Submission No 497

INQUIRY INTO IMPACT OF THE WESTCONNEX PROJECT

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The Hon. Rev Fred Nile MLC
Chair
Public Accountability Committee
Inquiry into the impact of the WestConnex project
Parliament House
Macquarie Street
Sydney NSW 2000

September 2018

Dear Rev Fred Nile MLC

Inquiry into the impact of the WestConnex project

Please accept my submission to the inquiry into the impacts of the various WestConnex motorway stages and associated motorway works, which is attached.

In my capacity as a transport academic at UTS I have been asked to assist several Council's in relation to matters arising as a result of the WestConnex motorway proposal and to investigate the various documents relating to the proposed works.

While there are many points of interest, from a traffic and transport perspective the key point that I would like to highlight is:

- The EIS for Stage 3 shows that traffic volumes in the AM Peak period will only fill the tunnel (4 lanes in each direction) to one third its capacity 10 years after opening. This is obscure,
- This outcome would see WestConnex Stage 3 achieve an outcome to similar to that experienced by the Cross City Tunnel.

In my submission, I outline where in the EIS for Stage 3 this is shown as this is obscure, but highly significant.

I have also taken this opportunity to relay some of the experiences I had during meetings of the Expert Advisory Panel in 2016 that was convened by the Deputy Secretary of Strategic Planning Carolyn McNally in order to assist with the compilation of the NSW Transport Masterplan. In particular I would like to highlight the complete absence of any discussions, or opportunity to discuss potential motorway proposals for Sydney in over a year of special meetings. I and other expert colleagues were then presented with draft Masterplan that included generally every motorway proposal that had ever been cited for Sydney.

This was a significant misuse of experts such as myself and came as a result of input from Infrastructure NSW that overrode the community consultation process initiated by the then Minister for Transport and now Premier The Hon. Gladys Berejiklian and then Director of TfNSW Les Weilinga.

These last points are significant because they highlight the problems with strategic transport planning in the NSW. These problems are responsible for projects that

are poorly conceived and unable to meet the transport needs of the people of Sydney and more widely across the entire state of NSW.

I am hopeful that the Inquiry will be able to shed some light on these problems, highlighting difficulties with the planning process that ultimately manifest in corruptions of technical content and transport science or evidence based assessment of transport systems and proposals.

Lastly, I would like to highlight my willingness to appear before the committee and to prepare special materials that look more deeply into any particular questions the committee may have that falls within my area of expertise. This includes questions relating to likely traffic volumes on the motorways and on local roads that act as the distribution network for the motorway. This point has significant implications for whether the road is worth constructing and whether it is likely to generate significant benefits able to justify its construction.

Yours sincerely

Dr Michelle Zeibots MP A CM LT
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1 Introduction

There are three areas of concern raised by the WestConnex Motorway proposal that are addressed in this submission:

1. Contribution to the Expert Advisory Panel for the NSW Transport Masterplan
2. Traffic volume estimates for WestConnex Stage 3
3. Strategic Planning issues and mass transit for major trunk route development in the northern and southern sectors of Sydney as an alternative to further urban motorway development

This submission views the WestConnex proposal as deeply problematic both in terms of process, or *how* the motorway option was evaluated and decisions made about its construction; and in terms of the technical analysis used to support the decision to proceed with construction.

In particular, there is evidence to show that:

- Motorway proposals were pursued despite expert advise, and the expressed view of the Director of Transport for NSW that mass transit development needed to be prioritised in order to improve both public transport and road services
- In the EIS' for various stages of the WestConnex motorway proposal Level Of Service (LOS) measures were shown *not* to significantly improve at key points and intersections on arterial roads associated with the motorway, indicating that benefits were not substantial
- Traffic volumes in the 8 lane tunnel (4 lanes in each direction) that comprises WestConnex Stage 3 would only fill to one third its capacity during morning peak periods, 10 years after opening, suggesting an outcome similar to that achieved with construction of the Cross City Tunnel will be achieved
- Strategic consideration of integrated transport and land use development factors in both the northern and southern sectors of Sydney highlights the need for rail options, suggesting the current commitment to motorway construction (as with Stages 1, 2 and 3 of WestConnex) have been poorly considered and misconstrue community need in both these sectors.

