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Attention: Shaun Williams

EPA Advice on Submissions Report

Dear Mr Williams

Thank you for the request for advice from Public Authority Consultation (PAE-10590984), requesting the review by the NSW Environment Protection Authority (EPA) of the Submissions Report for the proposed New Berrima Brickworks Facility (Application SSD-10422) at 416 and 524 Berrima Road, Moss Vale.

The EPA has reviewed the following documents:

- Response to Submissions – Willowtree Planning Pty Ltd – 30 October 2020
- Revised Air Quality Impact Assessment – Airlabs Environmental Pty Ltd – 19 October 2020
- Operational Flow Diagram – Willowtree Planning Pty Ltd – 30 October 2020
- Waste Management Plan – Land and Groundwater Consulting Pty Ltd – 2 October 2020

The EPA understands the proposal is for the construction and operation of a 50 million brick per annum (mbpa) brickworks plant with a proposed 24/7 operation. The new plant is proposed to replace the current Bowral plant and will have an increased production capacity of 15 mbpa. The plant would operate as a dry press brick plant with a tunnel kiln, producing premium dry pressed brick products including “Bowral Blues”

Based on the information provided, the proposal will require an environment protection licence under sections 43, 47, and 48 of the *Protection of the Environment Operations Act 1997* (POEO Act) for scheduled activity clause 7 (Ceramic Works) of Schedule 1 of the POEO Act. As advised in our submission dated 21 August 2020, other scheduled activities may also apply including clause 16 (crushing, grinding or separating).

The EPA has reviewed the Submissions Report and notes it has not adequately addressed the EPA’s submission on this project from 21 August 2020.

The EPA has the following additional comments and recommendations:

1. Matters to be addressed prior to determination

a. Air Quality Impact Assessment

The EPA does not consider the revised Air Quality Impact Assessment (AQIA V2) has addressed the issues identified in our previous submission. The EPA recommends the proponent be requested to revise the AQIA report to address the issues discussed below and in **Attachment A**. Options to further reduce emissions should be robustly evaluated and benchmarked against international best practice in the revised assessment.

The revised modelling predicts compliance with the EPA's ground level impact assessment criterion, as specified in the Approved Methods for the Modelling and Assessment of Air Pollutants, for all assessed pollutants. However, emissions have been modelled at, or near the standards of concentrations prescribed in the Protection of the Environment Operations (Clean Air) Regulation, for most pollutants.

The revised modelling results have been used to justify no further consideration of additional emission controls. The 'pollute up to goal' approach used in the assessment is contrary to the approach promoted by the EPA whereby all reasonable and feasible emission controls must be considered to reduce emissions as far as practicable. Additionally, under Section 45 of the Protection of the Environment Operations Act (1997), the EPA must consider, among other matters, the practical measures that could be taken to prevent, control, abate or mitigate pollution.

It is the EPA's expectation that newly designed and constructed plant should be capable of achieving an emission performance well below the standards prescribed in the Clean Air Regulation using best practice and technology for the control and mitigation of emissions. This expectation was clearly stated in the EPA's environmental assessment requirements provided for the proposed development in January 2020. The adopted levels of controls proposed are considered inconsistent with best practice available technologies.

If required and to assist the proponent to adequately address EPA's comments in relation to the AQIA, a meeting between the EPA, the proponent, and their consultant could be organised to discuss the comments in more detail.

b. Noise impact assessment

Some of the matters raised by the EPA in our submission dated 21 August 2020 in relation to the Noise Impact Assessment (NIA) have not been adequately addressed. The EPA requires that further information is provided to address these matters prior to the determination of the project. This may include providing a revised NIA. This information will assist the EPA in determining appropriate conditions of approval for the proposed development.

Our previous comments on the NIA noted that the impact of the cicadas in the vicinity of the noise loggers was not adequately accounted for. The information provided in the Submissions Report refers to that the development is controlled by the amenity criteria of the Noise Policy for Industry (NPfI) and that correcting for cicada noise is "unlikely" to lower the noise criteria. An additional statement regarding the duration of cicada activity throughout the year is also provided. This information does provide sufficient justification that cicada noise has not affected the Rating Background Level (RBL) as there is no numerical analysis to quantify the claims.

