SUMMARY OF CONCERNS IN RELATION TO THE PROPOSED NORTHCONNEX TUNNEL

This is an objection to many aspects of the proposed NorthConnex tunnel.

We would like to record that we are in favour of a tunnel linking the M2 with the F3 / M1. We see this as a necessary improvement to The Hills Area and the Sydney road network as a whole. It will clearly benefit most residents along the Pennant Hills Road corridor. It will also greatly benefit the long-haul freight vehicles travelling between Victoria, New South Wales and Queensland.

However, on careful reading of the NorthConnex Environmental Impact Statement (EIS), we have serious concerns with regard to the tunnel project as it is currently proposed in the EIS. Our concerns are detailed in six sections which show the changes we consider necessary to make the project acceptable.

SECTION A:
THE CONNECTIVITY OF NORTHCONNEX SOUTHERN VENTILATION FACILITY AT THE SOUTHERN INTERCHANGE, THE SOUTHBOUND TUNNEL IN PARTICULAR

On careful reading of the NorthConnex Environmental Impact Statement (EIS)

- *Volume 1a and 1b, Chapter 5 Project Description*, which purports to include all details of the project construction
- *Volume 4 Technical Working Paper – Urban Design*

We find that there is no detailed description of how and where the southbound tunnel will be connected to the ventilation facility at the southern interchange.
In fact, we can find no evidence that there is any intention to connect the southbound tunnel exit portals to the Southern Ventilation facility. It would appear that the connection of the northbound tunnel (at the southern interchange) is also uncertain.

In support of this contention we quote the following:

EIS Volume 1a & 1b Chapter 5 Project Description

1. EIS Page 103*, Figure 5-14 Indicative tunnel ventilation system northbound tunnel arrangement* *Page 4 below* this is a clear diagrammatic depiction of how the Wilson Road, Trelawney Street and Northern Ventilation facilities are connected and how they will work.
   There is no such diagram to illustrate how the Southern Ventilation facility is connected and how it will work given that it is across the road and 250 metres (m) from the southbound exit portal onto Pennant Hills Road and approximately 250m from the south-west exit portal onto the M2.

2. EIS Page 105, *Figure 5-15 Indicative Wilson Road tunnel support facility operational layout* *Page 5 below* there is clear evidence of connection to the northbound and southbound tunnels.
   EIS Page 107, *Figure 5-16 Indicative Trelawney Street tunnel support facility operational layout* *Page 6 below* it is obvious in the diagram that the facility is directly over the tunnels.
   EIS Page 113*, Figure 5-18 Northern ventilation facility operational layout* *Page 7 below* there is a clear connection between the ventilation facility and the tunnel.
   However,
   EIS Page 111*, Figure 5-17 Motorway operations complex* *Page 8 below* there is no indication of how the ventilation facility will be connected to either the northbound or southbound tunnel, nor is there any indication of how the southbound exit portal onto Pennant Hills Road or the south-west exit portal onto the M2 will be connected.
   In each of the above figures for Wilson Road, Trelawney Street, and Northern Ventilation facility, the shafts, emergency smoke extraction buildings, and ventilation facility make a substantial footprint in the construction area; however for the Southern Interchange the ventilation facility is an insignificant part of the construction area. How can this be? The difference in scale does not explain the difference.
   We also find it disturbing that in each of the above figures for Wilson Road, Trelawney Street, and Northern Ventilation facility the headings are for "*tunnel support facility operational layout*" and "*ventilation facility operational layout"* but for the Southern Interchange the description is for "*Motorway operations complex"* with no mention of the ventilation facility or the tunnels.
   Please note that each of the Figures 5-15 to 5-18 is from the same section of the EIS. They therefore are supposedly giving the same information about each of the four tunnel support facilities.

3. EIS Page189 *Figure 5-38 Indicative southern interchange construction compound* *Page 9 below*
   This is the first in a range of illustrations (*Figures 5-38 to 5-44*) all dealing with the construction compounds.
   It is ominous that the southern ventilation facility and shaft are completely absent from Figure 5-38.
   In all the other figures in this range of illustrations the tunnel shafts and ventilation facilities for Wilson Road, Trelawney Street and the Northern Interchange remain clearly labelled as such.

4. EIS Page 174, under the Southern Interchange Compound is the cryptic statement that
   "The construction works at the site would include:
   Excavation of two decline tunnels to the northbound on-ramp and the main northbound alignment tunnel.
   *A shaft **may** also be excavated to the main northbound alignment tunnel.*
   Where is the connection to the southbound tunnel going to be?
   Again we find it significant that in this section there is clear intent to excavate shafts to the tunnels for three of the ventilation facilities but not for the southern ventilation facility.

On page 175, Wilson Road Compound it clearly states "*excavation of a shaft to main alignment tunnels*"
On page 176, Trelawney Street Compound it clearly states "*excavation of a shaft to main alignment tunnels*"
On page 178, Northern Interchange Compound it clearly states "*excavation of a shaft to main alignment tunnels*"
Why is there no reference to the excavation of a shaft to the southbound alignment tunnel at the Southern Interchange Compound? What are the criteria for deciding whether or not there will be a shaft to the main northbound alignment tunnel? How will the jet and axial fans move the polluted air to the ventilation facility/outlet? When and how will this be decided? Will the public be informed when it is too late to object?

On scouring the Appendices we find further evidence to support our contention that there appears to be no intent to connect the southbound alignment tunnel exit portals to the Southern Ventilation facility.

5. *EIS Volume 4, Technical working papers - Urban Design, 6.0 Operational Ancillary Facilities*
EIS Page 99 there is the diagram "*Motorway Operations Complex – Southern Ventilation Facility – sections.* *Page 10 below* The diagram has the cryptic label "*Connection to tunnel TBC*". What does TBC stand for? To be considered? Why is tunnel singular? Which tunnel is the diagram referring to northbound or southbound? There is no diagram showing any connection from the Southern Interchange ventilation facility to either the northbound or the southbound tunnel in any way
AND YET ….
EIS Pages 101-129 there are diagrams for Wilson Road and Trelawney Street
… and … among pages and pages of diagrams,
EIS page 135 *Page 11 below* there is a very explicit diagram showing the *Northern Ventilation Facility – cross section.*
EIS page 134 *Page 12 below* there is a very explicit diagram showing the *Northern Ventilation Facility – long section.*
Why are there no comparable diagrams for the Southern Interchange and the Southern Ventilation facility?

6. *EIS Volume 4, Technical working papers Urban Design, 8.0 Landscape Design*
EIS Page 176 is the diagram "*Motorway Operations Complex – Southern Ventilation Facility – Site 1-1".* *Page 13 below* The diagram does not show any connection to either the northbound or southbound tunnel.
In the same Landscape Design section, EIS Page 182 is the diagram "*Wilson Road Tunnel Support Facility –Section* " *Page 14 below* which clearly shows the connection to the tunnels.
In the same Landscape Design section, EIS Page 189 is the diagram "*Northern Ventilation Facility – Landscape Concept Section* ". *Page 15 below* This also clearly shows the connection to the tunnels.

It is extremely disturbing that the Southern Interchange Facility is not clearly described or documented in SIX separate sections of the EIS. It cannot be a coincidence that in these six sections, three of the four ventilation facilities are well documented, with many clear diagrams showing the connectivity between the tunnels and the ventilation facilities, but for the Southern Interchange there is not a single diagram showing any connectivity neither is there any description of a proposed connection. Why has this been allowed to happen?

