No. 158

PARLIAMENT OF NEW SOUTH WALES
LEGISLATIVE COUNCIL

GENERAL PURPOSE STANDING COMMITTEE NO 5

REPORT

ON

INQUIRY INTO THE M5 EAST VENTILATION STACK

Ordered to be printed 17 December 1999 according to resolution of the House

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Chairman's Foreword

The M5 East motorway project has been in the pipeline since at least the 1940s. It is a project of a Government road building department that I believe needs close community scrutiny on its road building plans.

Once the Roads and Traffic Authority realised that a motorway through the Wolli Creek Valley was not acceptable to the community, it commenced plans to build a road tunnel through this area. The original preferred option of the RTA was to build three ventilation exhaust stacks for this tunnel on elevated sites and the environmental impact study was based on the three stack proposal. The communities in those areas vehemently opposed the three stacks and the proposal was dropped. The final decision was to construct the tunnel with just one ventilation exhaust stack at Turrella. This is on industrial land owned by the RTA but within proximity to housing and businesses.

The final decision to exhaust tunnel air through just one emission stack was made both hastily and with no public consultation. There were no published environmental studies or a supplementary environmental impact statement undertaken to support the decision to build a single stack.

It is apparent that the original three stack option was the more scientifically valid option, though unacceptable to the community. It is equally apparent that the single stack option is also unacceptable to the community. The current stack, located in a valley, is likely to be 25 metres high, yet has ridges of the valley surrounding it 40 metres high. It is clearly an inappropriate location to site the ventilation exhaust stack.

The single stack as currently planned will concentrate the tunnel emissions into one source and add to the pollutant load of the valley. The adverse health effects of this increased pollution on the surrounding community must be acknowledged, but the RTA fails to do so.

The world's best practice has not been incorporated in the design of the tunnel ventilation and exhaust system. The technology exists to fit particulate and gaseous pollutant control technologies either on the stack or within the tunnel.

The key recommendation of this Inquiry is:

The Committee recommends that the Roads and Traffic Authority immediately call for international expressions of interest for the installation of world's best treatment processes for particulate and nitrogen dioxide removal in the M5 East Motorway tunnel. The NSW Government should establish an independent panel of experts, including a community representative, to evaluate and report on the submissions which have been received by 31 March 2000. The report should identify accurate and if possible final costs for the installation of such equipment.

The Committee recommends that the Roads and Traffic Authority continue with construction work on the stack in a manner which can incorporate and make provision for alternative ventilation systems which might be recommended as a result of the assessment of responses to the call for international expressions of interest.

The Committee further recommends that following the publication of the report identified above, a decision be made to either:

- cease all further work on the ventilation stack and install pollution control equipment in the road tunnel itself; or

- install pollution control equipment in addition to the ventilation stack.

I consider that the Property Value Guarantee that the Government has given for those residential properties above the tunnels, or within 100 metres of the tunnel portals, should be extended to those properties which are directly and adversely affected by the emission stack. This view was not shared by other Members of the Committee.

I would like to thank my fellow Committee Members for the close attention they have given to this important enquiry. I would also like to thank the Committee staff, David Blunt, A/Clerk Assistant Committees, Stewart Smith, Senior Project Officer, Anna McNicol, Director, and Committee Officer, Phaedra Parkins, for the hard work they have put in to bring down this thorough and detailed report in such a short time.

The Hon Richard Jones MLC
Chairman

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Committee Membership

The Hon Richard Jones MLC (Chairman)	***Independent***
The Hon Ron Dyer MLC (Deputy Chairman)	***Australian Labor Party***
The Hon Jan Burnswoods MLC	***Australian Labor Party***
The Hon Duncan Gay MLC	***National Party***
The Hon John Johnson MLC	***Australian Labor Party***
The Hon Malcolm Jones MLC	***Outdoor Recreation Party***
The Hon John Ryan MLC	***Liberal Party***

Committee Secretariat

Mr David Blunt	***A/Clerk Assistant, Committees***
Ms Anna McNicol	***Director***
Mr Stewart Smith	***Senior Project Officer***
Ms Phaedra Parkins	***Committee Officer***

Terms of reference[1]

1. That General Purpose Standing Committee No. 5 inquire into and report on the changes and current plans for the M5 East ventilation stack, and in particular::

   a) the environmental impact of the new single stack,

   b) the evidence for the current design of the ventilation stack and alternative possibilities for the management of air polluting substances,

   c) a rigorous and open risk assessment integrated as part of any ventilation proposal, and

   d) appropriate guarantees for all affected residents and businesses.

2. That the Committee report by Wednesday, 8 December 1999.

1 General Purpose Standing Committee No. 5, *Minutes No. 10*, 28 October 1999

Recommendations

Recommendation 1

The Committee recommends that the NSW Government complete the development of the draft subregional air quality management plan, for the area surrounding the motorway, by 30 June 2000. The Government agencies responsible for the development of the plan should consult with the Community Consultative Committee, established in relation to the ventilation stack, as well as relevant local councils, in the formulation of a draft plan, which should then be released for public comment and input. The plan must have specified targets, goals, dates for achievement, identified sources of funding and clear responsibilities for implementation.

Recommendation 2

The Committee recommends that at six monthly intervals from 30 June 2000 an information paper be published outlining the steps taken to implement the draft air quality management plan, focussing on the specified goals and dates for achievement.

Recommendation 3

The Committee recommends that six months before the conclusion of the five year term during which the Roads and Traffic Authority is required to provide $0.5 million per year funding for the implementation of the air quality management plan, a review of funding sources and implementation of the plan be commissioned and published.

Recommendation 4

The Committee recommends that in any future discussion of the impact of the proposed ventilation stack upon air quality, the Roads and Traffic Authority and the Environment Protection Authority adopt the statements of the Minister for the Environment and the Minister for Urban Affairs and Planning that it is intended that emissions from the stack and tunnel should not result in any exceedences of air quality goals in their vicinity, and not suggest that up to five exceedences per year are allowable within these goals, excluding natural and extraordinary disasters.

Recommendation 5

The Committee recommends that the *Environmental Planning and Assessment Act* be amended to prevent a determining authority from approving a development with modifications, which have any significant impact upon the environment or which have a significant impact upon a different group of citizens to those affected by the proposed development, unless those modifications have been exhibited for public comment. The modifications must be subject to adequate public consultation before the proposal is determined.

Recommendation 6

The Committee recommends that no matter what form of tunnel ventilation or emission control is finally implemented, the Road and Traffic Authority, in conjunction with the Department of Health, fund an epidemiological study of the health of the community in the area of any tunnel emissions, commencing this financial year and continuing for 5 years after the commencement of operation of the motorway, or as long as the Department of Health recommends. The technique and operation of the study should be approved by the Department of Health, with results published on an annual basis.

Recommendation 7

The Committee recommends that the Roads and Traffic Authority, when investigating international developments in tunnel emission treatment systems as required by the condition of approval number 79 for M5 East motorway, not only survey the relevant literature but directly contact the suppliers of such equipment.

Recommendation 8

The Committee recommends that the Roads and Traffic Authority immediately call for international expressions of interest for the installation of world's best treatment processes for particulate and nitrogen dioxide removal in the M5 East Motorway tunnel. The NSW Government should establish an independent panel of experts, including a community representative, to evaluate and report on the submissions which have been received by 31 March 2000. The report should identify accurate and if possible final costs for the installation of such equipment.

The Committee recommends that the Roads and Traffic Authority continue with construction work on the stack in a manner which can incorporate and make provision for alternative ventilation systems which might be recommended as a result of the assessment of responses to the call for international expressions of interest.

The Committee further recommends that following the publication of the report identified above, a decision be made to either:

- cease all further work on the ventilation stack and install pollution control equipment in the road tunnel itself; or

- install pollution control equipment in addition to the ventilation stack.

Recommendation 9

The Committee recommends that air quality data reports, both before and after commencement of the motorway be made available 'real time' on the Internet so that those members of the population who are vulnerable to air pollutants may more easily become aware of any exceedences of air quality goals and take appropriate action. Further, it is recommended that air quality reports are published monthly, including on the Internet.

Recommendation 10

The Committee recommends that the Department of Urban Affairs and Planning, in consultation with the Community Consultative Committee, at six monthly intervals review all the sources of information, as identified in Condition 74, to assess whether pollution control equipment should be installed on the emission stack. The results of these reviews should be made public no later than six weeks after the end of the six month period, with reasons stated for the conclusions reached.

Recommendation 11

The Committee recommends that the Roads and Traffic Authority, in consultation with the Community Consultative Committee, prior to the operation of the motorway, develop a contingency plan for instances of air quality exceedences at the Turrella site. This contingency plan must be approved by the Minister for Urban Affairs and Planning and made publicly available.

Recommendation 12

The Committee recommends that the Department of Urban Affairs and Planning release any risk assessment done of the impact of the stack on the implementation of urban consolidation policies in the vicinity of the stack. If no such assessment has been undertaken to date, the Committee recommends that an open and rigorous risk assessment of the impact of the ventilation stack on urban consolidation policies be performed without delay, with the results to be published.

1 Introduction

1.1 Referral of the inquiry

On 28 October 1999 General Purpose Standing Committee No 5 resolved in accordance with its powers under paragraphs 3 & 4 of the resolution establishing the Committee, to adopt terms of reference for an inquiry into the M5 East ventilation stack, and in particular:

a) the environmental impact of the new single stack design;

b) the evidence for the current design of the ventilation stack and alternative possibilities for the management of air polluting substances;

c) a rigorous and open risk assessment integrated as part of any ventilation proposal; and

d) appropriate guarantees for all affected residents.

The Committee initially set itself a reporting date of 8 December 1999. This was later extended, by resolution of the Committee, to 17 December 1999.

The decision of the Committee to adopt terms of reference for this inquiry, followed the giving of notice, in the Legislative Council by the Hon Dr Arthur Chesterfield Evans on 27 October 1999, of a motion for the House to refer this matter to General Purpose Standing Committee No 5.

1.2 Conduct of the inquiry

During the Committee's meeting on 28 October 1999 it was resolved that advertisements be placed in relevant local newspapers calling for submissions, with a closing date of 15 November 1999. The Committee received 241 submissions. The overwhelming majority of these were from residents of the areas surrounding the location of the proposed ventilation stack, expressing opposition to the construction and operation of the stack. The authors of the submissions received are listed in Appendix One.

On 26 November the Committee inspected the site of the proposed ventilation stack at 79 Henderson Street, Turrella, with a number of officers of the Roads and Traffic Authority (RTA). The Committee also met with a number of representatives of the group Residents Against Polluting Stacks (RAPS) and viewed the location of the proposed stack with members of RAPS from a number of locations

The Committee held a public hearing at Parliament House on 29 November. 14 witnesses gave evidence. The witnesses are listed in Appendix Two.

At a deliberative meeting on 1 December the Committee received correspondence from RAPS detailing contact between RAPS and Clean Tunnel Air (CTA) and ABB Alstom Power, Norwegian companies, which had provided information on the use of new technologies in Norwegian tunnels. Also at that meeting, the Committee resolved to write to the Minister for Transport, seeking further information from the RTA in response to a number of specific matters arising from the hearing on

29 November. The RTA's response to this request was received on 10 December. The Committee met on 15 December to consider the Chair's draft report. The Minutes of relevant Committee meetings are reproduced in Appendix 1.

1.3 Structure of this report

Chapter Two of this report provides background information in relation to the matters under review. Early motorway proposals are briefly outlined, followed by an account of the development of the current project involving a four kilometre tunnel and a single ventilation stack located at Turrella. Reference is made to the approval process for the current project and the legal challenge to the validity of the approval, which was dismissed by the NSW Court of Appeal by a majority of two to one in 1999. Chapter Two also includes background information on air quality issues, specifically concerning particulate matter, nitrogen dioxide and carbon monoxide.

Chapters Three to Six in turn address each of the issues identified in the terms of reference for the inquiry. Chapter Three discusses the environmental impact of the new single stack, with particular reference to air quality. There is also a discussion of principles of public consultation arising from this matter.

Chapter Four is concerned with evidence for the current design of the ventilation stack and alternative possibilities for the management of air polluting substances. This chapter contains a discussion of world's best practice for the treatment of tunnel emissions and alternative possibilities for the management of air polluting substances. Chapter Four concludes with the Committee's recommendation in relation to the proposed stack and the use of alternative technologies.

Chapter Five deals with the integration of risk assessment into the ventilation proposal. This chapter is concerned with issues of the future assessment of air quality and contingency planning should the emissions from the tunnel exceed air quality goals. Chapter Five includes recommendations about the process by which the installation of new technologies could be triggered if the Committee's earlier recommendations are not implemented.

Chapter Six deals with appropriate guarantees for all affected residents and businesses, with particular reference to the application of the Property Value Guarantee that has been extended to residents above the actual road tunnel, to residents who may be affected by the proposed ventilation stack.

2 Background to the M5 East project[2]

2.1 Early motorway proposals

The proposal to develop a motorway standard road linking central Sydney to the south western suburbs has existed since at least the late 1940s.

In 1985, an Environmental Impact Statement for a motorway between King Georges Road Beverly Hills and Heathcote Road Milperra was exhibited. In 1986 the RTA determined to proceed with the motorway between Heathcote Road and Fairford Road, Padstow. In 1991, the RTA determined to proceed with that part of the motorway between Fairford Road and King Georges Road, but only as a single lane each way. This road is now operational.

In 1989 an Environmental Impact Statement for a six lane motorway between Beverly Hills and Alexandria was exhibited. This involved a surface level road through Wolli Creek.

2.1.2 The 1994 proposal: 3 km tunnel, one exhaust stack

In June 1994 another Environmental Impact Statement was exhibited. This proposal was for a four-lane tolled motorway, involving:

- duplication of the Fairford Road to King Georges Road motorway;
- a road on embankment from King Georges Road to Bexley Road;
- a tunnel under Wolli Creek to Turrella; and
- a surface road from Turrella to General Homes Drive, Kyeemagh.

The proposed tunnel was three kilometres long and had one exhaust vent stack at Earlwood. In response to the 1994 EIS, the RTA received 2246 representations, of which 518 were individual submissions and 1728 were form letters.

2.1.3 The 1996 proposal: 4 km tunnel, three exhaust stacks

Subsequently, in December 1996 the RTA prepared and exhibited a Supplement to the 1994 Environmental Impact Statement, which made substantial modifications to the 1994 proposals. This is known as the '1996 proposal', and was supported by the '1996 EIS Supplement'.

The 1996 proposal included a longer tunnel of four kilometres, which required a different tunnel ventilation system compared to the three kilometre tunnel of the 1994 option. The 1996 EIS

[2] This section has been adapted from: Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997.

Supplement proposed three exhaust vent stacks at: Royal Place/Bardwell Road in Bardwell Park; Hill Street/Duff Street in Arncliffe; and at Arncliffe Street/Burrows St in Arncliffe.

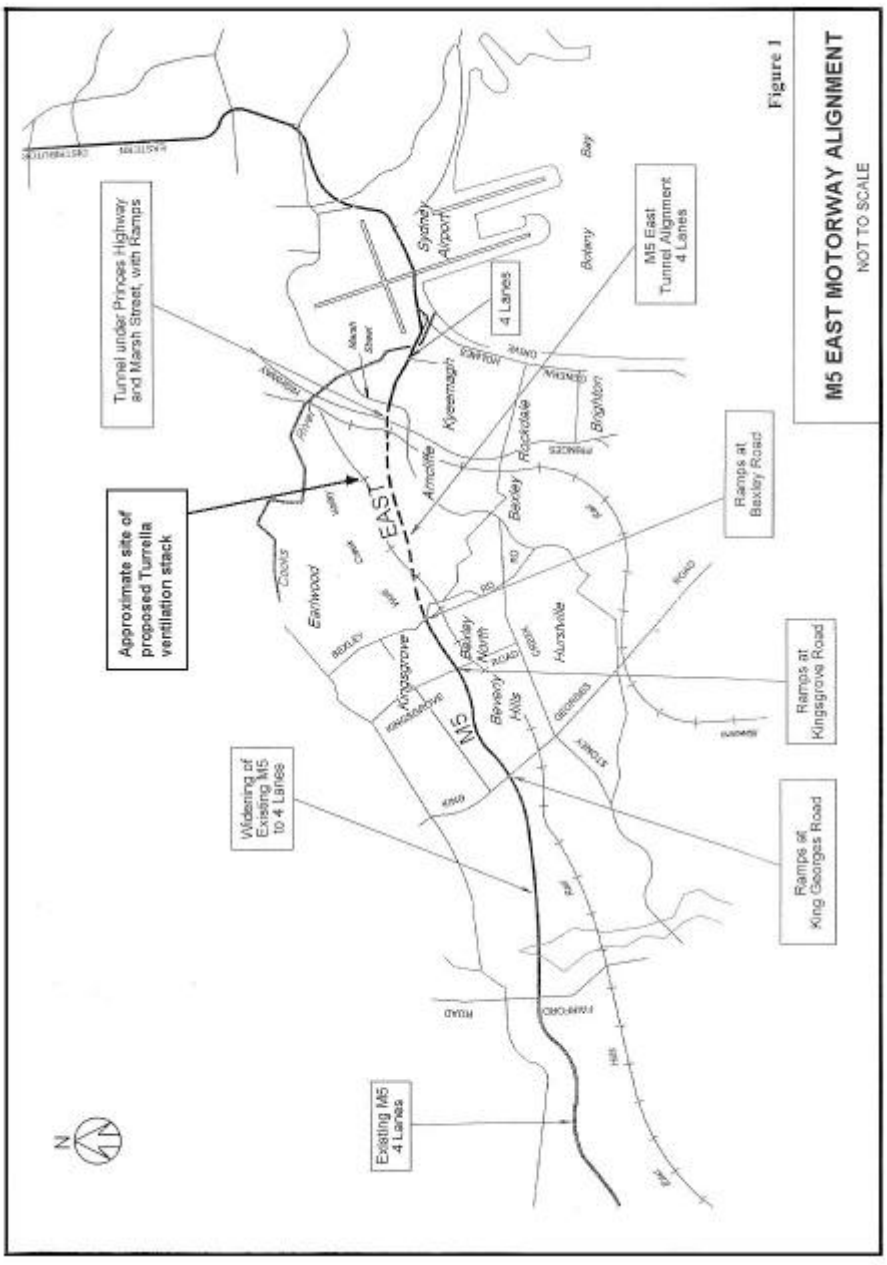
In response to the 1996 EIS Supplement, a total of 7951 representations were received, of which 1211 were individual submissions, 5 were petitions (with around 1100 signatures) and 6740 were form letters.

2.2 The current project: 4 km tunnel, one exhaust stack

On 30 June 1997 the RTA prepared the 'Representations Report', arising from the 1996 EIS Supplement. The Report noted the large number of submissions expressing concern about the proposed location of the air exhaust vent stacks. The Representations Report proposed modifications to the 1996 proposal. The most significant of these for the Inquiry was the decision to construct only a single exhaust vent stack, of some 20 to 25 metres height. The exhaust stack was to be connected to the motorway by a 900 metre connection tunnel.

On 14 July 1997, the RTA formally determined that the 1989 and 1994 proposals would not proceed. The RTA also determined that the 1996 proposal would proceed, with modifications set out in the RTA's Representations Report. The 1996 proposal relies, in part, on some of the information contained in the 1994 Environmental Impact Statement. Figure 1 shows a diagrammatic representation of the M5 East Motorway:

Figure 1: Proposed M5 East tunnel[3]



3 Figure 1 is adapted from: Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997, p.3.

2.2.1 The approval process

The Environmental Impact Statement, the Supplement and the RTA's Representation Report all state that the proposal is subject to Part 5 of *the Environmental Planning and Assessment Act 1979* (the EP&A Act). The approval of the Minister for Urban Affairs and Planning is required for those projects undertaken by State agencies where an EIS has been prepared under Part 5 of the EP&A Act and where the proponent has a determining role.

