



DOC19/913264

Ms Eliza Cook
Planning and Assessments Group
Department of Planning, Industry and Environment
GPO Box 39
SYDNEY NSW 2001

Email: Eliza.Cook@planning.nsw.gov.au

Dear Ms Cook

Thank you for the request for advice from Public Authority Consultation (PAE-528). The NSW Environment Protection Authority (EPA) has reviewed the Modification report for the proposed Modification 3 Commercial Building C1 – Co-generator plant (Application SSD-8529 MOD 3) at Barangaroo Building C1.

The EPA has reviewed the Environmental Impact Statement for the proposal and requires further information in relation to air and noise impacts. The EPA met with the proponent on 18 January 2018 and 30 May 2018 to discuss requirements in relation to air emissions and waste oil management for the proposal. However, the EIS does not appear to have adequately addressed the matters raised by the EPA at these meetings.

Please find the EPA's comments and recommendations in the attached submission.

The EPA is available to meet with the proponent to further discuss the proposal and the additional information requested by the EPA. If you have any questions in relation to this letter please contact Mr Mark Hanemann on 9995 6845 or via email at mark.hanemann@epa.nsw.gov.au

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Craig Flemming', written over a light blue horizontal line.

24/10/2019

CRAIG FLEMMING
Unit Head Sydney Industry
Environment Protection Authority

Phone 131 555

Phone +61 2 9995 5555
(from outside NSW)

Fax +61 2 9995 5999

TTY 133 677

ABN 43 692 285 758

PO Box 668

Parramatta

NSW 2124 Australia

4 Parramatta Square

12 Darcy Street

Parramatta NSW

2150 Australia

info@epa.nsw.gov.au

www.epa.nsw.gov.au

Environment Protection Authority (EPA) Submission on Modification Report for proposed Modification 3 Commercial Building C1 – Co-generator plant (Application SSD-8529 MOD 3) at Barangaroo Building C1

24 October 2019

The EPA understand the proposal is for:

- Installation of a cogeneration plant within Commercial Building C1 at Barangaroo. The cogeneration plant comprises two oil fired engines, which will be fuelled by refined waste cooking oil.
- Minor design refinements to Commercial Building C1 to accommodate the cogeneration plant.

Based on the information provided, the proposal will require an environment protection licence under s 43 of the *Protection of the Environment Operations Act 1997* for Energy recovery and waste disposal (thermal treatment) ccl 18 and 40 of Schedule 1 POEO Act.

However, in NSW, facilities seeking to recover energy by thermally treating waste, or materials derived from waste, must comply with the 'NSW energy from waste policy statement'. Under this policy statement, certain low-risk wastes, such as the recovered waste oil detailed in the proposal, may be thermally treated if a Resource Recovery Order and a Resource Recovery Exemption have been granted by the EPA.

An application for a Resource Recovery Order and Exemption for the proposal was submitted to the EPA by the proponent on 30 May 2019 including the document titled Air Quality Impact Assessment, Used Cooking Oil Co-Generation Plant – Barangaroo South, Northstar Air Quality, 18 April 2019 (the AQIA). On 25 September 2019 the EPA provided a response to the proponent via email in relation to the application. The EPA's response to the application requested further information and clarification in relation to air impacts from the proposal.

The EPA notes that the same AQIA has been submitted in support of this MOD proposal. The EPA's comments on the Resource Recovery Order and Exemption application are largely duplicated below, in the section titled 'Air Impacts'.

The EPA has advised the proponent that a Resource Recovery Order and Exemption cannot be granted until development consent is obtained for the proposal. Without a Resource Recovery Order and Exemption, a licence will be required to install or operate the co-generation plant.

The EPA has assessed this MOD application without prejudging the Resource Recovery Order and Exemption application. The EPA's consideration of matters of air quality for this MOD application, where a licence is required, has identified the same deficiencies as previously advised to the applicant.

Matters to be addressed prior to determination

Air Impacts

The EPA recommends that the air quality impacts from the burning of waste cooking oil be further assessed in accordance with the following requirements:

1. Volumetric exhaust flowrate not corrected to the reference concentration

The proponent must revise the AQIA to use the correct mass emission rates in all scenarios.

The volumetric flowrate of the exhaust gas was calculated using the exhaust gas flow rate listed in the engine technical data (53.5 m³/min) and corrected to 273 K from the exhaust gas temperature of 395 K. This resulted in an exhaust gas flow of 0.366 m³/s. It was not corrected for oxygen concentration, and therefore the flowrate of 0.366 m³/s is at the operating oxygen concentration of the engine (12.3%). When calculating the mass flowrates of pollutants, the volumetric flowrate and the concentration should be at the same oxygen concentration.

