

Beaches Link and Gore Hill Freeway Connection

EIS Submission:

*Modification of the WHC alignment to a **north-south tunnel** to go beyond Chatswood (portals on the Pacific Highway) and replace the Beaches Link Tunnel with an **east-west tunnel** under Chatswood (Roseville Bridge to Delhi Road/Sydney Orbital)*

Roseville Bridge

*East portals location
in Warringah Road*

*Tunnel passes
under Boundary
Road, Chatswood,
Lane Cove River to
Delhi Road and the
Sydney Orbital*

Executive Summary

Sydney's population is expected to grow from the current 5 million to 10 million by 2066 (ABS – 2017). That is only 35 years away, and on a timescale for major infrastructure, not that far into the future. For example, the Sydney Harbour Tunnel is already 30 years old and the Sydney Harbour Bridge will be 100 years old in 2033.

It is important, therefore, that we get our major infrastructure right! Especially if the capital cost is in the billions of dollars. There are also significant flaws in the current proposal with regards to road safety and delay.

Unfortunately, both the Western Harbour Crossing (WHC) and the Beaches Link Road Tunnel (BLRT), fall well short of what I would consider the most cost-effective solution, without even considering other factors.

The BLRT concept in the current proposal has been taken straight from the old Department of Main Roads (DMR) 1969 archives, and the WHC has just been tacked on to it through an already compromised Warringah Expressway.

It is obvious that credible alternatives schemes have not been assessed and a lot has happened since 1969! Which requires new thinking.

Without giving an endless list of these changes, perhaps the most important is the growth of Chatswood and its potential to grow going forward as a regional CBD. This growth will accelerate soon with the completion and full operation of the Sydney Metro Rail Project in 2024.

Chatswood already has significant traffic congestion issues, both for east-west and north-south traffic. Chatswood is already Australia's largest commercial centre outside city CBDs

The BLRT does nothing for the wider road network on the North Shore because it deposits all its traffic at the southern end of the Northern Beaches (weekends will be even worse).

Just one issue on road safety/delay will be mentioned here, as an example, the risk of head-on collisions on the Sydney Harbour Bridge. The lane widths do not comply with current road standards and a movable road barrier should be installed along the full length of the bridge to prevent these collisions. Concentrating road traffic through the Warringah/Gore Hill Expressway there is no redundancy in the road network should a traffic accident occur and will occur, no matter how many "safety in design" principles are applied.

This submission is not about providing a commentary on possible tweaks to the WHC and the BLRT, it is about getting a complete rethink of the combined projects to improve traffic flow and road safety north of the harbour, improve the economic viability of Westconnex (by directing more traffic to it) and not leaving loose ends around, like the traffic congestion at Chatswood, both now and into the future.

The EIS fails to satisfy the EIS legislative requirements of reporting Alternative solutions.

(note the front cover photograph, of the Roseville Bridge at the time of completion, no vegetation on the embankments (and hence the potential to accommodate widening and tunnel portals appears quite visible)! The Roseville Bridge was completed in 1966.

Executive Summary

Commentary

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1. List of reasons for a rethink! (with 4 figures attached, Figure 3, updated).
(for meeting with the WHBL - Traffic Leader, 11 Feb 2010² – North Sydney)
2. Text and images - 4 posts made to 'Linkedin' over several months
(during 2020 and 2021).
3. Memo to the Minister for Transport and Roads (dated 18 Nov 2020)
(minus the updated figures given in Item 1 above).

Commentary

I am sure others will address the traffic distribution predictions given in the EIS between the various road corridors. The shifts in traffic volumes are insignificant given the cost of the project. A tolled BLRT will never get the volumes of traffic predicted in the EIS because the tunnel is a side issue in the overall road network on the North Shore. This is for both east-west and north-south traffic.

The Roseville Bridge is a significant asset *whose full potential has not been realised* and the EIS traffic numbers predicted *degrade its importance*. Toll avoidance, however, will ensure that it keeps its status, along with Warringah Road, as the major east-west traffic route within the North Beaches.

For all the money being potentially spent, the Spit Bridge remains in its current form. I have a potential solution for this, but this is not included in this submission, and it is not a high-level bridge replacement.

(i) The EIS fails to satisfy the EIS legislative requirements of reporting Alternative solutions.

It is evident that the study area has been limited to immediate connections to the existing network in and around North Sydney and has not taken a strategic planning approach.

It fails therefore to investigate north-south traffic improvement alternatives to and from the Warringah Freeway and WHC to the north of Chatswood.

Glaringly, the EIS also fails to report alternative solutions to the proposed BLRT.

The proposed BLRT is unlikely to provide much benefit to East-West traffic movements into and out of the Northern Beaches.

