Environmental Justice Australia

WestConnex and air pollution

Analysis of Appendix H: Air quality impacts

Context

Air pollution kills more Australians than car crashes.[1] More than 3,000 people die prematurely each year from air pollution.[2] Particle pollution is the largest contributor to this health toll, causing respiratory disease, hospital admissions, asthma attacks and premature death.

Diesel emissions are significant sources of fine particle emissions. Diesel-powered passenger cars and light commercial vehicles (LCVs) are rapidly increasing as a proportion of the NSW vehicle fleet. In coming years, they will represent a growing proportion of traffic in the WestConnex catchment.

The health costs of particle pollution in Sydney are estimated to be approximately $4.7 billion each year, with most of this health impact attributable to long-term exposure to $PM_{2.5}$.[3] Motor vehicles are a significant contributor to these fine particles, accounting for between 12-17% of total $PM_{2.5}$ emissions.[4]

New pollution standards and their application to WestConnex

Australia's nine environment ministers representing the states, territories and Commonwealth, are currently revising the national standards for particle pollution. The NSW Government is leading this process and released an Impact Statement[5] for comment in August 2014, presenting the costs and benefits of various options for these new standards.

At their 14 July meeting this year, ministers agreed in principle to new standards for $PM_{2.5}$. At their December meeting, ministers are expected to finalise new standards for both PM_{10} and $PM_{2.5}$. The table below compares current Australian standards to the standards currently being considered, and to the standards that are referenced in the WestConnex EIS (Appendix H, p.48).

	$PM_{2.5}$ 24 hour average	$PM_{2.5}$ Annual average	PM_{10} 24 hour average	PM_{10} Annual average
Current standard	25µg/m³	8µg/m³	50µg/m³	n/a
Proposed NEPM standards	15, 20 or 25µg/m³	6, 8 or 10µg/m³	30, 40 or 50µg/m³	12, 16 or 20µg/m³
Standards referred to in WestConnex EIS	25µg/m³ (and a 'target' of 20µg/m³)	8µg/m³ (and a 'target' of 7µg/m³)	50µg/m³	30µg/m³

The case for stricter standards outlined in the Impact Statement is compelling: "Decreasing short-term exposure to PM_{10} would reduce attributable hospital admissions for childhood respiratory disease and pneumonia/bronchitis in people aged 65 and above." Reducing PM_{10} concentrations to 40µg/m³ is predicted to reduce health impacts in Sydney by around 50%.[6] Meeting the proposed $PM_{2.5}$ standard of 6µg/m³ nationally would prevent approximately 530 deaths.

The WestConnex EIS (Appendix H, pages 36-37) reveals that the NSW EPA has sought the endorsement of the NSW Cabinet for an annual average PM_{10} standard of 25µg/m³. This would allow significantly higher pollution concentrations than any of the three options for the standard that are advocated in the Impact Statement prepared by the NSW EPA to guide the variation of

these standards. It is important to note that the ministers will determine the new standard collectively. This is not a decision that will be made by the NSW minister alone. There is no reason to expect the standard proposed by the NSW EPA will be endorsed by other states or adopted nationally. It should not be used to assess the impacts and viability of this project.

The EIS (Appendix H p.48, Tables 7-5 and 7-6 on p.76. p.151 and elsewhere) interprets annual average PM_{10} levels in terms of a standard of 25µg/m^3 and a 'target' (10-year objective) of 20µg/m^3, ignoring the strong case for stricter standards and the fact that a decision has not yet been made regarding the new PM_{10} standards.

Similarly, the EIS assumes that the standard for 24-hour average PM_{10} concentrations will remain unchanged. On page 151, the EIS acknowledges that, "The maximum 24-hour mean PM_{10} concentrations at the 31 community receptors with the project in 2021 and 2031... At all receptor locations the maximum concentration was below - but close to - the NSW impact assessment criterion of 50µg/m3." If (as expected) a stricter national pollution standard or 30 or 40µg/m3 is adopted in December, it will already be significantly exceeded along the Westconnex route.

