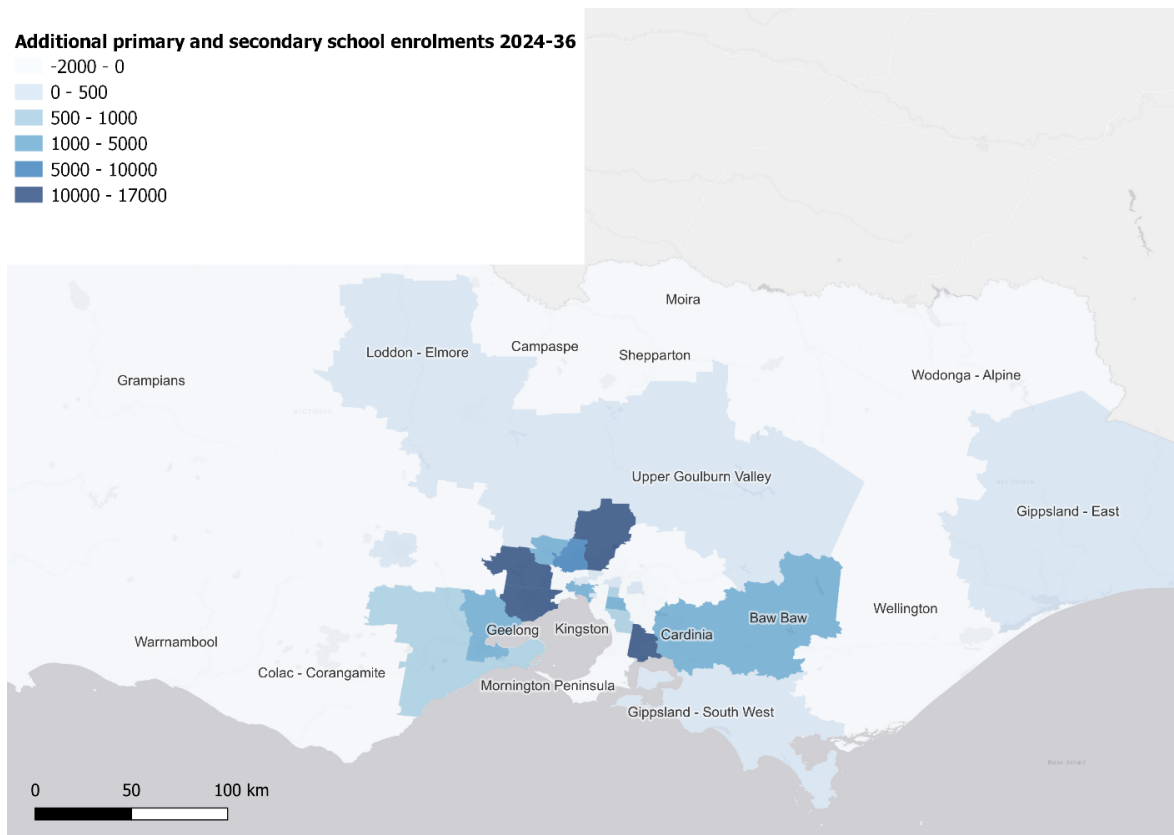
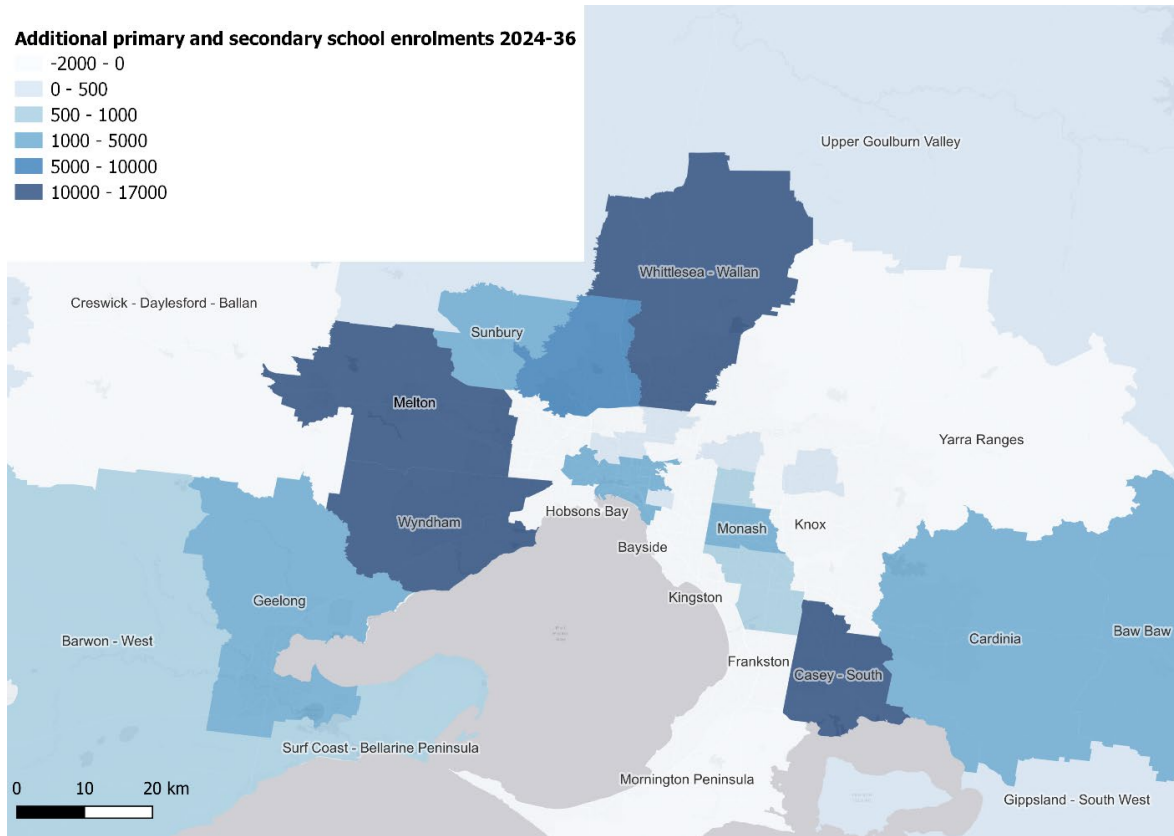
Adding buildings at existing schools is often cheaper than building new schools. Many government schools have space for new buildings while keeping enough outdoor space for students to play and exercise. The government should plan to enrol new students in existing schools before building new ones, wherever possible.

Our modelling shows expanding existing government schools might provide enough space for almost half of Victoria's new students by 2036.¹³² We estimate that adding extra buildings would cost \$1.5 billion to \$3.3 billion, depending on how many relocatable classrooms the schools need.¹³³ This would save up to \$2.4 billion in avoided construction and land costs for new schools.¹³⁴

It costs more to build new schools in established suburbs where land and building costs are higher, but many schools in inner and middle Melbourne do not have space for more buildings.¹³⁵ Schools can expand in different ways to enrol more students depending on where they are. For example, they might need to consider multi-storey buildings or new campuses.

In Melbourne's growth areas, the government will need to plan for new schools at the same time as expanding existing schools. Our projections suggest that schools in regional growth areas will likely be able to accommodate student growth by adding new classrooms and relocatable buildings until 2036.

Figure 3: Victoria will have more primary and secondary students in 2036, especially in new suburbs



Source: The Centre for International Economics, *Part 1: primary and secondary schools provision projection*, report to Infrastructure Victoria, 2024, accessed 7 July 2025; Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2024, p 28, accessed 7 July 2025.

Transparently plan and fund future schools

We modelled 4 scenarios that looked at how many new schools Victoria might need and where existing schools have space to grow. Our findings suggest that Victoria will need between 35 and 60 new schools by 2036, depending on the size and distance between schools.¹³⁶ These are in addition to the new schools the government has already committed to. Nearly all will be in Melbourne's new suburbs, although government plans for more homes in activity centres in established suburbs might change projected demand.¹³⁷

The government can use local area planning to decide future school locations. This can ensure the government meets its legislative requirements that all students can access their local school. The government can choose new school sites so students can reach them by active and public transport.¹³⁸

The Victorian Government should plan, fund and buy land for new schools now. This can save on land costs. Transparency about future plans will give local governments, non-government schools and communities time to collaborate in planning and designing new schools to best meet community needs.

The government can also co-locate kindergartens and early intervention services on school sites. This will help deliver connected support for children with additional needs.¹³⁹ It will also make early years education easier to access.¹⁴⁰

Cost range, timing and funding

We estimate that planning and delivering expanded and new schools will cost around \$5.7 billion over 10 years for implementation and capital works. This includes the cost to both expand existing schools and build new, larger schools. Land is around a third of the total cost for new schools on average, and up to half of the total cost in inner Melbourne.¹⁴¹ The Victorian Government has established systems and processes to plan and build schools and can use existing staff to do this work.

This recommendation can be funded through general government revenue. The government set aside \$835 million in the 2025–26 Victorian Budget for new schools, expansions, land and modular buildings.¹⁴² This is around 15% of the total we estimate is required.

The government can change the timing of funding new schools by using public private partnerships, like in the delivery of schools built in Victoria from 2008 to 2018.¹⁴³ The Australian Government can fund some of this through recent programs like the Schools Upgrade Fund.¹⁴⁴ Once complete, these new schools will cost \$170 million to \$220 million a year to maintain.

Expand TAFE in Melbourne's growth areas and some large regional centres

Expand TAFE campuses in Melbourne's west, north and south-east growth areas, and some large regional centres. Train more students at these TAFEs to fill skills gaps, especially in construction, energy and health.

TAFEs provide training to meet Victoria's skills needs

The *Victorian skills plan* estimates there will be 1.4 million new workers in Victoria by 2034.¹⁴⁵ Almost half will require vocational training.¹⁴⁶

Australia has growing shortages of tradespeople, forecast to peak at 76,000 workers in 2025–26.¹⁴⁷ The healthcare sector has skilled worker shortages, including aged and disability carers.¹⁴⁸ Skill shortages also present a major challenge to Victoria's transition to renewable energy (see [recommendation 30](#)).¹⁴⁹ Victoria's energy transition is expected to need 10,000 new workers every year until 2030.¹⁵⁰

Registered training organisations deliver vocational education and training that gives students the specialist and technical skills they need to work in these sectors. This helps Victoria's economy grow and become more productive, and supports the goal of net zero emissions.¹⁵¹

TAFEs and dual sector universities are public training providers.¹⁵² They educate people at all stages of life and provide career paths to improve life outcomes. People who do not finish school have fewer job choices and opportunities.¹⁵³ TAFEs provide training for thousands of students, including those who have left school early or want to re-train for a different career.

The Victorian Government expanded the Free TAFE program in 2024.¹⁵⁴ This means more students are enrolling. We found that 22% of adults would likely enrol in TAFE in the next 5 years.¹⁵⁵

Victoria's TAFEs need more space for construction, energy and healthcare training

Many people living in Melbourne's growth areas and regional Victoria cannot easily reach a TAFE campus.¹⁵⁶ Public transport services do not stop near TAFEs in many regional areas (see [recommendation 13](#)). Even if people can get to a local campus, it might not offer the course they are looking for. For example, TAFE campuses in Werribee and Berwick offer few construction and trades courses.

Digital technology can provide alternative access to TAFEs using online and remote learning options.¹⁵⁷ But some courses need to be delivered in person. For example, some construction and healthcare courses need specialised equipment and practical experience.¹⁵⁸ The government projects that Melbourne's new growth areas will have the largest increase in demand for construction and healthcare training.¹⁵⁹

Teaching more students needs more classroom space. By 2036, we estimate Victoria's TAFEs will need about 20% more space to meet the expected enrolments in all sectors.¹⁶⁰ This is on top of new TAFE campuses already planned for Melton and Sunbury.¹⁶¹

We estimate that TAFEs in Melbourne's growth areas will need over 125,000 square metres of extra space to deliver training in construction, energy and healthcare combined. TAFEs in Geelong, Ballarat, Bendigo and the Latrobe Valley will together need around 50,000 square metres of extra space to meet future demand.¹⁶²

TAFEs can expand to deliver more training

By 2030, the Victorian Government should fund the extra space needed at TAFEs in Melbourne's growth areas and large regional centres. This will improve access to construction, trades and healthcare training, so more people can attend a campus closer to home.

The government should work with TAFEs and dual sector universities to confirm the best places to expand. They should choose places where TAFEs have space to grow. These should be close to public transport so people can get there easily, and near jobs and services. Potential campuses include:

- Victoria University in partnership with Gordon TAFE – Werribee
- Chisholm TAFE – Berwick
- Melbourne Polytechnic – new campus in northern growth suburbs
- Gordon TAFE – Geelong or a new campus in outer Geelong or the Surf Coast
- Federation University – Ballarat
- Bendigo Kangan Institute – Bendigo
- Gippsland TAFE – Latrobe Valley.

Cost range, timing and funding

We estimate that expanding TAFEs will cost \$1.9 billion to \$2.5 billion over 10 years. General government revenue can fund this recommendation. The Victorian Government can source additional funding through the Australian Government's National Skills Agreement.¹⁶³ There may also be opportunities for public private partnerships to help fund TAFE expansions.¹⁶⁴

This includes the cost of building new teaching spaces at existing TAFE campuses in Melbourne's growth areas, and in Ballarat, Bendigo and the Latrobe Valley. This cost range includes the cost to buy land for new campuses in Melbourne's northern growth suburbs and Geelong. We assume that other TAFEs have land available to expand on existing sites.

The Victorian Government owns TAFE assets. Many TAFE institutes hold substantial amounts of land.¹⁶⁵ They might not need it all for future growth. In these circumstances, TAFEs might reduce the size of some campuses or consolidate assets on a smaller site. The government can work with TAFEs to identify excess assets and land sales for reinvestment, including in new and expanded TAFE campuses.

Once built, the new TAFE facilities will cost \$50 million to \$75 million each year to maintain.

Build libraries and aquatic centres for Melbourne's growing communities

Fund councils to plan and build libraries and aquatic recreation centres in Melbourne's growth areas.

Libraries and aquatic centres provide essential services to growing communities

Libraries help people learn skills, participate in the economy and connect with each other.¹⁶⁶ Aquatic recreation centres promote health, wellbeing and water safety.¹⁶⁷

Communities in Melbourne's new suburbs are young and diverse. Their populations are growing quickly.¹⁶⁸ These places are also hotter and have fewer people that take part in sport and the arts.¹⁶⁹

Libraries and aquatic centres provide services for local needs. They offer information in different languages and build identity and community.¹⁷⁰ They provide refuge from heat. They reduce the higher drowning risk for Australians born overseas by helping teach them to swim.¹⁷¹ They also provide spaces for creative, cultural and physical activity.¹⁷² These services improve health and wellbeing which reduces government costs.¹⁷³

Every \$1 spent on an aquatic centre in a capital city has \$3.70 in benefits.¹⁷⁴ Libraries deliver \$2 to \$4.30 in benefits for every \$1 of investment.¹⁷⁵

Access to libraries and aquatic centres is unequal and getting worse

Access to libraries and aquatic centres is still not equal.¹⁷⁶ There is one library for every 62,000 residents in Melbourne's growth areas. In established suburbs, there is one library for every 30,000 people (see Figure 4). Growth areas have one aquatic centre for every 82,000 residents. Established suburbs have one for every 58,000 people.¹⁷⁷ This means growth area residents are at more risk of poorer health, wellbeing, social inclusion and learning outcomes.

Some councils, including Wyndham and Whittlesea, have created small library spaces that provide basic services.¹⁷⁸ These are a good idea, but they do not provide the same level of services as libraries in other parts of Melbourne.

Planning and investment in new or expanded facilities should start now

Planning should start now for facilities in all 7 growth area councils. This work should assess existing capacity and identify future needs. It should consider opportunities to co-locate or share use with other services and councils. The Victorian Government should fund service planning for each council of up to \$200,000 for aquatic centres and \$100,000 for libraries.

We compared the number of libraries and aquatic centres in each council area to the number of residents now and into the future. Our analysis shows that Melton, Casey, Wyndham and Cardinia urgently need a new or expanded library. Residents in Melton, Wyndham and Casey also have poor access to aquatic centres. Rapid population growth will make this worse.¹⁷⁹

Local communities confirm that growth areas need more facilities.¹⁸⁰ Local governments such as Cardinia also highlight existing facilities that urgently need upgrading.¹⁸¹

Local councils own and operate libraries and aquatic centres. These facilities are costly to build and upgrade.¹⁸² In the past, the Victorian Government provided large grants for aquatic centres and funding for libraries. But now its funding is not enough to meet the need for regional scale infrastructure in growth areas.¹⁸³

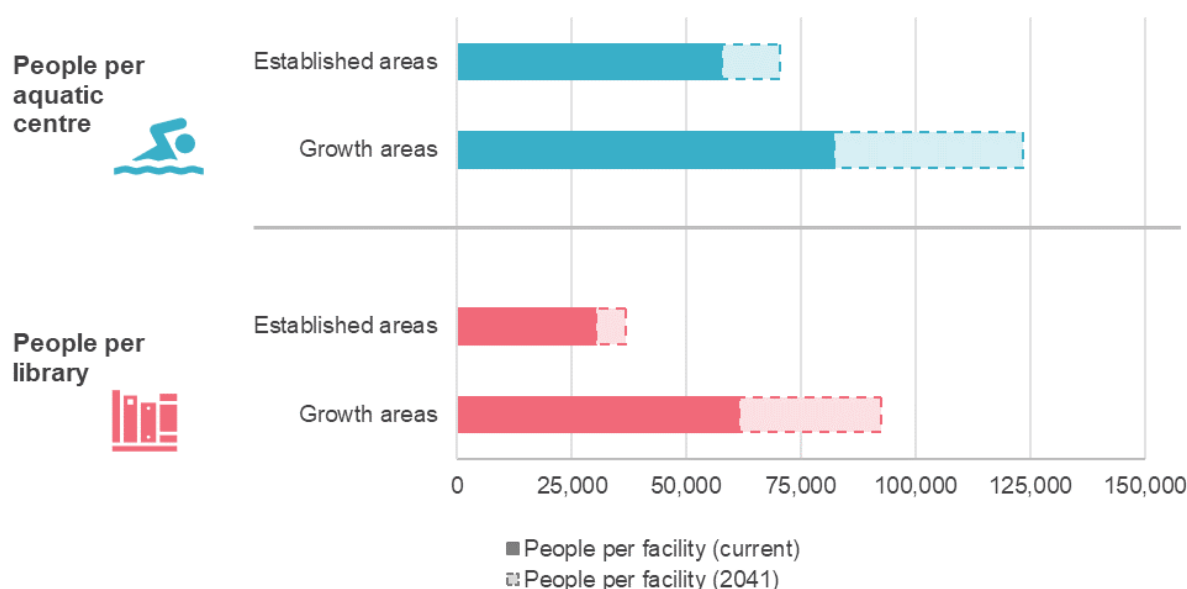
The Victorian Government should contribute at least a third of the cost to build or expand core parts of the facilities, like pools. Local and Australian governments should cover the rest.¹⁸⁴

Councils may fund any extra recreational or commercial spaces the community might need. This includes combining facilities like meeting rooms and gymnasiums with libraries and swimming pools. This can cross subsidise operational costs and provide benefits to the community. Staging delivery to expand functions over time can also reduce upfront costs.

Australian Government grants are available for this purpose, like the Thriving Suburbs Program.¹⁸⁵ Councils can also apply for sustainability grants to reduce their operational costs.¹⁸⁶ Energy-efficient facilities can help minimise ongoing running costs.¹⁸⁷

Co-location can also reduce costs, address local needs and create further benefits.¹⁸⁸ For example, Warrnambool’s public library is on the South West TAFE campus. The shared location avoids duplicating services. It also improves community access to the services available at TAFE.¹⁸⁹

Figure 4: Melbourne’s growth areas need more aquatic centres and libraries



Source: Infrastructure Victoria analysis of local government data from Life Saving Victoria and Public Libraries Victoria, confirmed through desktop review and stakeholder consultation. Life Saving Victoria, [Victorian public pools register](#), website, n.d., accessed 21 November 2024; Public Libraries Victoria, [Directory of public library services in Victoria](#), State of Victoria, 2024, accessed 21 November 2024.

Cost range, timing and funding

We estimate that building core parts of new libraries and aquatic recreation centres will cost \$300 million to \$500 million in implementation and capital works. These costs can be split into planning and building components. Assuming the funding is shared across all levels of government, this recommendation will cost the Victorian Government \$100 million to \$250 million.

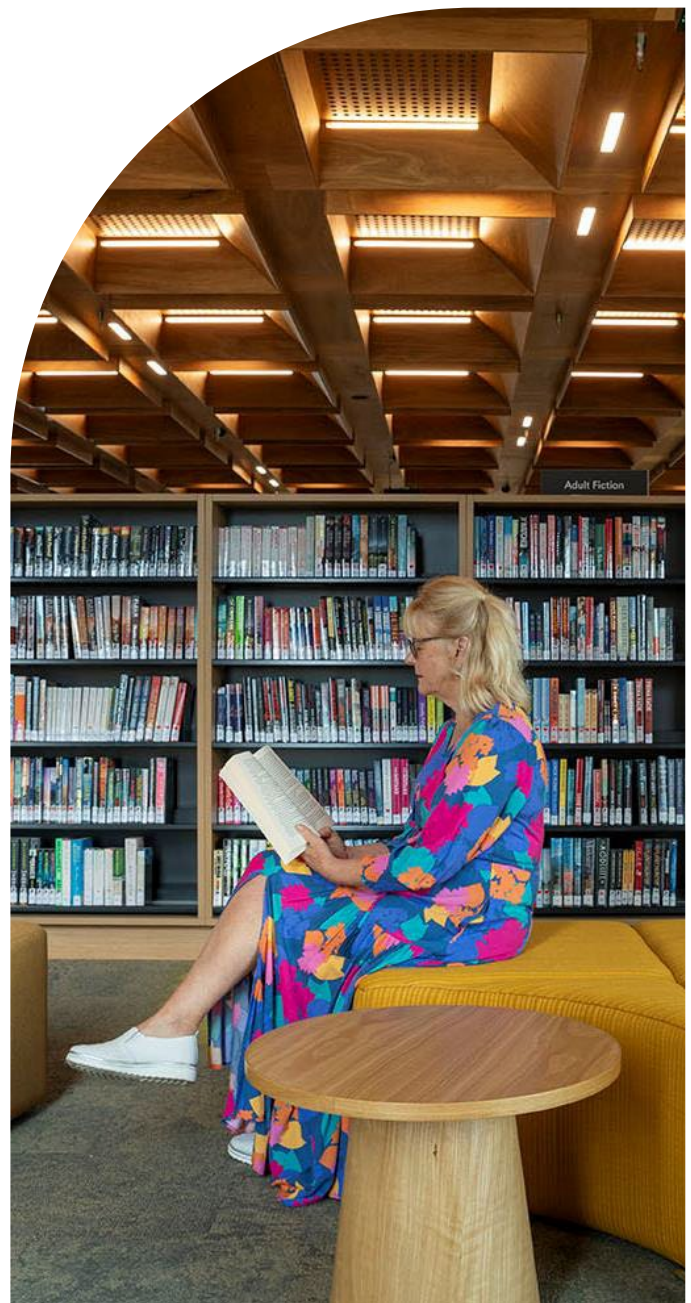
The Victorian Government can deliver the planning component of this recommendation for around \$2 million. This covers grants to the 7 growth area councils for strategic planning, including opportunities to share facilities in neighbouring councils.

Groups of local governments can undertake strategic planning together where possible. For example, 50 metre pools for competition can serve more than one council area, while 25 metre pools can support local swimming lessons and wellbeing. General Victorian Government revenue can fund this stage.

The building component of this recommendation includes grants to local governments for at least one third of the cost to deliver core parts of new or expanded libraries and aquatic centres in growth areas. This includes contributions for 3 new aquatic centres and 4 new libraries. We estimate grants of up to \$50 million for each aquatic centre and \$25 million for each library.

We estimate that it will cost less than \$1 million to run the grants program using existing staff. General Victorian Government revenue and other infrastructure contributions (see [recommendation 37](#)) can fund this stage.

Our cost estimate excludes buying land as we assume local governments will prioritise using land they own. Local governments will also be responsible for operational costs.



Make government infrastructure more accessible

Complete priority public transport stop upgrades to meet legal accessibility requirements and fund further upgrades. Provide better public information on accessibility in government buildings.

The Victorian Government funds infrastructure and services for all Victorians to use. But not everyone can access them. Over one million Victorians have a disability.¹⁹⁰ Many people with disability have challenges using transport and accessing services.¹⁹¹ One in 5 Victorians with disability need help or have difficulty using public transport. One in 8 cannot use public transport at all.¹⁹²

People experience different mobility challenges in their life. This includes people with injuries, people using prams and older people.¹⁹³ Those who face barriers to services have a higher risk of social isolation, unemployment and poor health.¹⁹⁴

Most public transport is still not accessible

The Victorian Government missed the 2022 legal deadline to make all public transport stops accessible.¹⁹⁵ Some train stations are not accessible for people using a wheelchair because they have steep ramps.¹⁹⁶ Almost half of regional and one third of Melbourne's bus stops are not wheelchair accessible.¹⁹⁷ Over 70% of tram stops are not level access.¹⁹⁸

When tram stops are upgraded to level access, they reduce pedestrian injuries from nearby road accidents by 81%.¹⁹⁹ This includes fewer accidents between cars and people getting on or off trams.²⁰⁰ The government upgraded 12 stops in 2024–25 and aims to upgrade 2 stops in 2025–26.²⁰¹ At this rate, it will take 166 years to complete all tram stop upgrades.²⁰²

In addition to accessible public transport stops, the government is required to make all trains and trams accessible by 2032.²⁰³ Over half of trams are not accessible, with steps and high floors.²⁰⁴ The government is building 100 low-floor trams, of which the first will start running from 2025. But it needs to replace 186 more.²⁰⁵

The government has published a framework to prioritise the most important transport accessibility upgrades.²⁰⁶ It has not funded these yet. The government should fund the highest priority stop upgrades and aim to finish them by 2030. It should also consult with people living with disability to identify the next wave of accessibility upgrades and approve funding for these.²⁰⁷

Better information can help people manage barriers to access

In Victoria, 26% of people with disability have difficulty accessing buildings or facilities.²⁰⁸ The Victorian Government's universal design policy outlines design principles that can improve accessibility for new buildings.²⁰⁹ But many existing buildings are still not accessible.

Accessibility information allows people to decide how they travel outside their home. It lets them know what to expect before going to a new place. Parks Victoria publishes accessibility information for 21 local, state and national parks.²¹⁰ Melbourne's SmartBuses have real-time information and trams have brightly coloured QR codes to deliver audio information to blind and low vision people.²¹¹ But not all government services do this.

In 2022, the government audited TAFE campuses to identify potential accessibility upgrades.²¹² It should assess accessibility of all buildings that deliver government services by 2030. The findings should inform published accessibility information for government buildings and services. For example, Canada's Rick Hansen Foundation runs an accessibility rating system that awards more points for features that improve

access.²¹³ Information on building accessibility should be developed with people living with disability and updated as upgrades are made.

Cost range, timing and funding

We estimate this recommendation will cost around \$1.5 billion over 10 years.

This includes up to \$1.5 billion for bus and tram stop upgrades. The Victorian Government can also spend \$1 million to \$5 million on an information tool that explains how to access all government buildings and services. General government revenue can fund this recommendation.

More than 50% of Victoria's bus stops meet the access standards.²¹⁴ We estimate upgrading the rest will cost \$200 million to \$300 million. The cost of upgrading tram stops is likely to be substantially higher.²¹⁵

Our cost estimate for accessible tram and bus stops does not include new footpaths or other supporting infrastructure. Modular builds or pre-built parts may reduce costs and speed up installation in some places.²¹⁶ The Victorian Government can explore building innovations for remaining bus and tram stops.



Rezone locations near existing infrastructure for more home choices

Change all relevant planning schemes to rezone for more homes in established areas of Victoria's cities and reach housing targets. More homes should be close to public transport and open space, with good access to services.

More compact cities deliver benefits

Our research in *Choosing Victoria's future* found that Victorians will be better off in more compact cities.²¹⁷ Compact cities use less land and make better use of infrastructure.²¹⁸ People have more affordable home choices in more places. More transport options let people easily reach work, schools, shops and services.²¹⁹ They can walk or cycle to more places which encourages them to do so more often.²²⁰ This helps keep people healthy. It also reduces air pollution and greenhouse gas emissions from transport.²²¹

For decades, Victorians built more homes in new suburbs than in established ones. Most middle suburbs in Melbourne and Victoria's regional cities are very low-density compared to overseas cities of a similar size.²²² They do not have many housing options apart from detached homes and a few townhouses.²²³ Planning rules limit how many homes developers can build in established suburbs. Heritage controls also make it hard to build new homes in these areas.²²⁴

Rezoning allows more homes near existing infrastructure

The inner and middle suburbs of Victoria's cities already have good access to infrastructure including schools and parks.²²⁵ The Victorian Government has local government housing targets for 70% of new homes in established suburbs.²²⁶ Rezoning these places will allow developers to build more homes near existing infrastructure.

The government has reviewed access to jobs, services and public transport in and around Melbourne's activity centres.²²⁷ It is developing activity centre plans, Suburban Rail Loop precinct plans and planning rule changes in and around some of these areas, but there is an opportunity to do more.²²⁸

Research shows that Melbourne's activity centres and areas around public transport routes and train stations can have up to 5 million more homes if planning zones change.²²⁹ The government should work with local governments in Melbourne and regional cities to plan and guide rezoning, building on work that has already been done.²³⁰ Plans can show places where people have easy access to jobs and are close to public transport and open space.²³¹ They can exclude areas with high heritage or environmental value, as well as high flood risk areas (see [recommendation 29](#)).²³²

The government should then do the rezoning.²³³ This can include changing rules to reduce minimum parking requirements in new developments.²³⁴ The government can start with areas around tram extensions in Melbourne's middle suburbs that could encourage 32,000 new homes (see [recommendation 8](#)). It can help Ballarat, Bendigo and Geelong rezone priority places, such as near train stations.²³⁵

Fast-growing established suburbs in Melbourne and regional cities might need other infrastructure like open space, walking paths and community facilities.²³⁶ The government can use infrastructure sector plans and reformed infrastructure contributions to support more homes in rezoned areas (see [recommendations 36](#) and [37](#)).²³⁷

Other development incentives can work alongside rezoning

Changing planning zones does not guarantee that developers will build more homes.²³⁸ The government can offer incentives to developers in rezoned locations. It is already speeding up planning approvals in activity

centres.²³⁹ It can also give rights to develop unused air space above train stations or car parks, or help arrange financing to share risk among project investors. Its land development agency can partner with developers and local governments to make sites ready for new homes.²⁴⁰

The government has not typically monitored the effects of zone changes on home building. It should measure and report how well these work with housing targets to generate more new homes in good locations.²⁴¹ It should keep monitoring the impact of rezoning to identify potential future changes.²⁴²

Cost range, timing and funding

We estimate that this recommendation will cost \$10 million to \$15 million to implement over 5 years.²⁴³ This covers 25 more places for the government to rezone following its work on activity centres. The cost includes consulting with communities and local government, reviewing existing zoning around public transport and other amenities, developing rezoning criteria, amending the planning scheme and monitoring growth in housing. Existing staff can carry out much of this work.

General government revenue can fund the cost of rezoning.

Rezoning might also create indirect benefits and costs to government and landowners. For example, rezoning is likely to increase the land value and require upgrades to existing infrastructure to support more homes. However, we found that building infrastructure in new growth areas can cost up to 4 times more than in established suburbs.²⁴⁴ Where new infrastructure is needed, redesigned infrastructure contribution schemes can help fund the cost of new infrastructure (see [recommendation 37](#)).



Make more homes affordable near existing infrastructure

Choose a consistent mechanism that makes more new homes affordable for low-income households, close to public transport, open space and services.

More Victorian households are struggling to find an affordable home

Many low-income households in Victoria are finding it hard to afford a home. Rent in the private market is often too expensive.²⁴⁵ Affordable housing helps people avoid poverty, allows more businesses to hire local workers and supports more inclusive places.²⁴⁶

There is no single agreed definition of housing affordability, but it generally refers to a person's ability to pay for their home.²⁴⁷ For low-income households, housing is usually considered affordable when it costs less than 30% of their income.²⁴⁸ This helps them avoid housing affordability stress.²⁴⁹

In 2021, Melbourne's inner and middle suburbs had a shortage of 71,600 rental homes affordable for low-income households. Ballarat, Bendigo and Geelong had a combined shortage of 8,700 homes.²⁵⁰ Current affordable housing approaches are inconsistent across Victoria and need project-specific negotiations. They also do not produce enough homes.²⁵¹

Our research in *Choosing Victoria's future: 5 urban development scenarios* shows that more compact cities can help more people find an affordable home in different places.²⁵² These cities have more homes close to existing infrastructure.²⁵³ They offer more travel options, so people can easily get to work, schools, shops and services.²⁵⁴

In *Our home choices: how more housing options can make better use of Victoria's existing infrastructure*, we show that most homes in established suburbs of Melbourne are unaffordable for households even on moderate incomes.²⁵⁵ Many households must move to new suburbs to buy a home. These places often need more expensive new infrastructure.²⁵⁶

The government can encourage more affordable housing to better use existing infrastructure

When the Victorian Government rezones locations near existing infrastructure for more home choices (see [recommendation 7](#)), it can consider how to make housing more affordable for low-income households.²⁵⁷ Developers can return some of the benefit of higher land values by building affordable homes in rezoned areas.²⁵⁸ They can factor this in when they buy new sites.²⁵⁹

The government can encourage developers to build more affordable homes near existing infrastructure in different ways. For example, it can offer incentives for developers to include affordable homes in their developments or make cash contributions.²⁶⁰ The government can also buy land and combine it with land it already owns to build affordable homes.²⁶¹ South Australia and New South Wales are taking a similar approach (see [case study – Affordable homes in other Australian jurisdictions](#)).

The government can start this in inner and middle Melbourne, Geelong, Ballarat and Bendigo, in places that already have infrastructure. More low-income households might then afford to live close to existing public transport, services and open space. This can improve their health and wellbeing.²⁶²

There are many ways the government can encourage affordable housing. To help decide the best approach for Victoria, the government can:

- work with developers, local governments and registered community housing providers to decide how to include affordable homes in new developments while making sure the development is financially viable²⁶³

- decide who is eligible for an affordable home and how much they should pay²⁶⁴
- explore how homes can stay affordable to low-income households and viable for building owners over time (for example, affordable housing in the United States has to stay affordable for at least 30 years)²⁶⁵
- model how many affordable homes can be built in rezoned areas by capturing some of the higher land value from rezoning
- trial the preferred affordable housing approach on government-owned land, including in state-led precincts and activity centres
- decide whether to put affordable home rules into planning schemes and the *Planning and Environment Act 1987*²⁷⁵
- find ways to develop underused public land and combine lots in rezoned locations for affordable homes.²⁷⁶

Cost range, timing and funding

We estimate this future option will cost \$1 million to \$5 million. General government revenue can fund this future option. This includes costs for government staff to consult and model the impact of policy to decide on the best approach. It also includes costs to trial the approach.

The Victorian Government has already set up the Development Facilitation Program which fast-tracks project approvals for developments where 10% of new homes are affordable.²⁷⁷ This can help to achieve housing targets as part of *Victoria's housing statement*.²⁷⁸

Case study

Affordable homes in other Australian jurisdictions

Governments across Australia are exploring ways to grow the supply of affordable homes. Schemes can include homes to buy or rent, or a combination of both.²⁶⁶

The South Australian Government introduced the *Housing plan for South Australia* in 2005. The scheme requires 15% of homes in large residential developments to be affordable. Initially, the requirement applied to government land releases in outer suburbs, but the policy now applies to urban renewal sites. Over the 10 years to 2015, the scheme delivered 5,485 affordable homes. This was around 17% of new supply in major residential projects.²⁶⁷ Projects included a mix of social and affordable rental homes as well as low-cost home ownership.²⁶⁸

Landcom, the New South Wales Government's land development agency, has prioritised building more affordable homes.²⁶⁹ They sell new homes to households earning low to moderate incomes and build affordable rental homes with community housing providers.²⁷⁰ In the City of Sydney, all developers have to contribute towards affordable rental housing. This helps make sure that low-income households can still afford to live and work in the city.²⁷¹ Developers can include affordable homes in their projects or make a cash contribution instead.²⁷² Community housing providers then manage the rental homes. They also receive the cash contributions.²⁷³ The scheme has delivered around 900 social homes in Ultimo-Pyrmont. It is expected to deliver over 300 affordable homes in Sydney's Green Square.²⁷⁴

Phase out residential stamp duties

Over the long term, phase out residential stamp duties and phase in residential land tax.

Stamp duty influences home choices, infrastructure costs and use

Stamp duty is a tax on the transfer of land ownership that the Victorian Government collects when people sell homes.

Stamp duty discourages people from moving house as their lives change. Instead, it encourages homebuyers to look for a larger ‘forever home’ that they hope will meet all their future needs.²⁷⁹ These homes are often only affordable in new suburbs where land is cheaper.

Building infrastructure for homes in new suburbs costs more than in established suburbs.²⁸⁰ New suburbs need roads, utilities, schools and public transport. This means stamp duty indirectly increases infrastructure costs to government.

Stamp duty is a penalty for moving house to be close to family or for a new job.²⁸¹ It might stop some people from moving, which means they need to travel further than they otherwise would.²⁸² This creates more traffic congestion and crowding on public transport which is costly for the government to fix.

A residential land tax can improve economic productivity

The Victorian Government can phase out stamp duties on homes over time. This would remove the upfront tax on buying a home and encourage homebuyers to look for a house that suits their current needs. It would also make it easier for people to move to places where jobs are available. This makes it easier for businesses to attract staff and improves economic productivity.²⁸³

To replace the tax revenue lost from stamp duty, the government can expand land tax to cover all residential properties.²⁸⁴ Land tax is a yearly charge based on land value rather than a single upfront payment. It can provide a steadier revenue stream for governments and does not deter people from moving house.²⁸⁵

Modelling suggests that replacing stamp duty with land tax can increase home ownership rates among young people.²⁸⁶ Land tax can also encourage higher housing densities, helping cities become more compact.²⁸⁷ Providing infrastructure for a more compact city is more efficient and cheaper for government.²⁸⁸ This means moving to a land tax can help reduce the cost of providing infrastructure for new housing.

Many stakeholders support this reform.²⁸⁹ Others support a value capture mechanism.²⁹⁰ Land tax is an effective way for the government to capture the benefits created by infrastructure investments.²⁹¹

The government is already making some changes to stamp duties. Over 10 years, a land tax will replace stamp duty for commercial and industrial properties.²⁹² The government is also expanding stamp duty concessions for off-the-plan apartments, townhouses and units for a 2-year period.²⁹³ Removing stamp duty for all residential properties would complement these measures, making it easier for people to buy and sell a home.

Phasing out stamp duty can happen over the long term

Stamp duty is a major source of government revenue. Stamp duties raised \$9.2 billion in the 2024–25 financial year.²⁹⁴ Moving away from stamp duty to land tax needs to be carefully phased over the long term to avoid disruptions to government revenue and the housing market.²⁹⁵

There are several sensible ways for the Victorian Government to make this change.²⁹⁶ For example, the ACT Government is gradually reducing stamp duty rates while increasing land tax over 20 years.²⁹⁷ Research shows that these reforms are not causing rent increases.²⁹⁸ This suggests that it is a good model for the Victorian Government to consider.

Cost range, timing and funding

We estimate this future option will cost \$1 million to \$5 million. General government revenue can fund this work.

The cost includes developing a legislative impact assessment, consulting with stakeholders, and undertaking processes to amend and adopt new legislation. Our estimate allows for expanding government systems to allow for an increase in residential land tax collection, while also phasing out residential stamp duties. The government can use existing staff to do this work.



Extend Melbourne's trams to encourage more new homes nearby

Increase services on key tram routes in activity centres that the government selected for more housing development. Extend trams in Melbourne's established suburbs in areas that can support more new homes. Rezone land around the extended tram lines so more homes can be built.

Trams can support more homes in inner and middle Melbourne

The Victorian Government wants to build 800,000 homes over the next decade, with 70% in established suburbs.²⁹⁹ Building in these areas can improve access to jobs, schools, shops and services.³⁰⁰ It can also make better use of Victoria's existing infrastructure.³⁰¹ Yet only half of new homes approved between 2022 and 2024 were in established suburbs.³⁰²

In the activity centres that the government selected for more housing development, some tram routes are already crowded.³⁰³ Adding more tram services can encourage more homes and help reduce crowding, road congestion and transport emissions.³⁰⁴

The government should add around 300 peak hour services every week on key routes. It should add them where more homes are planned and trams are already very busy, like routes 86, 96 and 109.³⁰⁵ It should also run more evening and weekend tram services so people who live near tram lines depend less on cars and new housing developments need fewer parking spaces.³⁰⁶

Extending tram lines in established suburbs can make the most of Melbourne's tram network and encourage more development.³⁰⁷ Expanding the tram network can also complement the government's plan for network reform to redistribute trams and routes. This helps to increase capacity on the busiest parts of the tram network and improve services to established suburbs.³⁰⁸

Improving tram services and extending the network to the government's priority precincts and activity centres can also encourage residential, institutional and commercial development. Tram services do not reach some of these places, like Fishermans Bend, Moorabbin and Chadstone.³⁰⁹

The government should deliver priority tram extensions to encourage new homes

The Victorian Government should complete a detailed assessment of tram extensions in Melbourne's established suburbs. It should prioritise extensions that can encourage new homes, improve access to jobs and increase public transport use. We propose 8 tram extensions for the government to start building by 2030 based on their potential to meet these needs (see Figure 5):

- Arden trams:
 - Swanston Street to Kensington
 - Spencer Street to Flemington Bridge
- Fishermans Bend trams:
 - Anzac train station to Fishermans Bend North
 - Southern Cross Station to Fishermans Bend South
- Middle suburbs trams:
 - East Malvern to Hughesdale via Chadstone
 - East Brighton to Moorabbin
 - Melville Road to Batman train station in Coburg
 - Wattle Park to Burwood East.

The 4 middle suburbs tram extensions can support around 32,000 new homes in these areas and increase daily public transport trips by 17,500.³¹⁰ By encouraging new homes in established suburbs instead of growth areas, these projects can save over \$1 billion in public infrastructure costs.³¹¹ We estimate that they can return \$1.10 to \$1.90 for every dollar invested.³¹²

These projects will connect people to trains at East Malvern, Moorabbin, Batman and the future Burwood station on the Suburban Rail Loop. They can improve access to other activity centres in middle suburbs by up to 9%.³¹³ Residents would travel up to 5% more quickly and reach nearly 15,000 more jobs in 45 minutes.³¹⁴

The government plans for 80,000 people to live in Fishermans Bend by 2050.³¹⁵ In Arden, it is planning for 15,000 residents by 2051.³¹⁶ We modelled tram extensions that make the most of the Metro Tunnel's new stations and capacity by redirecting some St Kilda Road trams to these precincts.³¹⁷ The Fishermans Bend tram extensions could allow 19% more people to reach the precinct within 45 minutes.³¹⁸ They could return \$1.30 to \$3.10 for every dollar invested.³¹⁹ The Arden tram extensions can increase daily public transport trips by 17,000.³²⁰

These extensions can give developers the confidence to build more homes in these precincts rather than outer suburbs.³²¹ They can also help the government save on infrastructure costs compared to building more homes in outer suburbs.³²²

We identified 2 more tram projects for the government to consider delivering from the mid-2030s, once it has delivered the first 8 projects. These include an extension from Airport West to Melbourne Airport and a new route from Highpoint to Sunshine.³²³ These projects would support more new homes in Melbourne's inner west. Residents could reach up to 52,000 more jobs in 45 minutes.³²⁴ A tram connection would make all public transport journeys to Melbourne Airport 10% faster.³²⁵

Extending tram lines will only encourage development if supported by planning rules. The government should update local planning schemes to enable more homes around the new tram extensions and at the end of the existing tram lines (see [recommendation 7](#)).

Cost range, timing and funding

We estimate it will cost \$4 billion to \$5.7 billion over 5 years to extend the 8 priority tram lines. General government revenue can fund this work. The Victorian Government can also seek additional funding from the Australian Government. The Australian Government has funded similar projects, such as the Canberra and Gold Coast light rail projects.³²⁶

Our cost estimates cover all infrastructure and additional trams, and include:

- \$1 billion to \$1.5 billion for 2 tram extensions in Fishermans Bend
- \$1 billion to \$1.6 billion for 2 tram extensions in Arden, including level crossing removals and an upgraded bridge across Moonee Ponds Creek
- \$1.5 billion to \$2 billion for 4 tram extensions in Melbourne's middle suburbs
- \$450 million to \$600 million for additional trams and power upgrades on tram routes 86, 96 and 109.

Each tram line can be extended separately, and costs range between \$200 million and \$1 billion each. Delivering all the extensions in middle Melbourne can save over \$1 billion in public infrastructure costs compared with building in new outer suburbs.

We have provided a broad cost range as the projects can be delivered in various ways to provide best value for money. This requires further analysis by the Victorian Government. Our cost estimates are approximate for each upgrade.

Extended tram lines will then cost the government \$30 million to \$40 million each year to operate.³²⁷ This includes asset renewal of the tram corridor and rolling stock. It also includes maintenance costs. Running

more services on existing tram routes and extra evening and weekend trams where more homes are planned will cost another \$40 million to \$60 million each year. The extra public transport fares can help offset the operating costs.

Figure 5: Tram extensions can make the most of Melbourne’s tram network, and support priority precincts and activity centres



Tram routes with extensions	Additional weekday public transport boardings	
	Year 2031	Year 2041
Arden tram extensions (Routes 3, 5)	14,600	17,000
→ Route 3 (west) – Kensington to Malvern East	4,900	5,200
→ Route 5 – Malvern to Flemington Bridge Station	9,700	11,800
Fishermans Bend tram extensions (Routes 11, 67)	13,100	33,000
→ Route 11 – West Preston to Fishermans Bend South (Plummer Street)	3,900	15,500
→ Route 67 – Carnegie to Fishermans Bend North (Turner Street)	9,200	17,500
Middle suburbs tram extensions	16,100	17,500
→ East Malvern to Hughesdale via Chadstone (route 3 (south) – Melbourne Uni to Hughesdale via Chadstone)	4,800	5,600
→ Melville Rd to Batman Station in Coburg (route 58 – Toorak to Batman)	1,800	2,000
→ East Brighton to Moorabbin (route 68 – Kew to Moorabbin)	4,500	4,700
→ Wattle Park to Burwood East via Burwood SRL train station (route 70 – Docklands Stadium to Burwood East Tally Ho)	5,000	5,300

Source: Infrastructure Victoria.

Recommendation 9

Run faster bus services, more often, in Victoria's largest cities

Run buses more often, for longer hours, and give buses priority on the road. In stages, straighten out existing bus routes so they are fast and direct. Add routes in growth areas that do not have any services.

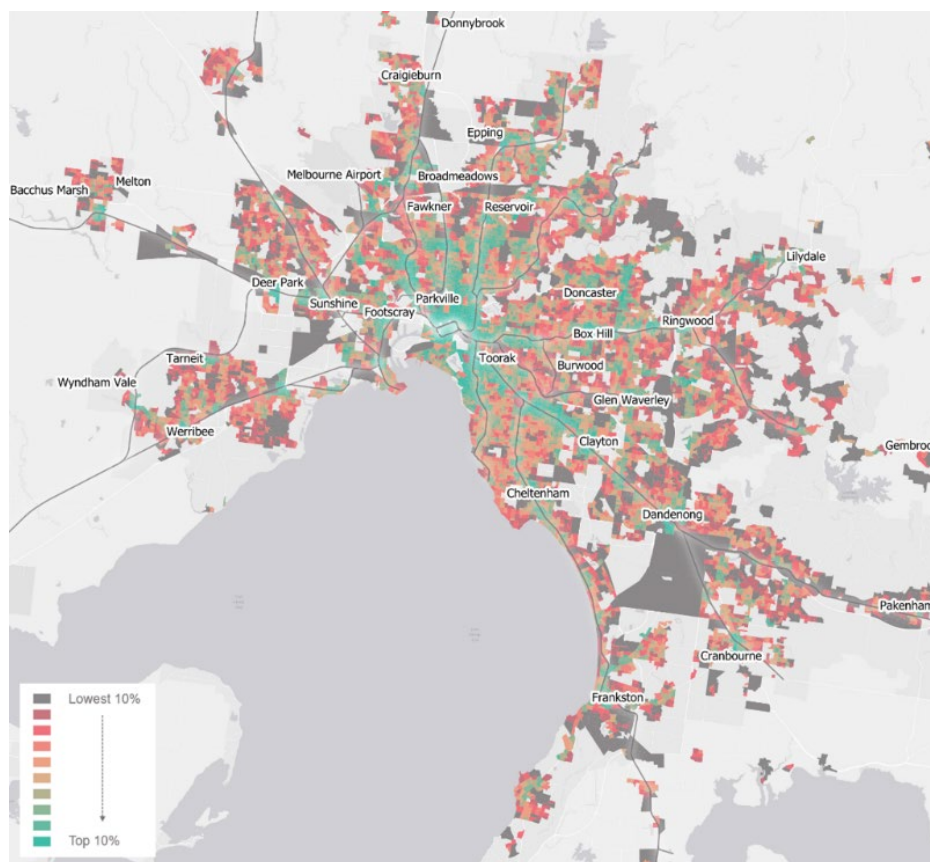
Bus services can be much better

Many Melbourne and regional city bus services have not changed much since they began.³²⁸ The Victorian Government rarely revises bus services to match changes in people's needs and travel destinations.

More people use buses when they offer better quality services.³²⁹ More than a third of Melburnians have never caught the bus, even though 8 out of 10 homes are within 400 metres of a bus stop.³³⁰ The most disadvantaged areas commonly have the least public transport. This is most often in growth areas (see Figure 6).³³¹ Many bus stops do not meet accessibility standards, meaning some people cannot use them (see [recommendation 6](#)).³³²

High-frequency bus services help support growing communities, including new activity centres.³³³ About a third of Melburnians wait more than 20 minutes for a nearby public transport service on an average weekday.³³⁴ The wait is even longer for people living in Ballarat, Bendigo and Geelong.³³⁵

Figure 6: Outer and new growth areas commonly have the fewest public transport services



Level of public transport service provision per population per area. Top 10% indicates the highest level of public transport provision. Source: Infrastructure Victoria analysis of General Transit Feed Specification (GTFS) and population data. See Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 79, accessed 18 July 2025.

Buses should run more often, start earlier and finish later

The Victorian Government should start running buses more often. It should upgrade services so that by 2030, 80% of people in Melbourne, Geelong, Ballarat and Bendigo live within 800 metres of a public transport service that arrives at least every 20 minutes.³³⁶ It should also introduce high-frequency buses that run every 5 to 10 minutes on key routes to major activity centres. In growth areas, the government should add new bus routes as well as run buses more often.³³⁷

Our research found that more frequent bus services in Melbourne deliver around \$1.20 in benefits for every dollar spent.³³⁸ Running buses more often delivers similar benefits to one of Victoria's big road or rail projects, but is far cheaper.³³⁹ It also means people can get to train stations, shopping and entertainment precincts more easily.³⁴⁰ Thousands of extra people used buses after previous service changes ran them more often (see case study – [Bus reform and network improvement success stories](#)).

Buses should start earlier in the day and finish later in the evenings, especially on weekends. This provides transport choices for industrial, retail and healthcare workers, who sometimes need to get to work early or return home late at night.³⁴¹ Our community research showed that people prefer bus services to run between 6am and 11pm every day.³⁴²

Bus routes should be more direct for faster travel times

Many of Victoria's bus routes are indirect.³⁴³ Routes have been designed so that bus stops are as close as possible to people's homes.³⁴⁴ This slows down buses as they wind through local streets. Traffic also delays buses. If nothing changes, buses on 84% of Melbourne routes will run slower by 2036.³⁴⁵

The Victorian Government should redesign bus routes to make them more direct. This can start in north and north-east Melbourne, where the government has already consulted the community on bus route changes.³⁴⁶ The government should give buses priority on the road to improve travel times. This can include new bus lanes and traffic signal priority for buses.³⁴⁷ Travel times can be shorter if bus timetables are coordinated with train and tram timetables.³⁴⁸

These changes will have a big impact for many Victorians who experience poor bus services today.³⁴⁹ They can immediately make buses more attractive to use. People can use cars less, save money, and lower their transport emissions.³⁵⁰

Cost range, timing and funding

We estimate that improving bus services in Victoria's largest cities will cost \$1 billion to \$1.5 billion over 5 years. General government revenue can fund this recommendation.

Better bus services in Victoria's largest cities can be delivered as a series of separate smaller packages over time, rather than a single project.

Our cost estimate includes \$0.8 billion to \$1.2 billion to create around 100 kilometres of new bus lanes.³⁵¹ We also include \$200 million to \$300 million for minor upgrades to the road network to support new bus routes. This includes new bus stops, and intersection upgrades like traffic signalling and short bus lanes to prioritise buses. The Victorian Government can upgrade traffic signalling for buses at the same time as it improves traffic control systems on arterial roads (see [recommendation 42](#)).

In addition to infrastructure costs, running more bus services will cost the government \$550 million to \$750 million each year to operate. This includes buying and maintaining the bus fleet and depot upgrades. Public transport fares can help offset the operating costs of improved bus services.

Bus reform and network improvement success stories

The Victorian Government has successfully delivered previous local route and network bus reforms. Those reforms provided more bus services at different times, more direct services to key destinations and added or extended bus routes to new places. The changes typically reduced waiting times, gave people better access to jobs and services, and increased passenger numbers. The government can build on these success stories to deliver more buses, more often to where people need to go.

Areas	Changes	Benefits
Chadstone to Dandenong – key activity centres	<p>Better weekend services from November 2024:</p> <ul style="list-style-type: none"> • More Saturday afternoon services on route 800, with frequency improved from a service every 120 minute every 30-40 minutes. • More than 50 Sunday services added on route 800, when previously there were none.³⁵² 	<ul style="list-style-type: none"> • 200% more passengers on Saturdays over the first 6 months. • 1,100 passengers using the bus on Sundays.³⁵³
Fishermans Bend – key activity centre	<p>Network reform in October 2023:</p> <ul style="list-style-type: none"> • Routes 235 and 237 connected to Southern Cross station rather than through the city from October 2023. • Services reallocated to provide a frequency of 8 minutes at peak times.³⁵⁴ • Route 235 services ran later (to midnight) on weekends, and at 20 minute intervals, rather than every 40-60 minutes. 	<p>This upgrade resulted in:</p> <ul style="list-style-type: none"> • 90% more passengers on Saturdays. • 240% more passengers on Sundays.³⁵⁵ • Passengers who previously carpooled or used ride share services took the bus instead, reducing congestion.³⁵⁶
Yarra Valley – outer suburbs	<p>Network reforms in November 2023:</p> <ul style="list-style-type: none"> • Significantly simplified bus routes and timetables. • Removed poor performing bus routes and sections that overlapped with train services. • Improved weekend service levels. 	<p>Reforms delivered:</p> <ul style="list-style-type: none"> • 10% increase in weekday passengers. • 35% increase in passengers on Saturdays. • 40% increase in passengers on Sundays.³⁵⁷
Armstrong Creek and Torquay – peri-urban areas	<p>More services and revised routes from June 2024:</p> <ul style="list-style-type: none"> • 500 extra weekly bus services, including on evenings and weekends.³⁵⁸ • New bus routes to Torquay and Jan Juc. • Rerouted services into Armstrong Creek. 	<p>Since the network was reformed:</p> <ul style="list-style-type: none"> • 20% increase in weekday passengers. • Saturday and Sunday passenger numbers increased by 15%. • 100,000 more trips taken.³⁵⁹ • Number of jobs accessible within 60 minutes by public transport increased by 75% in Torquay and 50% in Armstrong Creek.³⁶⁰
Deakin University Burwood – middle suburbs	<p>Network reforms in October 2023:</p> <ul style="list-style-type: none"> • Consolidation of Box Hill to Deakin University bus services to one shuttle bus route (201). • Improved bus connections to Union station. • Increased interpeak and weekend bus services. 	<p>Since the network was reformed:</p> <ul style="list-style-type: none"> • 30% more weekday passengers. • 40% more Saturday passengers. • 20% more Sunday passengers.³⁶¹

Build a new bus rapid transit network

Build a new bus rapid transit network in Melbourne, starting with routes that connect train stations and busy destinations. Extend the new Eastern Busway along Hoddle Street.

Melbourne needs a new type of public transport service

Melbourne has built many new homes on the edges of the city, often far away from train lines.³⁶² People who live in these areas have no convenient public transport alternative to driving. This limits their travel options.³⁶³

Congestion is also a growing problem. The city's roads will struggle to handle more traffic.³⁶⁴ Even with new and wider roads, motorists face a 46% increase in congestion between 2026 and 2036.³⁶⁵ Our commissioned modelling forecasts that road congestion will be particularly high in growth areas in Melbourne's north and west.³⁶⁶

Bus rapid transit networks offer an alternative to travelling by car. They provide a faster and more frequent service than Melbourne's existing bus network as they use larger buses that run along dedicated or separated lanes. Buses stop at stations with platforms, real-time information, shelter and seating.³⁶⁷

Melbourne is well suited to a new bus rapid transit network. It will provide better public transport to outer suburbs and growth areas. It can reduce reliance on cars and connect with Melbourne's train services.³⁶⁸ It can also drive down transport emissions to help achieve Victoria's net zero emissions targets.³⁶⁹

Bus rapid transit can encourage more compact development along public transport routes.³⁷⁰ It can also help attract investment in the priority precincts the government identified in *Victoria's housing statement*.³⁷¹ These services already run in other Australian cities like Sydney, Brisbane and Adelaide.³⁷²

Bus rapid transit routes can support travel in outer and new growth suburbs

The Victorian Government should start planning for bus rapid transit by assessing suitable routes in detail. It should then secure land and build the network.

We have prioritised 6 routes to progress by the early 2030s, based on how many people we expect to use the services. These include 5 new routes from Tarneit to Highpoint, Point Cook to Watergardens, Melton to Broadmeadows, Huntingdale to Upper Ferntree Gully and Endeavour Hills to Southland (see Figure 7).³⁷³ Together, these 5 routes could attract over 57,000 new trips a day by 2036.³⁷⁴

The government should also deliver a bus rapid route from Mitcham to Melbourne's city centre. This will require only minor works to extend the current peak-only bus lanes along Doncaster Road and connect into the new Eastern Busway.³⁷⁵ We recommend that buses on all routes run every 5 minutes during peak hours and every 10 minutes at other times.³⁷⁶ Services should also use zero emissions buses.³⁷⁷

The government can deliver bus rapid transit infrastructure at a fraction of the cost of trams or trains to these areas.³⁷⁸ Our analysis of possible bus rapid transit routes in Melbourne shows that they deliver benefits of at least \$2.20 for every dollar invested.³⁷⁹ This includes travel time savings to passengers worth around \$1.5 billion to \$2.1 billion.³⁸⁰

The Eastern Busway will be Melbourne's first bus rapid transit corridor, but it ends at Hoddle Street.³⁸¹ The government should make the most of its investment by extending the busway along Hoddle Street, after completing a detailed assessment. This will improve reliability and efficiency for buses travelling from suburbs like Doncaster and Templestowe, including our proposed bus rapid transit service from Mitcham.

The government can also deliver bus rapid transport routes in Melbourne's north to offer another transport choice to access jobs and services. We set out another 5 routes that the government can deliver after the early 2030s in our report *Fast, frequent, fair: how buses can better connect Melbourne*.³⁸²

Figure 7: Melbourne is well suited to a bus rapid transit network that runs along dedicated lanes



Source: Infrastructure Victoria.

Table 1: Bus rapid transit boardings by route

Bus rapid transit route	Total daily boardings, 2036
West Tarneit – Highpoint (Maribyrnong)	11,500
Melton – Broadmeadows	11,400
Point Cook – Watergardens (Sydenham)	17,600
Huntingdale – Upper Ferntree Gully	9,300
Endeavour Hills – Southland (Cheltenham)	7,600
Hoddle Street Busway* including 15,700 boardings on Mitcham to City route 907	57,200

* Total daily boardings of all bus services that would use the Hoddle Street Busway in 2036.

Source: WSP, [Better buses for Melbourne strategic modelling – scenario report](#), report to Infrastructure Victoria, 2023.

Cost range, timing and funding

We estimate that building the first 6 bus rapid transit routes and extending the Eastern Busway will cost \$3 billion to \$3.7 billion over 5 years.³⁸³ General government revenue can fund this recommendation. The extra public transport fares can help partially offset the cost of operating the new bus rapid transit network. The Victorian Government can also source additional funding from the Australian Government.³⁸⁴

This cost range includes \$200 million to \$900 million to build each of the new bus rapid transit routes, depending on the route selected. Minor construction works on Doncaster Road for the Mitcham route to connect to the Eastern Busway are estimated to cost around \$10 million. We estimate extending the Eastern Busway along Hoddle Street will cost \$500 million to \$1.4 billion, depending on its final design. Each route can be delivered as a separate project, rather than all routes together, without adding to the cost.

The 6 bus rapid transit services will then cost a combined \$100 million to \$125 million every year to operate.³⁸⁵

Extend metropolitan trains and run more services in Melbourne's west

Extend and electrify metropolitan trains to Melton. Build 2 more tracks from Sunshine to Caroline Springs and new train stations at Thornhill Park and Mount Atkinson. Reallocate V/Line trains that serve Melton to other areas in Melbourne's west and regional Victoria. Deliver a new train station at Altona North and rezone nearby land.

Melbourne's western growth areas are growing but they have little public transport

Melbourne's west is growing rapidly. By 2041, over 860,000 people are expected to live there, an increase of almost 450,000 since 2018.³⁸⁶ But new suburbs in these places do not have good roads or public transport.³⁸⁷

The metropolitan train network does not reach many of these communities. They have few bus services, and the regional trains that do stop are increasingly crowded.³⁸⁸ This means many residents must use cars to get to work, school or other activities. In Melbourne's outer suburbs and new growth areas, 63% of residents drive to work compared to 32% in inner Melbourne.³⁸⁹

More car use means busier roads and worse air quality.³⁹⁰ It can also put households who have no other transport options in financial stress.³⁹¹ Residents might have to take lower-paid jobs that do not match their skills because of poor access to public transport.³⁹²

Extending the train network can deliver better public transport for new suburbs

The Victorian Government should extend the metropolitan train network to Melton, Mount Atkinson and Deer Park. These places have strong population growth and plans for metropolitan activity centres, including the new Melton Hospital.³⁹³

By 2030, the government should:

- extend metropolitan train services from Sunshine to Melton by electrifying the Melton line
- build 2 more tracks to provide 4 tracks from Sunshine to Caroline Springs to allow for faster Geelong, Ballarat and Wyndham Vale V/Line services
- build 2 new train stations at Thornhill Park (Paynes Road) and Mount Atkinson (Hopkins Road) to support communities currently without rail access.

We prioritised Melbourne's west for more rail services based on projected passenger numbers, current and future road congestion and access to areas with fast job growth. We also considered government policies and plans like the Cobblebank and Sunshine priority precincts.³⁹⁴

Running trains more often on the Melton line, including the extensions, can help meet the travel needs of residents in Melbourne's west. For example, Melton residents could access 18,000 more jobs within 60 minutes by public transport.³⁹⁵

To deliver these benefits, the government should upgrade power and signalling on the Melton line and provide more services to reduce waiting times.³⁹⁶ Our strategic analysis shows that electrifying the Melton line delivers benefits of up to \$1.70 for every dollar invested. This assessment does not include new homes around existing stations or bus reforms to connect to new stations so overall benefits are likely higher.³⁹⁷ The government can prioritise this work alongside the planned \$4 billion upgrade to the 6 kilometres of rail around Sunshine station.³⁹⁸

The extensions would reduce congestion and travel times on many roads and trains during morning peak hours, including the Western Freeway.³⁹⁹ Our modelling shows that they would result in up to 16,000 more train trips and up to 9,000 fewer car trips each day by 2041.⁴⁰⁰

Train line extensions can provide network-wide benefits

Electrifying and extending the Melton line will allow V/Line trains that serve Melton to be reallocated to other areas. It will also allow the diesel V/Line trains to run express because Melton line stations would be served by electric metropolitan trains instead. This can make regional services to Ballarat and Geelong faster.

The government should assess which areas most need more trains. Our analysis suggests that the Wyndham Vale corridor is a priority. For example, if the V/Line trains that currently run to Melton on weekdays were sent to the Wyndham Vale corridor instead, trains could run every 10 minutes at stations like Tarnet. This would halve waiting times.⁴⁰¹ It would also be a first step to extend and electrify these services.

The government should also examine the Seymour train line for more train services (see [recommendation 12](#)).

A new station in Altona North can improve access to services and encourage new homes in Melbourne's inner west

The section of train line from Newport to Laverton via Altona North has the longest gap between stations on the metropolitan train network.⁴⁰² Altona North is a major activity centre.⁴⁰³ The government should build a new station there.

The new station would allow nearby residents reach 3 times more jobs within 45 minutes by public transport. It would also reduce travel times to the activity centre by around 10%.⁴⁰⁴ More trains would need to run to serve the station, providing extra weekend and evening services to passengers travelling from Footscray to Newport and Laverton to Werribee.⁴⁰⁵

Our recommendation to extend Melbourne's trams to encourage more new homes nearby (see [recommendation 8](#)) highlights that transport infrastructure investment can encourage more new homes. Rezoning land around a new Altona North station can have the same effect. The government should update local planning schemes to enable more homes around the new station.

Cost range, timing and funding

We estimate that this recommendation will cost \$4.3 billion to \$5.7 billion by 2030. The Victorian Government can consider a mix of funding mechanisms, including value capture. General government revenue is likely to be a major funding source. Public transport fares can help offset operating costs. The Victorian Government can also seek additional funding from the Australian Government.⁴⁰⁶

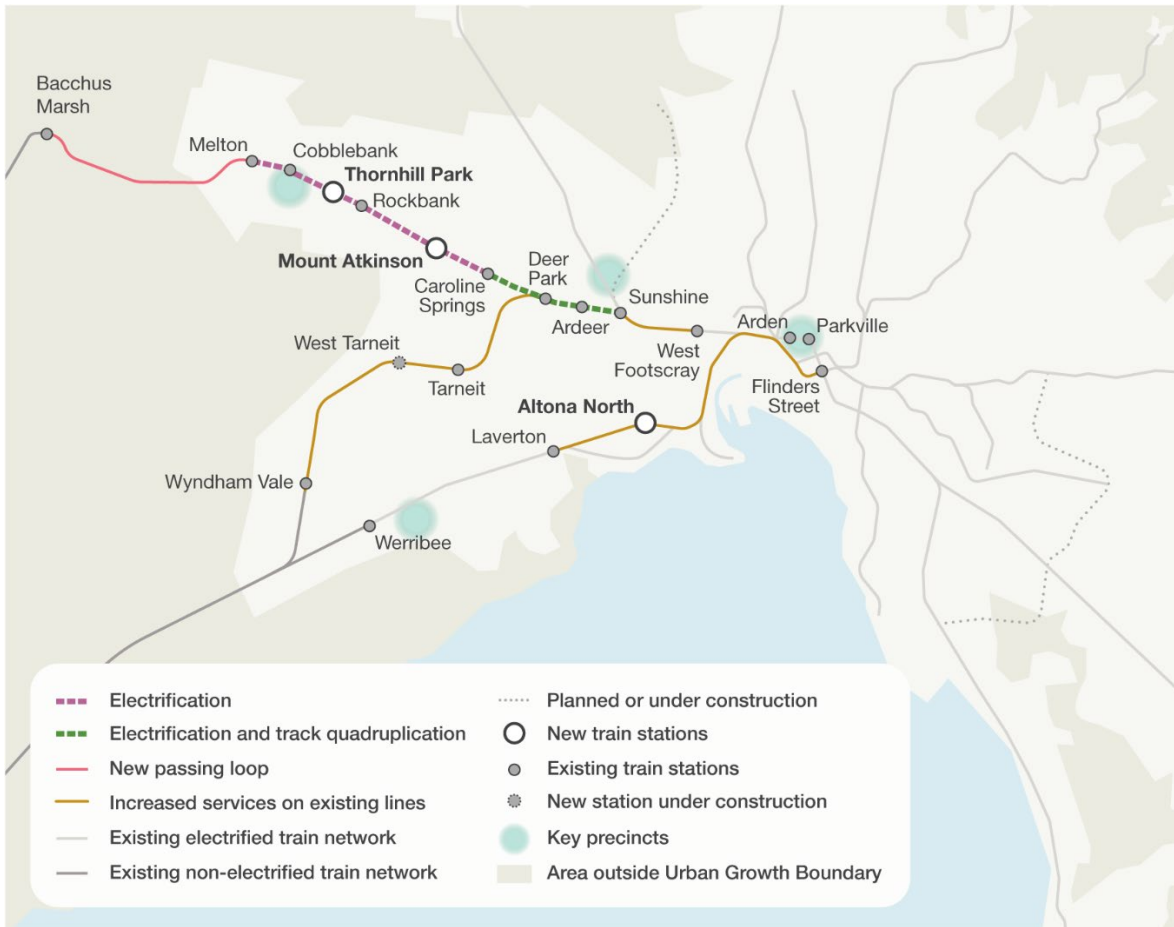
Our cost estimates include:

- \$4.2 billion to \$5.5 billion to upgrade the Melton line, build 2 extra tracks and 2 new stations
- \$140 million to \$240 million for a new station at Altona North on the Werribee line.

The cost includes upgrading the train line and buying new rolling stock. Our cost ranges are broad as the extension and stations can be delivered in various ways to provide value for money. Each cost estimate is approximate and based on 2020 estimates adjusted to reflect today's higher costs.⁴⁰⁷ The government can deliver the train line extension and the new Altona North station as separate projects. Overall costs will require further analysis by the government.

We estimate this recommendation will then cost the government \$60 million to \$80 million each year to operate. This includes maintenance and asset renewal of the train corridor and rolling stock.

Figure 8: Extending metropolitan trains helps to better connect places with strong population growth



Source: Infrastructure Victoria.

Table 2: Additional weekday train boardings at stations on each corridor (with train extensions)

Train extension	Year 2031	Year 2041
Electrify and quadruplicate the Melton line and build 2 new train stations: Thornhill Park (Paynes Road) and Mount Atkinson (Hopkins Road)	3,500	10,100
More services on the Wyndham Vale corridor	2,900	4,400
New train station at Altona North	1,000	1,500

Upgrade train infrastructure and run more services in Melbourne's north

Duplicate single track sections of the Upfield line and upgrade power and signalling for more train services. Rezone land around stations on the Upfield line to support more new homes, and build a new station at Campbellfield. Build a new station at Beveridge on the Seymour line.

Train services in Melbourne's northern suburbs do not run often

Victoria needs more homes close to existing infrastructure and services.⁴⁰⁸ Established areas in Melbourne's north can accommodate more housing. But trains in some of these areas do not run often, meaning that residents have fewer transport options. This limits housing development in these areas.⁴⁰⁹

People in Fawkner, Coburg and Brunswick can wait up to 20 minutes for trains during peak times.⁴¹⁰ These wait times are 4 to 5 times longer than stations in Melbourne's south-east that are a similar distance from the city centre.⁴¹¹ Coburg residents can travel by tram as well as by train, but the trams are slow and are predicted to get slower.⁴¹²

The rail infrastructure restricts how many trains can run at once. Only one track runs between Gowrie and Upfield stations, so trains have to take turns and wait for each other to pass.⁴¹³ Outdated signalling means trains must run further apart for safety reasons.⁴¹⁴ The power supply cannot support more trains running at the same time.⁴¹⁵

Without more train services, many people will have no choice but to drive. Our modelling shows more people in suburbs like Brunswick will be forced to drive in the future unless they can catch more train services.⁴¹⁶

Upgrading the Upfield line increases the number of trains that can run

The Metro Tunnel project frees up space in the City Loop, allowing more trains to run.⁴¹⁷ This means more services can run on the Upfield line.

By 2030, the Victorian Government should:

- upgrade power and signalling between North Melbourne and Upfield so more services can run, reducing the time people need to wait for trains (see case study – [Sector plans help with network planning and operation](#))
- build an extra track (duplicate) from Gowrie to Upfield so multiple trains can run in both directions and delays to one train do not affect the rest of the line⁴¹⁸
- build a new train station at Campbellfield to improve access to local jobs and better connect residents to jobs and services in central Melbourne.

These changes will allow up to 9 Upfield line trains to run each hour instead of 4.⁴¹⁹ This can help realise the full benefits of the Metro Tunnel project.⁴²⁰

The original Metro Tunnel business case included new rail infrastructure for the Upfield line, returning benefits of between \$1.10 and \$3.30 for every dollar invested.⁴²¹ We found similarly strong results in our analysis of the Upfield duplication. When assessed as part of a larger investment program, the Upfield duplication helps deliver benefits of between \$1.10 and \$1.90 for each dollar invested.⁴²²

Upgrades can happen at the same time as level crossing removals

The government is removing 8 level crossings around Brunswick by 2030.⁴²³ It can complete the Upfield line upgrades when it removes the crossings. This can reduce project costs and passenger disruption.⁴²⁴ It also builds the supporting infrastructure for a future extension to at least Kalkallo (see future option – [Extend metropolitan trains to growth areas in Melbourne's north and south-east](#)). The government can remove other level crossings at the same time, like Arden Street and Macaulay Road, to prevent further disruptions when it extends the line in the future (see [recommendation 8](#)).

More train services can support thousands of new homes along the Upfield line, including in the Brunswick and Coburg activity centres.⁴²⁵ By encouraging around 11,000 new homes in established suburbs instead of growth areas, upgrading the Upfield line can save around \$400 million in public infrastructure costs.⁴²⁶

More train services can also improve job opportunities. For example, Campbellfield residents could reach 32,000 more jobs in 45 minutes by public transport, and Coburg residents could reach 90,000 more jobs.⁴²⁷

A new station at Beveridge can serve fast-growing northern communities

Beveridge is a fast-growing town in Melbourne's north.⁴²⁸ Over 75,000 people are expected to live there by 2041, up from 4,300 in 2021.⁴²⁹ Residents have only 4 peak hour bus services on weekdays.⁴³⁰

Beveridge has limited road access. It has only one east-west road and one north-south link.⁴³¹ Residents have no other way to travel if these roads are disrupted.⁴³² This includes people travelling by bus.⁴³³

The government should build a new train station at Beveridge.⁴³⁴ This will give the fast-growing community better travel options and a more resilient transport network. The station is already part of the northern growth corridor plan.⁴³⁵ Some V/Line trains that are reallocated after the Melton electrification could be used to increase capacity on the Seymour line to serve these passengers (see [recommendation 11](#)).

The new station can provide public transport access before many more homes are built. This can help households avoid buying extra cars and spending more on transport as well as improve access to jobs and services.⁴³⁶

Cost range, timing and funding

We estimate that this recommendation will cost \$1 billion to \$2 billion by 2030. General government revenue is likely to be a major funding source. The extra public transport fares can help offset operating costs. The Victorian Government can also seek additional funding from the Australian Government.⁴³⁷

Delivering the upgrades and land rezoning along the Upfield line will save around \$400 million in public infrastructure costs.

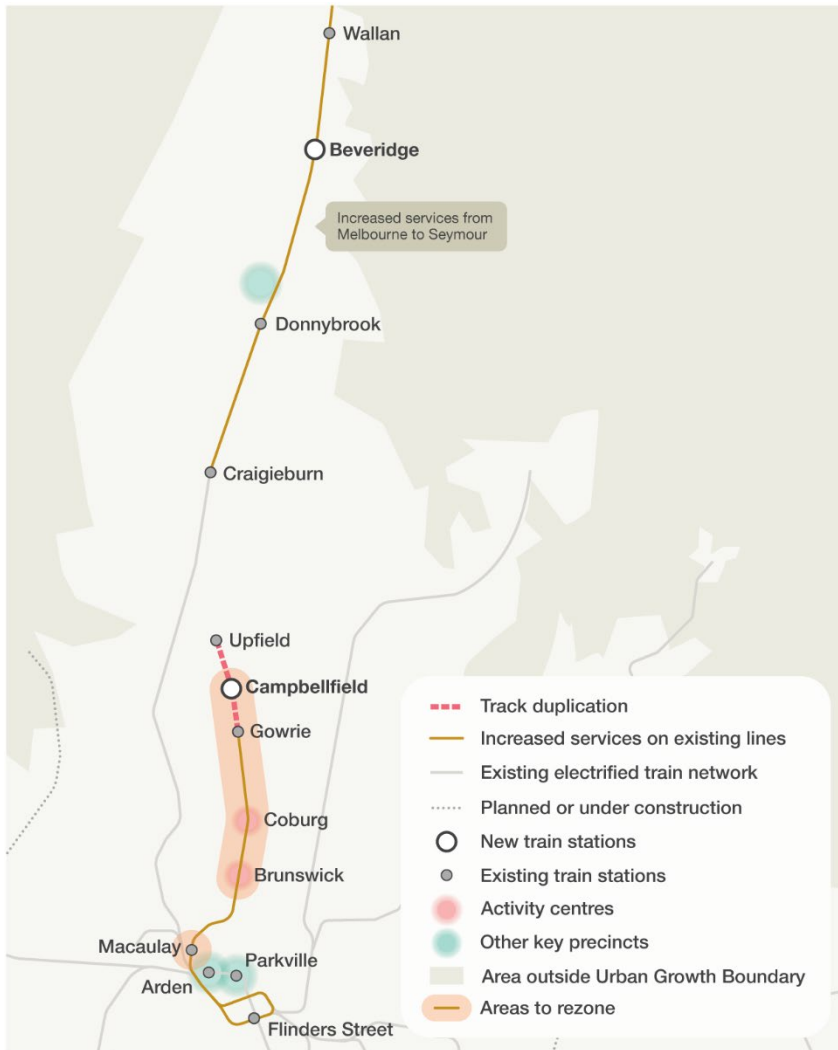
Our cost estimates include:

- \$650 million to \$1.4 billion to upgrade power and signalling between North Melbourne and Upfield and duplicate the line from Gowrie to Upfield
- \$100 million to \$250 million for each of the new stations
- \$180 million to \$220 million for extra trains.

Each cost estimate is approximate and based on 2020 estimates, adjusted to reflect today's higher costs.⁴³⁸ The government can deliver the train line extension and new stations as separate projects. Overall costs will require further analysis by the government.

We estimate this recommendation will then cost \$5 million to \$15 million each year to operate. This includes maintenance and asset renewal of the train corridor and rolling stock.

Figure 9: Upgrading train services in Melbourne’s north improves access to job and services



Source: Infrastructure Victoria

Table 3: Weekday train boardings at new stations

Project	Year 2031	Year 2041
New train station at Campbellfield	1,300 to 1,600	1,200 to 1,500
New train station at Beveridge	600 to 1,000	1,700 to 2,500

Extend metropolitan trains to growth areas in Melbourne's north and south-east

Extend and electrify metropolitan trains to Clyde and to at least Kalkallo to improve access in new suburbs.

Melbourne's north and south-east suburbs are growing and the transport network is crowded

Melbourne's western suburbs are seeing the city's fastest population growth (see [recommendation 11](#)), but suburbs in Melbourne's north and south-east are also growing rapidly. Over 612,000 new residents are expected to live there by 2041.⁴³⁹ But these areas are only expected to have 238,000 new jobs.⁴⁴⁰ Many residents will need to travel elsewhere for work.

More people and more car use means busier roads. Between 25% and 40% of major roads in Melbourne's north and south-east will be congested during morning peak hours by 2041.⁴⁴¹ This means longer journey times unless people have better transport options.⁴⁴²

Extending the train network can improve access to local jobs

Extending metropolitan train lines to Clyde and to at least Kalkallo can help address the need for public transport in Melbourne's north and south-east.⁴⁴³ [Recommendation 45](#) calls for the government to complete detailed assessments of these extensions and electrifications to allow for more metropolitan train services.

After 2030, following the start of construction on other train network expansions including the Upfield line upgrade and new Beveridge station (see [recommendation 12](#)), the Victorian Government can begin:

- electrifying the Craigieburn line to at least Kalkallo, including extending the Upfield line to Roxburgh Park to allow Upfield line trains to run to a new station at Kalkallo
- extending and electrifying the Cranbourne line to Clyde and building 4 new stations.

Our modelling shows that these extensions will improve access to jobs and services for growth area residents in Melbourne's north and south-east. In the south-east, extending the Cranbourne line to Clyde and building a new Dandenong South station means residents there could reach around 50,000 more jobs in 45 minutes by public transport.⁴⁴⁴

In Melbourne's north, extending the train line from Craigieburn means Kalkallo residents could reach 74,000 more jobs in 60 minutes.⁴⁴⁵ However, rapid population growth beyond Kalkallo might merit further extending the line towards Wallan in the future.

Beveridge and Wallan are expected to be home to around 100,000 extra people by 2041 compared with 2021.⁴⁴⁶ Developers are already building new homes and the government is approving more growth area precinct structure plans.⁴⁴⁷ When planning the metropolitan train line extension towards Kalkallo, the government can assess whether a second stage to Beveridge or Wallan will be needed.

Better public transport delivers network benefits

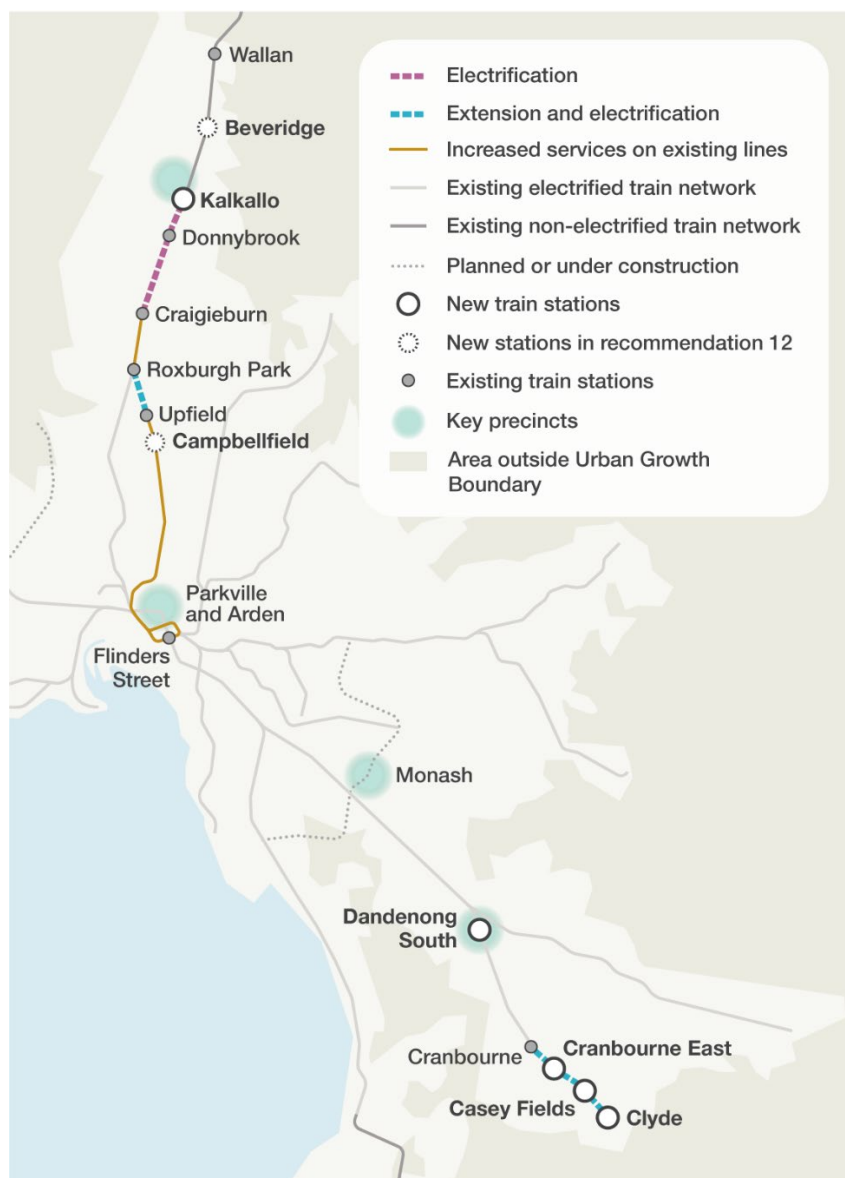
Extending metropolitan trains in Melbourne's north and south-east means that fewer motorists would need to drive in congested traffic.⁴⁴⁸ Our modelling of these extensions shows that by 2041 15,000 more people would catch a train each day and 10,700 people would not need to drive.⁴⁴⁹

Many people would use these new train stations because there are no other stations nearby. They would need frequent bus services to connect to the new train stations so they can travel easily. We recommend

running more bus services in Victoria's largest cities (see [recommendation 9](#)), including better bus connections to train stations.

If people cannot catch a frequent bus service to the train station, more of them will drive there. This means train station car parks fill up early and are crowded.⁴⁵⁰ Stations with frequent bus connections can see over 25% of train passengers travel to the station by bus.⁴⁵¹

Figure 10: Extending metropolitan trains to Melbourne's north and south-east will help to support future population growth



Source: Infrastructure Victoria.

Table 4: Additional weekday train boardings at stations on network segments (with train extensions)

Train extension	Year 2031	Year 2041
Electrify the Craigieburn line to Kalkallo, including extending the Upfield line to Roxburgh Park to allow trains to run to Kalkallo via Upfield, and build a new station (Kalkallo/Lockerbie)	3,300	5,900 to 6,900
Extend and electrify the Cranbourne line to Clyde and build 4 new stations (Dandenong South, Cranbourne East, Casey Fields, and Clyde)	3,700	6,900 to 9,100

Cost range, timing and funding

We estimate that extending metropolitan trains to Melbourne's growth areas will cost \$5 billion to \$7 billion between 2030 and 2040. The Victorian Government can consider a mix of funding mechanisms, including value capture. General government revenue is likely to be a major funding source. The extra public transport fares can help offset operating costs. The Victorian Government can also seek additional funding from the Australian Government.⁴⁵²

Our cost estimates include:

- \$3 billion to \$4 billion to electrify the Craigieburn line towards Kalkallo, including extending the Upfield line to Roxburgh Park to allow trains to run towards Kalkallo via Upfield, and building a new station at Kalkallo.
- \$2 billion to \$3 billion to upgrade and extend the Cranbourne line to Clyde and build 4 stations.

The cost includes upgrading the train line and buying new rolling stock. Our costs cover a large range as more detailed examination of different construction options can determine the best value for money. Each cost estimate is approximate and based on 2020 estimates adjusted to reflect today's higher costs.⁴⁵³

The government can extend train lines as separate smaller project packages to reduce the upfront capital cost. Overall costs will require further analysis by the government.

We estimate this recommendation will then cost government \$60 million to \$90 million each year to operate. This includes asset renewal of the train corridor and rolling stock. It also includes maintenance costs.

Run more bus and coach services in regional Victoria

Deliver more bus services in regional centres. Run more V/Line coach services to better connect small towns to regional cities. Start with routes that best improve access to jobs, education and healthcare.

Regional public transport helps connect people to education, healthcare and jobs

Many regional Victorians travel long distances for jobs, education, healthcare and other services which are mostly located in regional cities.⁴⁵⁴ Many people rely on cars to reach these places, but not everyone can afford one.⁴⁵⁵ Others cannot drive, like some young people, older Victorians or people with a disability. They rely on public transport to travel independently.⁴⁵⁶

If people use public transport more, they can save money and produce fewer greenhouse gas emissions.⁴⁵⁷ But our modelling confirms that many regional Victorians struggle to access services by public transport.⁴⁵⁸ Many transport services do not reach the places people need, including TAFEs, universities, employment centres, hospitals and health facilities.⁴⁵⁹ For example, around 90% of young people living in rural and regional Victoria cannot access their TAFE or university by public transport. Even when they can, they often have to leave classes early or wait a long time to get home.⁴⁶⁰

Better public transport can improve access to education and help young people stay in regional areas.⁴⁶¹ It can connect people to jobs and help fill labour shortages.⁴⁶² It can help older people stay independent and mobile.⁴⁶³ It also improves road safety. When people choose public transport over driving, it reduces the total number of car crashes.⁴⁶⁴

Public transport in regional centres can better meet local needs

The Victorian Government should deliver more bus services in regional centres, starting in Shepparton, Wodonga, Mildura, Wangaratta, Horsham, Bairnsdale, Warragul and Drouin. This complements our recommendation to run more bus services in Victoria's largest cities (see [recommendation 9](#)).

These are regional centres where bus services are infrequent, indirect and do not connect well to train and coach services.⁴⁶⁵ They provide health, education and services to their wider region. They are also home to a high share of people with limited access to transport, such as low-income households, First Peoples and older people.⁴⁶⁶

Poor connections between bus and train services mean workers from Warragul cannot use public transport when they complete a full day's work in Pakenham or Dandenong.⁴⁶⁷ New suburbs in Shepparton and Wodonga have no bus services at all.⁴⁶⁸ Few weekend and night services mean that young people miss out on work and social opportunities.⁴⁶⁹ Many people in Mildura say they need buses that run from 7am to 9pm on weekdays, and after 9pm on Friday and Saturday nights.⁴⁷⁰

Our analysis of possible service improvements shows that running daytime bus services every 30 minutes in larger cities will add up to 250 new services each day. Running buses every 60 minutes in smaller cities and towns will add around 30 new services a day.⁴⁷¹

The government should consult with communities, councils and bus operators in these regional centres to confirm transport needs and then run services to meet them. It should coordinate local bus services with train timetables to connect people to more transport options and reduce waiting times.⁴⁷²

Local communities need better access to regional cities

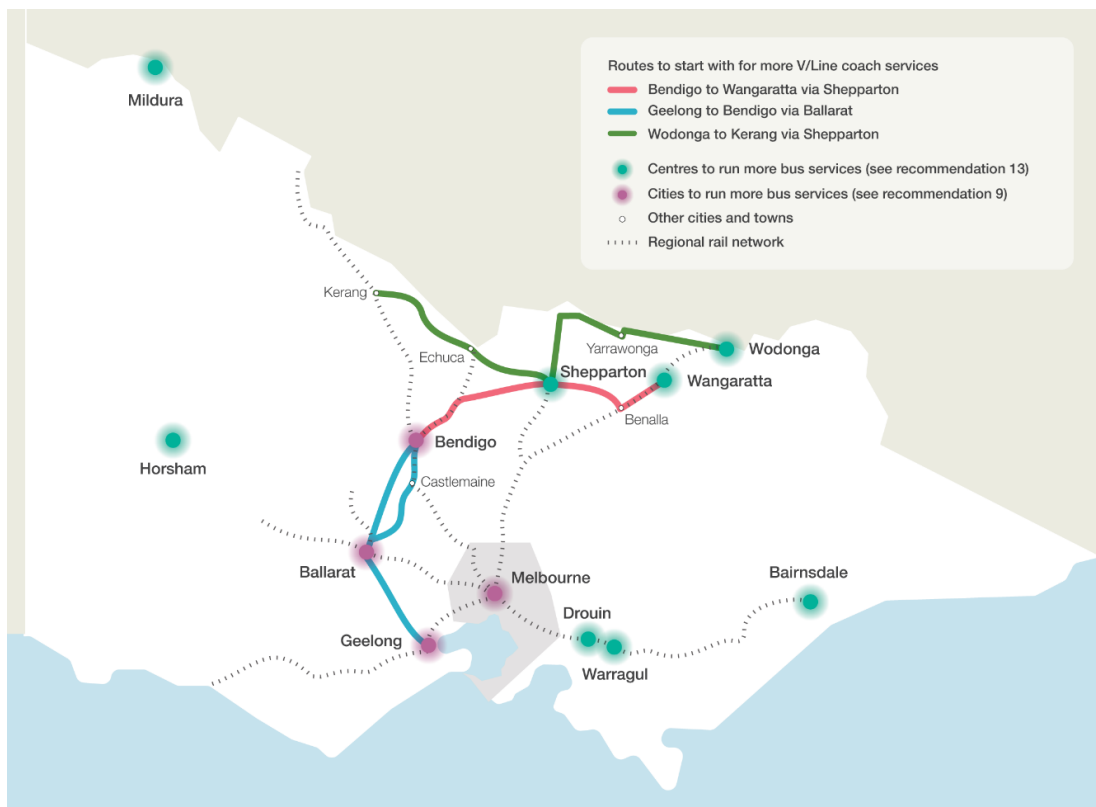
For many towns, V/Line coaches are the only public transport to regional cities. But they often do not run when people need them.⁴⁷³ For example, morning services can arrive too late for classes, work or medical appointments. Sometimes people have just 40 minutes before their only return service leaves.⁴⁷⁴

The Victorian Government should improve existing V/Line coach services. It should add stops, extend existing routes and fund extra services to improve access to regional cities.

It should start with routes like Bendigo to Wangaratta, Geelong to Bendigo via Ballarat, and Wodonga to Kerang. Communities on these routes need access to jobs, education and healthcare in regional cities but have limited public transport services. The government should run 6 services each day from Geelong to Bendigo, and 3 services each day from Bendigo to Wangaratta and Wodonga to Kerang.⁴⁷⁵

The Victorian Government is installing new ticket readers on most public transport services.⁴⁷⁶ It can also install them on the new bus and coach services to make it easier for people to change between services.

Figure 11: The Victorian Government should improve regional bus and V/Line coach services



Source: Infrastructure Victoria

Cost range, timing and funding

We estimate that this recommendation will cost \$100 million to \$150 million over 5 years. General government revenue can fund this recommendation. The extra public transport fares can help offset the operating costs of more regional services.

Our cost range includes new bus stops and transport hubs to support new bus and coach services. These can be delivered as a series of separate smaller packages rather than one project.

More bus and coach services in regional Victoria will then cost the government \$25 million to \$45 million each year to operate. This includes purchasing and maintaining the bus fleet and depot upgrades.

Make off-peak public transport cheaper and simplify regional fare zones

After upgrading the myki ticketing system, charge lower fares for off-peak travel on Victoria's buses, trains and trams. Simplify fares and reduce the number of regional fare zones.

Cheaper off-peak fares can change people's travel choices

Public transport fares influence how people choose to travel.⁴⁷⁷ The government can change Victoria's fares to encourage better use of the transport network and deliver more benefit to Victorians.

More people travel during peak hours than at off-peak times. This puts pressure on roads and public transport. Buses, trains and trams are often crowded in peak times but underused at other times.⁴⁷⁸ Victorians typically drive instead of taking public transport on weekends.⁴⁷⁹

Lower off-peak fares can encourage drivers to catch public transport instead. There are many benefits including less congestion and fewer emissions.⁴⁸⁰ Cheaper off-peak fares can also help to defer costly transport infrastructure upgrades.⁴⁸¹

We found that changing the way people pay for public transport might remove over 31 million car trips from roads and provide about \$520 million in value each year. It would also reduce demand on peak hour train services by up to 30,000 trips a day, equivalent to 27 trains.⁴⁸²

Our research showed that bus passenger numbers can increase by up to 19% for every \$1 fare discount.⁴⁸³ More public transport users can help offset the revenue impact of cheaper fares.⁴⁸⁴

Off-peak fares benefit low-income earners

The Victorian Government should adopt off-peak fare discounts after it has upgraded the myki ticketing system.⁴⁸⁵ This will reduce crowding on peak hour services by rewarding people who travel at quieter times. It will also benefit low-income earners, who make 45% of off-peak trips.⁴⁸⁶

Currently people travelling at quieter times pay the same price as those travelling during peak hours.⁴⁸⁷ In our modelling, a 50% discount was enough for people to change when and how they travel.⁴⁸⁸

V/Line passenger numbers grew rapidly when the government capped regional fares in 2023.⁴⁸⁹ This shows that cheaper fares attract users. The government can set the rules for off-peak discounts so that people make travel choices that benefit everyone.

Simple fares have the greatest impact

When fares are hard to understand, travellers can end up paying more.⁴⁹⁰ Our research found that off-peak fares were the easiest to understand.⁴⁹¹ To reduce complexity and make public transport fairer, the government should replace early bird train-only fares with off-peak discounts that apply to all public transport modes.

In regional Victoria, the government should make fare zones simpler. The regional fare cap reduced prices for long distance trips to Melbourne, but it had little impact on shorter trips between regional cities and towns.

Reducing the number of regional fare zones will help to lower the cost of these trips. It will reinforce the regional fare cap in providing cheaper travel in regional Victoria. The government can deliver this when it rolls out the upgraded myki system in regional areas.⁴⁹²

The government can pair off-peak fare discounts with service upgrades over time

Off-peak discounts are a first step to improving Victoria's public transport fares. We identify further reforms in *Fair move: better public transport fares for Melbourne*. This includes cheaper fares for buses at all times. The government can implement these after assessing the impact of off-peak fares.⁴⁹³

Many stakeholders point to the need to increase the number of public transport services as well as changing fares.⁴⁹⁴ Melbourne's off-peak frequency is lower than many other Australian capital cities and lower than it was in the 1930s.⁴⁹⁵ More people will catch public transport if fare reform is matched with service upgrades. This includes running more buses in Victoria's largest cities (see [recommendation 9](#)) and improving regional bus and coach services (see [recommendation 13](#)).

Cost range, timing and funding

We estimate that it will cost up to \$1 million a year to improve public transport fares. General government revenue can fund this recommendation. Existing government staff can do this work.

The cost range includes detailed modelling of public transport fares, tracking the impact of fare changes to the public transport network and refining fares. Changes to public transport fares can be made using Victoria's upgraded myki ticketing system.⁴⁹⁶ Victoria has previously trialled off-peak fares, which suggests they can be implemented again at minimal cost.⁴⁹⁷

Fare reform can reduce revenue to government from public transport users depending on the fares adopted. But more public transport users, especially in off-peak periods, can help to partially offset any revenue loss from cheaper fares. Shifting public transport demand away from peak periods can also help the government defer capital upgrades like new tunnels, costing substantially more than any change in fare revenue.⁴⁹⁸





Objective

Victorians are healthy and safe

Victorians achieve and maintain good physical and mental health. They are safe from harm.



Victoria's health challenges are growing

Keeping Victorians healthy and safe helps create a productive and thriving society. Good health allows Victorians to work, learn and engage fully with their communities.⁴⁹⁹ This adds to Victoria's social wellbeing and economic prosperity.⁵⁰⁰

Victoria faces several health challenges. These include an ageing population and rising health costs.⁵⁰¹ An ageing population has led to a rise in the frequency of chronic health conditions such as cancer, diabetes, dementia and heart disease.⁵⁰² These complex, long-term conditions can place more demand on health services.

There were 546,000 emergency department visits in Victoria in 2023–2024 that could have been avoided if they were managed in primary care or community health.⁵⁰³ Many of these were related to chronic conditions.⁵⁰⁴

Victorians' health is influenced by where and how people live and work.⁵⁰⁵ A person's social circumstances can also affect their health.⁵⁰⁶ Social exclusion, low incomes and limited access to education and other services can worsen their mental and physical health outcomes throughout their life.⁵⁰⁷

Infrastructure can help to reduce these risks. Buildings like hospitals and community health facilities provide access to essential healthcare services. Public open spaces such as parks and sports fields, and walking and cycling paths give people opportunities for exercise.⁵⁰⁸ Digital technologies can also offer new ways to connect people with the services they need.⁵⁰⁹

Infrastructure can help prevent illness and injury

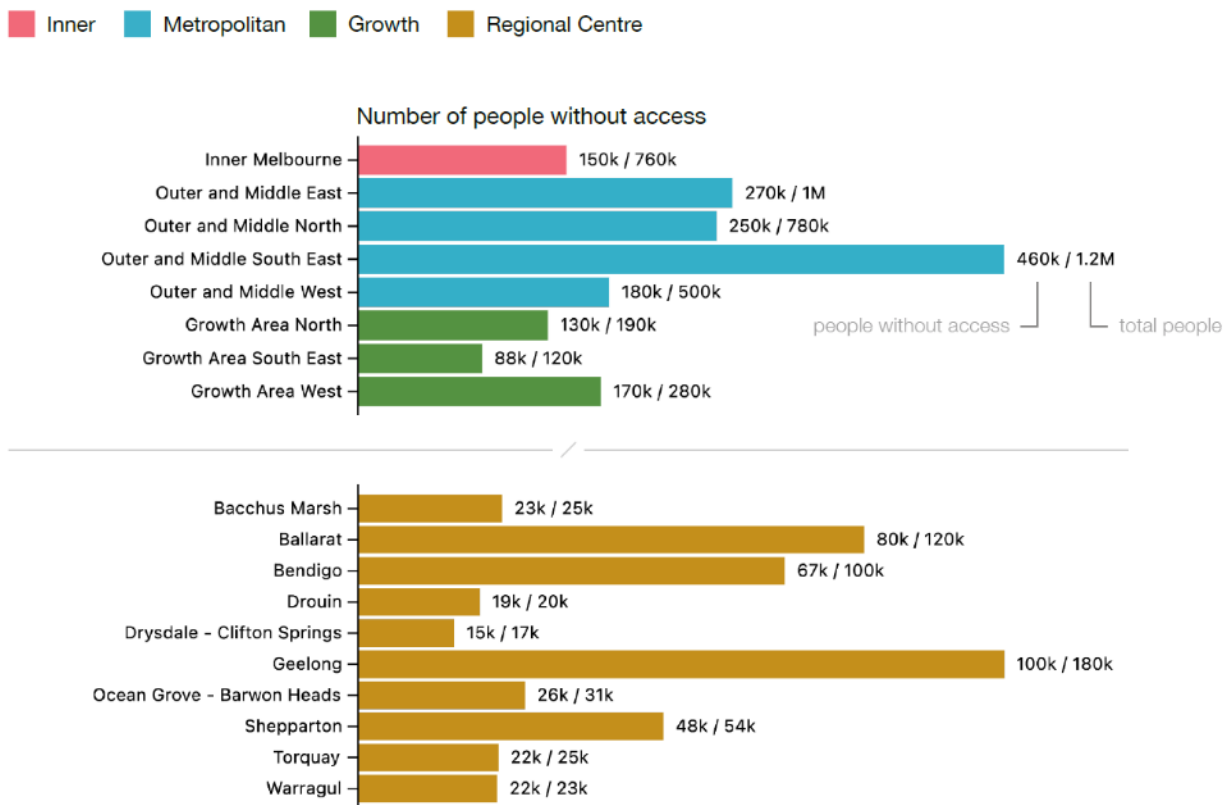
Preventive health measures can save money and help reduce demand on the hospital system.⁵¹⁰ Reducing risky lifestyle factors could prevent almost 40% of disease.⁵¹¹ Many chronic diseases are linked with diet and physical activity.⁵¹²

Access to the right types of infrastructure can help Victorians be healthier and happier.⁵¹³ Outdoor sports facilities, walkable neighbourhoods and areas that are safe to cycle in can increase physical activity and social connection.⁵¹⁴

For every \$1 invested in walking and cycling infrastructure, the community receives up to \$7 in health, economic and environmental benefits.⁵¹⁵ Investing in walking and cycling infrastructure can reduce noise and pollution while lowering the risk of conditions like heart disease, stroke and diabetes.⁵¹⁶ By encouraging healthy lifestyles, infrastructure can help reduce demand on public hospitals.⁵¹⁷

But not everyone has the same access to open space and sports fields (see Figure 12). Some Victorians have limited opportunities for outdoor exercise, potentially increasing their risk of developing chronic disease.⁵¹⁸

Figure 12: Many Victorians cannot access outdoor sports fields within a 10 minute walk



Source: Arup, *Social infrastructure accessibility mapping – outdoor sport fields*, report to Infrastructure Victoria, 2024, p 3, accessed 6 December 2024.

