5 September 2014

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

NorthConnex Application Number: SSI 13_6136

I request that my name not be published with this Submission.

Please find below my/our submission in response to the exhibition of the EIS for NorthConnex.

Firstly I would like to state we object to the project as described in the EIS.

I have **MAJOR** concerns regarding the following issues for the proposed NorthConnex project and request that these be considered by NorthConnex and the Department of Planning.

Issue:

Placement of the northern ventilation stack in the centre of a densely populated residential area in Wahroonga, where 9,300 school children will be exposed, as well as multiple aged care facilities, hospitals, businesses and homes.

Children are thought to be at higher risk of suffering adverse effects of air pollution owing to their potentially high susceptibility. Important factors determining the susceptibility of children are:

- **Factors related to physiology:**
  Children breathe more per unit body weight than adults
  Children have smaller airways and lungs
- **Factors related to metabolism:**
  Different rate of toxification and detoxification
- **Factors related to lung growth and development:**
  Vulnerability of developing and growing airways and alveoli. Immature host defence mechanisms
- **Factors related to time-activity patterns:**
  Time spent outdoors (specifically Abbotsleigh and Waitara Public School and many daycare centres and retirement homes in Wahroonga, Waitara, Hornsby and Turramurra. See Appenix D.
  Increased ventilation with play and exercise
- **Factors related to chronic disease:**
  High prevalence of asthma and other diseases
- **Factors related to acute disease:**
  High rates of acute respiratory infections

Adapted from: Health aspects of air pollution. Results from the WHO project "Systematic review of the health aspects of Air pollution in Europe" 2004

Current best practice in public health and urban infrastructure management by global standards requires that ventilation stacks be located away from residential areas. Where this is not possible, filtration should be used. This project however not only proposes a stack in a residential area, but in a densely populated, high risk area with an extraordinary number of 'at risk' people it calls 'sensitive receptors'. And it precludes filtration.

Solution:

Move the ventilation stack to an area where there are no residents, daycare centres, schools or retirement homes eg National Park.

An independent options assessment process should also be undertaken to assess alternative locations for the ventilation stack and portals.

Issue:

The placement of the northern ventilation stack in a valley in Wahroonga where there are often low wind speeds which will result in poor dispersion and exposure to community to high levels of tunnel emission.

Solution:

Independent meterological monitoring be undertaken locally (within 40m of the proposed stacks).

Issue:

I am highly concerned about the multiple large scale research studies that suggest the impacts of air pollutants on health are serious. These include increased death from heart disease, increased risks of lung cancer, stroke, poor lung growth in children, increased asthma, and recent research suggesting low birth weight for pregnant women, increased autism, and congenital heart defects. These studies confirm air pollutants have prothrombotic and inflammatory effects on humans which cause the above long term health problems. See Appendix A, B, C.

Solution:

To undertake a Life Cycle Analysis and assessment for the provision of filtration and a committment to have it running 24 hours a day, 365 days per year.

I also request that alternative transport options to ease congestion on Pennant Hills Rd be considered such as an orbital surface route or reduced traffic lights to ease congestion.

Issue:

Future provisions for portal emissions in densely populated areas, which will result in emissions remaining at ground level and therefore exposing the local population to pollutants. NorthConnex's claim that there will no portal emissions from current proposal cannot be verified. See Apenndix A, B and C.

Solution:

Portal emissions from NorthConnex in the future are banned for life and also conduct an independent review of the ventilation system to ensure that NorthConnex's claim of no portal emissions is justified.

Issue:

I am concerned about the large amount of diesel emissions which will be emitted from the NorthConnex tunnel, as it is being designed for heavy freight to bypass Pennant Hills Rd. Diesel emissions have been classified as carcinogenic by the World Health Organisation and contain a larger number of fine particles which penetrate deep into lung tissue and remain there causing inflammation. See Appendix A, B and C.

Solution:

A long term health study on children and residents in areas impacted by stack discharges be included as part of the conditions of approval.

Issue:

I am concerned about the air quality within the tunnel which is shown in the EIS to have exceedences above standards for pollutants such as NO2, and haze from particulate matter at the ends of the tunnel.

Solution:

To undertake a Life Cycle Analysis and assessment for the provision of filtration.

Issue:

Iam concerned about the multiple flaws in the air quality modelling of the northern stack in the EIS. These include:

a) extrapolation of meteorological data from other weather stations which do not reflect the local meteorology, local topography, and the valley location.

b) The use of a coarse topographical model

c) The failure to consider polluted intake air from the Pennant Hills/M2 interchange as part of the project contribution to air quality at Wahroonga

d) the background air quality being based on air quality at Lindfield and Prospect and the lack of any data on PM2.5

Solution:

Independent review of air quality in and around the Northern and Southern portals and using this data to review the tunnel air quality.

LOCAL meteorological and ambient air reporting (next to portals) be undertaken and this information used for the air quality assessment within the EIS.

Issue:

I am concerned that a full and transparent options assessment process was not undertaken to assess alternative designs for the project. Unlike other tunnel projects in Sydney, there are alternatives for locating the stack and portals in non-residential areas.

Solution:

The Submissions Report/Preferred Project be exhibited to allow the community to respond to the revised information contained in the report.

Issue:

The placement of the northern ventilation stack is in a valley.

Ventilation stacks emit pollutants into the surrounding ambient air, concentrating pollutants in this ambient air, rather than across the entire length of the surface road.

