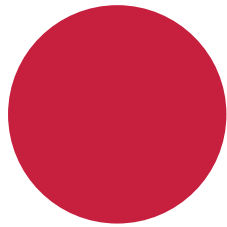


WHAT WE THOUGHT WOULD KILL US

CASE STUDY 6: THE GRAHAM FARMER FREEWAY AND NORTHBRIDGE TUNNEL

FEBRUARY 2016



WHAT WE THOUGHT WOULD KILL US

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About the Committee for Perth

The Committee for Perth is a member funded think-tank focused on maintaining and improving the liveability of the Perth metropolitan region by ensuring its vibrancy, economic prosperity, cultural diversity and sustainability.

We currently have 100 members who represent a broad cross-sector of the business community, civic institutions and local government. We rely solely on our members' financial and intellectual contributions to enable us to undertake the work, research and other activities that we carry out. A full list of our Members is at Appendix 2.

The Committee for Perth advocates on issues that will help us realise our vision for Perth and we have developed a unique model of advocacy to help us achieve that. Regardless of whether a project is our initiative or one implemented by government or others, we remain informed advocates for projects that will benefit Perth, whatever stage they are at, whether it's concept or development.

More information about the Committee for Perth and our work can be found at www.committeeforperth.com.au.

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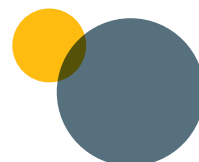
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Foreword



The 'What We Thought Would Kill Us Series' examines some of Perth's most controversial developments that have generated large amounts of community feedback and media attention either during the approval and/or development stages. In doing so, the Committee for Perth leads the way through informing debate on achieving outcomes for Perth which are innovative and character building.

This case study is the sixth in the series, and examines the Graham Farmer Freeway and Northbridge Tunnel, a highly controversial infrastructure project.

The Freeway with a 1.6 kilometre tunnel was proposed as a long-term solution to alleviate inner-city traffic congestion. The project received wide-spread community support, however there were others who were vehemently opposed to the project on the grounds that it was an out-dated proposal that would continue to facilitate a car dependent community. Opponents suggested that the project's cost of over \$300 million would be better spent on public transport.

As construction began and impacts to a number of houses became evident, local residents raised concerns about structural damage to their homes.

Despite the controversy, the Graham Farmer Freeway and Northbridge Tunnel have become a well-used addition to Perth's road network.

The project was also the catalyst for renewal of Northbridge which has received critical acclaim and resulted in more people living within the city limits.

Our independent evaluation of extensive material available in the public domain has found that the Graham Farmer Freeway and Northbridge Tunnel project has delivered on most of the desired short and medium-term benefits. However it is likely that in the longer-term new solutions will be needed as population and car ownership continue to increase.

I hope you enjoy reading this case study which starts back in the 1930's, when it was proposed that a diagonal highway be constructed from the Causeway to Newcastle Street and ends with an evaluation of the outcomes against the stated benefits.

A handwritten signature in black ink, appearing to read 'Marion Fulker'.

Marion Fulker
CEO, Project Manager

Our previous What We Thought Would Kill Us reports on Hillary's Boat Harbour, The Evolution of Perth's Passenger Rail, The Bell Tower, Perth Arena and the Raffles Waterfront Development are available on our website at <https://www.committeeforperth.com.au/research/research-projects/what-we-thought-would-kill-us>



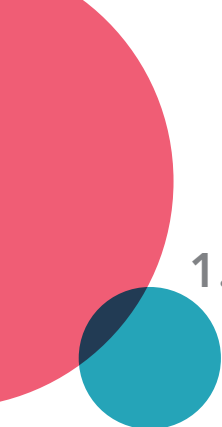
Research Report: 'What We Thought Would Kill Us'

Case Study 6: The Graham Farmer Freeway and Northbridge Tunnel

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This report
examines the
controversy and
long-term outcomes
surrounding the
Graham Farmer
Freeway and
Northbridge Tunnel
project.





1.0 Introduction

The Graham Farmer Freeway is a 6.4 kilometre freeway in Perth, Western Australia. It provides an east-west bypass of the city's central business district. The 1.6 kilometre Northbridge Tunnel is a key element of the freeway.

Opened in April 2000, the Northbridge Tunnel originally provided three lanes, configured as two traffic lanes and an emergency stopping lane in each direction. The tunnel was reconfigured in early 2013 to provide three traffic lanes each way and a new on-ramp to Mitchell Freeway northbound from the Loftus Street exit.

Consultation and opinion polls on the project undertaken in the late 1990's indicated that a majority of people in the Perth region were in support of the development, yet the project was vehemently challenged by opponents, who included residents, political figures, transport campaigners and land use planning and transport experts.

Supporters claimed the freeway would:

- Provide a balanced transport future for the city and region.
- Reduce traffic congestion in Perth's CBD and inner suburbs.
- Allow for high-quality pedestrian focused, urban renewal in Northbridge, as well as the eventual connection of Perth city with the Swan River.

Opponents said that:

- The road proposal was based on outdated car based planning.
- The financial costs of the project were too high.
- The environmental costs had been inadequately assessed.
- The project would have detrimental impacts on the character and community of Northbridge.
- It would promote an unsustainable car based future for Perth, with consequences such as increased congestion and pollution.

With the benefit of 15 years of hindsight, this report examines the controversy surrounding the Graham Farmer Freeway and Northbridge Tunnel project and identifies and reflects on the long-term outcomes of the project for central Perth and the wider region.

The report finds that the Graham Farmer Freeway and Northbridge Tunnel project did deliver most of its stated benefits. However, from its opening, the volume of traffic using the freeway and tunnel has been higher than anticipated, and as a result, it has been less successful at alleviating long-term congestion than was originally expected.

This is the result of numerous factors including rapid population growth, the re-routing of Riverside Drive to accommodate the Elizabeth Quay Project, a significant increase in the number of registered vehicles in the region and the fact that despite having long-term strategies and targets in place to reduce the dependence on private vehicles, Perth remains heavily reliant on cars for travel.

The outcome is that, despite significant investment in transport infrastructure projects, such as the Graham Farmer Freeway, predictions indicate that without substantial additional investment in Perth's regional transport system, congestion costs on key roads, including the Graham Farmer Freeway, will increase, costing the economy up to \$16 billion per annum.¹

¹ Infrastructure Australia, 2015, Australian Infrastructure Audit Volume 2 The Audit By State and Territory, Commonwealth of Australia, Canberra, <http://www.infrastructureaustralia.gov.au/policy-publications/publications/files/Australian-Infrastructure-Audit-Volume-2.pdf> Retrieved 1 June 2015.



In 1930, the Metropolitan Town Planning Commission, now the Western Australian Planning Commission, proposed that Riverside Drive should be constructed as a southern bypass to Perth's central area, with a diagonal highway cut from the Causeway to Newcastle Street to provide a northern city bypass.





2.0 History and Strategic Planning Context

In 1930, the Metropolitan Town Planning Commission, now the Western Australian Planning Commission, proposed that Riverside Drive should be constructed as a southern bypass to Perth's central area, with a diagonal highway cut from the Causeway to Newcastle Street to provide a northern city bypass.²

As part of the proposal, the railway was to be moved from central Perth to Vincent Street and the existing Perth railway station demolished to provide a grand approach to the civic centre and office precinct in Northbridge.³

The report and Atlas of the Plan for the Metropolitan Region of Perth and Fremantle prepared in 1955 by Stephenson and Hepburn (known as the Stephenson-Hepburn Plan) reached different conclusions.

It included proposals for "the electrification and sinking of the railway; sites for clubs, restaurants and boating facilities between Riverside Drive and the Swan River; a fully developed cultural centre instead of a civic centre; and a ring road embracing Riverside Drive and a widened Roe Street, with Wellington Street and Roe Street leading to a new bridge over the river".⁴

The Metropolitan Region Scheme (MRS) was gazetted by Parliament in 1963. Within the Scheme, the limited access highways identified in the 1955 Stephenson-Hepburn Plan were upgraded to freeways and the ring roads around the central area were proposed to keep traffic out of the central area and discharge commuter traffic into peripheral car parks. For this reason the northern bypass was identified as a cutting between Newcastle and Aberdeen Streets.⁵

The State Government began purchasing land situated along the identified bypass route in the 1960's. This land was taken up over a number of years and was held by government agencies for the purpose of constructing the bypass.⁶ Over this period some of the property, which was leased out to private tenants, suffered from blight and decay as a result of a lack of investment.

² Stephenson G, 1993A Critical Review of the Burswood Bridge and Road Study of September 1993, Western Planner Vol 11 No. 5 page 1, Australian Planning Institute West Australian Division.

³ Stephenson G, 1993A Critical Review of the Burswood Bridge and Road Study of September 1993, Western Planner Vol 11 No. 5 page 1, Australian Planning Institute West Australian Division.

⁴ Stephenson G, 1993, A Critical Review of the Burswood Bridge and Road Study of September 1993, Western Planner Vol 11 No. 5 page 1, Australian Planning Institute West Australian Division.

⁵ Stephenson G, 1993, A Critical Review of the Burswood Bridge and Road Study of September 1993, Western Planner Vol 11 No. 5 page 1, Australian Planning Institute West Australian Division.

⁶ Charlton E, 1996, Legislative Council – Questions without Notice Thursday 21 March 1996, <http://www.parliament.wa.gov.au/hansard/hans35.nsf/16ab30a0303e54f448256bf7002049e8/23774a8bf547719b482578f600177859?OpenDocument>.

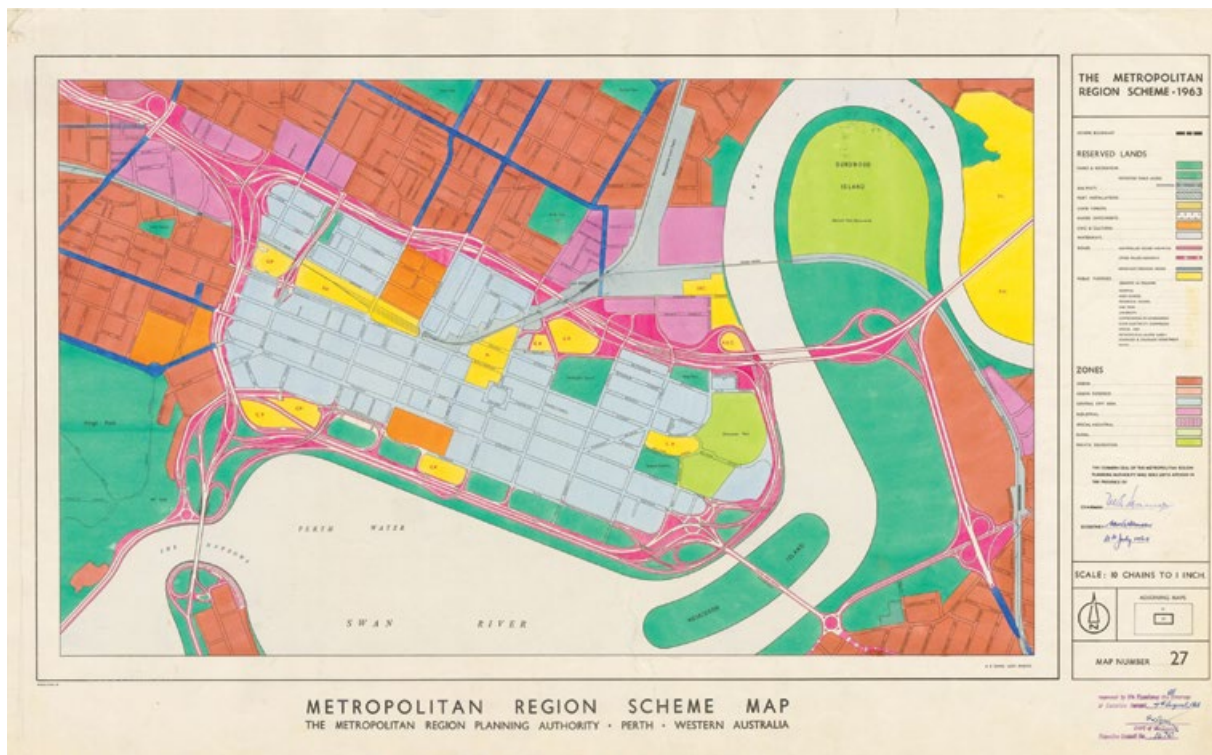


Figure 1: 1963 Metropolitan Region Scheme Map number 26⁷

2.1 Metroplan: A Planning Strategy for the Perth Metropolitan Region

In 1990, the State Government released Metroplan: A Planning Strategy for the Perth Metropolitan Region.

