

Attention Director Infrastructure Projects,
Planning Services Department of Planning and Environment
Application number SSI 6307 (Westconnex M4 East).
GPO Box 39 Sydney NSW 2001

1/11/15

To whom it may concern,

Please find below my submission on the M4 East Environmental Impact Statement regarding:

Health Risk Assessment:

I look forward to your response to each of the below points.

1. General concerns with the calculation of health risks and the health impacts associated with the project:

1.1 Statistics described in the Environmental impact statement are based upon hospitalisation rates. This suppressed the risk level. For example decreased air quality can lead to increased allergy reactions and more severe asthma attacks, increased noise can lead to sleep deprivation and resulting mental health issues which are unlikely to require a hospital stay. Therefore these less extreme impacts (though important for those affected) are not accounted for in the EIS design.

1.1.1 Of note many of the risk levels using the current design are not listed as negligible ($<1 \times 10^{-6}$) but 'tolerable' ($>1 \times 10^{-6}$ - $<1 \times 10^{-4}$) – a more comprehensive analysis of impact to include increased use of medication and increased GP visits may well move these risks to unacceptable ($>1 \times 10^{-4}$). As such a more comprehensive study should be undertaken.

1.2 These studies examine quite broad populations with little focus on either those closest to construction sites and the final build or vulnerable populations such as the elderly or those with pre-existing conditions which could be exacerbated.

1.1.2 Similar to pt1.1.1 an analysis focussing on those most directly affected by the project may indicate that increased health risks for these groups are unacceptable.

1.3 Risk calculations are based on exposure to the completed project and not to adverse conditions during construction.

1.4 Risks are calculated separately for exposure to decreased air quality, increased noise and vibration however exposures will be to all risk factors, not in isolation. As such cumulative risk for the multiple factors involved should be assessed prior to approval of the project.

1.5 No full health impact assessment was performed for the entire Westconnex project on the Sydney population. For example – for the M4 east the claim is made that air quality is improved due to moving traffic into a tunnel and away from surface roads. These emissions still need to go

somewhere and that the exhaust stacks limit exposure to local populations only suggests that the exhaust is more widely distributed as the stacks are not filtered.

1.5.1 As such we request that a full health impact assessment be conducted for the entire westconnex project be conducted compared to 'do nothing' and 'improved public transport and freight by rail' options to truly assess the impact of this project on the health of Sydney residents. We would request that this report be completed by an independent and preferentially international specialist firms including the use of health economists to predict the increased health costs arising from increased car and heavy truck traffic.

1.6 The health risk assessment does not in any way assess the increased cost to taxpayers via increased utilisation of the health care system – this should be taken into account when determining the cost and feasibility of the project. For example as cited below studies have linked many of the adverse health effects of large road projects such as this to increased leukaemia/lymphoma development. Current cutting edge therapy for adult chronic lymphocytic leukaemia and Non-Hodgkin's lymphomas are tyrosine kinase inhibitors such as Ibrutinib and Idelalisib. These treatments are expected to cost ~\$10000 per month to administer per patient and need to be taken long-term to provide maximal benefit. This may be for many years. As such each new case is a significant cost burden to the healthcare system, independent of cost to the individuals involved. We request that no approval be given to this project until a full cost analysis of all adverse health effects is conducted.

Specific health impact issues:

2. Location of substations:

2.1 There has been a reasonable amount of research performed on the effect of substations on cancer risk for those living in close proximity. Major concerns have been increased risk of lymphoma/leukaemia and malignant brain cancer. Given varying study design, length of follow-up period and specific parameters measured there has been variability in the results of these studies. The International Agency for Research on Cancer (IARC) assessed the published studies in 2002 and determined that "Extremely low-frequency magnetic fields are *possibly carcinogenic to humans (Group 2B)*. and Static electric and magnetic fields and extremely low-frequency electric fields are *not classifiable as to their carcinogenicity to humans (Group 3)*." We would note that this last statement is not that there is no carcinogenic effect but that there is not sufficient evidence to determine this. However quite regularly a link has been found in studies between long-term exposure to magnetic fields >0.4μT and increased cancer risk, particularly leukaemia/lymphoma. This level of magnetic field can be generated by domestic substations. Studies have also examined the effect of distance on cancer risk. It has been concluded that for adults (>18yr) cancer risk drops to background level for housing ~25-50m from a source and for children (<18yr) at ~50-100m (Coleman et al, *British Journal of Cancer*, 1989 – first author member of the International Agency for Research on Cancer (IARC)).