The key recommendations that arise from this submission are:

- Construction of Stage 3 WestConnex should be significantly altered or cease
- A metro option linking Brookvale, Mona Vale and the Northern Beaches Hospital Precinct to Chatswood be considered as an alternative option to building the Western Harbour Tunnel and Beaches Link motorway sections
- A heavy rail tunnel, augmenting existing heavy rail track configuration in the southern sector of Sydney between Waterfall and Thirroul be considered as an alternative to the F6 motorway.

2 Contribution to the Expert Advisory Panel for the NSW Transport Masterplan

In 2012, I was asked to contribute to development of the NSW Transport Masterplan as one of several expert members of the Expert Advisory Panel that was chaired by the then Transport for NSW (TfNSW) Deputy Director for Planning, Carolyn McNally. Other experts on the panel included my colleagues A/Prof Garry Glazebrook and Prof Stuart White from the University of Technology Sydney (UTS) and Mr Ron Christie, who had held several senior positions in agencies within the transport clusters as well as chaired the then recent Inquiry into transport policy initiated by the Sydney Morning Herald (SMH).

The meeting agendas did not specify or allocate time to discuss motorway development and nor was there any indication that the government was considering significant motorway construction.

A/Prof Glazebrook and Prof White are well known as academics not supportive of urban motorway development and Mr Christie had recently identified the urgent need for public transport alternatives to motorway development in the conclusions from the SMH Inquiry into transport.

At that time, public transport service delivery was poor and Sydney was generally seen as a city that needed to make significant improvements to the coordination between different modes in its existing public transport network as well as significant trunk route additions to the network. When I look back at that time and compare it with the state of Sydney's public transport now, there have been significant improvements, however these stand in stark contrast to the poor decisions made in relation to urban motorway development and I believe it is useful and important for decision makers and the community to reflect on these outcomes and understand how these mixed outcomes have occurred as there are important lessons for the future to be learnt from this period.

Why public transport over motorway development?

When transport professionals working in the NSW government get frustrated with the general inability of strategic planning agencies to identify an effective course of action on transport, they will often lament the polarisation of the discussion by people either being motorway advocates or public transport (rail and light rail) advocates. This is usually followed by a discussion about the need to not favour any one particular transport mode over another and to focus instead on the merits of options on a case by case basis.

I empathise with this frustration and feel it too, and so would like to clarify a critical point at the start of this submission that is often left unsaid or implicit in the recommendations made by transport planners and professionals like myself.

From a strategic transport planning perspective, there are critical differences between what we call the *fixed speed* and *variable speed* networks in an urban transport system.

A fixed speed transport network is one that operates to a schedule or timetable, which means that the times of arrival and departure from particular points along a transport route are known and the speeds set. This applies to public transport modes like rail and buses.

Critically, fixed speed services operate to a timetable because the users of these services are not in control of the vehicle.

A timetable enables multiple users to coordinate their movements with each other — if they all know what time a bus, train or ferry service departs, customers can synchronise their movements with it. This form of organisation also enables public transport to have a much higher carrying capacity than private transport — buses, trains and ferries can carry more people than cars.

By contrast, private car use and the traffic that dominates the road network, is operated by users themselves who determine the 'timetable' or when a vehicle will leave (although they cannot determine exactly the arrival time at the destination point). The road network operates to a variable speed because the speed is dependent on how many people choose to use the network at the same time. When large numbers of people choose to drive their cars at the same time (which is what happens during peak hour), road speeds go down because congestion is created by the larger numbers of vehicles on the road. When not so many people are driving, road network speeds increase, which is why we call it a variable speed network.

There is an important aspect to the relationship between fixed and variable speed networks in cities, which is that fixed speed networks (or scheduled public transport services) determines the speed of the variable speed network (or road networks dominated by private motor vehicle and commercial freight traffic). This is because most people will take which ever transport option is quickest, shifting between the two. Because one of these is fixed, it acts as a default speed for the entire system comprising both networks.

If the scheduled public transport service (or timetable) is quicker than a trip by private car, more people will use it and in the process fewer people will use the variable speed, or road network. Fewer cars on the road means that road speeds increase.