Access to health infrastructure in Victoria is unequal

Access to healthcare in Victoria also varies depending on where people live. For example, people living in outer suburbs and regional areas sometimes have fewer services, less consistent care and must travel further to reach them.⁵¹⁹ Chronic diseases and unintended overdose deaths are more common among people living in regional areas.⁵²⁰ These risks are worse among some groups including First Peoples and culturally diverse communities.⁵²¹

Community health services provide primary and preventive healthcare targeted to Victorians who are experiencing poverty or homelessness.⁵²² This can include vital dental services, mental health services and support for people to manage ongoing chronic conditions like type 2 diabetes.⁵²³

Victoria's prisons also provide healthcare and mental health services.⁵²⁴ These services help prisoners rehabilitate and reduce reoffending.⁵²⁵

Improving access does not always mean building new hospitals and other infrastructure. Innovative service models and digital technology can transform service delivery. Digital healthcare can help public hospitals work more efficiently and ease demand on limited infrastructure.⁵²⁶ For those in regional areas, digital healthcare can allow patients to receive care closer to home, reducing patient travel and costs.⁵²⁷

Make local streets safer for children and communities

Reduce speed limits to 30km/h on local streets, starting in places that children often visit including around schools, playgrounds, childcare centres and kindergartens.

Slower local streets reduce road trauma

Victoria's neighbourhoods should be safe for people to travel and for children to play. Local streets that encourage walking and cycling can help achieve this. However, many roads are not safe for people walking or riding bikes. An average of 39 pedestrians die each year in Victoria.⁵²⁸

Road trauma is a leading cause of death for children aged one to 14 in Australia.⁵²⁹ Seven children die each year on Victoria's roads.⁵³⁰ Nearly 300 children a year are seriously injured, mostly on local roads with speed limits of 50 kilometres per hour (km/h).⁵³¹

National and international research shows that slower speeds make streets safer.⁵³² They have little effect on travel times by car.⁵³³ A pedestrian hit by a car at 50km/h has an 85% chance of dying, and a 40% chance at 40km/h. At 30km/h, this falls to 10%.⁵³⁴ Some councils already have lower speed limits for safety, and more are planning to do so.⁵³⁵ For example, the City of Yarra introduced 30km/h zones in Fitzroy and Collingwood.⁵³⁶

Places where children go should be safe

The Victorian Government has recently made it easier to implement 30km/h zones around schools.⁵³⁷ But it should also update its speed limit policy to include local streets around other places that children often visit. It should also work with local governments to update speed limit signs to set 30km/h limits.⁵³⁸ Schools, playgrounds, childcare centres and kindergartens should all have lower speed limits around them (see Figure 13).⁵³⁹ The current 40km/h speed zone only applies to schools and some other busy areas.⁵⁴⁰ The changes should apply to streets with current speed limits of 50km/h or less.

The Victorian and local governments can lower speed limits on many local streets over time to improve pedestrian safety. But we do not recommend these changes to roads with speed limits above 50km/h, such as main roads and highways, unless they are in areas of high pedestrian activity.⁵⁴¹ Main roads transport people in trams and buses and goods in commercial vehicles.

Reducing speed limits works better when combined with changes to local street infrastructure.⁵⁴² This helps more drivers stick to the speed limit. Many local streets do not have safe crossing points.⁵⁴³ Some footpaths end before pedestrians reach their destination, especially in regional Victoria.⁵⁴⁴ Governments can trial upgrades to infrastructure on streets with 30 km/h speed limits. Showing how these changes improve safety can help build community support.⁵⁴⁵

Lower speeds can encourage more active travel and improve local amenity

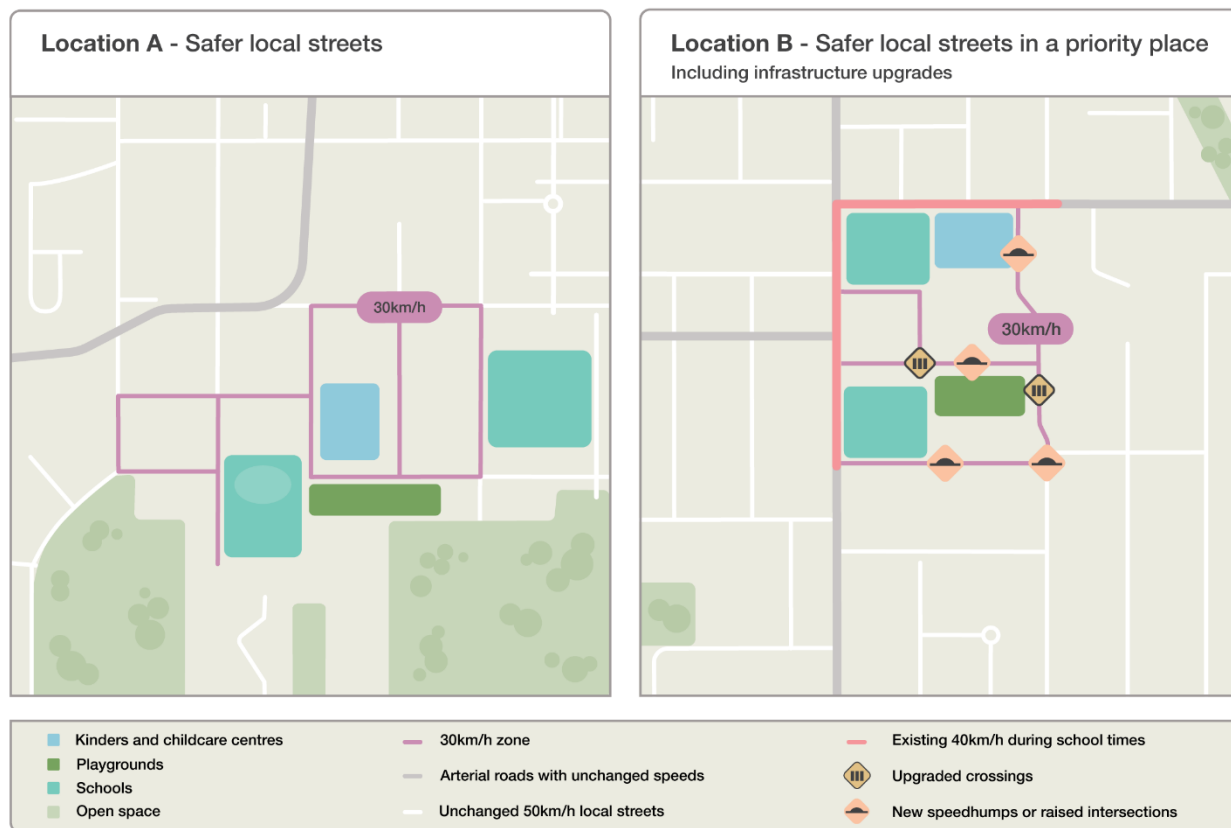
Lower speeds mean less noise and pollution, and safer streets for walking and cycling.⁵⁴⁶ This can improve amenity in busy suburbs, particularly in higher density areas and activity centres.⁵⁴⁷

Most parents worry about traffic and road safety, and do not let their children walk or cycle alone.⁵⁴⁸ Instead, they drop off and pick up their children by car.⁵⁴⁹ This has led to historically low levels of children walking and playing outdoors.⁵⁵⁰ If children walk and ride bikes more, this will reduce obesity and social isolation.⁵⁵¹

Lower speeds will increase physical activity and help Victoria achieve the government's target of 25% of trips by active travel by 2030. Switching one trip a day from car to cycling can also save each person half a tonne

of greenhouse gas emissions a year.⁵⁵² Schools, playgrounds, childcare centres and kindergartens are often close to people's homes. These trips are the easiest for people to switch from cars to walking and cycling.

Figure 13: Simple changes can make Victoria's streets safer



Source: Infrastructure Victoria.

Cost range, timing and funding

We estimate that making local streets safer for children and communities will cost \$35 million to \$45 million. This includes the cost of updating speed limit policy and working with local governments to install speed limit signs.

General government revenue and ongoing road safety improvement programs, such as those run by the Transport Accident Commission and Australian Government, can fund this recommendation.⁵⁵³ The government can also use funding attached to Victoria's Road Safety Action Plan.⁵⁵⁴

Infrastructure can increase the benefits of this recommendation. The government can use existing grants programs to improve footpaths and add crossings and other infrastructure to slow cars down in priority places. Grants programs often require local governments to show proof of crashes or that the site is already risky.⁵⁵⁵ The government can change these criteria to allow upgrades near places children often visit rather than relying on injury or risk data alone.⁵⁵⁶

Local government upgrades to streets, footpaths, parks and drainage can also contribute to local streets being safer and easier for drivers to stick to speed limits.

Build safe cycling networks in Melbourne and regional cities

Build more protected and connected cycle corridors in Melbourne, Geelong, Ballarat, Bendigo and Wangaratta. Publish regular updates to the strategic cycling corridor network.

Few Victorians ride bikes, even for short trips

In Melbourne, 60% of people's trips are under 5 kilometres. Many of these trips are well-suited to a short bike ride, but less than 2% of them are made by bicycle.⁵⁵⁷

Many people do not ride because they are worried about safety.⁵⁵⁸ One in every 4 serious road crashes in Australia involves a bike rider.⁵⁵⁹ In Victoria, over 400 riders are seriously injured every year.⁵⁶⁰ More than 50% of crashes happen where there is no bike infrastructure.⁵⁶¹

Victoria has a disconnected, low-quality cycling network.⁵⁶² Bike lanes can be too narrow, blocked by parked cars, or end suddenly.⁵⁶³ They are often not separated at dangerous intersections.⁵⁶⁴ Riders can feel unsafe when cycling close to cars and other vehicles.⁵⁶⁵ Some riders, particularly women, also feel unsafe on dark streets with few people around.⁵⁶⁶

The Victorian Government has a target for people to make 25% of their trips by bike or on foot.⁵⁶⁷ More car trips and unsafe roads make this target harder to reach.

More bike riding has many benefits

Cycling is a healthy and cheap way to travel.⁵⁶⁸ It has few emissions and can help meet net zero targets.⁵⁶⁹ Up to 5 times more people can travel on bike lanes each hour compared to car lanes.⁵⁷⁰

Separated bike infrastructure helps more people choose to ride bikes, including young people, women and less confident riders.⁵⁷¹ People using micromobility transport like electric scooters are also safer with separated bike infrastructure.⁵⁷² More than 75% of Victorians are interested in riding if they can use bike lanes separated from car traffic.⁵⁷³ Only 2% of bike crashes involving cars happen on a separated bike lane.⁵⁷⁴

Victoria already has a strategic cycling corridor plan.⁵⁷⁵ It is a blueprint for a safe and high-quality 2,768 kilometre bicycle network.⁵⁷⁶ But most of the network is not built yet. The government is only delivering small sections as part of major transport projects.⁵⁷⁷ Even when the network is complete, regional Victoria will have little coverage.⁵⁷⁸

Just 13% of Victorians lived within a 2 minute ride of roads with a protected bike lane in 2024.⁵⁷⁹ Together with lower speed limits on local roads (see [recommendation 15](#)), cycling corridors can encourage more people to ride bikes, both locally and for longer trips.⁵⁸⁰

A network of safe cycling corridors will encourage more people to ride

Cycling corridors should be safe for everyone to ride. They should include separated bike lanes, wayfinding, lighting, protected bike infrastructure at intersections, and safe crossings.⁵⁸¹ Where bike lanes are on local roads, traffic calming infrastructure like speed humps and road narrowing slows cars down.⁵⁸²

Safe cycling corridors deliver \$2.40 to \$3.40 in benefits for every dollar spent and up to \$4 when delivered together as a network.⁵⁸³ Short extra links to nearby local destinations can add up to 3 times more benefits.⁵⁸⁴

The Victorian Government should fund priority corridors in the strategic cycling corridor network and deliver them with local councils. It should build 12 corridors in Melbourne and one network each in Geelong, Ballarat, Bendigo and Wangaratta by 2035 (see Figure 14).

Cycling corridors work best when they are built in areas where a lot of people live.⁵⁸⁵ The 16 priority corridors we selected connect to activity centres, places people travel to and existing cycling infrastructure. We considered stakeholder feedback, crash hotspots and council priorities.⁵⁸⁶ They will make nearly 250 kilometres of continuous bike connections safer (see Table 5).⁵⁸⁷

The government can also fund cycling networks in other parts of Victoria from the mid-2030s, after it has delivered the first 16 projects. Our research found that Wodonga, Castlemaine, Shepparton and Mildura could also be good places to continue cycling network investments.⁵⁸⁸ Many people in these places rely on cars to get around.⁵⁸⁹ They spend more of their income on transport.⁵⁹⁰ Safer cycling networks can offer communities a cheaper and healthier way to travel.

The government should continue to plan and consult on the strategic cycling corridors. It should publish updates every 3 years. This will allow it to adjust or expand the planned network to suit Victoria as it grows.

Table 5: Length of priority new and upgraded cycling corridors

Type of change	Length
Build new separated cycling infrastructure where there is no existing infrastructure	87km
Upgrade existing painted cycling lanes to separated cycling infrastructure	75km
Add new wayfinding and lighting to existing cycling corridors	87km
<i>Total</i>	<i>249km</i>

Figure 14: The Victorian Government should deliver a network of cycle corridors in Melbourne and regional Victoria



Source: Infrastructure Victoria.

Table 6: Performance of new and upgraded cycling corridors in Melbourne and regional Victoria (2031)

Corridor	Annual kilometres cycled ('000 km)	Change if corridors are built
Northcote to Moonee Ponds	2,315	470%
Essendon to La Trobe University	700	240%
Alfred Hospital to Clayton	6,235	250%
Box Hill to Docklands	8,105	505%
Werribee to Footscray	2,795	85%
Abbotsford to Anzac Station	5,515	160%

Anzac Station to Sandringham and Moorabbin	6,675	70%
St Albans to Docklands	5,525	50%
Highpoint to Footscray	3,820	590%
Essendon North to Southbank	2,440	80%
Caulfield to Auburn	435	120%
Murrumbeena to Southland	795	425%
Wangaratta network	160	505%
Bendigo network	640	155%
Ballarat network	910	1125%
Geelong network	1,815	250%

Note: Change is compared to no corridors being built in 2031. Source: Infrastructure Victoria, [Building safer cycling networks](#), 2025, p 20; FTI Consulting, [Report on the economic assessment of cycling corridors](#), report to Infrastructure Victoria, 2025, p 26.

Cost range, timing and funding

We estimate that building this safe cycling network in Melbourne and regional cities will cost \$500 million to \$620 million over 10 years.⁵⁹¹ This network can be delivered in stages. Our estimated costs cover building protected cycling corridors and other supporting infrastructure. This includes physical barriers, upgrading traffic signal and new cycle pavements, depending on the location.⁵⁹² They do not include additional place-making works, such as landscaping or pedestrian and public transport access.

Funding for this recommendation can come from general government revenue, allocations attached to Victoria's Road Safety Action Plan and the Activity Centres Program, or infrastructure contributions (see [recommendation 37](#)).⁵⁹³ The Victorian Government can also seek funding from the Australian Government's Active Transport Fund.⁵⁹⁴

This recommendation also includes \$55 million to build safe local connections from the new cycling corridors. This includes key destinations in Footscray, Sunshine, St Albans, Werribee and Chadstone.⁵⁹⁵ We found that the corridors performed better with these connections.

Maintaining this infrastructure will cost around \$3 million to \$4 million each year.⁵⁹⁶

The Victorian and Australian governments can also give grants to councils to build more local cycling infrastructure.

Help government schools share their grounds

Prioritise which government school sports fields and facilities could deliver the greatest benefits if they were shared with local communities outside school hours. Give these schools extra help for maintenance if they voluntarily share their grounds for informal community use outside school hours. Offer funding for upgrades to incentivise shared access outside school hours.

Sharing school grounds can help more Victorians stay healthy, active and social

Our research report, *Getting more from school grounds: sharing places for play and exercise*, shows that sharing school grounds in some places means many more people can walk to a local outdoor recreation facility, such as a sports field, outdoor court or playground.

This is especially true in Melbourne's north, west and outer south-east.⁵⁹⁷ These places have fewer sports fields for each person than inner suburbs and people must travel further to reach one.⁵⁹⁸ They are also places where children are less likely to play an organised sport, and where communities have worse health outcomes.⁵⁹⁹

The Victorian Government can give local communities more access to outdoor recreation facilities for people to play, exercise and participate in informal sport. This can help people stay active, healthy and socially connected.⁶⁰⁰

Schools are often centrally located in suburbs within easy walking distance and can connect other forms of open space (see [recommendation 27](#)). Many communities already have out-of-hours access to outdoor recreation facilities at their local government school. But around a third of government schools do not allow use after hours or on weekends.⁶⁰¹ In some places, communities have few other nearby options for informal sports and recreation.

Melbourne will need more spaces for recreation as its population grows.⁶⁰² The city's existing government school outdoor courts and ovals take up 450 hectares.⁶⁰³ We estimate their total land value is \$6.6 billion.⁶⁰⁴ The Victorian Government can help communities get more benefit from these valuable public assets by offering support for schools to share their grounds for informal use outside school hours.

Government can help schools share their grounds

Some schools might hesitate to share their grounds because of concerns about damage to school property.⁶⁰⁵ The government should support schools to manage this risk in areas where sharing grounds will make the biggest difference. It should provide additional funding to the Department of Education to help schools manage extra maintenance and other costs if they voluntarily share their grounds outside school hours.

New Zealand provides funding to address vandalism to its schools using a local risk assessment.⁶⁰⁶ This approach might encourage more Victorian schools to share their grounds.

The government should plan for new schools to share their grounds with the community. But some existing school grounds might not be ready for community use.⁶⁰⁷ In priority areas, the government should offer grants of up to \$2 million for each school to help meet local community needs.⁶⁰⁸ Each school can deliver up to \$10 million worth of outdoor facilities to communities that need them most.⁶⁰⁹

These grants will allow schools to upgrade their grounds so that they are a similar standard to a quality community recreational facility. This can include infrastructure such as extra lighting, sports field upgrades or

new toilets. Sharing school grounds outside school hours is a better use of existing government land. It costs less than buying new land to meet the community's open space needs.⁶¹⁰

Most local governments support shared use of school grounds outside school hours.⁶¹¹ But some schools need help to maintain their grounds due to the extra use that comes with sharing them. Grants for improved facilities should depend on local governments agreeing to partner with schools to help maintain school grounds. This means local governments can provide more outdoor recreation facilities for their communities to use at no or low capital cost.

The government is piloting a scheme to boost community use of school spaces and facilities after hours in around 40 schools in Melbourne's west and selected regional areas.⁶¹² The pilot is a good start, but our research shows that more communities can benefit from out-of-hours access to school grounds for informal use and some schools might need upgrades so that their grounds are in a good condition to share. This includes fast-growing suburbs in Melbourne's outer north and south-east.⁶¹³

Cost range, timing and funding

We estimate that helping select schools in Melbourne share their grounds will cost \$1 million to \$40 million over 5 years.⁶¹⁴ General government revenue can fund this recommendation.

Many schools can share their grounds with local communities now without the need to upgrade facilities. However, there are also benefits in investing in upgrades for schools in priority locations. The upper limit of \$40 million for this recommendation allows for 20 priority schools to upgrade sports fields, lighting and toilet facilities for after-hours use, and other community infrastructure like seating.⁶¹⁵

Maintenance costs will rise as more people use school grounds that are open to the public. However, this increase for informal use is small compared to the overall cost of maintaining a school. We estimate it will cost about \$1 million a year for 70 schools to open outside school hours for informal community use.

As improvements in open space will benefit local communities, the Victorian Government can explore opportunities to jointly fund maintenance costs with local governments. The Victorian Government can also explore partnerships with sporting organisations, such as the AFL, to fund some school ground upgrades where local communities will also benefit.⁶¹⁶



Invest in maintenance, upgrades and expansions of community health facilities

Develop and fund 5-year priorities for Victorian Government investment in community health facilities.

Community health organisations help Victorians most at risk of poor health

Victoria's health system faces high demand from rising health costs and more complicated care.⁶¹⁷ In 2023–24 there were 546,000 emergency department visits in Victoria that could have been avoided if they were managed in the primary care or community health sectors.⁶¹⁸ This would have saved Victoria's public hospitals an estimated \$554 million in expenditure in emergency departments.⁶¹⁹ With the right infrastructure and service planning, community health organisations can help ease demand on hospitals by efficiently managing some of these cases in the community.

Victorians experiencing disadvantage are more likely to visit hospital with conditions that can be managed through primary and preventive care.⁶²⁰ Community health organisations provide cost-effective primary care such as GP services or dental care to Victorians most at risk of poor health.⁶²¹ They help people with complex health needs understand and manage their health better so they can stay out of hospital.⁶²²

Community health organisations deliver these services for free or low-cost. They also provide social services like aged care, housing and homelessness services, family violence programs, youth support and mental health services. They target people experiencing disadvantage, who have few other options to access these services. They operate alongside other parts of the primary care and broader health system.

But low-quality and deteriorating infrastructure reduces the quality and effectiveness of their care and means community health organisations help fewer people.

Infrastructure is limiting community health service delivery

Victoria has 2 main types of community health organisations. Registered community health organisations are independently managed while integrated community health organisations operate as part of hospital services.⁶²³

The Victorian Government is the largest funder of registered community health organisations. Along with local governments, it owns just over one third of their facilities.⁶²⁴ Community health organisations often use older buildings originally designed for other purposes and government does not have good information about them.⁶²⁵ Many buildings are poorly maintained.⁶²⁶ In some cases, failing facilities limit services.⁶²⁷

Our research suggests that more Victorians might use community health services in the future.⁶²⁸ But 45% of Victorians who are eligible to use community health services have not used them in the last 5 years.⁶²⁹ Many people who do use them report long wait times to get an appointment.⁶³⁰

Community health organisations can meet some of the growing demand for community-based mental health support, but they need better buildings and more space. Currently, Victorians use 1.8 million hours of community-based mental health services a year.⁶³¹ The government predicts demand will reach between 3 million and 8.9 million service hours by 2036.⁶³²

Our research shows that 89% of registered community health organisations report that one or more of their buildings are in poor condition or at end of life.⁶³³ At least 40% of registered community health facilities have at least one infrastructure problem that affects their service delivery or capacity.⁶³⁴ The Victorian Government should conduct an asset assessment of all community health facilities including integrated and registered community health organisations.

Community health organisations need infrastructure investment prioritisation and funding

Community health organisations cannot access enough infrastructure funding.⁶³⁵ Current funding comes from one-off grants or yearly surpluses. This approach does not support long-term infrastructure planning or larger investments to upgrade or build new facilities.⁶³⁶

The Victorian Government should undertake long-term infrastructure planning in consultation with community health organisations and use this to develop infrastructure investment priorities. This planning should compare the quality and capacity of existing facilities with expected future service delivery. This will show any mismatch. It will also identify any service gaps in Melbourne's fast-growing outer suburbs and other areas where access is already poor.⁶³⁷

Once the government has identified infrastructure priorities, it should invest in community health facilities to support the delivery of local, high-quality services over the next 5 years. This should include funding for maintenance and minor works, upgrades and expansions.

We recommend that the government first focus infrastructure funding on registered community health organisations. Our research shows that these organisations face significant infrastructure problems and have few funding options to fix them.⁶³⁸ Integrated community health organisations are included in infrastructure planning by rural and metropolitan government health services.

Cost range, timing and funding

We estimate that this recommendation will cost \$150 million to \$300 million, with funding committed and works started within 5 years. This would increase funding from 0.3% to between 1.5% and 3% of the \$2 billion the government spends on average each year on health infrastructure.⁶³⁹ General government revenue can fund this recommendation.

The government can seek co-funding from the Australian Government, community health organisations or other organisations where possible.

Our cost estimate includes capital grants to registered community health organisations only and includes investment priorities for the first 5 years of the program.⁶⁴⁰ The government can determine the funding needs of integrated community health organisations when it undertakes infrastructure planning and develops investment priorities.

Cost estimates also include implementation costs of \$4 million to \$6 million over one to 2 years. This includes \$2 million to \$3 million to undertake an asset assessment and \$2 million to \$3 million for infrastructure planning and to develop investment priorities for the 79 community health organisations.



Build more residential alcohol and other drug treatment facilities

Build residential rehabilitation and withdrawal facilities to meet the demand for alcohol and other drug treatment.

Victoria's alcohol and other drug treatment is not meeting demand

Alcohol and other drug use affects the wellbeing of many Victorians. High levels of use are linked to health problems, violence and disadvantage.⁶⁴¹ The social and economic cost of alcohol and other drug addiction in Australia is estimated to be \$35.5 billion a year.⁶⁴² Treating alcohol and drug use can return around \$4.60 in benefits for every \$1 invested.⁶⁴³ These benefits include reducing crime.⁶⁴⁴

Demand for alcohol and other drug treatment has gone up since the COVID-19 pandemic.⁶⁴⁵ Alcohol and drug-related ambulance attendances have grown over the past decade.⁶⁴⁶ Drug overdose deaths were the highest ever recorded in 2022.⁶⁴⁷ More Victorians are being treated for addiction, but access is unequal and the system is not keeping up with demand.⁶⁴⁸

Waitlists have increased by around 40% since the pandemic.⁶⁴⁹ The average wait time between assessment and treatment was 44 days in 2024–25, double the government's target of 20 days.⁶⁵⁰ Wait times for residential rehabilitation can be up to 90 days.⁶⁵¹ This is on top of the wait for assessment.⁶⁵² Long wait times can cause people to give up on treatment.⁶⁵³

Many people accessing alcohol and other drug treatment have a mental illness.⁶⁵⁴ Alcohol and drug treatment services are often poorly integrated with mental health care or are not funded to provide mental health interventions.⁶⁵⁵

Residential rehabilitation and withdrawal services are an effective form of treatment

Residential withdrawal facilities support people to safely withdraw from alcohol or drug dependence in a supervised residential or hospital facility.⁶⁵⁶ These services help patients who require 24-hour care to withdraw.⁶⁵⁷ This includes people who cannot withdraw at home because of personal or family circumstances.⁶⁵⁸

Residential rehabilitation facilities provide therapeutic treatment for people who have undergone withdrawal but have not yet overcome their addiction.⁶⁵⁹ Services can benefit from purpose-built facilities that create safe and effective treatment environments.⁶⁶⁰

Residential rehabilitation is effective at supporting recovery from addiction.⁶⁶¹ Research suggests it is particularly effective at reducing long-term methamphetamine and heroin use.⁶⁶² For some, their home or social circumstances may not provide the right conditions for rehabilitation.⁶⁶³

Alcohol and other drug use affects some communities more than others

Harmful drug and alcohol use contributes to the gap in health outcomes for First Peoples.⁶⁶⁴ Aboriginal Victorians make up 10% of people receiving treatment, but 1% of Victoria's population.⁶⁶⁵ They face barriers in accessing culturally safe treatment in mainstream facilities.⁶⁶⁶ This can contribute to further harm.⁶⁶⁷

Regional Victorians also face challenges. They are more likely to die from an unintended overdose than people living in Melbourne.⁶⁶⁸ People living in rural areas are more likely to drink alcohol at dangerous levels.⁶⁶⁹ Patients spend more time travelling to access treatment.⁶⁷⁰

The government is building new residential facilities in regional areas, but some regions still have none, including Great South Coast, Goulburn and Wimmera Southern Mallee.⁶⁷¹

The government should build new facilities for communities that need them

Victoria has the second lowest number of residential rehabilitation beds per person in Australia. It provides 0.7 beds per 10,000 people compared to 1.0 in Queensland and 1.2 in New South Wales.⁶⁷² Victoria needs at least 200 extra beds to bring it in line with the national average.⁶⁷³

The Victorian Government should plan and start building more residential alcohol and other drug treatment facilities to target at least 200 extra rehabilitation beds. It should prioritise communities with demonstrated need but low access, including First Peoples and regional Victorians.

Rehabilitation and withdrawal services can be co-located to provide greater value. Integrating services with mental health care can also improve health outcomes and reduce treatment costs.⁶⁷⁴

The government should design and deliver facilities for First Peoples in partnership with communities and Aboriginal Community Controlled Organisations so that they are culturally safe and responsive.⁶⁷⁵

Cost range, timing and funding

We estimate that building new facilities for 200 more rehabilitation beds will cost around \$100 million to \$150 million over 10 years. We used costs from recently built facilities in Gippsland, Wangaratta and Corio.⁶⁷⁶ General government revenue can fund this recommendation. We assume the Victorian Government can minimise costs by repurposing existing government land, so land costs are not included in our estimate.⁶⁷⁷

The cost range also includes government staff and consultancy costs to plan and develop the facilities.

We estimate the new facilities will cost \$5 million to \$7.5 million a year to maintain.

Invest in digital healthcare

Expand digital healthcare to improve access to quality care and ease demand on public hospitals. Deliver a statewide medical image sharing system and a statewide virtual care service that remotely monitors suitable patients at home.

Victoria's health system is under pressure from population growth, ageing and more complex chronic illnesses.⁶⁷⁸ Building and upgrading hospitals alone will not be enough to meet growing demand.

Digital technology can make hospital infrastructure work more effectively. It can provide better care for patients while easing pressure on public hospitals.⁶⁷⁹ Virtual care can be more comfortable for patients and save hospitals at least \$1,000 per patient.⁶⁸⁰

Better information sharing can improve healthcare services

Victoria's digital health transformation is uneven. Some of Victoria's health services still use paper records.⁶⁸¹ Others use different electronic medical record systems that do not always work well together.⁶⁸²

Better sharing of health information improves patient care. It gives doctors and nurses faster access to important information.⁶⁸³ This can reduce readmissions and the cost of care for hospitals.⁶⁸⁴ Around 30% of public health services are not connected to electronic medical records.⁶⁸⁵ Implementation is lower in regional and rural hospitals.⁶⁸⁶

The Victorian Government plans to roll out electronic medical records to all public hospitals.⁶⁸⁷ It is also implementing a system to make it easier for health services to share information digitally.⁶⁸⁸ But there are more opportunities to share information. For example, clinicians cannot easily share medical images across health services.⁶⁸⁹ They might need to repeat tests if they cannot access past results.⁶⁹⁰ For some scans, this can expose patients to unnecessary radiation.⁶⁹¹

The Victorian Government should fund and deliver a statewide medical image sharing system. Medical image sharing can improve care, reduce unnecessary tests and save costs for hospitals and patients.⁶⁹² Other states have already introduced similar systems.⁶⁹³

Virtual care can improve quality and access to healthcare

Virtual care is already changing how Victorians access healthcare (see [case study – Virtual emergency care in Victoria](#)). Virtual care is the remote delivery of health services using digital technology. This includes phone or video telehealth consultations and remote monitoring of patients.⁶⁹⁴

Telehealth allows patients to receive care at home. This reduces time spent travelling or in hospital.⁶⁹⁵ Telehealth already saves Australian patients around \$895 million each year through less travel time and waiting.⁶⁹⁶ Expanding virtual care can increase hospital bed capacity, improve patient satisfaction and outcomes, and save money.⁶⁹⁷

Patients suitable for remote monitoring get devices and sensors that track health data like blood pressure, heart rate or glucose levels.⁶⁹⁸ Doctors or nurses can intervene if a patient's health is getting worse. This can potentially keep them out of hospital.⁶⁹⁹ Many health services already monitor some patients remotely. These include Austin Health and Loddon Mallee Health Network.⁷⁰⁰

The government's Better at Home initiative has funded many home-based care programs.⁷⁰¹ But use of remote monitoring technologies is still limited. A statewide service will ensure fair access, provide consistent service quality and allow more efficiencies.

The Victorian Government should design and fund a statewide virtual care service to monitor patients at home. This should include a statewide digital platform for remote monitoring. It can introduce the service in stages, for example by clinical pathway or region.

A statewide service can focus on patients with chronic conditions. These include heart disease, lung disease and diabetes.⁷⁰² This would ease demand on health infrastructure.⁷⁰³ Chronic conditions are a leading cause of preventable hospital visits.⁷⁰⁴

When expanding digital healthcare, the government should fund change management and staff training.⁷⁰⁵ Some people in vulnerable communities or with low digital literacy might also find it difficult to access virtual care.⁷⁰⁶

Different funding models can also provide incentives for virtual care.⁷⁰⁷ Changes to funding models are already being considered nationally.⁷⁰⁸

Cost range, timing and funding

We estimate that expanding digital healthcare will cost \$100 million to \$200 million over 5 years. This is in addition to existing hospital funding. General government revenue can fund this recommendation. Expanding virtual care may also require changes to hospital and health service funding models. Our estimated costs do not include this.

Setting up medical image sharing and virtual care will each cost \$50 million to \$100 million. This includes establishing a software platform, training staff and a dedicated team to support implementation of new systems across all health services over 3 years. The government should aim for full implementation of these systems by 2030.

Running these systems will cost a further \$25 million a year. This includes \$5 million for medical image sharing and \$20 million for virtual care. These costs include software platform licenses, patient monitoring devices, staff tablets and running a help desk. Our costs assume virtual care supports approximately 4,000 Victorians each week.

Virtual emergency care in Victoria

The Victorian Virtual Emergency Department (Virtual ED) shows the potential of statewide virtual care services to reduce pressure on hospitals and improve access to healthcare in regional areas. The Virtual ED is a 24-hour statewide service run by Northern Health that allows nurses and doctors to assess patients with non-life-threatening emergencies through video calls.⁷⁰⁹

Doctors can provide patients with electronic scripts, refer them to other health services or direct them to attend an emergency department in person.⁷¹⁰ Patients can contact the Virtual ED directly or be referred from residential aged care, urgent care centres or other healthcare providers.⁷¹¹ Patients can access expert medical advice for urgent problems without attending a hospital. This can be particularly effective for people living in regional and rural Victoria, who often travel long distances to access care.

The Virtual ED also provides clinical support for paramedics, potentially avoiding unnecessary ambulance transfers.⁷¹²

Early evaluation of the Virtual ED found that 86% of patients using the service did not need to then attend an emergency department.⁷¹³ One academic study found there were cost savings from avoided emergency presentations in an earlier virtual emergency department pilot in Victoria.⁷¹⁴ These findings are supported by evaluations of similar virtual emergency department trials in Australia and internationally.⁷¹⁵

The Victorian Government provided funding to expand the capacity of the Virtual ED to 1,750 calls each day by 2028–29.⁷¹⁶



Fix critical public hospital infrastructure

Redevelop the Alfred, Austin and Royal Melbourne hospitals.

Some of Victoria's major tertiary hospitals urgently need renewal

Victoria's hospitals face multiple challenges including an ageing population, an increase in chronic diseases, rising service delivery costs and workforce shortages.⁷¹⁷ By 2051, around one-fifth of Victorians will be 65 or over.⁷¹⁸ About 80% of people in this age group have at least one chronic health condition, and 28% have 3 or more.⁷¹⁹ Hospitals must be able to meet these changing demands.

Tertiary hospitals provide the highest level of complex and specialised healthcare, including emergency care, organ transplants and treatment for rare cancers.⁷²⁰ Audits show that 3 of Victoria's major tertiary hospitals – the Alfred, Austin and Royal Melbourne hospitals – have needed redeveloping since at least 2017.⁷²¹

These hospitals provide complex acute care to all Victorians.⁷²² For example, the Alfred Hospital is Australia's largest trauma centre and treats over half of all major Victorian trauma cases.⁷²³ The Austin Hospital specialises in liver transplants and has a state-of-the-art spinal cord unit.⁷²⁴ The Royal Melbourne Hospital has one of the state's busiest emergency departments and provides specialised care including neurosciences and stroke services.⁷²⁵

The 3 hospitals house Victoria's most advanced medical facilities and technology, but critical maintenance issues and deteriorating aged facilities create serious risks that can compromise the delivery of safe, high-quality patient care.⁷²⁶ The Alfred Hospital has had to close wards and reschedule procedures due to infrastructure challenges. Its operating theatres urgently need replacing.⁷²⁷ Infrastructure issues mean that the Austin Hospital is unable to use some of its facilities.⁷²⁸ Many assets at the Royal Melbourne's Parkville and Royal Park campuses are past their useful life.⁷²⁹

Immediate government action is required to redevelop hospital infrastructure

In 2022, the Victorian Government committed funding to start redeveloping the Royal Melbourne Hospital. This funding was to build a new facility at Arden and prepare the Parkville site for future upgrades.⁷³⁰ The government has since announced that the facility at Arden will not go ahead.⁷³¹ It has not yet provided details on the updated scope of works or timeframe to redevelop Parkville.

The government has also announced funding to upgrade the Austin Hospital's emergency department and to help maintain fire safety, electrical infrastructure and in-patient care at the Alfred Hospital.⁷³² While this addresses some immediate needs, these hospitals still require urgent capital works.⁷³³

Providing hospital services in run-down assets can drive up long-term costs.⁷³⁴ The Victorian Government should announce the scope and timeframes to redevelop the Royal Melbourne Hospital's facilities in Parkville. It should replace the Alfred Hospital's operating theatres and announce the scope, timing and funding to further redevelop the Alfred and Austin hospitals. It should start construction on all 3 hospitals in the next 5 years and complete them by 2035.

The government should design flexible facilities that can adapt as service demands change.⁷³⁵ Staging delivery of major hospital upgrades will help to address construction workforce shortage issues. It will also help manage cost, timing and other project risks.⁷³⁶

Upgrading these hospitals will mean they can continue to provide higher complexity care to patients from all over Victoria. The government will also need to expand infrastructure capacity in response to rapid population growth in Melbourne's outer suburbs (see [recommendation 45](#)).

Cost range, timing and funding

We estimate redeveloping the 3 hospitals will cost \$6 billion to \$8 billion over the next 10 years. This cost is in addition to funding that the government has already announced.⁷³⁷

General government revenue can fund the hospital redevelopments. The Victorian Government can also consider alternative funding sources, like leasing parts of hospitals to businesses who then provide services for hospital staff, consultants, patients and visitors. Other funding sources include property income, provision of other services, donations and bequests. The government can use funding models like public private partnerships and ground lease models to enable private financing and delivery.⁷³⁸

This cost range includes renewing or replacing ageing infrastructure like existing buildings, plant and equipment. The Victorian Government might expand these hospitals at the same time, but at additional cost. We estimate that operational costs are unlikely to increase following the redevelopments, given existing infrastructure is inefficient and already has high maintenance costs.



Deliver corrections facilities and transition housing that reduce reoffending

Invest more in prison health facilities, culturally safe corrections facilities and post-release transition housing.

Victoria's prison population is rising again

Victoria's prison population fell sharply in recent years, driven in part by the COVID-19 pandemic, changes in court processes and fewer prisoners on remand.⁷³⁹ From a peak of over 8,000 in 2019, prisoner numbers fell 27% to fewer than 6,000 by 2024.⁷⁴⁰ But numbers are now rising again.

Victoria's bail laws have changed and crime rates have returned to historical levels.⁷⁴¹ This means more people are going to prison.⁷⁴² There was a 22% rise in adults and a 71% increase in young people on remand in April 2025 compared with the same time in 2024.⁷⁴³ This has triggered the need to expand capacity at youth justice facilities and prisons.⁷⁴⁴

Prisons are costly to build, run and keep. The Victorian Government spent \$1.6 billion on prisoner support and services in 2023–24.⁷⁴⁵ A large share of this goes towards repeat offenders. Almost half of adult prisoners return to corrective services within 2 years of release.⁷⁴⁶

High rates of reoffending affect the community and contribute to capacity issues in prisons.⁷⁴⁷ As it expands prison capacity, the Victorian Government should prioritise investment in health, housing and First Peoples' cultural facilities that support rehabilitation and reduce reoffending.

Prisons house people with complex health needs

People in prison have higher levels of mental health problems, chronic disease and disability than the general population.⁷⁴⁸ However, some prisoners find it difficult to access healthcare.⁷⁴⁹ At its worst, this has led to preventable deaths in custody.⁷⁵⁰

More prisoners means more pressure on prison health facilities. For example, part of Port Phillip Prison is staying open longer than planned to provide enough subacute beds in Victoria's prison system.⁷⁵¹

Poor physical and mental health can contribute to people reoffending when they are released.⁷⁵² Previous reviews recommended that the government provide better access to healthcare and mental health services in prisons.⁷⁵³ This can help people rehabilitate and improve community safety.⁷⁵⁴ In the long term, it can help manage the costs associated with repeat offending.⁷⁵⁵ The Victorian Government should invest in more health and mental health facilities and services in prisons.

Culturally safer facilities help address the needs of First Peoples

First Peoples face entrenched systemic racism.⁷⁵⁶ Legislative and policy decisions continue to contribute to the overrepresentation of First Peoples in Victoria's prisons.⁷⁵⁷ They are 16 times more likely to be in prison than non-Aboriginal and Torres Strait Islander Victorians.⁷⁵⁸ Prisons can cause lifelong harm to First Peoples.⁷⁵⁹

The independent cultural review of Victorian prisons and corrections facilities found that First Peoples in custody needed a culturally safer environment that recognises and protects their needs, rights, identities, histories and humanity.⁷⁶⁰ Culturally safe corrections facilities can be designed with First Peoples to incorporate cultural spaces and programs led by Elders, and support healing and rehabilitation through stronger connections to culture, family and Country.⁷⁶¹ These connections also reduce the risk of First Peoples being released from prison into homelessness.⁷⁶²

The Wulgunggo Ngalu Learning Place is a joint initiative between the Victorian Government and Aboriginal people in Gippsland. It is a culturally safe place for Aboriginal men completing community corrections orders.⁷⁶³ Residents can learn new skills, reconnect with their culture and take part in programs that address the causes of offending. The government has also opened an Aboriginal healing unit in the Dame Phyllis Frost Centre to provide culturally safe rehabilitation support for Aboriginal women in custody.⁷⁶⁴

The government should invest in making more existing and new corrections facilities culturally safer.⁷⁶⁵ This will reduce reoffending by First Peoples and the harm that imprisonment can cause them.

Social housing can help prisoners transition into the community

Many people leaving prison are at high risk of becoming homeless and reoffending.⁷⁶⁶ But prisoners released into stable housing are much less likely to reoffend.⁷⁶⁷ For example, people allocated social homes on leaving prison have fewer police incidents and court appearances.⁷⁶⁸ Stable housing reduces reoffending and lowers justice system costs.⁷⁶⁹ Putting people in prison can cost 23 times more than providing them with housing support.⁷⁷⁰

Victoria has some places that help prisoners transition into the community. For example, the Maribyrnong Community Residential Facility provides temporary housing for around 40 men leaving prison.⁷⁷¹ Baggarook provides culturally safe housing and services for up to 6 Aboriginal women as they transition back into the community.⁷⁷²

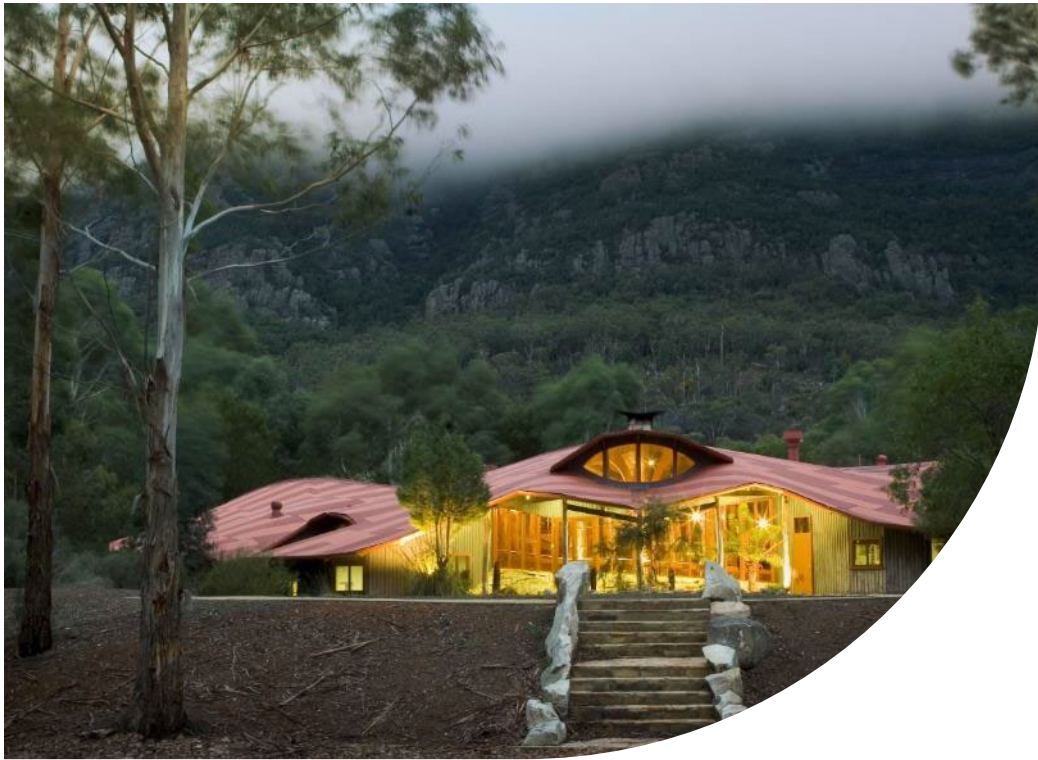
Evidence shows that these facilities work. For example, men supported by the Maribyrnong Community Residential Facility are 30% less likely to reoffend.⁷⁷³ But there are not enough places in transition housing to meet demand.⁷⁷⁴ The government should expand post-release transition facilities so more people can access them. It can also help people leaving prison or transition housing find other suitable homes, such as social housing (see [recommendation 1](#)).

Cost range, timing and funding

We estimate this recommendation will cost \$200 million to \$350 million over 10 years for implementation and capital works. General government revenue can fund this recommendation.

The cost of this recommendation is to build post-release transition accommodation for up to 80 people, expand facilities for more health services in existing prisons and deliver culturally safe corrections facilities. We estimate the homes will cost \$100 million to \$150 million, renovations for health services will cost \$50 million to \$80 million and culturally safe facilities \$60 million to \$100 million.

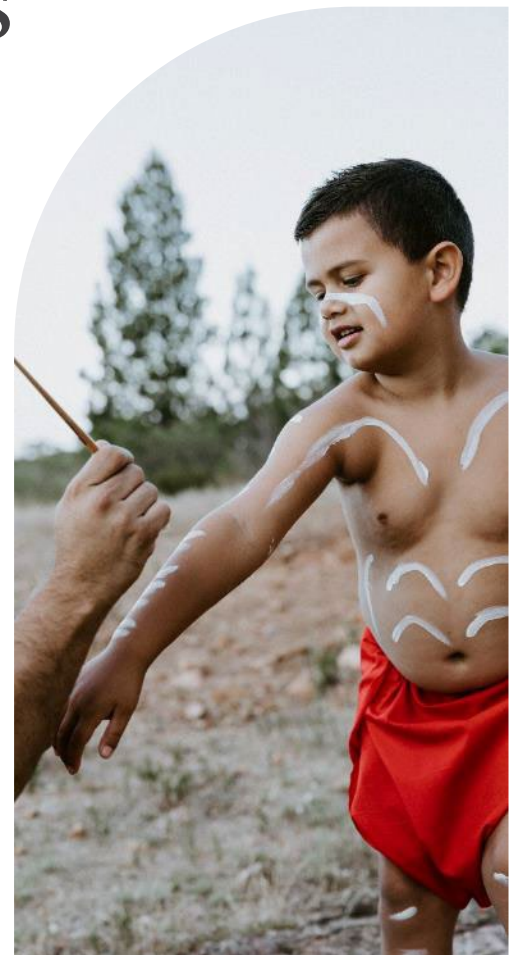
The new facilities will need \$4 million to \$7 million a year to maintain.



Objective

First Peoples have self-determination and equal outcomes to other Victorians

First Peoples have the power and resources to make decisions about their services, infrastructure, communities and future. Victoria has closed the gap in outcomes between Aboriginal and Torres Strait Islander people and other Victorians. Victorian infrastructure reflects respectful engagement with First Peoples' communities, draws on their knowledge, and celebrates their history, culture and values.



First Peoples were Victoria's first infrastructure builders

First Peoples have practised their law, lore, customs and languages for tens of thousands of years. They have nurtured Country through their spiritual, cultural, material and economic connections to the land, water and resources.⁷⁷⁵ In all regions of Victoria, First Peoples express a strong connection to Country and emphasise its importance to wellbeing and cultural identity.⁷⁷⁶

First Peoples were our first infrastructure builders.⁷⁷⁷ For example, the Gunditjmara people built houses and villages along the Budj Bim Cultural Landscape. They farmed kooyang (short-finned eels) and other fish by cultivating ancient lava flow channels. This infrastructure is one of the world's oldest freshwater aquaculture systems.⁷⁷⁸

European settlement brought about devastating changes for First Peoples. The colonial system excluded Aboriginal and Torres Strait Islander peoples from the places they traditionally occupied and disrupted their culture and kinship systems.⁷⁷⁹ The construction of roads, railways, ports and telegraph lines enabled settlers to expand further into Victoria, without the agreement of First Peoples. Dispossession resulted in social exclusion, institutionalisation and disadvantage for First Peoples.⁷⁸⁰

The consequences continue to play out in the lives of First Peoples today. They have lasting effects on health, housing, employment and education outcomes, and in their interactions with the criminal justice system.⁷⁸¹ First Peoples still experience more disadvantage than non-Aboriginal and Torres Strait Islander people on most indicators.⁷⁸²

All the objectives of this strategy are relevant to Victorian First Peoples' communities. But the unique cultures and histories of Aboriginal and Torres Strait Islander peoples call for a specific objective. Infrastructure planning, design, delivery, operation and maintenance offer opportunities for Aboriginal self-determination, to improve outcomes for First Peoples and to protect and heal Country.⁷⁸³

Self-determination requires a different approach to infrastructure planning and delivery

Victorian First Peoples are diverse and have different hopes and goals. But all want to practice culture through relationships to Country.⁷⁸⁴ This can be caring for waterways, managing living cultural heritage, traditional burning or accessing culturally significant places.⁷⁸⁵ People making decisions about land, water and infrastructure must understand and respect Traditional Owner aspirations and goals. Their culture and Country need to be preserved for future generations.⁷⁸⁶

Self-determination describes First Peoples' right to have control and authority over their own lives.⁷⁸⁷ It can mean different things to different communities in different contexts.⁷⁸⁸ When applied to infrastructure, it empowers First Peoples' communities to own, design and control infrastructure for their social, economic and cultural needs. We held discussions with First Peoples' representatives including Registered Aboriginal Parties and Aboriginal Community Controlled Organisations to hear their perspectives and understand the goals important to them.⁷⁸⁹ We developed recommendation 23: Invest in secure homes for First Peoples to support the self-determined Aboriginal housing strategy *Mana-na-worn-tyeen maar-takoort: every Aboriginal person has a home*. We also worked with the Victorian Aboriginal Community Controlled Health Organisation to develop recommendation 24: Fund better health and wellbeing infrastructure for First Peoples.

The Victorian Government is committed to closing the gap in life outcomes between Victorian First Peoples and non-Aboriginal and Torres Strait Islander Victorians.⁷⁹⁰ Victoria's Statewide Treaty Agreement provides a path for First Peoples in Victoria to have self-determination over decisions which affect their lives, culture and Country.⁷⁹¹ Treaties can deliver meaningful reform by increasing Traditional Owners' autonomy and involvement in infrastructure projects undertaken on Country.⁷⁹²

The Yoorrook Justice Commission was Victoria's first formal inquiry into the extent and impact of historical and ongoing systemic injustice against First Peoples in Victoria. It found self-determination is critical to ending systemic injustice, but more needs to be done.⁷⁹³ To enable self-determination, the Victorian Government must share decision-making powers with First Peoples.⁷⁹⁴ This means empowering First

Peoples' organisations and representative bodies to design and deliver policies, services and infrastructure. It will require governments to work with these organisations to build capacity over time.⁷⁹⁵

Poorly planned infrastructure can harm and destroy Aboriginal cultural heritage

Infrastructure continues to be built on and use materials derived from the traditional lands of First Peoples in Victoria, but decisions are still made without their involvement. This can lead to infrastructure that damages Country and does not deliver prosperity or meet the cultural needs of First Peoples.⁷⁹⁶ It can also worsen existing injustice and inequality.⁷⁹⁷

Each infrastructure policy and project that affects culture and Country needs the early, direct and ongoing involvement of First Peoples.⁷⁹⁸ But infrastructure developers often have a limited understanding of First Peoples' commitments to Country and community.⁷⁹⁹ Cultural Heritage Management Plans are required for some large development projects but these plans are often done late in the project development phase.⁸⁰⁰ Registered Aboriginal Parties can only advise on these plans and have reported having limited power to refuse a plan.⁸⁰¹

The Yoorrook Justice Commission and the Victorian Aboriginal Heritage Council have found that protections for First Peoples' cultural heritage are inadequate.⁸⁰² There is a lack of accountability or penalties when cultural heritage is destroyed, causing significant emotional and cultural loss for Traditional Owners.⁸⁰³ The government is undertaking a review of cultural heritage management.⁸⁰⁴

Infrastructure can help close the gap for First Peoples

Infrastructure can connect First Peoples to family and community and support connections to Country. It can reflect Aboriginal culture in its planning and design.⁸⁰⁵ It can also help improve economic, health and wellbeing outcomes for First Peoples by improving access to jobs and services.⁸⁰⁶

First Peoples have significantly less access to affordable, secure and quality housing, but a safe and secure home is essential for good health and wellbeing.⁸⁰⁷ It also supports access to employment, education and training.⁸⁰⁸

The Aboriginal population in Victoria is growing at an average annual rate of 3.8%, more than double the 1.6% growth rate of the broader population.⁸⁰⁹ Victorian First Peoples already need many extra homes just to meet existing demand. They will need more healthcare, mental health and other services, along with infrastructure that can support service delivery in a culturally safe way.⁸¹⁰ This means facilities where First Peoples can feel safe, and free from challenge or denial of their identity and experience.⁸¹¹ It includes creating spaces that celebrate First Peoples' cultures and acknowledge the Country on which they are located.⁸¹²

Our recommendations support self-determination and better outcomes for First Peoples in the housing, health and wellbeing sectors. Elsewhere in this strategy we consider responses to improve access to culturally safe and appropriate facilities (see recommendations [2](#), [19](#) and [22](#)) and to return more water to Traditional Owners (see future option – [Plan for and invest in manufactured water](#)).

Invest in secure homes for First Peoples

Fund a 10-year program to build social homes for First Peoples and provide secure and sustainable tenancies. Work with Aboriginal housing providers and Traditional Owner corporations to develop capacity across the Aboriginal housing and homelessness sector.

Housing outcomes for Victorian First Peoples are worse than for other Victorians

Historical experiences of dispossession, discrimination and social exclusion have resulted in Aboriginal and Torres Strait Islander peoples having less secure housing and lower rates of home ownership than other Australians.⁸¹³ Around 10% of Aboriginal households own their home outright compared to 30% for all Australians. One third of Aboriginal people live in social housing compared to 3% of all Australians.⁸¹⁴ By 2041, Victoria will have more than 60,000 Aboriginal households, up from around 34,000 in 2021.⁸¹⁵

First Peoples continue to face discrimination and exclusion from the housing market. They have fewer opportunities to buy a home, and it is more difficult for them to secure private rental homes.⁸¹⁶

As a result, Victorian First Peoples are 10 times more likely to seek homelessness support than non-Aboriginal and Torres Strait Islander people.⁸¹⁷ First Peoples' households are also overrepresented on Victoria's social housing waiting list. More than 6,000 First Peoples' households are on the waiting list, or one in 6 First Peoples' households in Victoria.⁸¹⁸ This rate is 5 times higher than non-Aboriginal and Torres Strait Islander households.⁸¹⁹

A safe, secure, affordable and culturally appropriate home is essential for good health and wellbeing.⁸²⁰ Stable, culturally appropriate housing can help close the gap in life outcomes for First Peoples.⁸²¹

Aboriginal housing providers need funding certainty to deliver secure homes

Mana-na-worn-tyeen maar-takoort: every Aboriginal person has a home is Victoria's self-determined housing policy framework.⁸²² It lays the foundation for housing and homelessness reform to benefit First Peoples.⁸²³ The Victorian Government has endorsed the framework.⁸²⁴ The Yoorrook Justice Commission recommended that the government deliver the framework in full.⁸²⁵

Mana-na-worn-tyeen maar-takoort sets a target to build at least 5,000 social homes by 2036.⁸²⁶ The Victorian and Australian governments funded around 1,000 new social homes for First Peoples over the 4 years to 2026–27. This is below the number of homes the framework calls for.⁸²⁷ It also falls well short of the number of First Peoples' households already in need of a home.

The Victorian Government should fund a 10-year program to build at least 300 Aboriginal-owned social homes each year. This aligns with *Mana-na-worn-tyeen maar-takoort* targets.⁸²⁸ The scale of need is greater, but this will make a meaningful difference in housing outcomes for First Peoples. New homes should be close to jobs, public transport and services.⁸²⁹ They will contribute towards our recommendation to build more social housing (see [recommendation 1](#)).

Many First Peoples experience disadvantage. This can make it hard for some tenants to meet their responsibilities once they have a home.⁸³⁰ Aboriginal housing providers deliver housing services and culturally appropriate, affordable and secure homes to First Peoples. But they must compete for funding with larger, non-Aboriginal service providers.⁸³¹

Like many other parts of the social services and housing sectors, contracts are too short to allow Aboriginal housing providers to plan and deliver services that meet community needs.⁸³² The government should fund

Aboriginal housing providers to deliver tenancy support to help people stay in their homes and avoid homelessness.⁸³³

Aboriginal communities should lead development of housing programs that affect them

Aboriginal self-determination requires Aboriginal-led housing solutions. Aboriginal housing providers are best placed to provide culturally appropriate, affordable and secure homes to their communities. Aboriginal-led programs can also build economic strength and opportunity.⁸³⁴

The government should work with Aboriginal housing providers, Traditional Owner corporations and Aboriginal Trusts to expand the capacity of the Aboriginal housing sector to develop and manage more homes and housing services.⁸³⁵ This can include home ownership programs and initiatives to create intergenerational wealth for First Peoples' communities and reduce future reliance on social housing.

Cost range, timing and funding

We estimate that building 3,000 social homes will cost the Victorian Government \$1 billion to \$1.4 billion over 10 years. These cost estimates are already included in the total cost to build social homes in [recommendation 1](#). However, costs to the Victorian Government will vary depending on how land is provided, the extent to which existing social homes are demolished to build new homes and how much the Australian Government contributes. General Victorian Government revenue can partly fund this recommendation.

We assume the Victorian Government can build all new homes on land it already owns, or on land owned by local government, Aboriginal housing providers, Aboriginal Trusts or other not-for-profit housing organisations. This approach can also include transferring ownership of the land to Aboriginal housing providers and Aboriginal trusts. If the government needs to buy land to build social homes on, it might cost \$400 million to \$500 million extra.

The Australian Government can partner with the Victorian Government to fund this recommendation. We have assumed that the Australian Government will fund 5% of costs based on existing levels of funding, including the Housing Australia Future Fund.⁸³⁶ There is an opportunity for the Australian Government to increase its share of the costs to deliver social homes.⁸³⁷

First Peoples' households are typically larger than non-Aboriginal and Torres Strait Islander households. They also experience higher rates of crowding. This leads to a significant need for more 3 or 4 bedroom homes in good locations.⁸³⁸ We used costs at the higher end of the range from [recommendation 1](#) to reflect this. But our recommendation also covers different home types and sizes to meet the diverse needs of Aboriginal households.⁸³⁹

This estimate includes \$15 million to \$20 million a year for tenancy support services and for the Aboriginal housing sector to build skills to develop and manage more homes.⁸⁴⁰

Once complete, new homes for First Peoples will need around \$30 million each year for maintenance. Housing rental payments collected from tenants can contribute. These payments are capped at between 25% and 30% of household income, including wages and government payments.⁸⁴¹ The Victorian Government can also ask the Australian Government for more funding.⁸⁴²

Victoria's negotiated Statewide Treaty Agreement includes provision for a First Peoples' Infrastructure Fund.⁸⁴³ This aims to support Aboriginal Community Controlled Organisations with maintenance, minor capital works and infrastructure upgrades.

Fund better health and wellbeing infrastructure for First Peoples

Fund and start health and wellbeing infrastructure projects identified by Aboriginal Community Controlled Organisations (ACCOs). Provide additional annual funding to health and wellbeing ACCOs to grow their existing skills and capacity to plan, develop and deliver new and upgraded infrastructure in a self-determined way. Continue to fund minor works and repairs until a self-determined infrastructure fund is introduced.

Victorian ACCOs' holistic health and wellbeing care model is effective

The Victorian and Australian governments have committed to closing the gap in health outcomes for Aboriginal and Torres Strait Islander peoples.⁸⁴⁴ But the gap continues. In 2024, Victorian First Peoples were more likely to be hospitalised for preventable diseases than non-Aboriginal and Torres Strait Islander people.⁸⁴⁵ First Peoples are also at greater risk of being diagnosed with cancer.⁸⁴⁶

The Victorian ACCO model promotes social, emotional, physical and cultural wellbeing.⁸⁴⁷ It takes a holistic approach to health and wellbeing and includes family education, justice and aged care services, among others.⁸⁴⁸ Studies show that the model improves the health of Aboriginal and Torres Strait Islander peoples and helps close the gap.⁸⁴⁹

The poor standard of existing ACCO health and wellbeing infrastructure limits service delivery

Demand for health and wellbeing services from ACCOs is increasing.⁸⁵⁰ ACCOs get their funding from many different programs, mostly through short-term grants. They do not have funding certainty to commit to major infrastructure projects.⁸⁵¹ Existing infrastructure funding only covers small to medium-sized projects and occasional repairs.⁸⁵²

The Victorian Aboriginal Community Controlled Health Organisation recently assessed ACCO health and wellbeing infrastructure. It found that 82% of buildings need to be fully or partially replaced in the next 15 years.⁸⁵³ Many of the buildings are not culturally safe for First Peoples (see box – [Culturally safe building design](#)). This can lead to people missing or not making appointments. It also limits service delivery.⁸⁵⁴

The assessment helps identify the most urgent health and wellbeing infrastructure projects that need immediate attention.⁸⁵⁵ The Victorian Government should fund and start them in the next 5 years.

ACCOs can only plan services and facilities with their communities when they have funding certainty. The Victorian Government should provide additional annual funding to cover minor upgrades and maintenance for health and wellbeing ACCOs. This will allow them to maintain and upgrade existing infrastructure to a reasonable standard.

Aboriginal Community-controlled infrastructure should remain in, or be transferred to, ACCO ownership. This respects Aboriginal self-determination. Ownership increases ACCO equity. It improves financial sustainability and helps enable service delivery to close the gap. ACCO building and maintenance services also provide economic development and employment opportunities for First Peoples.⁸⁵⁶

Self-determination requires reform in ACCO health and wellbeing infrastructure delivery

The Productivity Commission found that closing the gap requires governments to share power with First Peoples' communities.⁸⁵⁷ To make this happen, the government has negotiated an in-principle Treaty with the First Peoples' Assembly of Victoria.⁸⁵⁸ Treaty legislation is being considered by the Victorian Parliament.⁸⁵⁹ It includes provision for a new First Peoples' Infrastructure Fund, to be introduced from 1 July

2026. This will support long-term, self-determined maintenance and minor capital works, infrastructure upgrades and project planning.⁸⁶⁰

The Victorian Aboriginal Community Controlled Health Organisation has the skills and capabilities to work with health and wellbeing ACCOs to place them at the centre of infrastructure planning, development and delivery. Future infrastructure delivery should consider expanding the role of ACCOs to plan and deliver projects or creating partnership models that can build their resources and capability to do so.

These projects can also provide training, jobs and business opportunities for First Peoples' communities and organisations, so they gain skills and will benefit from these investments.⁸⁶¹ They also mean that upgraded and new infrastructure meets each ACCO's self-determined needs. They provide a pathway towards self-determined ACCO infrastructure governance and delivery beyond the first wave of priority projects. The government should fund this work until the new infrastructure fund is established.

Culturally safe building design

Cultural safety is when people feel comfortable to be themselves in their environment. Buildings that are designed to be culturally safe support more effective service delivery in healthcare.⁸⁶²

The physical design and location of a building or facility can affect whether visitors feel culturally safe. For people who have experienced racism or discrimination, or fear experiencing it, culturally safe environments are places they trust they can enter without having those experiences. When people feel a place is culturally safe, they are more likely to use its services.⁸⁶³

Some general practitioners report that culturally unsafe building design contributes to First Peoples feeling uncomfortable sharing medical information or having tests.⁸⁶⁴ In some instances, First Peoples leave appointments early without receiving treatment.⁸⁶⁵

An assessment of health and wellbeing ACCO infrastructure found that 98% of the buildings ACCOs use are not culturally safe. Reasons include:

- the use of inherited colonial buildings
- buildings that are not fit-for-purpose
- cramped buildings with few or no windows
- places where Community has a negative shared history with previous uses.⁸⁶⁶

These findings do not reflect cultural safety of the organisations or their services.⁸⁶⁷ Despite these infrastructure limitations, ACCOs do their best to maintain a culturally safe environment for staff and clients.⁸⁶⁸

Cost range, timing and funding

We estimate this draft recommendation will cost \$400 million to \$500 million over 5 years, with construction starting before 2031. This includes capital and delivery costs for the most urgent health and wellbeing ACCO facilities and the creation of a minor works and maintenance fund.⁸⁶⁹ This can be funded through general government revenue. The Victorian Government can seek additional Australian Government funding.⁸⁷⁰

Capital costs for ACCO facilities range between small (\$5 million to \$10 million), medium (\$20 million to \$50 million) and large (\$50 million to \$80 million), using costs from similar projects.⁸⁷¹ The Victorian Aboriginal Community Controlled Health Organisation has estimated that it would cost \$25 million a year for 5 years to deal with the urgent backlog of minor works and repairs.⁸⁷² This funding is in addition to the existing Aboriginal Community Infrastructure Program, which provides \$15.5 million over 3 years to June 2026.⁸⁷³

We estimate implementation costs of \$3 million to \$5 million a year for staff and consultants to plan, consult on and support the delivery of infrastructure projects and the fund.⁸⁷⁴ We expect all new and updated facilities to cost \$5 million to \$7 million each year to maintain.

Victoria's negotiated Statewide Treaty Agreement includes provision for a First Peoples' Infrastructure Fund.⁸⁷⁵ This aims to support Aboriginal Community Controlled Organisations with maintenance, minor capital works and infrastructure upgrades.



Objective

Victoria has a thriving natural environment

Victoria's ecosystems are biodiverse and clean. Victoria does not pollute or put waste in the air, water, land, and natural ecosystems. Victoria produces net zero greenhouse gas emissions.



Victorians want healthy environments

Victorians told us they want a thriving natural environment.⁸⁷⁶ They identified reducing greenhouse gas emissions as a priority.⁸⁷⁷ Victorians also value actions that help to keep Victoria's ecosystems biodiverse and clean. This includes keeping water for the environment, quickly reducing waste and encouraging more recycling.⁸⁷⁸

Victoria's plants and animals need healthy ecosystems. Minimising waste and pollution helps rivers, waterways and oceans stay healthy. This benefits the fish, turtles and other aquatic life in these ecosystems. On land, parks and forests provide habitat to many of Victoria's mammals and birds. Some species are not found anywhere else in the world.⁸⁷⁹ For example, the helmeted honeyeater is a bird found only in a small area in the upper Yarra Valley.⁸⁸⁰

Building new infrastructure can threaten the environment. It can lead to the destruction of habitat or produce more pollution.⁸⁸¹ Using materials like concrete and steel for new infrastructure creates greenhouse gas emissions.⁸⁸² But infrastructure can also help maintain a healthy environment. Better using existing infrastructure and using recycled materials in maintenance and construction can keep emissions down.⁸⁸³ It also reduces the amount of waste Victoria sends to landfills.

Well-planned infrastructure can produce less environmental pollution and fewer greenhouse gas emissions. Building infrastructure off-site and using pre-built parts can help.⁸⁸⁴ How infrastructure runs can also change the amount of air pollution from energy generation and transport. It can help keep water for the environment. These actions on emissions can increase productivity and lower costs (see section – [Victoria has a high productivity and circular economy](#)).

A thriving natural environment benefits Victorians

Communities value Victoria's natural environments.⁸⁸⁵ People benefit when they can visit and explore natural areas. For example, access to parks can make Victorians healthier. This saves Victoria \$80 million to \$200 million of costs from illness each year.⁸⁸⁶ The trees and soil in Victoria's parks also remove emissions from the air. They store at least 270 million tonnes of carbon.⁸⁸⁷ This helps Victoria minimise the dangerous impacts of climate change.

Healthy environments have many other benefits. Victoria's forests filter rain before it flows into water storage facilities. Most of Melbourne's drinking water passes through forests in protected catchments.⁸⁸⁸ These parks and forests save Victorian cities and towns about \$33 million in water treatment costs each year. In rural areas this increases to \$50 million each year.⁸⁸⁹

Thriving local environments also help local communities. For example, the Birrarung (Yarra River) has significant cultural value for First Peoples.⁸⁹⁰ It provides \$730 million in economic benefits each year.⁸⁹¹ People can enjoy spending time near the river and using it for recreation.⁸⁹² Farmers also use the river's water. The trees along its banks remove greenhouse gases from the air.⁸⁹³

Victoria's natural environments attract tourists, creating \$1.4 billion in tourism-related benefits each year.⁸⁹⁴ Regional economies benefit from this, including from visitors to the Grampians, Great Ocean Road, Yarra Valley, Dandenong Ranges and Gippsland.⁸⁹⁵

Victoria's natural ecosystems are in decline

The health of Victoria's ecosystems has declined since European settlement. Victoria has cleared more than half its native vegetation in the past 200 years.⁸⁹⁶ Clearing still happens.⁸⁹⁷ Other ecosystems are also in decline. For example, Australia's average sea temperature has risen by over one degree Celsius since 1900.⁸⁹⁸ This has caused ocean acidification, which affects Victoria's marine ecosystems.⁸⁹⁹

Urban growth can lead to less biodiversity. Climate change and introduced pests can make this worse. More animal and plant species are at risk of becoming extinct.⁹⁰⁰ But the decline in Victoria's biodiversity can be slowed and there is hope for many species. For example, scientists thought the Victorian grassland earless

dragon was extinct as it was last seen in 1969.⁹⁰¹ They recently rediscovered the small lizard in native grasslands west of Melbourne.⁹⁰²

Climate change is an ongoing threat to Victoria's ecosystems

Victoria will become hotter and drier because of climate change. This will affect Victoria's parks, farmland and rivers. Bushfires have become more frequent in Victoria over the past 40 years.⁹⁰³ They are likely to occur more often in the future.⁹⁰⁴ In some places, this could cause entire ecosystems to collapse.⁹⁰⁵

Bushfires threaten Victoria's water security. Melbourne has historically relied on water from forested catchments. These areas are vulnerable to bushfires, which harm water quality and quantity.⁹⁰⁶ Fires can lead to landslides, and soil and ash in water holding areas.⁹⁰⁷

Less water flowing down Victoria's rivers will impact their health. Some rivers in southern Victoria already need more water.⁹⁰⁸ For example, the Moorabool River near Geelong is one of the driest in Victoria. In summer parts of it can dry out and kill fish.⁹⁰⁹

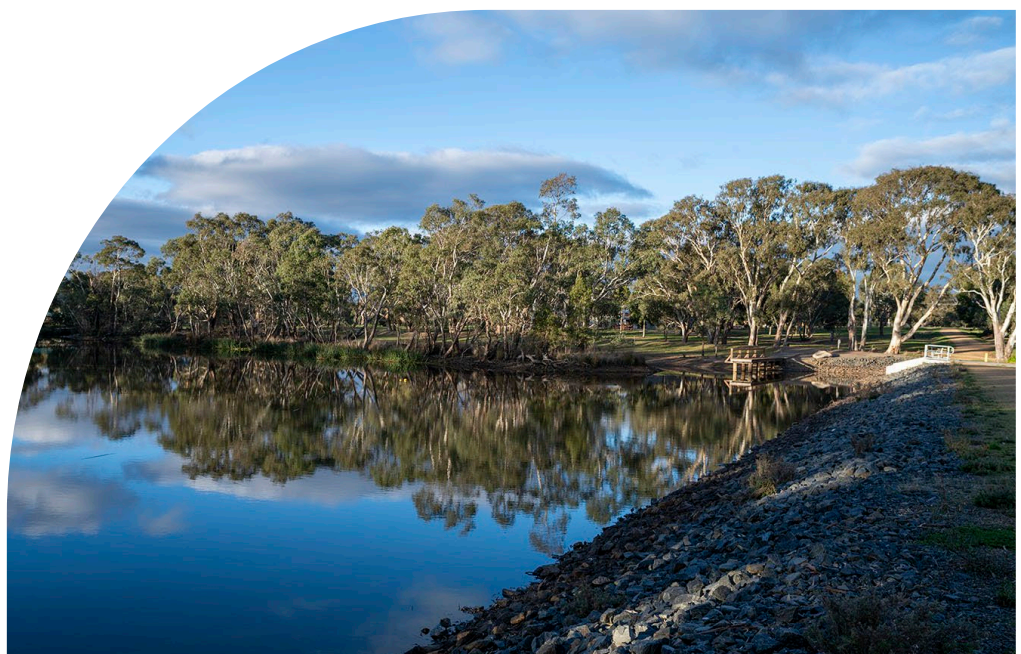
Infrastructure can contribute to a healthier environment

The Victorian Government can respond to these challenges. For example, Victoria can use new sources of water to meet future needs.⁹¹⁰ This means more water can stay in Victoria's rivers.

Traditional Owners have cared for Country and waterways for generations. Giving Traditional Owners more access to water supports their economic independence and can improve their wellbeing.⁹¹¹ Greater use of Traditional Owner knowledge in managing water can also lead to healthier ecosystems.⁹¹²

Planting more trees can help cool Victoria's cities. This can reduce energy costs by shading buildings from the heat and improve health by reducing heat stress and encouraging physical activity.⁹¹³ Trees also remove pollution and emissions from the air, reduce stormwater runoff and increase biodiversity.⁹¹⁴ Reducing the amount of waste Victorians produce means less rubbish ends up in Victoria's rivers, oceans and landfills. This further protects biodiversity.⁹¹⁵

Elsewhere in this strategy we consider how other infrastructure sectors like energy can contribute to a healthier environment and meet future needs of Victorian communities (see section – Victoria is resilient to climate change and other future risks).



Reduce greenhouse gas emissions from infrastructure

Adopt carbon values and measure carbon in infrastructure projects to reduce emissions.

Building and operating infrastructure produces emissions

Infrastructure contributes around 70% of Australia's greenhouse gas emissions.⁹¹⁶ Producing materials like cement and steel generates emissions.⁹¹⁷ Construction machinery often runs on fossil fuels. Buildings and infrastructure use energy when they run.

To reduce greenhouse gas emissions, governments and businesses can make swift and widespread changes to how they plan, build, maintain and reuse infrastructure. Victoria must reduce emissions generated when producing materials and building infrastructure to meet its emissions reduction targets. Acting now can reduce costs and improve productivity.⁹¹⁸ It can also promote innovation and grow jobs.⁹¹⁹

Infrastructure investment decisions need to consider emissions

Greenhouse gas emissions impose costs on the community. These costs include infrastructure damage from extreme weather.⁹²⁰ A carbon value represents the cost of these emissions to society. Cost benefit analyses use a carbon value to estimate how different projects and policies affect emissions. This encourages governments and businesses to reduce emissions and invest in cleaner alternatives.

The government does not have a standard method to value carbon. Existing guidance is out of date.⁹²¹ This makes it hard to compare the emissions of different materials and projects, and to report on them.⁹²² In our advice, *Opportunities to reduce greenhouse gas emissions of infrastructure*, we showed that Victoria can align its approach and timing with other governments.⁹²³ For example, Infrastructure Australia recommends carbon values of \$56 a tonne in 2025, rising to \$377 in 2050, to meet Australia's emissions reduction targets.⁹²⁴ Australia's infrastructure and transport ministers support using these nationally consistent carbon values for projects over \$100 million.⁹²⁵

State and territory governments need carbon values that reflect costs specific to their own emissions reduction targets. The Victorian Government should adapt the national approach and calculate carbon values that will meet Victoria's target of net zero emissions by 2045.⁹²⁶ It should then share these with local governments and industry to encourage a consistent approach.⁹²⁷

Assessing emissions from infrastructure requires a standard approach

In Victoria, infrastructure cost benefit analyses do not always include consistent carbon values.⁹²⁸ Project teams have little incentive to reduce emissions. They tend to focus on reducing monetary costs instead.

The Victorian Government should value carbon in infrastructure cost benefit analyses. This can encourage decision-makers to reduce carbon at the early stages of project planning when it has the greatest influence on outcomes (see Figure 15).⁹²⁹ The New South Wales Government has updated its requirements for valuing carbon and emission impacts in cost benefit analyses and issued detailed carbon measurement guidance.⁹³⁰

Australian and state governments have endorsed a consistent approach to measuring carbon in infrastructure projects.⁹³¹ The New South Wales Government has published policies and a roadmap for decarbonising infrastructure.⁹³² The Victorian Government should use these to inform updates to its business case, procurement and contracting guidance to prioritise reducing emissions. It should include emissions reduction requirements in tenders and government contracts.

If infrastructure projects measure and value carbon, options to reduce emissions can be compared.⁹³³ This will align Victoria’s approach with New South Wales, providing industry with greater certainty and incentives to reduce emissions from infrastructure.

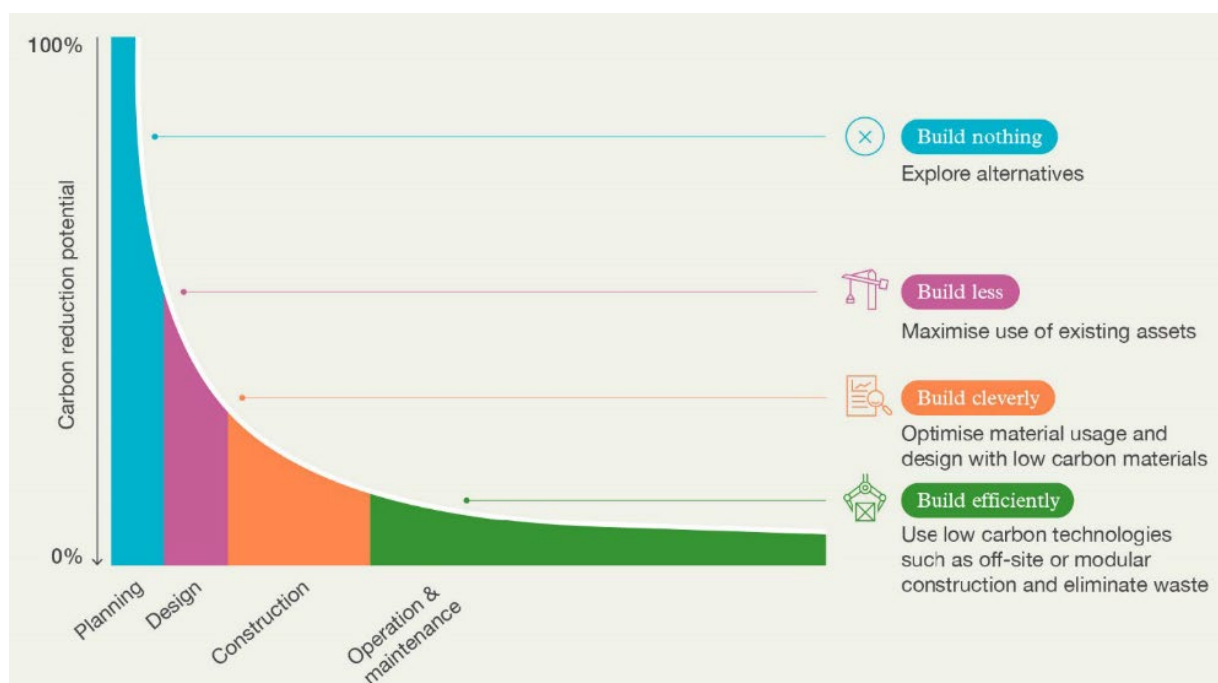
The government can help build more low carbon infrastructure

The Victorian Government should prioritise non-build and low-build solutions. It should better use existing infrastructure or modify it before building new.

When it does build, the government should use more low carbon and recycled materials. These are not used widely, making them more expensive.⁹³⁴ Government procurement practices can discourage low carbon options because they specify using certain designs and materials instead of performance outcomes.⁹³⁵

The government should work with industry to fast-track innovative low carbon materials and develop local supply chains.⁹³⁶ It should update standards and specifications to incentivise low carbon solutions and a performance-based approach.⁹³⁷

Figure 15: Carbon reduction potential across different project stages



Source: Infrastructure Victoria, adapted from World Green Building Council, *Bringing embodied carbon upfront: coordinated action for the building and construction sector to tackle embodied carbon*, 2019, p 20, accessed 24 December 2024.

Cost range, timing and funding

We estimate that this recommendation will cost around \$1 million and can be funded through general government revenue.

The cost includes working out Victoria’s carbon value, developing supporting policies and updating procurement guidelines, contracts, standards and specifications.

Advance integrated water management and use more recycled water

Work with partners to fund and deliver integrated water management projects. Determine the costs and benefits of introducing recycled drinking water in Victoria and pilot a recycled drinking water facility. Deliver a community education campaign on the need for investment in more water sources.

Integrated water management has many benefits

Integrated water management considers water, wastewater and stormwater services as a joint system. It can improve water security, public health, urban amenity and the environment.⁹³⁸ It can also help protect homes and infrastructure from floods. This includes places where existing stormwater systems become overwhelmed.⁹³⁹

The Victorian Government partners with organisations such as local governments and water authorities to deliver integrated water management projects (see case study – [Growing native plants with integrated water management](#)).⁹⁴⁰ Past projects provided recycled water to farms on the Bellarine Peninsula and built wetlands that remove excess nutrients and sediment from stormwater flowing into Bendigo Creek.⁹⁴¹

The government has set integrated water management targets. Current and planned projects in Melbourne will create 67 billion litres of recycled water.⁹⁴² But these will only provide 68% of the 2030 alternative water for agriculture target and 80% of the 2032 environmental water target.⁹⁴³ Many of the projects do not have funding yet.

The Victorian Government should work with partners to fund and deliver planned integrated water management projects. It should also find more projects to meet 2030 targets. These projects are an opportunity for Victoria to use more recycled water and boost water security.⁹⁴⁴

Victorians already use some recycled water

Victoria will need more climate resilient sources of water in future.⁹⁴⁵ Recycled water is wastewater that is treated to make it safe for people to use.⁹⁴⁶ Victorians use recycled water for agriculture, sports fields, parks, the environment and industry.⁹⁴⁷ Some households use it in gardens, laundries and toilets.⁹⁴⁸ Recycled water costs less than treated stormwater.⁹⁴⁹ It also relies less on rainfall, making it more resilient to climate change.⁹⁵⁰

Recycling water reduces demand on other drinking water sources. It also reduces the amount of treated wastewater released into oceans and waterways.⁹⁵¹ This protects biodiversity.⁹⁵² Victoria only reused 15% of its wastewater in 2021–22.⁹⁵³

Recycled drinking water is a further opportunity

Recycled water can be made safe to drink.⁹⁵⁴ People in Singapore, Perth and over 30 other places drink recycled water.⁹⁵⁵ The New South Wales Government is considering recycled drinking water in Sydney.⁹⁵⁶

Using recycled water for drinking would be new in Victoria. The Victorian Government should better understand recycled drinking water and consider whether to introduce it in Melbourne, Geelong and Bendigo. These places have large populations and projected water supply shortfalls.⁹⁵⁷ The government should determine the costs and benefits of using recycled drinking water by exploring how existing infrastructure can be used and what new infrastructure would be needed.

The government should also pilot a recycled drinking water facility. This can be a new facility or an upgrade to a recycled water facility that already exists. Pilot facilities provide data on treatment requirements.⁹⁵⁸ This

can give regulators a better understanding of whether recycled water can meet drinking water regulations. These facilities also improve consumer understanding.⁹⁵⁹ For example, water authorities in Sydney, Singapore and Silicon Valley have provided tours of recycled drinking water facilities.⁹⁶⁰

Many Victorians do not understand the need for investment in more water sources

Much of Victoria's water infrastructure is underground.⁹⁶¹ Some of it is ageing or in poor condition.⁹⁶² Water supply costs will increase in future as it will cost more to maintain and upgrade infrastructure.⁹⁶³

Recycled drinking water will also be a big change. People are more likely to support it if they know their community needs more drinking water.⁹⁶⁴ Consumer support for recycled drinking water also grows when people have more information.⁹⁶⁵

Victorians influence what their water corporations invest in.⁹⁶⁶ But many Victorians do not know that water resources are under pressure from population growth and climate change.⁹⁶⁷ Water saving initiatives will not be enough to meet demand (see future option – Plan for and invest in manufactured water).⁹⁶⁸

The government should deliver a statewide community education campaign on the need for investment in more diverse water supply sources to improve water security. This should include information on the need for infrastructure upgrades and the opportunity to use recycled drinking water.

Cost range, timing and funding

We estimate this recommendation will cost around \$300 million over 10 years. This includes a grant fund for planning and delivering integrated water management initiatives, including developing a pilot recycled drinking water plant. We estimate a pilot recycled drinking water plant will cost \$20 million to \$50 million to build or upgrade. It will cost less than \$1 million every year to maintain.

Our cost range also includes \$5 million to \$10 million in the next 5 years for technical studies on how Victoria can adopt recycled drinking water and to run community education programs.

General government revenue can fund this recommendation. The integrated water management framework is a collaborative model funded jointly by partnering organisations.⁹⁶⁹ The additional Victorian Government funding can encourage water authorities, local government and catchment management authorities to prioritise investing in integrated water management.

Case study

Growing native plants with integrated water management

The Royal Botanic Gardens Cranbourne waters native plants using recycled water from the Eastern Treatment Plant. A one kilometre pipeline transfers recycled water to the gardens, saving 35 million litres of drinking water each year.⁹⁷⁰

The project helps the Royal Botanic Gardens Cranbourne respond to climate change and means that more drinking water will be available for Victorians to use. The Victorian Government provided funding for the project from the integrated water management program.⁹⁷¹

Image: Royal Botanic Gardens Cranbourne



Plan for and invest in manufactured water

Plan for and invest in manufactured water. Return more water to Traditional Owners and the environment.

Victoria will need more manufactured water

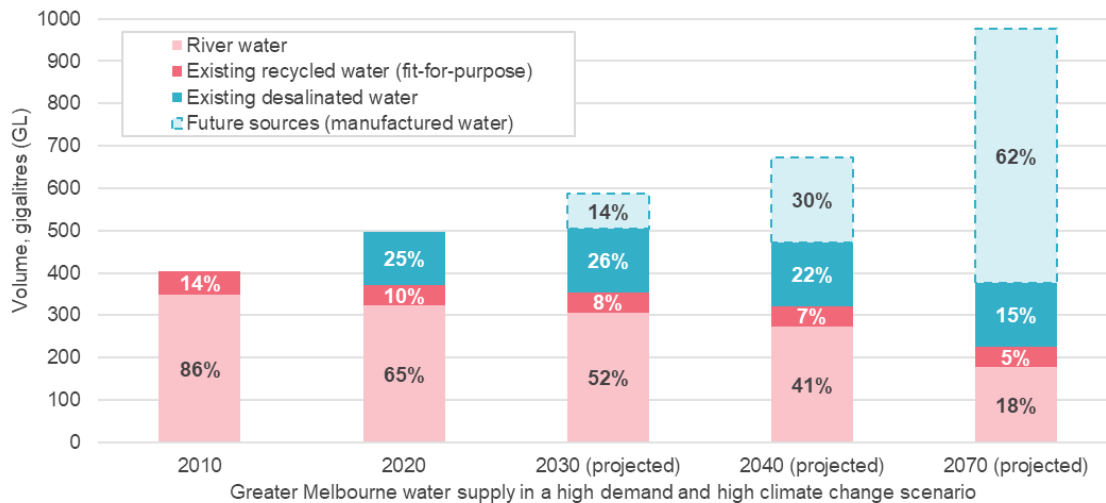
Victoria’s communities, agriculture, the environment and Traditional Owners all need water. Climate change means that Victoria will have less water flowing into rivers and dams as the climate becomes warmer and drier.⁹⁷² Victorians are used to saving water at home, but this will not be enough to meet future demand.⁹⁷³ Manufactured water can help address these challenges.

Manufactured water sources include recycled water, treated stormwater and desalinated water. Recycled water is wastewater that has been treated to make it safe for people to use.

Victorians already drink manufactured desalinated water from the Victorian Desalination Plant.⁹⁷⁴ They also use manufactured recycled water and stormwater treated to a lower standard for gardens, agriculture and industry.⁹⁷⁵ This reduces demand on Victoria’s other drinking water sources.

Communities across Victoria will need more water. Bendigo and Geelong are likely to need more drinking water by 2040.⁹⁷⁶ Melbourne’s water supply might need to double within 50 years.⁹⁷⁷ Up to 65% of Melbourne’s water might need to be from manufactured sources in 2050. This is an increase from 35% in 2020 (see Figure 16).⁹⁷⁸

Figure 16: Melbourne needs more manufactured water



Source: Infrastructure Victoria, adapted from Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, p 37, accessed 25 September 2025.

Manufactured water costs 2 to 4 times more than water from dams and other rainfall-dependent sources.⁹⁷⁹ Victoria’s urban water infrastructure is also ageing and becoming more expensive to maintain and upgrade.⁹⁸⁰ This means water supply costs will increase in future. The government should consider all manufactured water options to get the best value.⁹⁸¹

Plan early for manufactured drinking water facilities

Manufactured water facilities can take up to 10 years to plan and build.⁹⁸² Preparing now means that more water will be available when Victorians need it.

The Victorian Desalination Plant was designed so that it can be expanded when Melbourne needs more drinking water.⁹⁸³ The Victorian Government should develop a business case now that considers expanding the plant and alternative desalination options (see [recommendation 45](#)).⁹⁸⁴

But communities across Victoria will need even more water.⁹⁸⁵ This can come from a new desalination plant or recycled drinking water facility. Recycled drinking water is likely to be the cheaper option.⁹⁸⁶ It also uses less energy.⁹⁸⁷ The Victorian Government should plan for and invest in other manufactured water sources before Victoria needs more drinking water.⁹⁸⁸

Traditional Owners and the environment also need more water

Climate change will reduce how much water flows down Victoria's rivers.⁹⁸⁹ Using manufactured water in Victorian cities and towns means that more water can stay in rivers.⁹⁹⁰

Rivers have cultural value for Traditional Owners.⁹⁹¹ But the way rivers have been managed since European settlement has undermined their cultural value and connection.⁹⁹² First Peoples still have limited influence on how water is managed and used on Country.⁹⁹³ They owned less than 0.2% of Victoria's water entitlements in 2022.⁹⁹⁴ The exclusion of Traditional Owners in water management has prevented them from caring for Country.⁹⁹⁵

The Victorian Government has committed to working with Traditional Owners to increase access to water entitlements.⁹⁹⁶ It has already returned 2 billion litres of water to the Gunaikurnai Land and Waters Aboriginal Corporation (see box – [Returning water to First Peoples](#)).⁹⁹⁷

Victorian rivers also need more water to support a healthy environment for plants, fish and other animals.⁹⁹⁸ Some rivers already dry out in summer, causing plants and animals to die.⁹⁹⁹ The government plans to return almost 100 billion litres of water to the environment in the Central and Gippsland region.¹⁰⁰⁰ But this is only 26% of the water these rivers need.¹⁰⁰¹

Victoria needs to better use and manage water to improve cultural and environmental outcomes. The government should return more water to Traditional Owners and the environment. The Yoorrook Justice Commission found that some regions might have unused water entitlements.¹⁰⁰²

In regions where water rights are fully allocated, the government can return water through other ways.¹⁰⁰³ For example, it can buy water entitlements for First Peoples' communities.¹⁰⁰⁴ Manufactured drinking water is another opportunity to return water.¹⁰⁰⁵ Any such programs should be co-designed with Traditional Owners.¹⁰⁰⁶

Returning water to First Peoples

The Victorian Government returned 2 billion litres of water to the Gunaikurnai Land and Waters Aboriginal Corporation in March 2021.¹⁰⁰⁷ Announced in November 2020, it was the first formal hand back of water rights to Traditional Owners in Victoria.¹⁰⁰⁸

The water can only be taken from the Mitchell River when river flows are high during July to October. The water helps restore traditional practices, protect cultural values, heal Country and support the Gunaikurnai people to gain economic independence.¹⁰⁰⁹

Cost range, timing and funding

We estimate that planning for manufactured water will cost \$1 million to \$5 million. General government revenue and user costs collected by water authorities can fund this future option.

Our estimate includes costs to explore feasibility and develop business cases to provide Victorians with more manufactured water. To ensure the government considers all available options, it should first look into introducing recycled drinking water (see [recommendation 26](#)). It can then complete the feasibility studies and business cases between 2030 and 2032. This will support strategic planning of the full water network and allow for projects to start construction by 2035 as needed.

Our cost estimate for planning does not include the cost of investing in projects. We estimate that building manufactured water facilities will cost in the billions of dollars. For example, the Victorian desalination project in the Wonthaggi region cost \$3.5 billion to build in 2009.¹⁰¹⁰



Better use government land for open space and trees

Open up more public land in fast-growing suburbs. Plant more trees on local streets to help get to 30% tree canopy cover in urban areas.

Open space provides social, health and environmental benefits

Open space can include parks, ovals, reserves and areas along waterways.¹⁰¹¹ People want to use open space in many different ways.¹⁰¹² It can support recreation, sport, community gardens, wildlife and water storage.¹⁰¹³ Green open space helps people enjoy cooler temperatures, especially in more compact cities.¹⁰¹⁴ It also brings economic benefits through higher property prices, recreation value and avoided health costs.¹⁰¹⁵

More people living in Victoria's cities puts pressure on open spaces.¹⁰¹⁶ There are different methods to work out how much more open space Victorians will need.¹⁰¹⁷ We estimate that Melbourne's established suburbs alone might need around 1,000 more hectares by 2036.¹⁰¹⁸

People value high-quality open space especially when their neighbourhoods have more new homes.¹⁰¹⁹ Connected open spaces let people walk and ride along them. This can improve their health and reduce congestion.¹⁰²⁰ They support biodiversity and ecosystems by allowing safe travel for wildlife and protecting waterways.¹⁰²¹ Traditional Owners can use connected open spaces for cultural practices.¹⁰²²

The existing open space network has gaps.¹⁰²³ Many parks, trails and bike paths can be better connected, including in regional cities (see [recommendation 16](#)).¹⁰²⁴ This can mean more social, health and environmental benefits.

Governments can open up more land for public use

The Victorian and local governments own over 45,000 hectares of Melbourne's open space.¹⁰²⁵ Local communities cannot access over 4,000 hectares of this land.¹⁰²⁶ The Victorian Government can better use the land it owns so communities in fast-growing suburbs can use it for open space.¹⁰²⁷

By 2030, it should open at least 500 more hectares of public land where most population growth will happen. It can start with fast-growing established suburbs in Melbourne, Geelong, Ballarat and Bendigo. This is on top of the 6,500 hectares it is adding through the suburban parks program.¹⁰²⁸

The government is working out which types of open space should be in established suburbs.¹⁰²⁹ It should work with local governments and organisations like Melbourne Water and cemetery trusts to identify more public land to open up.¹⁰³⁰ This will help it deliver on its *Open space for everyone* strategy.¹⁰³¹

Some organisations might need funding to improve land before the community can use it. The government should offer grants for these upgrades. For example, it can provide funding to upgrade cemeteries for respectful use by communities, open up parts of public golf courses or plant native trees and build paths on utility land (see [Figure 17](#)).¹⁰³² It can help government schools share their grounds for informal community use (see [recommendation 17](#)).¹⁰³³ It can also identify funding for Parks Victoria to plan and maintain the open space assets it manages (see [recommendation 38](#)).¹⁰³⁴

More trees make open spaces better

Victoria's cities are rapidly getting hotter.¹⁰³⁵ More trees lower temperatures, keep water in soils, improve air and water quality and help manage flood risk.¹⁰³⁶ People are more likely to use cool and shaded open

spaces.¹⁰³⁷ Communities get around \$4 in benefits, like better mental health and productivity, for every \$1 spent on trees.¹⁰³⁸

Trees cover only 14% of Melbourne’s parks and 21% of transport corridors.¹⁰³⁹ Developers remove vegetation on private land when they build homes.¹⁰⁴⁰ Plants on public land must then make up for fewer trees on private land.¹⁰⁴¹ But tree canopy cover in parks is getting smaller.¹⁰⁴²

The government has 30% tree canopy targets for Victoria’s urban areas and public land in new suburbs.¹⁰⁴³ In the next 5 years, it should work with local governments and community organisations in Victoria’s largest cities to work out which hot places need trees most. It can support them to plant established trees so that canopies cover more streets and parks sooner.

Some parks might not have enough space for more large trees.¹⁰⁴⁴ The government can start by making more space for trees in streets in established suburbs. For example, it can work with water, electricity and gas companies and local governments to change engineering standards to allow more trees.¹⁰⁴⁵

Targets are most useful when they measure and show progress. The government should regularly collect vegetation data for all urban areas, building on its planned tree canopy mapping project, so it can show how it is getting towards the 30% target.¹⁰⁴⁶ Using it with heat data can show where places are getting cooler.¹⁰⁴⁷

Figure 17: Government can better use public land for connected open space



Source: Infrastructure Victoria.

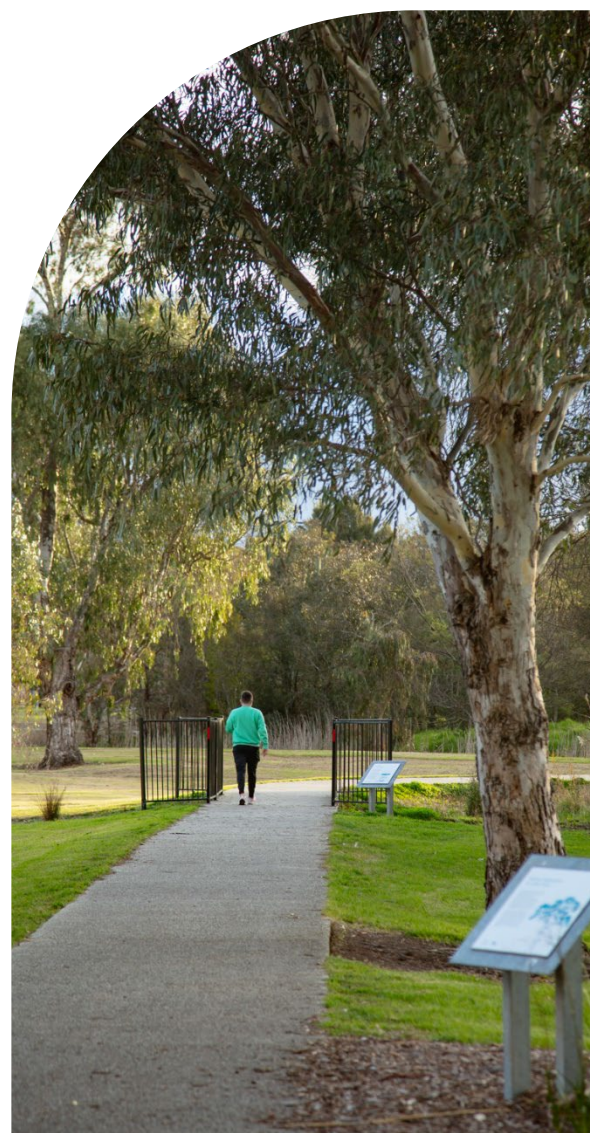
Cost range, timing and funding

We estimate that better using government land for open space and planting more trees will cost around \$175 million over 5 years. General government revenue, the Sustainability Fund and the Parks and Reserves Trust Account can fund this recommendation.

Costs include \$5 million to \$7 million for staff to continue the enabling actions in the Victorian Government's *Open space for everyone* strategy.¹⁰⁴⁸

Opening up and improving government-owned land will cost around \$150 million.¹⁰⁴⁹ The Victorian Government can use the existing Parks and Reserves Trust Account to fund local governments and organisations to improve public land like golf courses, cemeteries and creek corridors.¹⁰⁵⁰ They can also apply for funding from the Sustainability Fund to make their open spaces more usable by improving paths and building toilets. Regional councils can use that funding to develop or do open space strategy actions that improve connectivity.¹⁰⁵¹

We also include cost estimates of around \$20 million over 5 years for policy development, data collection and tree planting in established suburbs in Victoria's cities that need more trees.¹⁰⁵² The Victorian Government can expand the More Trees in Melbourne program to regional cities.¹⁰⁵³ It can use the Sustainability Fund so that local governments and community organisations can buy, plant and establish trees.¹⁰⁵⁴ It can also expand the planned tree canopy mapping project and update it regularly, to ensure it can monitor progress towards the 30% tree canopy targets in all urban areas.¹⁰⁵⁵





Objective

Victoria is resilient to climate change and other future risks

Victoria can minimise the impact of adverse future events. Victoria's greatest future risk is the impact of climate change, but it also faces risks of economic, technological, geopolitical, health or other environmental disasters and crises.



Victoria can prepare now for an uncertain future

Victorians want their communities and environments to be resilient.¹⁰⁵⁶ They recognise that climate change will affect their future. Stakeholders and community members told us they strongly support action on climate change.¹⁰⁵⁷ Many called for urgent measures to reduce greenhouse gas emissions and to adapt infrastructure for the new climate.¹⁰⁵⁸ They want infrastructure that protects people and nature from the impacts of climate change.¹⁰⁵⁹

Victoria will change over the next 30 years. By 2055, extreme weather events will occur more often. The state will face more intense rainfall, more hot days, and higher sea levels.¹⁰⁶⁰ This will threaten Victoria's infrastructure. Reducing greenhouse gas emissions and transitioning to renewable energy will help minimise the harms of climate change. But Victoria faces many risks in this transition.

Extreme weather events, crises and disasters disrupt daily life. They can destroy homes and challenge businesses.¹⁰⁶¹ A single event can happen in a matter of hours but change communities forever. Victorians have experienced these disruptions already, from pandemics to bushfires, droughts and floods.¹⁰⁶² Other risks could also affect Victoria, including economic volatility, ageing technologies, geopolitical instability, health crises and environmental disasters.

Victorians' future health, safety and prosperity will be shaped by how governments and communities anticipate, mitigate and adapt to the impact of adverse events.