We have attended all the information "drop-in" meetings and the Air Quality meeting. As a result of our frequently expressed concerns NorthConnex have admitted that there is an omission and, on the wall displays at the drop-in meetings, they have inserted an arbitrary line showing a connection between the northbound and southbound tunnels but this is far from satisfactory.

The following information, which is missing from the EIS, needs to be provided:

- Will the Southern Ventilation facility be connected to the southbound tunnel? In the complete absence of any indication in the EIS that this will occur, it is necessary that this question receive a direct confirmation or denial in writing.
- Where will the connection be?
- How will the polluted air from the tunnel reach the ventilation facility which is across a busy 6-lane highway?
- A diagram such as that in the EIS Page 103*, Figure 5-14 Indicative tunnel ventilation system northbound tunnel arrangement* must be provided showing how this will work for the southern interchange. Clearly the polluted air cannot be drawn upward if the ventilation facility is across the road.

- Diagrams need to be provided showing the inter-relation between the shaft, the ventilation outlet and the motorway operations centre with a clear description of what is to be constructed and how it will operate.
- The community needs irrefutable evidence that the polluted air from the southbound tunnel exit portals will not be allowed to flow like an invisible sewer through West Pennant Hills, North Rocks, Carlingford and Beecroft.

All the above information needs to be provided in writing as a matter of urgency. The general public needs to be given additional time to examine and understand the implications of the additional information.

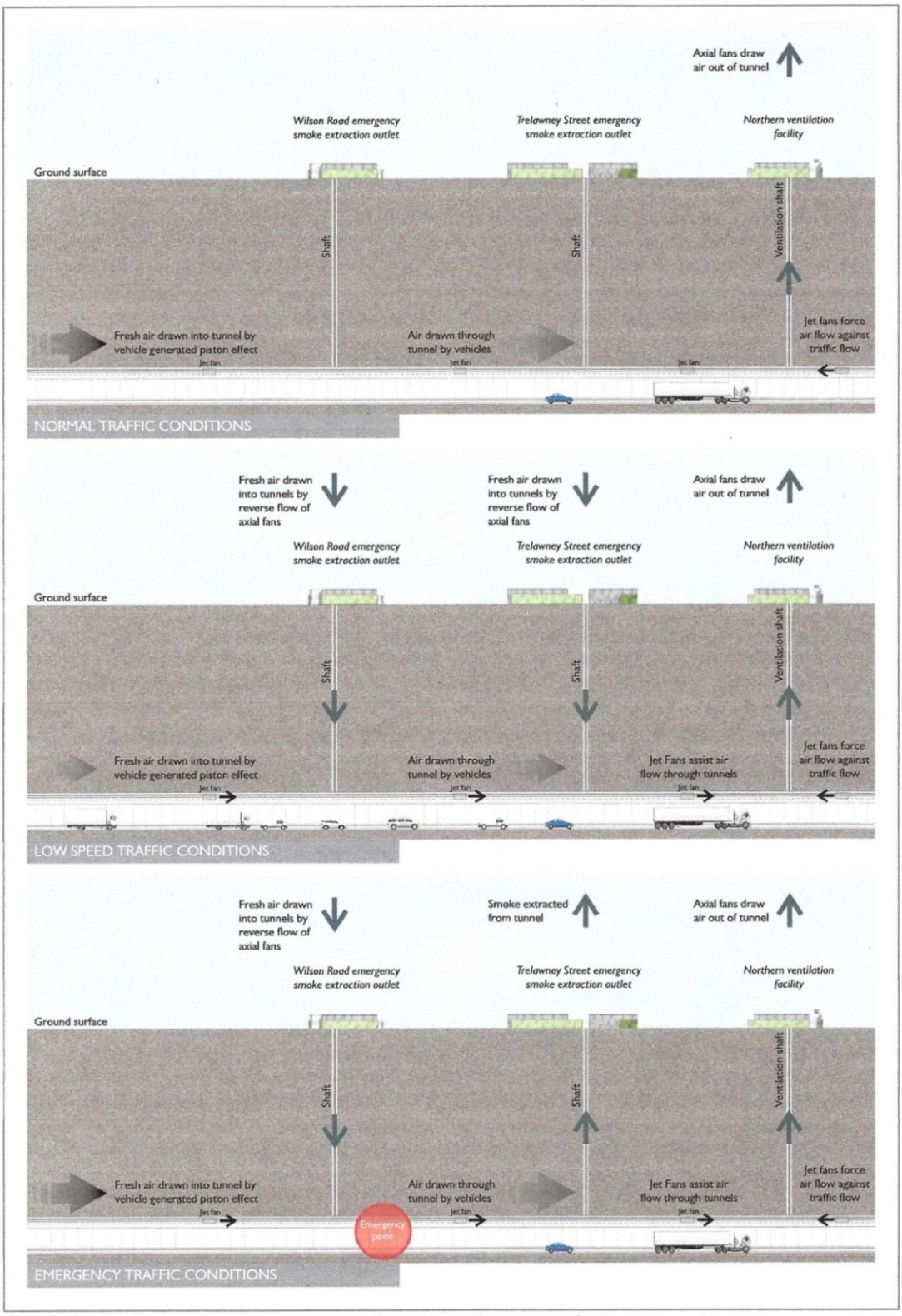

Figure 5-14 Indicative tunnel ventilation system (northbound tunnel arrangement)

Figure 5-15 Indicative Wilson Road tunnel support facility operational layout

Figure 5-16 Indicative Trelawney Street tunnel support facility operational layout

