DOC17/483204-02; EF13/3847

Mr David Rollings
Associate Director Air Quality
AECOM Australia Pty Ltd
17 Warabrook Boulevard
WARABROOK NSW 2304

Attention: Simon Murphy

By email:simon.murphy@aecom.com

6 October 2017

Dear Mr Rollings

Weston Aluminium – Proposed Thermal Waste Processing Plant (SSD 7396)
Review of Conditions of Approval and Emission Limits

I refer to your letter of 20 September 2017 titled "*Western Aluminium – Proposed Thermal Waste Processing Project: Air Emissions Regulation*" (AECOM 2017) relating to State Significant Development application for a thermal waste processing plant at Weston Aluminium, Kurri Kurri. This letter proposes alternative pollutant concentration limits from the recommended Conditions of Approval (CoA) provided by the Environment Protection Authority (EPA) to the Department of Planning and Environment (DPE) on 28 July 2017.

The EPA has reviewed and considered the AECOM 2017 request and is of the option that a robust basis for the EPA to amend the previously recommended CoA have not been presented. Background and justification for this decision is provided below.

Background

On 9 August 2017, the EPA met with Weston Aluminium (WA), AECOM, AirLabs Environmental and DEC to discuss the EPA's CoA of 28 July 2017. The CoA, including air emission limits, were based on published EPA policy and were reflective of the information provided by WA in their Environmental Impact Statement[1]. The meeting included significant discussion about uncertainty in emission estimates and flow characteristics for the proposed plant, including flow rates that varied from 21.4 m^3/s in the AQIA[2] to 2.58[3] m^3/s, since design information had not been provided by WA despite repeated requests from the EPA.

[1] *Thermal Waste Processing Project SSD_15_7396,* prepared by Weston Aluminium, 26 August 2016
[2] *Thermal Waste Processing Project SSD_15_7396, Appendix E, Air Quality and Odour Assessment*, prepared by Weston Aluminium, 26 August 2016
[3] Disclosed by AirLabs in the 9 August 2017 meeting

An agreed action from the meeting was that WA would provide additional information regarding the process air flowrate, including the quench rate and a flow balance, and the EPA would then revisit the discharge concentration limits. It was also agreed that WA will either profile the waste stream and emissions, or undertake post commissioning testing to quantify the variability in the emissions.

Subsequent to the meeting, AECOM requested the EPA's methodology for calculating the recommended emission limits – which had already been discussed with both WA and AECOM. On 23 August 2017, a document that explained the rationale for the derivation of the CoA was provided to WA. On 20 September 2017, AECOM prepared a letter to EPA (AECOM 2017) contending that the EPA's recommended CoA are not realistic or achievable, and proposed alternative CoA.

Justification for not varying the recommended Conditions of Approval

The EPA has reviewed AECOM 2017, which proposes alternate emission limits and monitoring requirements to those recommended by the EPA in July 2017. The EPA considers that AECOM 2017 has limited utility and is not robustly supported by project design information, as outlined below:

- Information regarding quench flow rates and a flow balance, as agreed in the meeting of 9 August 2017, was not provided;
- The 18% oxygen concentration referred to in AECOM 2017 has not been substantiated by a detailed engineering design and was not raised in the 12 months of project discussions prior;
- It is unclear how the 18% oxygen value was derived in the absence of a detailed process airflow balance;
- The proposed amended discharge concentration limits were based on Clean Air Regulation limits instead of site specific plant design information. US EPA AP42 emission factors were considered by WA as representative for use in the air quality assessment in the absence of site specific design information. WA is not however accepting limits based on the same data;
- Referencing emission limits for existing and dated medical waste facilities is not considered appropriate. Emission limits contained in Environment Protection Licenses are project, site and process specific. Further, benchmarking against outdated facilities and technology does not promote the objective of the *Protection of the Environment Operations Act 1997* (the POEO Act) to make progressive environmental improvements, including the reduction of pollution at source;
- Referencing stack testing for other manufacturing facilities, without providing the test reports or information on the control technology and process parameters, is not appropriate;
- Stating that "it is therefore unrealistic to expect emissions control performance levels equivalent to newly constructed mitigation equipment" is not in accordance with the Approved Methods, which requires that principal toxic air pollutants must be minimised to the maximum extent achievable through the application of best practice process design and/or emission controls. The proponent has a responsibility to design, construct and operate a plant which incorporates contemporary and appropriate emissions controls rather than simply rely on existing site infrastructure which was designed for a different process; and
- The variability in composition of the waste feedstock and feed ratios has not been provided. Without a robust understanding of the variability in composition of the feedstock, the EPA is unable to assess the variability in emissions, and hence relax the requirement for continuous monitoring.