Investment in the Warringah Road corridor, which is the main access corridor into and out of Northern Beaches would result in higher economic returns compared with the BLRT.

Rail access from the Sydney CBD to the Northern Beaches, which would be a far more sustainable solution and would support the future commercial and economic development of the Northern Beaches, has not been reported.

ii) Inconsistent Planning and Design Approaches

It is also evident from the EIS that the proposed WHC northern connections to the Warringah Freeway are at a lower standard compared with its southern connections with WestConnex.

This would result in lower levels of service on the northern side of the Harbour. This is a flaw in the planning design, largely because of the limited study area given to the design team and failure to investigate and report alternative solutions.

1. List of reasons for a rethink! (with 4 figures attached, Figure 3, updated).
(for meeting with the WHBL - Traffic Leader, 11 Feb 20102 – North Sydney)

A. North-south Connection

1. Given the potential increase in traffic with a rising population the Western Harbour Crossing connection with the Warringah/Gore Hill Expressway is unsustainable as the number of accidents (impacting on road safety and delay) will increase over time (refer to Figure 1 attached).
2. The standard of motorway design on the north side is not compatible with the high standards adopted for Westconnex on the south side of the Harbour. An example from the south side being the Rozelle Interchange (refer to Figure 2 attached).
3. The current proposal, while it in part addresses the north-south traffic, it does not extend sufficiently north to Chatswood and the Pacific Highway. Our proposal would strategically locate on-and-off ramps along its length.
4. Chatswood is expected to have significant employment growth of 38% by 2031, from a current base of 95,000(2015 study) to 130,000 workers. Chatswood is both a very significant traffic generator/attractor and has increasing traffic congestion problems (both north-south and east west).

B. East-west Connection

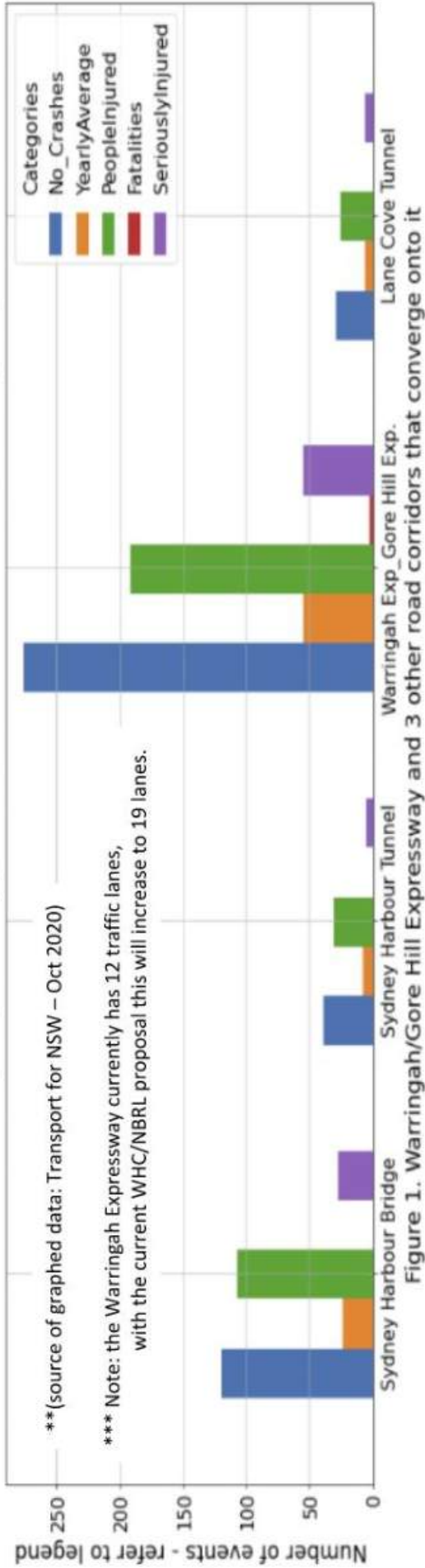
5. Boundary St (Chatswood)/Warringah Road are currently the main east-west arterial roads bringing traffic into the Northern Beaches (2014 report, at 80,000 vehicles per day) and the route should continue to be improved. The NSW Government has already spent \$600m on road works on Warringah Road, grade separating Forest Way and Wakehurst Parkway in Frenchs Forest and increasing the railway bridge span over Boundary Street.
6. An east-west tunnel from the west side of the Roseville Bridge to Dehli Road, Ryde and connecting with the Sydney Orbital is a logical route given the current and future growth of Western Sydney to improve east-west traffic flow.
7. The Beaches Road Tunnel Link(BRTL) entry and exits are at the south end of the northern beaches and with the “double toll” (BRTL and Lane Cove Tunnels) and extra travel distance and time is unlikely to attract east-west traffic from most of the Northern Beaches. Note also the pinch point at the east portals of the LCT, only 2 lanes.
8. Without an east-west tunnel the rabbit runs and traffic on Dehli Road west of the Pacific Highway will continue to be used together with the long route to Macquarie and Lane Cove Road etc via Forest Way/Mona Vale Road to the north of Warringah Road.

