12 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

This is my **submission** in response to the exhibition of the EIS for NorthConnex.

I am, together with my wife and two sons, a resident of Burns Road Wahroonga. Our home of nearly 15 years is a few hundred metres from the northern pollution stack site of the proposed NorthConnex tunnel. I have a science degree and a postgraduate business degree. I have worked for 20 years in the mining industry in technical and management roles in Australia and Asia, and subsequently ten years in my own environment related business.

My **objections** to the project as proposed are set out below:

1. **Community Consultation**

   The proponents of the project fail to satisfy the Director-General's requirements.

   The historical information and consultation processes (e.g. 2004) have no bearing on the current proposal. They lack relevance due to timeliness and stakeholder and economic and environmental change. Including these as part of the EIS lacks integrity.

   The introductory public information sessions (October and November 2013) were poorly attended as the proponents did not adequately distribute information. This was the most critical consultative phase. Most community stakeholders in this period were unaware of the project, status or intent. At the March 2014 and later sessions, the proponents (specifically Mr Tim Parker) admitted the poor, unaudited performance of the 'flyer distributor' earlier engaged in 2013. They were supposed to have 'GPS tracking', but clearly no-one looked at it, and there were no controls set. So hardly anyone was informed, and so did not participate. Note that once they had sorted out distribution shortcomings (albeit too late) the 2014 sessions had 20 times as many attendees and all the input they could mishandle. Still, many stakeholders were and are still unaware.

   From the end of 2013, the proponents had moved on from the very poor consultation process to just 'telling and selling'. Given the personality types, experience and mix of professions in the team, they have demonstrated a dogmatic inflexibility in the face of feed-

back. Clearly over-committed to the project as it stood, no options are considered and no real discussion. No consultation.

Resolution

The EIS submissions will identify the litany of errors, oversight and misrepresentations. The proponents must have a genuine commitment to responding. The outcome needs to be an extended exhibition period to evaluate the proponent's detailed responses to submissions.

Further to this it is required to complete a full design review based on all stakeholder input. The project is not fit to proceed as it stands with such a poor design, poor justification and minimal benefit for a huge cost. Judging from the under-performance to date, it is improbable that the current team is either willing or capable to accommodate the NSW community needs, further constrained by the misalignment of profit objectives of the unsolicited proposal.

2. Aboriginal Heritage

It is with some surprise that no Aboriginal heritage merit was identified in the corridor on the East side of the M1 extending from Millewa Ave to Carrington Park and beyond. This is known locally as Cockle Creek.

Being a creek and geological feature (and a source of food in the form of eels and other fauna and flora), it is most likely that Indigenous Australians may have used this area.

An inspection of the area indicates accumulations of aquatic crustacean shells at some locations. These may indicate the presence of disturbed middens. There is also evidence of rock chips that appear to be from outside the location. Artefacts may be hidden by brush turkey nests, weed growth and the seasonal and longer term changes from water flows in the creek. The cursory review in the EIS was prior to the current design scope and of only part of this area.

Resolution

It is required that a thorough compliant re-investigation of the site be undertaken based on the current design scope prior to any work commencing.

Given that there is some evidence and probability that heritage sites may be encountered during construction, it should be a condition of approval that a responsible and competent heritage officer be present or at least on call (requiring works to halt pending review).

3. Air Quality During Operation

This is the most starkly contestable element of the EIS.

The proposed northern pollution stack is in a valley characterised by low wind speeds and a propensity for thermal inversions. It is inevitable that this will result in poor dispersion and exposes the community to high levels of toxic and carcinogenic emissions. The stack is also

in the centre of a densely populated residential area of 9,300 school children, multiple aged care facilities, hospitals, parks, sporting facilities, businesses and homes.

Multiple studies clearly conclude that vehicle related air pollutants seriously impact on health. The health impacts include heart disease, increased risks of lung cancer, stroke, poor lung growth in children, increased asthma, and a low birth weight due to exposed pregnant women, increased autism, and congenital heart defects.