[4] It was exempt from requiring the Minister for Urban Affairs and Planning approval unless the Minister directed otherwise. On 31 July 1997, the Minister for Urban Affairs and Planning directed, under section 115F(2) of the EP&A Act, that the M5 East Motorway would be subject to division 4 of Part 5 of the EP&A Act and thus the Minister's approval is required.

A Species Impact Statement was also required to be prepared, with National Parks and Wildlife concurrence to the proposal granted on 26 August 1997.

On 27 August 1997 the RTA sought the approval of the Minister for Urban Affairs and Planning to proceed with the project as outlined in the Representations Report.

The Director-General of the Department of Urban Affairs was required to assess and report to the Minister on the proposal. This assessment was released in November 1997.[5]

On 9 December 1997 the Minister for Urban Affairs and Planning issued approval for the project subject to 150 conditions. Conditions 70 to 81 related to air quality aspects of the operational motorway.

2.2.2 The legal challenge

On 16 January 1998 the Transport Action Group Against Motorways Inc commenced proceedings in the Land and Environment Court challenging the validity of some of the decisions taken by the RTA and the Minister for Urban Affairs and Planning. One component of the challenge was based on the differences between the 1996 EIS Proposal compared to the final decision as outlined in the Representations Report, including reducing the number of exhaust emission vent stacks from three to one. The challenge was based on the premise that the changes represented substantial modifications and should have been subject to a further environmental impact statement. The RTA relied on section 112(4)(b)(i) of the EP&A Act which permits a determining authority to 'modify the proposed activity so as to eliminate or reduce the detrimental effect on the environment…' without the need for further environmental impact assessment or public consultation.

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4 It was transitional because it predated Division 4 of Part 5 of the EP&A Act, which is the section requiring the Minister's approval.

5 Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997.

The challenge was dismissed by the Land and Environment Court. A subsequent appeal to the Court of Appeal was also dismissed on a majority of two to one.[6] The majority judges held that the changes to the proposed activity were, when examined in isolation, significant developments. But when examined in the context of the overall activity it could be said that the changes altered that activity without radically transforming it, and thus could be said to be modifications to that activity. The majority judges held that the power to modify an activity without conducting a further environmental impact statement was not subject to the constraints of procedural fairness, and could still be exercised even if the modification had new adverse environmental effects not previously addressed. In dissent, Fitzgerald JA found that the proposed alterations would impose new, significant, detrimental effects on different localities and different persons from those who had the opportunity to make submissions on the EIS. His Honour held that the power to modify an activity without a further EIS could not be exercised in this way. His Honour also held that it was impossible to rationally compare the different environmental effects of the initial and amended activities.[7]

2.2.3 Construction

The RTA contracted Baulderstone Hornibrook Engineering Pty Ltd and Bilfinger + Berger Bauaktiengesellschaft to design, construct, operate and maintain the project. The 'Project Deed' was executed on 25 August 1998. The cost of the Project is $752 million. To date, approximately $210 million has been spent on the Project, while around $20 million each month continues to be spent.[8]

2.3 Background discussion on air quality

The most critical issue facing the Inquiry is that of air quality, and notably the impact of a single exhaust stack at Turrella on the air quality of the suburbs surrounding it. Some background information on air quality in the Sydney region is presented below.

Air quality is assessed by measuring the level of various pollutants in the atmosphere. These pollutants include particulate matter (especially PM_{10} particulates), carbon monoxide, nitrogen dioxide, toxic compounds and odour compounds. The World Health Organisation, the United States EPA, and the Australian National Health and Medical Research Council have all adopted various air quality goals for each of these pollutants. In addition, in Australia a National Environment Protection Measure for Ambient Air Quality has also been developed. Regulatory authorities in NSW are increasingly using the National Environment Protection Measure for Ambient Air Quality (NEPMAQ) as the desired air quality goal to achieve.

The NSW EPA, in assessing the potential air quality impacts of the single exhaust vent stack at Turrella, concluded that all air quality goals are likely to be complied with except for two possible

6 See: Transport Action Group Against Motorways Inc v Roads and Traffic Authority and anor [1999] NSWCA 196.

7 See "M5 East motors ahead. Residents lose appeal against motorway" in *Impact*, No 55 September 1999.

8 RTA, Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack. 17 November 1999, at 12.

areas. The EPA notes possible exceedence of particulate matter in regard to the emerging NEPMAQ goals. In addition, meeting the goals for nitrogen dioxide would depend on the exhaust stack being at least 25 metres high. These two pollutants are discussed in more detail below.

2.3.1 Particulate matter

Airborne particles are very diverse in their size and chemical composition. Particles can be referred to in various ways: total suspended particles (TSP); black smoke or by descriptions of their size. Common size descriptors are PM_{10} and $PM_{2.5}$, with the numbers referring to the maximum particle diameter in micrometres.[9]

Respirable particles (up to PM_{10} size) can be inhaled deeply into the lung and have been associated with a wide range of respiratory problems. Long and short term exposure to such particles have been linked with increased deaths from heart and lung disease. Many studies suggest that for every 10 $\mu g/m^3$ increase in average PM_{10} levels there is a one percent increase in the daily mortality rate. Exposure to PM_{10} has also been linked to pneumonia, loss of lung function, asthma and other respiratory problems.[10]

The NSW Health Department conducted a study of air pollution in the Sydney region, known as the Health and Air Research Program (HARP). The results showed:[11]

- associations between particulates and cardiovascular and respiratory mortality in Sydney on a day to day basis. It was found that for every 10 $\mu g/m3$ increase in 24 hour PM_{10} levels in Sydney was associated with a one percent increase in mortality. The studies did not determine if the increases in mortality represented days, months or years lost.

- associations between particulate pollution and hospital admissions for chronic obstructive pulmonary disease (a respiratory disease in the elderly) and heart disease in Sydney. An increase of 50 $\mu g/m3$ in 24-hour PM_{10} levels was associated with a 4 percent increase in COPD admissions in the elderly.

- associations between particulate pollution and the prevalence of respiratory symptoms among primary school children from the industrial centres of Newcastle and Wollongong.

- associations between daily particulate levels and reductions in lung function in children with asthma in Western Sydney.

- it was concluded that fine particle pollution in Sydney accounts for 397 premature deaths per year out of a total of 21,500.[12]

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9 National Environment Protection Council, Draft National Environment Protection Measure and Impact Statement for Ambient Air Quality. 1997 at 178.

10 National Environment Protection Council, Draft National Environment Protection Measure and Impact Statement for Ambient Air Quality. 1997at 178.

11 Environment Protection Authority, *New South Wales State of the Environment 1997*. 1997 at 80.

Particulate pollution is also responsible for the brown haze seen over the city, which is especially evident during winter when temperature inversions trap fine particles close to the surface.

2.3.2 Sources of particulate pollution

Anthropogenic particles are emitted directly into the atmosphere from combustion and industrial processes (known as primary particles), or form from chemical reactions in the atmosphere (secondary particles). The Metropolitan Air Quality Study has shown that wood combustion for domestic heating and motor vehicles, particularly diesel vehicles, are two major sources of particulate pollution in the Sydney region. It is estimated that 36 percent of weekday emissions, and 53 percent of weekend emissions is from domestic fuel combustion, most of which is wood.[13]

2.3.3 Regulatory standards for particulates

Worldwide there is some controversy over the suitable regulatory standard for PM_{10} and $PM_{2.5}$, as well as how they should be measured and reported. Most commonly, data is summarised as annual averages, although an averaged '24 hour' reading is also used. Table 1 lists the different standards for exposure to particulates in different jurisdictions. Currently in Australia the National Environment Protection Council has published a standard for PM_{10} to be 50 $\mu g/m^3$ averaged over a 24 hour period, with five allowable exceedences per year set as a 10 year goal.[14] The Council also acknowledges that with further research, the most suitable standard may be based on $PM_{2.5}$.[15] Presently, the US EPA has set a PM_{10} standard of 150 $\mu g/m^3$ (24 hour), and the UK is proposing a standard of 50 $\mu g/m^3$ over a 24 hour period. The WHO has decided to set no limit because of the absence of a threshold below which there are no effects.[16]

The NSW State of the Environment Report uses an annual average of PM_{10} as a core indicator of air pollution. The Report notes that in Sydney, approximately 30% of months included days on which 24 hour PM_{10} exceeded 50 $\mu g/m^3$ on at least one occasion.[17] The NSW Government has recently released its blueprint to reduce air pollution, called *Action for Air*.[18] The air quality goals identified in *Action for Air* are also indicated in Table 1.

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12 National Environment Protection Council, Draft National Environment Protection Measure and Impact Statement for Ambient Air Quality. 1997 at 185.

13 Environment Protection Authority, *New South Wales State of the Environment 1997*. 1997 at 80.

14 See the National Environment Protection Council Web site http://www.nepc.gov.au

15 National Environment Protection Council, Draft National Environment Protection Measure and Impact Statement for Ambient Air Quality. 1997 at 189.

16 Environment Protection Authority, *New South Wales State of the Environment 1997*. 1997 at 77.

17 Environment Protection Authority, *New South Wales State of the Environment 1997*. 1997 at 77.

18 NSW Government, Environment Protection Authority, *Action for Air*, February 1998.

Table 1 - Ambient air objectives for particulates - PM_{10}

Jurisdiction	**24 hour $\mu g/m^3$**	**Annual $\mu g/m^3$**
United States	150	50
World Health Organisation	No standard	No standard
NEPMAQ	50	-
NSW - Previous	150	50
NSW *Action for Air* Interim	50	-
Action for Air long term	-	30

Source: NSW Environment Protection Authority, Action for Air, The NSW Government's 24 year Air Quality Management Plan, 1999, p.23 & p.119.

2.4 Nitrogen dioxide

Nitrogen dioxide is a pungent gas that is corrosive and strongly oxidising. It is produced mainly by combustion processes. Combustion of fossil fuels converts nitrogen contained in the fuel and some atmospheric nitrogen into its oxides, mainly nitric oxide. The nitric oxide slowly oxidises to nitrogen dioxide in the atmosphere. In the presence of reactive organic compounds and light, nitrogen dioxide is a precursor to the formation of ozone. Because of this, nitrogen has traditionally been considered an important pollutant in regard to regional airshed issues. However, scientists are learning that localised effects of nitrogen dioxide are also important. Nitrogen dioxide is measured and reported in parts per million (ppm).

Nitrogen dioxide can damage the mechanisms which protect the human respiratory tract. Effects include:[19]

- increased susceptibility to respiratory infections in children and increased airway responsiveness, especially in asthmatics;
- possible bronchial response to common allergens;
- health studies have shown an association between nitrogen dioxide and daily mortality from respiratory related deaths;
- strong associations between nitrogen dioxide and hospital admissions for asthma and heart disease, with these effects most pronounced in children (1 - 4 yrs) and people over 65 years; and

19 Environment Protection Authority, *New South Wales State of the Environment 1997*. 1997 at 73.

- a 0.05 ppm increase in the maximum one hour nitrogen dioxide concentration is associated with an 11% increase in daily asthma admissions across all age groups.

2.4.1 Regulatory standards for nitrogen dioxide

The regulatory ambient air standards for nitrogen dioxide in various jurisdictions are listed in Table 2 below.

Table 2: Ambient air objectives for nitrogen dioxide

Jurisdiction	1 hour ppm	Annual ppm
World Health Organisation	0.11	0.021-0.026
NHMRC	0.16	-
NEPMAQ	0.12	0.03
NSW Previous	0.16	-
NSW *Action for Air* Interim	0.125	0.03
Action for Air long term	0.105	

Source: NSW Environment Protection Authority, *Action for Air, The NSW Government's 24 year Air Quality Management Plan*, 1999, p.14. & National Environment Protection Council, Revised Impact Statement for the *Ambient Air Quality National Environment Protection Measure, 1998,* at p.58

The NHMRC one hour goal for nitrogen dioxide has not been exceeded in the Sydney region over the years 1994-96. Over the last 15 years, the frequency with which the NHMRC one hour goal has been exceeded varies and shows no clear trend. Similarly, the number of days in which the WHO goal has been exceeded is also variable, although the frequency is much higher than the NHMRC goal. The greater frequency of days exceeding the WHO goal suggests that nitrogen dioxide in the Sydney region regularly reaches concentrations of between 0.11 and 0.16 ppm.20 The National Environment Protection Measure, as a 10 year goal, permits one exceedence per year for the 1 hour average and none for the yearly average.

2.5 Carbon monoxide

Carbon monoxide is a colourless, odourless gas which in high concentrations is poisonous to humans. It is present in the air at background levels of between 0.01 and 0.2 ppm. It is produced by natural processes, such as bushfires, and by human activities, such as the incomplete burning of fossil fuels, especially from motor vehicles.[21]

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20 Environment Protection Authority, *New South Wales State of the Environment 1997*. 1997 at 73.

21 National Environment Protection Council, Revised Impact Statement for the *Ambient Air Quality National Environment Protection Measure, 1998,* at p.70.

When inhaled, carbon monoxide combines with haemoglobin in the blood cells, which prohibits haemoglobin from carrying oxygen around the body. It takes about 4 to 12 hours for carbon monoxide concentrations in the blood to reach equilibrium with the carbon monoxide level in the air, so for this reason carbon monoxide readings are generally reported in terms of an eight hour average. However, the World Health Organisation has also introduced short term goals of 15 and 30 minutes.[22]

In the Sydney region, motor vehicles account for about 90% of carbon monoxide emissions. Table 3 shows the ambient air objectives for carbon monoxide. The NEPM measure is the same as the current NHMRC goal. *Action for Air* does not include carbon monoxide as an indicator.

Table 3: Ambient air objectives for carbon monoxide

Jurisdiction	1 Hour ppm	8 Hour ppm
World Health Organisation	25	10
NHMRC	-	9
NEPMAQ	-	9
NSW	25	9
NSW *Action for Air* Interim	-	-
Action for Air long term	-	-

Source: National Environment Protection Council, Revised Impact Statement for the *Ambient Air Quality National Environment Protection Measure, 1998*, at p.49-50

The EPA reports that overall levels of carbon monoxide are low, although levels in the Central Business District continues to exceed the NHMRC goal. However, the number of days that the goal is being exceeded in the CBD is dropping, with a reported 109 days in 1984, compared to 25 in 1995. The maximum one hour concentrations as set by the WHO have not been exceeded since 1986.[23]

The increasing proportion of motor vehicles fitted with catalytic converters, which reduce CO emissions, is largely responsible for decreasing trend in CO levels in the Sydney region. Further controls on motor vehicle emissions, which have been proposed in response to concerns about photochemical smog, will also assist in reducing CO emissions. The EPA states:

[22] National Environment Protection Council, Revised Impact Statement for the *Ambient Air Quality National Environment Protection Measure, 1998*, at p.70.

[23] Environment Protection Authority, *New South Wales State of the Environment 1997*. 1997 at p. 84.

tunnel, licence conditions specify that CO levels are maintained at acceptable levels. An EPA study, in conjunction with the CSIRO and RTA (Pengilley 1996), included monitoring of pollutant levels

number of proposals for new tunnels in Sydney (Eastern Distributor, M5) have raised community concerns about pollutant levels at tunnel ventilation exit points. [24]

[24] Environment Protection Authority, . 1997 at p. 84.

3. The environmental impact of the new single stack

3.1 The impact on air quality of three stacks compared to one

The Committee notes that the 1996 EIS M5 East proposal was to construct three ventilation emission stacks on a ridge line, in order to assist dispersion of pollutants. In supporting this option the RTA air quality consultant Dr Kerry Holmes noted the following:

> Ideally the stacks should be located on high ground. This results in the emissions being better dispersed by the stronger winds associated at greater elevation compared to the relatively calm conditions which would prevail in the valley. Locating the stack in the valley means that it must be substantially taller than if it were located on the ridge. Therefore, locations on ridges rather than in the deeper section of the Wolli Creek Valley were considered preferable. [25]

In evidence before the Committee Dr Holmes stated once again that in terms of dispersal of pollutants, locating emission stacks on a ridgeline is preferable than locating a stack in a valley.[26] The Committee accepts that in terms of dispersal of stack air pollutants, a ridge top location is preferable.

The Committee considers this point to be vital because of all the issues of the M5 East Motorway project, air quality was one of the dominant ones. Therefore it is imperative that the most efficient method to solve air quality problems is implemented.

The Committee recognises that the single ventilation stack is located in a valley and pollutants are unlikely to disperse as well as if it was located on a hill top. Associate Professor Chris Winder described the single stack proposal as follows:

> Conceptually, the idea of collecting the emissions of 70,000 vehicles into a tunnel ventilation system and discharging it without filtering or cleaning from one emission stack seems intuitively illogical. The idea of locating the stack in a valley where the possibility of increased local concentrations of contaminants can arise seems to add absurdity to illogic.[27]

Similarly, Consultant Engineer for Canterbury City Council Mr Noel Child noted:

> The proposed location of a single exhaust stack at Turrella in the Wolli Creek Valley appears to introduce a significant risk of unacceptable levels of localised air pollution. The risk is clearly

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25 Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997. Stephenson and Associates *Air Quality Assessment of the Environmental Impact Study for the Proposed M5 East Motorway*.

26 Evidence of Dr Kerry Holmes, Air Quality Consultant to the RTA, at p. 16.

27 Assoc Prof Chris Winder, Head, School of Safety Science, University of NSW, *Submission to General Purpose Standing Committee No 5 Inquiry into the M5 East Ventilation Stack*, at p.4.

> greater than would be the case if the tunnel emissions, whether by one or multiple stack, were to be vented at a more elevated location.[28]

Even though the RTA made representations before the Committee that air quality goals could be achieved with the single stack option, the Committee believes that the ridge top three stack option was preferable in this regard.

However, having said this, the Committee is also aware of the 7951 representations received by the RTA about the three stack proposal. After listening to community concerns about air quality, and abandoning the three stack proposal, the Committee believes that it is at this time the RTA should have put all its resources into developing proposals for a 'no stack option'.

The Committee accepts that on a regional basis, the amount of pollutants emitted into the atmosphere will be same whether they come from one stack or three.[29] However, the analysis of the bigger regional air shed must not be allowed to draw attention away from the impact of the single ventilation stack on the residents and businesses in the Wolli Creek Valley.

The single stack is likely to have other impacts on the environment, including visual and possibly noise. For instance, RAPS states:

> The visual and air pollution from the single, unfiltered exhaust stack will negate any benefit obtained from the creation of the Wolli Creek Regional Park and will have an adverse effect on human as well as natural ecosystems, flora and fauna in the Wolli, Bardwell and Cooks River Valleys.[30]

However, the overwhelming concern in the submissions made to the Inquiry was the potential for significant effects on the air quality of the locality surrounding the ventilation stack. As this was the main focus of many of the submissions, and is probably the most significant environmental issue arising from the development, this Chapter will restrict its discussion to air quality impacts of the new single stack.

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28 Child and Associates, M5 East Motorway Proposed Single Emission Stack at Turrella. *Review of Air Quality Impacts of the Single Stack Proposal and Consideration of Alternative Strategies. Final Report Findings and Recommendations.* Prepared for Canterbury City Council May 20 1999, at p.99.

29 See Evidence of Ms Jay Stricker, General Manager Environment and Community Policy, RTA at p. 12.

30 Residents Against Polluting Stacks, No Stacks near Homes. *A Submission by RAPS to the General Purpose Standing Committee No 5 Inquiry into single exhaust stack at Turrella for M5 East Motorway*, 15 November 1999, at p.13.

3.2 Consideration of the impact on air quality of the single stack in the approval process

3.2.1 Consideration of air quality impacts by the Roads and Traffic Authority

The *Environmental Planning and Assessment Act 1979* (EP&A Act) requires the environmental impact of a project to be determined by the proponent. The Act and its regulations provide criteria as to how such impacts should be determined and then assessed by a determining authority.