When located in a valley such as is proposed for the northern stack, the ventilation stack will increase deposition of particulate matter in the immediate surrounds, as there is less dispersion effect from a stack when placed in a valley.

The valley that is the proposed site for the northern ventilation stack is surrounded by dense vegetation of a height of approximately 20m especially to the south and western sides where the valley is at its greatest depth.

The height of the valley ridges will detract from the height of stack. This results in poor dispersion and in an accumulation of particulate matter in the area around the stack. The dispersion effect of a ventilation stack is dependent on its height, meteorology, topography of the surrounding area, and the levels of in-tunnel vehicular emissions. A valley such as the site in Wahroonga has typically stable air (little turbulence) which further decreases dispersion effects.

In a valley particulate matter becomes meteorologically trapped. If the air mass is stable dispersion is much less effective.

If the air mass is stable there is no dispersion. It is a well-known effect that the emission plume will descend into the valley and remain there, leading to significant pollution episodes. This can be further compounded by the topography, and pollutants released in a valley would be even more likely to be trapped there under such conditions. In the case of the northern stack there is limited wind flow and predominantly stable air in the proposed valley location.

Solution:

Locate the northern ventilation stack on higher ground.

Issue:

The Northconnex tunnel design uses a piston effect from the vehicles to propel the vehicle emissions into the tunnel. The proposal has no exhaust fan system to ensure emissions will be drawn into the stack at the tunnel entry. A low pressure area is likely to be created behind vehicles entering the tunnel, and the air flow from the piston effect may not be sufficient to propel emissions into the exhaust fans of the stack. It is therefore likely that emissions will stagnate at tunnel entry and exits at ground level, creating a health hazard for the surrounding residences.

Solution:

Install exhaust fans at both the Northern and Southern portals and run them 24 hours per day, 365 days per week.

Issue:

In the case of the NorthConnex tunnel, the background air quality data is being collected on higher ground at a sight 1250m away from the stack. This data is not representative of the site. The background monitoring of air quality data has to be collected at the site of the stack to have any meaningful comparisons in modelling scenarios. The models for predicting ambient air quality around ventilation stacks depend on multiple variables that are not easy to take into account. The data used does not provide details of the variation in emission levels dependent on time of day, traffic congestion, type of vehicles, and emission standards.

Monitoring of air quality data is generally averaged over 12 months which means that plume effects are not accounted for. The plume effect of ventilation stacks results in short bursts of highly polluted air being released from the stack into its immediate vicinity. The plume effect is difficult to measure since most measurement devices estimate hourly ambient air quality or average ambient air quality over a period of time such as 12 months. The intensity of the load of the plume effect is of serious concern due to the implications of the detrimental effect on the health of residents. Even very short term exposure to a dose of these toxins can lead to serious health consequences (see Appendix A).

There exists no particle that can effectively be measured to indicate if ambient air pollution is from surface roads or from a ventilation stack. The source appointment of emissions is in this case very complex.

Solution:

Undertake independent ambient air quality modelling locally (within 40m of the proposed Northern stack).

Issue:

Compounding effects of pollutants: There is no validated understanding for interactions between air pollutants and their compounded harmful effects. Air pollutants are modified by meteorological factors such as temperature and humidity and by the interactions between the mix of pollutants. The influence of these factors lead to nucleation processes which form particles of different sizes that are more complex to investigate, particles that were not in the original mix of pollutants, but which have formed once the pollutants are expelled from the tunnel stack and exposed to the elements.

Solution:

To consider the substantive health costs downstream from multi system health effects, hence, replacing the portals and stacks to non-residential areas.

Issue:

Ground level emissions from tunnel portals

The tunnel proposal builds in provisions for portal emissions. Portal emissions remain at ground level and present a serious health risk. The portals will be located along the project corridor close to schools and residences. Whilst the current proposal does not request approval for portal emissions, with an increase in traffic over time, the in-tunnel air quality will deteriorate and requests to emit pollutants via portals will be made. If these requests are not granted, the tunnel will no longer be safe to use, and we face the potential for this large investment to be closed

Solution:

Portal emissions are banned for now and the future and a commitment from Transurban that they will not seek portal emissions from Planning.

Issue:

I am concerned that the justification for not providing filtration for the stacks is cursory and unconvincing.

Solution:

The Planning Department does not approve the project in its current form as it clearly does not meet the principles of Ecologically Sustainable Development as required by the Environmental Planning and Assessment Act.

Issue:

Residents living close to the M5 stack at Turrella have regularly reported significant odour annoyance and ill-effects such as sore eyes, throat irritation and increased asthma since the tunnel opened. The study carried out by NSW Health into these reports was inconclusive and unreliable due to significant flaws both in the study design and the statistical analysis. Many residents most exposed to the stack emissions, have been forced to sell their houses because of repeated family illness. In doing so some have suffered significant financial loss, which was uncompensated in any way.

Solution:

To consider the substantive health costs downstream from multi system health effects, hence, replacing the Northern portal and stack to a non-residential area.

Stamp Duty on future house purchase be waived for residents within 500m of the proposed stack for a period of the construction of the project.

Some form of compensation be offerred to the residents surroundig the Northern Portal and ventilation stack.

Free medical treatment, exams and ongoing tests for the period of 5 years post construction.

