Asthma Foundation NSW

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26 November 2013

Attention: Planner
NSW Planning & Infrastructure
23-33 Bridge Street, Sydney NSW 2000
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RE: Modification No. 1 to MP10_0148 Mixed use redevelopment of 150 Epping Road, Lane Cove West

The application by the proponents proposes to modify the approved development to include:

1. A new child-care centre for approximately 85 children.
2. Deletion of 800sqm of commercial floor space and replacement with a 650sqm child-care centre.

This submission is to express our concern at this proposal as the facility is on a major road and close to the pollution stacks of the Lane Cove tunnel.

In the past month a World Health Organisation (WHO) report (October 2013) has declared air pollution *"…a human carcinogen like tobacco smoke, asbestos and arsenic"* calling it *"…a leading cause of cancer deaths globally."* [1] It has also been associated with elevated rates of asthma, as well as increased symptoms and hospital visits. Experts in the WHO study also evaluated particulate matter, one the largest components of air pollution, and classified it as a "carcinogen." These are significant conclusions, especially in light of this proposal.

We noted that out of all the submissions made during the public consultation period, from both government agencies and individuals, only one, from Dr Ray Kearney, raised the issue of air quality and its possible health effects. Had we been aware of this issue we would have most certainly added our voice. Asthma Foundation NSW has been an active voice in various air pollution debates during the past decade including; air pollution in the Sydney Basin, unflued gas heaters in NSW public schools, tobacco control, wood fired heaters and the M5 tunnel. We take the potential exposure of young children to harmful vehicle pollution just as seriously.

[1] http://www.latimes.com/science/sciencenow/la-sci-sn-air-pollution-causes-lung-cancer-20131017,0,981625.story

The effects of vehicle emissions, road dust and tyre fragmentation together cause an increase in atmospheric levels of carbon monoxide (CO), sulphur dioxide (SO2), nitrogen dioxide (NO2) and particulate matter (PM). For those exposed to such pollution, there is a documented increase in mortality and morbidity from both respiratory and cardiac diseases.[2] There is also evidence that the effects are greater on children whose lungs are still developing.[3]

The evidence on the health impacts of traffic pollution

A significant body of medical research on the health impacts of local traffic air pollution has been established over the past 15- 20 years showing a greater risk of asthma and other potentially fatal conditions.

- For children and adults with pre-existing respiratory diseases such as asthma, emphysema, bronchiectasis and cystic fibrosis, deaths increase by 3.4% for every increase in air particles by 10 µg/m.[4]
- Lung cancer is one of the most common malignant tumours in humans and it is also one of the most lethal. Data from the American Cancer Society in 2002 estimated an 8% annual increase in the long term risk of death from lung cancer for each increase in exposure to PM2.5 particles of 10 µg/m.[5]
- The American Heart Association has estimated that there are 60,000 deaths annually in the USA due to particle inhalation.[6]
- The large epidemiological study of traffic pollution in Europe by Kunzli et al. suggested that 3% of total mortality (20,000 cases per year) could be attributed solely to traffic pollution.[7]

Although the studies quoted above are international, local studies concur that exposure to traffic pollution in Australia also poses health risks.

The City Futures Research Centre, University of New South Wales conducted a schools study during 2007/ 8. The general aim was to look at the impact of traffic pollution on student health and the effect of exposure to NO2 and CO at 80 randomly selected primary schools across City, South-West, Northern and Western Sydney.

The distance from the school 'centroid' to the nearest major road was measured for each of the 80 schools and 33,997 students enrolled in this study and the chance of hospitalisation for asthma (odds ratio) calculated.

This study, as had many others, concluded that the key factors in those schools where the mean odds ratio was highest was proximity to a major road and traffic (see Figures 1 & 2). This resulted in those schools in Sydney City having the highest exposure to potentially harmful pollutants.

Specifically, Perez et al [8] concluded that nearly 18% of Los Angeles County children lived within 75 m of a major roadway. Approximately 27,100 asthma cases (8% of the

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[2] *The health impacts of local traffic pollution on primary school children* – Knight & Rickwood 2009, http://www.be.unsw.edu.au/sites/default/files/upload/research/centres/cf/CFpresentations/SOAC09Rickwood_Knight.pdf

[3] Gauderman et al (2006). *Effect of exposure to traffic on lung development from 10 to 18 years of age: a cohort study.* The Lancet, 368.