Figure 5-18 Northern ventilation facility operational layout

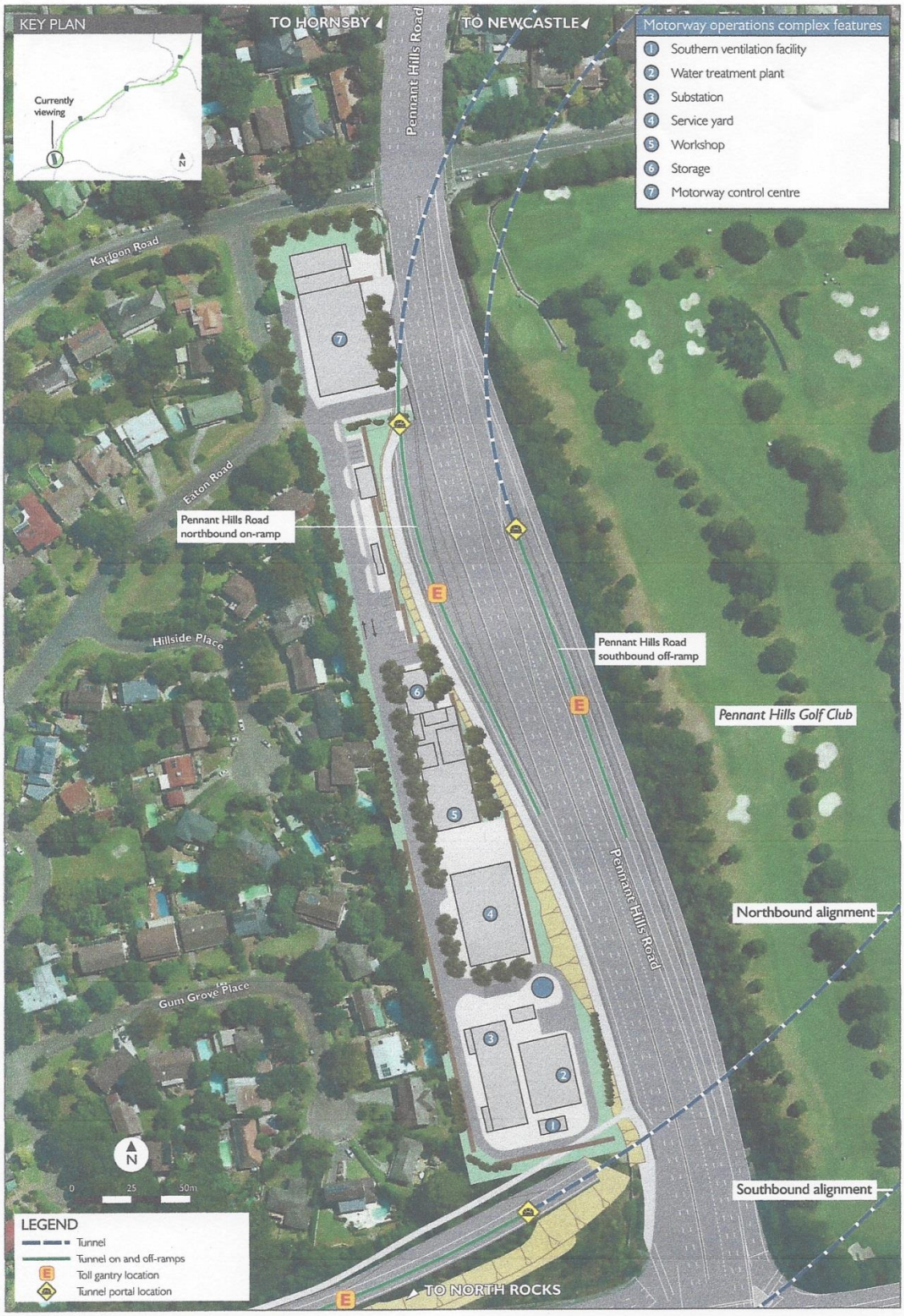

Figure 5-17 Motorway operations complex

Figure 5-38 Indicative southern interchange construction compound

CM+ context

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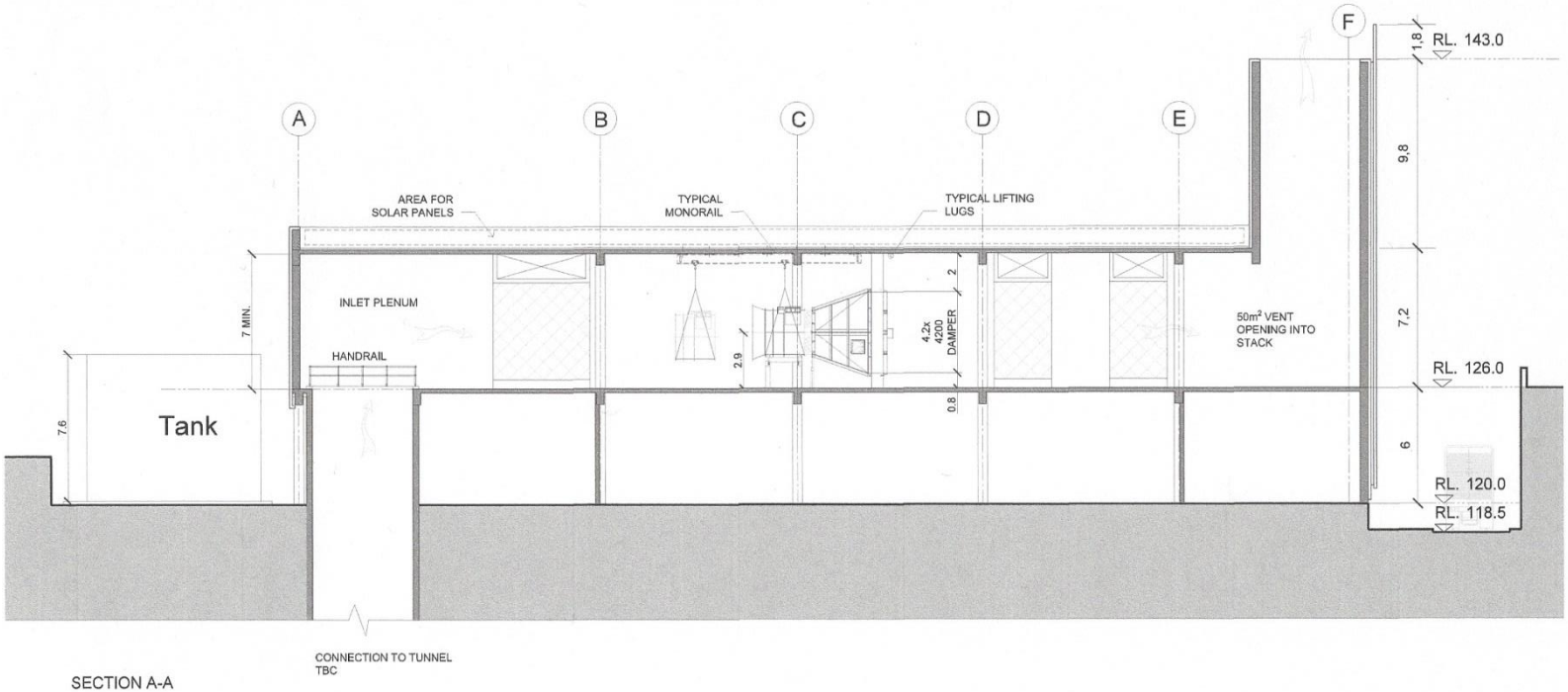

SECTION A-A

Legend

01	GRC Panels in Various Colours
02	Insulated Glass - 600 x 1200 - Operable as shown
03	Single Panel Glass - 600 x 1200 - Operable as shown
04	Metal Wall Panels - Horizontal ridges
05	Painted rendered Concrete Wall
06	Standard Pattern Alum Sun Screen Grating 1200 wide
07	Steel Structure to Engineers Requirement
08	Removable Alum Louver
09	Alum Security Screen - Match Sun Screen
10	Exposed Concrete - No Finish
11	Door to Engineers Requirements
12	Galv Steel Roll Up Door
13	Rain Harvesting Equipment
14	Metal Panels

