Our reference: DOC 16/288968
Laura Ansted; 9995 6812

Ms Pamela Morales
Planning Officer
Industry Assessments
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Dear Ms Morales,

EPA response to Vopak Terminal B4 Air Quality Impact Assessment

The Environment Protection Authority (EPA) refers to the Air Quality Impact Assessment for Vopak Terminals B4 – State Significant Development, dated 27 May 2016 (Ref. 60344169).

The Air Quality Impact Assessment (AQIA) was prepared by AECOM Australia Pty Ltd (AECOM) in response to previous comments and recommendations provided by the EPA on the earlier AQIA revisions and associated documents:

- Air Quality Impact Assessment - Vopak Terminals B4 – State Significant Development (AECOM, 8 October 2015 Rev D).
- Response to Submissions Report - SSD_7000 Vopak Site B4 Tank Farm (AECOM, 18 December 2015 Rev B).
- Air Quality Impact Assessment - Vopak Terminals B4 – State Significant Development (AECOM, 7 March 2016 Rev F)
- Vopak B4 Project (SSD_700): Response to EPA Comments - Addendum Information (AECOM, 31 March 2016).

The EPA is satisfied that the revised AQIA addresses most of the issues previously raised. Where items were not addressed fully the EPA proposes Consent Conditions. The EPA's detailed comments on the AQIA are provided in Attachment A. Wording for a proposed Consent Condition is provided in Attachment B.

If you have any questions or concerns in relation to this matter please contact Laura Ansted on (02) 9995 6812.

Yours sincerely

14 June 2016

JAMES GOODWIN
A/Manager – Sydney Industry
Environment Protection Authority

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Attachment A - EPA's detailed comments on the revised AQIA

Assessment of additional emission sources

The AQIA states:

"GLC contours were not provided for VOCs other than benzene. The ratio of each VOC to benzene from the reported residential GLCs were calculated and applied to the benzene B4 boundary GLC to gain the speciated VOC concentrations."

However, toluene, xylene and ethyl benzene are listed in Table 6-2 of GHD's report (GHD, 2011[1]). Terminal's bitumen facility VOC impacts listed in Table 6 does not appear to be the same as the numbers presented in Table 6-2 of GHD's report (GHD, 2011[2]).

The proposed expansions for Vopak including site B (B1, B2 and B3) and the bitumen facility has been included in the cumulative assessment.

The predicted cumulative impact is well below the relevant EPA criterion for the assessed VOCs with the exception of benzene and cumene. The predicted impact of benzene and cumene is approximately 88% and 75% of the relevant EPA criterion, respectively.

As outlined in Section 128 of the *Protection of the Environmental Operations Act 1997* the occupier of any premises must carry out activities or operate by such practicable means as may be necessary to prevent or minimise air pollution. Further, the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* specifies that principal toxic air pollution (such as benzene) must be minimised to the maximum extent achievable through the application of best-practice process design and/or emission controls.

In light of predicted benzene impacts at almost 90% of the criterion the EPA recommends a consent condition to investigate the feasibility of benzene reductions at the entire Vopak site B complex such as directing emissions from the storage tanks to the vapour recovery unit.

Assessment of peak impacts
Emissions smoothed annually may under predict peak impacts

Monthly emission rates were provided by TANKS. TANKS outputs were converted to grams per second and modelled as monthly varying emissions to account for seasonal variation. Maximum impacts from the neighbouring facilities were added to the cumulative impact assessment.

The EPA considers this to be adequately addressed.

Assessment does not adequately justify the adoption of 99.9th percentile model predictions

The VOC speciation in the assessment used default values from NPI. The revised report states *"It is AECOMs experience that these values are considered to be conservative and would likely result in an overestimation of actual emissions"*. Based on this and the site specific tank throughput and design data and meteorology used in the assessment, the proponent considers use of a level 2 assessment approach to be reasonable.

Although site specific meteorological data has been used in the assessment, VOC speciation is important in determining the impacts of toxic pollutants from the facility.

