

The Hon Daniel Mookhey MLC  
Chair  
Public Works Committee  
Parliament of New South Wales

18 June 2021

Dear Chair

**Re: Inquiry into the impact of the Western Harbour Tunnel and Beaches Link**

We write to express our concern regarding the Western Harbour Tunnel and Beaches Link Project, including each of its constituent parts (the Warringah freeway upgrade, the Western Harbour Tunnel and the Beaches Link). We are particularly concerned about the health implications for the communities living alongside these new roads, an important issue that is not expressly referred to in the terms of reference for this inquiry.

There is now strong evidence demonstrating the immediate and long-term adverse effects of traffic related air pollution on humans; highlighting a greater magnitude of impact than previously thought, and showing that there is no safe lower limit of exposure. Living in close proximity to high traffic volume is associated with a range of adverse health outcomes including:

*...mortality, myocardial infarction, sudden cardiac death, cardiovascular disease, atherosclerosis, hypertension, diabetes, asthma hospitalisation, respiratory symptoms, reduced lung function, lung cancer, arthritis, childhood cancer, autism, low birth weight and, cognitive performance in children.<sup>1</sup>*

Most people cannot easily change the location of their homes, workplaces, schools or childcare centres. When large road projects—such as this one—have the potential to significantly alter a community's air pollution exposure, every possible alternative and all mitigation strategies must be comprehensively considered. Consideration should include the net benefit to the community and associated health savings which should be weighed against the practicalities and costs of implementation.<sup>2</sup>

*Vehicle emissions and asthma*

Vehicle emissions are a major concern for people with asthma and those at risk of developing asthma, particularly children.

By volume, the principal emissions from motor vehicles are greenhouse gases, and the principal gas emitted is carbon dioxide (CO<sub>2</sub>). The level of emissions of CO<sub>2</sub> from a vehicle is linked to the amount and type of fuel consumed.<sup>3</sup> Motor vehicles also emit air pollutants such as carbon monoxide, nitrogen oxides, particulate matter, volatile organic compounds and benzene.<sup>4</sup>

Epidemiological studies most often identify nitrogen dioxide (NO<sub>2</sub>) as the putative agent within the traffic-related air pollution (TRAP) mixture and a proxy for TRAP. This is because "NO<sub>2</sub> measurements are readily available in many countries and the variability of TRAP mixture appears to be well characterised by NO<sub>2</sub>".<sup>5</sup>

A 2019 study in *The Lancet* on global, national, and urban burdens of paediatric asthma incidence attributable to ambient NO<sub>2</sub> pollution noted that:

*Over the past decade, several epidemiological studies done in North America, Latin America, Europe, and east Asia have reported associations between [TRAP] exposure and new-onset asthma in children.<sup>6</sup>*

It was further noted that:

*Corroborating evidence from toxicological and gene-environment studies have suggested that TRAP causes oxidative injury to the airways, leading to inflammation and remodelling that, in a genetically predisposed individual, could result in asthma development.<sup>7</sup>*

A 2018 Australian Child Health and Air Pollution Study, a national population-based cross-sectional study of children aged 7-11 years living in 12 Australian cities, also "assessed the effect of outdoor [NO<sub>2</sub>] as a proxy for urban air pollution, on current asthma and lung function in Australia".<sup>8</sup> It was found that:

*Exposure to outdoor NO<sub>2</sub> was associated with adverse respiratory health effects in this population-based sample of Australian children. The relatively low NO<sub>2</sub> levels at which these effects were observed highlight the potential benefits of continuous exposure reduction.<sup>9</sup>*

### *Vehicle emissions and lung cancer*

Lung cancer is another long-term consequence of exposure to traffic pollution.

Lung cancer is Australia's leading cause of cancer related mortality.<sup>10</sup> Reductions in cigarette smoking have reduced the incidence of squamous-cell lung cancer; however lung adenocarcinoma is increasing and affecting a growing proportion of 'never smokers'. Approximately twenty per cent of lung adenocarcinoma cases in Australia occur in 'never smokers'.

Lung cancer contributes 21 per cent of the health burden attributable to Australian urban air pollution. Given the lag time from exposure to presentation of disease (15- 30 years) lung cancer cannot be considered a short-term impact. The most recent systematic review and quantitative summary of the relationship between outdoor particulate matter and lung cancer reports a relative life-time risk for lung cancer of 1.09. The meta -relative risk for the specific sup-type of lung cancer most associated with air pollution (adenocarcinoma) is 1.40 (95% CI 1.07 – 1.83). Put simply, this equates to a **40% increased risk (relative to the current risk) of developing lung adenocarcinoma over the course of 60 years.**<sup>11</sup>

Diesel exhaust is particularly carcinogenic and there is evidence that the DNA damage and mutations caused by diesel pollution also occur in sperm, which may give rise to subsequent generations inheriting the mutagenic impacts of diesel vehicle emissions.<sup>12</sup>

### *Mitigating air pollution from motorway tunnels*

We note the 2018 report of the New South Wales Public Accountability Committee, *The impact of the WestConnex Project*, and the recommendations of that report. In particular, we note Recommendation 13 of the report, "That the NSW Government install, on all current and future motorway tunnels, filtration systems in order to reduce the level of pollutants emitted from ventilation stacks", and recommendations pertaining to the capture and real-time publication of air quality data.

