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30 January 2020

Philip Towler
Associate Director
EMM Consulting
Via email: ptowler@emmconsulting.com.au

RE: Georges Cove Marina – Response to Comments on Air Quality Assessment

Dear Philip,
The following outlines additional information and clarification to address the Liverpool City Council's comments relating to the *Air Quality Assessment for the Proposed Construction and Operation of the Georges Cove Marina* (**Todoroski Air Sciences, 2011**) and subsequent reapplication report *Air Quality and Greenhouse Gas Assessment for the Proposed Construction and Operation of the Georges Cove Marina* (**Todoroski Air Sciences, 2015**).

The comments are shown in grey italics, and are followed by the response to the comment.

The air quality assessment prepared by Todoroski Air Sciences dated 14th December 2011 referred to air quality criteria adopted from the 'Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales' prepared by the Department of Environment and Conservation NSW dated 2005. Minor revisions were made to this document in November 2016 which resulted in a more recent document titled 'Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales' being published by the NSW EPA in January 2017. The existing air quality assessment must be revised to reference the more recent 'Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales' being published by the NSW EPA in January 2017.

The key update to the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (**NSW EPA, 2017**) is the inclusion of particle assessment criteria consistent with the National Environmental Protection (Ambient Air Quality) Measure particle standards for $PM_{2.5}$ and annual average PM_{10}. This includes new criteria for $PM_{2.5}$ and also a reduction in the annual average PM_{10} criteria from a level of 30µg/m³ to 25µg/m³. The impact assessment criteria for the other dust metrics and other pollutants remain unchanged.

The Air Quality Assessment indicates that the potential for dust emissions arising from the construction and operation of the Project would not lead to a significant increase to the existing ambient dust levels considering the current use of the site, the separation distance to the nearest sensitive receptors and the proposed mitigation measures.

The dust generating activities associated with the Project would typically produce dust particles in the larger size fractions (typically PM_{10} and TSP) via means of handling of soils, vehicles travelling on unpaved surfaces during construction and from the occasional sanding within the workshop for boat maintenance during operation. Smaller particles ($PM_{2.5}$ emissions) are typically generated via a means of combustion and is not a significant pollutant associated with the Project. The dust emission sources at the Project would be managed via the proposed mitigation measures which include watering dusty areas and haul roads and fitting sanders with an extraction system. These mitigation measures are effective to ensure the operation of the Project does not cause any significant increase in the ambient dust levels and would thus be able to comply with the new particulate impact assessment criteria.

In addition, it is noted that the submitted air quality assessment considers off-site residential receivers. However, it is also noted that the future residential receivers on the northern Tanlane land have not been considered as part of the submitted air quality assessment. As the applicant is aware, a number of DAs have been lodged with Council seeking to subdivide the northern Tanlane land and construct residential dwellings (i.e. Mirvac Site – DA-24/2017, DA-519/2017, DA-758/2017, DA-319/2018). In this regard, the submitted air quality assessment must also be revised to consider the potential amenity impacts of the proposed construction and operation of a Marina on the residential dwellings proposed in the R3 zoned land to the north of the Marina site.

To assess the potential for air quality impacts in the northern Tanlane land, the maximum predicted level in the modelling domain (approximately 3x3km surrounding the Project site) has been analysed (shown in Appendix A of the Air Quality Assessment) (**Todoroski Air Sciences, 2011**). This value is applied to the estimated worst-case emission rates for the operation of the Project to assess potential impacts.

Table 1 presents the estimated worst-case emission rates and predicted maximum ground level 1-hour average concentrations. The predicted ground level concentrations are below the relevant criteria for all assessed pollutants in the modelling domain and thus would not impact the land to the north of the site.

Table 1: Emissions rates and predicted maximum concentrations in modelling domain

Pollutant	Emission rate (g/s)	Predicted 1-hour average maximum ground level concentration (mg/m^3)	NSW EPA Criteria (mg/m^3)
Cyclohexane	3.88E-03	0.0012	19
Ethyl acetate	1.52E-02	0.0048	12.1
Acetone	9.48E-03	0.0030	22
Methyl ethyl ketone	4.03E-03	0.0013	3.2
Methyl isobutyl ketone	2.69E-03	0.0008	0.05
Xylene	6.10E-02	0.019	0.19
Toluene	2.83E-01	0.089	0.36
Ethylbenzene	4.03E-03	0.0013	8
other Volatile organic compounds	3.64E-01	0.11	-
Styrene	3.59E-01	0.11	0.12

Please feel free to contact us if you would like to clarify any aspect of this letter.

Yours faithfully,
Todoroski Air Sciences

Aleks Todoroski

Philip Henschke

References

Todoroski Air Sciences (2011)

"Air Quality Assessment for the Proposed Construction and Operation of the Georges Cove Marina", prepared for Benedict Industries by Todoroski Air Sciences, December 2011.

Todoroski Air Sciences (2015)

"Air Quality and Greenhouse Gas Assessment for the Proposed Construction and Operation of the Georges Cove Marina", prepared for EMGA Mitchell McLennan by Todoroski Air Sciences, April 2015.