C. Alternative Route – Plan

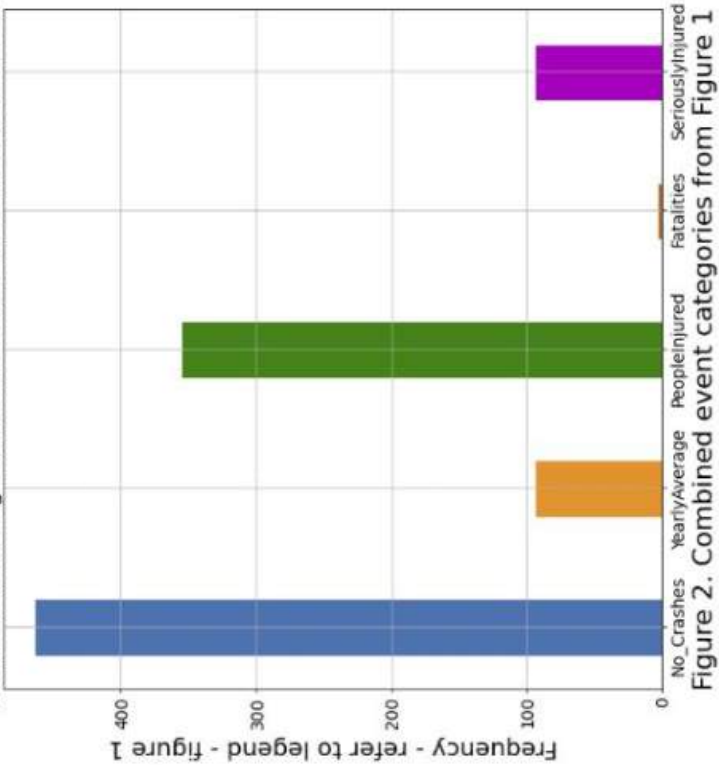
9. The attached concept plan is an alternative to the current Government proposal, and it has been developed to address the issues raised above (refer to Figure 3 attached).
10. The outcome of this short list is to persuade the WHC/BRTL team to assess this alternative given the billions of dollars involved in projects of this type and the problems, in my opinion, that have been highlighted with the current proposal.
11. The combined north-south and east-west tunnel is designed to direct as much traffic as possible into/from the Westconnex network on the south side of the harbour.
12. Please also refer to Figure 4 and the notes. This is the 1969 DMR concept for the BRTL.

Figure 1

Traffic Accidents Summary - reported by police for each Road Corridor, over 5 year period 2014-2018