The proponents have based their health risk assessment on data arising from obviously flawed modelling. The modelling is flawed as it:

- Uses a coarse topographical model from satellite imaging with too large margins of error.
- Wrongly uses meteorological data from other weather stations more than 10km away which do not reflect the local meteorology, local topography, and the valley location.
- Wrongly bases background air quality on data from Lindfield and Prospect (too distant and not relevant) and the lack of any actual data on PM2.5. No validation was entertained by cross referencing latterly attained data from
- Fails to consider that the highly polluted northbound tunnel intake air that comes from the Pennant Hills Rd/M2 interchange. This intersection has more than 160,000 vehicle movements a day so is hardly the 'fresh air' inlet that the proponents assume. The pollutants in the air from the northern stack are therefore understated.
- Suggests to the proponents that no portal emissions will occur. The Pearce's Corner ramps will definitely be a risk of portal emissions if the jet fan location is as proposed. Portal emissions are particularly hazardous to health, as they are undiluted extremely concentrated toxins (more than twenty times the goal level set for PM2.5).
- Uses traffic vehicle characteristic assumptions that are surprisingly counter-intuitive. It assumes the ratio of diesel to petrol light vehicles remains unchanged, ignoring their own data that diesel light vehicle numbers on the road are growing incredibly fast. Diesels of course produce the most damaging ultrafine particles.
- Assumed average truck weight seemingly understated, by up to a third. The heavier the vehicle, the greater the volume of toxic emissions.
- Assumes traffic numbers that are unsubstantiated, and sourced from data forming the basis of all other traffic tunnels in Sydney. No tunnel has got the forecast numbers right, with large errors both over and under. Using the same guesstimate methodology instils no confidence.
- Ignores the discharge from the stacks in the quality of air going into each tunnel entry point (i.e. northern stack discharge 'recycling' into the southbound portal and vice versa)
- Assumes the stack discharges 'disappear' when recalculating the resultant air quality along Pennant Hill Rd with the tunnels.

Based on the above, no confidence at all can be had in the modelling outcomes, and therefore confirming that the health risk assessment has no foundation

The northbound tunnel air quality from modelling is 20 times the goal value already for PM2.5 at discharge, and also very high for NO2. Note that the accumulated errors and

flawed assumptions greatly understate the toxic and carcinogenic concentrations and mass flow.

Nowhere do the proponents discuss the frequency of ground-strike, fumigating discharge plumes or the risk of inversions trapping the plume in the valley. Note that heart attacks have been induced in subjects in research studies at half the level of PM2.5 concentrations in the tunnel.

Resolution

As the modelling has no credibility whatsoever, it has to be re-done in its entirety with proper validation of all assumptions regarding traffic numbers, traffic characteristics, meteorological data, air quality data and terrain data.

The air quality and human health impact assessment need to be completely reviewed based on valid modelling.

Given the under-performance to date, an independent auditor and review entity needs to oversee the air quality/ health assessment. As the proponents (RMS and Transurban) are the biggest show in town for undertaking road infrastructure, it is unlikely that suitable experts can be found who will be able to resist compulsion to concur with the project findings to date, as future work prospects will weigh heavy on them. Nevertheless, independent expertise needs to be sort, perhaps outside of the Australia/New Zealand sphere. It is improbable, given recent history that any government department will have sufficient gravitas to act on behalf of the NSW community given the PPP status, the combined State and Federal funding and the ideological push for infrastructure at any cost.

A transparent and real assessment of options for stack and portal configuration, number of stacks, location and filtration must be considered. The false veil of 'commercial in-confidence' needs to be lifted so that the decision drivers can be clearly seen.

Given that the health impact assessment will likely identify greater impacts than the current gross understatement, a genuine filtration option assessment should be included. The proponents constant referral back to the poorly designed, poorly retrofitted and poorly operated M5 filtration trial is shallow and without integrity. No mention of the more than 100 hundred tunnel air filters operating elsewhere globally, nor proper costing and performance assessment of recent installations. It is illogical to not consider filtration for the improvement of air-shed quality of Sydney, if having already gone to the expense of concentrating a large mass of pollutants to two single points.