0 2 4 6 8 10m
SCALE 1:200@A3

M1-M2-5000-DR-UD-0525
MOTORWAY OPERATIONS COMPLEX - SOUTHERN VENTILATION FACILITY - SECTIONS

CM+ context

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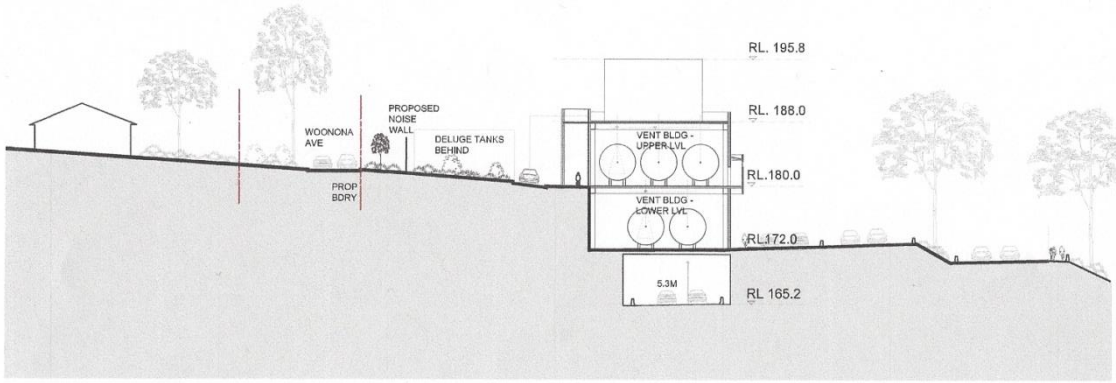
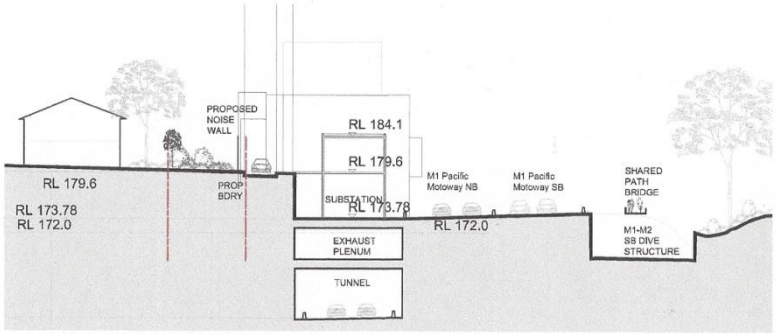
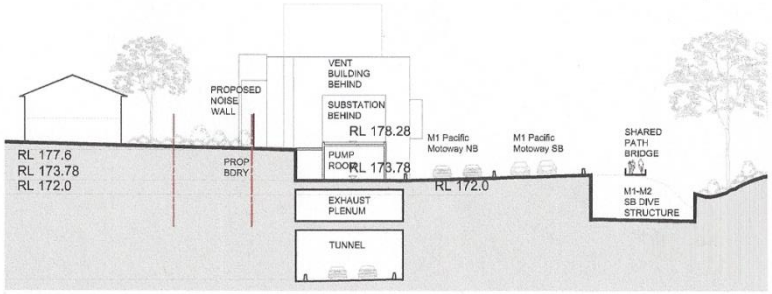


VENTILATION BUILDING CROSS SECTION



SUBSTATION CROSS SECTION



PUMP ROOM CROSS SECTION

0 5 10 15 20 25m

SCALE 1:500@A3

NOTE: LANDSCAPE SHOWN IS INDICATIVE

M1-M2-5000-DR-UD-0550
NORTHERN VENTILATION FACILITY - CROSS SECTIONS

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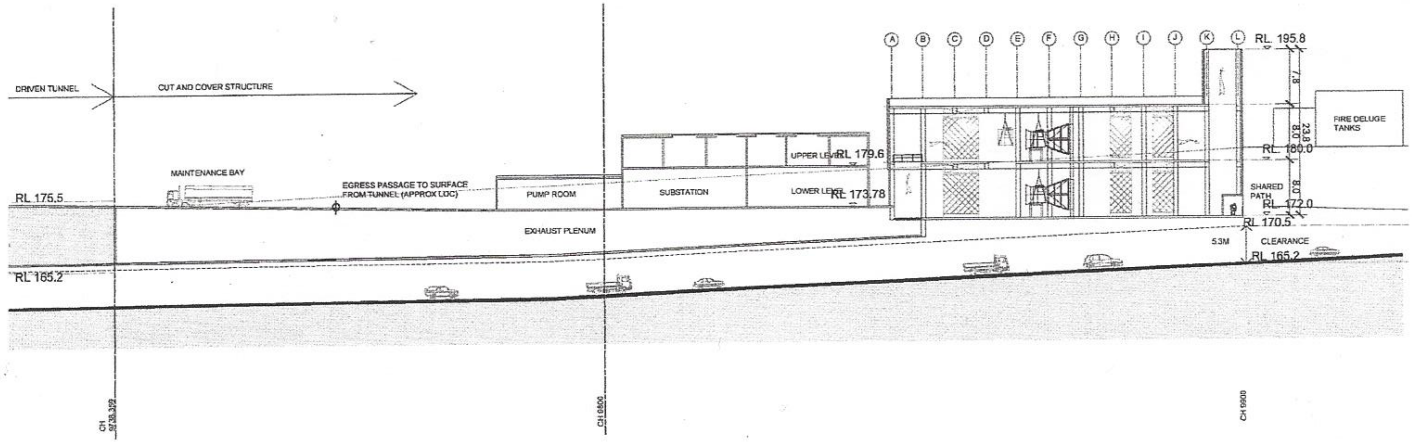
CM+ context



