

The following internal briefing paper was obtained during a call for papers in the Legislative council. It clearly outlines the concerns felt by NSW Health about the RTA proposal for unfiltered portal emissions.

POPULATION HEALTH DIVISION

Health Protection/ Environmental Health Branch

Briefing No: H06/8912

PURPOSE

Contentious issues brief on the proposed modifications to the M5 East Tunnel.

SUMMARY OF KEY ISSUES

- The RTA's "M5 East Air Quality Improvement Plan" includes a proposal to exhaust tunnel emissions through the portals from 5am-7pm most days in addition to the stack. This contravenes a Minister for Planning Condition of Approval, so requires a formal modification process under the EP&A Act.
- The stated purpose of this modification is to reduce the appearance of haze in the tunnel. RTA aim to have the main components of the modification in place by the end of the year.
- Department of Planning accepted NSW Health recommendations and have required RTA to conduct a thorough air quality assessment of the impact of portal emissions.
- An independent review of the environmental assessment, as agreed by the Cabinet Infrastructure Committee should proceed.
- The recently completed M5 health investigation re-analysis demonstrates that a lesser degree of portal emissions than is now proposed increased community exposure to air pollutants by about a factor of 50 compared to emissions from the stack. This section of the report is already publicly available through the Upper House order for papers.
- Other agencies should be advised of the impending release of the full re-analysis report. It is proposed that they are provided with an advance copy prior to public release.
- NSW Health has previously supported the use of a stack to effectively disperse emissions compared to releasing them at ground-level (which is the case with portal emissions).
- There are other options to improve in-tunnel haze, such as in-tunnel filtration, however all would take longer to implement than portal emissions.

RECOMMENDATION

That these concerns are raised with Department of Planning and the RTA.

Author: Vicky Sheppard Telephone: 9816 0256 Date: 17 October 2006

After a general introduction the brief continues:

ANALYSIS OF ISSUES

In-tunnel Air Quality

- The proposal is expected to improve air quality in the four sections of the tunnel by between 38% and 61 %.
- As the pollution reduction is mainly achieved by diluting emissions with the introduction of more fresh air, the in-tunnel air quality associated health concerns should be reduced.
- Precautionary advice regarding closing vehicle cabins should still be provided (as with all road tunnels), however the particular concern related to people with asthma being exposed to high concentrations of nitrogen dioxide is likely to be reduced.

External Air Quality

- A merit of exhausting all emissions via the ventilation stack is that they are effectively dispersed (into the airshed of the Sydney basin), so that residents around the stack are not exposed to high concentrations of pollutants.
- The effectiveness of the stack in dispersing emissions has been demonstrated by monitoring at four stations around the stack, with no significant increase in pollution levels compared to before the tunnel began operation.
- By comparison, venting tunnel emissions via the portals does not allow for good dispersion of the pollutants, and would tend to expose residents living around the tunnel portals to high concentrations of pollutants- Attachment A illustrates the proximity of existing residences to the portals.
- Previously, NSW Health representatives have publicly supported dispersion via a stack as being protective of community health compared to portal emissions.
- As part of the reanalysis of the M5 Health Investigation data NSW Health commissioned CSIRO to model community exposure to both stack and portal emissions during the study period (described below). The CSIRO consultant commented that portal emissions resulted in community exposures up to 50 times higher than any impacts from the stack.
- A review of the CSIRO modelling by a community-appointed peerreviewer included comments regarding the effectiveness of stack dispersion, and also highlights the relatively large impact of portal emissions (Attachment - Letter to NSW Health)Based on a comparison between the circumstances modelled by CSIRO and the new RTA proposal we are concerned that the proposal will significantly increase pollution exposure for the community living around the tunnel portals.

RTA report on portal emissions during 2005

- RTA have produced a report on the effect of portal emissions on local air quality.
- While this report does not show any concentrations of pollutants that are likely to have adversely affected health, it is important to note that most of the emission incidents documented in the report occurred during the night or at other times when tunnel usage (and hence pollutant concentrations) were low.
- This is in contrast to the new proposal where portal emissions are proposed between 5am and 7pm on most days, a period when tunnel concentrations- of pollutants are very high.

Proposed IRTA mechanism for portal emissions

- At a meeting in on September 9, RTA provided interim feedback to agencies on their assessment of portal emissions.
- Their proposal is to include a feedback mechanism between monitored air quality conditions and portal emissions, so that portal emissions would cease when external air quality reached certain trigger points, thus maintaining acceptable external air quality compared to air quality standards.
- Preliminary analysis showed that on some days this would only permit portal emission for 1-hour of the 14-hours when in-tunnel haze was high, thus not providing a solution to the in-tunnel haze problem.
- A verification mechanism for compliance with this complex operational procedure had not been determined at that stage.
- It is important to note that not all air quality standards are health-based i.e. compliance does not mean that there is no effect. This is the case for fine particle standards for which it is well documented that increases in exposure commensurately increases health effects.

Trial of filtration

- The "M5 Air Quality Improvement Plan" also includes a trial of filtration on the western portion of the westbound tunnel.
- Installation of the filtration plant would commence after approval was given, resulting in up to 18 months of unfiltered emissions before filtration could commence.
- The proposed filtration plant will remove only some of the pollutants to be discharged through the western portal, and even if successful will not remove pollutants such as carbon monoxide or air toxics.

Other options

- The RTA have considered other technologies to improve visible haze in the tunnel.
- The RTA plan to include in the Modifications Report a comparison of achieving increased flow (and dilution of emissions) through using a by-pass tunnel or an additional stack to vent emissions. They advised that these options are not favoured on the basis of cost and the long lead-time to becoming operational. There would also likely be considerable community opposition to the construction of any additional stack.
- In-tunnel filtration, an option favoured by the community, will also be considered in the Modifications Report.

Comparison of in-tunnel & external air quality Impacts

- The proposed portal emissions would trade improved in-tunnel air quality for degraded external air quality.
- While in-tunnel exposure to air pollutants is a health concern, this is considered a lower health risk, provided in-tunnel air quality complies with carbon monoxide goals.
- The rationale for this is:
 - o In-tunnel exposures are short-term (typically minutes)
 - o In-tunnel exposures can be effectively reduced by closing the vehicle cabin
 - o People can choose not to use the tunnel if they are sensitive to the air pollution
 - o External air quality impacts are long-term
 - o Individuals have less control over their exposure to external air quality
 - o Long-term exposure to increased air pollution is associated with premature mortality and exacerbation of cardiorespiratory diseases.