The RTA in its submission to the Inquiry notes the following documents that assessed the environmental impact of the M5 East Motorway:[31]

- 1994 Environmental Impact Statement;
- 1996 Environmental Impact Statement Supplement;
- 1997 RTA Representations Report;
- 1997 Environment Protection Authority Assessment Report of the Representations Report; and
- 1997 Department of Urban Affairs and Planning Director-General's Report.

As discussed in the introductory chapter, the validity of the environmental impact assessment and approval process was tested in the Land and Environment Court and subsequently in the NSW Court of Appeal. Both Courts ruled that the process complied with the requirements of the EP&A Act.[32]

To assess the effects on air quality resulting from the single stack the RTA Representations Report included a consultant's report by Holmes Air Sciences.[33] This report concluded the following:

- A single stack of 20-25 metres height and 12-15 metres diameter … can be located in the Turrella area to provide ventilation for the whole of the tunnel and still comply with the WHO air quality goals for nitrogen dioxide as well as the emerging Australian goal. A taller stack would result in a greater margin between air quality goals and predicted concentrations; and
- The stack has also been designed to meet current goals for other pollutants, however the emerging goal for PM_{10} (ie 50 $\mu g/m^3$) is significantly lower than the existing goal. More

31 RTA, *Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack*. 17 November 1999, at p. 13-14.

32 Transport Action Group Against Motorways Inc v Roads and Traffic Authority and anor [1999] NSWCA 196.

33 Holmes Air Sciences, *Air Quality Impacts of a Single Ventilation Stack at Turrella*, Prepared for Roads and Traffic Authority, 2 July 1997.

stringent regional control of this pollutant will be required if any new project is to comply with this goal.

After a request from the EPA to Holmes Air Sciences, further dispersion modelling was performed for the ventilation stack, which concluded the following:

- A stack height of 25 metres is sufficient for compliance with air quality goals but a taller stack would provide a greater margin of safety;

- There are no predicted exceedences of any of the current or emerging air quality goals, although the issue of PM_{10} levels requires resolution at a regional level. [34]

3.2.2 The Environment Protection Authority response

The EPA accepted the conclusions of the Holmes Report, and noted that a stack height of 25 metres would be required to meet current and emerging air quality goals with the possible exception of the 50 $\mu g/m^3$ PM_{10} goal.[35]

In response to regional concerns of particulate matter the EPA noted that regional actions might include:[36]

- A commitment to the development of a Public Transport Management Plan for the M5 catchment funded through a dedicated allocation to the Public Transport Infrastructure Improvement Program;

- A pilot program with the private sector focussing on better fleet management to improve freight movement and thereby reduce commercial vehicle emissions;

- Improved monitoring of roadside and sub-regional ambient air quality linked to the EPA's Urban Air Quality Monitoring Network;

- Further increasing the already high proportion of buses in the area using natural gas fuel; and

- Extending the EPA's Small Business Solutions to Pollution Program in conjunction with Rockdale, Canterbury, Botany and Marrickville Council, to involve dry cleaners and other businesses with emissions which contribute to regional air quality problems.

The Committee notes that a significant argument used in support of the single stack option is that particulate pollution is a regional problem, and therefore must be solved by a regional approach. The Committee is concerned that a regional response may prove to 'fall between the cracks' of

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34 Holmes Air Sciences, *Air Quality Assessment Report M5 East, Response to Comments by NSW EPA*, Prepared for Roads and Traffic Authority 20 October 1997.

35 Environment Protection Authority, *Submission on 1997 Representation Report to Proposed M5 East Motorway*, November 1997, at 8.

36 Environment Protection Authority, *Submission on 1997 Representation Report to Proposed M5 East Motorway*, November 1997, at 9.

government department responsibility. Mr Noonan of the DUAP expressed the following

> It is a nebulous concept. It does require a lot of hard work between regulators at State level [37]

Conditions of Approval numbers 80 and 81 require the RTA to participate with DUAP, the EPA, subregional air quality and provide $0.5 million per year for five years to fund implementation of the plan. The RTA has stated that they will commence development of the plan this financial [38]

The Committee is concerned that Mr Noonan of the DUAP (as reproduced above) specifically of Approval ignored this sector of government that the RTA must consult.

Recommendation 1

the draft subregional air quality management plan, for the area surrounding the motorway, should consult with the Community Consultative Committee, established in relation to the ventilation stack, as well as relevant local councils, in the formulation of a draft plan, specified targets, goals, dates for achievement, identified sources of funding and clear responsibilities for implementation.

[37] Evidence from Mr Maxwell Noonan, Director, Development and Infrastructure Assessments, DUAP, at p.34.

RTA,
Inquiry into the M5 East Ventilation Stack.

Recommendation 2

The Committee recommends that at six monthly intervals from 30 June 2000 an information paper be published outlining the steps taken to implement the draft air quality management plan, focussing on the specified goals and dates for achievement.

The Committee is concerned that $0.5 million per year for five years may be an inadequate amount of money to achieve satisfactory outcomes for the regional air quality plan.

Recommendation 3

The Committee recommends that six months before the conclusion of the five year term during which the Roads and Traffic Authority is required to provide $0.5 million per year funding for the implementation of the air quality management plan, a review of funding sources and implementation of the plan be commissioned and published.

3.2.3 The Department of Urban Affairs and Planning response

As discussed in Chapter 1, the Director-General of the Department of Urban Affairs and Planning (DUAP) reviewed the RTA M5 East proposal for determination by the Minister for Urban Affairs and Planning (MUAP). The Director-General's report noted the following:[39]

- The potential for air quality impacts was one of the major concerns raised in the representations. The proposed exhaust stacks, both the three sites proposed in the 1996 EIS Supplement and the single stack at Turrella, were issues of concern. In response, the Department undertook several actions, including commissioning an independent consultant to review air quality issues. This is known as the Stephenson Report and is summarised below;

- The Department considered that stack emissions should be able to meet current and emerging health based goals. However, there were some concerns about nitrogen dioxide levels and fine particulate matter levels when existing background levels were also taken into account. These issues are more fully discussed below.

39 Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997, at p. xii.

The Department of Urban Affairs and Planning Independent Air Quality Report[40] Prepared by Peter Stephenson and Associates Pty Ltd

Knowledge of the existing background air pollutant level of the region is essential to be able to allowance for background concentrations of NO_2 $\mu g/m$. However, the measured one hour 50 μ ^{3} on occasions.

PM_{10} $\mu g/m$ in the area of the Turrella stack, with peaks up to 40 g/m^3 $\mu g/m$. Noting $_{10}$ is 50 g/m^3 Sydney, Stephenson concluded that particulate pollution is a regional issue which will only be resolved if all sources of particulates in the region, including motor vehicles using the M5 East

Stephenson reviewed the dispersion modelling performed by Holmes and conducted some comparative work. Stephenson concluded that:

- ground level air quality goals with the exception of NO_2 $_{10}$, which are both marginal Ambient Air Quality.
- The additional energy required to transport the ventilation air the additional 900 metres to the single vent stack will cost approximately $2.8 million per year and contribute an generated if there were three individual stacks.

3.2.4

In approving the M5 East motorway with the single stack proposal, the Minister for Urban Affairs [42] Conditions 70 to 81 covered air quality issues

70. The tunnel ventilation system(s) must be designed and operated so that the World Health

Department of Urban Affairs and Planning,
Road, Padstow to General Holmes Drive, Kyeemagh, November 1997. Stephenson and Associates *the Environmental Impact Study for the Proposed M5 East Motorway*.

Department of Urban Affairs and Planning,
Road, Padstow to General Holmes Drive, Kyeemagh, November 1997. Stephenson and Associates *the Environmental Impact Study for the Proposed M5 East Motorway*, at p. 30.

Minister
December 1997.

any conditions. The design must be independently verified to the satisfaction of the Director-General, prior to the commencement of operation, by an independent person(s) or organisation(s) to be approved by the Director-General. The Proponent must develop and implement a tunnel air quality monitoring and reporting system to the satisfaction of the EPA. The system must be installed and fully operational prior to the commencement of tunnel operations. The Proponent must implement any reasonable requirements of the EPA which aim to improve in-tunnel air quality, as requested by the EPA.

71. Tunnel portals must be designed to avoid air being recirculated between tunnel portals. The ventilation system for the main tunnel (Bexley Road to Marsh Street) must be designed to avoid air emissions, through the portals, as far as is practical. In any event, the air emissions must not result in the following ambient air quality emerging goals being exceeded at ground level:

    NO_2 – one hour average of 256 $\mu g/m^3$ (0.125 ppm)
    PM_{10} – 24 hour average of 50 $\mu g/m^3$

    The design must have regard for the current short term Victoria EPA 3 minute design ground level concentration of:

    Toxic organic compounds
    Benzene – 3 minute average of 0.10 mg/m^3 (0.033 ppm)
    1-3 Butadiene – 3 minute average of 1.0 mg/m^3 (0.45 ppm)

    Odorous Compounds
    Acetaldehyde – 3 minute average of 0.076 mg/m3 (0.042 ppm)
    Formaldehyde – 3 minute average of 0.10 mg/m3 (0.033 ppm)

    The portal design must be independently verified to the satisfaction of the Director-General, prior to the commencement of operation, by an independent person(s) or organisation(s) to be approved by the Director-General. Modelling of emissions from the Cooks River tunnel must be undertaken, to the satisfaction of the EPA, prior to the commencement of operation. The portals must be designed to minimise emissions and aim to achieve the emerging goals and criteria referred to above, as far as is practical, and to the satisfaction of the EPA.

72. The tunnel exhaust stack must be designed so that emissions do not result in ambient air quality at ground level exceeding the following emerging goals:

    NO2 – one hour average of 256 $\mu g/m3$ (0.125 ppm)
    PM_{10} – 24 hour average of 50 $\mu g/m3$
    The design must have regard for the current short term Victoria EPA 3 minute design ground level concentration of:
    Toxic organic compounds
    Benzene – 3 minute average of 0.10 mg/m3 (0.033 ppm)
    1-3 Butadiene – 3 minute average of 1.0 mg/m3 (0.45 ppm)

    Odorous Compounds
    Acetaldehyde – 3 minute average of 0.076 mg/m3 (0.042 ppm)
    Formaldehyde – 3 minute average of 0.10 mg/m3 (0.033 ppm)

73. The height of the tunnel exhaust stack must be higher than 25m high unless otherwise approved by the Director-General, upon advice from the EPA. Wind tunnel testing must be undertaken of the stack, by an independent organisation to be approved by the Director-General, prior to detailed design, in a manner approved by the EPA.

The Director-General in consultation with the EPA shall approve the height of the stack

potential impact of emissions on the local population, after considering the results of the wind tunnel testing and any advice from the EPA. The Proponent must comply with any reasonable

74. The tunnel ventilation system must make provision, to the satisfaction of the Director-General

systems. The Director-General may require the installation of a treatment system by the

whether emissions comply with the goals specified in condition 79, input from the Community Consultative Committee specified in condition 78 and the views of the EPA, and-the outcome

there is an exceedance of the goals specified in condition 72.

75.

in the Turrella and Undercliffe areas, for ambient air quality measurements. The location of the network and pollutants to be monitored must be developed in consultation with the EPA be approved by the Director-General. The network must provide for extensive monitoring of stack emissions. The monitoring station(s)

commencement of tunnel operations. Monitoring must be carried out by an independent organisation, to be approved by the Director-General, and reports must be made available at 6

made available to the Director-General, the EPA, relevant Council(s) and the Committee referred to in condition 78, and must be made publicly available. The total duration of the

76. The exhaust stack and air intakes must be designed in consultation with relevant Councils and

consistent with the urban design principles referred to in conditions 42 to 45.

77.

comply with the reasonable requirements of the FAC for the stack.

78.

Committee must include representatives from the Turrella and Undercliffe areas and relevant Council(s), and must be established prior to the commencement of construction. The

requirements; accessing and disseminating monitoring results and other information on air quality issues; and associated potential impacts.

The Proponent must examine international developments in tunnel emission treatment

on the outcome of these examinations (including the cost effectiveness of systems) for five years on an annual basis from the date of approval and thereafter as required by the Director- , relevant Council(s) and the Committee referred to in condition 78.
available, upon request

80.

Planning, the Department of Health, the Department of Transport and the EPA, at its own

expense; in investigations into subregional air quality and participate in identifying strategies for improving air quality. The aim of the investigation is to identify key contributors to air pollution in the sub region and formulate cost effective measures to control/manage such contributors. The Proponent must contribute to the implementation of any control measures within its areas of responsibilities.

81. The Proponent must set aside a sum of $0.5 million per year over a period of 5 years, commencing from the start of the proposal's operation. This allocation is to be used, as necessary and as applicable, towards funding air quality improvement measures arising out of the studies in condition 80 above.

3.2.5 Air quality goals

The MUAP approval conditions on air quality as reproduced above do not specifically mention the air quality goals of the National Environment Protection Measure (NEPM). The critical factor is that the NEPM goals allow for five exceedences of the goal per year for PM_{10}, and one exceedence for nitrogen dioxide. The National Environment Protection Council states:

> Recognising that not all processes that contribute to pollution are controllable (eg hazard reduction burns), the goal includes a number of allowable exceedences.[43]

RAPS stated in their submission:

> The MUAP conditions of approval are quite clear and allow for no such exceedence in relation to the stack.[44]

RAPS tendered in evidence a letter from the Hon Bob Debus, MP, Minister for the Environment, to a RAPS member in which the Minister said:

> The intention of the goals is that emissions from the M5 East stack and tunnels should not result in any additional exceedences of air quality goals in their vicinity.[45]

Similarly, RAPS tendered in evidence a letter from the Hon Dr Andrew Refshauge MP, Minister for Urban Affairs and Planning, in an attachment of which it was stated:

> Notwithstanding, the conditions of approval require that the tunnel exhaust stack be designed so that emissions do not result in ambient air quality at ground level exceeding the EPA goal for PM_{10} of 50 $\mu g/m^3$.[46]

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43 National Environment Protection Council, *Draft National Environment Protection Measure for Impact Statement for Ambient Air Quality*, 21 November 1997, at p.16.

44 Residents Against Polluting Stacks, No Stacks near Homes. *A Submission by RAPS to the General Purpose Standing Committee No 5 Inquiry into single exhaust stack at Turrella for M5 East Motorway*, 15 November 1999, at p.20.

45 Letter to Mr C Briers, Residents Against Polluting Stacks from the Hon Bob Debus, Minister for the Environment, 11 November 1999.

46 Letter to Ms Giselle Mawer, Mr Charles Briers, Ms Judi Rossi, Residents Against Polluting Stacks, from the Hon Dr Andrew Refshauge MP, Minister for Urban Affairs and Planning, 9 August 1999.

These statements would therefore preclude the stack being permissible for any one of the NEPM allowable exceedences per year.

However, the RTA in their submission notes that the PM_{10} goal allows for five exceedences per year, and that a ten year time frame has been set for compliance with this goal by the National Environment Protection Council.[47] Similarly, the EPA in their submission to the Inquiry noted the NEPM for PM_{10} allowed for five exceedences per year.[48]

The Committee does not accept this interpretation of NEPM exceedences as provided by the RTA and other government agencies.

Recommendation 4

The Committee recommends that in any future discussion of the impact of the proposed ventilation stack upon air quality, the Roads and Traffic Authority and the Environment Protection Authority adopt the statements of the Minister for the Environment and the Minister for Urban Affairs and Planning that it is intended that emissions from the stack and tunnels should not result in any exceedences of air quality goals in their vicinity, and not suggest that up to five exceedences per year are allowable within these goals, excluding natural and extraordinary disasters.

3.3 Conflicting evidence in relation to air quality goal exceedences

The Committee was presented with evidence from other practitioners that conflicted with the above RTA and Government agency views that air quality goals could be met with the single stack option with no pollution control equipment installed.

For instance, Canterbury City Council engaged the services of Child and Associates to undertake a study into air quality and any potential health effects associated with the construction of the M5 East Ventilation Stack. The Child Report notes that the background air quality in the immediate vicinity of the Turrella stack is significantly 'worse' than previously assumed. As a consequence, the local area will be far more sensitive to the additional emission impacts of the single stack than has previously been assumed. In his report, Mr Child concluded the following:

- The proposed venting of exhaust gases through a single stack at Turrella appears almost certain, from time to time, to result in breaches of air quality goals in the immediate or local vicinity of the stack.

47 RTA, *Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack*. 17 November 1999, at p.18.

48 Environment Protection Authority, *Submission to the Legislative Council's Inquiry into the M5 East Ventilation Stack*, 19 November 1999.

- The frequency of such localised air quality problems can be expected to increase with time, based on anticipated increases in background levels of air pollutants, and progressive increases in both traffic volumes and congestion on the M5 East Motorway and associated road systems.

- The frequency of such breaches will be influenced by prevailing meteorological conditions.

- The situation of a tunnel exhaust stack at or near the foot of a slope may produce high local pollutant concentrations as a result of the exhaust plume being trapped by an atmospheric inversion layer, and as a consequence spreading with little dilution. [49]

In his evidence to the Committee, Mr Child suggested that air quality goals could be exceeded up to 30 times per year with the operation of the unfiltered single stack.

However, in response the RTA states that Mr Child's conclusions are based on a misinterpretation of the background air pollution data.[50]

The debate about the number or occurrence of air quality goal exceedences largely centres around the interpretation of air quality data from two air quality monitoring stations. These stations are the EPA's Beaman Park station in Earlwood and the Federal Airport Corporation's site at Kingsford Smith Airport.

In response to Mr Child's claims about air quality goal exceedences, the RTA stated that a recurring theme of Mr Child's report is that the RTA use of background air pollution data from the Beaman Park monitoring station results in an underestimate of background pollution at Turrella. In his study, Mr Child introduced background data from the airport.[51]

The RTA stated however that Mr Child's conclusions of air quality goal exceedences are based on a misinterpretation of this background data. In support of this, the RTA stated that air pollution from the airport can migrate up the Wolli Creek valley to Turrella simultaneously as it can reach and be represented in the EPA data at Earlwood. In addition, the RTA concluded that Mr Child's analysis for PM_{10} is invalid since the data presented in his report are monthly maximum figures whilst the EPA data with which these figures are average are monthly averages. The RTA concluded:

> This misrepresents the data and makes a significant difference to the interpretation of the information.[52]

In reply to the above RTA concerns, Mr Child did not accept that the use of the EPA's Earlwood monitoring station alone provided a valid or thorough background data in respect of the proposed

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49 Child and Associates, M5 East Motorway Proposed Single Emission Stack at Turrella. *Review of Air Quality Impacts of the Single Stack Proposal and Consideration of Alternative Strategies. Final Report Findings and Recommendations.* Prepared for Canterbury City Council May 20 1999, p.9

50 "RTA response to issues raised by the Committee of letter of 2 December 1999

51 "RTA response to issues raised by the Committee of letter of 2 December 1999" at p.12.

52 "RTA response to issues raised by the Committee of letter of 2 December 1999" at p.13

Turrella ventilation stack, as the Earlwood monitor is outside the area of local impact of the stack. In regards to PM_{10} levels, Mr Child stated:

> With regard to the data used for fine particulates at the airport boundary, this data was supplied by Sydney Airport Corporation. I have asked SAC for confirmation of the data previously supplied…In terms of the overall conclusions drawn in my report, however, a reduction in the background data for fine particulate matter at the airport boundary would not materially alter the conclusions in the report.[53]

Mr Child concluded his response with:

> In the absence of adequate air quality background data, the simple truth is that nobody can possibly determine the matter. Without solid background data, a satisfactory projection of ultimate air quality in the vicinity of the stack, and including the effects of the stack emissions, cannot be determined. This seems to be an unreasonable position to impose on those at interest in the community.[54]

Noting these differing opinions, the Committee remains concerned the stack may lead to exceedences of air quality goals.

