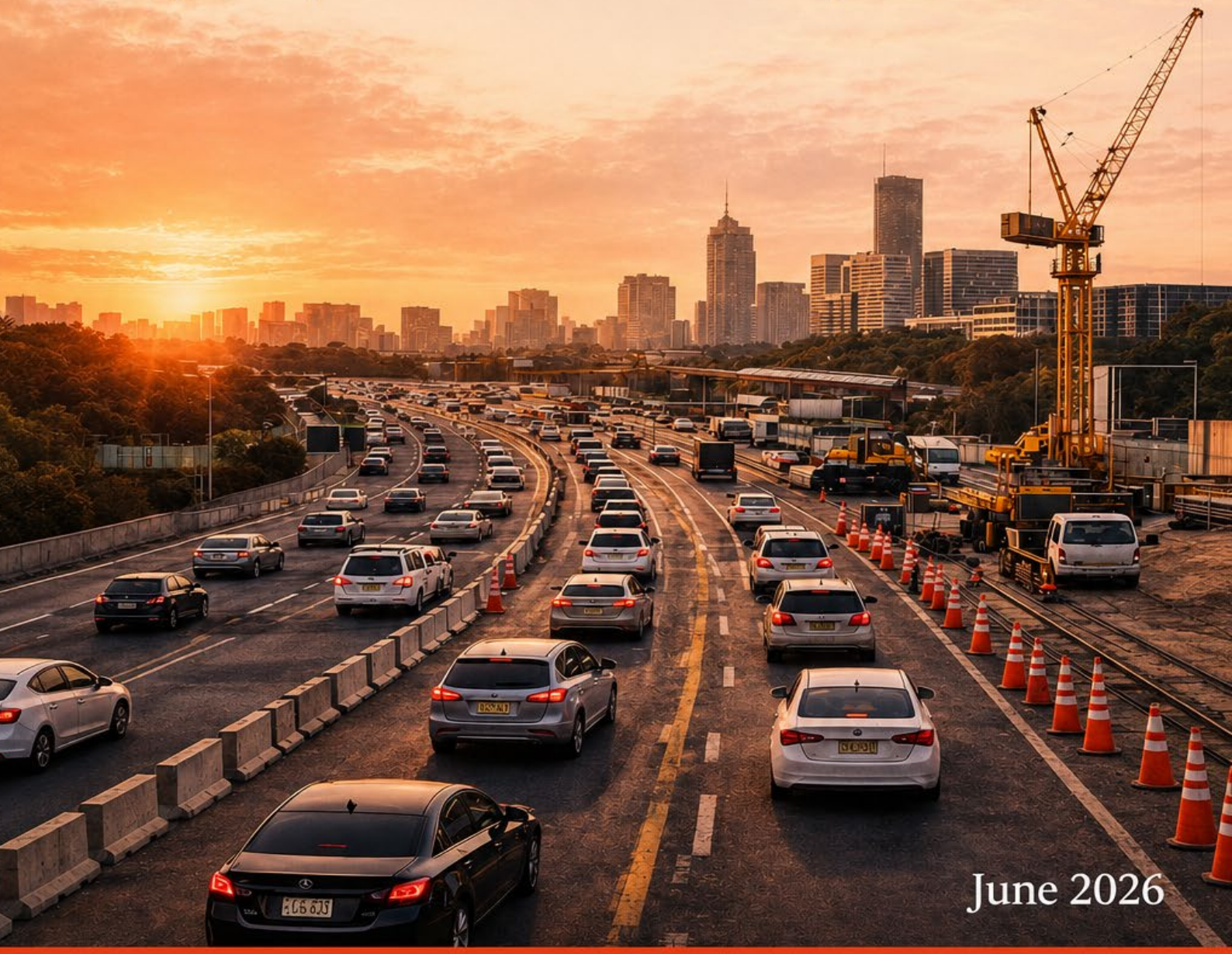
THE UNIVERSITY OF SYDNEY

III: The Great Australian Motorway Trap

Why every new lane locks in the past



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Acknowledgement of Country

We recognise and pay respect to the Elders and communities – past and present – of the lands that the University of Sydney's campuses stand on. For thousands of years, they have shared and exchanged knowledges across innumerable generations for the benefit of all.