Totals of the categories from each road corridor, 2014-2018



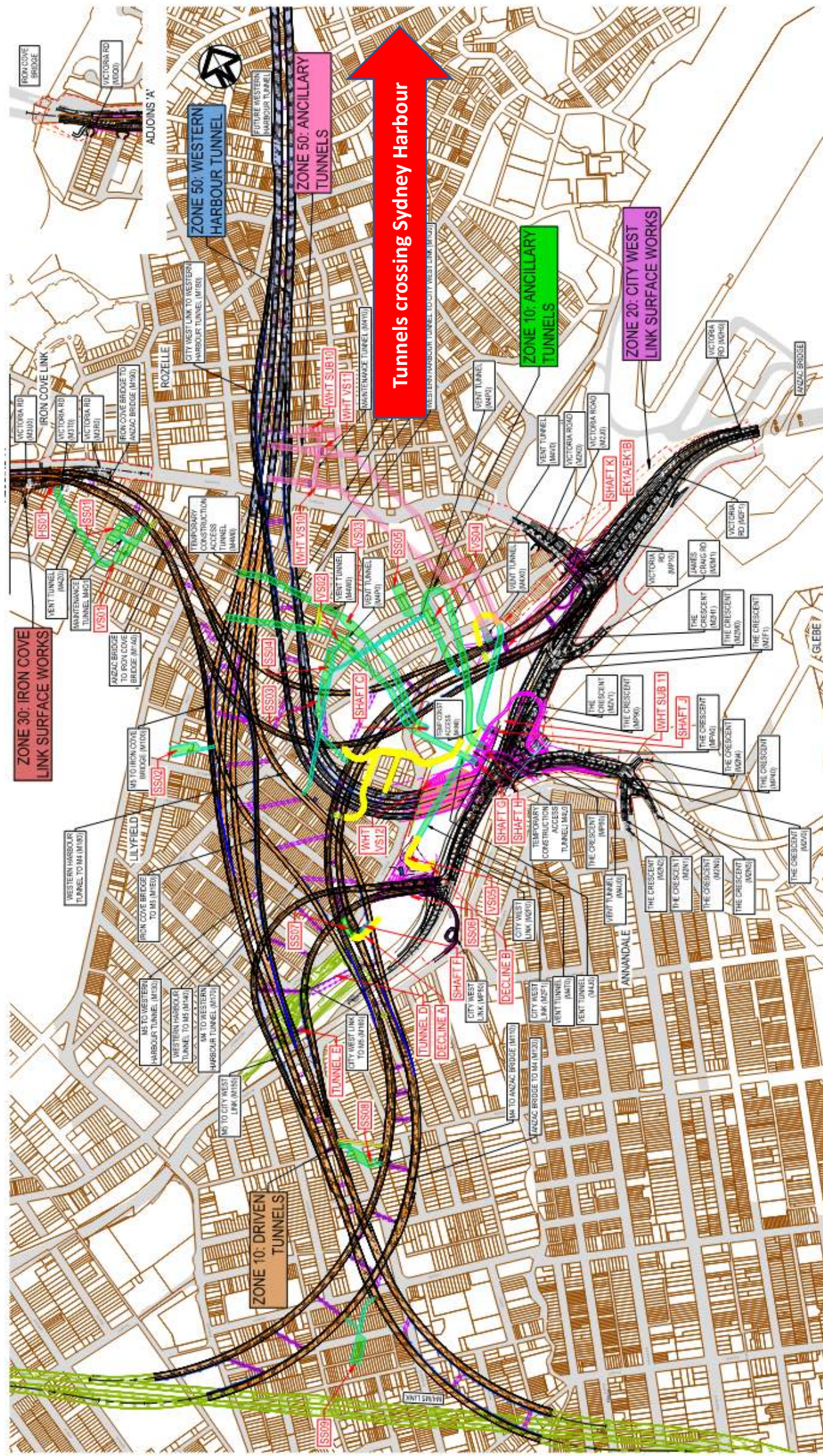


Figure 2 – Westconnex - Rozelle Interchange
(these are all tunnels -around 20km of them) except for lower centre and lower right)

Figure 3

Mona Vale Road, west of Terry Hills, upgrade currently under construction (off page).

North portal of WHC – Westconnex (in the Pacific Highway between Chatswood and Mona Vale Road)

\$600m upgrade Warringah Rd Frenchs Forest

Major Interchanges (roads/tunnels)

Macquarie

Roseville Bridge

Brookvale

Strategically located on/off ramps along its length where required.

New East-West Tunnel

From the Roseville Bridge the tunnel traverses under Boundary St, the Pacific Hwy to Delhi Rd, connects to Sydney Orbital at Macquarie.

Proposed Alignment of the WHC

Unchanged alignment across Sydney Harbour, traverse underground along the west side of North Sydney with both exit and entry portals north of Chatswood. Interconnection with East-West tunnel.