Issue:

Effective electrostatic precipitator filtration technologies are in use in Japan, Norway, South Korea and Vietnam to remove particulate matter both from inside tunnels and from ventilation stacks. Modern practice removes the particulate matter inside the tunnel, close to the point of formation. Both Japan and Norway, the main users, report that the constructive use of filtration can significantly reduce the overall cost of running tunnel ventilation systems, without factoring in reduced health costs. Madrid city has just announced it will filter the ventilation exhausts from the 55 km of tunnels in the new Calle 30 ring route to improve local air quality. Equipment for removal of nitrogen dioxide is under development but the need and economic viability of the use of such equipment in a city such as Sydney is difficult to justify except in a few special cases.

NorthConnex does not propose filtration and has not undertaken any reports on the effectiveness of filtration specific to the NorthConnex project.

Solution:

Filtration be implemented on both the Northern and Southern ventilation stacks and an agreement in place to run the filtraton equipement 24 hours a day, 365 days a year for life, regardless of cost. If the cost is too much, increase the tolls. Human life is more important than profits.

Issue:

For a tunnel of this length, SKM Report (F3 to Sydney Orbital Link Study) recommended four ventilation stacks.

The current stack is only 15m high, located in a valley, therefore, for 9km tunnel this is too low to enable the pollution to push through an inversion layer. It is in a valley with houses further up the road being equal in height to the top of the ventilation stack.

Other Sydney tunnel sizes and heights:

Eastern Distributor: 1.5km
Cross City Tunnel: 2.1km, 39m high
Sydney Harbour Tunnel: 2.25km
Lane Cove Tunnel: 3.6km
M5 East Tunnel: 4km, 35m high

Solution:

Provide the modelling that has enabled you to dismiss this recommendation. Provide evidence that four ventilaton stacks are not required along the 9km route.

Increase the height of the stack to at least 70m to enable effective dispersion.

Alternatively, 4 ventilation stacks along the route to help disperse the pollution from the tunnel. SKM's inital report recommended four ventilation stacks. This has been ignored.

Issue:

Potential future high rise developments could impact the effectiveness of the stack.

Solution:

Where a future high rise development is located within 800m of the stack the height of the proposed work is less than 13m.

Issue:

The Audtior General was quoted as saying that the NSW Government's failure to get people out of cars and onto public transport was the prime reason that Sydney would not meet its own national air quality and greenhouse emission targets. Instead, private car use is growing faster than the population. In 2001-2002 every car in NSW travelled 15 per cent more than the year before.

Solution:

Alternative transport options to ease congestion on Pennant Hills Rd be considered such as an orbital surface route or reduced traffic lights to ease congestion. If not considered, provide a report on the reasons why it would not work.

Issue:

Northern ventilation stack placed in residential area.

Solution:

Spend the extra $420 million to move the ventilation outlet to a non-residential area on higher ground. $420 million could be recovered by extending the toll contract.

Issue:

Motorway maintenance activities have been excluded from the EIS.

Solution:

The impact and associated mitigation measures for maintenance activities need to be addressed in the Submissions Report.

Issue:

The Environmental Protection Authority is not going to regulate this tunnel and it is up to self-regulation.

Solution:

The Environmental Protection Authority to regulate the tunnel.

Issue:

The project will have some social benefits in terms of improved travel times but may have negative impacts on property values particularly with those properties in close proximity to the ventilation stacks. It may have an impact on the Heritage Conservation Area of Wahroonga.

Property prices expected to fall (for those living close to the ventilation stack) after opening.

Solution:

An independent study by the Valuer-General should be undertaken to assess the impact on property values of NorthConnex project and other future tunnel projects.

Issue:

The heritage chapter of the EIS is inconsistent and in many cases uses outdated significance assessments as the foundation of investigation for impacts which have not been adequately addressed. Future planning has been left to 'detailed' design.

Solution:

Clarification needs to be obtained on the future process.

Issue:

The Northern Interchange Compound Site (NICS) will result in the removal of 1.14ha of Critically Endangered Blue Gum High Forest (BGHF) (Eco Logical Australia 2013) which is listed under the Threatened Species Conservation Act 1995 (TSC Act).

Solution:

Move portals furhter North thus more land available for Compound.

Issue:

The EIS states that air quality inside the tunnel will be monitored continuously throughout the operational life of the tunnel, while the air quality on the surface along Pennant Hills Road will only be monitored for a period of twelve months after it opens. This strategy will not allow data to be collected verifying the claim in the EIS that air quality will not be significantly affected in the longer term.

Solution:

Surface monitors retained and the data made public to ensure credibility in the 'safe operation of the tunnel' is to be established.

Issue:

Jet fans brake down causing pollution to spill out of the portals (as per M5 tunnel), subjecting residents and schools in the vicinity to be exposed to 10 times greater pollution.

Solution:

Remove the ventilation outlets away from residential area to higher ground.

Issue:

No modelling has been undertaken for a diesel truck (double length) on fire and subseqently pouring out of the portals and clouding the surrounding community.

Solution:

A variety of different plausible emergency situations should be modelled and the air quality and human impacts assessed.

Issue:

At 19min 23 second video gallery from the Air Quality Forum.

[redacted] (NorthConnex's independent expert) talks about poor dispersion being a stack in a valley of where there is still environment.

Solution:

Move the Northern Ventilation stack to higher ground.

Issue:

NorthConnex employee verbally commented "they already live near a freeway".

This is proof of the indifference of NorthConnex to the community in this project.

Solution:

Train NorthConnex staff to behave more appropriately.

Issue:

NorthConnex employee verbally commented "it would certainly be better for the stack to not be built in a residential area".

Solution:

Move the stack to a non-residential area.

Issue:

Distance from ventilation stack to houses is inaccurate.