Metroplan heralded a shift in strategic direction from the previous plan for Perth, the 1970 Corridor Plan. While the Corridor Plan primarily promoted decentralised, outwards growth in corridors, supported by high-quality road based, transport infrastructure, Metroplan also sought to respond to growing concern about issues like traffic congestion and urban sprawl in the Perth region by identifying urban consolidation as a new strategic objective. Strategies identified to achieve this included concentrating employment generating activities and higher density residential areas in locations served by public transport and providing opportunities for inner-city living. Metroplan also promoted a more balanced transport system and better public transport.⁸

Metroplan did not identify a singular strategy for future growth, but promoted both decentralised population and economic development, as well as an increased focus on strengthening central Perth and promoting urban consolidation and renewal”.⁹

From a more detailed transportation perspective, Metroplan proposed a ring road, an inner-city bypass and widening of arterial roads in the Perth metropolitan area.¹⁰ It also proposed public transport initiatives that were primarily bus based – and therefore reliant on road infrastructure improvements.

⁷ Department of Planning, 2011, Metropolitan Region Scheme Map number 26, <http://www.planning.wa.gov.au/5683.asp>, Retrieved 16 December 2015.

⁸ Department of Planning and Urban Development, 1990, Metroplan: A planning strategy for the Perth metropolitan region, Government of Western Australia.

⁹ Freestone R, 2010, Urban Nation, Australia's Planning Heritage, CSIRO Publishing, Department of the Environment, Water, Heritage and the Arts and the Australian Heritage Council, Page 165.

¹⁰ Department of Planning and Urban Development, 1990, Metroplan: A planning strategy for the Perth metropolitan region, Government of Western Australia.

2.2 Perth Metropolitan Transport Strategy 1995-2029

In 1995, the State Government released the Perth Metropolitan Transport Strategy 1995-2029. The strategy aimed to move Perth from a transport system dominated by low occupancy car use to a more balanced transport system, in which public transport and non-motorised transport options would be realistic for many trips. The strategy also acknowledged the integrated relationship of land use and transport in improving mobility.¹¹

The strategy recognised that:

- Cars would remain the dominant form of urban passenger transport in metropolitan Perth for the foreseeable future.
- Increasing car dominance was undesirable.
- Technological changes alone would not resolve problems created by increasing car use technology.
- Public transport, cycling and walking could provide many social benefits, including road use efficiency, community safety and local area economic development.
- Higher car occupancy could significantly improve transport efficiency.
- The volume of service traffic and freight transport would continue to grow.
- Gateways to the urban region, including national and state highways, seaports and airports, are critical to its well-being.
- A package of coordinated measures would be required to ensure residents and businesses in Perth continue to enjoy high levels of mobility and access.¹²

In this context, the strategy identified targets to improve the safety, efficiency, effectiveness and environmental performance of Perth's road system by 2029, when the regional population was predicted to reach two million people. This included reducing the proportion of trips by private car from 76% of all trips to 57.5% by 2029, as well as increasing the percentage of public transport trips to the Perth central area from 35% to 50% by 2010 and 65% by 2029.¹³

A summary of the targets and predictions made in the strategy is provided in Table 1 below.

Table 1: Perth Metropolitan Transport Strategy (1995) Transport Mode Targets

Transport options	1991 Use Pattern	2029 Use (Based on continuation of 1991 Patterns)	2029 MTS Targets (Predicted population of 2 million)
Walk only	10%	5.8%	12.5%
Cycle	5.7%	8%	11.5%
Public transport	6.4%	4.8%	12.5%
Car as passenger	13%	9%	11.5%
Car driver	63%	70.5%	46%
Taxi	2%	1.8%	2%
Transport substitution by telework	N/A	N/A	4%

¹¹ Department of Transport, Main Roads Western Australia, Ministry for Planning et al, 1995, Metropolitan Transport Strategy 1995-2029, Government of Western Australia.

¹² Department of Transport, Main Roads Western Australia, Ministry for Planning et al, 1995, Metropolitan Transport Strategy 1995-2029, Government of Western Australia.

¹³ Department of Transport, Main Roads Western Australia, Ministry for Planning et al, 1995, Metropolitan Transport Strategy 1995-2029, Government of Western Australia.

The Perth Metropolitan Transport Strategy recognised the importance of an integrated approach towards transport and land use planning and identified strategies and actions to support the goals for urban consolidation in areas accessible by public transport, walking and cycling. The strategy also predicted future population growth patterns if urban consolidation goals were not achieved, but it did not provide targets for more consolidated urban growth.

Table 2: Perth Metropolitan Transport Strategy Projected Population Distribution 1991-2029

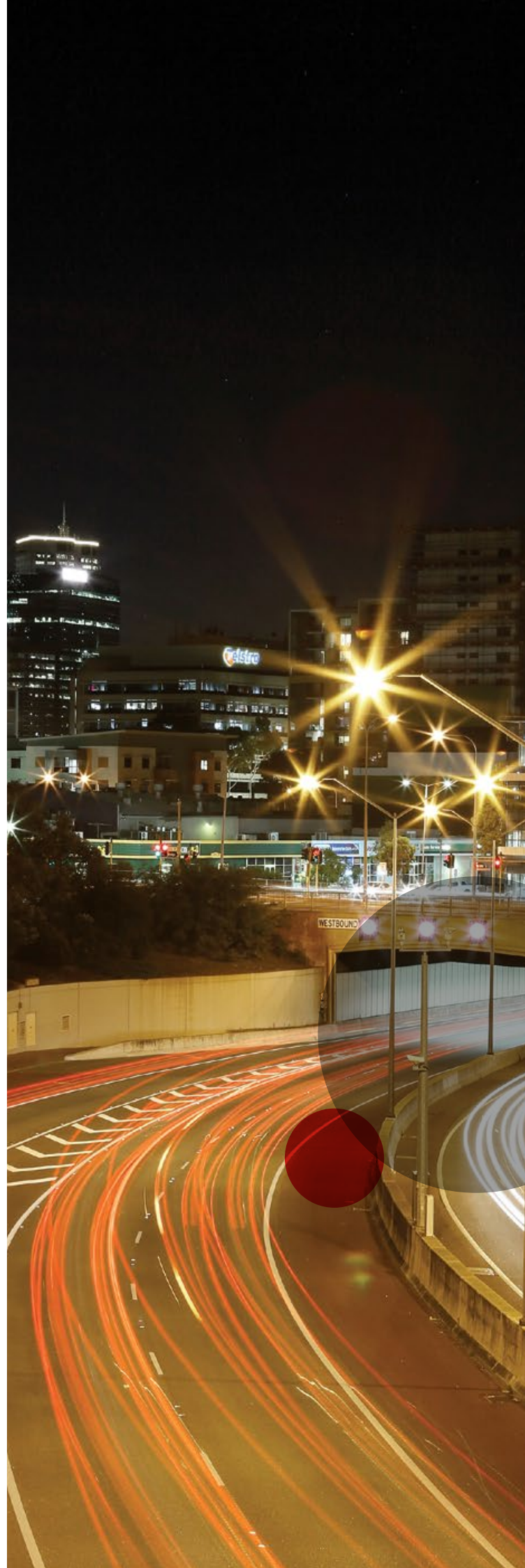
Population Distribution	1991	2029
		(Based on continuation of 1991 patterns)
Resident Population Inner	208,200	216,000
Resident Population Middle	427,500	453,000
Resident Population Outer	553,000	1,343,000

The Perth Metropolitan Transport Strategy primarily aimed to achieve its targets by increasing the share of trips by walking and cycling, raising vehicle occupancy, improving accessibility to public transport and activity/employment centres through integrated land use and transport planning and encouraging behavioural change.

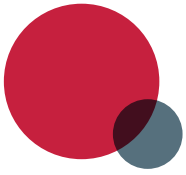
The strategy also identified a need for investment in appropriate transport infrastructure but did not identify specific priority projects, although it is noted that the Joondalup rail line had recently opened at the time the strategy was developed, and legislation enabling the construction of the passenger rail line to Mandurah was passed in 1999.¹⁴

¹⁴ Public Transport Authority, 2015, Our History, Government of Western Australia, <http://www.pta.wa.gov.au/aboutus/ourhistory/tabid/42/default.aspx>, Retrieved 22 October 2015.

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3.0 The Burswood Bridge and Road: City Bypass and Access Study



The Burswood Bridge and Road: City Bypass and Access Study was initiated by the then Department of Planning and Urban Development in the early 1990's. The study had two main objectives, firstly to determine the need for a city northern bypass and secondly to recommend the best form and alignment for the bypass.¹⁵

The study directly responded to the strategic directions identified in Metroplan, which were to strengthen central Perth, enable urban consolidation and reduce traffic congestion.

3.1 Traffic Congestion in Central Perth

In the 1990's, the Causeway and Riverside Drive formed the primary bypass route for east-west travel around the Perth city centre.

Predictions at the time indicated that without action, traffic volumes on the Causeway could increase from 102,000 vehicles per day to 130,000 vehicles per day by 2021 and that this would result in significant congestion on these routes, as well as roads such as Shepperton Road and Canning Highway.¹⁶

Analysis also indicated that traffic on Riverside Drive, which carried approximately 60,000 vehicles per day in 1994, more than 60% of which bypassed the city entirely, could be halved if a new bridge and bypass road was constructed.¹⁷

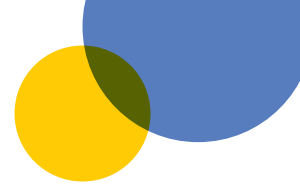
The Burswood Bridge and Road: City Bypass and Access Study examined the impacts of maintaining the existing road system against the impacts of a new bypass road. It examined a number of factors including traffic flows, modifications required to local roads, pedestrian and cyclists, impacts on the natural environment, properties affected, sites of heritage and Aboriginal significance, community impacts, traffic noise, air quality, and visual impacts.¹⁸

¹⁵ Burswood Bridge and Road Committee, 1993, Burswood Bridge and road: city bypass and access study, Department of Planning and Urban Development, Western Australia, State Library of Western Australia, Retrieved 3 September 2015.