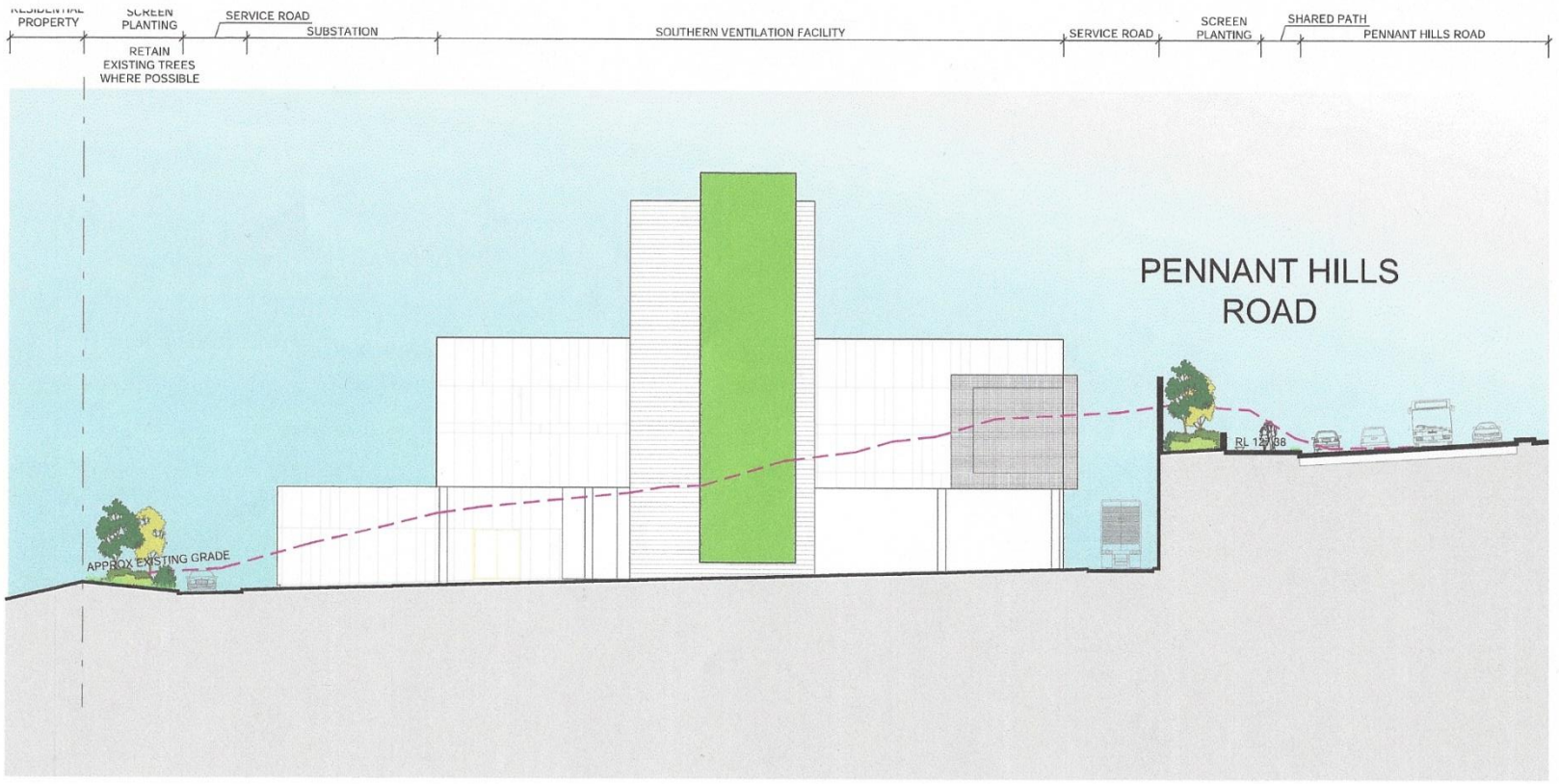
0 5 10 15 20 25m SCALE 1:500@A3

NOTE: LANDSCAPE SHOWN IS INDICATIVE

M1-M2-5000-DR-UD-0556
NORTHERN VENTILATION FACILITY - LONG SECTION

Lend Lease | BOUYGUES CONSTRUCTION AUSTRALIA

CM+ context



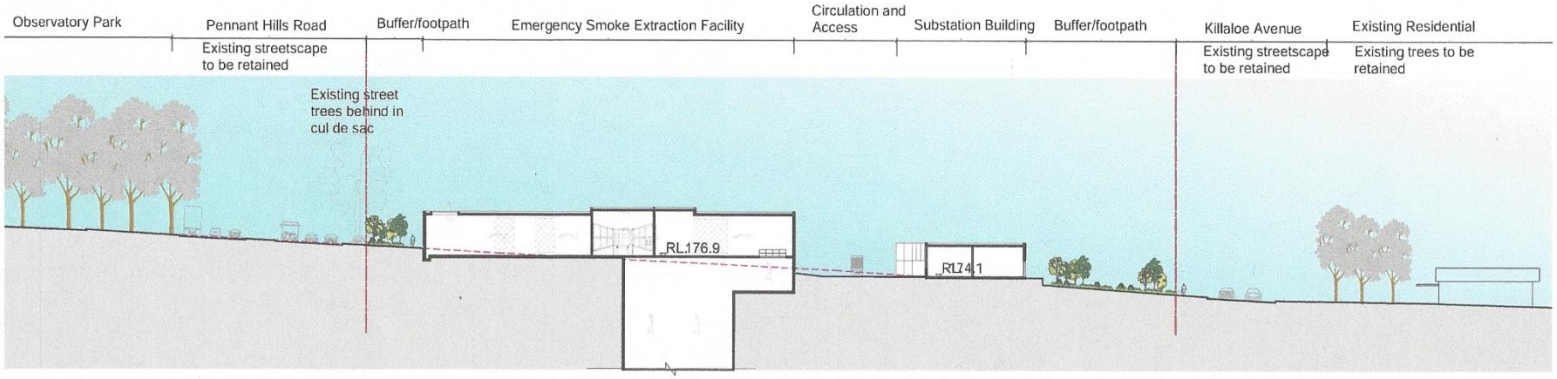
0 5 10 20m
SCALE 1:250@A3

M1-M2-5000-DR-UD-0713
MOTORWAY OPERATIONS COMPLEX - SOUTHERN VENTILATION FACILITY - SITE SECTION 1-1

Lend Lease | BOUYGUES CONSTRUCTION AUSTRALIA

CM+ context

8.0 Landscape Design



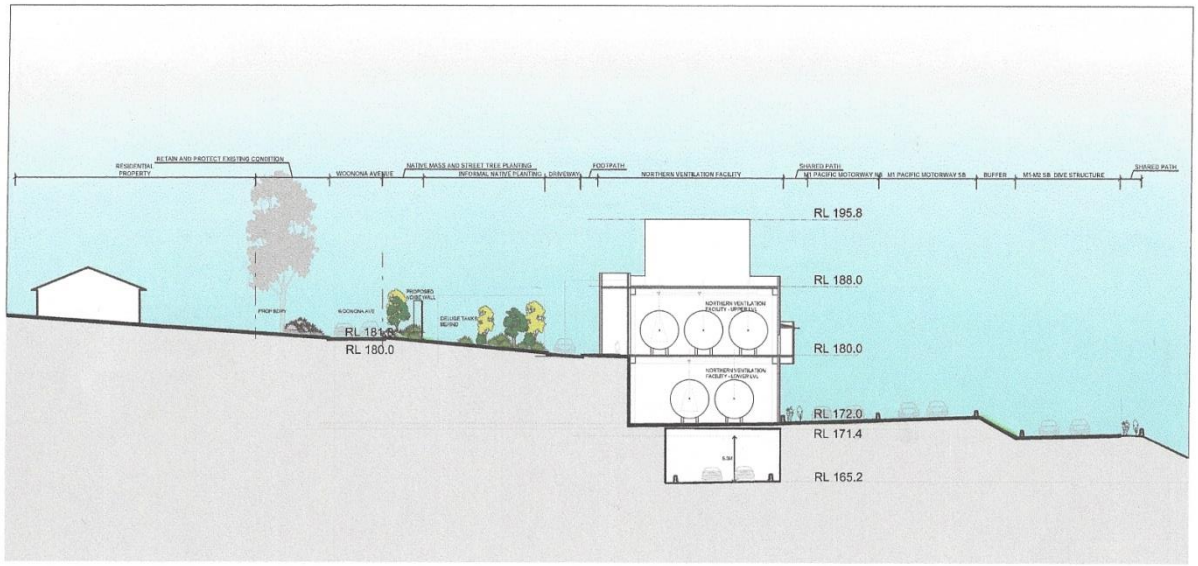
0 6 12 18 24 30m
SCALE 1:600@A3

M1-M2-5000-DR-UD-0717
WILSON ROAD TUNNEL SUPPORT FACILITY - SECTION

CM+ context

Lend Lease | BOUYGUES CONSTRUCTION AUSTRALIA

8.0 Landscape Design



0 5 10 15 20 25m

SCALE 1:500@A3

M1-M2-5000-DR-UD-0725
NORTHERN VENTILATION FACILITY - LANDSCAPE CONCEPT SECTION

SECTION B:
THE OPERATION AND LOCATION OF THE NORTHCONNEX SOUTHERN VENTILATION FACILITY

On careful reading of the NorthConnex Environmental Impact Statement (EIS)

- *Volume 1a and 1b, Chapter 5 Project Description*, which purports to include all details of the project construction

The following issues have caused concern:

1. EIS Page 97 *"The project does not currently propose portal emissions from the main alignment tunnels, however this approach may be considered in the future."*
   What does this mean? Will the operators be allowed to turn off the jet fans that force the air up the ventilation shaft whenever they wish? What is the purpose and intent of this statement? This requires far more clarification with definite and enforceable criteria on the grounds for such action. What will the contract hold the vendors to? Who will monitor the emissions on an ongoing basis to ensure that the figures do not worsen? How will the public have access to this information?