Most modern noise loggers are capable of outputting data that allows the removal of highly tonal cicada noise from the results. If the noise logging was undertaken by a noise logger that does not allow for cicada noise to be adequately excluded from the results, the EPA suggests that utilising the minimum noise levels contained within the Npfi may provide an appropriate compromise. The noise levels within the licence would then be LAeq 40 dB for the Day period and LAeq 35 dB for the evening and night period. Should these noise levels be applied for the licencing of the development, several receivers are currently predicted to have noise levels from the development that are above these minimum noise levels. The maximum exceedance would be 3 dB at R4 during the evening and night time, with several

other receivers having a 2 dB exceedance. The EPA is unable to provide recommended conditions that will result in immediate non-compliance.

Section 6 of the NIA contains additional proactive recommended mitigation measures. It is not clear as to whether these measures have been considered within the modelling and the level of noise reduction likely to be achieved. Quantifying these recommended mitigation measures may afford the 3 dB reduction required for compliance with the minimum noise level approach. If it does not, then additional mitigation measures would be required at the development to ensure compliance with the licence conditions. Further information on any additional mitigation measures (including estimated noise level reductions) that are proposed to be implemented should be provided.

2. Matters to be addressed with conditions

a. Noise management

The EPA recommends that conditions be included setting the noise limits deemed achievable in the NIA as part of the EIS. The information requested above will need to be reviewed and assessed prior to setting appropriate limits.

It is also recommended that attended noise monitoring be required to assess compliance with the noise limits once the facility is operational. This could include a noise verification monitoring campaign to verify that the activity complies with the noise limits set out in the Project Approval.

It is also recommended that the proponent documents all proposed noise mitigation strategies prior to construction including measures to ensure compliance with the noise limits. It is recommended that this requirement be conditioned in any approved consent.

The EPA can provide specific recommended noise conditions if required once the additional information specified in 1(a) above has been provided.

b. Remediation of asbestos impacted soils

The EPA recommends that conditions be included for the preparation and implementation of a Remedial Action Plan (RAP) for the proposed remediation of the asbestos contaminated materials (ACM) identified onsite.

The EPA recommends that the proponent be required to engage a suitably qualified independent occupational hygienist to review the proposed remediation strategies and supervise the remediation activities for the site. The objective of the remediation activities should be to eliminate any potential risks to human health and/or the environment for both current and proposed future users of the site. The objective of the remediation activities for the asbestos contaminated soil must be to eliminate any potential risks to human health and/or the environment for both current and proposed future users of the site.

The EPA recommends that the proponent be required to complete the proposed remediation activities prior to the construction of the proposed facility.

c. Soil and Water Management Plan

The EPA recommends that conditions be included for the preparation and implementation of a comprehensive and staged Soil and Water Management Plan by a suitably qualified environmental consultant prior to construction of the proposed facility. Given that the site is located within the Sydney Water Drinking Catchment (Section 6.9.8), enhanced stormwater controls should be designed and implemented to be consistent with the practices and principles of the Managing Urban Stormwater: Soils and Construction Volumes 1 and 2.

As advised in our previous submission, the EPA may have further comments and/or requirements upon submission of further details for the detailed design stage.

The EPA may have further comments and/or requirements upon receipt and review of the additional information requested.

If you have any questions about this request, please contact Craig Patterson on (02) 4224 4100.

Yours sincerely



CHARLES HAJEK
Manager Regulatory Operations – Regional South

Attachment A Review of Air Quality Impact Assessment

Attachment A

Review of Revised Air Quality Impact Assessment prepared by Airlabs Environmental (AQIA V2).

1. Hydrogen fluoride (HF) impacts on sensitive land

The EPA previously requested 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

Airlabs did an aerial survey to identify any wineries or fluoride sensitive vegetation in close proximity to the proposed site. Airlabs also considered information provided to them by Austral Bricks and reviewed information available on the public domain. The information provided by Austral Bricks or supporting documentation has not been included in the revised AQIA V2.

Airlabs did not identify any existing wineries or sensitive vegetation near the proposed facility or within the expected zone of impact. Airlabs have therefore applied the general HF assessment criteria ($2.9 \mu\text{g}/\text{m}^3$).

Dispersion modelling has been undertaken, at a maximum HF emission concentration of $20 \text{ mg}/\text{m}^3$. This is consistent with the expected emission performance of the Austral Bricks, Horsley Park Plants 2 and 3.

Incremental and cumulative HF ground level concentration isopleths have been overlaid on the Wingecarribee Local Environmental Plan 2010 to determine the extent of the predicted HF impacts. When the sensitive land use assessment criterion of $1.5 \mu\text{g}/\text{m}^3$ (24-hour) is applied, the results of the dispersion modelling show predicted impacts above the EPA's impact assessment criteria in the land zoned E3 to the North West of the proposed facility. As such, there is potential that future specialised land use potential in this area may be affected, including vegetation sensitive to fluoride, such as grape vines and stone fruits.