Solution:

Provide the community accurate measurements from the edge of the ventilation stack to the surround properties.

Issue:

Design of the ventilation stack – does not suit heritage and interwar houses.

Solution:

Provide alternative designs and allow the community to provide opinions.

Issue:

How long has it taken a huge company to provide the EIS and then to delay the date because it wasn't ready? Furthermore, to give the community 60 days to respond to 3,500 pages in our spare time is outrageous.

Solution:

Delay the project to allow the community to provide feedback. Many neighbours of mine are still unaware of the project.

Issue:

What is being done for the Pacific Highway? How will the traffic going there be addressed?

Solution:

Provide the community your complete plan to address the above.

Issue:

I have REPEATEDLY asked for the EIS in one PDF for download. This has not happened and in fact, many of my requests were completely ignored.

Solution:

Provide any further documentation in one downloadable PDF.

Issue:

Are you hiding behind “commercial and in confidence”? – why can’t the public see the other options for the tunnel? Where is your transparency? As this was an unsolicited bid, you hide behind this. This gives the community NO confidence that you aren’t hiding other matters relevant to us.

Solution:

Provide the other options that were supplied for the tunnel.

Issue:

The assumption that an improved air quality around Pennant Hills Road will lead to improvement in health along the road is incorrect. Evidence from Cowies study of the health impact along the Epping Road corridor after the opening of Lane Cove tunnel could not demonstrate an improvement in health (specifically looking at respiratory health)

Importantly it also showed a deterioration in lung function and increase in respiratory symptoms in people living near the ventilation stack, although levels of PM2.5 were within the range of “safety”. This suggests that something not being measured such as PM1 (known to have multiple adverse effects on health inclusion causing cancer and cardiovascular disease) was causing this. See Appendix A, B and C.

Solution:

Provide proof of the statement that improved air quality around Pennant Hills Road will lead to improvement in health along the road. Undertake independent health study.

Issue:

Have you split modelling into peak and non-peak periods? If not, why as the non-peak period will dramatically affect the results on the peak period”?

Solution:

Provide Peak and non-peak modelling.

Issue:

RMS Project Director ([redacted]) said that the Northern ventilation stack it’s not going to be put in a residential area (in the Hornsby Advocate).

Solution:

[redacted]*publicy retract the statement and admit to the community that the Northern ventilation outlet WILL be placed in a purely residential area.*

Issue:

Have you installed a monitor upwind of the tunnel emission point source as this allows determination of “background” air quality and the composition of the air entering a tunnel?

Solution:

Install monitor upwind of the tunnel emission point.

Issue:

Document: Air Quality in and Around Tunnels

“A simpler tunnel ventilation system involves the venting of contaminated air at the exit portals. If it is considered that the impact on the local environment is too high, the tunnel air can be vented elsewhere, at a ventilation station and possibly via a tall stack. In some cases, this stack is some distance from the tunnel so that tunnel air may be vented into the atmosphere in a nonresidential location. Variable control of the ventilation system can change the distribution of air vented through the portals and through alternative openings. On eof the great advantages of road tunnels is the opportunity to deliberately site portals (or stacks) away from sensitive receptors so that road transport emissions may be removed from dense residential areas, improving local air quality.”

Solution:

Vent the air pollution from the Northern ventilation outlook further away to a non-residential area

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Issue:

Document: Air Quality in and Around Tunnels

“Measurements of PM 10 are dependent on the presence of a relatively small number of coarse or supermicron particles. Thes particles exist in very low numbers in ambient air relative to finer particles, but their large size means that they make a substantial contribution to the mass of particles in a given volume. Smaller particles can remain suspended in the air because the turbulence in the atmosphere is sufficient to overcome the action of gravity. Particles of greater mass are heaver and thus more likely to form a sediment on the surface.”

Solution:

What assurances do you give people that live within 500m of the stack (including Waitara Public School and Abbotsleigh School)? Please provide scientific reports to support your argument.

Issue:

Will you be measuring portal emissions within 10-30m of the northern portal?

Solution:

Measure portal emissions within 10-30m of the Northern ventilation outlet, provide this information to the public. This should take place indefinitely and not a time-defined period to ensure the health of the community living around the stack.

Issue:

Document: Air Quality in and Around Tunnels:

"We would first like to comment on how difficult it was to obtain data about some Australian tunnels, especially where private operators were involved. In some cases this hindered or delayed our analysis."

Solution:

Provide assurances to the community regarding transparency with the community as to date, I have not received timely replies to emails and basically given the run-around. What procedures and plans are in place for this transparency for the future? Please outline.

Issue:

Document: Air Quality in and Around Tunnels:

"It is vital to establish what the localized pattern of air quality actually is in residential areas near tunnels. There is very little published work on observed health effects of residential location near a tunnel".

Solution:

Monitor indoor air quality for those living within 500m of the stack (including schools, daycare centred and aged care facilities).

Issue

Air Quality in and Around Tunnels: "it has long been established that valley settings are disadvantageous for dispersion of stack emissions due to sheltering, recirculation and being more prone to local inversions (effectively putting a "lid" on the valley) compared to open locations. Current dispersion models have limited success in predicting such effects at local (<1km) scales."

Solution:

Move the Northern ventilation outlet to higher ground away from residential areas.

Issue:

Air Quality in and Around Tunnels: Page 111, 7.2.4 Tunnel Filtration by Electrostatic Precipitation

"based on this widespread use over the last 25 years it is assumed that there are sufficient data to conduct an analysis of the effect of ESPs on external air quality."

