

Inquiry into the Cross City Tunnel

—Parliament of NSW Joint Select Committee on the Cross City Tunnel

Introduction

I am Dr Peter Manins, a senior science manager in CSIRO Marine and Atmospheric Research, in Melbourne. I am a Fellow of the Academy of Technological Sciences and Engineering, and a Fellow of the Clean Air Society of Australia and New Zealand. My expertise is in air pollution meteorology and modelling, with over 33 years of experience and over 200 publications, many in the international literature.

I have been involved in the Sydney tunnels since 1999 including

- a DUAP initiated and funded review of the M5 East vent configuration and height we presented in August 2000, and many follow-up activities including contracts for RTA
I was invited to give evidence at both the second and third General Purpose Standing Committee No.5 Inquiries into the M5 East Tunnel: in May 2001 and in November 2002.
- Technical advisor to the Cross City Tunnel Air Quality Community Consultative Committee for the past three years; my participation has been funded by RTA.
- Reviewer of air quality modelling and impact assessments for the Lane Cove Tunnel Air Quality Community Consultative Committee in 2005, funded by Thiess John Holland.

I would like to say a few things relevant to the Inquiry's Terms of Reference 1 (f), which, I understand, is the focus of the Inquiry now: Agreements and Public Consultation Processes.

Poor Environmental Designs for Sydney Tunnels

The environmental designs of the M5 East especially, and Cross City Tunnel too, are very poor. Indeed the means of collecting and dispersing pollutants emitted from vehicles using the M5 East tunnel would have to come close to being an example of "world's worst environmental practice" in my opinion, and that opinion was expressed at the 2000 Tunnel Forum run during the approval process for the M5 East.

- Instead of following best practice and collecting and emitting the pollutants from vents located as high as practicable and towards the ends of the tunnel, as was proposed in early designs, the M5 East has a single vent located in the bottom of a valley and near the centre of the length of the tunnel. Consequences include
 - The ventilation system is very energy hungry and expensive to operate because of the long paths for the vitiated air to take before being emitted
 - Concentrations of pollutants in the tunnel are hard to manage without highly undesirable emissions from the portals because of the long paths for vitiated air before emission from the vent
 - Difficult to manage the air quality in the tunnel if there is an emergency such as a burning car in the tunnel
 - Residences near the vent top can actually look down into the vent, indicating that there is a high likelihood of pollution impacts on occasion on those residences and others nearby.
- This design seems to have come about because decision makers have ignored best practice and made political decisions that are not in the best interests of the community as a whole regarding air quality.
- A similar story has happened for the Cross City Tunnel. Again best practice has not been followed and there is only one vent and it is located at the lowest point of the tunnel, this time at the western end in Darling Harbour. Again, it appears that what

would have been best for the community regarding air quality as a whole has not been implemented. Consequences include

- To manage a tightening of standard for the required in-tunnel concentrations of CO, the designers have included an extra ventilation tunnel running the full length of the road tunnels, to bring all vitiated air pushed to the eastern end to the western end for dispersal up the vent. This instead of revisiting the whole design and seriously considering a vent at the eastern end.
- This extra ventilation tunnel is reputed to have cost \$36M extra and will cost several \$M per annum in electricity, greenhouse gases and maintenance to operate.
- The ventilation design is grossly overcapacity for normal tunnel operation so as to cope with exceptional conditions such as in-tunnel fires. This expense would have been much lower with a two-vent design.
- Darling Harbour has poor characteristics for dispersing pollutants so local residences in the Ultimo area will experience higher air pollution than if a vent had also been located at the eastern end.

Failure to Accede to the Community Evidence of the Veracity of Filtration

Neither the M5 East nor the Cross City Tunnel (nor the Lane Cove Tunnel) employ in-tunnel filtration of particles, yet this is common practice in several countries and would have mitigated the current very poor visibility in the M5 East during the day, reduced the exposure of tunnel users to toxic pollutants that are bound to the particles, and would have reduced the emissions and impacts on the community of those emissions from the tunnel.

- In-tunnel filtration of particles may well have also reduced the cost of the ventilation system in the tunnels, as well as their operation.
- The RTA is still planning, after many months of discussions, to hold a trial of a tunnel filtration system that may not address in-tunnel air quality at all, being concentrated on vent emissions. The trial as reported to CCT AQCCC is to be of removal of particles and NOx; the latter is in my view, of far less importance than particles, yet it greatly increases the expense and uncertainty of the system.

Mixed Support for Community Consultation Mechanisms

The RTA pays CSIRO for my availability to the community representatives on the AQCCC. However,

- I have had great difficulties in obtaining information on such things as the basic ventilation and vent emissions parameters for the Cross City Tunnel, with 'commercial confidentiality' being invoked.
The calling up by Legislative Council Members of papers from the RTA has been a very helpful means of establishing what should have been made available to the public through the AQCCC mechanism
- I have watched as the RTA declines to follow requests from DIPNR to put procedures in place to make available to the public in a timely manner information on portal emissions from the CCT.
Portal emissions are the single biggest environmental concern of the public for CCT given the very poor performance and secrecy surrounding the portal emissions from the M5 East tunnel.
- I have been extremely disappointed to see the RTA, DIPNR, EPA and DoHealth fail to inform the public on the air pollution impacts to expect from the CCT before its completion. The design as actually constructed was never subjected to an Environmental Impact Assessment even though the changes from the original designs have been large — traffic numbers and fleet mix have been revised several times, most especially by the designers for BHBB; the vehicle emissions characteristics were changed in the final design; vent characteristics, particularly fan speeds, are

substantially different to what was used in the earlier public EIAs; a relevant dataset of the meteorology to estimate the dispersion and impact regions by a numerical model was not available for the EIAs, but *has* been available for over 18 months from the monitoring at Tumbalong Park and two roof-top stations; and the modelling approach used originally has been overtaken by much better approaches in recent years. Yet when it came to the builders seeking an approval via RTA from DIPNR for the final design (Minister's CoA 271), the assessment, which was not intended for the eyes of the public, showed that the agencies were all too willing to agree to use outdated, inapplicable or irrelevant meteorology and modelling approaches to assess the impacts on the public of the design actually being constructed. When challenged at AQCCC meeting in October 2005, the agencies argued that the impact would be small, so what does it matter to do a better job? And, it would disturb the comparison with the original EIA anyway. The response is, because a better job of understanding the performance of the tunnel *may* show that the impacts are not always small, that the footprint of impacts is highly likely to be very different, affecting different residents to those originally indicated, and that there may be a case for mitigation measures to be taken *before* problems are reported.

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