In the absence of a detailed engineering design, including at the very least an airflow balance, as has been requested on several occasions by the EPA, AECOM 2017 is considered to have limited utility, the EPA is unable to alter emission limits that have already been recommended. Although the limits are considered by WA to be unreasonably low, they are what were modelled as representative of the proposal, using US EPA AP42 values for a medical waste facility operating thirty years ago. It is therefore not unreasonable of EPA to expect that these limits can be achieved using modern technology.

If the flow balance cannot be provided, the EPA can discuss with WA the option of additionally setting mass emission rate limits based on modelled emission rates using US EPA AP42 values.
In the absence of a detailed demonstration of the pollutant composition of the waste profile, and its variability, the EPA recommends Continuous emission monitoring system (CEMS). If detailed feed composition data indicates negligible presence of particular elements, rationalising the required CEMS may be possible – e.g. where there is negligible sulfur, SO_2 CEMS may not be required.

In the absence of detailed design and airflow information from the proposed plant the EPA has not varied its CoA. For your reference copies of the recommended CoA and Environment Protection Licence Conditions to be added to EPL 6423 sent to the DPE on issued on 28 July 2017 have been included with this letter as Attachment A and Attachment B respectively.

If you require any further information regarding this matter, please contact Jenny Lange on 4908 68 or by email to hunter.region@epa.nsw.gov.au.

Yours sincerely

MARK HARTWELL
Head Regional Operations - Hunter
Environment Protection Authority

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cc: NSW Department of Planning and Environment

Attachment A

EPA Recommended Conditions for Inclusion if Consent is Granted

The EPA suggests the inclusion of the conditions, as listed below, on the consent. In addition, the EPA provides a revised list of Environment Protection Licence (EPL) conditions in Attachment B.

Waste Conditions

1. E-waste must not be received, stored, processed or treated (including thermal treatment) at the Premises.

2. Waste containing halogenated chemicals compounds must not be received, stored, processed or treated (including thermal treatment) at the Premises.

Noise Limit Conditions

3. Noise generated at the premises must not exceed the noise limits in the Table below.

Location	NOISE LIMITS dB(A)			
	Day $L_{Aeq\ (15\ minute)}$	Evening $L_{Aeq\ (15\ minute)}$	Night $L_{Aeq\ (15\ minute)}$	Night $L_{A1\ (1\ minute)}$
84 Government Road, Weston	36	35	35	47
67 Government Road, Weston	39	35	35	47
72 Hart Road, Loxford	41	37	37	47
122 Mitchell Avenue, Kurri Kurri	42	41	41	48
68 Northcote Street, Kurri Kurri	38	38	38	48

4. For the purpose of condition 3;

   - Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays.
   - Evening is defined as the period 6pm to 10pm.
   - Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holidays.

5. The noise limits set out in condition 3 apply under all meteorological conditions except for the following:

   a) Wind speeds greater than 3 metres/second at 10 metres above ground level.
   b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
   c) Stability category G temperature inversion conditions.

