

30 March 2020

Submission to Western Harbour Tunnel & Warringah Freeway Upgrade project EIS

I write as a committee member of Registry precinct residents association of Cammeray, but we are unable to endorse and sign as a group as no meetings of the group have been possible prior to the closure of the exhibition period within the extension period of March 12 to March 30. An extension was requested but rejected. We do however agree to object to the project as proposed as a group in the EIS due to failure to provide sufficient detail to justify the need for the project and demonstrate that the project will satisfy that need, unacceptable traffic impacts, unacceptable financial impacts, air quality impacts, deficiencies in the Air Quality Impacts analysis in EIS and loss of green space. I will provide detail for the objections below on behalf of the precinct.

All the recommendations of the NSW Parliamentary Inquiry into Westconnex and related projects of December 2018 should be implemented by conditions in any approval of these projects. That multi party committee made many unanimous recommendations, even the still serving NSW Liberal and National upper house members supported the recommendations. They heard much evidence of the conduct of these projects, and poor consultation and compensation mechanisms. Cracking of homes has not been addressed by the owner or builders of the project for example and the opportunity to reduce air pollution by filtration of stacks on such long road tunnels ignored. The Government response to that report were cursory and did not engage with the evidence. The Planning Department and Minister should read the transcripts of evidence as well as the final report to realise why the recommendations have been made and conditions of the kind recommended are crucial in any future road tunnel approvals in NSW. The manner in which stages 1 and 2 of the Westconnex project have been delivered have been unacceptable in many ways and those matters must be remedied by conditions in any approval for the Western Harbour Tunnel.

#### *Lack of evidence to justify the project*

SEARs are not satisfied. The claims of the projects as road projects assisting the 30 minute city expectations of the Greater Sydney Commission are spurious. Those objectives do not specify it must be travel within 30 minutes by private road transport only transport. Therefore, for example, claims that traffic growth without these projects by 2037 will prevent a person accessing the Sydney CBD by car within 30 minutes ignores the fact that Chatswood is well served already with rail and bus connections to the Sydney CBD and is getting a new Metro crossing opening before 2027.

No analysis of other peak hour transport options is provided be these rail, Metro or bus

The project appears to be at cross purposes with the other initiatives of Transport NSW for example the us journeys of those using the new Metro at Victoria Cross (north Sydney) will be delayed by significantly increased traffic time on Miller Street in both the morning and evening peak hours caused by the decision to have the Western Harbour Tunnel have an exit to Falcon St North Sydney and an entry form Berry Street, North Sydney. North Sydney is well served by road, rail, future Metro and bus transport. There is no need for further harbour crossing road access to the Municipality and CBD of North Sydney and no additional car parking for those vehicles to use when they get there.

#### *Unacceptable financial and amenity costs to individuals and communities*

Tolls in both directions (the tolling gantries are in the EIs for approval), for worse traffic on arterial and local roads (as evidenced by the traffic modelling in the EIS, Appendix F and Chapter

9) across the lower North Shore. Loss of green space from an LA (North Sydney) which already has the lowest per capita level of open recreation space in Northern Sydney, loss of property value during and after construction, increased noise – no abatement is offered except for permanent noise impacts. This is unacceptable with such a long construction timeline for the WFU portion and noise abatement measures should be provided for all affected residences where work will occur for more than 15 days.

#### *Schools impacts*

Schools in the project footprint will suffer the dangers of heavy vehicle movements on arterial and local roads to and from the construction and support sites unless conditions are imposed in the EIS. There must be a condition that NO heavy vehicle may pass a school or preschool in the area in the school zone hours of 8 am to 9.30 am and 2.30 to 4 pm on its way to or from a construction or support site associated with the projects. The officers at the consultations have confirmed that clean spoil from the sites such as Cammeray Golf course could be taken all over Sydney. Therefore contractors could therefore go past Anzac Park School on Ernest St, Cammeray Public on Miller Street, North Sydney Boys on Falcon Street or the many schools between Falcon and Berry Streets on Miller Street, North Sydney, Bay Rd/Pacific Highway past North Sydney Demonstration School or West Street past Cammeraygal High School, with such deliveries as they may be keen themselves to avoid paying tolls and will not always use the Freeway. Such restrictions are required for the safety of students and parents at drop off, pick up and walk to school periods. Many schools do not have light-controlled crossings and the danger is too great as is the exposure to extra heavy vehicle fumes at the road side at that time of day. If the contractors do stick to using the Warringah Freeway site exits they will not be limited by this condition and should be happy. An objection to this reasonable condition by the proponent would simply prove that trucks for convenience are expected to be able to risk the lives of school children going to and from their schools over many years of construction work.

