

Our reference: DOC15/485122
Contact: Jacqueline Roberts

Ms Kerry Hamann
Senior Environmental Planner
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Dear Kerry

The Environment Protection Authority (EPA) received the Department of Planning and Environment's (DPE's) letter dated 2 November 2015 inviting comment on Brickworks Ltd's development application SSD 6820 on exhibition for the construction and operation of a Light Weight Aggregate (LWA) Facility located at 780 Wallgrove Road, Horsley Park.

The EPA has reviewed the development application and supporting Environmental Impact Statement (EIS) prepared by McKenzie Group Consulting Planning (NSW) Pty Ltd dated October 2015. Based on the information provided to date the EPA is unable to issue General Terms of Approval. The EPA's comments supporting this position are outlined below.

Air Quality Impact Assessment (Energy from Waste)

The EIS identifies three potential alternative fuel sources for the rotary kiln systems, namely:

- 100% natural gas;
- 90% Construction & Demolition (C&D) / Construction and Industrial (C&I) Timbers and 10% Natural Gas; and
- 90% Refuse Derived Fuel (RDF) – typically comprising municipal and industrial waste and 10% Natural Gas.

The preferred choice of fuel identified in the EIS was a combination of 90% Construction & Demolition (C&D) / Construction and Industrial (C&I) Timbers and 10% Natural Gas.

Energy recovery or thermal treatment of waste materials or residues trigger the implementation of the NSW Energy from Waste Policy Statement (the Policy). The Policy establishes a two-tiered framework, separating the requirements for low-risk wastes from all other wastes. Low-risk waste materials are identified as Eligible Waste Fuels (EWFs). EWFs currently recognised by the EPA are listed under Section 3 of the Policy.

Energy recovery or thermal treatment of any other waste material which does not fall under the definition of an EWF, such as mixed municipal solid waste or construction and demolition waste must be undertaken at a purpose built Energy Recovery Facility (ERF). ERFs need to meet all the relevant technical, thermal

efficiency and resource recovery criteria and seek planning approval from the DPE or relevant consent authority.

Given that the alternate fuel sources proposed for the LWA facility were not EWFs (C&I and C&D sourced timber material and RDF) the proposed facility must meet the requirements of an ERF and be licensed as such, in accordance with Section 4 of the Policy.

The information provided in the EIS was not considered sufficient in assessing the potential risks associated with the proposed ERF. To facilitate approval of the site as an ERF and use of the proposed alternate fuel sources, the proponent must meet all the relevant technical, thermal efficiency and resource recovery criteria as outline in Section 4 of the Policy. Where technical criteria is not relevant, this must be clearly demonstrated and justified.

Following a preliminary review of the EIS and supporting AQIA, the following data gaps were identified:

- A review of Best Available Technologies (BAT), as they relate to thermal treatment or energy recovery of the proposed waste material. Whilst a review of BAT was undertaken on other LWA facilities, these were largely coal-powered and did not facilitate an assessment of BAT for mitigating potential emissions from the proposed waste feedstock material. The facility must demonstrate that the technology proposed is proven, well understood and capable of handling the expected variability and type of waste feedstock.
- Management of residues from the energy recovery process. This would include ash material as well as any air emissions.
- Emission factors were not available for C&D / C&I Timbers in the adopted EET manuals, and as a result emission factors relevant to saw dust were adopted. However given the inherent variability of C&D / C&I timbers and the potential for contamination, use of saw dust factors was not considered appropriate.
- Summarise any available trial data relevant to the site, which would support the use of the waste materials as an alternate fuel source, and the ability of the facility to adequately mitigate any potentially harmful emissions. In a meeting with Austral Bricks and the EPA on 20/10/15, they indicated that they had sampling and testing data of wood waste from C&D and C&I waste streams that they were going to propose as a sawdust substitute in the bricks.
- Implementation of all the technical criteria outlined in the Policy, some of which were reiterated in Section 4.2 of the AQIA. This includes the requirement for waste feed interlocks and continuous measurement for NO_x, CO, particles (total), total organic compounds, HCl, HF, SO₂, temperature in the combustion chamber and oxygen, pressure and temperature in stack and water vapour content.
- Discussion of the thermal efficiency criteria, and whether the facility has the capacity to meet these.
- Provision of a plan to implement Proof of Performance trials to demonstrate compliance.
- Characterisation of the feedstock material including quality control measures. The waste feedstock were considered to comprise less than 1% halogenated organic substances, however there was no characterisation information to substantiate this. It must be noted that the gas resulting from the process would be required to be raised to 1100°C rather than 850 °C.
- The description of the proposed fuel composition is broad and ambiguous. The EIS does not provide any information on the facilities from which the proposed alternate fuels will be sourced. The source of the material will have a major impact in the fuel composition and its likely contaminants. RDF, for example, can be derived from many types of facilities, including AWTs, MRFs and C&D recycling facilities. A more detailed description of the source and typical composition of alternate

fuel sources should be provided along with its flow-on implications for modelling of emissions and residues.