3.4 Community consultation

The Committee notes that a fundamental element of environmental impact assessment is community consultation. The residents group 'Residents Against Polluting Stacks' (RAPS) maintains the following:[55]

- communities affected by the 1994 EIS were consulted.
- communities affected by the 1996 EIS were consulted.
- communities affected by the current proposal, as outlined in the 1997 Representations Report, were not consulted at all. The communities affected by the current proposal are totally different from those affected by the previous proposals.

The 1994 EIS stated:

> An extensive program of community involvement was undertaken as an integral part of this EIS…The program was designed to meet the requirements of the EP&A Act… but the Roads and Traffic Authority wished to go beyond those minimum requirements…Information obtained from

53 "Response of Mr Noel Child, Consultant, Canterbury City Council, in response to facsimile from the Committee of 13 December 1999, at p.2."

54 "Response of Mr Noel Child, Consultant, Canterbury City Council, in response to facsimile from the Committee

55 Residents Against Polluting Stacks, No Stacks near Homes. *A Submission by RAPS to the General Purpose Standing Committee No 5 Inquiry into single exhaust stack at Turrella for M5 East Motorway*, 15 November 1999, at p.2.

> this consultative process was one of the major driving forces in the development of the proposal and in the preparation of the EIS."[56]

The 1996 EIS stated:

> Consultations with the community were undertaken in parallel with the development of the concept designs for the alternatives. The goals of the consultation process were to keep the community informed of the alternatives to the proposal and to obtain feedback from the community on them.. A total of nine public meetings were held…[57]

As part of its submission RAPS tabled an internal 'file minute' from the Department of Urban Affairs and Planning. The Departmental Officer had met with representatives from the RTA, and reported:

> The RTA stated that it was not able, because of Ministerial directions, to distribute material on post-exhibition changes … Sydney Water has expressed concerns to the RTA that it has not been kept informed about details of the proposal since exhibition … RTA also advised it was happy to brief the local councils on the changes to the proposal, but it would not leave any information for public perusal. The RTA did suggest, however, that DUAP is in a position to release information, if we feel that it is necessary…[58]

The Officer, in determining whether DUAP should liaise with the relevant local councils, concluded:

> However, in view of the post-exhibition changes and lack of publicly available information, some discussion may be necessary.[59]

It is evident that the RTA fully conducted community consultation proceedings for the 1994 and 1996 environmental impact statements. However, it is equally apparent that no consultation with affected parties to the current project was made. The RTA in neither its submission or evidence to the Inquiry made any reference to community consultation with parties affected by the current proposal.

As discussed in Chapter 1, the Committee is aware that the Court of Appeal has upheld the validity of the M5 East approval process, which includes requirements for community consultation. After this decision of the Courts the Environmental Defender's Office noted the following:

> This means that the larger the initially proposed activity is, the greater the changes that can now be made to that activity without the need for a new EIS process, even if those changes have environmental impacts, and will affect classes of people, far beyond those considered in the scope of the initial EIS.

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56 Roads and Traffic Authority, Proposed M5 East Motorway Fairford Rd to General Holmes Drive Environmental Impact Statement 1994. Prepared by Manidis Roberts Consultants, 1994, at p.28.

57 Roads and Traffic Authority, Supplement to M5 East Motorway Environmental Impact Statement 1996. Prepared by Manidis Roberts Consultants, 1996 at p.13.

58 Document tabled by RAPS at Public Hearing of 29 November 1999. File Minute from Department of Urban Affairs and Planning, Major Assessments and Hazards Branch, dated 17/9/1997.

59 Document tabled by RAPS at Public Hearing of 29 November 1999. File Minute from Department of Urban Affairs and Planning, Major Assessments and Hazards Branch, dated 17/9/1997.

> To fulfil the aims of the EP&A Act of environmental protection and public participation in the development assessment process, legislative amendment is needed.[60]

Condition 78 of the 'Conditions of Approval' by the Minister for Urban Affairs and Planning required the RTA to establish a Community Consultative Committee, including representatives from the Turrella and Undercliffe areas. This is of course community consultation after the decision on where to locate any emission stack has already taken place. Instead, the role of the Consultative Committee as outlined by DUAP includes:[61]

- input into defining/formulating air quality monitoring requirements;
- accessing and disseminating monitoring results and other information on air quality issues;
- associated potential impacts.

The Committee is concerned that the residents and businesses potentially affected by the single stack proposal either apparently had limited or no opportunity to make their concerns known to the appropriate regulatory authorities until after the stack was approved by the Minister.

Recommendation 5

The Committee recommends that the *Environmental Planning and Assessment Act* be amended to prevent a determining authority from approving a development with modifications, which have any significant impact upon the environment or which have a significant impact upon a different group of citizens to those affected by the proposed development, unless those modifications have been exhibited for public comment. The modifications must be subject to adequate public consultation before the proposal is determined.

3.5 The impact of the stack on community health

The Committee believes that the impact of the stack on the health of the surrounding community has not been properly assessed. Mr Curran of RAPS stated in evidence:

> The position of the stack in the valley will ensure a permanent heightening of the air pollution levels where we live and that is just not acceptable…[62]

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60 Norton, C. "M5 East motors ahead" in *Impact, Public Interest Environmental Law*, No 55 September 1999, at p2. Mr Norton is a solicitor at the Environmental Defender's Office.

61 Minister for Urban Affairs and Planning, Conditions of Approval in relation to the proposed M5 East Motorway, 9 December 1997.

62 Evidence of Mr Mark Curran, RAPS, at p. 57.

The Committee accepts that the operation of the stack in the Wolli Creek Valley will result in an increase in the air pollution levels in the locality, and this will occur no matter how high the stack is constructed.

Chapter Two covered some of the health effects of air pollutants, and in evidence Dr McPhail of the EPA stated about particulate pollution:

> Certainly the health research that was conducted in the health and air research program concluded that statistically if you took the cleanest days in Sydney and compared them with the most polluted days for fine particles you found a correlation with adverse health end points. On the basis of that, yes, it is fair to say that there is yet no data that clearly establishes a no-effect level.[63]

In regards to vehicle pollution Associate Professor Winder stated:

> If we look at the studies that investigate the effects of vehicle emissions on health….generally virtually all the studies of vehicle emissions on health report some deficit, and there is a tendency for health problems to intensify as pollution, either by proximity to pollution sources or intensity of traffic increases.[64]

And in relation to an American study linking vehicle exhaust and childhood leukemia, Assoc Prof Winder stated:

> …the figure that I have presented shows that the association of traffic density with leukemia increases, and above 10,000 vehicle movements a day, there is a significant increase in the incidents of leukemia…it is difficult to correlate this information with what is happening in the tunnel, but I want you to imagine that instead of having a 20 metre frontage we have a 4.5 kilometre road, and instead of 10,000 vehicles a day we have 60,000 cars a day. You can see that delivery of those vehicle emissions in a single concentrated form would suggest there may be an impact on health…[65]

63 Evidence of Dr Steve McPhail, Acting Manager - Air Sciences Division, Environment Protection Authority at p. 49.

64 Evidence of Associate Professor Chris Winder, Head, School of Safety Science, University of NSW, at p. 84.

65 Evidence of Associate Professor Chris Winder, Head, School of Safety Science, University of NSW, at p. 84.

Recommendation 6

The Committee recommends that no matter what form of tunnel ventilation or emission control is finally implemented, the Road and Traffic Authority, in conjunction with the Department of Health, fund an epidemiological study of the health of the community in the area of any tunnel emissions, commencing this financial year and continuing for 5 years after the commencement of operation of the motorway, or as long as the Department of Health recommends. The technique and operation of the study should be approved by the Department of Health, with results published on an annual basis.[66]

66 This recommendation arises from: Residents Against Polluting Stacks, No Stacks near Homes. *A Submission by RAPS to the General Purpose Standing Committee No 5 Inquiry into single exhaust stack at Turrella for M5 East Motorway*, 15 November 1999, at p. 28.

4 The evidence for the current design of the management of air polluting substances.

4.1

The issue here for the Inquiry was: should emissions from the single stack be untreated, as proposed by the RTA; should pollution control equipment be installed on the stack; or, as proposed by RAPS, no

4.2 The evidence for the current design of the

The RTA argued that the proposed ventilation stack has been thoroughly reviewed and assessed. The

DUAP and the EPA that emission treatment systems were unnecessary for the project.

In terms of the mechanics of the actual ventilation system itself, the RTA has summarised the [68]

- Preliminary air dispersion modelling. Determine stack dimensions required to meet air quality
- Wind tunnel testing at Monash University;
- Finalise air dispersion modelling;
- Forward proposed stack dimensions to DUAP;

Hyder Consulting (Aust) is performing the wind tunnel testing and has noted that the analysis 25 metre stack is likely to comply with goals defined for NO and

Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5.

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[68] RTA,
Inquiry into the M5 East Ventilation Stack

PM_{10}. Hyder has concluded that the area which is expected to experience the highest ground level concentration of emissions, although still within the air quality goals, is located in the Undercliffe area immediately to the north of the stack.[69]

4.2.1 Vehicle emission standards

In their submission supporting the proposed ventilation stack, the RTA tabled a paper from Professor Karl Pucher of Technical University, Graz, Austria. Professor Pucher argued that the introduction of new and more restrictive European vehicle emission standards make the necessity of tunnel stack emission controls unnecessary.[70] Professor Pucher noted:

> The background pollutant level is normally far higher than the additional pollution from a ventilation stack. So it is not very helpful to install electrostatic precipitators. It is far better to reduce the background levels of pollution by suitable laws on gas emissions. Then there will be considerably lower pollution levels not just around the stacks but also in the whole city and throughout the Australian continent. [71]

Consultants to the RTA, Evans and Peck Management, in a review of international tunnel emission control developments, also concluded:

> In view of the continuing improvement in vehicle emissions over a number of years, it is unlikely that the use of tunnel emission cleaning systems will become widespread. [72]

As will be fully discussed in section 4.3, this contrasts with the position of the Department of Urban Affairs and Planning who reported:

> [tunnel air] treatment systems are being considered in most countries particularly in view of community concern and opposition. The debate essentially centres on the cost effectiveness of various [73]

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69 RTA, *Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack*. 17 November 1999, at Annexure 5, M5 East Motorway Air Quality Modelling Status Report.

70 RTA, *Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack*. 17 November 1999, at p.7.

71 RTA, *Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack*. 17 November 1999, *Statement on the Installation of Electrostatic Precipitators (EP) in the Sydney Tunnel*, by Professor Karl Pucher.

72 Evans and Peck Management, *M5 East Motorway, Sydney. International Developments in Tunnel Emission Treatment Systems*. 15 September 1999.

73 Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997 Appendix F, *Review of International Practices in Ventilation and the Treatment of Exhaust Emissions.*

Similarly, Mr Noel Child disagreed with the conclusions of the Evans and Peck Report because of the expected rate of traffic growth and tunnel usage compared with the steps taken to reduce vehicle [74]

The United Nations Economic Commission Europe (UN ECE) vehicle emission standards have been made progressively more stringent over time, and are frequently referred to as, 'Euro 1', 'Euro 2', 'Euro 3', and 'Euro 4' standards. These refer to the standards that apply from 1992, 1996, 2000 and 2005 respectively.

The Committee notes that the introduction of new vehicle emission standards is likely to reduce the level of vehicle pollutants in the future. However, the Committee is also concerned with the slow implementation of these Euro vehicle emission standards in Australia compared to their introduction in Europe. For instance, in November 1997 the Prime Minister the Hon John Howard MP released a statement about Australia's response to climate change. Included in the Statement was a commitment to implement an Automotive Industry Environment Strategy. An important element of the Strategy was a commitment to harmonise noxious vehicle emissions standards with international standards by 2006.[75]

The responsibility to implement this plan lies with the Commonwealth Government's Motor Vehicle Environment Committee. As a response to the Prime Minister's statement, the Motor Vehicle Environment Committee made eight recommendations, including the following.[76]

1. Amend Australian Design Rule 37/01 as soon as possible [but not likely before 2002/2003] to incorporate UN ECE Euro 2 and Euro 3 levels as an alternative standard.

If the Euro 2 standard is adopted with the next introduction of vehicle models in the year 2002/2003, then Australia will be six years behind the best practice benchmark at that point (ie, Euro 2 was adopted in 1996 in Europe). It is also likely that if adopted, the Euro 2 standard will be in place in Australia for at least another two to three years after implementation. Then another review period and 'lead time' of up to another four years may see the introduction of Euro 3 or Euro 4 standards. It is therefore possible that under this timetable, in the year 2006 when the Prime Minister committed Australian emission standards to be harmonious with international standards, Australia will by then be ten years behind that standard.

Further adding to the problems of the slow introduction of international emission standards into Australia, a significant problem in terms of reducing vehicle emissions is the low turnover rate for the

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74 Evidence of Mr Noel Child, Consulting Engineer for Canterbury City Council, at p.77

75 Safeguarding the Future: Australia's Response to Climate Change. Statement by the Prime Minister of Australia, The Hon John Howard MP, 20 November 1997.

76 Motor Vehicle Environment Committee, *Review of Australia's Vehicle Emission Standards, Public Comment Document, Executive Summary*, September 1998, at 23.

[77] The impact of new

Bearing in mind the above discussion, the Committee notes that improvements to air quality from improved vehicle emission standards may take up to 20 years. The Committee therefore does not

happened in Europe, will render the introduction of road tunnel emission control equipment

The Committee notes that while the benefits of new vehicle standards will take some years to have a significant impact, the benefits of improved emissions from in-service vehicles would produce immediate impacts across the fleet as vehicles of all ages will produce lower emissions.

The Committee notes and supports the work of the NSW Government which has implemented the first stage of the in-service vehicle emission inspection and maintenance program. The second phase, which will require emission standard testing of passenger and light commercial vehicles in the Sydney region, will be implemented in the year 2000.[78]

The Committee supports the actions of the NSW Government in taking a leadership role in the development of policies to fast track the reduction in emissions from the entire motor vehicle fleet, not just new vehicle models. The Committee notes the large percentage of particulate pollution from diesel vehicles and urges the Government to investigate implementing the following actions:

- The EPA investigate and report on mechanisms for the reduction of sulfur content in petrol and diesel so as to reduce vehicle emissions by 30 June 2000, so that the sulfur reduction programs can be implemented before the commencement of operation of the M5 East Motorway.

- The NSW Government urge the National Environment Protection Council to develop a National Environment Protection Measure for diesel emissions.

- The NSW Government design and implement an inspection and maintenance program for diesel vehicles before the commencement of operation of the M5 East Motorway.

- **The NSW Government urge the National Road Transport Commission and the National Environment Protection Council to amend Australian Design Rule 37/01 to incorporate United Nations Economic Commission for Europe vehicle emission standard 'Euro 4' by 2005.**

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77 NSW Environment Protection Authority, *Action for Air, The NSW Government's 25 year Air Quality Management Plan*, 1998, at p. 32.

78 See: NSW Environment Protection Authority, *Action for Air, The NSW Government's 25 year Air Quality Management Plan*, 1998 at p. 30.

World's best practice for the treatment of tunnel emissions and alternative possibilities for the management of air polluting substances

4.3.1 World's best practice for the treatment of tunnel emissions

The RTA stated in their submission that it is accepted practice worldwide that if the use of mechanical ventilation systems results in air quality goals being achieved, then air treatment systems are not required. The RTA continued that the benefit of a tunnel and ventilation stack is that vehicle emissions which would otherwise be at ground level along surface roads are captured, mixed with ambient air and ejected at a suitable height providing further dilution and dispersal.[79]

The Department of Urban Affairs and Planning, in their own review of tunnel ventilation systems, noted that the predominant current practice worldwide (with the exception of a few countries, notably Japan and Norway) is the use of high ventilation rates within tunnels and exhaust emissions via elevated stacks and partly through portals. Elevated stacks and ventilation rates for fresh air intake are designed to achieve without any treatment ground level concentrations of the main pollutants well below established criteria for the protection of health and amenity. This is on the basis of both existing background levels in a locality and the added emissions from the stack.[80]

The RTA noted that the M5 East tunnel ventilation airflow rate has been determined by Condition of Approval 70 – ie, carbon monoxide goals within the tunnel are not to be exceeded under any conditions. To achieve this goal, the tunnel cross-section has been sized to provide sufficient airflow to dilute the carbon monoxide levels. In addition, fresh air is drawn in from the tunnel entrances and from a fresh air intake located at Duff Street, Arncliffe. The theory is that vehicle emissions are diluted in the tunnel air and then dispersed at a suitable height through the single emission stack, with no detriment to ambient air quality around the stack. The RTA argued that as the ambient air quality goals can be achieved utilising this ventilation method, no further emission treatment is necessary, and that this is in fact world's best practice.[81]

In support of this claim the RTA's submission documented numerous examples of road tunnels overseas which rely on mechanical ventilation systems to achieve air quality goals (ie, no emission treatment systems). These tunnels as identified by the RTA include the: Central Artery/Tunnel, Boston United States; Elbe Tunnel, Germany; Salzburg Tunnel, Austria; and the Milchbuck Tunnel, Switzerland.[82]

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79 RTA, *Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack*. 17 November 1999, at 14.

80 Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997 Appendix F, *Review of International Practices in Ventilation and the Treatment of Exhaust Emissions.*

81 RTA, *Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack*. 17 November 1999, see pages 2 and 16.

82 RTA, *Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack*. 17 November 1999, at p.14.

In response to further inquiries from the Committee about world's best practice, and claims by RAPS as noted below, the RTA stated:

> In conclusion, the RTA affirms that the proposed ventilation system for the M5 East stack is consistent with international practice in Switzerland, Austria, Italy, Germany and France. The only exceptions to this are Norway, Japan and Korea due to particular circumstances in each country.[83]

In evidence the RTA was asked why they should not make some effort to install electrostatic precipitation equipment to remove particulate matter from the single ventilation stack, to which it was replied:

> … it would in fact be a very marginal improvement at a high cost and also a big environmental cost if one considers the waste sludge that is produced.[84]

Similarly, the RTA does not accept that gaseous emissions from road tunnels can be treated. Mr Anderson of the RTA stated:

> Irrespective of which direction that you head from now on, you still need a stack at Turrella to disperse the gaseous components. There is no system anywhere in the world for treating the gaseous components of a road tunnel. You still need the stack.[85]

In contrast, RAPS notes that Norway has a policy of no ventilation stacks in urban areas, and that in fact suitable pollution control equipment is now available to remove the need for stacks altogether.[86]

In any discussion of world's best practice it is important to note that the NSW EPA has set the world's most stringent air quality standards for pollutants such as particulates. The RTA provided the following information about Norwegian air quality and standards:

> The PM10 given is 70 micrograms per cubic metre for the 24 hour average, which is a less stringent goal than the Australian goal of 50 micrograms per cubic metre 24 hour average. Norway has a six month goal of 40 micrograms per cubic metre. Typical background levels of PM10 are 25-50 micrograms per cubic metre for a 24 hour average.[87]

It is possible that tunnel ventilation practices may have to be different in NSW in order to achieve the NSW Environment Protection Authority air quality goal.

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83 "RTA response to issues raised by the Committee of letter of 2 December 1999", at p.2.

84 Evidence of Ms Jay Stricker, General Manager, Environment and Community Policy, RTA at p. 14.

85 Evidence of Mr John Anderson, Senior Project Manager – M5 East Motorway, RTA at p.15.

86 Residents Against Polluting Stacks, No Stacks near Homes. *A Submission by RAPS to the General Purpose Standing Committee No 5 Inquiry into single exhaust stack at Turrella for M5 East Motorway*, 15 November 1999, at p.2.

