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To: "simon.johnston@parliament.nsw.gov.au"
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Subject: DEC Responses to Questions on Notice - Parliamentary Inquiry into Health Impacts of Air Pollution in the Sydney Basin

Dear Simon,

Attached below are DEC's responses to the Questions on Notice forwarded to us in writing following the hearing of 16 August 2006 and those taken on notice by DEC at the hearing. A hard copy of these responses and the corrected hearing transcript will follow.

Please contact me if you have any queries.

Regards

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Parliamentary Inquiry into Health Impacts of Air Pollution in the Sydney Basin

Questions on Notice - Department of Environment and Conservation

1. *The terms of reference require the Committee to examine the health impacts of air pollution on 'at risk' groups. Do any localities in Sydney routinely suffer worse air quality than average? If so, which localities?*

Particle pollution can build up over the whole Sydney basin in the warmer months as a result of extreme natural events such as bushfires and dust storms due to drought conditions. During the cooler months, more localised impacts are experienced due to planned or unavoidable events such as hazard reduction burning on the outskirts of Sydney and overnight in areas of Sydney with high usage of solid fuel heaters.

Photochemical smog (ground level ozone) is of concern in summer. How quickly ozone is formed depends largely on the temperature and the mix of precursor pollutants – oxides of nitrogen (NO_x) and volatile organic compounds (VOCs). Emissions of these pollutants produced by morning peak hour traffic and other sources can be transported off shore. In the presence of sunlight, they react to form ozone and, with the arrival of the afternoon sea breeze, the plume is transported to the west across the Sydney basin.

2. *What assessments have been conducted of the susceptibility to air pollution of certain groups in the community such as children or the elderly?*

The issue of assessments of vulnerable groups is being addressed by the Department of Health in its responses to the Inquiry.

What actions have been taken to warn these groups of the risks they run and the appropriate preventative actions they should take?

NSW Health and DEC jointly operate an Air Pollution Health Alert System that provides information to the community and health care providers about the adverse health effects of air pollution and ways to reduce these effects. The system issues health alerts on days when high air pollution is expected, and provides specific information for recognised high risk groups – people with asthma and people with chronic lung and/or heart disease. NSW Health can provide further information.

3. *What are the major environmental concerns associated with air pollution from industry?*

The industrial sector has been a major target of pollution control efforts for the last 50 years. Consequently, industrial sources are well understood and subject to well-established management programs (eg: legislation and licensing). These programs have resulted in good management of industrial emissions and need to be maintained to continue the management of industrial sources of air pollution in Sydney.

Since 1994, the amount of lead emissions in Sydney have dropped by 97 percent. In the same period, carbon monoxide emissions have dropped by 29 percent, and nitrogen oxide by 6 percent.

Sulfur dioxide concentrations are also well below the national standard in Sydney and are falling in other regions such as the Illawarra. Levels of the most toxic air chemicals – dioxins and heavy metals – are well below international standards.

The major concern associated with air pollution in urbanised areas, such as Sydney, is any resulting adverse effects on human health. On a regional level, smog formation in summer months and brown haze caused by particles in winter months are the major air pollution concerns in Sydney. Air pollution emissions from all sectors, including industry, contribute to these concerns.

4. *Which localities in the Sydney Basin are most affected by industrial air pollution?*

The response to Question 5 lists the top 10 sources of industrial air pollution, including oxides of nitrogen (NO_x), volatile organic compounds (VOC) and particulate matter less than 10 microns (PM₁₀). The localities of these industrial sources are available through the National Pollutant Inventory (see below).

5. *Which industries in the Sydney Basin are the heaviest air polluters?*

The industrial sector has been the target of significant pollution control efforts over the last 50 years. Major sources of industrial air emissions in NSW are regulated and licensed by the DEC. These controls are used to minimise any adverse environmental impacts identified at the planning stage or during a premises' operation.