Climate change threatens Victoria's infrastructure

Victorians rely on services provided by essential infrastructure. This includes water, transport, healthcare, energy and communications.¹⁰⁶³ Disruptions to infrastructure can have serious consequences for communities, businesses and governments.¹⁰⁶⁴

Climate change presents profound and far-reaching challenges for Victoria. It threatens infrastructure, including buildings, roads and power lines. Roads can be washed away during storm surges, flooded, or damaged by coastal erosion.¹⁰⁶⁵ This can cut communities off during disasters. Most of Victoria's infrastructure was not designed for the changing climate. For example, rising sea levels will threaten coastal infrastructure. If governments take no action, Victoria's infrastructure will fail more often, affecting communities and industries in every region.¹⁰⁶⁶

Climate change can harm people and businesses. Households and businesses will face higher insurance costs as homes and commercial buildings will need more maintenance and repair.¹⁰⁶⁷ Some Victorians will be unable to afford these increases.¹⁰⁶⁸ Farms will also produce less and make fewer profits if they do not adapt.¹⁰⁶⁹ Wheat crop yields could fall by 14% in Victoria.¹⁰⁷⁰

Victorians are already paying for climate impacts. Between 2007 and 2016, recovery from extreme weather events cost Victoria an average of \$2.7 billion a year.¹⁰⁷¹ Heatwaves alone cost the Victorian economy \$87 million each year.¹⁰⁷² This could grow to \$179 million by 2030.¹⁰⁷³

One study estimated that climate change damage could reach \$150 billion by 2050.¹⁰⁷⁴ This includes costs from lower productivity, sea level rise and infrastructure damage. It does not include the impact of pollution, bushfires, floods and biodiversity loss. Some of these costs are unavoidable, but governments can avoid many future costs by acting now to reduce emissions and prepare for climate change.¹⁰⁷⁵

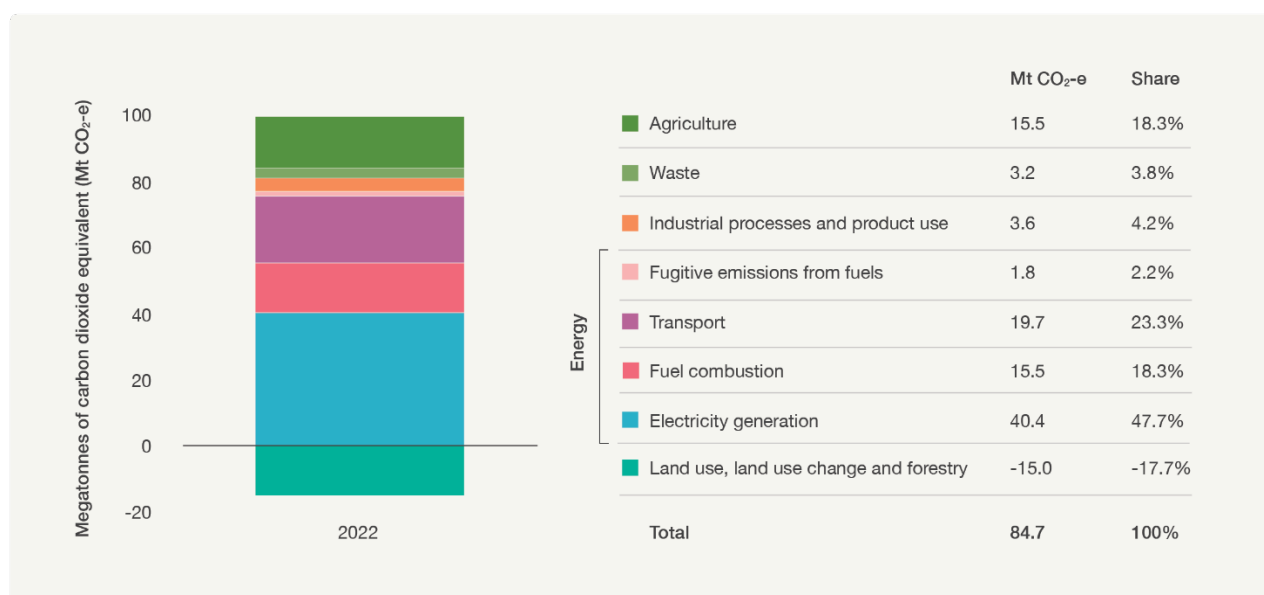
As natural hazards become more frequent and intense, adapting and investing in more resilient infrastructure becomes more urgent.¹⁰⁷⁶ In the past, governments waited until infrastructure failed and then spent large amounts of money to fix it.¹⁰⁷⁷ This has high economic, social and environmental costs.¹⁰⁷⁸ Investing in infrastructure that can better withstand climate effects is often more cost-effective than repairing and rebuilding it after it fails.¹⁰⁷⁹

Transitioning to renewable energy is critical to lowering emissions

Minimising the harms of climate change means acting to lower greenhouse gas emissions. Using fossil fuels such as oil, coal and gas is the main source of Victoria's emissions.¹⁰⁸⁰ About half of energy sector emissions come from generating electricity (see Figure 18).¹⁰⁸¹

Transitioning away from fossil fuels is critical for reducing greenhouse gas emissions. But it is also a major challenge for Victoria and requires more rapid progress. The recommendations in this strategy do not cover all aspects of Victoria's energy transition. There is significant work underway in Victoria and nationally. Our recommendations focus on the most urgent matters where more action is needed by the Victorian Government.

Figure 18: Victorian emissions by sector and energy subsector, 2022



Source: Infrastructure Victoria, adapted from Department of Energy, Environment and Climate Action, [Victorian greenhouse gas emissions report 2022](#). State of Victoria, 2024, p 8, accessed 24 June 2025.

Victoria will need more renewable energy infrastructure to meet its target of net zero emissions by 2045. Victoria's coal-fired power stations are also ageing and becoming less reliable. A balanced mix of renewable energy generation and storage can largely replace them as they are retired. The Victorian Government has set targets to generate 65% of electricity from renewables by 2030, increasing to 95% by 2035.¹⁰⁸² It has also set storage and offshore wind targets.¹⁰⁸³ This can help make Victoria's electricity system affordable, reliable and sustainable.¹⁰⁸⁴

Shifting to renewable energy means upgrading and building new infrastructure. Some existing infrastructure, such as coal-fired power stations, will no longer be used. Gas network infrastructure will also need to change as Victoria moves away from fossil gas in some sectors while still meeting the needs of industry and energy system security.¹⁰⁸⁵

Governments and the private sector are investing in new renewable electricity generation and storage, including offshore wind, to provide the energy Victoria needs.¹⁰⁸⁶ VicGrid is planning for transmission infrastructure to develop renewable energy zones, helping to connect new large-scale renewable electricity projects.¹⁰⁸⁷ In future decades, energy technologies which are emerging but not yet viable may also contribute to the transition.¹⁰⁸⁸

The electricity sector's transition to renewables opens opportunities for the gas and transport sectors to decarbonise, as more Victorians switch to electric vehicles and energy-efficient electric appliances.¹⁰⁸⁹ As more homes, businesses and vehicles electrify, Victoria's electricity use will increase by about 50% by 2036.¹⁰⁹⁰

Building new infrastructure also creates more emissions, which makes the impacts of climate change worse. We recommend that Victoria reduces emissions from infrastructure in [recommendation 25](#).

There are many risks to Victoria's energy transition

Victoria's emissions and energy targets help global efforts to reduce future climate change impacts. They are also important in guiding the pace of change towards a net zero emissions economy. But there are significant risks to meeting them. These include slow investment by private capital into large renewable energy projects and delays in major transmission and offshore wind projects.¹⁰⁹¹ This could mean Victoria relies on ageing and unreliable coal-fired power stations for longer.¹⁰⁹² Slow progress in electrifying homes, businesses and vehicles is also a risk.¹⁰⁹³ Victoria needs to act faster to meet its emissions and energy targets.

Many of these risks come from community concerns, technology limitations, supply chain issues and economic uncertainty.¹⁰⁹⁴ For example, some communities are worried about the impacts of energy projects on ecosystems and farmland. This can delay the delivery of major energy projects like transmission lines (see box - [Community engagement can build understanding and acceptance for energy projects](#)).¹⁰⁹⁵

The government may need to manage potential energy shortfalls. It released the *Gas security statement* to help manage gas supply.¹⁰⁹⁶ Long periods of cloud cover or low wind could lead to electricity shortfalls in the future. More people switching to electric vehicles and installing rooftop solar is leading to more variable demand for electricity. Victoria's ageing coal-fired power stations will also become less reliable.¹⁰⁹⁷ Without the right policy and investments, communities face a higher risk of blackouts and power outages.¹⁰⁹⁸ Electricity prices might also rise.¹⁰⁹⁹

An orderly transition to a lower emissions energy system is in the long-term interests of Victorians.¹¹⁰⁰ Managing risks to Victoria's energy transition requires ongoing coordinated policy and investments. The Victorian Government will need to work with Australian, state and local governments, energy market bodies and the private sector to bring about major change.

Households can also help with Victoria's renewable energy transition by using less electricity during peak times to take pressure off the electricity network.¹¹⁰¹ Improving energy efficiency means Victorians will use less electricity to heat or cool their homes. It also makes homes more comfortable. Adding solar panels and batteries means that households can generate and store electricity as well.¹¹⁰²

Community engagement can build understanding and acceptance for energy projects

Developing energy projects like transmission lines, large-scale wind, solar and batteries requires engagement with local communities, farmers and Traditional Owners.¹¹⁰³

Many communities are unhappy with the way energy project developers engage with them.¹¹⁰⁴ This includes concerns that there is a lack of timely and relevant information and fair compensation for land use.¹¹⁰⁵ Community engagement is often perceived as too one-sided, technical and rushed.

Poor community engagement can lead to a distrust of developers and concerns about environmental impacts.¹¹⁰⁶ It can increase opposition to energy projects and lead to costly delays.¹¹⁰⁷

Local communities need to be engaged early in the development of projects to ensure that they understand their role in the energy transition.¹¹⁰⁸ They need enough resources, time and capacity to meaningfully engage at each stage of the development process.¹¹⁰⁹ Community involvement in designing information resources and communication channels can help build trust.¹¹¹⁰

Victoria's energy transition will see renewable energy generation distributed across the state.¹¹¹¹ A coordinated and consistent approach to consultation on energy projects will give communities confidence in the process.¹¹¹² This means being open and honest with communities and landholders from the beginning. It also means involving the same people throughout the project to build trust and rapport over time.¹¹¹³

Community benefit sharing schemes can help manage the cumulative impacts of energy infrastructure development on local communities.¹¹¹⁴ They can also build economic partnerships and retain workforce skills with local communities.¹¹¹⁵

Guidelines are available to steer meaningful and inclusive community engagement. These include the Victorian Government's draft *Community engagement and social value guidelines for renewable energy and transmission projects*, the *National guidelines for community engagement and benefits for electricity transmission projects* or the Clean Energy Council's *Best practice charter for renewable energy projects*.¹¹¹⁶ The Australian Energy Infrastructure Commissioner provides best practice examples of community engagement.¹¹¹⁷ The *First Nations clean energy strategy 2024–2030* provides practical steps to engage with Traditional Owners in the energy transition.¹¹¹⁸

Better prepare infrastructure for climate change

Fund high-priority, cost-effective infrastructure adaptation actions when climate adaptation action plans are updated in 2026. Produce an energy sector adaptation plan.

Victoria's infrastructure needs to handle extreme weather

Victoria's climate is changing rapidly. It is already 1.2°C hotter than when official Australian records began in 1910.¹¹¹⁹ This means Victorians will have more intense storms and floods, more heatwaves and bushfires, higher sea levels and coastal erosion.¹¹²⁰ Climate change seriously threatens infrastructure, including buildings, roads and power lines.¹¹²¹

Weather-related damage might cost Victoria nearly \$1 trillion by 2100 if no one acts.¹¹²² It can be cheaper to invest in infrastructure that can withstand more extreme weather than to repair and rebuild it.¹¹²³ More resilient infrastructure also helps keep people safe and well, and businesses and services running.¹¹²⁴

The Australian Government spends 97% of its natural disaster funding on recovery and only 3% on prevention.¹¹²⁵ A shift to adaptation spending can break the cycle of low upfront investment and high repair and recovery costs.¹¹²⁶

Investment in adaptation can be cost effective

Our work in *Weathering the storm: adapting Victoria's infrastructure to climate change* shows that the Victorian Government can take cost-effective adaptation action to reduce climate impacts on infrastructure.¹¹²⁷ Some adaptation measures returned over \$5 in benefits for every \$1 spent.¹¹²⁸

But the government has not set aside funds for adapting the infrastructure it owns and manages. Infrastructure managers are not confident the government will fund adaptation projects.¹¹²⁹ Managers are reluctant to use limited resources to look at climate risks and adaptation actions for no result.

Victoria's climate change strategy contains the government's adaptation priorities.¹¹³⁰ These set the focus for 7 sectoral adaptation action plans and 6 regional adaptation strategies. The *Climate Change Act 2017* requires government to produce new adaptation plans by 2026.¹¹³¹

The Victorian Government should set aside funds for its 2026 adaptation update. It should fund adaptation proposals identified in the action plans that have strong business cases. Agencies should first work on high-risk assets to find the best solutions to manage these risks. They can ask for funds for bids that show a good return on investment.

This is like the approach in other countries, including New Zealand's NZ\$419 million Crown Resilience Programme and Canada's CAD\$200 million Natural Infrastructure Fund, which focuses on nature-based adaptation.¹¹³²

Nature-based approaches to climate adaptation

Nature-based solutions for infrastructure are actions that protect, manage or restore ecosystems while also building resilience to climate change. For example, restoring forests can help reduce flooding and associated property damage following major storms.¹¹³³ Some nature-based solutions like programmed drainage to increase flood resilience and reduce post-bushfire landslides can return over \$5 in benefits for every \$1 spent.¹¹³⁴

The energy sector needs its own adaptation plan

Power keeps homes and essential services running, including mobile phones and internet connections. These telecommunication services keep communities connected and updated during emergencies. Over 530,000 Victorians lost power after severe storms in February 2024.¹¹³⁵

The Victorian Government does not have an energy sector adaptation plan. The built environment plan includes some parts of the energy sector but not others.¹¹³⁶ It has few actions to improve energy infrastructure resilience, even though other adaptation action plans identify energy as essential to provide services.¹¹³⁷

The government should create an energy adaptation plan in the 2026 update to cover all parts of the energy sector. The new plan can build on the findings of the 2022 *Electricity distribution network resilience review*.¹¹³⁸ It should set out adaptation tasks for the government's energy agencies and regulators. It should also clarify the respective responsibilities of private businesses, governments, regulators and local communities in building resilience.¹¹³⁹

The government can also better track and report whether its adaptation actions are working. This can help infrastructure managers make better decisions by providing the evidence they need.¹¹⁴⁰ They can learn from past efforts and change future programs to perform better.¹¹⁴¹

The Victorian Government should regularly monitor and evaluate its adaptation action plans and publish the results mid-way and at the end of each 5-yearly adaptation cycle. This can build evidence of what works and guide future investment decisions.¹¹⁴²

Cost range, timing and funding

The financial cost of natural disasters in Victoria is projected to be at least \$185 billion from 2020 to 2060.¹¹⁴³ We estimate that better preparing infrastructure for climate change will cost \$300 million to \$500 million over 10 years. General government revenue can fund this recommendation.

Most of this cost is to fund infrastructure adaptation projects with a strong business case. It also includes up to \$1 million in government costs to develop an energy sector adaptation action plan, as well as to better track and report on actions. Existing government staff can do this work.

We have not estimated operational costs as these will vary depending on the specific adaptation measure. Business cases will ensure value for money from capital and operational costs.

Use new flood maps to revise planning schemes

Produce a common set of flood projections based on the latest climate data. Use this information to update flood studies and maps and apply them in planning schemes. Minimise building in areas at high risk of flooding.

Floods pose risks to Victoria's infrastructure

Climate change means floods will damage more of Victoria's infrastructure more often. The risks include flash floods, river floods, coastal floods and erosion from more intense rain. Properties in north central Victoria face the biggest risk from river floods in Australia.¹¹⁴⁴ Coastal communities are at risk from rising sea levels, high waves and erosion (see Figure 19).¹¹⁴⁵

Floods and sea level rise are costly. The 2022 floods led to Australia's highest ever insurance cost.¹¹⁴⁶ In Victoria, over 10,000 people claimed \$489 million.¹¹⁴⁷ The Victorian Government's relief and recovery costs were nearly \$2.5 billion.¹¹⁴⁸ By 2100, rising sea levels and storm surges might cause economic losses in Victoria of up to \$442 billion.¹¹⁴⁹

Victoria's flood data is outdated and unreliable

Governments and communities can better manage risk when they have good data about where floods might happen and how likely they are.¹¹⁵⁰ Climate change means that past data is no longer a useful guide.

Climate science is complex. People need expert knowledge to understand climate projections. Climate scientists suggest using multiple models to account for unknowns, since no one model can work for everything. People do not agree on which model to use.¹¹⁵¹

Governments, businesses and communities find it hard to get flood modelling that includes climate projections.¹¹⁵² Flood standards and sea level rise benchmarks are out of date.¹¹⁵³ Planners then make decisions based on inaccurate or outdated flood maps.¹¹⁵⁴

Councils gather and apply flood data in different ways. This can result in a patchwork of partial information.¹¹⁵⁵ Without good information, councils approve buildings in flood risk areas. This makes flood damage to infrastructure worse and increases costs to governments, businesses and communities.

Flood projections and maps should be updated

The Victorian Government should make consistent updates to flood projections using the latest scientific data.¹¹⁵⁶ By 2100, sea levels are likely to rise by more than 0.8 metres.¹¹⁵⁷ The government should increase Victoria's sea level rise benchmark for planning purposes from 0.8 metres to at least 1.1 metres by 2100.¹¹⁵⁸ This aligns with the Intergovernmental Panel on Climate Change's latest projections.¹¹⁵⁹ The projections should reflect the likelihood of higher frequency events. For example, a 2% or 5% chance of a flood each year instead of only the 1% Annual Exceedance Probability flood standard.¹¹⁶⁰

The government is funding some local governments to complete flood studies, but there is more to do.¹¹⁶¹ It should coordinate flood studies and maps for all local government areas. It should make sure these are regularly updated using the latest climate projections and data. Land use changes should be included. This will help the government and community better understand flood risks.¹¹⁶²

It should then work with local governments to update planning schemes to reflect the most up-to-date flood information.¹¹⁶³ This includes updating flood data, overlays and zones in the planning provisions. Decision-makers can use the updated planning rules to ensure flood risks are properly identified and managed while

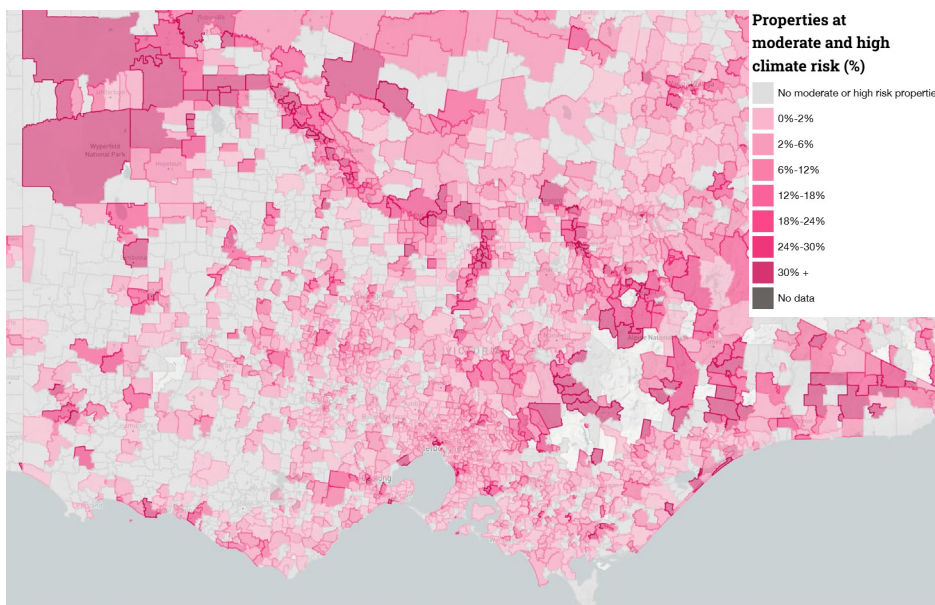
building the homes Victoria needs.¹¹⁶⁴ They can also prepare for adaptation or retreat from at-risk areas where necessary.

Good climate data allows governments to develop adaptation plans and evaluate them.¹¹⁶⁵ New projections and maps should be easier to access, like the maps already available for bushfire risks.¹¹⁶⁶ This will give people access to the same information to make decisions.¹¹⁶⁷

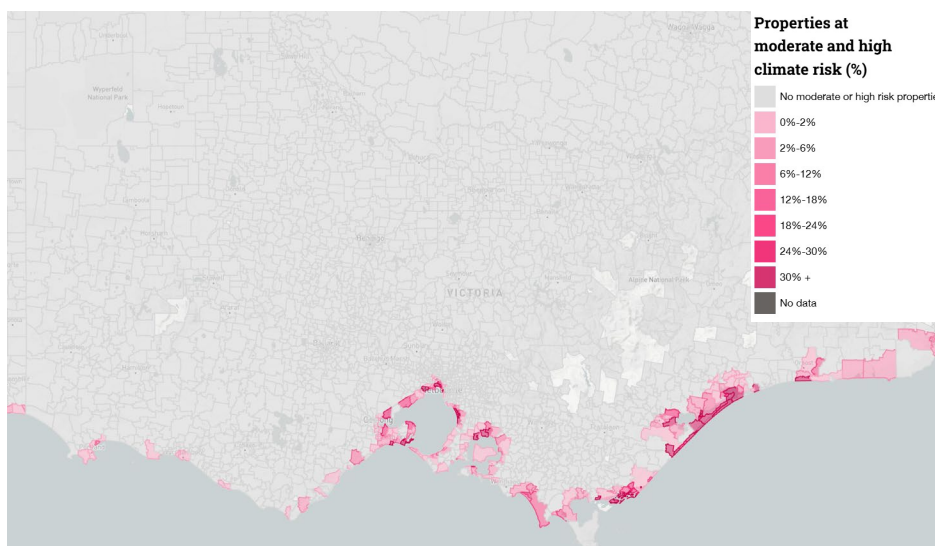
Ideally, the government can provide Victorians with detailed local data for individual sites.¹¹⁶⁸ People can use this to assess local area risks. Governments and communities can prioritise which infrastructure to adapt and where they should build.

Figure 19: Victorian properties at risk of riverine flooding and coastal inundation

Riverine flooding



Coastal inundation



Top figure: *Riverine flooding* – North central Victoria, near the Murray and Goulburn rivers, faces the highest risk of riverine flooding in Australia, with 9 in 10 homes in Shepparton at moderate or high risk in 2100 (existing action scenario).

Bottom figure: *Coastal inundation* – Coastal communities, including Point Lonsdale and parts of Melbourne like Altona and Chelsea, face significant risks from rising sea levels, affecting about 4 in 10 homes in 2100 (existing action scenario).

Source: Climate Council, [Climate risk map of Australia](#), Climate Council website, 14 April 2025, accessed 3 September 2025.

Cost range, timing and funding

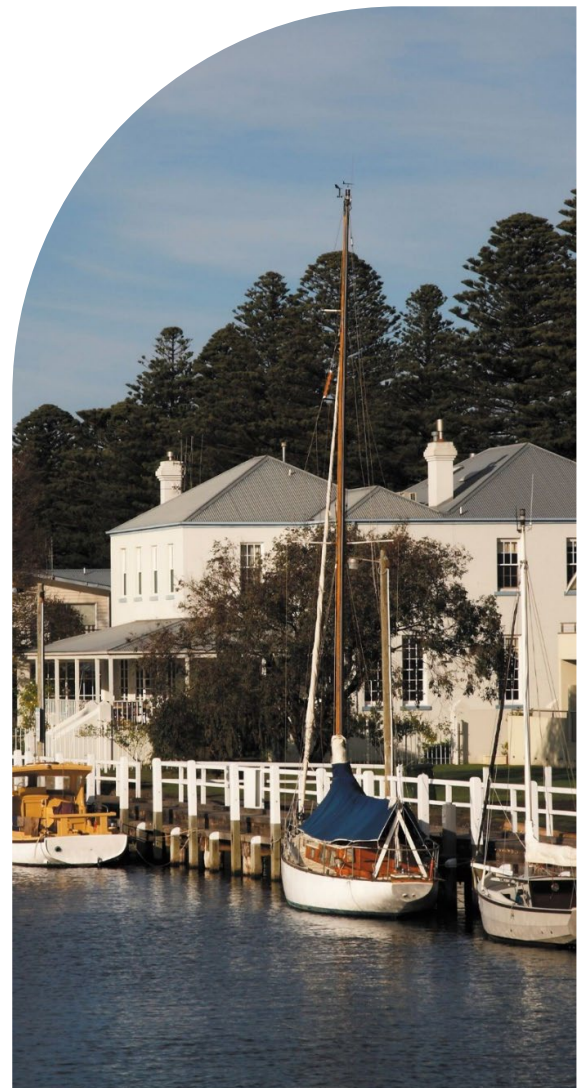
We estimate that this recommendation will cost \$10 million to \$15 million over 5 years. General government revenue can fund this recommendation.

These costs include the Victorian Government coordinating updates to flood projections, flood maps and planning schemes. The government will need to work with catchment management authorities and local governments to include local knowledge. Costs also cover an advisory committee to develop flood modelling standards and fast-track planning scheme amendments.¹¹⁶⁹

Our cost range includes around \$2 million to make flood study data more accessible using existing tools like VicPlan.¹¹⁷⁰

The Victorian Government does not need to provide additional funding to prepare flood studies. It has already provided funding to Melbourne Water and local governments for this purpose. Melbourne Water is committed to updating all of Melbourne's flood modelling by 2026.¹¹⁷¹ It will then review flood models every 5 years.¹¹⁷²

In regional Victoria, the Victorian Government has provided grants to local governments to carry out flood modelling and include these results into planning schemes.¹¹⁷³ Updated climate change data is already available.¹¹⁷⁴



Coordinate faster delivery of key energy infrastructure

Establish an energy transition project pipeline and publish annual progress assessments to improve transparency and manage risks. Fast-track key energy projects and coordinate enabling infrastructure.

Victoria needs new renewable energy and enabling infrastructure but faces challenges

Victoria needs a large amount of new renewable energy generation, storage and transmission infrastructure to reach its net zero emissions targets.¹¹⁷⁵ Building this infrastructure faces challenges including limited institutional investment in large energy projects to date. Projects also face rising costs, supply chain disruptions and long approval times.¹¹⁷⁶ Some community opposition, policy uncertainty, and physical limitations such as transmission network limits and inadequate roads make the task harder.¹¹⁷⁷

Workforce shortages are another challenge.¹¹⁷⁸ Other states are also developing renewable energy. This means Victoria is competing for skilled construction and power system workers. Workforce shortages can delay projects and increase costs (see [recommendation 4](#)).¹¹⁷⁹ Limited government resources can add to delays. Patchy coordination between Australian and state governments can also lead to conflicting priorities and inefficiencies.¹¹⁸⁰

Energy project delays might mean that Victoria relies on ageing coal-fired power stations for longer. Delays can also lead to higher energy bills.¹¹⁸¹ Major projects like the Victoria to NSW Interconnector West and the Western Renewables Link have pushed back schedules to allow for extra assessments and engagement.¹¹⁸² Complex environment issues for port infrastructure and funding uncertainty affect offshore wind project timelines and add to coordination challenges (see case study – [Offshore wind development needs government coordination](#)).

Changes in one part of the energy system affect others. This creates interconnected risks to meeting emissions reduction goals.¹¹⁸³ Victoria's key energy projects need strong oversight and coordination to manage risks that can disrupt the path to net zero.

A visible project pipeline will help manage risks

For the government to coordinate a smooth energy transition, it needs to have up-to-date, comprehensive information about the status of current and potential future projects. This includes information about their viability, impact and sequence.

The Victorian Government should develop and publish a live pipeline of key energy transition projects and enabling infrastructure, such as network and transport infrastructure. It should use this to track project progress, monitor supply and demand changes and assess what resources or actions are needed.¹¹⁸⁴ This means it can better monitor, manage and communicate risks to Victoria's emissions reduction, renewable energy, storage and offshore wind targets.

The pipeline should outline project priority, location, budget, funding, timeline and relevant community consultation. It should also show how projects align with the Australian Energy Market Operator's *Integrated system plan* and the *Victorian transmission plan*.¹¹⁸⁵ State-significant projects can also be added to the National Renewable Energy Priority List for effective coordination with the Australian Government.¹¹⁸⁶

A live pipeline can help boost business confidence to invest in Victorian supply chains and skilled workers.¹¹⁸⁷ It can also help communicate how energy projects will affect local communities.

The government should publish annual progress reports that identify where it needs to take further action to deliver the energy transition. Other stakeholders also recommend publishing regular progress updates on renewable energy development.¹¹⁸⁸

These reports should assess market capacity and workforce needs, identify system issues and outline actions to resolve them. For instance, environmental assessments need stronger reforms that still provide community engagement, cultural heritage and environmental protections (see [recommendation 31](#)).

Energy transition projects need ongoing and dedicated support

The government can reduce Victoria's energy transition risks by taking a more active role to identify, prioritise and fast-track state-significant energy infrastructure projects.¹¹⁸⁹ For example, Queensland and the USA use central coordinators for infrastructure projects.¹¹⁹⁰

Victoria has created a new investment coordinator-general and priority assessment teams. It has also expanded its development facilitation program to reduce assessment and approval bottlenecks and improve coordination across government.¹¹⁹¹ However, these programs only have short-term funding. They also have a wider remit than energy.¹¹⁹²

The Victorian Government needs a well-resourced, long-term program to support assessments and approvals for all energy and enabling infrastructure. It should extend the existing programs and create a dedicated coordinator for energy transition projects.¹¹⁹³

Enabling infrastructure can also unlock energy projects and support growth. New South Wales is improving transport routes from ports to renewable energy zones to better manage traffic disruption from oversized loads.¹¹⁹⁴ Victoria's renewable energy zones will need similar coordination between industry and government departments, as well as local governments, communities and road users. The government should identify and pursue investment in enabling infrastructure where needed.

Cost range, timing and funding

We estimate that this recommendation will cost \$50 million to \$80 million over 10 years. General government revenue can fund this recommendation.

Our cost range includes about \$40 million for the Victorian Government to extend existing project facilitation initiatives and create a dedicated coordinator for state-significant energy projects and enabling infrastructure.

Our cost range includes \$10 million to \$15 million to develop a live energy transition pipeline by 2027. We also include costs of \$1 million to \$1.5 million a year for maintaining the pipeline, tracking project progress, publishing progress updates, monitoring risks, and any policy development to address system issues.



Offshore wind development needs government coordination

Offshore wind can help Victoria transition to renewable energy. Strong ocean winds mean offshore wind farms run more often than onshore ones, producing more energy.¹¹⁹⁵ They save land, avoid competing land uses, and reduce visual and noise impacts on communities.¹¹⁹⁶ Without offshore wind, Victoria faces capacity constraints and supply shortages during peak times. This might increase electricity prices and reliance on energy imports.¹¹⁹⁷

Victoria plans to build Australia's first offshore wind farms.¹¹⁹⁸ The Victorian Government has legislated offshore wind energy targets of at least 2 gigawatts by 2032, 4 gigawatts by 2035 and 9 gigawatts by 2040.¹¹⁹⁹ This will require coordination across the Victorian Government, with industry and with the Australian Government. Missing these targets risks higher emissions, and reduced energy reliability and affordability.¹²⁰⁰

Offshore wind is a new industry in Australia.¹²⁰¹ Building offshore is different from onshore projects. Sites are in remote locations with harsh environmental and engineering challenges.¹²⁰² The industry needs to develop local supply chains and port infrastructure to support large-scale projects.¹²⁰³ This adds to higher development costs compared to onshore wind and solar.¹²⁰⁴ It also makes coordinated infrastructure planning even more important.

Offshore wind depends on efficient supply chains and skilled workers.¹²⁰⁵ Projects need specialised equipment like vessels and subsea cables. These have long lead times due to high global demand.¹²⁰⁶ The Victorian Government can help reduce delays by coordinating supply chains, aligning project schedules with a single pipeline and collaborating with other jurisdictions.¹²⁰⁷

Offshore wind farms need enabling infrastructure, including transmission networks and ports.¹²⁰⁸ VicGrid leads the development of transmission infrastructure to connect offshore wind projects to the grid.¹²⁰⁹ It is coordinating shared infrastructure to avoid multiple developers building individual connections.¹²¹⁰

Ports must support the transport of large parts, like turbines and foundations.¹²¹¹ Australia's port infrastructure needs major upgrades before it can receive and assemble offshore wind parts.¹²¹² Sensitive environments around ports pose additional challenges. In 2023, the Australian Government denied approvals to develop the Port of Hastings due to the impact on protected wetlands.¹²¹³ The Port of Hastings Corporation has since undertaken further studies and revised its proposed project. It is seeking new assessment and approval.¹²¹⁴

Developing suitable port infrastructure is a priority and requires strong coordination across Victorian and Australian government agencies. This includes Australia's Department of Climate Change, Energy, the Environment and Water, Victoria's Department of Transport and Planning and Offshore Wind Energy Victoria.¹²¹⁵ The Australian Government is temporarily reducing levies and fees on licences to help offshore wind projects.¹²¹⁶

In September 2025, the Victorian Government delayed its planned auction process for providing financial support to offshore wind projects.¹²¹⁷ Reasons for the delay include uncertainty with funding, as well as the enabling ports and transmission infrastructure.¹²¹⁸ Effective coordination between all levels of government can help overcome these challenges so that offshore wind contributes to the energy transition.

Improve environmental assessments and site selection for energy projects

Reform environmental assessments and help energy project proponents select good sites.

Unpredictable environmental assessment processes cause project delays

Large-scale renewable energy projects need many different statutory approvals. Many energy projects, including transmission projects, need an environmental assessment of their impact before they can be approved, such as an environment report or Environment Effects Statement (see box – [Environmental approvals in Victoria and Australia](#)).¹²¹⁹ After receiving a referral for an environmental assessment, the planning minister can decide whether the project needs an assessment, what form it should take and what information it requires.¹²²⁰

Project proponents often cannot predict these requirements in advance. Sometimes the information requirements are unclear, and proponents spend time and money gathering irrelevant details. Alternatively, they might not provide enough information up front, so they need to commission more studies later.¹²²¹ These issues add cost and delays and can risk a project's financial viability.¹²²² In some cases the process can take over 3 years.¹²²³

Environmental approvals in Victoria and Australia

An Environment Effects Statement (EES) is Victoria's most comprehensive environmental assessment. It is set by the *Environment Effects Act 1978*. An EES reviews the environmental, social and economic impacts of a development and includes mandatory public consultation.¹²²⁴ A less detailed environment report might be suitable for projects where the potential environment effects are already well understood, limited in scope, or can be readily assessed.¹²²⁵

After receiving a project referral, Victoria's planning minister decides whether a development needs an environment report, a full EES, or neither. After the prescribed assessment is complete, the minister can recommend the project be rejected, approved, or approved with conditions.¹²²⁶

Australian Government environmental approvals are conducted under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This legislation applies to projects that affect matters of national significance, such as World Heritage sites, or impact endangered species. Assessments under the EPBC Act also require public consultation. Australia's environment minister makes the final, legally binding decision and sets conditions to limit environmental harm.¹²²⁷

The EES and EPBC Act both assess environmental impacts but differ in scope, triggers and timelines.¹²²⁸ In some cases, a single assessment can be used to meet both EES and EPBC requirements.¹²²⁹ In other cases, the separate assessment processes require multiple assessments and cause delays. The Australian Government has proposed reforms to the EPBC Act to better align national and state assessment processes, but it has delayed delivery of some of the reforms while it consults with stakeholders.¹²³⁰

Streamlined approval processes can provide more clarity for energy projects

Victoria can streamline energy project assessments to reduce cost and delays.¹²³¹ This can help Victoria meet its energy targets. Large-scale renewable energy projects can use Victoria's Development Facilitation

Program for faster approvals.¹²³² The government can further simplify assessments without reducing the quality of environmental evaluations.¹²³³ Other states have made similar reforms.¹²³⁴

The Victorian Government plans to speed up Environment Effects Statement processes.¹²³⁵ This includes more clearly stating the scope and technical information needed for project assessment and using environment reports when possible.¹²³⁶

The government should go further and reform environment approvals legislation and guidance. The reforms should clarify required information and environmental management controls. They should aim to keep the same level of environmental protection while making the process faster, more cost-effective and predictable.

Several reforms can improve existing processes. The government should review the legislation and consider:

- setting statutory timeframes for assessment and decisions under the *Environment Effects Act 1978*¹²³⁷
- including an evaluation of a project's environmental benefits, such as its potential to reduce greenhouse gas emissions¹²³⁸
- clarifying whether a project requires an Environment Effects Statement or an environment report.¹²³⁹

The government should also provide guidance to make environmental management conditions more consistent between similar projects.¹²⁴⁰ The guidance should set agreed limits for design changes during the approval process to avoid time-consuming changes later.¹²⁴¹ It should also issue standard scoping requirements for major transmission infrastructure projects.¹²⁴²

The Queensland Government reformed its environmental approvals process to quickly identify and reject unsuitable projects (see case study – [Queensland's reforms clarify planning and approvals](#)).¹²⁴³

Good site selection can protect biodiversity and speed up approvals

Communities want assurance that faster approval processes will not erode biodiversity protections.¹²⁴⁴ The Victorian Government should give industry clearer information on environmental conditions and good sites. This can avoid biodiversity loss and project delays.¹²⁴⁵

The government has started to study how wind energy projects affect biodiversity, including brolga and bat populations.¹²⁴⁶ It has published maps of these species' range and prepared guidelines on wind farm management to better protect wildlife.

The government can repeat this process for transmission, solar and battery projects. It can also expand it to assess impacts on other species, including lesser-known species such as the striped legless lizard.¹²⁴⁷ The *Handbook for the development of renewable energy projects in Victoria* is a good start.¹²⁴⁸ The government should build on this over time.

Early engagement can help guide site selection and improve community acceptance

Faster approvals should not come at the cost of early, transparent and respectful engagement with local communities, landholders and Traditional Owners.¹²⁴⁹ Early engagement allows project proponents to identify areas of cultural and environmental significance and plan to lessen adverse impacts they cannot avoid (see box – [Community engagement can build understanding and acceptance for energy projects](#)).

Early engagement with Traditional Owners can better protect cultural heritage. Projects need a Cultural Heritage Management Plan as part of their Environment Effects Statement.¹²⁵⁰ These plans aim to protect Aboriginal cultural heritage. Registered Aboriginal Parties can evaluate the plans for their area and decide whether to approve or refuse them.¹²⁵¹

Proponents currently develop Cultural Heritage Management Plans late in a project's environmental approvals process. This puts time and financial pressure on Registered Aboriginal Parties to evaluate them within project timeframes.¹²⁵² There is no requirement for developers to engage early with Traditional Owners.¹²⁵³

The Yoorrook Justice Commission highlighted the importance of engaging with Traditional Owners early and at every stage of a project.¹²⁵⁴ Early engagement can help guide site selection and better protect cultural heritage.¹²⁵⁵ It also helps ensure that Traditional Owners have the capacity and time to contribute to projects that affect them.¹²⁵⁶

Cost range, timing and funding

We estimate this recommendation will cost around \$25 million over 5 years. General government revenue can fund this recommendation.

Our cost range includes existing government staff updating guidelines and preparing changes to legislation for environmental approvals, costing up to \$6 million. It also includes around \$20 million for the government to do further technical studies into biodiversity impacts.

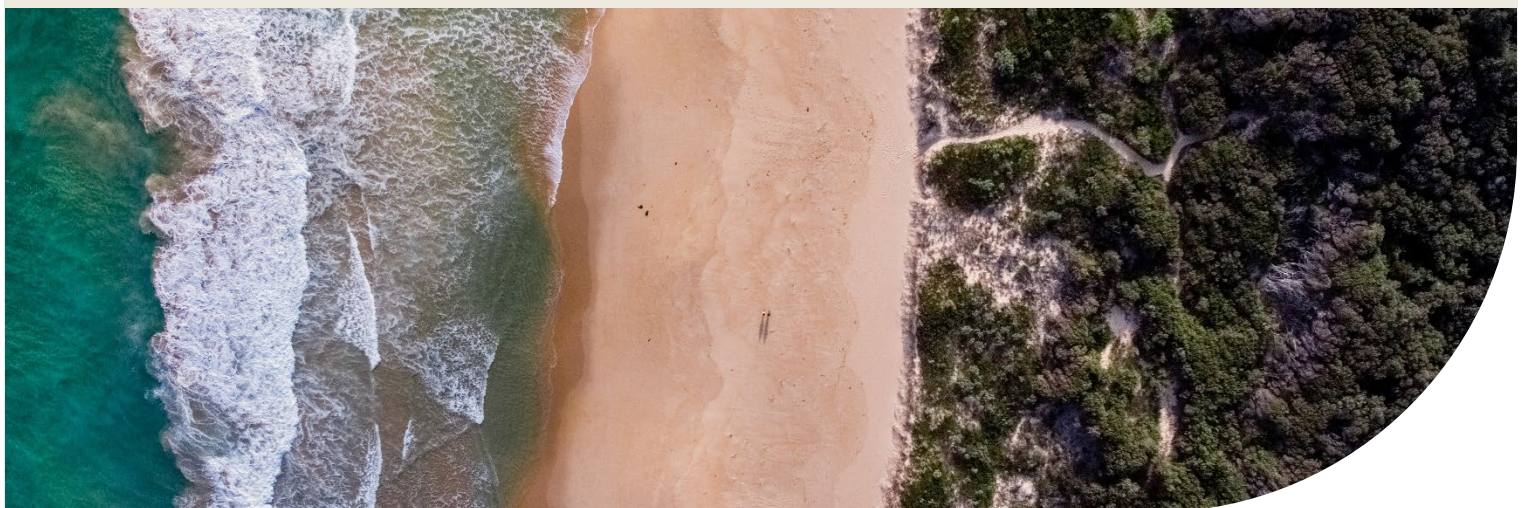
Case study

Queensland's reforms clarify planning and approvals

Queensland has changed its environment laws to increase consultation on resource projects, provide early clarity to proponents on unacceptable proposals and keep environmental impact statements up to date.¹²⁵⁷

The government can stop the planning process if a project poses serious environmental risks, affects significant environmental or cultural heritage areas, or does not meet legal standards. The reforms add an 'early no' step to the assessment process, allowing industry and the community to quickly learn if a project will not be approved as proposed. Proponents can no longer appeal directly to the minister.¹²⁵⁸ Assessment reports expire after 3 years unless proponents apply to extend them, to ensure they include the most recent and relevant information.¹²⁵⁹

The reforms simplify Queensland's planning and approval process by quickly identifying and rejecting projects that are clearly unacceptable. This prompt decision-making saves time and money.¹²⁶⁰



Encourage household energy efficiency and electrification

Support low-income households to go all-electric. Complete social housing energy upgrades, including electrification, energy efficiency and solar panels. Require Victorian homeowners to disclose the energy efficiency of their homes at the time of sale or lease.

Energy efficiency and electrification have many benefits

Victoria needs to cut emissions across the whole economy to meet its climate targets. Home energy use accounts for around 20% of Victoria's net greenhouse gas emissions.¹²⁶¹ Victoria risks missing its emissions reduction targets by up to one million tonnes of carbon dioxide equivalent a year if homes do not become more energy efficient.¹²⁶² Home energy efficiency and electrification can also cut gas use, helping to reduce Victoria's projected gas supply shortfalls.¹²⁶³

More efficient homes can lower energy bills, make homes more comfortable in a changing climate and reduce the need for new energy infrastructure.¹²⁶⁴ For example, homeowners can make their homes more energy efficient by installing insulation, sealing draughts and covering windows.¹²⁶⁵

Some electrical appliances, such as heat pumps, are more energy efficient than similar gas appliances.¹²⁶⁶ Switching from gas to efficient electric appliances when they need replacing can save households around \$1,200 to \$1,300 a year.¹²⁶⁷ When combined with rooftop solar, households can save even more.¹²⁶⁸

From 2027, Victorian households will have to switch to electric hot water when they replace their end-of-life gas water heater.¹²⁶⁹ The government has also introduced programs that provide Victorians with financial assistance to make their homes more energy efficient, swap appliances or add rooftop solar.¹²⁷⁰ It plans to develop a one-stop shop to help households electrify.¹²⁷¹

Low-income households are missing out on energy savings

Delivering home energy upgrades for low-income households could add around \$2.5 billion to \$4.4 billion to Victoria's economy over 7 years from expenditure on the upgrades and extra consumer spending from bill savings.¹²⁷² But low-income households and renters are less likely to access schemes that help manage energy costs, such as energy efficiency upgrades and solar rebates.¹²⁷³ They also tend to live in less efficient homes.¹²⁷⁴ People who do not make home upgrades face more challenges with energy costs. The energy transition can increase inequality if the benefits and costs are not distributed evenly.¹²⁷⁵

Some people cannot afford the upfront costs to change appliances.¹²⁷⁶ But as people switch from gas to electricity, the financial burden for those who stay on the gas network increases. This makes bills more expensive for people who cannot switch.¹²⁷⁷

The Victorian Government should create a grants program to support low-income homeowners to electrify their homes, including hot water systems, heaters and cooktops. This will address upfront cost barriers, reduce exposure to higher gas prices and support a fairer energy transition.¹²⁷⁸

Other people cannot make changes because they do not own their homes.¹²⁷⁹ The government should complete energy upgrades for all existing social homes. It should finish installing efficient electric hot water systems, heaters and cooktops across all properties. It can then remove social homes from the gas network. This means tenants can save on energy bills through electrification. The government is updating minimum energy efficiency standards for rental homes, due to start in 2027.¹²⁸⁰ This will help all renters save money.

The government should also install solar panels on social homes where possible. Social homes with solar panels can also reduce energy bills by using a timer to heat hot water to during the day when the sun is out.¹²⁸¹

Better information can lead to more energy-efficient homes

Most Victorian homes have low energy efficiency. Around two-thirds of detached and semi-detached homes have an energy rating of 2 stars or below. This is much lower than the current 7-star standard for new homes.¹²⁸²

Clear information about home energy efficiency encourages homeowners to make upgrades. It also helps renters and buyers choose homes that are more energy efficient, comfortable and cheaper to run.¹²⁸³

The Victorian Government should introduce a mandatory energy efficiency disclosure scheme. This should require owners to share their home's energy efficiency rating in all marketing when selling or leasing. This will complement minimum energy efficiency standards for rental homes.

The scheme should align with the national framework on home energy disclosure.¹²⁸⁴ It should rate how homes perform in hot and cold weather and the energy efficiency of installed appliances. It should also give advice on improvements, information on rebates or discounts for energy efficiency upgrades, and how much money they are likely to cost or save.

Better information can encourage more new homes to exceed minimum energy efficiency standards. In Victoria, less than 25% of homes built since 2016 are above minimum standards. In the ACT, where disclosures are mandatory, this is more than 60%.¹²⁸⁵

Cost range, timing and funding

We estimate that this recommendation will cost \$2 billion to \$4 billion. General government revenue can fund this recommendation. Completing energy upgrades for all social homes can leverage the existing Energy Efficiency in Social Housing Program and partner with the Australian Government to fund the upgrades.¹²⁸⁶

Our cost range includes \$1 billion to \$2.5 billion in Victorian Government grants to support low-income households to switch to efficient electric appliances over 10 years.¹²⁸⁷

We included \$1 billion to \$1.5 billion over 7 years to electrify social homes currently using gas. This also includes costs for rooftop solar, where possible, and energy efficiency upgrades for community housing to meet the new minimum energy efficiency rental standards.¹²⁸⁸ Lessons from this program could be shared, particularly apartment building electrification lessons.

Starting both programs from 2026 can help low-income households with their energy bills.

We also include cost estimates of \$5 million to \$10 million to introduce the mandatory energy efficiency disclosure scheme. This includes costs for assessing scheme design options to minimise compliance and administrative costs.¹²⁸⁹

Invest in home, neighbourhood and big batteries for more energy storage

Fund more batteries in social homes and provide incentives to encourage people to join a virtual power plant. Expand the neighbourhood batteries program, or similar. Facilitate more investment in big batteries for the transmission network.

Victoria is replacing its ageing coal-fired power plants to reduce emissions.¹²⁹⁰ This means reconfiguring electricity networks so homes and businesses have a stable supply of renewable energy. But delays in transmission projects, poorly managed extra distribution network loads and flows, or low battery storage uptake might mean Victoria will not be able to source enough electricity when coal-fired power stations close.¹²⁹¹

Some renewable energy sources only generate energy on sunny or windy days. Batteries can store this energy and supply it when needed. They come in many sizes including small home systems, mid-sized batteries connected to the distribution network, and big batteries connected to the transmission network.¹²⁹²

Batteries can help Victoria's electricity network work better. They can help balance the electricity system by allowing two-way flows and make energy supply more stable.¹²⁹³

Using virtual power plants to coordinate consumer energy resources is a big opportunity

Consumer energy resources like rooftop solar, electric vehicles, heat pumps and home batteries can reduce emissions. But they might strain the energy system if not coordinated.¹²⁹⁴ For instance, charging electric vehicles during peak times might need extra new infrastructure. But charging when rooftop solar is available can avoid this.¹²⁹⁵

Networking home batteries to form a virtual power plant can help (see box – [Virtual power plants](#)). Virtual power plants respond quickly to changes in supply and demand, making power supply more reliable.¹²⁹⁶

Virtual power plants

A virtual power plant is not an actual power plant. It is a group of rooftop solar arrays, batteries and smart devices like air conditioners or pool pumps that can be coordinated together to work like a traditional power plant.¹²⁹⁷ A virtual power plant operator links the assets together using a digital platform and provides instructions on when to store and release power.

Virtual power plants can provide services like trading in wholesale markets, demand management and frequency control ancillary services. These keep the electricity system operating within safe technical limits.¹²⁹⁸ Virtual power plants can store power when there is too much renewable energy in the system and release stored energy when people need it.

Coordinating consumer energy resources delivers other benefits to the energy system. Effective coordination of consumer energy resources might avoid around \$10 billion in distribution networks investment by 2040 and \$4.1 billion of investment in large-scale generation and storage projects across the National Electricity Market.¹²⁹⁹ Virtual power plants are a mechanism that can support this.

Energy retailers in Victoria offer various virtual power plant plans to customers with eligible solar power and battery systems. The plans can include upfront subsidies and different tariff rates for energy shared with the grid.¹³⁰⁰

The Australian Government's Cheaper Home Batteries Program helps homes and small businesses install small-scale solar battery systems.¹³⁰¹ The Victorian Government should complement this program by offering incentives for people to join a virtual power plant, for example an upfront payment based on the size of the battery. This will better connect and coordinate home batteries to benefit consumers and the electricity network. New South Wales already provides incentives to connect home batteries to virtual power plants.¹³⁰²

People living in social housing are excluded from existing home battery discounts. The subsidies target homeowners, businesses and community facilities. Even with financial assistance, the upfront cost of buying a battery can be too high for people on low incomes.¹³⁰³ The government should help social housing tenants benefit from home batteries. For example, it could partner with the private sector to provide batteries to social homes.

South Australia partnered with the private sector to install solar and home batteries on social homes with no upfront cost to tenants. The battery systems are centrally managed. In return tenants get cheaper electricity, access to clean energy and backup power during power outages.¹³⁰⁴

Mid-sized batteries can allow more rooftop solar and reduce emissions

Parts of Victoria's distribution network cannot host many more rooftop solar systems.¹³⁰⁵ Many homes have a rooftop solar system but no battery storage.¹³⁰⁶ By 2035, Victoria might need 20 times more coordinated battery storage than it has today.¹³⁰⁷

Mid-sized batteries, or neighbourhood batteries, store more power than home batteries. They store excess energy from home solar systems locally. They can coordinate consumer energy resources and reduce strain on the energy grid.¹³⁰⁸ The government should invest in mid-sized batteries by extending its neighbourhood batteries program to 2030.¹³⁰⁹

Energy distributors hold a lot of network data. They can better use and share this data to show where the network can host more batteries, including specific locations. This can help decide where to place batteries to best coordinate consumer energy resources.¹³¹⁰

The government should work with distribution network businesses, retailers, battery operators and communities to trial new battery tariffs. For example, Ausgrid is using a new tariff to support energy storage as a service in New South Wales. This allows customers to benefit from neighbourhood batteries without any upfront costs (see case study – [Ausgrid trials neighbourhood battery tariffs](#)).¹³¹¹

The government is implementing the *National consumer energy resources roadmap*. This aims to better integrate consumer energy resources into the energy grid and provide a safe and fair market for consumers.¹³¹² The government is also reviewing protections for consumer energy resources to ensure that safeguards are in place.¹³¹³

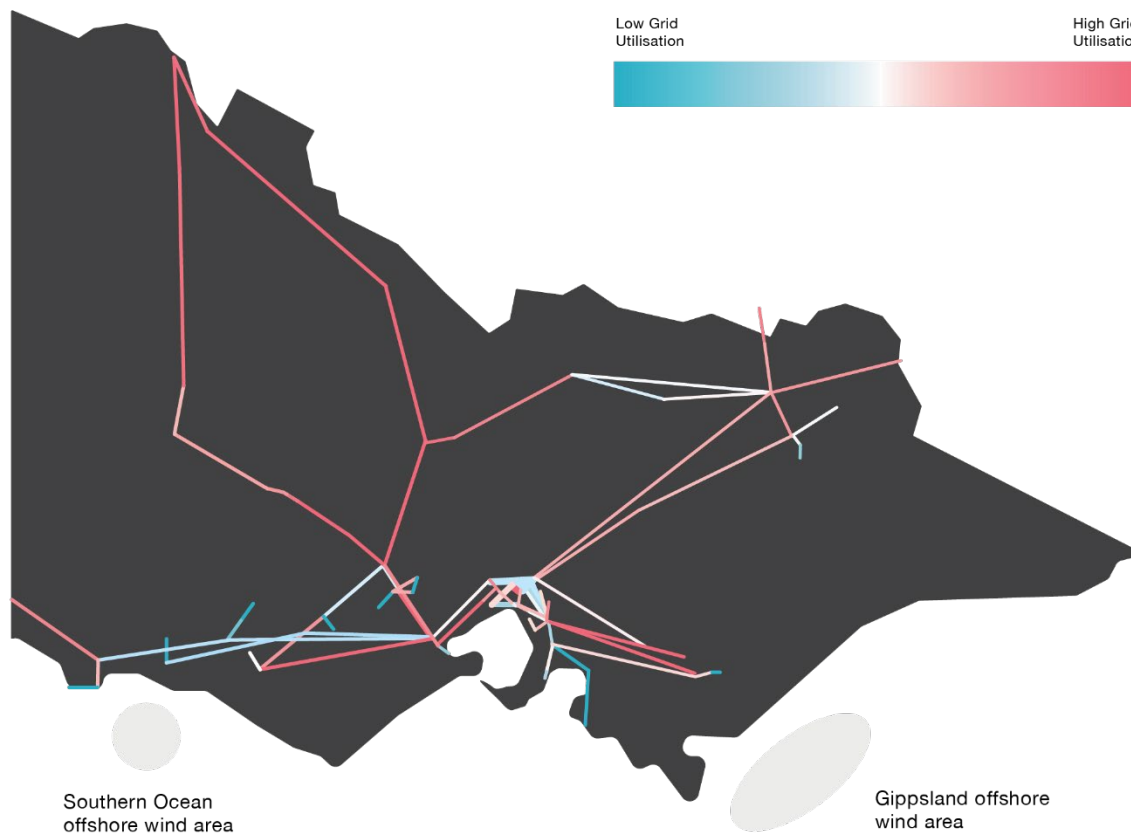
Big batteries can help with potential transmission risks

Victoria needs new infrastructure to transmit another 6 gigawatts of renewable energy by 2030. This rises to over 25 gigawatts by 2050.¹³¹⁴ The *Victorian transmission plan* outlines renewable energy zones and transmission projects to make this possible.¹³¹⁵ But large transmission projects have been delayed in Victoria due to community concerns, changes in project scope and the need for more detailed assessments and engagement.¹³¹⁶

Big batteries do not remove the need for more transmission capacity, but they can reduce transmission loads and provide backup power. The government should facilitate more investment in big batteries now, as backup if more projects are delayed. There are areas in Victoria where transmission congestion is already a

problem (see Figure 20). The government should prioritise areas where transmission congestion will likely remain a problem in the future, such as north-west and central Victoria.¹³¹⁷

Figure 20: Victoria's transmission network is experiencing congestion



Base case grid utilisation heatmap for Victoria, financial year 2025. Utilisation is defined as the annual average power flow on a line (in absolute values) as a proportion of the total line rating. Source: Infrastructure Victoria, adapted from Aurora Energy Research, *Infrastructure Victoria energy transition analysis* [pdf], report to Infrastructure Victoria, 2024, p 22.

Cost range, timing and funding

We estimate Victorian Government investment in batteries for more energy storage will cost \$350 million to \$575 million over 5 years. General government revenue and committed State Electricity Commission resources can fund this recommendation.

Our cost range estimates are made up of several parts:

- Providing incentives to join virtual power plants to 2030 will cost \$5 million to \$15 million.
- Initial Victorian Government grant funding to partner with the private sector to provide batteries to social homes will cost \$5 million to \$20 million, depending on the model adopted.
- Expanding the neighbourhood batteries program, or similar, to 2030 will cost \$25 million to \$35 million.¹³¹⁸

We estimate that Victorian Government investment in big batteries will be \$300 million to \$500 million by 2030. We assume the Victorian Government works in partnership with the private sector and contributes to big batteries in strategic locations.¹³¹⁹ Actioning this before 2030 will better manage impacts if there are delays to major transmission projects.

The Victorian Government has already committed \$1 billion in funding to the State Electricity Commission to invest in areas where the market is uncertain, including for big batteries.¹³²⁰ It can also facilitate more private sector investment in big batteries as firming is needed.

Ausgrid trials neighbourhood battery tariffs

Ausgrid, a distribution network business in New South Wales, is trialling a tariff agreement with energy retailers providing an energy as a service retail plan.

Network tariffs are charges for transporting energy along the electricity network. Retailers are charged, who then pass these charges through to customers. This is the network charge on the bill. Retailers are typically charged network tariffs for transporting a customer's solar energy to a neighbourhood battery, and again when the battery sends it back to the customer. This can make investing in neighbourhood batteries unattractive, and does not recognise the network benefits batteries can provide.

Energy as a service is a business model where customers pay a subscription fee for an outcome, compared to traditional energy plans where a customer pays for a unit of energy.¹³²¹ In this case, a customer pays a fee for access to a neighbourhood battery. It means a customer can use part of a shared battery instead of buying their own. Retailers offering this kind of plan to customers in Ausgrid's network can access a special tariff. It is a 'local use of system' tariff which allows free battery charging if it absorbs local generation.¹³²² This can make customer bills cheaper.¹³²³

This tariff aims to support eligible customers, including small businesses, to access a shared battery without upfront costs. Ausgrid will study customer responses to these tariffs.¹³²⁴



Determine long duration energy storage needs

Determine the most efficient policy or investment options to provide enough long duration energy storage to meet Victoria's needs.

The electricity system will operate differently as coal power plants close

Victoria's 3 remaining coal power plants need to close by 2035 to meet emissions and renewable energy targets.¹³²⁵ Transition arrangements are in place for 2 of them.¹³²⁶ As each plant closes, Victoria must replace its electricity with renewable energy generation and storage.

The electricity system will depend heavily on weather conditions when coal power stations close. Victoria will have times of low demand and high supply, and high demand and low supply. A flexible system, including storage and some gas-fired power, can manage this.¹³²⁷ However, sometimes Victoria has several cloudy and windless days in a row. This weather pattern is hard to predict, including how often it might happen or how long it will last.¹³²⁸

Victoria's largest battery is due to be completed in 2025. It will be able to deliver energy for up to 4 hours.¹³²⁹ Current battery technology can address daily peaks and troughs, but not days or weeks of low renewable output.¹³³⁰ During those times, Victoria will need other electricity sources to cover the shortfall.

Long duration energy storage can help manage the energy transition

Long duration energy storage can store power for 8 hours or more.¹³³¹ It comes in various forms, including pumped hydroelectricity, compressed air, molten salts and advanced battery systems.¹³³² Current energy market settings do not support investment in longer duration storage.¹³³³

A lack of long duration energy storage is a high risk for Victoria's energy transition.¹³³⁴ This might mean high prices and unreliable supply by 2035, depending on weather and demand patterns.¹³³⁵ Without enough long duration storage, Victoria will rely on fossil gas power plants and electricity imports from other states to cover gaps in supply when there is less renewable energy available. But this reliance also has risks, including future gas shortages.¹³³⁶ Energy projects in other states have similar cost, supply chain and timing pressures.¹³³⁷

The Victorian Government should decide the most efficient policy or investment options to provide enough long duration storage to meet Victoria's needs. Many stakeholders support this action.¹³³⁸ Several options are available. For example, the government can work with other jurisdictions to set up a longer-term strategic reserves service within National Electricity Market settings.¹³³⁹

The government can also explore options outside energy market frameworks.¹³⁴⁰ For instance, it can set targets for different duration storage requirements and develop procurement to support them (see case study – [Long duration energy storage in Australia and overseas](#)). New South Wales uses Long-Term Energy Service Agreements.¹³⁴¹ This approach offers stable revenue to projects, attracts investment and seeks to provide value for consumers.¹³⁴²

The government can also consider direct support through grants or targeted tenders for a strategic reserve. State-level planning can also improve system reliability and ensure resources and infrastructure are available as coal plants close.¹³⁴³ Each policy or investment option will have a different cost.

Reliable energy operations require an understanding of long duration storage needs

Research shows that grid planners must identify storage needs in detail to make sure energy supply and operations are reliable.¹³⁴⁴ Our consultation revealed support for an approach based on evidence and data analysis.¹³⁴⁵ In deciding the most efficient policy or investment option, the government should define Victoria's long duration energy storage needs and its policy goals. For example, the need might differ if local energy storage is a priority. There might be trade-offs between making the system reliable and reducing emissions. The government can consider different risk scenarios, such as potential downtime of critical energy infrastructure. Public consultation can help balance the different goals, risks and trade-offs.

Cost range, timing and funding

We estimate that determining long duration energy storage needs and policy or investment options will cost \$1 million to \$5 million over 2 years. General government revenue can fund this recommendation.

The cost range includes the Victorian Government's costs to investigate, develop policy and investment options, consult and determine future actions. Completing this work by 2027 means that the government can reduce the risk of not having enough long duration storage to support Victoria's energy transition.

Long duration energy storage in Australia and overseas

New South Wales long duration energy storage review

The *NSW electricity infrastructure roadmap* sets out minimum long duration storage objectives.¹³⁴⁶ These were initially set with 2 gigawatt and 16 gigawatt hours of long duration storage by 2030.

In 2024, the New South Wales Government reviewed long duration storage.¹³⁴⁷ This followed an independent *Electricity supply and reliability check up*.¹³⁴⁸ New South Wales also commissioned AEMO Services to advise on the value of long duration storage.¹³⁴⁹

Consultation for the roadmap focused on its 2030 infrastructure objectives and the potential to reduce minimum storage duration to help meet system reliability to 2030. It considered the challenge of meeting energy needs for 2030 and beyond, when reliability risks and system needs are expected to be different.¹³⁵⁰

Stakeholder feedback outlined the need to focus on system needs when coal closes.¹³⁵¹ The New South Wales Government also commissioned the Australian Energy Market Operator to run a reliability scenario that assumed all NSW coal power plants closed by 2034, to investigate how storage portfolios can close reliability gaps. This produced an estimate of the minimum long duration storage infrastructure needed to meet the reliability standard.¹³⁵²

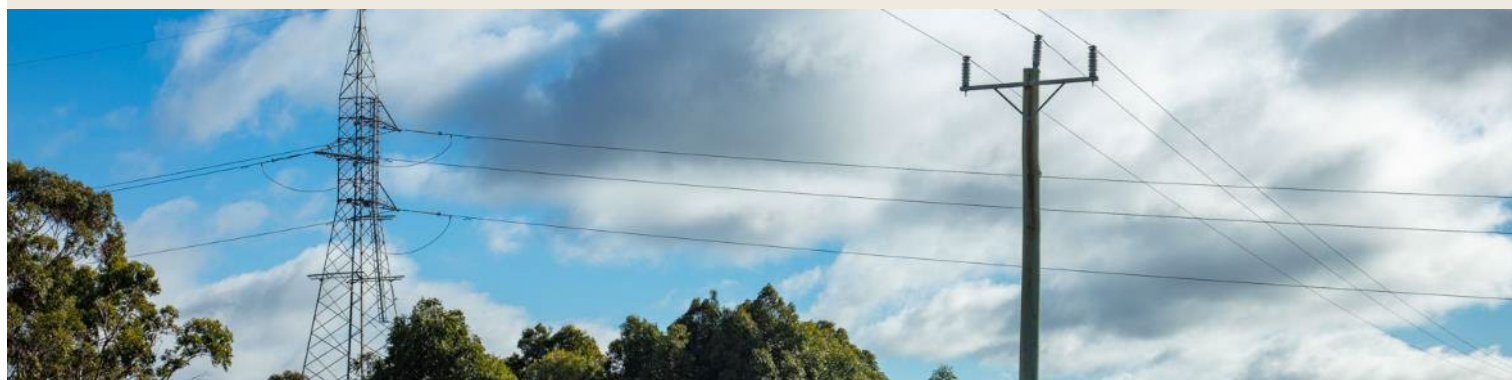
The New South Wales Government updated its Long Term Energy Service Agreement framework to include a requirement for the Consumer Trustee to consider additional financial benefits when assessing a competitive tender.¹³⁵³ The current tender for long duration storage includes the value of system resilience to low-probability and high-impact events, additional system security services such as inertia and system strength, and any value that long duration storage creates by avoiding or deferring network investment.¹³⁵⁴

Long duration energy storage developments in the UK

In early 2024, the UK Department for Energy Security and Net Zero consulted on a policy framework for long duration energy storage investment.¹³⁵⁵

By October 2024, the UK Government agreed to a cap and floor scheme for its long duration energy storage policy to support rapid and efficient investment.¹³⁵⁶ A cap and floor scheme provides a guaranteed revenue should returns fall below an agreed floor price, and a cap on the revenue earned. Some or all revenue earned over the cap is returned to the consumer.¹³⁵⁷ This type of scheme provides revenue certainty for investors.

The government also appointed Ofgem, the energy regulator, to act as the long duration energy storage regulator and the investment framework delivery body, due to its track record and expertise in a cap and floor scheme.¹³⁵⁸ Ofgem is developing the technical details of the scheme and aims to assess projects for approval in 2026.¹³⁵⁹



Develop an area-based energy plan and support renewable gas production

Develop an energy plan that combines future electricity and gas needs for each metropolitan and regional area. Set a renewable gas target to support renewable gas production.

Victoria's energy transition is a balancing act

Victoria relies on fossil gas to meet its current energy needs. This accounts for around 16% of total emissions.¹³⁶⁰ Victoria will need to reduce gas use and switch to cleaner energy sources to reach net zero emissions by 2045.

Each sector can reduce its gas use in different ways, but some are more ready to change than others. For instance, many homes can save money by switching to electricity now.¹³⁶¹ But some industries, like metal manufacturing, cannot easily switch to other fuels.¹³⁶² Victoria will also need to use gas in the medium to longer term to provide stable electricity generation as coal power plants close.¹³⁶³

Victoria's gas supply is expected to fall faster than demand. Lower production and ageing infrastructure could lead to shortages by 2029.¹³⁶⁴ This might happen earlier under certain conditions, such as a coal generator outage during peak daytime demand needing to be covered by gas powered generation.¹³⁶⁵ The *Gas security statement* sets out the Victorian Government's actions to secure supply and keep gas available for industry and power generation.¹³⁶⁶

Victoria's gas transition is a challenging balancing act. It will affect both gas and electricity infrastructure. For example, renewable gases like biomethane might be produced in more and different locations than fossil gas.¹³⁶⁷ The Australian Energy Market Operator projects that demand for electricity will double by 2050. This will require major network upgrades.¹³⁶⁸ It might also require more gas-fired electricity generation to deal with higher peak electricity demand.¹³⁶⁹

Planning for gas and electricity together will help coordinate infrastructure changes

Separate system-level plans are available for electricity and gas.¹³⁷⁰ Electricity networks publish regular infrastructure plans, whereas gas networks do not have the same requirements.¹³⁷¹ As Victorians use less gas and more electricity, governments can integrate energy system planning to manage the transition more smoothly.

More detailed planning for gas and electricity together can provide a better picture of Victoria's energy opportunities and infrastructure needs.¹³⁷² It can identify future renewable energy projects so that industry and communities can better understand the potential for local energy supply.¹³⁷³ The government should work with relevant bodies, such as the Australian Energy Market Operator and network businesses, to create a long-term plan for both electricity and gas infrastructure.

The plan should cover demand forecasts for gas and electricity, including from the transport sector as it shifts from fossil fuels. It should then identify the gas supply, electricity generation, storage and network infrastructure to meet this demand. This includes potential new gas-fired electricity generation plants and any changes to the gas network to support different patterns of supply and demand.¹³⁷⁴ It should also include long duration energy storage (see [recommendation 34](#)).

The integrated plan should also examine each metropolitan and regional area of Victoria and identify where to prioritise electricity, biogas, biomethane and hydrogen supply and use. The plan's examination of each area should cover:

- residential, commercial and industrial energy use, including transport

- any large energy users, such as data centres, and industries that cannot easily switch to electricity
- potential renewable gas production sites, including biogas, biomethane and green hydrogen¹³⁷⁵
- electricity and gas network changes to manage future demand and supply, including opportunities for local electricity generation, storage and energy sharing¹³⁷⁶
- roles and responsibilities in developing and carrying out actions.

Planning at a local level will help identify more energy opportunities, where infrastructure will continue to be needed and where its use might decline (see future option – [plan for gas infrastructure changes](#)). For instance, Shepparton has several large gas users and a significant agriculture industry.¹³⁷⁷ This creates opportunities to convert organic waste into energy, such as biomethane.¹³⁷⁸ Sharing the integrated plan with its area-based conclusions will also help businesses and local governments to align their investments and timing.¹³⁷⁹

Renewable gases can support industries that are hard to electrify

Victoria needs a renewable gas supply for industries that cannot switch to electricity. Gases like biomethane and green hydrogen can help reduce emissions, but they are not yet commercially viable.¹³⁸⁰ A renewable gas production target can support industry and electricity supply.

The government is proposing a target of 4.5 petajoules by 2035 as part of its planned Industrial Renewable Gas Guarantee scheme. It should implement the proposed target as planned, and review it after 3 years to assess costs and demand.¹³⁸¹ If it finds that the scheme is producing renewable gas at a reasonable cost, the government should increase the target at this time. Higher targets are more consistent with emissions reduction goals. An ambition of between 9 and 28 petajoules by 2035 is consistent with modelling and industry analysis.¹³⁸²

Cost range, timing and funding

We estimate that this recommendation will cost around \$25 million to \$50 million over 5 years. General government revenue can fund this work.

Our cost range includes Victorian Government costs to develop an integrated, area-based energy plan for electricity and gas networks. This is a significant investment as the involvement of many stakeholders with competing interests adds complexity to the process. The government will need to thoroughly investigate, analyse and consult on this plan.

We also include \$1 million to \$5 million to develop policy, undertake a regulatory impact statement and consult on an updated renewable gas target, when the government reviews the planned Industrial Renewable Gas Guarantee scheme.

Plan for gas infrastructure changes

Plan for future changes to gas infrastructure, including reconfiguring networks for industrial use and decommissioning in places where gas use is in decline.

Victoria's future gas use will be different from today's gas use

Victoria is one of the highest users of fossil gas in the world.¹³⁸³ It has over 38,000 kilometres of gas pipelines valued at \$7.2 billion.¹³⁸⁴ Homes and commercial businesses account for more than 60% of Victoria's total gas use.¹³⁸⁵ The Australian Energy Market Operator expects demand from these sources to decline 40% by 2035.¹³⁸⁶ It also expects industry to use 6% less gas, while gas used to generate electricity will increase.¹³⁸⁷

Victoria will need to use fossil gas in the medium to longer term to provide stable electricity generation as coal power plants close.¹³⁸⁸ Some industries will also need to use fossil gas as it is not currently technically possible or cost-effective for them to switch to alternative energy sources.¹³⁸⁹

As homes and businesses disconnect from the gas network over time, the cost of the infrastructure is spread over fewer customers. This makes gas more expensive for those who still use it. It makes it harder for gas network owners to justify replacing older gas infrastructure assets. It also makes ongoing maintenance and operations more challenging.¹³⁹⁰ In some instances, infrastructure will need to be decommissioned. Other parts might need to be reconfigured.¹³⁹¹ For transmission infrastructure, it might also mean changes to pipelines and storage.¹³⁹²

Future changes to gas networks will require planning, policy and regulation

Other governments are grappling with decommissioning gas networks (see case study – [Approaches to managing gas infrastructure decline](#)). In Victoria, residential, commercial and industrial customers can share the same part of the gas network.¹³⁹³ Some sections supply gas to households that are starting to switch to electricity and to industries that still need gas until other options become viable. In the future, some parts of the network might need to transport renewable gas to industrial users while other parts might no longer be needed.¹³⁹⁴

When it has completed energy planning for metropolitan and regional areas in Victoria (see [recommendation 35](#)), the government will better understand the future use of gas networks. It can then work closely with gas network businesses, regulators and other stakeholders to identify parts of the network to keep, repurpose or decommission.

From the early 2030s, the government can partner with gas and electricity network businesses to develop more detailed plans to phase out gas networks in any areas that will no longer use gas.¹³⁹⁵ This includes defining criteria and thresholds for decommissioning, such as customer density and pipeline use.¹³⁹⁶

Decommissioning plans should provide clear end dates for gas use in any areas where it will no longer be supplied as well as the process for disconnection. A clear timeframe will help individuals and businesses make decisions about their appliances, equipment and buildings.¹³⁹⁷ Early decisions on decommissioning give people and businesses time to prepare, allowing transition costs to be spread over a longer period.¹³⁹⁸

Navigating the gas transition will mean facing long-term challenges

Current gas regulatory frameworks were designed to encourage network growth, not to manage networks where gas use is declining over time.¹³⁹⁹ They do not consider how to keep gas supply reliable, secure, and affordable as fewer customers use the networks. The government is monitoring the need for regulatory

changes.¹⁴⁰⁰ It will need to consider issues such as information, safety, costs and who pays. For instance, some argue for more information on gas networks and that governments should review safety regulations so that they ensure decommissioning is done safely.¹⁴⁰¹

Governments will need to better understand risks and costs, as well as how to distribute them fairly.¹⁴⁰² This includes the costs of decommissioning gas infrastructure, which are uncertain and potentially significant.¹⁴⁰³ The government can learn from upcoming gas network decommissioning in 10 regional Victorian towns.¹⁴⁰⁴

Cost range, timing and funding

We estimate that planning for gas infrastructure reconfiguration and decommissioning will cost the Victorian Government around \$25 million to \$50 million over 5 years from 2030. General government revenue can fund this work.

Our cost range includes Victorian Government costs to set up suitable governance arrangements, involve industry, local governments and other stakeholders, and engage engineering expertise. The Victorian Government will need to thoroughly investigate, analyse and consult on gas infrastructure reconfiguration and decommissioning plans, which is likely to be a complex process.

Case study

Approaches to managing gas infrastructure decline

The European Union recognises the need to transition from fossil gas to achieve net zero emissions by 2050.¹⁴⁰⁵ Distribution system operators are required to create plans to shut down gas networks when demand for fossil gas is expected to decrease.¹⁴⁰⁶ Utilities companies must adopt transparent pricing models. Governments support vulnerable consumers as needed when phasing out fossil gas.¹⁴⁰⁷

Several European countries are developing local plans to phase out gas. In the Netherlands, municipalities develop local heating plans and apply accelerated depreciation to gas infrastructure.¹⁴⁰⁸ In Germany, municipalities create detailed heating decarbonisation plans and name areas for gas grid phase out. Denmark has taken the most ambitious approach by buying back its gas grid, setting up a decommissioning fund and aiming to phase out gas for heating by 2030.¹⁴⁰⁹

The ACT Government's *Integrated energy plan* outlines the transition from gas to electricity. The plan aims to significantly reduce residential gas use by 2030 followed by more complex gas users. The ACT Government has banned new gas connections since 2023 to introduce electric alternatives.¹⁴¹⁰ A pathway for decommissioning the ACT gas network will become clear between 2030 and 2035. Decommissioning will start from 2035 to achieve net zero by 2045.¹⁴¹¹ The local distributor, Evoenergy, will help to wind down the gas network.¹⁴¹² The ACT Government offers interest-free loans of up to \$15,000 and subsidies of up to \$5,000 to help households with the costs of energy-efficient electric products, along with education campaigns.¹⁴¹³

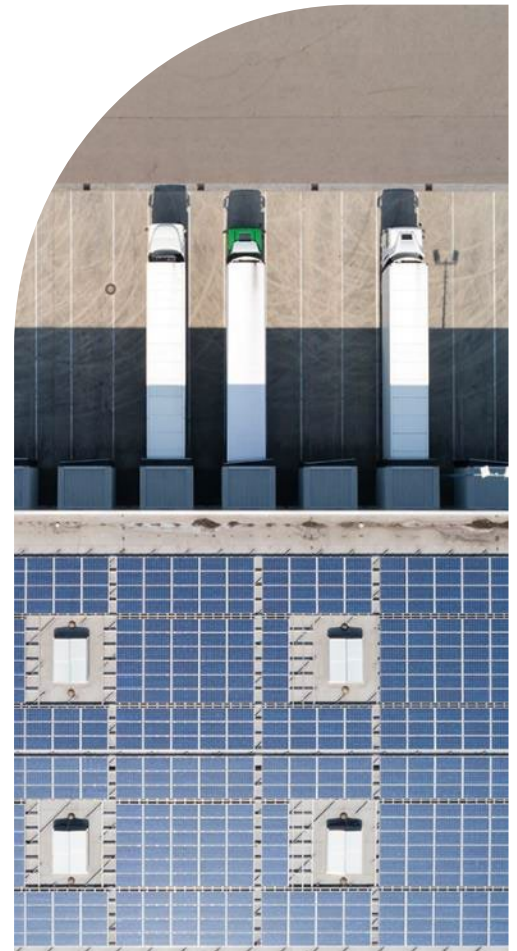




Objective

Victoria has a high productivity and circular economy

Victoria has a high productivity economy that creates well-paid jobs, attracts investment and facilitates trade. It does so while also continually reducing the environmental impacts of production and consumption.



Infrastructure can drive a more productive economy

Increasing productivity can help Victoria's economy grow.¹⁴¹⁴ This can improve work and social opportunities for Victorians. When productivity grows, employers can afford to pay higher wages.¹⁴¹⁵ Productivity growth also means workers can have more time for leisure.¹⁴¹⁶

In a high productivity economy businesses can attract the investment they need. They can then create the goods and services that drive economic growth. Consumers can get better products, which businesses can produce with fewer resources and hours of work.¹⁴¹⁷

Investing in infrastructure is one way of building a more productive economy. Education and training infrastructure helps workers get the right skills for the jobs the local economy needs.¹⁴¹⁸ This helps workers find well-paying jobs. Transport infrastructure helps Victorians access these jobs. It also makes it easier for businesses to send their goods across Victoria, interstate and internationally. Digital infrastructure connects people remotely to jobs and services. It allows businesses to be more efficient and to reach global markets.

A circular economy leads to less waste, more jobs and healthier environments

Victorians made it clear through our consultation that a highly productive economy must not come at the cost of a healthy and thriving natural environment.¹⁴¹⁹ Victoria can do this by moving towards a circular economy.

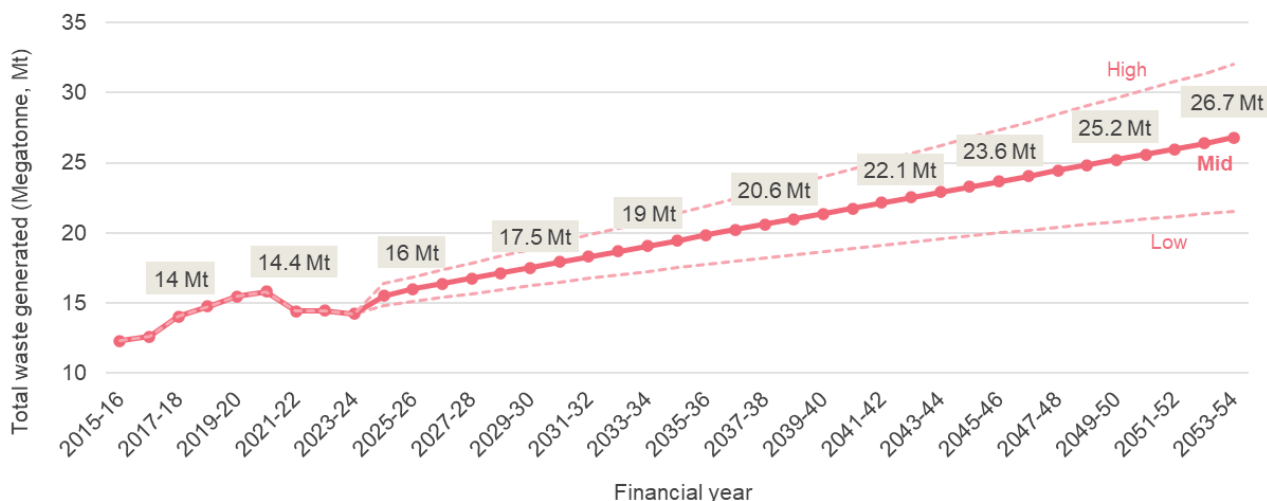
Businesses typically use raw materials like wood, plastics or metals to make products. This creates some waste. After consumers use these products, they often throw them out, creating more waste. A circular economy shifts away from this linear system of production and consumption. It aims to design products so they are in use for longer.¹⁴²⁰ This means that consumers can meet their needs with fewer materials.

In a circular economy, people recycle and reuse more. This reduces the environmental impact of the goods they produce and consume. The Victorian Government has committed to transitioning to a circular economy.¹⁴²¹ It has taken some steps towards this. For example, the government uses some recycled materials when it builds transport infrastructure.¹⁴²² Our recommendations prioritise many non-build and low build infrastructure solutions. When the government does build, it should use more recycled materials (see [recommendation 25](#)).

The government wants to reduce the amount of waste Victoria produces.¹⁴²³ But it expects that Victorians will produce more over the coming years (see Figure 21).¹⁴²⁴ This means more waste will end up in landfill. Materials sent to landfill often have economic value, which is lost if they are thrown away. For example, electronic waste contains valuable materials that Victoria can recover and reuse.¹⁴²⁵

Businesses might need to innovate and develop new ways to reuse products to achieve a circular economy. This can mean new jobs that need different skills.¹⁴²⁶ Victoria can develop circular economy skills for its workers through vocational education and training.¹⁴²⁷ Highly skilled workers help grow the economy.¹⁴²⁸

Figure 21: The government expects Victoria’s waste volume to increase over coming years



Victoria’s projected waste generation. Source: Infrastructure Victoria, adapted from Recycling Victoria, [Victorian waste projection model dashboard](#), last updated April 2025.

Infrastructure helps businesses move goods across Victoria and beyond

Trade helps productivity grow.¹⁴²⁹ When Victorian businesses trade with each other and with businesses outside the state, they can become experts at making certain products. Trade also gives consumers access to goods from around the world.¹⁴³⁰ Infrastructure is a part of the supply chains that make trade possible.¹⁴³¹ These supply chains mean Victorians can get what they want, when they need it, often delivered to their doorstep.

Transport infrastructure helps Victorian businesses move imports and locally produced goods across the state. Businesses also use road, rail, shipping, and airport infrastructure to send their products interstate and overseas.¹⁴³² For example, farmers use roads, railways and ports to send their produce to different places. This includes food and fibre, which were worth \$20.1 billion to the Victorian economy in 2023–24.¹⁴³³

Rail can be more efficient than road transport when moving heavy freight over long distances.¹⁴³⁴ But some goods still need to move by road, particularly during the last stage of delivery. Traffic congestion can make this expensive. Freight operators can work more efficiently when infrastructure makes their deliveries easier. They can have faster delivery times, be safer and produce fewer emissions.¹⁴³⁵

Opportunities exist to make infrastructure more productive

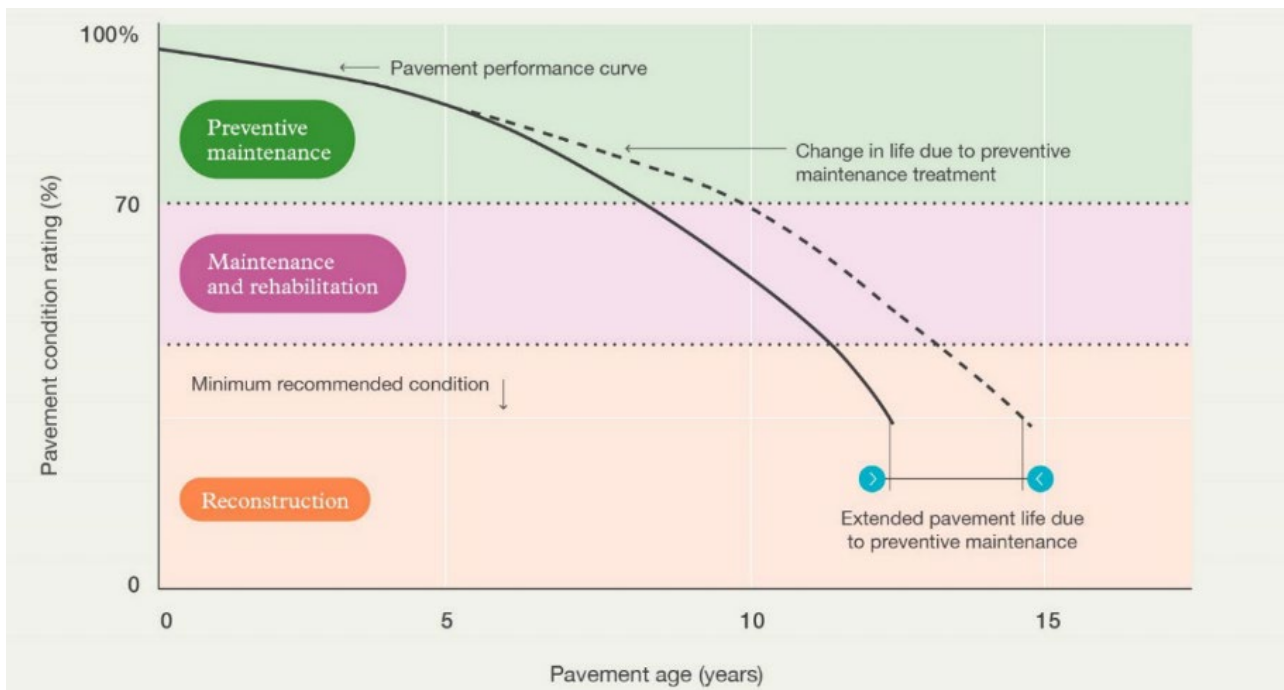
Infrastructure is more productive when it is well-designed, built efficiently and maintained regularly.¹⁴³⁶ Planning infrastructure early reduces overall costs.¹⁴³⁷ It helps the government deliver the most important infrastructure when and where Victorians need it.¹⁴³⁸ Integrating infrastructure plans across sectors is essential to achieve the productivity benefits of a more compact city (see [recommendation 36](#)). Compact cities have more productive economies and more employment opportunities than spread out cities.¹⁴³⁹

Victoria can better manage its \$400 billion of land and infrastructure assets.¹⁴⁴⁰ Changing how people use existing infrastructure can make it more productive.¹⁴⁴¹ This includes making the most of space on roads and public transport during quieter hours of the day. Maintaining infrastructure also keeps it in better condition for longer. For example, preventive maintenance of road surfaces means they last longer (see Figure 22).¹⁴⁴² Upgrading infrastructure can also increase its productivity. For example, installing digital water meters can save money by reducing water losses.¹⁴⁴³ Better managing existing infrastructure helps Victoria do more with less.

Our commissioned research *Digital technology and infrastructure productivity* looked at how digital technologies can help meet Victoria’s growing infrastructure needs faster. It found 5 technologies that can

transform the way infrastructure is designed, built and maintained.¹⁴⁴⁴ These technologies will need workers with new skills.¹⁴⁴⁵ Technologies can also help the Victorian Government save money, improve worker safety and boost productivity.¹⁴⁴⁶

Figure 22: Preventive road maintenance can help to extend asset life



Source: Infrastructure Victoria, *Opportunities to reduce greenhouse gas emissions of infrastructure*, 2023, p 29, accessed 14 November 2024.

Prepare and publish infrastructure sector plans

Agree a set of assumptions for future population, jobs and land use to achieve more compact cities. Require each department that owns infrastructure to develop an infrastructure sector plan as soon as possible, based on these assumptions, and publish strategic-level plans. Use the finished sector plans to decide government infrastructure project funding.

Integrated infrastructure and land use planning has many benefits

Different city shapes need different amounts of each infrastructure type to work well.¹⁴⁴⁷ For example, a more compact city needs a different public transport network than a more dispersed city.¹⁴⁴⁸ Governments can better coordinate land use and infrastructure planning to shape how Victoria's cities grow. This can help achieve more compact cities where people find it easier to access jobs, infrastructure, and services.¹⁴⁴⁹

Governments can better plan and sequence infrastructure delivery so people can reach facilities and services.¹⁴⁵⁰ Victorian Government departments and agencies use different assumptions to plan their infrastructure. These assumptions do not align with government goals for more compact cities.

Departments do not always share their plans with each other, or with local governments and industry. This means they miss chances to pool funding or streamline delivery. It also means infrastructure costs more in the long term.¹⁴⁵¹

Integrated land use and infrastructure planning needs governments to discuss options early on, long before they make final commitments or budget decisions.¹⁴⁵² When government departments are open about their plans, government, private and not-for-profit sectors can align their decisions.

Infrastructure sector plans can help improve Victoria's cities

The Victorian Government should agree on assumptions for departments to use in their plans to shape more compact cities. These assumptions should set out long-term population, job and land use forecasts. They should also match the housing targets the government set in *Plan for Victoria*.¹⁴⁵³

The government should then direct each department that owns infrastructure to develop a statewide sector plan for its infrastructure as soon as possible. The plans should be based on the agreed assumptions. They should show the government's goals and options to reach them.

The plans should at least cover:

- transport infrastructure, including public transport, active transport, roads and freight networks
- health, including hospitals, other health facilities and cemeteries
- social housing and social services infrastructure
- education, including schools, TAFE and early childhood facilities
- justice and emergency services facilities, including courts, prisons and youth justice centres
- water and sewerage infrastructure.

Plans should cover 20 to 30 years.¹⁴⁵⁴ They should name the timelines, triggers and order for infrastructure design and delivery. They should be regularly updated so that they remain current.¹⁴⁵⁵ The government should use the plans to decide which projects and policies to fund.

The plans should consider the supporting assets each sector needs for its infrastructure to perform well as a network. For example, the health system needs infrastructure capacity to support population growth, ageing and the rise in chronic disease (see [recommendation 45](#)). The transport sector needs clear plans for its train and tram power and signalling assets. This supports network planning and operation (see case study – [Sector plans help network planning and operation](#)).

Departments should publish their high-level plans. This means Australian and local governments, businesses and not-for-profit organisations can better align their decisions.¹⁴⁵⁶ Publishing these plans can also help encourage private investment earlier. If needed, the plans can leave out detailed information about exact locations.

Some governments worry that people might think the plans are promises to build specific infrastructure by a certain date. But governments in Queensland, New South Wales and the United Kingdom show they can publish plans and manage this risk.¹⁴⁵⁷

Cost range, timing and funding

We estimate that preparing and publishing infrastructure sector plans will cost around \$30 million. General Victorian Government revenue can fund this recommendation.

We estimate that the 6 plans will cost around \$5 million each. This covers technical studies, and policy review and development. This will help the Victorian Government determine a consistent set of assumptions and common policy scenarios. It will also help produce sector-specific plans.

Sector plans might use existing work the government is doing. Existing government staff can develop each plan, supported by technical advice. Preparing each plan will require departments to share information and coordinate within an infrastructure sector, and with other departments, agencies and stakeholders.

Sector plans help network planning and operation

The Victorian Government has spent the last 10 years building major road and rail projects.¹⁴⁵⁸ As people moved to Victoria, families grew and businesses expanded, they needed new and better transport infrastructure to get around and move goods.

The government has now finished over 60% of its Big Build projects.¹⁴⁵⁹ It can start to focus on making sure Victoria's transport network works well to support future growth. This includes making sure communities in fast-growing outer suburbs have the roads and public transport they need.

Integrated transport service and infrastructure planning helps get the most out of each Big Build project across the whole network. It can also help transport and land use planning keep pace with population growth.

A transport sector plan can address the different components that make up the transport network. For example, planning for freight infrastructure can help improve road and rail networks to handle growing freight volumes and protect land for future freight corridors.¹⁴⁶⁰ Train infrastructure planning can cover important assets like ageing power systems, signalling, tunnels and rolling stock.¹⁴⁶¹

These plans can provide clear direction on using new technology instead of systems that are 100 years old.¹⁴⁶² This will help public transport operators prioritise the changes they need to make each year. They can also guide asset management strategies for transport infrastructure (see [recommendation 38](#)). This means that the whole network can be planned and operated in the best way.

Service, infrastructure and asset management plans can provide the foundations for a modern transport network that supports future population growth, jobs and land use goals.



Reform infrastructure contributions

Simplify Victoria's infrastructure contribution schemes to cover all types of housing developments statewide and reflect the cost of infrastructure in different development settings.

Infrastructure costs vary in different development settings

Growing suburbs create more demand for local infrastructure like schools, roads and parks. Governments need to upgrade or build new infrastructure to support more people. New suburbs need new infrastructure, such as public transport, footpaths and schools.

Large urban renewal projects can increase housing supply in established suburbs, but they might need costly investment in new or upgraded infrastructure. These areas might also need new land for open space. A lack of infrastructure often stops sites from being developed.¹⁴⁶³

Our report *Choosing Victoria's future* found that the infrastructure needed to support an extra house in a new suburb costs up to \$59,000 more than in an established suburb.¹⁴⁶⁴ Infrastructure in established suburbs will also need upgrades as cities grow, but the total costs are likely to be lower than in new suburbs.¹⁴⁶⁵

Victoria's infrastructure contribution system is complicated and inconsistent

Infrastructure contributions can help fund essential infrastructure in new and growing communities.¹⁴⁶⁶ They can apply to new developments like housing, commercial spaces and urban renewal projects.¹⁴⁶⁷ They encourage developers to factor in the costs of new infrastructure when they develop land.¹⁴⁶⁸ This helps reflect infrastructure costs in the price of new homes. It can also influence where developers choose to build.¹⁴⁶⁹

Victoria has several infrastructure contribution schemes. They apply in Melbourne's new suburbs but are less common in established suburbs and regional cities. Both the Victorian and local governments can charge them. Over 40 local governments collect developer contributions in different ways.¹⁴⁷⁰

Different schemes work separately and are not part of an overall system.¹⁴⁷¹ This is complex and costly for governments and developers.¹⁴⁷² It also means that developments do not contribute equally to infrastructure costs. Even in areas covered by contribution schemes, most infrastructure funding comes from taxpayers.¹⁴⁷³

Victoria's infrastructure contribution schemes are not delivering the infrastructure that growing communities need.¹⁴⁷⁴ The Victorian Auditor-General has called for a development contributions framework with clear strategic goals, accountability and governance.¹⁴⁷⁵

Infrastructure contributions can support more new homes in established suburbs

The Victorian Government is working with property industry stakeholders to identify a new model for infrastructure contributions in 10 activity centres.¹⁴⁷⁶ It should then select a statewide model that creates a simple, consistent and efficient system for Victorian Government and local government infrastructure.

The Victorian Government should work with local governments to implement the system in established suburbs, new suburbs and urban development projects in Victoria.¹⁴⁷⁷ It should set a higher rate for areas where infrastructure costs more to deliver.

An infrastructure contribution system that reflects development costs in different settings can distribute infrastructure costs more fairly. It can help increase new homes in established suburbs and urban renewal areas. It can also help communities get the infrastructure they need faster.

Cost range, timing and funding

We estimate that reforming infrastructure contributions will cost \$1 million to \$5 million. The cost includes assessing alternative contribution schemes, considering legislative impacts, consulting with stakeholders and developing guidelines. The government should use existing staff to do this work.

General Victorian Government revenue can fund this recommendation. Depending on the selected contribution scheme, this recommendation might generate more revenue than existing schemes.

We suggest the Victorian Government begins work to reform infrastructure contributions as soon as possible.



Improve asset management of government infrastructure

Fund asset managers to better understand the condition, use and performance standards of government infrastructure. Use this information to develop asset management strategies and prioritise funding.

Government needs to better understand its infrastructure to improve asset management

The Victorian Government owns and manages infrastructure and land worth around \$400 billion.¹⁴⁷⁸ The government needs to maintain this infrastructure to make sure it is reliable, safe and provides value for money.

Infrastructure lasts a long time. Its condition, operating requirements and use all evolve over time. Climate change will speed up this process. Infrastructure will face more extreme weather more often.¹⁴⁷⁹ Better asset management will help respond to these challenges. It can support a circular economy by keeping assets and their components in use through repair, reuse and recycling.¹⁴⁸⁰

Identifying how, when and what amount of money to spend on infrastructure maintenance and renewal is complicated. The asset management industry has developed guidelines to manage infrastructure efficiently. Software systems and smart technology make the task easier. But organisations need to understand their infrastructure to manage it well.¹⁴⁸¹

The Victorian Government does not report how much money it spends to renew and maintain its infrastructure. Using average depreciation rates, we estimate around \$5 billion each year might be needed.¹⁴⁸² Without good data and information on the condition of its assets, the government will not know where to invest for the best results. This wastes money and creates risk for people and businesses.

Government has taken steps to improve asset management

The Victorian Government introduced the *Asset management accountability framework* in 2016 to improve asset management practices in its departments and agencies.¹⁴⁸³ The framework sets mandatory requirements for activities including resourcing, governance, risk management, performance monitoring and information management.¹⁴⁸⁴

The government has still not met the performance levels it set itself. Departments assessed their asset management maturity in 2021 and 2024. In 2021, 4 departments did not comply with the framework and were still developing competence. This assessment did not change in 2024.¹⁴⁸⁵ These departments manage over \$130 billion of infrastructure including hospitals, roads and public transport.

Government departments report that they often do not have good data on the condition and use of their assets.¹⁴⁸⁶ They do not have systems to collect and manage the data they need to make decisions. They often have few staff to manage the assets. As a result, the government is not well-prepared to respond to the challenges its infrastructure faces.¹⁴⁸⁷

Victoria can do more to manage its infrastructure

The Victorian Government should fund its departments to improve asset management by 2027 and to comply with the framework by 2030 or earlier. In 2018, the government funded the Department of Education to reform its asset management.¹⁴⁸⁸ The department now reports its asset management maturity as competent in all categories and is delivering targeted maintenance to schools.¹⁴⁸⁹

Some departments manage multiple types of infrastructure. For example, the Department of Transport and Planning manages roads, and passenger train and bus infrastructure. These departments should assess each major type of infrastructure separately when they next report their asset management maturity in 2027.¹⁴⁹⁰

The Victorian Government should develop asset management skills and leadership. It should develop standards and systems to collect and share asset information. Once the government better understands its infrastructure, it can develop asset management strategies. It should then prioritise funding for best value. It should allocate funding on a rolling basis at least 3 years ahead to support delivery.

Cost range, timing and funding

We estimate that improving asset management of Victorian Government infrastructure will cost \$150 million to \$250 million over 5 years. This is around 0.05% of the \$400 billion worth of infrastructure and land managed by the Victorian Government.¹⁴⁹¹

Our cost estimate includes developing standards and systems and collecting asset condition data. It also covers developing asset management strategies and business cases for ongoing asset management investment. General government revenue can fund this recommendation.

Asset managers will need more funding to plan beyond 2030, and for future infrastructure upgrades and maintenance. Our estimates do not include costs to renew or maintain government infrastructure.



Prepare for more recycling and waste infrastructure

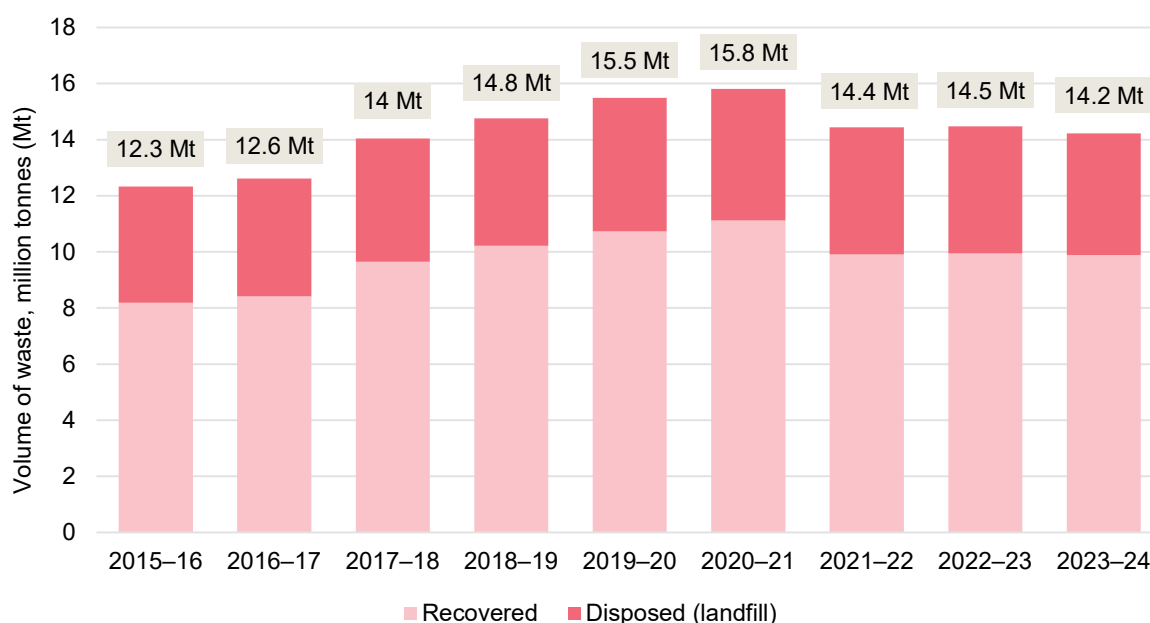
Identify and map locations for new recycling and waste infrastructure where it is needed and publish them in the next update to the *Victorian recycling infrastructure plan*.

Victoria buries too much waste in landfill

Victorians produced 14.2 million tonnes of waste in 2023–24 and sent a third of it to landfill (see Figure 23).¹⁴⁹² Valuable resources like metals and glass are lost when waste is sent to landfill.¹⁴⁹³ Recycling helps prevent this loss, keep resources in use and create jobs.

The Victorian Government endorses a move towards a circular economy.¹⁴⁹⁴ This means reducing waste and reusing and recycling more materials. But this change will take time.