2. EIS Page 98 "*Table 5-2 Key components of the project's ventilation system – A total of around 65 jet fans would be installed in the northbound tunnel and ramps and around 60 jet fans in the southbound tunnel and ramps."*
   Why is there any difference in the requirements of jet fans for two tunnels running almost parallel over 9 kilometres? Please see Section A of this document. Is this difference explained by the lack of any intention to connect the southbound tunnel to the ventilation facility?

3. EIS Page 109 *"Near the portals, tunnel air would be drawn upwards into ventilation facilities with ventilation fans prior to discharge to the environment via a 15 metre high discharge point."*
   There is no explanation of how this would work at the southbound tunnel portals at the southern interchange. The ventilation facility is over 250 metres away on the other side of the road from the Pennant Hills Road exit portal and approximately 250 metres from the M2 exit portal. Surely the piston effect described in the EIS will come into effect, and all emissions from exiting vehicles will be dragged out at ground level onto Pennant Hills Road and the M2.

4. EIS Page 448 *"The most efficient location for ventilation outlets is close to the main alignment tunnel exit portals. This is because vehicles travelling through the tunnels create a piston effect, which draws air into the tunnel and pushes it forward in the direction of traffic flow. Locating the ventilation outlets near the main alignment tunnel exit portals maximises the benefit of the piston effect and minimises the need for additional energy consumption to operate tunnel jet fans and to transport the exhaust air from the tunnel to the outlet. This approach provides environmental benefits through the reduction in energy consumption and greenhouse gas emissions from the project."*
   According to this assertion, to operate effectively, efficiently and economically, the Southern Ventilation Facility needs to be on the opposite side of the road to where it is currently proposed. It should be located near the corner of the Pennant Hills Golf Course and the M2. This would also have the effect of moving it further away from residential properties and also elevating the ventilation facility thereby improving the distribution of the pollutants.
   Speakers at the Air Quality forum spoke of the importance of the topography in the placement of the ventilation facilities. In the current proposed location the southern ventilation facility is at the lowest point of the M2 intersection where it is surrounded on three sides by hillside cuttings. In this location the "discharge point" will barely be above the surrounding land. How can this be the most suitable position for the outlet?
   It is a spurious and indefensible argument to assert that the government already owns this patch of land and therefore that is the best place for the facility. The government needs to acquire the land that is in the best location to have the facility work efficiently, effectively and economically.

5. EIS Page 137 *5.2.17 Property access and acquisition, it states that "the project would require the permanent acquisition of around 56 properties … and further 4 properties would be required temporarily."*
   Does this include a section of the Pennant Hills Golf Course? If not, why not? This is the obvious location for the Southern Ventilation facility if it is to work efficiently according to the quote from EIS Page 448 in point 4 above.

Please note that the Pennant Hills Golf Club is NOT A PUBLIC AMENITY. It is a private facility, and sad as it is to lose one's family home or part of a recreational facility, it is within the government's power to compulsorily acquire property in the public interest.
Property cannot be acquired by repossessing family homes while it appears that powerful commercial entities may be allowed to use their influence and money to remain immune. The Pennant Hills Golf Course is clearly the best location for the Southern Ventilation facility according to all the criteria cited in the EIS.
It is noted that the purchase of a portion of the Pennant Hills Golf Club will necessitate the outlay of funds at the commencement of the project, but the economy of operating the jet and axial fans in the correct location over many years will offset this initial cost. Costs that would have been incurred by the construction of shafts under Pennant Hills Road and/or the M2 to connect the exit portals to the ventilation facility will also be offset against the purchase of land from Pennant Hills Golf Course.

6. With the ventilation facility correctly located on Pennant Hills Golf Course, the proposed dimensions of the Motorway Control Centre can be altered to make this building longer and lower and thus have less impact as a huge industrial complex in the middle of a residential area.

7. [redacted] The EIS **does not** contain all available information that is relevant for a fair assessment and understanding of the project, and it **is** misleading.

Our preferred position is that the government acquires a portion of the Pennant Hills Golf Club, that the southbound ventilation facility be located on the Pennant Hills Golf course so that the southbound tunnel can be efficiently, effectively and economically ventilated and that the ventilation facility be properly filtered. (See Section C below)

SECTION C:
AIR QUALITY AT THE SOUTHERN INTERCHANGE OF THE PROPOSED NORTHCONNEX TUNNEL

There is significant West Pennant Hills community concern in respect of the standard of the air quality that is likely to result in the vicinity of the Southern portal of the proposed NorthConnex ±9km tunnel project. It is not because the tunnel is being built, in fact, quite the contrary, it is seen as very necessary and it will clearly benefit most residents along the current Pennant Hills Road corridor.

We also fully understand that allowable pollutants in the atmosphere are a necessary compromise between human health and economic growth necessity. For instance, it is anticipated that the tunnel will be take 5000 heavy vehicles off the Pennant Hills Road traffic every day. It is also appreciated that the efficiency of diesel vehicles has been regulated since 2002 and that CSIRO anticipate a significant reduction of emissions by 2030, however the proportion of diesel vehicles in the national fleet increased by almost 40% between 2006 and 2013.

The important point is that minimisation of diesel emissions from location 'A' should not mean an increased concentration at location 'B' particularly given that the World Health Organisation (WHO) listed diesel emissions as a Group 1 carcinogens.

Consequently, our concern is primarily around the **connection (**see Section 'A' of this submission**)** and **location (**see Section 'B' of this submission**)** of the southern ventilation facility/outlet (as opposed to the southern motorway control centre location) and the fact that none of the four ventilation outlets will be **filtered** – despite the

assurances throughout the Environmental Impact Statement (EIS) published on the 15th July 2014 that the project is fully aligned to 'best practice' as is mentioned frequently throughout the documents (eg EIS Volume 1A page 64).

As background to our concerns, we have drawn on three reference documents. The first, 'Impacts on Health of Air Quality in Australia' Senate Inquiry, published by the Federal Government Senate Committee in August 2013, heard evidence that particulate matter of a certain size, (particularly $PM_{2.5}$) is:

- 'primarily derived from direct emissions from combustion processes, such as petrol and diesel vehicles….';
- 'has negative impacts on health …is the ninth leading cause of global disease burden (Lancet 2012[1]);
- that the size of the PM was the principal determinant of how deeply it is inhaled;
- that epidemiological studies concluded that there was a statistically significant relationship between fine particles and human health effects (CSIRO submission[2]); and that
- $PM_{2.5}$ is believed to be the most health-hazardous pollutant, responsible for 10 to 20 times as many premature deaths as the next worse pollutant (CSIRO submission[2]); further that
- so far, no limit of exposure where there is no impact has been identified (Leech *et al*[3]);
- the populations at greatest risk are those who are exposed the most – and those inherently more susceptible ie children, the elderly, those with lung dysfunction and asthma, socio-economically disadvantaged and pregnant women. Buffer zones between pollutants and the population of >2km were suggested by some.

The second reference – the National Environment Protection Measure (NEPM) for Ambient Air Quality published in 1998 under the then auspices of the National Environmental Protection Council (NEPC) saw fit to set air quality advisory standards that are meant to be binding on all levels of Government. These standards were set on the basis of scientific studies together with an appraisal of other standards such as those of the WHO. In 2011, the NEPC made 23 recommendations that included introducing compliance standards for $PM_{2.5}$. This set of recommendations is to be fed into a National Plan for Clean Air, which will be put to the Council of Australian Governments (COAG) at the end of 2014. Will this project be forced to comply with these recommendations when they are introduced?