Noise abatement for schools with no work during examination periods, no night work more than 2 nights per week at a site (children and families need some sleep) and particularly on going noise abatement by conditioning the use of noise reducing road pavement for the tunnel portals and all upgraded or resurfaced portions of the Warringah Freeway is essential. The EIS states that the proponent could do it, please make it a condition of any approval.

#### *Traffic impacts are unacceptable and the project is objected to as designed*

Traffic data modelling should be redone using more current traffic data, the existing data does not satisfy the SEARS because the 2016 year base data does not take into account the changes in traffic patterns brought about by the North West Metro and the B line bus service. Both will have reduced the need for services for single commuter journeys from the Northwest (eg. via the M2 toll road network) and the lower and Northern beaches (the B Line) which are the rationale for the WHT and WFU projects and the related Beaches Link projects in the first place. The current COVID 19 crisis that has prevented people meeting and discussing the EIS for the entire extension period of March 12 to 30 has demonstrated that in employment many people and industries can work from home and it is strongly recommended that the project NOT be approved until after the crisis and the traffic analysis of this period has been done to analyse the likely ongoing reduction of persons commuting daily to the CBD for work – these projects are entirely aimed at reducing road congestion in peak hours.

The Traffic impacts on arterial and therefore connected local roads across the lower north shore demonstrated in the traffic modelling are unacceptable. Significant intersections across the area will have worse traffic impacts with the projects and even with the Beaches Link added rather than the predicted outcomes if the projects are NOT done at all (the do Minimum option). This is not the project outcomes that were sole to the populations at the earlier RMS consultations (claims of 15% traffic reduction on Military Road – now clearly not there as not raised in the EIs despite the DSC modelling including the Beaches Link project). The changes to access points to the Warringah Freeway (closing Ernest Street access to the Sydney Harbour Bridge and the Western Distributor) will generate a large amount of rat running across Mosman and Cremorne to access the Sydney Harbour Bridge and through Cammeray and North Sydney (closing the Falcon St access to North Sydney/Crows Nest) are key examples and there are many more that no doubt North Sydney Council will advise you of.

I attach a map of the changes annotated with the impact. I note that the traffic changes map for the proposed Warringah Freeway was not even produced by the RMS (proponent) until demanded, through your helpful planning officer Ms Moss, by the community. How is it acceptable for an EIS of road network changes to not include a map of those road changes in over 9000 pages of documentation is mindboggling and is just one example of where the EIS does not satisfy the SEARs and the consultation has been inadequate.

*Unacceptable air quality impacts* – the project is objected to as described in the EIS and the modelling should be redone and articulate and gas filtration systems installed on Ventilation facilities if the project is approved as a condition. Air quality monitoring within the tunnel, at the ventilation outlets and at ambient locations must be conditioned to be on an ongoing basis as is done for the Brisbane Airportlink tunnel. Baseline air quality monitoring must be installed at the construction sites at least 6 months before construction begins to establish a real base line not one artificially raised with constructions pollutants (dust and diesel fumes).

Air quality was the overwhelming concern raised in responses to the reference design ( a very limited design as a total of some 90 pages for both the Western Harbour Tunnel and the Beaches Link projects). However, those concerns have not been addressed in the EIS and the design detail provided in the EIs documentation is now even worse than envisaged then.