The EPA recommends the proponent be required to provide supporting evidence of the information considered in Airlabs survey of the potential for sensitive lands surrounding the proposed project site.

2. Assessment of hydrogen chloride

The EPA previously requested that the AQIA be revised to include an assessment of hydrogen chloride (HCl). HCl must be assessed at and beyond the boundary of the facility and consider cumulative sources including the Boral Berrima Cement Works.

A cumulative and incremental assessment of HCl emissions has been conducted which is presented in the revised AQIA V2. Modelling of the HCl emissions is based on a maximum discharge concentration of $100 \text{ mg}/\text{m}^3$, which is at the Group 6 concentration standard prescribed in the Clean Air Regulation.

The maximum (reported as 99.9th percentile) 1-hour average incremental HCl concentration predicted at or beyond the facility boundary is $30.4 \mu\text{g}/\text{m}^3$ (22% of the impact assessment criteria). Airlabs have not proposed any additional options to further reduce HCl emissions based on the results of the modelling.

Austral Bricks proposes to install a fluorine cascade scrubber to control emissions of acid gases, including HCL. The effectiveness of this pollution control option is dependent on the adsorbing material used. For example, unmodified calcium carbonate granules are effective at removing HF and SO₃, whilst only partially effective (50% control) for HCl and largely ineffective (20% control) for SO₂ (CER, 2016)¹. Improved HCl removal performance can be achieved with the use of modified adsorption materials or through additional controls.

¹ European Commission, Reference Document on Best Available Techniques in the Ceramic Manufacturing Industry (August 2007)

Airlabs have assumed a HCl discharge concentration of 100 mg/m³, consistent with the maximum allowable standard prescribed in the Clean Air Regulation. This is inconsistent with best practice and the EPA's expected emission performance, for a newly designed plant. Emission performance well below the POEO Clean Air Regulation should be practicably achievable. Additionally, under Section 45 the Protection of the Environment Operations Act (1997), the EPA must consider, among other matters, the practical measures that could be taken to prevent, control, abate or mitigate pollution.

The EPA requests that further evaluation of emission controls is undertaken. Also see Point 3 below.

3. Significant incremental impacts are predicted

The EPA previously requested that the proponent identify and evaluate further mitigation measures to minimise emissions of pollutants including sulfur trioxide, nitrogen oxides and sulfur dioxide in a revised AQIA. Additionally, options to improve dispersion, such as increasing the stack height, should also be considered.

The revised AQIA V2 includes additional discussion regarding the expected emission performance of the proposed plant. Airlabs have used the results of the dispersion modelling and the predicted levels of compliance with the EPA's assessment criterion, to determine that further consideration of additional controls was not warranted.

As identified in Point 2 above, the proposed cascade scrubber is not effective at controlling some pollutants associated with the brick manufacturing including NO_x. Emission reduction options, such as low NO_x burners or catalytic reduction have not been discussed which indicates that no mitigation measures have been proposed for preventing or minimising NO_x emissions. This is inconsistent with best practice and the EPA's expected emission performance for a newly designed plant. Emission performance well below the POEO Clean Air Regulation should be practicably achievable.

The cascade scrubber also has limited effectiveness at controlling SO₂, depending on the absorbing material used. However, options for minimising emissions of SO₂, such as the use of appropriate absorbing material, have not been discussed in detail and no emission performance guarantees or engineering specifications have been provided.

The proposed facility will be the dominant source of SO₂ emissions in the local area, with predicted incremental impacts (10 minute, 100% ile) of up to 131 µg/m³ (18% of the EPA's assessment criterion). All reasonable and feasible options to further reduce SO₂ emissions should be evaluated in a revised assessment.

The EPA requests that the AQIA V2 be revised to include a detailed feasibility assessment of engineering options and control measures to minimise emissions of pollutants including, but not limited to, particles, hydrogen chloride, nitrogen oxides and sulfur dioxide as far as practicably achievable. The results of dispersion modelling must not be used as the sole basis for not proposing emission controls. Where controls are proposed, the estimated level of emission performance must be supported using engineering specifications or performance guarantees.

4. Assessment of nitrogen dioxide impacts

The EPA previously requested that the AQIA be revised to include a refined assessment of nitrogen dioxide, accounting for all nearby emission sources.

The EPA's previous advice dated 21 August 2020 (DOC20/604489-13) identified that NO_x emissions from the Boral Cement Plant adopted in the original assessment were considerably lower for the 2017/18 reporting period (2,300 tonnes) when compared to the emissions from the higher for the 2018/19 reporting period (4,000 tonnes).