When the opposite occurs — the fixed speed network is made slower, some people will choose to abandon it and use their cars. If more people join the variable speed network, congestion increases and speeds are reduced.

In transport engineering, we call this relationship the *Mogridge Principle* after the academic who first articulated it. This principle can be seen in shifts in the data for changes to public transport speeds embodies in the timetable and consequent changes in average road speeds in Sydney. In the mid 2000s for example when a very deliberate decision was made to slow down the rail network, average road speeds on Sydney arterial roads also dropped.

It's because of the Mogridge Principle that transport experts like my colleagues on the Expert Advisory Panel and myself will say that there needs to be an emphasis on public transport development, improvements to service frequency levels and the addition of new network links to areas within the Sydney metropolitan region that are not well served by public transport.

In these instances, improving public transport is a shorthand way of saying the fixed speed network needs to be enhanced (speeds, service frequencies and therefore overall capacity) in order to improve conditions on the variable speed network. If we only improve the variable speed network, congestion will not be reduced because we know that road network speeds will only default to whatever the service levels (or speeds and capacities) are on the public transport network.

In the case of Sydney, the performance of the public transport network is dominated by the performance of the rail network and this is why technical debates and discussions focus on this point, but what is important to keep in mind is that at all times what we are really debating is differences in operating characteristics of the various options and the impact we know these will have on network performance.

Rail workshop

Several months into the Expert Advisory Panel's regular meetings, a special one day workshop was held to gather feedback from the Expert Advisory Panel on the new metro system proposed for Sydney.

At that time, development of a metro network for Sydney was viewed by some practitioners as a preferred alternative to further development of the existing heavy rail network due to what was presumed to be the higher hourly carrying capacity of metro services.

At the opening of the workshop, Mr Les Weilinga, the then Director of TfNSW and former Director of the NSW Roads & Traffic Authority (RTA), opened the workshop, by clearly stating that Sydney needed to see greater investment in rail development as it did most of the 'heavy lifting' in terms of numbers and volumes of people during the morning peak period when our networks are stretched to their limits. Mr Weilinga also talked about aspects of the Mogridge Principle during the opening of that workshop. His views echoed the professional views and technical perspectives expressed to me and other UTS colleagues in other meetings with teams from Roads & Maritime Services (RMS) who articulated that there was no longer the surface land area available in Sydney to keep expanding roads.

Mr Ron Christie also made reference to these ideas and transport network principles during our conversations at the rail workshop and in discussions that made input to the NSW Transport Masterplan. I and others also made reference to them and were under the impression that finally we were working with a situation and government where these principles were understood and acknowledged so we could get on with the work of improving operations of the existing public transport network as well as augmenting it with new links.

For this reason, most if not all our discussions during 2012 were aimed at this strategic outcome and we did not discuss the extensive motorway plans that would become a later feature of the Masterplan.

Inspection of the Draft NSW Transport Masterplan

In the last few months of 2012, colleagues and I from the Expert Advisory Panel were asked to come into the TfNSW offices to look through the Draft NSW Transport Masterplan, where we were given the opportunity to look through the 400 page document but not take a copy with us.

I recall feeling deeply disappointed at the time on seeing a masterplan with almost every motorway that had ever been suggested since 1948 included in the document.

This stood in stark contrast to everything we had been asked to make input on and I remember feeling 'let down' that the eventual outcome was so different to all of our discussions. At the time I recall Mr Christie saying in a meeting attended by myself and A/Prof Glazebrook, 'What was the point? What was the point of asking us to attend all those meetings if they were just going to ignore us?'

At moments like that it is very easy to become jaded. However, I believe that many people within TfNSW at that time as well as the Minister did comprehend the need to improve public transport, but were 'out manoeuvred by others in their political party who preferred urban motorway development. That these same people do not rely on empirical data or a strong 'evidence base' when formulating their positions is evident in the stark difference between the materials outcomes that have been achieved by these motorways and the 'beliefs and ideals' expressed before construction that were used to justify them.