If you want to understand Australia's transport addiction, stand at the edge of a motorway widening project. Watch the cranes. Watch the concrete pour. Listen to the language. Congestion relief. Productivity boost. Future proofing.

We tell ourselves the same story every time. Build more road, traffic will ease. Expand capacity, growth will follow. Add lanes, solve the problem.

Then the traffic comes back.

Transport emissions are not abstract. According to the Climate Change Authority (2024), transport produced about 90 million tonnes of carbon dioxide equivalent in 2022 and accounts for roughly 21 percent of Australia's total emissions. On road vehicles dominate the sector, contributing about 85 percent of transport emissions.

So, when we widen motorways, we are not just reshaping traffic patterns. We are reshaping the emissions trajectory of the country.

The concept that haunts this debate is induced demand. It is not ideology. It is transport economics. When you increase road capacity, you reduce travel time temporarily. Lower travel time encourages additional trips, longer commutes, shifts from public transport to private vehicles, and changes in land use. Over time, the new lanes fill.

This phenomenon has been documented in decades of international research. Reviews of

evidence commissioned by governments, including in the United Kingdom, have consistently found that increases in capacity

generate additional traffic. Australian studies have observed similar patterns in major urban expansions.

The logic is simple. Roads are not static pipes. They are part of a behavioural system. When you make driving easier, more people drive.

Yet motorway expansion remains politically irresistible. It offers visible action. It creates construction jobs. It allows ministers to cut ribbons and promise relief.

Contrast that with bus priority lanes or service frequency upgrades. They are cheaper and often more effective per dollar at moving people, but they lack spectacle.

The climate implications are profound. If on road vehicles account for the overwhelming majority of transport emissions, then policies that expand vehicle kilometres travelled entrench emissions. Even if the fleet gradually electrifies, more traffic still means more energy demand, more materials, more congestion, and more land consumed by roads and parking.

An electric traffic jam still wastes time and space.

There is also the lock in effect. Highways shape cities. New interchanges encourage development further from employment centres. Housing estates spring up around ramps. Commuting distances lengthen. Public transport becomes harder to provide efficiently. Car dependence deepens. Once land use adjusts to expanded road capacity, reversing that pattern is extraordinarily difficult.

Consider the freight dimension. Road freight is essential in Australia. But expanding urban motorways primarily to accommodate peak hour commuting traffic is an expensive way to serve freight needs. Dedicated freight corridors, improved rail capacity, and better port access planning often deliver more targeted benefits.

Instead, we blur the justification. A motorway expansion is sold as helping freight, families, and growth simultaneously. In reality, much of the additional capacity serves private vehicles during peak periods.

The uncomfortable question is whether Australia should consider a moratorium on new urban motorway expansions in major cities until lower emissions alternatives are fully funded and implemented. That does not mean neglecting maintenance or safety upgrades. It means shifting capital expenditure away from capacity growth that induces more driving and toward systems that move more people with fewer vehicles.

Bus rapid transit corridors can be implemented faster and at lower cost than rail megaprojects. High frequency bus networks supported by dedicated lanes can transform commuting patterns. Cycling infrastructure, when built as a connected network rather than isolated fragments, can meaningfully shift short trips.

International cities have demonstrated that reallocating road space can reduce traffic without causing chaos. When alternatives are viable, some drivers simply change behaviour.

Critics argue that Australian cities are too dispersed for such approaches. Yet sprawl is not a natural force. It is shaped by planning rules, infrastructure investment, and housing policy. When we extend highways outward, we reinforce low density expansion. When we invest in infill development around transit, we support shorter trips.