- Undertake a Human Health Risk Screening Assessment for the facility.

The EPA recommends that the Proponent be requested to address the data gaps outlined above.

Air Quality Impact Assessment (AQIA)

The EPA has reviewed the Air Quality Impact Assessment (AQIA) and makes the following comments:

Best Available Technology (BAT) Assessment

The Best Available Technologies (BAT) assessment is largely qualitative and lacks detail. Specifically the BAT assessment:

- Is limited to a desktop review that references facilities without a detailed comparison of emission performances;
- Lists facilities with little contextual detail if these facilities utilise similar waste streams to the proposal. It is noted that some of the referenced facilities utilise coal as fuel; and
- References reports that would be considered outdated when considering Best Available Technologies (i.e. reports dated 1981 are referenced).

The EPA recommends that the proponent be requested to provide a more detailed BAT assessment.

Adoption of Emission Factors

The assessment is based on the use of Emission Factors which are considered of limited value for this type of proposal.

- As per the *Approved Methods for the Modelling and Assessment of Air Pollutants*, Emission Factors are generally averages of available data and are used when emissions can reasonably be demonstrated to be negligible;
- Are not in line with the EfW expectations to reference fully operational plants;
- Are not demonstrated to adequately characterise the emissions from the proposed fuel sources.
For example:
 - Emission factors for sawdust have been adopted for assessing emissions from C&D waste fuel; and
 - Emission factors for RDF have been adopted from emission estimation technique manuals for refuse combustion, which are for different process technologies than being proposed.

The EPA recommends that the proponent be requested to provide a revised AQIA based on manufacturer's specifications, emission guarantees and reference to similar fully operational plants using the same technologies and treating like waste streams.

Pollution Control Efficiencies

The AQIA adopts a series of control efficiencies for key compounds, including:

- An estimated control efficiency for dioxins associated with baghouses without any carbon injection of 30%. This is based on emission testing, however no supporting information (including test data) has been included; and
- An estimated control efficiency of 20 % for vapour phase metals associated with the use of a baghouse & scrubber combination. The assessment outlines that no information is available with the regards to this control efficiency hence 20 % was applied as a conservative measures.

The EPA recommends that the AQIA include all necessary information to demonstrate the basis for adopted pollution control efficiencies. Where supporting data is not available no control should be assumed.

Meteorological Data

a) Selection of 2014 meteorological data

The assessment outlines that based on analysis of the meteorological data from 2010-2014 at the Bureau of Meteorology (BoM) Horsley Park Automatic Weather Station (AWS), 2014 was considered to be a representative year. However the analysis (provided as Appendix C of the AQIA) is limited to the compilation of wind roses without specific analysis or discussion. Windroses are considered one tool for determining the representative nature of a meteorological data set.

The EPA recommends that the AQIA includes further analysis to demonstrate 2014 is considered a representative year for assessment purposes.

b) Compilation of meteorological data used for dispersion modelling

The assessment outlines that meteorological modelling was constructed utilising a staged process of

- Prognostic modelling using TAPM, incorporating the assimilation of local meteorological observations obtained from the Bureau of Meteorology (BoM) Automatic Weather Station at the Horsley Park Equestrian Centre;
- Integration of the TAPM modelling data into CALMET for the preparation of meteorological data across the CALPUFF dispersion modelling domain.

CALMET was operated in no-obs mode and includes model settings in accordance with OEH, 2011¹. Such a method is endorsed. The assessment provides wind rose diagrams for a point located within the CALMET modelling domain, presumably at the proposed sites location, however this is not made clear in the report. It is noted that the presented information on the CALMET meteorological data contains differences with the information presented on the BoM Horsley Park data, specifically in relation to the percentage of calm conditions. Calm conditions are adverse for air dispersion. A summary of the compared quantity of calm conditions is tabulated below.