The proponents decline to acknowledge that they have the option of having two stacks on each of the tunnels. It is no coincidence that large foot print facilities ('support') are at the 3km and 6km intervals. If additional ventilation stacks were constructed, there would be stacks at the 0, 3, 6 and 9km intervals (two per tunnel). This reduces concentration of tunnel pollutants in each emission stream, ensures superior dispersion and is perhaps a fairer distribution of pollutants.

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

A comprehensive air quality monitoring program needs to be developed and implemented. This needs to be planned and in place for the duration of the period that the operator retains the rights to collect tolls or until the tunnel reaches full capacity. The 12 month monitoring proposal is found to be insulting to the community.

The tunnel proponents need a ceiling value of tonnes of all pollutants by type able to be emitted per hour, week and year.

On-line data needs to be available, as to all air quality monitoring points live. Also included should be volumetric flow and linear velocity data for ventilation stacks. Routine checklists for condition monitoring of equipment and maintenance need to be published at agreed intervals. Consequences of not doing so should be the foregoing of collected tolls whilst any item remains outstanding.

All equipment vital to operation of the ventilation system, especially the stack fans, should maintain discharge rates according to the approved protocol at all times. If due to break-down or malfunction either of monitoring equipment or of operational equipment, the tunnel should be closed immediately until full service is returned.

The protocol for operation of ventilation needs to be submitted and independently assessed prior to any approval. It should take in to consideration the tunnel air quality from monitoring, ambient air quality from monitoring and ambient meteorological data. Portal emissions should trigger emergency response. This should not be able to be changed without a full application and assessment procedure

Portal emissions from the tunnel should be banned, both now and into the future.

A community / operator /government committee should be formed prior to approval to agree on and oversee air quality monitoring, tunnel operation and as a board of review for feed-back, communication and audit. This should continue for as long as the tunnel operates.

A clear strategy needs to be in place and approved for mitigation and amelioration should any aspect of the project not perform to the modelling or predictions of the proponents. This is a pre-requisite for project approval. This may well get the proponents to focus on the accuracy, validity and integrity of the proposed modelling and design.

4. Emergency ventilation

The function of the emergency ventilation is described in the EIS. There is no modelling however of the plume emission from the two emergency systems at the support facilities. The proponents admitted this in the public forum. They have no stacks.

The proponents claim to have liaised with emergency services (e.g. Fire), which may well be the case. But that appears to be it. Whilst dangerous goods are prohibited in the tunnel, many non-dangerous goods produce lethal emissions in their products of combustion. A

tunnel fire may see the emergency ventilation activated, which will spew toxic smoke and gases into the homes and businesses adjacent to the 'support facilities'.

Resolution

A full modelling exercise of worst case fire in the tunnels needs to be modelled. It may well be instructive to include modelling release of the worst hazardous goods in the tunnel too, given that not everyone follows the rules and that acts of intentional harm must be considered in the light of heightened concerns of national security. This is a pre-requisite to project approval.

5. Transport Strategy

A cogent strategy for state-wide transport, now and into the future, does not seem to be available. The tunnel proposal, being an unsolicited proposal, jumps the queue of projects based on merit or priority (if such a ranking exists).

Does building roads lead the way forward for easing traffic congestion by itself? If it is assumed yes, based on projects in the pipeline, it ignores Braess's paradox and Nash equilibrium which together negate the effectiveness of any road infrastructure traffic flow assumptions.

Resolution

Prepare a proper transport strategy in a consultative process with all stakeholders that embrace all transport options being public, road, and rail. Develop an open, transparent system of option evaluation that quantifies the costs and the benefits (direct and indirect) and prioritises accordingly. This will better justify projects beyond being seen as expensive thought bubbles, pork-barrelling, rewarding supportive corporates and high vis. vest photo opportunities.

6. Air Quality During Construction

Sydney sandstone has the highest crystalline free silica content of common rock types. It is the cause of silicosis and a range of other diseases.