Solution:

Why have you not investigated and modelled filtration for NorthConnex? Please provide proof that filtration does not work (do not address cost effectiveness as this relates to human health and a price should not be put on that).

Issue:

Air Quality in and Around Tunnels:

"The trapping of pollutants emitted in valleys has been known for over a Century. Causes for pollutant trapping invlude sheltering from the wind, invrsions capping the valley, katabatic flow down valley sides, and interactions between these processes. For achieving the full benefits of stack venting compared to portal emissions in populated areas, especially if sensitive receptors are located above the valley or on valley slopes, stacks need to be taller than valley sides to take advantage of natural atmospheric dispersion."

Solution:

The proposed site of the stack is located in a valley and my house will be above the top of the stack. Provide the receptors to model this.

Issue:

CSIRO Modelling of NOx Concentrations near the M5 Stack: " The most significant feature of the figures compared to result from the ealier study (Hibberd, 2003) is the high ground-level concentrations near the tunnel portals. These are typically 10 times larger than any of the ground-level concentrations due to stack emissions."

Solution:

Provide guarantee on health to the residents living within 600m of the portal.

Issue:

The tunnel has been designed with 3 lanes and you have designed the ventilation system for the cars at opening. How do we know this is not a repeat of the M5 where use was significantly underestimated. “It is clear that tunnels with extra lanes carry extra traffic, which implies higher total emissions.” (Air Quality in and Around Tunnels).

Solution:

Provide guarantee on health to the residents living within 600m of the portal and your plan if health issues arise.

Issue:

Parliament of NSW: Inquiry into Lane Cove Tunnel

“While the Committee heard credible evidence that the Lane Cove Tunnel project is likely to result in a net improvement to air quality in the surrounding region, the Committee acknowledges that the effect of unfiltered emissions from the Lane Cove Tunnel’s ventilation stacks on the health and wellbeing of the surrounding community is a continuing and serious concern for some sections of the community. To address this concern, the Committee has made a number of recommendations intended to ensure that the community is made aware of the results of the NSW Health study currently in progress, and that the improvement of air quality is a continuing priority of the Government. The Committee has also recommended that the trial of filtration technology in the M5 East tunnel be closely monitored, and that future tunnel projects incorporate into the call for tenders a requirement to design and cost in-tunnel filtration.”

Solution:

Provide an independent report on the reasons why filtration has not been researched and is not required on the NorthConnex project.

Include tunnel filtration costs and modelling into the EIS.

Issue:

Parliament of NSW: Inquiry into Lane Cove Tunnel:

“Recommendation 13: That future road tunnel projects include within the call for tenders a requirement for tenderers to design and cost in-tunnel filtration as a component of the ventilation systems.”

Solution:

Provide design and cost of in-tunnel filtration as a component of the ventilation system.

Issue:

Parliament of NSW

"Recommendation 14: That the decision on whether or not to install in-tunnel filtration in future road tunnel projects be made by the Budget Committee of Cabinet, on the basis of advice received from relevant Government departments."

Solution:

The Budget Committee of Cabinet provide the report on why in-tunnell filltration was not required on the NorthConnex project.

Issue:

It has not been acknowledged in the, the high level of community anxiety regarding the stack at the Northern interchange.

Solution:

Acknowledge publicly to the community that this project has created a lot of anxiety in the community and what measures you are taking to relieve this.

Issue:

The use of air filtration in Sydney tunnels is not effective (cost or health-wise).

Solution:

Can you refer to any scientific studies to support your argument (note, scientific studies need to be of relative size to NorthConnex and have ventilation stacks in purely residential areas and running 100% of the time)? Retro-fitting air filtration is not cost effective. Refer report (Air Quality in and Around Traffic Tunnels) "People who live near to tunnels or their stacks may be at risk if the presence of the tunnel alters the ongoing quality of the neighborhood ambient air" and "Of particular concern is an association between impaired lung development in children and emissions from traffic. Particulares from tunnels and volatile compounds including benzene may produce an increased lifetime risk for cancer" .

Provide ambient air quality data 20m from the first house closest to the stack on Wonoona Avenue. Please supply modelling to show that ambient air monitoring across the Street has been undertaken.

Issue:

No modelling has been undertaken for the use of studded tyres (the interaction of such tyres with the road surface producing higher levels of PM).

Solution:

Please supply this data and any relevant scientific studies to support your answer.

Issue:

Technical Working Paper: Human Health Risk Assessment – NorthConnex: "Based on the available studies, there is no evidence of a safe level of exposure or a threshold below which no adverse health effects occur (NEPC 2010; WHO 2013b)."

Solution:

If there is no evidence of a sale level of exposure the ventilation stacks should be moved to non-residential areas.

Issue:

Technical Working Paper: Human Health Risk Assessment – NorthConnex:

"For many of the key health effects associated with exposures to PM10 and PM2.5 the exposure-response relationship is linear (where there is no threshold below which no adverse effects have been identified) (NEPC 2010). "

Solution:

This means that any exposure to particulate matter has the potential to be associated with an effect. Please provide evidence this will not happen for people living within 600m of either the Norhtern or the Southern ventilation outlet (also quote scientific reports).

Issue:

The Northern ventilation stack is located in a heritage conservation area and is not in the existing road corridor. The ventilation stack will be highly visible from the heritage conservation areas both sides of the M1 – while the existing M1 is not. Why is the design of the ventilation stack not consistent with heritage objectives and character of the area?