As a matter of principle, we support transport and associated infrastructure for communities that is clean and green. We believe that in the 21st Century, our governments must consider and support policies and projects that use technology to create a cleaner future.

We have concerns about this project, not only regarding its viability as a method of 21st Century transport but, as the New South Wales Government has determined, its construction phase.

We encourage the NSW Department of Planning, Industry and Environment to conduct further enquires and analysis to ensure the best possible strategies are in place to protect the respiratory health of workers and residents, both during the construction of the tunnel and its ongoing use. This includes measuring air quality, not in accordance with the current industry standards, but in accordance with health-based standards.<sup>13</sup> It also includes conducting health impact assessments to identify safe levels of pollution in advance of the tunnel being built, and an investigation into introducing vehicle caps so that safe levels of pollution is not exceeded.

At a minimum, should the project proceed, we consider that filtration systems, ongoing dust suppression measures, capping of loads, halting activities during certain weather events, and ongoing air quality monitoring at schools and child care centres, are necessary for the health of the population residing by or engaging in activities alongside motorways, particularly for people with asthma, young children and those with respiratory conditions. We call for the implementation of such measures with respect to the development of all new motorway infrastructure projects.

Additionally, we support calls that:

- no spoil should be allowed to be stockpiled outside the acoustic shed, during day or overnight
- contaminated spoil should not be retained on the construction site; it should be immediately taken away after excavation
- the Government investigate the implementation of a limit on the use of diesel vehicles; non-diesel powered trucks should be used instead; and
- trucks from the Project should be banned from roads adjoining schools (with fines imposed for non-compliance).

In terms of measures to ensure compliance, there should be regular and ongoing monitoring of compliance with dust suppression and contamination measures by an independent person, and the project proponent should be required to consult with an occupational health and safety expert from the beginning of the project, and throughout the project's lifecycle, concerning the design and implementation of the project.

We look forward to the outcome of this inquiry, and would be pleased to provide further evidence at the request of the Committee.

Yours sincerely,



Mark Brooke  
Chief Executive Officer  
Lung Foundation Australia



Michele Goldman  
Chief Executive Officer  
Asthma Australia

## References

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- <sup>1</sup> Hime et al., 2015. Childhood interstitial lung disease: A systematic review. *Pediatric Pulmonology* 50(12), citing (Boothe and Shendell 2008, Hart et al. 2009, Hoffmann et al. 2009, HEI 2010a, Nuvolone et al. 2011, Volk et al. 2011, WHO 2013c, Grahame et al. 2014, Hart et al. 2014).
- <sup>2</sup> Lung Health Research Centre (Clare Walter) Melbourne University submission to the West Gate Tunnel Project.
- <sup>3</sup> Commonwealth Government 2021. *Green Vehicle Guide*. Available from: <https://www.greenvehicleguide.gov.au/pages/Information/VehicleEmissions>.
- <sup>4</sup> Commonwealth Government 2021. *Green Vehicle Guide*. Available from: <https://www.greenvehicleguide.gov.au/pages/Information/VehicleEmissions>.
- <sup>5</sup> Achakulwisut et al., 2019. Global, national, and urban burdens of paediatric asthma incidence attributable to ambient NO<sub>2</sub> pollution: estimates from global datasets. *The Lancet*. Volume 3(4).
- <sup>6</sup> Ibid.
- <sup>7</sup> Ibid.
- <sup>8</sup> Knibbs et al., 2018. The Australian Child Health and Air Pollution Study (ACHAPS): A national population-based cross-sectional study of long-term exposure to outdoor air pollution, asthma, and lung function. *Environment International* 120:394-403.
- <sup>9</sup> Ibid.
- <sup>10</sup> Australian Institute of Health and Welfare 2020. *Cancer data in Australia*. Cat. no. CAN 122. Canberra: AIHW. <https://www.aihw.gov.au/reports/cancer/cancer-data-in-australia>. Also see: [Lung cancer in Australia statistics | Cancer Australia](#)
- <sup>11</sup> Lung Health Research Centre (Clare Walter) Melbourne University submission to the West Gate Tunnel Project.
- <sup>12</sup> Ibid.
- <sup>13</sup> See, Health-based standards for Australian regulated thresholds of nitrogen dioxide, sulfur dioxide and ozone. [Expert Position Statement 2019](#).