DOC19/957681

Mr Shaun Williams
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4 November 2019

Dear Mr Williams

By Electronic Mail

State Significant Development for proposed plant 2 upgrade works – Lot 7 DP1059698 – 780 Wallgrove Road, Horsley Park – SSD 9601

The Environment Protection Authority ("EPA") is writing to you in reply to your email dated 2 October 2019 in relation to the Department of Planning, Industry and Environment's ("DPIE") public exhibition of the Environment Impact Statement ("EIS") for the proposed plant upgrade for Plant 2 at Austral Brickworks.

The EPA has reviewed the EIS and provides comments in this letter (Attachment A). The comments highlight areas where the proposal presents the likelihood of significant risk to the environment. The comments also point to areas where the EPA recommends the proponent provide more information and clarification to assist DPIE in the assessment and determination of this proposal.

The EPA may require further clarification upon receipt and review of this information.

Background

The Austral Brick Co Pty Ltd submitted a significant development application (SSD 9601) for Horsley Park Brickworks Plant 2 Upgrade located at 780 Wallgrove Road, Horsley Park in the City of Fairfield City Council local government area ("the premises"). The EPA has reviewed the SSD including the EIS and prepared a response for DPIE consideration.

The Austral Brick Co Pty Ltd holds environment protection licence no. 546 for the facility located at the premises. The licence permits mining for minerals, crushing, grinding or separating, extractive activities and ceramic works.

On 12 November 2018 the EPA provided Environmental Assessment Requirements for the proposal to DPIE.

The EPA notes the land portion is not currently zoned, however will be considered permissible with formal consent provided by DPIE under the relevant legislation.

The EPA can meet with DPIE at a mutually convenient time to discuss any of our comments.

If you have any questions in relation to the above, please contact Christine Mitchell on 9995 5732.

Yours sincerely

Jacqueline Ingham
Unit Head Sydney Industry
Environment Protection Authority
Enc: Attachment A

Attachment A

Background Summary

On 12 November 2018 the EPA provided an input for the Secretary's Environmental Assessment Requirements for this project. The EPA has considered the details of the proposal as provided by DPIE. The main key issue is the air quality management as detailed below.

The Austral Brick Co Pty Ltd ("the proponent") operate three plants at Horsley Park under Environment Protection Licence ("the licence") no. 546 to undertake ceramic production, ceramic waste generation, crushing, grinding or separating land-based extraction and mining for minerals. Operations at Plant 2 produces up to 80 million bricks per annum.

The proponent is proposing upgrades to their Plant 2 operations. The proposal is categorised as a State Significant Development (SSD) – 9601 as it has a capital investment value exceeding $10 million.

The EIS has been prepared by Willow Tree Planning Pty Ltd on behalf of the Austral Brick Co Pty Ltd ("Austral Brick") dated August 2019.

A licence variation to the environment protection licence may be required if the project is approved.

This could include changes to conditions relating to limits, operating, storage, monitoring, pollution reduction programs and reporting requirements. When exercising licensing functions, the EPA is required to consider any of the matters in Section 45 of the *Protection of the Environment Operations Act 1997* that are relevant. These include but are not necessarily limited to:

- the pollution that will be caused and its impact on the environment
- practicable measures that can be taken to prevent, control, abate or mitigate the pollution and protect the environment from harm
- practical measures that can be taken to restore or maintain those values.

Air Quality

Exceedances of hydrogen fluoride (HF) limits at point 5 (Plant 2) and point 7 (Plant 3) were reported in the 2015/2016 annual return. A Pollution Reduction Program (PRP) was placed on the licence on 29 August 2017 to require an investigation into the emissions of fluorine (including hydrogen fluoride) and explore options for reducing them.

An Air Quality Impact Assessment (AQIA)[1] report assessing the HF concentrations from Austral Bricks was provided in response to the PRP.

A report by Ramboll on mitigation options (Best Practice HF Mitigation Options Review[2]) was provided and recommended Austral Bricks pursue dry lime scrubber technology for new kilns and kiln replacements.

[1] Austral Bricks Horsley Park, Hydrogen Fluoride Air Quality Assessment – Final Report, Pacific Environment, 29 May 2018

[2] Best Practice HF Mitigation Options Review, Austral Bricks Horsley Park Plant 1, 2 and 3, Ramboll, May 2018

Efficiency of proposed scrubber not demonstrated

The AQIA states that the proposed improvements of the fluorine cascade scrubber would offer a 45-65 % control efficiency in reducing HF emissions.

