Ground floor, 20 Chandos Street
St Leonards NSW 2065
PO Box 21
St Leonards NSW 1590

T 02 9493 9500
E info@emmconsulting.com.au

www.emmconsulting.com.au

4 August 2020

Kate Jackson
Boral Resources Pty Ltd
Delivered by email

Re: St Peters Terminal - additional atmospheric dispersion modelling - 1.75 Mtpa handling facility throughput - response to EPA letter

Dear Kate,

1 Introduction

Boral Resources (NSW) Pty Ltd (Boral) owns and operates a concrete batching plant (the concrete plant) and construction materials handling facility (the handling facility) at 25 Burrows Road South, St Peters (the site). EMM Consulting Pty Ltd (EMM) was engaged by Boral to prepare an air quality impact assessment for an interim operational scenario at the site under Modification 12 throughput rates for the handling facility (MOD12 AQIA).

The NSW Department of Planning, Industry and Environment (DPIE) received technical review comments for the Modification 12 air quality impact assessment (MOD12 AQIA) from the NSW Environment Protection Agency (EPA) in a letter dated 24 July 2020 (the EPA letter). The recommendations from the EPA and associated responses are presented in the following sections.

2 EPA Recommendation 1

EPA recommendation: The proponent should revise the additional AQIA to consider additional mitigation measures and demonstrate that best management practices will be implemented to minimise emissions in accordance with the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* approach for dealing with elevated backgrounds and exceedances of criteria.

EMM response:

The EPA has stated the following:

> The additional AQIA does not clarify whether a contemporaneous assessment of particulate impacts was undertaken or whether the highest predicted incremental concentrations were added to the highest (non-exceedance) background concentration (2015 Earlwood).

On page 2 of the letter, the EPA has presented cumulative impact assessment calculations for receptor R3 (cumulative 24-hour average PM_{10}) and R4 (cumulative 24-hour average PM_{10}). The Earlwood 2015 PM_{10} and $PM_{2.5}$ monitoring datasets were used as background consistent with the MOD12 AQIA. There are one and two recorded concentrations above the applicable EPA impact assessment criteria for PM_{10} and $PM_{2.5}$ respectively in the Earlwood 2015 dataset.

To assess cumulative 24-hour average PM_{10} concentrations, the EPA has combined the maximum predicted site only incremental 24-hour average PM_{10} concentration at R3 with all daily varying PM_{10} concentrations

from the 2015 Earlwood PM_{10} monitoring dataset. The EPA calculated one additional exceedance of criteria for 24-hour average PM_{10} at receptor R3.

Similarly, to assess cumulative 24-hour average $PM_{2.5}$ concentrations, the EPA has combined the maximum predicted site only incremental 24-hour average $PM_{2.5}$ concentration at R4 with all daily varying $PM_{2.5}$ concentrations from the 2015 Earlwood $PM_{2.5}$ monitoring dataset. The EPA calculated three additional exceedances of criteria for 24-hour average PM_{10} at receptor R4.

However, by applying the maximum concentration to all background measurements, the approach adopted by the EPA is not consistent with the Level 1 cumulative assessment approach in Section 5.1 of the Approved Methods for Modelling (EPA 2016), which conservatively requires the pairing of the maximum predicted concentration with the maximum background concentration. Therefore, the calculation of one additional exceedance day for PM_{10} and three additional exceedance days for $PM_{2.5}$ by the EPA is not considered accurate.

Nevertheless, EMM can confirm that the MOD12 AQIA undertook a contemporaneous cumulative assessment approach, consistent with the Level 2 assessment approach detailed in Section 5.1 of the Approved Methods for Modelling (EPA 2016). As stated in the MOD12 AQIA, a single additional exceedance day was predicted at receptor R4 for 24-hour average $PM_{2.5}$. This exceedance coincided with a background concentration of 23.9 µg/m³. The contribution to the cumulative exceedance at R4 is illustrated in Figure 2.1.