87 "RTA response to issues raised by the Committee of letter of 2 December 1999", at p.7

4.3.2 The Department of Urban Affairs and Planning review of international ventilation and exhaust systems in road tunnels

The Department of Urban Affairs and Planning conducted their own survey of international ventilation and exhaust systems in road tunnels. As it provides a useful summary of the issues elements of this report are reproduced below, with important points for this Inquiry *italicised*:[88]

- Emerging and projected policies and practices in Japan and Europe in particular recognise the need to possibly incorporate treatment systems to control (at the source) road tunnels exhaust emissions particularly when stacks are located in urban areas. Such treatment systems are to be required when exhaust stacks on their own result in increase to existing background levels of pollutants above required standards ie. cannot on their own meet national or international air quality goals or standards. *There is however in all countries strong community concern and opposition to exhausting tunnel emissions without treatment, including strong opposition to stacks in urban areas particularly without treatment of exhaust at the source. This is substantially affecting the future policy direction irrespective of whether air quality standards can be met without the need for treatment systems.*

- The implications of the above are that:

  (a) exhaust emissions from tunnel portals are totally prohibited (particularly in urban areas). Ventilation systems are required to be designed so that there is no discharge from portals;

  (b) treatment systems are certainly required when exhaust stacks on their own can not achieve the required air quality standard on the basis of total ambient concentrations from both existing background and additional emissions from stacks. *Experience to date in most countries indicates that elevated stacks on their own can meet such objectives and hence treatment systems are not required. On that basis elevated stacks remain the preferred option for emission exhaust from road tunnels;*

  (c) *notwithstanding the above, treatment systems are being considered in most countries particularly in view of community concern and opposition. The debate essentially centres on the cost effectiveness of various control strategies.* That is the (capital and operating) costs of treatment systems at the exhaust stacks vs the costs of other pollution reduction on other sources and on vehicle emissions in achieving air quality improvements. *Whilst such an approach is particularly promoted on a regional basis, it does not in some cases fully address local impacts and concerns.* In most countries however regional studies are comprehensively undertaken to determine the most cost effective strategy and decisions on exhaust stacks and/or treatment systems made within the context of such strategies.

- *The technology for controlling Particulate Matter (PM_{10}) is relatively well established using Electrostatic Precipitators (EP).* These are and have been in use for many years in Japan and Norway but almost nowhere else. There are two points to note concerning the use of EP in road tunnels:

  (i) The traditional and predominantly current use of EP in tunnels is aiming at ensuring an adequate level of visibility within the tunnels and reflect particular country characteristics. In Japan, the fleet contains up to 40% of diesel fuelled heavy and other vehicles resulting

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88 This section has been copied directly from: Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997 Appendix F, *Review of International Practices in Ventilation and the Treatment of Exhaust Emissions*.

of particulate matters. Unless controlled, diesel soot particulates inhibit safe visibility within tunnels. In Norway, although traffic composition is generally similar to Australian studs which tend to generate dust on friction with roadways. These conditions in winter times also generate poor visibility in tunnels

(ii)

systems in that they are installed within tunnels. Air is recirculated inside the tunnel after passing

the main criteria in such systems, exhaust quality as to particulates is also improved.

- Notwithstanding the above observations, (few) existing tunnels and certainly planned ones are to incorporate EP as part of exhaust emissions treatment. It is evident that the technology is

particle sizes. The cost of such systems appear to considerably vary with a Norwegian supplier quoting a broad figure of $8,000-$8,500 per m /sec of exhaust air (presumably excluding associated infrastructure cost).

Electrostatic precipitators do not remove nor treat gaseous components such as nitrogen plant testing technologies for NOx treatment are underway in several countries notably Japan, Norway, Austria and Germany. No treatment system for gaseous pollutants has been installed in any tunnel. The following points apply to the current status of the technology:

trial systems are mostly based on catalytic converters and biological absorption;

(ii) *trial systems demonstrate good conversion/treatment of nitrogen dioxide (NO_2) with some suppliers guaranteeing such conversions. The technology appears established in this regard;*

(iii) trial systems indicate difficulties and constraints in nitrogen monoxide (NO) conversion. Research is continuing in this regard;

(iv) the planned Laerdal tunnel in Norway due for completion by 2000 requires full exhaust emissions treatment - both electrostatic precipitators and NOx treatment.

- *Overseas practice particularly in Europe emphasises the undertaking of subregional air management studies and strategies to establish an integrated set of air quality improvement measures.* Both regional and local air pollution control/management strategies are formulated/implemented on that basis.

The Committee would like to highlight that the independent report from DUAP as reproduced above noted the following in regard to the treatment of nitrogen dioxide from road tunnels:

> trial systems demonstrate good conversion/treatment of nitrogen dioxide (NO_2) with some suppliers guaranteeing such conversions. The technology appears established in this regard;[89]

[89] Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997 Appendix F, *Review of International Practices in Ventilation and the Treatment of Exhaust Emissions.*

From the above DUAP work the Committee notes the concern and opposition in communities around

ventilation stacks in urban areas. The pertinent conclusion of the Department of Urban Affairs is that this opposition is affecting the future policy direction irrespective of whether air quality standards can

The Committee notes that what the RTA refers to as 'world's best practice' from an engineering view may not equate to what communities around the world class as 'world's best practice'. Nevertheless, the Committee accepts that past engineering practice has been to dilute tunnel air pollutants and vent them via an elevated stack. However, the Committee is disappointed that the RTA, having been 'overwhelmed' by community opposition to the three stack proposal, did not fully investigate alternative technologies, for instance through direct contact with suppliers.

The Committee has been contacted by suppliers of alternative technologies who may be in a position to provide information and quotations to the RTA.

4.3.3 The RTA response

As noted in the previous chapter, MUAP condition of approval number 79 required the RTA to examine international developments in tunnel emission treatment systems, and report of the outcomes of these examinations annually for five years and thereafter as required by the Director-General.

To comply with this condition, amongst other actions the RTA has contracted the firm Evans and Peck Management which in September 1999 concluded the following:

(i) there are no new tunnel emission treatment technologies since the date of the approval;

(ii) apart from Japan and Norway there is no widespread use of systems for internal air quality treatment, although systems and concepts continue to be developed and trialed;

(iii) current known operating permanent installations for internal air quality are limited to electrostatic precipitators, although a system for reducing NO2 concentrations is being developed for internal air quality purposes for a tunnel in Norway;

(iv) there is no known permanent installation of a system to remove gases for external air quality purposes;

(v) there is one known permanent application of electrostatic precipitators to reduce particulates for external air quality purposes in an extreme heavy vehicle environment in Japan; and

(vi) in view of the continuing improvement in vehicle emissions over a number of years, it is unlikely that the use of tunnel emission cleaning systems will become wide spread.[90]

RAPS however provided a scathing critique of the above Evans and Peck document and earlier work and stated:

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90 Evans and Peck Management, *M5 East Motorway, Sydney. International Developments in Tunnel Emission Treatment Systems*, 15 September 1999, at p.4.

> It is clear that this report which claims to investigate and report on overseas technology does little other than constructively misreport and misrepresent the true situation[91]…

Mr Child commented about the Evans and Peck report:

> It is probably a conservative report and I think it is certainly a desktop report. In other words, it is a review of other people's work rather than a research into the thing itself. I think that is what Evans and Peck were asked to do. They were asked to look at a range of reports that were around, survey the literature, bring it all together in a concise report and give a summary, so no criticism of Evans and Peck in that. I do not think it sought to go down the burrow, … in terms of looking at what innovative practices might be near coming through…[92]

However, in response to these claims the RTA replied:

> In conclusion, it is clear that the report by Evans and Peck does represent international practice, that the Norwegian practices have been acknowledged as they were at that time, and RTA has subsequently made efforts to remain informed of the status of international practice.[93]

With these comments in mind:

> Recommendation 7
>
> The Committee recommends that the Roads and Traffic Authority, when investigating international developments in tunnel emission treatment systems as required by the condition of approval number 79 for M5 East motorway, not only survey the relevant literature but directly contact the suppliers of such equipment.

4.4 Costs and obligations in regard to installation of pollution control equipment on the single stack

The RTA has provided the following information to the Committee:[94]

- The cost of installation of an electrostatic precipitator at Turrella is estimated to cost $40 million. This is based on cost estimates from Matsushita Electric Industrial Co in Japan, based on the treatment of 870 cubic metres of air per second, which is the maximum volume of air

91 Residents Against Polluting Stacks, "No new technology – Evans and Peck Manageme tendered by RAPS 29 November 1999, at p.8.

92 Evidence of Mr Noel Child, Consulting Engineer, Canterbury City Council, at p. 78.

93 "RTA response to issues raised by the Committee of letter of 2 December 1999", at p.9.

94 "RTA response to issues raised by the Committee of letter of 2 December 1999", at p.9-11.

able to be exhausted from the current design of the stack, as well as infrastructure, overheads and contingencies;

- In accordance with the Project Deed, if the stack at Turrella was deleted the contractor would be entitled to:

  (a) The cost of design and construction work done to date at Turrella $4.1 million

  (b) Costs associated with deletion of both the design and construction at Turrella as well as the operation and maintenance components of the work calculated in accordance …$3.8 million

- In addition to the above the Contractor would be entitled to costs associated with delays to construction while an alternative design is prepared for the motorway ventilation system;

- Installation of electrostatic precipitators in the tunnels at this late stage of design of the ventilation system and with 20% of the tunnel already constructed would be a high risk strategy. Installation of electrostatic precipitators in the tunnels is expected to cost about the same as the installation at Turrella. However, there is a high risk of additional substantial costs from delays to the current tunnel construction. This is estimated to cost between $15 to $30 million. Overall, addition of precipitators in the tunnel is estimated to add $55 to $70 million to the project cost. Opening of the motorway will also be substantially delayed with consequential lost community benefits.

In contrast, the work by DUAP on international technologies as noted in section 4.3.2 noted the broad figure of installation of an electrostatic precipitator at $8000 - $8500 per m^3/sec of exhaust air (although presumably not including infrastructure costs). Using the RTA supplied exhaust air figure of 870 m^3/sec, this would result in a cost of $6.9 million to $7.4 million.

The Committee received evidence which stated that the costs of installing equipment such as electrostatic precipitators and nitrogen dioxide treatment increase significantly if this is done after the tunnel and stack are completed. It was stated by RAPS that:

> The least desirable and most expensive solution would involve the fitting of either or both of electrostatic precipitators and nitrogen dioxide treatment equipment at the base of the stack. Although a similar amount of equipment would be required, the opportunity for cost reductions in cost of construction of the stack and of the air intake would be lost as in the other solutions neither the stack nor the air intake would be required and other parts of the ventilation system would also be reduced.[95]

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95 Residents Against Polluting Stacks, No Stacks near Homes. *A Submission by RAPS to the General Purpose Standing Committee No 5 Inquiry into single exhaust stack at Turrella for M5 East Motorway*, 15 November 1999, Appendix 9 at p.11.

4.5 The Norwegian experience: cleaning of polluted air in combination with longitudinal ventilation[96]

Below is a summary of a paper presented by an Officer of the Norwegian Public Road Administration at the World Road Congress held at Kuala Lumpur in October 1999:

Norway has approximately 700 road tunnels, all of which are ventilated by longitudinal ventilation methods. For long tunnels with longitudinal ventilation the normal procedure has been to divide the tunnel into sections with the help of shafts in order to obtain acceptable environmental conditions and air velocity within the tunnel.

Whilst in many cases this 'normal' method will prove to be an acceptable method, in some cases this may be unsatisfactory because of the surrounding areas. In these cases, the use of air cleaning technology either with a ventilation tower or within the tunnel with no ventilation tower may be the solution.

During the last 10 years electrostatic precipitator particle cleaning plants have been installed in several Norwegian road tunnels. The purpose of these installations has been to improve the visibility conditions within the tunnels and/or reduce the emissions of particles to the outer environment. Electrostatic precipitators have been installed in the ceilings of tunnels as well as associated with ventilation towers. Electrostatic precipitators remove smoke from car fires and are very efficient for the particle sizes that are normally found within a road tunnel.

In 1992 the Norwegian Parliament approved the construction of the 24.5 kilometre long Laerdal tunnel. One of the main challenges was to provide suitable ventilation throughout the length of the tunnel. A research program focussed on the removal of NO_2 from the tunnel air. A pilot plant was installed within the Oslo tunnel, which had a capacity of 10,000 M^3/hr, which demonstrated a cleaning effect of approximately 80 percent. Subsequently, the Laerdal tunnel was designed so that particulate and nitrogen dioxide cleaning plants will be installed within the tunnel.

The author concluded:

> The methods that have been developed for extraction of particles and nitrogen dioxide may easily be integrated in a longitudinal ventilation plant. This can be done both with and without ventilation shafts…the air cleaning technology for nitrogen dioxide was initially developed for the purpose of cleaning contaminated air inside very long road tunnels in order to limit the ventilation air volume required to maintain an acceptable air quality inside the tunnel. The cleaning technology is, however, also an adequate solution for pollution control of exhaust air from city tunnels.[97]

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96 Henning, J.E. *Cleaning of Polluted Air in Combination with Longitudinal Ventilation*, Norwegian Public Roads Administration, Directorate of Public Roads, PIARC XXst World Road Congress, October 3-9 1999, Kualar Lumpur.

97 Henning, J.E. *Cleaning of Polluted Air in Combination with Longitudinal Ventilation*, Norwegian Public Roads Administration, Directorate of Public Roads, PIARC XXst World Road Congress, October 3-9 1999, Kualar Lumpur.

4.6 The residents' view

The Residents Against Polluting Stacks group tabled evidence to the Committee about their discussions with Norwegian firms Clean Tunnel Air and ABB Alstom Power. The following is the proposal that RAPS have put together with the input of the above firms:[98]

RAPS' preferred option involves no emission stack. This option envisages the installation of by-pass type air cleaning stations close to the exits of the two tunnels containing electrostatic precipitator and nitrogen dioxide catalytic removal systems, and electrostatic precipitators ceiling mounted about half way along each tunnel. The total capacity of the cleaning system in each tunnel would be between 300 and 350 m3/sec.

This capacity should be able to ensure that emitted air is close to air quality goals for PM_{10} and nitrogen dioxide, and the ceiling mounted electrostatic precipitators would reduce the amount of smoke in the tunnel in the case of fire. RAPS have estimated this option to cost approximately $25.6 million.

RAPS' preferred option if the stack is completed would involve the fitting of either or both of electrostatic precipitator and nitrogen dioxide treatment equipment at the base of the stack. Although a similar amount of equipment would be required as in the preferred option, the opportunity for cost savings would be lost as the stack and connecting tunnel still need to be constructed. If pollution control equipment needs to be retrofitted as possibly required by DUAP, then we would have the situation of a tunnel designed around high ventilation air flow rates, which would not be required when the pollution control equipment is in place. RAPS have costed this option at $56.6 million.

RAPS concludes that to build the stack as currently planned will cost $36 million, and stated:

> It seems to me, and the people overseas agree, that we have a potential saving of $10 million, and we get clean air and do not have to build the stack. What are we doing? Why are we not seriously looking at this?[99]

4.7 Conclusion

The Committee notes the worldwide debate on what constitutes best practice in regard to road tunnel ventilation and emission systems. However, this debate cannot detract from the fact that communities in Sydney are not prepared to live with a ventilation stack with no emission treatment within their neighbourhood. With this in mind, the Committee recommends the following:

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98 Evidence of Mr Mark Curran, Residents Against Polluting Stacks, at p. 59, and overhead tabled by RAPS titled "What do RAPS want?"

99 Evidence of Mr Mark Curran, Residents Against Polluting Stacks, at p. 60.

Recommendation 8

The Committee recommends that the Roads and Traffic Authority immediately call for international expressions of interest for the installation of world's best treatment processes for particulate and nitrogen dioxide removal in the M5 East Motorway tunnel. The NSW Government should establish an independent panel of experts, including a community representative, to evaluate and report on the submissions which have been received by 31 March 2000. The report should identify accurate and if possible final costs for the installation of such equipment.

The Committee recommends that the Roads and Traffic Authority continue with construction work on the stack in a manner which can incorporate and make provision for alternative ventilation systems which might be recommended as a result of the assessment of responses to the call for international expressions of interest.

The Committee further recommends that following the publication of the report identified above, a decision be made to either:

- cease all further work on the ventilation stack and install pollution control equipment in the road tunnel itself; or

- install pollution control equipment in addition to the ventilation stack.

5 A rigorous and open risk assessment integrated as part of any ventilation proposal

5.1 Future assessment of air quality

Condition of Approval number 74 required the RTA to make provision for the installation of air quality treatment systems, including electrostatic precipitators and gas treatment systems as part of the tunnels' ventilation system. With this in mind, a significant line of inquiry at the public hearing was:

- What base line air quality data will be used to compare air quality at present compared to air quality after commencement of operation of the motorway and ventilation stack;
- When does a future assessment of air quality in the region take place; and
- What level or number of air quality goal exceedences is 'enough' to force the RTA to install pollution control equipment, and who makes the final decision as to the installation of this equipment?

The conditions of approval for the project require the RTA to commence air quality monitoring in the Turrella and Undercliffe areas at least 6 months prior to the commencement of tunnel operations, which is expected to be in mid 2002.[100] The condition also requires the RTA to publish these air quality reports every six months.[101] This, as well as other air quality data from nearby monitoring stations, will provide the data to compare air quality both before and after the commencement of the motorway in the immediate vicinity of the emission stack. The RTA has indicated that this monitoring is due to commence early 2000.[102] Whilst this is considerably earlier than the requirement as outlined in the conditions of approval, RAPS noted that a more responsible course of action would have been to establish the air quality monitoring stations when the project was approved in December 1997.[103] Mr Child recommended the development of a comprehensive, real time open path system to monitor air quality in the local area. The Committee suggests that the practicalities of this idea be discussed by the RTA and the EPA with a view to the development of a workable approach.

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100 Evidence of Mr John Anderson, Senior Project Manager – M5 East Motorway, RTA, at p.12.

101 Condition Number 75.

102 Evidence of Mr John Anderson, Senior Project Manager – M5 East Motorway, RTA, at p.12.

103 Residents Against Polluting Stacks, No Stacks near Homes. *A Submission by RAPS to the General Purpose Standing Committee No 5 Inquiry into single exhaust stack at Turrella for M5 East Motorway*, 15 November 1999, at p.11.

Recommendation 9

The Committee recommends that air quality data reports, both before and after commencement of the motorway be made available 'real time' on the Internet so that those members of the population who are vulnerable to air pollutants may more easily become aware of any exceedences of air quality goals and take appropriate action. Further, it is recommended that air quality reports are published monthly, including on the Internet.[104]

5.1.2 The mechanism to 'trigger' implementation of Condition 74

In regard to the second question, there was some wide ranging discussion at the Inquiry as to when the most appropriate time would be to review whether air quality goals are being met. Mr Noonan from DUAP stated the following:

> There is a data collection regime that we expect will take a couple of years to stand back, look at all the monitoring results that will be going on from now, the assessments of the impacts that we have obliged RTA to sort of put in place after operations, and then determine if the subregional goals are achievable…[105]

In response to questioning about when the EPA would take action against any exceedences of the air quality goals because of the stack, Mr Woodward of the EPA stated:

> …It cannot be boiled down to an equation…[106]

Instead, Mr Woodward noted the following likely actions of the EPA:

> The EPA would take into account the significance of the exceedence… also take into account the frequency of exceedences…If on the basis of both the significance of any single exceedence or the frequency of exceedences was great enough to suggest that there should be action taken, the conditions of consent do allow for action to be taken, and that action can relate to either retrofitting of environment protection control technology in the stack itself or other subregional measures…[107]

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104 This recommendation arises from Mr Child's recommendation to develop a comprehensive, real time open path system to monitor air quality in the local area. See Child and Associates, *M5 East Motorway Proposed Single Emission Stack at Turrella, Review of Air Quality Impacts of the single Stack Proposal and Consideration of Alternative Strategies, Final Report, Findings and Recommendations*, Prepared for Canterbury City Council May 20 1999, at p.16.