The Best Practise HF Mitigations Options report provided by Ramboll prepared for the PRP investigating HF emissions at Austral Bricks Plants 1, 2 and 3 identified that under current international best practice cascade absorbers can achieve 90-99 % HF emission reduction.

Previous stack testing measurements of HF (attached memo in AQIA) reported a maximum HF concentration of 68 mg/m3, with an average concentration of 50.6 mg/m3 (N = 15). Based on the manufacturer design specifications of a maximum HF concentration of 45 mg/m3, the EPA calculates a maximum efficiency of 34 % and average efficiency of 11 %.

The EPA expects the proposed scrubber for the Plant 2 kiln to achieve 90-99 % performance efficiency. The EPA advises the efficiencies stated in the AQIA are below expected performance efficiencies. The EPA recommends the expected performance of the proposed fluorine cascade scrubber be designed to meet international best practice (90-99 %).

The EPA **recommends** the AQIA be revised to benchmark the kiln and scrubber emission design performance and control efficiency with best practice.

The EPA **recommends** that the scrubber be redesigned to align with best practice and the redesign should be included in the revised AQIA.

Proposed upgraded Plant 2 emissions below the *Protection of the Environment Operations (Clean Air) Regulation 2010* ("Clean Air Regulation") standards of concentration.

The AQIA presents the manufacturer design specifications for concentrations of pollutants emitted from the proposed Plant 2 Kiln upgrade in Table 14. Table 14 indicates that the pollutants Total suspended particles ("TSP"), nitrogen oxide NOx (as NO2 equivalent) and Flourine (F2) (as HF equivalent) would be below the Group 6 standard of concentrations for the scheduled activity (ceramic works). The AQIA states that actual discharge concentrations from the exhaust kiln are not expected to exceed the design specifications.

The EPA advises that the proposed upgrade of the kiln at Plant 2, including the scrubber, indicates compliance with the Clean Air Regulation standards of concentrations.

However, the EPA **recommends** the emission limits cannot be provided until the AQIA has been adequately updated to include demonstrations of the expected scrubber performance efficiency.

Offsite hydrogen fluoride (HF) impacts below Impact Assessment Criteria (IAC)

Predicted incremental impacts (Plant 2 upgrade only) at all identified receptors are below the HF Impact Assessment Criteria (IAC) for generalised land use of 2.9 µg/m3. The maximum incremental 24-hour concentration, predicted at receptor 7 to the immediately east of the site, is 1.48 µg/m3, which constitutes a significant amount (51 %) of the 24-hour IAC.

The cumulative impacts (assumed to be only sourced from Plant 1 and Plant 2 emissions) are predicted to be below the IAC for generalised land use at all receptors. The maximum cumulative 24-hour concentration, predicted at receptor 8 east of the site is 1.59 µg/m3, which constitutes a significant amount (54.9 %) of the 24-hour IAC of 2.9 µg/m3.

The EPA advises that the HF IAC from the Approved Methods for Modelling and Assessment of Air Pollutants in NSW (Approved Methods) for "general land use" has been used in the AQIA and offsite HF concentrations at all identified receptors are predicted to be below this IAC. However, a more stringent IAC exists for specialised land use, which includes all areas with vegetation sensitive to fluoride. Whilst the AQIA has stated that the surrounding land use is largely grazing/pastoral land, it has not adequately demonstrated that the general land use IAC is appropriate.

The EPA advises that had the specialised land use IAC been used, it would have been exceeded at two identified receptors (7 and 8) on a 24-hour basis, one identified receptor (1) on a 7-day basis and two identified receptors (1 and 7) on a 90-day basis.

The EPA **recommends** the proponent provide a detailed land use and vegetation assessment to evaluate current and potential future land uses and vegetation that may be sensitive to fluoride.

Dispersion modelling issues

- *Plant 3 not modelled*

The cumulative impacts have only included HF emissions from Plants 1 and 2 and not Plant 3.

The EPA advises that emissions from Plant 3 should have been included in dispersion modelling and assessment of cumulative impacts offsite.

The EPA **recommends** the AQIA should be revised to include Plant 3 emissions in dispersion modelling.

- *Average emissions rather than maximum emissions from Plant 1*

Average emissions from Plant 1 were included in dispersion modelling and assessment of offsite impacts rather than maximum emissions.