Figure 23: Victoria sends over 4 million tonnes of waste to landfill each year



Source: Infrastructure Victoria, adapted from Recycling Victoria, [Recycling Victoria data hub](#), accessed 1 October 2025.

Victoria will need more waste and recycling infrastructure

A review of Victoria’s waste and recycling sector found opportunities for businesses and households to recycle more.¹⁴⁹⁵ But Victoria needs more recycling facilities to do this. This includes recycling infrastructure for concrete and bricks, soils, paper, cardboard, plastics, electronic waste, textiles, organics and metals.¹⁴⁹⁶ Victoria can also build waste to energy facilities to divert waste from landfill (see [recommendation 40](#)).¹⁴⁹⁷

Electronic waste is already the fastest growing type of waste globally.¹⁴⁹⁸ Victoria’s transition to renewable energy will generate even more waste from used batteries, solar panels and wind turbines.¹⁴⁹⁹ The Australian Government is developing a mandatory product stewardship scheme to reduce the amount of electronic waste going to landfill.¹⁵⁰⁰ The Victorian Government will need to plan for the facilities to recycle this waste.

Finding suitable locations and securing local support for waste and recycling facilities is challenging.¹⁵⁰¹ Communities often oppose these facilities because they are concerned about noise, odour, dust and their related health effects.¹⁵⁰² Poorly managed existing facilities can heighten these worries.¹⁵⁰³

Facilities need to be away from homes, schools and hospitals.¹⁵⁰⁴ But if they are too far away, the extra transport costs can make them expensive to run.¹⁵⁰⁵ A balance must be struck between being close enough for the site to be financially feasible, but far enough to secure community support.¹⁵⁰⁶

Land use planning can help support a circular economy.¹⁵⁰⁷ The Victorian Government introduced a new buffer area overlay into the planning scheme to help manage conflict between different types of land use.¹⁵⁰⁸ Some wastewater treatment plants have an overlay, but it has rarely been used for waste and recycling sites.¹⁵⁰⁹

Statewide planning can help achieve a circular economy

A circular economy needs waste and recycling facilities to be close to where materials are used and produced.¹⁵¹⁰ Leaving decisions on where to build this infrastructure up to the market has created patchy clusters of facilities across Victoria.¹⁵¹¹ It has also led to issues like odour and air pollution that affect communities.¹⁵¹²

The Victorian Government should work with local governments and industry to identify locations in Melbourne and regional Victoria for new and expanded waste and recycling infrastructure. It can co-locate infrastructure with other compatible industries, drawing on existing plans such as *Melbourne's industrial and commercial land use plan* and *Plan for Victoria*.¹⁵¹³

The *Victorian recycling infrastructure plan* can inform strategic and statutory land use planning to site waste and recycling facilities in areas where they are needed. The current plan describes the type of places where new facilities might go, but it does not identify locations.¹⁵¹⁴ The government should identify and map these locations and publish them in the next update of the *Victorian recycling infrastructure plan*.¹⁵¹⁵

Statewide planning can help ensure that these facilities do not unfairly affect some communities.¹⁵¹⁶ The Victorian Government can integrate waste and recycling infrastructure into existing planning strategies and frameworks.¹⁵¹⁷ The Victorian Government or local governments can rezone land if needed and use planning buffers to protect residential areas. For example, planning for Eaglehawk Landfill in Bendigo included recycling infrastructure and used the overlay to reduce its impact on local residents.¹⁵¹⁸

Cost range, timing and funding

We estimate that preparing for more recycling and waste infrastructure will cost \$1 million to \$5 million over 2 years. This includes strategic planning, consulting with government authorities and business, community engagement and amending planning schemes. The Victorian Government can fund this recommendation through its Sustainability Fund.¹⁵¹⁹

Identifying suitable sites for new waste and recycling facilities by 2027 means they can be included in the next update to the *Victorian recycling infrastructure plan*.¹⁵²⁰

Recommendation 40

Set future waste levy prices and audit landfill

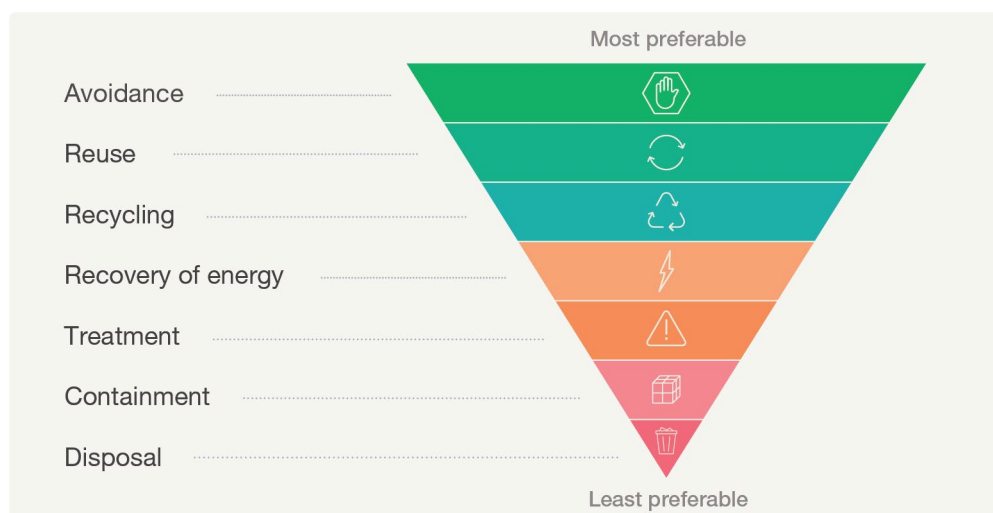
Publish waste levy rates for the next 5 years to provide investment certainty for waste and recycling infrastructure. Conduct a waste audit to document which materials go into landfill.

Victoria's waste is increasing and landfills are filling up fast

Victoria is estimated to produce over 200 million tonnes of waste each year by 2045.¹⁵²¹ Landfills are the least sustainable way to manage waste and Victoria's landfills are filling up.¹⁵²²

Landfills affect the environment long after they close.¹⁵²³ Methane from landfills represents 97% of total greenhouse gas emissions from solid waste.¹⁵²⁴ Moving to a circular economy will mean recovering more materials and burying less waste in landfill (see Figure 24).¹⁵²⁵

Figure 24: Waste hierarchy



Source: Infrastructure Victoria, adapted from Victorian Auditor-General's Office, *Recovering and reprocessing resources from waste*, June 2019, accessed 27 August 2025.

Victoria is expected to have landfill capacity until around 2039.¹⁵²⁶ However, some regions might reach capacity in the next 5 years, such as Gippsland, Loddon Mallee and Goulburn.¹⁵²⁷ Other landfills, like in Ballarat, are filling up faster than expected.¹⁵²⁸ The Victorian Government will need to ensure alternative management options are in place before landfills fill up.

Businesses need cost certainty to plan for future infrastructure

Victoria's recycling rates have barely changed over the last decade.¹⁵²⁹ This is despite government funding programs and community education campaigns to encourage more recycling.¹⁵³⁰

Waste levies put a price on all waste that goes to landfill.¹⁵³¹ They can help boost recycling and recovery rates by making landfill cost more.¹⁵³² Waste levies also encourage investment in recycling facilities.¹⁵³³ They can help make investment in waste to energy and advanced recycling infrastructure commercially viable.¹⁵³⁴

Publishing a schedule of future waste levy rates can encourage businesses to invest earlier by providing certainty on how expensive waste disposal in landfills will be in the future.¹⁵³⁵ The Victorian Government

charges a waste levy and has committed to increasing the price over time.¹⁵³⁶ However, it has only published rates up to June 2027.¹⁵³⁷

The government should review the waste levy and set rates that can stimulate investment in new recycling and waste to energy infrastructure.¹⁵³⁸ The government should publish waste levy rates for the next 5 years to provide more certainty for businesses and investors. Certainty about waste levy rates can also help local governments plan and manage household and business waste.

The government should work with neighbouring states to set rates that minimise the risk of illegal dumping or waste being sent interstate.¹⁵³⁹ It should support changes to the waste levy by educating landfill users about its purpose and how to comply. It should also conduct and support more enforcement activities that discourage illegal waste stockpiling and dumping.¹⁵⁴⁰

Waste to energy projects need better investment certainty

Waste to energy facilities can turn waste into energy resources like heat and electricity.¹⁵⁴¹ They provide the last chance to get value from materials that would otherwise go to landfill. However, waste to energy can undermine efforts to avoid waste, reuse or recycle more by competing for the same materials.¹⁵⁴²

The *Victorian waste to energy framework* specifies the amounts and types of waste that can be converted to energy. This aims to balance investment in energy recovery with waste reduction and recycling.¹⁵⁴³ Victoria has several waste to energy facilities planned, but none have been built yet.¹⁵⁴⁴

Waste to energy facilities are costly and take a long time to plan and build. They can take more than 10 years from planning to operation.¹⁵⁴⁵ Businesses will only invest in waste to energy facilities if they are confident they are commercially viable and they can reasonably expect to secure planning approvals (see [recommendation 39](#)). Like energy projects, a coordinated and consistent approach to consultation on waste to energy facilities will give investors and communities confidence in the process (see box – [Community engagement can build understanding and acceptance for energy projects](#)).

The Victorian Government raised the waste to energy cap to 2.5 million tonnes a year to attract more infrastructure investment.¹⁵⁴⁶ A published schedule of waste levy prices will help provide the long-term certainty investors need for project financing and development decisions.

Better data on what goes into landfill can help achieve a circular economy

Waste audits help officials understand which materials go into landfill.¹⁵⁴⁷ Audits can find missed opportunities to recycle more and provide a clearer picture of Victoria's waste and recycling infrastructure needs.

Documenting what waste goes to landfill can identify the energy value of waste to help plan for waste to energy facilities, and any potential environmental and health issues.¹⁵⁴⁸ The government last conducted a detailed waste audit in 2018.¹⁵⁴⁹ It should audit the waste going into Victoria's landfills again so it has reliable data.¹⁵⁵⁰

The government aims to divert 80% of waste from landfill by 2030. It has an interim target of 72% by 2025.¹⁵⁵¹ A recent review has highlighted that Victoria is not on track to meet these targets.¹⁵⁵² It called for better data to track progress towards a circular economy.¹⁵⁵³

Better data can help the community understand what happens to their waste and give them confidence that the government is planning for the facilities to manage it. It will also create more certainty for investors.¹⁵⁵⁴ Other reviews have called for the same thing.¹⁵⁵⁵

Cost range, timing and funding

We estimate that this recommendation will cost between \$15 million to \$20 million over 5 years. The Sustainability Fund, collected through the waste levy, can be used to fund this recommendation.

Our cost estimates cover economic analysis to determine appropriate levy rates, updating and publishing the waste levy schedule and conducting a landfill audit to improve data from landfills by 2027. They also cover education and enforcement measures over 5 years.¹⁵⁵⁶

Existing government staff can complete relevant administrative tasks. The Sustainability Fund can be allocated to strategic or ongoing initiatives, including education and enforcement. It can fund grant programs that are open to a wide range of recipients.¹⁵⁵⁷



Use digital technologies on government infrastructure

Pilot digital technologies to better design, build, operate and maintain government infrastructure and report on progress. Use building information modelling on major infrastructure and housing projects. Improve capabilities in government agencies and change procurement processes to promote greater use of digital technologies.

Digital technologies can boost Victoria's productivity

Digital technologies can help Victoria do more with less. These technologies depend on data centres and other infrastructure to store and process information.¹⁵⁵⁸ The Victorian Government already uses digital technologies to design, build, operate and maintain some infrastructure. For example, the Department of Transport and Planning's Smarter Roads project is improving traffic light network operations to help avoid the need for new roads (see [recommendation 42](#)).¹⁵⁵⁹ But governments and businesses have other opportunities to use digital technologies more often.

Our commissioned report *Digital technologies and infrastructure productivity* looked at technologies that can lift the productivity of Victoria's infrastructure. We found that using robotics, building information modelling and artificial intelligence can deliver big cost savings on government infrastructure projects.¹⁵⁶⁰ For example, using robotics to inspect and maintain the water network might save up to \$3.5 billion by 2055 in reduced maintenance and other avoided costs.¹⁵⁶¹

Victoria can get more from building information modelling

Infrastructure designers can use building information modelling, a form of digital engineering, to create a 3-dimensional digital model.¹⁵⁶² This has more information than standard 2-dimensional construction drawings.¹⁵⁶³ Project teams can access information, collaborate and share data online.¹⁵⁶⁴ They can test design options and make changes in the model. This saves time and resources, particularly when projects use building information modelling without standard construction drawings (see case study – [Design and construction of bridges with building information modelling](#)).¹⁵⁶⁵

Building information modelling can lower the costs of designing and building infrastructure.¹⁵⁶⁶ It helps reduce mistakes during design and construction. Our research found that using building information modelling to build public housing might provide Victoria with \$1.9 billion in reduced cost overruns and risks by 2055. Applied to road construction, it might deliver over \$13 billion of benefits by 2055.¹⁵⁶⁷

The Victorian Government should use building information modelling on major infrastructure and housing projects (see recommendations [1](#) and [3](#)).

Pilot projects can help Victoria to better understand the benefits of digital technologies

Common barriers to adopting digital technologies include technology costs and a lack of digital skills.¹⁵⁶⁸ Trials and pilot projects can help by letting government and businesses test new technologies before rolling them out.¹⁵⁶⁹ For example, they can help ensure that government asset management systems can integrate with building information modelling (see [recommendation 38](#)). The government can then incorporate lessons learned into future projects.¹⁵⁷⁰

The Victorian Government should pilot digital technologies on infrastructure projects and report on their outcome. Our research identified building information modelling with online data sharing and a single 3-dimensional model as a good technology to pilot.¹⁵⁷¹ Robotics, machine learning, artificial intelligence, advanced imaging and geospatial technologies also show good potential.

The government can pilot these in sectors including transport, education, housing and water. The *Victorian digital asset strategy* provides guidance on using digital technologies like building information modelling to get more value and better use from physical and digital assets throughout their life.¹⁵⁷²

The New South Wales Government has released the *NSW infrastructure digitalisation and data policy* to support the adoption of digital technologies in government infrastructure.¹⁵⁷³ The policy requires government agencies to commit to, manage and invest in digital technologies to boost productivity. It is supported by detailed guidelines to help agencies put the policy into practice.¹⁵⁷⁴

New skills and procurement processes can enable digital technologies

Government employees involved in planning, designing and procuring infrastructure will need new skills to understand the opportunities and manage use of digital technologies. The Victorian Government should build these skills to help integrate technology into the infrastructure lifecycle. This can give industry confidence that government will ask for and consider proposals that use digital technologies.

The Victorian Government can also set expectations on how businesses use technology in its procurement policy.¹⁵⁷⁵ The government should review and change procurement policies and frameworks so they encourage digital technology use. This can include the *Ministerial directions for public construction procurement* and the *Procurement – investment lifecycle and high value high risk guidelines*.¹⁵⁷⁶

Cost range, timing and funding

We estimate that piloting digital technologies will cost \$15 million to \$30 million over 5 years. General government revenue can fund this recommendation.

Our estimated cost range includes piloting various digital technologies, like using building information modelling on a major infrastructure project. Starting by 2030 means the government can select suitable projects, identify delivery models and develop specifications to engage designers and contractors.

This cost range also includes training and mentoring government and project staff, as well as monitoring, evaluation and reporting on pilot projects.

Design and construction of bridges with building information modelling

Randselva Bridge

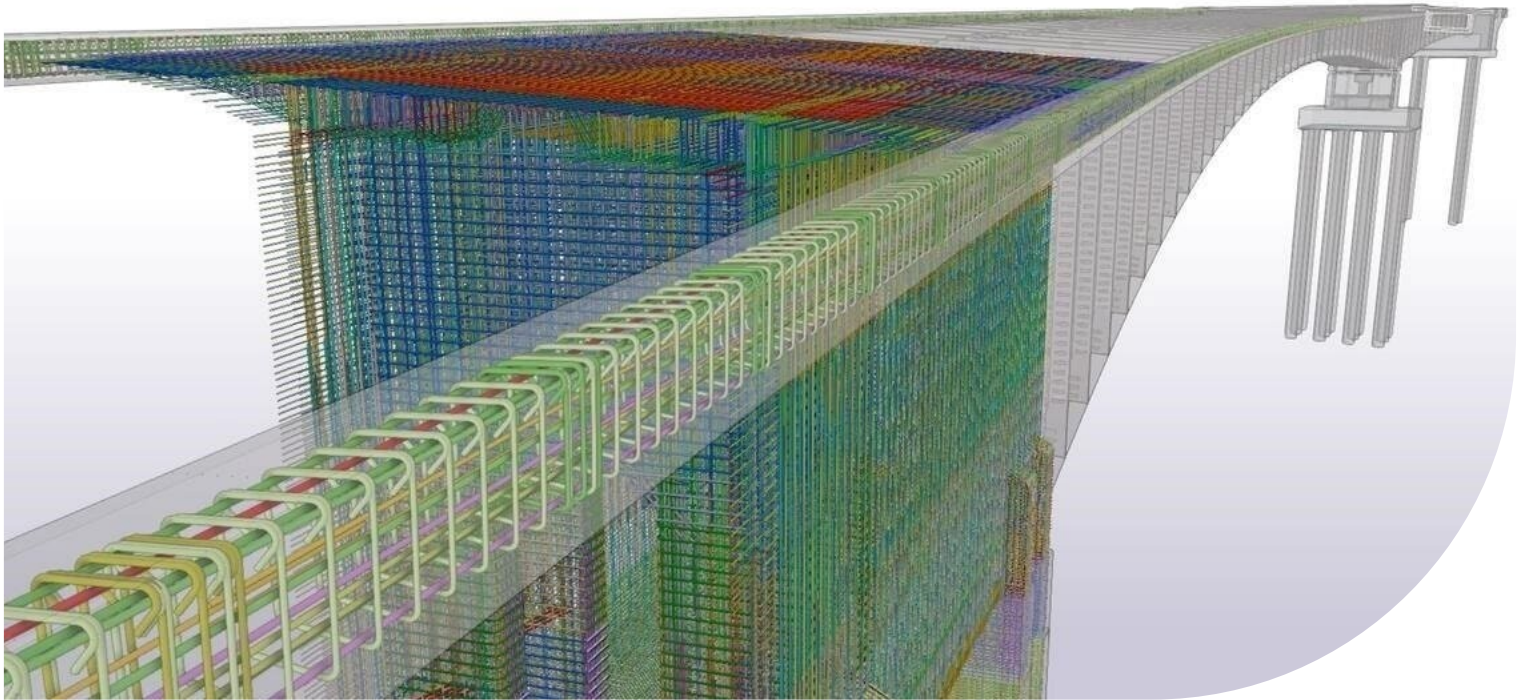
Randselva Bridge is a 634-metre-long concrete bridge located about 50 kilometres from the Norwegian capital of Oslo. At its highest point the bridge is 55 metres above ground level.¹⁵⁷⁷

The project team used building information modelling to create a detailed 3-dimensional information model for Randselva Bridge. This model holds all project information in a shared database. It is the world's longest bridge built without 2-dimensional drawings.¹⁵⁷⁸

The 3-dimensional information model was available online to all parties involved in the project. This allowed teams across 5 countries to easily collaborate and stay up to date during the different stages of design and construction.¹⁵⁷⁹ The project team could also use information from the model to order building materials.¹⁵⁸⁰

Using building information modelling allowed the project team to make changes in the shared model. This enabled more efficient construction by ending the need to communicate the change and edit multiple drawings. It also reduced the number of errors made during design, reducing time and allowing better quality assurance.¹⁵⁸¹

Image below: Tekla, [Randselva Bridge](#), Tekla website, n.d., accessed 12 December 2024.



Use modern traffic control technology for efficient and safe journeys

Further extend modern traffic control technology like sensors and cameras along arterial roads in Victoria's largest cities. Begin expanding smart motorways into Melbourne's growth area freeways.

The road network is under pressure and building more roads is not a complete fix

Many arterial roads and freeways will reach capacity over the next decade.¹⁵⁸² Growing congestion will lead to delays and longer travel times. It limits the opportunities that Victorians have access to, and costs businesses and the community money.¹⁵⁸³

As more Victorians use roads, events like a freeway crash can delay thousands of people. They also risk leaving those involved with life-changing injuries and trauma.¹⁵⁸⁴

Traffic control technology can deliver smoother and safer journeys. Victoria's roads carry more than cars. Improved journeys can reduce delays for buses, trams, pedestrians and trucks.¹⁵⁸⁵ On some tram routes, almost 20% of travel time is spent waiting at red lights.¹⁵⁸⁶

Governments usually build bigger roads to manage congestion.¹⁵⁸⁷ But evidence from around the world shows that expanding roads only works for a short time. The roads soon become congested again because more motorists start using them.¹⁵⁸⁸

Traffic control technology can improve flow on arterial roads

The Victorian Government's \$340 million Smarter Roads program aims to keep traffic moving on arterial roads. It started in Melbourne's west and south-east and brings together real-time transport data from devices like traffic sensors and cameras on the road network.¹⁵⁸⁹

Engineers use this data to optimise traffic signals and improve traffic flow for all road users, including pedestrians.¹⁵⁹⁰ This technology can provide benefits of up to \$14 for every dollar invested. It can be delivered for under a third of the cost of major road projects.¹⁵⁹¹

The Victorian Auditor-General found that the government is not fully using the new data to make traffic flow better.¹⁵⁹² For example, it can use the data to identify roads that can reduce congestion the most and change traffic flows on these first. This will increase the benefits of its investment in Smarter Roads.¹⁵⁹³

The government should extend Smarter Roads technology to more arterial roads in Melbourne, Ballarat, Bendigo and Geelong by 2030. It should then identify roads where congestion can be reduced the most and optimise traffic signals to improve flow. For instance, roads like Melbourne's Sydney Road, Bell Street and Ballarat Road carry large volumes of traffic and are very congested at peak hour.¹⁵⁹⁴

Beyond 2030, the government can introduce the technology in other regional centres. It can prioritise places like Traralgon, Shepparton and Warrnambool. These cities have busy pedestrian areas alongside a major freight route.¹⁵⁹⁵ Regional centres without a road bypass are also potential priorities for Smarter Roads.¹⁵⁹⁶

The government should fund new traffic incident response teams near high-risk arterial roads to manage incidents quickly. Staff in the Victorian traffic control room can use the new cameras to direct the response teams to the incidents.¹⁵⁹⁷

It should also consider demand management measures like changes to public transport and road pricing (see [recommendation 14](#) and future option – [Charge people fairly to use roads](#)).¹⁵⁹⁸

Traffic control technology on Victoria's roads

Traffic signal engineers use cameras and sensors to understand traffic patterns and behaviours on Victoria's roads.¹⁵⁹⁹

Changing conditions like population growth or major events mean traffic lights need to be updated. By optimising the amount of green time across traffic signals, engineers can provide a smoother and safer journey for cars, freight and public transport.¹⁶⁰⁰

A well-optimised network can mean the difference between stop-start traffic and getting through intersections on a single green cycle. It can also reduce the amount of time pedestrians or public transport services wait at traffic signals, like around busy shopping strips.¹⁶⁰¹



Upgrades can better manage traffic on Victoria's busiest motorways

The government can also improve traffic flow on Victoria's busiest motorways.¹⁶⁰² New technology will help prepare Victoria's road network for automated vehicles.¹⁶⁰³ Melbourne's Monash Freeway already uses smart motorway technology and it is planned for North East Link.¹⁶⁰⁴ This includes ramp signals, overhead lane and trip information signs, cameras and sensors.¹⁶⁰⁵ Upgrades have increased speeds by up to 28% and enabled more vehicles to travel on the freeway. They also allow operators to respond quickly to disruptions.¹⁶⁰⁶ This has reduced the crash rate by 30%.¹⁶⁰⁷

The government should complete the smart motorway network by extending the technology to Melbourne's growth area freeways. This includes the Princes, Western, Calder and Hume freeways to Werribee, Melton, Sunbury and Wallan, respectively. We prioritised these freeways based on how congested they are and how much average speeds can fall during peak travel times.¹⁶⁰⁸

After 2030, the government can add the Mornington Peninsula and South Gippsland freeways to the smart motorway network.¹⁶⁰⁹

Cost range, timing and funding

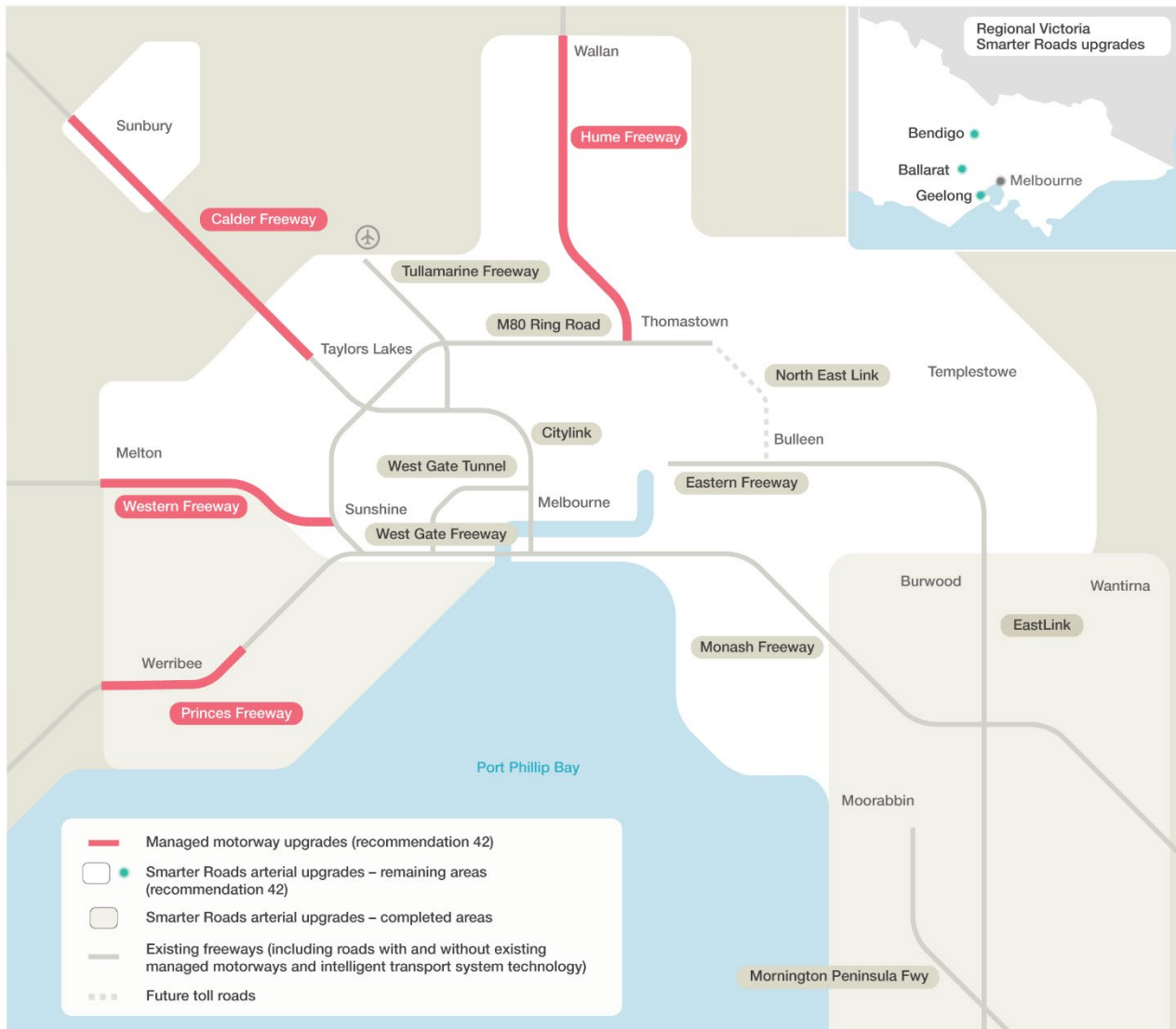
We estimate that using modern traffic technology on Victoria's roads will cost \$2 billion to \$3 billion over 5 years. This includes upgrades on 1,600 kilometres of Victoria's roads, covering new and upgraded traffic signals, trip information signs, cameras, sensors, support structures, power, communications and central control systems. General government revenue can fund this recommendation.

Within 5 years, the Victorian Government should use traffic control systems to manage more arterial roads in Melbourne. We estimate this will cost \$600 million to \$800 million. Adding these systems on arterial roads in Geelong, Ballarat and Bendigo will cost around \$150 million across the 3 cities. Implementing traffic control systems in other regional centres beyond 2030 could cost around \$5 million to \$20 million for each regional centre.

The government should also expand the smart motorway network from 2026. This requires more complex systems and infrastructure. We estimate that adding 82 kilometres of smart motorways across 4 freeways to Melbourne's growth areas will cost \$1.3 billion to \$1.9 billion to plan and construct over 5 years. The government could also add another 35 kilometres of smart motorways on the Mornington Peninsula and South Gippsland freeways after 2030 at a cost of \$500 million to \$800 million.

Both technologies can be introduced in stages. For example, a stage might cost \$10 million for upgraded traffic control systems on an arterial road, or \$30 million for a section of managed motorway. The government can also build on existing systems.

Figure 25: Roads in Victoria’s largest cities can be upgraded with modern traffic control technology



Source: Infrastructure Victoria.

Charge people fairly to use roads

Introduce road charges that help manage congestion and improve productivity. Consider options such as car parking levies, off-peak freeway tolls, congestion pricing trials, or road user charging for all motorists with lowered fixed road charges. Work with the Australian Government and other state governments on road pricing options.

Road congestion remains a big problem

Victoria's roads will get busier over time.¹⁶¹⁰ More cars and trucks will mean longer, less predictable travel times.¹⁶¹¹ Inner Melbourne is the most congested part of the state.¹⁶¹² By 2030, Melbourne's traffic delays might cost over \$14 billion each year in time, vehicle costs and extra pollution.¹⁶¹³ Building more roads does not solve congestion, but changing how motorists pay to use roads can help reduce it.¹⁶¹⁴

The Victorian Government's vehicle registration charges and stamp duties help pay for roads.¹⁶¹⁵ Motorists pay these fixed road charges regardless of how much they travel.¹⁶¹⁶ These charges do not reflect the costs of infrastructure, congestion, pollution, emissions or road trauma.

The Australian Government also collects revenue from motorists through fuel excise.¹⁶¹⁷ As more motorists switch to electric and hybrid vehicles, the Australian Government will collect less fuel excise.¹⁶¹⁸ This means it might have less infrastructure funding to allocate to Victoria, including for roads.

Changing how Victorians pay to use roads can help ease congestion

Our modelling shows that charging people to use specific roads during peak periods might increase travel speeds by up to 25% in 2031.¹⁶¹⁹ Peak hour traffic might fall by 8%, with 168,000 fewer car trips each day.¹⁶²⁰ Road pricing can encourage more people to use public transport, meaning less road congestion.¹⁶²¹

The Victorian Government can phase in road charges to help reduce congestion. By the 2030s around 40% of motorists might drive electric cars.¹⁶²² The government has several options to change how motorists pay for roads. For example, it can:

- work with the Australian Government and other state governments to introduce road user charging based on distance travelled
- further expand Melbourne's congestion levy on parking into current and future higher density precincts and activity centres¹⁶²³
- introduce cheaper tolls on any new freeways for travel outside of peak hours and negotiate future toll road contracts to include variable tolls based on the time of day
- trial low-emission zones or congestion charging at ports, in major precincts or inner Melbourne.

High car parking costs and fewer parking spaces can encourage people to use other forms of transport. Melbourne's parking levy has helped to reduce congestion in inner Melbourne.¹⁶²⁴ The government can extend the levy to cover any parking above mandatory minimum requirements in established suburbs with good public transport. It can also lower minimum parking requirements in these areas to help reduce the cost of new homes.¹⁶²⁵

Motorists have paid tolls on some of Melbourne's freeways since the 1970s.¹⁶²⁶ Charging motorists based on how much, when and where they drive can change travel behaviour. It encourages people to travel at different times, to different places or to use public transport. The government can apply charges fairly. For example, discounts can help people on low incomes, vulnerable Victorians or those living in rural areas who have no other transport options.¹⁶²⁷

Road pricing can deliver less congestion, more predictable travel times and higher productivity. It can also reduce emissions and improve road safety.¹⁶²⁸ Road pricing can delay the need for costly and disruptive infrastructure projects because it makes better use of existing infrastructure.

Road pricing reforms can generate government revenue

Transport pricing reforms might generate over \$7.5 billion a year in revenue for the Victorian Government.¹⁶²⁹ This can help improve public transport to meet increased demand and support Victorians in areas with fewer travel options. People are more likely to accept road pricing if they see that it pays for better public transport.¹⁶³⁰ Cheaper off-peak public transport fares can also support road pricing changes (see [recommendation 14](#)).

Trialling road pricing can help different options work with public transport fare changes to build community support.¹⁶³¹ By making changes in stages, the government can show the benefits and find lessons for further reforms. It can eventually integrate one or more of these pricing options across Victoria's transport network to get the best results from its investments in road and rail.

Cost range, timing and funding

We estimate that this future option costs \$25 million to \$160 million, depending on the selected approach. General government revenue can fund this work. Road pricing, like tolls, can help to cover some or all operational costs once the infrastructure and systems are in place.

Our cost range includes \$5 million to \$10 million for the government to plan, phase-in and track road pricing. This involves reviewing policies, changing legislation and regulations, and communicating any new charges. The State Tolling Corporation can do this work if the government expands its role.¹⁶³²

Congestion pricing or road user charging will require some new infrastructure. A 2019 estimate found that introducing congestion pricing in Melbourne would cost around \$100 million.¹⁶³³ New technologies can help to make this cheaper as they do not require barriers, gantries and detection points.¹⁶³⁴ Other options like expanding Melbourne's congestion levy or applying off-peak road tolls can cost less to introduce as they need less infrastructure.

High Court decision on electric vehicle road user charging

In 2021, the Victorian Government passed the *Zero and Low Emission Vehicle Distance-based Charge Act 2021* (Vic). This charged zero and low emissions vehicle users up to 2.5 cents per kilometre to drive on public roads.¹⁶³⁵

The High Court of Australia decided in 2023 that this charge was a duty of excise because it had a 'close relation to the production or manufacture, sale, distribution, or consumption of goods'.¹⁶³⁶ Under section 90 of the Australian Constitution, only the Australian Government can impose a duty of excise. The decision made the *Zero and Low Emission Vehicle Distance-based Charge Act 2021* (Vic) invalid, removing the Victorian Government's charge on zero and low emissions vehicles.

The High Court's decision challenges the Victorian Government's ability to charge people fairly to use Victoria's roads. It also affects government revenue, which it can use to improve public transport or fund road maintenance.¹⁶³⁷ To overcome this, the Victorian Government should work with the Australian and other state governments on road pricing options. The Australian Government is considering reforms to introduce road user charges for electric vehicles.¹⁶³⁸

Road pricing success stories around the world

Cities like London, Singapore, Stockholm, Milan, Oslo and New York have successfully introduced transport pricing reforms. These reforms have reduced congestion, improved vehicle travel speeds and reduced emissions.¹⁶³⁹ Some cities have used funds from road pricing to build roads, tunnels, public transport infrastructure, and cycling and walking facilities.¹⁶⁴⁰

Scheme	Main features	Benefits
London congestion charge	<ul style="list-style-type: none"> • Daily area charge for central London. • 90% discount for residents inside the charging zone.¹⁶⁴¹ • No charge for vehicles used by people with disability.¹⁶⁴² 	<ul style="list-style-type: none"> • 3 million fewer car trips in 2019.¹⁶⁴³ • 39% less private car traffic entering central London between 2002 and 2014.¹⁶⁴⁴ • Revenue used for transport improvements like public and active transport.¹⁶⁴⁵ • Fewer cars meant road space could be reused for sustainable transport modes.¹⁶⁴⁶
Singapore electronic road pricing	<ul style="list-style-type: none"> • Major roads tolled to achieve congestion targets. • Tolls regularly changed to get traffic speeds to match a target.¹⁶⁴⁷ 	<ul style="list-style-type: none"> • 15% less daily traffic within the restricted zone throughout the day and 16% less at morning peak.¹⁶⁴⁸
Stockholm congestion tax	<ul style="list-style-type: none"> • Cordon charge for central Stockholm. • Applies from 6:30am to 6:30pm, higher charge during peaks.¹⁶⁴⁹ 	<ul style="list-style-type: none"> • 18–21% less traffic in the first 6 years.¹⁶⁵⁰ • 3% less emissions.¹⁶⁵¹ • 5–10% fewer road accidents involving injuries.¹⁶⁵²
Milan Area C congestion charge	<ul style="list-style-type: none"> • Cordon charge for central Milan. • Single charge on entry during the day.¹⁶⁵³ 	<ul style="list-style-type: none"> • 15% fewer vehicle entries into charge area.¹⁶⁵⁴ • 6–17% less pollution.¹⁶⁵⁵
Oslo toll rings	<ul style="list-style-type: none"> • Three tiers of toll points on major arterials from outer to inner Oslo.¹⁶⁵⁶ • Four tiers of vehicle fuel-based charge.¹⁶⁵⁷ • Higher tolls during peak hours 6.30am to 9am and 3pm to 5pm.¹⁶⁵⁸ 	<ul style="list-style-type: none"> • Exemption from tolls for electric vehicles incentivised their uptake.¹⁶⁵⁹ • 15% less direct greenhouse gas emissions from road traffic.¹⁶⁶⁰ • 5% less congestion from cordon changes (2005 figure), but more electric vehicles offset some congestion benefits.¹⁶⁶¹
New York congestion charge	<ul style="list-style-type: none"> • Daily area charge for Manhattan. • Higher tolls during peak hours 5am to 9pm on weekdays and 9am to 9pm on weekends. • 50% discount for low-income residents.¹⁶⁶² 	<ul style="list-style-type: none"> • 11% fewer vehicles entering Manhattan every day (nearly 70,000 vehicles).¹⁶⁶³ • 4% more people walking. • \$48 million revenue in the program's first month for public and active transport.¹⁶⁶⁴ • Traffic noise complaints down 70%.¹⁶⁶⁵ • Crime is down 24% on the underground rail systems (the subway).¹⁶⁶⁶

Make rail freight competitive, reliable and efficient

Develop and publish a 30-year integrated rail freight network plan and fund a 10-year rail freight maintenance program. Implement a freight network coordination policy.

Victoria's freight is predicted to reach 900 million tonnes in 2051 – more than double the volume in 2020.¹⁶⁶⁷ Improving how freight moves can boost Victoria's productivity, competitiveness and regional development.¹⁶⁶⁸

Rail can produce 16 times less greenhouse gas emissions than road freight.¹⁶⁶⁹ Moving more freight by rail will help Victoria achieve its net zero emissions targets.¹⁶⁷⁰ Rail is efficient for moving heavy goods over longer distances but can be less reliable and flexible than road for many freight tasks.¹⁶⁷¹ Businesses move freight by road for many reasons, but rail can be competitive with the right infrastructure and set-up.¹⁶⁷²

A long-term network plan will support rail freight growth

Rail freight demand is forecast to nearly quadruple between 2020 and 2050.¹⁶⁷³ Projects like the Port Rail Shuttle Network, Inland Rail and Beveridge Intermodal Freight Terminal will enable some of this growth.¹⁶⁷⁴ But some routes will still be congested, particularly into the Port of Melbourne and Dynon precinct from the west and south-east.¹⁶⁷⁵ Rail freight networks might also be affected by passenger rail infrastructure projects.¹⁶⁷⁶

The Victorian Government should publish a 30-year integrated plan for the rail freight network that:

- identifies land to set aside to expand network capacity, such as for intermodal terminals and empty container parks¹⁶⁷⁷
- clarifies timing and responsibility for infrastructure projects like the rail link to Webb Dock, the western intermodal freight terminal and the outer metropolitan road and rail corridor (see [recommendation 45](#))¹⁶⁷⁸
- outlines performance standards and aligns with national standards.

The plan will guide investment and integrate Victorian and national rail networks.¹⁶⁷⁹ It will clarify the government's priorities for the rail freight network.

Victoria's rail freight network needs to be maintained

Recent maintenance funding has improved the rail freight network.¹⁶⁸⁰ Benefits include the removal of some speed restrictions, reduced travel times and increased load capacity.¹⁶⁸¹ However, over 10% of V/Line assets will be near or past their design life by 2025.¹⁶⁸² The overall network condition is still below the standards outlined in the 2018 freight plan. This means that heavy freight trains cannot always travel safely at speed.¹⁶⁸³ Planned rail freight maintenance is 10% to 15% cheaper than ad hoc repairs.¹⁶⁸⁴ But Victoria does not have long-term funding for rail freight network maintenance.¹⁶⁸⁵

The Victorian Government should develop a 10-year rail maintenance program. Annual funding of around \$100 million for the next 4 years will allow V/Line to plan and deliver network maintenance.¹⁶⁸⁶ V/Line should assess and prioritise maintenance needs to inform longer-term funding and publish key network performance indicators.

Better access can improve rail freight reliability for businesses

Passenger services have priority over freight on the shared rail network.¹⁶⁸⁷ This means freight services can be cancelled when there is network disruption or conflict.¹⁶⁸⁸ Rail access to the Port of Melbourne is also

challenging. Multiple freight operators coordinate access and there is no agreed way to resolve access conflicts.¹⁶⁸⁹

Victoria does not have a policy to coordinate reliable freight access to the rail network. This increases business costs and affects efficiency.¹⁶⁹⁰ The government should develop a freight network coordination policy to guide freight access to the network. As a first step, it should include conditions for enough reliable freight access in passenger rail franchise agreements.¹⁶⁹¹

A coordinator function can oversee the planning and scheduling of freight movements on rail and help resolve day-to-day conflicts (see case study – [The Hunter Valley Coal Chain Coordinator](#)).¹⁶⁹² The government should implement the freight network coordination policy with a central coordinator function, for example by Freight Victoria, for a smooth, end-to-end operating system for rail freight.¹⁶⁹³

Cost range, timing and funding

We estimate this recommendation will cost around \$400 million over 4 years. This can be funded in different ways. General government revenue can partly fund ongoing regional rail freight maintenance when it provides wider benefits, such as avoided road transport costs and less pollution. Freight operators already pay access fees to use Victoria's existing rail infrastructure.¹⁶⁹⁴ More rail freight means the government will receive more in access fees.

Rail freight network maintenance and renewal will cost around \$100 million a year for the 4 years to 2029, extending current funding.¹⁶⁹⁵ Rail user charges can help offset rail freight maintenance costs.

The Victorian Government can spend around \$5 million on a 30-year integrated plan for rail freight and rail freight network coordination policy, and around \$5 million on a 10-year rail maintenance plan. The maintenance plan can set funding beyond 2029 once the government has a better understanding of how to get value for money. Increasing the capacity of an existing government body, like Freight Victoria, to coordinate freight access will cost around \$400,000 each year.

Case Study

The Hunter Valley Coal Chain Coordinator

The Hunter Valley Coal Chain Coordinator Limited is an independent body that oversees coal movement from mines to export terminals and domestic customers in the Hunter Valley region of New South Wales.¹⁶⁹⁶

The coordinator functions as a business analyst, traffic coordinator, maintenance scheduler, network planner and investment manager.¹⁶⁹⁷ It was set up to address cancellations and queues caused by the lack of clear roles and responsibilities in coordinating coal movements through the region. This lack of coordination was increasing costs for businesses and creating investment uncertainty.

Membership of the coordinator includes all Hunter Valley coal producers, rail operators and port terminal operators, as well as the Australian Rail Track Corporation as the track owner. Central planning and digital scheduling have achieved reliable and efficient performance for the rail network. Industry stakeholders consider this a model for rail freight.¹⁶⁹⁸

Encourage off-peak freight delivery in urban areas

Prepare for growing freight volumes in urban areas by piloting an off-peak freight delivery program in high-density areas of Melbourne. If successful, expand off-peak delivery for more productive and sustainable freight movement.

More people means more deliveries in high-density areas

Melbourne's population growth and increasing density will mean more freight deliveries to urban areas.¹⁶⁹⁹ More people shop online, further increasing freight traffic in business and residential suburbs.¹⁷⁰⁰

Trucks move most of the freight in urban areas. They currently make up 15% to 20% of city traffic.¹⁷⁰¹ Trucks contribute to congestion, traffic accidents, and air and noise pollution.¹⁷⁰² Moving freight in cities can also be expensive. Deliveries are not coordinated and parking is restricted.¹⁷⁰³ The 'last mile' of freight delivery (the final stage of delivery to customers) can account for over half of total delivery costs.¹⁷⁰⁴

The freight industry is complex. It involves many stakeholders, including customers, governments, freight operators, communities and retailers.¹⁷⁰⁵ The Victorian Government can work with stakeholders to test ways to improve freight productivity and reduce negative impacts, including greenhouse gas emissions.

Victoria will need to reduce emissions from urban freight to meet its target of net zero emissions by 2045.¹⁷⁰⁶ Small trucks and vans carry most freight in urban areas. They produce around one-fifth of transport emissions.¹⁷⁰⁷

Delivering goods outside peak hours reduces congestion and increases productivity

In urban areas, delivering goods to businesses outside peak hours when roads are less congested can save time and money.¹⁷⁰⁸ It makes better use of existing infrastructure and increases productivity.¹⁷⁰⁹ Freight providers can make more deliveries in less time with less equipment.¹⁷¹⁰ Trucks spend less time on the road overall, so communities experience less air pollution.¹⁷¹¹ Fewer trucks on the road during the day also improves road safety for everyone.¹⁷¹²

Other cities have seen the benefits of moving more freight in off-peak hours. For example, off-peak delivery trials in Sydney reduced freight travel and service times by up to 50%.¹⁷¹³ New York expanded its off-peak program in 2024 due to significant efficiency and environmental benefits (see case study – [Delivering goods outside of peak hours](#)).¹⁷¹⁴

Modelling shows that moving 30% of Victorian freight to off-peak hours by 2051 might result in:

- 155,000 fewer hours spent on the road for Victorian cars every day
- 800,000 fewer kilometres travelled by trucks each day while delivering the same amount of freight.¹⁷¹⁵

There are many barriers to moving more freight in off-peak hours. These include truck curfews, local laws against after-hours deliveries, and higher staff and security costs.¹⁷¹⁶ Major fashion retailers, supermarkets, food services and convenience stores have the most potential for off-peak delivery.¹⁷¹⁷

Pilot projects can test the benefits of off-peak freight delivery

The Victorian Government can encourage stakeholders to work together to overcome barriers and explore changes to delivery times in congested urban areas. By 2030, it should set up pilots in Melbourne for off-peak freight delivery to test what works and confirm benefits.

The pilot program should focus on delivery from distribution centres to businesses within a single sector, such as retail. It should target dense residential and commercial areas with high levels of road congestion, such as inner Melbourne. The program should aim to remove barriers to participation for freight operators and businesses. This could include relaxing truck access restrictions and helping to resolve staffing, storage and security challenges.¹⁷¹⁸

Off-peak freight might affect amenity in areas where people live, for instance by increasing noise.¹⁷¹⁹ The government should partner with relevant businesses, freight operators, local governments and communities to work through potential issues. This could include managing when, where and which types of vehicles to pilot.¹⁷²⁰

Lessons learned from the pilot can help determine how to expand the program in the future.

Cost range, timing and funding

We estimate that piloting an off-peak freight delivery program will cost \$1 million to \$5 million over 5 years. This includes costs to design, run and evaluate the program. We assume existing government staff will do this work.

General government revenue can fund this recommendation.

Delivering goods outside of peak hours

Delivering and collecting goods outside peak hours in busy areas makes better use of existing infrastructure and increases efficiency. There have been many trials around the world, including in Australia.¹⁷²¹

In 2016, the New South Wales Government worked closely with businesses to trial off-peak deliveries and collections. The trials involved companies from the supermarket, waste and hardware sectors.¹⁷²² The benefits of scheduling some activities to occur at night instead of during the day included:

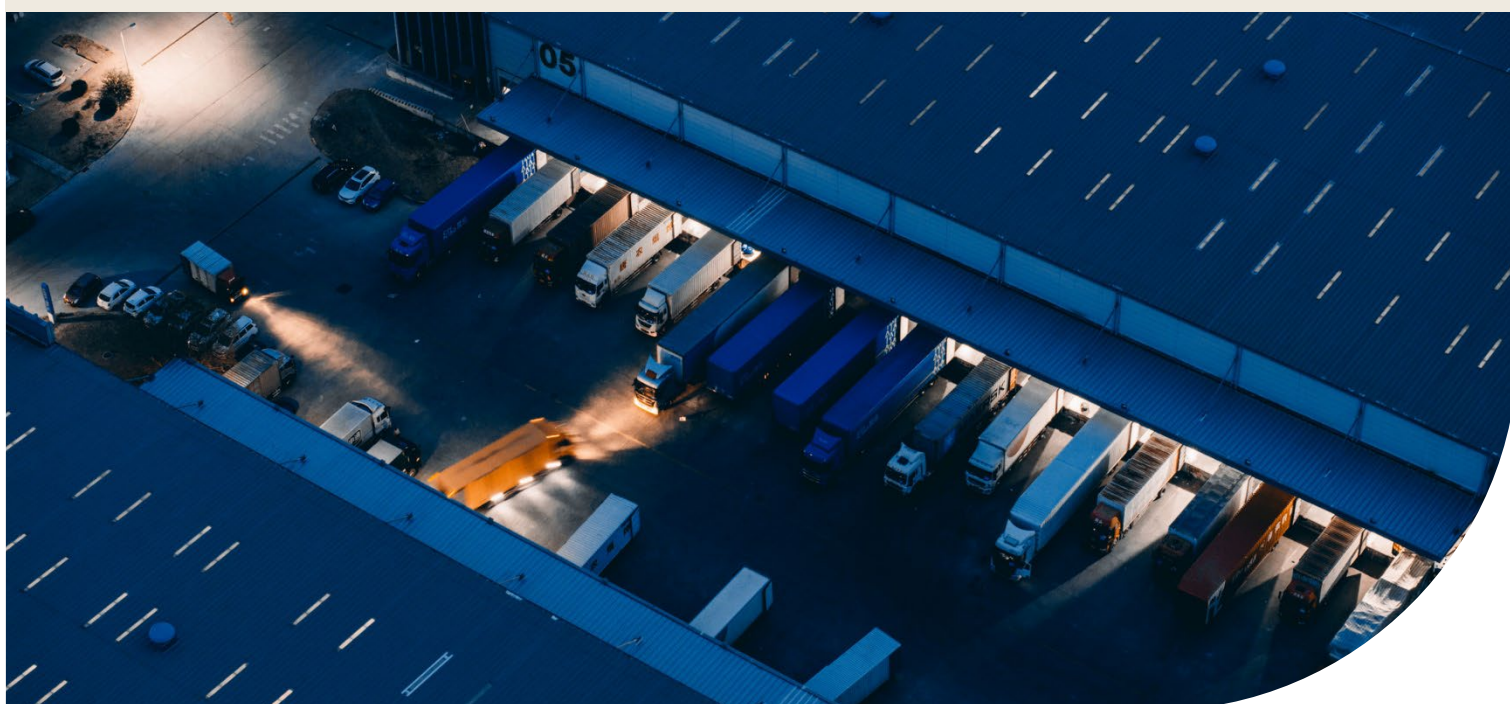
- travel time savings of up to 50% to reach Sydney's central business district
- between 15% and 40% fewer kilometres travelled within the city centre
- time savings of 30% to 50% to load and unload goods after parking
- productivity improvements of 30% to 40% due to faster vehicle turnaround.¹⁷²³

The New South Wales Government continues to help connect businesses with service providers to trial and implement off-peak delivery.¹⁷²⁴

In 2009, New York piloted an off-peak delivery program in Manhattan's central business district to help businesses receive goods between 7pm and 6am. Participating businesses were eligible for a US\$2,000 incentive if they shifted multiple weekly deliveries to off-peak hours and committed to the program for at least 6 months.¹⁷²⁵

The pilot successfully shifted deliveries for over 400 businesses.¹⁷²⁶ It reduced congestion, lowered emissions, and improved efficiency for delivery companies and customers.¹⁷²⁷ The pilot estimated annual business savings of US\$100 million to \$200 million through reduced congestion and improved delivery efficiency.¹⁷²⁸

In 2010, New York City made the off-peak delivery program permanent. Around 1,120 locations currently receive off-peak deliveries.¹⁷²⁹ The city allocated \$6 million to expand the program in 2024, aiming to reach 5,000 locations by 2040.¹⁷³⁰



Plan for more efficient and sustainable urban freight

Develop a network of urban delivery zones in Melbourne to improve freight productivity and reduce emissions.

Growing cities face freight delivery challenges

Population increases, more online shopping and changing customer expectations mean urban freight will continue to grow.¹⁷³¹ 'Last mile' delivery is the final stage of freight delivery to customers. It is inefficient in urban areas because roads are more congested and it can be hard for trucks to move.¹⁷³² Some businesses can shift deliveries to off-peak hours (see [recommendation 44](#)). But this will not work for all.

As cities attract more people and businesses, and become more compact, there will be less land available in inner suburbs for freight operators to use.¹⁷³³ This is likely to increase freight costs.¹⁷³⁴ Governments will need to integrate freight industry needs into land use planning to help boost the economy, make roads safer and improve local amenity (see [recommendation 36](#)).¹⁷³⁵

Urban freight also adds to greenhouse gas emissions. Emissions from last mile deliveries in the world's largest cities might increase by over 30% by 2030.¹⁷³⁶ Low or zero emission freight vehicles can help Victoria achieve its goal of net zero emissions by 2045.¹⁷³⁷

Innovation can improve freight productivity and reduce emissions

Policymakers in Australia and worldwide are exploring urban freight solutions to reduce congestion and pollution, increase efficiency and promote zero emission vehicles (see case study – [Innovative solutions for urban freight](#)). Suitable initiatives for Victoria include:

- developing urban freight consolidation centres near busy urban areas, where larger trucks drop off their loads for smaller, lower emission vehicles to handle last mile delivery
- setting up zero emission zones that restrict or charge entry for petrol and diesel vehicles
- providing parking and loading zones in high-density areas for zero emission commercial delivery vehicles.¹⁷³⁸

The Victorian Government can test these in urban delivery zones. By 2035, it can create a network of these zones in Melbourne to improve delivery efficiency, boost productivity and cut emissions. The government is targeting 50% of small truck and van sales to be zero emission vehicles by 2030.¹⁷³⁹ This timing will also support the population growth expected in key activity centres.¹⁷⁴⁰

To prepare for more freight in urban areas, the government can work with industry and local governments to identify potential locations for urban delivery zones. These are likely to be places where housing density and congestion are increasing, such as *Victoria's housing statement* priority precincts, activity centres and Suburban Rail Loop precincts.¹⁷⁴¹ The government can consider population and freight demand forecasts, access to the Principal Freight Network, industrial precincts and local businesses, surrounding land uses and levels of air pollution when selecting locations.

The government can also complete a feasibility study to test effective urban freight solutions for different urban delivery zones and decide how and when to action them. Some areas might need a mix of solutions.

Empowering local governments to create and enforce urban delivery zones can also help the government prepare for more freight. This might include updating land strategies and engaging with industry, businesses and local communities.

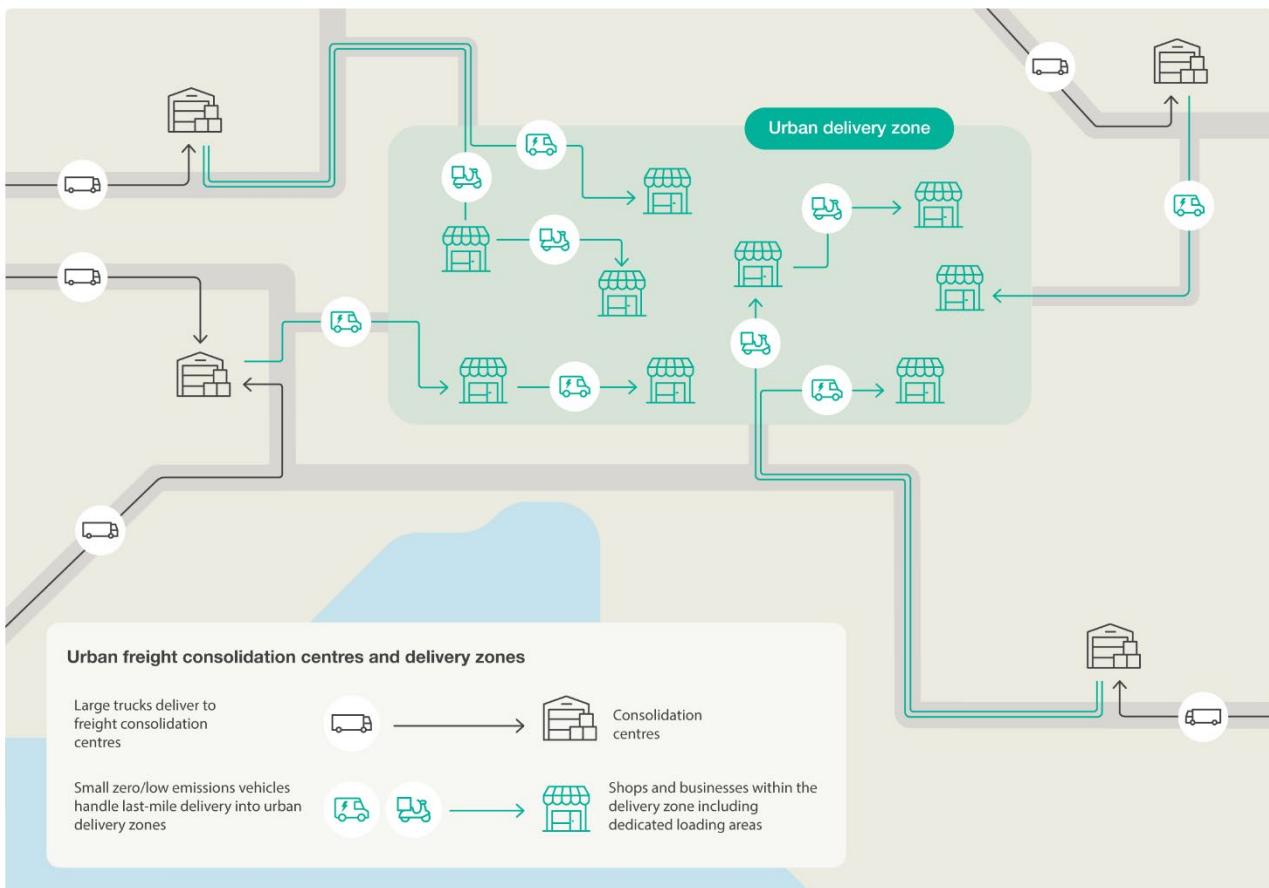
Cost range, timing and funding

We estimate that planning for more efficient and sustainable urban freight from 2030 will cost \$1 million to \$5 million over 5 years. General government revenue can fund this future option.

The Victorian Government can work with local governments and stakeholders to find opportunities and test solutions. The cost range includes consulting with stakeholders, developing guidelines and standards, and grants for pilot initiatives. The costs for this future option might be higher if the government needs to buy or lease land to trial urban freight solutions.

Charges collected from petrol and diesel vehicles entering zero emission zones can be used to help freight operators transition to zero emission vehicles.

Figure 26: Urban delivery zones can improve freight productivity



Source: Infrastructure Victoria.

Innovative solutions for urban freight

There are many ways to improve urban freight. Government policies like road pricing, vehicle restrictions, and low emission zones can help address urban logistics challenges. Infrastructure such as freight hubs can improve city logistics. Freight operators can combine deliveries and improve truck loading.¹⁷⁴²

Urban freight consolidation centres

Urban freight consolidation centres, where larger trucks drop off their loads for smaller, lower emission vehicles, can boost productivity with faster vehicle turnaround and higher driver efficiency.¹⁷⁴³ They can reduce congestion and emissions and improve road safety in local areas.¹⁷⁴⁴

In 2019, 62 urban freight consolidation centres operated in Europe. They work best when government and industry collaborate, when they are within one to 3 kilometres of the end destination and when they have easy access to key freight routes.¹⁷⁴⁵ Government typically provides the land for the centres, alongside other regulatory and financial support.¹⁷⁴⁶ For example, Paris has reserved over 60 sites for future logistics hubs.¹⁷⁴⁷

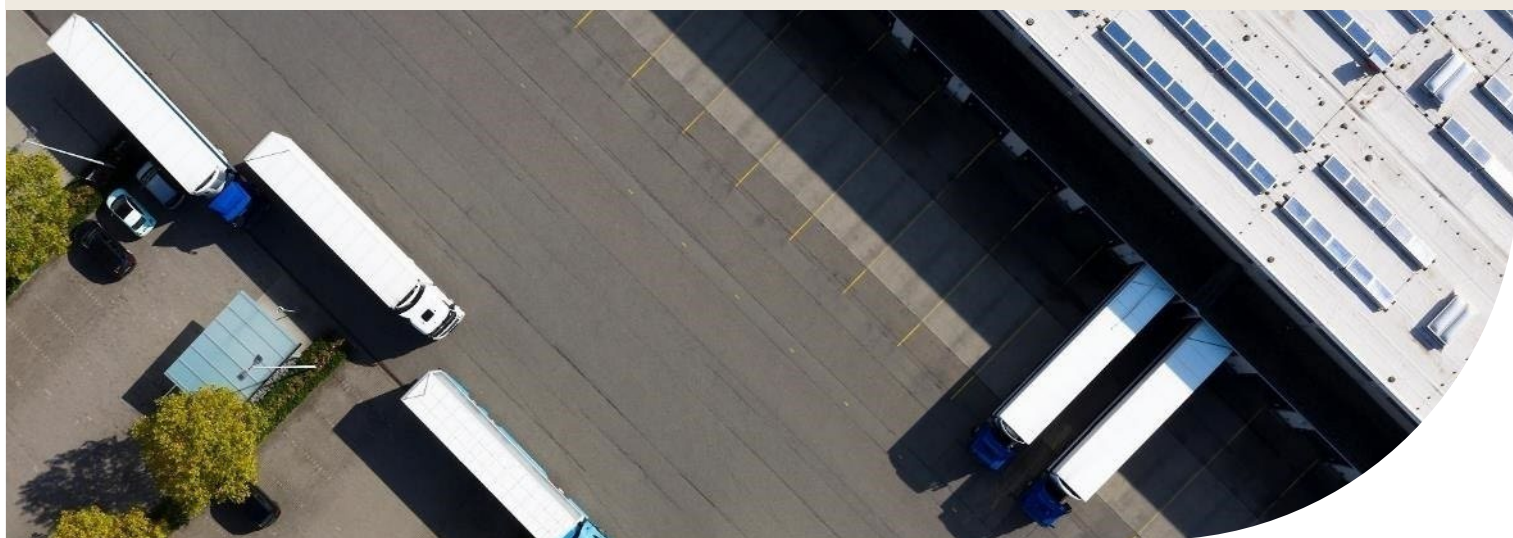
The City of Sydney and Transport for New South Wales trialled a free courier hub in a carpark near Sydney's central business district.¹⁷⁴⁸ Transport companies delivered goods faster and reduced their operating costs. The value of community benefits was 5 times more than total project costs.¹⁷⁴⁹

Zero emission zones

From 2025, Dutch cities can introduce zero emission zones to reduce emissions from freight.¹⁷⁵⁰ Around 30 zero emission zones will cover city centres and nearby areas.¹⁷⁵¹ Businesses are notified at least 4 years in advance so they can prepare.¹⁷⁵² All new vans and trucks must be zero emission vehicles. The government offers subsidies of up to €5,000 to help with the cost of buying zero emission vans or trucks.¹⁷⁵³

Zero emission parking and loading zones

Santa Monica trialled the USA's first voluntary zero emission delivery zone in 2021.¹⁷⁵⁴ It provided priority kerb space in a one square mile area. This zone covers nearly 16,000 residents and 2 commercial districts with about 30,000 workers.¹⁷⁵⁵ The program aimed to address congestion and pollution from transport. It monitored vehicle activity in curb zones to study efficiency, safety, congestion and emissions. It also provided real-time parking data to zero emission drivers.¹⁷⁵⁶



Create and preserve opportunities for future major infrastructure projects

Create and preserve opportunities to build major infrastructure projects that might be required in the long term. This includes expanding desalination capacity, more hospital capacity in Melbourne's outer north, City Loop reconfiguration, extending and electrifying metropolitan trains to north and south-east Melbourne growth areas, Melbourne Metro 2, the Bay West port, the outer metropolitan road and rail corridor and connecting western intermodal freight terminal.

The government has limited ability to invest in new major infrastructure projects in the short-term

The Australian economy faces shortages in skilled labour and construction materials needed for infrastructure projects.¹⁷⁵⁷ At the same time, the Victorian Government has limited capacity to fund new major projects.¹⁷⁵⁸ Reflecting these challenges, the government expects annual capital spending to fall in the next few years from recent highs.¹⁷⁵⁹

In the short term, there are many ways the government can get more out of existing infrastructure without building large new projects. Many of the recommendations we make in this strategy will help the government achieve this.

In the long term, factors like advances in technology, climate change, population growth and ageing means that Victoria will still need to invest in new infrastructure projects. Victoria's transport system will need to carry more passengers and move more vehicles.¹⁷⁶⁰ More people means more demand for goods, putting pressure on Victoria's freight network and ports.¹⁷⁶¹ Growing communities, an ageing population and advances in technology will change demand for healthcare in areas with little existing health infrastructure.¹⁷⁶² Climate change means Victoria will need water from different sources.¹⁷⁶³ Infrastructure will need to be more resilient.¹⁷⁶⁴

Our recommendation to prepare and publish infrastructure sector plans to shape Victoria's cities (see [recommendation 36](#)) will help the government plan and sequence the infrastructure needed to support this growth.

Victoria can plan now for future infrastructure needs

The government should prepare now for major infrastructure projects that Victoria is likely to need in the long term. It should:

- complete a detailed business case that considers expanding the existing Victorian Desalination Plant and alternative desalination options to help meet water demand until 2035 (see future option – [Plan for and invest in manufactured water](#))
- complete a detailed business case for more hospital capacity to provide healthcare services to fast-growing communities in Melbourne's outer north
- complete a preliminary business case and detailed engineering assessment to reconfigure the City Loop (see future option – [Reconfigure the City Loop for more frequent and reliable trains](#))
- complete detailed assessments to extend and electrify metropolitan trains to Melbourne's north and south-east growth areas (see future option – [Extend metropolitan trains to growth areas in Melbourne's north and south-east](#))
- complete a preliminary business case for the Melbourne Metro 2 tunnel project, confirm its route and protect the land needed to build it

- apply planning protection for transport corridors and buffers for a future Bay West port, particularly for future road and rail connections, and monitor and report on the environmental conditions and triggers to develop a new port
- determine project staging to build the outer metropolitan road and rail corridor and connecting western intermodal freight terminal.

These projects respond to the long-term infrastructure needs we have identified in our work.

Why these projects?

We have identified several projects that might be needed in the future. This work to identify future projects includes our *Major transport program strategic assessment report* and *Advice on securing Victoria's ports capacity*.¹⁷⁶⁵ The 7 projects in this recommendation are long-term projects that require the government to start preparing now. This will keep the opportunity open to pursue them in the future.

Expand desalination capacity

Victoria's largest cities will need more water in coming decades.¹⁷⁶⁶ Our future option – Plan for and invest in manufactured water shows that Victoria will need more water sources in the long term. The Victorian Government should plan now to extend Victoria's desalination capacity in the future. This might be by expanding the existing Victorian Desalination Plant or investing in a new plant.¹⁷⁶⁷



More hospital capacity in Melbourne's outer north

Melbourne's outer north is growing rapidly. The area might be home to around 350,000 more people in 2041 compared with 2018.¹⁷⁶⁸ Access to health services is already an issue for these communities. There are long wait lists for existing services and many people need to travel outside the area to access care.¹⁷⁶⁹ Victoria's health system planning framework identifies planning for more hospital capacity in the northern growth areas as an infrastructure priority.¹⁷⁷⁰ The government has funded upgrades and extra capacity at the Northern Hospital but more will be needed in the long term.¹⁷⁷¹ This might be delivered through expanding existing facilities or building a new hospital. The government should plan now for more hospital capacity in Melbourne's outer north.¹⁷⁷²



City Loop reconfiguration

The Metro Tunnel will add capacity to the metropolitan train network and reduce the impact of disruptions.¹⁷⁷³ But even after that project is complete, some parts of the train network will reach capacity in the next decade.¹⁷⁷⁴ The Craigieburn and Upfield lines will still share one City Loop track, limiting the number of train services on each line as passenger demand continues to grow.¹⁷⁷⁵ The government should do engineering work and service planning, including timing and staging. Our future option – Reconfigure the City Loop for more frequent and reliable trains explains how changing the way the City Loop works can add capacity to the train network.



Extend and electrify metropolitan trains in Melbourne's north and south-east

Our recommendation to extend metropolitan trains to Melbourne's west (see recommendation 11) will better connect communities in western suburbs to jobs and services. However, rapidly growing communities in Melbourne's north and



south-east also have limited public transport. Our future option – Extend metropolitan trains to growth areas in Melbourne’s north and south-east outlines how extending train lines to Clyde and to at least Kalkallo can help address transport needs for more of Melbourne’s growth area communities.

Melbourne Metro 2

Our recommendation to extend Melbourne’s trams to encourage more new homes nearby (see recommendation 8) shows strong demand for tram services in Fishermans Bend. Our research shows the proposed Fishermans Bend tram will reach capacity in peak hours during the mid-2030s.¹⁷⁷⁶ To achieve the 80,000 jobs and 80,000 residents anticipated for the precinct, Fishermans Bend will need a new train line.¹⁷⁷⁷ The Melbourne Metro 2 project provides this. It will help address train network capacity issues and improve access to national employment and innovation clusters.¹⁷⁷⁸ Route alignment and the type of train technology to use are key issues to explore in the business case.



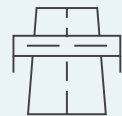
Bay West port

Our advice on Victoria’s ports found that growing freight volumes can be met by continuing to boost capacity at the Port of Melbourne.¹⁷⁷⁹ The Victorian Government should keep working with the Port of Melbourne to develop this capacity. However, Victoria will need a second major container port around 2055.¹⁷⁸⁰ The government will need to start detailed planning for this around 2040, or when triggered by changes such as faster growth in demand, congestion, amenity impacts or cost changes.¹⁷⁸¹ Short-term action is needed to secure transport links to the future port as land development pressures within the urban growth boundary in Melbourne’s west might restrict future access.¹⁷⁸² Monitoring and assessing environmental conditions around the Bay West site will improve environmental outcomes and support regulatory approvals.¹⁷⁸³



Outer metropolitan road and rail corridor

More people and more freight will add to road congestion in coming decades. Melbourne’s outer north and west could be home to over 800,000 more people by 2051.¹⁷⁸⁴ The M80 Ring Road will see up to 1,800 more trucks during morning peak hour alone.¹⁷⁸⁵ The outer metropolitan road and rail corridor will help accommodate this growth. It provides faster travel times and better access to jobs.¹⁷⁸⁶ It will connect current and future industrial and logistics precincts with international and interstate transport terminals. This includes the proposed Bay West port, western and Beveridge intermodal freight terminals, Melbourne and Avalon airports, and the Port of Geelong.¹⁷⁸⁷ The government has done some initial planning including a preliminary business case.¹⁷⁸⁸ A public acquisition overlay is in place.¹⁷⁸⁹ The government now needs to confirm which sections of the project have the greatest benefit to inform how to stage the project and connect it to the western intermodal freight terminal.



Preparing now will keep Victoria’s opportunities open

Planning and preparing now keeps the opportunity open to start these projects in the future. Preparing now can reduce total project costs, prevent conflicting land use and allow others to plan accordingly.¹⁷⁹⁰

When the need for these projects arises, this recommendation will ensure that projects are ready to start quickly, and the community can see the benefits sooner.

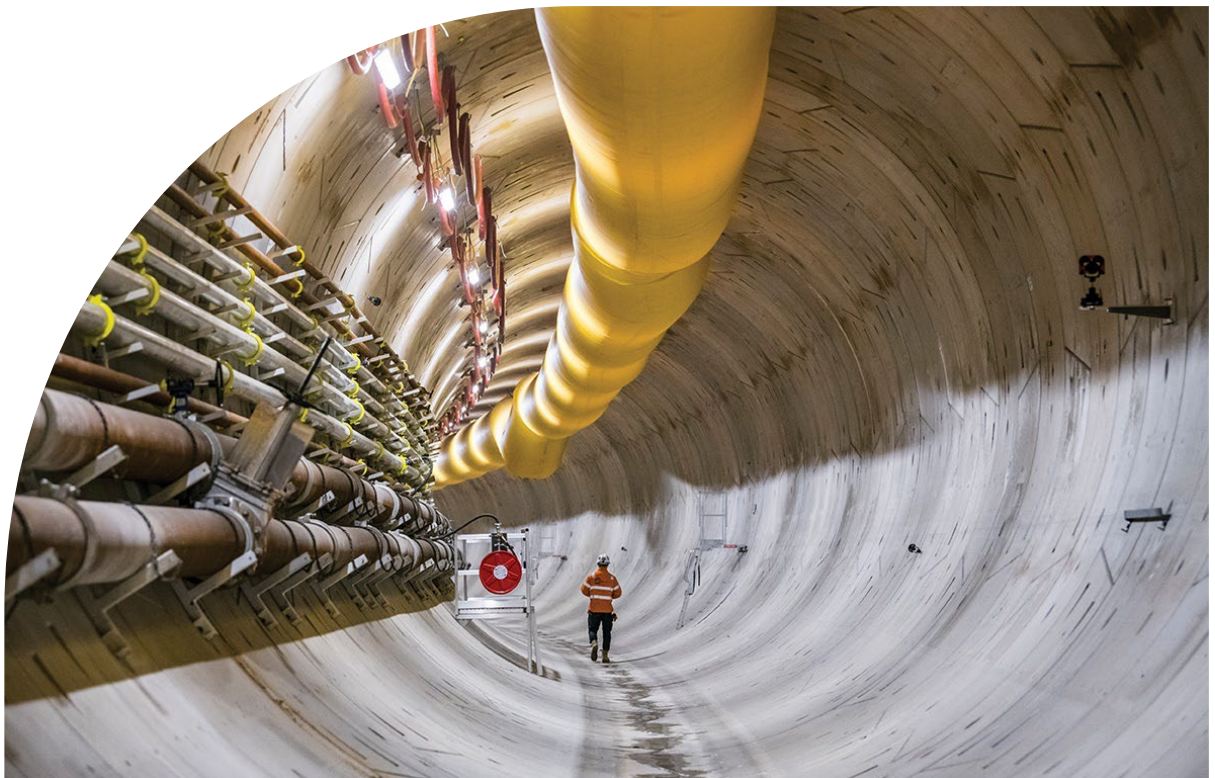
Cost range, timing and funding

We estimate this recommendation will cost \$125 million to \$150 million in planning and preparation work. General government revenue can fund this recommendation. We assume existing government staff will do some of this work.

The government can complete environmental and technical studies, consult with Victorians, and develop business cases within the next 5 years. This means Victoria is prepared if these projects are required in the long term. Existing government staff can lead this work.

Our estimated cost range includes \$15 million to \$30 million to update existing overlays or apply new public acquisition overlays to protect land. We have not included the cost of buying land as it may be many years between when government applies an overlay and buys the land.

Developing Victoria's second major container port at Bay West will require time and attention to assess and manage impacts on sensitive coastal habitats.¹⁷⁹¹ Our cost range for the future port over the 10 years to 2035 includes \$40 million to \$50 million for environmental assessment and monitoring.



Reconfigure the City Loop for more frequent and reliable trains

Reconfigure the City Loop by splitting 2 City Loop tunnels into 2 separate cross-city train lines. Build around 3 kilometres of new train tunnels and upgrade related power and signalling. Increase service frequency on the Craigieburn, Upfield and Frankston lines.

Melbourne's fast-growing northern suburbs need better access to jobs and services

The Victorian Government forecasts around 840,000 more people will live in Melbourne's growth areas by 2036. But these places will only have 250,000 more jobs.¹⁷⁹²

People living in these areas find it harder to get to work within reasonable travel times compared to people in Melbourne's inner and middle suburbs.¹⁷⁹³ This can mean they travel further for work, or accept lower paid, lower skilled jobs. When more people travel further, roads become congested and rail services become crowded.

The City Loop has 4 sets of tracks that circle central Melbourne. The northern part of the City Loop is a bottleneck and cannot support many more trains.¹⁷⁹⁴ This limits how often trains run on the Craigieburn and Upfield lines.

Using only current infrastructure, all morning peak Craigieburn services will be overcrowded by the mid-2030s.¹⁷⁹⁵ Regional train services on the Shepparton and Seymour lines will also have high demand at V/Line stations north of Craigieburn, like Donnybrook and Wallan.¹⁷⁹⁶

Reconfiguring the City Loop will provide more frequent and reliable cross-city train services

After 2030, when train services are expected to be crowded, the Victorian Government can build around 3 kilometres of new train tunnels. This will allow it to redesign 2 City Loop tracks and build:

- a pair of cross-city tunnels from Richmond to North Melbourne via Flagstaff
- a separate pair of tracks from Richmond to North Melbourne via Southern Cross.

Reconfiguring the City Loop will separate the Craigieburn and Upfield lines and remove the current bottleneck. It would let trains run through the city and continue onto other lines, such as the Frankston, Ringwood, Alamein or Glen Waverley lines. The Craigieburn and Upfield lines will no longer share the same City Loop track, reducing the risk of disruptions on one line affecting others.

The government can boost passenger capacity by upgrading power and signalling on the Craigieburn line at the same time, or earlier. It should also upgrade power and signalling on the Upfield line (see [recommendation 12](#)). These projects can support over 18 more train services each hour and make trains on both lines more frequent and reliable.¹⁷⁹⁷

This project will generate significant benefits for a relatively low cost

This project allows more trains to enter Melbourne's city centre at a relatively low cost.¹⁷⁹⁸ We estimate this project can generate \$5 billion to \$13 billion in benefits for public transport and car users.¹⁷⁹⁹ Providing up to 18 trains an hour in each direction on the metropolitan train network is equivalent to building a 16-lane freeway.¹⁸⁰⁰ Our modelling shows it can attract more jobs and housing along train lines in the north, including in Coburg and Broadmeadows.¹⁸⁰¹

This future option can work alongside other train network expansions (see [recommendation 11](#)), including extending and electrifying the Upfield line to at least Kalkallo via Craigieburn (see future option – [Extend](#)

metropolitan trains to growth areas in Melbourne's north and south-east) to improve public transport access in outer suburbs.

Recommendation 45 calls for the government to complete a preliminary business case to reconfigure the City Loop.

Cost range, timing and funding

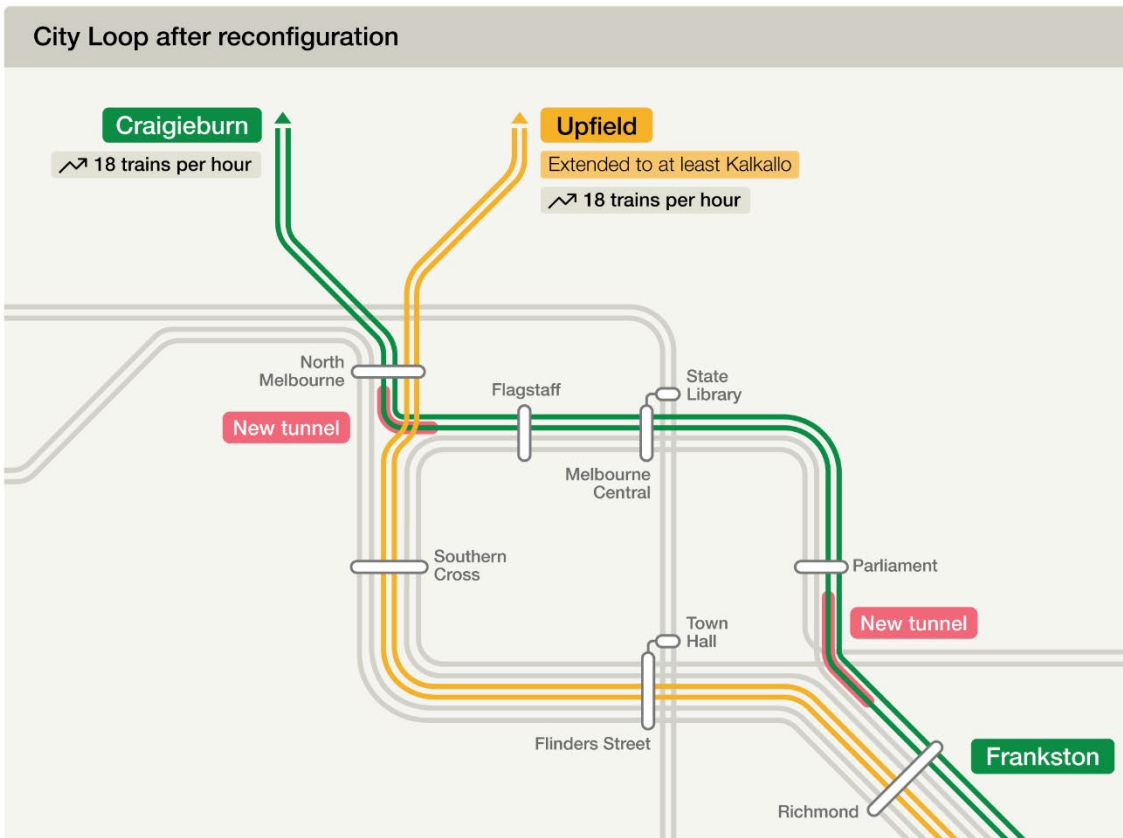
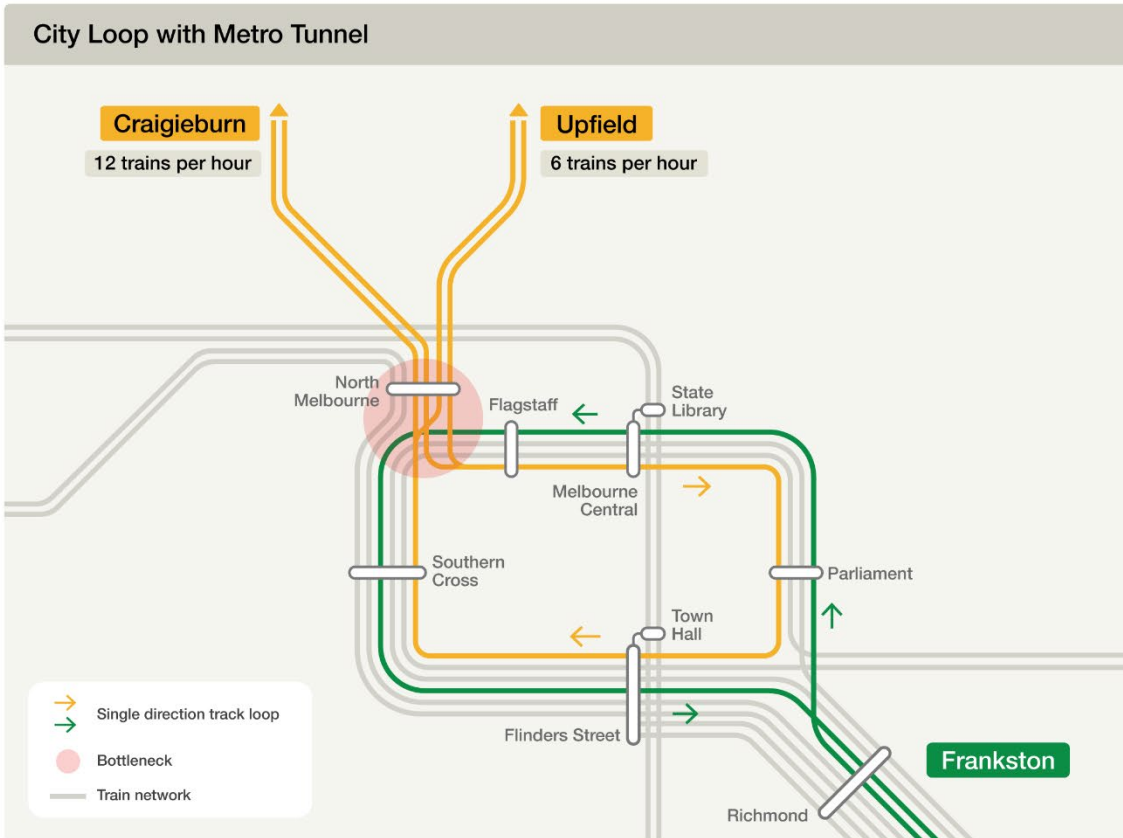
We estimate that reconfiguring the City Loop will cost \$2 billion to \$5 billion. This includes building new tunnels and upgrading connecting train lines. Around \$1 billion more is required for new rolling stock and supporting infrastructure like train depot and maintenance facilities.

General government revenue is likely to be a major funding source for this future option. Public transport fares can help offset the operating costs of public transport upgrades. The Victorian Government can also seek extra funding from the Australian Government.¹⁸⁰²

We have provided a broad cost range as the project can be delivered in various ways to provide best value for money. This requires further analysis by the Victorian Government. Our cost estimates are based on 2020 prices, adjusted to reflect today's higher costs.¹⁸⁰³

We estimate it will cost \$40 million to \$50 million each year to operate more trains through a reconfigured City Loop. This includes the cost to run more train services, and to maintain train lines and rolling stock.

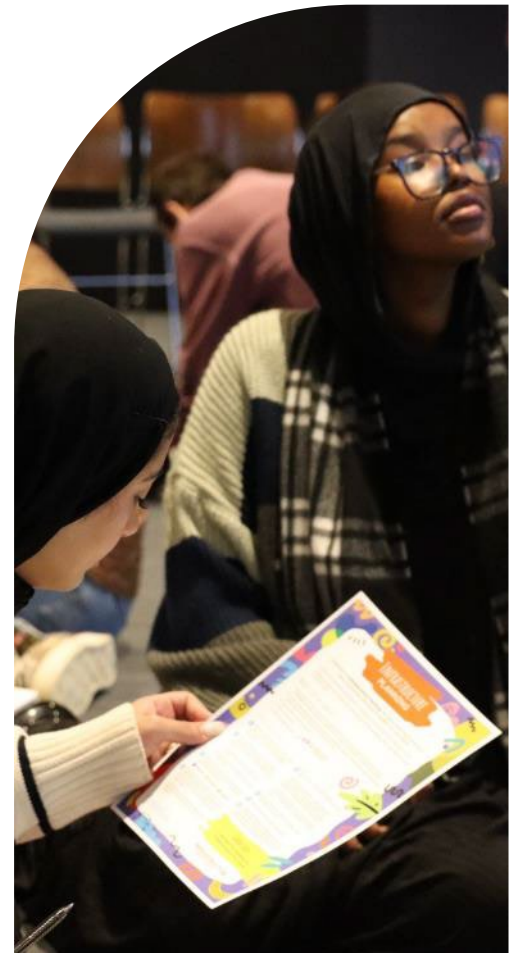
Figure 27: Reconfiguring the City Loop allows for more cross-city services and reduces disruption



City Loop layout in this figure is a guide only. It does not show all detailed platform, track and junction configurations.
Source: Infrastructure Victoria.



How we developed the strategy



We heard from Victorians and spoke with stakeholders

Our recommendations are based on evidence and engagement

As we developed this strategy, we heard from thousands of Victorians and spoke with stakeholders.¹⁸⁰⁴ We analysed policy, literature and data, and commissioned advice on complex issues.

In 2023, more than 500 people helped shape the strategy objectives. Our call for submissions on strategy objectives encouraged individuals and organisations to share their ideas. They told us about the future they want and suggested how infrastructure can help achieve it. During workshops and discussions, we captured the perspectives of Victorian First Peoples, regional Victoria's infrastructure challenges and opportunities, and the views of young Victorians. This is covered in our [*Strategy objectives engagement report*](#).

This consultation informed our strategy objectives and helped us develop our recommendations. In our research program, we heard from 18,500 Victorians on important infrastructure issues. This included housing options, gas infrastructure, bus services and social infrastructure.

Over March and April 2025, we consulted on a draft version of this strategy. During this period, we held a series of engagement events including 3 webinars and 16 government and sector workshops. Through the Engage Victoria website we received over 300 submissions. Written submissions and workshops resulted in over 2,500 individual points of feedback on the draft strategy. Across our website and Engage Victoria there were more than 57,000 page views from 21,000 active users. Our [*Consultation summary*](#) report records what we heard during this consultation period and how it influenced this strategy.

Our recommendations address infrastructure priorities for the next 30 years

We researched major infrastructure challenges and opportunities

We assessed the current state of Victoria's infrastructure and researched how infrastructure can help respond to existing and future challenges. We analysed trends in data, looked at Australian and international literature, found case studies and talked with stakeholders from industry. We spoke extensively to policymakers in government departments and agencies who shared their work on the challenges and opportunities for Victoria's future infrastructure.

We reviewed *Victoria's infrastructure strategy 2021–2051* to see how the government is implementing our earlier recommendations, and which infrastructure issues remain (see [*Review of 2021 recommendations*](#)).

We researched specific issues, like:

- different urban growth patterns for Melbourne and major regional cities in [*Choosing Victoria's future: 5 urban development scenarios*](#)
- actions to better prepare Victoria's infrastructure for more frequent and extreme weather in [*Weathering the storm: adapting Victoria's infrastructure to climate change*](#)
- how Victoria can make the most of its gas infrastructure in [*Towards 2050: gas infrastructure in a net zero emissions economy*](#)
- actions the Victorian Government can take to make emissions count as part of infrastructure decision-making in [*Opportunities to reduce greenhouse gas emissions of infrastructure*](#)
- how buses can give more people access to good public transport in [*Fast, frequent, fair: how buses can better connect Melbourne*](#)

- giving Victorians more access to open space in [Getting more from school grounds: sharing places for play and exercise](#)
- investing in education infrastructure that benefits all Victorians in [Learning for life: preparing kindergarten, school and TAFE infrastructure for the future](#)
- securing safe and sustainable Community-controlled care in [Investing in Aboriginal health and wellbeing infrastructure](#)
- how Victoria can better manage its \$400 billion in assets in [Getting better use from infrastructure](#)
- improving care for the most vulnerable Victorians in [Investing in community health infrastructure](#)
- prioritising strategic cycling corridor investment in Victoria in [Building safer cycling networks](#)
- strategic economic evaluation to support major transport recommendations in the strategy in [Transport projects strategic evaluation](#).

We commissioned advice to add to our evidence base

We commissioned technical advice on infrastructure issues. This supported our research and helped us develop recommendations. The advice included economic analysis, desktop reviews, spatial mapping, and transport and energy modelling. Technical reports are available on our website, including reports on:

- how digital technologies can improve infrastructure productivity in [Digital technology and infrastructure productivity](#)
- the risks to Victoria's energy transition and how Victoria can mitigate them in [Victoria's energy transition risks and mitigation actions](#)
- the impact of different scenarios on Victoria's energy transition in [Energy transition analysis](#)
- opportunities for First Peoples' self-determination in infrastructure projects in [Self-determination in infrastructure](#)
- opportunities to extend tram and train services in middle and outer suburbs in [Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025-2055](#)
- the economic impacts of cycling corridors in [Report on the economic assessment of cycling corridors](#)
- the costs of investing in cycling corridors in [Priority cycling corridor investment analysis](#)
- the propensity to cycle in [Bike use propensity index forecast](#)
- the future need for primary and secondary schools in Victoria in [Estimating primary and secondary school provision](#)
- the future need for kindergartens in Victoria in [Estimating kindergarten provision](#)
- the cost of land in different regions and how this affects the value of school outdoor sports facilities in [Cost of land for different regions in Victoria](#)
- how Victorians use outdoor sports grounds in [Consumer research – access to school sports grounds consumer research](#) and [Accessibility mapping for outdoor school grounds](#)
- how Victorians access vocational education in [Consumer research – access to TAFE](#) and [Accessibility mapping for TAFE](#)
- how Victorians access Aboriginal health and wellbeing infrastructure in [Accessibility mapping for Aboriginal Community Controlled Organisations](#)
- how Victorians access community health services in [Consumer research – access to community health](#) and [Accessibility mapping for community health centres](#).

We developed recommendations

This strategy update examines what the Victorian Government can do to address Victoria's most pressing infrastructure challenges, beyond the measures it has already announced. We recommend actions the government can start in the 5 years to 2030 that deliver long-term benefits. The recommendations help advance the strategy objectives and position Victoria for the next 30 years.

The strategy also includes some actions the Victorian Government can start in the longer term. We present them as future options for the government. We believe they will also help achieve the strategy objectives, but they do not require the government's immediate attention or decision.

In selecting our recommendations, we studied the major problems and opportunities in each infrastructure sector. We analysed these alongside existing Victorian Government policy directions, and other policy and external changes. This helped us select the infrastructure priorities our recommendations should progress, and how the Victorian Government can act to make a difference.

We then assessed proposed recommendations against the strategy objectives, to make sure each of them helped achieve the goals most important to Victorians.

We also used Infrastructure Victoria's strategic priorities to guide our recommendations. These are the problems that Infrastructure Victoria aims to make a significant impact on in all our work, being:¹⁸⁰⁵

- doing more with less
- navigating change and disruption
- improving social equity through access
- mitigating and adapting to our changing climate.

Each of our recommendations help achieve at least one of these strategic priorities.

We released draft versions of our recommendations for feedback.¹⁸⁰⁶ This feedback gave us evidence that helped us refine and finalise our recommendations.¹⁸⁰⁷

Our recommendations are cost effective

We estimated the benefits and cost of each recommendation

Our recommendations have many economic, social and environmental benefits. We estimate that implementing all 45 recommendations can produce over \$166 billion worth of benefits to Victorians.¹⁸⁰⁸ Some of the significant benefits of our recommendations include:

- \$35 billion in improved health and economic outcomes for children over their lifetime from investing in new schools and kindergartens (recommendations [2](#) and [3](#))
- \$27 billion in improved employment, health and social outcomes for those at risk of homelessness from building more social homes ([recommendation 1](#))
- \$22 billion in travel time savings, fewer greenhouse gas emissions, and other benefits from public transport projects (recommendations [8](#), [9](#), [10](#), [11](#), and [12](#))
- \$15 billion in cost savings from using new digital technologies in constructing public housing and roads ([recommendation 41](#))
- \$14 billion in additional economic activity, wages and profits from achieving more compact cities (recommendations [7](#), [36](#), and [37](#)).

But producing these benefits also has a financial cost to the Victorian Government. We present our cost estimates as approximate ranges under each recommendation.

A long-term infrastructure strategy can help the Victorian Government achieve a stable investment profile. Our cost estimates help the government make informed decisions about infrastructure investments, project sequencing and delivery timelines. Before making an investment decision, the government should assess the costs and benefits of a project or policy based on its final design.

The Victorian Government will need to do more work to fully detail the costs of the proposed infrastructure, policies and reforms. This further planning and development can include design, procurement, construction, operation and maintenance of infrastructure.

Many of our recommendations will require the Victorian Government to coordinate with and fund local governments. In their submissions, local governments frequently called for strong partnerships between Victorian and local governments in implementing recommendations.¹⁸⁰⁹

Our estimates include once-off and yearly costs

Some recommendations include capital costs, like the costs to design, procure, build and upgrade infrastructure. Some include the costs to develop policy or introduce reforms. Some include a yearly operating cost to run and maintain new infrastructure.

We also include the costs of staff or consultancies to develop and deliver plans or policies, or provide technical advice. In many cases, our recommendations can be delivered by Victorian Government staff as part of their existing duties. The government could also redeploy staff from other tasks rather than spending extra money on hiring more staff.

Our estimates do not include the costs of providing the services from social infrastructure. For example, we do not include the salaries of nurses providing care in upgraded hospitals, or teachers in new schools. However, we do include the costs of running extra transport services like trains, trams and buses.

We present many of our costs as a cost range. They are strategic, order of magnitude estimates (see box below).¹⁸¹⁰ They are approximate and typically based on available cost data for similar earlier projects. Our estimated cost ranges can be narrow or wide depending on our level of certainty. We include sources for our cost data, except where we have used confidential information.

All cost estimates are in real dollars as of June 2025. For example, this could be the cost of signing a contract to build infrastructure or starting a new policy in June 2025. To do the same thing in future years would require escalation to be added to the 2025 cost.

Estimating the cost of our recommendations

Order of magnitude estimates are initial cost estimates within a broad accuracy range and based on historical information. They are commonly applied in early stages of a business case where few details are available. Order of magnitude estimates are helpful in comparing high-level alternatives to determine the most feasible solutions.¹⁸¹¹

Real dollars measure the cost of something without increasing prices for future inflation.¹⁸¹² All our cost estimates are in real dollars. We have used real dollars to avoid introducing future price inflation as another source of uncertainty.

Escalation adjusts the cost of something for future price inflation of inputs.¹⁸¹³ Most of our recommendation cost estimates do not include escalation. However, several of our major transport project recommendations have escalation built into their cost estimates, reflecting their long delivery times (including recommendations [11](#) and [12](#), [future option – Extend metropolitan trains to growth areas in Melbourne’s north and south-east](#), and [future option – Reconfigure the City Loop for more frequent and reliable trains](#)).

We proposed ways to fund each recommendation

Funding is the money needed to pay for infrastructure. Victorian Government funding can come from the community through taxes, from charging people when they use infrastructure or government services, or from debt. The Australian Government also raises money through taxes and can share some of this money with the states. This often helps fund infrastructure.

New or upgraded infrastructure can help some groups of people or businesses. A logistics firm might save money because a new road lets them move goods faster and at lower cost. New infrastructure can make land more valuable. Asking those who benefit to help pay can be fairer than all Victorians paying taxes to fund infrastructure from general government revenue.¹⁸¹⁴

The Victorian Government can also partner with the Australian Government, and private and not-for-profit sectors and share infrastructure costs. For example, businesses can invest in the construction of new hospitals in return for the development of new on-site commercial facilities.¹⁸¹⁵

We assume the Victorian Government can start funding our recommendations in its 2026–27 budget. We assume the government can start spending that money from the 2026–27 financial year. We also assume the government will start acting on our recommendations within 5 years. The government might deliver some of the recommendations over a longer period than the initial 5 years.

Victorian Government departments and agencies should consider how to fund and lower costs when they plan infrastructure investments. This can help reduce the reliance on general government revenue. The government can also consider shifting spending from other initiatives to infrastructure investments.

We estimated the total cost of Victoria's 30-year infrastructure strategy recommendations

Victorian Government infrastructure investment has been at record levels in recent years. It peaked at \$24.2 billion in 2023–24 and will average \$17.9 billion each year from the 2025–26 to the 2028–29 financial years. The government's investment was around \$15 billion in the 2020–21 financial year. The government aims to get back to this level by the 2028–29 financial year.¹⁸¹⁶

Only 28 of our 45 recommendations need Victorian Government capital investment. Very few are major projects that require high upfront investment. Many recommendations upgrade or replace infrastructure that is not running efficiently. The other 17 recommendations call for policy work, legislative reform and better planning.

We estimate that the cost to the Victorian Government to implement all recommendations is around \$65 billion to \$75 billion. Most of this spending would happen before 2035. Around 75% of the total cost is for 7 recommendations with capital-intensive projects that improve social housing, kindergartens, schools, public transport and hospitals. Table 7 includes a summary of costs by infrastructure sector.

Table 7: Costs to the Victorian Government of recommendations by infrastructure sector

Infrastructure sector (recommendations)	Cost (millions)
<p><i>Across sectors</i> (6, 36, 37, 38, 41 and 45)</p> <ul style="list-style-type: none"> Recommendations for better infrastructure planning, use, maintenance, and funding. 	\$1,900
<p><i>Climate change, water and circular economy</i> (25, 26, 28, 29, 39 and 40)</p> <ul style="list-style-type: none"> Recommendations to build climate resilience, advance integrated water management, and improve waste and recycling infrastructure. 	\$700
<p><i>Community infrastructure and justice</i> (5, 17, 22 and 27)</p> <ul style="list-style-type: none"> Recommendations to deliver community and justice infrastructure, including libraries and aquatic centres, prison health facilities, and open space. 	\$700
<p><i>Education and training</i> (2, 3, and 4)</p> <ul style="list-style-type: none"> Recommendations for better education and training infrastructure. New kindergartens cost between \$3.9 and \$7.2 billion and new schools cost around \$5.7 billion. 	\$13,900
<p><i>Energy</i> (30, 31, 32, 33, 34 and 35)</p> <ul style="list-style-type: none"> Recommendations on the energy transition, including improving coordination and environmental assessments, more batteries and encouraging household electrification. 	\$3,400
<p><i>First Peoples</i> (23 and 24)</p> <ul style="list-style-type: none"> Recommendations to support First Peoples having self-determination and equal outcomes to other Victorians. Costs of between \$1 billion and \$1.4 billion to build social homes for First Peoples is covered separately in the Housing and planning category below. 	\$600
<p><i>Health</i> (18, 19, 20 and 21)</p> <ul style="list-style-type: none"> Recommendations covering health infrastructure improvements for community health, rehabilitation and withdrawal facilities, digital healthcare and public hospitals. 	\$7,500
<p><i>Housing and planning</i> (1 and 7)</p> <ul style="list-style-type: none"> Recommendations to deliver more social homes and rezone near infrastructure. Delivering more social homes is the most capital-intensive recommendation, costing between \$12 billion to \$19.5 billion. Including land costs adds \$6 billion to \$9.5 billion. 	\$23,800
<p><i>Transport – public transport, walking and cycling</i> (8, 9, 10, 11, 12, 13, 14, 15 and 16)</p> <ul style="list-style-type: none"> Recommendations that improve access and support the strategy objective of keeping Victorians healthy and safe, including large train, tram and bus capital projects costing: <ul style="list-style-type: none"> between \$4.3 billion and \$5.7 billion to extend metropolitan trains in Melbourne’s west between \$4 billion and \$5.7 billion to extend Melbourne’s trams between \$3 billion and \$3.7 billion for a new bus rapid transit network. 	\$15,200
<p><i>Transport – roads and freight</i> (42, 43 and 44)</p> <ul style="list-style-type: none"> Recommendations that identify smarter ways to manage traffic and move more freight. 	\$2,800
Total	\$65,000 to \$75,000*

*Total is approximate due to rounding of recommendation costs within each infrastructure sector. Many recommendation costings include a range as they are order of magnitude estimates. For summary purposes, this table typically uses recommendation costs in the middle of the range.

Funding for our recommendations does not need to come from the Victorian Government alone. The Victorian Government can partner with the Australian Government (see box – [Making the case for strategic and evidence-based infrastructure funding](#)) and other organisations, or funding can come through other sources like charging infrastructure users.

Federal partnerships, along with smarter use of existing government land, can help reduce the Victorian Government's costs to implement our strategy recommendations to around \$60 billion, including average spending of approximately \$5 billion each year for the next 10 years. Our future options would add around \$10 billion in capital works after 2030.

Making the case for strategic and evidence-based infrastructure funding

The 2023 *Infrastructure policy statement* details the Australian Government's commitment to delivering high-quality and nationally significant land transport infrastructure that meet a set criteria.¹⁸¹⁷ This includes investing in proposals that are supported by evidence and long-term strategic plans.