¹⁶ Hughes B, 1994, Comments on a Burswood Bridge and Road One Way Pair: A Reply to Professor Gordon Stephenson. Western Planner Vol 1 No. 6 1994, Royal Australian Planning Institute.

¹⁷ Hughes B, 1994, Comments on a Burswood Bridge and Road One Way Pair: A Reply to Professor Gordon Stephenson. Western Planner Vol 1 No. 6 1994, Royal Australian Planning Institute.

¹⁸ Burswood Bridge and Road Committee, 1993, Burswood Bridge and road: city bypass and access study, Department of Planning and Urban Development, Western Australia, State Library of Western Australia, Retrieved 3 September 2015.



3.2 Burswood Bridge and Road Study Recommendations

The Burswood Bridge and Road: City Bypass and Access Study supported the need for a northern city bypass road to cater for approximately 80,000 vehicle movements per day by 2021, claiming that the project would “considerably reduce the volume of bypass traffic in the central area, while providing a key river crossing and an essential component of the regional road network.”¹⁹

The study also justified the need for the project on the basis that:

- Traffic movements into the Perth central area were predicted to increase.
- The bypass would allow for a reduction of up to 20-40% of traffic volume on key transport links in the central area.
- The resulting reduction in traffic flows on roads such as the Causeway would allow for increased provision of public transport initiatives.

The study identified two options for the bypass road - a surface road or ‘boulevard’ option, and an option incorporating a six kilometre tunnel.

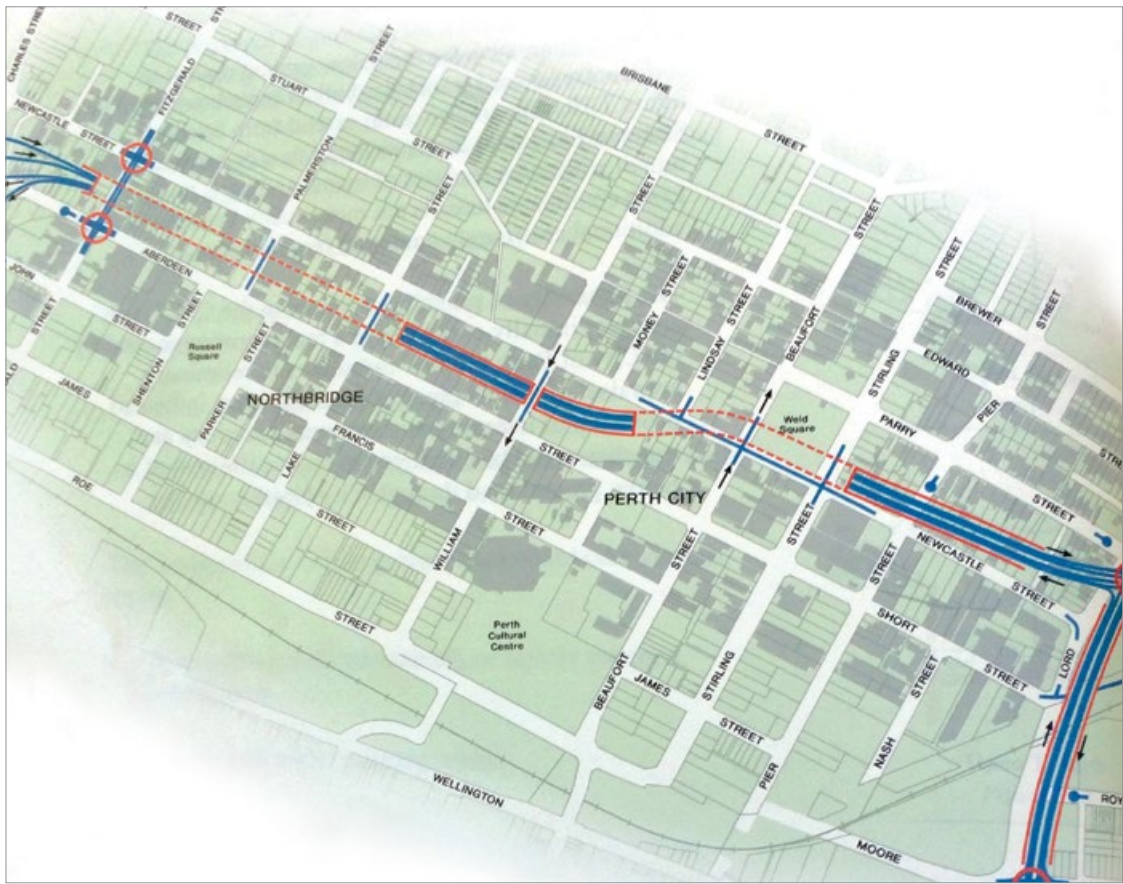
The tunnel option was identified as the preferred selection for the project due to its ability to provide for the efficient movement of traffic, minimise impacts on the urban environment and enable urban renewal and revitalisation of the city centre.

In addition to the construction of the bypass, the study also recommended a number of complementary transport initiatives, which included public transport improvements and changes to parking policies to restrict the amount of parking available in the Perth city centre and encourage the increased use of public transport.

Recommended improvements to public transport primarily focused on the introduction of bus lanes along the Causeway. The study also recommended traffic management measures on Riverside Drive, St George’s Terrace and along major streets with an east-west alignment.

¹⁹Burswood Bridge and Road Committee, 1993, Burswood Bridge and road: city bypass and access study, Department of Planning and Urban Development, Western Australia, State Library of Western Australia, Retrieved 3 September 2015, Page 3.

Figure 2: Burswood Bridge and Road Preferred Tunnel Option²⁰



3.3 Consultation Outcomes

Community consultation was undertaken on the Burswood Bridge and Road and associated amendment to the Metropolitan Region Scheme. Seven hundred and forty seven submissions were received. Of these, 391 submissions provided unconditional support for the project, an additional 95 submissions supported the construction of a bypass road but suggested design modifications. Two hundred and eighteen submissions opposed the bypass.²¹

²⁰ Burswood Bridge and Road Committee, 1993, Burswood Bridge and road: city bypass and access study, Department of Planning and Urban Development, Western Australia, State Library of Western Australia, Retrieved 3 September 2015, Page 66.

²¹ Summary of Public Submissions on Burswood Bridge and Road and MRS Amendment, Accessed from Cities for People Campaign Folder, Retrieved 3 September 2015 from the State Library of Western Australia.



Of the 747 submissions received, 486 supported the project and 218 opposed it.



4.0 The Controversy



The City Northern Bypass project generated considerable controversy and media attention from its announcement in the mid-1990's, until well after its opening in April 2000. During this period there were public rallies and protests and considerable debate within Parliament and in the media.

4.1 The Need for a Bypass Road

In 1995, then Premier Hon. Richard Court AC announced that the City Northern Bypass project would proceed. The State Government outlined a number of potential benefits of the project. These included:

- Improved east-west access for private, business and commercial traffic around the central city area.
- Reduced traffic congestion in the inner suburbs.
- Major improvements in public transport, specifically bus access to central city areas from the eastern metropolitan area.
- Reduced traffic on Riverside Drive and St Georges Terrace.
- Enabling the function of Riverside Drive to be downgraded, delivering the potential for new development to better integrate Perth's city centre with the Swan River foreshore area.
- Enabling traffic calming measures to be implemented in the city centre.
- Maintaining a commercially viable city centre.
- Providing a cleaner city centre environment, and improved amenity for pedestrians and for inner-city living.²²

Dr Ken Michael AC, Commissioner of Main Roads WA at the time, reiterated the potential for the project to deliver transport improvements to the Perth CBD.

*"It's going to improve the transport flow on Riverside Drive; it's going to loosen up the Causeway and St Georges Terrace to the extent that we can run a bus lane all the way through, exclusive; it's going to create a better environment for pedestrians walking from Northbridge because you won't have this interaction with traffic."*²³

²² Main Roads WA, 1997, City Northern Bypass Project, A special report by Main Roads WA in Western Contractor, February 1997.

²³ Michael, K, 1994, Interview with Dr Ken Michael of Main Roads Western Australia by Leigh Edmonds, Retrieved 3 September 2015 from the State Library of Western Australia.



4.2 Arguments Against a Bypass

Opponents of the City Northern Bypass project did not generally oppose the stated project objectives or benefits, but strongly questioned whether the construction of a new major bypass road was the best approach to achieve these outcomes.

In this context, they stated that the need for the construction of a bypass road had not been properly established and that transport and land use planning that focused on road building was old-fashioned and redundant.

Prominent town planner Professor Gordon Stephenson, a co-author of the 1955 Stephenson-Hepburn Plan, was an outspoken project opponent. He claimed that the new road would not be used by motorists to bypass the city centre but for city centre access. This he believed, would further encourage motorists to drive into the city centre rather than use public transport, walk or cycle, increasing future congestion and pollution.²⁴

This concern was shared by a number of project opponents including people who joined together to establish the Cities for People Campaign.

Cities for People argued that prioritising investment in road based transport was an outdated and obsolete form of transport planning. They asserted that investment should be directed towards sustainable forms of transport, particularly the development of an efficient public transport system, as a priority.²⁵

It was the view of Cities for People that the State Government had its priorities wrong by spending on the new east-west freeway when Main Roads traffic figures showed that there were greater pressures on the Mitchell and Kwinana Freeways than on existing east-west routes. Their contention was that the \$150 million proposed to be spent on the tunnel would be better spent alleviating congestion on other routes.²⁶

This view was supported by then Member of Parliament the Hon. John Kobelke who said that the planning for the bypass was “outdated 1960’s thinking” and would fail to meet the transport needs of Perth as it moved towards the 21st century. In this regard, he accused the government of “putting in place something which should have been taken off the drawing board years ago” and that would “create more transport problems than we will solve.”²⁷

“This proposal will channel thousands more vehicles onto a freeway which currently cannot cope in peak periods. It will shift the problem. It will move it a bit further; we will spend \$400 million to create a bigger problem a few kilometres away,” he said.

The Planning Minister at the time, the Hon. Richard Lewis responded to this criticism by rejecting concerns regarding the Burswood Bridge and Road Study and claiming that the State Opposition was guilty of “leading a deliberate and misleading scare campaign” against the City Northern Bypass project.

He said that Opposition MPs who criticised the project were “misrepresenting important elements of the recently released Burswood Bridge and Road Study in an effort to hijack proper debate on the issue.”

²⁴ Stephenson G, 1993A Critical Review of the Burswood Bridge and Road Study of September 1993, Western Planner Vol 11 No. 5 page 1, Australian Planning Institute West Australian Division.

²⁵ Cities for People Campaign Folder, Retrieved 3 September 2015 from the State Library of Western Australia.