105 Evidence from Mr Maxwell Noonan, Director, Development and Infrastructure Assessments, DUAP, at p.24.

106 Evidence of Mr Colin Woodward, Director, Sydney Region, EPA, at p.44.

107 Evidence of Mr Colin Woodward, Director, Sydney Region, EPA, at p.42.

Similarly, the DUAP Officer noted that:

> …if the exercise of managing the operation of the stack combined with strategies for improving the regional air quality fail to ensure that residents in the area achieve the WHO goals…then the conditions provide for retrofitting of treatment systems…Our view is that we would want to see a pretty solid cost-benefit analysis. The data will have to be rigorous and we will not want investment to be inappropriate or capricious…and then determine if the subregional goals are achievable, and at that point we will enter into discussion as to whether retrofitting is required.[108]

Some clues as to the answer to who decides if and when pollution control equipment is fitted may be found in the conditions of approval. Condition 74 states:

> The Director-General [of DUAP] may require the installation of a treatment system by the Proponent, after considering the results of independent monitoring, whether emissions comply with the goals specified in condition 72, input from the Community Consultative Committee, the views of the EPA and the outcome of investigations from condition 80 [this required an investigation into subregional air quality, to identify key contributors to air pollution in the region and formulate cost effective measures to control such contributors.]

It is clear that only the DUAP has the regulatory authority to force the RTA to install pollution control equipment. It is also evident from Condition 74 that DUAP, in assessing whether pollution control equipment must be installed on the stack, must take into account five different factors as specified in the condition.

The Committee notes the difficulty in prescribing a 'formula' to mark the point at which pollution control equipment must be installed. Equally, the Committee notes the frustration in segments of the community who would like a definitive answer as to at what point exceedence in air quality goals attributable to the ventilation stack triggers an automatic requirement to install emission control equipment.

Recommendation 10

The Committee recommends that the Department of Urban Affairs and Planning, in consultation with the Community Consultative Committee, at six monthly intervals review all the sources of information, as identified in Condition 74, to assess whether pollution control equipment should be installed on the emission stack. The results of these reviews should be made public no later than six weeks after the end of the six month period, with reasons stated for the conclusions reached.

108 Evidence of Mr Maxwell Noonan, Director, Development and Infrastructure Assessments, DUAP, at p.24.

5.2 Contingency planning

Whilst the RTA and its consultants predicted no exceedences of any of the current or emerging air quality goals, it was widely recognised that NO_2 and PM_{10} could be a problem given the already high background pollutant levels. With this scenario, it would be prudent of the RTA to have a 'contingency plan' in place if and when air quality goals are exceeded once the motorway commences operation.

In evidence Mr Child strongly recommended that such a plan be developed, and stated:

> There is enough evidence around of concern that I think that it is prudent on a project of this scale…that you have a contingency plan that deals with that eventuality, and not to have it, I think, is inappropriate.[109]

In Mr Child's submission he provided the basis for such a plan as follows:[110]

- The provision of a comprehensive, real time, open path analysis system to monitor air quality in the local area to the proposed single stack, and the integration of such a system in a comprehensive ventilation management plan for the tunnel.

- A revision of current project guidelines such that the discharge of exhaust air through the tunnel portals is allowed.

- The inclusion of a system of jet fans to express tunnel air from the various tunnel portals as an alternative or supplement to ventilation via the proposed single stack.

- The initiation of the supplementary jet fan ventilation system at those times when the monitoring system indicated that local air quality might be likely to exceed established criteria as a consequence of emissions from the proposed single stack.

In response Mr Anderson of the RTA noted that a working party had been formed:

> …to look at what in effect, is an instant management scheme so that if an event occurred which was as a consequence of the M5 East and it appeared that there may be an exceedence [of air quality goals] we have a plan for managing that…[including] the feasibility of, on occasions, emitting from the portals if there appeared to be a likely exceedence at Turrella.[111]

After a request from the Committee, the RTA supplied supplementary information about a contingency plan in the event that air quality goals are exceeded. The RTA replied:

> Contingencies which are provided for in the tunnel ventilation design and which may be implemented are as follows:

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109 Evidence of Mr Noel Child, Consulting Engineer to Canterbury City Council, at p.24.

110 Child and Associates, *M5 East Motorway Proposed Single Emission Stack at Turrella, Review of Air Quality Impacts of the single Stack Proposal and Consideration of Alternative Strategies, Final Report, Findings and Recommendations*, Prepared for Canterbury City Council May 20 1999, at p.16.

111 Evidence of Mr John Anderson, Senior Project Manager – M5 East Motorway, RTA, at p.24.

1. Increase the output of the ventilation fans by using the excess capacity required by the project Specification – this increases the exit velocity from the stack and improves dispersion

2. Subsequent installation of emission treatment plant, as required by Condition of Approval No 74 – this reduces the amount of exhaust pollutants emitted from the stack – currently particulate only

3. Increase the height of the stack – this assists dispersion

4. Control the amount of traffic entering the tunnel using a Traffic Management System – this reduces the amount of exhaust emissions within the tunnel and emitted from the stack at Turrella. A physical barrier system and appropriate signage will be installed to control traffic, particularly for incident management.[112]

The Committee notes that no evidence has been provided that indicates that the current design of the stack will allow it to be easily increased in height – as per point three above.

Under the above section the RTA then again made reference to the working party assessing the feasibility of emitting air through the portals, and concluded:

> In spite of increasing motor vehicle ownership substantial reductions in pollutants are expected in the next decade, in line with international trends. Overall it is considered unlikely that the above contingencies will need to be implemented.[113]

If it were found to be feasible to install a supplementary fan ventilation system through the portals during periods when air quality goals are likely to or have been exceeded at the Turrella stack site, then the Conditions of Approval for the project would have to be amended. Condition 71 stated:

> The ventilation system for the main tunnel (Bexley Road to Marsh Street) must be designed to avoid air emissions, through the portals, as far as is practicable. In any event, the air emissions must not result in the following ambient air quality emerging goals being exceeded at ground level [the same goals as specified for the single stack emissions were stated].

112 "RTA response to issues raised by the Committee of letter of 2 December 1999", at p.7.

113 "RTA response to issues raised by the Committee of letter of 2 December 1999", at p.8.

Recommendation 11

The Committee recommends that the Roads and Traffic Authority, in consultation with the Community Consultative Committee, prior to the operation of the motorway, develop a contingency plan for instances of air quality exceedences at the Turrella site. This contingency plan must be approved by the Minister for Urban Affairs and Planning and made publicly available.[114]

The Approval requiring the RTA to assess annually the state of international developments in dealing with road tunnel exhaust emissions provides a form of risk assessment. The assessments have been discussed in section 4.3.3 in Chapter 4.

The Committee understands that the assessment process for the single stack was challenged and found to be valid in the Courts. However, the Committee, as noted in Chapter 3, notes that there was no open risk assessment as part of the single ventilation stack. The RTA impact assessment (and hence their risk assessment), was done as part of the Representations Report, which was done in secret between government agencies and neither invited nor involved further public input. On this basis, the Committee rejects the assertion of the RTA that the project has been the subject of an open risk assessment process.

The RAPS group stated:

> There has been no open and rigorous risk assessment integrated as part of the M5 East single ventilation proposal. Independent expert sources show the single stack proposal will exceed air quality goals when the tunnel operates. They also consider the risk to be significant and yet there are no realistic contingency plans.[115]

Similarly, Canterbury City Council in their submission to the Inquiry stated:

> Council would urge that an environmental impact statement be integrated as part of the tunnel ventilation proposal to establish if the stack can be operated in a manner that does not compromise air quality or the health of residents.[116]

It would appear to the Committee that the only group of people who believe that a rigorous and open risk assessment of the project has been undertaken are those representatives from the RTA and other government departments.

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114 This recommendation is taken from the work of Mr Noel Child.

115 This recommendation arises from: Residents Against Polluting Stacks, No Stacks near Homes. *A Submission by RAPS to the General Purpose Standing Committee No 5 Inquiry into single exhaust stack at Turrella for M5 East Motorway*, 15 November 1999, at p. 27.

116 Canterbury City Council, Letter to the Committee re Inquiry into the M5 East Ventilation Stack, at p. 5.

The DUAP consultancy report by Stephenson and Associates recommended as an essential pre-requisite to project approval the need to correlate a risk assessment of the stack height and pollution dispersal with appropriate urban planning controls.[117] In this regard, the Committee is aware of the increasing urbanisation and new housing developments of formerly industrial land in the region.[118] The proposed ventilation stack site is adjacent to Turrella railway station. The Committee notes the State Government's housing strategy to increase urbanisation nearby nodes of transport. For instance, the then Minister for Urban Affairs and Planning stated:

> urban consolidation will still be pursued, although the emphasis is now on increasing residential densities only in those areas which have good access to transport, employment and community facilities.[119]

The Committee notes that the Turrella area has good access to transport next to the railway station, as well as the community facilities of the Wolli Creek Regional Park. With the construction of the New Southern Railway, the region is a prime target for urban consolidation.

Recommendation 12

The Committee recommends that the Department of Urban Affairs and Planning release any risk assessment done of the impact of the stack on the implementation of urban consolidation policies in the vicinity of the stack. If no such assessment has been undertaken to date, the Committee recommends that an open and rigorous risk assessment of the impact of the ventilation stack on urban consolidation policies be performed without delay, with the results to be published.

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117 Department of Urban Affairs and Planning, *Environmental Impact Assessment, Proposed M5 East Motorway, Fairford Road, Padstow to General Holmes Drive, Kyeemagh*, November 1997. Stephenson and Associates *Air Quality Assessment of the Environmental Impact Study for the Proposed M5 East Motorway*, at p. 27.

118 See for example: "Forgotten precinct comes to fore" in *The Australian Financial Review*, October 7 1999. This newspaper article detailed housing plans for the industrial precincts of North Arncliffe.

119 Knowles, C. "The NSW State Government's Urban Management" in *Australian Planner*, Vol 33 No 2, 1996, at 68.

6 Appropriate guarantees for all affected residents and businesses

In response to this term of reference the RTA stated several points as follows:[120]

- The conditions of approval specified strict air goals. The exhaustive assessment of the environmental impacts of the ventilation stack concluded that all EPA air quality goals will be met;

- The design of the ventilation system, including the height of the stack cannot be approved unless both DUAP and the EPA are satisfied that there will be no adverse impacts;

- The conditions of approval also require the RTA, with other government agencies, to identify strategies to improve regional air quality;

- The provision for emission treatment systems to be retrofitted is present should it become necessary, however, it is better to address the pollution at the source rather than treat the effects;

- The State Government's Property Value Guarantee to property owners above the tunnels, or within 100 metres of the tunnel portals. Under this scheme, eligible property owners can sell their properties to the RTA at current market values as if the project did not exist.

Residents and businesses adjacent to the ventilation stack itself have had no opportunity to join the PVG scheme if they wished, or if it is shown that their properties are directly affected by the stack. The RAPS group asked:

> The proposed stack has already reduced property values in affected areas, and this is bound to worsen. Residents located immediately above the tunnel and at the portals have been offered a property value guarantee, frogs and birds whose habitat is being destroyed are being 'relocated'. Why is it that people affected by the stack are not being given the same consideration when their case is arguably worse?[121]

In evidence Mr Siapos of RAPS continued:

> Recent sales have indicated that houses have sold for $70,000 to $100,000 less than market estimates at the time. In our proposal you will see that around the stack currently, there is only single digit increases in prices, whereas beyond the boundary of that, you will find double digit growth which is more akin to normal Sydney growth. We have evidence and we know of people that have actually had to sell because of health reasons, they cannot stay. They will not be able to

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120 RTA, Submission by the Roads and Traffic Authority to the Legislative Council General Purpose Standing Committee No 5. Inquiry into the M5 East Ventilation Stack. 17 November 1999, at p. 23.

121 Residents Against Polluting Stacks, No Stacks near Homes. A Submission by RAPS to the General Purpose Standing Committee No 5 Inquiry into single exhaust stack at Turrella for M5 East Motorway, 15 November 1999, at p.30.

> stay in any environment and what they are doing is they are selling and they are losing somewhere between $70,000 to $100,000 right now.[122]

The Committee notes the good intention of the Property Value Guarantee but does not consider that it should be extended.

[122] Evidence of Mr Siapos, Residents Against Polluting Stacks, at p. 60.

Statement of Dissent by

The Hon Ron Dyer MLC
The Hon John Johnson MLC
The Hon Jan Burnswoods MLC

The community in suburbs surrounding the M5 East ventilation stack is concerned about the impact of the M5 East on local air quality. It is important that accurate information continues to be provided to residents on existing air quality and air quality monitoring after the motorway is opened. It is equally important that residents on currently congested roads in Bexley, Rockdale, Earlwood and Kogarah obtain the relief from the noise and vehicle pollution from heavy vehicles in their local streets that the M5 East will deliver.

The Environment Protection Authority (EPA) sets air quality goals for NSW. Air quality goals are developed in order to protect the health of NSW residents. Advice provided to the committee by the Roads and Traffic Authority (RTA) and the Department of Urban Affairs and Planning (DUAP) and the EPA's own assessment concluded that the proposed M5 East ventilation system would meet air quality goals specified by the EPA. These are amongst the most stringent in the world.

The final design of the Ventilation Stack, including the height of the stack, is subject to the approval of DUAP and the EPA. Alternative systems for the management of air pollutants were assessed as part of the environmental assessment process of the project. The RTA provided evidence that international developments in treatment systems continue to be examined as required by the conditions of approval issued by the Minister for Urban Affairs and Planning. The evidence presented to date indicates that the ventilation system proposed for the M5 East continues to represent world's best practice in the management of air pollutants.

Air quality is an issue that affects all Sydney residents. The Majority Committee Report focuses on particular technologies that are in limited use in some overseas jurisdictions to deal with some pollutants in tunnels. However, the Committee also received evidence from leading tunnel experts that it is far more effective to deal with motor vehicle emissions at the source ie. at the car exhaust, rather than through in-tunnel systems such as electrostatic precipitators that only deal with some pollutants.

The NSW Government is currently developing an Inspection and Maintenance scheme for light vehicle emissions, and is developing a diesel emissions test in conjunction with the CSIRO. These initiatives will assist in reducing air pollution for all Sydney residents.

Appendix 1 – Submissions received

No 1	McINTOSH, Ms Rita
No 2	RIDSDALE, Mrs B
No 3	FAIRWEATHER, Mr John
No 4	TZAVELLAS, Mr Phillip & Family
No 5	GIBBS, Mr Allan & Mrs Margaret
No 6	EARLWOOD ROCKDALE TRAFFIC ACTION GROUP INC (Ms Alison Edsall)
No 7	GARDINER, Mrs Evelyn
No 8	VALET PLUMBING SERVICES PTY LTD (Mr Paul Howland)
No 9	NUTTALL, E
No 10	GULLO, Mr Salvatore & Mrs Francesca
No 11	LEVONIS, E
No 12	HERRON, Sam
No 13	PRICE, Mr Gary & SCIBERRAS, Ms Mary
No 14	COOK'S RIVER VALLEY ASSOCIATION (Mr Gary Price)
No 15	SLAPCZYNSKI, Mr Richard
No 16	ELSLEY, Mrs Beryl
No 17	BEE, Stevie
No 18	SULLIVAN, Mr Colin
No 19	LEE, Mrs R
No 20	KASZONYI, Mr Miklos & Mrs Elizabeth
No 21	LITTLE, Ms Debra
No 22	UNIVERSITY OF NSW, School of Safety Sciences (Assoc Prof Chris Winder)
No 23	KING FURNITURE (Ms Gwen King)
No 24	MAROSZ, Mr Peter

No 25	NASSER, Amal
No 26	NASSER, Jamal
No 27	LOREN, Mrs Jean
No 28	DONOVAN, Mr Jim
No 29	CANTERBURY CHRISTIAN DEMOCRATIC PARTY (Mr Michael Robinson)
No 30	BAYNDRIAN, Mr Mario
No 31	CANTERBURY CITY COUNCIL (Mr Jim Montague)
No 32	ANDERSON, Dr Peter & NICOL, Dr Robert
No 33	STARK, Mr David
No 34	GILES, Ms Tina
No 35	CHILD & ASSOCIATES (Mr Noel Child)
No 36	DAY, N
No 37	TULLY, Ms Miriam
No 38	GALTSMITH-CLARKE, Ms Rae
No 39	BROWNE, Mr Richard & Mrs Gloria
No 40	GRIFFITH, Emeritus Prof Ross
No 41	TOUMA, Mr Sam & Mrs Fadia
No 42	TURCSANYI, Ms Michelle
No 43	TIPPETT, Mr John & VALETTE, Ms Christiane
No 44	K32 NEIGHBOURHOOD WATCH (Ms Elaine Cohen)
No 45	TOUMA, Mr Charlie
No 46	DAVIDSON, Mr Peter & CASTILLO, Ms Chona
No 47	LEUONIS, E
No 48	TOUMA, Ms Donna
No 49	BAKER, Ms Janet
No 50	BABLIS, Mr Anastasios

No 51	SCARLATA, Mr Giuseppe
No 52	JONES, Ms Annette
No 53	WILLIS, Dr Annette
No 54	TOUMA, Ms Tania
No 55	TURCSANYIA, Mr Attila
No 56	CAMPBELL, Mr James
No 57	BISHOP, Ms Meryl
No 58	TURNER, Mrs V
No 59	WILKINSON, Mr Marshall
No 60	HUGHES, Ms E
No 61	SEVERINA, Mr Francesco
No 62	RAHME, Mr Joseph & Mrs Rose
No 63	RAHME, Mansour
No 64	GREGOR, Ms Irene
No 65	RAHME, Nada & Bahjat
No 66	HARTGE, Mr Brent
No 67	DERWOOD, Ms Johanna
No 68	GOMES, Ms Kerry
No 69	GOMES, Ms Noelia
No 70	GOMES, Ms Maria
No 71	HANGER, Mr Chris
No 72	BOYLES, Ms Josephine
No 73	CICCHIELLO, Ms Rosanna
No 74	COLUBRIALE, Mr Joe & Mrs Wilma
No 75	CARNUCCIO, Mr Joe
No 76	TASKER, Mr Alfred & Mrs Lorraine

No 77	BASSIL, Mr Joseph
No 78	CARDINALE, J
No 79	FRIENDS OF WOLLI CREEK INC (Mr Clifford Willard)
No 80	CANTERBURY CITY COUNCIL, East Ward (Cr John Koutsouras)
No 81	VAN BOHEEMEN, Ms Anne
No 82	D'ASTOLI, Mr Mark & BROOKS, Ms Megan
No 83	DUFFY, Mr Tony
No 84	BAZZI, Mr Armed
No 85	SMITH, M
No 86	WOLLI CREEK PRESERVATION SOCIETY INC (Ms Shirley Allen)
No 87	FEDERATION OF SCHOOL COMMUNITY ORGANISATIONS (Ms Shirley Allen)
No 88	COOREY, Ms Barbara
No 89	DENNIS, Ms Diane
No 90	ROBINSON, Mr Michael
No 91	FLATT, Mr Christopher
No 92	BOOTES, Mr Ron & KADLEC, Ms Ivona
No 93	THOMPSONS ROLLER SHUTTERS PTY LTD (A McDonogh)
No 94	BATCHELOR, Ms Lola
No 95	PEARCE, Ms Barbara
No 96	SWEENEY, Mr Harold & Mrs Margaret & McDONNELL, Ms Mary
No 97	STODART, Ms Eileen
No 98	ELLIOTT, Mr Blake
No 99	STOODLEY, Ms Beth
No 100	HOULBROOK, Mr Mick & WALK, Ms Maree
No 101	BASIOLI, Mr David & Family