Resolution

All areas of construction activity need to be better risk assessed and monitored than the token consideration given in the EIS. The underground ventilation outlets at the compounds will be a constant source of dangerous dust as the tunnelling method will produce massive quantities of fine material. Truck loading will also be dust generating. Surrounding areas of every compound and portal will need special attention including monitoring and dust abatement.

7. House Values

The proponents believe that the project will enhance house values. When challenged at public meetings or drop-ins, they referred mainly to Pennant Hills Road mid-point housing. It is disingenuous of the proponents to repeat this misrepresentation. Clearly, projects such as this that externalise costs. They transfer wealth from private home-owners (who lose house value) and from councils (who lose rates due to lower house values). The churning of housing by disenfranchised home-owners also generates stamp duty for the State. Further costs are born by the health services (and therefore the taxpayer). Wealth transfers to private toll road operators in the form of misappropriated profit.

Resolution

If the proponents believe they will enhance house values, make it a condition that they give affected home-owners the option to sell the house to them at the 'without the project' value. This transfers the risk to the beneficiary of the project. They can reap the profit they will make on the enhanced value when they sell.

The NSW state government should waive the stamp duty for disaffected home-owners who feel forced to leave.

8. Noise

The noise management and impact is nearly as contentious as the poor air quality and health impact. So much uncertainty exists due to mismanagement by the proponents.

The incorrect distribution of mitigation letters, left uncorrected for more than a month has upset many in the community.

Seeming anomalies in the modelling noise 'maps' and the insertion graphs for sound barrier design has left many not confident in proposals.

Poor and changing noise from construction, sound barrier removal and modification, changing work scope and unrealistic work scheduling clearly shows shortcomings in what is proposed.

Resolution

The noise modelling needs to be reviewed and re-done where deficient. Appropriate responses made to design, mitigation works, sound barriers and construction and operational work plans.

Based on re-working this, all sound barriers need to be assessed for current condition and new (permanent) ones built prior to removing any where possible. The noise abatement needs to cope with all traffic and infrastructure noise at the design traffic flow future maximum of the project.

Surface construction activity should always be carried out in construction hours only. No relaxation of this should be considered.

Future noise generating maintenance activity also needs to be constrained to normal hours of work.

9. Water

The EIS has no detailed assessment of the project impact on groundwater, how it will change the water profile along and adjacent to the route. The tunnels are variable in depth, long and porous which are perfect for intercepting water flow. Little quantification is included. Will the project:

- starve flora,
- adversely affect home/commercial/municipal bores
- produce huge volumes of water creating disposal issues
- create sinkholes and subsidence
- Dry out the soil profile, drying clays, causing them to shrink and damage built structures?

Resolution

A detailed study needs to be conducted prior to project approval, establishing benchmark water quality, volumes and depth. This needs to be monitored closely during and post construction. Significant flora loss needs to be monitored and proponents held to account for biodiversity destruction.

A detailed response plan for adverse events, such as sink holes and subsidence needs to be prepared in advance.

The condition surveys for damage due to vibration need to be extended to also cover built structure damage due to water removal. This requires ongoing monitoring, well into the future, with liability resting with the proponents.

10. Biodiversity

The project construction leads to the complete destruction of local wildlife corridors, such as Cockle Creek. This creek has been observed to host:

- Brush turkeys and nests
- Eels
- Water dragons
- Wallabies
- Echidnas
- Koels (migratory)
- Channel-billed cuckoos (migratory)
- Cockatoos, galahs and parrots
- Magpies
- Currawongs
- Butcher birds
- Honey-eaters
- Many snakes and lizards

- Many insects
- Spiders
- Several frogs species
- Bats, large and small

The flora is extensive and varied, and is quite invaded by weeds. Nonetheless, it is the only local wildlife corridor.

As significantly, the proponents appear not to have taken any considered steps to avoid the destruction of Blue Gum High Forest (BGHF), other than an exercise in tokenism. The project destroys 2% of this forest type left in the world. The biodiversity off-set scheme is, frankly, no compensation.