²⁶ Betti L, 1996, Anti-tunnel lobby urges north-south line priority, The West Australian Monday March 18.

²⁷ Kobelke J, 1996, Legislative Assembly Address in Reply Thursday, 28 March 1996, Parliament of Western Australia Old Hansard, Retrieved 20 October 2015.

4.3 The Stated Benefits of the Northbridge Tunnel

The 1.6 kilometre tunnel section of the City Northern Bypass project was the most controversial aspect of the proposal. The tunnel option for the bypass was identified as the preferred option in order to enable traffic to move efficiently, while minimising impacts on the amenity of the Perth city centre, Northbridge and East Perth.

Compared to surface road options, the tunnel option was identified as delivering a more direct, higher speed bypass road because unlike a surface road, a tunnel would not suffer from conflict between local and regional traffic and would not require speed restrictions, controlled intersections, or traffic calming measures.²⁸

The tunnel option was also assessed as beneficial because it would provide for a high volume of traffic movement while delivering the potential for redevelopment and urban renewal in Northbridge and retaining/enhancing the attractiveness of the area as the region's premier entertainment district and as an inner urban living environment.²⁹

Then Planning Minister the Hon. Richard Lewis said that, "the City Northern Bypass project provides an opportunity for us to develop areas of Northbridge that have been underutilised as a result of reservation for road services."³⁰

The tunnel would, according to proponents, reduce traffic through the Northbridge area in the medium to long-term. By contrast, assessments of surface road bypass options, which would utilise existing roads such as Newcastle and Aberdeen Streets found that this would more than double vehicle volumes on these roads thereby reducing amenity for residents and visitors and result in disconnecting the community.³¹

The reported benefits of the proposed tunnel option also extended to the construction method. A "top down" construction process was identified as the preferred method in order to minimise community disruption.

The top down process involved the construction of the walls and roof of the tunnel, followed by excavation of soil and finally the construction of the tunnel floor.

The benefit of this method were purported to be so that traffic patterns could be reinstated above the tunnel roof as sections were completed, minimising transport disruptions, while the problems of dust, noise and truck movements associated with excavation were minimised because the work was undertaken beneath the concrete frame of the tunnel.³² The design of the tunnel roof also enabled the construction of buildings up to three storeys to take place under the Northbridge Urban Renewal Scheme.³³

²⁸ Hughes B, 1994, Comments on a Burswood Bridge and Road One Way Pair: A Reply to Professor Gordon Stephenson. Western Planner Vol 1 No. 6 1994, Royal Australian Planning Institute

²⁹ Hughes B, 1994, Comments on a Burswood Bridge and Road One Way Pair: A Reply to Professor Gordon Stephenson. Western Planner Vol 1 No. 6 1994, Royal Australian Planning Institute

³⁰ Lewis R, 1996, East Perth Redevelopment Bill Second Reading Legislative Assembly, Hansard, Parliament of Western Australia, <http://www.parliament.wa.gov.au/hansard/hans35.nsf/c02fad1ff7f00ecbc82572e4002d0af9/561314a76a9612ed482578f60017e3d0?OpenDocument> Retrieved 22 October 2015.

³¹ Hughes B, 1994, Comments on a Burswood Bridge and Road One Way Pair: A Reply to Professor Gordon Stephenson. Western Planner Vol 1 No. 6 1994, Royal Australian Planning Institute

³² Main Roads WA, 1997, City Northern Bypass Project, A special report by Main Roads WA in Western Contractor, February 1997.

³³ Main Roads WA, 1997, Bypass bulletin: City Northern Bypass Project, State Library of Western Australia, Retrieved 02 February 2016.

4.4 Arguments Against the Northbridge Tunnel

The people and organisations opposing the Northbridge Tunnel expressed multiple concerns about the tunnel proposal. Fundamentally, these concerns centred on views that the tunnel was unnecessary and would have significant negative environmental and social impacts. They also said that urban renewal benefits and adequate bypass routes could be delivered without a tunnel.

Then Member for Perth the Hon. Diana Warnock OAM, said that while urban renewal in Northbridge was necessary, the Government was going about it the wrong way. "We can do all this without the tunnel," she said.

"The government has this idea that we will have an immense amount of traffic. I just don't believe those figures." Mrs Warnock, as well as a number of project opponents, also expressed support for a surface road option as an alternative to a tunnel.

"We should push public transport and we can have a new bridge to deal with east-west traffic if we use Aberdeen and Newcastle Street as a one way pair," she said.³⁴

Other arguments against the tunnel option focused on the need to preserve Northbridge, its businesses, community and heritage. They also highlighted concerns that the tunnel and trench would be "noisy, smelly and unpleasant."³⁵

4.5 Impacts on Heritage, Residents and Businesses

One of the most significant negative impacts of constructing the tunnel through the top down method was the need to demolish 58 buildings above the tunnel alignment.

Main Roads Western Australia commissioned a heritage assessment of the project. The assessment identified 22 buildings of heritage significance within the area earmarked for demolition. However it found that these buildings were of local heritage significance, not of state significance.³⁶

Planning Minister at the time, the Hon. Richard Lewis said, "None of the buildings in the path of the tunnel was considered by the Heritage Council to have sufficient heritage significance to justify their being entered into the State Register of Heritage Places."³⁷

Main Roads also said, while some buildings were to be demolished as part of the project, other significant heritage buildings would not be damaged, and the character of Northbridge would be preserved. A study by the Perth City Council and the Ministry of Planning supported these views, concluding that "few of the buildings to be demolished were uncommon."³⁹

However demolition of heritage buildings to construct the tunnel became an issue of significant concern to some Northbridge residents.

³⁴ Newspaper article, Author and Publication unknown, accessed from Cities for People Campaign folder, State Library of Western Australia, Retrieved 3 September 2015.

³⁵ Stephenson G, 1993A Critical Review of the Burswood Bridge and Road Study of September 1993, Western Planner Vol 11 No. 5 page 1, Australian Planning Institute West Australian Division.

³⁶ Mendez T, 1996, Tunnel report 'bypassed', The West Australian February 2 1996.

³⁷ Lewis R, 1996, Northbridge Tunnel Heritage Assessment Demolition of Buildings and Trees, Legislative Assembly Questions on Notice, Thursday 2 May 1996, Parliament of Western Australia <http://www.parliament.wa.gov.au/hansard/hans35.nsf/16ab30a0303e54f448256bf7002049e8/209f5a34df14454b482578f60017ac71?OpenDocument>, Retrieved 22 October 2015.

³⁸ Main Roads Western Australia, Information Update City Northern Bypass, Tunnel Construction Plan Preserves Character of Northbridge, The West Australian Community Classifieds, accessed from Cities for People Campaign folder, State Library of Western Australia, Retrieved 3 September 2015.

³⁹ Betti L, 1996, History falls to the march of time, The West Australian, February 20 1996, Page 6

Project opponents strongly criticised the decision to demolish the buildings and claimed that the area to be demolished was “the last vestige of Old Perth with a mixture of grand old residences, quaint cottages, interesting old shop fronts and a few tall buildings.”⁴⁰

They also said that the area is “one of importance to Perth...It has a history of which we should be proud and aware.”⁴¹

Northbridge residents also raised concerns regarding the loss of cultural heritage and the lack of documentation of the social heritage of the buildings to be demolished.

“Historically it is the site of our ethnic (Italian/Greek) heritage. Four generations have lived and died in some of these cottages...” as well as the impact on Northbridge’s multicultural community “with the influx of Asian immigrants...this is a truly cosmopolitan area.”⁴²

Project opponents expressed concern that consultation regarding the heritage impacts of the tunnel was inadequate. According to Cities for People, an original proposal to explain the heritage assessment through a public forum was never implemented and the public were “kept in the dark” regarding the project’s heritage impacts.^{43,44}

Concerns were also raised that the project would lead to “the destruction of parkland used as a meeting place by Aboriginal people, the loss of popular youth venues and the eviction of students, artists and less-affluent persons from the Northbridge area” and would have major detrimental impacts on residents, visitors and local businesses during the construction process.⁴⁵

It is noted that following the construction of the Northbridge Tunnel, plans for the redevelopment of Northbridge proposed the demolition of additional buildings of local heritage significance. However in 2002, newly appointed Minister for Planning and Infrastructure, the Hon. Alannah MacTiernan intervened in the planning process, ultimately ensuring the protection of approximately 20 heritage buildings previously earmarked for demolition.

The protection of these heritage buildings was a direct response to the loss of local heritage that resulted from the construction of Graham Farmer Freeway.⁴⁶

⁴⁰ Cities for People Campaign, 1996, Northbridge Should be Preserved Intact Flyer/Form, accessed from Cities for People Campaign folder, State Library of Western Australia, Retrieved 3 September 2015.

⁴¹ Cities for People Campaign, 1996, Northbridge Should be Preserved Intact Flyer/Form, accessed from Cities for People Campaign folder, State Library of Western Australia, Retrieved 3 September 2015.

⁴² Betti L, 1996, History Falls to the March of Time, The West Australian, February 20 1996.

⁴³ Mendez T, 1996, Tunnel Report Bypassed, The West Australian February 2, 1996 pp. 35.

⁴⁴ Cities for People Campaign, Destruction of Northbridge’s (and Perth’s) heritage continues, Accessed from Cities for People Campaign Folder, State Library of Western Australia, Retrieved 3 September 2015.

⁴⁵ Benbow A, 2000, Perth a City for Cars, Green Left Weekly, Wednesday 3 May 2000.

⁴⁶ MacTiernan A, 2002, Government acts to save Northbridge heritage, Media Statement Government of Western Australia, 7 January 2002 <https://www.mediastatements.wa.gov.au/Pages/Gallop/2002/01/Government-acts-to-save-Northbridge-heritage.aspx>, Retrieved 30 November 2015.

4.6 Environmental Impacts

The environmental impacts of the proposal were also of substantial concern to project opponents and local residents. This concern was heightened by the decision of the State Government not to undertake a formal environmental assessment of the project.

Opponents claimed that the project had been committed to “without proper environmental assessment to support construction” and appeals were made to the Minister for Environment to overturn this decision.^{45&46}

Then Federal Labor MHR for Perth, the Hon. Stephen Smith and former State Opposition environment spokeswoman the Hon. Dr Judy Edwards put forward three arguments for appeal of this decision – related to groundwater flow and management, noise and dust. Mrs Edwards said she was “staggered that a project the size of the Northern Bypass would not receive a high level of environmental scrutiny.”⁴⁷

Other high profile people who supported the call for a full environmental assessment of the project included Clough Ltd Chairman, Dr Harold Clough AO OBE, who said “the highest level of assessment, an environmental impact assessment, may have been better.”⁴⁸

Dr Clough said he believed that the environmental impacts of the project had been exaggerated by opponents but that the highest level of environmental assessment might have helped silence critics.⁴⁹

Academics also expressed their concerns about the level of environmental assessment undertaken by the State Government. Murdoch University academic William Ross called for a full assessment of the project.⁵⁰ He said that, “Although the Northern City Bypass is the biggest WA road project ever undertaken, the Department of Environmental Protection took a little over three hours to assess the impact of the project on Perth’s environment” and that “air pollution, water table damage and animal and plant life were ignored in the report.”⁵¹

“The continuing push from the government towards more roads, highways and tunnels is leading us down the same smoggy road as Los Angeles and Sydney”, he said.⁵²

However, impacts on the water table as a result of dewatering were of particular concern to local residents who were worried that the dewatering process would cause structural damage to homes.^{53&54}

Some people also raised concerns about the lack of available information regarding the extraction and dispersal of exhaust fumes from the tunnel.