It can be seen from Figure 2.1 that the background concentration dominates the cumulative concentration (approximately 94%). The other following points are noted:

- the modelling results relate to peak day activity rates occurring continuously throughout the modelling period, which is a highly conservative assumption;
- by adopting the maximum annual throughput at the handling facility, the modelled scenario relates to the worst-case potential for operational split with regards to air emissions and impacts.
- the impacted receptor in question is an industrial receptor that would not be exposed to an entire 24-hour averaging period.

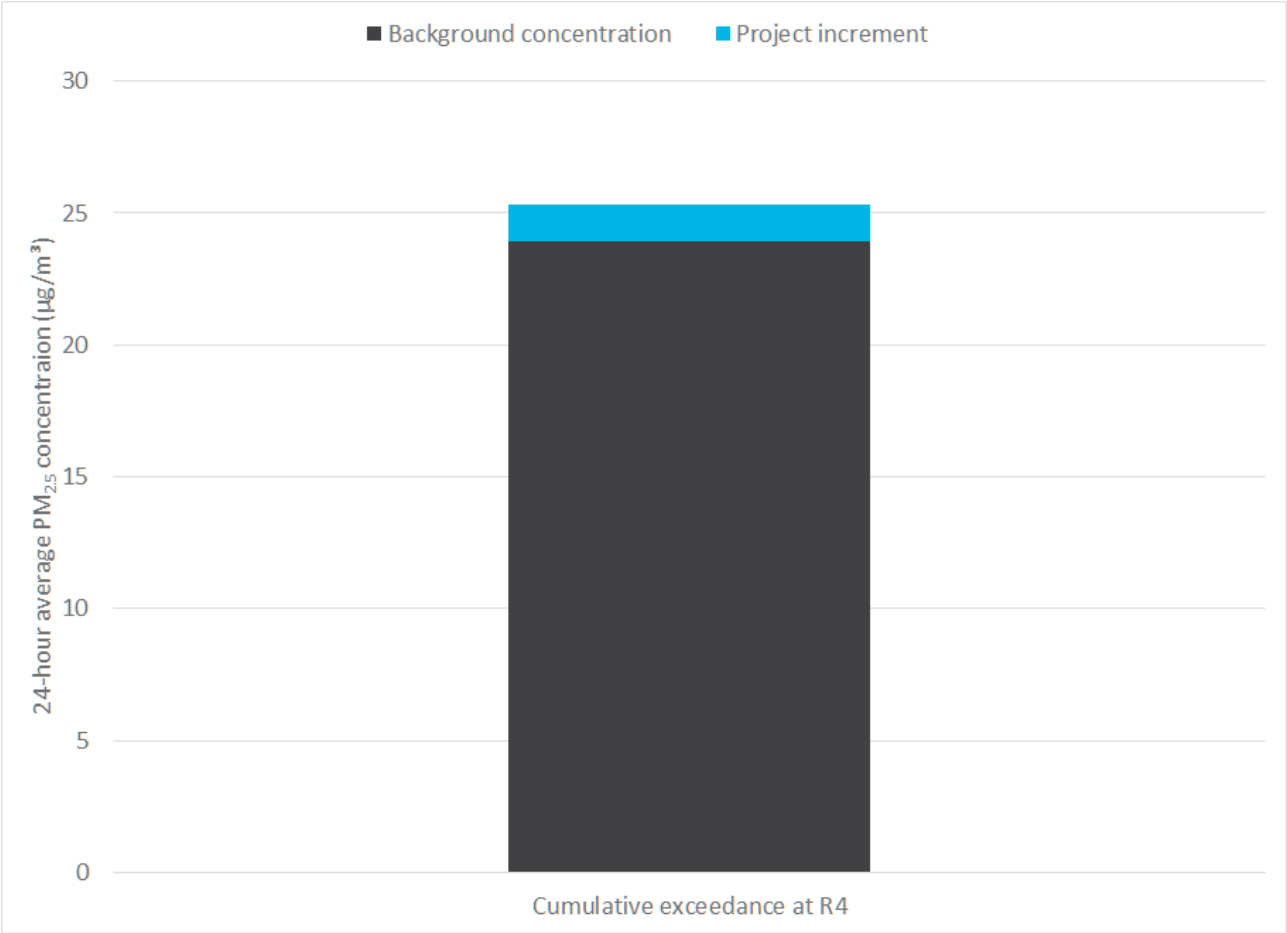

Figure 2.1 Contribution to predicted additional cumulative 24-hour average $PM_{2.5}$ concentration exceedance– receptor R4

While the above analysis demonstrates that the predicted cumulative exceedance is dominated by the corresponding background and associated with highly conservative emission assumptions, response is made to the EPA comment regarding the implementation of best management practices for air quality emissions at the site.