The reasons for the objection and the recommendations for appropriate conditions of approval are detailed below:

The 3 largest air quality impacts of the projects are:

*During construction:*

*Dust* – there will be substantial dust produced during the establishment and operation of the construction and support sites. In particular trees, sandstone bluffs in the freeway, grass and soil will be removed generating much dust and also removing the capacity of the environment to settle or remove that dust from circulation. As the EIS notes in Appendix H this represents a High level risk to over 18,000 sensitive receptors just from the Cammeray Golf Course construction site alone. It is

astonishing that in doing that analysis of dust impact the EIS report has assumed (as they note a 'judgment' as the standard said to use "judgement" that the schools only had 100 persons on site.

As a former Minister for Education, the Planning Minister would be well aware that the schools in the construction footprint have at least 500 and often 1000 or more students plus then staff at a proportion of around 1 staff to 20 students. The fact that no one on the project team thought to look at the document and query the number speaks to the cavalier nature in which the issue of air quality appears to have been addressed within the EIS and it is submitted that the Minister for Planning should require the proponent to redo that work using an estimate of 1000 persons (sensitive receivers) at each school site identified in the GRAL domain. The EIS air quality analysis must be redone with the correct estimate of schools populations as sensitive receivers. They have been grossly underestimated, especially in the North Sydney area.

All dust suppression measures possible must be conditioned, particularly the watering of the sites and minimising the removal of trees from sites wherever possible as a barrier to dust.

*Vehicle pollution* for the additional movements of heavy vehicles within the construction footprint and from plant and equipment especially that powered by diesel fuel. There is no sign that the impact of these added vehicle movements has been factored into pollution impacts of the project. The impact of plant and equipment for noise pollution during construction is considered but not air pollution.

#### **After construction**

From increased surface road pollution of extra traffic and from the unfiltered ventilation stacks

The GRAL analysis appears to make a basic statistical error.

At the Table in Appendix H providing the total numbers and types of receivers as individual sites it notes there are 135 schools in the GRAL air quality analysis domain. Unfortunately it then converts each site to a percentage of the whole (a percentage out of 100%) and therefore a house that might contain 2 or 4 people is rated as equivalent to a school property, which as discussed above, in the Sydney region will average at least 1000 students and staff at that site. Thus a school population of around 23% of receivers is estimated at less than 5% and that proportion appears to have been taken into the population analysis used for the health impacts analysis in Appendix I and could cause the estimates in that analysis to be out by a factor of 10 or more.

The use of the ABS census population figures are also inappropriate as these are evening population figures only, they do not give the population of schools during the daytime, peak hours when most construction and traffic operation can be anticipated and most air pollution impacts at the sites. School enrolment numbers, easily accessible on My school website should be used

### *Flawed assumptions in the Air Quality impacts assessment*

It assumes Euro 6 and Euro VI vehicle emission and fuel standards will be in place from 2021 and as such all the pollution maps in Appendix H are on that basis and at least underestimate the nitrous dioxide levels by 20%.

The Chief Health Officer has noted this in her response to the proposed ventilation systems design and noted at "all the proponent's assumptions as to surface road traffic will need to hold". We would submit that the surface road assumptions cannot hold as again they have been made on the assumption of Euro 6 standards being in place by 2021 to affect vehicle mix sufficiently by 2027.

Given the current COVID 19 health and economic crisis the rate at which people will trade up vehicles is

### *Flawed ventilation system design*

Object to the ventilation outlets (unfiltered exhaust stacks) not having filtration installed. The EIS proposes a double (really triple) unfiltered ventilation outlet be built at Cammeray in the Warringah Freeway at Ernest Street. This facility is not to have any filtration of the air collected from both the Western Harbour Tunnel (to be a 7.3km length by this point from Rozelle) and the 8.5 km length of the BeachesLink tunnel from Seaforth to Cammeray.

Contrary to the practice overseas of using filtration on such long urban road tunnels or banning diesel heavy vehicles the RMs is adamant it will not filter as insufficient benefit provided for cost but not provided a cost to install filtration.