Despite these concerns, the then Environment Minister the Hon. Peter Foss QC rejected calls for a full environmental assessment of the project, supporting an informal assessment, stating that “construction companies tendering to build the tunnel would develop an environmental management plan that would include groundwater issues.”⁵⁵

⁴⁷ Betti L, 1996, Tunnel Study ‘fell short’, The West Australian Monday February 19 1996, Page 6.

⁴⁸ Betti L, 1996, Tunnel Study ‘fell short’, The West Australian Monday February 19 1996, Page 6.

⁴⁹ Betti L, 1996, Tunnel Study ‘fell short’, The West Australian Monday February 19 1996, Page 6.

⁵¹ Cover R, 1996, Western Australians Rally to Stop Road Developments, Green Left Weekly Wednesday 26 June 1996, Retrieved 20 October 2015.

⁵² Cover R, 1996, Western Australians Rally to Stop Road Developments, Green Left Weekly Wednesday 26 June 1996, Retrieved 20 October 2015.

⁵³ Crikey, 2000, The danger of a one paper town with vested interests, Sunday 21 May 2000, http://www.crikey.com.au/2000/05/21/the-danger-of-a-one-paper-town-with-vested-interests/?wpmp_switcher=mobile, Retrieved 13 October 2015.

⁵⁵ Betti L, Tunnel Study ‘fell short’, The West Australian Monday February 19 1996, Page 6.

4.7 Project Costs

Initial State Government estimates indicated that the Northern City Bypass project would cost approximately \$335 million, however project opponents claimed that this figure would be significantly higher, commonly citing that the project was likely to cost "in excess of \$400 million."

Opposition MP the Hon. John Kobelke, for example, claimed that "the Government has fudged the figures and continues to get away with putting up amounts of money that are not even on the books."⁵⁶

In addition, he said that "an extra \$40 million is simply left out of the figures" and that "when one adds the land value, which on its accounting basis should be included, one clearly has a project in excess of \$400 million."⁵⁷

Controversy surrounding project costs was further fuelled by rumours that the new road would be a toll road - rumours that the then State Government was quick to quash.

Then Transport Minister the Hon. Minister Eric Charlton said that the Labor Opposition had raised the issue of the possible private operation of the proposed tunnel as part of an ongoing campaign to discredit the project.⁵⁸

"The suggestion is wrong and again does the Opposition no credit in seeking to gain mileage from a completely fabricated notion," the Minister said.

"The \$335 million project will be funded from the WA Government's \$1 billion Additional Road Funding program, which has already been responsible for \$10 million in extra expenditure on WA roads since its introduction in February this year," he said.⁵⁹

By November 1998, it was apparent that the cost of the project had exceeded \$400 million. Then Minister for Transport, the Hon. Eric Charlton, reported that some of the cost increases could be attributed to land and works but that they were mainly due to the inclusion of corporate overheads.⁶⁰

⁵⁵ Betti L, Tunnel Study 'fell short', The West Australian Monday February 19 1996, Page 6.

⁵⁶ Kobelke J, 1996, Legislative Assembly Address in Reply Thursday, 28 March 1996, Parliament of Western Australia Old Hansard, Retrieved 20 October 2015.

⁵⁷ Kobelke J, 1996, Legislative Assembly Address in Reply Thursday, 28 March 1996, Parliament of Western Australia Old Hansard, Retrieved 20 October 2015.

⁵⁸ Charlton E, 1995, Rumours about funding for city northern bypass tunnel quashed, Media Statement Government of Western Australia, 21 November 1995 <https://www.mediastatements.wa.gov.au/Pages/Court/1995/11/Rumours-about-funding-for-City-Northern-Bypass-tunnel-quashed.aspx>, Retrieved 15 October 2015.

⁵⁹ Charlton E, 1995, Rumours about funding for city northern bypass tunnel quashed, Media Statement Government of Western Australia, 21 November 1995 <https://www.mediastatements.wa.gov.au/Pages/Court/1995/11/Rumours-about-funding-for-City-Northern-Bypass-tunnel-quashed.aspx>, Retrieved 15 October 2015.

⁶⁰ Charlton E, 1998, Graham Farmer Freeway Increase in Cost, Legislative Assembly Tuesday 10 November 1998, Parliament of Western Australia, Hansard [http://www.parliament.wa.gov.au/hansard/hans35.nsf/\(ATT\)/5E63031B132E2A4C482566BF001FB5A4/\\$file/A1110013.PDF](http://www.parliament.wa.gov.au/hansard/hans35.nsf/(ATT)/5E63031B132E2A4C482566BF001FB5A4/$file/A1110013.PDF), Retrieved 10 October 2015.

Initial State Government estimates indicated that the Northern City Bypass project would cost approximately \$335 million, however project opponents claimed that this figure would be significantly higher, commonly citing that the project was likely to cost "in excess of \$400 million."



5.0 Project Outcomes



The Northern City Bypass project, called the Graham Farmer Freeway, upon opening did deliver, partially deliver, or assist in delivering, most of its stated benefits. A comparison of the stated project benefits and outcomes is provided in Table 3.

Table 3: Comparison of Stated Benefits and Outcomes of Graham Farmer Freeway Project

Stated Benefits	Outcomes
Improved east-west access for private, business and commercial traffic around the central city area and a reduction in traffic volumes on key routes such as Riverside Drive.	Traffic statistics and State Government information indicate that improvements to traffic congestion and travel times for east-west traffic bypassing Perth city centre were achieved following the opening of the GFF. It also reduced traffic volumes on existing roads. For example, in 2013, Riverside Drive catered for approximately 35,000 vehicle movements per day compared to 60,000 prior to the opening of GFF. ⁶¹
Reduction of traffic congestion in the inner suburbs.	Traffic volumes on Riverside Drive, the Causeway and Shepperton Road decreased after the opening of GFF. However, traffic volumes on GFF were higher than predicted from opening; additional works have been required to ease traffic congestion; and long-term congestion on GFF and other major roads is projected to increase.
Major improvements in public transport (bus) access to central city areas from the eastern metropolitan area.	Priority bus lanes were constructed on the Causeway and a short distance along St Georges Terrace, however were not constructed all the way along St Georges Terrace. Bus lanes were not constructed all the way along St Georges Terrace.
Enabling the function of Riverside Drive to be downgraded, delivering the potential for new development to better integrate Perth's city centre with the Swan River foreshore area.	Riverside Drive has been re-routed to enable the construction of the Elizabeth Quay project. The GFF accommodated a large proportion of this traffic. It is noted that substantial additional works to the freeway were required to achieve this benefit.
Enabling traffic calming measures to be implemented in the city centre.	Work has been completed to reduce the number of traffic lanes on parts of St Georges Terrace from six to four, widening footpaths and increasing the width of median strips.
Maintaining a commercially viable city centre.	Commercial viability of Perth city centre has been maintained although the impact of the GFF on commercial viability has not been assessed.
Providing a cleaner city centre environment, and improved amenity for pedestrians and for inner-city living.	Urban renewal and growth in inner-city living has been achieved through the 'New Northbridge' project.

⁶¹ Department of Transport, Main Roads, Public Transport Authority, 2012, Perth Central Business District Transport Plan, Department of Transport, Government of Western Australia, Page 25



However, it is noted that Graham Farmer Freeway was intended to be part of a balanced approach to regional transport and in this context, was expected to assist in reducing congestion in inner areas in the medium to long-term.

In this context, it is evident that the freeway has accommodated traffic volumes which are significantly above original predictions since opening. As a result, while the freeway has enabled more efficient traffic movement in the short to medium-term, current research indicates that the Graham Farmer Freeway is likely to be less successful in alleviating long-term congestion problems.

5.1 Reducing Congestion

Since opening, traffic volumes on Graham Farmer Freeway have been much higher than originally predicted. The Burswood Bridge and Road Study estimated that the bypass would carry approximately 80,000 vehicles per day by 2021. In practice, the freeway carried between 60,000 and 80,000 vehicles daily in its first few months of opening.

Ongoing growth in traffic volumes using the freeway has meant that substantial changes to the bypass have been required. In 2013, the freeway was reconfigured so that the two lanes and emergency lane in either direction became dedicated three lane systems and this change was made in order to this change was made in order to ease traffic congestion and to manage the traffic impacts of the Elizabeth Quay project.⁶² Works undertaken as part of the \$57 million project included:

- Providing an extra lane in the Northbridge Tunnel in each direction;
- Building an additional lane on Mitchell Freeway northbound from Graham Farmer Freeway to Hutton Street; and
- Widening the traffic bridges over Powis Street, Vincent Street and Scarborough Beach Road.⁶³

Since this work was undertaken, the volume of traffic using the Northbridge Tunnel has increased to approximately 115,000 per day.⁶⁴ It is noted that a significant proportion of this traffic is likely to be generated by people undertaking east-west journeys that cannot be easily undertaken by public transport.

The higher than predicted use of Graham Farmer Freeway has been due to a number of factors. Most significantly, it has been due to unforeseen rates of population growth. In 1991, the population of the Perth and Peel regions was approximately 1.14 million people and was predicted to increase to 1.4 million in the year 2001; 1.6 million in 2011; 1.8 million in 2021; and 2.0 million by 2029.⁶⁵ Yet, in reality, the population of regional Perth exceeded 2 million people by 2014.⁶⁶

Growth in traffic volumes is also the result of a very substantial increase in the number of registered vehicles per person, which was predicted. In 1991, car ownership in Perth had reached 580 cars per 1,000 people and the Perth Metropolitan Transport Strategy predicted that car ownership would reach 'saturation point' at 645 vehicles per 1,000 people by 2029.

⁶² Main Roads Western Australia, 2014, Graham Famer Freeway Tunnel and Mitchell Freeway widening to Hutton Street, <https://www.mainroads.wa.gov.au/BuildingRoads/Projects/CompletedProjects/2013/GFF/Pages/GFFMF.aspx>, Retrieved 15 August 2015.

⁶³ Main Roads Western Australia, 2014, Graham Famer Freeway Tunnel and Mitchell Freeway widening to Hutton Street, <https://www.mainroads.wa.gov.au/BuildingRoads/Projects/CompletedProjects/2013/GFF/Pages/GFFMF.aspx>, Retrieved 15 August 2015.

⁶⁴ Main Roads WA, 2015, Metropolitan Traffic Digest 2009/10-2014/15, Government of Western Australia, http://reportingcentresources.mainroads.wa.gov.au/public/data/xrc4111/AAWT/traffic_digest.207.pdf, Retrieved 20 October 2015.