This points to a significant problem for all parties and decision makers in government — how to overcome the pressure from those who do not wish to engage with the transport engineering science and standards that enable us to see what will work technically and what can be justified with an evidence base. Or in other words, a perspective that respects the science and which would be able to withstand interrogation under the rules of evidence, like those that have occurred in the successful legal prosecutions against several urban tollways in both Sydney and Brisbane.

In the pages that follow, I will make some reference to this transport science and hope very much that my explanation is enough to enable members of the Inquiry panel to feel confidence in the reasons the science gives us to see that WestConnex is a poorly conceived transport proposal as those of us that served as Expert Advisory Panel members were able to see and can see today.

I believe that many of the problems with the current WestConnex proposal were fermented during 2012. This was especially evident in the contrasting policy position expressed by Infrastructure NSW and those in TfNSW charged with responsibility to develop a well considered transport strategy for the state.

My deepest regret from this period is that I did not have the resources (time) at my disposal to more effectively speak out against these motorway proposals. As with previous episodes in the cycle of the transport debate in Sydney, a choice needed to be made between advocating for public transport or speaking out against urban motorway development and at that time vast improvements were needed to the way public transport services (rail, bus, light rail and ferry) are delivered to the community and customers of public transport services. I opted for the latter as I thought that would be more constructive in the long run.

3 Traffic volume estimates for WestConnex Stage 3

• NOTE: material conta8ined in this section has been derived from material that was generated for the City of Sydney. It has been reproduced here with permission.

Since the legal proceedings over traffic volume estimates for the Eastern Distributor and subsequent actions relating to traffic estimates for the Lane Cove Tunnel (which was settled out of court) and tollways in Brisbane that were the subject of successful legal prosecutions, the reporting of traffic volumes for these projects in EIS' have become more and more obscure. Or in other words, the results from the models are not shown clearly and unambiguously in ways that most engineering practitioners would pursue in order to clarify what the outcomes from a proposal would likely be.

In most jurisdictions, the relevant environment and planning legislation makes prescriptions for administrative procedures but not technical standards. Consequently, standards for reporting traffic volume estimates — a piece of information that is central to the reasons for building a motorway — have not been consistent or even coherent. In many cases even experienced traffic professionals have difficulty in working out what the likely traffic will be on Motorways like WestConnex.

In the case of WestConnex Stage 3, traffic volume estimates from the model used to produce traffic volumes for the EIS show that in the morning peak period, 10 years after opening, traffic volumes are estimated to be about one third of the motorways ceiling capacity.

The significance of this finding is that it tells us that the lane capacity being built in the tunnel section for WestConnex Stage 3 is significantly higher than the capacity of the surrounding road network that feeds it.

3.1 Traffic volumes presented in the EIS for WestConnex Stage 3

When examining an EIS for a motorway, one of the first things an experienced transport professional will do is compare estimated traffic volumes arising from a model with something called the 'ceiling capacity' for the facility.

The reason why we do this is because if the volumes coming out of the model are above the ceiling capacity, it means the model is giving us numbers or results that are not possible in the material world.

All roadway configurations have what is called a 'ceiling capacity'.

A ceiling capacity refers to the maximum number of vehicles that can pass through a given point in a road configuration. For example, the maximum number of vehicles that can pass through one road lane with a motorway design speed (land width, camber and horizontal displacement) is around 2,000 vehicles per hour.

This number is contained in the Highway Capacity Manual (HCM) and derived from years of observation of roads and the traffic volumes that use them. Importantly, this number is the product of an empirical science method and not a traffic model. Because of these origins, this aspect of what we do is like a science and we are able to approach it with great confidence due to the countless times it has been tested and verified against real traffic volume counts for roads here in Australia and in jurisdictions around the world.

WestConnex Stage 3 is proposed as an 8 lane tunnel with 4 lanes in each direction. This means that when operating at its ceiling capacity it has the ability to carry a maximum of 8,000 vehicles per hour in one direction.

The EIS for WestConnex Stage 3 does not communicate clearly on expected hourly traffic volume coming from the traffic model. However, there is one set of graphs shown below that provide an indication of expected hourly traffic volumes inside the tunnel.

An estimate of the what those volumes would be can be read 'manually' from the graphs below.

