

# Memorandum

07 June 2018

To	<b>LEVEL CROSSING REMOVAL AUTHORITY</b>
Copy to	Greta Marks, Will Bartley
From	Barry Cook
Site	Edithvale and Bonbeach EES Hearing
Subject	Adequacy of Measuring Stations for Dust and Air Quality
Memo Number	LXRA-LX31-00-PA-MEM-0057 Revision A

## 1. Inquiry and Advisory Committee

The Inquiry and Advisory Committee (IAC) for the Edithvale and Bonbeach Environment Effects Statement (EES) are currently, 4 to 15 June 2018, conducting seven days of public hearings. I have previously submitted an Expert Witness statement in this matter. Subsequent to the publication of the statement and the IAC hearings commencing, Clayton Utz have requested:

- “written comments in the form of a short memo that addresses the adequacy of the data that you have relied upon in respect of the dust and air quality assessment” (email from Greta Marks, Tuesday 5/06/2018 7:21 PM).

## 2. Existing conditions assessment

Section 5.1 of Technical Report I to the EES addresses ambient air quality in relation to existing conditions for the Project area. Since it is very unlikely to have site-specific existing air quality ambient monitoring performed at project sites, it is standard practice to utilise the nearest and most relevant (usually long-term) monitoring datasets. A site-representativeness test is applied. By default, the nearest available is usually the most representative. A worst-case scenario is that available data is not representative and that would require a minimum of a year-long monitoring campaign to ‘fill the data gap’.

Dust monitoring takes the form of particulate matter (PM) measurements of in-air concentrations. These concentrations are expressed as mass per volume (in this instance micro-gram per cubic metre of air). Table 5 of the Technical Report identified the nearest available EPA Victoria monitoring stations with site-representative data. For PM<sub>10</sub> (particulate matter with equivalent aerodynamic diameter of less than 10 micron) the Dandenong station was used. Since both Dandenong and Brighton from the EPA Victoria AirWatch network measures PM<sub>2.5</sub> (particulate matter with equivalent aerodynamic diameter of less than 2.5 micron) with instruments not meeting Australian Standards, the nearest monitoring station with reliable measurements is at Alphington.

For measurements of gaseous substances, the standard AirWatch network routinely measures the Class-1 indicators of Nitrogen Dioxide (NO<sub>2</sub>), Carbon Monoxide (CO) and Sulphur Dioxide (SO<sub>2</sub>). All of the Air Quality Monitoring Stations (AQMS) in the network measure NO<sub>2</sub>. This makes Brighton and Dandenong the closest stations to the Project area. SO<sub>2</sub> however, is not measured at all stations with the nearest AQMS

measuring SO<sub>2</sub> being Alphington. CO is only measured where high levels are expected with Footscray and Alphington being the closest to the Project area with the lowest readings.

The latest complete year of annual statistics reported by EPA Victoria, 2014, was used for the AQMS within the AirWatch network.

There is limited air toxic monitoring available across the network as Class-2 and Class-3 indicators are not routinely measured. This expensive monitoring is targeted to high impact areas as specific monitoring campaigns. Due to the EPA Victoria commitments to the development of an Air Toxics National Environment Protection Measure (NEPM), the most comprehensive benzene measurements undertaken to date is nearby the Westgate Freeway in Brooklyn during 2004. Benzene measurements were not duplicated for the Francis Street, Yarraville monitoring campaign of 2012-13. Instead, the traffic-related marker of PAH's was used – this being the most comprehensive to date dataset across the Greater Melbourne or Port Phillip Control Region.

### **3. Adequacy of the data**

#### **3.1 Site-representative data**

As stated above (and in Section 5.1 of Technical Report I), by default, the nearest available data is usually the most representative. The EPA Victoria AirWatch network AQMS are established so as to be representative of community exposure and are to be reported to the National Environment Protection (Ambient Air Quality) Measure. This requirement is codified in the State Environment Protection Policy (Ambient Air Quality). On 16 February 2001, the Commonwealth, State and Territory Environment Ministers approved Victoria's Air Quality Monitoring Plan for reporting air quality levels against national standards agreed on in 1998. The '*Ambient Air Quality NEPM Monitoring Plan Victoria*' is documented as EPA Victoria Publication 763 of November 2001.

