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Director - Infrastructure Projects
Department of Planning and Environment
Number: SSI 13_6136
Major Projects Assessment
GPO Box 39
SYDNEY NSW 2001

Submission by [REDACTED]
[REDACTED]

Via online form:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6136

NorthConnex Application Number: SSI 13_6136

Submission re: NorthConnex Tunnel

Personal Introduction

I am a local resident of Wahroonga and I live with my wife and three young children within 50m of the proposed Northern Portal and Stack for the NorthConnex tunnel. Our family has endured a very distressing six months since the announcement of the preferred design in March. I strongly object to the current proposal.

I am a consultant physician [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] As I provide oncall services to many hospitals in Northern and Western Sydney, I am acutely aware of the urgent need to address traffic congestion along the Pennant Hills Road corridor, especially in peak periods where heavy traffic volumes and a paucity of alternate routes and public transport options leave commuters stuck unnecessarily in traffic jams. In my own practice this road corridor has at times caused lengthy delays in attending to extremely sick and premature babies, and as such I acknowledge the need to relieve some of this congestion.

The proposal design is overly simplistic, substandard and obviously designed to minimise cost. I am writing this submission to express my deep concerns and outline my specific objections. I hope that this submission and others like it will result in a project that is better for the communities who live in and those who commute along the route.

I have read and fully support the submission made by Community Against Polluting Stacks (C.A.P.S.). In addition to the concerns raised in the C.A.P.S. documents, I would like to reiterate and explore my personal objections in a few broad categories: justification of the project, traffic issues, design errors, air quality issues, sustainable design and non-Aboriginal heritage impacts.

1. Justification of the Project

Issue: Recommendations from The Pearlman Review of 2007 have not all been undertaken.

The Pearlman Review of 2007 has often been quoted and used as justification by the project team and politicians. This report actually endorsed the Type A corridor "Purple Option" (not NorthConnex specifically) and also insisted that a Type C corridor be planned for now (i.e. 2007). The second recommendation of a second crossing over the Hawkesbury River has been largely ignored since it was written. Further, the Environmental Impact Statement admits that the NorthConnex project "would not solve the existing congestion problems in the local area in the long term". If the NSW and Federal Governments cannot afford to build both of these projects, then perhaps they should be compared for effectiveness prior to going ahead with NorthConnex.

Solution: Reports and reviews cannot be selectively quoted to suit the purposes of the proponents. If we can only have one of these options as suggested by persistent government inaction, the community needs to be informed as to which of these projects provides the greatest long-term benefit.

Issue: Local use of private vehicles highlights the need for improved public transportation, not NorthConnex

The Environmental Impact Statement reports low rates of rail and bus travel, cycling and walking in the Hills and Hornsby Shires relative to the Sydney-wide average which contributes to traffic congestion along the road corridor. These figures demonstrate the urgent need to address the lack of adequate public transport options for local commuters, not used as a justification for building NorthConnex. The plan for NorthConnex also has no plan for integrated public transport to help local residents use public transport where possible to address this local difference in usage rates.

Furthermore, the construction plan for NorthConnex runs the real risk of changing commuters preferences further in favour of private transport, especially for those in the Hills district, as the Westbound buslane on the M2 will be closed for years during construction.

Solution: In the modern era, all infrastructure projects must be seen as an opportunity to improve the whole city, rather than simply joining two roads together. Even the M2, constructed nearly twenty years ago clearly demonstrates how a motorway can integrate effectively with public transport and improve general amenity.

2. Traffic Issues

Issue: Travel time savings post-project have been overstated.

Estimated travel times via NorthConnex are 6 minutes northbound and 5 minutes southbound (figures taken from EIS, NorthConnex). It is unclear why it should take a minute longer in the northbound direction or how it will be possible or legal to travel 9km in 5 minutes (average speed 108km/hr). Even if you take the slower time of 6 minutes and count only 8km of the tunnel, the commuter will have an estimated average speed of 80km/h. There are no other roads in Sydney where commuters average the legally limited speed, especially in peak hour traffic. NorthConnex would be no different, and travel times would be significantly greater than estimated.

Solution: More accurate, realistic and legal travel times must be used in traffic modelling to give a more realistic reflection of travel times along the corridor and a more honest representation of travel time savings for the community to consider.

Issue: A reduction in crash rates is not a justification for a motorway such as NorthConnex.