[4] Brook et al (2004). *Air pollution and cardiovascular disease*. Circulation, 109(21):2655–2671.

[5] Pope III, et al (2002). Lung cancer, cardiopulmonary mortality, and long-term exposure to fine particulate air pollution. Journal of the American Medical Association, 287(9):1132–1141

[6] As 4

[7] Kunzli, N. et al (2000). Public-health impact of outdoor and traffic-related air pollution: a European assessment. The Lancet, 356:795–801.

[8] Perez et al *Near-Roadway Pollution and Childhood Asthma: Implications for Developing "Win–Win" Compact Urban Development and Clean Vehicle Strategies*, *Environ Health Perspect*; DOI:10.1289/ehp.1104785

total reported) could be at least partly attributed to living near a major roadway. If regional pollution was reduced by 20% but 3.6% more children (based on total county population) lived near a major roadway, an estimated 5,900 more cases of asthma would occur; if 3.6% fewer children lived by a major roadway with the same reduction in pollution, the estimated number of cases would drop by 5,900.

Figure 1

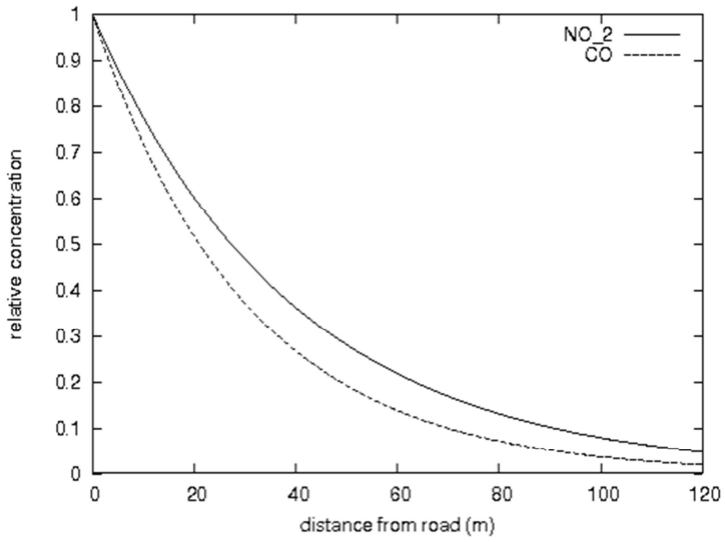

Figure 1: Decay model for CO and NO_2 with distance from the road.

Figure 2

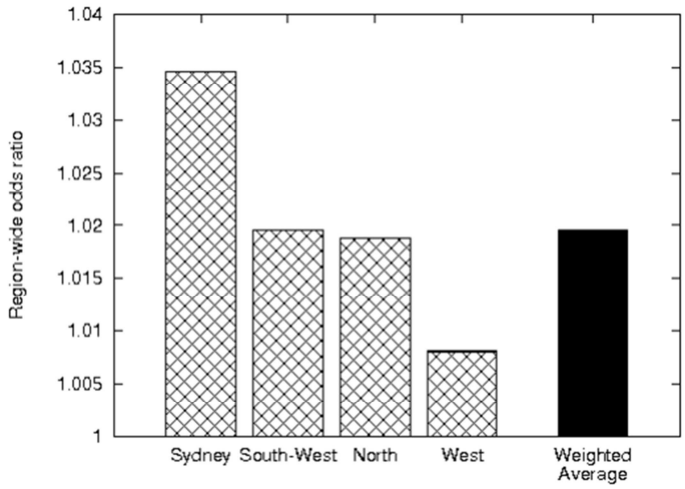

Figure 4: Mean odds ratios for students in each of the four school regions covering the Sydney metropolitan area

The City Futures study concluded:

> *"….we should be cautious about encouraging development of residential dwellings close to, or along, major roads. But this is exactly what we are currently doing in Sydney, and we plan to continue doing so, with the Sydney metropolitan plan suggesting that over 50% of new residential development will occur in centres and along major corridors (NSW Department of Planning, 2005), many of which are close to main roads."*

The recent *Australian Child Health and Air Pollution* Study (ACHAPS), commissioned by the Government's own National Environment Protection Council, further underlined the harmful effect of traffic pollution on children's health.[9]

Published in 2012, it found that car pollution is creating asthma-like symptoms in otherwise healthy children, and potentially affecting their lung growth. The ACHAPS study of 2,860 primary school children representing most states revealed **NO2, found in motor vehicle exhaust, was present in the lungs of two-thirds of the students tested at the 55 sample schools.** The schools chosen were close to air quality testing stations, so results could be cross-checked with daily pollutant levels.