Solution:

Provide further detailed design options to the community.

Issue:

Inaccurate “artist impression” images supplied to the Community which show the height of the ventilation outlet as only 9m high when in fact, from ground level it will be 23m high.

Solution:

Provide ACCURATE artist impression images to the cmomunity before the project is undertaken.

Issue:

The artist impression images from the NorthConnex website showed the surrounding hertiage houses as grey industrial blocks. This is misleading to the community at large. These were subsequently removed after numerous complaints.

Solution:

Release a public apology for misleading the public with these drawings.

Issue:

The visual appearance of northern ventilation building is totally inappropriate for its location in the middle of heritage conservation areas. It is arrogant to provide one design and expect the community to be happy with it.

There is no opportunity for community involvement in the urban design of the project despite its significant visual impacts to the residents surrounding the Northern ventilation stack.

Solution: Liaise with the community and Council to provide 3 options of different designs to be considered. Provide an urgan design and landscaping plan for surface and landscaped elements.

Issue:

You state:

“The air quality background monitoring locations are Rainbow Farm Reserve, Carlingford; Observatory Park, Pennant Hills, Headon Sports Park, Thornleigh, Brickpit Park, Normanhurst, and James Park, Hornsby. The stations are currently collecting existing local air quality data including monitoring for particulates (PM10 and PM2.5)”. There is no air monitoring station situated on the corner of Bareena Avenue and Woonona Avenue.

Solution:

Provide air monitoring station on the corner of Bareena Avenue and Woonona Avenue and make the data avilable to the public.

Issue:

The current background monitoring locations represent both ambient and roadside locations in the Pennant Hills area. The purpose of these stations is to collect sub-regional air quality data and therefore the location is not linked to the proposed portal or ventilation outlet positions. The final locations of the operational air quality stations will be established in consultation with the EPA and NSW Planning and Environment.

Solution:

Given that inflow air for each of the tunnels will from the both the M2 and M1 Motorways corridors please air quality monitoring at these locations.

Issue:

No out of hours assessment for the M1 integration works has been undertaken.

Solution:

Provide a guarantee to the community that all construction works for the M1 integration and M1 portal works will be undertaken within standard construction hours.

Issue:

The visual impact indicates that significant areas of the conservation area will be able to view the project including the northern ventilation stack. The M1 is currently is obscured by the significant road corridor vegetation which will be removed and much of the M1 corridor and new works will become visible.

Solution:

The impact on heritage values of the visual impact of the project needs to re-assessed in consideration of the visual impact assessment report.

Issue:

NorthConnex email to me:

"Once in the atmosphere, vehicle emissions continue to dilute and disperse, sometimes travelling over many kilometres. Some emissions remain in the atmosphere and others may come back to ground level, which result in a measure so small it is insignificant in comparison to background.

Source: http://www.lanecovemotorways.com.au/livedata.php<http://l.facebook.com/l.php?u=http%3A%2F%2Fwww.lanecovemotorways.com.au%2Flivedata.php&h=PAQFEwVk-&enc=AZMry9yCzf-TEiJBr0ByrnPxjH1HlNbxp8NDbIUyR-yF3evDXPdiMVusrbupIZXsX9A61rgpCGXqigOPPXuArcMSxA73l0VSXlT7Gr4exo10yqyl8MsE5YXqcUgXDjcCUj74Vg8m-UmmDmOOrlfSbdWg&s=1>".

Solution:

The source you referred me to provides "IN-TUNNEL" monitoring. Provide evidence of the above statement for external air quality.

Issue:

NorthConnex email to me:

This link provides access to in-tunnel and external ambient data. For the latter, you can go directly to http://www.lanecovemotorways.com.au/ambient.htm<http://l.facebook.com/l.php?u=http%3A%2F%2Fwww.lanecovemotorways.com.au%2Fambient.htm&h=IAQEySJG3&enc=AZMg39VV9I8CA2SC6Vj5alSeeMclFes-NqAk3N06HDF-SBxSkE-m7SKrc0Z-5jqbABlfLidJlYHKAVufJG4svqjbAOBSTlChuaeFg8P7loeu5FL78MO8qRg1fj3pyiDhNy8kcZJYXMotfK1vDYuWJTWq&s=1> on the same site.

Solution:

The ambient data you referred me to is 4+ years old – it does not take into account any increases in traffic numbers, is for a tunnel a third of the size of NorthConnex and one that has a significantly lower percentage of heavy vehicles. Please provide a more relevant and contemporary source.

Issue:

If the quality of "fresh air" entering the northbound tunnel at the Pennant Hills Road and M2 Interchange entry portals has been based upon purely on the air quality monitoring undertaken in residential areas in Prospect and Lindfield. Using the Prospect and Lindfield air quality monitoring stations to establish the "fresh air" quality entering the northbound tunnel at Pennant Hills Road/ M2 interchange would significantly underestimate pollutant concentrations

Solution:

Provide evidence of the air quality entering the northbound tunnel at Pennant Hills Road and M2 interchange entry portals.

Issue:

The breakdown scenario modelled in the air quality assessment is not the worst case according to the PIARC guidelines

Solution:

Scenario B should be modelled to determine worst case emissions from the tunnel.

Issue:

The human health impacts from the inhalation of silica rich dust generated from construction has not been assessed.

Solution:

Provide human health impact assessment of the above.

Issue:

There are no systems or management measures proposed in the EIS to manage tunnel air if NorthConnex does not perform as modelled.

