NSW GOVERNMENT Health

H18/114231

Ms Carolyn McNally
Secretary
NSW Department of Planning and Environment
GPO Box 39
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Dear Ms McNally

F6 Extension, Stage 1 (SSI 17_8931) – NSW Health submission on the project proposal Environmental Impact Statement

Thank you for the opportunity to provide advice on the Environmental Impact Statement (EIS) for the proposed F6 Extension project, Stage 1 (SSI 17_8931). NSW Health has reviewed the EIS with an emphasis on the Human Health Risk Assessment, the Air Quality Impact Assessment and the Noise and Vibration Impact Assessment and provides comments on the potential impacts of air pollution (including dust during the construction phase) and noise.

Exposure to 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.

Exposure to excessive environmental noise has been shown in epidemiological studies to be associated with cardiovascular disease and sleep disturbance. Therefore, effective noise management strategies are required during the construction phase and from surface road traffic where management levels are exceeded.

On 19 October 2018 NSW Health received advice from Mr Hugh Durrant-Whyte, NSW Chief Scientist & Engineer, on behalf of the independent members of the NSW Advisory Committee on Tunnel Air Quality indicating that the methodology used for air quality modelling presented in the draft EIS is logical and reasonable.

The EIS describes a redirection of traffic from surface roads into the F6 Extension road tunnels. Hence, traffic-related air pollution will be released in the tunnels rather than on the surface roads. Well-designed and operated road tunnel ventilation outlets discharge in-tunnel air to the atmosphere at a height and velocity that promotes dispersion of the in-tunnel air, minimising ground-level impacts.

The EIS predicts that the contribution of emissions from road tunnel ventilation outlets to community exposures is small relative to the contribution of emissions from traffic on surface roads from other pollution sources. The primary source of community exposure to air pollution is from pre-existing regional air pollution, followed by pollution from surface road traffic.

Any potential air pollution-related health effects from the project are likely to be primarily a result of changes in volumes of traffic on the surface road network, not a result of the tunnel ventilation outlets.

The next steps in the development assessment process includes the development of management plans for the mitigation of noise and dust impacts. NSW Health will review these documents, along with the appropriate regulatory authorities.

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

- Any potential air pollution-related health effects from the project are likely to be primarily the result of changes in volumes of traffic on the surface road network, not a result of tunnel ventilation outlets.
- The predicted in-tunnel air quality would appear to be consistent with *the* NSW *In-tunnel air quality (nitrogen dioxide) policy*.
- Dust generated during construction activities may impact the health of nearby residents if not appropriately mitigated. Management plans to address air quality impacts associated with construction will be reviewed by NSW Health.
- Noise generated during construction is estimated to exceed management levels for exposure at some receptor locations including residents and schools. Management plans to address noise impacts associated with construction will be reviewed by NSW Health.
- Noise levels associated with surface road traffic associated with the F6 Extension Stage 1 are estimated to exceed management levels for some sensitive receptors. Management plans to address noise impacts associated with surface road traffic will be reviewed by NSW Health.

Thank you for your consideration of NSW Health's submission to the F6 Extension, Stage 1 project EIS. If you would like more information on any of the points raised in our submission, please contact Mr Matthew James, Acting Director Environmental Health Branch on 9424 5721.

Yours sincerely

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17/12/17

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NSW GOVERNMENT Health

Detailed comments from NSW Health's review of the Environmental Impact Statement for the F6 Extension, Stage 1 (SSI 17_8931)

Operation of the F6 Extension, Stage 1

Ambient air quality impacts

The primary source of community exposure to air pollution is from pre-existing regional air pollution, followed by pollution from surface road traffic. The project is expected to change the volume of traffic on surface road networks. Traffic volume will increase in some locations and reduce in others. These changes are associated with a redistribution of ground level air quality impacts.

Appendix E (Air quality technical report) and Appendix F (Human health risk technical report) indicates that the project design has been iteratively developed to minimise potential air quality and health impacts. Based on the current design, the EIS predicts that annual average PM2.5 within the study area may exceed relevant ambient air quality guideline values at all receptor locations, primarily as a result of background air pollution. Meeting long term air quality goals in the project area will require significant reductions in fine particle emissions across Sydney. For these reasons, it is important that all reasonable measures are taken to minimise exposure to traffic related air pollution.

Elevated receptors

Appendix E (Air quality technical report) of the EIS provides an assessment of air quality impacts at 10, 20, 30 and 45 metres above ground level. This assessment is based on the predicted changes in annual average and maximum 24-hour concentration of PM2.5 as a result of the project. At each increasing elevation the predicted influence of surface road traffic was clearly reduced, compared with at ground level.

At a height of 30 metres, the impact of surface level traffic was negligible. The contribution of tunnel ventilation outlets became more noticeable, although the largest changes in PM2.5 were still lower than at ground level.