Within the study group, 270 students with asthma were asked to keep a diary of their respiratory health. These records showed **increased coughing, wheezing and medication use when exposed to NO2**, which had the strongest association with adverse respiratory effects in children.

Doctors for the Environment Australia spokeswoman, Marion Carey, is quoted in the media as saying, *"…We have enough information now to act. We should be translating this knowledge into practical policy and action to protect everyone's health, especially our children's."*[10]

Particulate matter, a by-product of fuel combustion, dubbed "the new asbestos," was the prime focus of *Caution, Drivers! Children Present: Traffic, Pollution, and Infant Health*, a 2010 study conducted by Kittel et all for the MIT Centre for Energy and Environmental Policy Research. It concluded:

> *"…We find PM10 has a large and statistically significant effect on infant mortality… a one-unit decrease in PM10 (around 13% of a standard deviation) saves roughly 18 lives per 100,000 births. This represents a decrease in the mortality rate of around 6%. This is consistent with the findings of prior research on ambient particulate matter, and suggests that even at today's lower levels substantial health gains are to be made by reducing both ambient pollution and traffic congestion."*

An even more localised study, specific to the development in question, was conducted between 2006- 08 before, during and after the opening of the Lane Cove tunnel. Its results were released in November 2012. Despite expectations of a 10-14% decrease in concentrations of NO2, the study concluded: *"…Analysis of air pollutant data from the continuous fixed site monitors showed that the tunnel intervention did not lead to consistent reductions in NO2 or PM across the wider study area."* [11]

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[9] http://www.scew.gov.au/resource/australian-child-health-and-air-pollution-study-achaps-final-report

[10] *Car pollution puts child health at risk* SMH 22/7/2012 http://www.smh.com.au/national/car-pollution-puts-child-health-at-risk-20120721-22gyt.html

Figure 3 (below) from the 2012 Lance Cove Tunnel study below shows that the highest NO2 levels found were along Epping Rd - a main road. And that both before and after the tunnel opened, and even with decreases in NO2 due to decreased traffic along the road, Epping Rd still has the highest concentrations of NO2 in the area.[12]

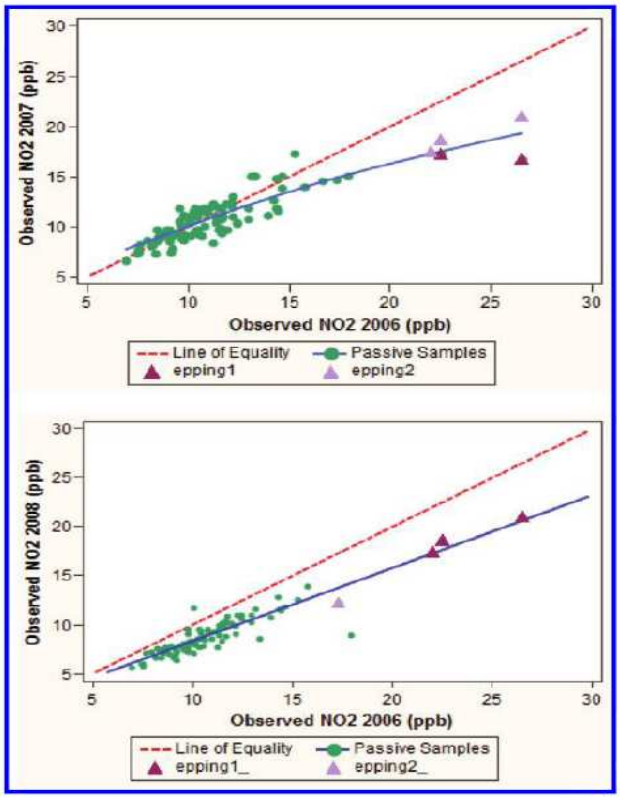

Figure 3. Passive NO_2 sampler observations: (top) year 2 vs year 1 and (bottom) year 3 vs year 1.