Season	CALMET (Figure 11 of AQIA)	BoM (Figure C-5 of AQIA)
Annual	11.23 %	16.67 %
Summer	10.00 %	13.24 %
Autumn	14.89 %	22.84 %
Winter	9.32 %	13.67 %
Spring	10.66 %	17.66 %

The EPA recommends the AQIA include further validation of the meteorological data utilised for dispersion modelling purposes with a focus on the discrepancies between the quantity in calm conditions between the observation data and the CALMET generated data.

Assessment of Air Toxics

The AQIA provides predicted ground level concentrations for a number of pollutants at the nearest sensitive receptors for comparison against impact assessment criteria. *The Approved Methods for Modelling and*

¹ OEH, 2011 – *Generic Guidance and Optimum Model Settings for the CALPUFF Modelling system for inclusion into the 'Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia'.*

Assessment of Air Pollutants in NSW outlines that impact assessment criteria for individual toxic air pollutants applies at and beyond the boundary of the facility.

The EPA recommends that the AQIA be revised to include predicted ground level concentrations for air toxics at and beyond the boundary of the facility.

Assessment of PM_{2.5} Impacts

The AQIA identifies TSP, PM₁₀ & PM_{2.5} as key fractions for airborne particulate matter. The report includes assessment against TSP and PM₁₀, however no assessment of PM_{2.5} has been included.

The EPA recommends that the AQIA include an assessment of PM_{2.5}. The assessment should reference the NEPM advisory standards for PM_{2.5}, which include a 24 hour average criteria value of 25 ug/m³, and an annual average criteria value of 8 ug/m³.

Predicted PM₁₀ Concentrations

The assessment includes predicted PM₁₀ concentrations (on a cumulative basis) for each sensitive receptor, and scenario considered. Predicted PM₁₀ concentrations over a 24 hour averaging period are approximately 27 ug/m³ for the scenarios assessed on a cumulative basis. However Table 7 of the assessment outlines that the maximum PM₁₀ concentration measured at Prospect in 2014 was 44 ug/m³. The data from Prospect was utilised in the assessment for consideration of cumulative impacts. As per the *Approved Methods for Modelling*, assessment against the PM₁₀ criteria must be reported as the 100th percentile (increment plus background), hence a predicted cumulative concentration below the 100th percentile background concentration would not be expected.

The EPA recommends that the predicted cumulative impacts be reviewed and revised where necessary.

Detailed Process Description

The AQIA provides an overview of the Project, however no detailed description of the unit operations of the two kilns has been included. A process description is an important part of the assessment process, and aids in stakeholders of varying backgrounds to gain an appreciation of the technicalities of a process. The AQIA outlines two point source discharges for each kiln, those being the Product Combustion Stack and Cooling Air Stack. A detailed description of how these operate enables an appreciation for the pollutants that maybe associated with each point source.

The EPA recommends a process description of all processes and point source discharges be included. The description should be supported by process flow diagrams, and details on any air streams merging prior to discharge.

The EPA recommends that the Proponent address the EfW Policy requirements prior to the revision of the AQIA, to allow for assessment of the AQIA based on the final proposal design that meets the EfW Policy to be presented.

Noise Impact Assessment

The EPA has reviewed the Noise Impact Assessment prepared by Benbow Environmental Pty Ltd dated October 2015 on behalf of the applicant. Based on the development currently proposed and based on the information provided, the EPA cannot issue GTA's given that the noise levels are 4dB above the nominated criteria predicted for two locations.

The EPA also seeks clarification on a number of components of the noise impact assessment which are unclear. For example, the EPA seeks clarification as to why Table 6-7 has an estimated Industrial Noise level of <39dBLAeq for Receptor R6 when the last row of Table 4-7 includes the comment indicating industrial noise (Jemena Horsley Park Meter Station) of around 43dBA at Location R6. It is not clear from the assessment whether this noise from the meter station present at a constant level all day and night, every day?

The EPA suggests the applicant and/or their noise consultant arrange to meet with the EPA to discuss the Noise Impact Assessment.

If the DPE has any questions or queries in regards the above, please do not hesitate to contact Jacqueline Roberts on (02) 9995 5259.

Yours sincerely

4/12/2015

A handwritten signature in black ink, appearing to read 'Stuart Clark', with a long horizontal flourish extending to the right.

STUART CLARK
A/Unit Head – Sydney Industry
Environment Protection Authority