In 2003, the major industrial sources of air pollution were:

Solid Particles (PM₁₀) – industrial sources (36.7% of total in Sydney)

27% Crushing, grinding or separating works
22% Extractive Industries
11% Ceramics production (excluding glass)
6% Concrete batching
6% Solid waste landfilling
5% Poultry production
3% Petroleum refining
(+ 20% other)

Oxides of Nitrogen (NO_x) – industrial sources (15.1% of total in Sydney)

26% Electricity generation (other than coal)
20% Petroleum refining
17% Glass production
10% Cement or lime production
9% Petrochemical production
(+ 12% other)

Volatile Organic Compounds (VOCs) – industrial sources (10.6% of total in Sydney)

23% Petroleum refining
17% Printing
17% Metal plating or coating works
8% Other metal processing
4% Other chemical processing
4% Plastics production
4% Electricity generation (other than coal)
3% Petrochemical production
(+ 20% other)

The National Pollutant Inventory identifies the largest emitters of air pollution in Sydney and is publicly available at: <http://www.npi.gov.au/>.

6. *The Government's policy to improve air quality in NSW is called Action for Air. How does Action for Air incorporate and address the health impacts of air pollution, particularly in relation to air pollution caused by motor vehicles?*

Action for Air adopts the national health based air quality goals set out in the Ambient Air Quality National Environment Protection Measure. These goals were adopted in 1998 and are regularly reviewed to take account of recent and emerging health information.

A wide range of programs in Action for Air focus on making motor vehicles and fuels cleaner and providing people with more and better public transport choices. For example, NSW is actively contributing to a national effort to improve fuel quality and tighten vehicle emission standards. The strict new standards are being phased in and, despite increased vehicle use, by 2020 they are expected to have reduced carbon monoxide by 62%, volatile organic compounds by 40%, and oxides of nitrogen by 55% in the Greater Metropolitan Region.

7. *It is nearly ten years since the introduction of the Protection of the Environment Operations Act. How effective has the Act been in improving air quality, and can you identify new challenges in respect of air quality that may require further legislative changes?*

The introduction of the *Protection of the Environment Operations Act (POEO Act) 1997* integrated the Clean Air Act into a much stronger, more streamlined piece of pollution control legislation. The POEO Act and its associated Regulations have been extremely effective in improving air quality because they have significantly increased the offences and penalties available to better control air pollution and prosecute offenders, as well as established innovative market-based mechanisms to reduce air pollution more effectively.

As stated in the Auditor-General's 2001 Performance Audit Report, *The Environment Protection Authority: Controlling and Reducing Pollution from Industry*, "... the introduction of the Protection of the Environment Operations Act 1997 which commenced 1 July 1999, restructured, streamlined and strengthened pollution legislation and established a regulatory framework consistent with international best practice."

Industrial air emissions are now more strictly regulated than ever before with the revamped Protection of the Environment Operations (Clean Air) Regulation 2002. This Regulation was further strengthened in 2005. As a result of these changes, in each year the Regulation operates, it is estimated that the following air emissions will be avoided:

- 1,336 tonnes of solid particles (or 26,727 tonnes over 20 years)
- 18,303 tonnes of nitrogen oxides (NO_x) (or 366,062 tonnes over 20 years)
- 4,716 tonnes of sulfur oxides (SO_x) (or 94,316 tonnes over 20 years)

In doing so, the Regulation is estimated to avoid health costs of up to \$1.26 billion over the next twenty years (approximately \$63 million per year).

The POEO Act has been recently reviewed. It was updated in 2005 to further improve its pollution control provisions, including increased penalties for pollution offences.

Ozone and particles remain the main challenges. *Action for Air* will be reviewed in 2007 to consider further actions to address existing and emerging challenges for air quality.

8. *The Minister for Planning sets Conditions of Approval for major projects. What role, if any, does the Department of Environment and Conservation play in formulating Conditions of Approval, and in policing Conditions of Approval once finalised? Can you illustrate your answer with an example?*

Where a project is scheduled under the Protection of the Environment Operations Act 1997, most air quality planning approval conditions are included as conditions on the project's Environment Protection Licence. Licence conditions are enforced by DEC using a range of regulatory approaches including licence monitoring requirements, load based licensing, annual reporting requirements, pollution reduction programs and compliance audits.

An example is the Mt Piper Power Station capacity upgrade. Delta Electricity submitted a modification application which sought to upgrade the Mount Piper Power Station. DEC worked with DoP to ensure an appropriate level of assessment of the air quality impacts was conducted. DEC provided recommended conditions of approval, which formed the basis of the Minister's Modification Approval issued on 3 June 2006. The emission limits and monitoring requirements will be incorporated into the DEC's Environment Protection Licence for the site.