No 102	OLUBAS, Dr Brigitta & ALLEN, Mr Bruce
No 103	MOYLAN-BROUFF, Ms Glenda
No 104	ROSSI, Ms Judi
No 105	SABBAH, Mr Joe
No 106	BARTLETT, Mr Christopher
No 107	MALOUF, Mr Richard
No 108	Tzavellas, Mr Michael & PHILLIP, Mrs E
No 109	M & J FENECH NEWSAGENTS (Mr & Mrs Michael Fenech)
No 110	FABRISCHI, Pasqisale
No 111	JAIWATANASANAT, Me Adul
No 112	ROSSI, Mr Riccardo
No 113	MOUTSIS, Mr Sam
No 114	NICOLA, Mr Nicholas
No 115	STARK, C
No 116	LAROCCA, Mr Costanzo & Mrs Sarina
No 117	LIM, Mr Allan
No 118	MAWER, Mr Simon
No 119	TIZZONE, Mrs Nada
No 120	HUDSON, Mr Vincent
No 121	HU, Ms Janice
No 122	CHEN HSIN YEN, Hu
No 123	MAGEE, Ms Bernadette
No 124	MAWER, Ms Giselle
No 125	MAWER, Ms Danielle
No 126	BLOMFIELD, Ms Jody
No 127	GARCIA, Mr Antonio

No 128	STONHAM, Mr Michael
No 129	CERGOVSKI, Mr Mick
No 130	HERBERT, Mr Brian & Family
No 131	PLATER FAMILY
No 132	MARTIN, Mr Ian
No 133	ROSSI, Mr Michael
No 134	KYRIACOU, Mr Dimitri
No 135	KYRIACOU, Ms Voula
No 136	NAGLE, Ms Emily
No 137	KING, Ms Susan
No 138	SABBAH, Ms Freda
No 139	ROSSI, Ms Angela
No 140	CURRAN, Mr Mark
No 141	FINLASON, Ms Judy
No 142	HEI HEI, Mr Jim
No 143	JOHNSON, Mr Errol
No 144	SPAIS, Mr George
No 145	WINTER, Ms Jeanette
No 146	SAWYER, N
No 147	ANONYMOUS
No 148	FABIAN, Mr Craig
No 149	ANONYMOUS
No 150	JORGE, Ulkan
No 151	ANONYMOUS
No 152	DONNACHY, Mr Simon
No 153	BLAKE, Mr Stuart

No 154	SAAD, Nader
No 155	WARREN, D
No 156	ELACH, Mr Hussain
No 157	McDONOGH, Ms Lyn
No 158	LEVONIS, E
No 159	NATURE CONSERVATION COUNCIL OF NSW INC (Ms Kathryn Ridge)
No 160	CONSULTATIVE AIR QUALITY COMMITTEE (Mr Col Roberts)
No 161	BRENNER, Ms Julie
No 162	TRANSPORT ACTION GROUP AGAINST MOTORWAYS INC (Mr Gavin Gatenby)
No 163	PENGELLY, Ms Hainee & SHEA, Mr Paul
No 164	LOSSIN, Mr R & Mrs C
No 165	KINSCHER, Mr Terry
No 166	SIMPSON, Mr Mark
No 167	WOOLLOOMOOLOO RESIDENTS AGAINST POLLUTING STACKS (Ms Jane Salmon)
No 168	MUSSAWAR, Rami
No 169	HOFFMANN, Lee
No 170	LIM, Mr Allen
No 171	EARLWOOD RESIDENTS AGAINST THE M5 EAST MOTORWAY (Mr John Banos)
No 172	UNDERCLIFFE PUBLIC SCHOOL PARENTS & CITIZENS ASSOCIATION (Mr Kevin Hay)
No 173	TAYLOR, Mr Colin & Mrs Sascha
No 174	ALACHI, Ms Helen
No 175	GAMA, Mr Jose
No 176	GAMA, Ms Maria

No 177	HARRIS, Ms Cathy
No 178	FLETCHER, Ms Lynette
No 179	JONES, Mr Robert
No 180	REA, Mr & Mrs L
No 181	UNDERCLIFFE PUBLIC SCHOOL PARENTS & CITIZENS ASSOCIATION (Mrs M Lim)
No 182	FERNCOURT PUBLIC SCHOOL PARENTS & CITIZENS ASSOCIATION (Ms Vicki Bamford)
No 183	CLARKE, Mr Andrew & Family
No 184	Ms CHERIE BURTON MP, MEMBER FOR KOGRAH
No 185	BURROWS, Ms Tanya
No 186	SEETO, Maenin
No 187	MORRISON, The Hon Bill & Mrs Marty
No 188	TOUMA, Mr Mark
No 189	CEONDARITIL, Mr Peter
No 190	KARAS, Mrs Nola
No 191	BAMFORD, Ms Vicki
No 192	HAINES, Ms Katherine
No 193	RICKSON, Ms Jan
No 194	DANN, Mr Michael & Mrs Jeanette
No 195	BYRNE, Mr Jim
No 196	TSIAMIS, Ms Betty
No 197	FEDERATION OF PARENTS & CITIZENS ASSOCIATIONS OF NSW (Mr Warren Johnson)
No 198	FARDELL, Miss Joyce
No 199	KARAGIANNIS FAMILY
No 200	TSIAMIS, Mr Peter

No 201	JONES, Mr Peter
No 202	DANEZ, Mrs Magda & Family
No 203	ARNCLIFFE PROGRESS ASSOCIATION (Mr Brian Gawthrop)
No 204	REDZYNER, Ms Rhonda
No 205	KELLY, Mr Paul
No 206	MANOLIOS, K
No 207	FORGACS, Dr Robert & Dr Christine
No 208	TULLY, Mr Errol
No 209	FREEDMAN, Ms Eva
No 210	STEFANDIS, Stratos
No 211	TULLY, Ms Rebecca
No 212	SNEPVANGERS, Mr Peter & Mrs Kim
No 213	ROCKDALE CITY COUNCIL (Cr Shaoquett Moselmane)
No 214	ROCKDALE CITY COUNCIL (Cr Geoff Hedge)
No 215	PASSMORE, Ms Elisabeth
No 216	MARRICKVILLE COUNCIL (Crs Hale, Fitzgerald, Byrne, Thanos & Hanna)
No 217	RIDDETT, Mr Brett & Mrs Vicky
No 218	MORGAN, Ms Lyneve
No 219	RALSTON, Ms Anna
No 220	ST GEORGE TEACHERS ASSOCIATION (Mr Laurice Bonfield)
No 221	RESIDENTS AGAINST POLLUTING STACKS (Ms Giselle Mawer & Ms Judi Rossi)
No 222	NSW ENVIRONMENT PROTECTION AUTHORITY (Mr Neil Shepherd)
No 223	MAYGER, Mr John & SINGARAM, Ms Jayanthi
No 224	ROADS & TRAFFIC AUTHORITY (Mr Paul Forward)
No 225	GOTSIS FAMILY

No 226	CANTERBURY EARLWOOD CARING ASSOCIATION LIMITED
No 227	ADAMS, H
No 228	ATHANASOPOULOS FAMILY
No 229	BLAXLAND, Ms Megan; NEWMAN, Mr Dale; & WARNE, Mr Justin
No 230	KATSAROS FAMILY
No 231	TSIAMIS FAMILY
No 232	STEVENS, Mr Peter
No 233	COOREY, Ms Barbara
No 234	JURD, Ms Felicity
No 235	BRIERS, Mr David
No 236	LOCAL GOVERNMENT ASSOCIATION OF NSW (Cr Peter Woods)
No 237	ROSOLEN, Ms Jenell
No 238	CONFIDENTIAL
No. 239	ALLKOTES (Mr Alan Goulburn)
No. 240	PATERSON, Ms Marie-Rose
No. 241	FRASER, Mr Malcolm

In addition, the Committee received petitions containing 1237 signatures from local residents who strongly opposed the construction of the M5 East Ventilation Stack.

Appendix 2 – Witnesses who appeared at hearing

Hearing Held:
Monday, 29 November 1999
Waratah Room Parliament House

Name	Position and Organisation Represented
Mr John Anderson	Senior Project Manager – M5 East Motorway, Roads & Traffic Authority
Ms Jay Stricker	General Manager – Environment & Community Policy, Roads & Traffic Authority
Mr Garry Humphrey	Sydney Motorway Projects Manager, Roads & Traffic Authority
Dr Kerry Holmes	Air Quality Scientist – Holmes Air Science, Air Quality Consultant to the RTA
Mr Mark Hather	Senior Environmental Planner, Department of Urban Affairs & Planning
Mr Geoff Noonan	Director – Development & Infrastructure Assessments, Department of Urban Affairs & Planning
Mr Colin Woodward	Director Sydney Region, Environment Protection Authority
Dr Steve McPhail	Acting Manager, Air Sciences Division, Environment Protection Authority
Mr Mark Curran	Residents Against Polluting Stacks
Mr Riccardo Rossi	Residents Against Polluting Stacks
Ms Giselle Mawer	Residents Against Polluting Stacks
Mr Peter Siapos	Residents Against Polluting Stacks
Mr Noel Child	Child & Associates – Consultant for Canterbury City Council
Assoc Prof. Chris Winder	Head, School of Safety Sciences, University of NSW

Proceedings of the Committee

Note: At the time the Committee was conducting this inquiry, it was also inquiring into other unrelated matters. Those parts of the Minutes of the Meetings of the Committee which concern the other matters have been deleted from the Minutes appearing below.

Minutes No. 10

Thursday 28 October 1999
At Parliament House at 1.00pm

1. Members Present

Mr R Jones (in the Chair)
Ms Burnswoods
Mr Dyer
Mr Hannaford (Gay)
Mr Johnson
Mr M Jones
Mr Ryan

2. Apologies

Nil

3. Confirmation of Minutes

Resolved, on motion of Mr Dyer, that the minutes of meeting number 9 be confirmed.

* * * *

5. Inquiry into the M5 East ventilation stack

Mr Ryan moved: that the Committee adopt the following terms of reference for an Inquiry into the M5 East ventilation stack:

1. That General Purpose Standing Committee No 5 inquire into and report on the changes and current plans for the M5 East ventilation stack, and in particular:

   (a) the environmental impact of the new single stack;
   (b) the evidence for the current design of the ventilation stack and alternative possibilities for the management of air polluting substances;
   (c) a rigorous and open assessment process integrated as part of any ventilation proposal; and
   (d) a health and property value guarantee for all affected residents and businesses.

2. That the Committee report by Wednesday 8 December 1999.

Debate ensued.

Mr M Jones moved: that the question be amended by replacing the words "a health and property value guarantee" with "appropriate guarantees".

Question: – that the amendment of Mr M Jones

Question – that the original question, as amended:

1. That General Purpose Standing Committee No 5 inquire into and report on the changes and current plans for the M5 East ventilation stack, and in particular:

   (a) the environmental impact of the new single stack;
   (b) the evidence for the current design of the ventilation stack and alternative possibilities for the management of air polluting substances;
   (c) a rigorous and open assessment process integrated as part of any ventilation proposal; and
   (d) appropriate guarantees for all affected residents and businesses.

2. That the Committee report by Wednesday 8 December 1999 – be agreed to.

The Committee divided.

Ayes: Mr R Jones
Mr M Jones
Mr Hannaford
Mr Ryan

Nos: Ms Burnswoods
Mr Dyer
Mr Johnson

Question resolved in the affirmative.

The Committee deliberated.

Resolved, on motion of Mr Ryan, that the advertisements be placed in relevant local newspapers calling for submissions in relation to the terms of reference, with a closing date for submissions of Monday, 15 November 1999.

The Director was instructed to prepare a media release about the inquiry and circulate it to relevant media.

The Committee deliberated.

Resolved, on motion of Mr Ryan, that Members reserve from 9am to 5pm on Monday, 29 November 1999 for the purposes of a public hearing in relation to the inquiry, and that Members agree not to hold on any deliberative votes on that day, unless it is otherwise decided.

Resolved, on motion of Mr Ryan, that the Committee hold a deliberative meeting from 1pm to 2pm on Wednesday, 1 December 1999 for the purposes of discussing issues to be included in the Committee's report.

6. Adjournment

The meeting adjourned at 2.10pm until 9am on Monday 29 November 1999.

Anna McNicol
Director

Minutes No. 11

Thursday 18 November 1999
At Parliament House at 5.00pm

1. Members Present

Mr R Jones (in the Chair)
Ms Burnswoods
Mr Dyer
Mr Gay
Mr Johnson
Mr M Jones
Mr Ryan

2. Apologies

Nil

3. Confirmation of Minutes

Resolved, on motion of Mr Dyer, that the minutes of meeting number 10 be confirmed.

* * * *

5. Inquiry into the M5 East ventilation stack

The Committee deliberated in relation to the inquiry into the M5 East ventilation stack.

Resolved, on the motion of Mr Dyer, that the Committee undertake a site visit to the location of the proposed ventilation stack between 10.00am and 1.00pm on Friday 26 November 1999, with the RTA being invited to make appropriate arrangements for the inspection of the site, to be followed by a meeting with representatives of Residents Against Polluting Stacks (RAPS).

Resolved, on the motion of Mr Dyer that the following organisations and individuals be invited to attend and give evidence before the Committee on Monday 29 November 1999, with each witness being allocated 45 minutes: RTA, Environment Protection Authority, Department of Urban Affairs and Planning, RAPS, Canterbury Council, and Associate Professor Chris Winder.

Resolved, on the motion of Mr Dyer, that the Committee examine the possibility of receiving information by video-conference on the evening of Tuesday 30 November or Wednesday 1 December 1999, from the Norwegian expert identified by RAPS.

6. Adjournment

The meeting adjourned at 5.45pm until 10.00am on Friday 26 November 1999.

David Blunt
A/Clerk Assistant Committees

Minutes No. 12

Friday 26 November 1999
At Turrella, NSW at 10.30am

1. Members Present

Mr Dyer (in the Chair)
Mr Gay
Mr M Jones
Ms L Rhiannon (R Jones)
Mr Ryan

2. Apologies

Mr R Jones
Ms Burnswoods
Mr Johnson

3. Inquiry into the M5 East ventilation stack

The Committee conducted a site visit in relation to the inquiry into the M5 East ventilation stack.

The Committee inspected the site of the proposed ventilation stack at 79 Henderson Street, Turrella, with the following officers of the RTA: Mr John Anderson; Ms Jay Stricker; and Mr Michael Najem.

The Committee met with the following representatives of RAPS at 7 David Street, Earlwood: Ms Giselle Mawer; Mr Mark Curran; Mr Charles Briers; Mr Michael Rossi; Ms Marcia Alexander; and Mr Warren Alexander. The Committee viewed the location of the proposed ventilation stack with members of RAPS from a number of locations.

4. Adjournment

The meeting adjourned at 11.40am until 9.45am on Monday 29 November 1999.

David Blunt
A/Clerk Assistant Committees

Minutes No. 13

Monday 29 November 1999
At Parliament House at 9.45am

1. Members Present

Mr Dyer (in the Chair)
Ms Burnswoods
Mr Johnson
Mr M Jones
Ms Rhiannon (R Jones)
Mr Ryan
Mr Samios (Gay)

2. Apologies

Mr R Jones

3. Confirmation of Minutes of meeting no 11

Resolved, on the motion of Mr Ryan, to amend the draft minutes by inserting the words: "Following a suggestion from the Hon M Jones to broaden the terms of reference to include other matters" before the sentence "Mr Dyer moved that a further paragraph (f) be added to the terms of reference agreed to

Resolved, on the motion of Ms Burnswoods, that the minutes as amended be confirmed.

* * * *

5. Inquiry into the M5 East ventilation stack

The meeting was opened to the public and the media.

Ms Jay Stricker, Mr John Anderson, Mr Gary Humphrey and Dr Kerry Holmes, of the Roads and Traffic Authority, affirmed and examined.

Examination concluded and the witnesses withdrew.

Mr Mark Hather and Mr Geoff Noonan, of the Department of Urban Affairs and Planning, affirmed and examined.

Evidence concluded and the witnesses withdrew.

Mr Colin Woodward and Dr Steve McPhail, of the Environment Protection Authority, affirmed and examined.

Examination concluded and the witnesses withdrew.

Mr Mark Curran, Mr Riccardo Rossi and Ms Giselle Mawer, of Residents Against Polluting Stacks, sworn and examined.

Mr Peter Siapos, of Residents Against Polluting Stacks, affirmed and examined.

Examination concluded and the witnesses withdrew.

Mr Noel Child, consulting engineer, sworn and examined.

Examination concluded and the witness withdrew.

Dr Chris Winder, of the University of New South Wales, affirmed and examined.

Examination concluded and the witness withdrew.

Resolved, on the motion of Mr M Jones, that in order to better inform all those who are participating in the inquiry process, the Committee make use of the powers granted Section 4(2) of the *Parliamentary Papers (Supplementary Provisions) Act 1975*, to publish the uncorrected transcript of today's hearing.

Resolved, on the motion of Mr M Jones, that in order to better inform all those who are participating in the inquiry process, the Committee make use of the powers granted Section 4(2) of the *Parliamentary Papers (Supplementary Provisions) Act 1975*, to publish the submissions received in relation to this inquiry.

5. Adjournment

The meeting adjourned at 4.30pm until 4.30pm on Wednesday 1 December 1999.

David Blunt
A/Clerk Assistant Committees

Minutes No. 14

Wednesday 1 December 1999
At Parliament House at 4.30pm

1. Members Present

Mr R Jones (in the Chair)
Mr Dyer
Ms Burnswoods
Mr Johnson
Mr M Jones
Mr Ryan

2. Apologies

Mr Gay

3. Confirmation of minutes of meetings nos 12 & 13

Resolved, on the motion of Mr Ryan, that the minutes of meetings nos 12 & 13 be confirmed.

4. Business arising

The Committee deliberated.

Resolved, on the motion of Ms Burnswoods, that the Committee write to the Minister for Transport, seeking further information in relation to the following matters arising from the hearing on Monday 29 November 1999, in connection with the inquiry into the M5 East ventilation stack:

- The document tabled by 'Residents Against Polluting Stacks' at the hearing on 29 November 1999 'what do we want' including costings for the installation of pollution control equipment;
- The document tabled by 'Residents Against Polluting Stacks' critiquing the Evans and Peck overview of new pollution control technology;
- Information on:
  (a) Costs of installation of an electrostatic precipitator in the current stack;
  (b) Current contractual obligations and resulting costs if the stack were not to proceed;
  (c) Costs of installation of ventilation fans at the portals to expel air when air quality goals are exceeded at the Turrella ventilation stack site;
  (d) Comments by RAPS that the estimated volume of air to be treated with any pollution control equipment was exaggerated, and that these values uplifted the potential cost of various air filtering options.
- A response to Mr Noel Child's report as presented to Canterbury Council, in particular his claim when giving evidence to the Committee that there is a potential for up to 30 annual exceedences of the EPA PM_{10} target a year;
- Information in relation to risk assessment / contingency planning in the event of the stack leading to unacceptable exceedences in air quality goals.

Resolved, on the motion of Ms Burnswoods, that the Committee write to the Minister for Environment, seeking further information in relation to the following matters arising from the hearing on Monday 29 November 1999, in connection with the inquiry into the M5 East ventilation stack:

- A response to Mr Noel Child's report as presented to Canterbury Council, in particular his claim when giving evidence to the Committee that there is a potential for up to 30 annual exceedences of the EPA PM_{10} target a year; and
- Comments by Associate Professor Winder in relation to the adequacy of the existing air quality standards for particulates, notably 50 $\mu g/m^3$, especially in relation to sensitive groups of the population.

Resolved, on the motion of Ms Burnswoods, that the Committee write to the Minister for Urban Affairs and Planning, seeking further information in relation to the following matters arising from the hearing on Monday 29 November 1999, in connection with the inquiry into the M5 East ventilation stack:

- A response to Mr Noel Child's report as presented to Canterbury Council, in particular his claim when giving evidence to the Committee that there is a potential for up to 30 annual exceedences of the EPA PM_{10} target a year.