The NEPC Review supported a reduction framework that would reduce exposure for communities living in close proximity to large emission sources given that as a rule of thumb**,' there is no safe level of exposure that does not cause some level of harm'.**

The scientific consensus is that monitoring and modelling tunnel environmental factors like Nitrogen Dioxide (NO_2) and $PM_{2.5}$ is difficult and inaccurate. These limitations are acknowledged in EIS (4.2.14). Perhaps in support of this difficulty, the 2012 study on the unfiltered Lane Cove tunnel published by Senior Research Fellow Dr Christine Cowie entitled 'Respiratory Health before and after the Opening of a Road Traffic Tunnel: A Planned Evaluation'[4]. The findings stated that she found no apparent deterioration in air quality near the ventilation stacks (which are unfiltered). However, she did find increased reporting of some symptoms and decrements in some lung function measures in people within 650m of the stack zone in one study (but not in a subset of that study).

Nonetheless, the Senate Committee did recommend pollution monitoring of proximate population exposure to pollution point sources (Recommendation 4 of 'Impacts on Health of Air Quality in Australia' Senate Inquiry').

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[1] Stephen S Lim; Theo Vos, Abraham D Flaxman, Goodarz Danaei, Kenji Shibuya, Heather Adair-Rohani et al. 'A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990—2010: a systematic analysis for the Global Burden of Disease Study 2010.' *The Lancet*, 2012; 380(9859): 2224-60.

2 Commonwealth Scientific and Industrial Research Organisation, Submission 48, p.8.

3 Judith A Leech , William C Nelson, Richard T Burnett, Shawn Aaron and Mark E Raizenne
'It's about time: A comparison of Canadian and American time–activity patterns', *Journal of Exposure Analysis and Environmental Epidemiology* (2002) 12, 427–432.

[4] Christine T Cowie, Nectarios Rose, Wafaa Ezz, Wei Xuan, Adriana Cortes-Waterman, Elena Belousova, Brett G Toelle, Vicky Sheppeard, Guy B Marks
'Respiratory Health before and after the Opening of a Road Traffic Tunnel: A Planned Evaluation'; PLOS One Research Article'. Nov 2012.

NorthConnex has chosen not to filter as it 'did not represent value for money'. NorthConnex has modelled the likely increases in environmental pollutants including $PM_{2.5}$. *(EIS Technical Working Paper – Air Quality Page151 Table 37)* Taking into account the topography and likely wind conditions, traffic and tunnel engineering, modelling indicates a level of 25% per annum over the maximum reporting standards of 8µg/m^3 (ie 10.1µg/m^3) by 2019. We understand that this projection is over the 9km of the surface area above the tunnel.

The southern ventilation outlet peak cumulative concentration $PM_{2.5}$ contribution over 24 hours is modelled at 5.2% in 2019 INCREASING to 8% in 2029. *(EIS Technical Working Paper – Air Quality Page173 Table 30)*. **What is unknown and not documented is whether that modelling has been carried out under the assumption that the southern portal emissions have been extracted to the southern ventilation facility; (**see Part 'A' of this submission above**).** It is noted that these projected tunnel emission contributions at the southern ventilation outlet are 44% higher in 2019 and 54% higher in 2029 than the northern ventilation outlet and yet the local homes are an equivalent distance from either ventilation facility (±50m). Why should this be the case? There is no documented modelling using information gathered at the actual ventilation locations. Why has this not been undertaken?

It is accepted that these figures are not substantial; nonetheless, there are two options available to improve these emission statistics. The first is to move the southern ventilation facility close to the portals of the southbound tunnel. The obvious position is near the south-west corner of the Pennant Hills Golf Course where the southbound tunnel and Pennant Hills Road and M2 portal exits will be located. This would have the added advantages of reducing the cost of moving the emissions to that facility (approx 250m) and would mean that the 15m stack would be considerably higher (since, in its current position, it is only 7m higher than neighbouring land). Refer Section 'A' of this submission. The second would be to make the facility considerably higher. There are no restrictions associated with aircraft;

Given that it is accepted scientifically and medically that there are no safe levels and diesel emissions are a Group 1 carcinogen, best practice would be to locate the stack at its most efficient point. It is proposed that 56 properties will be compulsorily permanently 'acquired'. If not already included in these property acquisitions, a small strip of the south west boundary of the Pennant Hills Golf Course should be included. The trees on the course would provide a further environmental buffer.

This would be of benefit to all those who are at particular risk including the children in the 11 schools situated within a 2km circumference of the southern ventilation facility.

Finally, it is accepted that filtration of the emissions like $PM_{2.5}$ and the less dangerous PM_{10} are only partly successful as documented by CSIRO in their 'Assessment of the Electrostatic Particle Technology' associated with the M5 East Air Filtration System (69% of $PM_{2.5}$ removed and 70% of PM_{10} removed)[5] and AMOG Consulting in their M5 East Tunnel filtration trial evaluation (65% PM_{10} removed and well below the target 80%)[6]. It is also understood that filtration does incur both a significant capital and recurrent maintenance cost, but it would mean a further decrease of exposure **by two thirds** to the surrounding population The question must be asked – what is "value for money" when there is a significant health risk (especially to those most vulnerable over the long term) and when considering the added burden to our health system to deal with the effects on the population of these unfiltered stacks.

Our preferred solution is that the Southern Ventilation Facility is filtered and that it is located *near the main alignment tunnel exit portals to maximise the benefit of the piston effect and minimise the need for additional energy consumption to operate tunnel jet fans and to transport the exhaust air from the tunnel to the outlet. This approach provides environmental benefits through the reduction in energy consumption and greenhouse gas emissions from the project.*
We would also like to know whether this project will be forced to comply with the NEPC recommendations to the National Plan for Clean Air once they are introduced?

5 Final Report of CSIRO entitled 'Air Filtration Plant of the M5 Tunnel. Determination of Particle Removal Efficiencies'. Nov 2011.
6 Report by AMOG Consulting entitled 'M5East Tunnel Filtration Trial Evaluation Program – Review of Operational Performance'. February 2012.

SECTION D:
TRAFFIC ARRANGEMENTS ON SUBURBAN STREETS DURING AND AFTER THE CONSTRUCTION OF THE NORTHCONNEX TUNNEL

The diagram below, copied from *NorthConnex Fact Sheet for the Southern Interchange dated July 2014* shows that it is proposed that **DAILY** an extremely high volume of heavy vehicles and many light vehicles will be using the route indicated in yellow.

It is totally unacceptable that this volume of industrial traffic should be allowed to traverse already overloaded suburban streets for a period of up to 5 years. Aiken Road, Oakes Road and Karloon/Eaton Road are congested and frequently at a standstill during the peak traffic hours without adding all of these construction vehicles.

Aiken Road is a park-and-ride area for commuters catching buses to school and work. Currently the local community uses the designated lanes for parking to catch the buses that have become a ubiquitous transport solution. Passengers catching buses on the M2 use designated parking along Oakes Road and spill over into unmarked parking on Karloon Road. There are 11 schools within a 2km radius of this proposed heavy vehicle route. Passengers, including school children, catching buses on these streets will be contending with both the normal traffic and the industrial trucks as they try to cross the road. With no pedestrian crossings on any of these roads, this is an accident waiting to happen.