The advertising for NorthConnex and rhetoric from the RMS suggests that one of the key benefits in the new project is reducing crashes, which no doubt is true on an economic basis. The low crash severity on Pennant Hills Road though suggests that a large proportion of these are low speed rear-end type crashes without motorist/passenger injury. Minor rear-end accidents are an issue more in terms of congestion, as Pennant Hills Road loses a third of its capacity in one direction instantly. Accidents on motorways however are on average higher speed and therefore more likely to put drivers and passengers in hospital with significant injuries. So we may have fewer crashes in NorthConnex, but they will be higher severity crashes with a higher associated average morbidity and mortality.

Solution: Accurate crash projections are important in advising the community rather than suggesting that NorthConnex will be a “cure” for motor vehicle accidents along the corridor.

Issue: Trucks off Pennant Hills Road only tells part of the story.

The environmental impact statement goes to some lengths to demonstrate the benefit to traffic flows, pollution and road user safety when using a motorway as opposed to a highway. The project may well reduce the number of trucks travelling along Pennant Hills Road, but this comes at the expense of trucks being forced off the M7 motorway onto alternate routes such as Cowpasture Road (which will take an extra 1450 trucks per day in 2019 and 1600 in 2029). It is unacceptable to be trumpeting the benefits of taking trucks off Pennant Hills Road without counting the cost of the hundreds of heavy vehicles leaving the M7 every day because of NorthConnex.

Solution: Impacts on the residents and commuters within South West Sydney must be taken into account in the Environmental Impact Statement, and alternate funding arrangements should be reached to ensure that, once constructed, all motorways are affordable and thus serve the purpose for which they were originally built.

Issue: The Roads and Maritime Service has not completed a Pennant Hills Road Study for Public Transport and Intersection Treatments

This study is referred to in the Environmental Impact Statement for NorthConnex, but is not available as it has not been done! This is despite the fact that the need for the M1M2 link has been recognised for many years. This study is critical to the traffic projections in the road corridor and the traffic implications of NorthConnex. The time for this report is now, alongside the Environmental Impact Statement for NorthConnex so that more accurate information is available to those assessing the proposal, rather than undertaking this “upon opening of the project”.

Solution: Roads and Maritime should immediately undertake a separate study on Pennant Hills Road, so that the community ends up with a “whole of road corridor” approach that reduces congestion as much as possible, rather than the *ad hoc* approach suggested by NorthConnex.

Issue: There are only two southbound lanes for the surface road along the M1 Pacific Motorway at the Northern Interchange.

After many years and many millions of dollars spent widening the M1 Motorway to 3 lanes each way between Sydney and the Central Coast, NorthConnex will reduce this to 2 lanes for those people leaving Sydney and those arriving from the Central Coast. It will create a traffic “pinch point” at the interchange and will “funnel” southbound traffic into the tunnel accordingly. As for those southbound motorists who are not heading towards the M2, they will be stuck in worsening traffic to join the Pacific Highway or Pennant Hills Road.

Solution: Tunnels built “in parallel” to existing roads must add to rather than reducing existing traffic capacity. Alternative sites and/or designs must be investigated for the location of the northern portals so that taxpayers are allowed to use the roads they paid to build, rather than being funnelled onto a private motorway.

Issue: Further to the previous issue, the project makes future road-widening of the Pacific Motorway at its southern end virtually impossible without costly buyouts of hundreds of properties.

The Pacific Motorway is a very important road, being the only freeway linking Sydney with all other locations to the north. Its strategic importance cannot be overstated. The current design of NorthConnex, uses every available metre of road corridor width and expands the width of the corridor as far as possible without having to acquire entire blocks of houses. Locating the northern tunnel portals in suburban Wahroonga as planned prevents any future possibility of increasing the capacity of the Pacific Motorway though widening without mass property acquisitions.

Solution: Relocating the northern portals to a non-residential area further north allows for greater traffic capacity on the Pacific Motorway now (as six lanes would be maintained), and greater capacity for it to be widened as the need arises in future without prohibitive acquisition costs.

3. Errors in Design

Issue: Co-location of exhaust stacks and entry portals works against the concept of the “piston effect drawing in clean air”.