Lower north-south screenline volumes for M4-M5 (Stage 3) roads

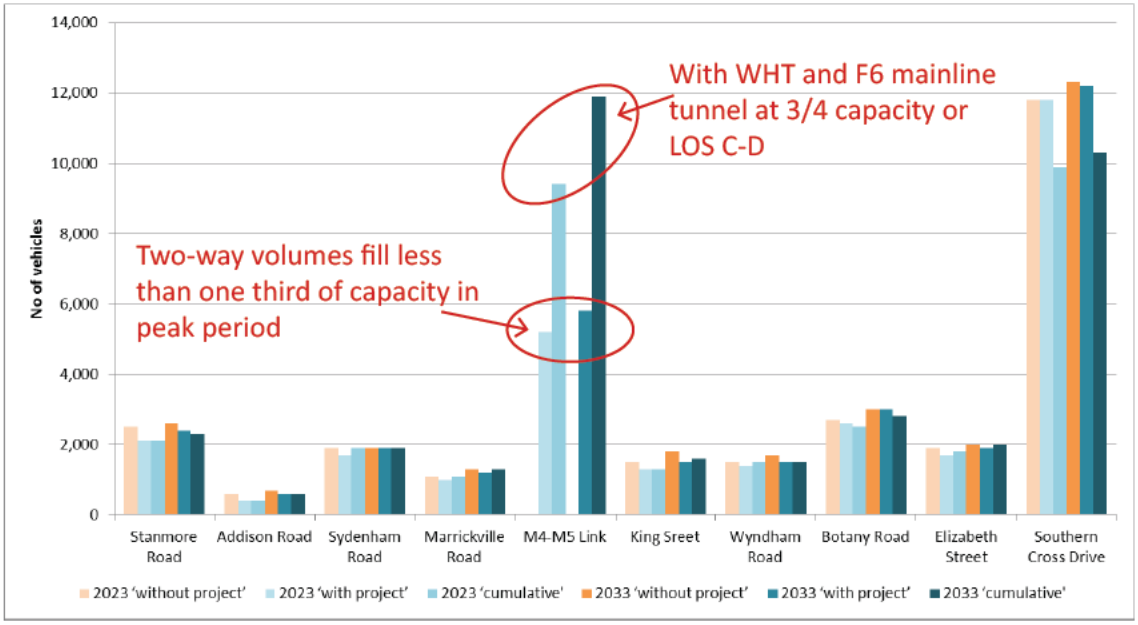

Figure 9-6 Lower north–south screenline: comparison of two-way AM peak one hour volumes