Major projects including significant road tunnels can now be assessed under Part 3A of the *Environmental Planning and Assessment Act*. DEC provides technical advice to Department of Planning (DoP) on air quality issues at various stages during the Part 3A process. This includes advice on the technical methodology for assessing air quality impacts and the environmental outcomes required.

DEC's Part 3A input may include recommendations for approval conditions relating to air quality issues. DEC's input to DoP on major projects considers the risk of impact on the community and DEC consults with other agencies including NSW Health in formulating its advice.

The enforcement of planning approval conditions is the responsibility of DoP, although DEC provides technical assistance where required.

9. *The Government is formulating the Metro Sydney strategy to guide planning decisions in Sydney for the next 30 years.*

What role, if any, did the Department of Environment and Conservation have in formulating the Metro Sydney strategy?

DEC's Director-General participated in the CEO steering committee for the Strategy and DEC's Deputy Director-General was represented on the Environment Reference Panel for the Strategy. DEC also took part in officer-level discussions on development of the environment chapter. DEC was involved in a number of stakeholder forums and workshops on development of the Strategy, provided a DEC submission in response to the Metropolitan Strategy discussion paper and provided comments on drafts of the Strategy's environment chapter.

How will the Metro Sydney impact on air quality in the Sydney Basin?

The Metropolitan Strategy provides a framework that will support the improvement of air quality and, in particular, the reduction of vehicle emission impacts, through a range of measures for integrated land use and transport planning and improving public transport.

DEC has estimated changes in emissions and modelled the potential impact on the ozone concentration in the Sydney basin out to the year 2026, using Transport and Population Data Centre data on forecast changes in population numbers and distribution together with the associated changes in "vehicle kilometres travelled".

Scenario modelling for 2016 and 2026 considers the potential impact of an increase in the population of Sydney from 3.8 million to 4.6 million by 2016 and a further increase to 5

million by 2026, as envisaged under the Metropolitan Strategy. The modelling shows that for this increase in population

- the most important determinant of future photochemical smog events is not development in south-west and north-west Sydney, but will be emissions associated with population growth across the entire metropolitan area (these sectors are expected to provide 30-40% of new housing, the rest will be in established areas of Sydney)
- There is not a substantial deterioration in western and south western Sydney air quality provided expected control strategies are maintained.
- Although there will be a reduction in vehicle emissions due to new vehicle emission and fuel quality standards, motor vehicles will remain a source of the precursor pollutants.

10. The DEC licenses activities which cause air pollution. What incentives are available to licensed polluters to encourage them to reduce their emissions below the levels allowed in their licenses?

The load-based licensing (LBL) scheme introduced under the *Protection of the Environment Operations Act 1997* provides an incentive for licensees in the Sydney Basin to reduce their impact on the environment. This includes a reduction in air pollutants.

LBL seeks to manage the cumulative impacts of the pollutant loads by applying the 'polluter pays' principle. It gives industry (licensees) an incentive to reduce their annual emissions of air and water pollution in NSW.

The LBL fee is based on the potential for pollutants from a licensee to impact on the environment – that is, the amount of pollution, how harmful it is and where it is emitted. The lower the potential environmental impact of a licensee's emissions, the lower the licence fee.

The LBL scheme is explained in detail in greater detail in Appendix 5 to the NSW Government submission.

11. The Western Sydney Clean Air and Water Action Group and Concerned Residents for Guildford submitted that the Alcoa aluminium plant at Yennora is unlawfully emitting air pollutants above its licensed limits. Has the DEC investigated this complaint, and what was the outcome?

The DEC has investigated a number of complaints related to this plant. The investigation has included announced and unannounced inspections and night time surveillance, examination of monitoring results and production data and other investigations and analysis. The DEC investigations to date have not identified any breaches of licence conditions or limits by Alcoa.

The DEC has met with members of the Western Sydney Clean Air and Water Action Group and Concerned Residents for Guildford committee and advised them of its investigations to date. DEC is continuing to closely scrutinise Alcoa's operations at Yennora.

12. If particulate matter resulting from bushfires and from wood heaters is excluded, what have been the annual minimum and maximum concentrations of particulate matter in Sydney's air over the last decade?

It is not possible to use current air quality monitoring data to distinguish between the contribution of particulate matter resulting from bushfires and wood heaters and other sources. See question 13 for break down of emissions inventory data.