A recently reformed Infrastructure Australia will also support improved infrastructure evaluation and decision-making.¹⁸¹⁸ Many of our recommendations on land transport strongly align with the Australian Government's focus on productivity, sustainability and liveability for infrastructure investment.¹⁸¹⁹

The Australian Government has committed \$19.2 billion to Victoria over 10 years under the Infrastructure Investment Program.¹⁸²⁰ Although this funding has already been committed to projects, maintaining this level of investment in Victoria would result in Australian Government funding of approximately \$1.9 billion each year.¹⁸²¹ Continued partnership between the Victorian and Australian governments could help to reduce the cost of delivering our future options by around \$5 billion.

Our recommendations are realistic and achievable

We estimated overall costs, but this strategy is not a budgeting exercise. The Victorian Government's published budget figures are for the next 4 years only. The government considers the state's financial position and its fiscal policy when making decisions on raising revenue and spending money on infrastructure.

Delivering our recommendations is realistic and achievable within the planned government infrastructure investment range. Some of our recommendations might only use funds that are regularly spent on social and transport infrastructure anyway. Some of our recommendations include large-scale investment in infrastructure like kindergartens, schools and hospitals (for example, recommendations [1](#), [2](#) and [21](#)). We designed these recommendations to meet current and future infrastructure needs that are difficult to avoid and are necessary investments to achieve Victorian Government policies.

Similarly, many of our transport recommendations (see recommendations [8](#), [9](#), [10](#), [11](#), [12](#), [13](#) and [42](#)) improve access to opportunities for Victorians already living in new suburbs on the city's fringes based on past planning decisions. They also support more homes in inner and middle suburbs and help achieve the Victorian Government's housing targets.

Investing in social housing (recommendations [1](#) and [23](#)) to meet the current and future housing needs of low-income Victorians is one of our highest cost recommendations, even when delivered over a long period. The high costs of meeting needs for more transport, housing, and social infrastructure mean that the Victorian Government will need to carefully balance its policy ambitions with available funding in future.

Endnotes

- ¹ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, accessed 29 August 2024.
- ² B Trewin, D Morgan-Bulled and S Cooper, *Australia state of the environment: climate*, report to the Australian Government Department of Agriculture, Water and Environment, 2021, accessed 2 October 2024; Environment Victoria, *Victoria, flooding and climate change*, Environment Victoria website, 11 July 2024, accessed 2 October 2024; D Lindenmayer, C Taylor, MJ Evans and P Zylstra, 'Yes, climate change is bringing bushfires more often. But some ecosystems in Australia are suffering the most', *The Conversation*, 18 August 2023, accessed 20 September 2024.
- ³ Department of Energy, Environment and Climate Action, *Victoria's 2035 emissions reduction target: driving real climate action*, State of Victoria, 2023, p 5, accessed 19 August 2025.
- ⁴ Department of Energy, Environment and Climate Action, *Victoria's 2035 emissions reduction target: driving real climate action*, State of Victoria, 2023, pp 9,12, accessed 17 September 2024.
- ⁵ Department of Energy, Environment and Climate Action, *Victoria's 2035 emissions reduction target: driving real climate action*, State of Victoria, 2023, p 9, accessed 17 September 2024.
- ⁶ Australian Bureau of Statistics, *National, state and territory population*, ABS website, 18 September 2025, accessed 1 October 2025; Department of Transport and Planning, *Victoria in future*, DTP website, 1 September 2024, accessed 26 June 2025.
- ⁷ Australian Bureau of Statistics, *Population projections, Australia*, ABS website, 23 November 2023, accessed 1 October 2025.
- ⁸ Joint Standing Committee on Migration, *Final report of the inquiry into Australia's skilled migration program*, Parliament of the Commonwealth of Australia, August 2021, pp 3-13, accessed 2 October 2024; Department of Treasury and Finance, *Victorian Budget 2024/25: Budget paper no. 4 – state capital program*, State of Victoria, 2024, p 3, accessed 15 October 2025; B Coates, T Wiltshire and T Reysenbach, *Australia's migration opportunity: how rethinking skilled migration can solve some of our biggest problems*, Grattan Institute, 2022, p 27, accessed 3 December 2024.
- ⁹ University of Sydney Business School, *Population growth and the economy: a mixed blessing?*, University of Sydney website, 7 August 2023, accessed 2 October 2024; The Treasury and Department of Home Affairs, *Shaping a nation*, Australian Government, 2018, pp 22–32, accessed 3 December 2024; B Coates, T Wiltshire and T Reysenbach, *Australia's migration opportunity: how rethinking skilled migration can solve some of our biggest problems*, Grattan Institute, 2022, p 27, accessed 3 December 2024.
- ¹⁰ The Treasury, *Intergenerational report 2023*, Australian Government, 2023, p 51, accessed 3 December 2024; Department of Health, *Victoria's cultural diversity*, DH website, 9 April 2024, accessed 30 August 2024.
- ¹¹ Regional Development Victoria, *Regional economic development strategies*, RDV website, 16 November 2023, accessed 30 August 2024.
- ¹² O Oliinyk, Y Bilan, H Mishchuk, O Akimov and L Vasa, 'The impact of migration of highly skilled workers on the country's competitiveness and economic growth', *Montenegrin journal of economics*, 17(3):7–19; Department of Foreign Affairs and Trade, *2017 foreign policy white paper*, Australian Government, 2017, p 65, accessed 2 October 2024; Regional Development Victoria, *Regional economic development strategies*, RDV website, 16 November 2023, accessed 30 August 2024.
- ¹³ Department of Treasury and Finance, *Victorian Budget 2024/25: Budget paper no. 4 – state capital program*, State of Victoria, 2024, p 3, accessed 15 October 2025
- ¹⁴ Infrastructure Australia, *Infrastructure market capacity 2024 report*, Australian Government, 2024, pp 49–59, accessed 22 January 2025.
- ¹⁵ Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 2 – strategy and outlook*, State of Victoria, 2024, pp 5,52, accessed 16 July 2025; Department of Treasury and Finance, *2024/25 Budget update*, State of Victoria, 2024, p 4, accessed 3 January 2025.
- ¹⁶ Arup, *Digital technology and infrastructure productivity*, report to Infrastructure Victoria, 2024, accessed 5 December 2024.
- ¹⁷ Arup, *Digital technology and infrastructure productivity*, report to Infrastructure Victoria, 2024, accessed 5 December 2024; Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, accessed 3 September 2024.
- ¹⁸ Victorian Skills Authority, *Victorian skills plan for 2024 into 2025: shared prosperity through skills*, State of Victoria, 2024, p 6, accessed 2 July 2025.
- ¹⁹ Victorian TAFE Association, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 5–6; La Trobe University, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; City of Whittlesea, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5; Gippsland Regional Partnership, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4.
- ²⁰ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, accessed 14 May 2024.
- ²¹ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, accessed 14 May 2024.
- ²² Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, p 4, accessed 14 May 2024.
- ²³ Infrastructure Victoria, *Infrastructure provision in different development settings: metropolitan Melbourne*, 2019, p 35, accessed 2 December 2022.
- ²⁴ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, p 15, accessed 4 September 2024.

- ²⁵ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, pp 4,14, accessed 4 September 2024.
- ²⁶ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, p 63, accessed 4 September 2024.
- ²⁷ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, pp 50-51, accessed 14 July 2025.
- ²⁸ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 6, accessed 28 August 2024.
- ²⁹ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 10, accessed 28 August 2024.
- ³⁰ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 7, accessed 28 August 2024.
- ³¹ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 7, accessed 28 August 2024.
- ³² Victorian Government, *Victorian integrated survey of travel and activity* [data set], Victorian Government website, 15 May 2025, accessed 24 June 2025.
- ³³ C Boulange, L Gunn, B Giles-Corti, S Mavoa, C Pettit and H Badland, 'Examining associations between urban design attributes and transport mode choice for walking, cycling, public transport and private motor vehicle trips', *Journal of Transport & Health*, 2017, 6:155–166; R Ellison and S Greaves, 'Travel time competitiveness of cycling in Sydney, Australia', *Transportation Research Record*, 2011, 2247(1):99–108; M Altieri, C Silva and S Terabe, 'Give public transit a chance: A comparative analysis of competitive travel time in public transit modal share', *Journal of Transport Geography*, 2020, 87:102–817.
- ³⁴ C Lowe, J Stanley and J Stanley. 'Transport industry adapting to change: An Australian case study', *Research in Transportation Economics*, 2020, 83, p 100940.
- ³⁵ Victorian Auditor-General's Office, *Maintaining state-controlled roadways*, 2017, p vii, accessed 12 December 2024; Transport Victoria, *Major works this summer*, DTP website [archive], 29 November 2024, accessed 15 October 2025.
- ³⁶ SGS Economics & Planning, *Melbourne's growth management opportunity*, report to Interface Councils, August 2023, pp 13–15, accessed 6 January 2025; Jobs and Skills Australia, *Industry profiles*, JSA website, n.d., accessed 23 October 2024.
- ³⁷ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 79, accessed 15 February 2024.
- ³⁸ K Lucas, 'Transport and social exclusion: Where are we now?', *Transport Policy*, 2012, 20:105–113.
- ³⁹ Infrastructure Victoria, *Fair move: better public transport fares for Melbourne*, 2020, p 18, accessed 2 January 2024.
- ⁴⁰ J Ison, K Forsdike, N Henry, L Hooker and A Taft, "'I'll try and make myself as small as possible": women and gender-diverse people's safety work on public transport', *Violence Against Women*, 2024, 31(11):2830–2852; Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 6, accessed 23 September 2024; A Delbosc and G Currie, 'Modelling the causes and impacts of personal safety perceptions on public transport ridership', *Transport Policy*, 2012, 24:302–309.
- ⁴¹ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 24, accessed 23 September 2024.
- ⁴² S Foster and B Giles-Corti, 'The built environment, neighborhood crime and constrained physical activity: an exploration of inconsistent findings', *Preventive Medicine*, 2008, 47(3):241–251; R Aldred, 'Incompetent or too competent? Negotiating everyday cycling identities in a motor dominated society', *Mobilities*, 2013, 8(2):252–271; CrowdSpot, *BikeSpot – archive map*, BikeSpot website, n.d., accessed 2 January 2024.
- ⁴³ XYX Lab and CrowdSpot, *YourGround Victoria report*, Monash University XYX Lab, 2021, pp 21–22, 55, accessed 23 September 2024.
- ⁴⁴ R Goodman, M Buxton and P Chhetri, *Planning Melbourne: lessons for a sustainable city*, CSIRO Publishing, 2016, pp 43,121; Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's infrastructure*, 2023, p 9, accessed 18 November 2024.
- ⁴⁵ Victorian Government, *Victoria's housing statement*, State of Victoria, 2023, p 41, accessed 16 December 2024.
- ⁴⁶ M Stevenson, J Thompson, T H de Sá, R Ewing, D Mohan, R McClure, I Roberts, G Tiwari, B Giles-Corti, X Sun, M Wallace and J Woodcock, 'Land use, transport, and population health: estimating the health benefits of compact cities', *The Lancet*, 2016, 388(10062):2925–2935.
- ⁴⁷ R Ewing and R Cervero, 'Travel and the built environment: a meta-analysis', *Journal of the American Planning Association*, 2010, 76(3):265–294.
- ⁴⁸ S Nuttman, 'How a long commute to work affects your health and wellbeing', *this.*, n.d., accessed 18 November 2024.
- ⁴⁹ Lonergan Research, *National arts participation survey 2022 Victoria – research report*, report to Creative Victoria, 2023, p 37, accessed 3 July 2024.
- ⁵⁰ Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's infrastructure*, 2023, p 4, accessed 18 November 2024; M Reynolds, S Parkinson, J De Vries and K Hulse, *Affordable private rental supply and demand: short-term disruption (2016-2021) and longer-term structural change (1996-2021)*, Australian Housing and Urban Research Institute, 2024, pp 56–57,66, accessed 18 November 2024.
- ⁵¹ Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's infrastructure*, 2023, p 21, accessed 18 November 2024.
- ⁵² Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's infrastructure*, 2023, p 21, accessed 18 November 2024.
- ⁵³ R Goodman, M Buxton and P Chhetri, *Planning Melbourne: Lessons for a sustainable city*, CSIRO Publishing, 2016, p 98; S Henderson, 'Outer metropolitan areas and infrastructure deficits: policy dynamics on the edge of Melbourne, Australia', *Cities*, 2019, 90, p 25.

- ⁵⁴ T Bartik, *From preschool to prosperity: the economic payoff to early childhood education*, WE Upjohn Institute for Employment Research, 2014; Department of Education, *School operations: attendance*, DE website, 28 May 2020, accessed 6 January 2025.
- ⁵⁵ Department of Education, *School operations: attendance*, DE website, 28 May 2020, accessed 23 September 2024.
- ⁵⁶ Infrastructure Victoria, *Choosing Victoria's future*, 2023, p 63, accessed 6 August 2025.
- ⁵⁷ Infrastructure Victoria, *Choosing Victoria's future*, 2023, p 63, accessed 4 September 2024.
- ⁵⁸ Gippsland Regional Partnership, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 17.
- ⁵⁹ SGS Economics and Planning, *Social isolation in the Southern Melbourne Region – Issues Paper*, report to the Southern Metropolitan Partnership, 2019, p 4, accessed 1 July 2025.
- ⁶⁰ J Holt-Lunstad, TB Smith, JB Layton, *Social relationships and mortality risk: a meta-analytic review*, PLOS Medicine 7(7): e1000316, July 2010, p 14, accessed 1 July 2025.
- ⁶¹ Royal Commission into Violence, Abuse, Neglect and Exploitation of People with Disability, *Executive summary: our vision for an inclusive Australia and recommendations*, 2023, pp 4,5; Royal Commission into Violence, Abuse, Neglect and Exploitation of People with Disability, *Volume 1: voices of people with disability – book 3*, 2023, p 644; Royal Commission into Violence, Abuse, Neglect and Exploitation of People with Disability, *Volume 1: voices of people with disability – book 2*, 2023, p 535; Australian Bureau of Statistics, *Disability, ageing and carers survey: Victoria results* [data set], ABS website, 24 October 2019, accessed 18 November 2024.
- ⁶² M Reynolds, S Parkinson, J De Vries and K Hulse, *Affordable private rental supply and demand: short term disruption (2016-2021) and longer-term structural change (1996-2021)*, Australian Housing and Urban Research Institute, 2024, pp 56-57,64-66, accessed 6 January 2025; Homes Victoria, *Homes Victoria rental report September quarter 2024*, State of Victoria, 2024, accessed 16 October 2025.
- ⁶³ Department of Families, Fairness and Housing, *Social housing*, DFFH website, 19 June 2024, accessed 6 January 2025; Australian Housing and Urban Research Institute, *What is the difference between social housing and affordable housing - and why do they matter?*, AHURI website, 28 February 2023, accessed 6 January 2025.
- ⁶⁴ CA Nygaard, and T Kollmann, *Social and affordable housing in Australia: a social cost benefit analysis*, report to the Community Housing Industry Association, 2023, p 2, accessed 18 November 2024.
- ⁶⁵ M Reynolds, S Parkinson, J De Vries and K Hulse, *Affordable private rental supply and demand: short term disruption (2016-2021) and longer-term structural change (1996-2021)*, Australian Housing and Urban Research Institute, 2024, pp 53-67, accessed 4 September 2025.
- ⁶⁶ Australian Bureau of Statistics, *Census of population and housing: estimating homelessness* [data set], ABS website, 22 March 2023, accessed 4 September 2025.
- ⁶⁷ K Bell, *Housing: the great Australian right*, Monash University Publishing, Clayton, Vic., 2024, pp 36-63.
- ⁶⁸ Legislative Council Legal and Social Issues Committee, *Inquiry into homelessness in Victoria*, Final report, Parliament of Victoria, 2021, pp 28-30, accessed 4 September 2025; RJ Seastres, J Hutton, R Zordan, G Moore, J Mackelprang, KV Kiburg and V Sundararajan, 'Long-term effects of homelessness on mortality: a 15 year Australian cohort study', *Australian and New Zealand Journal of Public Health*, 2020, 44(6):476-481.
- ⁶⁹ A Morris, J Idle, J Moore, and C Robinson, *Waithood: the experiences of applying for and waiting for social housing*, Institute for Public Policy and Governance, University of Technology Sydney, 2023, pp 8-13, accessed 4 September 2025.
- ⁷⁰ SGS Economics and Planning, *Growing social housing: data, insights and targets*, report to the Victorian Council of Social Service, 2025, accessed 4 September 2025.
- ⁷¹ Homes Victoria, *Applications on the Victorian Housing Register (VHR)*, Homes Victoria website, n.d., accessed 4 September 2025.
- ⁷² Refers to people who have received a priority access housing allocation or priority transfer. Department of Families, Fairness and Housing, *DFFH annual report 2023-24*, State of Victoria, 2024, p 43, accessed 4 September 2025.
- ⁷³ N Brackertz, L Borrowman, C Roggenbuck, S Pollock and E Davis, *Trajectories the interplay between housing and mental health pathways*, Australian Housing and Urban Research Institute, 2020, p 51, accessed 4 September 2025.
- ⁷⁴ National Housing Supply and Affordability Council, *State of the housing system 2025*, Australian Government, 2025, p 58, accessed 4 September 2025.
- ⁷⁵ Infrastructure Victoria calculations using Productivity Commission, *Report on government services 2025, G18: housing* [data set], housing data tables, table 18A.3, 10 June 2025, accessed 4 September 2025; Australian Bureau of Statistics, *Total value of dwellings: June quarter 2024* [data set], Table 1 – total value of dwellings, all series, ABS website, 10 September 2024, accessed 4 September 2025.
- ⁷⁶ Legislative Council Legal and Social Issues Committee, *Inquiry into the rental and housing affordability crisis in Victoria*, Final report, Parliament of Victoria, 2023, p xix, accessed 4 September 2025.
- ⁷⁷ Homes Victoria, *Establishing a 10-year strategy for social and affordable housing: a discussion paper prepared for the Victorian community by the Victorian Government* [pdf], State of Victoria, 2021, p 21, accessed 4 September 2025.
- ⁷⁸ CA Nygaard, and T Kollmann, *Social and affordable housing in Australia: a social cost benefit analysis*, report to the Community Housing Industry Association, 2023, pp 8-9, accessed 4 September 2025; S Oberklaid, A Gower, C Roggenbuck and T Alves, *Housing economics analysis*, report prepared for Infrastructure South Australia, Australian Housing and Urban Research Institute, 2022, pp 10-21, accessed 4 September 2025.

- ⁷⁹ SGS Economics, *Leave no young Australian behind: the long-term costs of youth homelessness to Australia*, report to Housing All Australians, 2024, p 11, accessed 4 September 2025.
- ⁸⁰ Bayside City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; Community Housing Industry Association Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 11; Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 13.
- ⁸¹ National Housing Supply and Affordability Council, *State of the housing system 2025*, Australian Government, 2025, pp 2,9,11, accessed 4 September 2025; Property Council, *Procore / Property Council industry sentiment survey: June 2025 chartbook* [pdf], 2025, pp 4–5.
- ⁸² National Housing Supply and Affordability Council, *State of the housing system 2025*, Australian Government, 2025, p 35, accessed 4 September 2025.
- ⁸³ Australian Bureau of Statistics, *Building activity, Australia, March 2025: data explorer datasets, building activity by state*, ABS website, 16 July 2025, accessed 2 September 2025.
- ⁸⁴ National Housing Supply and Affordability Council, *State of the housing system 2025*, Australian Government, 2025, p 121, accessed 4 September 2025; Planning Institute of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 13; Industry Capability Network, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3.
- ⁸⁵ Arup, *Digital technologies and infrastructure productivity*, report to Infrastructure Victoria, 2024, p 12, accessed 4 September 2025; Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; Engineers Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 13; Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 13.
- ⁸⁶ Department of Families, Fairness and Housing, *DFFH annual report 2023–24*, State of Victoria, 2024, p 121, accessed 4 September 2025.
- ⁸⁷ A Sharam, S McNelis, H Cho, C Logan, T Burke and P Rossini, *Towards an Australian social housing best practice asset management framework*, Australian Housing and Urban Research Institute, 2021, p 74, accessed 4 September 2025.
- ⁸⁸ City of Casey, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; Urban Development Institute of Australia (Victoria), *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2.
- ⁸⁹ OFFICE, *Retain, repair, reinvest: Flemington Estate: feasibility study and alternative design proposal*, OFFICE website, n. d., p 11, accessed 4 September 2025; Climate Action - Merri-bek *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ⁹⁰ Cardinia Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; Gippsland Regional Partnership, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ⁹¹ Regional Local Government Homelessness and Social Housing Charter Group, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10; City of Melbourne, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5; Mental Health Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10; Mitchell Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3.
- ⁹² J Lawson, H Pawson, L Troy, R van den Nouwelant and C Hamilton, *Social housing as infrastructure: an investment pathway*, Australian Housing and Urban Research Institute, 2018, p 1, accessed 4 September 2025.
- ⁹³ R Benedict, N Gurrán, C Gilbert, C Hamilton, S Rowley and S Liu, *Private sector involvement in social and affordable housing*, Australian Housing and Urban Research Institute, 2022, p 1, accessed 4 September 2025.
- ⁹⁴ Federal Financial Relations, *National Agreement on Social Housing and Homelessness: bilateral agreement between the Commonwealth and Victoria*, 2024, accessed 4 September 2025; Department of Finance, *Housing Australia Future Fund*, Australian Government website, 12 June 2025, accessed 4 September 2025.
- ⁹⁵ Cardinia Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; City of Ballarat, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 7,9; Melbourne 9, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ⁹⁶ Homes Victoria, *Social Housing Growth Fund*, Homes Victoria website, n. d., accessed 4 September 2025; Community Housing Industry Association Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; Urban Development Institute of Australia (Victoria), *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5.
- ⁹⁷ Bayside City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; Regional Local Government Homelessness and Social Housing Charter Group, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; City of Ballarat, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; City of Whittlesea, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; Gippsland Regional Partnership, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ⁹⁸ Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Victorian Aboriginal housing and homelessness framework overview*, 2020, accessed 4 September 2025.
- ⁹⁹ SGS Economics and Planning, *Growing social housing: data, insights and targets*, report to the Victorian Council of Social Service, 2025, accessed 4 September 2025.
- ¹⁰⁰ Infrastructure Victoria calculations using: J Lawson, H Pawson, L Troy, R van den Nouwelant and C Hamilton, *Social housing as infrastructure: an investment pathway*, Australian Housing and Urban Research Institute, 2018, accessed 4 September 2025; Australian Bureau of Statistics, *Producer price indexes, Australia, June 2025*, ABS website, 1 August 2025, accessed 4 September 2025.

- ¹⁰¹ Community Housing Industry Association Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 7,5; Cardinia Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; City of Ballarat, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 7,9; Melbourne 9, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ¹⁰² The Treasury, *Social Housing Accelerator*, Australian Government website, n.d., accessed 4 September 2025; Department of Finance, *Housing Australia Future Fund*, Australian Government website, 12 June 2025, accessed 4 September 2025; Housing Australia, *Contracts signed to support 18,650 social and affordable homes under the Housing Australia Future Fund Facility and National Housing Accord Facility* [media release], Housing Australia, 3 July 2025, accessed 4 September 2025.
- ¹⁰³ G Tibbits, 'The enemy within our gates', in R Howe (ed), *New houses for old: fifty years of public housing in Victoria, 1938–1988*, Ministry of Housing and Construction, Melbourne, 1988, pp 123–162; D Hayward, 'The reluctant landlords? A history of public housing in Australia', *Urban Policy and Research*, 2008, 14(1):5–35; L Groenhart and T Burke, 'What has happened to Australia's public housing? Thirty years of policy and outcomes, 1981 to 2011', *Australian Journal of Social Issues*, 2014, 49(2):127–149; H Pawson and V Milligan, 'Towards a national housing policy for the 2020s', in R Freestone, B Randolph and W Steele (eds.), *Australian urban policy: prospects and pathways*, ANU Press, Canberra, 2024, pp 349–368.
- ¹⁰⁴ J Lawson, H Pawson, L Troy, R van den Nouweland and C Hamilton, *Social housing as infrastructure: an investment pathway*, Australian Housing and Urban Research Institute, 2018, pp 130–135, accessed 4 September 2025. Escalated to 2025 costs by Infrastructure Victoria.
- ¹⁰⁵ O McLennan, S Glackin and M Smith, *Site amalgamation for social housing, discussion paper*, CHIA Victoria, June 2025, pp 6–7, accessed 4 September 2025.
- ¹⁰⁶ Homes Victoria, *Ground lease model*, Homes Victoria website, 2025, accessed 4 September 2025; Urban Design Forum Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; Whitehorse City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2.
- ¹⁰⁷ HousingVic, *Community housing*, HousingVic website, 19 June 2024, accessed 4 September 2025.
- ¹⁰⁸ Victorian Auditor-General's Office, *Planning social housing*, 2024, p 14, accessed 4 September 2025; L Davies and B Engels, 'Counting the costs of public housing estate redevelopment in Melbourne: a comparison of delivery options', *Urban Policy and Research*, 2021, 39(1):63–84.
- ¹⁰⁹ Department of Education and Training, *Two years of early childhood education: what the evidence says*, State of Victoria, 2024, accessed 10 July 2025.
- ¹¹⁰ PwC, *A smart investment for a smarter Australia: economic analysis of universal early childhood education in the year before school in Australia*, report to The Front Project, 2019, p 6, accessed 16 July 2025.
- ¹¹¹ PwC, *A smart investment for a smarter Australia: economic analysis of universal early childhood education in the year before school in Australia*, report to The Front Project, 2019, p 14, accessed 16 July 2025.
- ¹¹² Victorian Government, *The Best Start, Best Life reforms*, Victorian Government website, 9 July 2025, accessed 10 July 2025.
- ¹¹³ The Centre for International Economics, *Part 2: kindergarten provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, accessed 16 July 2025.
- ¹¹⁴ City of Greater Geelong, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5.
- ¹¹⁵ Victorian Government, *Kindergarten facilities and capital funding*, Victorian Government website, 16 July 2025, accessed 22 July 2025.
- ¹¹⁶ Baw Baw Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 3-4; Bayside City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; City of Greater Geelong, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5; National Growth Areas Alliance, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 11.
- ¹¹⁷ City of Casey, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 1; Cardinia Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5.
- ¹¹⁸ Early Learning Victoria, *About us*, ELV website, 2025, accessed 18 June 2025; Victorian School Building Authority, *50 Early Learning Victoria centres*, VSBA website, 2025, accessed 15 July 2025.
- ¹¹⁹ Australian Competition and Consumer Commission, *Childcare inquiry: final report*, 2023, pp 25–27, accessed 16 July 2025; P Hurley, H Matthews and S Pennicuik, *Deserts and oases: how accessible is childcare in Australia?*, Mitchell Institute, 2022, pp 30–33, accessed 16 July 2025.
- ¹²⁰ The Centre for International Economics, *Part 2: kindergarten provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, pp 16–18, accessed 16 July 2025.
- ¹²¹ Victorian Aboriginal Child and Community Agency, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5. For a case study, see Infrastructure Victoria and the Victorian Aboriginal Community Controlled Health Organisation, *Investing in Aboriginal health and wellbeing infrastructure: securing safe and sustainable Community-controlled care*, 2025, p 31, accessed 3 July 2025.
- ¹²² Infrastructure Victoria analysis using CIE data: The Centre for International Economics, *Part 2: kindergarten provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, accessed 22 July 2025; Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2024, p 19, accessed 22 July 2025.
- ¹²³ The Centre for International Economics, *Part 2: kindergarten provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, accessed 22 July 2025.
- ¹²⁴ Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2024, p 48, accessed 3 July 2025; Victorian TAFE Association, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4.

- ¹²⁵ Prime Minister of Australia, *Next steps in building a universal education system* [media release], Ministers' Media Centre website, 11 December 2024, accessed 22 July 2025.
- ¹²⁶ Department of Treasury and Finance, *New schools PPP*, DTF website, 22 October 2024, accessed 16 July 2025; Victorian Auditor-General's Office, *Implementation of school infrastructure programs*, VAGO website, 20 February 2013, accessed 22 July 2025; Department of Treasury and Finance, *Partnerships Victoria in Schools Project*, DTF website, 22 October 2024, accessed 16 July 2025.
- ¹²⁷ Australian Government, *Quality schools, quality outcomes*, Australian Government, 2016, accessed 24 June 2025; Victorian Auditor-General's Office, *Managing school infrastructure*, 2017, accessed 24 June 2025.
- ¹²⁸ Department of Treasury and Finance, *Victorian Budget 2024/25: Budget paper no. 4 – state capital program*, State of Victoria, 2024, p 10, accessed 19 June 2025.
- ¹²⁹ Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 3 – service delivery*, State of Victoria, 2025, pp 25–26, accessed 19 June 2025.
- ¹³⁰ Department of Transport and Planning, *Victoria in future 2023* [dataset], 2023; Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2024, pp 26–28, accessed 24 June 2025.
- ¹³¹ The Centre for International Economics, *Part 1: Primary and secondary schools provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, pp 3–4, accessed 24 June 2025.
- ¹³² Infrastructure Victoria analysis using CIE data: The Centre for International Economics, *Part 1: Primary and secondary schools provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, pp 19–21, accessed 24 June 2025.
- ¹³³ Infrastructure Victoria analysis using CIE data: The Centre for International Economics, *Part 1: Primary and secondary schools provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, p 24, accessed 24 June 2025.
- ¹³⁴ Infrastructure Victoria analysis using CIE data: The Centre for International Economics, *Part 1: Primary and secondary schools provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, p 24, accessed 24 June 2025.
- ¹³⁵ Infrastructure Victoria, *Choosing Victoria's future – 5 urban development scenarios*, 2023, p 64, accessed 24 June 2025.
- ¹³⁶ Infrastructure Victoria analysis using DTP and CIE data: Department of Transport and Planning, *Victoria in Future* [dataset], 2023; The Centre for International Economics, *Part 1: Primary and secondary schools provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, pp 13–21, accessed 24 June 2025.
- ¹³⁷ The Centre for International Economics, *Part 1: Primary and secondary schools provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, p 13, accessed 24 June 2025.
- ¹³⁸ City of Greater Geelong, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; Latrobe City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; Melton City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; Department of Education, *School operations: land acquisition – guidance*, DE website, 6 June 2024, accessed 24 June 2025.
- ¹³⁹ Australian Government, *A new connected system of support and new early intervention NDIS pathway*, NDIS Review website, 7 December 2023, accessed 18 June 2025.
- ¹⁴⁰ Victorian School Building Authority, *Kinders at schools*, VSBA website, 3 June 2025, accessed 18 June 2025.
- ¹⁴¹ Infrastructure Victoria analysis using CIE data: The Centre for International Economics, *Part 1: Primary and secondary schools provision projection – key findings and methodology*, report to Infrastructure Victoria, 2024, pp 22–25, accessed 24 June 2025.
- ¹⁴² Department of Treasury and Finance, *Victorian budget 2025/26: Budget paper no. 4: state capital program*, State of Victoria, 2025, p 14, accessed 24 June 2025.
- ¹⁴³ Department of Treasury and Finance, *New schools PPP*, DTF website, 22 October 2024, accessed 23 June 2025; Victorian Auditor-General's Office, *Implementation of school infrastructure programs*, VAGO website, 20 February 2013, accessed 24 June 2025; Department of Treasury and Finance, *Partnerships Victoria in Schools Project*, DTF website, 22 October 2024, accessed 24 June 2025.
- ¹⁴⁴ Department of Education, *Schools Upgrade Fund*, Australian Government website, 13 June 2024, accessed 24 June 2025.
- ¹⁴⁵ Victorian Skills Authority, *Victorian skills plan for 2024 into 2025: shared prosperity through skills*, State of Victoria, 2024, p 12, accessed 1 July 2025.
- ¹⁴⁶ Victorian Skills Authority, *Victorian skills plan for 2024 into 2025: shared prosperity through skills*, State of Victoria, 2024, p 7, accessed 1 July 2025.
- ¹⁴⁷ Infrastructure Australia, *Public infrastructure workforce supply dashboard*, IA website, n.d., Supply and demand for trades and labour, all occupations, all states, April 2025, accessed 1 July 2025.
- ¹⁴⁸ Jobs and Skills Australia, *Better together: the jobs and skills report 2024*, Australian Government, 2024, p 47, accessed 1 July 2025.
- ¹⁴⁹ Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2024, p 45, accessed 30 June 2025; Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, pp 32,87, accessed 30 June 2025; Infrastructure Partnerships Australia, *Australian infrastructure investment monitor 2024*, 2024, p 12, accessed 23 June 2025; Department of Jobs, Skills, Industry and Regions, *Clean economy workforce development strategy 2023–2033*, State of Victoria, 2023, p 12, accessed 23 June 2025.
- ¹⁵⁰ Department of Jobs, Skills, Industry and Regions, *Clean economy workforce development strategy 2023–2033*, State of Victoria, 2023, p 7, accessed 30 June 2025.

- ¹⁵¹ KPMG, *The importance of TAFE to Victoria's prosperity* [pdf], report to the Victorian TAFE Association, 2018, pp 4,37–38, accessed 30 June 2025; Infrastructure Australia, *Delivering net zero infrastructure: workforce report*, 2025, accessed 27 August 2025.
- ¹⁵² Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2024, p 42, accessed 30 June 2025.
- ¹⁵³ S Lamb and S Huo, *Counting the costs of lost opportunity in Australian education*, Mitchell Institute, 2017, p 2, accessed 30 June 2025; J Watterston and M O'Connell, *Those who disappear*, University of Melbourne, 2019, p 17, accessed 30 June 2025.
- ¹⁵⁴ Premier of Victoria, *Free TAFE training Victorians for the jobs of the future* [media release], Victorian Government, 29 November 2024, accessed 30 June 2025.
- ¹⁵⁵ Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2024, p 46, accessed 30 June 2025.
- ¹⁵⁶ Arup, *Social infrastructure accessibility mapping – TAFEs*, report to Infrastructure Victoria, 2024, accessed 30 June 2025.
- ¹⁵⁷ Victorian TAFE Association, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 8.
- ¹⁵⁸ J Macklin, *Future skills for Victoria: driving collaboration and innovation in post-secondary education and training*, State of Victoria, 2020, p 138, accessed 30 June 2025.
- ¹⁵⁹ Department of Jobs, Skills, Industry and Regions, *TAFE enrolment* [data set], provided to Infrastructure Victoria, 2024. See also: Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2025, p 47, accessed 30 June 2025.
- ¹⁶⁰ Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2024, pp 46–47, accessed 30 June 2025.
- ¹⁶¹ Kagan Institute, *Site of new Kagan Institute campus in Melton unveiled*, Kagan Institute website, 27 May 2025, accessed 18 June 2025.
- ¹⁶² Infrastructure Victoria, *Learning for life: preparing kindergarten, school and TAFE infrastructure for the future*, 2024, p 47, accessed 30 June 2025.
- ¹⁶³ Australian Department of Employment and Workplace Relations, *National Skills Agreement*, DEWR website, 18 October 2024, accessed 30 June 2025.
- ¹⁶⁴ Victorian TAFE Association, *Submission to Victoria's draft 30-year infrastructure strategy*, p 4; Ernst & Young, *The journey continues: PPPs in social infrastructure*, 2008, p 15, accessed 30 June 2025.
- ¹⁶⁵ Infrastructure Victoria analysis of internal government data.
- ¹⁶⁶ SGS Economics and Planning, *The health and wellbeing benefits of public libraries across Victoria*, report to State Library of Victoria and Public Libraries Victoria, 2023, accessed 20 June 2025.
- ¹⁶⁷ E Sherry, AJ Karg, R Storr, C Yeomans and RJ Houston, *Social impact of the national aquatic industry*, Swinburne Sport Innovation Research Group and Royal Life Saving Society Australia, 2021, p 6, accessed 20 June 2025.
- ¹⁶⁸ Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's infrastructure*, 2023, pp 24–25, accessed 20 June 2025; Infrastructure Victoria, *Social infrastructure in Melbourne's growth areas*, 2021, p 12, accessed 20 June 2025.
- ¹⁶⁹ C Sun, J Hurley, M Amati, J Arundel, A Saunders, B Boruff and P Caccetta, *Urban vegetation, urban heat islands and heat vulnerability assessment in Melbourne. 2018* [pdf], report to the Department of Environment, Land, Water and Planning, 2019, p 7, accessed 20 June 2025; VicHealth, *Sport participation in Victoria 2015–2022 research summary*, 2024, p 2, accessed 20 June 2025; Creative Victoria, *National arts participation survey*, Creative Victoria website, 2024, accessed 20 June 2025.
- ¹⁷⁰ State Library of Victoria and Public Libraries Victoria, *Creative communities: the cultural benefits of Victoria's public libraries*, 2014, p 14, accessed 20 June 2025; E Sherry, AJ Karg, R Storr, C Yeomans and RJ Houston, *Social impact of the national aquatic industry*, Swinburne Sport Innovation Research Group and Royal Life Saving Society Australia, 2021, pp 30–33, accessed 20 June 2025; State Library of New South Wales, *Library as community place*, State Library of NSW website, 5 February 2025, accessed 20 June 2025; PwC Australia, *The health, social and economic value of the Australian national aquatic industry*, report to the Royal Life Saving Society Australia, 2021, pp 10,39, accessed 20 June 2025.
- ¹⁷¹ SM Willcox-Pidgeon, RC Franklin, S Devine, PA Leggat and J Scarr, 'Reducing inequities among adult female migrants at higher risk for drowning in Australia: the value of swimming and water safety programs', *Health Promotion Journal of Australia*, 2021, 32(S1):49–60; State Library of New South Wales, *Library as community place*, State Library of NSW website, 5 February 2025, accessed 20 June 2025; PwC Australia, *The health, social and economic value of the Australian national aquatic industry*, report to the Royal Life Saving Society Australia, 2021, pp 33,39, accessed 20 June 2025.
- ¹⁷² E Boyle, M Collins, R Kinsey, C Noonan, and A Pocock, 'Making the case for creative spaces in Australian libraries', *The Australian Library Journal*, 2016, 65(1):30–40; State Library of New South Wales, *Library as community place*, State Library of NSW website, 5 February 2025, accessed 20 June 2025; PwC Australia, *The health, social and economic value of the Australian national aquatic industry*, report to the Royal Life Saving Society Australia, 2021, p 11, accessed 20 June 2025.
- ¹⁷³ State Library of New South Wales, *Library as community place*, State Library of NSW website, 5 February 2025, accessed 20 June 2025.
- ¹⁷⁴ PwC Australia, *The health, social and economic value of the Australian national aquatic industry*, report to the Royal Life Saving Society Australia, 2021, p 21, accessed 20 June 2025.
- ¹⁷⁵ SGS Economics and Planning, *The health and wellbeing benefits of public libraries across Victoria*, report to State Library of Victoria and Public Libraries Victoria, 2023, p 6, accessed 20 June 2025; SGS Economics and Planning, *Libraries work! The socio-economic value of public libraries to Victorians* [pdf], report to State Library of Victoria and Public Libraries Victoria Network, p 8, accessed 20 June 2025.

- ¹⁷⁶ Infrastructure Victoria, [Social infrastructure in Melbourne's growth areas](#), 2021, accessed 20 June 2025.
- ¹⁷⁷ Public Libraries Victoria, [Victorian public libraries 2023](#) [spatial file], 2023, accessed 12 June 2024; OpenStreetMap, [OpenStreetMap](#) [spatial file], 2024, accessed 12 June 2024.
- ¹⁷⁸ Wyndham City Council, [Williams Landing Library Lounge](#), Wyndham City Council website, n.d., accessed 20 June 2025; Wyndham City Council, [Truganina Library Lounge](#), Wyndham City Council website, n.d., accessed 20 June 2025; City of Whittlesea, [Kirrip Library Hub](#), City of Whittlesea website, n.d., accessed 20 June 2025.
- ¹⁷⁹ Department of Transport and Planning, [Victoria in future 2023](#), State of Victoria, 2023, pp 5,14–15, accessed 20 June 2025.
- ¹⁸⁰ Cardinia Shire Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, pp 9–10; City of Casey, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, pp 2–3; Hume City Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 8; Melton City Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 5; Mitchell Shire Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, pp 6–7; City of Whittlesea, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, pp 6–8; Wyndham City Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, pp 1–2.
- ¹⁸¹ Cardinia Shire Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, pp 9–10; Hume City Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 8; Melton City Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 5; Tony O'Hara, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025; Cardinia Shire Council, [Cardinia calls for funding to upgrade Cardinia Life](#), Cardinia Shire Council website, 16 April 2025, accessed 8 July 2025.
- ¹⁸² Infrastructure Victoria, [Social infrastructure in Melbourne's growth areas](#), 2021, p 17, accessed 20 June 2025.
- ¹⁸³ Infrastructure Victoria, [Social infrastructure in Melbourne's growth areas](#), 2021, p 17, accessed 20 June 2025.
- ¹⁸⁴ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [Thriving Suburbs Program](#), Australian Government website, n.d., accessed 20 June 2025; Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [Growing Regions Program](#), DITRDCA website, n.d., accessed 20 June 2025.
- ¹⁸⁵ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [Thriving Suburbs Program](#), Australian Government website, n.d., accessed 20 June 2025.
- ¹⁸⁶ Australian Renewable Energy Agency, [Brimbank Aquatic and Wellness Centre integrated energy system](#), ARENA website, 13 August 2024, accessed 20 June 2025; Australian Renewable Energy Agency, [Advancing Renewables Program](#), ARENA website, 12 May 2025, accessed 20 June 2025.
- ¹⁸⁷ Northmore Gordon, [Swimming towards sustainability: how to reduce energy costs in large pools and aquatic centres](#), Northmore Gordon website, 13 February 2024, accessed 20 June 2025; Z Wang, W Wang, Y Zhang, J Song and L Zhu, 'Research on energy-saving design strategies of libraries in severe cold regions: taking a university in Xinjiang as an example', *Energy Reports*, 2021, 7(7):1101–1113.
- ¹⁸⁸ Urbis, [Co-location and other integration initiatives strategic evaluation](#), report to the Department of Education and Early Childhood Development, 2014, pp xi–xii, accessed 20 June 2025.
- ¹⁸⁹ South West TAFE, [A new learning and library hub is coming to Warrnambool!](#) [pdf], State of Victoria, 2019, accessed 20 June 2025.
- ¹⁹⁰ Australian Bureau of Statistics, [Disability, ageing and carers survey 2018: Victoria results](#) [data set], ABS website, 24 October 2019, accessed 2 October 2024.
- ¹⁹¹ Australian Bureau of Statistics, [Disability, ageing and carers survey 2018: Victoria results](#) [data set], ABS website, 24 October 2019, accessed 2 October 2024; Metropolitan Transport Forum, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 5.
- ¹⁹² Australian Bureau of Statistics, [Disability, ageing and carers survey 2018: Victoria results](#) [data set], ABS website, 24 October 2019, accessed 2 October 2024.
- ¹⁹³ Engineers Australia, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 7; Planning Institute Australia, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 6.
- ¹⁹⁴ Australian Institute of Health and Welfare, [People with disability in Australia 2024](#), 23 April 2024, p 168, accessed 17 July 2025.
- ¹⁹⁵ [Disability Standards for Accessible Public Transport 2002](#) (Cth), sch 1, accessed 7 July 2025.
- ¹⁹⁶ Metro Trains, [Station accessibility features](#), Metro Trains Melbourne website, n.d., accessed 23 June 2025; C Haritos, 'Victorian train network failing to meet national accessibility standards', *ABC News*, 1 June 2025, accessed 23 June 2025.
- ¹⁹⁷ Department of Families, Fairness and Housing, [Inclusive Victoria: state disability plan \(2022–2026\)](#), State of Victoria, 2022, p 19, accessed 26 June 2025.
- ¹⁹⁸ P Hatch, 'Fares aside, Hailey pays a "physical cost" for each trip on Melbourne's old trams', *The Age*, 21 June 2025, accessed 23 June 2025.
- ¹⁹⁹ F Naznina, G Currie, D Loganb and M Sarvi, 'Safety impacts of platform tram stops on pedestrians in mixed traffic operation: a comparison group before–after crash study', *Accident Analysis and Prevention*, 2016, 86:1–8.
- ²⁰⁰ F Naznina, G Currie, D Loganb and M Sarvi, 'Safety impacts of platform tram stops on pedestrians in mixed traffic operation: A comparison group before–after crash study', *Accident Analysis and Prevention*, 2016, 86:1–8.
- ²⁰¹ Public Transport Victoria, [La Trobe Street tram stop upgrades](#), PTV website, n.d., accessed 16 July 2025; Department of Treasury and Finance, [Department performance statement 2025–26](#), State of Victoria, 2025, p 141, accessed 26 June 2025.
- ²⁰² Infrastructure Victoria analysis of: P Hatch, 'Fares aside, Hailey pays a "physical cost" for each trip on Melbourne's old trams', *The Age*, 21 June 2025, accessed 23 June 2025; Department of Treasury and Finance, [Department performance statement 2025–26](#), State of Victoria, 2025, p 141, accessed 26 June 2025; Victorian Auditor-General's Office, [Accessibility of tram services](#), 2020, p 4, accessed 7 July 2025. Note: There are 1634 tram stops, with 1162 of these not level access. The Victorian Government is upgrading 12 stops in 2024–25 and 2

stops in 2025–26. Using the average of these, upgrading 7 tram stops a year means it will take 166 years for all tram stops to become level access.

- ²⁰³ *Disability Standards for Accessible Public Transport 2002* (Cth), sch 1, accessed 2 July 2025.
- ²⁰⁴ Yarra Trams, *Melbourne's tram fleet*, Yarra Trams website, n.d., accessed 2 July 2025.
- ²⁰⁵ Infrastructure Victoria analysis of: Yarra Trams, *Melbourne's tram fleet*, Yarra Trams website, n.d., accessed 2 July 2025; Victorian Government, *Next Generation Trams*, Victorian Government website, 8 November 2024, accessed 2 July 2025. Note: there are 298 high-floor trams. Assuming the 100 new low-floor trams replace high-floor trams 1:1, 198 high-floor trams remain on the network; 12 of these are heritage W8-Class trams used for tourism purposes so we have assumed that these will not be replaced.
- ²⁰⁶ Department of Transport and Planning, *Transport accessibility strategic framework*, State of Victoria, 2024, pp 12,34, accessed 2 July 2025.
- ²⁰⁷ Department of Transport and Planning, *Transport accessibility strategic framework*, State of Victoria, 2024, pp 37–28, accessed 2 July 2025.
- ²⁰⁸ Australian Institute of Health and Welfare, *Accessing buildings and facilities*, AIHW website, 24 October 2024, accessed 2 July 2025.
- ²⁰⁹ Department of Families, Fairness and Housing, *Whole of Victorian Government universal design policy summary*, State of Victoria, 2022, accessed 2 July 2025.
- ²¹⁰ Parks Victoria, *Parks with accessibility information*, Parks Victoria website, n.d., accessed 2 July 2025.
- ²¹¹ Infrastructure Victoria, *Fast, frequent, fair: making the most of Melbourne's buses*, 2023, p 69, accessed 2 July 2025.
- ²¹² Department of Treasury and Finance, *Victorian Budget 2022/23: Budget paper no.3 – service delivery*, State of Victoria, 2022, p 20, accessed 2 July 2025.
- ²¹³ Rick Hansen Foundation, *Frequently asked questions about RHFAC*, RHF website, n.d., accessed 2 July 2025.
- ²¹⁴ Department of Transport, *Accessible public transport in Victoria action plan 2020–2024*, State of Victoria, 2020, p 14, accessed 2 July 2025.
- ²¹⁵ Victorian Auditor-General's Office, *Accessibility of tram services*, 2020, p 35, accessed 2 July 2025.
- ²¹⁶ Victorian Auditor-General's Office, *Accessibility of tram services*, 2020, pp 9–10, accessed 20 June 2025.
- ²¹⁷ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, accessed 24 June 2025.
- ²¹⁸ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, pp 5,16, accessed 24 June 2025; C Nygaard, S Parkinson and M Reynolds, *Agglomeration effects and housing market dynamics*, Australian Housing and Urban Research Institute, 2021, accessed 24 June 2025.
- ²¹⁹ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, accessed 24 June 2025.
- ²²⁰ SE Bibri, J Krogstie and M Kärrholm, 'Compact city planning and development: emerging practices and strategies for achieving the goals of sustainability', *Developments in the Built Environment*, 2020, 4(100021); B Giles-Corti, K Ryan and S Foster, *Increasing density in Australia: maximising the health benefits and minimising harm*, National Heart Foundation of Australia, 2012, accessed 3 July 2025.
- ²²¹ LD Frank and G Pivo, 'Impacts of mixed use and density on utilization of three modes of travel: single-occupant vehicle, transit, and walking', *Transportation Research Record*, 1994, vol. 1466, pp 44–52; Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, pp 39-40, accessed 3 July 2025.
- ²²² Demographia, *World urban areas: 19th annual edition* [pdf], 2023, p 80, accessed 3 July 2025.
- ²²³ P Newton, S Murray, R Wakefield, C Murphy, L Khor and T Morgan, *Towards a new development model for housing regeneration in greyfield precincts*, Australian Housing and Urban Research Institute, 2011, accessed 3 July 2025.
- ²²⁴ C Gilbert, S Rowley, N Gurran, C Leishman, M Mouritz, K Raynor and C Cornell, *Urban regulation and diverse housing supply: an investigative panel*, Australian Housing and Urban Research Institute, 2020, p 52, accessed 3 July 2025; A Taylor, 'Harsh truth: more than half of Sydney's councils failing to meet housing targets', *The Sydney Morning Herald*, 24 April 2022, accessed 3 July 2025.
- ²²⁵ Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's infrastructure*, 2023, accessed 3 July 2025.
- ²²⁶ Department of Transport and Planning, *Plan for Victoria*, State of Victoria, 2025, pp 28,30–31, accessed 25 June 2025.
- ²²⁷ Department of Transport and Planning, *Plan for Victoria*, State of Victoria, 2025, p 72, accessed 24 June 2025.
- ²²⁸ Victorian Government, *More homes for Victorians: activity centres*, Engage Victoria website, n.d., accessed 24 June 2025; Premier of Victoria, Department of Transport and Planning, *Activity centres program*, DTP website, n. d., accessed 24 June 2025; Department of Transport and Planning, *Expanding the activity centres program*, DTP website, 6 May 2025, accessed 24 June 2025; Victoria's Big Build, *SRL East precinct planning: draft structure plans and technical documents*, State of Victoria, 14 March 2025, accessed 24 June 2025.
- ²²⁹ Department of Transport and City of Melbourne, *Transforming Australian cities for a more financially viable and sustainable future. Transportation and urban design*, 2010, p 15, accessed 24 June 2025; YIMBY Melbourne, *Melbourne's missing middle: building a liveable, affordable, and sustainable city for all*, 2023, p 11, accessed 24 June 2025.
- ²³⁰ Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; Regional Local Government Homelessness and Social Housing Charter Group, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 8; City of Casey, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3; City of Greater Geelong, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 11; Melbourne 9, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; Merri-bek City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 8.

- ²³¹ City of Melbourne, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 11,22; City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; City of Yarra, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10; Hobsons Bay City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 3–4.
- ²³² City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; City of Whittlesea, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; Hobsons Bay City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 3–4.
- ²³³ Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; City of Casey, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3.
- ²³⁴ Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's infrastructure*, 2023, pp 50–51, accessed 25 June 2025; City of Melbourne, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 11,22; GoGet Carshare, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4.
- ²³⁵ City of Greater Bendigo, *Managed growth strategy*, 2024, pp 44–45, accessed 30 June 2025; City of Greater Geelong, *South Geelong urban design framework*, 2025, pp 11,32,33, accessed 30 June 2025.
- ²³⁶ Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's infrastructure*, 2023, p 43, accessed 3 July 2025; Bayside City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 3,12,13; Regional Local Government Homelessness and Social Housing Charter Group, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 8; City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 2,3; Municipal Association of Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 15; Planning Institute Australia, Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; Scentre, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; Urban Transit Solutions, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; VicHealth, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5; Victoria Walks, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 1.
- ²³⁷ Australia Post, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; Australian Logistics Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 3–4; City of Ballarat, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4.
- ²³⁸ Y Freemark, 'Upzoning Chicago: impacts of a zoning reform on property values and housing construction', *Urban Affairs Review*, 2020, 56(3):758-789.
- ²³⁹ Victorian Government, *More homes for Victorians: activity centres*, Engage Victoria website, n.d., accessed 3 July 2025.
- ²⁴⁰ Urbed, *Capital gains: a better land assembly model for London*, report to Greater London Authority, 2018, pp 61–65, accessed 3 July 2025; SGS Economics and Planning, *Shaping metropolitan Melbourne: a discussion paper*, report to Municipal Association of Victoria, 2023, p 30, accessed 3 July 2025; SGS Economics and Planning, *Shaping regional and rural Victoria: A discussion paper*, report to Municipal Association of Victoria, 2023, p 32, accessed 3 July 2025; P Newton, P Newman, S Glackin and G Thomson, *Greening the greyfields. New models for regenerating the middle suburbs of low-density cities*, Palgrave Macmillan, Singapore, 2022, p 67; Renewal SA, *Annual report 2022–2023*, SA Government, 2023, accessed 25 June 2025.
- ²⁴¹ Property Council of Australia (Victorian Division), *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3.
- ²⁴² Promoting Inclusive Equitable Community Health Research Group, Victoria University, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5.
- ²⁴³ Based on Activity Centres Program expansion in Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 3 – service delivery*, State of Victoria, 2025, p 83, accessed 3 July 2025.
- ²⁴⁴ Infrastructure Victoria, *Infrastructure provision in different development settings: metropolitan Melbourne*, 2019, p 2, accessed 3 July 2025.
- ²⁴⁵ M Reynolds, S Parkinson, J De Vries and K Hulse, *Affordable private rental supply and demand: short term disruption (2016-2021) and longer-term structural change (1996-2021)*, Australian Housing and Urban Research Institute, 2024, p 86, accessed 26 June 2025.
- ²⁴⁶ SGS Economics & Planning, *Social and affordable housing contributions: developers must play their part in social housing*, SGS website, 24 March 2022, accessed 26 June 2025.
- ²⁴⁷ L O'Flynn, *Housing affordability*, NSW Parliamentary Library, 2011, p 2, accessed 3 July 2025.
- ²⁴⁸ M Stone, T Burke and L Ralston, *The residual income approach to housing affordability: the theory and the practice*, [pdf], Australian Housing and Urban Research Institute, 2011, p 8, accessed 26 June 2025; L O'Flynn, *Housing affordability*, NSW Parliamentary Library, 2011, pp 7–9, accessed 3 July 2025.
- ²⁴⁹ Australian Housing and Urban Research Institute, *What is the difference between social and affordable housing - and why do they matter*, AHURI website, 28 February 2023, accessed 26 June 2025.
- ²⁵⁰ M Reynolds, S Parkinson, J De Vries and K Hulse, *Affordable private rental supply and demand: short term disruption (2016-2021) and longer-term structural change (1996-2021)*, Australian Housing and Urban Research Institute, 2024, pp 57,64, accessed 26 June 2025.
- ²⁵¹ Department of Transport and Planning, *Using Victoria's planning system*, State of Victoria, 2024, pp 221-233, accessed 26 June 2025; Department of Transport and Planning, *Development Facilitation Program*, DTP website, 12 November 2024, accessed 26 June 2025; Planning Institute of Australia (Vic), *Better places, better housing: a planning reform agenda* [pdf], n.d., pp 22,24, accessed 25 June 2025; CoHousing Australia Cooperative Limited, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3; Melton City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6.
- ²⁵² Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, pp 4,19, accessed 3 July 2025.
- ²⁵³ C Nygaard, S Parkinson and M Reynolds, *Agglomeration effects and housing market dynamics*, Australian Housing and Urban Research Institute, 2021, p 9, accessed 3 July 2025.

- ²⁵⁴ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, p 63, accessed 3 July 2025.
- ²⁵⁵ Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's existing infrastructure*, 2023, p 27, accessed 3 July 2025.
- ²⁵⁶ Infrastructure Victoria, *Our home choices: how more housing options can make better use of Victoria's existing infrastructure*, 2023, p 30, accessed 3 July 2025.
- ²⁵⁷ N Gurrán, C Gilbert, K Gibb, R van den Nouwelant, A James, and P Phibbs, *Supporting affordable housing supply: inclusionary planning in new and renewing communities*, Australian Housing and Urban Research Institute, 2018, p 2, accessed 3 July 2025; Department of Transport and Planning, *Plan for Victoria*, 2025, p 76, accessed 30 June 2025; Banyule City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 1; Bayside City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6.
- ²⁵⁸ Australian Housing and Urban Research Institute, *What is value capture*, AHURI website, 23 May 2017, accessed 24 September 2024; Community Housing Industry Association Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5.
- ²⁵⁹ M Spiller, L Mackevicius and A Spencer, *Development contributions for affordable housing: theory and implementation*, SGS Economics and Planning, 2018, p 5, accessed 26 June 2025.
- ²⁶⁰ R Benedict, N Gurrán, C Gilbert, C Hamilton, S Rowley and S Liu, *Private sector involvement in social and affordable housing*, AHURI Final Report No. 388, 2022, pp 42-50, accessed 3 July 2025.
- ²⁶¹ O McLennan, S Glackin and M Smith, *Site amalgamation for social housing discussion paper*, Ys Housing and Swinburne University, 2025, p 6, accessed 20 August 2025.
- ²⁶² C Nygaard and T Kollmann, *Social and affordable housing in Australia: a social cost-benefit analysis*, report to the Community Housing Industry Association, 2023, accessed 3 July 2025.
- ²⁶³ Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; Charter Group, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; Community Housing Industry Association Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5; M9, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 5,7; Property Council of Australia (Victorian Division), *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; Urban Design Forum Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 6,8; Urban Development Institute of Australia (Victoria), *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5.
- ²⁶⁴ Cardinia Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; City of Melbourne, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10; Climate Action - Merri-bek, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6.
- ²⁶⁵ Municipal Association of Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 20; Grounded Community Land Trust Advocacy, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3; CoHousing Australia Cooperative Limited, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3; R Wang and S Balachandran, 'Inclusionary housing in the United States: dynamics of local policy and outcomes in diverse markets', *Housing Studies*, 2023, 38(6), p 1080.
- ²⁶⁶ Australian Housing and Urban Research Institute, *What is Inclusionary zoning, and how does it help deliver affordable housing*, AHURI website, 29 August 2023, accessed 3 July 2025.
- ²⁶⁷ Australian Housing and Urban Research Institute, *What is Inclusionary zoning, and how does it help deliver affordable housing*, AHURI website, 29 August 2023, accessed 3 July 2025.
- ²⁶⁸ N Gurrán, C Gilbert, K Gibb, R van den Nouwelant, A James, and P Phibbs, *Supporting affordable housing supply: inclusionary planning in new and renewing communities*, Australian Housing and Urban Research Institute, 2018, p 1, accessed 3 July 2025.
- ²⁶⁹ Landcom, *Annual report FY 2024*, 2024, p 31, accessed 30 September 2025.
- ²⁷⁰ Landcom, *Annual report FY 2024*, 2024, pp 36,40–41 accessed 30 September 2025.
- ²⁷¹ City of Sydney, *Affordable housing contributions*, City of Sydney website, n.d., accessed 3 July 2025.
- ²⁷² City of Sydney, *City of Sydney affordable housing program*, City of Sydney website, 24 November 2023, accessed 3 July 2025.
- ²⁷³ City of Sydney, *City of Sydney affordable housing contributions distribution plan*, 2024, accessed 3 July 2025.
- ²⁷⁴ Australian Housing and Urban Research Institute, *What is inclusionary zoning, and how does it help deliver affordable housing*, AHURI website, 29 August 2023, accessed 3 July 2025; M Spiller, 'The affordable housing beacon we sailed past', *The Sourceable*, 2 February 2021, accessed 3 July 2025.
- ²⁷⁵ Department of Transport and Planning, *Plan for Victoria*, 2025, p 76, accessed 30 June 2025; Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; Cardinia Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 19; Charter Group, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; Community Housing Industry Association Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 18; Hobsons Bay City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; M9, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; Municipal Association of Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 20.
- ²⁷⁶ Municipal Association of Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 21; O McLennan, S Glackin and M Smith, *Site amalgamation for social housing discussion paper*, Ys Housing and Swinburne University, 2025, p 6, accessed 2 October 2025.
- ²⁷⁷ Department of Transport and Planning, *Development Facilitation Program*, DTP website, 26 May 2025, accessed 3 July 2025.
- ²⁷⁸ Victorian Government, *Victoria's housing statement*, Victorian Government, 2023, accessed 3 July 2025.

- ²⁷⁹ Reserve Bank of Australia, *Submission to the inquiry into housing affordability and supply in Australia*, House of Representatives Standing Committee on Tax and Revenue, Submission 52, 2021, pp 16–17, accessed 14 June 2025; National Housing Finance and Investment Corporation, *Stamp duty reform: benefits and challenges*, 2021, p 4, accessed 14 June 2025; Legislative Council Economy and Infrastructure Committee, *Inquiry into land transfer duty fees: final report*, Parliament of Victoria, 2023, p 19, accessed 14 June 2025; Infrastructure Victoria, *Policy evidence for more housing options in Victoria*, 2023, p 12, accessed 14 June 2025; Wallis Social Research, *Influencing greenfield housing demand – qualitative research*, report to Infrastructure Victoria, 2022, accessed 14 June 2025.
- ²⁸⁰ Infrastructure Victoria, *Choosing Victoria's future*, 2023, pp 20–21, accessed 14 June 2025.
- ²⁸¹ B Coates and J Moloney, *Victoria should swap stamp duties for a broad-based property tax: Victorian Legislative Council inquiry into land transfer duty fees*, Grattan Institute, submission 52, 21 April 2023, accessed 14 June 2025.
- ²⁸² Legislative Council Economy and Infrastructure Committee, *Inquiry into land transfer duty fees: final report*, Parliament of Victoria, 2023, p 11, accessed 14 June 2025.
- ²⁸³ Victorian Chamber of Commerce and Industry, *Submission to inquiry into land transfer duty fees*, submission 54, 1 May 2023, accessed 14 June 2025.
- ²⁸⁴ Legislative Council Economy and Infrastructure Committee, *Inquiry into land transfer duty fees: final report*, Parliament of Victoria, 2023, pp 26–27, 14 June 2025.
- ²⁸⁵ M Malakellis and M Wartlers, *The economic costs of transfer duty: a literature review* [pdf], NSW Government, 2021, p 11, accessed 14 June 2025.
- ²⁸⁶ Y Cho, SM Li and L Uren, *Stamping out stamp duty: property or consumption taxes?* [pdf], Centre for Applied Macroeconomic Analysis Working Paper, 2021, pp 2,29, accessed 14 June 2025.
- ²⁸⁷ HS Banzhaf and N Lavery, 'Can the land tax help curb urban sprawl? Evidence from growth patterns in Pennsylvania', *Journal of Urban Economics*, 2010, p 177; V Taranu and G Verbeeck, 'Property tax as a policy against urban sprawl', *Land Use Policy*, 2022.
- ²⁸⁸ Infrastructure Victoria, *Choosing Victoria's future*, 2023, pp 20–21, accessed 14 June 2025.
- ²⁸⁹ Bass Coast Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3; Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10; City of Melton *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; Climate Action - Merri-bek page, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; Property Council of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ²⁹⁰ Eastern Region Group of Councils *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; Prosper Australia *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2.
- ²⁹¹ Marion Terrill, *What price value capture*, Grattan Institute, 2017, p 40, accessed 5 June 2025.
- ²⁹² Department of Treasury and Finance, *Victorian Budget 2024/25: Budget paper no. 2 – strategy and outlook*, State of Victoria, 2024, p 13, accessed 14 June 2025.
- ²⁹³ Premier of Victoria, *Stamp duty tax cuts extended to build more homes* [media release], Victorian Government, 14 May 2025, accessed 5 June 2025.
- ²⁹⁴ Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 5: statement of finances*, State of Victoria, 2025, p 162, accessed 14 June 2025.
- ²⁹⁵ Legislative Council Economy and Infrastructure Committee, *Inquiry into land transfer duty fees: final report*, Parliament of Victoria, 2023, p 48, accessed 15 June 2025; Property Council of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ²⁹⁶ Legislative Council Economy and Infrastructure Committee, *Inquiry into land transfer duty fees: final report*, Parliament of Victoria, 2023, p 46, accessed 14 June 2025.
- ²⁹⁷ J Freebairn, *Reforming state taxes on property* [pdf], Tax and Transfer Policy Institute, TTPI – Working Paper 6/2020, June 2020, p 10, accessed 14 June 2025.
- ²⁹⁸ Tax and Transfer Policy Institute and National Centre for Social and Economic Modelling, *Analysis of the impacts and outcomes of the ACT tax reform*, 2020, p 29, accessed 5 June 2025.
- ²⁹⁹ Victorian Government, *Victoria's housing statement*, State of Victoria, 2023, pp 3,41, accessed 21 August 2025.
- ³⁰⁰ Infrastructure Victoria, *Choosing Victoria's future*, 2023, p 17, accessed 21 August 2025.
- ³⁰¹ Infrastructure Victoria, *Choosing Victoria's future*, 2023, p 16, accessed 21 August 2025.
- ³⁰² Infrastructure Victoria, *Our home choices*, 2023, p 5, accessed 21 August 2025; B Coates and J Moloney, 'The 2 big unanswered questions about Victoria's new housing plan', *Grattan Institute*, 8 February 2024, accessed 21 August 2025; M Chwasta, 'Some of Melbourne's oldest suburbs are about to grow fast – but are they ready?', *ABC News*, 2 April 2024, accessed 21 August 2025.
- ³⁰³ Carlton-Lygon Street is a major activity centre in *Plan Melbourne 2017–2050* (Department of Environment, Land, Water and Planning, *Plan Melbourne 2017–2050*, State of Victoria, 2017, p 53, accessed 21 August 2025). The latest available data on tram routes 1 and 6 showed overcrowding (Department of Transport, *Metropolitan tram load standards survey*, 2019, p 6, accessed 21 August 2025).
- ³⁰⁴ AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025-2055* [pdf], report to Infrastructure Victoria, 2025, pp 51–52, accessed 21 August 2025; Department of Environment, Land, Water and Planning, *Plan Melbourne 2017–2050*, State of Victoria, 2017, p 37, accessed 21 August 2025.
- ³⁰⁵ D Bowen, 'Australia's top tram routes', *Daniel Bowen's blog*, 2 March 2020, accessed 21 August 2025.

- ³⁰⁶ Victorian Transport Action Group, *Increasing Melbourne's service frequency* [pdf], 2024, p 21, accessed 21 August 2025; Infrastructure Victoria, *Our home choices*, p 50, 2023, accessed 21 August 2025; C De Gruyter, LT Truong and EJ Taylor, 'Can high quality public transport support reduced car parking requirements for new residential apartments?' *Journal of Transport Geography*, 2020, 82(102627); Property Council of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 7–8.
- ³⁰⁷ JC Arndt, C Morgan, JH Overman, TL Clower, BL Weinstein, M Seman, *Transportation, social and economic impacts of light and commuter rail*, report to Texas Department of Transportation, 2008, p 20, accessed 21 August 2025; C De Gruyter, S Pemberton and E Keys, *Tracking the development of apartment housing activity against public transport service provision in Melbourne: 2004–2022*, Centre for Urban Research working paper, RMIT, 2024, pp 18–19, accessed 21 August 2025; Transport Canberra, *Light rail five years on: benefits realisation report 2024*, ACT Government, 2024, pp 23–24, accessed 21 August 2025.
- ³⁰⁸ Department of Transport and Planning, *Melbourne's tram plan*, State of Victoria, 2023, pp 16,20, accessed 21 August 2025.
- ³⁰⁹ Victorian Government, *Victoria's housing statement*, State of Victoria, 2023, p 11, accessed 21 August 2025; Department of Transport and Planning, *Melbourne tram network*, State of Victoria, 2024, accessed 21 August 2025; Infrastructure Victoria analysis of AECOM transport modelling (see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, pp 50,54, accessed 21 August 2025).
- ³¹⁰ The estimate is based on the method used in Infrastructure Victoria, *Advice on autonomous and zero emissions vehicles*, 2018, accessed 21 August 2025. See also SGS Economics & Planning, *Automated and zero emission vehicle land use scenarios*, report to Infrastructure Victoria, 2018, pp 32,35, accessed 21 August 2025; Infrastructure Victoria analysis of AECOM transport modelling (see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 21 August 2025).
- ³¹¹ Infrastructure Victoria analysis based on infrastructure cost savings per dwelling, estimated in Infrastructure Victoria, *Choosing Victoria's future*, 2023, accessed 21 August 2025. See also Infrastructure Victoria, *Transport projects strategic evaluation*, 2025, p 7.
- ³¹² Infrastructure Victoria, *Transport projects strategic evaluation*, 2025, p 8.
- ³¹³ Access metric is travel time by public transport in the morning peak. Infrastructure Victoria analysis of AECOM transport modelling. See AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 21 August 2025.
- ³¹⁴ Access metrics are travel time by public transport in the morning peak and population accessible within a 45-minute public transport travel time. Infrastructure Victoria analysis of AECOM transport modelling. See AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 21 August 2025.
- ³¹⁵ Department of Transport and Planning, *Connecting Fishermans Bend: integrated transport plan*, State of Victoria, 2025, p 4,10, accessed 8 October 2025.
- ³¹⁶ Victorian Planning Authority, *Arden vision* [pdf], State of Victoria and City of Melbourne, 2018, p 23, accessed 21 August 2025.
- ³¹⁷ Department of Economic Development, Jobs, Transport and Resources, *Melbourne Metro business case*, 2016, p 7, accessed 7 October 2025.
- ³¹⁸ AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p 52, accessed 21 August 2025.
- ³¹⁹ AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p 52, accessed 21 August 2025; Infrastructure Victoria, *Transport projects strategic evaluation*, 2025, p 42.
- ³²⁰ AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p 31, accessed 21 August 2025.
- ³²¹ The recommended tram extensions for Fisherman Bend and Arden may have different connections to the existing tram network than those in public planning documents. The recommended routes connect to key train stations and are the catalyst for the new housing development identified in the same public planning documents. Transport Canberra, *Light rail five years on: benefits realisation report* [pdf], 2024, pp 22–23, accessed 21 August 2025.
- ³²² Infrastructure Victoria, *Choosing Victoria's future*, 2023, pp 48–51, accessed 21 August 2025.
- ³²³ Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 10–11; Hume City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9.
- ³²⁴ Infrastructure Victoria analysis of AECOM transport modelling. Access metric is jobs accessible within a 45-minute public transport travel time. See AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 21 August 2025).
- ³²⁵ Infrastructure Victoria analysis of AECOM transport modelling. Access metric is travel time by public transport in the morning peak in 2041. See AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 21 August 2025).
- ³²⁶ City of Gold Coast, *Gold Coast Light Rail*, City of Gold Coast website, n.d., accessed 21 August 2025; Minister for Infrastructure, Transport, Regional Development and Local Government, *Investment to deliver a future made in Australia* [media release], Australian Government, 14 May 2024, accessed 21 August 2025.
- ³²⁷ Operating cost estimates are based on the Keolis Downer 2017–2024 Yarra Trams franchisee agreement, see Buying for Victoria, *MR5 - franchise agreement - tram franchise*, 1 December 2024, accessed 21 August 2025.

- ³²⁸ P Parker, 'Bus service reform in Melbourne – the last 5 years' [conference paper], *Australasian Transport Research Forum 2011*, Adelaide, 28–30 September 2011, p 15, accessed 17 July 2025; Infrastructure Victoria, *Get on board: making the most of Melbourne's buses*, 2022, p 40, accessed 17 July 2025.
- ³²⁹ C Loader, N Langdon and E Robotis, 'Bringing better buses to Brimbank – implementing bus network reform in Melbourne' [conference paper], *Australasian Transport Research Forum 2015 Proceedings*, Sydney, 30 September – 2 October 2015, p 14, accessed 17 July 2025; Department of Transport and Planning, *Victoria's bus plan*, State of Victoria, 2021, p 10, accessed 17 July 2025.
- ³³⁰ Quantum Market Research, *Bus reform community research*, report to Infrastructure Victoria, March 2023, p 4, accessed 17 July 2025; Victorian Auditor-General's Office, *Tendering of metropolitan bus contracts*, 2015, p 1, accessed 17 July 2025.
- ³³¹ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, pp 16,26, accessed 17 July 2025.
- ³³² Manningham City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5; Friends of the Earth Melbourne, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6.
- ³³³ Public Transport Users Association, *Activity centres program: Bus route audit*, 2025, pp 7–8, accessed 17 July 2025; Department of Transport and Planning, *Activity centres program*, DTP website, n.d., accessed 17 July 2025.
- ³³⁴ Infrastructure Victoria analysis of public transport timetable data. For more details, see: Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 98, accessed 17 July 2025.
- ³³⁵ Infrastructure Victoria analysis of regional bus timetable data.
- ³³⁶ For more details, see: Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 39, accessed 17 July 2025.
- ³³⁷ City of Casey, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 421; Cardinia Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 11; Mitchell Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ³³⁸ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 26, accessed 9 September 2025.
- ³³⁹ Using publicly available business case reporting from Big Build projects like North East Link, Metro Tunnel, Melbourne Airport Rail and Suburban Rail Loop. See: North East Link Authority, *North East Link Project business case*, State of Victoria, 2018, accessed 19 September 2025; Department of Department of Economic Development, Jobs, Transport and Resources, *Melbourne Metro business case*, 2016, accessed 19 September 2025; Victorian Government and Australian Government, *Melbourne Airport Rail business case*, 2022, accessed 19 September 2025; Suburban Rail Loop Authority, *Suburban Rail Loop business and investment case*, State of Victoria, 2021, accessed 19 September 2025.
- ³⁴⁰ City of Greater Bendigo, *Submission to Victoria's 30-year infrastructure strategy*, 2023, p 6, accessed 31 July 2025.
- ³⁴¹ City of Ballarat, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; City of Greater Geelong, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 13–14; City of Whittlesea, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 11.
- ³⁴² Quantum Market Research, *Bus reform community research*, report to Infrastructure Victoria, March 2023, pp 91–93, accessed 17 July 2025.
- ³⁴³ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 32, accessed 17 July 2025.
- ³⁴⁴ Victorian Planning Authority, *Precinct structure planning guidelines: new communities in Victoria*, State of Victoria, 2021, accessed 17 July 2025.
- ³⁴⁵ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 17, accessed 17 July 2025.
- ³⁴⁶ Department of Transport and Planning, *Victoria's bus network reform: Melbourne's northern suburbs*, DTP website, n.d., accessed 17 July 2025.
- ³⁴⁷ National Association of City Transport Officials (NATCO) *Move! That! Bus! Tactics for transforming transit in two years*, 2022, accessed 17 July 2025; Transport for NSW, *Directions for on-street transit – white paper*, NSW Government, 2023, p 21, accessed 17 July 2025.
- ³⁴⁸ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 42, accessed 4 July 2025, Engineers Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 12.
- ³⁴⁹ Sustainable Cities, *Meet Zunairah* [video], Facebook, 7 November 2022, accessed 17 July 2025; Sustainable Cities, *Meet Rizwana* [video], Facebook, 11 November 2022, accessed 17 July 2025; P Hatch, 'Budget cut fears for Melbourne's "most urgent public transport need"', *The Age*, 17 May 2023, accessed 17 July 2025.
- ³⁵⁰ Department of Transport and Planning, *Victoria's bus plan*, State of Victoria, 2021, p 2, accessed 17 July 2025; Senate Rural and Regional Affairs and Transport References Committee, *Role of public transport in delivering productivity outcomes*, Commonwealth of Australia, 2014, pp 11–12, accessed 17 July 2025; T Hodges, *Public transportation's role in responding to climate change*, United States Department of Transportation, 2010, accessed 17 July 2025.
- ³⁵¹ For potential bus lane locations see: Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, pp 47–55, accessed 18 November 2024.
- ³⁵² P Parker, 'TT (Timetable Tuesday) #195: the new Route 800 bus timetable', *Melbourne on Transit blog*, 12 November 2024, accessed 2 July 2025.
- ³⁵³ T Condren, *Dandenong route bus experiences patronage surge*, Australasian Bus & Coach website, 12 May 2025, accessed 2 July 2025.
- ³⁵⁴ Department of Transport and Planning, *Faster buses to Fishermans Bend via Routes 235 and 237*, Public Transport Victoria website, n.d, accessed 3 July 2025.
- ³⁵⁵ Department of Transport and Planning, bus patronage data provided to Infrastructure Victoria, 10 July 2025.

- ³⁵⁶ Department of Transport and Planning, *Fishermans Bend bus improvements* [video], YouTube, 28 June 2024, accessed 3 July 2025.
- ³⁵⁷ Department of Transport and Planning, bus patronage data provided to Infrastructure Victoria, 10 July 2025.
- ³⁵⁸ Premier of Victoria, *Locals get on board with improved bus network* [media release], Victorian Government website, 4 June 2025, accessed 2 July 2025.
- ³⁵⁹ Premier of Victoria, *Locals get on board with improved bus network* [media release], Victorian Government website, 4 June 2025, accessed 2 July 2025.
- ³⁶⁰ Department of Transport and Planning, bus patronage data provided to Infrastructure Victoria, 10 July 2025.
- ³⁶¹ Department of Transport and Planning, bus patronage data provided to Infrastructure Victoria, 10 July 2025.
- ³⁶² Department of the Prime Minister and Cabinet, *Planning for Australia's future population* Australian Government, 2019, p 19, accessed 4 September 2025.
- ³⁶³ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, pp 14,24, accessed 4 September 2025; Melton City Council, *Submission to Victoria's infrastructure strategy objectives*, p 5, 2023, accessed 4 September 2025
- ³⁶⁴ Infrastructure Victoria analysis of WSP, *Better buses for Melbourne strategic modelling*, reports to Infrastructure Victoria, 2023, accessed 4 September 2025. For further details, see Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 47, accessed 4 September 2025.
- ³⁶⁵ Infrastructure Victoria analysis of WSP, *Better buses for Melbourne strategic modelling*, reports to Infrastructure Victoria, 2023, accessed 4 September 2025.
- ³⁶⁶ WSP, *Better buses for Melbourne strategic modelling: baseline conditions report*, report to Infrastructure Victoria, 2023, p 33, accessed 4 September 2025.
- ³⁶⁷ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 61, accessed 4 September 2025.
- ³⁶⁸ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 18, accessed 4 September 2025; Infrastructure Victoria, *Get on board: making the most of Melbourne's buses*, 2022, p 39, accessed 4 September 2025.
- ³⁶⁹ Department of Energy, Environment and Climate Action, *Victorian Government action on climate change*, DEECA website, 22 July 2025, accessed 4 September 2025; Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 14, accessed 4 September 2025.
- ³⁷⁰ R Cervero and CD Kang, 'Bus rapid transit impacts on land uses and land values in Seoul', *Transport Policy*, 2011 18(1):102–116; C Mulley, B Sampaio and L Ma, 'South Eastern Busway network in Brisbane, Australia: value of the network effect', *Transportation Research Record*, 2017, 2647(1):41–49.
- ³⁷¹ Department of Premier and Cabinet, *Victoria's housing statement*, State of Victoria, 2023, accessed 4 September 2025.
- ³⁷² Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 62, accessed 4 September 2025.
- ³⁷³ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 63, accessed 4 September 2025.
- ³⁷⁴ Infrastructure Victoria analysis of 5 prioritised bus rapid transit corridors, as originally modelled in WSP, *Better buses for Melbourne strategic modelling*, report to Infrastructure Victoria, 2023, pp 68–78.
- ³⁷⁵ Victorian Government, *Eastern busway*, Victoria's Big Build website, 8 May 2025, accessed 4 September 2025; Manningham Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; Whitehorse Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 14.
- ³⁷⁶ For further details, see WSP, *Better buses for Melbourne strategic modelling: scenarios report*, report to Infrastructure Victoria, 2023, pp 68–78, accessed 8 August 2025.
- ³⁷⁷ Mornington Peninsula Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 8; Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 13.
- ³⁷⁸ DA Hensher, R Ellison, CQ Ho and G Weisbrod, *How well does BRT perform in contrast to LRT? An Australian case study using MetroScan T1*, Working paper, Institute of Transport and Logistics Studies, 2017; LR Hsu, 'Cost estimating model for mode choice between light rail and bus rapid transit systems,' *Journal of Transportation Engineering*, 2012, 139(1):20–29; Victorian Transport Action Group, *Submission to Victoria's infrastructure strategy objectives*, 2023, p 4, accessed 4 September 2025.
- ³⁷⁹ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 5, accessed 4 September 2025.
- ³⁸⁰ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 23, accessed 4 September 2025.
- ³⁸¹ Victorian Government, *Eastern busway*, Victoria's Big Build website, 8 May 2025, accessed 4 September 2025.
- ³⁸² Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, pp 63–68, accessed 4 September 2025.
- ³⁸³ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 63, accessed 4 September 2025.
- ³⁸⁴ Based on Australian Government funding of similar medium-capacity transport projects. See Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Brisbane Metro*, DITRDCA website, 18 December 2024, accessed 4 September 2025; Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Canberra Light Rail – stage 2A*, DITRDCA website, 7 August 2025, accessed 4 September 2025; Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Gold Coast Light Rail – stage 3*, DITRDCA website, 9 March 2023, accessed 4 September 2025.
- ³⁸⁵ Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 63, accessed 4 September 2025.

- ³⁸⁶ Population projections cover the Melton and Wyndham local government areas. AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p A-1, accessed 4 September 2025.
- ³⁸⁷ SGS Economics and Planning, *Economic, social and environmental profile: inter-regional report*, report to Infrastructure Victoria, 2019, p 40, accessed 4 September 2025; Infrastructure Victoria, *Fast, frequent, fair: how buses can better connect Melbourne*, 2023, p 16, accessed 4 September 2025; M Paul and R Maloney, 'An hour and a half to drive 3km — why is traffic so bad in Melbourne's outer suburbs?', *ABC News*, 31 October 2022, accessed 4 September 2025.
- ³⁸⁸ A Darling, 'Train overcrowding shows infrastructure shortfalls, V/Line commuters say', *ABC News*, 5 December 2024, accessed 4 September 2025.
- ³⁸⁹ Australian Bureau of Statistics, *TableBuilder*, 2021 Census, ABS website, 8 November 2021, accessed 4 September 2025. Based on 2021 Census, method of travel to work on Census night (note this was during the 2021 COVID-19 pandemic lockdowns).
- ³⁹⁰ J Levy, J Buonocore and K von Stackelberg, 'Evaluation of the public health impacts of traffic congestion: a health risk assessment', *Environmental Health*, 2010, 9(65).
- ³⁹¹ K Rosier and M McDonald, *The relationship between transport and disadvantage in Australia*, Australian Institute of Family Studies, 2011, pp 4,9, accessed 4 September 2025.
- ³⁹² SGS Economics and Planning, *Gender equity in employment* [pdf], report to the City of Whittlesea, 2019, p 15, accessed 4 September 2025.
- ³⁹³ Department of Transport and Planning, *Plan For Victoria*, 2025, p 25, accessed 4 September 2025; Victorian Health Building Authority, *New Melton Hospital industry briefing* [presentation], State of Victoria, 2022, accessed 4 September 2025.
- ³⁹⁴ Department of Transport and Planning, *Plan For Victoria*, 2025, p 25, accessed 4 September 2025; AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p A-5, accessed 4 September 2025.
- ³⁹⁵ Infrastructure Victoria analysis of AECOM transport modelling. Access metric is travel time by public transport in the morning peak. See AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 4 September 2025.
- ³⁹⁶ Premier of Victoria, *Connecting Sunshine to Melbourne Airport and beyond* [media release], Victorian Government, 19 September 2024, accessed 4 September 2025.
- ³⁹⁷ Infrastructure Victoria, *Transport projects strategic evaluation*, 2025, pp 25–32.
- ³⁹⁸ Victorian Government, *Your new Sunshine Station Superhub*, Victoria's Big Build website, 2 June 2025, accessed 4 September 2025; Victorian Government, *Sunshine Station Masterplan*, Victorian Government website, 15 November 2023, accessed 4 September 2025.
- ³⁹⁹ AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025-2055* [pdf], report to Infrastructure Victoria, 2025, p 48, accessed 4 September 2025.
- ⁴⁰⁰ Infrastructure Victoria analysis of AECOM transport modelling, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p 47, accessed 4 September 2025.
- ⁴⁰¹ Infrastructure Victoria analysis based on existing Melton inter-peak timetable, see Department of Transport and Planning, *Ballarat Line timetable*, effective 1 December 2024, State of Victoria, 2024, accessed 20 February 2025.
- ⁴⁰² Victorian Government, *Vicmap transport - railway infrastructure point* [data set], Data Vic website, 16 November 2024, accessed 12 February 2025; P Mallis, *Distances between Melbourne railway stations - a quick map*, Maps by Phillip Mallis blog, 23 April 2018, accessed 4 September 2025.
- ⁴⁰³ Department of Transport and Planning, *Activity centres – planning guidance*, DTP website, 11 March 2025, accessed 4 September 2025.
- ⁴⁰⁴ Infrastructure Victoria analysis of AECOM transport modelling, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025-2055* [pdf], report to Infrastructure Victoria, 2025, accessed 4 September 2025. Access metrics are population accessible within a 45-minute public transport travel time and travel time by public transport in the morning peak.
- ⁴⁰⁵ Passengers from Footscray to Newport would get a more frequent train service, and passengers from Laverton to Werribee will save around 6 minutes at these times when travelling to or from the city.
- ⁴⁰⁶ Minister for Infrastructure, Transport, Regional Development and Local Government, *Investment to deliver a future made in Australia* [media release], Australian Government, 14 May 2024, accessed 28 July 2025.
- ⁴⁰⁷ AECOM, *Transport cost estimate to support cost benefit analysis* [pdf], report to Infrastructure Victoria, 2021, accessed 30 July 2025.
- ⁴⁰⁸ Infrastructure Victoria, *Choosing Victoria's future*, 2023, pp 14-24, accessed 27 August 2025.
- ⁴⁰⁹ C De Gruyter, S Pemberton, E Keys, *Tracking the development of apartment housing activity against public transport service provision in Melbourne: 2004-2022* [pdf], RMIT University Centre for Urban Research, April 2024, p 18, accessed 27 August 2025.
- ⁴¹⁰ Infrastructure Victoria analysis of August 2025 PTV timetable data from Transport Victoria, *Upfield line*, TV Website, n.d., accessed 27 August 2025.
- ⁴¹¹ Infrastructure Victoria analysis of August 2025 PTV timetable data from Transport Victoria, *Upfield line*, TV Website, n.d., accessed 27 August 2025; Infrastructure Victoria analysis of August 2025 PTV timetable data from Transport Victoria, *Pakenham line*, TV Website, n.d., accessed 27 August 2025. Stations on the Upfield line have a waiting time of 17 to 20 minutes between services in the AM peak, whilst Carnegie station on the Pakenham/Cranbourne line have waiting times which are 3 to 6 minutes in the AM peak.

- ⁴¹² Infrastructure Victoria analysis of AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 27 August 2025. Access metric is travel time by public transport in the morning peak. Trams run 27% slower on Sydney Road than the rest of the network average due to mixed traffic. Tram speeds could slow by a further 4% by 2041.
- ⁴¹³ Vicsig, *Upfield line*, Vicsig website, 27 July 2023, accessed 27 August 2025.
- ⁴¹⁴ Department of Economic Development, Jobs, Transport and Resources, *Melbourne Metro business case*, 2016, p 135, accessed 27 August 2025.
- ⁴¹⁵ Public Transport Victoria, *Network development plan – metropolitan rail* [pdf], State of Victoria, 2012, pp 18–19, accessed 27 August 2025.
- ⁴¹⁶ Infrastructure Victoria analysis of AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 27 August 2025.
- ⁴¹⁷ Department of Economic Development, Jobs, Transport and Resources, *Melbourne Metro business case*, 2016, p 139, accessed 27 August 2025.
- ⁴¹⁸ Mitchell Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; Northern Councils Alliance, *Transport connectivity and access: Upfield line duplication and access*, 2025, pp 1,4, accessed 28 August 2025.
- ⁴¹⁹ Infrastructure Victoria analysis of Public Transport Victoria, *Network development plan – metropolitan rail*, State of Victoria, 2012, pp 95,116, accessed 27 August 2025.
- ⁴²⁰ Department of Economic Development, Jobs, Transport and Resources, *Melbourne Metro business case*, 2016, p 133, accessed 27 August 2025.
- ⁴²¹ The Metro Tunnel business case included a train turnback at Gowrie Station and additional Gowrie or Upfield services. See: Department of Economic Development, Jobs, Transport and Resources, *Melbourne Metro business case*, 2016, pp 8,135, accessed 27 August 2025.
- ⁴²² Upfield duplication (and rebuilding the rail connection between Upfield and Roxburgh Park) was included as part of the City Loop Reconfiguration and Northern Rail Corridor Project. See: Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, pp 75,87, accessed 27 August 2025.
- ⁴²³ Victorian Government, *Brunswick level crossing removals*, Big Build website, 23 December 2024, accessed 27 August 2025.
- ⁴²⁴ Victorian Government, *Level Crossing Removal Project: program business case*, 2017, p 102, accessed 27 August 2025.
- ⁴²⁵ Department of Transport and Planning, *Plan for Victoria*, State of Victoria, 2025, pp 24–27, accessed 27 August 2025.
- ⁴²⁶ The \$400 million saving is because this housing would have otherwise been delivered in the growth areas where more infrastructure is required (e.g. utilities) which makes it more expensive. Infrastructure Victoria analysis based on infrastructure cost savings per dwelling in: Infrastructure Victoria, *Choosing Victoria's future*, 2023, accessed 27 August 2024.
- ⁴²⁷ Infrastructure Victoria analysis of AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 27 August 2025. Access metric is travel time by public transport in the morning peak.
- ⁴²⁸ Victorian Planning Authority, *Beveridge North West precinct structure plan*, State of Victoria, 2024, accessed 27 August 2025.
- ⁴²⁹ .id, *Mitchell Shire population summary*, .idcommunity website, n.d, accessed 27 August 2025. 47,000 of these residents will come from the Beveridge North West Precinct Structure Plan, see: Department of Transport and Planning, *Beveridge North West*, 5 August 2025, accessed 27 August 2025.
- ⁴³⁰ Transport Victoria, *Route 511 Donnybrook Station to Mandalay via Olivine bus timetable*, State of Victoria, July 2025, accessed 27 August 2025.
- ⁴³¹ Google Maps, *Beveridge VIC 3753* [map], Google Maps website, 2025, accessed 27 August 2025. The east-west road is Lithgow Street, the north-south link is Hume Freeway.
- ⁴³² A Carey, 'Sold a dream, left in gridlock: The isolated suburb begging for traffic fix', *The Age*, 7 April 2025, accessed 27 August 2025.
- ⁴³³ Transport Victoria, *Route 511 Donnybrook Station to Mandalay via Olivine bus timetable*, State of Victoria, July 2025, accessed 27 August 2025.
- ⁴³⁴ Mitchell Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 8–9; Northern Councils Alliance, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; North LINK, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3.
- ⁴³⁵ Growth Areas Authority, *The north growth corridor plan* [pdf], 2012, pp 71–72, accessed 27 August 2025.
- ⁴³⁶ A Kroen, R Goodman, L Gunn and S Pemberton, *Early delivery of equitable and healthy transport options in new suburbs* [pdf], Centre for Urban Research, RMIT University, 2021, p iii, accessed 27 August 2025.
- ⁴³⁷ C King, K McBain, C Brown and A Chisholm, *Investment to deliver a future made in Australia* [media release], Australian Government, 14 May 2024, accessed 27 August 2025.
- ⁴³⁸ AECOM, *Transport cost estimate to support cost benefit analysis*, report to Infrastructure Victoria, 2021, accessed 27 August 2025.
- ⁴³⁹ Infrastructure Victoria analysis based on AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p A-1, accessed 4 September 2025. Local Government Areas: Cardinia, Casey, Hume, Melton, Mitchell, Whittlesea, Wyndham.

- ⁴⁴⁰ Infrastructure Victoria analysis based on AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p A-1, accessed 4 September 2025. Local Government Areas: Cardinia, Casey, Hume, Melton, Mitchell, Whittlesea, Wyndham.
- ⁴⁴¹ Infrastructure Victoria analysis of AECOM transport modelling, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 4 September 2025. Measured as the proportion of roads by length that are congested in the south-east (Casey, Cardinia) and north (Hume, Mitchell, Whittlesea).
- ⁴⁴² Infrastructure Victoria analysis of AECOM transport modelling, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 4 September 2025. Journey times measured for residents in the south-east (Casey, Cardinia) and north (Hume, Mitchell, Whittlesea).
- ⁴⁴³ B Adhikari *Submission to Victoria's draft 30-year infrastructure strategy*, 2025; Australian Institute of Traffic Planning & Management, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 8–9; S Bhardwaj, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025; Casey Residents and Ratepayers Association, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; City of Casey, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 14; Climate Action – Merri-bek, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 23–25; Hume City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 15–16; NORTH Link, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3; Rail Futures Institute, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025; pp 5–6; Victorian Transport Action Group, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9.
- ⁴⁴⁴ Infrastructure Victoria analysis of AECOM transport modelling, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 4 September 2025. Measured improvements to jobs accessible in 45 minutes for residents within 3 kilometres of the new stations.
- ⁴⁴⁵ Infrastructure Victoria analysis of AECOM transport modelling, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 4 September 2025. Measured improvements to jobs accessible in 60 minutes for residents in Kalkallo.
- ⁴⁴⁶ .idcommunity, *Mitchell Shire population summary*, .id (informed decisions) website, n.d., accessed 4 September 2025.
- ⁴⁴⁷ Rokon, *Ooranya Estate*, Rokon website, n.d., accessed 4 September 2025; Frasers Property, *Wallara Waters*, Frasers Property website, n.d., accessed 4 September 2025; Synergy Living, *Springridge*, Springridge website, n.d., accessed 4 September 2025; Department of Transport and Planning, *Beveridge North West PSP*, Victorian Planning Authority website, 5 August 2025, accessed 4 September 2025.
- ⁴⁴⁸ Infrastructure Victoria analysis of AECOM transport modelling, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 4 September 2025. Measured reduction in volume-capacity across all roads.
- ⁴⁴⁹ Infrastructure Victoria analysis of AECOM transport modelling, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p 28,39,42, accessed 4 September 2025. Measured boardings at stations in the south-east (Dandenong South, Cranbourne East, Casey Fields, and Clyde) and the north (Kalkallo, Donnybrook, Craigieburn, Roxburgh Park, Coolaroo, Upfield, Broadmeadows, Jacana, Gowrie and Glenroy).
- ⁴⁵⁰ The cost per parking spot is \$10,000 to \$68,000. See Public Transport User Association, *Myth: park-and-ride facilities will encourage public transport use*, PTUA website, 25 July 2024, accessed 4 September 2025.
- ⁴⁵¹ Box Hill had 26.2% access mode share to the station by bus in 2019, see P Mallis, 'Which are the least and most used stations in Victoria?', *Phillip Mallis in Transport blog*, 21 February 2019, accessed 4 September 2025.
- ⁴⁵² Minister for Infrastructure, Transport, Regional Development and Local Government, *Investment to deliver a future made in Australia* [media release], Australian Government, 14 May 2024, accessed 4 September 2025.
- ⁴⁵³ AECOM, *Transport cost estimate to support cost benefit analysis* [pdf], report to Infrastructure Victoria, 2021, accessed 4 September 2025.
- ⁴⁵⁴ Productivity Commission, *Transitioning regional economies*, Australian Government, 2017, p 19, accessed 8 September 2025; J Stanley and J Stanley, *The value of getting there: mobility for stronger Australian regions*, report to Bus Industry Confederation of Australia, 2018, p 4, accessed 8 September 2025; Infrastructure Victoria, *Infrastructure priorities for the regions*, 2020, p 30, accessed 8 September 2025.
- ⁴⁵⁵ G Currie and J Allen, 'Australians with disabilities: transport disadvantage and disability', in G Currie, J Stanley and J Stanley (eds), *No way to go: transport and social disadvantage in Australian communities*, Monash University ePress, Clayton, Vic., 2007, accessed 13 August 2025; K Rosier and M McDonald, *The relationship between transport and disadvantage in Australia*, Australian Institute of Family Studies, 2011, p 9, accessed 8 September 2025.
- ⁴⁵⁶ Youth Affairs Council Victoria, *On the buses: using school buses to improve access to public transport in rural and regional Victoria*, 2021, p 16, accessed 8 September 2025; C Browning and J Sims, 'Ageing without driving: keeping older people connected', in G Currie, J Stanley and J Stanley (eds), *No way to go: transport and social disadvantage in Australian communities*, Monash University ePress, Clayton, Vic., 2007; G Currie and J Allen, 'Australians with disabilities: transport disadvantage and disability', in G Currie, J Stanley and J Stanley (eds), *No way to go: transport and social disadvantage in Australian communities*, Monash University ePress, Clayton, Vic., 2007.
- ⁴⁵⁷ Infrastructure Victoria, *Infrastructure priorities for the regions*, 2020, p 71, accessed 8 September 2025; L Davies, V Allan, J Batson, T Katsu and E Fishman, *Albury Wodonga integrated transport strategy background report*, Institute for Sensible Transport, 2021, p 88, accessed 8 September 2025; L Rau, H Rowe and R Powell, *Decarbonising Australia's transport sector: diverse solutions for a credible emissions reduction plan*, Climateworks Centre, 2024, p 12, accessed 8 September 2025.
- ⁴⁵⁸ Arup, *Social infrastructure accessibility mapping: TAFEs*, report to Infrastructure Victoria, 2024, p 6, accessed 8 September 2025; Arup, *Social infrastructure accessibility mapping: community health centres*, report to Infrastructure Victoria, 2024, p 8, accessed 8 September 2025.

- ⁴⁵⁹ Youth Affairs Council Victoria, *On the buses: using school buses to improve access to public transport in rural and regional Victoria*, 2021, p 11, accessed 8 September 2025; Infrastructure Victoria, *Infrastructure priorities for the regions*, 2020, p 30, accessed 13 August 2025; Baw Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 5–6.
- ⁴⁶⁰ Youth Affairs Council Victoria, *On the buses: using school buses to improve access to public transport in rural and regional Victoria*, 2021 p 11, accessed 8 September 2025.
- ⁴⁶¹ Department of Economic Development, Jobs, Transport and Resources, *Connecting regional Victoria: Victoria's regional network development plan*, State of Victoria, 2016, p 12, accessed 8 September 2025.
- ⁴⁶² KPMG, *The importance of TAFE to Victoria's prosperity: final report*, report to the Victorian TAFE Association, 2018, p 39, accessed 13 August 2025; McCrindle, *The TAFE value and perception challenge*, report to the Victorian TAFE Association, 2024, p 7, accessed 13 August 2025.
- ⁴⁶³ Department of Economic Development, Jobs, Transport and Resources, *Connecting regional Victoria: Victoria's regional network development plan*, State of Victoria, 2016, p 12, accessed 13 August 2025.
- ⁴⁶⁴ Australasian College of Road Safety, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; L Truong, G Currie, 'Macroscopic road safety impacts of public transport: a case study of Melbourne, Australia'. *Accident Analysis & Prevention*, 2019, 132(105270).
- ⁴⁶⁵ Greater Shepparton City Council, *Submission to school bus program inquiry*, Parliament of Victoria website, 2020, accessed 8 September 2025; L Davies, V Allan, J Batson, T Katsu and E Fishman, *Albury Wodonga integrated transport strategy background report*, Institute for Sensible Transport, 2021, p 100, accessed 8 September 2025; Infrastructure Victoria analysis of bus and train timetables for Warragul and Drouin from Transport Victoria, *Timetables*, n.d., accessed 13 August 2025.
- ⁴⁶⁶ Australian Bureau of Statistics, *Socio-economic indexes for areas (SEIFA), Australia* [data set], ABS website, 2021, accessed 10 September 2024; Australian Bureau of Statistics, *QuickStats* [data set], ABS website, 2022, accessed 10 September 2024.
- ⁴⁶⁷ Infrastructure Victoria analysis of bus and train timetables for Warragul and Drouin from Transport Victoria, *Timetables*, n.d., accessed 13 August 2025.
- ⁴⁶⁸ Greater Shepparton City Council, *Submission to school bus program inquiry*, Parliament of Victoria website, 2020, accessed 8 September 2025; L Davies, V Allan, J Batson, T Katsu and E Fishman, *Albury Wodonga integrated transport strategy background report*, Institute for Sensible Transport, 2021, p 115, accessed 8 September 2025.
- ⁴⁶⁹ Department of Economic Development, Jobs, Transport and Resources, *Connecting regional Victoria: Victoria's regional network development plan*, State of Victoria, 2016, p 12, accessed 8 September 2025.
- ⁴⁷⁰ Department of Transport and Planning, *Mildura bus reform: consultation summary*, Engage Victoria website, 2023, pp 4–5, accessed 8 September 2025.
- ⁴⁷¹ Infrastructure Victoria internal analysis based on existing service gaps. This assumes weekday buses operate for 14 hours – for example between 7am and 9pm – at least every 30 minutes in Shepparton, Wodonga and Mildura, and at least every 60 minutes in Wangaratta, Warragul/Drouin, Horsham and Bairnsdale. This also assumes Saturday buses hourly between 7am and 7pm, and Sunday buses hourly between 10am and 7pm in all 8 cities. Exact figures should be informed by further planning and consultation.
- ⁴⁷² City of Ballarat, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5; Engineers Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 14.
- ⁴⁷³ Victorian Government, *Regional network development plan – conversation report* [pdf], 2015, p 11, accessed 8 September 2025.
- ⁴⁷⁴ V/Line, *Bendigo – Albury timetable* [pdf], 23 October 2022, accessed 8 September 2025.
- ⁴⁷⁵ A minimum of 3 services each day allows people to travel to regional cities in the morning and return home in the afternoon or evening.
- ⁴⁷⁶ Transport Victoria, *Preparing for more ways to pay for PT*, TV Website, n.d., accessed 6 October 2025.
- ⁴⁷⁷ Infrastructure Victoria, *Fair move: better public transport fares for Melbourne*, 2020, accessed 17 June 2025.
- ⁴⁷⁸ Department of Transport and Planning post-COVID road network usage May 2024; Department of Transport and Planning, *Monthly Victorian public transport patronage by mode* [data set], Data Vic, 2024, accessed 2 July 2024; WSP, *Better buses for Melbourne strategic modelling: baseline conditions report*, report to Infrastructure Victoria, 2023, accessed 17 June 2025.
- ⁴⁷⁹ Infrastructure Victoria, *Get on board: making the most of Melbourne's buses*, pp 28–29, 2022, accessed 17 June 2025; Infrastructure Victoria analysis of Victorian Government Department of Transport bus data and SCATS data (Department of Transport and Planning, *Traffic signal volume data* [data set], Data Vic, 2022, accessed 9 June 2022).
- ⁴⁸⁰ Infrastructure Victoria, *Fair move: better public transport fares for Melbourne*, 2020, accessed 17 June 2025.
- ⁴⁸¹ The Centre for International Economics and Jacobs, *Estimating the social marginal cost of public transport in Victoria*, report to Infrastructure Victoria, 2020, pp 40–41, accessed 17 June 2025.
- ⁴⁸² Infrastructure Victoria, *Fair move: better public transport fares for Melbourne*, 2020, pp 6,8, accessed 17 June 2025.
- ⁴⁸³ Infrastructure Victoria, *Fast, frequent, fair – how buses can better connect Melbourne*, 2023, p 78, accessed 17 June 2025; Quantum Market Research, *Bus reform community research*, report to Infrastructure Victoria, 2023, p 62, accessed 17 June 2025.
- ⁴⁸⁴ Infrastructure Victoria, *Fair move: better public transport fares for Melbourne*, 2020, p 74, accessed 17 June 2025.
- ⁴⁸⁵ Public Transport Victoria, *myki is getting an upgrade*, PTV website, n.d., accessed 17 June 2025.
- ⁴⁸⁶ Infrastructure Victoria, *Fair move: better public transport fares for Melbourne*, 2020, p 19, accessed 17 June 2025.