A review of accepted best practice air pollution emission management practices has been undertaken through comparison of site mitigation measures with those presented in the Cement Concrete and Aggregates Australia (CCAA) *Environmental Management Guideline for Concrete Batch Plants October 2019* (CCAA 2019). The results of this review are presented in Table 2.1.

It can be seen from this comparison that where relevant to the site, the air quality emission mitigation strategies are consistent with the CCAA management guidelines.

Table 2.1 Review of site management practices against CCAA Environmental Management Guideline for Concrete Batch Plants October 2019

Site process/emission source	Mitigation / management measure	Implemented at the site
Transport of sand and aggregate	Transport sand and aggregate in trucks with enclosed top covers	Yes
	Transport damp sand and aggregate or wet on receipt, to avoid dust dispersal during unloading	Yes
	Transport cement and supplementary cementing materials (SCM) in fully enclosed containment systems	Yes
Underground storage	Underground storage optimised for moisture levels, to avoid dust dispersal during transfers	n/a to site – only underground transfers, not storage
	'Do-not-overfill' management procedures in place and enforced to prevent over-filling	n/a to site– only underground transfers, not storage
Above ground storage bays	Bays enclosed on three sides by solid walls	Yes
	Bays fitted with additional screening over and above wall height as required (e.g. shade cloth)	Yes
	Bays fitted with functional, well-maintained, effective sprinkler systems	Yes
	Bays - stockpiles kept damp to maintain adequate moisture levels to prevent dust dispersal	Yes
	Bays - stockpiles kept at least 0.5 m below the top of walls and 0.5m inside open end of bays	Yes
	Bays clearly sign-posted instructing staff: "Do not overfill"	Yes
	Other 'do-not-overfill' management procedures in place and enforced	Yes
Storage of cement and SCM in overhead silos	Fitted with fully enclosed pneumatic transfers	Yes
	Fitted with emergency pressure alert and automatic cut-out overfill protection	Yes
	Fitted with back-up over-fill protection	Yes
	Fitted with high quality dust filters that ensure maximum performance: such as jet pulse filters	Yes
	Burst-bag detector system ducted to vent just above ground level adjacent to filling pipe	Yes
	Emergency pressure alert/overfill protection systems well maintained and maintenance records kept	Yes
	Filters regularly maintained and replaced and maintenance records kept	Yes
	Emergency management plan, procedures for cement and SCM recovery and lawful disposal in place to prevent air emissions and stormwater contamination in the event of catastrophic equipment failure resulting in silo 'blow-out'	Yes
	Burst protection for silo socks to contain product if the sock bursts	Yes
Transfer of sand and aggregate	Front-end loader transfers prevent dust emissions by maintaining adequate moisture levels	Yes

Table 2.1 Review of site management practices against CCAA Environmental Management Guideline for Concrete Batch Plants October 2019