13. What are the principal sources of particulates in Sydney's air? In what proportion are they present?

The principal man-made sources of PM₁₀ in Sydney's air and their proportion are as follows:

- Industrial premises (EPA licensed) – 36.7%;
- Domestic solid fuel heating – 22.6%;
- Industrial premises wheel generated dust (EPA licensed) – 12.6%;
- Motor vehicles – 11.9%;
- Commercial businesses (Non EPA licensed) – 9.9%; and
- Commercial businesses wheel generated dust (Non EPA licensed) – 2.2%.

Please see Appendix 3 - Emission Sources in the Sydney Basin of the NSW Government Submission for specific details.

Approximately 2,700 tonnes/year of PM₁₀ from natural sources (i.e. bushfires, prescribed burning and windblown dust) was emitted into Sydney's air during 2003. This compares with approximately 21,500 tonnes/year of PM₁₀ from man-made sources for the same period.

14. Section 3(d)(ii) of the POEO Act 1997 envisages "the reduction to harmless levels of the discharge of substances likely to cause harm to the environment". What time frames and standards have been put in place to phase out the discharge of carcinogenic substances into the atmosphere of such as dioxins, furans, and mercury? If no standards or time frames for a staged removal is in place, when will they be introduced?

In relation to air pollution, the objectives of the POEO Act are enacted in the following ways:

Part 5.4 (sections 124–135) of the POEO Act deals specifically with air pollution. This includes the general obligation that the occupiers of industrial/commercial premises do not cause air pollution by failing to operate or maintain plant, carry out work or deal with materials in a proper and efficient manner.

Section 128 of the POEO Act requires occupiers of non-residential premises to comply with any air emission standards prescribed by regulations, as contained in Part 4 of the POEO (Clean Air) Regulation. These standards limit the maximum concentration of emissions permissible for industrial sources anywhere in NSW.

In relation to toxic air pollutants, such as dioxins and furans, the Regulation sets a standard of 0.1 nanograms per cubic metre (ng/m³). This standard represents best practice throughout the world. The Regulation also specifies design parameters for equipment used to treat material containing toxic compounds.

The Regulation also specifies emission standards for a range of toxic compounds, including mercury, cadmium, lead, chromium and arsenic. The standard for mercury for new industry is 0.2 milligrams per cubic metre (mg/m³).

The standards in the Regulation are reviewed every 5 years in accordance with the Subordinate Legislation Act. This ensures that the latest health studies and developments in pollution control can be considered and new standards incorporated where warranted. Progressively more stringent standards are generally implemented each time the Regulation is reviewed.

Even where the Regulation does not prescribe standards for a particular air pollutant, occupiers must still take all practicable means to prevent or minimise air pollution.

The POEO Act also establishes a system of environment protection licensing for activities with the potential to have a significant impact on the environment. Emission limits may be specified in licences, where warranted, to control or prevent emission of a particular pollutant, even beyond the requirements of the Regulation. The setting of such emission limits is based on the outcomes of site-specific air impact assessment against health-based criteria.

15. Emission standards to regulate diesel cars, trucks and buses are in place. What standards are in place to regulate emissions from diesel locomotives?

Emission standards for cars, trucks and buses are determined at a national level. There are as yet no national emission standards for diesel locomotives. However in NSW, s128(2) of the Protection of the Environment Operations Act (1997) requires any plant – including a locomotive – to be operated by such practicable means as may be necessary to prevent or minimise air pollution.

16. What actions has the DEC undertaken to encourage the adoption of national standards to regulate emissions from diesel locomotives?

The National Transport Commission (NTC) and, more specifically, the Land Transport Environment Committee (LTEC), has responsibility for developing national standards for diesel locomotives.

The DEC does not have a formal role in the NTC process but DEC liaises with the NTC and other relevant associations to encourage them to adopt good environmental safeguards for the rail sector. DEC has made submissions to LTEC reviews such as LTEC's scoping of rail environment issues in 2004 which considered issues such as national rail emission limits.

17. Will the DEC be proposing legislation to introduce diesel locomotive emission standards in this State? If not, why not?

