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Dear Ms Moss

**WestConnex M4-M5 Link project (SSI 16\_7485)**

Thank you for the opportunity to comment on the Environmental Impact Statement (EIS) for the WestConnex M4-M5 Link project (SSI 16\_7485). NSW Health makes the following submission for your consideration.

NSW Health has reviewed the EIS concentrating on the Human Health Risk Assessment (HHRA), Air Quality Assessment, and Noise and Vibration Assessment. The models used to assess air quality impacts are consistent with those used previously on stage 1b and stage 2 and were considered adequate. NSW Health is satisfied that for this particular project the HHRA has used a generally appropriate approach for the assessment of human health.

Exposure to traffic related air pollution has been shown in epidemiological and clinical studies to be associated with a range of cardiovascular and respiratory health outcomes. There is also little evidence of any threshold below which exposure to components of traffic related air pollution are not associated with adverse health effects. For these reasons, it is important that all reasonable measures are taken to minimise exposure to traffic related air pollution where feasible.

Consistent with this, the National Health and Medical Research Council (NHMRC) 2008 report *Air quality in and around traffic tunnels* concludes that it is good practice to limit, as far as possible, exposure to traffic related air pollution in and around tunnel portals and stacks. NSW Health supports this position and this is reflected in the comments provided in this submission.

There is also emerging evidence of the health impacts of environmental noise. The evidence is strongest for impacts on cardiovascular disease and sleep disturbance. Measures to limit community exposure to noise are therefore important to protect public health.

The appendix to this letter provides detailed comments on the EIS including the areas highlighted below:

- Changes to air quality external to tunnels resulting from operation of the M4-M5 Link are projected to have potential human health risks that the HHRA defines as unacceptable.
- Dust generated during construction activities may impact the health of nearby residents if not appropriately mitigated. A management plan to address air quality associated with construction is to be produced but is not yet available.
- Operation of the M4-M5 Link is expected to decrease the level of noise exposure for most people however there is expected to be a significant increase in noise exposure for some people.

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- Noise generated during construction is estimated to exceed management levels for exposure by some residents and other sensitive locations such as schools.

It is important that all feasible measures to mitigate these expected or potential impacts from construction and operation of the M4-M5 Link be considered.

Thank you for your consideration of NSW Health's submission to the WestConnex M4-M5 Link project EIS. If you would like more information on any of the points raised in our submission, please contact Dr Ben Scalley, Director, Environmental Health Branch on 9424 5721.

Yours sincerely



Dr Kerry Chant PSM  
**Chief Health Officer and Deputy Secretary**  
**Population and Public Health**

13/10/17

## Detailed comments from NSW Health's review of the environmental impact statement for the WestConnex M4-M5 Link project (SSI 16\_7485)

### **Operational air quality impacts external to tunnels**

The human health risk assessment (HHRA) of the environmental impact statement (EIS) has identified potential human health risks associated with air quality related to operation of the M4-M5 Link that it defines as unacceptable (greater than 1 in 10,000). The EIS does not describe in detail project design or mitigation options that were considered to reduce health risks at those locations where unacceptable health risks were identified. Consideration should be given to ways to mitigate these potential impacts as well as putting in place controls to prevent residential use of land within these areas or at these elevations.

### **Industrial location near Sydney Airport**

Potential unacceptable health risks were identified in an industrial/workplace area. The EIS states that the health risks may be lower at this location because exposure may occur only during work hours. However, the amount of time that an individual could spend at a workplace or industrial site may not be as modelled. It is important that consideration be given to how to mitigate these effects through options such as improved traffic management as the impacts appear to be largely due to surface road congestion.

The EIS considered it 'not relevant to evaluate future residential exposures at this location' because it was considered unlikely that the location of concern near Sydney Airport would be rezoned for residential use. Given the recent substantial building of residential apartment blocks near to Sydney Airport, consideration should be given to implementing controls on future rezoning for residential purposes especially if mitigation of the air quality impacts is not feasible.