The mass flowrate for Scenario 1 was calculated correctly based on a volumetric flow rate referenced to 15% oxygen and a mass concentration referenced to 15% oxygen. Thus the mass flow rate in scenario 1 is correctly calculated. The mass rates modelled for Scenarios 2 and 3 were calculated using a volumetric flowrate referenced to 12.3% oxygen and a discharge concentration referenced to 3% oxygen (the oxygen concentration for the regulatory limit). Thus, the emission rates used in Scenarios 2 and 3 are over-estimated.

2. Unlikely that NO_x emissions of 250 mg/Nm³ can be achieved

The proponent must provide additional evidence that NO_x emissions of 250 mg/Nm³ at 3% oxygen can be achieved.

NO_x emissions are 1027.6 mg/Nm³ at 15% oxygen, which is equivalent to 3082.8 mg/Nm³ at 3% oxygen. The EPA notes that the proponent intends to use Selective Catalytic Reduction (SCR) technology to reduce the NO_x discharge concentration to comply with regulatory limits.

The engine specification indicates an 87.5% reduction when using SCR. However, the AQIA specifies a 90% reduction. An 87.5% reduction would result in an expected NO_x discharge concentration of 385.35 mg/Nm³ at 3% oxygen, which complies with the regulatory limit of 450 mg/Nm³ in Schedule 4 of the POEO (Clean Air) Regulation 2010. However, the emissions discharge must also comply with the Interim Nitrogen Oxide Policy for Cogeneration in Sydney and Illawarra, OEH, 2011 which specifies a NO_x limit of 250 mg/Nm³ at 3% oxygen. Based on the information provided, the proposal will not meet a NO_x limit of 250 mg/Nm³ at 3% oxygen.

3. Conclusions are not consistent with results

The proponent should clarify the statement in Section 7.1 of the AQIA regarding incremental impacts, and provide further justification for why the incremental NO_x impacts are not considered to be significant.

Section 7.1 of the AQIA concludes that "With reference to the predicted incremental concentrations (see Section 6.1 and Appendix E), the maximum predicted 1-hour NO₂ impacts corresponding to emission limits of 450 mg/Nm³ and 250 mg/Nm³ are 4.69 µg/m³ and 2.60 µg/m³ respectively. These predicted incremental impacts may be compared to the 1-hour air quality impact criterion (NSW EPA, 2017) of 246 µg/m³ and the maximum increments correspond to 1.91% and 1.06% of that criterion value".

This statement is not consistent with Table 8 of the AQIA which shows maximum incremental impacts of 129 µg/m³ and 115 µg/m³ for emission limits of 450 mg/Nm³ and 250 mg/Nm³ respectively. The EPA considers that incremental NO_x impacts are significant at these discharge concentrations.

4. Inadequate justification for not assessing odour

The proponent must provide a more robust justification for not assessing odour, including data from reference facilities, if available. If reference facility data is not available, details should be provided of contingency measures to mitigate potential odour impacts.

The AQIA states “Due to the thermal oxidation process, the routine operational emissions are anticipated to result in an insignificant emission of odour”. The EPA does not consider that this is adequate justification for not assessing potential odour impacts from the proposal.

5. Ammonia emissions were not assessed

The proponent must assess ammonia impacts against the ammonia impact assessment criterion at the boundary of the site, or provide robust justification for why they should not be assessed.

The proposal includes the use of SCR, which utilises ammonia, to reduce NO_x emissions. The ammonia slip (ammonia left over from the reaction with NO_x) could lead to adverse ammonia impacts. However, ammonia emissions were not assessed in the AQIA.

6. No discussion as to why Building 4A contributes significantly to TPM and NO_x emissions

The proponent must discuss why Building 4A is such a significant contributor to NO_x and TPM emissions.

Results of the AQIA indicate that emissions from Building 4A at Barangaroo contribute significantly to ambient PM_{2.5} and NO₂ concentrations. The AQIA indicates that building 4A has a cogeneration plant, and that cumulative impacts from both cogeneration plants have been assessed. However, no information is provided about the size or type of the cogeneration plant in Building 4A.

Considering that the cogeneration plant in Building 4A is a significant contributor to NO_x and TPM emissions, and to the surrounding airshed, more details about the size and nature of the emissions from this plant are required.

Noise Impacts

The proponent must review the operation of the equipment for the proposal to determine whether the frequency spectrum contains any major components in the low-frequency range (10 - 160 Hz), or provide justification for why these frequency ranges do not require assessment.

The acoustic assessment for the proposal, titled *Barangaroo South Building C1 Co-Generation Plant Noise Assessment* (Wilkinson Murray, 22.02.2019), concludes that noise impacts from the proposal, including night time impacts, comply with noise policy guidelines. However, the acoustic assessment does not analyse potential low frequency noise impacts associated with use of the generators.

This concludes the EPA submission on the proposal.