The Minister or Secretary must require the proponent to obtain and provide publicly at least 2 quotations from the manufacturers of ESP and Nox filters to be considered before this project can be considered for approval. CTA Norway is a leader, as is Aigner of Austria, FILTRONtec of Germany and Panasonic of Japan. The cost must not include the cost of the ventilation facility itself which will need construction anyway, only the additional cost of the filtration system.

As the Minister for Planning noted as then Minister for Education when the proposal of unfiltered exhaust stacks was first made he would "not have any unfiltered stacks near schools". We; this project proposes to put a triple stack within range and with predictions to increase the pollution levels at all schools within 1.5kms of the stack ( predictions made in the EIS air quality modelling) of the largest education precinct in Australia with over 10,000 students or preschool children plus thousands of residents in a densely populated LGA.

To deliberately plan to have unfiltered stacks in the area where extra surface road pollution will be added by the traffic exiting the Western Harbour Tunnel portal into the Warringah Freeway is an appalling choice that no one else in the world is making.

When asked what other modern road tunnel is being built in the same way they say the E4 Tunnel in Stockholm. What they neglect to mention is that on the E4 Stockholm project there are:

10 air exchange stations on the 18 km tunnel route plus a separate smoke exhaust

The ventilation system tender required that there must NOT be a distance of 5000m or more between those exchanges. The WHT design does not comply with this approach, which is also done by the French (see CTEU papers). There is one air exchange in the design described by Arup in the EIS, this is useful to add more air before the on ward journey in the Beaches Link tunnel but will do nothing to relieve the concentration of the double load of pollution from 2 road tunnels (really 3 counting the spur of the WHT from North Sydney) all at the Cammeray stack.

This E4 Stockholm tunnel information is easily available in English on the project website . I am happy to provide a copy if required. The tunnel is still under construction.

*Otherwise ban diesel heavy vehicles from the tunnel as a condition until Euro 6 is fully implemented or diesel vehicles are banned in Australia (as occurring overseas, Europe by 2030)*

Alternately, the air quality could be improved by heavy diesel vehicles (including trucks and buses) being banned from using the tunnel if filtration equipment is not to be installed.

Likewise in Hong Kong the CW Byass tunnel opened in February 2019 does have air treatment of tunnel air to remove both fine particulates (using ESP filters) and noxious gases via NOX filters) before it is released via 3 ventilation outlets.

The ACTAQ Technical paper on Tunnel Ventilation Systems by Prof Sturm dated December 2019 handed out by RMs at the public consultations incorrectly notes “No information on air treatment is available” in relation to the CWB tunnel. That is patently untrue – the fact of the “air purification systems” on the CWB project is clearly on the Hong Kong roads website. The installation of the equipment by FILTRONtec was done by Leightons Asia an affiliate company of Leightons Australia.

This is not in any way the same as the pollution exhausted from the Lane Cove Tunnel (only 3.6km long and with an extra air way passage providing partially transverse ventilation that the RMs regards as “overdesigned”), the S

Inadequate monitoring proposed:

The EIS proposes that monitoring conditions will only be for 12 months before the tunnel opens and up to 24 months afterwards.

Monitoring for the 12 months before the tunnel opens, rather than starting before construction commences, will produce an artificially high baseline as items such as the increased local heavy vehicle traffic involved in the construction and the extensive dust of construction will all be factored into the monitoring. That is not a fair comparison to evaluate the change to local air quality caused by the project.

To only monitor for up to 24 months is also not acceptable. There is no way that the tunnel will be operating at maximum traffic capacity by 24 months. If it is then it is clearly another reason that the projects are not a solution to the transport needs of Sydney as claimed in the project summary. It is therefore not possible to have the monitoring to check whether the assumptions in the air quality modelling, already known to be 20% understated, will hold.

Ongoing monitoring at ambient sites as well as in tunnel monitoring of the 5 key pollutants (CO, NO, NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>) must be a condition in any project approval. This is done on the Brisbane AirportLink tunnel and the Clem 7 tunnel and is available in real time (see at XXXXXX). Transurban has taken over the operation of these road tunnels and has no problem with complying with this requirement. As they are the likely purchaser of the Western Harbour Tunnel if the asset is built and sold off there is no reason to not impose ongoing monitoring of in tunnel and ambient air quality in any approval simply at thought it might make the project undesirable to an eventual purchaser. What conditions should be put in place should be what is right for the public and the monitoring of the environment.