The EPA advises that the Approved Methods requires that maximum measured emission rate to be used in the absence of available data to describe emission rate distribution.

The EPA **recommends** the AQIA should be revised to include maximum emissions from Plant 1 in dispersion modelling.

- *Use of CALMET data for long-term assessment of meteorological conditions*

The AQIA has presented the long-term site-representative meteorological data using CALMET model generated data instead of meteorological data collected at a meteorological monitoring station as preferred and outlined in the Approved Methods. The choice of 2017 for dispersion modelling was based on CALMET generated data comparison rather than site-representative meteorological data from a monitoring station.

The EPA advises that there are significant differences between the observed (BoM) meteorological data and the modelled (CALMET) meteorological data (Figure 13 of the AQIA).

The EPA notes that the licence requires weather monitoring onsite, including rainfall, temperature, wind speed and direction, and advises that site-specific meteorological data (if >90 % complete) is preferred above site-representative.

The EPA advises that the presentation of CALMET generated long-term meteorological data only does not adequately establish that this data describes the expected meteorological conditions at the site.

The EPA **recommends** additional information be provided on long-term site-representative meteorological data collected from a monitoring station and a detailed discussion on the prevailing meteorological conditions at the site including an analysis of wind speed and direction, stability class, ambient temperature and mixing height.

The EPA **recommends** an adequate justification of the use of 2017 for dispersion modelling compared to the long-term site-representative meteorological data collected from a monitoring station be provided.

- *Building wake effects*

Section 11 of the AQIA states building wake effects on plume dispersion have been included in the modelling for the Plant 2 kiln stack.

The EPA advises that it is unclear in the AQIA if building wake effects have been included for emissions from Plant 1.

The EPA **recommends** the AQIA clarify if building wake effects for Plant 1 have been included in dispersion modelling and justify whether Plant 1 kiln is a wake-affected or wake-free point source.

- *Inconsistencies with previous modelling meteorology*

The EPA notes that the 2018 AQIA (Pacific Environment, section 4.3) shows different wind fields and a much higher % of calms than the AQIA report modelling the proposed Plant 2 upgrade (see Figure below).

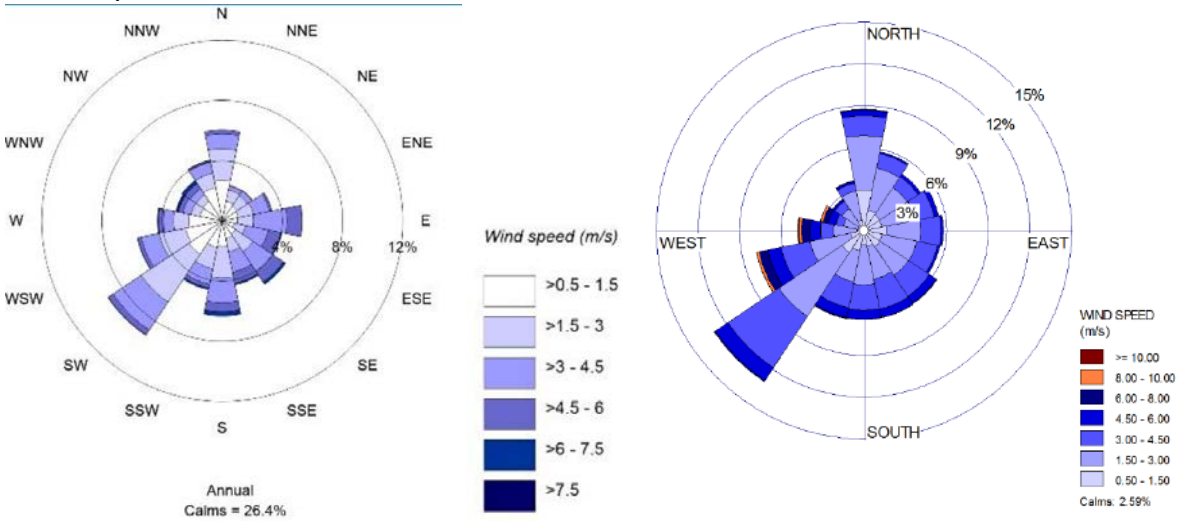

Figure: 2018 Pacific Environment meteorological data (Left) and 2019 Airlabs Environmental meteorological data (Right).