As pollution is emitted from the exhaust stack, there is a projected deterioration in local air quality as described in the Environmental Impact Statement. The entry portals for both the Northern and Southern Interchange are located well within the zones demarcated in the air quality document of the Environmental Impact Statement which would suffer this deterioration. By co-locating the stacks and entry portals polluted (**NOT FRESH**) air will be dragged into the tunnel by the piston effect and sent back to the other end of the tunnel along with all the emissions from vehicles travelling in the other direction. This vicious cycling of the same polluted air means poorer in-tunnel air quality and more importantly further deterioration in the air quality at either end of the tunnel.

Solution: Stacks and air-intake points must be located further apart from one another so that accurate modelling of the exhaust air can be undertaken, and to ensure the greatest benefit is derived from the ‘piston effect’.

Issue: Two breaches in the sound wall at the Northern Ventilation Facility provide the facility with a circular driveway.

The design of the Northern Ventilation Facility has two glass gates providing access to the facility for the “very small” number of vehicles. These two gates appear to be within 30 metres of each other. An inability of NorthConnex staff to use the reverse gear in their vehicles is insufficient justification for the installation of a totally unnecessary circular driveway which exposes the residents of Woonona Avenue to unnecessary noise and air pollution.

Solution: One gate is sufficient for the stated purpose and staffing at the Northern Ventilation Outlet (“Infrequent Access”); this will reduce noise and air pollution for local residents. This gate should be placed at the quietest part of the facility, which would possibly be in the lee of the building, to create minimal disturbance to those living over the road from this break in the sound wall.

Issue: Tunnel gradient increases just as the tunnel emerges in Wahroonga, creating unnecessary noise and pollution in the middle of a residential area.

The geological long section contained within the Environmental Impact Statement clearly shows that as the proposed tunnel emerges from underground around the northern portal on the Pacific Motorway, the gradient is increased upon exit. This creates a “hump” which vehicles have to drive over before entering the M1 Freeway. This creates an unnecessary point at which acceleration and down-shifting of gears may be required by northbound vehicles, resulting in unnecessary noise and emission generation.

Solution: The northbound exit ramps must be kept at a constant gradient to prevent unnecessary noise and emission generation within a residential suburb.

4. Air Quality Issues

Issue: The stated concept of “net improvement in air quality along the road corridor” demonstrates the proponent’s attitudes toward equity.

The same “net improvement in air quality” would be demonstrated if all of the emissions from NorthConnex were vented into one (unlucky!) resident’s lounge room. Air quality cannot scientifically be traded between suburbs. Emissions are simply collected along the corridor and released at either end. It should be clearly stated in the Environmental Impact Statement that NorthConnex improves the air quality for those that live along Pennant Hills Road at the expense of the air quality at either end of the tunnel. (ref)

Solution: The project team must start acknowledging publically that the current design will negatively impact the air quality for those people who live near either end of the tunnel. Given that there are no acknowledged “safe” levels for airborne particulate matter, the project team must also start acknowledging publically that this will negatively impact on the health of those who live in the vicinity of the ends of the tunnel. Alternatives must be examined to locate the portals and stacks as far as possible from homes and schools to reduce harm and future liability.

References

Longley, I., Gray, S. And Kuschel, G. *Stocktake of Air Quality in and around State Highway Tunnels* April 2010

Issue: Meteorological data is of fundamental importance.

I totally agree with this assertion as stated in the Environmental Impact Statement. I am shocked by the lack of local weather data (which would have been very easy to collect) provided in the calculations of the Environmental Impact Statement, especially given the close proximity to ‘sensitive receivers’. In particular this is important for the frequency and strength of winds, as wind is so important for pollutant dispersion. For many years people have anecdotally recognised the climate being different in Wahroonga and this has not been considered in the Environmental Impact Statement. If wind speeds are slower than at distant weather stations used in the modelling, dispersion will be less, exposing locals to more pollutants than is suggested in the Environmental Impact Statement.

There is also no consideration given to Climate Change and its effect on the dispersion of pollutants. As the above ground temperatures rise over the next few decades the buoyancy of pollutants ejected at underground temperatures will reduce, exposing local residents to more pollution than has been estimated in the Environmental Impact Statement.

Solution: Relevant local meteorological data must be used in a repeat of the air quality modelling. Consideration must be given to the effect that Climate Change will have on pollutant buoyancy, using temperature change predictions for “catastrophic climate change” to give an idea of ‘worst case scenario’.

