In the matter of the Metro Tunnel

Planning Panels Victoria

Proponent: Melbourne Metro Rail Authority

Joint Statement prepared by Shane Lakmaker and Terry Bellair arising from conclave of air quality experts

1 Background

The IAC inquiring into the EES for the Melbourne Metro Project has required the following experts to participate in conclave to canvass air quality issues related to the EES:

- Shane Lakmaker (Authority Representative), Atmospheric Scientist, Jacobs Group (Australia) Pty Ltd of 710 Hunter Street Newcastle West NSW 2302; and
- Dr Terry Bellair (Submitter Representative), Principal of Environmental Science Associates, of 18 Goldsmith Crescent, Castlemaine VIC 3450.

The conclave was conducted by telephone and email, as the participants are located in Newcastle and Castlemaine, respectively.

This joint statement highlights points of agreement and disagreement between the experts.

2 Summary of Outcomes

Description of issue	Agreed or not agreed?	Authority view	Submitter view
1. Response to "Requirement for an EES" (EES Section 1.3.1) – Minister's Public Notice 2: • *"An [EES} process will provide a robust and transparent and integrated framework through which:* o *The potential environmental effects can be rigorously assessed - -* o *The effectiveness of proposed measures to avoid, minimise, manage and offset environmental effects and related risks can be evaluated"*	Not agreed	The Technical Report addresses this issue. The reasons for this position are as follows: - Model files were not provided with the Technical Report only for reasons of readability and because specialist knowledge is required to interpret the files. The model files have subsequently been provided to the submitter for review and to address a concern of lack of transparency. - The effectiveness of measures is well defined by existing literature. The relevant reference is the "Emission Estimation Technique Manual for Mining" (NPI 2012) which provides a range of activities, control methods and emission reductions. These are relevant to excavation works as proposed as part of the Project. The control methods and emission reductions are documented in the Technical Report (refer to Table 4-7 to 4-12) and these data have been used in the air quality modelling, the results of which have been used to inform the determination of environmental effects and risks. - RCS emissions are not expected to cause adverse air quality impacts, based on a subsequent review of model predictions. This is discussed in more detail against item 5 below. - Spoil handling quantities associated with the excavation and construction of Domain Station were included in the modelling. This was a concern of the submitter. Indicative volumes of spoil handled for Domain Station works are included in Table 4-5 of the Technical Report. - Emissions from ventilation outlets will form only a small fraction of the total emissions from the construction activities, however it is acknowledged that ventilation outlet details will need to be confirmed with the updated modelling task once construction details have been further established (as per EPR AQ1). - Model receptors are at a sufficiently fine resolution (25 m spacing) to be representative of nearest sensitive receptors and model output data closely reflect the concentration contour plots provided in the Technical Report.	The Air Quality assessment is not robust, for the reasons set out below. However, I acknowledge that an important contributing issue has been the lack of detailed information in the EES on factors which will have a significant bearing on dust emission rates, such as the nature of TBM and excavation operations, underground ventilation arrangements, spoil transport and handling, and the number and size of spoil stockpiles. The Air Quality assessment described in the EES is not transparent, because the model input files are not included in the document, as is normal practice in my experience (such files specify model settings and details of the location, dimensions and emission rates for emission sources).During the conclave process, I was provided with the input file used by AJM for modelling particulate emissions (along with the output file for the 24-hour PM10 predictions presented in Figure 12.6 in the EES. The printout of the input file comprises only three A4 pages. The Air Quality assessment does not evaluate the effectiveness of measures to avoid, minimise - - environmental effects and related risks - while some basic dust control measures have been assumed by the modellers, to my knowledge, these have not been specified/endorsed by MMRA. My comments on RCS are set out under Issue 5. Predictions should have been made for discrete receptors (such as Botanica apartment balcony doors facing St Kilda Road, because of their close proximity to the Domain station site), and also for "worst case" situations when construction activities are occurring in their immediate vicinity. Spoil generated by the construction of the Domain station has been included in the overall estimates of spoil volumes; however, dust generated directly by the station excavation works has not been included in the modelled scenario.

Description of issue	Agreed or not agreed?	Authority view	Submitter view
2. The Botanica apartments will be sensitive to increases in local dust levels	Agreed in part	Agreed. EPR AQ1 acknowledges that potential increases in dust during construction is the key air quality issue for the project and that suitable plans will need to be developed to minimise impacts on residential and commercial properties. These properties will include The Botanica apartments. It has been suggested by the submitter that EPR AQ1 could be more prescriptive in terms of the management measures to be implemented. I support this suggestion and propose consideration of the following additional text for EPR AQ1: *"The plan must:* - *Describe the measures that would be implemented to ensure compliance with air quality criteria. These measures should include but not be limited to watering of haul routes as required, restricting on-site vehicle speeds, clearly marked haul routes, water sprays on stockpiles as required, minimising drop distances when loading stockpiles, wind breaks, and modification of activities in response to adverse weather conditions.* - *Describe the proposed air quality management system"*	Agreed. However, these apartments will be <u>particularly</u> sensitive for the reasons set out on page 1 of my statement. The suggested additional management measures for EPR AQ1 are typical of measures commonly applied at extractive industry operations, but in my view, fall well short of the controls which should be applied in this situation, where construction activities will occur for a prolonged period in very close proximity to residents and Melbourne Grammar.
3. The following design criteria in Schedule A of SEPP (AQM) should be included for any point sources (such as ventilation air discharges) PM_{10} - 80 µg/m^3 (1-hour average) $PM_{2.5}$ - 50 µg/m^3 (1-hour average) RCS (as $PM_{2.5}$) - 0.33 µg/m^3 (3-minute average)	Agreed	Agreed.	Agreed.