Recommendation: Assessment of the environmental and health impacts of the proposed motorway should be based on the strictest standards currently being considered by Australia's environment ministers, not on standards that are significantly less strict.

Existing air pollution levels and the need for action to improve air quality

Particle pollution levels along the proposed WestConnex route are at or above current standards, and well above proposed standards.

The EIS (p.66) states that annual $PM_{2.5}$ concentrations measured in 2014 in the study area were "very close to or above" the current advisory reporting guideline (noting that the new national standards is expected to include a stricter target of 7µg/m^3 to be achieved over 10 years). Current 24-hour average concentrations of $PM_{2.5}$ are "close to or above" the current NSW reporting standard of 25µg/m^3 and well above the likely national target of 7µg/m^3.

This is also true of coarse particle (PM_{10}) pollution levels. Figure 8-54 (p,149) identifies several locations along the WestConnex route where annual average PM_{10} concentrations are already above 20µg/m^3 (in the range 20-24µg/m^3). Similarly. Figure 8-62 (p.155) identifies large residential areas adjacent to the M4 Western Motorway and A6 (Olympic Drive) where PM_{10} concentrations are already above 20µg/m^3.

Figure 8-56 (Appendix H p.151) forecasts the maximum 24-hour mean PM_{10} concentrations at 31 'community receptors' in 2021 and 2031. At all these receptor locations the maximum concentration was "below - but close to - the NSW impact assessment criterion of 50µg/m3".

Particle pollution levels near the motorway already exceed the current PM_{10} and $PM_{2.5}$ standards. Construction and operation of WestConnex will increase pollution concentrations and adverse health impacts.

Recommendation: The NSW Government needs to prevent any additional sources of fine particle pollution and to actively manage existing polluters.

The myth that building roads can improve air quality

The WestConnex proponents allege (Appendix H, Figure 5.2, page 50) that WestConnex will *improve* air quality. Building and expanding motorways *increases* air pollution.

Motorways induce traffic. The EIS assumes a 31% increase in vehicle kilometres travelled (vkt) in the WestConnex domain (p.94). Increasing road capacity will directly increase vkt. As a result, air pollution worsens.

The EIS predicts that $PM_{2.5}$ emissions in the WestConnex domain will decrease by 21% while vkt increases by 31% (Table 8.6 p.94), from 234 tonnes per annum in 2014 to 182 tonnes in 2031. Similarly, the EIS predicts a reduction in PM_{10} and $PM_{2.5}$ emissions from the M5 East tunnel stack.

Across Sydney, ambient concentrations of $PM_{2.5}$ and PM_{10} are increasing.[7] This compels the NSW Government to act to improve air quality and take all available measures to reduce particle emissions.

The prediction that constructing WestConnex can reduce emissions is based in part on the assumption that the motorway will ensure that traffic moves faster and more freely. In reality, many motorways become congested more rapidly than expected, due in part to induced traffic.

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[1] Australian Medical Association submission to the 2013 Senate Inquiry 'Health Impacts of Air Pollution'

[2] Begg S, Vos T, Barker B, Stephenson, C., Stanley, L. & Lopez, A.D. *The burden of disease and injury in Australia 2003, Australian Institute of Health and Welfare*, Cat. no. PHE 82, Canberra (2007), p234.

[3] National Environment Protection Council, July 2014, 'Impact Statement: Draft Variation to the National Environment Protection (Ambient Air Quality) Measure', p.xi.

[4] The WestConnex EIS suggests that motor vehicles were responsible for 12% of $PM_{2.5}$ emissions in Sydney in 2011. The Australian Motor Vehicle Emissions Inventory estimates that motor vehicles were responsible for 17% of $PM_{2.5}$ emissions nationally in 2010.

[5] NEPC, July 2014, 'Impact Statement: Draft Variation to the National Environment Protection (Ambient Air Quality) Measure'.

[6] NEPM Impact Statement, p.xviii

[7] NSW Chief Scientist, 2014, Advisory Committee on Tunnel Air Quality, p.6 http://www.chiefscientist.nsw.gov.au/__data/assets/pdf_file/0003/52986/Road-Tunnels_TP02_Air_Quality_Trends_in_Sydney.pdf