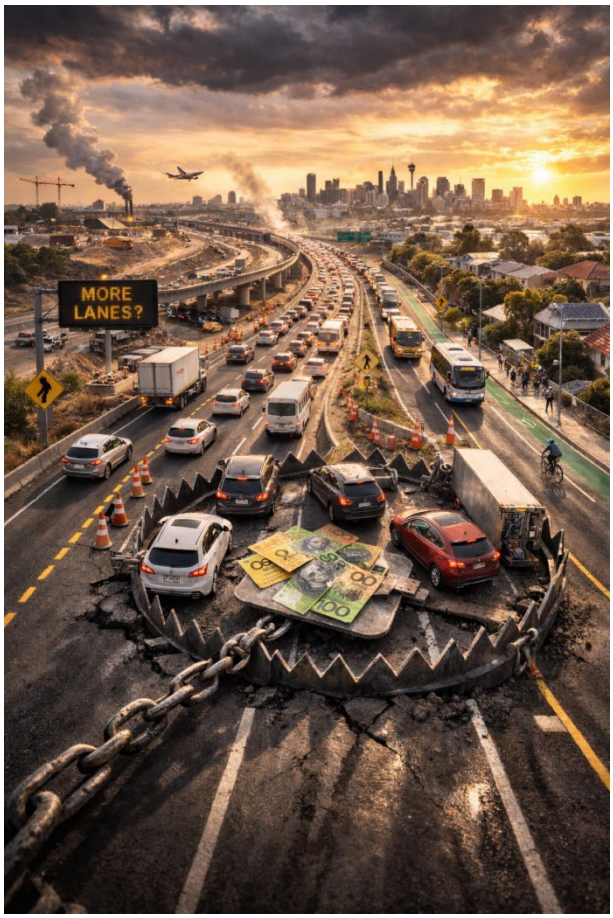
Motorway expansion is often defended as pragmatic. People drive. Therefore, we must accommodate driving. But that reasoning confuses current behaviour with destiny.

Transport systems are dynamic. They respond to incentives, infrastructure, and design. If we make driving easier and cheaper relative to alternatives, people will drive more. If we make alternatives reliable and competitive, some will switch.

Climate timelines add urgency. The next decade is critical for emissions reduction. Large motorway projects take years to plan and build. By the time new lanes open, the carbon budget has tightened further.

There is also an opportunity cost. Billions spent on urban highway expansions are billions not

spent on electrifying bus fleets, upgrading rail corridors, or improving active transport infrastructure.



Australia does not lack engineering capability. It lacks strategic restraint.

The motorway trap is seductive because it promises a simple solution to a complex problem. Traffic is frustrating. Widening roads feels intuitive. But intuition is not evidence.

Evidence suggests that more lanes invite more cars.

A serious sustainable transport strategy would scrutinise every proposed capacity expansion through a climate lens. Does this project reduce total vehicle kilometres travelled or increase them. Does it enable a shift to lower emissions modes or entrench dependence on private vehicles.

If the answer is entrenchment, we should pause.

No politician wants to campaign on building fewer roads. But leadership sometimes requires challenging the reflex.

We can continue pouring concrete and congratulating ourselves on progress while congestion returns and emissions rise. Or we can accept that the solution to traffic is not always more asphalt.

Every new motorway lane is a long-term commitment. Not just to moving vehicles, but to the patterns of life that follow them.

The question is not whether we can afford to stop expanding urban motorways. It is whether we can afford not to.

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Sustainable Transport Series

About the authors of this series

John rejoined the Institute of Transport and Logistics Studies as the Neil Smith Research Chair in Sustainable Transport Futures in October 2022, after an 8-year absence. Over the course of his academic career, John has published over 300 scientific articles in peer-reviewed journals, books, and conference proceedings. He has also been an Associate Editor of Transportation, and Co-Editor and Chief of the Journal of Choice Modelling and Transportation Research Part A. He has also held various roles on multiple conference committees both in Australia and overseas.

Since graduating with a PhD, John has been obtained numerous grants worth over $3.4 million. These include a number of ARC discovery grants in the areas of Public Health, Transportation crowding, general economic theory related to utility separability as well as one on improving the external validity of Discrete Choice Experiments. In addition to academic grants, John has been involved in $9 million in industry-based contract research since the year 2005. Find out more about John: https://profiles.sydney.edu.au/john.rose

Andrea joined the Institute of Transport and Logistics Studies as the Neil Smith Lecturer in Sustainable Mobility and Accessibility in March 2023. Before becoming a lecturer, Andrea spent three years as visiting research scholar thanks to two scholarships, the Early.Postdoc mobility and the Postdoc mobility, awarded by the Swiss National Science Foundation. Andrea holds a Master of Science in Statistics with Honors from the University of Bologna and a PhD in Economics from the University of Lugano. Over the years, Andrea has taken part in different consulting projects with several public and private institutions such as NSW Government, University of Florence, and University of Catania. Find out more about Andrea: https://profiles.sydney.edu.au/andrea.pellegrini

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