Source: WRTM v2.3, 2017

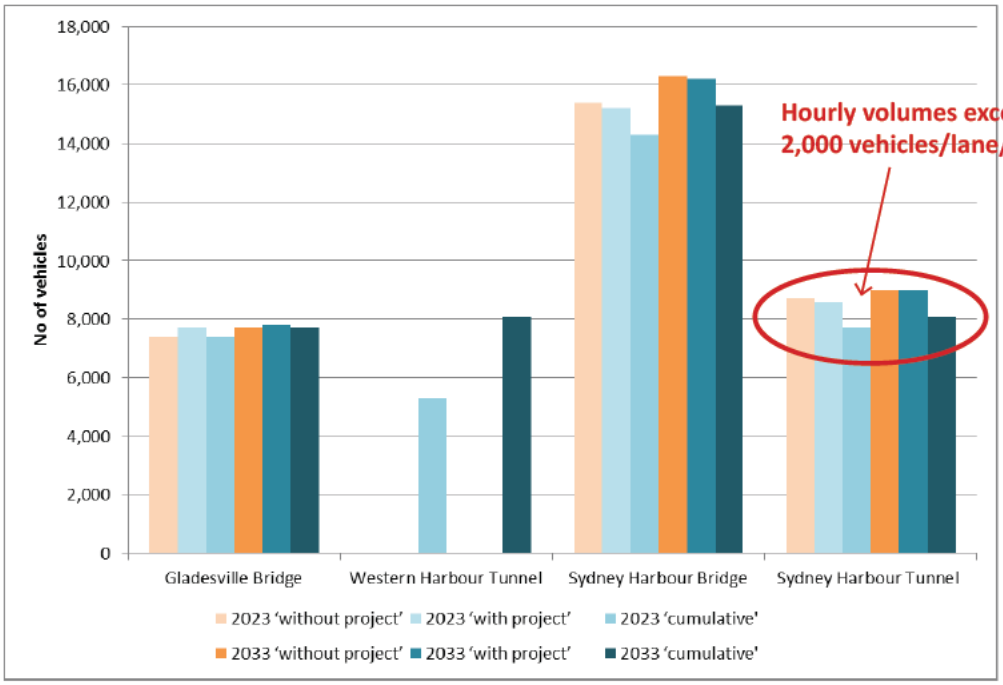

Figure 9-8 Cross-harbour screenline: comparison of two-way AM peak one hour volumes

Source: WRTM v2.3, 2017

The significance of these numbers are two fold.

First the volumes for the WestConnex Stage 3 tunnel show very little traffic in the tunnel during peak hour, thereby suggesting that in the off peak periods volumes would be even lower.

However, the model also shows that on existing roads such as the Sydney Harbour Tunnel, model volumes are above the hourly ceiling capacities for roads of that kind in accordance with the HCM. This suggests to me that the model has been 'pumped', ie, larger volumes enabled on other roads or parts of the model in order to generate larger volumes on the newly proposed link, namely WestConnex.

Figure 1 Traffic volume estimates from the WRTM for the cross-harbour screenline

Table 9-7 Cross-harbour screenline: WRTM comparison for with and without project scenarios – AWT volumes

Direction	Location	2023 'without project'		2023 'with project'		Change	2033 'without project'		2033 'with project'		Change
		Volume	Share	Volume	Share		Volume	Share	Volume	Share	
Northbound	Gladesville Bridge	41,700	21%	43,800	21%	5%	44,800	21%	46,500	22%	4%
	Western Harbour Tunnel	–	–	–	–	–	–	–	–	–	–
	Syd Harbour Bridge	106,400	52%	108,300	53%	2%	111,800	52%	114,300	53%	2%
	Syd Harbour Tunnel	54,800	27%	52,400	26%	-4%	56,500	27%	55,100	26%	-2%
	Total	**202,900**		**204,500**		**1%**	**213,100**		**215,900**		**1%**
Southbound	**Gladesville Bridge**	**48,200**	**24%**	**51,600**	**26%**	**7%**	**49,000**	**23%**	**52,000**	**25%**	**6%**
	Western Harbour Tunnel	–	–	–	–	–	–	–	–	–	–
	Syd Harbour Bridge	**87,800**	**44%**	**87,100**	**43%**	**-1%**	**94,600**	**45%**	**93,800**	**44%**	**-1%**
	Syd Harbour Tunnel	**64,000**	**32%**	**63,100**	**31%**	**-1%**	**66,100**	**32%**	**65,300**	**31%**	**-1%**
	Total	**200,000**		**201,800**		**1%**	**209,700**		**211,100**		**1%**
Two-way	Gladesville Bridge	89,900	22%	95,400	23%	6%	93,800	22%	98,500	23%	5%
	Western Harbour Tunnel	–	–	–	–	–	–	–	–	–	–
	Syd Harbour Bridge	194,200	48%	195,400	48%	1%	206,400	49%	208,100	49%	1%
	Syd Harbour Tunnel	118,800	29%	115,500	28%	-3%	122,600	29%	120,400	28%	-2%
	Total	**402,900**		**406,300**		**1%**	**422,800**		**427,000**		**1%**

Source: WRTM v2.3, 2017

Table 9-8 Cross-harbour screenline: WRTM comparison for without project and cumulative scenarios – AWT volumes