5. Inquiry into the M5 East ventilation stack

The Committee deliberated.

Resolved, on the motion of Mr Dyer, that the reporting date for the inquiry into the M5 East ventilation stack, self referred by the Committee on 28 October 1999, be extended to Friday 17 December 1999.

The Committee noted correspondence from Mr Mark Curran, dated 30 November 1999, on behalf of RAPS, forwarding copies of emails and faxes between RAPS and Clean Tunnel Air (CTA) and ABB Alstom Power, Norwegian companies.

* * * *

7. Adjournment

The meeting adjourned at 4.50pm.

David Blunt
A/Clerk Assistant Committees

Minutes No. 15

Wednesday 15 December 1999
At Parliament House at 2.00pm

1. Members present

Mr R Jones (in the Chair)
Mr Dyer
Ms Burnswoods
Mr Jobling (Gay)
Mr Johnson
Mr M Jones
Mr Ryan

2. Apologies

Nil

3. Confirmation of minutes of meeting no 14

Resolved, on the motion of Mr Ryan, that the minutes of meeting no 14 be confirmed.

4. Inquiry into the M5 East ventilation stack

Correspondence Received:

Letter from Mr Paul Forward, Chief Executive, Roads and Traffic Authority, to Chair, dated 10 December 1999, relating to the Committee's request for further information after the public hearing of 29 November 1999.

Letter from Mr Noel Child, Principal, Child and Associates, to A/Clerk Assistant Committees, dated 15 December, replying to critique of the Roads and Traffic Authority of Mr Child's evidence at the public hearing of 29 November 1999.

Letter from Mr George Hare, Columbus Pty Ltd, to Chair, dated 13 December 1999, relating to the ability of the Wandlunge System to eliminate the need for the M5 East ventilation stack.

Letter from Mr Noel Child, Principal, Child and Associates, to A/Clerk Assistant Committees, dated 10 December 1999, clarifying evidence at the public hearing of 29 November 1999.

Letter from Ms Giselle Mawer, Residents Against Polluting Stacks, to Senior Project Officer, dated 22 November 1999, requesting that the Committee view the Hyder video of the wind tunnel testing, and included a video of Dr Gordon Rodley of his seminar at Parliament House (summary of which was in RAPS submission).

Letter from Ms Giselle Mawer, Residents Against Polluting Stacks, to Chair, dated 20 November 1999, supplying colour photos of proposed stack from different vantage points.

Letter from Mr Jim Montague, General Manager, Canterbury City Council, to Chair, dated 1 November 1999, relating to the Council resolving to request the Committee to invite a representative of Clean Air Technology to provide expert advice on in-tunnel filtration.

The Committee proceeded to consider the Chair's draft report.

The Committee deliberated.

Committee members expressed their views on the central matters under consideration concerning the future construction of the proposed ventilation stack and the potential for the use of alternative technologies, and considered the draft recommendations.

Chapter One read.

Resolved, on the motion of Ms Burnswoods, to amend the first paragraph in section 1.1 (page 10 Chair's draft), by deletion of the words "to self refer the matter of the M5 East ventilation stack for inquiry and report" and the insertion of the words "in accordance with its powers under paragraphs 3 & 4 of the resolution establishing the Committee, to adopt terms of reference for an inquiry into the M5 East ventilation stack".

Resolved, on the motion of Ms Burnswoods, to amend the fourth paragraph in section 1.1 (page 10 Chair's draft), by deletion of the words "to self refer this matter" and the insertion of the words "adopt

Chapter One, as amended, agreed to.

Chapter Two read.

Resolved, on the motion of Mr Ryan, the additional text be drafted, for inclusion at the end of Chapter Two, containing background information on carbon monoxide.

Chapter Two, as amended, agreed to.

Chapter Three read.

Resolved, on the motion of Ms Burnswoods, to amend the second paragraph on page 20 (Chair's draft), commencing with the words "Even though the RTA …", by deletion of the words "the more scientifically valid" and insertion of the words "preferable in this regard".

Resolved, on the motion of Mr Dyer, to amend the third paragraph on page 20 (Chair's draft), commencing with the words "However, having said this …", by deletion of the words "Put simply, the Committee is disappointed that the best the RTA could come up with was to impose the emissions on another, albeit smaller, section of the community".

Resolved, on the motion of Ms Burnswoods, that the final recommendation in section 3.2.2 (page 23 Chair's draft) be amended by deletion of the word "draft".

Mr Dyer moved that the last sentence in section 3.2.5 (page 28 Chair's draft) "The Committee notes the intentions of the Minister for the Environment and Minister for Urban Affairs and Planning, that the stack should not result in any additional exceedences of air quality in their vicinity" be deleted.

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr M Johnson
Mr M Jones

Noes:
Mr Jobling
Mr R Jones
Mr Ryan

And so the question was resolved in the affirmative.

Resolved, on the motion of Mr M Jones, that the recommendation at the end of section 3.2.5 (page 29 Chair's draft) be amended, by the addition of the words "excluding natural and extraordinary disasters"

Ms Burnswoods moved that the recommendation at the end of section 3.2.5 (page 29 Chair's draft) be deleted.

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Johnson

Noes:
Mr Jobling
Mr M Jones
Mr R Jones
Mr Ryan

And so the question was resolved in the negative.

Resolved, on the motion of Ms Burnswoods, that additional text be included in section 3.3 (page 30 Chair's draft) to reflect the views of the RTA and Mr Child on the possibility of air quality goal exceedences.

Mr Dyer moved that the recommendations at the end of section 3.4 (page 32 Chair's draft) be deleted.

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Johnson
Mr M Jones

Noes:
Mr Jobling
Mr R Jones
Mr Ryan

And so the question was resolved in the affirmative.

Resolved, on the motion of Mr Jobling, that the question on the deletion of the recommendations at the end of section 3.4 (page 32 Chair's draft) be re-committed.

Mr Dyer moved that the first recommendation on page 32 (Chair's draft) be deleted.

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Johnson
Mr M Jones

Noes:
Mr Jobling
Mr R Jones
Mr Ryan

And so the question was resolved in the affirmative.

Mr Dyer moved that the second recommendation on page 32 be deleted.

To which Mr Ryan moved an amendment, that the recommendation be amended by insertion of the word "significant" before the words "impact upon a different group of citizens" and the deletion of the word "full" and insertion of the word "adequate" before the words "public consultation".

The Chair put the question on Mr Ryan's amendment.

The Committee divided:

Ayes:
Mr Jobling
Mr M Jones
Mr R Jones
Mr Ryan

Noes:
Ms Burnswoods
Mr Dyer
Mr Johnson

And so the question was resolved in the affirmative.

The Chair put the question on Mr Dyer's motion, that the recommendation be deleted.

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Johnson

Noes:
Mr Jobling
Mr M Jones
Mr R Jones
Mr Ryan

And so the question was resolved in the negative.

Ms Burnswoods moved that the fourth paragraph on page 31 (Chair's draft), commencing with the

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Johnson

Noes:
Mr Jobling
Mr M Jones
Mr R Jones
Mr Ryan

And so the question was resolved in the negative.

Ms Burnswoods moved that the third paragraph in section 3.5 (page 32 Chair's draft), comencing with the words "The Committee accepts that the operation …", be deleted.

Resolved, on the motion of Mr M Jones, that the word "permanent" be deleted.

Resolved, on the motion of Mr Ryan, that the words "of the region" be deleted and replaced with the

The Chair put Ms Burnswoods motion, that the paragraph be deleted.

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Johnson

Noes:
Mr Jobling
Mr M Jones
Mr R Jones
Mr Ryan

And so the question was resolved in the negative.

Mr Dyer moved that the recommendation at the end of section 3.5 (page 33 Chair's draft) be deleted and replaced by the words: "The Committee recommends that the Department of Health, in conjunction with the EPA, examine and report on the adequacy of existing and emerging air quality goals in protecting the health of NSW residents, including epidemiological data used to determine those goals. Further, that the Department make recommendations on the cost and scope of any further studies needed to update and improve air quality goals."

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Johnson

Noes:
Mr Jobling
Mr M Jones
Mr R Jones
Mr Ryan

And so the question was resolved in the negative.

Mr M Jones moved that the recommendation at the end of section 3.5 (page 33 Chair's draft) be amended by the insertion of the words "in conjunction with the Department of Health" after the words "Roads and Traffic Authority".

The Committee divided:

Ayes:
Mr Jobling
Mr M Jones
Mr R Jones
Mr Ryan

Noes:
Ms Burnswoods
Mr Dyer
Mr Johnson

And so the question was resolved in the affirmative.

Mr Jobling moved that Chapter Three, as amended, be agreed to.

The Committee divided:

Ayes:
Mr Jobling
Mr M Jones
Mr R Jones
Mr Ryan

Noes:
Ms Burnswoods
Mr Dyer
Mr Johnson

And so the question was resolved in the affirmative.

Chapter Four read.

Resolved, on the motion of Mr M Jones, that the final paragraph on page 36 (Chair's draft), commencing with the words "Bearing in mind the above discussion …", be amended by the insertion of the word "necessarily" after the words "therefore does not".

Resolved, on the motion of Mr M Jones that the following recommendations on page 37 (Chair's draft) be deleted, and that the ideas expressed in the draft recommendations be included in additional text to be included in section 4.2 (page 37 Chair's draft):

"The Committee recommends that the NSW Government take a leadership role in the development of policies to fast track the reduction in emissions from the entire motor vehicle fleet, not just new vehicle models.

The Committee recommends that the NSW Government urge the National Road Transport Commission and the National Environment Protection Council to amend Australian Design Rule 37/01 to incorporate United Nations Economic Commission for Europe vehicle emission standard 'Euro 4' by 2005.

The Committee recommends that the EPA investigate and report on mechanisms for the reduction of sulfur content in petrol and diesel so as to reduce vehicle emissions by 30 June 2000, so that the sulfur reduction programs can be implemented before the commencement of operation of the M5 East Motorway.

The Committee recommends that the NSW Government urge the National Environment Protection Council to develop a National Environment Protection Measure for diesel emissions.

The Committee recommends that the NSW Government design and implement an inspection and maintenance program for diesel vehicles before the commencement of operation of the M5 East Motorway."

Resolved, on the motion of Mr Dyer to remove the following paragraph in section 4.3.2 (page 41 Chair's draft): "The Committee does not accept the RTA assertion that such technology does not

Resolved, on the motion of Ms Burnswoods, that the final paragraph on page 41 (Chair's draft), commencing with the words "The Committee notes that what the
of the words: "did not seriously attempt to investigate world's best practice from the community perspective" and their replacement with the words: "did not fully investigate alternative technologies, for instance through direct contact with suppliers".

Resolved, on the motion of Mr Ryan, that the final two paragraphs in section 4.3.2 (page 42 Chair's draft) be deleted and replaced with the following paragraph: "The Committee has been contacted by suppliers of alternative technologies who may be in a position to provide information and quotations to the RTA."

6. Adjournment

The Committee adjourned at 5.10pm until 10.00am on Thursday 16 December 1999.

David Blunt
A/Clerk Assistant Committees

Minutes No. 16

Thursday 16 December 1999
At Parliament House at 10.00am

1. Members Present

Mr R Jones (in the Chair)
Mr Dyer
Ms Burnswoods
Mr Jobling (Gay)
Mr Johnson
Mr M Jones
Mr Ryan

2. Apologies

Nil

3. Confirmation of minutes of meeting no 15

Minutes of meeting no 15 read.

The Committee made a number of amendments to the draft minutes to more clearly reflect the decisions of the Committee in consideration of the Chair's draft report.

Resolved, on the motion of Mr Jobling, that the minutes of meeting no 15, as amended, be confirmed.

4. Inquiry into the M5 East ventilation stack

The Committee considered the textual additions to the Chair's draft report, drafted following the resolutions of the Committee at meeting no 15.

Resolved, on the motion of Ms Burnswoods, that the material drafted in relation to carbon monoxide, be incorporated as section 2.5 at the end of Chapter Two.

Resolved, on the motion of Mr Jobling, that the material drafted in relation to the views of the RTA and Mr Child on air quality goal exceedences, be incorporated in section 3.3 (page 30 Chairs draft).

Resolved, on the motion of Mr Jobling, that the final sentence in section 3.3 (page 30 Chair's draft), "The Committee is not convinced the stack will not lead to exceedences of air quality goals" be deleted and replaced by "Noting these differing opinions, the Committee remains concerned the stack may lead

Resolved on the motion of Mr Jobling, that the material drafted in relation to vehicle emission standards, be incorporated into section 4.2.1 (page 37 Chair's draft).

The Committee proceeded to consider the remainder of the Chair's draft report.

Resolved, on the motion of Ms Burnswoods, that the heading of section 4.4 (page 43 Chair's draft) be amended by deleting the words "as Estimated by the RTA".

Resolved, on the motion of Mr Ryan that a new paragraph be added at the end of section 4.4 (page 44 Chair's draft) as follows:

"The Committee received evidence which stated that the costs of installing equipment such as electrostatic precipitators andnitrogen dioxide treatment increase significantly if this is done after the tunnel and stack are completed. It was stated by RAPS that:

> The least desirably and most expensive solution would involve the fitting of either or both of electrostatic precipitators and nitrogen dioxide treatment equipment at the base of the stack. Although a similar amount of equipment would be required, the opportunity for cost reductions in cost of construction of the stack and of the air intake would be lost as in the other solutions neither the stack nor the air intake would be required and other parts of the ventilation system would also be reduced.

Resolved, on the motion of Ms Burnswoods, that the subheadings in section 4.6 be deleted.

Resolved, on the motion of Ms Burnswoods, that the second paragraph in section 4.6 (page 45 Chair's draft) be amended to deleted the word "This" and insert the

Resolved, on the motion of Ms Burnswoods, that the fourth paragraph in section 4.6 (page 46 Chair's draft) be amended to deleted the words "This option" and insert the

Mr Ryan moved that a new paragraph be inserted at the end of section 4.3.1 (page 39 Chair's draft) as follows:

"In any discussion of world's best practice it is important to note that the NSW EPA has set the world's most stringent air quality standards for pollutants such as particulates. The RTA provided the following information about Norwegian air quality and standards:

> The PM10 given is 70 micrograms per cubic metre for the 24 hour average, which is a less stringent goal than the Australian goal of 50 micrograms per cubic metre 24 hour average. Norway has a six month goal of 40 micrograms per cubic metre. Typical background levels of PM10 are 25-50 micrograms per cubic metre for a 24 hour average.

It is possible that tunnel ventilation practices may have to be different in NSW in order to achieve the NSW Environment Protection Authority air quality goal."

The Committee divided:

Ayes:
Mr Jobling
Mr M Jones
Mr R Jones
Mr Ryan

Noes:
Ms Burnswoods
Mr Dyer
Mr Johnson

And so the question was resolved in the affirmative.

Mr Ryan moved that the recommendation in section 4.7 (page 46 Chair's draft) be deleted and replaced by the following:

"The Committee recommends that the Roads and Traffic Authority immediately call for international expressions of interest for the installation of world's best treatment processes for particulate and nitrogen dioxide removal in the M5 East Motorway tunnel. The NSW Government should establish an independent panel of experts, including a community representative, to evaluate and report on the submissions which have been received by 31 March 2000. The Report should identify accurate and if possible final costs for the installation of such equipment.

The Committee further recommends that immediately following the publication of the report identified above, a decision be made to either:

- cease all further work on the ventilation stack and install pollution control equipment in the road tunnel itself; or
- install pollution control equipment in addition to the ventilation stack.

The Committee requests that the Roads and Traffic Authority delay any specific construction work on the stack which would preclude consideration of an alternative ventilation system which might be recommended as a result of the assessment of responses to the call for international expressions of interest."

Resolved, on the motion of Mr M Jones, to amend the amendment by:

1. Moving the paragraph commencing "The Committee further recommends…" to the end of the recommendation and deleting the word "immediately".
2. deleting the words: "The Committee requests that the RTA delay any specific construction work on the stack which would preclude consideration of an alternative ventilation system", and inserting instead

   "The Committee recommends that the RTA continue with construction of the stack which can incorporate and make provision for alternative ventilation systems"

Resolved, on the motion of Mr Ryan, that the amendment to the recommendation in section 4.7 (page 46 Chair's draft), as amended by Mr M Jones, be the recommendation of the Committee.

Chapter Four, as amended, agreed to.

Chapter Five read.

Resolved, on the motion of Mr Jobling, that the recommendation at the end of section 5.1 (pages 48-49 Chair's draft) be amended by deletion of the words "In any event" and their replacement with the word "Further", and by deletion of the words "and by an advertisement placed in an appropriate local

Resolved, on the motion of Ms Burnswoods, that the final paragraph of section 5.1 (page 48 Chair's draft) be amended by the addition of the following sentences: "Mr Child recommended the development of a comprehensive, real time open path system to monitor air quality in the local area. The Committee suggests that the practicalities of this idea be discussed by the RTA and the EPA with a view to the development of a workable approach."

Resolved, on the motion of Ms Burnswoods, that the recommendation at the end of section 5.1.2 (page 50 Chair's draft) be amended by the deletion of the words "should the Government not adopt the concluding recommendation in chapter 4".

Resolved, on the motion of Mr Ryan, that the recommendation at the end of section 5.2 (page 54 Chair's draft) be amended by deletion of the words "surrounding Turrella railway station" and the insertion of the words "in the vicinity of the stack".

Chapter Five, as amended, agreed to.

Chapter Six read.

Mr Dyer moved that the following recommendation at the end of Chapter Six (page 56 Chair's draft) be deleted:

"The Committee recommends that, should the Government not implement the concluding recommendation in chapter 4, an open and rigorous assessment of the air quality data and visual impacts of the exhaust stack be undertaken to determine which properties are likely to be affected by the stack, and that the Government extend the Property Value Guarantee to those affected properties."

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Jobling
Mr Johnson
Mr M Jones
Mr Ryan

Noes:
Mr R Jones

And so the question was resolved in the affirmative.

Ms Burnswoods moved that the second paragraph of Chapter Six (page 55 Chair's draft) be amended by deletion of the words "The Committee notes the good intentions of the Property Value Guarantee, but considers that it should be extended. For instance".

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Jobling
Mr Johnson
Mr M Jones
Mr Ryan

Noes:
Mr R Jones

And so the question was resolved in the affirmative.

Ms Burnswoods moved that the last two paragraphs in Chapter Six as follows (page 56 Chair's draft) be deleted:

"In contrast, Ms Striker of the RTA stated in evidence:

> Those people do not have to leave. The air quality goals will be met. They will be as well protected for air quality as people throughout the greater metropolitan area. They do not have to leave. There is no direct impact on them.

The Committee notes that the property value guarantee applies to residents above the tunnel, but it is apparent that there is no obvious impact on them. In contrast, there is no guarantee for those in the Turrella/Undercliffe areas who will or may be affected by air quality or visual impacts."

and be replaced by the following words: "The Committee notes the good intention of the Property Value Guarantee but does not consider that it should be extended."

The Committee divided:

Ayes:
Ms Burnswoods
Mr Dyer
Mr Jobling
Mr Johnson
Mr M Jones
Mr Ryan

Noes:
Mr R Jones

And so the question was resolved in the affirmative.

Chapter Six, as amended, agreed to.

Resolved, on the motion of Mr Ryan, that the report, as amended, be the report of the Committee.

Resolved, on the motion of Mr Dyer, that all submissions received, transcripts of evidence, tabled documents and correspondence received in the course of the inquiry be tabled with the report and made public.

Resolved, on the motion of Mr Dyer, that 3.30 pm on Friday 17 December 1999 be the deadline for the submission of any dissenting statement for inclusion in the report.

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7. Adjournment

The Committee adjourned at 12.45pm.

David Blunt
A/Clerk Assistant Committees