Emissions sources in the Sydney Basin are currently under review. The outcomes of this review will determine what, if any, action regarding diesel locomotives is taken. At present, railways contribute 1.7% NO_x, 0.1 % VOC and 0.2% PM₁₀ of the total man-made emissions in the Sydney Basin. (Refer to Question 15 also.)

18. The DEC's 2004-2005 Annual Report indicates that prosecutions of smoky vehicles are declining. What is the reason for this decline?

It is likely that the number of reports of smoky vehicles has been declining in recent years because there are fewer smoky vehicles on the road. The tightening of emission and fuel standards and generally better performance of motor vehicle fleets in NSW, has also had a beneficial outcome. DEC is currently undertaking a study to provide further information on smoky vehicle trends.

19. Has a review, as suggested by the Auditor-General, been undertaken of the reduction in DEC's air quality monitoring capacity? If not, when will the review be undertaken? If so, when will the results of the review be released?

There are currently 20 ambient air monitoring stations operating in Sydney's greater metropolitan area. This represents the most extensive air monitoring network of any city in Australia. Around \$2.5 million is being spent in 2006-07 on the maintenance of the NSW air

quality monitoring program. Monitoring of fine particles has increased in line with national requirements. Extra equipment has been installed in four existing stations in the greater metropolitan area to increase the number of stations included in calculation of the Regional Pollution Index.

A review of the NSW monitoring plan for the Ambient Air Quality National Environment Protection Measure is scheduled for 2006/07. This will provide an opportunity to review the current network configuration.

20. The proposed expansion of Port Botany is a part of the Sydney Ports Corporation (SPC) strategy to handle increased container throughput. The strategy aims to transport 40% or more of containers by freight rail (a 220% increase in rail traffic) as well as increases in road traffic in order to handle a trebling (at least) in container growth. Will a 40% modal shift to freight rail coupled with an approximate 100% increase in road traffic (heavy vehicles) numbers operating to and from the Port, have a potential negative impact on air quality. If so, what impacts? What detailed information supports this conclusion?

From a greenhouse gas perspective, the 2004 Australian Government white paper *Securing Australia's Energy Future* clearly recognises that mode diversion from road to rail will reduce the amount of greenhouse gases produced per unit of freight transported. From a Sydney region airshed perspective, DEC's current understanding is that rail locomotives are likely to contribute a very small proportion of common air pollutants of concern (ie typically less than 1%) but impacts along rail transport corridors can be more significant.

Information from air quality modelling done by the proponent for Port Botany showed that once the completed terminal had reached full capacity the cumulative effects of port activities and other sources could result in nitrogen dioxide standards being approached at some locations on some days. The modelling was based on a range of assumptions regarding air emissions performance from plant, equipment and transport used in terminal operations, including shipping, so was not specific to rail freight.

21. What studies have been done in Australia and / or NSW comparing heavy road freight vehicle emissions per tonne / kilometre with train emissions per tonne / kilometre? What factors have been considered in such studies?

The review described at Question 17 will reveal if further investigation of diesel locomotives, that would include a literature search should be undertaken.

22. What emissions testing has been done on diesel locomotives operating in NSW? What were the detailed findings in relation to the composition of emissions and their quantities? Under what conditions was the testing done? What classes of locomotives/ individual locomotives were tested and what was/ is their age?

DEC is aware of pilot studies by the Department of Mineral Resources and the former Freight Corp. The studies aim to test smoke emissions from new and old engines.

23. Is DEC aware of moves in Canada and by the United States EPA to limit diesel locomotive emissions? Are there any similar moves in NSW?

Yes. See Questions 15-17.

24. Does DEC consider the US diesel locomotive fleet to be comparable to the NSW fleet in terms of emissions? In what ways are they similar or dissimilar?

This question is most appropriately directed to the NTC and rail bodies such as RailCorp, Australian Rail Track Corporation and private freight operators such as Pacific National, who are better qualified to respond in more detail.

25. What is the mechanism or process by which diesel locomotive emissions will be improved in the future? When can such improvements be expected? How will improvements in emissions from diesel locomotives be measured and reported?

The NTC and more specifically the Land Transport Environment Committee (LTEC) are responsible for developing means of improving emissions from diesel locomotives. (See Questions 15 -17)

26. When setting standards for acceptable exposure to air pollution in road tunnels, does DEC base its calculations on short- or long-term exposure?