4. Dispersion modelling does not provide an adequate basis for defining residual risk	Not agreed	The dispersion modelling does provide an adequate basis for defining residual risk. The reasons for this position are as follows: - Emissions from ventilation outlets (locations and ventilation rates currently not known) will form only a small fraction of the total emissions from the construction activities. It is unlikely that the currently determined "Medium" residual risk (based on a "Moderate" consequence and "Likely" likelihood) will change as a result of ventilation outlet emissions. - Spoil handling quantities associated with the excavation and construction of Domain Station were included in the modelling. This was a concern of the submitter. Indicative volumes of spoil handled for Domain Station works are included in Table 4-5 of the Technical Report. - Emission data in the model input files match the emission data presented in Table 4-9 of Technical Appendix H and wheel generated dust is included. - RCS emissions are not expected to cause adverse air quality impacts, based on a subsequent review of model predictions. This is discussed in more detail against item 5 below. - Highest concentrations due to the proposed construction activities will be at ground level. The Concept plan construction information indicates that dust generating activities will be at ground level and dispersion models will predict lower concentrations at elevated locations.	The air quality modelling does not: • consider all potentially significant sources of particulates; • consider potential RCS emissions; • evaluate "worst case" scenarios for The Botanica; nor • predict contaminant concentrations at discrete, sensitive receptors (such as at balcony doors on Botanica apartments facing St Kilda Road). The AERMOD input file indicates that the modeller allocated the total PM_{10} emission rate listed in Table 4-9 of Technical Appendix H to 11 volume sources representing the construction site along St Kilda Road, and one volume source on the Edmund Herring Oval. This explains why the model plots do not reflect the fact that the haul road is projected to be the predominant source of particulate emissions in the Domain precinct. However, this has the effect of providing more conservative predictions of particulate concentrations along St Kilda Road. While emissions from underground ventilation exhausts can be expected to represent a small proportion of overall dust emissions in the Domain precinct, they may have a significant impact if located close to sensitive uses (such as apartments). Maximum particulate concentrations associated with discharges of ventilation from underground construction activities may be experienced at elevated receptors, depending on discharge conditions (elevation, vertical discharge velocity and temperature).

5. It will be important to establish whether respirable crystalline silica will be an issue associated with managing spoil	Agreed in part	Agreed. Identification of any additional air quality issues such as RCS would be a key step in the dust management and monitoring plan development process, as per EPR AQ1. RCS emissions were not identified as a key air quality issue in the environmental risk assessment as this has not been identified as an issue for other, similar projects of this scale and for projects with higher volumes of material handled. However the potential impacts of RCS have subsequently been reviewed. Figure 13-3 from the Technical Report provides an estimate of annual average $PM_{2.5}$ concentrations in the Domain Precinct. Monitoring by EPA Vic has indicated that background levels of RCS in Melbourne (Brooklyn and Footscray) are negligible (EPA Vic–1444, 2012). Assuming that 100% of the $PM_{2.5}$ emissions are RCS (a conservative approach) the indication from the modelling is that the highest annual average RSC concentrations will be in the order of 0.5 to 1 $\mu g/m^3$, which is lower than the assessment criterion of 3 $\mu g/m^3$. Therefore RCS is not expected to be an issue.	Agreed. However, this needs to be clarified (RCS may also be an issue for discharges of ventilation air from underground construction activities). The potential for RCS to be a significant issue cannot be discounted at this stage, particularly in view of the very stringent SEPP(AQM) design criterion of 0.33 $\mu g/m^3$ (3-minute average) for RCS from point sources (such as ventilation air discharges).
6. Further dispersion modelling should be conducted to include emissions from Domain Station excavation	Agreed in part	Agreed. EPR AQ1 requires updated air modelling for construction. However it should be noted that spoil handling quantities associated with the excavation and construction of Domain Station were included in the Technical Report modelling. Indicative volumes of spoil handled for Domain Station works are included in Table 4-5 of the Technical Report.	Agreed. Updated dispersion modelling is essential to assess compliance with the relevant EPA air quality criteria and identify any specific air quality concerns requiring particular attention during construction. Dust emissions directly associated with excavation of the Domain station are not included in the model input file.
7. Establishment of a Community Liaison Committee to oversee dust management during the construction period	Agreed	Agreed. A Community Liaison Committee, or similar, would be beneficial to make sure there is ongoing focus on dust management during construction.	It will be important to establish a Community Liaison Committee (or similar) for the Domain Precinct, as recommended in in Section 6.5 of my statement. EPR AQ1 provides, at best, an inadequate basis for the development of a Construction Environmental Management Plan (CEMP) by contractor(s) engaged by the MMRA. My experience suggests that consultation with EPA cannot always be relied on to provide appropriate advice and oversight of projects.

3 Declarations

We have made all the inquiries that we believe are desirable and appropriate and no matters of significance which we regard as relevant have to our knowledge been withheld from the Panel.

We have not been instructed by any external party not to reach agreement in respect of points of difference.

Signed 

Shane Lakmaker

Dated 22 August 2016

Signed 

Dr Terry Bellair

Dated 22 August 2016