⁶⁵ Department of Transport, Main Roads Western Australia, Ministry for Planning et al, 1995, Metropolitan Transport Strategy 1995-2029, Government of Western Australia.

⁶⁶ Australian Bureau of Statistics, 2015, 3218.0 - Regional Population Growth, Australia, 2013-14, Australian Bureau of Statistics, www.abs.com.au

Current statistics indicate that there are approximately 600 passenger vehicles per 1,000 people in Perth, and the total number of registered vehicles has reached 844 per 1,000 people. Statistics also indicate that the number of registered vehicles per person has risen at a faster pace in Western Australia than elsewhere in Australia, with close to 15% growth in passenger vehicle registrations between 2010 and 2015 compared to an Australian average of just over 10%.⁶⁷

It is also probable, that higher than projected traffic volumes are the result of the ongoing dominance and preference for vehicle travel in Perth; low vehicle occupancy; and the continued development of outward growth patterns.

In this context, this assessment has found that while the Perth region has targets and strategies in place to promote urban consolidation, substantial change has not been achieved. For example, a comparison between population distribution in the Perth region in 1991 and 2011 shows that growth has retained a 'business as usual' distribution with the majority of growth continuing to be focused in outer suburban areas.

Table 4: Population Growth Patterns 1991-2011⁶⁸

	1991	2011	Absolute Increase	Growth Rate (%) 1991-2011	Average Annual Growth Rate (%)
Central Metropolitan Perth	115,026	115,621	33,651	29.3	1.5
East Metropolitan Perth	194,414	212,831	76,703	39.5	2.0
North Metropolitan Perth	329,626	364,963	165,438	50.2	2.5
South East Metropolitan Perth	274,852	288,085	104,802	38.1	1.9
South West Metropolitan Perth	223,680	252,845	125,145	55.9	2.8
Peel Region	37,971	50,221	46,348	122.1	6.1
Total Metro Perth and Peel	1,175,569	1,284,566	552,087	47.0	2.3

This is supported by other evidence which indicates that while there have been recorded density gains in established inner and middle suburbs, outer suburban areas continue to accommodate a significant majority of aggregate population growth. Specifically, the proportion of growth on Perth's urban fringe is at 68%, higher than that of any other Australian capital.⁶⁹

The outcome is that, as illustrated in Figure 3, Perth remains heavily car dependent. It is also evident from the figures provided in Table 5 that Perth is not on track to meet the majority of transport targets stated in the Perth Metropolitan Transport Strategy 1995-2029.

⁶⁷ Australian Bureau of Statistics, 2015, 9309.0 Motor Vehicle Census Australia 31 January 2015, Australian Bureau of Statistics

⁶⁸ Huddleston V, 2014, Perth as a Spatially Transforming Region Volume 1 Main Report, Committee for Perth and University of Western Australia, www.committeeforperth.com.au, Page 16

⁶⁹ Bureau of Infrastructure, Transport and Regional Economics, 2013, Urban public transport: updated trends, Information Sheet 59, Department of Infrastructure and Regional Development, Australian Government.

Figure 3: Mode of travel to work for commuters in Australia's four largest cities⁷⁰

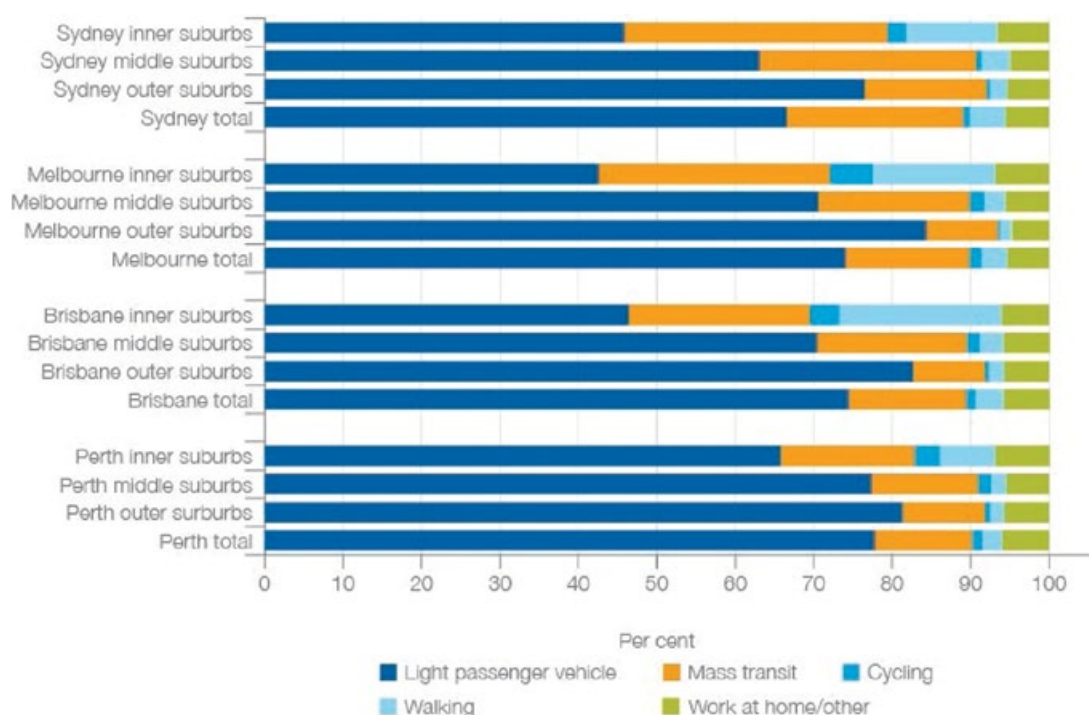


Table 5: Perth Metropolitan Transport Strategy (1995) Transport Mode Targets Comparison with 2011 Journey to Work Data

Transport options	1991 Transport Use*	2029 Use (Based on continuation of 1991 Patterns)	2029 MTS Targets (Predicted population of 2 million)	2011 ABS Census Journey to work (Population of 1.72 million) ⁷¹
Walk only	10%	5.8%	12.5%	2.6%
Cycle	5.7%	8%	11.5%	1.7%
Public transport	6.4%	4.8%	12.5%	7.1% ⁷² (All trips) 12.3% (Journeys to work)
Car as passenger	13%	9%	11.5%	6%
Car driver	63%	70.5%	46%	76%
Taxi	2%	1.8%	2%	2.2%
Transport substitution by telework	N/A	N/A	4%	3.4%

*It is noted that Perth Metropolitan Transport Strategy stated that 1991 data is for all trips, while 2011 Census data reflects methods of travel to work only. Percentage of public transport use for all trips is also stated.

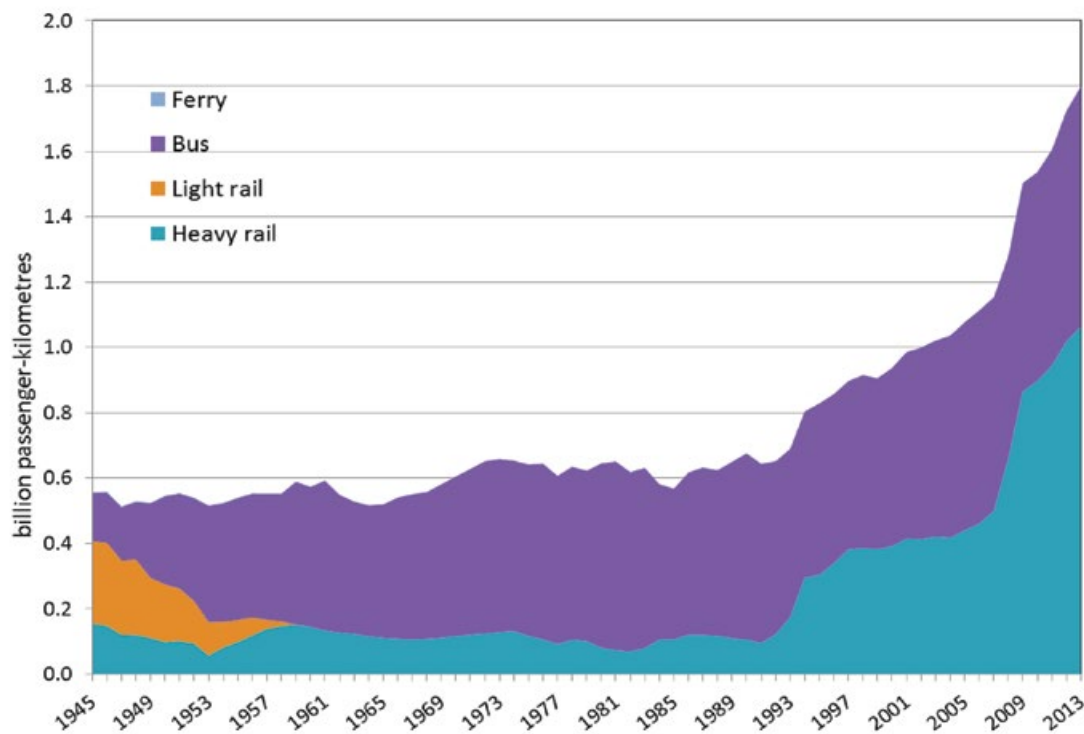
The key area in which significant progress has been made is in increasing public transport mode share, which is a direct result of investment in passenger rail infrastructure and has resulted in significant growth in journeys by heavy rail.

⁷⁰ Department of Infrastructure and Transport major Cities Unit, State of Australian Cities 2013, Department of Infrastructure and Regional Development, Australian Government page 102.

⁷¹ Australian Bureau of Statistics, 2011, Greater Perth Region Method of Travel to Work Census 2011, Australian Bureau of Statistics

⁷² Bureau of Infrastructure, Transport and Regional Economics, 2013, Urban public transport: updated trends, Information Sheet 59, Department of Infrastructure and Regional Development, Australian Government

Figure 4: Share of Journeys by Public Transport Mode⁷³



Combined, the result is that traffic congestion problems in the Perth region have increased and congestion delays on major routes, including the Graham Farmer Freeway are expected to grow.

In May last year, Infrastructure Australia released the 2015 Australian Infrastructure Audit. It predicts that in the absence of generating any additional urban transport capacity, other than projects already under construction or funded, much of Perth's road and public transport system will be operating well over capacity by 2031, causing transport delays and costing the regional economy \$16 billion per annum.⁷⁴

The audit projected that:

- Without action, Perth's community in 2031 can expect severely congested roads during peak periods and higher delay costs than any region in Australia - including Sydney, which is predicted to have delay costs of \$15 billion by 2031, Melbourne, predicted to have delay costs of \$9 billion by 2031, or Brisbane, \$9 billion by 2031.⁷⁵
- Traffic volumes on parts of almost all of Perth's major roads will significantly exceed capacity causing severe congestion.
- The Graham Farmer Freeway, Mitchell Freeway, Tonkin Highway, Marmion Avenue/West Coast Highway, Wanneroo Road, Leach Highway, Roe Highway, Canning Highway/Great Eastern Highway and Reid Highway will be heavily congested along their routes, with points of severe congestion. To put this into context, in 2011 congestion on these roads was rated as low to moderate.
- The Joondalup and Mandurah rail lines will reach 'crush capacity'.