In NSW, road tunnels are regulated as follows:

- The Department of Planning (DoP) is the regulator under the Environmental Planning and Assessment (EP&A) Act via Ministerial planning approvals;
- The DEC licenses construction only. DEC contributes its experience in regulating industrial air pollution by working co-operatively with NSW Health and DoP to incorporate appropriate in-tunnel health based goals into enforceable conditions of approval. DEC advises DoP on the management of operational air quality impacts;
- NSW Health advises on air quality health impacts, including appropriate health based goals for in-tunnel and ambient air quality.

NSW Health advises on the standards, not DEC, so this question is more appropriately directed to NSW Health.

27. Are exposure levels calculated on the basis of one tunnel trip per day, one return trip per day, or multiple trips through multiple tunnels?

This question is more appropriately directed to NSW Health as the lead agency for advising on health based in-tunnel air quality goals.

28. How much time would a vehicle passenger need to spend inside multiple Sydney tunnels in a typical working day before their health was negatively impacted?

This question is more appropriately directed to NSW Health.

29. Have any calculations been undertaken of the health impacts on drivers of using the M5 East tunnel, the Eastern Distributor and the Harbour Tunnel in one journey?

This question is more appropriately directed to NSW Health.

30. Are acceptable exposure standards set on the basis of drivers using only one tunnel? If so, which tunnel is used?

This question is more appropriately directed to NSW Health.

31. Does DEC calculate the health impacts of exposure to air pollution in tunnels on the basis of exposure to a single pollutant (eg nitrogen dioxide), or particulates, or the combined impact of multiple pollutants?

DEC does not calculate health impacts. This question is more appropriately directed to NSW Health as the lead agency for advising on health based in-tunnel air quality goals.

32. *Has DEC communicated with the RTA about the risks to vehicle passengers of spending cumulative time throughout the working week in Sydney's tunnels? If not, why not? If yes, what has the RTA's response been?*

No. NSW Health advises on the health impacts of exposure to in-tunnel air pollutants.

33. *In California, benzene in petrol may not exceed 1%. What is the level of benzene present in Australian fuels?*

The maximum content of benzene in petrol in Australian petrol is also 1%.

34. *What studies have been undertaken of the health impacts of air transport toxic emissions on the Sydney basin?*

This question is more appropriately directed to NSW Health.

35. *Are airport-related road traffic emissions included when estimating the impacts of Sydney Airport on Sydney's air quality?*

The impacts of airport related road traffic emissions on Sydney's air quality were raised in the NSW Government Submissions to the:

- Sydney Airport Preliminary Draft Master Plan (October 2003, pp.30-34); and
- Preliminary Draft Major Development Plan, Retail Precinct - Sydney Airport (January 2006, pp.27-28).

The following comment on air quality is from the 2006 submission:

"The development is predicted to generate an additional 3000 vehicle trips per hour in the Saturday midday peak period. The NSW Government's concerns about additional traffic relate to local and regional air quality, greenhouse emissions and noise, in addition to the road capacity issues addressed in the MDPs [Major Development Plans].

As per the comments made with regard to road congestion, the MDPs should assess the cumulative impacts of increased traffic generation from this proposal in the context of other development in the area, including Port Botany and substantial areas of new residential development in the "global arc" from the CBD to Port Botany."

Further queries on this matter should be referred to the Department of Planning who coordinated preparation of the NSW Government Submissions.

36. *What are the top ten single sources of air pollution in the Sydney basin? Does Sydney Airport appear in this list? If so, where does it rank?*

The response to Question 5 lists the top 10 sources of industrial air pollution, including oxides of nitrogen (NO_x), volatile organic compounds (VOC) and particulate matter less than 10 microns (PM₁₀). Sydney Airport does not appear on this list.

37. *Has there been any assessment undertaken of the health impacts of long-term exposure to specific carcinogens and toxics (eg benzene, 1,3 butadiene, formaldehyde, arsenic) issuing from Sydney Airport and Port Botany?*

This question is more appropriately directed to NSW Health.

38. *In relation to the M5 East, CCT and LCT projects, does the DEC ensure the standards and models used to advise, make decisions and approve designs and operating protocols reflect best practice?*

Yes.

39. *Does the DEC independently check the assumptions of an assessment, (or subsequent reassessment by RTA or Department of Planning)? If not, why not?*

Yes.