To often in the design of this project, as evidenced in the detail in the EIS, is an approach of what can we get away with not how can this project best be designed to environmental impact. How are the best road tunnels in the world designed not how are the cheapest.

The improvements to air quality brought by uptake of electric or hydrogen vehicles are many years off and further now with the current economic shock. Diesel SUV sales are increasing increasing the pollution profile of the modern vehicle fleet in Sydney.

The conditions placed on the Westconnex and Northconnex projects should not become a one size fits all when there are clear deficiencies that have simply not been fixed.

Northconnex conditions at least require there be provision for filters to be retrospectively installed.

The Northconnex tunnel (9km) also has an emergency smoke release located at Thornleigh – which can also be opened to release excess pollution in the tunnel to maintain in tunnel air quality during peak periods and thereby reduce the level of pollution being released at the Wahroonga Stack for North bound traffic or the Pennant Hills/Beecroft stack for southbound traffic.

There is no such provision in the design of the Western Harbour Tunnel.

In fact the pollution that would have been released at North Sydney from the spur exit at that point is to be piped up to the Cammeray stack making it in effect a triple pollution vent. The lack of an emergency smoke release also means that the smoke generated by accident or fire in the tunnel will all come out of this stack within 250 m of a new primary school (*Anzac Park Primary School*) soon to have an enrolment of 1000 students, and the staff.

The neglect was clear when the original scoping document was released showing no school within range as it had been prepared on a desk top and no one had cared to check the area where they proposed to put the unfiltered ventilation stack for 2 long road tunnels! The project team were clearly surprised to find a brand new school there but have spent the remaining 2 years obfuscating the need to install filters despite no other long urban road tunnel in the developed road being built with this poor ventilation system.

Many other schools are also within 500m to 2km km range of the triple unfiltered exhaust stack proposed at Cammeray:

Cammeray Public School (Miller Street)

Neutral Bay Public School (Ben Boyd Road)

Cammeraygal High School Senior Campus (Ernest Street)

North Sydney Boys High (Miller and Falcon Street)

Marist North Shore (Miller street)

St Marys Primary School (Ridge Street and Miller Street)

Wenona (Ridge Street, Walker Street and Miller Street)

Monte St Angelo (Miller Street and Berry Street)

This is unacceptable from a modern country to build such a substandard ventilation system with no filters.

There are also sportclubs and grounds right near the unfiltered double stack: Soccer field, Skate Park, Croquet Club, golf Club, Tennis courts.

The failure to reach Euro 6 standards means the tunnel ventilation design must be rethought and filters added.

The concern at the single unfiltered stack design on longitudinally ventilated road tunnels of a length over 5km is clearly demonstrated by the NW Chief Scientist's Ari Quality Committee itself in its submission to the Australian Government's consideration of emission and fuel standards. The ACTAQ document accessed from the NSW Chief Scientist website is attached herewith and the ACTAQ notes maintaining in tunnel air quality is difficult with the existing fuel and vehicle emission standards and urges the uptake of Euro 6 standards. It becomes harder and harder the longer the tunnels become for a longitudinal ventilation system to maintain in tunnel air quality within safe limits for tunnel users (drivers) who are able to wind up their windows and only travel through the tunnel for around 15 minutes.

### *Motorcyclists*

If the tunnel is to not be filtered, motorcyclists must be banned from using it

Astonishingly the RMs proposes to allow motorcyclists to use the proposed tunnel – despite the fact the tunnel will be so long (7.3 km Rozelle to Cammeray) with potentially an onward underground journey to exit at Seaforth 15.8 km from Rozelle. If tunnel have no filtration then other countries ban motorcyclists from long road tunnels for example France from the Duplex tunnel in Paris and Turkey from the Eurasia tunnel in Istanbul opened in 2016. They do not wish to risk a motorcyclist having health difficulties being in heavy traffic polluted tunnel air. Incredibly the only mention of the word “filter” in the EIs is its use to explain the motorcyclists should be able to filter between lanes to get through if there are long delays in the road tunnel. The RMS attitude expressed by a spokesperson at the that “any registered vehicle can use the tunnel” is a business model not a health impacts and environmental consequences approach which is required in the EIS and is not good enough. Another reason not to approve the ventilation design and tunnel usage as proposed and add other conditions.