Solution:

The ventilation stacks should be designed and constructed to allow filtration to be installed at a later date at minimal cost. Please provide evidence this has been allowed for.

Issue:

The EIS has not been translated into any other languages. A translation service is provided. There are many neighbours of different nationalities living in the area (the Waitara Public school is the most mutli-cultured school in Australia). If a Korean person was to call the Translaton Service, would they translate the 3,500 pages over the telephone?

Solution:

Provide ALL future documentation relating to the project in Cantonese, Mandarin, Korean and Vietnamese.

Issue:

Will there be any air quality impacts (odours) from the water treatment plant?

Solution:

Provide independent report showing there will be no air quality impacts.

Issue:

Under-estimating the use of the NorthConnex tunnel (eg M5 tunnel).

Solution:

Provide the action plan to the public of the actions you will undertake if the projected car and truck figures are under-estimated.

Issue:

Even though there are worker carparks, what guarantee will you give the residents surrounding the entry and exit points that cars will not fill up their streets and make noise 24 hours a day for the durection of the build?

Solution:

Provide project plan that ensures workers are not allowed to park cars and trucks or drive through any residential streets surrounding the entry and exit points to these car parks.

Issue:

Worker noise. During a recent surfacing upgrade on the M1, workers (in the middle of the night) were often heard screaming, laughing and shouting.

Solution:

Provide your method for mitigating this.

Issue:

The EIS did not address property prices during the construction period.

A recent article in the Australian Financial Review, by Micheal Bleby (published 25/8/14) stated "During construction of the Burnley Tunnel…..houses within 500m of the ventilation stack at the eastern end of the tunnel grew more slowly in price then those 500m to 1 km away."

Solution:

An independent study should be unertaken to assess the impact on property prices of NorthConnex when selling a property during the construction phase.

Issue:

Property prices have already decreased for houses around the Northern ventilaton stack (regardless of what NorthConnex says) and this has been verbally repeated to me by many Real Estate Agents of what clients are telling them.

Solution:

RMS needs to provide stamp duty exemptions for the sale of impacted properties since the lodgment of the SSIAR with DP&E

Issue:

I did not receive the initial NorthConnex flyer regarding the proposed project and only found out about the project from a neighbour.

Solution:

All future community updates need to be provided in a timely manner – and any complaints about the distribution of community updates need to be properly investigated.

Issue:

NorthConnex continusly misleads the community regularly regarding the filtration trial of the M5 in their brochures to the community.

Fact: 65% of PM was removed yet the ESPs were turned on for only 4 hours a day. The filtration also only treated 50% of the Westbound tunnel.

NorthConnex brochures do not contain any details regarding other filtration systems where removal of PM is 90+%.

NorthConnex deliberately mislead the community so that the community would believe filtraton does not work and is not “cost effective” whereby the above proovs that is is.

Solution:

NorthConnex publicy admit the above to the community instead of hiding behind “filtration does not represent value for money”.

NorthConnex to also amend their brochures so that the information provide to the community is not misleading.

NorthConnex to distribute updated flyers to the residents living within 2km of both the Northern and Southern ventilation outlets.

An independent report on the effectiveness of filtration specifically relating to the 9km NorthConnex tunnel and that report be made publicly available.

NorthConnext ventilation outlets be built so that filtration is able to be implemented in the future.

Issue:

The NorthConnex Air Pollution Forum was presented a mere 2 weeks after the launch of the EIS. This did not give the community enough time to read 3,500+ pages. This seemed deliberate and is misleading to the community.

The Forum itself was misleading, unprofessional and the presenters at times were rude and arrogant.

[redacted] (NorthConnex's independent expert) had not read the EIS and had no relevant information to the actual project and often referred to New Zealand tunnels which do not compare to the 9km NorthConnex tunnel. NorthConnex failed to project an apporpriate independent expert.

The community was severely unhappy with the level of information provided many questions were not directly answered or answered with irrelevant information.

Question time was only 40 minutes in length and ended even though there were many people still wanting to ask questions.

The video for the Forum was uploaded to their website 18 days after the actual forum. This is disgraceful and again, seemed deliberate. There was no editing of the video so why the 18 days to put it up on the website? Again, this is misleading and seems a deliberate attempt by NorthConnex to draw out the process of EIS submissions.

The NorthConnex "drop-in" offices are not open 7 days a week and are dificult to get to. Many people have not visited them and when they do, were often treated with sarcasim with one employee telling a community member "do you want a Scotch with that?" and laughing. They also did not have answers to many questions so were in fact, a pointless excercise and nothing short of a tool for NorthConnex advertising.

Solution:

NorthConnex to provide a "question and answers forum" for the community in relation to Air Pollution to enable further questions on the project.

Due to the above significant concerns of the project design (raised above) I request that the Department of Planning does not approve the project in its current form.

APPENDIX A

POLLUTANTS AND THEIR EFFECT ON HUMANS

Particulate Matter

Increased mortality risk as shown in a study from the Lancet which followed 29,076 people for 13 yrs (1) ; reduced lung growth in children exposed to higher levels of pollution between the ages of 10 to 18 years(12) ; short and long term exposure associated with host of CV diseases, heart failure, stroke(14).

Fine particulate Sulphur Oxide

Increased lung cancer shown in study from American Cancer Society (2) ; increased death from heart and lung disease. For each 10 microg/m increase linear increase in mortality.

Air pollution

Increased lung cancer, bladder cancer World Health Organisation 2010(3, 4).

Air pollution from M5

Residents near stack had more upper and lower reps symptoms Cowie et al (5).