⁷³ Bureau of Infrastructure, Transport and Regional Economics, 2013, Urban public transport: updated trends, Information Sheet 59, Department of Infrastructure and Regional Development, Australian Government, Page 23

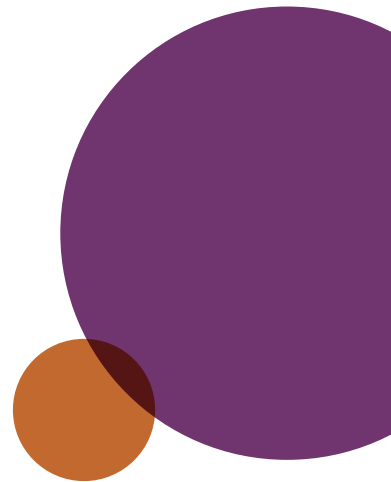
⁷⁴ Infrastructure Australia, 2015, Australian Infrastructure Audit Volume 2 The Audit By State and Territory, Commonwealth of Australia, Canberra, <http://www.infrastructureaustralia.gov.au/policy-publications/publications/files/Australian-Infrastructure-Audit-Volume-2.pdf> Retrieved 1 June 2015.

⁷⁵ Ibid.

Subsequent to Infrastructure Australia's 2015 Audit, the Bureau of Infrastructure, Transport and Regional Economics (BITRE) released an assessment of the impacts of congestion in Perth. This assessment estimates that the 'avoidable' costs of congestion, defined by BITRE as "where the benefits to road users of some travel in congested conditions are less than the costs imposed on other road users and the wider community" will rise from \$2 billion in 2015 to \$5.7 billion by 2030.

In addition, they predict:

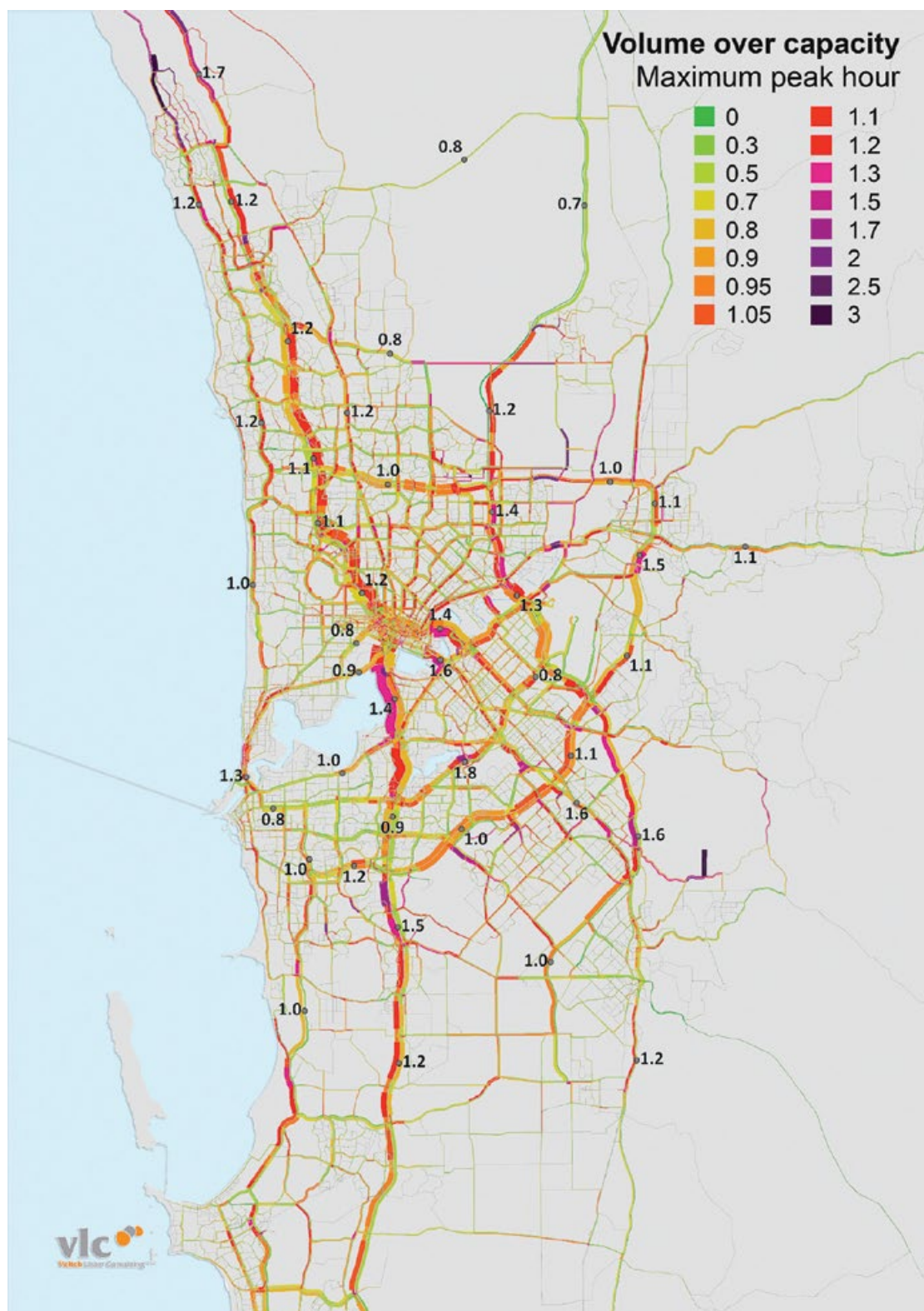
- The amount of vehicle kilometres travelled in Perth will increase from 17.8 billion kilometres in 2015 to 25.54-27.62 billion kilometres by 2030; and
- The annual avoidable cost of congestion per capita in Perth will be the third highest in the nation by 2030, below Sydney and Brisbane. This annual cost per capita is estimated at just under \$2,000.⁷⁷



⁷⁶ Bureau of Infrastructure, Transport and Regional Economics, 2015, Traffic and congestion cost trends for Australian capital cities, Information Sheet 74, Department of Infrastructure and Regional Development, Australian Government, page 1.

⁷⁷ Bureau of Infrastructure, Transport and Regional Economics, 2015, Traffic and congestion cost trends for Australian capital cities, Information Sheet 74, Department of Infrastructure and Regional Development, Australian Government.

Figure 5: Predicted Peak Hour Traffic Volumes Perth 2031⁷⁸



⁷⁸ Infrastructure Australia, 2015, Australian Infrastructure Audit Volume 2 The Audit By State and Territory, Commonwealth of Australia, Canberra, <http://www.infrastructureaustralia.gov.au/policy-publications/publications/files/Australian-Infrastructure-Audit-Volume-2.pdf> Retrieved 1 June 2015.

Ultimately, the result is that while the Graham Farmer Freeway successfully delivered the described short-term and medium-term objectives, its long-term contribution to improving congestion in Perth is likely to be less significant than anticipated.

5.2 New Northbridge

The Graham Farmer Freeway facilitated the redevelopment and urban renewal of Northbridge through the 'New Northbridge' project which is almost near completion and has been a widely heralded success.

The New Northbridge project has enabled the renewal of Northbridge as a "culturally rich urban village".⁷⁹

New Northbridge has facilitated new residential and commercial development; increased connectivity through and to Northbridge by all transport modes; provided new, innovative open spaces; and is expected to generate an anticipated \$300m in investment from the private sector. It has also enabled the conservation of 70 heritage buildings.^{80&81}

In addition, the project has delivered new street furniture and off-street car parking bays; resulted in a number of vibrant shopfronts, art piece installations; and facilitated a 10-15% increase in the provision of social and affordable housing.^{82&83}

New Northbridge has been awarded both the Urban Development Institute of Australia WA award for urban renewal and its President's Award.⁸⁴

It is doubtful whether the New Northbridge project could have occurred if the surface road bypass option was implemented.

However, it is evident that the demolition of buildings and subsequent urban renewal did mean that aspects of Northbridge's heritage character were changed or lost and that some residents were displaced, both as a result of the project and subsequent revitalisation and gentrification of the area.

5.3 Environmental Outcomes

The decision not to undertake a formal environmental assessment of the Northern City Bypass fuelled community controversy and concern about the project and may have contributed to the reported negative outcomes associated with the dewatering during the construction process.

⁷⁹ Metropolitan Redevelopment Authority, n.d., New Northbridge, <http://www.mra.wa.gov.au/projects-and-places/new-northbridge>, Retrieved 14 October 2015.

⁸⁰ Metropolitan Redevelopment Authority, n.d., New Northbridge: Vision, <http://www.mra.wa.gov.au/projects-and-places/new-northbridge/vision>, Retrieved 14 October 2015.

⁸¹ Metropolitan Redevelopment Authority, n.d., New Northbridge: Investment Opportunities, <http://www.mra.wa.gov.au/projects-and-places/new-northbridge/investment-opportunities>, Retrieved 14 October 2015.

⁸² Metropolitan Redevelopment Authority, n.d., New Northbridge: Vision, <http://www.mra.wa.gov.au/projects-and-places/new-northbridge/vision>, Retrieved 14 October 2015.

⁸³ Metropolitan Redevelopment Authority, n.d., New Northbridge: Investment Opportunities, <http://www.mra.wa.gov.au/projects-and-places/new-northbridge/investment-opportunities>, Retrieved 14 October 2015.

⁸⁴ Metropolitan Redevelopment Authority, n.d., New Northbridge: An MRA Project, <http://assets.mra.wa.gov.au/production/f8618770607cb8b86af918487094d730/new-northbridge-fact-sheet.pdf>, Retrieved 14 October 2015.

This was the most significant reported environmental impact of the project and allegedly resulted in damage to homes caused by subsidence. It was reported that this damage was a result of contractors not adhering to the requirements of the Environmental Management Plan and not properly following the prescribed monitoring of ground water levels.^{85&86}

This alleged procedural failure and the resulting reported damage to homes generated additional controversy and negative media coverage. However, in 2003 a confidential out-of-court settlement offered by the State Government and the contractors was accepted by the last 10 of 35 affected property owners, as compensation for the alleged damage to homes caused by the construction of the Northbridge tunnel.⁸⁷

5.4 Consultation with the Community

It is evident that the State Government did undertake formal and informal community consultation as part of the Burswood Bridge and Road: City Bypass and Access Study and subsequent Metropolitan Region Scheme Amendment and that a majority of submitters generally supported the proposal. However, it is also clear that there was significant subsequent concern about aspects of the proposal, particularly among local residents and individuals opposed to a road based transport and land use planning approach.

It is not possible to have the benefit of hindsight in order to ascertain the extent to which additional consultation or opportunities for meaningful community input would have reduced community concern and controversy surrounding the City Northern Bypass Project. Yet, it is feasible that more opportunities for community involvement early in the planning process and during the assessment of environmental and heritage impacts may have helped to increase transparency; ensure that the social, economic and environmental impacts of the project were understood; and therefore reduce the potential for controversy and negative media attention.

In addition, it is apparent that that agency processes used by the State Government to gauge community views on the City Northern Bypass Project could have been more open and transparent.