40. *Does the DEC monitor the implementation of the designs and protocols of road tunnels?*

DEC works co-operatively with DoP and NSW Health to incorporate appropriate in-tunnel health based goals into enforceable conditions of approval, and advises DoP on the management of operational air quality impacts.

41. *Does the DEC have sufficient powers to make their eventual recommendations enforceable? If not, why not? Has the DEC taken action to rectify this situation?*

DEC has sufficient powers to perform its role by working co-operatively with DoP to develop enforceable conditions of approval (see question 26).

42. *What action is DEC taking to prevent a repeat of the M5 East ventilation and air pollution problems in the Lane Cove Tunnel project?*

DEC recommended that the Department of Planning place more stringent conditions on the consent for the Lane Cove Tunnel as a result of the air quality issues experienced with the M5 East. The approach is outlined below:

Air Quality Issue	Lane Cove Tunnel approach
Ambient	Ambient goals based on NEPM goals
Stack	Stack limits. An ambient exceedance triggers an assessment of the contribution of the stack to the exceedance.
Portal emissions	<i>design and operate to avoid portal emissions as far as is practical – excludes accidents and major maintenance periods.</i>

43. *Could the DEC have declared the approval of the deletion of the Lane Cove ventilation tunnel invalid? If yes, why wasn't such action taken? If no, could an independent reassessment of the new impacts been conducted at the request of the DEC?*

No. DEC does not have an approval role as the Department of Planning (DoP) is the consent authority. However, DEC provides technical advice to DoP on a range of environmental issues, including on air quality. DEC reviewed the modelling results for the changed ventilation system to ensure the changes would not compromise the achievement

of environmental outcomes. The review found that regardless of the change the local air quality remained well below the ambient goals.

44. Has DEC initiated action to acquire the needed legislative powers to control air quality and ventilation systems in tunnels? If not, why not?

No. DoP has the powers to regulate the air quality and ventilation systems in road tunnels. DEC has a sufficient role in advising DoP on the management of operational air quality and ventilation systems.

45. Does the DEC believe that the fine particulate matter, and especially vehicular emissions, must be regarded as a significant health risk with both long and short-term impacts?

There is a need to gain better information and data on the health impact of the finer fraction of particulate matter. This has been discussed as part of the national air quality standard-setting process under the National Environment Protection Measures, however DEC considers that fine particulate matter may be a health risk.

What action is the DEC taking in relation to the exceedances of air-quality standards in the M5 East Tunnel...

The M5 East tunnel is currently operating in compliance with the in-tunnel air quality standards in its conditions of approval issued by DoP.

... and the disclosures by Dr Peter Manins that particulate pollution is under-estimated for the Cross City Tunnel and Lane Cove Tunnel projects?

Both the Cross City Tunnel and the Lane Cove Tunnel Ministerial Approvals have in-stack limits for particulate emissions that will ensure ambient air quality goals are not compromised.

In an interview on ABC Radio 702, Tuesday 23 May 2006, Dr Peter Manins stated that:

- There would be no serious problem with the Lane Cove Tunnel at all;
- His report is being taken out of context and sensationalised;
- He predicts there may be greater particulate emissions and that all other emissions would be equal to or lower than predicted by the RTA;
- That residents especially should be satisfied with the design of the tunnel.

46. What level of review was given by DEC or any other agencies to the changes to the ventilation design by RTA and submitted to DIPNR on 25.10.02?

DEC's approach to managing the environmental impacts of major projects is to provide advice on what environmental outcomes must be achieved, rather than on how to achieve them.

Therefore DEC does not prescribe the engineering design of the ventilation design. Instead, DEC provided DIPNR detailed comments on the ambient air quality modelling and underlying assumptions with a view of ensuring that the operation of the Lane Cove Tunnel would achieve national ambient air quality goals.

47. What level of review of the changes to the ventilation design, outlined in the RTA consistency Report dated April 2004, was made by DEC or any other agency?

RTA changed the design of the ventilation system for the Lane Cove Tunnel, and these were considered by that agency to be consistent with the planning approval.

The change involves removal of a section of the ventilation tunnel that led to the eastern stack and diversion of all air that would have been transported through that tunnel to the western stack instead. The total amount of air emitted remains the same but the percentage emitted through each stack differs, with a larger percentage of air emitted from the western stack than in the original design.