### *Loss of green space and tree cover – particularly at Cammeray Golf Course and Warringah Freeway construction*

The loss of nearly 3 hectares of green space and tree cover at Cammeray from the construction of the WHT and the WFU upgrade is not acceptable with the extra vehicle traffic to be deposited into the Freeway and arterial roads by the project. This is part of the green lungs of the area and the loss of tree cover and grass cover will increase the air and dust pollution in the area as well as having recreation and urban amenity impacts.

Why can the project not be redesigned with appropriate green space and air quality design? The construction will involve major impacts on the communities along the route and there is nothing in the proposal to improve the environment at Cammeray at the end of the project. For example as the CWB Bypass tunnel is with the ventilation facility placed under a green roof reducing the urban impact of the new road tunnel. Instead a green link is created, the building impact of large ventilation building is reduced and filtration has also been installed so there tunnel air can be safely discharged.

We note that at Rozelle the motor way facilities and ventilation buildings are being put underground to enable increased green space – such design should be required at the Cammeray site or equivalent. It must be designed and conditioned BEFORE any approval otherwise the “we might do” and “artist impressions” simply fall off the project as was seen with the Parramatta road upgrades

Green space improvements mentioned in the EIs such as Berrys Bay and Rozelle must be conditioned.

#### *The misleading claims of the “failure” of the M5 East filtration trial*

Rather than relying on the press release in November 2012 from the then Minister for Roads that cancelled the trial, Planning NSW and the RMs might like to look at the actual evaluation reports.

This shows that the filters worked: the electrostatic precipitation filters (ESP) filters removed around 75% of the PM2.5 particulates from the air filtered

The NOX filters were more problematic in operation but still removed 55%. The trial proved filters worked. The per tonne costing was disingenuous as all the costs of the project including construction of the building were included not just the cost of filters and operation as if they were built into the project. Using tonnes rather than quantity is also a poor way to measure PM2.5 pollution as quantity is more appropriate.

This trial was a retrofit nearly a decade ago. Systems always work better when built as part of integrated design.

The evaluation that contrasted the expense of the trial versus the cost of other air quality measures appears persuasive. However the Government in the decade since have not done these such as banning woodfired heating. Removing pollution by filtering captured tunnel air is a technologically easy thing to do. The argument that it is a small portion of the total pollution load in the area is untenable when it is a small portion because the background load is so high. The figures from the monitoring station at Naremburn show this.

The graphs provided at the EIS consultation by RMS showing 8 mcg/m<sup>3</sup> as the air quality standard for ambient PM<sub>2.5</sub> however that is misleading and disingenuous. The standard has already been legislated in the NEPM goals to reduce that limit to 7 mcg/m<sup>3</sup> by 2025 before this tunnel opens and the schools and homes affected by this stack already reach or exceed 8 mcg/m<sup>3</sup> already. Why is it in any way acceptable to approve a design that deliberately chooses to add fine particulate air pollution (PM<sub>2.5</sub>) particularly from vehicle emissions (fine particulates from diesel emissions are known to be particularly carcinogenic: see World Health Organisation reports on Air Pollution and Health, the Lancet articles, the Cochrane collection reviews and the work of the Air Pollution and Health CRC at QUT, Queensland).

The independent expert, Professor Ian Longley consulted by the RMS has been the same person since the Transurban NorthConnex application (supported by RMS) in 2013XX. How can this person continue to be regarded as independent when he is guaranteed work everytime RMS has a road tunnel it wants to build. Professor Longley has never found a road tunnel he thinks should be filtered despite coming from a country which has as its longest a 4km road tunnel in Auckland.