### **Elevated receptors near the St Peters interchange**

The HHRA identified unacceptable health risks associated with air pollution 30 metres above ground-level adjacent to the tunnel ventilation stack at the St Peters interchange. This is a hypothetical risk because current buildings are less than 10 metres in height at that location. Consideration should be given to ensuring that planning controls are put in place so that building heights in the area are limited and exposure to these levels of PM<sub>2.5</sub> are avoided.

The EIS determined that air quality at an elevation of 10 metres near the proposed St Peters interchange, which includes a 20 metre high ventilation stack, would be minimally impacted by the project. Air quality at heights between 10 and 30 metres were not modelled. Therefore the impact of the project on air quality at heights between 10 and 30 metres is unknown. On this basis, planning controls should be developed in the vicinity of the St Peters interchange to limit future building heights to no higher than 10 metres.

There is inconsistency within the EIS with regards to developing planning controls for the St Peters area. The air quality assessment states that planning controls in the vicinity of St Peters should 'ensure future developments at heights 30 metres or higher are not adversely impacted by the ventilation outlets' (page 9-106), while the HHRA states that planning controls should 'ensure future developments at heights above 10 metres are not adversely impacted by the ventilation outlets' (page 11-34). Unless air quality assessment of St Peters demonstrates acceptable impacts on air quality at heights between 10 and 30 metres, planning controls should limit building heights in that area to 10 metres.

### **Filtration of in-tunnel air**

The EIS sets out reasons why filtration of in-tunnel air prior to ejection from ventilation stacks is not feasible or reasonable for this project (Appendix I, pages 232-240). The reasons relate to lack of effectiveness of the technology where it is in use in other countries, minimal impact on air quality, and cost. These conclusions are consistent with those in the *Initial Report on Tunnel Air Quality* of the Advisory Committee on Tunnel Air Quality, which has previously been established to provide the NSW Government with an understanding of the scientific and engineering issues informing road tunnel ventilation design and operation. It is important that the justification for not having filters in ventilation stacks is clearly communicated to community.

### **Sensitivity tests**

No sensitivity tests were conducted for the air quality modelling and assessment. The reason provided in the EIS for not doing sensitivity tests was that the parameters for the sensitivity tests conducted for previous WestConnex projects (M4 East and New M5) were very similar to that for the M4-M5 Link project, and therefore the outcomes for the previous sensitivity tests would also apply to the M4-M5 Link project. Outcomes of sensitivity tests for a parameter such as ventilation outlet temperature may be similar between projects. However, for parameters such as ventilation outlet height and the inclusion of buildings near ventilation heights, which will have site specific effects on air quality, the outcomes of sensitivity tests may differ between projects. Sensitivity tests related to these parameters resulted in changes to air pollutant concentrations by a factor of 1.3 to 1.5 for previous WestConnex projects. Changes of this magnitude could significantly change outcomes of the human health risk assessment. Sensitivity tests should be conducted for assessment of air quality related to the M4-M5 Link project.

### **Traffic modelling**

The WestConnex Road Traffic Model, in operational models of the M4-M5 Link, was unable to accommodate forecast growth in peak hour traffic to and from Sydney Airport without the proposed Sydney Gateway project which is presumably necessary to accommodate future traffic growth (Appendix H, page 53). It appears that peak hour traffic demand to and from Sydney Airport was therefore reduced by a factor of 0.7-0.75 so that the model could be applied to this area for scenarios without the Sydney Gateway (Table 4-1, Appendix H, page 53). This could mean that potential health risks associated with air pollution at St Peters, an area where the HHRA identified unacceptable health risks (see above), could be higher than the estimates provided in the EIS. Discussion of the effect on health risk estimates of applying the traffic model in this way would be appropriate, especially given that the future Sydney Gateway project has not been approved.

### **In-tunnel air quality**

The modelled in-tunnel air quality should not result in air pollution exposures known to be associated with health effects if commuters have motor vehicle windows closed and ventilation on recirculate while traversing the WestConnex tunnel network. The predicted in tunnel air quality would appear to be consistent with the In-tunnel air quality (nitrogen dioxide) policy and I note the whole of government work in this space.