5.5 Total Project Cost

The cost of the Graham Farmer Freeway, at more than \$400 million, was higher than initial estimates, however the cost overrun did not have any reported medium to long-term impacts.

In 2010, ten years after the opening of Graham Farmer Freeway, the State Government claimed the project had delivered significant economic benefits to Western Australia.

Then Transport Minister the Hon. Simon O'Brien said that the freeway was delivering tens of millions of dollars in benefits to the West Australian community annually due to reduced crashes, vehicle operating costs and travel time, which amounted to more than \$1.4 billion since 2000.^{88&89}

⁸⁵ Highbeam Business, 2003, Northbridge dispute settled, <http://business.highbeam.com/4544/article-1G1-99812084/northbridge-dispute-settled>, Retrieved 12 October 2015.

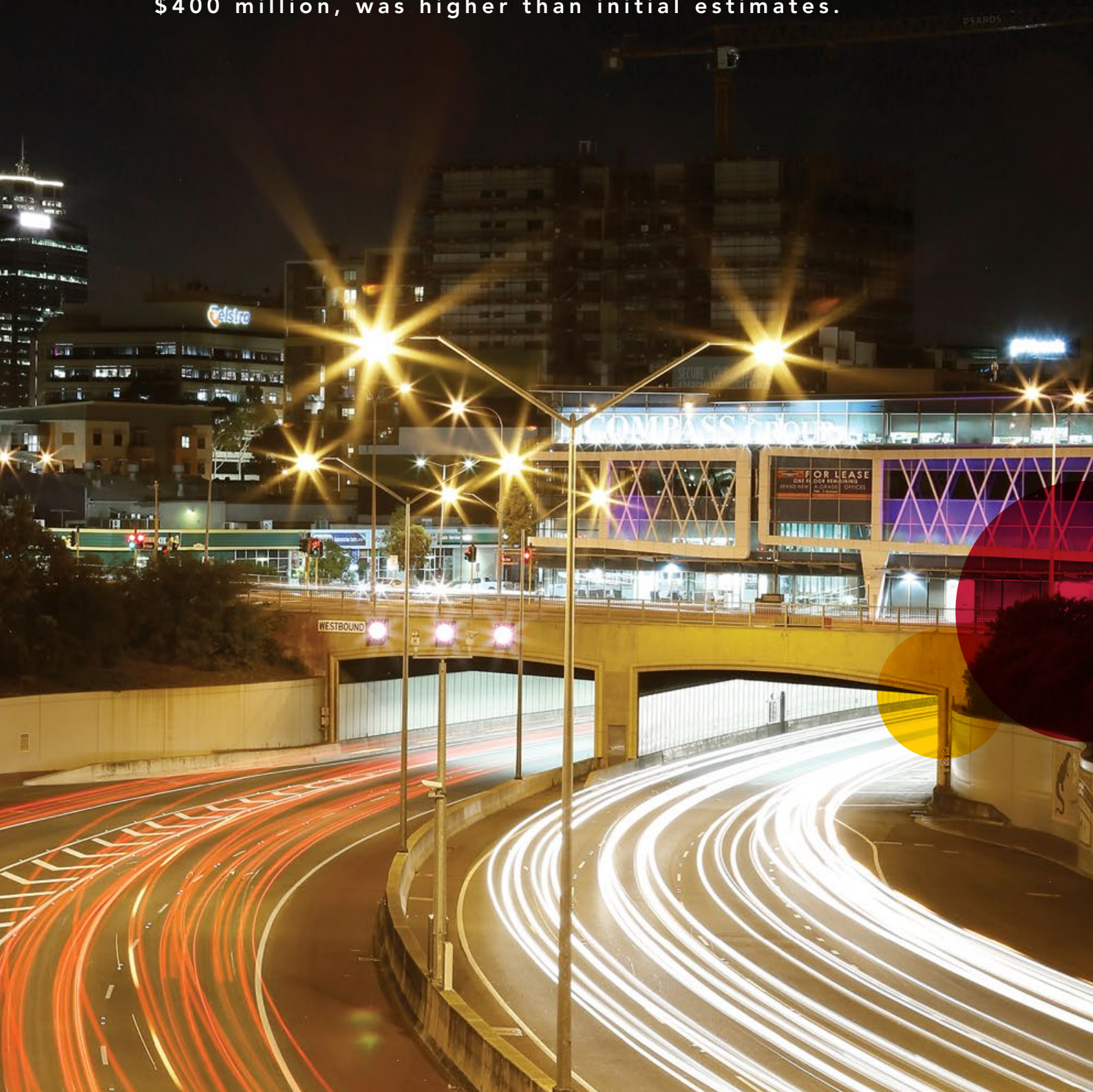
⁸⁶ Crikey, 2000, The danger of a one paper town with vested interests, Sunday 21 May 2000, http://www.crikey.com.au/2000/05/21/the-danger-of-a-one-paper-town-with-vested-interests/?wpmp_switcher=mobile, Retrieved 13 October 2015.

⁸⁷ Highbeam Business, 2003, Northbridge dispute settled, <http://business.highbeam.com/4544/article-1G1-99812084/northbridge-dispute-settled>, Retrieved 12 October 2015.

⁸⁸ O'Brien S, 2010, Graham Farmer Freeway and Northbridge Tunnel Turn 10, Liberal Party of Australia, Western Australian Division Inc., <https://www.wa.liberal.org.au/article/graham-farmer-freeway-and-northbridge-tunnel-turn-10>, Retrieved 13 October 2015.

⁸⁹ O'Brien S, 2010, Graham Farmer Freeway and Northbridge Tunnel Turn 10, Media Statement Government of Western Australia, 24 April 2010, <https://www.mediastatements.wa.gov.au/Pages/Barnett/2010/04/Graham-Farmer-Freeway-and-Northbridge-Tunnel-turn-10.aspx>, Retrieved 13 October 2015.

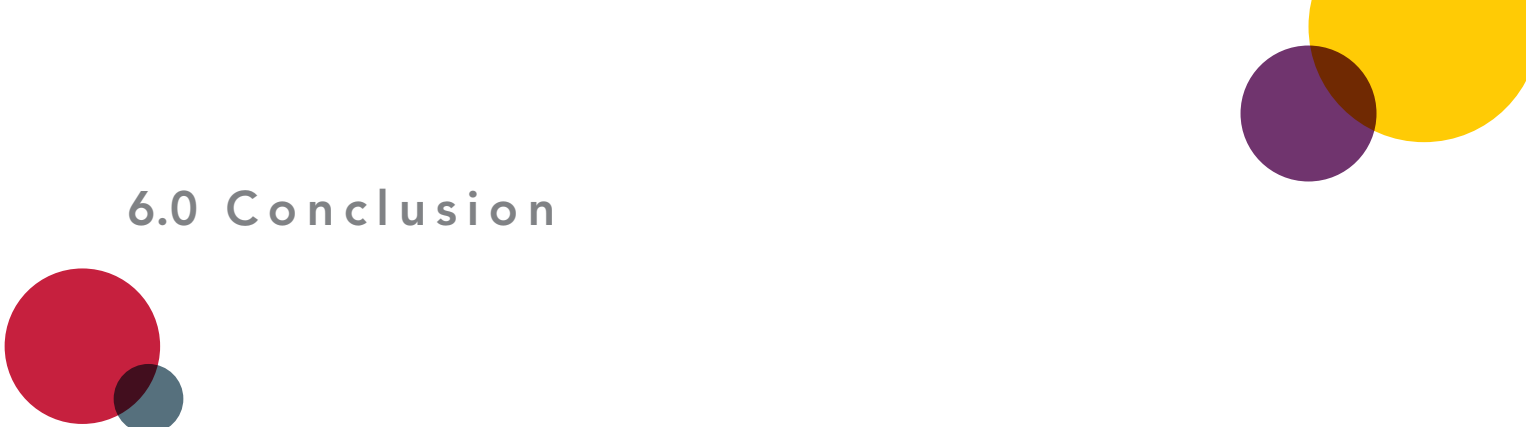
The cost of the Graham Farmer Freeway, at more than \$400 million, was higher than initial estimates.





The Perth region will require high-quality road infrastructure to meet future transport requirements, but road building alone is not likely to solve Perth's congestion problems.





6.0 Conclusion

This study has found that the Graham Farmer Freeway and Northbridge Tunnel did deliver most of the stated benefits of the City Northern Bypass Project. In particular it:

- Improved east-west access around the central city area.
- Reduced traffic volumes and congestion along some routes.
- Allowed for improvements in bus access to central city areas from the eastern metropolitan area.
- Reduced traffic on Riverside Drive, the Causeway and Shepperton Road in the short and medium-term.
- Enabled the function of Riverside Drive to be downgraded to enable the delivery of Elizabeth Quay.
- Facilitated urban renewal and revitalisation in Northbridge through the New Northbridge Project.⁹⁰

However, the City Northern Bypass/Graham Farmer Freeway project was controversial. Project opponents questioned the need for a bypass and a tunnel; expressed concern about the continued investment in road infrastructure, rather than more sustainable transport modes; and identified detrimental impacts of the construction process on the surrounding area.

Today, it is evident that some community concerns may have been at least partially alleviated through additional opportunities for open and transparent public consultation; by undertaking a formal environmental assessment of the proposal; and ensuring that proper procedures were followed during the construction process.

This study also concludes that, while it is clear that the Graham Farmer Freeway has enabled the efficient movement of traffic bypassing the Perth city centre, particularly in the short to medium-term, it has not prevented an increase of congestion delays and costs in Perth's inner-city and suburbs. Congestion delays are also predicted to increase in the future.

Multiple factors have influenced this outcome. This includes population and registered vehicle growth that was higher than predicted and a failure to meet strategic targets for a more 'balanced' transport system that is less reliant on private vehicles.

It is therefore evident that, while the Perth region will require high-quality road infrastructure to meet future transport requirements, road building alone is not likely to solve Perth's congestion problems. Improving congestion will require genuine commitment to integrated land use and transport planning and the development of a balanced transport system that will reduce the Perth region's long-term reliance on private vehicles.

Appendix 1: Researchers



Gemma Davis

Manager, Research & Strategy

Gemma is Manager of Research and Strategy for the Committee for Perth and is an Honorary Research Fellow with the University of Western Australia. She is a Policy and Strategic Planning professional with 19 years of experience and has prepared research and strategy reports for the Committee on a contract basis since 2007. During this time she has also worked as a consultant in Australia and New Zealand, undertaking research and strategic planning projects for public and private organisations. She holds an Honours Degree in Urban and Regional Planning from Curtin University and has undertaken studies in Arts and Psychology at The University of Western Australia and Aboriginal Studies at Curtin University.



Georgia Harford-Mills

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Georgia is a Research Officer with the Committee for Perth, joining the organisation in 2014. She holds a Bachelor of Science, Geography and received First Class Honours in Urban and Regional Planning from The University of Western Australia.

Appendix 2: Committee for Perth Membership

Research work commissioned by the Committee for Perth is funded entirely through the contribution of our members, and we acknowledge:

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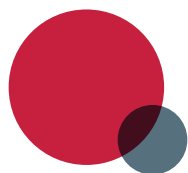
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