- ⁴⁸⁷ Public Transport Victoria, *Metropolitan fares*, PTV website, n.d., accessed 17 June 2025. From 1 January 2026, Senior will pay nothing for weekend public transport, but will require a myki to travel – see Public Transport Victoria, *Fare changes for young people and senior Victorians*, PTV website, 20 May 2025, accessed 17 June 2025.
- ⁴⁸⁸ Infrastructure Victoria, *Fair move: better public transport fares for Melbourne*, 2020, pp 65–69, accessed 17 June 2025.
- ⁴⁸⁹ Premier of Victoria, *Fairer fares deliver huge savings in first year* [media release], Victorian Government, 9 April 2024, accessed 18 September 2025; B Kolovos, “‘Find a spot on the floor’: overcrowding complaints grow as Victorians take advantage of rail fare cap”, *The Guardian*, 12 September 2023, accessed 17 June 2025; B Carmody and B Preiss, “‘Overcrowded’: cheap train tickets a hit, but passengers forced to stand for hours”, *The Age*, 8 July 2023, accessed 17 June 2025; Public Transport Users Association, *V/Line: coming fare cuts set to worsen crowding*, PTUA website, 14 January 2023, accessed 17 June 2025.
- ⁴⁹⁰ MD Grub, ‘Failing to choose the best price: theory, evidence and policy’, *Review of Industrial Organisation*, 2015, 47:303-340; SGS Economics and Planning and The Behavioural Insights Team, *How people respond to complexity in public transport fares*, report to Infrastructure Victoria, 2020, accessed 17 June 2025.
- ⁴⁹¹ SGS Economics and Planning and The Behavioural Insights Team, *How people respond to complexity in public transport fares*, report to Infrastructure Victoria, 2020, pp 20–23, accessed 17 June 2025.
- ⁴⁹² Public Transport Victoria, *myki is getting an upgrade*, PTV website, n.d., accessed 17 June 2025; Department of Transport and Planning, *Annual report 2022–2023*, State of Victoria, 2023, accessed 17 June 2025.
- ⁴⁹³ Infrastructure Victoria, *Fair move: better public transport fares for Melbourne*, 2020, accessed 17 June 2025.
- ⁴⁹⁴ Eastern Region Group of Councils, *Submission to Victoria’s draft 30-year infrastructure strategy*, 2025, p 6; Metropolitan Transport Forum, *Submission to Victoria’s draft 30-year infrastructure strategy*, 2025, p 9; Victorian Transport Action Group, *Submission to Victoria’s draft 30-year infrastructure strategy*, 2025, pp 7,10–15.
- ⁴⁹⁵ D Bowen, *Train map: frequency*, 11 February 2022, accessed 17 June 2025; P Parker, ‘TT (Timetable Tuesday) #180: Melbourne’s forgotten frequent rail network that we could have again’, *Melbourne on Transit blog*, 7 March 2023, accessed 17 June 2025.
- ⁴⁹⁶ Public Transport Victoria, *myki is getting an upgrade*, PTV website, n.d., accessed 17 June 2025.
- ⁴⁹⁷ Premier of Victoria, *Building a train network for the future* [media release], Victorian Government, 1 December 2020, accessed 17 June 2025.
- ⁴⁹⁸ The Centre for International Economics and Jacobs, *Estimating the social marginal cost of public transport in Victoria*, report to Infrastructure Victoria, 2020, pp 35–40, accessed 17 June 2025.
- ⁴⁹⁹ Department of Health, *Victorian public health and wellbeing plan 2023–27*, State of Victoria, 2023, p 7, accessed 23 September 2024.
- ⁵⁰⁰ Department of Health, *Victorian public health and wellbeing plan 2023–27*, State of Victoria, 2023, p 25, accessed 23 September 2024; A Maccagnan, S Wren-Lewis, H Brown and T Taylor, ‘Wellbeing and society: towards quantification of the co-benefits of wellbeing’, *Social Indicators Research*, 2019, 141(1):217–243.
- ⁵⁰¹ B Cameron, A Cockram, C Kilpatrick, T Tierney and L Wallace, *Health services plan*, report to the Department of Health, 2024, p 7, accessed 18 November 2024; Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 54, accessed 10 June 2024; Australian Institute of Health and Welfare, *Chronic conditions and multimorbidity*, AIHW website, 17 June 2024, accessed 10 July 2024.
- ⁵⁰² Australian Institute of Health and Welfare, *Chronic conditions and multimorbidity*, AIHW website, 17 June 2024, accessed 10 July 2024.
- ⁵⁰³ Productivity Commission, *Report on government services 2025: health (part E)*, Australian Government, 6 February 2025, p 29, accessed 11 July 2025.
- ⁵⁰⁴ Productivity Commission, *Report on government services 2025: health (part E)*, Australian Government, 6 February 2025, p 48, accessed 11 July 2025.
- ⁵⁰⁵ B Cameron, A Cockram, C Kilpatrick, T Tierney and L Wallace, *Health services plan*, report to the Department of Health, 2024, p 7, accessed 15 August 2024; Australian Institute of Health and Welfare, *Understanding health and health data*, AIHW website, 2 July 2024, accessed 18 November 2024.
- ⁵⁰⁶ World Health Organisation, *Social determinants of health*, WHO website, n.d., accessed 23 July 2024.
- ⁵⁰⁷ World Health Organisation, *Social determinants of health*, WHO website, n.d., accessed 23 July 2024.
- ⁵⁰⁸ Australian Institute of Health and Welfare, *Built environment and health*, AIHW website, 2 July 2024, accessed 1 October 2024.
- ⁵⁰⁹ Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 4, accessed 8 May 2024.
- ⁵¹⁰ M Gmeinder, D Morgan and M Mueller, ‘How much do OECD countries spend on prevention?’, *OECD Health Working Papers*, 2017, 101, p 11, accessed 10 August 2024.
- ⁵¹¹ Australian Institute of Health and Welfare, *Australian burden of disease study 2018: interactive data on risk factor burden*, AIHW website, 24 November 2021, accessed 31 July 2024.
- ⁵¹² Australian Institute of Health and Welfare, *Built environment and health*, AIHW website, 2 July 2024, accessed 1 October 2024; E Anderson and JL Durstine, ‘Physical activity, exercise, and chronic diseases: a brief review’, *Sports Medicine and Health Science*, 2019, 1(1):3-10; C Roberts and J Barnard, ‘Effects of exercise and diet on chronic disease’, *Journal of Applied Physiology*, January 2005, 98(1):3-30.

- ⁵¹³ J Rozek, L Gunn, A Gannet, P Hooper, B Giles-Corti, *Evidence supporting the health benefits of public open space*, Heart Foundation website, n.d., accessed 1 October 2024; Australian Institute of Health and Welfare, *Built environment and health*, AIHW website, 2 July 2024, accessed 1 October 2024.
- ⁵¹⁴ Australian Institute of Health and Welfare, *Built environment and health*, AIHW website, 2 July 2024, accessed 1 October 2024.
- ⁵¹⁵ Arup, *The economic case for investment in walking*, report to Victoria Walks, 2018, p 19, accessed 23 September 2024; FTI Consulting, *Report on the economic assessment of cycling corridors*, report to Infrastructure Victoria, 2025, p 6, accessed 6 August 2025.
- ⁵¹⁶ Arup, *The economic case for investment in walking*, report to Victoria Walks, 2018, p 6, accessed 23 September 2024; Australian Institute of Health and Welfare, *Built environment and health*, AIHW website, 2 July 2024, accessed 1 October 2024.
- ⁵¹⁷ Department of Health and Aged Care, *National preventive health strategy 2021–2030*, Australian Government, 2021, pp 55–57, accessed 24 September 2024; Australian Institute of Health and Welfare, *Economics of sport and physical activity participation and injury*, AIHW website, 5 September 2023, accessed 1 October 2024; D Cadilhac, T Cumming, L Sheppard, D Pearce, R Carter and A Magnus, 'The economic benefits of reducing physical inactivity: an Australian example', *International Journal of Behavioral Nutrition and Physical Activity*, 2011, 8:99.
- ⁵¹⁸ RM Eime, J Harvey, MJ Charity, M Casey, H Westerbeek and WR Payne, 'The relationship of sport participation to provision of sports facilities and socioeconomic status: a geographical analysis', *Australian and New Zealand Journal of Public Health*, 2017, 41(3):248-255; Australian Institute of Health and Welfare, *Built environment and health*, AIHW website, 2 July 2024, accessed 1 October 2024.
- ⁵¹⁹ B Cameron, A Cockram C Kilpatrick, T Tierney and L Wallace, *Health services plan*, report to the Department of Health, 2024, p 7, accessed 21 September 2024.
- ⁵²⁰ Australian Institute of Health and Welfare, *Chronic conditions*, AIHW website; Pennington Institute, *Australia's annual overdose report*, August 2024, pp 125-126, accessed 2 January 2025.
- ⁵²¹ B Cameron, A Cockram C Kilpatrick, T Tierney and L Wallace, *Health services plan*, report to the Department of Health, 2024, p 7, accessed 21 September 2024.
- ⁵²² Department of Health, *Community health*, DH website, 25 October 2023, accessed 23 July 2024.
- ⁵²³ Department of Health, *Community health*, DH website, 25 October 2023, accessed 23 July 2024; Community Health First, *Strengthening Victoria's health system through community health*, 2023, pp 11–13, accessed 23 July 2024.
- ⁵²⁴ Corrections, Prison & Parole, *Health care*, Victorian Government website, n.d., accessed 20 December 2024.
- ⁵²⁵ T Cartwright, J Gallagher and G Smith, *Cultural review of the adult custodial corrections system*, report to the Victorian Government, 2022, p 720, accessed 31 May 2024.
- ⁵²⁶ OECD, *Health in the 21st century: putting data to work for stronger health systems*, OECD Health Policy Studies, 2019, pp 11–13, accessed 23 May 2024; Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 2, accessed 8 May 2024.
- ⁵²⁷ N Bradford, L Caffery, A Smith, 'Telehealth services in rural and remote Australia: a systematic review of models of care and factors influencing success and sustainability', *Rural and Remote Health*, 2016, 16(4), pp 2-3; Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 46, accessed 8 May 2024; Gippsland Regional Partnership, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 10,16.
- ⁵²⁸ Transport Accident Commission, *Lives lost: annual*, TAC website, n.d., accessed 25 August 2025.
- ⁵²⁹ Australian Institute of Health and Welfare, *Leading causes of death*, AIHW website, 9 April 2025, accessed 14 July 2025.
- ⁵³⁰ Transport Accident Commission, *Parents*, TAC website, n.d., accessed 14 July 2025.
- ⁵³¹ Transport Accident Commission, *Parents*, TAC website, n.d., accessed 14 July 2025; RACV, *RACV highlights the need for school zone safety* [media release], RACV, 31 January 2024, accessed 14 July 2025; Infrastructure Victoria analysis of Victorian road crash data. See Department of Transport and Planning, *Victorian road crash data* [data set], Victorian Government website, 2024, accessed 26 April 2024.
- ⁵³² OECD, *Speed management*, OECD, 2006, pp 74–76, accessed 14 July 2025; B Welle, W Li, C Adriaola-Steil, R King, M Obelheiro, C Sarmiento and Q Liu, *Cities safer by design*, World Resources Institute, 2015, accessed 14 July 2025; Curtin Monash Accident Research Centre, *Fact sheet 6: improving pedestrian safety* [pdf], 2010, p 4, accessed 14 July 2025; Victoria Police, *Road safety strategy, July 2024 to June 2028*, 2024, p 16, accessed 14 July 2025; G Yannis, E Michelraki, 'Review of city-wide 30 km/h speed limit benefits in Europe', *Sustainability*, 2024, 16(11), pp 7–11.
- ⁵³³ J Archer, N Fotheringham, M Symmons and B Corben, *The impact of lowered speed limits in urban/metropolitan areas* [pdf], Monash University Accident Research Centre, 2008, pp l,xiii–xiv,27–30,45, accessed 14 July 2025; OECD, *Speed management*, OECD, 2006, p 15, accessed 22 July 2025.
- ⁵³⁴ B Welle, W Li, C Adriaola-Steil, R King, M Obelheiro, C Sarmiento and Q Liu, *Cities safer by design*, World Resources Institute, 2015, accessed 14 Jul 2025; OECD, *Towards zero: ambitious road safety targets and safe system approach*, 2008, International Transport Forum, accessed 14 July 2025; E Rosen, U Sander, 'Pedestrian fatality risk as a function of car impact speed', *Accident Analysis & Prevention*, 2009, volume 41(3), pp 6-8.
- ⁵³⁵ City of Stonnington, *Safer Stonnington streets*, City of Stonnington website, n.d, accessed 11 July 2025, Merri-bek City Council, *Moving around Merri-bek transport strategy*, 2024, p 40, accessed 11 July 2025; P Hatch, 'This inner-city suburb could become an entirely 30km/h zone', *The Age*, 30 May 2025, accessed 11 July 2025.
- ⁵³⁶ City of Yarra, *Yarra City Council green lights new 30km speed limit trial* [media release], City of Yarra, 9 May 2024, accessed 14 July 2025.

- ⁵³⁷ Department of Transport and Planning, [Speed zoning policy – edition 3](#), 2025, pp 22–24, accessed 9 September 2025.
- ⁵³⁸ Department of Transport and Planning, [Speed zoning policy – edition 3](#), 2025, accessed 9 September 2025.
- ⁵³⁹ L Pearson, M Oakey, B Nelson, M Karbakhsh, S Karmali and B Beck, 'Cross-country policy comparison of 30 km/h speed limits', *Cities & Health*, August 2024, 1–12, p 10.
- ⁵⁴⁰ Department of Transport and Planning, [Speed zoning policy – edition 3](#), 2025, accessed 9 September 2025.
- ⁵⁴¹ The [Speed zoning policy – edition 3](#) allows for 30km/h speed limits in areas where vehicles mix with people walking, cycling or using other forms of transport. This could include local streets with high pedestrian numbers, activity centres and some school zones. The policy allows for time of day speed limits. We are not recommending removing the ability to reduce speed limits on arterial roads with high pedestrian numbers, activity centres and some school zones as part of the Speed zoning policy. Department of Transport and Planning, [Speed zoning policy – edition 3](#), 2025, accessed 9 September 2025.
- ⁵⁴² Austroads, [Impact of LATM treatments on speed and safety](#), 2009, pp 10–11, accessed 14 July 2025; RE Layfield and DI Parry, [Traffic calming – speed cushion schemes](#), Transport Research Laboratory, 1998, pp 22–23, accessed 14 July 2025.
- ⁵⁴³ Infrastructure Victoria analysis of potential streets using Google Street View. We looked at typical cases in Melbourne and regional Victoria. These include Brunswick, Reservoir, Keilor Downs, Wollert, Bendigo and Port Fairy; Victoria Walks, [Walking survey 2021 \(survey report\)](#), 2022, accessed 10 July 2025.
- ⁵⁴⁴ Infrastructure Victoria analysis of potential streets using Google Street View. We looked at typical cases in Melbourne and regional Victoria. These include Brunswick, Reservoir, Keilor Downs, Wollert, Bendigo and Port Fairy; I Olayode, H Chau and E Jamei, 'Barriers affecting promotion of active transportation: a study on pedestrian and bicycle network connectivity in Melbourne's west', *Land*, 2024,14(1), pp 16–18.
- ⁵⁴⁵ Victoria Walks, [Safer speeds on local streets: messaging survey report](#), 2025, pp 44–47, accessed 10 July 2025.
- ⁵⁴⁶ J Archer, N Fotheringham, M Symmons and B Corben, [The impact of lowered speed limits in urban and metropolitan areas](#) [pdf], Monash University Accident Research Centre, 2008, pp xi,32–37, accessed 14 July 2025.
- ⁵⁴⁷ Department of Transport, [Speed zoning policy](#), State of Victoria, 2021, p 8, accessed 14 July 2025; Transport for NSW, [NSW speed zoning standard](#), NSW Government, 2023, p16, accessed 22 July 2025.
- ⁵⁴⁸ Legislative Assembly Economy and Infrastructure Committee, [Inquiry into the impact of road safety behaviours on vulnerable road users](#), Parliament of Victoria, 2024, p 193, accessed 14 July 2025.
- ⁵⁴⁹ A Carver, A Barr, A Singh, H Badland, S Mavoa and R Bentley, 'How are the built environment and household travel characteristics associated with children's active transport in Melbourne, Australia?', *Journal of Transport and Health*, 2019, 12, pp 115–129.
- ⁵⁵⁰ J Garrard, [Active transport: children and young people](#) [pdf], VicHealth, 2009, p 9, accessed 26 April 2024; Active Healthy Kids Australia, [Reboot! Reimagining physically active lives](#) [pdf], 2022, p 20, accessed 14 July 2025.
- ⁵⁵¹ I Marzi and AK Reimers, 'Children's independent mobility: current knowledge, future directions, and public health implications', *International Journal of Environmental Research and Public Health*, 2018, 15(11), pp 2–5; GSA Trapp, [Driving up obesity? Exploring the relationship between school travel mode, physical activity and weight status in children](#) [doctoral thesis], University of Western Australia, 2012, pp 162–167, accessed 14 July 2025.
- ⁵⁵² M Oliver, 'Active transport is the key to achieving sustainable mobility', *WellBeing*, 20 June 2023, accessed 14 July 2025.
- ⁵⁵³ Transport Accident Commission, [Safe Local Roads and Streets program](#), TAC website, n.d., accessed 14 July 2025; Premier of Victoria, [Making local streets safer in Shepparton](#) [media release], Victorian Government, 3 July 2025, accessed 14 July 2025.
- ⁵⁵⁴ Premier of Victoria, [Making our roads safer](#) [media release], Victorian Government, 26 December 2024, accessed 14 July 2025; Department of Transport and Planning, [Road Safety Action Plan 2](#), State of Victoria, 2024, accessed 14 July 2025.
- ⁵⁵⁵ Transport Accident Commission, [TAC Local Government Grant Program: 2025 funding guidelines](#), State of Victoria, 2025, pp 5–11, accessed 11 July 2025; Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts, [Black Spot program guidelines](#) [pdf], Australian Government, 2024, pp 8–10, accessed 11 July 2025.
- ⁵⁵⁶ The guidelines currently do not include certain infrastructure treatments including roundabouts, pedestrian-operated signals, street lighting, signage improvements and raised non-priority crossings. These can all support safer walking and cycling. Transport Accident Commission, [TAC Local Government Grant Program](#), TAC website, n.d., accessed 10 July 2025.
- ⁵⁵⁷ Infrastructure Victoria analysis of 2022-2024 data from Transport Victoria, [Victorian Integrated Survey of Travel and Activity data](#) [data set], 15 May 2025, accessed 27 August 2024.
- ⁵⁵⁸ L Pearson, S Reeder, B Gabbe and B Beck, 'Designing for the interested but concerned: a qualitative study of the needs of potential bike riders', *Journal of Transport and Health*, 2024, 35(101770).
- ⁵⁵⁹ Victorian State Trauma Outcomes Registry and Monitoring Group, [Victorian state trauma registry annual report 2021–22](#) [pdf], 2023, p 20, accessed 27 August 2025; Legislative Assembly Economy and Infrastructure Committee, [Inquiry into the impact of road safety behaviours on vulnerable road users](#), Final report, Parliament of Victoria, 2024, p 146, accessed 27 August 2025.
- ⁵⁶⁰ Infrastructure Victoria analysis of 2012-2023 data from Transport Victoria, [Victorian road crash data](#) [data set], 11 August 2025, accessed 27 August 2025.
- ⁵⁶¹ Bicycle Network, [Bike crash experience study](#), 2023, p 10, accessed 27 August 2025.

- ⁵⁶² B Beck, M Winters, T Nelson, C Pettit, SZ Leao, M Saberi, J Thompson, S Seneviratne, K Nice and M Stevenson, 'Developing urban biking typologies: quantifying the complex interactions of bicycle ridership, bicycle network and built environment characteristics', *Environment and Planning B: Urban Analytics and City Science*, 2023, 50(1).
- ⁵⁶³ L Pearson, S Reeder, B Gabbe and B Beck, 'Designing for the interested but concerned: a qualitative study of the needs of potential bike riders', *Journal of Transport and Health*, 2024, 35(101770); H Ryan, *Submission no 188 to the Inquiry into the impact of road safety behaviours on vulnerable road users* [pdf], 16 May 2023, p 9, accessed 27 August 2025.
- ⁵⁶⁴ Infrastructure Victoria analysis of BikeSpot, *BikeSpot archive map* [data set], CrowdSpot website, 2023, accessed 27 August 2025.
- ⁵⁶⁵ Legislative Assembly Economy and Infrastructure Committee, *Inquiry into the impact of road safety behaviours on vulnerable road users*, Final report, Parliament of Victoria, 2024, p 144, accessed 6 August 2025; L Pearson and B Beck, 'Three in four people want to ride a bike, but are put off by lack of safe lanes', *The Conversation*, 12 January 2022, accessed 27 August 2025.
- ⁵⁶⁶ Legislative Assembly Economy and Infrastructure Committee, *Inquiry into the impact of road safety behaviours on vulnerable road users*, Final report, Parliament of Victoria, 2024, pp 145–146, accessed 27 August 2025; L Pearson, S Reeder, B Gabbe and B Beck, 'What a girl wants: a mixed-methods study of gender differences in the barriers to and enablers of riding a bike in Australia', *Transportation Research Part F: Traffic Psychology and Behaviour*, 2023, 94:453–465.
- ⁵⁶⁷ Department of Environment, Land, Water and Planning, *Victoria's climate change strategy*, State of Victoria, 2021, p 39, accessed 27 August 2025.
- ⁵⁶⁸ Sinclair Knight Merz and PwC, *Benefits of the inclusion of active transport in infrastructure projects*, report to the Queensland Department of Transport and Main Roads, 2011, pp v–vi, 5–6, accessed 27 August 2025; Queensland Government, *Benefits of riding*, Queensland Government website, 2 September 2024, accessed 27 August 2025.
- ⁵⁶⁹ C Brand, E Dons, E Anaya-Boig, I Avila-Palencia, A Clark, A de Nazelle, M Gascon, M Gaupp-Berghausen, R Gerike, T Götschi, F Iacorossi, S Kahlmeier, M Laeremans, MJ Nieuwenhuijsen, JP Orjuela, F Racioppi, E Raser, D Rojas-Rueda, A Standaert, E Stigell, S Sulikova, S Wegener, and L Int Panis, 'The climate change mitigation effects of daily active travel in cities', *Transportation Research Part D: Transport and Environment*, 2021, 93(102764); L Rau, H Rowe and R Powell, *Decarbonising Australia's transport sector: diverse solutions for a credible emissions reduction plan*, Climateworks Centre, 2024, pp 10,18,21,41, accessed 27 August 2025.
- ⁵⁷⁰ B Knight, *Why cycling lanes should be on the fast track for cities*, UNSW website, 27 July 2022, accessed 27 August 2025; Department for Transport, *Case study: developing London's cycle infrastructure*, UK Government website, 7 February 2020, accessed 27 August 2025.
- ⁵⁷¹ City of Melbourne, *Arden Street and Macaulay Road protected bike lanes*, City of Melbourne website, n.d., accessed 27 August 2025; R Mitra, RA Ziemba and PM Hess, 'Mode substitution effect of urban cycle tracks: case study of a downtown street in Toronto, Canada' [conference presentation] [pdf], *95th annual meeting of the Transportation Research Board*, Washington DC, 10–14 January 2016, accessed 27 August 2025; H Cordeau, *If you build it, who will come? Evidence from Montreal's bike lane expansion*, Working paper, SSRN website, 2023, p 15, accessed 27 August 2025; ASDF Research and CDM Research, *Near-market research 2017*, report to the City of Melbourne, 2017, p 27, accessed 27 August 2025; L Pearson, S Reeder, B Gabbe and B Beck, 'What a girl wants: a mixed-methods study of gender differences in the barriers to and enablers of riding a bike in Australia', *Transportation Research Part F: Traffic Psychology and Behaviour*, 2023, 94:453–465.
- ⁵⁷² International Transport Forum, *Safe micromobility*, 2020, pp 62–69, accessed 27 August 2025; International Transport Forum, *Safer micromobility*, pp 15,16, accessed 27 August 2025.
- ⁵⁷³ L Pearson and B Beck, 'Three in four people want to ride a bike, but are put off by lack of safe lanes', *The Conversation*, 12 January 2022, accessed 27 August 2025.
- ⁵⁷⁴ Bicycle Network, *Bike crash experience study*, 2023, p 10, accessed 27 August 2025.
- ⁵⁷⁵ Victorian Government, *Strategic cycling corridors in Victoria*, Victorian Government website, 12 November 2024, accessed 27 August 2025.
- ⁵⁷⁶ Network length derived from Infrastructure Victoria analysis of Victorian Government, *Strategic cycling corridors in Victoria*, Victorian Government website, 15 November 2023, accessed 14 April 2024.
- ⁵⁷⁷ Victorian Government, *Walking and cycling*, Victorian Government website, 29 May 2024, accessed 27 August 2025.
- ⁵⁷⁸ Victorian Government, *Strategic cycling corridors in Victoria*, Victorian Government website, 12 November 2024, accessed 27 August 2025.
- ⁵⁷⁹ Infrastructure Victoria analysis of Department of Transport and Planning, *Bicycle infrastructure network* [data set], 6 June 2025, accessed 27 August 2025. Analysis assumes that it takes 2 minutes to cycle 400 metres, see A Kassim, H Tayyeb and M Al-Falahi, 'Critical review of cyclist speed measuring techniques', *Journal of Traffic and Transportation Engineering* (English edition), 2020, 7(1):98–110, p 102.
- ⁵⁸⁰ G Yannis and E Michelaraki, 'Review of city-wide 30 km/h speed limit benefits in Europe', *Sustainability*, 2024, 16(11), pp 13–14; R Aldred, A Goodman, J Woodcock, 'Impacts of active travel interventions on travel behaviour and health: results from a five-year longitudinal travel survey in Outer London', *Journal of Transport and Health*, 2024, 35(101771), pp 2,3,13; Interreg North-West Europe, *What is a cycle highway?*, Cycle Highways website [archive], n.d., accessed 27 August 2025.
- ⁵⁸¹ Transport for NSW, *Cycleway design toolbox: designing for cycling and micromobility*, NSW Government, 2020, accessed 27 August 2025; Trafficworks, *Priority cycling corridor investment analysis*, report to Infrastructure Victoria, 2025, pp 10–17.
- ⁵⁸² Trafficworks, *Priority cycling corridor investment analysis*, report to Infrastructure Victoria, 2025, p 10.
- ⁵⁸³ FTI Consulting, *Report on the economic assessment of cycling corridors*, report to Infrastructure Victoria, 2025, pp 6–7.
- ⁵⁸⁴ FTI Consulting, *Report on the economic assessment of cycling corridors*, report to Infrastructure Victoria, 2025, pp 58–59.
- ⁵⁸⁵ FTI Consulting, *Report on the economic assessment of cycling corridors*, report to Infrastructure Victoria, 2025, p 56.

- ⁵⁸⁶ Department of Transport and Planning, *Plan for Victoria*, Victorian Government, 2025, pp 25–26, accessed 27 August 2025; Infrastructure Victoria analysis of Institute of Sensible Transport, *Bike propensity index* [data set], unpublished; Compass IoT, *Vehicle speeds and traffic volume* [data set], unpublished; BikeSpot, *BikeSpot archive map* [data set], CrowdSpot website, 2024, accessed 9 September 2024; Department of Transport and Planning, *Bicycle infrastructure network* [data set], 6 June 2025, accessed 27 August 2025; BikeWest, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 7–sk11; Boroondara, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 9–10; Eukai on behalf of Vicinity Centres, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2.
- ⁵⁸⁷ Infrastructure Victoria analysis of Compass IoT, *Vehicle speeds and traffic volume* [data set], unpublished; BikeSpot, *BikeSpot archive map* [data set], CrowdSpot website, 2024, accessed 9 September 2024; Department of Transport and Planning, *Bicycle infrastructure network* [data set], 6 June 2025, accessed 27 August 2025. Infrastructure requirements from City of Yarra, *Moving forward – Yarra's transport strategy 2022–32* [pdf], pp 60–61, 2022, accessed 27 August 2025.
- ⁵⁸⁸ Infrastructure Victoria, *Building safer cycling networks*, 2025, p 19.
- ⁵⁸⁹ G Currie and J Allen, 'Australians with disabilities: transport disadvantage and disability', in G Currie, J Stanley and J Stanley (eds), *No way to go: transport and social disadvantage in Australian communities*, Monash University Press, 2007; Institute of Sensible Transport, *Mildura CBD access and mobility strategy*, Final report, Mildura Rural City Council, 2022, p 20, accessed 27 August 2025; Greater Shepparton, *Structure plan for Shepparton North: key issues and opportunities paper*, 2021, p 26, accessed 27 August 2025; L Davies, V Allan, J Batson, T Katsu and E Fishman, *Albury Wodonga integrated transport strategy background report*, Institute for Sensible Transport, 2021, pp 49–50, accessed 23 July 2025.
- ⁵⁹⁰ K Rosier and M McDonald, *The relationship between transport and disadvantage in Australia*, Australian Institute of Family Studies, 2011, p 9, accessed 6 August 2025.
- ⁵⁹¹ Trafficworks, *Priority cycling corridor investment analysis*, report to Infrastructure Victoria, 2025, pp 41–44.
- ⁵⁹² St Kilda Road cycling lanes cost \$3.7 million per kilometre, see Victoria's Big Build, *St Kilda Road bike lanes*, Victoria's Big Build website, 6 February 2025, accessed 27 August 2025. O'Hea Street Bike Path extension cost in Pascoe Vale cost \$2.2 million per kilometre, see Merri-bek City Council, *10 year capital works programs for walking and cycling*, Merri-bek City Council website, n.d., accessed 27 August 2025. New cycling link in Ballarat complete with raised pedestrian crossings, seating, tree planting and solar lighting cost \$800,000 per kilometre, see City of Ballarat, *Connecting Victoria Park to Morshead Park*, City of Ballarat website, 30 January 2025, accessed 27 August 2025.
- ⁵⁹³ Premier of Victoria, *Making our roads safer* [media release], Victorian Government, 26 December 2024, accessed 27 August 2025; Department of Transport and Planning, *Road Safety Action Plan 2*, State of Victoria, 2024, accessed 27 August 2025; Department of Transport and Planning, *Activity Centres Program*, DTP website, n.d., accessed 6 August 2025.
- ⁵⁹⁴ Minister for Infrastructure, Transport, Regional Development and Local Government, *National Active Transport Fund* [media release], Australian Government, 7 May 2024, accessed 27 August 2025.
- ⁵⁹⁵ Trafficworks, *Priority cycling corridor investment analysis*, report to Infrastructure Victoria, 2025, p 44.
- ⁵⁹⁶ Trafficworks, *Priority cycling corridor investment analysis*, report to Infrastructure Victoria, 2025, p 48.
- ⁵⁹⁷ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, accessed 3 July 2025.
- ⁵⁹⁸ Arup, *Social infrastructure accessibility mapping: outdoor sports fields*, report to Infrastructure Victoria, 2024, accessed 3 July 2025.
- ⁵⁹⁹ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, p 19, 2024, accessed 3 July 2025; Infrastructure Victoria analysis of Health Direct Australia, *Healthmap*, HDA website, accessed 8 October 2024; based on data from Torrens University Australia, *Public health information development unit* [data set], Torrens University Australia, 2018, accessed 8 October 2024.
- ⁶⁰⁰ RM Eime, J Harvey, MJ Charity, M Casey, H Westerbeek and W Payne, 'The relationship of sport participation to provision of sports facilities and socioeconomic status: a geographical analysis', *Australian and New Zealand Journal of Public Health*, 2017, 41(3), pp 248–255.
- ⁶⁰¹ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, p 4, accessed 3 July 2025.
- ⁶⁰² Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, p 6, accessed 3 July 2025.
- ⁶⁰³ The Centre for International Economics, *Cost of land for different regions in Victoria: key findings and methodology*, report to Infrastructure Victoria, 2024, pp 2–3, accessed 16 June 2025.
- ⁶⁰⁴ The Centre for International Economics, *Cost of land for different regions in Victoria: key findings and methodology*, report to Infrastructure Victoria, 2024, pp 2–3, accessed 16 June 2025.
- ⁶⁰⁵ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, pp 15–16, accessed 3 July 2025.
- ⁶⁰⁶ Ministry of Education, *Vandalism funding to repair school property*, New Zealand Ministry of Education website, 12 August 2024, accessed 16 June 2025.
- ⁶⁰⁷ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, pp 15–16, accessed 3 July 2025.
- ⁶⁰⁸ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, p 22, accessed 3 July 2025.
- ⁶⁰⁹ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, p 11, accessed 3 July 2025. We estimate costs of around \$8 million to provide the open space equivalent to the average government school site in Melbourne

(based on unpublished data from the Centre for International Economics). This land value combined with grants for upgrades might produce an outdoor facility that might otherwise cost \$10 million.

- ⁶¹⁰ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, pp 6, 11, accessed 3 July 2025.
- ⁶¹¹ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, p 10, accessed 3 July 2025.
- ⁶¹² Premier of Victoria, *Delivering more community spaces and new schools* [media release], Victorian Government website, 23 July 2025, accessed 23 July 2025; K Rooney and R Eddie, 'Dozens of schools to open up sports facilities after hours for western communities', *The Age*, 23 July 2025, accessed 23 July 2025.
- ⁶¹³ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, p 4, accessed 23 July 2025.
- ⁶¹⁴ Infrastructure Victoria analysis based on unpublished data from Sports and Recreation Victoria.
- ⁶¹⁵ Infrastructure Victoria, *Getting more from Melbourne's school grounds: sharing places for play and exercise*, 2024, p 22, accessed 3 July 2025.
- ⁶¹⁶ AFL, *Breaking new ground guidelines* [pdf], 2024, pp 1–2, accessed 16 June 2025.
- ⁶¹⁷ B Cameron, A Cockram, C Kilpatrick, T Tierney and L Wallace, *Health services plan: report of the Expert Advisory Committee*, report to the Department of Health, 2024, p 7, accessed 25 August 2025; Productivity Commission, *Leveraging digital technology in healthcare*, Australian Government, 2024, p 54, accessed 25 August 2025; Australian Institute of Health and Welfare, *Chronic conditions*, AIHW website, 17 June 2024, accessed 25 August 2025.
- ⁶¹⁸ Productivity Commission, *Report on government services 2025: health (part E)*, Australian Government, 2025, p 29, accessed 25 August 2025.
- ⁶¹⁹ Infrastructure Victoria estimate based on Productivity Commission, *Report on government services 2025: health (part E)*, Australian Government, 6 February 2025, p 29, accessed 25 August 2025; Productivity Commission, *Report on government services 2025: health (part E) - primary and community health*, Australian Government, 6 February 2025, table no. 12A.55, accessed 8 July 2025. Estimate uses an average cost per acute emergency department presentation in public hospitals for admitted (\$1,533) and non-admitted (\$736) patients for 2022–23. Assumes 2022–23 rates of 35% admitted and 65% non-admitted patients for emergency department patients, applied to selected potentially preventable GP-type presentations to emergency departments in Victoria. Cost data only covers 38 reporting public hospitals. Does not include other potential public hospital cost savings such as reductions in staffing numbers.
- ⁶²⁰ Z Ansari, SI Haider, H Ansari, T de Gooyer and C Sindall, 'Patient characteristics associated with hospitalisations for ambulatory care sensitive conditions in Victoria, Australia', *BMC Health Services Research*, 2012, 12(475).
- ⁶²¹ Community Health First, *Strengthening Victoria's health system through community health* [pdf], 2023, p 38, accessed 25 August 2025; B Cameron, A Cockram, C Kilpatrick, T Tierney and L Wallace, *Health services plan: report of the Expert Advisory Committee*, report to the Department of Health, 2024, p 141, accessed 25 August 2025.
- ⁶²² R Katterl, O Anikeeva, C Butler, L Brown, B Smith and P Bywood, *Potentially avoidable hospitalisations in Australia: causes for hospitalisations and primary health care interventions*, Primary Health Care Research and Information Service, 2012, p i, accessed 25 August 2025; RJ Wolters, JCC Braspenning and M Wensing, 'Impact of primary care on hospital admission rates for diabetes patients: a systematic review', *Diabetes Research and Clinical Practice*, 2017, 129:182–196.; AJL King, R Johnson, H Cramer, S Purdy and AL Huntley, 'Community case management and unplanned hospital admissions in patients with heart failure: a systematic review and qualitative evidence synthesis', *Journal of Advanced Nursing*, 2018, 74(7):1463–1473.
- ⁶²³ Department of Health, *Community health*, DH website, 4 June 2025, accessed 25 August 2025.
- ⁶²⁴ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 15, accessed 25 August 2025.
- ⁶²⁵ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 14, accessed 25 August 2025.
- ⁶²⁶ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 17, accessed 25 August 2025.
- ⁶²⁷ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 19, accessed 25 August 2025.
- ⁶²⁸ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 11, accessed 25 August 2025.
- ⁶²⁹ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 11, accessed 25 August 2025; Infrastructure Victoria analysis of Quantum Market Research, *Access to social infrastructure consumer research*, report to Infrastructure Victoria, 2024, accessed 25 August 2025.
- ⁶³⁰ Quantum Market Research, *Access to social infrastructure consumer research*, report to Infrastructure Victoria, 2024, p 31, accessed 25 August 2025.
- ⁶³¹ Victorian Agency for Health Information, *Mental health community service hours report 2023–24 – quarter 4*, Department of Health, 2024, accessed 25 August 2025.
- ⁶³² Department of Health, *Statewide mental health and wellbeing service and capital plan 2024–2037*, State of Victoria, 2024, p 40, accessed 25 August 2025; Mental Health Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5.
- ⁶³³ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 17, accessed 25 August 2025.
- ⁶³⁴ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 19, accessed 25 August 2025.

- ⁶³⁵ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 25, accessed 25 August 2025.
- ⁶³⁶ Community Health Taskforce, *Community Health Taskforce: report to government*, report to the Department of Health, 2019, p 26, accessed 25 August 2025.
- ⁶³⁷ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 12, accessed 25 August 2025.
- ⁶³⁸ Infrastructure Victoria, *Investing in community health infrastructure*, 2025, p 25, accessed 25 August 2025.
- ⁶³⁹ Infrastructure Victoria analysis of Department of Treasury and Finance, *Victorian Budget 2021/22: Budget paper 4 – state capital program*, State of Victoria, 2021, accessed 25 August 2025; Department of Treasury and Finance, *Victorian Budget 2022/23: Budget paper 4 – state capital program*, State of Victoria, 2022, accessed 25 August 2025; Department of Treasury and Finance, *Victorian Budget 2023/24: Budget paper 4 – state capital program*, State of Victoria, 2023, accessed 25 August 2025; Department of Treasury and Finance, *Victorian Budget 2024/25: Budget paper 4 – state capital program*, State of Victoria, 2024, accessed 25 August 2025; Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper 4 – state capital program*, State of Victoria, 2025, accessed 25 August 2025. Assumes \$150 million to \$300 million spending in total on community health infrastructure over 5 years, expressed as a proportion of average health infrastructure investment of approximately \$2 billion a year.
- ⁶⁴⁰ This cost estimate is based on Infrastructure Victoria survey of registered community health organisations, see Infrastructure Victoria, *Investing in community health infrastructure*, 2025, pp 14–23, accessed 25 August 2025.
- ⁶⁴¹ Social Ventures Australia, *AOD use and the risk of entrenched disadvantage in Australia*, 2024, p 4, accessed 18 June 2025.
- ⁶⁴² Rethink Addiction and KPMG, *Understanding the cost of addiction in Australia*, Rethink Addition, 2022, p 4, accessed 18 June 2025.
- ⁶⁴³ A Voce and T Sullivan, 'What are the monetary returns of investing in programs that reduce demand for illicit drugs?', *Trends and Issues in Crime and Criminal Justice*, 2022, 657, p 9.
- ⁶⁴⁴ A Voce and T Sullivan, 'What are the monetary returns of investing in programs that reduce demand for illicit drugs?', *Trends and Issues in Crime and Criminal Justice*, 2022, 657, p 2, accessed 18 June 2025; UK Health Security Agency, 'How alcohol and drug treatment helps to reduce crime', *UK Health Security Agency blog*, 2 November 2017, accessed 18 June 2025; T Whitten, J Cale, S Nathan, M Williams, E Baldry, M Ferry and A Hayen, 'Influence of a residential drug and alcohol program on young people's criminal conviction trajectories', *Journal of Criminal Justice*, 2023, 84.
- ⁶⁴⁵ Australian Institute of Health and Welfare, *Alcohol and other drug treatment services in Australia annual report: Victoria*, AIHW website, 14 June 2024, accessed 18 June 2025.
- ⁶⁴⁶ Turning Point, *Ambulance attendances for alcohol and drug-related events - AODstats*, Turning Point website, 23 April 2025, accessed 18 June 2025.
- ⁶⁴⁷ Coroners Court of Victoria, *Victorian overdose deaths 2014–2023*, 3 October 2024, p 4, accessed 18 June 2025.
- ⁶⁴⁸ Australian Institute of Health and Welfare, *Alcohol and other drug treatment services in Australia annual report: Victoria*, AIHW website, 14 June 2024, accessed 18 June 2025; Victorian Alcohol and Drug Association, *Victorian election statement: equitable access to alcohol and other drug treatment for all Victorians* [pdf], 2022, pp 9–10,15, accessed 18 June 2025.
- ⁶⁴⁹ Victorian Alcohol and Drug Association, *Surge in alcohol related treatment demand needs to be urgently addressed* [media release], VAADA, 17 April 2024, accessed 18 June 2025.
- ⁶⁵⁰ Department of Treasury and Finance, *Victorian Budget 2025/26: department performance statement 2025–26*, State of Victoria, 2025, p 70, accessed 6 June 2025.
- ⁶⁵¹ Victorian Alcohol and Drug Association, *Victorian election statement: equitable access to alcohol and other drug treatment for all Victorians* [pdf], 2022, p 12, accessed 18 June 2025.
- ⁶⁵² Victorian Alcohol and Drug Association, *Victorian election statement: equitable access to alcohol and other drug treatment for all Victorians* [pdf], 2022, p 12, accessed 18 June 2025.
- ⁶⁵³ Victorian Alcohol and Drug Association, *Victorian election statement: equitable access to alcohol and other drug treatment for all Victorians* [pdf], 2022, p 12, accessed 18 June 2025; Turning Point, *A study of patient pathways in alcohol and other drug treatment: final report of the Patient Pathways National Project*, 2014, p xvi, accessed 18 June 2025; C Redko, RC Rapp and RG Carlson, 'Waiting time as a barrier to treatment entry: perceptions of substance users', *Journal of Drug Issues*, 2006, 36(4):831–852.
- ⁶⁵⁴ Victorian Alcohol and Drug Association, *Mental health presentation in the AOD sector: highlighting the challenge and working towards solutions*, 2025, accessed 2 June 2025; P Armytage, A Fels, A Cockram and B McSherry, *Final report volume 3 – promoting inclusion and addressing inequities*, Royal Commission into Victoria's Mental Health System, report to the Victorian Government, 2021, p 294, accessed 3 June 2025; Mental Health Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9.
- ⁶⁵⁵ Victorian Alcohol and Drug Association, *Mental health presentation in the AOD sector: highlighting the challenge and working towards solutions*, 2025, accessed 2 June 2025; P Armytage, A Fels, A Cockram and B McSherry, *Final report volume 3 – promoting inclusion and addressing inequities*, Royal Commission into Victoria's Mental Health System, report to the Victorian Government, 2021, pp 285–305, accessed 3 June 2025; Mental Health Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9.
- ⁶⁵⁶ Department of Health, *Residential treatment services*, DH website, 6 July 2023, accessed 18 June 2025.
- ⁶⁵⁷ Department of Health, *Residential treatment services*, DH website, 6 July 2023, accessed 18 June 2025.
- ⁶⁵⁸ Department of Health, *Residential treatment services*, DH website, 6 July 2023, accessed 18 June 2025.
- ⁶⁵⁹ Department of Health, *Residential treatment services*, DH website, 6 July 2023, accessed 18 June 2025.

- ⁶⁶⁰ Network of Alcohol and Other Drugs Agencies, *Providing alcohol and other drug treatment in a residential setting*, 2022, pp 22–24, accessed 18 June 2025; Victorian Health Building Authority, *Alcohol and other drug residential rehabilitation facility part b: health facility briefing and planning guideline*, 2019, p 23, accessed 18 June 2025; RS Ulrich, C Zimring, A Joseph, X Quan and R Choudhary, 'The role of the physical environment in the hospital of the 21st century: a once-in-a-lifetime opportunity', *The Center for Health Design*, 2004, pp 26–27, accessed 18 June 2025.
- ⁶⁶¹ Turning Point, *A study of patient pathways in alcohol and other drug treatment: final report of the Patient Pathways National Project*, 2014, p xii, accessed 18 June 2025.
- ⁶⁶² Turning Point, *A study of patient pathways in alcohol and other drug treatment: final report of the Patient Pathways National Project*, 2014, p 6, accessed 18 June 2025; S Darke, A Williamson, J Ross and M Teesson, 'Residential rehabilitation for the treatment of heroin dependence: Sustained heroin abstinence and drug-related problems 2 years after treatment entrance', *Addictive Disorders and Their Treatment*, March 2006 5(1):9-18; M Teesson C Marel, S Darke, J Ross, T Slade, L Burns, M Lynskey, S Memedovic, J White and KL Mills, 'Long-term mortality, remission, criminality and psychiatric comorbidity of heroin dependence: 11-year findings from the Australian Treatment Outcome Study', *Addiction*, 2015, 110(6): 986–93; Network of Alcohol and Other Drugs Agencies, *Providing alcohol and other drug treatment in a residential setting*, 2022, p 20, accessed 18 June 2025.
- ⁶⁶³ E Madden, A Fisher, KL Mills and C Marel, *Best practice approaches for alcohol and other drug treatment in residential rehabilitation*, The Matilda Centre for Research in Mental Health and Substance Use, 2020, p 10, accessed 18 June 2025; Department of Health, *Residential treatment services*, DH website, 6 July 2023, accessed 18 June 2025.
- ⁶⁶⁴ Alcohol and Drug Foundation, *What is 'Closing the Gap'?*, ADF website, 18 March 2025, accessed 18 June 2025.
- ⁶⁶⁵ Australian Institute of Health and Welfare, *Alcohol and other drug treatment services in Australia annual report, state and territory summaries*, AIHW website, 14 June 2024, accessed 18 June 2025; Australian Bureau of Statistics, *Victoria: Aboriginal and Torres Strait Islander population summary*, ABS website, 1 July 2022, accessed 18 June 2025.
- ⁶⁶⁶ Victorian Aboriginal Community Controlled Health Organisation, *Not everyone has that support: an evaluation of a series of harm reduction and AOD awareness activities within Victorian Aboriginal communities*, VACCHO website, 2015, p 6, accessed 18 June 2025; Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 4*, 2025, p 97, accessed 8 July 2025.
- ⁶⁶⁷ Alcohol and Drug Foundation, *What is 'Closing the Gap'?*, ADF website, 18 March 2025, accessed 18 June 2025; Australian Institute of Health and Welfare, *Health system performance: 3.11 Access to alcohol and drug services*, AIHW website, n.d., accessed 18 June 2025.
- ⁶⁶⁸ Penington Institute, *Australia's annual overdose report 2024*, 2024, p 125, accessed 18 June 2025; Turning Point, *Deaths - AODstats*, Turning Point website, 23 April 2025, accessed 18 June 2025.
- ⁶⁶⁹ Victorian Agency for Health Information, *Victorian population health survey 2022*, VAHI website, n.d., accessed 18 June 2025.
- ⁶⁷⁰ Australian Institute of Health and Welfare, *Alcohol and other drug use in regional and remote Australia: consumption, harms and access to treatment 2016–17*, AIHW website, 15 March 2019, accessed 18 June 2025.
- ⁶⁷¹ Infrastructure Victoria analysis of regional residential rehabilitation bed locations. Public Accounts and Estimates Committee, *Inquiry into the 2019–20 budget estimates hearings – mental health: questions on notice written request*, Parliament of Victoria, Thursday 13 June 2019, p 7, accessed 18 June 2025; Victorian Health Building Authority, *Residential alcohol and other drugs treatment facility for Mildura and the Mallee*, VHBA website, 29 January 2025, accessed 18 June 2025; Victorian Health Building Authority, *Regional residential rehabilitation services - stage 2 and 3*, VHBA website, 21 April 2022, accessed 18 June 2025; Warrnambool City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ⁶⁷² Victorian Alcohol and Drug Association, *Victorian election statement: equitable access to alcohol and other drug treatment for all Victorians* [pdf], 2022, p 13, accessed 18 June 2025.
- ⁶⁷³ Infrastructure Victoria analysis of Victorian Alcohol and Drug Association data. Estimates based on Australian Bureau of Statistics, *National, state and territory population*, ABS website, March 2021 data, 16 September 2021, accessed 1 October 2025.
- ⁶⁷⁴ P Armytage, A Fels, A Cockram and B McSherry, *Final report volume 3 – promoting inclusion and addressing inequities*, Royal Commission into Victoria's Mental Health System, report to the Victorian Government, 2021, pp 285–305, accessed 3 June 2025; D Baker and F Kay-Lambkin, *Two at a time: alcohol and other drug use by young people with a mental illness* [pdf], Orygen, 2016, pp 24-25, accessed 3 June 2025; C Glover-Wright, K Coupe, AC Campbell, C Keen, P Lawrence, SA Kinner and JT Young, 'Health outcomes and service use patterns associated with co-located outpatient mental health care and alcohol and other drug specialist treatment: a systematic review', *Drug and Alcohol Review*, 2023; 42(5):1195–1219.
- ⁶⁷⁵ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 4*, 2025, pp 102–103, accessed 8 July 2025.
- ⁶⁷⁶ Premier of Victoria, *Helping Victorians recover from alcohol and drug use* [media release], Victorian Government, 7 January 2021, accessed 18 June 2025.
- ⁶⁷⁷ Department of Transport and Planning, *Government land management policies*, DTP website, n.d., accessed 18 June 2025.
- ⁶⁷⁸ Department of Transport and Planning, *Victoria in future 2023*, State of Victoria, 2023, pp 7,11, accessed 14 June 2025; Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 54, accessed 14 June 2025; Australian Institute of Health and Welfare, *Chronic conditions*, AIHW website, 17 June 2024, accessed 14 June 2025.
- ⁶⁷⁹ OECD, *Health in the 21st century: putting data to work for stronger health systems*, OECD Health Policy Studies, 2019, p 31, accessed 14 June 2025; Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 2, accessed 14 June 2025.
- ⁶⁸⁰ O Boldt-Christmas, R Kannourakis, M Maud, and D Ungerman, 'Virtual hospitals could offer respite to overwhelmed health systems', *McKinsey Healthcare Blog*, 11 May 2023, accessed 14 June 2025.

- ⁶⁸¹ Victorian Healthcare Association, *Protecting the wellbeing of Victoria's public healthcare services*, 2024, p 11, accessed 14 June 2025; Premier of Victoria, *Delivering a better health system for Victorian patients* [media release], Victorian Government, 8 August 2024, accessed 14 June 2025.
- ⁶⁸² Department of Health, *Health services plan: report of the Expert Advisory Committee*, 2024, p 135, accessed 14 June 2025.
- ⁶⁸³ In Sarkar, 'Transforming health data to actionable information: recent progress and future opportunities in health information exchange', *Yearbook of Medical Informatics*, 2022, 31(01): 203–214, p 205, accessed 14 June 2025; Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 18, accessed 14 June 2025.
- ⁶⁸⁴ JR Vest, MA Unruh, S Freedman, K Simon, 'Health systems' use of enterprise health information exchange vs single electronic health record vendor environments and unplanned readmissions', *Journal of the American Medical Informatics Association*, 1 October 2019, 26(10):989–998; NE Cho, 'The impact of health information sharing on hospital costs', *Healthcare (Basel)*, 2021, 9(7), 806; OECD, *Health in the 21st century: putting data to work for stronger health systems*, OECD Health Policy Studies, 2019, p 21, accessed 14 June 2025.
- ⁶⁸⁵ Victorian Healthcare Association, *Targeted solutions to address the challenges facing the healthcare system*, VHA website, 3 December 2024, accessed 4 June 2025; Victorian Healthcare Association, *Protecting the wellbeing of Victoria's public healthcare services*, 7 February 2024, p 11, accessed 4 June 2025.
- ⁶⁸⁶ Victorian Healthcare Association, *Targeted solutions to address the challenges facing the healthcare system*, VHA website, 3 December 2024, accessed 4 June 2025; K Bonello, M Riley, D McBain, J Lee, N Prasad, S Campbell, E Barker and K Robinson, *Implementation status of hospital EMRs: findings from a survey of public hospitals in Victoria, Australia*, Conference Paper from Health Information Management Association of Australia Virtual 38th National Conference 2021, October 2021, pp 31–32, accessed 4 June 2025.
- ⁶⁸⁷ Premier of Victoria, *Delivering a better health system for Victorian patients* [media release], Victorian Government, 8 August 2024, accessed 11 June 2025.
- ⁶⁸⁸ Department of Health, *CareSync Exchange*, DH website, 14 August 2025, accessed 18 August 2025; Premier of Victoria, *Delivering more connected care across our health system* [media release], Victorian Government website, 18 August 2025, accessed 18 August 2025.
- ⁶⁸⁹ Department of Health, *Victoria's digital health roadmap: improving patient care by lifting digital maturity in Victoria's public health services 2021–2025*, State of Victoria, 2021, p 35, accessed 14 June 2025; Australian Commission on Safety and Quality in Health Care, *My Health Record in emergency departments: final report and adoption model*, Australian Government, 2021, p 79, accessed 14 June 2025.
- ⁶⁹⁰ JR Vest, HY Jung, A Ostrovsky, LT Das and GP McGinty, 'Image sharing technologies and reduction of imaging utilization: a systematic review and meta-analysis', *Journal of American College of Radiology*, December 2015, 12(12):1371–1379.e3, p 1371.
- ⁶⁹¹ AR Chatterjee, S Stalcup, A Sharma, TS Sato, P Gupta, YZ Lee, C Malone, M McBee, EL Hotaling and AP Kansagra, 'Image sharing in radiology — a primer', *Academic Radiology*, 2017, 24(3):286–94, pp 286–287; EC Lin, 'Radiation risk from medical imaging', *Mayo Clinic Proceedings*, December 2010, 85(12):1142–1146; Harvard Health Publishing, *Radiation risk from medical imaging*, Harvard Medical School website, 30 September 2021, accessed 14 June 2025.
- ⁶⁹² JR Vest, HY Jung, A Ostrovsky, LT Das and GP McGinty, 'Image sharing technologies and reduction of imaging utilization: a systematic review and meta-analysis', *Journal of American College of Radiology*, December 2015, 12(12):1371–1379.e3; A Vreeland, KR Persons, H Primo, M Bishop, KM Garriott, MK Doyle, E Silver, DM Brown and C Bashall, 'Considerations for exchanging and sharing medical images for improved collaboration and patient care: HIMSS-SIIM collaborative white paper', *Journal of Digital Imaging*, 2016, 29:5, p 547–58; AR Chatterjee, S Stalcup, A Sharma, TS Sato, P Gupta, YZ Lee, C Malone, M McBee, EL Hotaling and AP Kansagra, 'Image sharing in radiology — a primer', *Academic Radiology*, 2017, 24(3):286–94, pp 286–287.
- ⁶⁹³ eHealth New South Wales, *Enterprise Imaging Repository (EIR)*, eHealth New South Wales website, n.d., accessed 14 June 2025; Government of Western Australia Health Support Services, *Enterprise Medical Imaging Platform (EMIP) now at all major metropolitan WA health system hospital sites*, Government of Western Australia website, 13 November 2023, accessed 14 June 2025.
- ⁶⁹⁴ Department of Health, *Victorian virtual care strategy*, State of Victoria, 2023, p 6, accessed 14 June 2025.
- ⁶⁹⁵ OECD, *The COVID-19 pandemic and the future of telemedicine*, OECD Health Policy Studies, 2023, p 81, 14 June 2025.
- ⁶⁹⁶ Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 91, accessed 14 June 2025.
- ⁶⁹⁷ O Boldt-Christmas, R Kannourakis, M Maud, and D Ungerman, 'Virtual hospitals could offer respite to overwhelmed health systems', *McKinsey Healthcare Blog*, 11 May 2023, accessed 14 June 2025.
- ⁶⁹⁸ Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 54, 14 June 2025; C Snoswell, M Taylor, T Comans, A Smith, L Gray, and L Caffery, 'Determining if telehealth can reduce health system costs: scoping review', *Journal of Medical Internet Research*, 2020, 22(10):e17298, pp 12–13.
- ⁶⁹⁹ ML Taylor, EE Thomas, CL Snoswell, AC Smith and LJ Caffery, 'Does remote patient monitoring reduce acute care use? a systematic review', *BMJ Open*, 2021, 11(3):e040232, p 2.
- ⁷⁰⁰ Austin Health, *Our virtual ward advances at-home care for patients with serious conditions*, Austin Health website, 30 May 2024, accessed 14 June 2025; Bendigo Health, *Remote patient monitoring brings care home*, Bendigo Health website, 1 March 2024, accessed 14 June 2025.
- ⁷⁰¹ Department of Health, *Better at Home initiative*, Department of Health website, 1 April 2025, accessed 14 June 2025; Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 54.
- ⁷⁰² Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 54, 14 June 2025; C Snoswell, M Taylor, T Comans, A Smith, L Gray, and L Caffery, 'Determining if telehealth can reduce health system costs: scoping review', *Journal of Medical Internet Research*, 2020, 22(10):e17298, pp 12–13.

- ⁷⁰³ Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 56, 14 June 2025; ML Taylor, EE Thomas, CL Snoswell, AC Smith and LJ Caffery, 'Does remote patient monitoring reduce acute care use? a systematic review', *BMJ Open*, 2021, 11(3):e040232, pp 2–3; KR De Guzman, CL Snoswell, ML Taylor, LC Gray, and LJ Caffery, 'Economic evaluations of remote patient monitoring for chronic disease: a systematic review', *Value in Health*, 2022, 25(6):897-913, p 909; E Seto, 'Cost comparison between telemonitoring and usual care of heart failure: a systematic review', *Telemedicine Journal and eHealth*, September 2008, 14(7):679–86.
- ⁷⁰⁴ Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, p 54, 14 June 2025; Australian Institute of Health and Welfare, *Disparities in potentially preventable hospitalisations across Australia, 2012–13 to 2017–18*, Australian Government, 2020, p 32, accessed 14 June 2025.
- ⁷⁰⁵ City of Greater Geelong, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 21–23.
- ⁷⁰⁶ SK Mistry, M Shaw, F Raffan, G Johnson, K Perren, S Shoko, B Harris-Roxas and F Haigh, 'Inequity in access and delivery of virtual care interventions: a scoping review', *International Journal of Environmental Research and Public Health*, 2022, 19:15.
- ⁷⁰⁷ Productivity Commission, *Leveraging digital technology in healthcare: research paper*, Australian Government, 2024, pp 63–65, accessed 4 June 2025; Independent Health and Aged Care Pricing Authority, *Consultation paper on the pricing framework for Australian public hospital services 2025–26*, 2024, pp 30–31, accessed 14 June 2025.
- ⁷⁰⁸ Independent Health and Aged Care Pricing Authority, *Consultation paper on the pricing framework for Australian public hospital services 2025–26*, 2024, pp 30–31, accessed 14 June 2025.
- ⁷⁰⁹ Department of Health, *Victorian virtual care strategy*, State of Victoria, 2023, p 13, accessed 14 June 2025.
- ⁷¹⁰ Department of Health, *Victorian virtual care strategy*, State of Victoria, 2023, p 13, accessed 14 June 2025.
- ⁷¹¹ L Sher, A Semciw, RL Jessup, A Carrodus and J Boyd, 'Structured evaluation of a virtual emergency department triage model of care: a study protocol', *Emergency Medicine Australasia*, 2022, 34(6):907-12, pp 907–909.
- ⁷¹² Department of Health, *Victorian virtual care strategy*, State of Victoria, 2023, p 13, accessed 14 June 2025.
- ⁷¹³ Premier of Victoria, *Virtual emergency department will care for more Victorians* [media release], Victorian Government, 17 March 2024, accessed 14 June 2025.
- ⁷¹⁴ LKD Le, T Thai, PA Cameron, M Sri-Ganeshan, GM O'Reilly, B Mitra, Z Nehme, L Brichko, A Underhill, C Charteris, D Egerton-Warburton and C Mihalopoulos, 'Modelled economic evaluation of a virtual emergency department in Victoria', *Emergency Medicine Australasia*, 2023, 35(6):1020–5.
- ⁷¹⁵ M Sri-Ganeshan, A Underhill, C Charteris, F McGee and PA Cameron, 'Establishing a 'Virtual' model of emergency care in Melbourne's southeast', *Australian Health Review*, 2023, 47(6):684–8; JT Kelly, N Mitchell, KL Campbell, K Furlong, M Langley, S Clark, E Rushbrook and K Hansen, 'Implementing a virtual emergency department to avoid unnecessary emergency department presentations', *Emergency Medicine Australasia*, 2024, 36(1):125–32; S Reid, M Bhatt, R Zemek et al, 'Virtual care in the paediatric emergency department: A new way of doing business?', *Canadian Journal of Emergency Medicine*, 2021, 23:80–4; JR Langabeer, T Champagne-Langabeer, D Alqusairi et al, 'Cost-benefit analysis of telehealth in pre-hospital care', *Journal of Telemedicine and Telecare*, 2017, 23(8):747–5.
- ⁷¹⁶ Department of Treasury and Finance, *Victorian Budget 2024/25: Budget paper no. 3 – service delivery*, State of Victoria, 2025, pp 49,54, accessed 4 June 2025; Department of Health, *Budget delivers record boost for frontline service delivery*, DH website, 21 May 2025, accessed 4 June 2025.
- ⁷¹⁷ B Cameron, A Cockram, C Kilpatrick, T Tierney and L Wallace, *Health services plan: report of the Expert Advisory Committee*, report to the Department of Health, 2024, p 28, accessed 26 June 2025.
- ⁷¹⁸ Department of Transport and Planning, *Victoria in future 2023*, State of Victoria, 2023, p 8, accessed 26 June 2025.
- ⁷¹⁹ Australian Institute of Health and Welfare, *Older Australians: health – selected conditions*, AIHW website, 2 July 2024, accessed 26 June 2025.
- ⁷²⁰ B Cameron, A Cockram, C Kilpatrick, T Tierney and L Wallace, *Health services plan: report of the Expert Advisory Committee*, report to the Department of Health, 2024, pp 66,96–97, accessed 30 June 2025.
- ⁷²¹ Victorian Auditor-General's Office, *Results of the 2016–17 audits: public hospitals*, 2017, pp 64,66, accessed 26 June 2025.
- ⁷²² B Cameron, A Cockram, C Kilpatrick, T Tierney and L Wallace, *Health services plan: report of the Expert Advisory Committee*, report to the Department of Health, 2024, p 96, accessed 30 June 2025.
- ⁷²³ Alfred Health, *Major trauma service: patient information*, Alfred Health website, n.d., accessed 23 July 2025.
- ⁷²⁴ Victorian Agency for Health Information, *Austin Hospital*, VAHI website, n.d., accessed 26 June 2025.
- ⁷²⁵ Royal Melbourne Hospital, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3.
- ⁷²⁶ Victorian Auditor-General's Office, *Results of the 2016–17 audits: public hospitals*, 2017, p 10, accessed 23 July 2025.
- ⁷²⁷ Alfred Health, *Response to reports about The Alfred infrastructure* [media release], 28 November 2019, accessed 1 June 2025; Victorian Legislative Council, *Debates*, 21 March 2023, pp 892–893, accessed 10 July 2025.
- ⁷²⁸ Austin Health, *Austin 2025: clinical services plan*, 2016, pp 8,77, accessed 26 June 2025.
- ⁷²⁹ Royal Melbourne Hospital, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2.
- ⁷³⁰ Department of Treasury and Finance, *2022 Victorian economic and fiscal update*, State of Victoria, 2022, p 94, accessed 10 September 2024.

- ⁷³¹ Department of Treasury and Finance, *Victorian Budget 2024/25: Budget paper 4 – state capital program*, State of Victoria, 2024, p 9, accessed 7 August 2025.
- ⁷³² Premier of Victoria, *Supporting the Alfred Hospital for generations to come* [media release], Victorian Government, 1 August 2025, accessed 13 August 2025; Premier of Victoria, *Helping families with great healthcare, close to home* [media release], Victorian Government, 7 May 2024, accessed 10 September 2024.
- ⁷³³ Victorian Auditor-General's Office, *Results of the 2016–17 audits: public hospitals*, 2017, pp 64–72, accessed 10 September 2024; B Preiss and M Cunningham, "Falling down around our ears": \$2b plea as The Alfred starts to crumble', *The Age*, 17 November 2019, accessed 15 July 2025.
- ⁷³⁴ Victorian Auditor-General's Office, *Results of the 2016–17 audits: public hospitals*, 2017, p 10, accessed 26 June 2025.
- ⁷³⁵ G Scialpi and J Declercq, 'Adaptability in healthcare buildings: a perspective through Joseph Bracops Hospital', *Frontiers in Medical Technology*, 2023, 5:1199581; Mott Macdonald, *The hospital of the future* [pdf], 2020, p 5, accessed 7 August 2025.
- ⁷³⁶ Infrastructure Partnerships Australia, *A healthy pipeline: delivering Australia's hospital infrastructure*, 2024, pp 23,25, accessed 7 August 2025.
- ⁷³⁷ Department of Treasury and Finance, *Victorian Budget 2024/25: Budget paper no. 4 – state capital program*, State of Victoria, 2024, p 65, accessed 7 August 2025.
- ⁷³⁸ Department of Treasury and Finance, *Partnerships Victoria projects*, DTF website, 18 November 2024, accessed 7 August 2025; Homes Victoria, *Ground lease model*, Homes Victoria website, n.d., accessed 7 August 2025.
- ⁷³⁹ Independent Broad-based Anti-corruption Commission, *Corrections and youth justice*, IBAC website, 19 September 2024, accessed 27 August 2025; H Gleeson, *Coronavirus triggers drop in prisoner numbers and an opportunity to reinvent the criminal justice system, lawyers say*, ABC News, 9 August 2020, accessed 27 August 2025.
- ⁷⁴⁰ Corrections Victoria, *Monthly time series prison and community corrections data* [data set], Table 1 – number of people in prison by gender and warrant status, data as at 30 June 2025, Corrections, Prisons and Parole website, accessed 27 August 2025.
- ⁷⁴¹ Crime Statistics Agency, *Recorded criminal instances* [data set], data as at 31 March 2025, CSA website, accessed 27 August 2025.
- ⁷⁴² Premier of Victoria, *Even tougher bail test to keep Victorians safe* [media release], Victorian Government, 29 July 2025, accessed 27 August 2025.
- ⁷⁴³ Premier of Victoria, *State gears up for tougher bail – starting now* [media release], Victorian Government, 18 March 2025, accessed 27 August 2025; B Kolovos, 'Cost of crime crackdown criticised as Victoria prepares for influx of prisoners with huge jail spend', *Guardian Australia*, 13 May 2025, accessed 27 August 2025; Premier of Victoria, *Tough new bail laws demand more prison beds* [media release], Victorian Government, 13 May 2025, accessed 27 August 2025.
- ⁷⁴⁴ Premier of Victoria, *Tough new bail laws demand more prison beds* [media release], Victorian Government, 13 May 2025, accessed 27 August 2025; Premier of Victoria, *Even tougher bail test to keep Victorians safe* [media release], Victorian Government, 29 July 2025, accessed 27 August 2025.
- ⁷⁴⁵ Department of Treasury and Finance, *2025-26 department performance statement*, State of Victoria, 2025, pp 107–108, accessed 27 August 2025.
- ⁷⁴⁶ Productivity Commission, *Report on government services 2025: part c: justice* [data set], Australian Government, 4 February 2025, accessed 27 August 2025.
- ⁷⁴⁷ J Payne, *Recidivism in Australia: findings and future research*, Australian Institute of Criminology, 2007, p 2, accessed 27 August 2025; Productivity Commission, *Australia's prison dilemma*, Australian Government, 2021, p 3, accessed 27 August 2025.
- ⁷⁴⁸ Australian Institute of Health and Welfare, *Adults in prison*, AIHW website, 15 November 2023, accessed 27 August 2025; Australian Institute of Health and Welfare, *The health of people in Australia's prisons 2022*, AIHW website, 15 November 2023, accessed 27 August 2025.
- ⁷⁴⁹ Legislative Council Legal and Social Issues Committee, *Inquiry into Victoria's criminal justice system*, Final report, vol. 2, Parliament of Victoria, 2022, pp 587–593, accessed 27 August 2025; Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 4, 2025, pp 212–217, accessed 27 August 2025.
- ⁷⁵⁰ Coroner's Court of Victoria, *Inquest into the passing of Veronica Nelson*, 24 August 2023, accessed 27 August 2025; Cultural Review of the Adult Custodial Corrections System, *Safer prisons, safer people, safer communities*, 2022, p 720, accessed 27 August 2025.
- ⁷⁵¹ Premier of Victoria, *Western Plains Correctional Centre ready for prisoners* [media release], Victorian Government, 26 June 2025, accessed 27 August 2025.
- ⁷⁵² SA Pellicano, LA Pearce, AC Campbell, R Shuttleworth and, SA Kinner, 'Health and incarceration research in Australia: a scoping review', *The Lancet Regional Health - Western Pacific*, 2025, 56(101500).
- ⁷⁵³ Coroner's Court of Victoria, *Inquest into the passing of Veronica Nelson*, 24 August 2023, pp 356–358, accessed 27 August 2025.
- ⁷⁵⁴ Cultural Review of the Adult Custodial Corrections System, *Safer prisons, safer people, safer communities*, 2022, p 720, accessed 27 August 2025; Productivity Commission, *Australia's prison dilemma*, Australian Government, 2021, p 3, accessed 27 August 2025.
- ⁷⁵⁵ Productivity Commission, *Australia's prison dilemma*, Australian Government, 2021, pp 63–64, accessed 27 August 2025.
- ⁷⁵⁶ Yoorrook Justice Commission, *Yoorrook for justice: report into Victoria's child protection and criminal justice systems*, 2023, p 236, accessed 8 September 2025; Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 4, 2025, p 215, accessed 8 September 2025.

- ⁷⁵⁷ Yoorrook Justice Commission, *Yoorrook for justice: report into Victoria's child protection and criminal justice systems*, 2023, p 238, accessed 8 September 2025.
- ⁷⁵⁸ Infrastructure Victoria calculation based on Productivity Commission, *Report on government services 2025: part c, section 8: corrective services* [data set], Australian Government, 4 February 2025, accessed 27 August 2025. In 2023-24, there were 1,549 per 100,000 adults in prison who are Aboriginal and Torres Strait Islander, compared to 99 per 100,000 adults in prison who are non-Indigenous, meaning Aboriginal and Torres Strait Islander people are 16 times more likely to be a Victorian prisoner than a non-Indigenous person.
- ⁷⁵⁹ Yoorrook Justice Commission, *Yoorrook for justice: report into Victoria's child protection and criminal justice systems*, 2023, pp 61,360, accessed 27 August 2025; Kevin Bell, *Housing: the great Australian right*, Monash University Publishing, Clayton, Vic., 2024, pp 49–53; Cultural Review of the Adult Custodial Corrections System, *Safer prisons, safer people, safer communities*, 2022, pp 27–31, accessed 27 August 2025.
- ⁷⁶⁰ Cultural Review of the Adult Custodial Corrections System, *Safer prisons, safer people, safer communities*, 2022, pp 27,138, accessed 27 August 2025.
- ⁷⁶¹ Yoorrook Justice Commission, *Yoorrook for justice: report into Victoria's child protection and criminal justice systems*, 2023, pp 360,407, accessed 8 September 2025; Cultural Review of the Adult Custodial Corrections System, *Safer prisons, safer people, safer communities*, 2022, pp 460,502–3,507–10, accessed 8 September 2025.
- ⁷⁶² Kevin Bell, *Housing: the great Australian right*, Monash University Publishing, Clayton, Vic., 2024, pp 45–50.
- ⁷⁶³ Department of Justice and Community Safety, *Wulqunqgo Ngalu Learning Place*, DJCS website, 28 September 2022, accessed 18 June 2025.
- ⁷⁶⁴ Premier of Victoria, *Australian-first Aboriginal Healing Unity in a prison opens* [media release], Victorian Government, 18 September 2023, accessed 8 September 2025; Victorian Government, *Cultural Review of the Adult Custodial Corrections System: Victorian Government response*, State of Victoria, 2023, p 8, accessed 8 September 2025.
- ⁷⁶⁵ Department of Justice and Community Safety, *Wulqunqgo Ngalu Learning Place*, DJCS website, 15 October 2024, accessed 8 September 2025; Cultural Review of the Adult Custodial Corrections System, *Safer prisons, safer people, safer communities*, Final report, 2022, p 30 accessed 8 September 2025.
- ⁷⁶⁶ M Acone, *Breaking the cycle: addressing homelessness and recidivism for formerly incarcerated men through enhanced housing pathways*, Council to Homeless Persons website, 18 November 2024, accessed 8 September 2025; K Bell, *Housing: the great Australian right*, Monash University Publishing, Clayton, Vic., 2024, pp 45–50.
- ⁷⁶⁷ M Willis, *Supported housing for prisoners returning to the community: a review of the literature*, Australian Institute of Criminology report to Corrections Victoria, 2018, p v, accessed 8 September 2025; C Martin, R Reeve, R McCausland, P Burton, R White and S Thomas, *Exiting prison with complex support needs: the role of housing assistance*, Australian Housing and Urban Research Institute, 2021, accessed 8 September 2025.
- ⁷⁶⁸ C Martin, R Reeve, R McCausland, P Burton, R White and S Thomas, *Exiting prison with complex support needs: the role of housing assistance*, Australian Housing and Urban Research Institute, 2021, p 54, accessed 8 September 2025.
- ⁷⁶⁹ C Martin, R Reeve, R McCausland, P Burton, R White and S Thomas, *Exiting prison with complex support needs: the role of housing assistance*, Australian Housing and Urban Research Institute, 2021, p 54, accessed 8 September 2025.
- ⁷⁷⁰ M Willis, *Supported housing for prisoners returning to the community: a review of the literature*, Australian Institute of Criminology report to Corrections Victoria, 2018, p 7, accessed 8 September 2025.
- ⁷⁷¹ Corrections Victoria, *Maribyrnong Community Residential Facility*, Corrections Victoria website, 20 May 2025, accessed 8 September 2025.
- ⁷⁷² Victorian Aboriginal Legal Service, *Baggarook*, VALS website, n.d., accessed 8 September 2025.
- ⁷⁷³ Premier of Victoria, *Breaking the cycle of crime with a stable roof over heads* [media release], Victorian Government, 9 July 2024, accessed 8 September 2025.
- ⁷⁷⁴ Victorian Aboriginal Legal Service, *Budget reveals yet again that Allan Labor Government pays lip service to Aboriginal self-determination*, VALS website, 7 May 2024, accessed 18 June 2025.
- ⁷⁷⁵ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 2, 2025, pp 25, accessed 3 October 2025; R Broome, *Aboriginal Victorians: A history since 1800*, Allen & Unwin, Sydney, 2005, pp xvii–xxii; Department of Premier and Cabinet, *Victorian Government Aboriginal affairs report 2024*, State of Victoria, 2025, p 1, accessed 31 July 2025.
- ⁷⁷⁶ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 2, 2025, pp 25–40, accessed 3 October 2025; The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 34, accessed 3 October 2025.
- ⁷⁷⁷ Deloitte, *Project 2 – methodology report for sector analysis* [pdf], report to the Federation of Victorian Traditional Owner Corporations, 2024, p 25, accessed 26 August 2024.
- ⁷⁷⁸ Yoorrook Justice Commission, *Yoorrook: truth be told*, 2025, p 36, accessed 17 July 2025; Gunditj Mirring Traditional Owners Aboriginal Corporation, *Sustainable development of the Budj Bim Cultural Landscape*, Gunditj Mirring Traditional Owners Aboriginal Corporation website, n.d., accessed 6 September 2024; Budj Bim Cultural Landscape, *Gunditjmarra culture*, Budj Bim Cultural Landscape website, n.d., accessed 1 November 2024; The Gunditjmarra people and G Wettenhall, *The people of Budj Bim*, em PRESS Publishing, Heywood, Vic., 2010, pp 18–27.
- ⁷⁷⁹ Yoorrook Justice Commission, *Yoorrook: truth be told*, 2025, pp 43–47, accessed 17 July 2025; Victorian Government, *Burra lotipa dungaludja – Victorian Aboriginal justice agreement phase 4*, State of Victoria, 2018, p 18, accessed 26 August 2024; R Broome, *Aboriginal Victorians: A history since 1800*, Allen & Unwin, Sydney, 2005, p 119.

- ⁷⁸⁰ Yoorrook Justice Commission, *Yoorrook: truth be told*, 2025, pp 37–38, 45–47; Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 2, 2025, pp 57–59, accessed 3 October 2025; Victorian Government, *Burra lotjpa dunguludja – Victorian Aboriginal justice agreement phase 4*, State of Victoria, 2018, p 18, accessed 26 August 2024; N Blatman, L Taksa, B Silverstein, P McManus, L Barker and A Webb, 'Rail relations: Aboriginal storywork and remaking Australia's settler-colonial infrastructure', *Geographical Research*, 2024, 63(2):280-281.
- ⁷⁸¹ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 1, 2025, pp 38–45, 89–94, accessed 3 October 2025; Victorian Government, *Burra lotjpa dunguludja – Victorian Aboriginal justice agreement phase 4*, State of Victoria, 2018, p 18, accessed 26 August 2024.
- ⁷⁸² Department of Premier and Cabinet, *Victorian Government Aboriginal affairs report 2024*, State of Victoria, 2025, accessed 24 July 2025; Productivity Commission, *Closing the gap information repository* [data set], Productivity Commission website, July 2025, accessed 31 July 2025.
- ⁷⁸³ The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, pp 37–38, accessed 24 July 2025.
- ⁷⁸⁴ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 2, 2025, pp 31–35; The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 33, accessed 3 October 2025.
- ⁷⁸⁵ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 2, 2025, pp 27–40, accessed 3 October 2025; The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 33, accessed 3 October 2025.
- ⁷⁸⁶ The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 34, accessed 24 July 2025.
- ⁷⁸⁷ First Peoples – State Relations, *Aboriginal self-determination*, First Peoples – State Relations website, 30 December 2019, accessed 19 September 2024.
- ⁷⁸⁸ The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 1, accessed 24 July 2025.
- ⁷⁸⁹ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 4, accessed 9 January 2025.
- ⁷⁹⁰ First Peoples – State Relations, *The Victorian Closing the Gap implementation plan*, First Peoples – State Relations website, 28 February 2024, accessed 8 October 2024.
- ⁷⁹¹ First Peoples' Assembly of Victoria Ltd and the State of Victoria, *Statewide Treaty – negotiated – pending assent*, 2025, p 9, accessed 10 September 2025; Victorian Government, *What is treaty?*, Victoria's Treaty website, n.d., accessed 24 July 2025; Victorian Government and First People's Assembly of Victoria, *Joint statement on treaty negotiations*, Victoria's Treaty website, 4 July 2025, accessed 24 July 2025; Department of Premier and Cabinet, *Victorian Government Aboriginal affairs report 2024*, State of Victoria, 2025, accessed 24 July 2025; The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 50, accessed 3 October 2025.
- ⁷⁹² First Peoples' Assembly of Victoria, *Representation and decision making power*, First Peoples' Assembly of Victoria website, 2022, accessed 29 August 2024; The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 5, accessed 24 July 2025.
- ⁷⁹³ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 1, 2025, pp 143–150, accessed 3 October 2025.
- ⁷⁹⁴ Productivity Commission, *Review of the National Agreement on Closing the Gap*, vol. 1, Australian Government, 2024, p 31, accessed 29 August 2024.
- ⁷⁹⁵ Productivity Commission, *Review of the National Agreement on Closing the Gap*, vol. 1, Australian Government, 2024, p 19, accessed 29 August 2024.
- ⁷⁹⁶ Deloitte, *Project 2 – methodology report for sector analysis* [pdf], report to the Federation of Victorian Traditional Owner Corporations, 2024, p 25, accessed 26 August 2024; The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 33, accessed 3 October 2025.
- ⁷⁹⁷ The Indigenuity Lab, *Self-determination in Infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 32, accessed 24 July 2025; J Losavio and A Sawhney, 'Socially valuable, sustainable and just infrastructure - a call to action', *RICS World Built Environment Forum*, 28 July 2020, accessed 26 August 2024.
- ⁷⁹⁸ The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, pp 34–35, accessed 24 July 2025.
- ⁷⁹⁹ The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, p 52, accessed 24 July 2025.
- ⁸⁰⁰ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 2, 2025, p 258, accessed 8 July 2025.
- ⁸⁰¹ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report*, vol. 2, 2025, p 260, accessed 8 July 2025.
- ⁸⁰² Public Accounts and Estimates Committee, *Inquiry into the 2025–26 budget estimates: Public hearing on Treaty and First Peoples*, Victorian Parliament, 5 June 2025, p 5, accessed 24 July 2025.
- ⁸⁰³ Victorian Aboriginal Heritage Council, *Taking control of our heritage*, State of Victoria, 2021, p 65, accessed 24 July 2025; Aboriginal Heritage Council, *State of Victoria's Aboriginal cultural heritage report 2016–2021*, 2021, p 147, accessed 8 July 2025.
- ⁸⁰⁴ Public Accounts and Estimates Committee, *Inquiry into the 2025–26 budget estimates: Public hearing on Treaty and First Peoples*, Victorian Parliament, 5 June 2025, p 5, accessed 24 July 2025; First People's Assembly of Victoria and the State of Victoria, *Treaty negotiation framework*, 2022, p 41, accessed 23 July 2025.
- ⁸⁰⁵ Level Crossing Removal Project, *Indigenous design guidelines*, 2021, accessed 30 January 2025.

- ⁸⁰⁶ J Pope, *The role of infrastructure in addressing regional disadvantage*, report to Infrastructure Victoria, 2019, pp 17–18, accessed 29 August 2024; Arup, *Social infrastructure accessibility mapping: Aboriginal Community Controlled Organisations*, report to Infrastructure Victoria, 2024, accessed 3 October 2025.
- ⁸⁰⁷ Australian Institute of Health and Welfare, *Housing circumstances of First Nations people*, AIHW website, 7 September 2023, accessed 24 July 2025.
- ⁸⁰⁸ Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 26, accessed 4 September 2024.
- ⁸⁰⁹ Victorian Aboriginal Community Controlled Health Organisation, *Aboriginal and Torres Strait Islander population growth model*, VACCHO website, n.d., accessed 24 June 2025.
- ⁸¹⁰ SVA Consulting, *Demand for services for Aboriginal and Torres Strait Islander people in Victoria* [pdf], report to the Aboriginal Executive Council, 2019, accessed 27 July 2025.
- ⁸¹¹ Victorian Public Sector Commission, *Aboriginal and/or Torres Strait Islander cultural capability*, VPSC website, 11 January 2024, accessed 24 July 2025.
- ⁸¹² Victorian Health Building Authority, *Designing for cultural safety*, VHBA website, 17 March 2022, accessed 24 July 2025.
- ⁸¹³ Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 8, accessed 9 September 2025; Yoorrook Justice Commission, *Yoorrook for transformation: Third interim report*, vol. 4, 2025, pp 280–289, accessed 9 September 2025.
- ⁸¹⁴ Closing the Gap, *Aboriginal and Torres Strait Islander housing sector strengthening plan* [pdf], 2022, accessed 9 September 2025.
- ⁸¹⁵ Aboriginal Housing and Homelessness Forum, *Aboriginal housing in Aboriginal hands: the time to right past wrongs*, submission to the Yoorrook Justice Commission, 10 April 2024, p 11, accessed 9 September 2025.
- ⁸¹⁶ WM Stone, ZA Goodall, A Peters and P Veeroja, *Aboriginal private rental access in Victoria: ‘Excluded from the start’*, Centre for Urban Transitions, Swinburne University, 2021, p 84, accessed 9 September 2025; Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 51, accessed 9 September 2025.
- ⁸¹⁷ Yoorrook Justice Commission, *Yoorrook for transformation: Third interim report*, vol. 4, 2025, p 267, accessed 9 September 2025.
- ⁸¹⁸ Data as at March 2025. Homes Victoria, *Applications on the Victorian Housing Register (VHR)*, HV website, n.d., accessed 9 September 2025.
- ⁸¹⁹ Yoorrook Justice Commission, *Yoorrook for transformation: Third interim report*, vol. 4, 2025, pp 309, accessed 9 September 2025.
- ⁸²⁰ Australian Institute of Health and Welfare, *Housing circumstances of First Nations people*, AIHW website, 7 September 2023, accessed 9 September 2025; Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 26, accessed 9 September 2025.
- ⁸²¹ Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 4, accessed 9 September 2025.
- ⁸²² Premier of Victoria, *Tackling Aboriginal housing challenges head on* [media release], Victorian Government, 26 February 2020, accessed 9 September 2025.
- ⁸²³ Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 90, accessed 9 September 2025.
- ⁸²⁴ Premier of Victoria, *Tackling Aboriginal housing challenges head on* [media release], Victorian Government, 26 February 2020, accessed 9 September 2025.
- ⁸²⁵ Yoorrook Justice Commission, *Yoorrook for transformation: Third interim report*, vol. 4, 2025, pp 326, accessed 9 September 2025.
- ⁸²⁶ Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 13, accessed 9 September 2025.
- ⁸²⁷ H Shing, *Witness statement of Hon Harriet Shing MP, Minister for Housing*, Yoorrook Justice Commission, 24 June 2024, p 32, accessed 9 September 2025.
- ⁸²⁸ Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 13, accessed 9 September 2025.
- ⁸²⁹ Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria’s draft 30-year infrastructure strategy*, 2025, p 5; Cardinia Shire Council, *Submission to Victoria’s draft 30-year infrastructure strategy*, 2025, p 20.
- ⁸³⁰ Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 31, accessed 9 September 2025.
- ⁸³¹ SNAICC – National Voice for our Children, *SNAICC submission on the Review of the National Agreement on Closing the Gap draft report*, 2023, p 19, accessed 9 September 2025.
- ⁸³² Productivity Commission, *Review of the National Agreement on Closing the Gap*, vol. 1, Australian Government, 2024, p 52, accessed 9 September 2025.
- ⁸³³ Australian Housing and Urban Research Institute, *What is a sustaining tenancies program?*, AHURI website, 3 October 2022, accessed 9 September 2025.

- ⁸³⁴ Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3; Department of Climate Change, Energy, the Environment and Water, *Indigenous leadership: driving economic growth and sustainability*, DCCEEW website, 10 December 2024, accessed 9 September 2025.
- ⁸³⁵ Aboriginal Housing Victoria, *Mana-na worn-tyeen maar-takoort: every Aboriginal person has a home – the Aboriginal housing and homelessness framework*, 2020, p 19, accessed 9 September 2025.
- ⁸³⁶ The Treasury, *Social Housing Accelerator*, Australian Government website, n.d., accessed 11 September 2025; Department of Finance, *Housing Australia Future Fund*, Australian Government website, 12 June 2025, accessed 1 August 2025; Housing Australia, *Contracts signed to support 18,650 social and affordable homes under the Housing Australia Future Fund Facility and National Housing Accord Facility* [media release], Housing Australia, 3 July 2025, accessed 26 August 2025.
- ⁸³⁷ G Tibbits, 'The enemy within our gates', in R Howe (ed), *New houses for old: fifty years of public housing in Victoria, 1938–1988*, Ministry of Housing and Construction, Melbourne, 1988, pp 123–162; D Hayward, 'The reluctant landlords? A history of public housing in Australia', *Urban Policy and Research*, 2008, 14(1):5–35; L Groenhart and T Burke, 'What has happened to Australia's public housing? Thirty years of policy and outcomes, 1981 to 2011', *Australian Journal of Social Issues*, 2014, 49(2):127–149; H Pawson and V Milligan, 'Towards a national housing policy for the 2020s', in R Freestone, B Randolph and W Steele (eds), *Australian urban policy: prospects and pathways*, ANU Press, Canberra, 2024, pp 349–368.
- ⁸³⁸ N Brackertz, J Davison and A Wilkinson, *How can Aboriginal housing in NSW and the Aboriginal Housing Office provide the best opportunity for Aboriginal people?*, Australian Housing and Urban Research Institute report to the NSW Aboriginal Housing Office, 2017, pp 15,43,51,55,56, accessed 9 September 2025.
- ⁸³⁹ Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7.
- ⁸⁴⁰ Aboriginal Housing and Homelessness Forum, *AHHF 2024–25 Victorian state budget submission*, 2024, p 3, accessed 9 September 2025.
- ⁸⁴¹ Department of Families Fairness and Housing, *Community housing*, HousingVic website, 19 June 2024, 2024, accessed 18 June 2025.
- ⁸⁴² Homes Victoria, *Social Housing Accelerator Program: Victorian implementation plan*, 2023, p 13, accessed 9 September 2025.
- ⁸⁴³ Premier of Victoria, *Negotiations finalised for Victoria's Treaty* [media release], Victorian Government, 9 September 2025, accessed 10 September 2025; First Peoples' Assembly of Victoria Ltd and the State of Victoria, *Statewide Treaty – negotiated – pending assent*, 2025, p 27, accessed 10 September 2025.
- ⁸⁴⁴ First Peoples–State Relations, *The Victorian Closing the Gap implementation plan 2021–2023*, State of Victoria, 2021, accessed 9 September 2025; National Indigenous Australian Agency, *Closing the Gap*, NIAA website, n.d., accessed 9 September 2025.
- ⁸⁴⁵ Department of Premier and Cabinet, *Victorian Government Aboriginal affairs report 2024*, State of Victoria, 2025, accessed 9 July 2025.
- ⁸⁴⁶ Department of Premier and Cabinet, *Victorian Government Aboriginal affairs report 2024*, State of Victoria, 2025, accessed 9 July 2025.
- ⁸⁴⁷ Victorian Aboriginal Community Controlled Health Organisation, *The Victorian ACCO model*, VACCHO website, n.d., accessed 9 July 2025. VACCHO created the Victorian ACCO model in collaboration with its 33 member organisations.
- ⁸⁴⁸ For a full list of VACCHO member services, see Victorian Aboriginal Community Controlled Health Organisation, *VACCHO member service profile* [pdf], VACCHO website, 2024, accessed 9 July 2025.
- ⁸⁴⁹ T Vos, R Carter, J Barendregt, C Mihalopoulos, L Veerman, A Magnus, L Cobiac, M Bertram and A Wallace, *Assessing cost-effectiveness in prevention* [pdf], University of Queensland and Deakin University, 2010, p 53, accessed 3 July 2025; KS Ong, R Carter, M Kelaher and I Anderson, 'Differences in primary health care delivery to Australia's Indigenous population: A template for use in economic evaluations', *BMC Health Services Research*, 2012, 12:307; MA Campbell, J Hunt, DJ Scrimgeour, M Davey and V Jones, 'Contribution of Aboriginal Community Controlled Health Services to improving Aboriginal health: an evidence review', *Australian Health Review*, 2017, 42(2):218–226; Department of Health, *Aboriginal and Torres Strait Islander health performance framework*, Australian Government website, 2017, p 172, accessed 9 July 2025; J Dwyer, K Silburn and G Wilson, *National strategies for improving Indigenous health and health care: Overall program assessment*, Department of Health and Ageing, 2004, pp 28–31, accessed 3 July 2025; P Mackey, A Boxall and K Partel, *The relative effectiveness of Aboriginal Community Controlled Health Services compared with mainstream health service*, Deeble Institute, 2014, pp 6–7; Joint Council on Closing the Gap, *National Agreement on Closing the Gap: priority reform two – building the community-controlled sector*, 27 July 2020, accessed 3 July 2025; Yoorook Justice Commission, *Yoorook for transformation: third interim report*, volume 4, 2025, pp 244–245, accessed 3 July 2025.
- ⁸⁵⁰ Victorian Aboriginal Community Controlled Health Organisation, *2024–25 VACCHO budget submission*, 8 January 2024, p 4, accessed 9 July 2025; SVA Consulting, *Demand for services for Aboriginal and Torres Strait Islander people in Victoria* [pdf], report to the Aboriginal Executive Council, 2019, pp 7–8.
- ⁸⁵¹ Victorian Aboriginal Community Controlled Health Organisation, *Yoorook Justice Commission submission*, 9 April 2024, p 53, accessed 9 July 2025.
- ⁸⁵² Victorian Aboriginal Community Controlled Health Organisation, *Yoorook Justice Commission submission*, 9 April 2024, pp 57–58, accessed 9 July 2025.
- ⁸⁵³ Victorian Aboriginal Community Controlled Health Organisation, *Systemic failures, urgent action: fixing the infrastructure crisis in Aboriginal health and wellbeing*, 2025, p 8, accessed 3 July 2025.
- ⁸⁵⁴ Infrastructure Victoria and the Victorian Aboriginal Community Controlled Health Organisation, *Investing in Aboriginal health and wellbeing infrastructure: securing safe and sustainable Community-controlled care*, 2025, pp 27–30, accessed 3 July 2025.
- ⁸⁵⁵ Infrastructure Victoria and the Victorian Aboriginal Community Controlled Health Organisation, *Investing in Aboriginal health and wellbeing infrastructure: securing safe and sustainable Community-controlled care*, 2025, p 8, accessed 3 July 2025; EY Parthenon, *Investment in*

infrastructure for Victorian ACCOs, report to the Victorian Aboriginal Community Controlled Health Organisation, 31 August 2025, confidential.

- ⁸⁵⁶ Infrastructure Victoria and the Victorian Aboriginal Community Controlled Health Organisation, *Investing in Aboriginal health and wellbeing infrastructure: securing safe and sustainable Community-controlled care*, 2025, p 43, accessed 3 July 2025; Victorian Aboriginal Community Controlled Health Organisation, *Systemic failures, urgent action: fixing the infrastructure crisis in Aboriginal health and wellbeing*, 2025, p 6, accessed 3 July 2025.
- ⁸⁵⁷ Productivity Commission, *Review of the National Agreement on Closing the Gap: study report volume 1*, Australian Government, 2024, p 7, accessed 9 July 2025.
- ⁸⁵⁸ Premier of Victoria, *Negotiations finalised for Victoria's Treaty* [media release], Victorian Government, 9 September 2025, accessed 10 September 2025.
- ⁸⁵⁹ *Statewide Treaty Bill 2025 (Vic)*.
- ⁸⁶⁰ *Statewide Treaty, First Peoples' Assembly of Victoria Ltd and the State of Victoria – negotiated – pending assent*, p 27, accessed 10 September 2025.
- ⁸⁶¹ Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5.
- ⁸⁶² R Williams, 'Cultural safety: what does it mean for our work practice?', *Australian and New Zealand Journal of Public Health*, 1999, 23(2):213.
- ⁸⁶³ Infrastructure Victoria and the Victorian Aboriginal Community Controlled Health Organisation, *Investing in Aboriginal health and wellbeing infrastructure: securing safe and sustainable Community-controlled care*, 2025, p 27, accessed 3 July 2025.
- ⁸⁶⁴ Infrastructure Victoria and the Victorian Aboriginal Community Controlled Health Organisation, *Investing in Aboriginal health and wellbeing infrastructure: securing safe and sustainable Community-controlled care*, 2025, p 30, accessed 3 July 2025.
- ⁸⁶⁵ Infrastructure Victoria and the Victorian Aboriginal Community Controlled Health Organisation, *Investing in Aboriginal health and wellbeing infrastructure: securing safe and sustainable Community-controlled care*, 2025, p 30, accessed 3 July 2025.
- ⁸⁶⁶ Victorian Aboriginal Community Controlled Health Organisation, *Systemic failures, urgent action: fixing the infrastructure crisis in Aboriginal health and wellbeing*, 2025, p 8, accessed 3 July 2025.
- ⁸⁶⁷ Victorian Aboriginal Community Controlled Health Organisation, *Systemic failures, urgent action: fixing the infrastructure crisis in Aboriginal health and wellbeing*, 2025, p 8, accessed 3 July 2025.
- ⁸⁶⁸ NJAC, *The 'making do' report: cultural safety building design assessments*, report to the Victorian Aboriginal Community Controlled Health Organisation, 2024, pp 7–9.
- ⁸⁶⁹ EY Parthenon, *Investment in infrastructure for Victorian ACCOs*, report to the Victorian Aboriginal Community Controlled Health Organisation, 31 August 2025, confidential.
- ⁸⁷⁰ Australian Government Department of Health and Aged Care, *\$100 million to improve health infrastructure in First Nations communities*, Australian Government website, 5 July 2024, accessed 28 August 2025.
- ⁸⁷¹ Bendigo and District Aboriginal Co-operative, *Building our future, stage 3 - new medical facility project*, BDAC website, n.d., accessed 9 July 2025; Victorian Health Building Authority, *Ballarat and District Aboriginal Co-operative medical and regional health hub*, VHBA website, 15 June 2020, accessed 9 July 2025; Victorian Health Building Authority, *More early parenting centres to help Victorian families*, VHBA website, 28 April 2023, accessed 9 July 2025; Premier of Victoria, *Early parenting centre for Shepparton on the way* [media release], Victorian Government, 15 June 2022, accessed 9 July 2025; Victorian Health Building Authority, *Youth prevention and recovery care centre expansion and upgrade program*, VHBA website, 27 February 2025, accessed 9 July 2025; Victorian Health Building Authority, *Community hospitals program*, VHBA website, 4 June 2025, accessed 9 July 2025.
- ⁸⁷² EY Parthenon, *Investment in infrastructure for Victorian ACCOs*, report to the Victorian Aboriginal Community Controlled Health Organisation, 31 August 2025, confidential.
- ⁸⁷³ First Peoples–State Relations, *Aboriginal Community Infrastructure Program*, First Peoples–State Relations website, 22 April 2024, accessed 9 July 2025; Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 3 – service delivery*, State of Victoria, 2025, pp 3–4, accessed 4 July 2025.
- ⁸⁷⁴ EY Parthenon, *Investment in infrastructure for Victorian ACCOs*, report to the Victorian Aboriginal Community Controlled Health Organisation, 31 August 2025, confidential.
- ⁸⁷⁵ Premier of Victoria, *Negotiations finalised for Victoria's Treaty* [media release], Victorian Government, 9 September 2025, accessed 10 September 2025; First Peoples' Assembly of Victoria Ltd and the State of Victoria, *Statewide Treaty – negotiated – pending assent*, 2025, p 27, accessed 10 September 2025.
- ⁸⁷⁶ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 11, accessed 28 August 2024.
- ⁸⁷⁷ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 6, accessed 28 August 2024.
- ⁸⁷⁸ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 10, accessed 28 August 2024.
- ⁸⁷⁹ Department of Energy, Environment and Climate Action, *Leadbeater's possum*, DEECA website, 19 August 2024, accessed 19 September 2024; Zoos Victoria, *Baw Baw frog*, Zoos Victoria website, n.d., accessed 19 September 2024; Zoos Victoria, *Helmeted honeyeater*, Zoos Victoria website, n.d., accessed 19 September 2024.
- ⁸⁸⁰ Department of Energy, Environment and Climate Action, *Helmeted Honeyeater*, DEECA website, 22 May 2025, accessed 18 June 2025.