International Commission on Non-ionising Radiation Protection (ICNIRP) 2010 publication in Health Physics 99(6):818-36. Aimed to "establish guidelines for limiting exposure to electric and magnetic fields (EMF) that will provide protection against all established adverse health effects". This report stated that "A considerable number of epidemiological reports, carried out particularly during the 1980's and 90's indicated that long-term exposure to 50-60Hz magnetic fields....might be associated with cancer" and that "pooled analyses indicate that an excess risk may exist for average exposure

exceeding 0.3-0.4 μ T". These levels are in the range of those in close proximity to a substation. This report then states that it is difficult to set exposure thresholds for this type of risk. We suggest that the evidence that is available would recommend a prudent approach to placing new structures next to residential housing and as such proposed substations should be located as far as possible from residences.

Consequently the location of the proposed substation at the corner of Sydney Street and Concord Rd poses a health risk to a number of residences that fall within the 0-100m radius. We propose that this substation should be located where a utility substation is temporarily located during construction (near large acoustic shed) or on the opposite side of Sydney St to the proposed location where it could be located in the 'green zone' area where it is not in very close proximity to housing. This small change to the plan can greatly decrease the health risks for Westconnex neighbours.

3. Air Quality:

We request further information regarding mechanisms to mitigate exposure of the general population and particularly exposure of residents to decreased air quality during construction.

3.1 The adverse health risks described in this report are related to the impact of the completed project. We request that this assessment be completed for the impact of the actual construction process on the residents of the surrounding properties prior to approval being given to the project.

3.2 According to the World Health Organisation exposure to particulate matter is responsible for up to 800000 premature deaths each year worldwide. Exposure to particulate matter can increase risk of respiratory disorder, cardiovascular disease and cerebrovascular disease. The risks are particularly high for vulnerable groups –children, the elderly and disease exacerbation for people already presenting with these diseases. Mechanisms do appear to be in place to try and limit exposure of tunnel neighbours to increase exposure from vehicle exhausts, increased air flow and dispersion once construction is completed. Particulate matter is also derived from road wear, tyre wear and brake wear amongst other sources. We request additional information on whether the road surfaces to be utilized for the M4 widening and tunnel have been chosen to minimize the creation of particulate matter.

3.3 An Australian Federal Senate report was released in 2013 regarding limitation of air pollution levels and recommended courses of action. We would be interested to know how this report and particularly the submission of the Australian Medical Association to this committee have been considered when designing the entire Westconnex project. Within this report are suggestion limits for exposure. We request that hard limits be set for the construction phase of this project and that there be penalties applied to the contractors if they exposure project neighbours to levels of pollutants higher than these limits.

3.4 During construction there will also be an increased presence of heavy vehicles operating in the area for prolonged periods of time. What mitigations or controls are planned to be in place to ensure that vehicle fumes and dusts from construction phases are not impacting neighbouring properties and residents. Further are there mechanisms to compensate or protect direct neighbours of Westconnex for increased dust and particulate matter in their homes or businesses both during construction and from the final project?

4 Noise:

4.1 We would also request additional information on how noise levels will be monitored both during construction and afterwards. What mechanisms will be used to limit the impact of increased noise on neighbours – are these solely sound barriers in appropriate areas or will compensation be made to nearby home owners to assist with noise proofing their residences to deal with the increased noise levels. This is also a health matter – increased noise levels can lead to mental health problems, sleeping disorders and increased risk of cardiovascular disease and lymphoma. We believe that measures should be taken to minimize this impact on Westconnex neighbours.

4.2 There does not appear to be any noise barrier provision on Sydney street or Carrington Lane following completion of construction. We request that consideration be made for inclusion of sound barriers at these sites.