Direction	Location	2023 'without project'		2023 'cumulative'		Change	2033 'without project'		2033 'cumulative'		Change
		Volume	Share	Volume	Share		Volume	Share	Volume	Share	
Northbound	Gladesville Bridge	41,700	21%	49,900	24%	20%	44,800	21%	50,400	22%	13%
	Western Harbour Tunnel	–	–	16,900	8%	–	–	–	25,600	11%	–
	Syd Harbour Bridge	106,400	52%	95,800	46%	-10%	111,800	52%	106,100	47%	-5%
	Syd Harbour Tunnel	54,800	27%	45,400	22%	-17%	56,500	27%	45,000	20%	-20%
	Total	**202,900**		**208,000**		**3%**	**213,100**		**227,100**		**7%**
Southbound	**Gladesville Bridge**	**48,200**	**24%**	**51,900**	**25%**	**8%**	**49,000**	**23%**	**52,800**	**23%**	**8%**
	Western Harbour Tunnel	–	–	**22,400**	**11%**	–	–	–	**29,500**	**13%**	–
	Syd Harbour Bridge	**87,800**	**44%**	**86,600**	**42%**	**-1%**	**94,600**	**45%**	**92,200**	**41%**	**-3%**
	Syd Harbour Tunnel	**64,000**	**32%**	**46,400**	**22%**	**-28%**	**66,100**	**32%**	**50,500**	**22%**	**-24%**
	Total	**200,000**		**207,300**		**4%**	**209,700**		**225,000**		**7%**
Two-way	Gladesville Bridge	89,900	22%	101,800	25%	13%	93,800	22%	103,200	23%	10%
	Western Harbour Tunnel	–	–	39,300	9%	–	–	–	55,100	12%	–
	Syd Harbour Bridge	194,200	48%	182,400	44%	-6%	206,400	49%	198,300	44%	-4%
	Syd Harbour Tunnel	118,800	29%	91,800	22%	-23%	122,600	29%	95,500	21%	-22%
	Total	**402,900**		**415,300**		**3%**	**422,800**		**452,100**		**7%**

Source: WRTM v2.3, 2017

An explanation of how the ceiling capacity for roads is calculated and what they look like when viewing time series data of real traffic volumes as distinct from modelled results is provided in Appendix A. Critically ceiling capacities for AWT and the more frequently used AADT volume estimates are dependent on the hourly capacities and hourly ceiling capacities are known and can be estimated with greater accuracy that AWT and AADT.

Tables 1 and 2 below compare the hourly volumes for several key roads on the screenline.

Table 1 Comparison of two-way AM peak traffic volume estimates from WRTM with ceiling capacities

	Ceiling capacity (veh/hour)	2023 'with project'		2023 'cumulative'		2033 'with project'		2033 'cumulative'	
M4-M5 (St' 3)	16,0000	~ 5,000	vc rat o 0.31	~ 9,300	vc rat o 0.58	~ 5,800	vc rat o 0.36	~ 11,900	vc rat o 0.74
Syd Harbour Tunnel	6,740*	~ 8,500	vc rat o 1.26	~ 7,800	vc rat o 1.16	~ 9,000	vc rat o 1.34	~ 8,000	vc rat o 1.19
W Harbour Tunnel	8,000**	-		~ 5,100	vc rat o 0.64	-		~ 8,000	vc rat o 1.0
Syd Harbour Bridge	16,000	~ 15,000	vc rat o 0.93	~ 14,000	vc rat o 0.88	~16,000	vc rat o 1.0	~ 15,100	vc rat o 0.94

Note: approximate volumes are visual measurements taken from graphs in the EIS.

Note: ~ approximate volumes are visual measurements taken from graphs in the EIS as no tables are provided. * calculations used to determine the practical ceiling capacity for the Sydney Harbour Tunnel are provided in Appendix B. ** a ceiling capacity for the Western Harbour Tunnel is difficult to calculate when there is no design, however the configuration is likely to be similar to the Sydney Harbour Tunnel in which case the ceiling capacity would be lower and the vc ratios in some cases would exceed 1.

Table 2 Comparison of two-way PM peak traffic volume estimates from WRTM with ceiling capacities

	Ceiling capacity (veh/hour)	2023 'with project'		2023 'cumulative'		2033 'with project'		2033 'cumulative'	
M4-M5 (St' 3)	16,0000	~ 5,000	vc rat o 0.31	~ 9,300	vc rat o 0.58	~ 5,800	vc rat o 0.36	~ 11,900	vc rat o 0.74
Syd Harbour Tunnel	6,740*	~ 8,500	vc rat o 1.26	~ 7,800	vc rat o 1.16	~ 8,200	vc rat o 1.22	~ 7,000	vc rat o 1.04
W Harbour Tunnel	8,000	-		~ 3,900	vc rat o 0.49	-		~ 5,100	vc rat o 0.64
Syd Harbour Bridge	16,000	~ 13,800	vc rat o 0.86	~ 13,700	vc rat o 0.86	~14,000	vc rat o 0.88	~ 14,200	vc rat o 0.89