6. For the purposes of condition 5:

   a) Data recorded by Commonwealth Government's Bureau of Metrology (Cessnock Airport) Weather Monitoring station must be used to determine meteorological conditions; and
   b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

7. To determine compliance:

   a) with the $L_{eq(15\ minute)}$ noise limits in condition 3, the noise measurement equipment must be located:

      - approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
      - within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable
      - within approximately 50 metres of the boundary of a National Park or a Nature Reserve.

   b) with the $L_{A1(1\ minute)}$ noise limits in condition 3, the noise measurement equipment must be located within 1 metre of a dwelling façade.

   c) with the noise limits in condition 3, the noise measurement equipment must be located:

      - at the most affected point at a location where there is no dwelling at the location; or
      - at the most affected point within an area at a location prescribed by conditions 7(a) or 7(b).

8. A non-compliance of condition 3 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

   - at a location other than an area prescribed by conditions 7(a) and 7(b); and/or
   - at a point other than the most affected point at a location.

9. For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

Monitoring Noise

10. To assess compliance with Condition 3, attended noise monitoring must be undertaken in accordance with Condition 7 and:

    a) at each one of the locations listed in Condition 3;
    b) occur annually in a reporting period;
    c) occur during each day, evening and night period as defined in the NSW Industrial Noise Policy for a minimum of:

       - 1.5 hours during the day;
       - 30 minutes during the evening; and
       - 1 hour during the night.

    d) occur for three consecutive operating days.

Noise Reporting Conditions

11. A noise compliance assessment report must be submitted to the EPA within 30 days of the completion of the yearly monitoring. The assessment must be prepared by a suitably qualified and experienced acoustical consultant and include:

a) an assessment of compliance with noise limits presented in Condition 3; and
b) an outline of any management actions taken within the monitoring period to address any exceedences of the limits contained in Condition 3.

Air Quality Conditions

12. By 2 months prior to construction, the licensee must submit to the DPE and the EPA a 'Preconstruction Design Report' which includes, but is not limited to:
    a. Final thermal treatment plant design;
    b. Detailed discussion and illustration of all process units and plant associated with generation and discharge of emissions from the thermal treatment plant;
    c. The design air/gas flow balance for the thermal treatment process expressed at both normalised and actual conditions;
    d. Manufacturers emission guarantees;
    e. Calculations of design discharge concentrations and emission rates from the thermal treatment plant; and
    f. Post commissioning Proof of Performance Air Emission Sampling Plan, for EPA approval, including
        i. manual reference methods testing
        ii. continuous emission monitoring, commissioning, quality assurance and calibration plans.

13. Within 3 months of commissioning, the licensee must submit to the EPA a "Post Commissioning Air Emissions Verification Report" for the thermal waste treatment plant which includes:
    a. Air emissions sampling results for the thermal treatment plant obtained in accordance with the EPA approved Post Commissioning Proof of Performance Air Emission Sampling Plan;
    b. Comparison of the emission sampling results against the discharge limits for the thermal treatment plant specified in the Environment Protection Licence for the premises;
    c. Detailed evaluation of potential off-site impacts based on measured emission concentrations and rates;
    d. Proposed approach, including timeframe for implementation, to resolve any non-compliances with Environment Protection Licence limits and the Protection of the Environment Operations (Clean Air) Regulation, 2010 limits;

14. The proponent must develop and implement an air quality management plan prior to the commencement of project operations. As a minimum, the air quality management plan must include the following parts:
    - *Key performance indicator(s);*
    - *Monitoring method(s);*
    - *Location, frequency and duration of monitoring;*
    - *Record keeping;*
    - *Response mechanisms; and*
    - *Compliance reporting.*

Additions to Definition of Terms of the licence

- NSW Industrial Noise Policy - the document entitled "New South Wales Industrial Noise Policy published by the Environment Protection Authority in January 2000."

- Noise – 'sound pressure levels' for the purposes of conditions 3 to 9.

Attachment B

Environment Protection Licence Conditions to be Added to EPL 6423

The following conditions will be incorporated into the existing EPL 6423 along with the existing licence conditions. Where any inconsistency exists between the licence conditions the conditions below will prevail.