Site process/emission source	Mitigation / management measure	Implemented at the site
	Hoppers and dusty transfer points – all screened (or otherwise sheltered) from wind	Yes
	Dry dust extraction systems fitted around hoppers; open sides of enclosure	n/a – sand and aggregate weigh hoppers are enclosed
	Open sides of hoppers can be enclosed and encased within plant structure where appropriate	Yes
	Conveyor belts fully enclosed	Yes – site features a mixture of fully and partially enclosed conveyors
	Conveyor belts enclosed on side of prevailing winds/partially enclosed	Yes – site features a mixture of fully and partially enclosed conveyors
	Conveyor belts - spill trays to capture spillage fitted to contain spillage and dust accumulation	Yes
	Conveyor belts - smooth operation ensured by regular maintenance and maintenance records kept	Yes
	Spills from conveyor belts and other equipment monitored and promptly cleaned	Yes
Hardstand or paved or sealed surfaces	Hardstand - installed across entire site, including internal roadways and key production areas	Yes
	Hardstand – appropriately designed, contoured and bunded	Yes
	Hardstand - adequately maintained by regular cleaning to prevent tracking out of contaminants	Yes
	Hardstand - management process in place to prevent and promptly clean spillages	Yes
	Street sweepers or sweeper attachments on front-end loader/forklift used to clean the hardstand	Yes
	Hardstand - management process in place to prevent dust accumulation on driveways, internal roads, along property boundaries, etc.	Yes
	Hardstand - cracks promptly repaired	Yes
	Speed limit on internal unsealed roads enforced (to ‘drop dust’)	Yes
Agitator truck loading	Loading bays roofed or otherwise enclosed	Yes
	Loading bays and slumping stations fitted with grated floors to capture sediment/water	Yes
	Loading bays fitted with dry dust extraction systems or fitted with water dust suppression spray bars	Yes
	Loading bays fitted with plant socks to direct materials into agitator	Yes
	All diesel vehicles and machinery fitted with diesel particulate filters (DPF)	Yes

Table 2.1 Review of site management practices against CCAA Environmental Management Guideline for Concrete Batch Plants October 2019

Site process/emission source	Mitigation / management measure	Implemented at the site
Agitator trucks and plant machinery	DPF filters regularly replaced and maintenance records kept	Yes
	Regular maintenance of all agitator trucks and maintenance records kept	Yes
	Regular maintenance of all plant equipment and maintenance records kept	Yes
	Regular maintenance on all emission-control equipment and records kept	Yes
Boundary screening	Additional screening at boundaries of premises and around dust-generating areas where physically possible	Yes

3 EPA Recommendation 2

EPA recommendation: The proponent should consider alternate mitigation measures that can be temporarily or additionally employed to achieve similar reductions in particle emissions and impacts as was modelled and predicted for previous recent modifications to demonstrate minimal environmental impact

EMM response: As demonstrated in Section 2, the site is currently implementing air quality management practices that are consistent with industry best practice measures. There are no significant additional measures that can be recommended that would have a material improvement on site emissions management.

It is considered that the most effective means of managing emissions and impacts from the site is the real-time particulate matter monitoring network at the boundary of the site, recently installed by Boral.

The real-time monitoring network, combined with short-term PM_{10} concentration trigger levels specified in a trigger action response plan (TARP), will assist Boral with the reactive management of particulate matter emissions from the site by alerting site personnel to periods of elevated site emissions and allow for the periodic implementation of increased emission controls.

4 EPA Recommendation 3

EPA recommendation: The proponent should provide a clear and concise description of the proposed flexibility of operations. The proponent should also evaluate how the variability of the operations affects particulate emissions and predicted impacts to ensure the worst-case emissions and impacts are presented in the AQIA.

EMM response: Boral have confirmed that the site's environment manager currently monitors production volumes and truck numbers to ensure compliance with the overall production limits, as well as the peak hour truck limits. Data from the concrete plant's batching system, and the handling facility's weighbridge data is tracked and aggregated for the annual review. Given Modification 12 seeks to simplify the way truck numbers (and hence production volumes) are tracked, Boral's existing systems will be used to aggregate this data and report compliance with the consent.

The worst-case scenario presented in Modification 12 was chosen to represent the operational distribution with the highest potential for air pollutant emissions and impacts. The EPA correctly identifies that the worst-case scenario modelled was a presumed throughput of 1.75 Mtpa for the handling facility and 650,000 m^3 per annum for the concrete plant. A reduced batching plant volume (400,000 m^3) was then modelled for the limitations of the existing site layout. Therefore, as long as the total number of combined site trucks does not exceed those modelled for this scenario, then any other combination of production volumes (within the consented limits) will be at most equivalent to or less than this modelled worst case scenario.

Reporting on compliance (and non-compliance) is a requirement of the consent (see section C of the consolidated consent), and therefore the onus of compliance rests with Boral.

Yours sincerely

Scott Fishwick
Associate - National Technical Leader, Air Quality
sfishwick@emmconsulting.com.au