At a height of 45 metres, the maximum annual average PM2.5 (1.58 µg/m3) and maximum 24-hour PM2.5 (15 µg/m3) at any receptor location was markedly higher than at ground level. The increase in PM2.5 at elevations of 45 meters are greater than those predicted at ground level resulting from surface road traffic.

The EIS classifies the air quality and health impacts to elevated receptors as being acceptable. This is because none of the receptor locations with the maximum increases in PM2.5 are known to have existing buildings with a height of more than 20 metres. The EIS classifies the impacts to theoretical receptors at 45 metres as being unacceptable. It is recommended that the Department of Planning take this information into account in regards to future planning developments.

Filtration of in-tunnel air

The EIS provides a rationale for the exclusion of in-tunnel filtration systems in the project design. Chapter 9 (Air Quality) describes that inclusion of a filtration system is expected to have a negligible impact on air quality. The project's proposed ventilation system is expected to ensure compliance with air quality criteria both in-tunnel and at ventilation outlets.

In-tunnel air quality

The EIS describes that modelled in-tunnel air quality meets operational criteria. It is therefore considered unlikely to result in pollutant exposures known to be associated with health effects provided commuters have motor vehicle windows closed and ventilation on recirculate.

The predicted in-tunnel air quality would appear to be consistent with the *In-tunnel air quality (nitrogen dioxide) policy*. However, as noted in Chapter 10 (Health safety and hazards), *the NO_2 guideline may not be protective of all health effects for all individuals. There is potential for severe asthmatic individuals, especially if they use motorbikes, to experience some change in respiratory response after using the tunnels, particularly when congested.*

NSW Health notes that signage has been used to mitigate risk for tunnel users for similar developments and recommends the development of appropriate and targeted communication strategies for this project.

Noise

Noise levels associated with operation of the project are expected to exceed management levels at some receptor locations. The EIS has identified locations where surface road traffic noise is expected to exceed the relevant criteria for residential land uses. A total of 107 receptor locations, including residential properties and schools may require noise mitigation measures.

NSW Health notes that next steps in the development assessment process includes the development of an Operational Noise and Vibration Review (ONVR) for the mitigation of noise impacts. The ONVR will be reviewed by NSW Health and the appropriate regulatory authorities.

Construction of the F6 Extension, Stage 1

Ambient air quality impacts

The EIS identifies that air quality impacts associated with dust and soil from construction are expected to occur at a number of receptor locations, including *high-sensitivity receptors* such as residences, cafes and schools.

Chapter 10 (Health, safety and hazards) describes these impacts as *temporary and relatively short –lived*. However, consideration should be given to quantifying the likely duration of exposures to inform risk characterisation.

NSW Health notes that next steps in the development assessment process includes development of a Construction Air Quality Management Plan (CAQMP) to address air quality impacts associated with construction. The CAQMP will be reviewed by NSW Health and the appropriate regulatory authorities.

Noise

Noise levels associated with construction of the project are expected to exceed management levels at a number receptor locations. Five receptor locations have been specifically identified in the EIS as *highly affected* (noise exceeding 75 dB(A)) from both standard and out-of-hours construction noise. These include receptors at the Rockdale, President Avenue and Princes Highway construction ancillary facilities, the cut-and-cover works at West Botany Street and the President Avenue surface works. The worst-case noise levels are sufficiently high that health impacts may occur.

NSW Health notes that next steps in the development assessment process includes the development of a Construction Noise and Vibration Management Plan (CNVMP) for the mitigation of construction noise impacts. The CNVMP will be reviewed by NSW Health and the appropriate regulatory authorities.

NSW Health recommends that the CNVMP include tailored interventions for the most vulnerable receptors, for example Cairnsfoot School children. All reasonable measures should be taken to limit community exposure to construction noise associated with construction.

Odour

The EIS provides some discussion about the potential odours from disturbance of acid sulphate soils and historic landfills in the region. Exposure to high levels of hydrogen sulphide may cause

people with pre-existing respiratory conditions to experience worsening of their symptoms. NSW Health's past experience is that hydrogen sulphide odours generate significant public health and wellbeing complaints.

NSW Health notes that next steps in the development assessment process includes the development of a Construction Air Quality Management Plan (CAQMP) for the mitigation of odour and air quality impacts. The CNVMP will be reviewed by NSW Health and the appropriate regulatory authorities.

Other impacts

Chapter 17 (Groundwater and geology) and Appendix J (Contamination technical report) of the EIS have identified a high volume of residential bores in the area (including approximately 370 registered bores and potentially additional unregistered bores). The EIS notes that potential water quality impacts from the construction phase of the project will be managed via the appropriate management plans and site specific procedures. Although not used for drinking purposes, it is recommended that there be clear communication with the local communities about the risk and consequences of any bore water contamination.

Other potential health impacts

Significant health benefits are associated with active transport such as walking, cycling, and public transport. It is important that the 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.