- ⁸⁸¹ Melbourne Water, *Reimagining Moonee Ponds Creek*, Melbourne Water website, 2 February 2024, accessed 19 September 2024; B Helmreich, R Hilliges, A Schriever and H Horn, 'Runoff pollutants of a highly trafficked urban road – correlation analysis and seasonal influences', *Chemosphere*, 2010, 80(9), pp 991-997.
- ⁸⁸² Infrastructure Victoria, *Opportunities to reduce greenhouse gas emissions of infrastructure*, 2023, p 19, accessed 15 October 2024.
- ⁸⁸³ Infrastructure Victoria, *Opportunities to reduce greenhouse gas emissions of infrastructure*, 2023, pp 4-7, 22-23, accessed 10 October 2024.
- ⁸⁸⁴ Infrastructure Victoria, *Opportunities to reduce greenhouse gas emissions of infrastructure*, 2023, p 30, accessed 10 October 2024.
- ⁸⁸⁵ BehaviourWorks Australia, *Victorians value nature survey results*, Monash University report to the Department of Environment, Land, Water and Planning, 2019, accessed 20 September 2024.
- ⁸⁸⁶ Department of Environment, Land, Water and Planning, *Protecting Victoria's environment – biodiversity 2037*, State of Victoria, 2017, p 5, accessed 19 September 2024.
- ⁸⁸⁷ Department of Environment, Land, Water and Planning, *Protecting Victoria's environment – biodiversity 2037*, State of Victoria, 2017, p 5, accessed 19 September 2024.
- ⁸⁸⁸ Melbourne Water, *Our water supply system*, Melbourne Water website, 2 February 2024, accessed 19 September 2024.
- ⁸⁸⁹ Department of Environment, Land, Water and Planning, *Protecting Victoria's environment – biodiversity 2037*, State of Victoria, 2017, p 5, accessed 19 September 2024.
- ⁸⁹⁰ S Tregonning, *Indigenous perspective: the Birrarung, 'a river of mists and shadows'*, Environment Victoria website, 25 January 2018, accessed 20 September 2024; Department of Environment, Land, Water and Planning, *Yarra River action plan*, State of Victoria, 2017, pp 5-6, accessed September 2024.
- ⁸⁹¹ Alluvium, *Economic benefits of the Yarra River*, Alluvium website, n.d., accessed 19 September 2024; NCEconomics, *Economic benefits of the Yarra River* [pdf], report to Melbourne Water, 2018, p 2, accessed 15 October 2025.
- ⁸⁹² Department of Environment, Land, Water and Planning, *Yarra River action plan*, State of Victoria, 2017, p 1, accessed 28 October 2024.
- ⁸⁹³ Alluvium, *Economic benefits of the Yarra River*, Alluvium website, n.d., accessed 19 September 2024; NCEconomics, *Economic benefits of the Yarra River* [pdf], report to Melbourne Water, 2018, accessed 15 October 2025.; Melbourne Water, *Yarra River*, Melbourne Water website, accessed 3 October 2024.
- ⁸⁹⁴ Parks Victoria, *Valuing Victoria's parks - summary*, State of Victoria, 2015, p 4, accessed 1 July 2025.
- ⁸⁹⁵ Parks Victoria, *Valuing Victoria's parks - summary*, State of Victoria, 2015, p 4, accessed 1 July 2025.
- ⁸⁹⁶ Department of Environment, Land, Water and Planning, *Protecting Victoria's environment – biodiversity 2037*, State of Victoria, 2017, p 4, accessed 19 September 2024.
- ⁸⁹⁷ KJ Williams, B Hunter, RK Schmidt, E Woodward and ID Cresswell, *Australia – state of the environment 2021: land*, report to the Department of Agriculture, Water and the Environment, 2021, p 8, accessed 1 October 2024; Victorian Auditor-General's Office, *Offsetting native vegetation loss on private land*, 2022, accessed 28 October 2024.
- ⁸⁹⁸ Commonwealth Scientific and Industrial Research Organisation, *Oceans*, CSIRO website, 22 November 2022, accessed 1 October 2024.
- ⁸⁹⁹ Commonwealth Scientific and Industrial Research Organisation, *Oceans*, CSIRO website, 22 November 2022, accessed 1 October 2024.
- ⁹⁰⁰ H Murphy and S van Leeuwen, *Australia – state of the environment 2021: biodiversity*, report to the Department of Agriculture, Water and the Environment, 2021, pp 82-83, accessed 1 October 2024.
- ⁹⁰¹ Premier of Victoria, *Reptile thought to be extinct rediscovered* [media release], Victorian Government, 25 June 2023, accessed 20 September 2024; A Smethurst, 'Earless dragon rediscovery like finding the Tasmanian tiger', *The Age*, 25 June 2023, accessed 20 September 2024.
- ⁹⁰² Premier of Victoria, *Reptile thought to be extinct rediscovered* [media release], Victorian Government, 25 June 2023, accessed 20 September 2024; A Smethurst, 'Earless dragon rediscovery like finding the Tasmanian tiger', *The Age*, 25 June 2023, accessed 20 September 2024.
- ⁹⁰³ D Lindenmayer, C Taylor, MJ Evans and P Zylstra, 'Yes, climate change is bringing bushfires more often. But some ecosystems in Australia are suffering the most', *The Conversation*, 18 August 2023, accessed 20 September 2024.
- ⁹⁰⁴ Climate Council, *Climate change and the Victoria bushfire threat: update 2017* [pdf], 2017, pp 13–15, accessed 20 September 2024; D Lindenmayer, C Taylor, MJ Evans and P Zylstra, 'Yes, climate change is bringing bushfires more often. But some ecosystems in Australia are suffering the most', *The Conversation*, 18 August 2023, accessed 20 September 2024.
- ⁹⁰⁵ D Lindenmayer, C Taylor, MJ Evans and P Zylstra, 'Yes, climate change is bringing bushfires more often. But some ecosystems in Australia are suffering the most', *The Conversation*, 18 August 2023, accessed 20 September 2024.
- ⁹⁰⁶ Greater Western Water, Melbourne Water, South East Water and Yarra Valley Water, *Greater Melbourne urban water and system strategy*, p 49, accessed 24 May 2024.
- ⁹⁰⁷ Greater Western Water, Melbourne Water, South East Water and Yarra Valley Water, *Greater Melbourne urban water and system strategy*, p 49, accessed 24 May 2024; J Neris, C Santin, R Lew, PR Robichaud, WJ Elliot, SA Lewis, G Sheridan, A-M Rohlfis, Q Ollivier, L Oliveira and SH Doerr, 'Designing tools to predict and mitigate impacts on water quality following the Australian 2019/2020 wildfires: Insights from Sydney's largest water supply catchment', *Integrated Environmental Assessment Management*, 2021, 17:1151-1161.
- ⁹⁰⁸ Barwon Water, *Urban water strategy 2022: water for our future*, 2022, p 15, accessed 4 September 2024.
- ⁹⁰⁹ Barwon Water, *Urban water strategy 2022: water for our future*, 2022, p 16, accessed 4 September 2024.

- ⁹¹⁰ Victorian Auditor-General's Office, *Supplying and using recycled water*, 2021, p 24, accessed 9 August 2024; Water Services Association of Australia, *All options on the table: urban water supply options for Australia*, 2020, accessed 20 September 2024.
- ⁹¹¹ Department of Environment, Land, Water and Planning, *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, p 13, accessed 4 September 2024.
- ⁹¹² Department of Environment, Land, Water and Planning, *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, p 13, accessed 30 July 2025.
- ⁹¹³ The Nature Conservancy and Resilient Melbourne, *Living Melbourne: our metropolitan urban forest*, 2019, pp 8,13–14, accessed 7 July 2025.
- ⁹¹⁴ Office of Energy and Climate Change, *Climate change fund: Executive summary – Greening our City program* [pdf], NSW Government, 7 July 2023, p 7, accessed 16 January 2025; Department of Energy, Environment and Climate Action, *Victoria's 2035 emissions reduction target: supporting analysis*, State of Victoria, May 2023, p 10, accessed 6 September 2024; Landscape Foundation of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 8.
- ⁹¹⁵ Environment Victoria, *Reducing waste*, Environment Victoria website, n.d., accessed 20 September 2024; Convention on Biological Diversity, *Zero waste equals multiple benefits for biodiversity*, CBD website, 28 March 2024, accessed 20 September 2024.
- ⁹¹⁶ Infrastructure Sustainability Council of Australia, ClimateWorks Australia, and Australian Sustainable Built Environment Council, *Issues paper: reshaping infrastructure for a net zero emissions future*, ClimateWorks Australia, 2020, p 17, accessed 16 June 2025.
- ⁹¹⁷ The Climate Council, *Australia's clean industry future: making things here in a net zero world*, 2023, pp 15,53, accessed 16 June 2025.
- ⁹¹⁸ Infrastructure Victoria, *Opportunities to reduce greenhouse gas emissions of infrastructure*, 2023, pp 19–20, accessed 16 June 2025.
- ⁹¹⁹ Productivity Commission, *5-year productivity inquiry: innovation for the 98%*, Inquiry report – volume 5, Australian Government, 2022, p 72, accessed 16 June 2025; Infrastructure Victoria, *Advice on recycling and resource recovery infrastructure in Victoria*, 2020, p 65, accessed 16 June 2025; Infrastructure Victoria, *Opportunities to reduce greenhouse gas emissions of infrastructure*, 2023, p 22, accessed 16 June 2025.
- ⁹²⁰ World Bank Group, *What is carbon pricing?*, World Bank website, n.d., accessed 16 June 2025.
- ⁹²¹ Department of Treasury and Finance, *Economic evaluation for business cases: technical guidelines*, State of Victoria, 2013, pp 17–18, accessed 16 June 2025.
- ⁹²² Infrastructure Australia, *Embodied carbon projections for Australian infrastructure and buildings*, Australian Government, 2024, pp 10,32, accessed 12 June 2025.
- ⁹²³ Infrastructure Victoria, *Opportunities to reduce greenhouse gas emissions of infrastructure*, 2023, pp 4,9–10, accessed 10 June 2025.
- ⁹²⁴ Infrastructure Australia, *Valuing emissions for economic analysis*, Australian Government, 2024, p 4, accessed 16 June 2025.
- ⁹²⁵ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Communiqué for Infrastructure and Transport Ministers' meeting Friday 7 June 2024*, 2024, p 1, accessed 16 June 2025.
- ⁹²⁶ WSP, *Opportunities to decarbonise Victorian Government infrastructure*, report to Infrastructure Victoria, 2023, p 90, accessed 16 June 2025; Australian Sustainable Built Environment Council, *Our upfront opportunity: Australia's policy roadmap to reduce upfront embodied carbon in the built environment*, 2025, p 4, accessed 16 June 2025.
- ⁹²⁷ Infrastructure Australia, *Embodied carbon projections for Australian infrastructure and buildings*, Australian Government, 2024, pp 9,12, accessed 12 June 2025; Mornington Peninsula Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 18; Australian Sustainable Built Environment Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9.
- ⁹²⁸ WSP, *Opportunities to decarbonise Victorian Government infrastructure*, report to Infrastructure Victoria, 2023, p 11, accessed 16 June 2025.
- ⁹²⁹ World Green Building Council, *Bringing embodied carbon upfront: coordinated action for the building and construction sector to tackle embodied carbon*, 2019, p 20, accessed 16 June 2025.
- ⁹³⁰ NSW Treasury, *Carbon emissions in the investment framework*, NSW Government, 2024, accessed 16 June 2025; Infrastructure NSW, *Embodied carbon measurement for infrastructure – technical guidance*, NSW Government, 2025, accessed 11 July 2025.
- ⁹³¹ Engineers Australia, *Carbon measurement fundamentals for engineers*, 2024, p 2, accessed 12 June 2025; Infrastructure and Transport Ministers, *Embodied carbon measurement for infrastructure: technical guidance*, 2024, p 3, accessed 13 June 2025.
- ⁹³² Infrastructure NSW, *Decarbonising infrastructure delivery policy*, NSW Government, 2024, accessed 11 July 2025; Infrastructure NSW and Transport for NSW, *Decarbonising Infrastructure Roadmap*, NSW Government, 2025, accessed 11 July 2025; NSW Environment Protection Authority, *Protection of the environment policy*, NSW Government, 2025, accessed 11 July 2025.
- ⁹³³ Productivity Commission, *Investing in cheaper, cleaner energy and the net zero transformation: interim report*, pp 29–33, accessed 5 August 2025.
- ⁹³⁴ The Climate Council, *Australia's clean industry future: making things here in a net zero world*, 2023, pp 19–21, accessed 16 June 2025.
- ⁹³⁵ WSP, *Opportunities to decarbonise Victorian Government infrastructure*, report to Infrastructure Victoria, 2023, p 35, accessed 16 June 2025.
- ⁹³⁶ Infrastructure Victoria, *Opportunities to reduce greenhouse gas emissions of infrastructure*, 2023, pp 4,57,70, accessed 12 June 2025; Infrastructure Australia, *Embodied carbon projections for Australian infrastructure and buildings*, Australian Government, 2024, pp 8,34, accessed 12 June 2025.
- ⁹³⁷ Infrastructure Australia, *Embodied carbon projections for Australian infrastructure and buildings*, Australian Government, 2024, pp 13,35, accessed 16 June 2025; Infrastructure Victoria, *Opportunities to reduce greenhouse gas emissions of infrastructure*, 2023, pp 4,57, accessed 12 June 2025.

- ⁹³⁸ Department of Energy, Environment and Climate Action, *Integrated water management*, DEECA website, 26 February 2025, accessed 27 June 2025.
- ⁹³⁹ Melbourne Water, *Flood management strategy – Port Phillip and Westernport* [pdf], 2015, p 8, accessed 30 June 2025; Melbourne Water, *Flood management strategy – Port Phillip and Westernport 2021–2031*, 2021, pp 19–21, accessed 30 June 2025.
- ⁹⁴⁰ Department of Energy, Environment and Climate Action, *Integrated water management*, DEECA website, 26 February 2025, accessed 27 June 2025.
- ⁹⁴¹ Department of Energy, Environment and Climate Action, *Integrated water management progress report*, State of Victoria, 2022, pp 19–21, accessed 27 June 2025.
- ⁹⁴² Department of Energy, Environment and Climate Action, *Dandenong catchment integrated water management action plan*, State of Victoria, 2024, p 13, accessed 27 June 2025.
- ⁹⁴³ Department of Energy, Environment and Climate Action, *Dandenong catchment integrated water management action plan*, State of Victoria, 2024, p 14, accessed 27 June 2025.
- ⁹⁴⁴ Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 8, accessed 25 September 2025.
- ⁹⁴⁵ Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, p 61, accessed 27 June 2025; Victorian Auditor-General's Office, *Supplying and using recycled water*, 2021, p 9, accessed 27 June 2025; Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 2, accessed 25 September 2025.
- ⁹⁴⁶ Environmental Protection Agency Victoria, *Recycled water*, EPA Victoria website, 18 May 2025, accessed 27 June 2025; Melbourne Water, *Producing recycled water*, Melbourne Water website, 30 September 2024, accessed 27 June 2025.
- ⁹⁴⁷ Department of Energy, Environment and Climate Action, *Water supply*, DEECA website, n.d., accessed 27 June 2025; Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 8, accessed 25 September 2025.
- ⁹⁴⁸ Yarra Valley Water, *Recycled water classifications*, YVW website, n.d., accessed 27 June 2025.
- ⁹⁴⁹ Water Services Association of Australia, *All options on the table: urban water supply options for Australia*, 2020, p 13, accessed 27 June 2025.
- ⁹⁵⁰ Water Services Association of Australia, *All options on the table: urban water supply options for Australia*, 2020, p 6, accessed 27 June 2025.
- ⁹⁵¹ Barwon Water, *Recycled water*, Barwon Water website, n.d., accessed 27 June 2025.
- ⁹⁵² C Tortajada, 'Contributions of recycled wastewater to clean water and sanitation sustainable development Goals', *npj Clean Water*, 2020.
- ⁹⁵³ Department of Energy, Environment and Climate Action, *Water supply*, DEECA website, n.d., accessed 27 June 2025.
- ⁹⁵⁴ SS Lau, K Bokenkamp, A Tecza, ED Wagner, MJ Plewa and WA Mitch, 'Toxicological assessment of potable reuse and conventional drinking waters', *Nature Sustainability*, 2023, 6(1):39–46.
- ⁹⁵⁵ Water360, *Global connections map*, Water360 website, n.d., accessed 18 December 2024.
- ⁹⁵⁶ NSW Department of Planning and Environment, *Greater Sydney water strategy*, NSW Government, 2022, p 19, accessed 27 June 2025.
- ⁹⁵⁷ Department of Environment, Land, Water and Planning, *Central and Gippsland sustainable water strategy*, State of Victoria, 2022, p 62, accessed 27 June 2025; Coliban Water, *Urban water strategy 2022*, 2022, p 30, accessed 24 June 2025.
- ⁹⁵⁸ Sydney Water, *Planning for the future fact sheet*, n.d., p 2, accessed 27 June 2025; Water Services Association of Australia, *Demonstration plants and visitor centres, and adoption of purified recycled water for drinking* [pdf], 2021, p 1, accessed 27 June 2025.
- ⁹⁵⁹ Sydney Water, *Planning for the future fact sheet*, n.d., p 2, accessed 27 June 2025; Water Services Association of Australia, *Demonstration plants and visitor centres, and adoption of purified recycled water for drinking* [pdf], 2021, p 1, accessed 27 June 2025; SM Katz, and PA Tennyson, 'Public outreach for potable reuse: bringing the public to a new level of acceptance', *Journal AWWA*, 2015, 107(11):46–53.
- ⁹⁶⁰ Sydney Water, *Purified recycled water*, SW website, n.d., accessed 27 June 2025; Public Utilities Board, *NEWater Visitor Centre*, PUB website, n.d., accessed 27 June 2025; Silicon Valley Advanced Water Purification Center, *Water of the future*, SVAWPC website, n.d., accessed 27 June 2025.
- ⁹⁶¹ Melbourne Water, *Our water supply system*, Melbourne Water website, 27 November 2024, accessed 30 June 2025.
- ⁹⁶² Greater Western Water, Melbourne Water, South East Water and Yarra Valley Water, *Greater Melbourne urban water and system strategy: water for life*, 2022, p 48, accessed 27 June 2025; Melbourne Water, *Melbourne sewerage strategy*, 2018, p 49, accessed 26 June 2025.
- ⁹⁶³ Greater Western Water, Melbourne Water, South East Water and Yarra Valley Water, *Greater Melbourne urban water and system strategy: water for life*, 2022, p 48, accessed 27 June 2025; Melbourne Water, *Melbourne sewerage strategy*, 2018, p 49, accessed 26 June 2025; Friends of Latrobe Water, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5.
- ⁹⁶⁴ CE Scruggs, CB Pratesi and JR Fleck, 'Direct potable water reuse in five arid inland communities: an analysis of factors influencing public acceptance', *Journal of Environmental Planning and Management*, 2020, 63(8):1470–1500.
- ⁹⁶⁵ KS Fielding and AH Roiko, 'Providing information promotes greater public support for potable recycled water', *Water Research*, 2014, 61: 86–96; Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 9, accessed 25 September 2025.
- ⁹⁶⁶ Essential Services Commission, *Water pricing framework and approach: implementing PREMO from 2018*, 2016, p 5, accessed 27 June 2025.

- ⁹⁶⁷ Victorian Auditor-General's Office, *Supplying and using recycled water*, 2021, p 24, accessed 27 June 2025; Department of Environment, Land, Water and Planning, *Victoria's water in a changing climate*, State of Victoria, 2021, p 13, accessed 27 June 2025.
- ⁹⁶⁸ Department of Environment, Land, Water and Planning, *Central and Gippsland sustainable water strategy*, State of Victoria, 2022, p 49, accessed 27 June 2025.
- ⁹⁶⁹ Department of Energy, Environment and Climate Action, *Integrated water management*, DEECA website, 26 February 2025, accessed 30 June 2025.
- ⁹⁷⁰ Department of Energy, Environment and Climate Action, *Integrated water management progress report*, State of Victoria, 2022, p 23, accessed 27 June 2025.
- ⁹⁷¹ Department of Energy, Environment and Climate Action, *Integrated water management progress report*, State of Victoria, 2022, p 23, accessed 27 June 2025.
- ⁹⁷² Department of Environment, Land, Water and Planning, *Water cycle climate change adaptation action plan 2022–2026*, State of Victoria, 2022, p 7, accessed 25 June 2025.
- ⁹⁷³ Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, p 49, accessed 27 June 2025.
- ⁹⁷⁴ Melbourne Water, *Desalination*, Melbourne Water website, 4 April 2025, accessed 25 June 2025.
- ⁹⁷⁵ Environment Protection Authority Victoria, *Recycled water*, EPA Victoria website, 18 May 2025, accessed 27 June 2025.
- ⁹⁷⁶ Coliban Water, *Urban water strategy 2022*, 2022, p 31, accessed 27 June 2025; Barwon Water, *Water for our future strategy*, 2022, p 41, accessed 27 June 2025.
- ⁹⁷⁷ Melbourne Water, *Greater Melbourne urban water and system strategy: water for life*, Melbourne Water website, 18 November 2024, accessed 28 June 2025; Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, p 61, accessed 27 June 2025.
- ⁹⁷⁸ Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, pp 36–37, accessed 25 June 2025.
- ⁹⁷⁹ Water Services Association of Australia, *All options on the table: urban water supply options for Australia*, 2020, p 3, accessed 27 June 2025.
- ⁹⁸⁰ Greater Western Water, Melbourne Water, South East Water and Yarra Valley Water, *Greater Melbourne urban water and system strategy: water for life*, 2022, p 48, accessed 27 June 2025; Melbourne Water, *Melbourne sewerage strategy*, 2018, p 49, accessed 26 June 2025.
- ⁹⁸¹ Department of Agriculture, Fisheries and Forestry, *Australian Government response to the Productivity Commission inquiry on national water reform*, Australian Government, 2019, Recommendation 6.1, accessed 27 June 2025.
- ⁹⁸² Greater Western Water, Melbourne Water, South East Water and Yarra Valley Water, *Greater Melbourne urban water and system strategy: water for life*, p 51, accessed 25 June 2025; Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 12, accessed 25 September 2025.
- ⁹⁸³ Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 8, accessed 25 September 2025.
- ⁹⁸⁴ Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 8, accessed 25 September 2025.
- ⁹⁸⁵ Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, pp 37,65, accessed 25 June 2025.
- ⁹⁸⁶ Water Services Association of Australia, *All options on the table: urban water supply options for Australia*, 2020, p 3, accessed 25 June 2025; W Wu and D Romain, *How purified recycled water could provide supply resilience – a Greater Melbourne case study*, Aurecon, 2022, p 15, accessed 25 June 2025.
- ⁹⁸⁷ Water Services Association of Australia, *All options on the table: urban water supply options for Australia*, 2020, p 18, accessed 25 June 2025; W Wu and D Romain, *How purified recycled water could provide supply resilience – a Greater Melbourne case study*, Aurecon, 2022, p 14, accessed 25 June 2025; Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 9, accessed 25 September 2025.
- ⁹⁸⁸ Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 12, accessed 25 September 2025.
- ⁹⁸⁹ Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, p 201, accessed 25 June 2025.
- ⁹⁹⁰ Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, p 203, accessed 25 June 2025.
- ⁹⁹¹ Department of Environment, Land, Water and Planning *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, accessed 25 June 2025.
- ⁹⁹² Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 2*, 2025, pp 308–317, accessed 7 July 2025.
- ⁹⁹³ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 2*, 2025, p 322, accessed 7 July 2025.
- ⁹⁹⁴ Department of Environment, Land, Water and Planning *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, p 15, accessed 25 June 2025; Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 2*, 2025, pp 318–319, accessed 7 July 2025.

- ⁹⁹⁵ Department of Environment, Land, Water and Planning *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, p 15, accessed 25 June 2025; Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 2*, 2025, pp 310–333, accessed 7 July 2025.
- ⁹⁹⁶ Department of Environment, Land, Water and Planning *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, p 8, accessed 25 June 2025.
- ⁹⁹⁷ Department of Environment, Land, Water and Planning *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, p 8, accessed 27 June 2025.
- ⁹⁹⁸ Victorian Environmental Water Holder, *Water for the environment*, VEWH website, 30 April 2025, accessed 25 June 2025.
- ⁹⁹⁹ Barwon Water, *Water for our future strategy*, 2022, p 16, accessed 27 June 2025; Commonwealth Environment Water Holder, *Managing water when it's dry*, CEWH website, 9 July 2024, accessed 27 June 2025.
- ¹⁰⁰⁰ Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, p 18, accessed 25 June 2025.
- ¹⁰⁰¹ Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, pp 18,203, accessed 27 June 2025.
- ¹⁰⁰² Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 2*, 2025, p 319, accessed 7 July 2025.
- ¹⁰⁰³ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 2*, 2025, pp 331–333, accessed 7 July 2025.
- ¹⁰⁰⁴ Productivity Commission, *National water reform 2024 inquiry report*, Australian Government, 2024, p 82, accessed 27 June 2025; Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 2*, 2025, pp 331–333, accessed 7 July 2025.
- ¹⁰⁰⁵ Yoorrook Justice Commission, *Yoorrook for transformation: third interim report volume 2*, 2025, p 333, accessed 7 July 2025.
- ¹⁰⁰⁶ Wurundjeri Woi-Wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 14.
- ¹⁰⁰⁷ Department of Environment, Land, Water and Planning *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, p 8, accessed 27 June 2025.
- ¹⁰⁰⁸ Department of Environment, Land, Water and Planning *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, p 55, accessed 27 June 2025.
- ¹⁰⁰⁹ Department of Environment, Land, Water and Planning *Water is life: Traditional Owner access to water roadmap*, State of Victoria, 2022, p 55, accessed 27 June 2025.
- ¹⁰¹⁰ Department of Environment, Land, Water and Planning, *Victorian desalination project: costs and payments* [pdf], State of Victoria, 2015, p 1, accessed 27 June 2025.
- ¹⁰¹¹ P Hooper and N Edwards, 'The Australian Park Life project: development of a nationally standardised spatial layer and public participatory GIS for greenspace in Australian capital cities', *MethodsX*, 2024, 13(102856):3; Department of Transport and Planning, *Victoria Planning Provisions, 19.02-6S Open space*, 2018, accessed 21 August 2025; Concerned Waterways Alliance, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9; Water Services Association of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 3,11.
- ¹⁰¹² J McNeill and B Dollyer, 'Funding local government infrastructure: the case of developer charges and public open spaces in New South Wales, Australia', Working Paper Series in Economics 99-7, School of Economic Studies, University of New England, 1999, p 4, accessed 21 August 2025.
- ¹⁰¹³ P Hooper and N Edwards, 'The Australian Park Life project: development of a nationally standardised spatial layer and public participatory GIS for greenspace in Australian capital cities', *MethodsX*, 2024, 13(102856):3; Department of Transport and Planning, *Victoria Planning Provisions, 19.02-6S Open space*, 2018, accessed 21 August 2025.
- ¹⁰¹⁴ RPS, *Community engagement: density done well*, report to Infrastructure Victoria, 2020, pp 21,31, accessed 21 August 2025; M Davern, A Farrar, D Kendal and B Giles-Corti, *Quality green public open space supporting health, wellbeing and biodiversity: a literature review*, report to the Heart Foundation, Government of South Australia, and Local Government Association of South Australia, University of Melbourne, 2017, p 16, accessed 21 August 2025.
- ¹⁰¹⁵ Mosaic Insights and NCEconomics, *The economic benefits of open space in metropolitan Melbourne: an ecosystem services framework applied in the City of Moreland*, report to the Department of Land, Water, Environment and Planning, 2019, pp 25–27, accessed 21 August 2025.
- ¹⁰¹⁶ Legislative Assembly Environment and Planning Committee, *Inquiry into environmental infrastructure for growing populations*, Final report, Parliament of Victoria, 2022, p 14, accessed 21 August 2025.
- ¹⁰¹⁷ M Spiller and J Noesgaard, *Public open space contributions in Victoria: a preferred approach*, SGS Economics and Planning, 2024, accessed 21 August 2025; The Centre for International Economics, *Economic social and environmental impacts of alternative urban development scenarios for Victoria*, report to Infrastructure Victoria, 2023, accessed 21 August 2025; A Veal, 'Planning for open space and recreation', *Australian Planner*, 2020, 56(1):37–47; A Veal and A Piracha, 'Meeting the need for a rational basis for open space and recreation planning in new high density residential areas: the Recreational Activity Benchmark model', *Australian Planner*, 2022, 58(1-2):63–68; P Hooper, B Boruff, B Beesley, H Badland and B Giles-Corti, 'Testing spatial measures of public open space planning standards with walking and physical activity health outcomes: findings from the Australian national liveability study', *Landscape and Urban Planning*, 2018, 171:57–67; B Engels, 'The historical rise and fall of community facility provision standards in the metropolitan planning of Melbourne', *Planning Perspectives*, 2019, 34(4):693–724.

- ¹⁰¹⁸ Calculation provided by the Department of Energy, Environment and Climate Action based on M Spiller and J Noesgaard, *Public open space contributions in Victoria: a preferred approach*, SGS Economics and Planning, 2024, accessed 21 August 2025; Infrastructure Victoria analysis of data provided by The Centre for International Economics, *Economic social and environmental impacts of alternative urban development scenarios for Victoria*, report to Infrastructure Victoria, 2023, accessed 23 June 2025.
- ¹⁰¹⁹ RPS, *Community engagement: density done well*, report to Infrastructure Victoria, 2020, pp 4,27,31, accessed 21 August 2025.
- ¹⁰²⁰ Department of Environment, Land, Water and Planning, *Open space for everyone: open space strategy for metropolitan Melbourne 2021*, State of Victoria, 2021, p 25, accessed 21 August 2025.
- ¹⁰²¹ J Beninde, M Veith and A Hochkirch, 'Biodiversity in cities needs space: a meta-analysis of factors determining intra-urban biodiversity variation', *Ecology Letters*, 2015, 18(6):581–592; J Hejkal, T Buttschardt and K Klaus, 'Connectivity of public urban grasslands: implications for grassland conservation and restoration in cities', *Urban Ecosystems*, 2017, 20(2):511–519; R Forman, *Land mosaics: the ecology of landscapes and regions*, Cambridge University Press, Cambridge, 1995.
- ¹⁰²² Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 19.
- ¹⁰²³ Victorian Planning Authority, *VPA open space* [data set], VPA website, 1 April 2021, accessed 21 August 2025.
- ¹⁰²⁴ OFFICE, *Melbourne Biodiversity Network: unlocking biodiverse networks for community health and climate resilience*, OFFICE and University of Melbourne, 2024, p 29, accessed 21 August 2025. For a discussion of these issues, see City of Greater Geelong, *Open space: social infrastructure plan – generation one: 2020-23*, 2018, p 12, accessed 21 August 2025; City of Ballarat, *Open space strategy engagement report* [pdf], 2024, pp 12–13, accessed 21 August 2025; City of Greater Bendigo, *Greater Bendigo public space plan – parts 4 and 5* [pdf], 2018, accessed 21 August 2025.
- ¹⁰²⁵ Victorian Planning Authority, *VPA open space* [data set], VPA website, 1 April 2021, accessed 21 August 2025.
- ¹⁰²⁶ Victorian Planning Authority, *VPA open space* [data set], VPA website, 1 April 2021, accessed 21 August 2025.
- ¹⁰²⁷ Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 17; Glenelg Shire, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; Urban Development Institute of Australia (Victoria), *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6.
- ¹⁰²⁸ Department of Energy, Environment and Climate Action, *Suburban parks program*, DEECA website, n.d., accessed 21 August 2025.
- ¹⁰²⁹ Department of Transport and Planning, *Plan for Victoria*, 2025, p 82, accessed 21 August 2025.
- ¹⁰³⁰ City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 14; Greater Metropolitan Cemeteries Trust, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 8; Department of Environment, Land, Water and Planning, *Open space for everyone: open space strategy for metropolitan Melbourne 2021*, State of Victoria, 2021, p 30, accessed 21 August 2025; Infrastructure Victoria, *Growing together*, 2020, pp 30–33, accessed 21 August 2025.
- ¹⁰³¹ Department of Environment, Land, Water and Planning, *Open space for everyone: open space strategy for metropolitan Melbourne 2021*, State of Victoria, 2021, pp 41–47, accessed 21 August 2025.
- ¹⁰³² Greater Metropolitan Cemeteries Trust, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 8; Victorian Planning Authority, *VPA open space* [data set], VPA website, 1 April 2021, accessed 21 August 2025; Department of Environment, Land, Water and Planning, *Open space for everyone: open space strategy for metropolitan Melbourne 2021*, State of Victoria, 2021, p 30, accessed 21 August 2025; Legislative Assembly Environment and Planning Committee, *Inquiry into environmental infrastructure for growing populations*, Parliament of Victoria, 2022, p 136, accessed 19 June 2025.
- ¹⁰³³ Department of Environment, Land, Water and Planning, *Open space for everyone: open space strategy for metropolitan Melbourne 2021*, State of Victoria, 2021, p 33, accessed 23 June 2025.
- ¹⁰³⁴ Legislative Assembly Environment and Planning Committee, *Inquiry into environmental infrastructure for growing populations*, Final report, Parliament of Victoria, 2022, p 159, accessed 21 August 2025.
- ¹⁰³⁵ Department of Energy, Environment and Climate Action, *Victoria's climate science report 2024*, State of Victoria, 2024, p 36, accessed 21 August 2025.
- ¹⁰³⁶ The Nature Conservancy and Resilient Melbourne, *Living Melbourne: our metropolitan urban forest*, Strategy, 2019, p 43, accessed 21 August 2025.
- ¹⁰³⁷ S Han, D Song, L Xu, Y Ye, S Yan, F Shi, Y Zhang, X Liu and H Du, 'Behaviour in public open spaces: a systematic review of studies with quantitative research methods', *Building and Environment*, 2022, 223(109444):6.
- ¹⁰³⁸ Mosaic Insights and NCEconomics, *Priority urban greening analysis*, Final report, 2023, p 6, accessed 21 August 2025.
- ¹⁰³⁹ J Hurley, A Saunders, A Both, C Sun, B Boruff, J Duncan, M Amati, P Caccetta and J Chia, *Urban vegetation cover change in Melbourne 2014–2018* [pdf], Centre for Urban Research, RMIT University, 2019, p 17, accessed 21 August 2025.
- ¹⁰⁴⁰ T Croeser, C Ordóñez, C Threfall, D Kendal, R van der Ree, D Callow and S Livesley, 'Patterns of tree removal and canopy change on public and private land in the City of Melbourne', *Sustainable Cities and Society*, 2020, 56(102096):9; T Guo, J Morgenroth and T Conway, 'Redeveloping the urban forest: the effect of redevelopment and property-scale variables on tree removal and retention', *Urban Forestry & Urban Greening*, 2018, 35:200.
- ¹⁰⁴¹ G Moore, 'People, tree, landscapes and climate change', in H Sykes (ed), *Climate change: on for young and old*, Future Leaders, Melbourne, 2009, pp 135–136, accessed 21 August 2025.
- ¹⁰⁴² S Han, D Song, L Xu, Y Ye, S Yan, F Shi, Y Zhang, X Liu and H Du, 'Behaviour in public open spaces: a systematic review of studies with quantitative research methods', *Building and Environment*, 2022, 223(109444):6; J Hurley, A Saunders, A Both, C Sun, B Boruff, J Duncan,

M Amati, P Caccetta and J Chia, *Urban vegetation cover change in Melbourne 2014–2018*, Centre for Urban Research, RMIT University, 2019, p 17, accessed 21 August 2025.

- ¹⁰⁴³ Department of Transport and Planning, *Plan for Victoria*, 2025, pp 69,81, accessed 21 August 2025; Victorian Planning Authority, *Precinct structure planning guidelines: new communities in Victoria – part 3*, State of Victoria, 2021, p 77, accessed 21 August 2025. We heard from stakeholders that private property also needs canopy targets (see Banyule City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 1; Boroondara City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 11; City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 14; Victorian Greenhouse Alliances and the Council Alliance for a Sustainable Built Environment, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; Planning Institute Australia, Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 9–10).
- ¹⁰⁴⁴ G Moore, 'People, trees, landscapes and climate change', in H Sykes (ed), *Climate change: on for young and old*, Future Leaders, Melbourne, 2009, pp 135–136, accessed 21 August 2025.
- ¹⁰⁴⁵ ULI Australia, *Urban Land Institute Net Zero Imperative Technical Assistance Panel report*, report to the Department of Transport and Planning, 2024, pp 42–43, 105–107, accessed 21 August 2025.
- ¹⁰⁴⁶ Department of Transport and Planning, *Melbourne's vegetation, heat and land use data*, DTP website, 25 October 2023, accessed 21 August 2025; Premier of Victoria, *500,000 more trees for Melbourne* [media release], Victorian Government, 14 September 2025, accessed 22 September 2025.
- ¹⁰⁴⁷ Australian Urban Observatory and RMIT, *Public open space and heat vulnerability index*, Australian Urban Observatory website, n.d., accessed 22 September 2025.
- ¹⁰⁴⁸ Department of Environment, Land, Water and Planning, *Open space for everyone: open space strategy for metropolitan Melbourne 2021*, State of Victoria, 2021, pp 41–44, accessed 21 August 2025.
- ¹⁰⁴⁹ Infrastructure Victorian analysis using: funding for the equivalent of 5 Northern Trail projects; City of Darebin, *Northern trails strategy 2022*, City of Darebin website, n. d., accessed 3 July 2025; Aither, *Local Parks Program evaluation*, report to Department of Environment, Land, Water and Planning, 2022, unpublished, pp 5,51–52.
- ¹⁰⁵⁰ Department of Energy, Environment and Climate Action, *Parks and Reserves Trust Account*, DEECA website, 7 November 2024, accessed 21 August 2025.
- ¹⁰⁵¹ Department of Energy, Environment and Climate Action, *Sustainability Fund*, DEECA website, 31 March 2025, accessed 21 August 2025; City of Ballarat, *Open space strategy engagement report* [pdf], 2024, p 13, accessed 21 August 2025; City of Greater Geelong, *Greater Geelong's open space strategy*, COGG website, 2025, accessed 21 August 2025; City of Greater Bendigo, *Greater Bendigo public space plan – parts 4 and 5* [pdf], 2018, accessed 21 August 2025.
- ¹⁰⁵² Premier of Victoria, *Delivering 500,000 trees for Melbourne's west*, [media release], Victorian Government, 17 November 2024, accessed 21 August 2025.
- ¹⁰⁵³ Premier of Victoria, *500,000 more trees for Melbourne* [media release], Victorian Government, 14 September 2025, accessed 22 September 2025.
- ¹⁰⁵⁴ Department of Energy, Environment and Climate Action, *Green Links grants*, DEECA website, 27 May 2025, accessed 21 August 2025; Department of Energy, Environment and Climate Action, *Victorian Landcare grants*, DEECA website, n.d., accessed 21 August 2025.
- ¹⁰⁵⁵ Premier of Victoria, *500,000 more trees for Melbourne* [media release], Victorian Government, 14 September 2025, accessed 22 September 2025.
- ¹⁰⁵⁶ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, pp 16-17, accessed 2 October 2024.
- ¹⁰⁵⁷ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 6, accessed 2 October 2024.
- ¹⁰⁵⁸ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 8, accessed 2 October 2024.
- ¹⁰⁵⁹ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, p 11, accessed 2 October 2024.
- ¹⁰⁶⁰ Department of Environment, Land, Water and Planning, *Victoria's climate change strategy*, State of Victoria, 2021, p 9, accessed 1 October 2024; Department of Energy, Environment and Climate Action, *Victoria's climate science report 2024*, State of Victoria, 2024, p 7, accessed 21 January 2025.
- ¹⁰⁶¹ Emergency Management Victoria, *Critical infrastructure resilience strategy*, State of Victoria, 2015, p 8, accessed 26 September 2024; Infrastructure Victoria, *Weathering the storm*, 2024, p 17, accessed 20 January 2025.
- ¹⁰⁶² Victorian Auditor-General's Office, *Managing state-significant risks*, 2024, p 1, accessed 26 September 2024; Infrastructure Victoria, *Weathering the storm*, 2024, pp 3-11, accessed 20 January 2025.
- ¹⁰⁶³ Emergency Management Victoria, *Critical infrastructure resilience*, EMV website, 3 September 2024, accessed 26 September 2024.
- ¹⁰⁶⁴ Emergency Management Victoria, *Victoria's critical infrastructure all sectors resilience report 2023*, State of Victoria, 2024, p 5, accessed 26 September 2024.
- ¹⁰⁶⁵ Infrastructure Victoria, *Weathering the storm*, 2024, p 7, accessed 7 July 2025.
- ¹⁰⁶⁶ AECOM, *Climate change consequences study*, report to Infrastructure Victoria, 2023, accessed 1 October 2024.
- ¹⁰⁶⁷ N Hutley, A Dean, N Hart and J Daley, *Uninsurable nation: Australia's most climate-vulnerable places*, Climate Council, 2022, p 1, accessed 22 October 2024.

- ¹⁰⁶⁸ N Hutley, A Dean, N Hart and J Daley, *Uninsurable nation: Australia's most climate-vulnerable places*, Climate Council, 2022, pp ii,5–11, accessed 22 October 2024.
- ¹⁰⁶⁹ N Hughes, M Lu, WY Soh and K Lawson, 'Modelling the effects of climate change on the profitability of Australian farms', *Climatic Change*, 2022, 172(12); N Hughes, 'Farms are adapting well to climate change, but there's work ahead', *The Conversation*, 29 July 2021, accessed 20 January 2025.
- ¹⁰⁷⁰ N Bailey, Z Hochman, Y Mao, M Silvapulle and P Silvapulle, 'Impact of climate change on agriculture in Australia: an interactive fixed effects model approach', *Applied Economics*, 2024, 1(14).
- ¹⁰⁷¹ Deloitte Access Economics, *Building resilience to natural disasters in our states and territories*, report to the Australian Business Roundtable for Disaster Resilience and Safer Communities, 2017, p 23, accessed 30 September 2024.
- ¹⁰⁷² Department of Environment, Land, Water and Planning, *The economic impact of heatwaves on Victoria*, State of Victoria, 2019, p 1, accessed 9 October 2024.
- ¹⁰⁷³ Department of Environment, Land, Water and Planning, *The economic impact of heatwaves on Victoria*, State of Victoria, 2019, p 1, accessed 9 October 2024.
- ¹⁰⁷⁴ T Kompas, M Keegan and E Witte, *Australia's clean energy future: costs and benefits* [pdf], Melbourne Sustainable Society Institute, University of Melbourne, 2019, pp 8, 38, accessed 9 October 2024.
- ¹⁰⁷⁵ Department of Environment, Land, Water and Planning, *Victoria's climate change strategy: economic analysis*, State of Victoria, 2021, p 6, accessed 9 October 2024; W Steffen, K Mallon, T Kompas, A Dean and M Rice, *Compound costs: how climate change is damaging Australia's economy* [pdf], Climate Council, 2019, p 5, accessed 14 October 2024.
- ¹⁰⁷⁶ S Hallegatte, J Rentschler and J Rozenberg, *Lifelines: the resilient infrastructure opportunity*, The World Bank, 2019, p xiii-xiv, accessed 26 September 2024.
- ¹⁰⁷⁷ Infrastructure Victoria, *Weathering the storm*, 2024, p 1, accessed 20 January 2025; Deloitte Access Economics, *Economic reality check: adapting Australia for climate-resilient growth*, report to the Munderoo Foundation, 2022, pp 26-27, accessed 30 September 2024; S Hallegatte, J Rentschler and J Rozenberg, *Lifelines: the resilient infrastructure opportunity*, The World Bank, 2019, accessed 21 August 2023.
- ¹⁰⁷⁸ Deloitte Access Economics, *Economic reality check: adapting Australia for climate-resilient growth*, report to the Munderoo Foundation, 2022, pp 26-27, accessed 30 September 2024.
- ¹⁰⁷⁹ R Wise, 'The benefits of proactively planning for infrastructure resilience', *CSIRO News*, 13 October 2022, accessed 1 October 2024.
- ¹⁰⁸⁰ Department of Energy, Environment and Climate Action, *Greenhouse gas emissions*, DEECA website, 16 November 2024, accessed 1 October 2024.
- ¹⁰⁸¹ Department of Energy, Environment and Climate Action, *Victorian greenhouse gas emissions report 2022*, State of Victoria, 2024, p 8, accessed 5 December 2024.
- ¹⁰⁸² Department of Energy, Environment and Climate Action, *Victorian renewable energy and storage targets*, DEECA website, 23 August 2024, accessed 25 September 2024; Department of Energy, Environment and Climate Action, *Offshore wind transmission*, DEECA website, 26 June 2025, accessed 1 October 2025.
- ¹⁰⁸³ Department of Energy, Environment and Climate Action, *Victorian renewable energy and storage targets*, DEECA website, 31 October 2024, accessed 2 October 2025.
- ¹⁰⁸⁴ Department of Energy, Environment and Climate Action, *Victoria's electricity future*, DEECA website, 22 August 2024, accessed 1 October 2024.
- ¹⁰⁸⁵ Department of Energy, Environment and Climate Action, *Gas substitution roadmap: update*, State of Victoria, 2023, pp 21, 75, accessed 9 December 2024.
- ¹⁰⁸⁶ Department of Energy, Environment and Climate Action, *Offshore wind energy*, DEECA website, 26 September 2024, accessed 10 October 2024; Department of Energy, Environment and Climate Action, *Renewable energy zones*, DEECA website, 2 October 2024, accessed 10 October 2024; State Electricity Commission, *SEC back to accelerate Victoria's transition to renewable, affordable energy* [media release], SEC, 29 August 2024, accessed 9 December 2024; Department of Climate Change, Energy, the Environment and Water, *Clean energy and the electricity market*, DCCEEW website, 22 February 2024, accessed 9 December 2024.
- ¹⁰⁸⁷ Department of Energy, Environment and Climate Action, *Renewable energy zones*, DEECA website, 2 October 2024, accessed 10 October 2024; Department of Climate Change, Energy, the Environment and Water, *Rewiring the nation*, DCCEEW website, 14 October 2024, accessed 10 December 2024; Department of Energy, Environment and Climate Action, *The Victorian transmission plan*, DEECA website, 22 July 2025, accessed 23 July 2025.
- ¹⁰⁸⁸ International Energy Agency, *The state of energy innovation*, 2025, p 22, accessed 4 September 2025.
- ¹⁰⁸⁹ Department of Energy, Environment and Climate Action, *Cheaper, cleaner, renewable: our plan for Victoria's electricity future*, State of Victoria, 2024, pp 13,25,27, accessed 10 December 2024.
- ¹⁰⁹⁰ Department of Energy, Environment and Climate Action, *Cheaper, cleaner, renewable: our plan for Victoria's electricity future*, State of Victoria, 2024, p 8, accessed 10 December 2024.
- ¹⁰⁹¹ Aurora Energy Research, *Energy transition analysis* [pdf], report to Infrastructure Victoria, 2024, p 4, accessed 10 July 2025; Jacobs, *Victoria's energy transition risks and mitigation actions*, report to Infrastructure Victoria, 2024, pp 47–48, accessed 10 July 2025.
- ¹⁰⁹² Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, p 46, accessed 23 July 2025.

- ¹⁰⁹³ Aurora Energy Research, *Energy transition analysis* [pdf], report to Infrastructure Victoria, 2024, pp 48–52, accessed 10 July 2025.
- ¹⁰⁹⁴ Jacobs, *Victoria's energy transition risks and mitigation actions*, report to Infrastructure Victoria, 2024, pp 47–48, accessed 10 July 2025; Aurora Energy Research, *Energy transition analysis* [pdf], report to Infrastructure Victoria, 2024, pp 48–52, accessed 10 July 2025.
- ¹⁰⁹⁵ Jacobs, *Victoria's energy transition risks and mitigation actions*, report to Infrastructure Victoria, 2024, p 43, accessed 15 July 2025.
- ¹⁰⁹⁶ Department of Energy, Environment and Climate Action, *Gas security statement*, State of Victoria, June 2025, accessed 23 July 2025.
- ¹⁰⁹⁷ Australian Energy Market Operator, *2024 integrated system plan for the national energy market*, 2024, p 7, accessed 30 July 2025.
- ¹⁰⁹⁸ Jacobs, *Victoria's energy transition risk and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, pp 114-116.
- ¹⁰⁹⁹ Aurora, *Energy transition analysis* [pdf], report to Infrastructure Victoria, 2024, p 18; Endgame Economics, *Modelling electricity bill impact of transmission project delays* [pdf], report to Nexa Advisory, 2022, pp 9-12, accessed 22 October 2024; Jacobs, *Victoria's energy transition risk and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, pp 114-116.
- ¹¹⁰⁰ Aurora, *Energy transition analysis* [pdf], report to Infrastructure Victoria, 2024, p 18; Endgame Economics, *Modelling electricity bill impact of transmission project delays* [pdf], report to Nexa Advisory, 2022, pp 9-12, accessed 22 October 2024; Jacobs, *Victoria's energy transition risk and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, pp 114-116.
- ¹¹⁰¹ Sustainability Victoria, *By 2030, our homes could help power the nation*, SV website, 2 May 2022, accessed 10 October 2024; Energy Consumers Australia, *Energy consumer behaviour survey: the results*, ECA website, 9 October 2021, accessed 10 October 2024.
- ¹¹⁰² Sustainability Victoria, *By 2030, our homes could help power the nation*, SV website, 2 May 2022, accessed 10 October 2024.
- ¹¹⁰³ JH Kamlage, J Uhlig, M Rogall and J Warode, 'Shaping energy landscapes: public participation and conflict resolution in wind power, grid expansion, and biogas transformation fields' in *Landscape Conflicts*, 1st ed, Springer VS, Wiesbaden, 2024.
- ¹¹⁰⁴ Climate Action Merri-bek, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 16; Gas Appliance Manufacturers Association of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4, Gippsland Regional Partnership, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 15, Melton City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10, Planning Institute of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 12, Victorian Farmers Federation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6, City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 18.
- ¹¹⁰⁵ A Dyer, Australian Energy Infrastructure Commissioner, *Community engagement review report*, Department of Climate Change, Energy, the Environment and Water, Australian Government, 2023, accessed 12 June 2025.
- ¹¹⁰⁶ J Pickering and P Chalaye, *Towards a coherent energy transition: expanding renewable energy and reducing inequalities in Australia*, Centre for Environmental Governance, Centre for Deliberative Democracy and Global Governance, University of Canberra, 2023, pp 43–44, accessed 20 June 2025; A Dyer, Australian Energy Infrastructure Commissioner, *Community engagement review report*, Department of Climate Change, Energy, the Environment and Water, Australian Government, 2023, accessed 12 June 2025.
- ¹¹⁰⁷ Australian Energy Infrastructure Commissioner *2022 annual report of the Office of the Australian Energy Infrastructure Commissioner*, Australian Government, 2022, pp 45–46, accessed 20 June 2025.
- ¹¹⁰⁸ S Ryder, C Walker, S Batel, H Devine-Wright and P Devine Wright, *Do the ends justify the means? Problematizing social acceptance and instrumentally-driven community engagement in proposed energy projects*. *Socio Ecol Pract Res*, 2023, 5(2), pp 189–204.
- ¹¹⁰⁹ H Solman, M Smits, B van Vliet and S Bush, 'Co-production in the wind energy sector: A systematic literature review of public engagement beyond invited stakeholder participation', *Energy Research & Social Science*, 2021, p 72.
- ¹¹¹⁰ Jacobs, *Victoria's energy transition risks and mitigation actions*, report to Infrastructure Victoria, 2024, p 54, accessed 20 June 2025; Solman H, Smits M, van Vliet B, and Bush S, 'Co-production in the wind energy sector: a systematic literature review of public engagement beyond invited stakeholder participation', *Energy Research & Social Science*, 2021, p 72.
- ¹¹¹¹ T Lane T and J Hicks, *Community engagement and benefit sharing in renewable energy development: a guide for applicants to the Victorian Renewable Energy Target auction*, State of Victoria, 2017, p 5, accessed 9 July 2025.
- ¹¹¹² Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, p 18.
- ¹¹¹³ Partnerships 2025, 'Energy: from ideas to electrons' [video], *Infrastructure Partnerships Australia*, IPA website, 19 September 2025, accessed 6 October 2025.
- ¹¹¹⁴ T Lane and J Hicks, *Community engagement and benefit sharing in renewable energy development: a guide for renewable energy developers*, State of Victoria, 2017, accessed 9 July 2025; Department of Environment, Land, Water and Planning, *Community engagement and benefit sharing in renewable energy development in Victoria* [pdf], State of Victoria, accessed 9 July 2025; VicGrid, *Draft Renewable Energy Zone community benefits plan*, State of Victoria, 2025, accessed 9 July 2025.
- ¹¹¹⁵ D Cass, L Connor, R Heikkinen and R Pearse, *Renewables & rural Australia: a study of community experiences in Renewable Energy Zones in NSW and the case for more equity and coordination of the clean energy transformation*, The Australia Institute and Sydney Environment Institute, 2022, accessed 20 June 2025; Victorian Government, *Public engagement framework 2021–2025*, State of Victoria, 2021, accessed 6 June 2025; J Pickering and P Chalaye, *Towards a coherent energy transition: expanding renewable energy and reducing inequalities in Australia*, Centre for Environmental Governance, Centre for Deliberative Democracy and Global Governance, University of Canberra, 2023, pp 101–104, accessed 6 October 2025.
- ¹¹¹⁶ Department of Energy, Environment and Climate Action, *Community engagement and social value guidelines for renewable energy and transmission projects – draft*, State of Victoria, 2025, accessed 6 October 2025; Department of Climate Change, Energy, the Environment

and Water, *National Guidelines for community engagement and benefits for electricity transmission projects*, Australian Government, 2024, accessed 5 June 2025; Clean Energy Council, *Best practice charter*, CEC website, 2025, accessed 10 June 2025.

- ¹¹¹⁷ Australian Energy Infrastructure Commissioner, *About us*, AEIC website, n.d., accessed 6 August 2025.
- ¹¹¹⁸ Department of Climate Change, Energy, the Environment and Water, *The First Nations clean energy strategy 2024–2030*, Australian Government, 2024, accessed 25 June 2025.
- ¹¹¹⁹ Department of Energy, Environment and Climate Action, *Victoria's climate science report 2024*, State of Victoria, 2024, p 5, accessed 18 June 2025; Commonwealth Science Industrial Research Organisation, *Victoria's changing climate*, Climate Change in Australia website, 14 March 2021, accessed 18 June 2025.
- ¹¹²⁰ Intergovernmental Panel on Climate Change, 'Summary for policymakers', in H Lee and J Romero (eds), *Climate change 2023: synthesis report*, Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, 2023, accessed 18 June 2025; Department of Energy, Environment and Climate Action, *Victoria's climate science report 2024*, State of Victoria, 2024, accessed 18 June 2025; Department of Energy, Environment and Climate Action, *Victoria's resilient coast – adapting for 2100+*, DEECA website, 14 May 2024, accessed 18 June 2025.
- ¹¹²¹ Australian Climate Service, *Australia's national climate risk assessment report*, Australian Government, 2025, p 149, accessed 17 September 2025.
- ¹¹²² T Kompas, M Keegan and E Witte, *Australia's clean energy future: costs and benefits*, Melbourne Sustainable Society Institute, University of Melbourne, 2019, p 38, accessed 18 June 2025.
- ¹¹²³ R Wise, *The benefits of proactively planning for infrastructure resilience*, CSIRO website, 13 October 2022, accessed 18 June 2025.
- ¹¹²⁴ National Climate Change Adaptation Research Facility, *Climate proofing Australia's infrastructure: policy guidance brief 7*, 2013, p 1, accessed 18 June 2025.
- ¹¹²⁵ Productivity Commission, *Natural disaster funding arrangements: volume 1*, Australian Government, 2014, p 9, accessed 18 June 2025.
- ¹¹²⁶ S Hallegatte, J Rentschler and J Rozenberg, *Lifelines: the resilient infrastructure opportunity*, World Bank, 2019, p xiv, accessed 18 June 2025.
- ¹¹²⁷ Infrastructure Victoria, *Weathering the storm*, 2024, p 1, accessed 18 June 2025.
- ¹¹²⁸ Infrastructure Victoria, *Weathering the storm*, 2024, pp 23,26, accessed 18 June 2025.
- ¹¹²⁹ Infrastructure Victoria, *Weathering the storm*, 2024, p 52, accessed 18 June 2025.
- ¹¹³⁰ Department of Environment, Land, Water and Planning, *Victoria's climate change strategy*, State of Victoria, 2021, p 44, accessed 18 June 2025.
- ¹¹³¹ *Climate Change Act 2017 (Vic)*, subsection 34(2).
- ¹¹³² NZ Transport Agency Waka Kotahi, *Crown Resilience Programme*, NZTA website, n.d., accessed 18 June 2025; United Nations Office for Disaster Risk Reduction, *Canada's success in harnessing nature for infrastructure resilience*, UNDRR website, 30 August 2023, accessed 18 June 2025.
- ¹¹³³ Global Infrastructure Hub, 'What are nature-based solutions for infrastructure?', *GI Hub*, 27 November 2023, accessed 17 January 2025.
- ¹¹³⁴ Infrastructure Victoria, *Weathering the storm*, 2024, p 26, accessed 18 June 2025.
- ¹¹³⁵ Department of Energy, Environment and Climate Action, *Victorian Government response to the network outage review*, State of Victoria, 2024, p 4, accessed 17 June 2025.
- ¹¹³⁶ Department of Environment, Land, Water and Planning, *Built environment climate change adaptation action plan 2022–2026*, State of Victoria, 2022, accessed 18 June 2025.
- ¹¹³⁷ For example: Department of Education and Training, *Education and training climate change adaptation action plan 2022–2026*, State of Victoria, 2022, p 20, accessed 18 June 2025; Department of Health and the Department of Families, Fairness and Housing, *Health and human services climate change adaptation action plan 2022–2026*, State of Victoria, 2022, p 22, accessed 18 June 2025.
- ¹¹³⁸ Electricity Distribution Network Resilience Review Expert Panel, *Electricity distribution network resilience review: final recommendations report*, State of Victoria, 2022, pp 11–20, accessed 18 June 2025.
- ¹¹³⁹ Electricity Distribution Network Resilience Review Expert Panel, *Electricity distribution network resilience review: final recommendations report*, State of Victoria, 2022, pp 2,15–17,38, accessed 18 June 2025.
- ¹¹⁴⁰ JP Palutikof, SL Boulter, F Stadler and AC Perez Vidaurre, 'Tracking the progress of climate change adaptation: an Australian case study', *Environment Science and Policy*, 2019, 101:126–135.
- ¹¹⁴¹ Productivity Commission, *Investing in cheaper, cleaner energy and the net zero transformation*, Australian Government, 2025, p 68, accessed 5 August 2025.
- ¹¹⁴² Infrastructure Victoria, *Weathering the storm*, 2024, p 32, accessed 13 June 2025.
- ¹¹⁴³ Commissioner for Environmental Sustainability Victoria, *Victorian state of the environment 2023 report: scientific assessments volume 1*, State of Victoria, 2023, p 81, accessed 17 June 2025.
- ¹¹⁴⁴ Climate Council, *Uninsurable nation: Australia's most climate-vulnerable places*, 2022, p III, accessed 4 July 2025.
- ¹¹⁴⁵ Climate Council, *Climate risk map of Australia*, Climate Council website, 2 May 2022, accessed 29 April 2024.

- ¹¹⁴⁶ Deloitte, *The new benchmark for catastrophe preparedness in Australia*, report to the Insurance Council of Australia, 2023, p 11, accessed 3 July 2025; Insurance Council of Australia, *Catastrophe 223: Victorian, NSW and Tasmanian floods*, ICA website, 6 March 2025, accessed 3 July 2025.
- ¹¹⁴⁷ Legislative Council Environment and Planning Committee, *Inquiry into the 2022 flood event in Victoria: final report*, Parliament of Victoria, 2024, p 427, accessed 4 July 2025.
- ¹¹⁴⁸ Department of Treasury and Finance, *Victorian Budget 2023/24: Budget overview*, State of Victoria, 2023, pp 2,58, accessed 3 July 2025.
- ¹¹⁴⁹ T Kompas, K Mallon, M Bojko, T Nhu Che, B Strain, M McKinley, P Van Ha, C Grafton and N Stoekl, *Economic impacts from sea level rise and storm surge in Victoria, Australia over the 21st century*, report to the Victorian Marine and Coastal Council and Life Saving Victoria, 2022, p 66, accessed 3 July 2025.
- ¹¹⁵⁰ Legislative Council Environment and Planning Committee, *Inquiry into the 2022 flood event in Victoria: final report*, Parliament of Victoria, 2024, pp xix-xx, accessed 3 July 2025; Deloitte, *The new benchmark for catastrophe preparedness in Australia*, report to the Insurance Council of Australia, 2023, p 120, accessed 3 July 2025.
- ¹¹⁵¹ Partnership in Statistics for Development in the 21st Century (PARIS21), *Envisioning a climate change data ecosystem* [pdf], 2022, pp 3,15, accessed 4 July 2025.
- ¹¹⁵² Insurance Council of Australia, *Climate change impact series: flooding and future risks* [pdf], 2022, p 8, accessed 4 July 2025.
- ¹¹⁵³ Insurance Council of Australia, *Climate change impact series: flooding and future risks* [pdf], 2022, p 6, accessed 4 July 2025.
- ¹¹⁵⁴ Rural Councils Victoria, *559. Submission by Rural Councils Victoria: Inquiry into the 2022 flood event in Victoria*, 2023, p 8, accessed 4 July 2025.
- ¹¹⁵⁵ Planning Institute Australia, *Victoria's planners do not have the information they need to prepare for floods*, PIA website, 19 August 2022, accessed 4 July 2025; M Ellis, 'Some councils still rely on outdated paper maps as supercharged storms make a mockery of flood planning', *The Conversation*, 25 October 2022, accessed 4 July 2025.
- ¹¹⁵⁶ Legislative Council Environment and Planning Committee, *Inquiry into the 2022 flood event in Victoria: final report*, Parliament of Victoria, 2024, p 94, accessed 4 July 2025; Hansen Partnership, *Climate change and planning in Victoria: ensuring Victoria's planning system effectively tackles climate change*, report to CASBE and Victorian Greenhouse Alliances, 2021, p 4, accessed 4 July 2025.
- ¹¹⁵⁷ BS Hague, DA Jones, J West and D Jakob, 'Sea level trajectories and recent records at Australian tide gauges', *Journal of Southern Hemisphere Earth Systems Science*, 2025, 75(2).
- ¹¹⁵⁸ A less likely high emissions pathway suggests sea levels might rise to between 1.3 and 1.6 metres. In: RSW Van de Wal, RJ Nicholls, D Behar, K McInnes, D Stammer, JA Lowe, A Church, R DeConto, X Fettweis, G Goelzer, M Haasnoot, ID Haigh, J Hinkel, BP Horton, TS James, A Jenkins, G LeCozannet, A Levermann, WH Lipscomb, B Marzeion, F Pattyn, AJ Payne, WT Pfeffer, SF Price, H Seroussi, S Sun, W Veatch and K White, 'A high-end estimate of sea level rise for practitioners', *Earth's Future*, 2022, 10(11).
- ¹¹⁵⁹ Intergovernmental Panel on Climate Change, *IPCC special report on the ocean and cryosphere in a changing climate*, 2019, p 20, accessed 4 July 2025.
- ¹¹⁶⁰ Department of Environment, Land, Water and Planning, *Guidelines for development in flood affected areas*, State of Victoria, 2019, p 9, accessed 4 July 2025; Insurance Council of Australia, *Climate change impact series: flooding and future risks* [pdf], 2022, p 6, accessed 4 July 2025.
- ¹¹⁶¹ Premier of Victoria, *New funding to fast-track council flood planning* [media release], Victorian Government, 30 May 2023, accessed 17 July 2025; Premier of Victoria, *Flood mapping updated for the future* [media release], Victorian Government, 3 October 2025, accessed 7 October 2025.
- ¹¹⁶² Legislative Council Environment and Planning Committee, *Inquiry into the 2022 flood event in Victoria: final report*, Parliament of Victoria, 2024, pp 88–94, accessed 4 July 2025.
- ¹¹⁶³ Legislative Council Environment and Planning Committee, *Inquiry into the 2022 flood event in Victoria: final report*, Parliament of Victoria, 2024, p 128, accessed 4 July 2025; Hansen Partnership, *Climate change and planning in Victoria: ensuring Victoria's planning system effectively tackles climate change*, report to CASBE and Victorian Greenhouse Alliances, 2021, pp 42,47,48,54, accessed 4 July 2025.
- ¹¹⁶⁴ Property Council of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 14.
- ¹¹⁶⁵ AECOM, *Assessment of the impacts of climate change on Victoria's infrastructure*, report to Infrastructure Victoria, 2022, p 78, accessed 4 July 2025.
- ¹¹⁶⁶ Department of Transport and Planning, *Fact sheet: bushfire mapping methodology and criteria*, State of Victoria, 2019, p 3, accessed 4 July 2025.
- ¹¹⁶⁷ Premier of Victoria, *Flood mapping updated for the future* [media release], Victorian Government, 3 October 2025, accessed 7 October 2025.
- ¹¹⁶⁸ Legislative Council Environment and Planning Committee, *Inquiry into the 2022 flood event in Victoria: final report*, Parliament of Victoria, 2024, pp 94,98, accessed 4 July 2025; Land Use Victoria, *Digital Twin Victoria: about the program*, DTP website, 19 June 2024, accessed 4 July 2025.
- ¹¹⁶⁹ Department of Transport and Planning, *Flood-related Amendments Standing Advisory Committee*, DTP website, 1 July 2025, accessed 4 July 2025.
- ¹¹⁷⁰ Department of Transport and Planning, *Using VicPlan*, DTP website, 12 May 2025, accessed 4 July 2025.

- ¹¹⁷¹ Melbourne Water, *Maribyrnong River Flood Review, Melbourne Water's response to Independent Review Panel's recommendations: progress update – April 2024*, 2024, p 1, accessed 4 July 2025.
- ¹¹⁷² Melbourne Water, *Maribyrnong River Flood Review, Melbourne Water's response to Independent Review Panel's recommendations: progress update – April 2024*, 2024, p 1, accessed 4 July 2025.
- ¹¹⁷³ Premier of Victoria, *New funding to fast-track council flood planning* [media release], Victorian Government, 30 May 2023, accessed 4 July 2025.
- ¹¹⁷⁴ Intergovernmental Panel on Climate Change, *6th assessment report*, 2023, accessed 4 July 2025; C Wasko, S Westra, R Nathan, D Jakob, C Nielsen, J Evans, S Rodgers, M Ho, M Babister, A Dowdy and W Sharples, 'Book 1, chapter 6. Climate change considerations' in J Ball, M Babister, R Nathan, W Weeks, E Weinmann, M Retallick and I Testoni (eds), *Australian rainfall and runoff: a guide to flood estimation*, Australian Government, version 4.2, 2019.
- ¹¹⁷⁵ Australian Energy Market Operator, *2024 Integrated system plan for the National Energy Market*, AEMO, 2024, pp 54,57-58,60-64, accessed 25 August 2025; VicGrid, *2025 Victorian transmission plan*, State of Victoria, 2025, pp 59–60,98,104–115, accessed 25 August 2025.
- ¹¹⁷⁶ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, pp 114–120, accessed 25 August 2025; Australian Energy Market Operator, *2024 Integrated system plan for the National Energy Market*, AEMO, 2024, pp 79–80, accessed 25 August 2025.
- ¹¹⁷⁷ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, pp 114–120, accessed 25 August 2025; Australian Energy Market Operator, *2024 Integrated system plan for the National Energy Market*, 2024, pp 80,82–89, accessed 25 August 2025; Australian Energy Market Operator, *2025 enhanced locational information (ELI) report*, AEMO, 2025, pp 4-6, accessed 25 August 2025; A Dyer, Australian Energy Infrastructure Commissioner, *Community engagement review report*, Australian Government, 2023, pp 44–45, accessed 25 August 2025.
- ¹¹⁷⁸ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, p 87, accessed 25 August 2025; Australian Energy Market Operator, *2024 Integrated system plan for the National Energy Market*, 2024, pp 83–84, accessed 25 August 2025.
- ¹¹⁷⁹ J Rutovitz, E Gerrard, H Lara and C Briggs, *The Australian electricity workforce for the 2024 integrated system plan: Projections to 2050, RACE for 2030*, 2024, pp 12-13, accessed 25 August 2025.
- ¹¹⁸⁰ Blueprint Institute and The McKell Institute, *How the sausage is made: assessing Australian policymaking practices in the energy sector*, Susan McKinnon Foundation, 2025, pp 12–17, accessed 25 August 2025.
- ¹¹⁸¹ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, pp 26,85, accessed 25 August 2025; Aurora Energy Research, *Energy transition analysis* [pdf], report to Infrastructure Victoria, 2024, pp 63,67, accessed 25 August 2025; Nexa Advisory, *The consumer cost of transmission delays*, 2024, pp 7,9, accessed 25 August 2025.
- ¹¹⁸² Transmission Company Victoria, *VNI West updated construction timeline coincides with release of new land easement and access package* [media release], 30 June 2025, accessed 25 August 2025; AusNet, *Project update – special edition EES now on public exhibition July 2025*, Western Renewable Link newsletter, 2 July 2025, accessed 25 August 2025.
- ¹¹⁸³ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, p 46, accessed 25 August 2025.
- ¹¹⁸⁴ Port of Melbourne, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10.
- ¹¹⁸⁵ City of Whittlesea, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 24–25; Australian Energy Market Operator, *Integrated system plan (ISP)*, AEMO website, n.d., accessed 25 August 2025; Department of Energy, Environment and Climate Action, *The Victorian transmission plan*, DEECA website, 20 August 2025, accessed 25 August 2025.
- ¹¹⁸⁶ Department of Climate Change, Energy, the Environment and Water, *National renewable energy priority list*, DCCEE website, 17 March 2025, accessed 25 August 2025.
- ¹¹⁸⁷ Consult Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 4-5; Industry Capability Network, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4.
- ¹¹⁸⁸ Commissioner for Environmental Sustainability Victoria, *Victorian state of the environment 2023 report – summary report*, State of Victoria, 2023, pp 75–76, accessed 25 August 2025.
- ¹¹⁸⁹ Productivity Commission, *Investing in cheaper, cleaner energy and the net zero transformation: interim report*, Australian Government, 2025, pp 4,48–49, accessed 25 August 2025.
- ¹¹⁹⁰ State Development, Infrastructure and Planning, *Coordinator-General*, SDIP website, 13 February 2025, accessed 25 August 2025; Permitting Council, *FAST-41 program*, Permitting Council website, 11 December 2024, accessed 25 August 2025.
- ¹¹⁹¹ Department of Transport and Planning, *Development Facilitation Program*, DTP website, 7 July 2025, accessed 25 August 2025; Department of Treasury and Finance, *Economic growth statement*, State of Victoria, 2024, p 20,25, accessed 25 August 2025.
- ¹¹⁹² Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 3 – Service delivery*, State of Victoria, 2025, pp 8–9,11, accessed 25 August 2025.
- ¹¹⁹³ Productivity Commission, *Investing in cheaper, cleaner energy and the net zero transformation: interim report*, Australian Government, 2025, pp 4,48–49, accessed 25 August 2025.
- ¹¹⁹⁴ Transport for NSW, *Renewables transportation – port to renewable energy zones (REZ)*, NSW Government website, 22 August 2025, accessed 25 August 2025.

- ¹¹⁹⁵ Department of Environment, Land, Water and Planning, [Victorian electricity sector renewable energy transition – energy market modelling](#), 2022, p 5, accessed 25 August 2025; pp 5,11-12, accessed 18 August 2025; Global Wind Energy Council, [Global offshore wind report 2025](#), June 2025, p 18, accessed 25 August 2025; Aurecon, [2024 Energy technology cost and technical parameter review](#), report to the Australian Energy Market Operator, 2025, p 24, accessed 25 August 2025.
- ¹¹⁹⁶ Aurecon, [2024 Energy technology cost and technical parameter review](#), report to the Australian Energy Market Operator, 2025, p 24, accessed 25 August 2025.
- ¹¹⁹⁷ Aurora Energy Research, [Energy transition analysis](#) [pdf], report to Infrastructure Victoria, 2024, pp 73–75, accessed 25 August 2025.
- ¹¹⁹⁸ Department of Energy, Environment and Climate Action, [Offshore wind energy implementation statement 4](#), State of Victoria, 2025, p 2, accessed 25 August 2025.
- ¹¹⁹⁹ [Renewable Energy \(Jobs and Investment\) Act 2017](#), section 7B.
- ¹²⁰⁰ Jacobs, [Victoria's energy transition risks and mitigation actions](#) [pdf], report to Infrastructure Victoria, 2024, pp 37–38,40–42, accessed 25 August 2025.
- ¹²⁰¹ International Energy Agency, [Australia 2023: energy policy review](#), 2023, pp 84–85, accessed 25 August 2025.
- ¹²⁰² Aurecon, [2024 Energy technology cost and technical parameter review](#), report to the Australian Energy Market Operator, 2025, p 24, accessed 25 August 2025.
- ¹²⁰³ Department of Energy, Environment and Climate Action, [Offshore wind energy implementation statement 4](#), State of Victoria, 2025, pp 19–22, 25 August 2025; Arup, [Australian offshore wind market study: supply chain assessment and gap analysis](#), report to the UK Government, 2023, accessed 25 August 2025; Global Wind Energy Council and ERM, [Mission critical: Building the Asia Pacific wind energy supply chain for a 1.5°C world](#), 2024, p 6, accessed 19 August, 2025.
- ¹²⁰⁴ International Renewable Energy Agency, [Renewable power generation costs in 2024](#), IRENA, 2025, p 117, accessed 25 August 2025; P Graham, J Hayward and J Foster, [GenCost 2024-25 final report](#), CSIRO, 2025, p 38, accessed 25 August 2025.
- ¹²⁰⁵ Global Wind Energy Council, [Global offshore wind report 2024](#), 2024, p 25, accessed 25 August 2025.
- ¹²⁰⁶ Global Wind Energy Council, [Global offshore wind report 2024](#), 2024, pp 55–60, accessed 25 August 2025.
- ¹²⁰⁷ Global Wind Energy Council and ERM, [Mission critical: Building the Asia Pacific wind energy supply chain for a 1.5°C world](#), 2024, pp 77–78, accessed 25 August 2025; Global Wind Energy Council, [Global offshore wind report 2024](#), 2024, pp 62–64, accessed 25 August 2025.
- ¹²⁰⁸ Global Wind Energy Council, [Global offshore wind report 2025](#), 2025, p 24, accessed 25 August 2025.
- ¹²⁰⁹ Department of Energy, Environment and Climate Action, [Gippsland offshore wind transmission](#), DEECA website, 29 August 2025, accessed 6 October 2025.
- ¹²¹⁰ VicGrid, [2025 Victorian transmission plan](#), State of Victoria, 2025, pp 97–100, accessed 25 August 2025.
- ¹²¹¹ Arup, [Australian offshore wind market study: Supply chain assessment and gap analysis](#), report to the UK Government, 2023, pp 32–33, accessed 25 August 2025.
- ¹²¹² Department of Energy, Environment and Climate Action, [Offshore wind implementation statement 4](#), State of Victoria, 2025, pp 19–20, accessed 25 August 2025.
- ¹²¹³ T Plibersek, [Statement of reasons for a decision that the action is clearly unacceptable under the Environment Protection and Biodiversity Conservation Act 1999](#), EPBC 2023/09609, Department of Climate Change, Energy, the Environment and Water, 2023, pp 1–6, accessed 25 August 2025.
- ¹²¹⁴ Victorian Renewable Energy Terminal, [Commonwealth EPBC Act referral \(2025\)](#), Victorian Renewable Energy Terminal project website, n.d., accessed 20 August 2025.
- ¹²¹⁵ Department of Climate Change, Energy, the Environment and Water, [Environment Protection and Biodiversity Conservation Act 1999 \(EPBC Act\)](#), DCCEEW website, 5 February 2025, accessed 25 August 2025; Department of Transport and Planning, [Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978](#), 8th ed., State of Victoria, 2023, accessed 25 August 2025; Department of Transport and Planning, [Navigating our port futures: the Victorian commercial ports strategy](#), State of Victoria, 2022, pp 35,56, accessed 25 August 2025; Department of Energy, Environment and Climate Action, [Offshore Wind Energy Victoria](#), DEECA website, 18 June 2025, accessed 25 August 2025.
- ¹²¹⁶ Department of Climate Change, Energy, the Environment and Water, 'Changes to offshore wind to boost jobs and growth' [media release], Australian Government, 16 September 2025, accessed 3 October 2025.
- ¹²¹⁷ Department of Energy, Environment and Climate Action, 'APAC Wind Energy Summit wraps after three days in Melbourne', [LinkedIn](#), 18 September 2025, accessed 3 October 2025.
- ¹²¹⁸ Department of Energy, Environment and Climate Action, 'APAC Wind Energy Summit wraps after three days in Melbourne', [LinkedIn](#), 18 September 2025, accessed 3 October 2025; R Cropp, 'Renewables hit fresh speed bump as Victoria delays offshore wind plans', [Financial Review](#), 16 September 2025, accessed 3 October 2025; T Singh, 'Victoria delays Gippsland offshore wind auction, stalling developers' [ABC News](#), 16 September 2025, accessed 3 October 2025; Energy Source & Distribution, 'Trouble in the water: Victoria delays first offshore wind tender', [EDS News](#), 17 September 2025, accessed 3 October 2025; R Williamson, 'The paperwork is done: Time for feds to lean in on offshore wind, says D'Ambrosio', [Renew Economy](#), 3 June 2025, accessed 3 October 2025.
- ¹²¹⁹ Department of Transport and Planning, [Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978](#), 8th ed., State of Victoria, 2023, accessed 19 August 2025.

- ¹²²⁰ Department of Transport and Planning, *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978*, 8th ed., State of Victoria, 2023, p 19, accessed 19 August 2025.
- ¹²²¹ Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, pp 8,27, accessed 19 August 2025.
- ¹²²² Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, p 27, accessed 19 August 2025; Clean Energy Council, *Clean energy council welcomes project planning reforms for Victorian renewables projects* [media release], CEC website, 14 March 2024, accessed 19 August 2025.
- ¹²²³ PwC, *Securing approvals for renewable energy facilities in Victoria*, PwC website, n.d., accessed 19 August 2025.
- ¹²²⁴ Department of Transport and Planning, *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978*, 8th ed., State of Victoria, 2023, accessed 19 August 2025.
- ¹²²⁵ Department of Transport and Planning, *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978*, 8th ed., State of Victoria, 2023, p 6, accessed 19 August 2025.
- ¹²²⁶ Department of Transport and Planning, *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978*, 8th ed., State of Victoria, 2023, pp 39–40, accessed 19 August 2025.
- ¹²²⁷ Department of Climate Change, Energy, the Environment and Water, *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, DCCEEW website, 5 February 2025, accessed 19 August 2025.
- ¹²²⁸ Department of Transport and Planning, *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978*, 8th ed., State of Victoria, 2023, accessed 19 August 2025; Department of Climate Change, Energy, the Environment and Water, *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, DCCEEW website, 5 February 2025, accessed 19 August 2025.
- ¹²²⁹ Department of Climate Change, Energy, the Environment and Water, *Victorian Assessment Bilateral Agreement*, 27 October 2014, accessed 24 June 2025.
- ¹²³⁰ Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, pp 17–18, accessed 19 August 2025; Minister for Environment and Water, *Environment and business to benefit from Nature Positive Plan* [media release], Australian Government, 16 April 2024, accessed 19 August 2025; Productivity Commission, *Investing in cheaper, cleaner energy and the net zero transformation: interim report*, Australian Government, 2025, p 36, accessed 19 August 2025.
- ¹²³¹ Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, pp 4,28, accessed 19 August 2025.
- ¹²³² Department of Transport and Planning, *Development Facilitation Program*, DTP website, 7 July 2025, accessed 19 August 2025.
- ¹²³³ Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, p 4, accessed 19 August 2025.
- ¹²³⁴ Queensland Government, *The Coordinated Project process*, State Development and Infrastructure website, 7 November 2024, accessed 19 August 2025; Department for Trade and Investment, *Guide for applicants: impact assessed development*, SA Government, 2023, pp 4–6, accessed 19 August 2025; NSW Government, Planning, *Renewable energy*, NSW Government website, n.d., accessed 19 August 2025.
- ¹²³⁵ Department of Treasury and Finance, *Economic growth statement*, State of Victoria, 2024, p 25, accessed 19 August 2025.
- ¹²³⁶ Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, p 29, accessed 19 August 2025; Victorian Auditor-General's Office, *Effectiveness of the Environmental Effects Statement process*, State of Victoria, 2017, p 26, accessed 19 August 2025; Victorian Government, *Economic Growth Statement*, 2024, p 25, accessed 19 August 2025.
- ¹²³⁷ Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, p 30, accessed 19 August 2025.
- ¹²³⁸ Clean Energy Council, *Submission on federal environmental law reform*, CEC submission to the Department of Climate Change, Energy, the Environment and Water, 5 April 2024, p 1, accessed 19 August 2025.
- ¹²³⁹ Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, p 28, accessed 19 August 2025; Victorian Auditor-General's Office, *Effectiveness of the Environmental Effects Statement process*, State of Victoria, 2017, p 24, accessed 19 August 2025.
- ¹²⁴⁰ Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, pp 28–29, accessed 19 August 2025.
- ¹²⁴¹ Environment Institute of Australia and New Zealand, *Good practice scoping in impact assessment*, n.d., p 2, accessed 19 August 2025; UK Government, *Guidance - nationally significant infrastructure projects - advice note nine: Rochdale Envelope*, UK Government website, 2018, accessed 19 August 2025.
- ¹²⁴² Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, p 30, accessed 19 August 2025; Ausnet, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4.

- ¹²⁴³ Queensland Government, *Categories of development* [pdf], 2021, pp 1–2, accessed 19 August 2025; Herbert Smith Freehills, Clean Energy Investor Group, *Delivering major clean energy projects in Queensland and Victoria: review of QLD and VIC statutory planning approvals processes* [pdf], 2024, pp 28–29, accessed 19 August 2025.
- ¹²⁴⁴ Manningham Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 20; City of Whittlesea, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 26; Cardinia Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 26.
- ¹²⁴⁵ RE-Alliance and the Energy Charter, *Better practice renewables and biodiversity: opportunities for collaboration guide*, 2024, p 17, accessed 19 August 2025; Productivity Commission, *Investing in cheaper, cleaner energy and the net zero transformation: interim report*, Australian Government, 2025, p 42, accessed 19 August 2025.
- ¹²⁴⁶ Department of Energy, Environment and Climate Action, *A better approach to managing biodiversity impacts of renewable energy projects*, State of Victoria, 2024, p 7, accessed 19 August 2025.
- ¹²⁴⁷ City of Whittlesea, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 26; Department of Energy, Environment and Climate Action, *Striped legless lizard*, DEECA website, 24 January 2024, accessed 19 August 2025.
- ¹²⁴⁸ Department of Energy, Environment and Climate Action, *Discussion paper - a better approach to managing the biodiversity impacts of renewable energy*, State of Victoria, 2024, accessed 19 August 2025; Department of Energy, Environment and Climate Action, *Handbook for the development of renewable energy in Victoria*, State of Victoria, 2025, accessed 19 August 2025.
- ¹²⁴⁹ Climate Action Merri-bek, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 16; Gas Appliance Manufacturers Association of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4; Gippsland Regional Partnership, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 15; Melton City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10; Planning Institute of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 12; Victorian Farmers Federation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 18.
- ¹²⁵⁰ Department of Transport and Planning, *PPN45: Aboriginal Heritage Act 2006 and the planning permit process*, DTP website, 1 September 2024, accessed 19 August 2025.
- ¹²⁵¹ First Peoples – State Relations, *Cultural Heritage Management Plans*, First Peoples – State Relations website, 12 June 2025, accessed 19 August 2025.
- ¹²⁵² Victorian Aboriginal Heritage Council and Terri Janke and Company, *State of Victoria's Aboriginal cultural heritage report 2016–2021*, commissioned by the Victorian Aboriginal Heritage Council, 2021, pp 93–94, accessed 19 August 2025; Better Regulation Victoria, *Planning and building approvals process review – discussion paper*, State of Victoria, 2021, pp 103–104, accessed 19 August 2025; Yoorrook Justice Commission *Yoorrook for transformation: third interim report*, vol. 2, 2025, p 378, accessed 19 August 2025.
- ¹²⁵³ Victorian Aboriginal Heritage Council and Terri Janke and Company, *State of Victoria's Aboriginal cultural heritage report 2016–2021*, commissioned by the Victorian Aboriginal Heritage Council, 2021, pp 93–94, accessed 19 August 2025; Victorian Aboriginal Heritage Council, *Taking control of our heritage*, 2021, p 63, accessed 19 August 2025.
- ¹²⁵⁴ Yoorrook Justice Commission *Yoorrook for transformation: third interim report*, vol. 2, 2025, pp 397–399, accessed 19 August 2025.
- ¹²⁵⁵ Better Regulation Victoria, *Planning and building approvals process review – discussion paper*, State of Victoria, 2021, pp 103–104, accessed 19 August 2025; Department of Transport and Planning, *Action 20: reflect Country in planning schemes where supported by and following ongoing engagement with Traditional Owners*, State of Victoria, 28 February 2025, accessed 19 August 2025.
- ¹²⁵⁶ The Indigenuity Lab, *Self-determination in infrastructure* [pdf], report to Infrastructure Victoria, 2024, pp 39–40, accessed 19 August 2025.
- ¹²⁵⁷ The Queensland Cabinet and Ministerial Directory, *Queensland's environmental laws strengthened* [media release], Queensland Government, 29 March 2023, accessed 19 August 2025.
- ¹²⁵⁸ Queensland Government, *EPOLA Act—changes to the EIS process*, Queensland Government website, 18 April 2023, accessed 19 August 2025.
- ¹²⁵⁹ The Queensland Cabinet and Ministerial Directory, *Queensland's environmental laws strengthened* [media release], Queensland Government, 29 March 2023, accessed 19 August 2025.
- ¹²⁶⁰ The Queensland Cabinet and Ministerial Directory, *Queensland's environmental laws strengthened* [media release], Queensland Government, 29 March 2023, accessed 19 August 2025.
- ¹²⁶¹ Sustainability Victoria, *Tracking Victoria's energy transition – 1990 to 2020* [pdf], 2022, p 8, accessed 27 August 2025.
- ¹²⁶² Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, p 38, accessed 27 August 2025.
- ¹²⁶³ AEMO, *Victorian gas planning report*, Australian Energy Market Operator Limited, 2025, pp 3–4, accessed 27 August 2025; Department of Energy, Environment and Climate Action, *Gas security statement*, State of Victoria, 2025, pp 5–6, accessed 27 August 2025.
- ¹²⁶⁴ Sustainability Victoria, *The Victorian Healthy Homes Program: research findings*, 2022, p 5, accessed 27 August 2025; Climateworks Centre, *Climate-ready homes: building the case for a renovation wave in Australia – summary report*, 2023, pp 30–31, accessed 27 August 2025.
- ¹²⁶⁵ Northmore Gordon and Energeia, *Gas infrastructure advice – costs benefit analysis of energy efficiency activities in the gas sector*, report to Infrastructure Victoria, 2021, pp 78–79,92, accessed 27 August 2025; Climateworks Centre, *Climate ready homes: building the case for a renovation wave in Australia*, 2023, p 34, accessed 27 August 2025.

- ¹²⁶⁶ Northmore Gordon and Energeia, *Gas infrastructure advice – costs benefit analysis of energy efficiency activities in the gas sector*, report to Infrastructure Victoria, 2021, pp 6,92, accessed 27 August 2025; International Energy Agency, *Energy efficiency 2024*, 2024, pp 46-47, accessed 27 August 2025.
- ¹²⁶⁷ J Gordon, *Managing the transition to all-electric homes – an economical solution to Victoria's fossil gas dilemma*, Institute for Energy Economics and Financial Analysis, 2023, p 5, accessed 27 August 2025; T Wood, A Reeve and E Suckling, *Getting off gas: why, how, and who should pay?*, Grattan Institute, 2023, p 15, accessed 27 August 2025; J Gordon, *Electrification regulations in Victoria would lower energy bills and reduce gas supply gaps*, Institute for Energy Economics and Financial Analysis, 2025, p 2, accessed 27 August 2025.
- ¹²⁶⁸ J Gordon, *Electrification regulations in Victoria would lower energy bills and reduce gas supply gaps*, Institute for Energy Economics and Financial Analysis, 2025, p 9, accessed 27 August 2025.
- ¹²⁶⁹ Department of Energy, Environment and Climate Action, *New electrification and efficiency standards and regulations for Victorian buildings*, DEECA website, 27 June 2025, accessed 27 August 2025.
- ¹²⁷⁰ Department of Energy, Environment and Climate Action, *About Victorian energy upgrades*, DEECA website, 28 July 2025, accessed 27 August 2025; Solar Victoria, *Solar homes program*, Solar Victoria website, 12 August 2025, accessed 27 August 2025; Solar Victoria, *Hot water rebate*, Solar Victoria, 12 August 2025, accessed 27 August 2025.
- ¹²⁷¹ State Electricity Commission, *SEC to build installer and trade network to help Victorians switch to electric* [media release], SEC, 28 May 2025, accessed 27 August 2025.
- ¹²⁷² Deloitte Access Economics, *Powering progress: energy upgrades to low-cost housing*, report to the Australian Council of Social Service, 2024, pp 16–17,31–32, accessed 27 August 2025.
- ¹²⁷³ N Willand, T Moore, R Horne and S Robertson, 'Retrofit poverty: socioeconomic spatial disparities in retrofit subsidies uptake', *Buildings and Cities*, 2020, 1(1):14–35; M Lang, R Lane, K Zhao, S Tham, K Woolfe and R Raven, 'Systematic review: landlords' willingness to retrofit energy efficiency improvements', *Journal of Cleaner Production*, 2021, 303(127041), p 13; T Dodd and T Nelson, 'Australian household adoption of solar photovoltaics: a comparative study of hardship and non-hardship customers', *Energy Policy*, 2022, 160(112674).
- ¹²⁷⁴ A Crowe and S Rowley, *Measuring housing affordability: Scoping the real cost of housing*, Australian Housing and Urban Research Institute Limited, 2024, p 10, accessed 27 August 2025.
- ¹²⁷⁵ World Economic Forum, *Putting people at the centre of the green transition*, WEF website, 16 January 2024, accessed 27 August 2025.
- ¹²⁷⁶ T Wood, A Reeve and E Suckling, *Getting off gas: why, how, and who should pay?*, Grattan Institute, 2023, p 22, accessed 27 August 2025.
- ¹²⁷⁷ Infrastructure Victoria, *Towards 2050: gas infrastructure in a net zero emissions economy*, 2021, p 40, accessed 27 August; Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, p 116, accessed 27 August 2025.
- ¹²⁷⁸ Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 20; AusNet, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6.
- ¹²⁷⁹ T Wood, A Reeve and E Suckling, *Getting off gas: why, how, and who should pay?*, Grattan Institute, 2023, pp 26–27, accessed 27 August 2025.
- ¹²⁸⁰ Department of Energy, Environment and Climate Action, *Energy efficiency for rental properties in Victoria*, DEECA website, 1 July 2025, accessed 27 August 2025.
- ¹²⁸¹ B Yildiz, D Saldivia Salazar, H Saberi, R Klisser, A Brice and A Sproul, *Solar shift: Turning household water heating systems into MW batteries*, Final report, RACE for 2030, p 22, accessed 27 August 2025.
- ¹²⁸² CSIRO, *Dashboards – energy ratings – states and territories*, CSIRO website, n.d., accessed 24 July 2025; Sustainability Victoria, *The Victorian Healthy Homes Program: research findings*, 2022, p 9, accessed 27 August 2025; Department of Energy, Environment, and Climate Change, *7 star energy efficiency building standards*, DEECA website, 25 July 2024, accessed 27 August 2025.
- ¹²⁸³ S Berry, T Marker and T Chevalier, 'Modelling the relationship between energy efficiency attributes and house price: the case of detached houses sold in the Australian Capital Territory in 2005 and 2006', *ACEEE Summer Study on Energy Efficiency in Buildings*, Washington D.C., 17–22 August 2008, pp 2:55–2:56, accessed 27 August 2025; H Adams, M Clark and J Potts, *Enhancing the market for energy efficient homes: Implementing a national voluntary disclosure system for the energy performance of existing homes*, CRC for Low Carbon Living, 2016, pp 9–10, accessed 27 August 2025; Green Building Council and Property Council of Australia, *Every building counts: innovating for a greener, healthier, and more equitable built environment: state and territory policy plan*, 2023, p 60, accessed 27 August 2025.
- ¹²⁸⁴ Australian Government, *Home energy ratings disclosure framework – a collaborative project of the Australia, state and territory governments – version 2*, Australian Government, 2024, accessed 27 August 2025.
- ¹²⁸⁵ CSIRO, *Dashboards – energy ratings – states and territories*, CSIRO website, n.d., data from May 2016 to May 2024, accessed 27 August 2025.
- ¹²⁸⁶ Homes Victoria, *Energy Efficiency in Social Housing Program*, Homes Victoria website, n.d., accessed 27 August 2025.
- ¹²⁸⁷ Infrastructure Victoria calculation based on Australian Bureau of Statistics, *Census of housing and population*, Australian Government, 2021; Department of Transport and Planning, *Building electrification regulatory impact statement*, State of Victoria, 2024, accessed 27 August 2025; Energy Networks Australia, *Reliable and clean gas for Australian homes* [pdf], 2021, accessed 27 August 2025; T Wood, A Reeve and E Suckling, *Getting off gas: why, how, and who should pay?*, Grattan Institute, 2023, accessed 27 August 2025.
- ¹²⁸⁸ Infrastructure Victoria calculation based on Climateworks Centre, *Climate ready homes: building the case for a renovation wave in Australia – summary report*, 2023, p 35, accessed 27 August 2025; Deloitte Access Economics, *Minimum energy efficiency and safety standards for rental homes – Regulatory impact statement* [pdf], report to Department of Energy, Environment and Climate Action, 2024, accessed 27 August 2025.

- August 2025; Department of Energy, Environment and Climate Action, [Disconnecting from fossil gas](#) [pdf], State of Victoria, 2024, accessed 27 August 2025; Department of Families, Fairness and Housing, [Social housing and homelessness additional service delivery data 2023-24](#), 2024, accessed 27 August 2025; Department of Transport and Planning, [Building electrification regulatory impact statement](#), State of Victoria, 2024, accessed 27 August 2025; Energy Consumers Australia, [How households use gas and their attitudes towards electrification](#), 2025, accessed 27 August 2025; Energy Networks Australia, [Reliable and clean gas for Australian homes](#) [pdf], 2021, accessed 27 August 2025; Minister for Housing, 'Public and social housing with gas appliances', Questions without notice 385, *Legislative Council 60 Parliament First Session*, 5 December 2023, accessed 27 August 2025; T Wood, A Reeve and E Suckling, [Getting off gas: why, how, and who should pay?](#), Grattan Institute, 2023, accessed 27 August 2025.
- ¹²⁸⁹ Common Capital, [An assessment of the costs and benefits of energy performance disclosure in single dwellings and apartment buildings](#), report to the Department of Climate Change, Energy, the Environment and Water, 2024, pp 12–13, accessed 27 August 2025; Engineers Australia, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, pp 10–11.
- ¹²⁹⁰ Department of Energy, Environment and Climate Action, [Cheaper, cleaner, renewable: our plan for Victoria's electricity future](#), State of Victoria, 2024, p 12, accessed 27 August 2025.
- ¹²⁹¹ Jacobs, [Victoria's energy transition risks and mitigation actions](#), report to Infrastructure Victoria, 2024, p 38, accessed 27 August 2025.
- ¹²⁹² Department of Energy, Environment and Climate Action, [Renewable energy action plan](#), State of Victoria, 2017, p 30, accessed 27 August 2025.
- ¹²⁹³ G Kuiper, [Reforming the economic regulation of Australian electricity distribution networks](#), Institute for Energy Economics and Financial Analysis, 2024, p 6, accessed 27 August 2025; G Watt, [Integrating distributed energy resources in the electricity grid](#), Engineers Australia, 2022, p 9, accessed 27 August 2025.
- ¹²⁹⁴ A Collyer, C Savage and D Westerman, [Consumer energy resources and the transformation of the NEM](#), Energy Security Board, 2024, p 8, accessed 27 August 2025.
- ¹²⁹⁵ F Menezes, A La Nauze and T Philip, [Electric vehicles explained \(part 2\)](#), Australian Institute for Business and Economics, University of Queensland, 26 September 2023, accessed 27 August 2025.
- ¹²⁹⁶ F Strauli, N Obadage, G Kupier and P Faraggi, [Project Edith: project overview report](#), Ausgrid and Reposit, 2022, accessed 27 August 2025; Solar Victoria, [Benefits of joining a virtual power plant](#), SV website, 1 June 2025, accessed 27 August 2025.
- ¹²⁹⁷ Australian Renewable Energy Agency, [AEMO virtual power plant demonstrations](#), ARENA website, 1 February 2022, accessed 27 August 2025.
- ¹²⁹⁸ F Strauli, N Obadage, G Kupier and P Faraggi, [Project Edith: project overview report](#), Ausgrid and Reposit, 2022, p 6, accessed 27 August 2025.
- ¹²⁹⁹ G Kuiper, [Reforming the economic regulation of Australian electricity distribution networks](#), Institute for Energy Economics and Financial Analysis, 2024, p 6, accessed 27 August 2025; Australian Energy Market Operator, [2024 integrated system plan for the National Energy Market](#), 2024, p 19, accessed 27 August 2025.
- ¹³⁰⁰ SolarQuotes, [Virtual Power Plant \(VPP\) comparison table](#), SolarQuotes website, 25 September 2025, accessed 6 October 2025.
- ¹³⁰¹ Department of Energy, Environment and Climate Action, [Cheaper Home Batteries Program](#), DEECA website, 25 July 2025, accessed 27 August 2025.
- ¹³⁰² NSW Climate and Energy Action, [Connect your battery to a Virtual Power Plant \(VPP\)](#), NSW Government website, 6 August 2025, accessed 27 August 2025.
- ¹³⁰³ L Chester, A Elliot and P Crossley, 'New forms of solar PV provisioning needed to advance energy justice for lower income households' [conference paper], *Asia Pacific Solar Research Conference*, Sydney, 4–6 December 2018, accessed 27 August 2025.
- ¹³⁰⁴ SA Department of Energy and Mining, [South Australia's Virtual Power Plant](#), Energy and Mining website, n.d., accessed 27 August 2025; Observatory of Public Sector Innovation, [South Australia's Virtual Power Plant](#), OPSI website, 16 November 2022, accessed 27 August 2025; Australian Renewable Energy Agency, [Tesla Virtual Power Plant](#), ARENA website, 20 April 2023, accessed 27 August 2025; Merri-bek City Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 24.
- ¹³⁰⁵ Jacobs, [Victoria's energy transition risks and mitigation actions](#) [pdf], report to Infrastructure Victoria, 2024, p 26, accessed 27 August 2025; Powercor Australia, [Draft proposal 2026-31 – part b – revenue & expenditure forecasts](#), 2024, p 23, accessed 27 August 2025; Citipower, [Draft proposal 2026-31 – part b – revenue & expenditure forecasts](#), 2024, p 23, accessed 27 August 2025; United Energy, [Draft proposal 2026-31 – Part B – revenue & expenditure forecasts](#), 2024, p 23, accessed 27 August 2025.
- ¹³⁰⁶ Clean Energy Regulator, [Quarterly carbon market report: December quarter 2023](#), Australian Government, 2024, accessed 27 August 2025.
- ¹³⁰⁷ Infrastructure Victoria calculation based on Australian Energy Market Operator, [2024 ISP generation and storage outlook – step change optimal development path](#) [data set], 2024, accessed 27 August 2025; T Monaghan, [A tale of two approaches: how does Victoria's energy plan differ from the 2024 ISP?](#), Australian Energy Council website, 29 August 2024, accessed 27 August 2025.
- ¹³⁰⁸ L Heathfield and T Shue, 'Home, neighbourhood, grid-scale batteries: what's the difference and why does it matter?', *Renew Economy*, 25 August 2023, accessed 27 August 2025.
- ¹³⁰⁹ Department of Energy, Environment and Climate Action, [Neighbourhood batteries](#), DEECA website, 25 August 2025, accessed 27 August 2025.
- ¹³¹⁰ Energy Consumers Australia, [Why distribution network planning rules need to change](#), Energy Consumers Australia website, 3 July 2025, accessed 27 August 2025; Australian Energy Regulator, [Low-voltage network visibility: summary of neighbourhood battery trials](#), Australian Government, 2024, p 2, accessed 27 August 2025.

- ¹³¹¹ Ausgrid, *Energy storage as a service (ESaaS)*, Ausgrid website, n.d., accessed 27 August 2025.
- ¹³¹² Energy and Climate Change Ministerial Council, *National consumers energy resources roadmap – powering decarbonised homes and communities*, Australian Government, 2024, accessed 27 August 2025.
- ¹³¹³ Department of Energy, Environment and Climate Action, *Consumer energy resources (CER) consumer protections review: directions paper*, State of Victoria, 2024, p 7, accessed 27 August 2025; Cardinia Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 26.
- ¹³¹⁴ Infrastructure Victoria calculation based on: Australian Energy Market Operator, *2024 ISP generation and storage outlook – step change optimal development path* [data set], 2024, accessed 27 August 2025.
- ¹³¹⁵ VicGrid, *2025 Victorian transmission plan*, State of Victoria, 2025, p 55–97, accessed 27 August 2025.
- ¹³¹⁶ Transmission Company Victoria, *VNI West updated construction timeline coincides with release of new Land Easement and Access Package* [media release], 30 June 2025, accessed 27 August 2025; PwC, *Western Renewables Link economic impact assessment – changing construction program* [pdf], report to Western Renewables Link, p 3, 2025, accessed 27 August 2025.
- ¹³¹⁷ Aurora Energy Research, *Energy transition analysis* [pdf], report to Infrastructure Victoria, 2024, p 22, accessed 27 August 2025.
- ¹³¹⁸ Infrastructure Victoria analysis; Department of Energy, Environment and Climate Action, *Neighbourhood batteries*, DEECA website, 25 August 2025, accessed 27 August 2025.
- ¹³¹⁹ Premier of Victoria, *SEC to power one of the world's biggest batteries* [media release], Victorian Government, 30 November 2023, accessed 15 September 2025; Premier of Victoria, *Koorangie energy storage facility hits major milestone* [media release], Victorian Government, 24 July 2024, accessed 15 September 2025; Premier of Victoria, *Terang big battery to boost jobs and strengthen grid* [media release], Victorian Government, 1 October 2024, accessed 15 September 2025.
- ¹³²⁰ Department of Treasury and Finance, *Victorian Budget 2023/24: Budget paper no. 3 – service delivery*, State of Victoria, 2023, p 33, accessed 27 August 2025.
- ¹³²¹ Accenture, *Energy as a service: the benefits, challenges, and opportunities for the acceleration of EaaS in Australia*, report to the Australian Renewable Energy Agency, 2022, p 7, accessed 27 August 2025.
- ¹³²² R Lewis, *Sub-threshold tariff notification* [pdf], Ausgrid, 28 February 2024, p 20, accessed 27 August 2025.
- ¹³²³ Ausgrid, *Energy storage as a service (ESaaS)*, Ausgrid website, n.d., accessed 27 August 2025.
- ¹³²⁴ Ausgrid, *Energy storage as a service (ESaaS)*, Ausgrid website, n.d., accessed 27 August 2025.
- ¹³²⁵ Department of Energy, Environment and Climate Action, *Cheaper, cleaner, renewable: our plan for Victoria's electricity future*, State of Victoria, 2024, p 35, accessed 16 June 2025.
- ¹³²⁶ EnergyAustralia, *EnergyAustralia powers ahead with energy transition* [media release], EnergyAustralia, 10 March 2021, accessed 16 June 2025; AGL, *Loy Yang – structured transition agreement* [media release], AGL, 21 August 2023, accessed 16 June 2025.
- ¹³²⁷ AEMO, 'Appendix 4: system operability', in *2024 integrated system plan for the National Electricity Market*, Australian Energy Market Operator Limited, 2024, pp 19–22, accessed 16 June 2025.
- ¹³²⁸ AEMO, 'Appendix 4: system operability', in *2024 integrated system plan for the National Electricity Market*, Australian Energy Market Operator Limited, 2024, p 8, accessed 16 June 2025.
- ¹³²⁹ Australia New Zealand Infrastructure Pipeline, *Melbourne renewable energy hub*, Infrastructure Partnerships Australia website, n.d., accessed 10 June 2025.
- ¹³³⁰ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, p 116; AEMO, *2024 integrated system plan for the National Electricity Market*, Australian Energy Market Operator Limited, 2024, p 67, accessed 16 June 2025.
- ¹³³¹ Department of Energy, Environment and Climate Action, *Victorian renewable energy and storage targets*, DEECA website, 31 October 2024, accessed 16 June 2025.
- ¹³³² Department of Energy, Environment and Climate Action, *Victorian renewable energy and storage targets*, DEECA website, 31 October 2024, accessed 16 June 2025.
- ¹³³³ Clean Energy Council, *The future of long duration energy storage: keeping the lights on in a carbon constrained world*, 2024, p 66, accessed 16 June 2025; P Simhauser and N Gohdes, 'Incomplete markets, pumped hydro storage and the role of policy in Australia's national electricity market', *Energy Policy*, 2025, 204, p 2.
- ¹³³⁴ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, pp 31,40.
- ¹³³⁵ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, p 42.
- ¹³³⁶ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, p 122; Australian Energy Market Operator, *Victorian gas planning report*, 2025, p 4, accessed 25 August 2025.
- ¹³³⁷ AEMO, *2024 integrated system plan for the National Electricity Market*, Australian Energy Market Operator Limited, 2024, pp 83–84, accessed 16 June 2025.
- ¹³³⁸ Climate Action Merri-Bek, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 16-17; Gippsland Regional Partnership, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 15; Squadron Energy, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 3-4; Manningham Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 20; City of Melbourne, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 36-37; City of Greater Geelong, *Submission to Victoria's*

- draft 30-year infrastructure strategy*, 2025, p 31; Melton City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10; Australian Sustainable Built Environment Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 12–13.
- ¹³³⁹ T Nelson, P Conboy, A Hancock and P Hirschhorn, *National Electricity Market wholesale market settings review – draft report*, 2025, pp 186–189, accessed 25 August 2025.
- ¹³⁴⁰ Reliability Panel, *Review of the form of the reliability standard and administered price cap – final report*, Australian Energy Market Commission, 2024, pp 14–16, accessed 10 June 2025.
- ¹³⁴¹ EnergyCo, *Long-term energy service agreements*, NSW Government website, n.d., accessed 16 June 2025.
- ¹³⁴² NSW Climate and Energy Action, *Tenders to support the Electricity Infrastructure Roadmap*, NSW Government, n.d., accessed 10 June 2025; AEMO Services, *NSW Roadmap – Tender Round 6 long duration storage LTESA*, 27 May 2025, accessed 10 June 2025.
- ¹³⁴³ Jacobs, *Victoria's energy transition risks and mitigation actions* [pdf], report to Infrastructure Victoria, 2024, pp 62–63.
- ¹³⁴⁴ J Twitchell, K DeSomber and D Bhatnagar, 'Defining long duration energy storage', *Journal of Energy Storage*, 2023, 60.
- ¹³⁴⁵ Tesla Motors Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 4–5.
- ¹³⁴⁶ NSW Climate and Energy Action, *Electricity infrastructure roadmap*, NSW Government website, n.d., accessed 16 June 2025.
- ¹³⁴⁷ NSW Climate and Energy Action, *Electricity infrastructure roadmap consultations: long duration storage review*, NSW Government website, 13 June 2025, accessed 16 June 2025.
- ¹³⁴⁸ NSW Climate and Energy Action, *NSW electricity supply and reliability check up*, NSW Government website, 2 July 2025, accessed 25 August 2025.
- ¹³⁴⁹ AEMO Services – Consumer Trustee, *The value of long-duration storage: review of storage infrastructure requirements for the NSW market*, report to the NSW Government Office of Energy and Climate Change, 2024, accessed 25 August 2025.
- ¹³⁵⁰ Department of Climate Change, Energy, the Environment and Water, *Review of long duration storage (Part 6 of the Electricity Infrastructure Investment Act 2020)*, NSW Government, 2024, p 21, accessed 25 August 2025.
- ¹³⁵¹ Department of Climate Change, Energy, the Environment and Water, *Position paper: long duration storage review*, NSW Government, 2024, p 5, accessed 25 August 2025.
- ¹³⁵² Department of Climate Change, Energy, the Environment and Water, *Position paper: long duration storage review*, NSW Government, 2024, pp 5–6, accessed 25 August 2025.
- ¹³⁵³ Department of Climate Change, Energy, the Environment and Water, *Position paper: long duration storage review*, NSW Government, 2024, p 6, accessed 25 August 2025.
- ¹³⁵⁴ AEMO Services – Consumer Trustee, *NSW Electricity infrastructure tenders – guidelines tender round 6*, AEMO Services, 2025, pp 18,25–26,33, accessed 25 August 2025.
- ¹³⁵⁵ Department for Energy Security and Net Zero, *Long duration electricity storage consultation: designing a policy framework to enable investment in long duration electricity storage*, UK Government, 2024, accessed 25 August 2025.
- ¹³⁵⁶ Department for Energy Security and Net Zero, *Long duration electricity storage consultation: Government response*, UK Government, 2024, p 3, accessed 25 August 2025.
- ¹³⁵⁷ Department for Energy Security and Net Zero, *Long duration electricity storage consultation: Government response*, UK Government, 2024, p 3, accessed 25 August 2025.
- ¹³⁵⁸ Department for Energy Security and Net Zero, *Long duration electricity storage consultation: Government response*, UK Government, 2024, p 3, accessed 25 August 2025.
- ¹³⁵⁹ Ofgem, *Long duration electricity storage*, Ofgem website, n.d., accessed 25 August 2025.
- ¹³⁶⁰ Department of Energy, Environment and Climate Action, *Gas substitution roadmap: update 2024*, State of Victoria, 2024, p 5, accessed 6 August 2025.
- ¹³⁶¹ T Wood, A Reeve and E Suckling, *Getting off gas: why, how, and who should pay?*, Grattan Institute, 2023, pp 14–15, accessed 6 August 2025; J Gordon, *Managing the transition to all-electric homes: an economical solution to Victoria's fossil gas dilemma*, Institute for Energy Economics and Financial Analysis, 2023, pp 15–17, accessed 6 August 2025; J Gordon, *Electrification regulations in Victoria would lower energy bills and reduce gas supply gaps* [briefing note], Institute for Energy Economics and Financial Analysis, 2025, pp 1–2, accessed 6 August 2025; P Graham, L Havas, J Foster and Z Meher-Homji, *Consumer impacts of the energy transition: modelling report*, CSIRO and Dynamic Analysis report to Energy Consumers Australia, 2023, pp 27–29, accessed 6 August 2025; Department of Energy, Environment and Climate Action, *Gas substitution roadmap: update 2024*, State of Victoria, 2024, p 12, accessed 6 August 2025.
- ¹³⁶² Northmore Gordon and Energeia, *Gas infrastructure advice – cost benefit analysis of energy efficiency activities in the gas sector*, report to Infrastructure Victoria, 2021, pp 18–19,25–26, accessed 6 August 2025.
- ¹³⁶³ Australian Energy Market Operator, *2024 integrated system plan for the National Electricity Market*, 2024, p 10, accessed 6 August 2025; Australian Energy Market Operator, *Victorian gas planning report*, 2025, p 41, accessed 6 August 2025; T Wood and J Ha, *Go for net zero: a practical plan for reliable, affordable, low-emissions electricity*, Grattan Institute, 2021, p 3, accessed 6 August 2025.
- ¹³⁶⁴ Australian Energy Market Operator, *Victorian gas planning report*, 2025, pp 4,8–10,12–13, accessed 6 August 2025.
- ¹³⁶⁵ Australian Energy Market Operator, *Gas statement of opportunities*, 2025, p 9, accessed 7 August 2025.