PM10

From vehicle exhausts reduce lung function.

Nitrogen Dioxide

Increased bronchitis, asthma in adults and children (6, 7, 8).

Sulphur Dioxide

Pregnant women exposed to sulphur dioxide have low birth weight babies (33).

Ultrafine Particles

Reduced lung function and bronchitis 24 communities in Canada (9-11); absorption into tissues and circulation causing toxicity (27).

Nitrogen dioxide

PM2.5 and PM10 – heart arrhythmia, heart attacks Boston (20); exposure during pregnancy and first year of life is associated with autism (34) , and congenital heart defects; long term exposure on elderly accelerates dementia(35).

Diesel particles and ozone

Increased allergic antibody (29).

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APPENDIX B

Particulate matter

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PM10

From vehicle exhausts reduce lung function

Nitrogen dioxide

Increased bronchitis, asthma in adults and children in (6,7,8)

Sulphur dioxide

Pregnant women exposed to sulphur dioxide have low birth weight babies (33),

Ultrafine particles

Reduced lung function and bronchitis 24 communities in Canada (9-11); absorption into tissues and circulation causing toxicity (27)

Nitrogen dioxide, PM2.5 and PM10

Heart arrhythmia, heart Boston (20);

Exposure during pregnancy and first year of life is associated with autism (34), and congenital heart defects

Long term exposure on elderly accelerates dementia(35)

Diesel particles and ozone

Increased allergic antibody(29)

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APPENDIX C

PM - Particulate Matter

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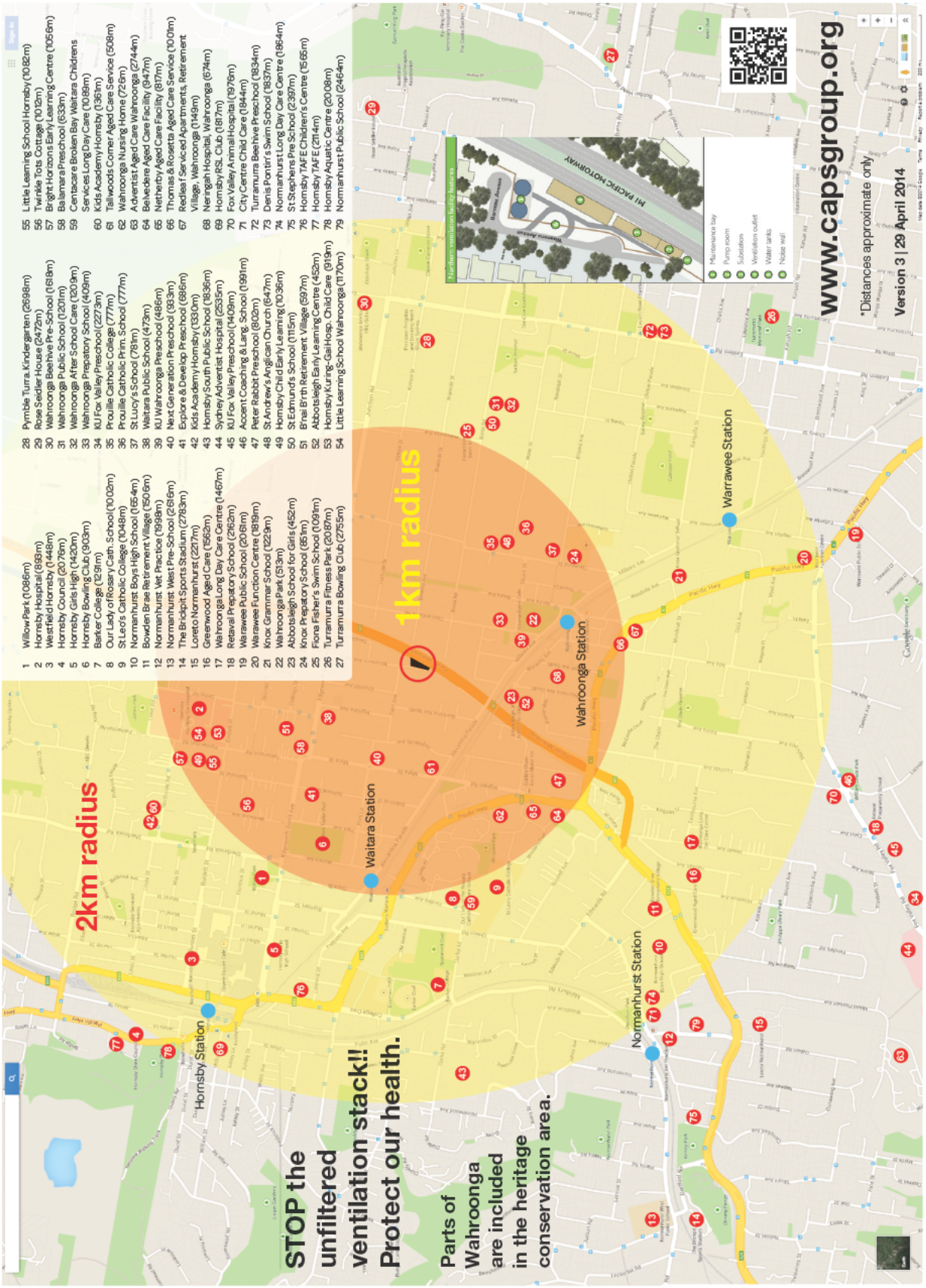
APPENDIX D



Source: www.capsgroup.org