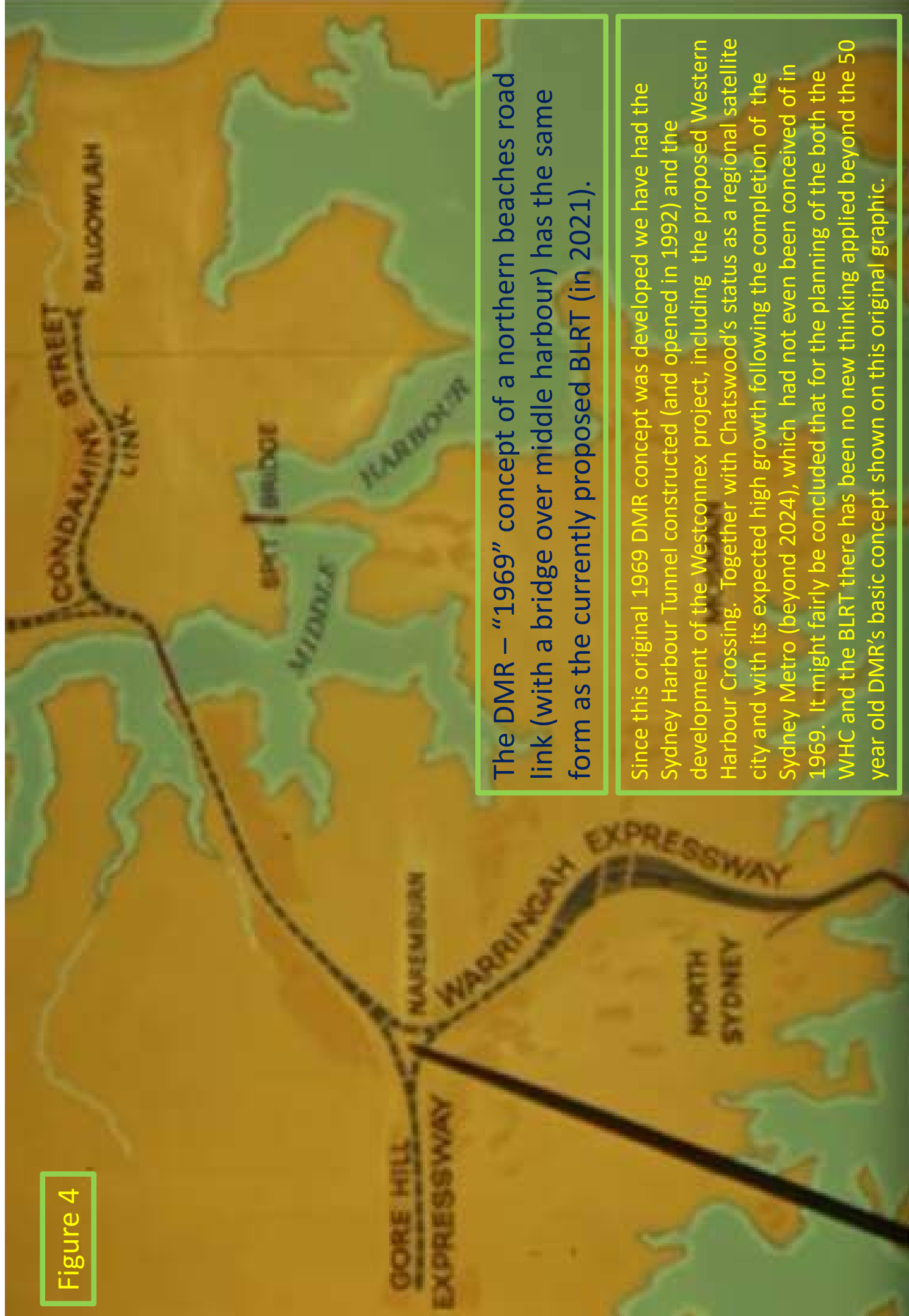
Warringah/Gore Hill Expressway (completely by-passed by the WHC)

Rozelle Interchange (under construction)

1. Upgrade Wakehurst Parkway.
2. Grade separate Warringah and Pittwater Road.
3. Grade separate Manly and Sydney Road.
4. Grade separate Warringah Rd and Forestville Ave.

E J Nye & Associates Pty Ltd
Date: 28 Feb 2021

Figure 4



The DMR – “1969” concept of a northern beaches road link (with a bridge over middle harbour) has the same form as the currently proposed BLRT (in 2021).

Since this original 1969 DMR concept was developed we have had the Sydney Harbour Tunnel constructed (and opened in 1992) and the development of the Westconnex project, including the proposed Western Harbour Crossing. Together with Chatswood’s status as a regional satellite city and with its expected high growth following the completion of the Sydney Metro (beyond 2024), which had not even been conceived of in 1969. It might fairly be concluded that for the planning of the both the WHC and the BLRT there has been no new thinking applied beyond the 50 year old DMR’s basic concept shown on this original graphic.