The EIS states that during extreme traffic congestion, for people with asthma who do not adopt advice to keep motor vehicle windows closed and ventilation on recirculate, or who are on a motor bike, there is the potential for those people 'to experience some minor change in respiratory response after using the tunnels' (Appendix K, page 97). Signage and other messaging promoting motor vehicle drivers to close windows and set vehicle ventilation to recirculate while driving through tunnels should be adopted.

### **Air quality impacts from construction**

Dust generated during construction activities can impact the health of nearby residents. It is important that dust emissions are mitigated according to best practice procedures and that dust management reduces exposure by residents near construction activities. The EIS refers to a *Construction Air Quality Management Plan*, however as the plan is not yet available NSW Health is unable to comment on its adequacy. The plan should be reviewed by the appropriate regulatory authority and NSW Health prior to the commencement of any construction related to the M4-M5 Link project. Dust mitigation measures should be subject to regular monitoring. Community members should be notified in advance of activities likely to generate substantial dust, and mitigation measures and options for reducing or avoiding exposure be made available and be accessible. This is especially important as some residents may be exposed for prolonged periods given the time periods of construction.

### **Noise impacts from construction**

Noise levels associated with construction are estimated to exceed management levels for some residences and at other sensitive locations such as child care centres and schools. Due to the on-going nature of the WestConnex development, some people could be exposed to noise from construction activities over a period of several years. NSW Health recommends that mitigation strategies are applied to minimise the risk of adverse health impacts to residents and other sensitive people from exposure to excessive noise.

The EIS discusses potential mitigation measures but does not provide details as to how or when mitigation measures will be applied, nor any assessment of residual noise impacts after mitigation. This will only be undertaken during the development of the Construction Noise and Vibration Management Plan (CNVMP) at the detailed design phase. It is therefore not possible for NSW Health to comment on the adequacy of mitigation measures or the acceptability of residual noise and associated health impacts. The proponent should provide further detail on mitigation measures where possible and give a clear commitment to mitigate noise levels in order to prevent exceedances of relevant management levels. The CNVMP should be reviewed by the appropriate regulatory authority and NSW Health prior to the commencement of any construction related to the M4-M5 Link project.

The proponent should implement tailored mitigation and communication strategies for vulnerable members of the community and are likely to be more susceptible to adverse health effects of noise, especially those who are elderly, who do not speak English, are housebound, or who may be unwell. Vulnerable community members should be individually consulted to determine appropriate mitigation and management plans, and have ongoing two-way communication regarding noise impacts during construction. Consideration should be given to whether vulnerable community members are at home during the day and hence require additional mitigation to reduce noise impacts during standard construction hours.

Some noise management levels used in the EIS, including for sleep disturbance and for sensitive receptors such as schools, are based on the assumption that noise levels are reduced by 10 dBA from outside to inside with an open window. However, some dwellings may only provide a 5 dBA reduction with an open window. The EIS should consider how this may affect the numbers of receptors impacted and whether additional mitigation measures are required.

### **Noise impacts from operation**

It is noted that the M4-M5 Link is expected to decrease exposure to traffic noise for most people, with more traffic moving underground. However there are expected to be significant increases in

noise exposure for some residents as a result of changes in the location and movement of traffic. All feasible and reasonable mitigation strategies should be implemented for all significant increases in noise exposure associated with changes in traffic resulting from the M4-M5 Link.

### **Other potential health impacts**

Significant health benefits are associated with active transport such as walking, cycling, and public transport. It is important that the M4-M5 Link project has minimal impact on the accessibility and availability of active transport. Incorporation of active transport infrastructure (walking and cycling paths) into the project are supported and encouraged.

Given the proximity of the Royal Prince Alfred Hospital (RPAH), Camperdown to proposed construction activities and the sensitivity of this facility to the effects of air quality, noise and vibration, it is important that RPAH management is consulted on the potential impacts of construction well in advance of any activity which may impact the site.