Resolution

Develop a plan as to how the wildlife corridor will be cleared of hosted species. Ensure wildlife handling officers are present or on call at all times, halting work when wildlife is encountered. Well defined relocation plans must be prepared and implemented. All animals need to be dealt with humanely.

The management of venomous species needs special care, as driving them into the yards of adjoining homes will put residents and their pets at risk.

More detail is required to be publicised regarding the biodiversity off-sets proposed.

BGHF destruction must be reconsidered, and minimised at all cost.

11. Unanticipated Tunnelling Hazard

The tunnelling extends from 9m to 90m below surface. The route passes through what were extensive forested areas prior to white settlement. Many large trees have an extensive and broad root system, with many having systems capable of extending below the surface to the same distance as their canopy is above the ground. i.e. a 40m tree can have a 40m deep root system.

These relic root systems (obviously decayed as the trees have long since been logged) can constitute an unforeseen significant weakness in the stratigraphy. The EIS does not mention how these will be managed when intersected by tunnelling, especially where they occur under occupied houses and other buildings.

Resolution

The proponents need to develop and publish a risk assessment that includes a management strategy. The proponents may have to incorporate an evacuation and temporary resident relocation plan. Technical solutions will also need to be evaluated, such as ground penetrating radar or similar. Business and public buildings may require alternative premises to be provided, with the proponents assuming full liability.

12. Potential for Archaeological Finds

Sandstone is well known for hosting preserved remains of flora and fauna. This has commonly occurred in quarries around the Sydney basin. Anecdotal evidence is that in earlier unenlightened times many valuable finds have been lost due to commercial goals outweighing scientific pursuits. Given the range of profiles the tunnelling will pass through, it is highly probable that fossils will be exposed. This need to be considered in the works procedures.

Resolution

The proponents need to develop and publish an assessment and plan that considers fossil finds. A responsible officer needs to be present or on call, and the workforce educated into what to look for to ensure work stops when a find is encountered to allow assessment for recovery.

13. Transport and Disposal of Spoil

The project is likely to produce more than 2.5 million cubic metres of waste rock, more than 4 million tonnes. The proponents have a short list of receivers of the waste, but have been careful to avoid confirming the disposal site. This is avoiding one of the largest issues of the construction period.

If you consider that the waste is more than 125,000 truckloads (250,000 truck movements) it is perhaps clear why the proponents avoid details. One can only imagine how much more of the community would be incited to resist the project if they knew the routes of the waste trucks through our neighbourhoods. Consider living adjacent to the route to Hornsby Quarry (which coincidentally has capacity to take all of the spoil). Over a 4 year period, you would have on average more than 170 heavy truck movements per day past your front door in your quiet suburban street. Dust, noise, road surface damage, diesel exhaust and (from the proponents own data on accident frequency risk) up to 25 significant accidents.

Resolution

There should be no approval for the project until a detailed assessment has been undertaken of the traffic flows and associated impacts of a yet to be revealed waste Disposal Management Plan. Full community consultation is a requirement.

A detailed analysis needs to be presented by the proponents in assessing the options, including the criteria for ranking.

14. PPP, SSI CSI and Other Unwanted Acronyms and Threats to the Impartiality of Government and the Democratic Process.

The community is growing tired of the compromises embodied in Public Private Partnerships, State Significant Infrastructure and Critical Infrastructure. This is made worse still by adding Unsolicited Proposals, the commercial-in-confidence defence, restrictive FOI and perception of infiltration of government. The lack of input, no recourse, constrained

legal options and being stymied by bureaucracy gives the community the feeling that democracy is heavily eroded. The ICAC proceedings give no confidence in either side of government, let alone confidence in development corporations.

Resolution

The legal process will be tested if the decisions made on the future of this project are seen to be unfair and unjust.

The democratic process will be seen to start to reclaim the integrity of government at the next election.

15. Endorsement of Other Submissions

I recommend and endorse the submissions of:

- Campaign Against Polluting Stacks (CAPS) group
- Dr Ray Nassar
- Associate Professor Dr Richard Chard

---------- This concludes my submission for the project. ----------