2. Text and images - 4 posts made to 'Linkedin' over several months (during 2020 and 2021).

A. 7 Months ago

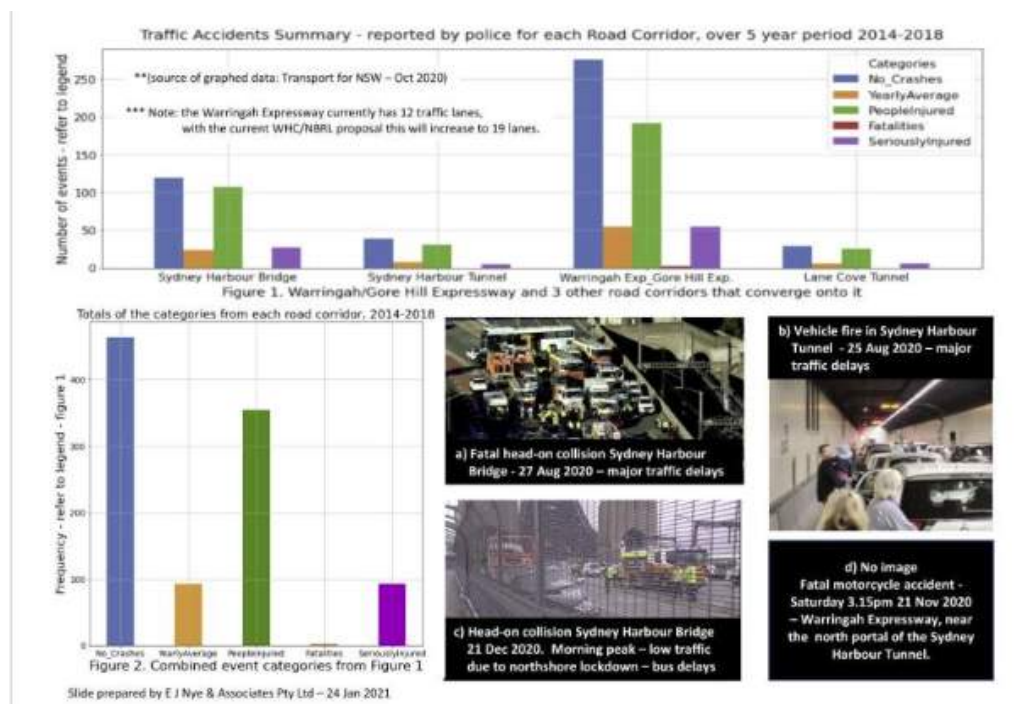
Pleased to publish another paper, "Sydney Heads Rail Tunnel – a Treasure Trove of Planning Opportunities" at the virtual WTC2020 Congress (September) from KL Malaysia. The paper also touches on the flaws in the Northern Beaches Road Tunnel (which should be scraped) and the north shore alignment of the proposed Western Harbour Crossing (keeping the currently proposed harbour crossing, but re-aligned to go north towards Chatswood, not North Sydney). The upgraded Warringah Road (at Frenchs Forest, see photograph below) could be a significant traffic attractor (away from Military Road) together with the duplication of Mona Vale Road, currently under construction. The biggest missing links on the north shore are a Boundary Street to Delhi Road tunnel connection (starting at the west end of the Roseville bridge) and upgrades to the Pacific Highway (via at least a north south tunnel by-passing Chatswood). The Federal Government initiated Northconnex tunnel study (2005) also considered a tunnel route under the Pacific Highway, traffic congestion at Chatswoods being significant issue. [#Transport](#)



B. 1 month ago

Western Harbour Crossing(WHC) and Road Safety (Warringah Expressway(WE))
“Thank you for your interest in road safety” the opening text to a letter from Transport for NSW in October 2020, following my request for accident data - Lane Cove Tunnel, Warringah/Gore Hill Expressway(W/GH), Sydney Harbour Tunnel and Bridge. Note the spike in traffic incidents for the W/GH Expressway. The frequency of traffic incidents will increase during construction and after, due to the number of traffic lanes in the WE increasing from 12 to 19. If completed in its current form, the number of traffic incidents along this whole, already compromised road corridor, will also increase with traffic volumes/population and the sheer complexity of the road network. I have posted previously a description of a better option, which extends the WHC tunnel up to Chatswood and replaces the Beaches Link with a road tunnel connecting Warringah Road (just west of the Roseville Bridge) to Delhi Road, under the Pacific Hwy. The WHC then is not reliant on the WE. There will be a significant increase in road accidents in this corridor and road safety and the network will be compromised compared with more effective alternatives.

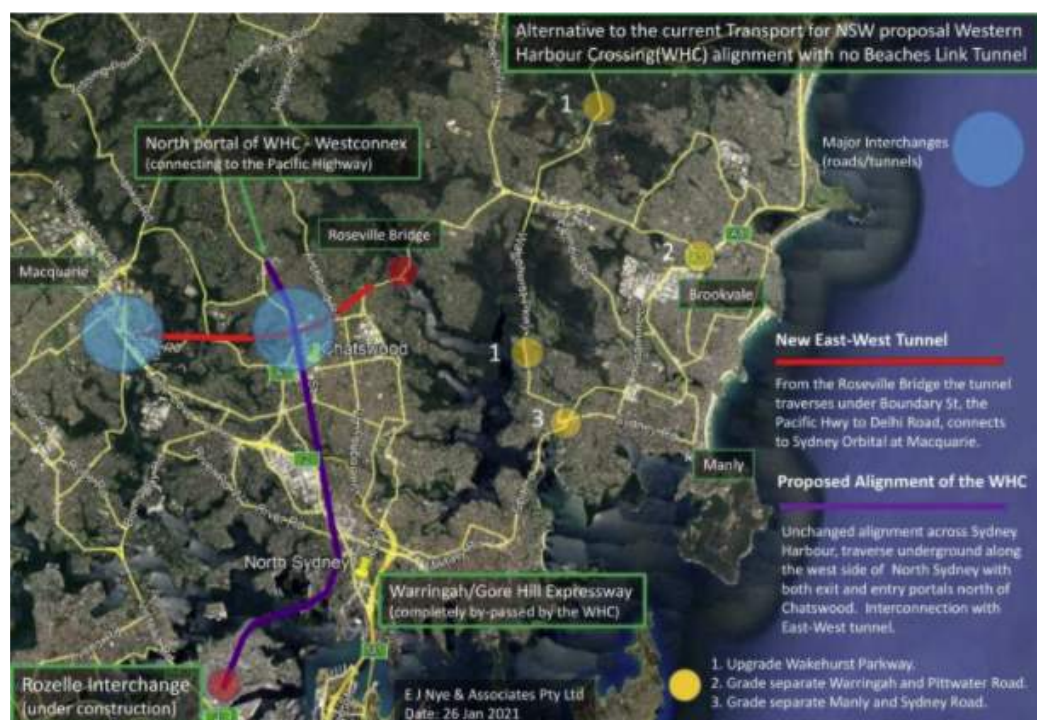
[#roadsafety](#) [#sydneyconstruction](#) [#westernharbourtunnel](#) [#transportforNSW](#)