When under the Premier's new ventilation stack approval process announced in January 2019 there was to be an Independent review of the proposed design for future road tunnels the independents were still Professor Longley (who sits on the NSW Chief Scientist's ACTAQ Committee (with very limited terms of reference) and a colleague invited by him.

At least in their review of the ventilation system for the WHT they have noted that the design assumes Euro 6 and will therefore be underestimated pollution levels in the modelling and also that there is no data set for unfiltered exhaust sets to confirm the modelling on such long tunnels. Well that is because NO other developed country is building longitudinally ventilated urban road tunnels over 5km in length without ventilation stack filtration or in tunnel filtration and allowing diesel heavy vehicles to use them.

This is what is done overseas (copies of the relevant web pages or specifications can be provided on request). I have been trying to have officers of RMS to listen for years, their response is simply we don't think we need to, or we think they don't turn the filters on overseas (but no proof) and from overseas there are detailed reports of other engineers visiting those plants and observing the systems operating (Tokyo – Yamate tunnels particularly and the Madrid Calle 30 tunnel system). Perhaps Planning NSW and the Planning Minister will now ask the hard questions – why with such poor vehicle emissions standards would NSW not utilise well developed filtration technology to at a minimum filter the polluted collected tunnel emissions before they are vented over school and residential communities?

Other countries take a precautionary approach to their communities health – they know vehicle emissions (especially diesel) are carcinogenic and also compromise the lung development of children and capacity of everyone, particularly older people. They are also implicated in cardiovascular disease and stroke. Nitrogen dioxide is a well known asthma trigger and interacts with PM<sub>2.5</sub> particles to help make those particles, that can cross the lung/blood and blood/brain barrier to lodge in other organs, more dangerous. Therefore they do not risk increasing levels of pollution which they

know can be reduce by the use of filtration. The Western Harbour Tunnel project will already add more surface road pollution from the tunnel traffic added to the Warringah Freeway and to Falcon Street from the 2 northern exits – it adds insult to injury to add even more from the ventilation stacks when it can be so easily reduced. The cost of building in filters is a fraction of the cost of building the ventilation stack in the first place and negligible (to use a term often employed in this EIS) in the scale of a likely \$15 billion project. The approach in the Appendix H analysis and the Appendix I health assessment , which has likely been based on the statistical errors in Appendix H where school populations were underestimated ; they make up around 23% of the day time population of the areas affected in Cammeray/North Sydney not the around 5% used in the analysis,

The impacts of such a statistical error could be some 10 or 100 times when extrapolated into the health assessment data. If the fractions are used against the ABX population data for the LGA of North Sydney that is also an error as the school population is there in the daytime and not shown in Census population data esident on the evening of data only.

The health assessment provided in Appendix I of the EIS states that the increased health event considered is asthma admission to hospital. And there may be an additional case or two. However, with the greatest respect, most asthma, even quite debilitating asthma is readily treated in the community with GPs these days. Such a measure will therefore not pick up increased asthma rates in local children at Rozelle, Balmain, North Sydney, Cammeray and, if Beaches Link is approved, Balgowlah and Seaforth. With respect, the wrong medical condition measure has been estimated and the health assessment should be done again with symptoms likely form increased PM2.5 and nO2 pollution levels and that prediction provided.

The already likely high background levels of pollution (certainly above the maximum PM2.5 NEPM goal for ambient PM2.5 pollution) at Rozelle and Cammeray can be likened to a flooded footpath. Adding a bit more water so that the water goes up a little and enters one’s house might be a “negligible” amount but the consequences are not. This is how using an increase against a high background to generate a small percentage is very misleading. The absolute amount of pollution relevant to the existing site should be considered and appropriate abatement provided. Filtration of the stacks should be an abatement measure and for the schools closest to the Freeway such as Anzac Park and Wenona and KU Green Park preschool which will all have significant increases the installation of seals on classroom windows and air filters for classrooms.

Australia has the poorest vehicle emissions standards in the world not having yet enacted Euro 6 standards for new vehicles.