To address this concern, Airlabs undertook a review of the NO_x emissions released from the Boral Cement Plant as reported to the NPI over a 10 year period from 2009 to 2019. Airlabs

observed that NO_x emissions from the Boral Cement Plant were approximately 1.7 times higher in 2018/19 than the average emissions measured over the 9 preceding years. As such, the average of the last five years (including the emissions reported for the 2018/19 period), was determined to be 2,880 tonnes and used in the cumulative assessment. Airlabs are unaware of any reason for the increase in NO_x emissions at the Boral cement plant.

Given the limited data-set publicly available regarding the NO_x emissions, and the unfamiliarity with the change in operating conditions at Boral Cement, the EPA considers that a more conservative approach could have been applied. The EPA considers that there is still potential that cumulative NO_x impacts have been slightly underpredicted, further supporting the EPA's request in Point 3 above that additional NO_x controls must be considered in the final design stages of the project.

5. Kiln emissions during reducing conditions

The EPA previously requested that the AQIA be revised to include a discussion on the expected emissions profiles from the kiln stack under oxidised and reduced conditions. All pollutant emissions associated with the proposed two firing techniques, including carbon monoxide, volatile organic compounds and particles must be adequately evaluated and assessed. Justification for all adopted emission rates should be appropriately supported.

The response provided by Airlabs in the revised AQIA V2 is limited to the following '*Modelling of the kiln emissions have been based on a maximum discharge concentration, considering every kiln condition. Therefore, irrespective of whether the kiln is operating in an oxidation or reduction mode, emissions from either condition would never exceed the modelled emission rates*'.

There is no further discussion regarding the emissions profile from the kiln when fired under the various conditions. Evidence, such as emissions profiling data, has not been provided by Airlabs to support their response.

The EPA requests that the AQIA V2 be revised to include supporting evidence of emissions profiles under both oxidising and reducing conditions to support the emissions inventory adopted in the assessment.

6. Solid particles emissions control performance

The EPA previously requested that additional information is provided to demonstrate that all reasonable and feasible control measures have been considered and evaluated in the AQIA to achieve an emission performance of particles, which is reflective of best practice controls and benchmarked against comparable emission performance standards for newly installed pollution control systems.

The revised AQIA V2 does not consider any additional emission controls to further reduce particle emissions. Airlabs did not consider additional controls because the modelling results suggest that particulate emissions from the facility (both point and fugitive) are not a major concern as the predicted incremental impacts for all the size fractions is less than 7% of the assessment criteria at the worst impacted receptor. This 'pollute up to goal' approach is not supported by the EPA.

As previously advised, the EPA expect that newly designed plant and equipment can achieve an emission performance well below the standards prescribed in the POEO Clean Air Regulation. Dispersion modelling results should not be used as sole justification for not adopting reasonable and feasible emission controls. Additionally, under Section 45 of the Protection of the Environment Operations Act (1997), the EPA must consider, among other matters, the practical measures that could be taken to prevent, control, abate or mitigate pollution. All practicably achievable options to further reduce point source emissions of particulates from the kiln should be evaluated in a revised assessment.

The EPA requests that the AQIA V2 be revised to include the information request in Point 3 above.

7. Fugitive dust emissions from the operational activities

The EPA previously requested that the AQIA be revised to model emissions of fugitive dust from operational activities over a 24-hour period, unless adequate justification can be provided for adopting a 12-hour period.

Airlabs has revised the assessment to model emissions of fugitive dust from operational activities over a 24-hour period. However, there is no change in predicted emissions from the original assessment. For example, annual Fugitive TSP Emission Estimates have remained at 820kg/year.

In the original AQIA (AQIA V1), fugitive emissions were modelled over a 12-hour period. Under this scenario, the emission rates are effectively half the 24-hour modelled scenario. For example, estimated annual TSP emission rate from crusher operations in AQIA V1 was 114 kg/yr or 7.2 mg/s. In the revised assessment (AQIA V2), the emission rate has halved to 3.6 mg/s. This reduction in emission rates has not been discussed.

It appears that the emission rates calculated in the revised AQIA V2 are based on the average daily throughput, rather than the peak daily maximum throughput. As such, the modelling scenario does not reflect a worst case.

To reflect a worst-case scenario, for a 24-hour period, the peak maximum daily emission rates should be calculated based on the maximum achievable production rates, rather than the average rate.

The EPA requests that the AQIA V2 be revised to include further assessment of worst case fugitive emissions of particles.