- ¹³⁶⁶ Department of Energy, Environment and Climate Action, [Gas security statement – certainty of gas supply for industry and the community](#), State of Victoria, 2025, accessed 6 August 2025.
- ¹³⁶⁷ Infrastructure Victoria, [Towards 2050: gas infrastructure in a net zero emissions economy – final report](#), 2021, p 20, accessed 6 August 2025.
- ¹³⁶⁸ Australian Energy Market Operator, [2024 integrated system plan for the National Electricity Market](#), 2024, pp 10–15,26–27, accessed 6 August 2025.
- ¹³⁶⁹ P Simhauser and J Gilmore, [Policy sequencing: on the electrification of gas loads in Australia's National Electricity Market](#), Centre for Applied Energy Economics & Policy Research working paper series 2024-10, Griffith University, 2024, pp 16–18,22, accessed 6 August 2025.
- ¹³⁷⁰ Australian Energy Market Operator, [Gas statement of opportunities](#), 2025, accessed 7 August 2025; Australian Energy Market Operator, [Victorian gas planning report](#), 2025, accessed 6 August 2025; Australian Energy Market Operator, [2024 integrated system plan for the National Electricity Market](#), 2024, accessed 13 August 2025; Australian Energy Market Operator, [2024 electricity statement of opportunities](#), 2024, accessed 13 August 2025; Australian Energy Market Operator, [Victorian annual planning report](#), 2024, accessed 13 August 2025; VicGrid, [2025 Victorian transmission plan](#), State of Victoria, 2025, accessed 27 August 2025.
- ¹³⁷¹ Energy Consumers Australia, [Gas distribution network rule change requests](#), National Gas Rules change request to the Australian Energy Market Commission, pp 4–5, accessed 6 August 2025.
- ¹³⁷² Infrastructure Victoria, [Towards 2050: Gas infrastructure in a net zero emissions economy](#), 2021, pp 16–21, accessed 21 August 2025.
- ¹³⁷³ Anonymous ID 77, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, pp 3–4.
- ¹³⁷⁴ Australian Energy Market Operator, [2024 integrated system plan](#), 2024, pp 70–71, accessed 6 August 2025; Australian Energy Market Operator, [2025 Gas infrastructure options report](#), 2025, pp 4–6, accessed 6 August 2025.
- ¹³⁷⁵ Infrastructure Victoria, [Towards 2050: gas infrastructure in a net zero emissions economy](#), 2021, p 17, accessed 6 August 2025; Department of Energy, Environment and Climate Action, [Gas substitution roadmap update – Victoria's electrification pathway](#), State of Victoria, 2023, p 61, accessed 6 August 2025.
- ¹³⁷⁶ C4NET, [Enhanced system planning project](#), Final report, 2025, accessed 6 August 2025; Brimbank City Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 20; Victorian Greenhouse Alliances and the Council for a Sustainable Built Environment, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 3.
- ¹³⁷⁷ DORIS Engineering, [IV128 net zero emission scenario analysis stage 2 study report](#), report to Infrastructure Victoria, 2021, pp 87–91, accessed 6 August 2025; GPA Engineering, [AGIG Victorian distribution network overview – summary report](#), report to Australian Gas Infrastructure Group, 2025, p 10, accessed 6 August 2025.
- ¹³⁷⁸ Australian Gas Infrastructure Group and blunomy, [Biomethane potential in AGIG's network catchment and associated co-benefits](#), 2024, p 27, accessed 6 August 2025; SA Culley, O Smith, AC Zecchin and HR Maier, [Report 2: identifying the most investable biomethane project sites in Australia](#), Project RP1.2-06, Future Fuels CRC, 2025, p 24, accessed 6 August 2025.
- ¹³⁷⁹ Energy Consumers Australia, [Gas distribution network rule change requests](#), National Gas Rules change request to the Australian Energy Market Commission, p 15, accessed 6 August 2025.
- ¹³⁸⁰ Infrastructure Victoria, [Towards 2050: gas infrastructure in a net zero emissions economy](#), 2021, pp 91–99, 118–119, accessed 6 August 2025.
- ¹³⁸¹ Department of Energy, Environment and Climate Action, [Victorian industrial renewable gas guarantee – Victoria's renewable gas directions paper](#), State of Victoria, 2024, p 4, accessed 6 August 2025.
- ¹³⁸² DORIS Engineering, [IV128 net zero emissions scenario analysis stage 2 study report](#), report to Infrastructure Victoria, 2021, p 378, accessed 6 August 2025; Bioenergy Australia, [Submission to Victoria's renewable gas consultation paper](#), 2023, p 10, accessed 6 August 2025; Australian Gas Infrastructure Group and blunomy, [Biomethane potential in AGIG's network catchment and associated co-benefits](#), 2024, p16, accessed 6 August 2025; Australian Gas Infrastructure Group, [Submission to Victoria's renewable gas consultation paper](#), 2023, p 23, accessed 6 August 2025; Australian Gas Infrastructure Group, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 7.
- ¹³⁸³ Accenture Strategy, [Gas infrastructure: international comparisons](#), report to Infrastructure Victoria, 2021, p 3, accessed 8 August 2025.
- ¹³⁸⁴ Australian Energy Regulator, [State of the energy market 2025](#), Australian Government, 2025, p 187, accessed 9 September 2025.
- ¹³⁸⁵ Australian Energy Regulator, [State of the energy market 2025](#), Australian Government, 2025, p 144, accessed 9 September 2025.
- ¹³⁸⁶ Australian Energy Market Operator, [Gas statement of opportunities](#) [dataset], 2025, Victoria, annual consumption, step change scenario, accessed 6 August 2025.
- ¹³⁸⁷ Australian Energy Market Operator, [Gas statement of opportunities](#) [dataset], 2025, Victoria, annual consumption, step change scenario, accessed 6 August 2025.
- ¹³⁸⁸ Australian Energy Market Operator, [2024 integrated system plan for the National Electricity Market](#), 2024, p 10, accessed 6 August 2025; Australian Energy Market Operator, [Victorian gas planning report](#), 2025, p 41, accessed 6 August 2025; T Wood and J Ha, [Go for net zero: a practical plan for reliable, affordable, low-emissions electricity](#), Grattan Institute, 2021, p 3, accessed 6 August 2025.
- ¹³⁸⁹ Infrastructure Victoria, [Towards 2050: Gas infrastructure in a net zero emissions economy](#), 2021, pp 64, 100–101, accessed 22 August 2025; Department of Energy, Environment and Climate Action, [Gas substitution roadmap: update 2024](#), State of Victoria, 2024, p 26, accessed 20 August 2025.
- ¹³⁹⁰ Boardroom Energy, [Risks to gas consumers of declining demand](#), report to Energy Consumers Australia, 2022, pp 30–31, accessed 8 August 2025; T Wood, A Reeve and E Suckling, [Getting off gas: why, how, and who should pay?](#), Grattan Institute, 2023, pp 44–45, accessed 11 August 2025.

- ¹³⁹¹ Infrastructure Victoria, *Towards 2050: Gas infrastructure in a net zero emissions economy*, 2021, p 5, accessed 13 August 2025.
- ¹³⁹² Department of Energy, Environment and Climate Action, *Gas security statement*, State of Victoria, 2025, p 4, accessed 13 August 2025.
- ¹³⁹³ Australian Gas Infrastructure Group, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 8–10; GPA Engineering, *AGIG Victorian distribution network overview*, 2025, accessed 8 August 2025.
- ¹³⁹⁴ Infrastructure Victoria, *Towards 2050: gas infrastructure in a net zero emissions economy*, 2021, pp 92–95, accessed 8 August 2025.
- ¹³⁹⁵ AusNet, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 6; Australian Gas infrastructure Group, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 9–10.
- ¹³⁹⁶ J Rosenow, R Lowes and C Kemfert, 'The elephant in the room: how do we regulate gas transportation infrastructure as gas demand declines?', *One Earth*, 2024, 7(7):1158–1161; A Rodgarkia-Dara and S Schmitt, *Decarbonising EU gas networks without stranded investment risks*, Frontier Economics website, n.d., accessed 11 August 2025.
- ¹³⁹⁷ T Wood, A Reeve and E Suckling, *Getting off gas: why, how, and who should pay?*, Grattan Institute, 2023, pp 3,43, accessed 11 August 2025.
- ¹³⁹⁸ T Wood, A Reeve and E Suckling, *Getting off gas: why, how, and who should pay?*, Grattan Institute, 2023, p 50, accessed 11 August 2025; The Senate Economics References Committee, Parliament of Australia, *Residential electrification*, March 2025, pp 11,77, accessed 11 August 2025.
- ¹³⁹⁹ Infrastructure Victoria, *Towards 2050: Gas infrastructure in a net zero emissions economy*, 2021, p 139, accessed 12 August 2025; Department of Energy, Environment and Climate Action, *Gas substitution roadmap: update 2024*, State of Victoria, 2024, p 21, accessed 11 August 2025; Australian Energy Market Commission, *Gas distribution networks: connection and permanent abolishment charges consultation paper*, AEMC, June 2025, accessed 12 August 2025.
- ¹⁴⁰⁰ Department of Energy, Environment and Climate Action, *Gas substitution roadmap: update 2024*, State of Victoria, 2024, p 21, accessed 11 August 2025; Department of Energy, Environment and Climate Action, *Gas security statement*, State of Victoria, 2025, pp 1,4, accessed 11 August 2025.
- ¹⁴⁰¹ Energy Consumers Australia, *Gas distribution network rule change requests*, National Gas Rules change request to the Australian Energy Market Commission, 2025, pp 15–16, accessed 11 August 2025; T Wood, A Reeve and E Suckling, *Getting off gas: why, how, and who should pay?*, Grattan Institute, 2023, p 50, accessed 11 August 2025.
- ¹⁴⁰² T Wood, A Reeve and E Suckling, *Getting off gas: why, how, and who should pay?*, Grattan Institute, 2023, pp 44–45, accessed 11 August 2025; J Gordon *Managing the transition to all-electric Victorian homes*, Institute of Energy Economics and Financial Analysis, 2023, p 33, accessed 11 August 2025; Department of Climate Change, Energy, the Environment and Water, *Electricity and energy sector plan – discussion paper*, Australian Government, March 2024, p 25, accessed 11 August 2025; R Lowes, *Decompression: policy and regulatory options to manage the gas grid in a decarbonising UK*, Regulatory Assistance Project, 2023, p 11, accessed 11 August 2025; ACT Government, *The integrated energy plan 2024–2030*, Australian Capital Territory, 2024, pp 12,54–55, accessed 11 August 2025.
- ¹⁴⁰³ J Giehl, T Sudhaus, A Kurre, F v Mikulicz-Radecki, J Hollnagel, M Wacker, J Himmel, J Müller-Kichenbauer, 'Modelling the impact of the energy transition on gas distribution networks in Germany', *Energy Strategy Reviews*, 2021, 38(100751):9; R Lowes, *Decompression: policy and regulatory options to manage the gas grid in a decarbonising UK*, Regulatory Assistance Project, 2023, p 12, accessed 11 August 2025; Arup, *Future of Great Britain's gas networks*, report to the National Infrastructure Commission and Ofgem, 2023, p 153.
- ¹⁴⁰⁴ Solstice Energy, *Helping you switch to cheaper energy*, Solstice website, n.d., accessed 12 August 2025.
- ¹⁴⁰⁵ European Commission, *Hydrogen and decarbonised gas market*, European Commission website, n.d., accessed 12 August 2025.
- ¹⁴⁰⁶ Council of the European Union, *Directive (EU) 2024/1788 of the European Parliament and of the Council of 13 June 2024 on common rules for the internal markets for renewable gas, natural gas and hydrogen, amending Directive (EU) 2023/1791 and repealing Directive 2009/73/EC*, Article 57.
- ¹⁴⁰⁷ Council of the European Union, *Directive (EU) 2024/1788 of the European Parliament and of the Council of 13 June 2024 on common rules for the internal markets for renewable gas, natural gas and hydrogen, amending Directive (EU) 2023/1791 and repealing Directive 2009/73/EC*, Articles 11, 13, 26, 27; Climate Action Network Europe, *Gas package analysis: the good, the bad and the ugly of the revised Directive and Regulation*, 2024, pp 4-6, accessed 13 August 2025.
- ¹⁴⁰⁸ J Rosenow, R Lowes and C Kemfert, 'The elephant in the room: how do we regulate gas transportation infrastructure as gas demand declines?', *One Earth*, 2024, 7(7):1159; N Cunningham, 'Europe needs to decommission gas infrastructure as demand plummets', *Gas Outlook*, 23 July 2024, accessed 12 August 2025.
- ¹⁴⁰⁹ J Rosenow, R Lowes and C Kemfert, 'The elephant in the room: how do we regulate gas transportation infrastructure as gas demand declines?', *One Earth*, 2024, 7(7):1159–1160.
- ¹⁴¹⁰ ACT Government, *Preventing new gas network connections*, Everyday Climate Choices website, n.d., accessed 13 August 2025.
- ¹⁴¹¹ ACT Government, *The Integrated Energy Plan 2024–2030*, ACT Government, 2024, pp 18–19, accessed 3 October 2025.
- ¹⁴¹² ACT Government, *The Integrated Energy Plan 2024–2030*, ACT Government, 2024, pp 53–55, accessed 3 October 2025.
- ¹⁴¹³ ACT Government, *Sustainable household scheme*, Everyday Climate Choices website, n.d., accessed 13 August 2025; ACT Government, *Home Energy Support: rebates for homeowners*, Everyday Climate Choices website, n.d., accessed 13 August 2025.
- ¹⁴¹⁴ Victorian Skills Authority, *State of the Victorian labour market: Victorian skills plan 2022*, State of Victoria, 2022, p 14, accessed 8 January 2025.
- ¹⁴¹⁵ Productivity Commission, *Productivity growth and wages – a forensic look*, Australian Government, 2023, p 1, accessed September 2024.

- ¹⁴¹⁶ Productivity Commission, *5-year productivity inquiry*, vol. 1, Australian Government, 2023, p 1, accessed September 2024.
- ¹⁴¹⁷ Productivity Commission, *5-year productivity inquiry*, vol. 1, Australian Government, 2023, p 1, accessed September 2024.
- ¹⁴¹⁸ Productivity Commission, *5-year productivity inquiry*, vol. 8, Australian Government, 2023, p 1, accessed September 2024.
- ¹⁴¹⁹ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, accessed 28 August 2024.
- ¹⁴²⁰ Commonwealth Scientific and Industrial Research Organisation, *Circular economy: about*, CSIRO website, n.d., accessed 18 September 2024.
- ¹⁴²¹ Department of Environment, Land, Water and Planning, *Recycling Victoria: a new economy*, State of Victoria, 2020, accessed 16 May 2024.
- ¹⁴²² Victoria's Big Build, *About ecologiQ*, Victoria's Big Build website, 19 September 2023, accessed 21 August 2024.
- ¹⁴²³ Department of Environment, Land, Water and Planning, *Recycling Victoria: a new economy*, State of Victoria, 2020, p 6, accessed 30 June 2025.
- ¹⁴²⁴ Recycling Victoria, *Victorian waste projection model dashboard*, State of Victoria, 2023, accessed 20 August 2024.
- ¹⁴²⁵ Sustainability Victoria, *Wired for change*, Sustainability Victoria website, 10 October 2023, accessed 16 October 2025.
- ¹⁴²⁶ DB McGinty, *5 opportunities of a circular economy*, World Resources Institute website, 3 February 2021, accessed 20 September 2024.
- ¹⁴²⁷ Department of Environment, Land, Water and Planning, *Recycling Victoria: a new economy*, State of Victoria, 2020, p 17, accessed 30 June 2025.
- ¹⁴²⁸ Productivity Commission, *5-year productivity inquiry*, vol. 7, Australian Government, 2023, p 1, accessed 20 September 2024; Productivity Commission, *5-year productivity inquiry*, vol. 1, Australian Government, 2023, p 12, accessed 20 September 2024.
- ¹⁴²⁹ Productivity Commission, *Inquiry into the Australian Government's approach to negotiating trade and investment agreements*, submission to the Joint Standing Committee on Trade and Investment Growth, 2023, pp 4–5, accessed 18 September 2024.
- ¹⁴³⁰ Productivity Commission, *Vulnerable supply chains*, Australian Government, pp 1–2, accessed 18 September 2024.
- ¹⁴³¹ Productivity Commission, *Vulnerable supply chains*, Australian Government, p 27, accessed 18 September 2024.
- ¹⁴³² Melbourne Airport, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 7; Australian Logistics Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2.
- ¹⁴³³ Department of Jobs, Skills, Industry and Regions and Department of Energy Environment and Climate Action, *Victorian food and fibre export performance summary 2023–24*, State of Victoria, March 2025, p 4, accessed 14 July 2025.
- ¹⁴³⁴ GHD Advisory, *Freight modal shift: mode shift impediments and opportunities*, report to the Australasian Railway Association, 2022, p 6, accessed 8 January 2025.
- ¹⁴³⁵ Austroads, *Overcoming barriers to the off-peak movement of freight in urban areas*, 2016, p 50, accessed 8 January 2025; Rensselaer Polytechnic Institute, New York Department of Transportation and Rutgers University, *Integrative freight demand management in the New York City metropolitan area: implementation phase*, 2013, p 263, accessed 8 January 2025.
- ¹⁴³⁶ R Dobbs, H Pohl, DY Lin, J Mischke, N Garemo, J Hexter, S Matzinger, R Palter and R Nanavatty, *Infrastructure productivity: how to save \$1 trillion a year*, McKinsey & Company, 2013, pp 4–7, accessed 10 August 2024.
- ¹⁴³⁷ R Dobbs, H Pohl, DY Lin, J Mischke, N Garemo, J Hexter, S Matzinger, R Palter and R Nanavatty, *Infrastructure productivity: how to save \$1 trillion a year*, McKinsey & Company, 2013, pp 4–6, accessed 10 August 2024.
- ¹⁴³⁸ Victorian Auditor-General's Office, *Effectively planning for population growth*, 2017, p viii, accessed 23 March 2024.
- ¹⁴³⁹ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, p 61, accessed 3 September 2025.
- ¹⁴⁴⁰ Infrastructure Victoria, *Getting better use from infrastructure*, 2025, accessed 21 July 2025.
- ¹⁴⁴¹ R Dobbs, H Pohl, DY Lin, J Mischke, N Garemo, J Hexter, S Matzinger, R Palter and R Nanavatty, *Infrastructure productivity: how to save \$1 trillion a year*, McKinsey & Company, 2013, p 7, accessed 10 August 2024.
- ¹⁴⁴² D Hein and J-M Croteau, *The impact of preventive maintenance programs on the condition of roadway networks*, 2004, p 4, accessed 21 August 2024.
- ¹⁴⁴³ Infrastructure Victoria, *Getting better use from infrastructure*, 2025, p 7, accessed 21 July 2025.
- ¹⁴⁴⁴ Arup, *Digital technology and infrastructure productivity*, report to Infrastructure Victoria, 2024, p 5, accessed 5 December 2024.
- ¹⁴⁴⁵ Arup, *Digital technology and infrastructure productivity*, report to Infrastructure Victoria, 2024, p 8, accessed 5 December 2024.
- ¹⁴⁴⁶ Arup, *Digital technology and infrastructure productivity*, report to Infrastructure Victoria, 2024, p 5, accessed 5 December 2024.
- ¹⁴⁴⁷ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, pp 10,18–23, accessed 20 June 2025.
- ¹⁴⁴⁸ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, p 22, accessed 20 June 2025.
- ¹⁴⁴⁹ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, p 63, accessed 3 September 2025.
- ¹⁴⁵⁰ Infrastructure Australia, *Planning liveable cities: a place-based approach to sequencing infrastructure and growth*, 2018, pp 2,8, accessed 20 June 2025.
- ¹⁴⁵¹ Victorian Auditor-General's Office, *Developing transport infrastructure and services for population growth areas*, 2013, p vii, accessed 20 June 2025.

- ¹⁴⁵² Infrastructure Victoria, *Growing together*, 2020, p 35, accessed 20 June 2025.
- ¹⁴⁵³ Department of Transport and Planning, *Plan for Victoria*, State of Victoria, 2025, pp 28–31, accessed 20 June 2025.
- ¹⁴⁵⁴ City of Greater Geelong, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 35.
- ¹⁴⁵⁵ Urban Transit Solutions, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 18.
- ¹⁴⁵⁶ Queensland Productivity Commission, *Opportunities to improve productivity of the construction industry - interim report*, 2025, p 96, accessed 10 September 2025; Infrastructure Victoria, Sector dialogue: development and planning [online consultation], 9 February 2021; Infrastructure Australia, *Planning liveable cities: a place-based approach to sequencing infrastructure and growth*, 2018, pp 33–34, accessed 20 June 2025.
- ¹⁴⁵⁷ Department of State Development, Infrastructure, Local Government and Planning, *ShapingSEQ 2023*, Queensland Government, 2023, accessed 21 March 2024; Department of State Development, Infrastructure, Local Government and Planning, *SEQ infrastructure supplement 2023*, Queensland Government, 2023, accessed 20 June 2025; Infrastructure NSW, *The NSW infrastructure pipeline*, Infrastructure NSW website, 13 June 2025, accessed 20 June 2025; Transport for NSW, *Future transport strategy*, NSW Government, 2022, accessed 20 June 2025; Infrastructure NSW, *Aerotropolis sector plan*, NSW Government, 2025, accessed 20 June 2025; HM Treasury, *National infrastructure and construction pipeline 2023*, UK Government website, 2 February 2024, accessed 20 June 2025.
- ¹⁴⁵⁸ Victoria's Big Build, *Completed projects*, VBB website, 21 October 2024, accessed 20 June 2025.
- ¹⁴⁵⁹ Victoria's Big Build, *Projects*, VBB website, 3 December 2024, accessed 20 June 2025.
- ¹⁴⁶⁰ Port of Melbourne, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4.
- ¹⁴⁶¹ Victorian Government, *Growing our rail network 2018–2025*, 2018, pp 7–8, accessed 20 June 2025.
- ¹⁴⁶² Arup, *Digital technology and infrastructure productivity*, report to Infrastructure Victoria, 2024, pp 13,15,16,18,29, accessed 20 June 2025.
- ¹⁴⁶³ Better Regulation Victoria, *Planning and building approvals process review: discussion paper*, State of Victoria, 2019, p 49, accessed 7 July 2025.
- ¹⁴⁶⁴ Infrastructure Victoria, *Choosing Victoria's future: five urban development scenarios*, 2023, p 21, accessed 7 July 2025.
- ¹⁴⁶⁵ Infrastructure Victoria, *Infrastructure provision in different development settings: metropolitan Melbourne*, 2019, p 36, accessed 7 July 2025.
- ¹⁴⁶⁶ Victorian Auditor-General's Office, *Managing development contributions*, 2020, pp 7,15, accessed 7 July 2025.
- ¹⁴⁶⁷ Department of Transport and Planning, *Infrastructure contributions*, DTP website, 2 June 2025, accessed 7 July 2025; Better Regulation Victoria, *Planning and building approvals process review: discussion paper*, State of Victoria, 2019, pp 95–101, accessed 7 July 2025.
- ¹⁴⁶⁸ Productivity Commission, *Public infrastructure*, Australian Government, 2014, p 169, accessed 20 September 2024.
- ¹⁴⁶⁹ National Housing Finance and Investment Corporation, *Developer contributions: how should we pay for new local infrastructure?*, Australian Government, 2021, p 6, accessed 7 July 2025.
- ¹⁴⁷⁰ Victorian Government, *Infrastructure funding where homes are being built*, Victorian Government website, 27 November 2024, accessed 7 July 2025.
- ¹⁴⁷¹ Victorian Auditor-General's Office, *Managing development contributions*, 2020, p 8, accessed 7 July 2025.
- ¹⁴⁷² Victorian Auditor-General's Office, *Managing development contributions*, 2020, pp 25,35, accessed 7 July 2025.
- ¹⁴⁷³ Victorian Auditor-General's Office, *Managing development contributions*, 2020, pp 45–46, accessed 7 July 2025.
- ¹⁴⁷⁴ Victorian Auditor-General's Office, *Managing development contributions*, 2020, p 8, accessed 7 July 2025.
- ¹⁴⁷⁵ Victorian Auditor-General's Office, *Managing development contributions*, 2020, p 12, accessed 7 July 2025.
- ¹⁴⁷⁶ Premier of Victoria, *All suburbs that build more homes deserve more funding* [media release], Victorian Government, 22 October 2024, accessed 7 July 2025.
- ¹⁴⁷⁷ Latrobe City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 15; Metropolitan Transport Forum, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 11; Whitehorse City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 35–36.
- ¹⁴⁷⁸ Department of Treasury and Finance, *Victorian Budget 2023/24: 2023/24 financial report*, State of Victoria, 2024, p 62, accessed 10 September 2025.
- ¹⁴⁷⁹ Infrastructure Victoria, *Weathering the storm: adapting Victoria's infrastructure to climate change*, 2024, p 8, accessed 10 September 2025.
- ¹⁴⁸⁰ Infrastructure Victoria, *Getting better use from infrastructure: how Victoria can improve its asset management*, 2025, pp 11–12, accessed 10 September 2025.
- ¹⁴⁸¹ Victorian Auditor-General's Office, *Compliance with the asset management accountability framework*, 2019, p 7, accessed 10 September 2025.
- ¹⁴⁸² Calculated by Infrastructure Victoria based on confidential data and average depreciation rates identified in: New Zealand Infrastructure Commission/Te Waihangā, *Build or maintain? New Zealand's infrastructure asset value, investment, and depreciation, 1990–2022*, New Zealand Infrastructure Commission/Te Waihangā, 2024, p 40, accessed 10 September 2025.
- ¹⁴⁸³ Department of Treasury and Finance, *Asset management accountability framework*, State of Victoria, 2016, accessed 10 September 2025.

- ¹⁴⁸⁴ Victorian Auditor-General's Office, *Compliance with the asset management accountability framework*, 2019, p 8, accessed 10 September 2025.
- ¹⁴⁸⁵ Infrastructure Victoria, *Getting better use from infrastructure: how Victoria can improve its asset management*, 2025, accessed 10 September 2025.
- ¹⁴⁸⁶ Infrastructure Victoria, *Weathering the storm: adapting Victoria's infrastructure to climate change*, 2024, p 38, accessed 10 September 2025.
- ¹⁴⁸⁷ Infrastructure Victoria analysis of Victorian Government departments' annual reports, 2020–21 and 2023–24. For a full list of sources, see Appendix 1 of Infrastructure Victoria, *Getting better use from infrastructure: How Victoria can improve its asset management*, 2025, p 26, accessed 10 September 2025.
- ¹⁴⁸⁸ J Atta, *Parliamentary Inquiry into Managing School Infrastructure: Public Accounts and Estimates Committee* [presentation], Department of Education and Training, 10 March 2020, p 10, accessed 10 September 2025.
- ¹⁴⁸⁹ Department of Education, *Annual report 2023–24*, State of Victoria, 2024, p 115, accessed 10 September 2025; Premier of Victoria, *Maintenance blitz for Victorian schools* [media release], Victorian Government, 19 September 2024, accessed 10 September 2025.
- ¹⁴⁹⁰ Department of Treasury and Finance, *Asset management accountability framework*, DTF website, 23 October 2024, accessed 10 September 2025.
- ¹⁴⁹¹ Department of Treasury and Finance, *Victorian Budget 2023/24: 2023/24 financial report*, State of Victoria, 2024, p 62, accessed 10 September 2025.
- ¹⁴⁹² Recycling Victoria, *Victorian waste projection model: release notes and dataset 2024.01* [data set], Victorian Government website, 2025, accessed 10 September 2025.
- ¹⁴⁹³ UNSW Business School, 'No time to waste: how Australia can ditch landfill', *BusinessThink*, 24 November 2022, accessed 10 September 2025.
- ¹⁴⁹⁴ Department of Environment, Land, Water and Planning, *Recycling Victoria: a new economy*, Victorian Government website, 2020, accessed 10 September 2025.
- ¹⁴⁹⁵ Victorian Auditor-General's Office, *Recycling resources from waste*, 2025, pp 20–21, accessed 10 September 2025.
- ¹⁴⁹⁶ Recycling Victoria, *Victorian recycling infrastructure plan*, State of Victoria, 2024, p 128–129, accessed 10 September 2025.
- ¹⁴⁹⁷ Department of Environment, Land, Water and Planning, *Victorian waste to energy framework*, State of Victoria, 2021, p 2, accessed 10 September 2025.
- ¹⁴⁹⁸ Sustainability Victoria, *Why e-waste can't go in the bin*, SV website, 2 August 2023, accessed 10 September 2025.
- ¹⁴⁹⁹ Recycling Victoria, *Circular economy market report 2024*, State of Victoria, 2024, pp 32–33, accessed 10 September 2025.
- ¹⁵⁰⁰ Department of Climate Change, Energy, the Environment and Water, *E-stewardship in Australia*, 28 August 2023, accessed 10 September 2025.
- ¹⁵⁰¹ Infrastructure Partnerships Australia and LEK Consulting, *Building trust: social licence for infrastructure*, 2020, p 2, accessed 10 September 2025; Talis Consultants, *Social licence to operate in the waste and resource recovery sector: toolkit* [pdf], report to the Waste Management and Resource Recovery Association of Australia, 2022, p 4, accessed 10 September 2025.
- ¹⁵⁰² Brooklyn Community Representative Group, *BCRG background and achievements*, 2014, p 2, accessed 10 September 2025.
- ¹⁵⁰³ Inspector-General for Emergency Management, *Review of SKM Coolaroo recycling plant fire*, State of Victoria, 2017, accessed 10 September 2025.
- ¹⁵⁰⁴ Environment Protection Authority Victoria, *Separation distance guideline*, State of Victoria, 2024, p 36, accessed 10 September 2025.
- ¹⁵⁰⁵ Department of Environment, Land, Water and Planning, *Gippsland regional circular economy plan*, State of Victoria, 2022, p 15, accessed 10 September 2025.
- ¹⁵⁰⁶ Talis Consultants, *Social licence to operate in the waste and resource recovery sector: toolkit* [pdf], report to Waste Management and Resource Recovery Association of Australia, 2022, pp 12–13, accessed 10 September 2025.
- ¹⁵⁰⁷ Department of Climate Change, Energy, the Environment and Water, *Australia's circular economy framework*, Australian Government, 2024, p 28, accessed 10 September 2025.
- ¹⁵⁰⁸ Department of Transport and Planning, *Buffers and land use compatibility*, DTP website, 1 June 2024, accessed 10 September 2025.
- ¹⁵⁰⁹ Department of Transport and Planning, *Planning scheme – amendments*, Wodonga City Council, Planning Scheme Amendment C105, 2018, accessed 10 September 2025; Department of Transport and Planning, *Planning scheme – amendments*, Moira Shire Council Planning Scheme Amendment C086, 2018, accessed 10 September 2025.
- ¹⁵¹⁰ C Oughton, B Kurup, M Anda and G Ho, 'Industrial symbiosis to circular economy: what does the literature reveal for a successful complex industrial area?', *Circular Economy and Sustainability*, 2022, 2:1317–1344; M Retamal, NP Stoianoff, S Liaros, B Tran-Nam and N Edwards, *Rapid review: taxation and fiscal policy for a circular economy*, NSW Circular, 2022, p 23, accessed 10 September 2025; Pecllet Technology, *Circular economy and industrial symbiosis*, Pecllet Technology website, n.d., accessed 8 August 2025.
- ¹⁵¹¹ Infrastructure Victoria, *Advice on recycling and resource recovery infrastructure*, 2020, p 67, accessed 10 September 2025; Department of Energy, Environment and Climate Action, *Victorian recycling infrastructure plan*, State of Victoria, 2024, pp 64,68,104, accessed 10 September 2025.

- ¹⁵¹² Inner West Air Quality Community Reference Group, *Air pollution in Melbourne's inner west: taking direct action to reduce our community's exposure*, report to the Victorian Government, 2020, pp xi–xvi, accessed 10 September 2025; Planning Panels Victoria, *Melbourne regional landfill expansion, Ravenhall* [pdf], State of Victoria, 2017, p 20, accessed 10 September 2025.
- ¹⁵¹³ Department of Environment, Land, Water and Planning, *Melbourne industrial and commercial land use plan*, State of Victoria, 2020, accessed 29 August 2025; Department of Transport and Planning, *Plan for Victoria*, State of Victoria, 2025, pp 68–69, accessed 29 August 2025.
- ¹⁵¹⁴ Recycling Victoria, *Victorian recycling infrastructure plan*, 2024, pp 102, accessed 10 September 2025.
- ¹⁵¹⁵ *Circular Economy (Waste Reduction and Recycling) Act 2021* (Vic), subsection 37(b).
- ¹⁵¹⁶ *Circular Economy (Waste Reduction and Recycling) Act 2021* (Vic), s 9 (2); Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 22.
- ¹⁵¹⁷ Recycling Victoria, *Victorian recycling infrastructure plan*, State of Victoria, 2024, p 131, accessed 29 August 2025.
- ¹⁵¹⁸ Department of Transport and Planning, *Greater Bendigo planning scheme - amendments*, DTP website, 3 May 2024, accessed 10 September 2025.
- ¹⁵¹⁹ Department of Energy, Environment and Climate Action, *Sustainability Fund*, DEECA website, 31 March 2025, accessed 10 September 2025.
- ¹⁵²⁰ *Circular Economy (Waste Reduction and Recycling) Act 2021* (Vic), subsection 37(b).
- ¹⁵²¹ Recycling Victoria, *Victoria's waste projection model dashboard*, 2024, accessed 10 September 2025.
- ¹⁵²² L Manner, 'Waste isn't waste until it's wasted - the waste hierarchy explained', Resource Recovery Australia website, 25 August 2023, accessed 10 September 2025; Environment Protection Authority Victoria, *Find alternatives to landfill*, EPAV website, 13 May 2025, accessed 10 September 2025; Axil, *What is a waste management hierarchy?*, Axil website, n.d., accessed 10 September 2025; Department of Environment, Land, Water and Planning, *Victorian waste to energy framework*, State of Victoria, 2021, p 5, accessed 11 July 2025; Yarra Ranges Council, *Waste as an energy source – SEMAWP*, Yarra Ranges Council website, n.d., accessed 10 September 2025.
- ¹⁵²³ Environment Protection Authority Victoria, *Landfill buffer guideline*, State of Victoria, 2024, p 5, accessed 10 September 2025.
- ¹⁵²⁴ Department of Climate Change, Energy the Environment and Water, *Energy recovery*, DCCEEW website, 12 December 2024, accessed 10 September 2025.
- ¹⁵²⁵ Victorian Government, *Victoria's plan for a circular economy*, Victorian Government website, 11 October 2023, accessed 10 September 2025.
- ¹⁵²⁶ Recycling Victoria, *Victorian recycling infrastructure plan*, State of Victoria, 2024, p 9,77, accessed 10 September 2025.
- ¹⁵²⁷ Recycling Victoria, *Victorian recycling infrastructure plan*, State of Victoria, 2024, pp 77,81, accessed 10 September 2025.
- ¹⁵²⁸ City of Ballarat, *New cell at Ballarat Regional Landfill opens for waste disposal* [media release], City of Ballarat, 8 November 2023, accessed 10 September 2025; A Dalziel, 'Piles of rubbish: push to change habits as landfill costs spiral', *The Courier*, 9 November 2023, accessed 10 September 2025.
- ¹⁵²⁹ Recycling Victoria, *Victorian waste projection model dashboard*, State of Victoria, 2024, accessed 10 September 2025.
- ¹⁵³⁰ Sustainability Victoria, *Grants and funding*, Sustainability Victoria website, n.d., accessed 10 September 2025; Sustainability Victoria, *Household education for 4-stream recycling*, SV website, 12 June 2025, accessed 8 August 2025.
- ¹⁵³¹ M Ritchie, 'Waste myth #5: landfill levies don't affect behaviour', *MRA Consulting Group Blog*, 22 June 2023, accessed 10 September 2025.
- ¹⁵³² NSW Auditor-General, *Waste levy and grants for waste infrastructure*, Audit Office of NSW, 2020, p 12, accessed 18 July 2025; Victorian Auditor-General's Office, *Managing the municipal and industrial landfill levy*, 2018, accessed 19 June 2025.
- ¹⁵³³ Victorian Auditor-General's Office, *Managing the Municipal and Industrial Landfill Levy*, 2018, p 33, accessed 10 September 2025; Department of Environment, Land, Water and Planning, *Victorian waste to energy framework* [pdf], State of Victoria, 2021, p 5, accessed 10 September 2025.
- ¹⁵³⁴ Centre for International Economics, *Impact of the waste levy on commercial and industrial recycling* [pdf], 2011, p 13, accessed 10 September 2025; Recycling Victoria, *Waste, recycling and resource recovery investment prospectus* [pdf], State of Victoria, 2024, accessed 10 September 2025.
- ¹⁵³⁵ M Ritchie, 'Waste myth #5: landfill levies don't affect behaviour', *MRA Consulting Group Blog*, 22 June 2023, accessed 10 September 2025.
- ¹⁵³⁶ Department of Environment, Land, Water and Planning, *Recycling Victoria: a new economy*, State of Victoria, 2020, p 29, accessed 10 September 2025; Environment Protection Authority Victoria, *Waste levy*, 28 May 2025, accessed 3 October 2025.
- ¹⁵³⁷ Environment Protection Authority Victoria, *Waste levy*, 28 May 2025, accessed 10 September 2025.
- ¹⁵³⁸ Parliament of Australia, *From rubbish to resources: building a circular economy*, Australian Government, 2020, pp 93–95, accessed 10 September 2025; Veolia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2, accessed 19 June 2025; Waste Management and Resource Recovery Association of Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, pp 4–6, accessed 19 June 2025.
- ¹⁵³⁹ NSW Environment Protection Authority, *Review of the NSW waste levy: issues paper*, NSW Government, 2024, p 9, accessed 3 October 2025.
- ¹⁵⁴⁰ Department of Environment, Land, Water and Planning, *Recycling Victoria: a new economy*, State of Victoria, 2020, p 29, accessed 10 September 2025; Environmental and Communications References Committee, *Never waste a crisis: the waste and recycling industry in*

Australia, Parliament of Australia, 2018, pp 47–57, accessed 10 September 2025; Premier of Victoria, Cracking down on illegal dumping [media release], Victorian Government, 11 October 2025, accessed 15 October 2025.

- ¹⁵⁴¹ Victorian Government, About waste to energy, Victorian Government website, 15 August 2025, accessed 10 September 2025.
- ¹⁵⁴² Department of Environment, Land, Water and Planning, Victorian waste to energy framework [pdf], State of Victoria, 2021, p 5, accessed 10 September 2025; Department for Environment, Food and Rural Affairs, Energy from waste: a guide to the debate, UK Government, 2014, p 3, accessed 8 August 2025.
- ¹⁵⁴³ Victorian Government, Waste to energy: A framework for sustainable and appropriate investment, Victorian Government website, 25 July 2025, accessed 10 September 2025.
- ¹⁵⁴⁴ SMEC, Victorian waste-to-energy plant, SMEC website, n.d., accessed 10 September 2025; H Tippet and N Schapova, 'Five waste-to-energy plants are under development in Victoria. Here's how it works', ABC News, 21 August 2024, accessed 10 September 2025; Veolia, Maryvale energy from waste facility, Victoria, Veolia website, n.d., accessed 10 September 2025; Cleanaway, Melbourne energy and resource centre, Cleanaway website, n.d., accessed 10 September 2025.
- ¹⁵⁴⁵ Phoenix Energy, Projects: about the Kwinana waste to energy projects, Phoenix Energy website, n.d., accessed 10 September 2025; City of Canning, Canning sends first waste to Kwinana Energy Recovery facility, City of Canning website, 12 December 2024, accessed 10 September 2025.
- ¹⁵⁴⁶ Department of Treasury and Finance, Economic growth statement, State of Victoria, 2024, p 23, accessed 10 September 2025; Victorian Government, Waste to energy, Victorian Government website, 25 July 2025, accessed 6 October 2025.
- ¹⁵⁴⁷ Victorian Auditor-General's Office, Recycling resources from waste, Parliament of Victoria, 2025, p 14, accessed 10 September 2025.
- ¹⁵⁴⁸ M Michael-Agwuoke, Let's get this rubbish sorted: the value of a waste audit, 2019, pp 3,6–7, accessed 10 September 2025.
- ¹⁵⁴⁹ Victorian Auditor-General's Office, Recycling resources from waste, Parliament of Victoria, 2025, p 30, accessed 10 September 2025.
- ¹⁵⁵⁰ Victorian Auditor-General's Office, Recycling resources from waste, Parliament of Victoria, 2025, p 8, accessed 10 September 2025.
- ¹⁵⁵¹ Department of Environment, Land, Water and Planning, Recycling Victoria: a new economy, State of Victoria, 2020, p 12, accessed 10 September 2025.
- ¹⁵⁵² Victorian Auditor-General Office, Recycling resources from waste, Parliament of Victoria, 2025, pp 3–6, accessed 10 September 2025.
- ¹⁵⁵³ Victorian Auditor-General Office, Recycling resources from waste, Parliament of Victoria, 2025, p 8, accessed 10 September 2025.
- ¹⁵⁵⁴ Recycling Victoria, About Recycling Victoria, Victorian Government website, 27 May 2024, accessed 10 September 2025; Recycling Victoria, Waste, recycling and resource recovery investment prospectus [pdf], 2024, p 44, accessed 10 September 2025.
- ¹⁵⁵⁵ Parliament of Victoria, Inquiry into recycling and waste management, Final report, 2019, p 189, accessed 10 September 2025; Infrastructure Victoria, Advice on recycling and resource recovery, 2021, p 36, accessed 10 September 2025; Victoria's Auditor-General Office, Recycling resources from waste, Parliament of Victoria, 2025, p 8, accessed 10 September 2025.
- ¹⁵⁵⁶ Victorian Government, Summaries of major campaigns undertaken in 2018-19 by advertiser D, Victorian Government website, 16 January 2025, accessed 10 September 2025; NSW Environment Protection Authority, NSW Illegal dumping prevention strategy 2022–27, NSW Government, 2022, p 19, accessed 14 August 2025.
- ¹⁵⁵⁷ Department of Energy, Environment and Climate Action, Sustainability Fund, DEECA website, 31 March 2025, accessed 10 September 2025.
- ¹⁵⁵⁸ Mandala, Empowering Australia's digital future, 2024, p 6, accessed 11 June 2025.
- ¹⁵⁵⁹ Infrastructure Victoria, Opportunities to reduce greenhouse gas emissions of infrastructure, 2023, p 38, accessed 14 June 2025; Department of Transport and Planning, Smoother journeys on Smarter Roads, DTP website, n.d., accessed 14 June 2025.
- ¹⁵⁶⁰ Arup, Digital technologies and infrastructure productivity, report to Infrastructure Victoria, 2024, p 5, accessed 14 June 2025.
- ¹⁵⁶¹ Arup, Digital technologies and infrastructure productivity, report to Infrastructure Victoria, 2024, pp 5,27 accessed 14 June 2025.
- ¹⁵⁶² Minter Ellison, 'What is digital engineering and building information modelling?', in Construction Law Made Easy, 2025, accessed 18 May 2025.
- ¹⁵⁶³ Arup, Digital technologies and infrastructure productivity, report to Infrastructure Victoria, 2024, p 34, accessed 14 June 2025.
- ¹⁵⁶⁴ Arup, Digital technologies and infrastructure productivity, report to Infrastructure Victoria, 2024, p 34, accessed 14 June 2025.
- ¹⁵⁶⁵ Tekla, Randselva Bridge, Tekla website, n.d., accessed 14 June 2025.
- ¹⁵⁶⁶ Arup, Digital technologies and infrastructure productivity, report to Infrastructure Victoria, 2024, p 35, accessed 14 June 2025.
- ¹⁵⁶⁷ Arup, Digital technologies and infrastructure productivity, report to Infrastructure Victoria, 2024, p 35, accessed 14 June 2025.
- ¹⁵⁶⁸ Deloitte, State of digital adoption in the construction industry 2025, 2025, p 3, accessed 14 June 2025.
- ¹⁵⁶⁹ Deloitte, State of digital adoption in the construction industry 2025, 2025, pp 6,34, accessed 14 June 2025.
- ¹⁵⁷⁰ Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts, National digital engineering policy principles, Australian Government, 2016, p 2, accessed 11 June 2025.
- ¹⁵⁷¹ Arup, Digital technologies and infrastructure productivity, report to Infrastructure Victoria, 2024, accessed 14 June 2025.
- ¹⁵⁷² Department of Treasury and Finance, Victorian digital asset strategy, State of Victoria, 2020, accessed 28 May 2025.

- ¹⁵⁷³ Infrastructure NSW, [NSW infrastructure digitalisation and data policy](#), NSW Government, 2025, accessed 6 October 2025.
- ¹⁵⁷⁴ Infrastructure NSW, [NSW infrastructure digitalisation and data policy: overview and foundational concepts guide](#), NSW Government, 2025, accessed 6 October 2025.
- ¹⁵⁷⁵ Arup, [Digital technologies and infrastructure productivity](#), report to Infrastructure Victoria, 2024, pp 5,43, accessed 14 June 2025.
- ¹⁵⁷⁶ Department of Treasury and Finance, [Ministerial directions and instructions for public construction procurement](#), DTF website, 19 November 2024, 14 June 2025; Department of Treasury and Finance, [Procurement – investment lifecycle and high value high risk guidelines](#), State of Victoria, 2024, accessed 14 June 2025.
- ¹⁵⁷⁷ Tekla, [Randselva Bridge](#), Tekla website, n.d., accessed 14 June 2025.
- ¹⁵⁷⁸ Tekla, [Randselva Bridge](#), Tekla website, n.d., accessed 14 June 2025.
- ¹⁵⁷⁹ Arup, [Digital technologies and infrastructure productivity](#), report to Infrastructure Victoria, 2024, p 34, accessed 14 June 2025.
- ¹⁵⁸⁰ Sweco, [Randselva Bridge](#), Sweco website, n.d., accessed 14 June 2025.
- ¹⁵⁸¹ Arup, [Digital technologies and infrastructure productivity](#), report to Infrastructure Victoria, 2024, p 34, accessed 14 June 2025.
- ¹⁵⁸² Infrastructure Victoria analysis of WSP bus reform modelling for 2026 morning and afternoon peak periods, see WSP, [Better buses for Melbourne strategic modelling – baseline report](#), report to Infrastructure Victoria, 2023.
- ¹⁵⁸³ Infrastructure Victoria, [Good move: fixing transport congestion](#), 2020, p 6, accessed 25 June 2025.
- ¹⁵⁸⁴ Infrastructure Victoria, [Good move: fixing transport congestion](#), 2020, p 16, accessed June 18 2024; Department of Transport, [Victorian road safety strategy 2021-2030](#), State of Victoria, 2020, accessed 25 June 2025.
- ¹⁵⁸⁵ Our modelling in *Fast, frequent, fair: making the most of Melbourne's buses* showed significant patronage uplift on high-frequency routes when buses were given priority for faster journey times along arterial roads. See Infrastructure Victoria, [Fast, frequent, fair: making the most of Melbourne's buses](#), 2023, accessed 25 June 2025.
- ¹⁵⁸⁶ Department of Transport and Planning, [Melbourne's tram plan](#), State of Victoria, 2024, p 14, accessed 25 June 2025.
- ¹⁵⁸⁷ As early as Melbourne's Transportation Study – 1969; M Terril and H Batrouney, [Stuck in traffic: we need a smarter approach to congestion than building more roads](#), *The Conversation*, 3 October 2017, accessed 27 June 2025.
- ¹⁵⁸⁸ G Duranton and M Turner, 'The fundamental law of road congestion: evidence from US cities', *American Economic Review*, 2011 6:2616-52; Victorian Auditor-General's Office, [Effectiveness of arterial road congestion initiatives](#), 2024, p 8, accessed 27 June 2025.
- ¹⁵⁸⁹ Department of Transport and Planning, [How we're improving your journey](#), Smarter Roads website, n.d, accessed 27 June 2025; Deloitte, [Getting Melbourne moving: transport optimization with AI](#) [conference presentation], *Global Deloitte AI institute: Virtual AI conference*, Australia, 18–19 April 2023, accessed 27 June 2025.
- ¹⁵⁹⁰ Department of Transport and Planning, [A dynamic approach to pedestrian crossings](#), Smarter Roads website, 25 July 2023, accessed 26 June 2025.
- ¹⁵⁹¹ Infrastructure Victoria, [Major transport program strategic assessment report](#), 2021, p 62, accessed 29 June 2025. Comparing the upper range cost of this recommendation with major road project costs for North East Link (approximately \$29 billion) and West Gate Tunnel (approximately \$10 billion). See Infrastructure Partnerships Australia, [Project: North East Link](#), Australia New Zealand infrastructure pipeline website, n.d., accessed 27 June 2025; Infrastructure Partnerships Australia, [Project: West Gate Tunnel](#), Australia New Zealand infrastructure pipeline website, n.d., accessed 27 June 2025.
- ¹⁵⁹² Victorian Auditor-General's Office, [Effectiveness of arterial road congestion initiatives](#), 2024, accessed 27 June 2025.
- ¹⁵⁹³ Victorian Auditor-General's Office, [Effectiveness of arterial road congestion initiatives](#), 2024, accessed 27 June 2025.
- ¹⁵⁹⁴ Department of Transport and Planning analysis for Infrastructure Victoria using data fusion model; WSP, [Strategic modelling baseline conditions: better buses for Melbourne](#), report to Infrastructure Victoria, pp 30–32, 2023, accessed 29 June 2025.
- ¹⁵⁹⁵ Google Maps, [Princes Highway Traralgon](#), n.d, accessed 25 June 2025; Google Maps, [Goulburn Valley Highway Shepparton](#), n.d, accessed 18 July 2025; Google Maps, [Princes Highway Warrambool](#), n.d, accessed 18 July 2025.
- ¹⁵⁹⁶ Latrobe City Council, [Submission to Victoria's draft 30-year infrastructure strategy](#), 2025, p 11.
- ¹⁵⁹⁷ Department of Transport and Planning, [Programs – incident response](#), Transport Victoria website, n.d., accessed 27 June 2025.
- ¹⁵⁹⁸ Infrastructure Victoria, [Major transport program strategic assessment](#), 2021, accessed 27 June 2025; Infrastructure Victoria, [Good move: fixing transport congestion](#), 2020, accessed 27 June 2025.
- ¹⁵⁹⁹ Department of Transport and Planning, [Programs – real time signal operations](#), Transport Victoria website, n.d., accessed 27 June 2025.
- ¹⁶⁰⁰ Department of Transport and Planning, [Programs – traffic light optimisation](#), Transport Victoria website, n.d., accessed 27 June 2025.
- ¹⁶⁰¹ Department of Transport and Planning, [Reducing pedestrian wait time in Clayton](#), Smarter Roads website, 14 December 2023, accessed 26 June 2025.
- ¹⁶⁰² Victorian Government, [Managed Motorways operations](#), Victorian Government website, 19 July 2024, accessed 27 June 2025; Major Roads Projects Victoria, [Calder Park Drive interchange – community consultation summary](#) [pdf], State of Victoria, 2022, accessed 27 June 2025; City of Melton, [Western Highway: urbanisation, additional lanes and interchange upgrades](#), Moving Melton website, n.d., accessed 27 June 2025.
- ¹⁶⁰³ Infrastructure Victoria, [Advice on autonomous and zero emissions vehicles](#), 2018, accessed 29 June 2025.

- ¹⁶⁰⁴ Victoria's Big Build, *Monash Freeway upgrade*, Victoria's Big Build website, 8 March 2024, accessed 18 June 2024. Victorian State Government, *North East Link*, Big Build website, n.d, accessed 24 June 2025.
- ¹⁶⁰⁵ Victorian Government, *Managed Motorways operations*, Victorian Government website, 19 July 2024, accessed 27 June 2025.
- ¹⁶⁰⁶ VicRoads, *Managed Motorways framework: network optimisation & operations rationale and technical requirements* [pdf], State of Victoria, 2017, accessed 27 June 2025.
- ¹⁶⁰⁷ Premier of Victoria, *Switching on Melbourne's managed motorway network* [media release], Victorian Government, 2 June 2018, accessed 18 June 2024; VicRoads, *Managed Motorways framework: network optimisation and operations rationale and technical requirements* [pdf], State of Victoria, 2017, accessed 29 June 2025.
- ¹⁶⁰⁸ Department of Transport and Planning analysis for Infrastructure Victoria using data fusion model.
- ¹⁶⁰⁹ Mornington Peninsula freeway includes Mordialloc Freeway and Peninsula Link. Mornington Peninsula Shire, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 30.
- ¹⁶¹⁰ Arup, *Urban development scenarios: strategic transport modelling*, report to Infrastructure Victoria, 2023, p 19, accessed 23 June 2025.
- ¹⁶¹¹ Arup, *Urban development scenarios: strategic transport modelling*, report to Infrastructure Victoria, 2023, p 23, accessed 23 June 2025.
- ¹⁶¹² Arup, *Urban development scenarios: strategic transport modelling*, report to Infrastructure Victoria, 2023, p 19, accessed 23 June 2025.
- ¹⁶¹³ Department of Infrastructure and Regional Development, Bureau of Infrastructure, Transport and Regional Economics, *Traffic and congestion cost trends for Australian capital cities* [pdf], Australian Government, 2015, pp 1,25, accessed 23 June 2025 (Infrastructure Victoria converted 2010 dollars to 2024 dollars using the RBA inflation calculator).
- ¹⁶¹⁴ Engineers Australia, *Transport and infrastructure net zero consultation roadmap*, submission to Australian Government, 2024, p 5, accessed 23 June 2025; G Duranton and MA Turner, 'The fundamental law of road congestion: evidence from US Cities', *American Economic Review*, 2011, 101(6), 2616–2652; Infrastructure Victoria, *Good move: fixing transport congestion*, 2020, pp 24–26, accessed 23 June 2025.
- ¹⁶¹⁵ M Terrill, *Roads to riches: better transport spending*, Grattan Institute, 2016, pp 9,11,14, accessed 23 June 2025; Infrastructure Victoria, *Infrastructure Victoria community panel: background paper*, 2019, p 5, accessed 23 June 2025.
- ¹⁶¹⁶ Infrastructure Victoria, *Good move: fixing transport congestion*, 2020, p 20, accessed 23 June 2025.
- ¹⁶¹⁷ Parliamentary Budget Office, *Fuel taxation in Australia*, Australian Government, 2022, pp 4–5, accessed 23 June 2025.
- ¹⁶¹⁸ Australian Government, *Intergenerational report 2023: Australia's future to 2063*, Australian Government, 2023, p 193, accessed 23 June 2025.
- ¹⁶¹⁹ Infrastructure Victoria, *Good move: fixing transport congestion*, 2020, p 7, accessed 23 June 2025.
- ¹⁶²⁰ Infrastructure Victoria, *Good move: fixing transport congestion*, 2020, p 7, accessed 23 June 2025.
- ¹⁶²¹ Infrastructure Victoria, *Good move: fixing transport congestion*, 2020, pp 7,34,37,41, accessed 23 June 2025.
- ¹⁶²² CSIRO, *Electric vehicle projections 2023: update to the 2022 projections report*, report to AEMO's draft 2024 forecasting assumptions update, Paul Graham, December 2023, p 29, accessed 23 June 2025. Projection is for 2035 in the Step Change scenario.
- ¹⁶²³ Infrastructure Victoria, *Five-year focus*, 2018, p 32, accessed 23 June 2025; State Revenue Office Victoria, *Congestion levy updates*, SRO website, 18 December 2024, accessed 23 June 2025.
- ¹⁶²⁴ Victorian Department of Treasury and Finance, *Review of the effectiveness of the congestion levy*, State of Victoria, 2010.
- ¹⁶²⁵ Infrastructure Victoria, *Our home choices*, 2023, pp 50–51, accessed 25 June 2025.
- ¹⁶²⁶ MG Lay and KF Daley, 'The Melbourne City Link Project', *Transport Policy*, 2002, 9(3):261–267, p 263. The West Gate Bridge was tolled from 1978 to 1985 and Melbourne has had toll roads since 1999 with CityLink.
- ¹⁶²⁷ Infrastructure Victoria, *Good move: fixing transport congestion*, 2020, pp 56–63, accessed 23 June 2025.
- ¹⁶²⁸ Infrastructure Victoria, *Good move: fixing transport congestion*, 2020, p 5, accessed 23 June 2025.
- ¹⁶²⁹ Infrastructure Victoria, *Good move: fixing transport congestion*, 2020, p 41, accessed 23 June 2025.
- ¹⁶³⁰ L Lehe, 'Downtown congestion pricing in practice', *Transportation Research Part C*, 2019, 100:200-223; Infrastructure Victoria, *Infrastructure Victoria's response to the transport network pricing community panel*, 2019, p 10, accessed 23 June 2025.
- ¹⁶³¹ Infrastructure Victoria, *Transport network pricing community panel report*, 2019, p 8, accessed 23 June 2025.
- ¹⁶³² Victorian Government, *North East Link State Tolling Corporation*, Victorian Government website, 31 March 2025, accessed 23 June 2025.
- ¹⁶³³ M Terrill, *Right time, right place, right price*, Grattan Institute, 2019, p 59, accessed 23 June 2025.
- ¹⁶³⁴ European Union Agency for the Space Programme, *GNSS adoption for road user charging issue 2*, 2022, p 12, accessed 23 June 2025.
- ¹⁶³⁵ Victorian Government, *Zero and low emission vehicle distance-based charge bill 2021*, p 7, accessed 23 June 2025.
- ¹⁶³⁶ High Court of Australia, *Vanderstock & Anor v. The State of Victoria*, p 51, accessed 23 June 2025.
- ¹⁶³⁷ A Foley, S Ross-Smith and C Koutsis, 'Australian High Court finds Victoria's electric vehicle tax invalid, puts Commonwealth in the driver's seat for future electric vehicle taxes', *Ashurst Insights*, 20 October 2023, accessed 23 June 2025.
- ¹⁶³⁸ Treasurer of Australia, *Joint statement from Treasurers on road user charging* [media release], Australian Government, 5 September 2025, accessed 7 October 2025.

- ¹⁶³⁹ Infrastructure Victoria, *Good move: fixing transport congestion*, 2020, p 26, accessed 23 June 2025; R de Cani, 'Two decades in, what can other cities learn from the London congestion charge?', *Arup Insights*, March 2023, 23 June 2025; G Santos, 'Urban congestion charging: a comparison between London and Singapore', *Transport Reviews*, 2005, 25(5):511–534; D'Artagnan Consulting, *Review of international road pricing initiatives, previous reports and technologies for demand management purposes*, report to the Ministry of Transport Auckland Smarter Transport Pricing Project, 2018, p 22, accessed 23 June 2025; M Gibson and M Carnovale, 'The effects of road pricing on driver behavior and air pollution', *Journal of Urban Economics*, 2015, 89:62–73; City of New York, *Congestion pricing program*, City of New York website, n.d., accessed 8 July 2025; Metropolitan Transportation Authority, *The most detailed view of NYC traffic (so far)*, MTA website, 30 January 2025, accessed 8 July 2025; M Kaske, 'NYC sees pedestrian traffic increase in congestion-pricing zone', *Bloomberg CityLab*, 7 February 2025, accessed 8 July 2025.
- ¹⁶⁴⁰ MA Aasness, J Odeck, 'Road users' attitudes towards transforming a flat rate cordon toll to a congestion charging system: The case of Oslo, Norway', *Research in Transportation Business and Management*, 2023, vol. 50; Transport for London, *Annual report and statement of accounts: 2019/20*, Transport for London, 2020, p 123, accessed 23 June 2025.
- ¹⁶⁴¹ Transport for London, *Discounts and exemptions for Congestion Charge and Blackwall and Silvertown tunnels charge*, TfL website, n.d., accessed 23 June 2025.
- ¹⁶⁴² Transport for London, *Discounts and exemptions for Congestion Charge and Blackwall and Silvertown tunnels charge*, TfL website, n.d., accessed 23 June 2025.
- ¹⁶⁴³ Transport for London, *Congestion Charge marks 20 years of keeping London moving sustainably*, TfL website, 17 February 2023, accessed 23 June 2025.
- ¹⁶⁴⁴ D'Artagnan Consulting, *Review of international road pricing initiatives, previous reports and technologies for demand management purposes*, report to the Ministry of Transport Auckland Smarter Transport Pricing Project, 2018, p 32, accessed 23 June 2025.
- ¹⁶⁴⁵ Transport for London, *Annual report and statement of accounts: 2019/20*, Transport for London, 2020, p 123, accessed 23 June 2025.
- ¹⁶⁴⁶ R de Cani, 'Two decades in, what can other cities learn from the London congestion charge?', *Arup Insights*, March 2023, accessed 23 June 2025.
- ¹⁶⁴⁷ D'Artagnan Consulting, *Review of international road pricing initiatives, previous reports and technologies for demand management purposes*, report to the Ministry of Transport Auckland Smarter Transport Pricing Project, 2018, p 23, accessed 23 June 2025.
- ¹⁶⁴⁸ G Santos, 'Urban congestion charging: a comparison between London and Singapore', *Transport Reviews*, 2005, 25(5):511–534, p 525.
- ¹⁶⁴⁹ M Börjesson, J Eliasson, MB Hugosson and K Brundell-Freij, 'The Stockholm congestion charges – 5 years on. Effects, acceptability and lessons learnt', *Transport Policy*, 2012, 20:1–12.
- ¹⁶⁵⁰ M Börjesson, J Eliasson, MB Hugosson and K Brundell-Freij, 'The Stockholm congestion charges – 5 years on. Effects, acceptability and lessons learnt', *Transport Policy*, 2012, 20:1–12.
- ¹⁶⁵¹ D'Artagnan Consulting, *Review of international road pricing initiatives, previous reports and technologies for demand management purposes*, report to the Ministry of Transport Auckland Smarter Transport Pricing Project, 2018, p 39, accessed 23 June 2025.
- ¹⁶⁵² D Albalade and G Bel, 'What local policy makers should know about urban road charging: lessons from worldwide experience', *Public Administration Review*, 2009, 69(5):962–974.
- ¹⁶⁵³ D'Artagnan Consulting, *Review of international road pricing initiatives, previous reports and technologies for demand management purposes*, report to Ministry of Transport Auckland Smarter Transport Pricing Project, 2018, p 51, accessed 23 June 2025.
- ¹⁶⁵⁴ This is based on the 14.5% increase of vehicle entries into the priced area when the scheme was briefly suspended for 2 months in 2012; M Gibson and M Carnovale, 'The effects of road pricing on driver behavior and air pollution', *Journal of Urban Economics*, 2015, 89:62–73.
- ¹⁶⁵⁵ M Gibson and M Carnovale, 'The effects of road pricing on driver behavior and air pollution', *Journal of Urban Economics*, 2015, 89:62–73.
- ¹⁶⁵⁶ M Aasness and J Odeck, 'Road users' attitudes towards electric vehicle incentives: empirical evidence from Oslo in 2014–2020', *Research in Transportation Economics*, 2023, 97:1–14, pp 3–4.
- ¹⁶⁵⁷ Fjellinjen, *Tariffs and toll stations*, Fjellinjen website, n.d., accessed 23 June 2025.
- ¹⁶⁵⁸ Visit Oslo, *Oslo toll rings and AutoPASS*, Visit Oslo website, n.d., accessed 23 June 2025.
- ¹⁶⁵⁹ The large economic benefits for electric vehicle drivers, such as an exemption from tolls, are the main reason for the sharp increase in the purchase and use of EVs. M Aasness and J Odeck, 'The increase of electric vehicle usage in Norway— incentives and adverse effects', *European Transport Research Review*, October 2015, 7(34):1–8, p 4.
- ¹⁶⁶⁰ City of Oslo, *Climate statistics*, City of Oslo website, n.d., accessed 23 June 2025; M Aasness and J Odeck, 'The increase of electric vehicle usage in Norway – incentives and adverse effects', *European Transport Research Review*, October 2015, 7(34):1–8, pp 5–6.
- ¹⁶⁶¹ K Wærsted, 'Urban tolling in Norway – practical experiences, social and environmental impacts and plans for future systems' [conference presentation], *PIARC seminar on road pricing with emphasis on financing, regulation and equity*, Cancun, Mexico, 11–13 April 2005, p 5, accessed 23 June 2025; M Aasness and J Odeck, 'Road users' attitudes towards electric vehicle incentives: empirical evidence from Oslo in 2014–2020', *Research in Transportation Economics*, 2023, 97:1–14, p 4.
- ¹⁶⁶² City of New York, *Congestion Pricing Program*, City of New York website, n.d., accessed 20 June 2025.
- ¹⁶⁶³ Infrastructure Victoria analysis of: Metropolitan Transit Authority, *Reduction in vehicle entries to the CBD*, MTA Metrics, n.d., accessed 20 June 2025.
- ¹⁶⁶⁴ Metropolitan Transit Authority, *Congestion relief is unlocking a better New York*, MTA website, n.d., accessed 20 June 2025.

- ¹⁶⁶⁵ J Dow, 'Surprise! New York's congestion pricing plan to fix traffic... actually fixed traffic', *Electrek*, 20 June 2025, accessed 23 June 2025.
- ¹⁶⁶⁶ S Liebman, 'MTA responds to U.S. transportation secretary: subway crime down, congestion toll revenue up', *Spectrum News NY1*, 24 March 2025, accessed 23 June 2025.
- ¹⁶⁶⁷ Department of Transport and Planning, *Victoria delivers: Victorian freight plan 2025–30*, State of Victoria, 2025, p 8, accessed 11 August 2025.
- ¹⁶⁶⁸ Bureau of Infrastructure, Transport and Regional Economics, *Freight rates in Australia*, Australian Government, 2017, p 11, accessed 8 July 2025; Department of Transport and Planning, *Victoria delivers: Victorian freight plan 2025–30*, State of Victoria, 2025, pp 8,34,43, accessed 11 August 2025.
- ¹⁶⁶⁹ Australasian Railway Association, *Value of rail 2020*, 2020, p 50, accessed 8 July 2025.
- ¹⁶⁷⁰ Department of Energy, Environment and Climate Action, *Victoria's 2035 emission reduction target: driving real climate action*, State of Victoria, 2023, p 3, accessed 8 July 2025.
- ¹⁶⁷¹ GHD Advisory, *Freight modal shift: mode shift impediments and opportunities*, report to the Australasian Railway Association, 2022, p 44, accessed 8 July 2025.
- ¹⁶⁷² GHD Advisory, *Freight modal shift: mode shift impediments and opportunities*, report to the Australasian Railway Association, 2022, pp 42–47, accessed 8 July 2025.
- ¹⁶⁷³ Jacobs Australia, *Victorian rail freight demand forecasts*, report to Freight Victoria, 2021, p 12.
- ¹⁶⁷⁴ Department of Transport and Planning, *Victoria delivers: Victorian freight plan 2025–30*, State of Victoria, 2025, p 26, accessed 10 September 2025.
- ¹⁶⁷⁵ Jacobs Australia, *Victorian rail freight demand forecasts*, report to Freight Victoria, 2021, p 17.
- ¹⁶⁷⁶ Australian Rail Track Corporation, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 5; Rail Futures Institute, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 9.
- ¹⁶⁷⁷ Wimmera Southern Mallee Development, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3; Mildura Rural City Council, *Mildura integrated transport and land use strategy*, 2025, pp 29–32, accessed 4 August 2025.
- ¹⁶⁷⁸ Department of Transport and Planning, *Victoria delivers: Victorian freight plan 2025–30*, State of Victoria, 2025, p 26, accessed 11 August 2025; Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 3 – service delivery*, State of Victoria, 2025, pp 83,86, accessed 8 July 2025.
- ¹⁶⁷⁹ National Transport Commission, *National rail action plan*, NTC website, n.d., accessed 8 July 2025.
- ¹⁶⁸⁰ Department of Treasury and Finance, *Victorian Budget 2024/25: Budget paper no. 3 – service delivery*, State of Victoria, 2024, p 81, accessed 8 July 2025; Victorian Government, *About Victoria's rail freight network*, Victorian Government website, 21 August 2024, accessed 8 July 2025; Victoria's Big Build, *Track upgrades*, Victoria's Big Build website, 2 August 2024, accessed 8 July 2025.
- ¹⁶⁸¹ Victoria's Big Build, *Track upgrades*, Victoria's Big Build website, 2 August 2024, accessed 8 July 2025.
- ¹⁶⁸² Department of Transport and Planning, Discussion with DTP staff, informed by V/Line, 18 June 2024.
- ¹⁶⁸³ Transport for Victoria, *Delivering the goods: Victorian freight plan* [pdf], State of Victoria, 2018, p 43, accessed 11 August 2025.
- ¹⁶⁸⁴ S Stern, A Behrendt, E Eisenschmidt, S Reimig, L Schirmers and I Schwerdt, *The rail sector's changing maintenance game*, McKinsey & Company, 2017, p 7, accessed 8 July 2025.
- ¹⁶⁸⁵ Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 3 – service delivery*, State of Victoria, 2025, pp 83,89–90, accessed 8 July 2025.
- ¹⁶⁸⁶ Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 3 – service delivery*, State of Victoria, 2025, pp 83,89–90, accessed 8 July 2025; Department of Transport and Planning, Discussion with DTP staff, informed by V/Line, 18 June 2024.
- ¹⁶⁸⁷ *Rail Management Act 1996* (Vic), section 38G.
- ¹⁶⁸⁸ *Rail Management Act 1996* (Vic), section 38G; Department of Transport and Planning, *Victoria's rail infrastructure: statement of freight network capability*, State of Victoria, 2023, accessed 8 July 2025.
- ¹⁶⁸⁹ FTI Consulting, *Workplan for the commencement of Port Rail Shuttle Network (PRSN) operations*, report to Department of Transport and Planning, 2023, p 4; Deloitte, *Port rail shuttle network viability assessment report*, report to Freight Victoria, 2022, p 27; Department of Transport and Planning, *Victoria delivers: Victorian freight plan 2025–30*, State of Victoria, 2025, p 34, accessed 10 September 2025.
- ¹⁶⁹⁰ Australasian Railway Association, *The future of freight*, 2023, p 19, accessed 8 July 2025.
- ¹⁶⁹¹ Department of Transport and Planning, *Victoria delivers: Victorian freight plan 2025–30*, State of Victoria, 2025, p 35, accessed 10 September 2025.
- ¹⁶⁹² Rail Freight Alliance, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; Australian Institute of Traffic Planning & Management, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025.
- ¹⁶⁹³ Department of Transport and Planning, *Victoria delivers: Victorian freight plan 2025–30*, State of Victoria, 2025, p 44, accessed 10 September 2025.
- ¹⁶⁹⁴ Victorian Government, *Rail access pricing and guidelines*, Victorian Government website, 29 May 2025, accessed 8 July 2025.

- ¹⁶⁹⁵ Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 3 – service delivery*, State of Victoria, 2025, pp 83,89–90, accessed 8 July 2025.
- ¹⁶⁹⁶ Hunter Valley Coal Chain Coordinator, *HVCCC history*, HVCCC website, n.d., accessed 8 July 2025.
- ¹⁶⁹⁷ Hunter Valley Coal Chain Coordinator, *About us*, HVCCC website, n.d., accessed 8 July 2025.
- ¹⁶⁹⁸ Australasian Railway Association, *The future of freight*, 2023, p 16, accessed 8 July 2025.
- ¹⁶⁹⁹ Department of Transport and Planning, *Victoria in future 2023*, State of Victoria, 2023, p 3, accessed 24 June 2025.
- ¹⁷⁰⁰ D Schöder, F Ding and J Kucht Campos, 'The impact of e-commerce development on urban logistics sustainability', *Open Journal of Social Sciences*, 2016, 4(3):1–6.
- ¹⁷⁰¹ Department of Transport and Planning, *Urban freight consolidation centres: project trial opportunities paper*, p 9. Document provided by Freight Victoria.
- ¹⁷⁰² SK Nkesah, 'Making road freight transport more sustainable: insights from a systematic literature review', *Transport Research Interdisciplinary Perspectives*, 2023, 22(100967).
- ¹⁷⁰³ Department of Infrastructure, Transport, Regional Development and Communications, *National urban freight planning principles*, Australian Government, 2021, p 13, accessed 24 June 2025; P Chhetri, *Last mile freight: critical policy brief*, Centre for Urban Research, 2018, accessed 24 June 2025; AECOM, *Investigation to quantify costs and benefits of extended delivery hours*, report to the Department of Economic Development, Jobs, Transport and Resources, 2015, p 1. Document provided by Freight Victoria.
- ¹⁷⁰⁴ Infrastructure Partnerships Australia, *Fixing freight: establishing freight performance Australia*, 2018, p 39, accessed 24 June 2025.
- ¹⁷⁰⁵ A Stathopoulos, E Valeri and E Marcucci, 'Stakeholder reactions to urban freight policy innovation', *Journal of Transport Geography*, 2012, 22:34–35.
- ¹⁷⁰⁶ Department of Energy, Environment and Climate Action, *Climate action targets*, DEECA website, 23 May 2023, accessed 24 June 2025.
- ¹⁷⁰⁷ Victorian Government, *Victorian greenhouse gas emissions report 2021*, State of Victoria, 2023, p 26, accessed 24 June 2025.
- ¹⁷⁰⁸ Transport for NSW, *Retiming: how to guide*, NSW Government, 2016, p 2, accessed 24 June 2025; Austroads, *Overcoming barriers to the off-peak movement of freight in urban areas*, 2016, p 50, accessed 24 June 2025.
- ¹⁷⁰⁹ Austroads, *Overcoming barriers to the off-peak movement of freight in urban areas*, 2016, p 50, accessed 24 June 2025; Rensselaer Polytechnic Institute, New York Department of Transportation and Rutgers University, *Integrative freight demand management in the New York City metropolitan area: implementation phase*, 2013, p 263, accessed 24 June 2025; Transport for NSW, *Retiming: how to guide*, NSW Government, 2016, p 2, accessed 24 June 2025.
- ¹⁷¹⁰ Transport for NSW, *Retiming: how to guide*, NSW Government, 2016, p 2, accessed 24 June 2025.
- ¹⁷¹¹ Austroads, *Overcoming barriers to the off-peak movement of freight in urban areas*, 2016, p 50, accessed 24 June 2025.
- ¹⁷¹² Austroads, *Overcoming barriers to the off-peak movement of freight in urban areas*, 2016, p 50, accessed 24 June 2025.
- ¹⁷¹³ Transport for NSW, *Retiming: how to guide*, NSW Government, 2016, p 2, accessed 24 June 2025.
- ¹⁷¹⁴ Rensselaer Polytechnic Institute, New York City Department of Transportation and Rutgers University, *Integrative freight demand management in the New York City metropolitan area: implementation phase*, 2013, pp xix-xxiii, accessed 24 June 2025.
- ¹⁷¹⁵ NineSquared, *Contribution of freight and logistics to the Victorian Economy*, report to Freight Victoria, 2024. Document provided by Freight Victoria.
- ¹⁷¹⁶ E Giampoldaki, M Madas, V Zeimpekis and M Vlachopoulou, 'A state-of-practice review of urban consolidation centres: practical insights and future challenges', *International Journal of Logistics Research and Applications*, 2023, 26(6):732–763; AECOM, *Investigation to quantify costs and benefits of extended delivery hours*, report to the Department of Economic Development, Jobs, Transport and Resources, 2015, pp 3,9,B-4. Document provided by Freight Victoria.
- ¹⁷¹⁷ AECOM, *Investigation to quantify costs and benefits of extended delivery hours*, report to the Department of Economic Development, Jobs, Transport and Resources, 2015, p ii. Document provided by Freight Victoria.
- ¹⁷¹⁸ Austroads, *Overcoming barriers to the off-peak movement of freight in urban areas*, 2016, p 40, accessed 24 June 2025; ID Sanchez-Diaz, 'Shifting urban freight deliveries to the off-peak hours: a review of theory and practice', *Transport Reviews*, 2016, 37(4):1–22; T Chowdhury, J Vaughan, M Saleh, K Mousavi, M Hatzopoulou and MJ Roorda, 'Modelling the impacts of off-peak delivery in the Greater Toronto and Hamilton Area', *Transportation Research Record*, 2676(10), 413–425; Department of Infrastructure, Transport, Regional Development and Communications, *National urban freight planning principles*, Australian Government, 2021, accessed 24 June 2025.
- ¹⁷¹⁹ Brimbank City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 24; Hobsons Bay City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10; Manningham Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 23; Mornington Peninsula Shire, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025.
- ¹⁷²⁰ Austroads, *Overcoming barriers to the off-peak movement of freight in urban areas*, 2016, p 32, accessed 24 June 2025.
- ¹⁷²¹ Austroads, *Overcoming barriers to the off-peak movement of freight in urban areas*, 2016, pp 16–24, accessed 24 June 2025.
- ¹⁷²² Transport for NSW, *Case studies – retiming for freight and servicing*, n.d., accessed 24 June 2025.
- ¹⁷²³ Transport for NSW, *Retiming: how to guide*, NSW Government, 2016, p 2, accessed 24 June 2025.
- ¹⁷²⁴ Transport for NSW, *Retiming: how to guide*, NSW Government, 2016, p 10, accessed 24 June 2025.

- ¹⁷²⁵ Rensselaer Polytechnic Institute, New York City Department of Transportation and Rutgers University, *Integrative freight demand management in the New York City metropolitan area: implementation phase*, 2013, p xx, accessed 24 June 2025.
- ¹⁷²⁶ Rensselaer Polytechnic Institute, New York City Department of Transportation and Rutgers University, *Integrative freight demand management in the New York City metropolitan area: implementation phase*, 2013, p xix, accessed 24 June 2025.
- ¹⁷²⁷ Rensselaer Polytechnic Institute, New York City Department of Transportation and Rutgers University, *Integrative freight demand management in the New York City metropolitan area: implementation phase*, 2013, p xxi, accessed 24 June 2025.
- ¹⁷²⁸ Rensselaer Polytechnic Institute, New York City Department of Transportation and Rutgers University, *Integrative freight demand management in the New York City metropolitan area: implementation phase*, 2013, p xxiii, accessed 24 June 2025.
- ¹⁷²⁹ New York City Department of Transportation, *NYC DOT to provide new incentives to reduce truck deliveries during busiest hours and fight congestion* [media release], NYC DOT, 24 April 2024, accessed 24 June 2025.
- ¹⁷³⁰ New York City Department of Transportation, *NYC DOT to provide new incentives to reduce truck deliveries during busiest hours and fight congestion* [media release], NYC DOT, 24 April 2024, accessed 24 June 2025.
- ¹⁷³¹ Freight Australia, *National urban freight planning principles*, Australian Government, 2021, pp 8,20, accessed 19 June 2025; P Chaudhary, 'Navigating the complex web of last-mile deliveries', *Capgemini Expert Perspectives blog*, 5 October 2023, accessed 19 June 2025.
- ¹⁷³² American Journal of Transportation, *The challenges of last-mile delivery in urban areas*, AJOT website, 2 March 2023, accessed 19 June 2025.
- ¹⁷³³ Infrastructure Australia, *Australian infrastructure audit 2019*, 2019, p 338, accessed 19 June 2025.
- ¹⁷³⁴ K Aljohani, 'Integrating logistics facilities in inner Melbourne to alleviate impacts of urban freight transport' [conference presentation], *Australasian Transport Research Forum 2016*, Melbourne, 16–18 November 2016, pp 2–3, accessed 19 June 2025.
- ¹⁷³⁵ Infrastructure Australia, *Australian infrastructure audit 2019*, 2019, p 338, accessed 19 June 2025.
- ¹⁷³⁶ World Economic Forum, *The future of the last-mile ecosystem*, 2020, p 5, accessed 19 June 2025.
- ¹⁷³⁷ Department of Energy, Environment and Climate Action, *Victoria's 2035 emission reduction target: driving real climate action*, State of Victoria, 2023, p 3, accessed 19 June 2025.
- ¹⁷³⁸ Department of Transport and Planning, *Victoria delivers: Victorian freight plan 2025–30*, State of Victoria, 2025, p 44, accessed 10 September 2025.
- ¹⁷³⁹ Victorian Government, *Zero emissions vehicle roadmap*, State of Victoria, 2021, p 6, accessed 19 June 2025.
- ¹⁷⁴⁰ Department of Premier and Cabinet, *Victoria's housing statement*, State of Victoria, 2023, pp 9,11, accessed 19 June 2025; Victorian Government, *Suburban Rail Loop business and investment case: key findings*, State of Victoria, 2021, pp 22-23,26, accessed 19 September 2024.
- ¹⁷⁴¹ Department of Premier and Cabinet, *Victoria's housing statement*, State of Victoria, 2023, p 11, accessed 19 June 2025; Victorian Government, *Suburban Rail Loop business and investment case: key findings*, State of Victoria, 2021, pp 22–23, accessed 19 June 2025; E Kinsella, 'In Melbourne there's a push for more freight to be moved by rail — but there's a big thing missing', *ABC News*, 27 September 2022, accessed 19 June 2025.
- ¹⁷⁴² E Giampoldaki, M Madas, V Zeimpekis and M Vlachopoulou, 'A state-of-practice review of urban consolidation centres: practical insights and future challenges', *International Journal of Logistics Research and Applications*, 2023, 26(6):732–763.
- ¹⁷⁴³ Department of Transport and Planning, *Urban freight consolidation centres: project trial opportunities paper*, p 17. Document provided by Freight Victoria, March 2024; E Giampoldaki, M Madas, V Zeimpekis and M Vlachopoulou, 'A state-of-practice review of urban consolidation centres: practical insights and future challenges', *International Journal of Logistics Research and Applications*, 2023, 26(6):732–763.
- ¹⁷⁴⁴ J Allen, M Browne, A Woodburn and J Leonardi, 'The role of urban consolidation centres in sustainable freight transport', *Transport Reviews*, 2012, 32(4):473–490; E Giampoldaki, M Madas, V Zeimpekis and M Vlachopoulou, 'A state-of-practice review of urban consolidation centres: practical insights and future challenges', *International Journal of Logistics Research and Applications*, 2023, 26(6):732–763.
- ¹⁷⁴⁵ E Giampoldaki, M Madas, V Zeimpekis and M Vlachopoulou, 'A state-of-practice review of urban consolidation centres: practical insights and future challenges', *International Journal of Logistics Research and Applications*, 2023, 26(6):732–763.
- ¹⁷⁴⁶ Department of Transport and Planning, *Urban freight consolidation centres: project trial opportunities paper*, p 17. Document provided by Freight Victoria, March 2024; E Giampoldaki, M Madas, V Zeimpekis and M Vlachopoulou, 'A state-of-practice review of urban consolidation centres: practical insights and future challenges', *International Journal of Logistics Research and Applications*, 2023, 26(6):732–763.
- ¹⁷⁴⁷ Apur, *The tools for urban logistics in Local Urbanism Plans - PLU - the example set by the Paris PLU*, Apur website, January 2020, accessed 19 June 2025.
- ¹⁷⁴⁸ SGS Economics and Planning, *Evaluation of Goulburn Street Courier Hub trial – final report*, report to Transport for New South Wales, 2023, p 8. Document provided by TfNSW.
- ¹⁷⁴⁹ SGS Economics and Planning, *Evaluation of Goulburn Street Courier Hub trial – final report*, report to Transport for New South Wales, 2023, p 39. Document provided by TfNSW.
- ¹⁷⁵⁰ Netherlands Enterprise Agency, *Zero-emission zones in the Netherlands*, Business.gov.nl website, n.d., accessed 19 June 2025.
- ¹⁷⁵¹ Netherlands Enterprise Agency, *Zero-emission zones in the Netherlands*, Business.gov.nl website, n.d., accessed 19 June 2025.
- ¹⁷⁵² Netherlands Enterprise Agency, *Municipalities can introduce zero-emission zones*, Business.gov.nl website, 24 October 2022, accessed 19 June 2025.

- ¹⁷⁵³ Netherlands Enterprise Agency, *Municipalities can introduce zero-emission zones*, Business.gov.nl website, 24 October 2022, accessed 19 June 2025.
- ¹⁷⁵⁴ LACI, *Why prioritize zero emissions delivery?*, LACI website, n.d., accessed 19 June 2025.
- ¹⁷⁵⁵ City of Santa Monica, *Zero emission delivery zone*, City of Santa Monica website, n.d., accessed 19 June 2025.
- ¹⁷⁵⁶ LACI, *Why prioritize zero emissions delivery?*, LACI website, n.d., accessed 19 June 2025.
- ¹⁷⁵⁷ Infrastructure Australia, *Infrastructure market capacity 2024 report*, Australian Government, 2024, pp 49,51, accessed 6 August 2025.
- ¹⁷⁵⁸ Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 2 – strategy and outlook*, State of Victoria, 2024, p 6, accessed 15 August 2025.
- ¹⁷⁵⁹ Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 4 – state capital program*, State of Victoria, 2024, p 2, accessed 6 August 2025.
- ¹⁷⁶⁰ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 23, accessed 6 August 2025.
- ¹⁷⁶¹ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 26, accessed 6 August 2025.
- ¹⁷⁶² Department of Health and Human Services, *Statewide design, service and infrastructure plan for Victoria's health system 2017–2037*, State of Victoria, 2017, pp 86–87, accessed 14 August 2025.
- ¹⁷⁶³ Department of Environment, Land, Water and Planning, *Central and Gippsland sustainable water strategy*, State of Victoria, 2022, p 37, accessed 6 August 2025.
- ¹⁷⁶⁴ Infrastructure Victoria, *Weathering the storm*, 2024, pp 10–13, accessed 15 August 2025.
- ¹⁷⁶⁵ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, accessed 6 August 2025; Infrastructure Victoria, *Advice on securing Victoria's ports capacity*, 2017, accessed 6 August 2025.
- ¹⁷⁶⁶ Melbourne Water, *Greater Melbourne urban water and system strategy: water for life*, Melbourne Water website, 18 November 2024, accessed 6 August 2025; Department of Environment, Land, Water and Planning, *Central and Gippsland region sustainable water strategy*, State of Victoria, 2022, p 61, accessed 6 August 2025.
- ¹⁷⁶⁷ Department of Energy, Environment and Climate Action, *Water security plan 2025*, State of Victoria, 2025, p 8, accessed 25 September 2025; City of Stonnington, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 13; Veolia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 3.
- ¹⁷⁶⁸ Population projections cover the Hume, Mitchell and Whittlesea local government areas, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p A-1, accessed 4 August 2025.
- ¹⁷⁶⁹ Department of Health and Human Services, *Statewide design, service and infrastructure plan for Victoria's health system 2017–2037*, State of Victoria, 2017, p 88, accessed 10 September 2025.
- ¹⁷⁷⁰ Department of Health and Human Services, *Statewide design, service and infrastructure plan for Victoria's health system 2017–2037*, State of Victoria, 2017, p 88, accessed 10 September 2025.
- ¹⁷⁷¹ Victorian Health Building Authority, *Northern Hospital expansion – stage 2* [archive], VHBA website, 25 January 2022, accessed 11 July 2025; Premier of Victoria, *Massive Northern Hospital expansion now underway* [media release], Victorian Government, 4 May 2025, accessed 1 August 2025.
- ¹⁷⁷² Mitchell Shire Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 10–11, NORTH Link, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 2; Northern Council's Alliance, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 5–6.
- ¹⁷⁷³ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 72, accessed 6 August 2025.
- ¹⁷⁷⁴ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 71, accessed 6 August 2025.
- ¹⁷⁷⁵ Infrastructure Victoria, *Victoria's infrastructure strategy 2021–2051 volume 1*, 2021, p 163, accessed 6 August 2025; Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 72, accessed 6 August 2025.
- ¹⁷⁷⁶ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 6, accessed 6 August 2025.
- ¹⁷⁷⁷ Department of Environment, Land, Water and Planning, *Fishermans Bend framework*, State of Victoria, 2018, p 5, accessed 6 August 2025; Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 6, accessed 6 August 2025.
- ¹⁷⁷⁸ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 119, accessed 6 August 2025.
- ¹⁷⁷⁹ Infrastructure Victoria, *Advice on securing Victoria's ports capacity*, 2017, p 12, accessed 6 August 2025.
- ¹⁷⁸⁰ Infrastructure Victoria, *Advice on securing Victoria's ports capacity*, 2017, p 12, accessed 6 August 2025.
- ¹⁷⁸¹ Infrastructure Victoria, *Advice on securing Victoria's ports capacity*, 2017, pp 14, 102–103, accessed 6 August 2025.
- ¹⁷⁸² Infrastructure Victoria, *Advice on securing Victoria's ports capacity*, 2017, p 19, accessed 6 August 2025; Department of Transport and Planning, *Victorian freight plan 2025–30*, State of Victoria, 2025, pp 27–28, accessed 15 August 2025.
- ¹⁷⁸³ Infrastructure Victoria, *Advice on securing Victoria's ports capacity*, 2017, p 21, accessed 6 August 2025.
- ¹⁷⁸⁴ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 143, accessed 15 August 2025.

- ¹⁷⁸⁵ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 144, accessed 15 August 2025.
- ¹⁷⁸⁶ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 145, accessed 15 August 2025.
- ¹⁷⁸⁷ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 145, accessed 6 August 2025.
- ¹⁷⁸⁸ Victorian Government, *Outer metropolitan ring/E6 transport corridor*, 9 July 2024, Victorian Government website, accessed 6 August 2025.
- ¹⁷⁸⁹ Victorian Government, *Outer metropolitan ring/E6 transport corridor*, 9 July 2024, Victorian Government website, accessed 6 August 2025.
- ¹⁷⁹⁰ Australian Transport Assessment and Planning, *T8 real options assessment*, Australian Government, 2020, pp 7–8, accessed 6 August 2025.
- ¹⁷⁹¹ Infrastructure Victoria, *Advice on securing Victoria's ports capacity*, 2017, p 168, accessed 6 August 2025.
- ¹⁷⁹² Department of Transport and Planning, *VIF2023 LGA Population Household Dwelling Projections to 2036*, Data Vic website, 29 April 2025, accessed 24 June 2025; WSP, *Better buses for Melbourne strategic modelling: baseline conditions report*, report to Infrastructure Victoria, 2023, pp A-1–A-2, accessed 24 June 2025. Growth area local government areas are Cardinia, Casey, Hume, Melton, Mitchell, Whittlesea and Wyndham.
- ¹⁷⁹³ Infrastructure Victoria analysis of AECOM transport modelling. Modelling shows that residents in the south-east (Casey and Cardinia) and north (Hume, Mitchell and Whittlesea) might have access to over 80% fewer jobs in 45 mins than LGAs in inner and middle Melbourne on average. For further details, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 26 June 2025.
- ¹⁷⁹⁴ Public Transport Victoria, *Network development plan – metropolitan rail*, State of Victoria, 2012, pp 89,94,112–113,122–125, accessed 24 June 2025.
- ¹⁷⁹⁵ Infrastructure Victoria analysis of AECOM transport modelling. Modelling shows 7% below capacity at 2031 and 11% over capacity at 2041. For further details, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, p 41, accessed 26 June 2025.
- ¹⁷⁹⁶ Infrastructure Victoria analysis of AECOM transport modelling. Modelling shows a 73% in passenger load on Seymour trains between 2031 and 2041. For further details, see AECOM, *Strategic transport modelling of tram and train projects to inform Victoria's infrastructure strategy 2025–2055* [pdf], report to Infrastructure Victoria, 2025, accessed 26 June 2025.
- ¹⁷⁹⁷ Public Transport Victoria, *Network development plan – metropolitan rail*, State of Victoria, 2012 pp 122–123, accessed 24 June 2025.
- ¹⁷⁹⁸ The City Loop reconfiguration at a cost of \$2.2 billion to \$5.9 billion is less than half of the \$13.48 billion cost of the Melbourne Metro tunnel (ABC, 'Melbourne's Metro Rail Tunnel budget blows out by \$837 million, with state government blaming global factors', *ABC News*, 26 September 2024, accessed 24 June 2025) and less than a quarter of the \$26 billion cost of North East Link (R Willingham, 'Victorian Premier Jacinta Allan reveals \$10-billion blowout on North East Link', *ABC News*, 15 December 2023, accessed 24 June 2025).
- ¹⁷⁹⁹ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 85, accessed 24 June 2025.
- ¹⁸⁰⁰ Melbourne metropolitan trains have a benchmark standard of 900 passengers (Department of Transport and Planning, *Metropolitan train load standard survey report*, State of Victoria, 2019, p 3 accessed 24 June 2025). Following this, it would take 18 trains to transport 16,200 passengers. A freeway lane capacity at 100km/h with a LOS C is 1,600 (Austroads, *3.3 Capacity analysis*, p 11, accessed 24 June 2025). Daily average for vehicle occupancy in Victoria is 1.21 people (Australian Transport Assessment and Planning, *Parameter values: PV2 road transport – 3. Travel time*, table 11, ATAP website, n.d., accessed 24 June 2025). This means that eight lanes would be needed in each direction to transport 16,200 people, requiring a total of a 16-lane freeway.
- ¹⁸⁰¹ Infrastructure Victoria, *Major transport program strategic assessment report*, 2021, p 82, accessed 24 June 2025.
- ¹⁸⁰² Minister for Infrastructure, Transport, Regional Development and Local Government, *Investment to deliver a future made in Australia*, Ministers for Infrastructure, Transport, Regional Development, Communications and the Arts, 14 May 2024, accessed 24 June 2025.
- ¹⁸⁰³ AECOM, *Transport cost estimate to support cost benefit analysis* [pdf], report to Infrastructure Victoria, 2021, pp 50–67, accessed 24 June 2025.
- ¹⁸⁰⁴ Infrastructure Victoria, *Strategy objectives engagement report*, 2023, accessed 29 August 2024; Infrastructure Victoria, *Consultation summary*, 2025, accessed 16 October 2025.
- ¹⁸⁰⁵ Infrastructure Victoria, *Corporate plan 2022–2027*, 2023, pp 10–11, accessed 8 November 2024.
- ¹⁸⁰⁶ Infrastructure Victoria, *Victoria's draft 30-year infrastructure strategy*, 2025, accessed 31 July 2025.
- ¹⁸⁰⁷ Infrastructure Victoria, *Consultation summary*, 2025, accessed 16 October 2025.
- ¹⁸⁰⁸ This is a high-level indication of the value of benefits of all recommendations. It was calculated using the information available within this strategy document or related technical reports. For example, if a benefit cost ratio is cited within the supporting information of a recommendation, we have applied this to the cost of the recommendation. Where annual benefits are stated, we have used 10 years' worth of benefits. Not all recommendations have been able to have their benefits quantified. The total benefit figure does not include the cost of recommendations. The total benefit figure has not been calculated using a cost-benefit analysis method.
- ¹⁸⁰⁹ Municipal Association of Victoria, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 8; Hobsons Bay City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 11–12; Bayside City Council, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 23; National Growth Areas Alliance, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 12–13; Greater South East Melbourne, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, p 4.

- ¹⁸¹⁰ Department of Treasury and Finance, *Investment lifecycle and high value high risk guidelines: overview and glossary*, State of Victoria, 2019, p 16, accessed 20 November 2024.
- ¹⁸¹¹ Department of Treasury and Finance, *Investment lifecycle and high value high risk guidelines – business case*, State of Victoria, 2023, p 11, accessed 31 December 2024.
- ¹⁸¹² NSW Treasury, *Government guide to cost-benefit analysis*, NSW Government, 2023, p 33, accessed 3 January 2025.
- ¹⁸¹³ NSW Treasury, *Government guide to cost-benefit analysis*, NSW Government, 2023, p 33, accessed 3 January 2025.
- ¹⁸¹⁴ Prosper Australia, *Submission to Victoria's draft 30-year infrastructure strategy*, 2025, pp 1–2.
- ¹⁸¹⁵ Victorian Health Building Authority, *New Melton Hospital*, VHBA website, 25 July 2025, accessed 14 August 2025; Victorian Health Building Authority, *New Footscray Hospital*, VHBA website, 21 February 2025, accessed 14 August 2025; Ernst & Young, *The journey continues: PPPs in social infrastructure*, 2008, p 17, accessed 7 October 2025.
- ¹⁸¹⁶ Department of Treasury and Finance, *Victorian Budget 2025/26: Budget paper no. 2 – strategy and outlook*, State of Victoria, 2025, p 43, accessed 7 October 2025.
- ¹⁸¹⁷ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Infrastructure policy statement*, Australian Government, 14 November 2023, accessed 6 February 2025.
- ¹⁸¹⁸ Infrastructure Australia, *Infrastructure Australia update to reforms*, IA website, 9 April 2024, accessed 6 February 2025.
- ¹⁸¹⁹ Minister for Infrastructure, Transport, Regional Development and Local Government, *Nation building infrastructure for a better Australia* [media release], Australian Government, 16 November 2023, accessed 6 February 2025.
- ¹⁸²⁰ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Infrastructure investment program - Victoria*, Australian Government, 2021, p 1, accessed 6 February 2025.
- ¹⁸²¹ The Treasury, *Victoria – Federation agreement schedule on land transport infrastructure projects (FFAS): 2024-25 Budget (August 2024) funding table*, Australian Government, 2024, accessed 6 February 2025.

Infrastructure Victoria is committed to reducing its impact on the environment. This report is available in accessible version online or in PDF format only.

This publication may be of assistance to you, but Infrastructure Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence that may arise from you relying on any information in this publication. You should seek appropriately qualified advice before making any decisions regarding your particular project.

Published by Infrastructure Victoria
November 2025

© Copyright Infrastructure Victoria 2025

Except for any logos, emblems, trademarks, figures and photography, this document is made available under the terms of the Creative Commons Attribution 3.0 Australia licence. It is a condition of this Creative Commons Attribution 3.0 licence that you must give credit to the original author, who is Infrastructure Victoria.

This document is also available in PDF and accessible HTML or Word format at www.infrastructurevictoria.com.au

ISBN 978-1-923210-05-9
(PDF/online/MS word)