Other inconsistencies in air pollution modelling

Inaccurate terrain data: Data used to develop the Digital Elevation Model has an absolute error of 6m, and a relative error of 4.7m. Given that the Northern exhaust stack will be 15m relative to Woonona Ave, and is located in a valley, this level of accuracy is obviously inadequate.

Failure to obtain site specific meteorological and ambient air quality. Computer modelling has been used, with data from sites 10km and more from the northern stack. The data used is from sites that bear little in common with the proposed northern stack site.

Inadequate modelling/monitoring of the quality of “fresh” air entering the northbound entry bound portals at the Pennant Hills/M2 interchange.

Absence of air quality monitoring during an emergency

No assessment of potential air quality impacts during construction has been undertaken

Solution: Air quality modelling should be repeated taking the above into account.

Issue: Health risk assessment is not based on up-to-date medical knowledge, especially as far as particulate matter is concerned.

The Environmental Impact Statement states that there is a growing consensus regarding the measurement of PM1 to assess health impacts, then goes on to completely disregard their own statement by modelling PM2.5 and PM10, coming to the conclusion that there is a negligible effect on health! This is far from reassuring...

Solution: Air quality modelling should be performed for those particles that we know are the most concerning from the point of view of health effects, PM1. The project team needs to read and take heed of its own Environmental Impact Statement!

Issue: The design of NorthConnex disregards basic principles of risk management.

Tunnel exits and exhaust stacks are sources of point sources of particulate matter, which is recognised as carcinogenic material by the World Health Organisation (ref). The fact that this is Australia's longest tunnel and one that is primarily designed for freight demonstrates how crucial appropriate placement of stacks and portals is. Given this, it is outrageous that alternative locations for these parts of the project have not been considered. It does not take too much investigative effort to appreciate the density of residential dwellings, schools, preschools, retirement villages and hospitals near the Northern Exhaust Stack and portal. The Environmental Impact Statement refers euphemistically to "sensitive receivers" in the area and indeed there are many. Rather than desperately trying to convince all these people that this project is probably going to be safe, the tunnel design should select the safest location for the stack and portal, which is as far away from as many people as practical.

Solution: Basic principles of risk management need to be used in a re-design of the project so that the community is kept as safe as possible, particularly as traffic in the tunnel gets heavier over the next few decades.

References:

IARC: Outdoor air pollution a leading environmental cause of cancer deaths. World Health Organisation, Press Release No. 221, 17 October 2013

5. Sustainable Design

Issue: NorthConnex is not Sustainably Designed

NorthConnex does NOT demonstrate excellence in sustainable design. When questioned about this, the project team point to design features such as a steady tunnel gradient with few corners, and situating the stacks near the portals as being their demonstration of 'sustainability'. This seems to be a convenient reframing of the truth, which is that these features make it cheaper to dig the tunnel (being the shortest possible distance) and cheaper to run (with pollutants not being relocated to areas with fewer sensitive receivers, i.e. non-residential areas).

The intention of sustainable design is to "eliminate environmental impact through skilful and sensitive design"(ref). And yet, NorthConnex will result in

- The destruction of hectares of Blue Gum High Forest, which is classified as critically endangered under the New South Wales Government's Threatened Species Conservation Act 1995. Claims in the Environmental Impact Statement as to the condition of these forest areas as being infiltrated with exotic species says nothing of its capacity to be regenerated through restoration work, and serves only to undermine the importance of this ecological community. As there are only 136 hectares of Blue Gum High Forest remaining in total, a more careful design needs to be undertaken to protect what is left of the original forest cover of the Sydney Basin.
- A point source for all north-bound pollution within a densely populated residential area with uninhabited areas offering alternatives immediately to the north
- A point source for all north-bound pollution in a valley, allowing the potential for the trapping of pollution by inversion layers as well as exposure to the pollution plume by local residents who live at a higher elevation (especially residential towers, existing or planned). This is especially pertinent given the ever-increasing demands for higher density housing across Sydney including the Upper North Shore.(ref)
- This same point source for pollution being located amidst a large number of preschools, primary schools, high schools and aged/palliative care facilities. The young and elderly are well known to be most sensitive to the deleterious effects of air pollution.
- A tunnel with a steady uphill gradient to the head of the north-flowing Cockle Creek upon which the Pacific Motorway was built. The existing motorway falls in elevation as it travels north from this point, meaning that the NorthConnex tunnel design will cause unnecessary inefficiency in the combustion of non-renewable fossil fuels when compared to a portal located a relatively short distance to the north. This design aspect is at odds with the Sustainability Strategy of NorthConnex, for "more efficient fuel consumption due to smooth traffic flows..."
- No additional infrastructure/incentives for public transportation, cycling or pedestrian traffic despite projections for ongoing population growth in Northern Sydney and the Central Coast and employment growth in Western Sydney
- Inevitable damage to the heritage value of the local area, given the proximity of the northern tunnel portal and interchange to two heritage conservation areas and tunnelling within metres of historic houses