Our finding that the main beneficial effect on NO2 concentrations was close to the bypassed main road is consistent with evidence of a steep gradient in NO2 and other pollutant concentrations with distance from busy roads.[13] [14] Both Karner et al's and Zhou and Levy's[15] synthesis of studies investigating pollutant concentrations near roadways found that pollutant concentrations (including NO2) decay to background levels within approximately 115−570 m[16] and 100−500 m respectively. For many pollutants measured there is a sharp decrease within the first 100−150[17] m from a road,31 but effects beyond this distance have also been observed.[18]

This was supported by a 2006 Californian study in which researchers evaluated the respiratory health of 5,341 children relative to the distance that they lived from major roads, including highways, arterial roads, and freeways. The children, aged 5 to 7

[12] Christine T. Cowie et al, *Redistribution of Traffic Related Air Pollution Associated with a New Road Tunnel* Environmental Science & Technology Journal 2012, 46, 2918−2927
[13] Gilbert, N. L.; Woodhouse, S.; Stieb, D. M.; Brook, J. R. *Ambient nitrogen dioxide and distance from a major highway*. Sci. Total Environ. 2003, 312 (1−3), 43−46.
[14] Karner, A. A.; Eisinger, D. S.; Niemeier, D. A. *Near-roadway air quality: Synthesizing the findings from real-world data.* Environ. Sci. Technol. 2010, 44 (14), 5334−5344.
[15] Zhou, Y.; Levy, J. I. *Factors influencing the spatial extent of mobile source air pollution impacts: A meta-analysis*. BMC Public Health 2007, 7, 89.
[16] As 14
[17] As 15
[18] Venn, A. J.; Lewis, S. A.; Cooper, M.; Hubbard, R.; Britton, J. *Living near a main road and the risk of wheezing illness in children.* Am. J. Respir. Crit. Care Med. 2001, 164 (12), 2177−2180.

years, lived in 13 communities. The team used detailed information about roadway type and traffic volume collected by the California Department of Transportation to develop a proxy for fresh traffic exhaust- the gases given off immediately around cars - at each child's home.

Children who lived within 75 meters of a major road were approximately 1.5 times more likely to report asthma or wheezing compared to those living 300 meters or more from a major road. Among children with no parental history of asthma, those who had resided at an address close to heavy traffic since before age 2 experienced even higher risks (2.5-fold for asthma and 2.7-fold for wheezing), suggesting that a cumulative lifetime exposure to traffic pollutants may raise health risks. Girls showed a greater association between living near a major road and the health outcomes measured, for unknown reasons.

Few studies in the United States have looked at the connection between traffic and the prevalence of childhood asthma, but the results are consistent with emerging evidence from European studies. Smog and other regional pollution is slowly being brought under control by legislation. However, traffic exhaust represents a form of local pollution with public health consequences that is largely unregulated. As a start toward curbing the effects of exhaust, California recently passed a law that prohibits the construction of new schools within 500 feet of highways.[19]

This sort of scientific opinion led other jurisdictions to mandate tough environmental rules whenever new schools or educational facilities are being considered. For example the Californian Department of Education has stringent environmental guidelines for new schools built within a quarter mile of any pollution source[20] and as the article above states **banned the construction of new schools within half a kilometre of a highway.** The public will be entitled to ask, why are such measures in place for American and not Australian children?

Asthma Foundation NSW believes the weight of science and scientific opinion does not support the siting of a childcare centre at the 150 Epping Rd development and trust that this, rather than any commercial considerations, will guide your decision. Where there is doubt caution should be the guiding principle – especially where children's health is concerned.

We would be happy to meet with you or provide further testimony should you require it.

Yours sincerely,

Michele Goldman
CEO, Asthma Foundation NSW

[19] Carol Potera, Environmental Health Perspectives VOLUME 114 NUMBER 5 May 2006 *The Freeway Running through the Yard – Traffic Exhaust and Asthma in children*
[20] California Dept. of Education, *School Site Selection and Approval Guide.*
http://www.cde.ca.gov/ls/fa/sf/schoolsiteguide.asp#emissions