DEC wrote to the RTA on 8 July 2004 requesting information about the changes including modelling results that demonstrated that the changes would not compromise the achievement of environmental outcomes.

The RTA provided a report in August 2004 which indicated that while the changes were predicted to slightly increase concentrations at some locations around the western stack, they remained well below the ambient goals and would therefore be consistent with, and satisfy, the Conditions of Consent.

48. In the modelling of pollution from the Lane Cove Tunnel stacks, why has TJH been permitted to exclude local (e.g., from Gore Hill Expressway) background pollution?

Background pollution has been included in the assessment.

49. Would incorporation of local background pollution to the levels of pollutants from the stacks demonstrate exceedances of the NEPM standards/guidelines?

No. Background pollution has been appropriately included.

50. If so, how does DEC ensure compliance? Is in-tunnel filtration a measure DEC support, given that the RTA disclosed in the Auditor General's Report (April, 2005) that provision for filtration has been provided "should it be needed"?

DEC's approach to managing the environmental impacts of major projects is to provide advice on what environmental outcomes must be achieved, rather than on how to achieve them.

The Minister's Conditions of Approval for road tunnel projects specify goals and limits for key air pollutants. RTA is responsible for determining how it will achieve these outcomes.

51. Does MCoA 278 not require an external audit of in-stack or portal pressure monitoring? If yes, why not?

This matter does not fall within DEC's responsibilities.

52. What enforcement powers does DEC have in the event that tunnel emissions from the portals are in breach of the Conditions of Approval?

DEC does not regulate the operation of road tunnels. DoP is the regulator under the Environmental Planning and Assessment (EP&A) Act via Ministerial planning approvals.

Taken on notice by DEC during hearing of 16 August 2006

53. What is the number of staff in DEC working in the regulatory area on air quality?

As stated in evidence to the hearing of 16 August 2006, the regulatory and enforcement functions of the DEC are integrated under the Protection of the Environment Operations Act and regulatory officers work across the media of air, water, noise and waste.

54. *The Government's submission indicates that a monitoring station still operating at Earlwood. Is that so, or has that station been either closed or moved?*

The Earlwood station has not been closed or moved and is still operating.

According to the Total environment Centre sampling levels have dropped from 1,500 to 450 samples. Is that Correct? Has the level of sampling decreased?

The air quality monitoring network managed by DEC is not static, and changes continually due to changing technologies and other factors. The network is the most comprehensive in Australia and is regularly reviewed according to national criteria.

Sampling levels as measured by the number of instruments in the Air Quality Monitoring Network have been changed following the closure of redundant stations.

As a result of the changes to the network, data from 98% of the remaining air quality monitoring instruments are now available for posting onto the DEC website where previously this was 81%. Resource intensive batch sampling has been reduced from 19% of the air quality monitoring instruments to around 2% today. This translates to air quality data from the network being more quickly accessible to the community.

55. *What is the amount of pollution that Alcoa's Yennora premise is allowed to produce and how does that compare with Weston Aluminium?*

A comparison of the allowable pollutant load per tonne of product is outlined below:

Pollutant	Allowable pollutant load ¹ (kg) per tonne of product ²	
	Alcoa	Weston
Coarse particulates	0.232	0.135
Fine particulates	0.096	0.384
Fluoride	0.010	0.064
Nitrogen oxides	0.864	0.950
Sulfur oxides	0.272	0.622
Volatile organic compounds	1.160	0.166

1. Pollutant loads based on LBL limits. The figures may not reflect actual pollutant loads from the premises
2. *Amount of product (tonnes) based on the maximum approved production rate for Weston, and the plant capacity for Alcoa (there is no formal limit on their development consent).*

56. *In 2004-05, did the EPA Board write to the Ministers of RTA, Health, Planning and DEC to request installation of filtration systems in the M5 East, the Cross City Tunnel and Lane Cove Tunnel? Did the Ministers respond?*

The EPA Board wrote to the Minister for the Environment on 5 April 2004 about the proposed pilot of filters. The Minister for the Environment subsequently wrote to the Minister for Roads 19 July 2004. The Minister noted that the EPA Board had highlighted the importance of the RTA vigorously initiating measures to improve air quality in consultation with the EPA, including the proposed pilot.