As a general rule on the representativeness test applied to ambient/background air quality data, a conservative assumption can be brought into play where the measured data is expected to be higher than the site-specific circumstances. As discussed in Section 4.1 of Technical Report I, site-representative data can be higher than the expected site-specific exposure. As indicated in Figure 4 of Technical Report I, the Project area has better air quality (as indicated by green shading) than Dandenong, Brighton and indeed any of the monitoring locations used for baseline pollutant levels.

#### **3.2 Particulate Matter (PM)**

As stated in the Victorian NEPM monitoring plan (EPA Victoria, 2001, p.18):

- “The PM<sub>10</sub> network will therefore broadly follow the population distribution in the region.”
- “The nominated Air NEPM particle (PM<sub>10</sub>) network ... consists of ... South Metro (Brighton) ... Southeast Metro (Dandenong)”.

Dandenong is closer to the Project area than Brighton and has a similar population density exposure pattern as it is closer to 'Green Wedge' areas compared to Brighton.

It was not a requirement of the Victorian NEPM monitoring plan to measure PM<sub>2.5</sub>, however “the Air NEPM Final Impact Statement requires monitoring of this pollutant for establishing data sets for future assessments and reviews” (EPA Victoria, 2001, p.1). During the 2014 reporting year for NEPM, EPA Victoria indicated that the PM<sub>2.5</sub> measurements by 'partisol samplers' (used at Alphington) have superior accuracy to the alternative measurements undertaken at Dandenong and Brighton. Moreover, Alphington is representative of general residential areas of Melbourne while avoiding, similar to the Project area, the direct impacts of localised pollutant sources.

### **3.3 Class-1 gaseous indicators**

“NO<sub>2</sub> levels ... are generally due to the primary emissions from traffic, heating and industrial sources” (EPA Victoria 2001, p.31). Therefore Brighton is preferred over Dandenong as the latter is closer to industrial sources compared to Brighton and the Project area.

Carbon monoxide (CO) is not measured at Brighton or Dandenong as CO concentrations are generally higher in the vicinity of heavy traffic. Of the CO monitoring stations in the AirWatch network, Footscray was selected as it has the least exposure to localised emissions from the major road network and is closer to bayside influences (similar to the project area) than Alphington.

For SO<sub>2</sub> monitoring, the Victorian NEPM monitoring plan nominated ‘Inner East Metro (Alphington)’ site is best placed to indicate levels in general residential areas of Melbourne when compared to “Upper-bound monitoring stations ... proposed at Geelong, CBD and Southwest Metro (Paisley)” (EPA Victoria, 2001, p.20).

### **3.4 Air Toxics**

The ‘Air Toxics NEPM’ originally set out to establish baseline levels to be used in setting standards and goals, including for traffic-emitting markers of benzene and PAH's. The target was for each jurisdiction to measure at ‘peak impacted locations’. This is logical as impacts outside localised ‘hot-spots’ are much lower and it is very expensive to measure in locations where the majority of measurements would be ‘below detection limits’. Section 5.1 of Technical report I sourced data from the most comprehensive studies for the two markers. These are what are used as ambient/background levels for major road corridor projects in Greater Melbourne. The site-representative test is then applied so the Project area will be lower with better prevailing air quality. The site-specific air toxic levels will be somewhere between zero and the ‘hot-spot’ recorded levels. So when undertaking a cumulative assessment (background plus incremental), the assessed levels are conservative.

## **4. Summary of opinion**

The Air Quality Assessment in Technical Report I to the Environment Effects Statement (EES) has demonstrated that the changes to air quality due to the Project are small to negligible. Additionally, during construction, air quality impacts are negligible for gaseous emissions and manageable (via mitigation measures) for dust and odour. When it comes to management of construction dust and odour impacts, it is the increment above background that is the most important.

The assessment report has a low reliance on the quantum of the existing conditions of dust and air quality. Therefore, site-representative data is adequate to describe background levels specific to the Project area (site-specific).

Kind regards

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