- A project design without the significant use of renewable energy (in construction or operation), or the reuse of materials

Solution: The tunnel project proponents must either accept that the current design does NOT represent excellence in sustainable design, or else undertake a re-design incorporating the above suggestions and those from suitably qualified and motivated designers/engineers before claiming excellence in sustainable design.

References:

McLennan, J.F. (2004) *The Philosophy of Sustainable Design*

NSW Planning: Density the price of convenience, says Goward. Sydney Morning Herald, May 31, 2014

6. Heritage Impacts

Issue: Visual impacts in a residential suburb classified as a heritage conservation area.

It seems unimaginable that the location of an exhaust stack and its associated buildings between 2 heritage conservation areas would ever pass the “common sense” test. If this is unavoidable, it seems even more perplexing that buildings are not “buried” behind the sound wall for the M1 so that the visual impact is kept low. Nice as the current design of these buildings may be in another setting, they are totally out of keeping with the heritage buildings located over the road from the facility from the early years of the 20th century. Under normal circumstances buildings of this size, magnitude and style would be forbidden by local planning laws and to maintain the historical character of the area these must be hidden from view through clever design, except when required for functional reasons, such as the exhaust stack.

Solution: rather than spending time and money in designing brutalist structures which may be appealing in other situations, the designers must accept that their industrial buildings will never be in keeping visually with the surrounding historical suburb and must therefore be hidden from view as much as possible. Given the large amount of excavation at this location, the design of this facility must take into account the three dimensional space and locate the buildings as low as possible.

[REDACTED]

This is a locally significant heritage building [REDACTED]
[REDACTED] constructed in 1895, and it had fallen into disrepair until the last ten years, when it has undergone a painstaking, architecturally-sensitive and expensive restoration courtesy of the property owners. I note with some irritation that the heritage assessment of this house seems to focus more on the “unsympathetic fence” along the front of the property rather than the excellent condition that the house is in, given its age.

Issue: Dilapidation of a significant historic building.

I am concerned about the cumulative impact of vibration and construction on this property and the irreparable damage this may cause. In addition, as there is *no groundwater assessment* as part of the Environmental Impact Statement, the likelihood and magnitude of earth subsidence has not been estimated. All of my questions on this issue to the project team have been met with “What, you think you can’t repair a heritage house?” or similarly insensitive statements. Whilst I acknowledge that repairs to heritage buildings are possible, wouldn’t it be better to avoid this in the first place? Damage to this and other heritage houses in the area are more likely to be required, more expensive and time-consuming and may be structurally more significant when compared with houses built more recently. These homes not only belong to the property owners but culturally belong to the residents of the area and must be protected.

Even if this house escapes unscathed from the point of view of structural damage, it will inevitably suffer from the visual impact of the project, which is rather casually acknowledged and then ignored in the Environmental Impact Statement and design documents. There are many houses in a similar situation in the Heritage Conservation Areas which are immediately adjacent to this project on the eastern and western sides of the Pacific Motorway. It is hard to think of a more inappropriate place for a construction site and industrial-styled infrastructure facility.

Solution: The proponents need to demonstrate a greater level of concern for the heritage values of the area immediately surrounding the northern ventilation facility. The potential for irretrievable damage due to construction, subsidence and operation is high in this area. There are more suitable locations for this project with less potential for damage to heritage value. Rather than simply making passing reference to visual impacts of locally significant houses, better design is required to minimise this impact.

Conclusion

“Critical State Significant Infrastructure” and “clever design” should not be mutually exclusive concepts. The current plan for NorthConnex is overly simplistic, reckless and motivated by minimising cost to maximise profit margins. Community concern must be taken into account to ensure an intelligent, safe design.