C. 1 month ago

Proposed Western Harbour Crossing(WHC) - Warringah Expressway(WE) connection a design folly and professional embarrassment.

Major strategic infrastructure must have a 100-year design life, an example of this is the Sydney Harbour Bridge which will have been in operation since 1933. The Government's proposal to connect the WHC to the Northshore road network would fail this test. The graphic is my concept for a better alternative to the currently proposed WHC and Beaches Link Road Tunnel (BLRT). As a local resident of the Northshore and an engineer experienced in the design of strategic infrastructure projects, what is currently on offer is a professional embarrassment. As per my post of a few days ago the WE is an already compromised road corridor. The BLRT also has no social or economic justification. The obvious missing road upgrade is between Warringah Road (west of the Roseville Bridge) and Delhi Road, Ryde, and as anyone living in Sydney would know Delhi Road, across the Lane Cove River, is a goat track at peak times. There are also numerous rabbit runs across to Macquarie, west of the Pacific Highway, if you use Boundary Street at Chatswood. Locals travel north up Forest Way to Mona Vale Road, across and then south again to get to Macquarie and Lane Cove Road.



The above figure has been updated as in Section 1.

D. 5 days ago

Beaches Link Road Tunnel - a NSW Government rabbit hole/money pit

A project out of the old DMR's 1969 archive – that is the graphic below! (identical form to BLRT). No acknowledgement, future growth of Chatswood and the impact of the new Sydney Metro on this growth. Chatswood has both significant east-west and north-south (Pacific Hwy) traffic congestion issues. Warringah Road is the main east-west access road corridor with the Northern Beaches, ignored future potential even after a \$600m upgrade at Frenchs Forest (potential for new road tunnel link to Delhi Road, Ryde and the Sydney Orbital starting at the 6 lane wide Roseville Bridge). WHC and the BLRT will be constrained by the pair of 2 traffic lanes only east portals of the Lane Cove Tunnel at peak times. No awareness of road safety and delay on the Warringah Expressway and Harbour Bridge road corridor and the negative impact on both that will follow from the increased complexity of the road network. Too many ways to avoid this tolled road tunnel. Military Road, Warringah Road and Mona Vale Road (major upgrade east of Terry Hills, under construction). Please view previous post for one alternative that aims to address all the above issues which should divert more traffic to the WHC and Westconnex.



3. Memo to the Minister for Transport and Roads (dated 18 Nov 2020)
(minus the updated figures given in Item 1 above).

Attention: Andrew Constance, Minister for Transport and Roads

(uploaded to the NSW Government website, Contact Ministers))

From: Ted Nye

E. J. Nye & Associates Pty Ltd
10 Malbara Crescent
Frenchs Forest, NSW, 2086

Date: 18 Nov 2020

Mobile: 0422003275

Email: ted.nye@nyeconsulting-eng.com.au

Dear Sir,

**Re: Western Harbour Crossing and Northern Beaches Road Tunnel
Alternative Alignments**

I am professional engineer with over 40 years' experience in major transport projects, both road and rail (from concept to commissioning). At the end of this letter I have provided a list of some of the projects and places around the world where I have developed this expertise.

I am writing to you because I do not believe the current tunnel alignments on the north shore for both the Western Harbour Crossing(WHC) and the Northern Beaches Road Tunnel(NBRT) are commercially and economically viable or enhance road safety nor minimise potential delays.

This is particularly so with regards to road safety and delay and within the road corridor that includes the Gore Hill - Warringah Expressways and the Sydney Harbour Bridge. The current alignments being proposed for both these tunnels will direct more traffic onto to this corridor (it already has 160,000 + vehicles/day). This will result in a greater number of traffic accidents and incidents within the corridor and the feeder roads to this corridor (i.e. the Lane Cove Tunnel, the Sydney Harbour Tunnel and the other remaining surface feeder roads e.g. Military Road).