Note: ~ approximate volumes are visual measurements taken from graphs in the EIS. Note: ~ approximate volumes are visual measurements taken from graphs in the EIS as no tables are provided. * calculations used to determine the practical ceiling capacity for the Sydney Harbour Tunnel are provided in Appendix B

Outputs from the WRTM raise several key questions that commentary in the EIS does not address:

- Why are there so many instances of traffic volume estimates in the EIS that exceed the maximum hourly capacity, and by extension ceiling capacity, of major arterials affected by M4-M5 (Stage 3)?
- Why build the mainline tunnel at such a high capacity and high cost if much of the capacity would be unused?
- Are the Western Harbour Tunnel and Beaches Link estimated to cost the community $14-20billion to construct the best way to provide access between heavily congested centres and people living in the northern suburbs where public transport is currently poor?
- Would a simpler and lower cost set of connections enable network continuity between existing M4 and inner west motorway segments without creating the highly congested conditions identified by the model if the current options are completed?

These questions are not trivial and suggest that specific motorway construction options have been pursued without first having undertaken any robust strategic assessment of transport need throughout the region. Given that the scope of WestConnex Stage 3 now encompasses motorway proposals reaching from the far south of the Sydney Metropolitan Region to the Northern sectors, strategic justification is critical.

4 Strategic Planning issues for major trunk route development in the northern and southern sectors of Sydney

In light of the model results that show such low traffic volumes in WestConnex Stage 3, it is reasonable to assume that one of the key motivations for wishing to proceed with construction of the Western Harbour Tunnel and F6 motorways is to generate more traffic to fill the WestConnex tunnel.

While this may be a good business development goal from the perspective of a tollway operator, in and of itself it is not necessarily a good goal from the perspective of the general community or an integrated transport and land use development, or sustainability perspective.

4.1 Trunk route development in the northern sector of Sydney

In late 2017, my colleagues and I at the Institute for Sustainable Futures undertook investigations of what we could at that time about the Western Sydney Harbour Tunnel and Beaches Link. This report is appended here.

The primary outcome from that investigation was that the option of an extension to the metro rail system from Chatswood through to the Hospital Precinct, Mona Vale and Brookvale should be investigated. Our reasons for this are described and outline in the document attached, but could be summarised as:

- Strategic centre development in the north west and west of Sydney would be better supported by introducing direct rail access to a region that currently does not have any, but is clearly in need of high capacity, mass transit
- Such a line would also serve people wanting to travel to the major centres of North Sydney and the Sydney Central Business District without having to negotiate the difficult terrain through Military Road
- The difference this would make to road traffic congestion is likely to be far greater than a continuation of road building due to the ability to introduce fast and stable travel speeds to that sector of the network, thereby offering an opportunity to stabilise the variable speed network at a higher speed during peak periods.

A key recommendation is that this be investigated as part of current investigations and preparations for any major transport development in that sector.

I would like to emphasise that such an option has significant implications for the development of Parramatta as a second CBD and so while such a project may not appear to help people in western Sydney, it does have implications for whether or not Parramatta would be able to successfully develop as a substantial business district by enabling the catchment area for its workforce to extend to critical parts of the metropolitan region. The ‘science’ around this aspect of urban passenger transport development is explained in more detail in the report.

4.2 Trunk route development in the northern southern of Sydney

While I am unable to present detailed analysis of changes to the demand for public transport use in the southern sector of Sydney, I believe that recent changes to service levels will show an increase in usage.

As with the northern sector, if public transport is significantly improved, shifts from the road network are likely and improvements to congestion levels possible.

Construction of a rail tunnel from Waterfall to Thirroul would have the effect of reducing journey times between Wollongong and the Sydney CBD by around 30 minutes, bringing substantial improvement to passenger services for customers from these districts. As with the Northern Beaches metro link, this augmentation of the heavy rail network needs to be investigated as a matter of urgency.