The move to electric vehicles will now be significantly slowed by the COVID 19 economic shock and had already been very slow uptake by OECD standard with no national EV policy and no incentives offered in NSW at all – you get a discount on registration for using toll roads but not for purchasing and using an electric and low pollution vehicle.

Until Euro 6 standards are implemented all diesel heavy vehicles should be barred from using the Western Harbour Tunnel

We have the poorest ventilation system design for long (over 5km) road tunnels. We are approving tunnel after tunnel with longitudinal single end stack unfiltered stack ventilation despite the fact that such tunnel approved, the 9km NorthConnex tunnel not even being open yet and so no proof that the actual emissions load will be as low as assumed in the modelling on which the approval is based.

At a minimum, the approval of the Western Harbour Tunnel should wait until the NorthConnex Tunnel is open and has been operating for at least 12 months with in-tunnel, at ventilation outlet and ambient air quality data being monitored and publicly released.

We note that the NorthConnex conditions of approval include provision that the ventilation stacks must be capable of having filtration installed retrospectively, however the mechanism to trigger such is unworkable. The Government must commit to pay for filtration to be installed and operated if the peak hour pollution levels at the stack exceed the levels in the approval on more than 2 occasions. The monitoring must be ongoing or the operator will simply wait out the 24 months air quality monitoring period to avoid filtration.

There are NO urban road tunnels over 5km in length in the USA or the UK at all

Modern urban road tunnels (those built within the last 10 years) are not built as proposed in this EIS

In France diesel trucks are banned from long road tunnels if longitudinally ventilated and no road tunnels are allowed to have exhaust stacks more than 5000m apart

The Mont Blanc road tunnel had stack filtration systems (Aigner) retrofitted to protect the town of Chamonix which is near the stack (much like Anzac Park school and the residents of Cammeray and Neutral Bay)

The Casena road tunnel in Italy has filtration systems installed (Aigner)

Japan's Yamate tunnels (2 tunnels totalling 15km) has stack filtration installed with longitudinal ventilation

Madrid's Calle 30 tunnel system has been an excellent site for comparing the efficiencies of the filtration systems by different manufacturers as different combinations have been used at each ventilation station on the system. Aigner, CTA, Panasonic and FILTRONtec technology are all used

As discussed CWB Bypass tunnel in Hong Kong has longitudinal ventilation on a 4km tunnel and has filtration at the ventilation stacks on the tunnel – including the taller stack over Hong Kong harbour and also for the air emitted through the green roof structure over the ventilation facilities.

With respect Professor Hibberd's analysis of the impact of the Lace Cove Tunnel, the M5 East and the Cross City tunnel stacks on local health and air quality is interesting but is not relevant to this project. Those road tunnels are all 4km or less. The level of pollutants collected in the tunnels is therefore much less than in a single stack tunnel over the length proposed for the WHT of 7.3 km by the time it reaches Cammeray and a total of 15.8km if travel to Seaforth on Beaches Link. 2 km 2

lanes each way emissions from the 2.1 km Sydney Harbour Tunnel does not compare to 3 lanes each way on the Western Harbour Tunnel.

It would be better if a prospective health study of children in the Wahroonga educational district and residents was done before Northconnex opens later in 2020 and then another analysis done after the tunnel and the unfiltered stack had been operating for 1 to 2 years. Perhaps Prof Hibberd could co-ordinate that and it would provide valuable analysis and actual health evidence in relation to these tunnel designs not used anywhere else in the world.

The fact of exhausting at Rozelle and Cammeray multiple joining road tunnels with no filters increases the pollution burden at both sites beyond the burden experienced in areas with a single stack. This alone is reason why filters should be installed in relation to the Western Harbour Tunnel (and beaches Link) if approved.

Cammeray will emit collected emissions from 7.3km time 3 lanes plus 8.5 km times 3 lanes

Vs Northconnex at Wahroonga that will releases 9km times 3 lanes (27km of concentrated tunnel pollution)

Thank you for considering this submission and taking these objections into account. The EIs needs much redesign or redone reports before further consideration.

Georgina Taylor

Cammeray