The EPA advises that the significant inconsistencies of meteorological data by the same proponent is questionable and that the significant difference in the percentages of calm would influence the dispersion of emissions, potentially changing the results and conclusions of the assessment.

The EPA **recommends** that a revised AQIA be prepared that demonstrates the meteorological data used for dispersion modelling adequately describes the expected meteorological patterns at the site.

The EPA **recommends** that additional information be provided on long-term site-representative meteorological data collected from one or more monitoring stations and a detailed discussion on the prevailing meteorological conditions at the site include an analysis of wind speed and direction, stability class, ambient temperature and mixing height, to demonstrate that the meteorological data produced by the model is appropriate for use in dispersion modelling.

The EPA calculations are outlined below. However, the EPA advises that these issues should not influence the emissions from the kiln and the proposed kiln upgrade and scrubber installation.

Significant issues with fugitive emissions calculations

The EPA advises that the offsite impacts from particulates (TSP PM10 and PM2.5) cannot be assessed from the AQIA due to numerous issues in the emissions inventories for Plants 1 and 2. These issues are itemised below:

Not enough information to evaluate emissions inventory.

Table 12 provides the estimated fugitive emissions at Plant 1 however not enough information is provided to recalculate these emissions values. Missing information includes control factors applied, load weight of haul trucks, weight of trucks, distance travelled, silt content and moisture content.

Table 16 provides the estimated fugitive emissions at Plant 2, however as for Plant 1, insufficient information is provided to recreate the emissions from the various activities included in the emissions inventory.

The EPA **recommends** that all information and variables needed to calculate the emissions from all activities in Tables 12 and 16 should be provided.

- *Incorrect total emissions calculated*

In Table 12, the sum of emissions from all sources listed equals 16,225 kg/yr for TSP, however Table 12 provides a total of 3,649 kg/yr. As the AQIA has not provided sufficient information to assess the particulate fugitive emissions, it is unclear which total is correct and what emission rates have been used in the dispersion modelling to assess offsite impacts.

The EPA **recommends** a correct emissions inventory be provided and that if total emissions has been significantly under estimated, a revised AQIA with more realistic dispersion modelling be provided.

- In*consistent emissions from same activity between Plant 1 and Plant 2*

Plant 1 has a total emission of TSP of 16,225 kg/yr (calculated from the sum of individual activities, see above issue) from a production of 65 million bricks, while Plant 2 has a total emission of TSP of 7,882.7 kg/yr from a production of 80 million bricks. Given the increased production and quantity at Plant 2, it is incongruous that the fugitive emissions from Plant 1 are higher.

Additionally, individual activity emissions between the two plants are vastly different. For example, Plant 1 haulage emissions are 13,435 kg/yr (TSP) while Plant 2 haulage emissions are 29.8 kg/yr (TSP).

The EPA advises that no evaluation of the impacts from particulates has be conducted based on the multiple issues outlined above.

The EPA **recommends** the emissions inventories for Plants 1 and 2 be corrected and all information and variables used to calculate the emissions be provided.

The EPA **recommends** a revised AQIA should include dispersion modelling and particulate (TSP, PM10 and PM2.5) impact assessments using the correct fugitive emissions inventories.

Additional issues noted:

AQIA states there are no standards specific to brick manufacturing. The EPA advises that the standards for ceramic works in Schedule 3 of the POEO Clean Air Regulation apply as the facility is licensed under the scheduled activity of ceramic works (and others).

Table 14 in the AQIA references the *POEO Clean Air Regulations* standards of concentrations to evaluate the proposed emissions of SO_2 and sulfuric acid mist for the proposed Plant 2 upgrade. However, the licence sets a lower concentration limit at Point 5 for SO_2 of 400 mg/m^3 which should be used for the evaluation of SO_2 emissions for the proposal.

As the AQIA demonstrates that this EPL concentration can be met however, the use of the incorrect standard is a minor issue.

Noise and vibration Management

Generally, the EPA is satisfied with the assessment of noise and notes that no change to the current noise limits in EPL 546 are proposed.

The Noise Impact Assessment provides an assessment against Project Noise Trigger Levels (PNTLs) in accordance with the guidance in the Noise Policy for Industry, however the predicted noise levels are fittingly compared not just against the PNTLs but also against the current licence noise limits (and are not predicted to exceed either the PNTLs or noise limits).

The EPA is satisfied that the proposal does not require an update to the current noise condition on the licence and does not consider that any further noise recommendations or assessments are required for this proposal.