[1] GHD, *Report for Bitumen Import and Dispatch Facility, Port Botany – Air Quality Assessment*, April 2011
[2] GHD, *Report for Bitumen Import and Dispatch Facility, Port Botany – Air Quality Assessment*, April 2011

The EPA recommends the proponent complete a post commissioning assessment to characterise speciated VOC emissions from the facility.

Details of a recommended Consent Condition for post commissioning assessment is provided in Attachment B. Data collected in the post commissioning assessment will also assist in providing site specific values for load based licensing calculations.

Assessment of ozone impacts

A Level 1 ozone assessment was completed using the Level 1 screening tool. The estimated VOC emissions from the Vopak facilities including B1, B2, B3 and B4 is 86 tonnes per annum. This was divided by the number of days in a year to get an input VOC emission of 0.236 tonnes per day.

The estimated maximum 1-hour and 4-hour average ozone concentration increment from the screening tool is well below the significant impact level for ozone non-attainment areas. Therefore, no further analysis was completed.

Although emissions have been spread evenly through the year for the ozone assessment, the estimated daily VOC emissions of 0.236 tonnes per day will have to increase 6 folds before an exceedance of the significant impact level of 0.5 ppb.

The EPA considers this to be adequately addressed.

Justification of model meteorology
Model meteorology not demonstrated as representative

Appendix A of the revised AQIA includes an analysis of meteorology. A comparison of wind speed, stability class and wind roses between BoM Sydney Airport and CALMET generated data is presented in Appendix A. Three years of BoM data in aggregate is used in the comparison including 2013 to 2015.

The comparison provides an indication of the performance of the model but does not provide justification that 2014 is a representative year for dispersion modelling.

CALMET model evaluation not adequate

The settings and 7 critical parameters for CALMET are presented in Table 8 of the revised AQIA. The CALMET simulation was revised to align with EPA's CALPUFF guidance3. BoM Sydney Airport observations for 2014 was used as surface input into CALMET. RMAX1 and R1 was set to be 5 km and 1 km, respectively. The other critical parameters are set in accordance with EPA's CALPUFF guidance.

CALMET predictions are extracted at Sydney Airport and compared with BoM measured data. The wind roses presented indicate the CALMET predictions at the airport are similar to the data measured at BoM Sydney Airport station. Comparison of stability class at extracted at Vopak B4 compared to data extracted at Sydney Airport station show mostly neutral conditions at both locations with more variability between class D and F at Vopak B4.

Wind roses extracted at the airport are expected to be similar as BoM data was used as input into the dispersion model. Wind roses extracted at Vopak B4 are not presented in the analysis.

Although the proponent has not thoroughly addressed the issues regarding model meteorology, it is noted that the model setup is in accordance with EPA's CALPUFF guidance and the analysis completed indicates good model performance.

[3] TRC, *Generic Guidance and Optimum Model Settings for the CALPUFF Modeling System for Inclusion into the 'Approved Methods for the Modeling and Assessments of Air Pollutants in NSW, Australia'*, March 2011

The EPA will require any further modelling undertaken by Vopak at the premises to include robust discussion on the representativeness of the year selected for modelling and detailed meteorological model evaluation.

Attachment B – Post Commissioning Air Emissions Report

A post commissioning air emissions report must be completed to verify the major emission sources assessed in the air quality impact assessment report (AECOM, 2016[4]). The post commissioning air emissions report must be completed by a suitably qualified and independent person(s) and include:

- Post commissioning sampling and speciation of VOC emissions from the storage tanks and vapour recovery unit for the fuel types assessed in the air quality impact assessment. Sampling must be undertaken by a suitably qualified personnel.
- Records of the operating capacity and process rate of the activity at the time of sampling.
- Sampling undertaken in accordance with the requirements specified in the *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW*.
- Results of the post commissioning sampling must be compared with the modelled emissions in the air quality impact assessment and demonstrate compliance with the ground level criteria in the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW*.

Within six months of commissioning the licensee must submit a written report to the EPA detailing the results of post commissioning source emissions sampling and analysis.

[4] AECOM, *Air Quality Impact Assessment Vopak Terminal B4 – State Significant Development*, 27 May 2016