4.3 High noise is a stressor which results in activation of the endocrine and autonomic nervous system, these systems do not fully habituate to chronic exposure. There is evidence that adverse effects from exposure to increased noise is cumulative over time with chronic night time night exposure “likely to result in detrimental effects as they accumulate overtime and thus indirectly create an increased risk for cardiovascular disease” (Pirrera et al *Environment International* 36, 492-8 (2010) and references within). Given the length of the construction period for this proposal the noise generated could have significant adverse health effects on nearby residents particularly the proposed night work. We request that the allowance for night time work particularly the continuous use of heavy trucks to remove spoil from the Concord Rd tunnelling be re-assessed and limited to reduce the adverse impact on neighbours. While there are some allowances for noise monitoring it is unclear as to how realtime results will be fed back to the construction company and if this will result in changes to construction practice if noise levels routinely exceed the recommended 65dB. We request that if permission for night time works is given that it is only if this noise limits are not exceeded and if they are that penalties be imposed on the contractors and approval for night works can be revoked.

4.4 Noise from traffic is a concern for many Sydney residents – we request that the NSW state government look at altering the legislation which limits the amount of noise individual vehicles can make – we request that noise limits be placed on the amount of noise an accelerating vehicle can make and also that the current limit for stationary engine noise of 96dB for older cars and 100dB for motorcycles be decreased to reflect technological advances made since the legislation was written.

5. Vibration:

5.1 Vibration can similarly act as a stressor. Given the large amount of proposed excavation and piling for construction of the tunnel entry at Concord Rd we request further information on how affected properties can be protected from these impacts.

5.2 For both noise and vibration the assumption is made that residents will not be at home during daytime work hours for many of the assessments. Many residents may work from home making this particularly disruptive to their work life. Additionally there are people who do not work (stay at home mothers, retirees etc) as well as residents’ pets. For these people and animals the impacts of the construction phase and the final build are effectively constant. We request that this be addressed prior to approval being given to the project.

6. In summary, the current assessments of the health impacts of this project are inadequate as they do not assess the full range of health impacts but only the extreme end, they put no cost on the increased adverse health risks and the impacts on particularly adversely affected residence or vulnerable populations are not adequately addressed. In the interest of the public health we request that hard exposure limits be generated for noise and air quality measures (particulate matter and toxic chemicals) and that proof that these measures can be adhered to be part of approval for this project. Additionally we suggest that penalties should be imposed on those involved in construction of the project if these limits are exceeded.

Yours sincerely,

Dr Tara Roberts
74 Concord Rd
North Strathfield NSW 2137
Private E-mail: dinosaurtara@gmail.com

Key References:

1. Carpenter, D.O. "Human disease resulting from exposure to electromagnetic fields" (2013) *Reviews on Environmental Health*. 28(4): 159-172
2. Zhao, L et al. "Magnetic fields exposure and childhood leukemia risk: A meta-analysis based on 11,699 cases and 13,194 controls" (2014) *Leukemia Research* 38: 269-274
3. Kheifets, L et al "Extremely Low Frequency Electric Fields and Cancer: Assessing the Evidence" (2010) *Bioelectromagnetics* 31: 89-101
4. Coleman, M.P. et al. "Leukaemia and residence near electricity transmission equipment: A case-control study" (1989) *British Journal of Cancer* 60: 793-798
5. Grellier, J et al. "Potential Health Impacts of Residential exposures to extremely low frequency magnetic fields in Europe" (2014) *Environment International* 62: 55-63
6. Halonen, J.I. et al. "Road traffic noise is associated with increased cardiovascular morbidity and mortality and all-cause mortality in London" (2015) *European Heart Journal* ePub advance online.
7. Pirrera, S et al. "Nocturnal road traffic noise: A review on its assessment and consequences on sleep and health" (2010) *Environment International* 36: 492-498
8. Roswall, N et al "Residential Exposure to Traffic Noise and Health-Related Quality of Life- A Population-Based Study" (2015) *Plos One* 10(3):e0120199
9. Sorensen, M et al. "Residential exposure to traffic noise and risk for Non-Hodgkin lymphoma among adults" (2015) *Environmental Research* 142: 61-65
10. Anderson, J.O. et al. "Clearing the Air: A Review of the Effects of Particulate Matter Air Pollution on Human Health" (2012) *J.Med. Toxicol* 8: 166-175.

11. Amato, F et al. "Urban Air Quality: The challenge of traffic non-exhaust emissions" (2014) *Journal of Hazardous Materials* 275: 31-36