These trucks will not only be adding to the congestion on suburban roads but also adding heavily to the pollution and the noise in this residential area. Industrial trucks do not belong on suburban streets; at the volume suggested, this decision is totally unreasonable and unacceptable.

NorthConnex Fact Sheet for the Southern Interchange dated July 2014 states that there would be

- *Widening and upgrade work on Eaton and Karloon Roads to ensure roads would accommodate increased heavy vehicle traffic*

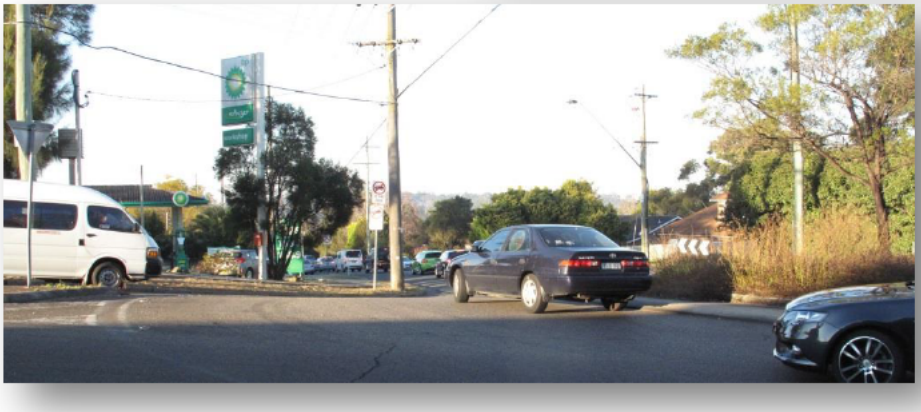
Aiken Road and Oakes Road would be experiencing the same amount of increased traffic but these roads and associated roundabouts will not be widened or modified. Why?

We believe the empty, noisy truck-and-trailer heavy vehicles will bounce along our local streets every 1-2 minutes and then sit on Eaton/Karloon Road in queues waiting to be called to the site. They will be blocking the local traffic and puffing out their pollutants and noise while waiting to go into the construction compound. Once the tunnel is operational, we expect the heavy vehicles will continue to use that same route whenever they need to carry out maintenance work or re-surfacing.

An indication of the current traffic levels on the proposed route is shown in the photographs below taken during peak morning traffic.

A queue of bus and cars travelling from the west along Aiken Road waiting to turn into Oakes Road at the roundabout.

A bus (with a queue of cars behind it) waiting to cross the roundabout and continue down Aiken Road. The traffic in Oakes Road is at a standstill.



The traffic at a standstill in the roundabout at Oakes and Aiken Roads junction.

This traffic arrangement proposal is totally unacceptable as it will affect hundreds of residents, the Aiken Road bus routes, parking for M2 and Aiken Road bus commuters, Carmen Drive shops, school children walking to school etc.

We propose that you mitigate the effect by having one of the following:

Option 1:
Alter the traffic lights at the Pennant Hills Road and Eaton Road junction to permit a right-hand turn from Pennant Hills into Eaton Road which would back up the trucks on Pennant Hills Road but minimise the impact on residents and local traffic; or

Option 2: (Our preferred option)
Have the trucks turn right on to the M2 from Pennant Hills Road, drive to the Windsor Road Passover, double back along the M2 and access the construction compound directly by the creation of a ramp from the M2 straight into the construction compound. All vehicles heading north from the construction compound should exit via this same ramp back onto the M2 if they don't have direct access to Pennant Hills Road. Unfortunately, vehicles heading west will still have to turn right onto Pennant Hills Road from Eaton Road.

The benefits of Option 2 are self-evident. The M2 is owned by the RMS and toll charges could be negotiated or waived, and the impact on residents and local traffic is minimal. This strategy will also stretch out the returning truck 'convoy', local roads and roundabouts would not have to be widened at the start of the project nor will they have to be restored during construction and at completion. This would clearly be a win-win for all concerned.

We recommend that a communication system is implemented where a control centre can contact heavy vehicles and call them to site from north or south holding locations. The number of trucks waiting to access the construction compound must be strictly limited to prevent severe disruption to normal traffic. As one truck leaves the southern interchange compound, another can be notified via the communication system to be on its way from a holding station well away from the traffic flow.

We strongly recommend that NorthConnex adopt option 2 and keep industrial vehicles off suburban streets.

SECTION E:
RESTORATION AND PRESERVATION OF THE ENVIRONMENT AROUND RESIDENTIAL PROPERTIES

EIS Volume 4, Technical working papers Urban Design, 8.0 Landscape Design
This section of the EIS gives details of the landscape work and plants to be installed around each of the ventilation facilities and construction sites. However, the exact location of the noise attenuation barriers and how much of the current vegetation will be removed is not clear.

Cogniscance **MUST** be taken in respect of the impact that boundary and compound walls will have on individual home environments which will no longer overlook residential gardens and /or parkland areas. This is of particular concern around Gum Grove Place where the homes currently face onto natural parkland and Eaton Road which, at the moment, is a quiet back road. The planting and maintenance of trees and bushes against the boundary walls and compound areas to restore the parkland feel of this residential area is seen as extremely important.

As described in Section B of this submission, with the ventilation facility correctly located on Pennant Hills Golf Course, the proposed dimensions of the Motorway Control Centre can be altered to make the building longer and lower. With this redesign, residents would not be overshadowed by a huge industrial building.

We believe that while progress and change are inevitable, it is important that in making the change, the leafy, garden and parkland character of the suburbs is maintained as far as is possible. We would like to see a more detailed and comprehensive plan that would include the planting of trees and bushes on the residential side of the boundary and construction compound walls to lessen the 'industrial' look of the tunnel facilities. We would also like the opportunity for ongoing community consultation post 12th September with regard to this.

SECTION F:
INVOLVEMENT IN THE ONGOING CONSULTATION PROCESS

In summary, we believe that we must have representation in any future negotiations that extend beyond the 60-day Environmental Impact Statement submission response period.

We believe that this is necessary as we have found that the Environmental Impact Statement does not have all the necessary information for the community to make an informed and comprehensive submission. Sections A and B of this submission have identified much information we feel we should have had access to in order to properly assess the project.

We have attended all the Community drop-in sessions and spoken with many of the NorthConnex staff but, in the end, all we have is their unwritten assurance that this or that would occur. In particular, we would like to see in writing and with diagrams the connectivity of the Southern Ventilation facility/outlet and the southbound tunnel and its portal exits at the Southern Interchange.

We see air quality as a major issue if we are to ensure a safe and sustainable environment for our children and grandchildren. In this regard we also believe that the best location for the Southern Ventilation facility is on the Pennant Hills Golf course.

We are concerned about how the problem of traffic arrangements during and after the construction of the tunnels is resolved. In Section D we have submitted a viable alternative to the proposed heavy vehicle route during the construction route. We will continue to lobby for an alternative solution if our proposal is not adopted.

We are also concerned about the visual impact of the compounds and boundary walls in this leafy area of Sydney. There is no need to desecrate the landscape and destroy the tranquility of the area while improving the transport situation. Wherever possible, trees and bushes must be replaced. This is of particular concern for those residents living adjacent to the compound and noise attenuation walls but, in the end, it affects everyone in the community.

We have been told by NorthConnex staff that it is not unprecedented for a community group to be permitted to review a project such as this and to negotiate change post the EIS submission response period.

Please advise us on how we can continue to be involved in the on-going negotiations for this project.