When there are traffic accidents/incidents in the feeder tunnels or on the Harbour Bridge they have the potential to cause significant traffic grid lock over a wide area of the Sydney's road network and this will occur irrespective of the WHC and NBT tunnels being linked together under the Warringah Expressway.

This corridor is currently the northern gateway into/from the WHC and ultimately the whole of Westconnex.

Westconnex includes a road network investment of many billions of dollars. For example, just one element of Westconnex, the Rozelle Interchange alone will cost around \$3billion (and it includes numerous multi-level tunnels for the purposes of providing grade separation).

On 10 August I messaged the Minister for Planning and Public Spaces, Rob Stokes, and outlined the above concerns with reference to the inadequacies of the EIS (please see the

attached correspondence). Unfortunately, with regards to both road safety and traffic disruption my concerns were graphically realised on the 25 and 27 August, just a few weeks later! (please see Attachment 1).

I then requested from TfNSW the traffic accident statistics for the Lane Cove Tunnel, Sydney Harbour Tunnel, Warringah Expressway and the Sydney Harbour Bridge (the response is Attachment No. 2) I have also prepared a graph of the data provided (Attachment No. 3). You can easily compare the accident statistics for each infrastructure transport element from the graph.

Sydney, with a population heading towards 10 million in 2066, deserves two completely independent major road crossings of the harbour in the areas relevant to this discussion to minimise the issues raised above. At least with one throughfare fully operational the Sydney traffic is not completely grid locked around the Harbour.

In order to achieve this, I have proposed the alternative alignments for both the WHC (land tunnels only) and the NBRT outlined in Figure 2 (Attachment No. 4). The concept provides redundancy to the road network i.e. Westconnex/WHC and the Warringah Expressway /Sydney Harbour Bridge operate completely independently from one another.

The replacement tunnel for the NBRT also provides an important missing link, connecting Warringah Road with Dehli Road (and the Sydney Orbital) starting from a portal just west of the existing Roseville Bridge (Attachment No. 4).

My proposal, I believe, is also consistent with the large scale thinking behind Westconnex, while the ad hoc solution around the Warringah Expressway corridor is not (i.e. with numerous additional merging and diverging traffic lanes, plus disruption to traffic flow and actual delays associated with the Sydney Harbour Bridge in particular). I wonder how emergency services will cope with major accident scenarios within this expanded and compromised corridor (refer an actual scenario described in Attachment 1).

From a commercial and economic viewpoint, in my proposal the traffic catchment area is also significantly larger than the Government's current proposal. The NBRT, given its limited catchment area, will I predict, have a similar fate to the Cross City Tunnel. There are numerous opportunities to avoid this tolled tunnel (Military Road, Warringah Road and Mona Vale Road).). This, however, leads to another problem of increased traffic congestion on Boundary St, Eastern Valley Way and around Chatswood, the rabbit runs to Dehli Road from the Pacific Highway and on Lane Cove Road, north of the Sydney Orbital, heading down to Macquarie.

The Government's current project proposal does nothing for the Pacific Highway and traffic congestion around and through Chatswood. Chatswood could be expected to grow significantly once Stage II of the Sydney Metro is up and running.

As mentioned previously, Sydney's population is currently 5 million and is projected to be 10 million by 2066 (ABS figure). A high proportion of this population increase will eventually occur on the Northern Beaches and in the not too distance future heavy rail will have to be

considered. More roads will not solve the problem as the area densifies (for example, the proposed Frenchs Forest Town Centre on Warringah Road).

The Gore Hill/Warringah Expressway and the Sydney Harbour Bridge corridor should be avoided by any new project with traffic diverted elsewhere to ensure the viability of Westconnex and to not degrade the efficiency of this already constrained and compromised road corridor. The key words here to hold are “ensure redundancy” within the road network.

In conclusion, there is a well-known engineering expression - if it doesn't look right, it probably isn't. This, in my opinion, clearly this applies to the current proposals for both the WHC and the NBRT north of the Harbour. Today and in the future, there is a desperate need for alternative routes across the Harbour.

I would be happy to come to your office and give a presentation on the above to you and your transport planning team.

Yours sincerely,

Ted Nye
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Email: ted.nye@nyeconsulting-eng.com.au

Cc Rod Staples - Secretary Transport
Tim Reardon - Secretary – Department of the Premier and Cabinet
Rod Stokes MP – Minister for Planning and Public Spaces

Enc. Attachments 1 to 4 (not repeated here)

Addendum: Summary List of My Involvement in Projects Past & Present (not given here).