1. Condition A1 - addition of thermal activity of scheduled activity of Waste Disposal (thermal treatment) with the fee based activity of thermal treatment of hazardous and other wastes.

2. Waste table to condition L4 will be varied to list all waste types permitted to be processed.

3. E-waste must not to be received, stored, processed or treated (including thermal treatment) at the Premises.

4. Waste containing halogenated chemical compounds must not be received, stored, processed or treated, (including thermal treatment) at the Premises.

5. Thermal Waste Treatment Plant Operations and Processing
    a. Thermal treatment of waste at the premises must, at a minimum, use of a primary and secondary (two stage) combustion.
    b. The maximum amount of waste that can be processed per hour is 800 kilograms;
    c. Acceptable wastes are limited to:
        i. Medical wastes;
        ii. Quarantine wastes (no more than 15%[4] by mass at any one time);
        iii. Other wastes: limited to oily rags, pitch sludge residue and solvents and paints, confidential documents (no more than 10%[1] by mass at any one time); and waste chemical substances from research and development or teaching activities. Waste chemical substances from research and development or teaching activities must not be used unless specifically approved in writing by the EPA prior to use.
    d. The bypass stack (stack 8) is not to be used except in the event of an emergency shutdown. The Licensee must notify the EPA immediately in the event that emissions are directed to and discharged from the bypass stack;
    e. All emissions from the burnout hearth must be directed to emission control equipment associated with the thermal treatment plant; and
    f. The reverberatory furnace and thermal treatment plant (rotary kiln) cannot be used simultaneously.
    g. Emissions from point 13 (stack 5) should have a minimum velocity at discharge of 18 m/s.

[4] These percentage limits, as well as the need for percentage limits, will be reviewed by the EPA following receipt of the post commissioning Air Emissions Verification Report.

6. Concentration Limits

The concentration of a pollutant discharging from discharge point 13 (Stack 5) when the thermal processing plant is operational must not exceed the concentration limits specified for that pollutant in the table below:

a. Limit conditions for licensed discharge point 13 (Stack 5), when the thermal waste treatment plant is in use.

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Averaging Period
Volatile Organic Compounds (as n-propane)	mg/m^3	20[1]	Dry, 273K, 101.3kPa 11% O_2	1 hour rolling
Hydrogen Chloride	mg/m^3	10	Dry, 273K, 101.3kPa 11% O_2	1 hour
Solid Particles	mg/m^3	10	Dry, 273K, 101.3kPa 11% O_2	1 hour
Sulphuric acid mist and/or sulphur trioxide	mg/m^3	20	Dry, 273K, 101.3kPa 11% O_2	1 hour
Type I and Type II substances in aggregate	mg/m^3	0.1	Dry, 273K, 101.3kPa 11% O_2	1 hour
Nitrogen Oxides (as NO_2 equivalent)	mg/m^3	30	Dry, 273K, 101.3kPa 11% O_2	1 hour
Dioxins and Furans	ng/m^3	0.1	Dry, 273K, 101.3kPa 11% O_2	6 hours
Sulfur Dioxide	mg/m^3	20	Dry, 273K, 101.3kPa 11% O_2	1 hour

[1] The EPA intends to review the concentration limit for volatile organic compounds based on test results from the post commissioning verification report required under condition 13.

7. Monitoring and Recording Conditions

The licensee must monitor the concentration of each pollutant and parameter specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency specified, in the other columns.

a. Monitoring Requirement for Discharge Point 13 (Stack 5)

Pollutant	Units of measure	Frequency	Sampling Method
Sampling position			TM-1
Dioxins and Furans	ng/m^3	Quarterly	TM-18
Dry gas density	mg/m^3	Quarterly	TM-23
Hydrogen Chloride	mg/m^3	Continuous	Special Method 1
Moisture content	%	Continuous	CEM-6
Nitrogen Oxides (as NO_2 equivalent)	mg/m^3	Continuous	CEM-2
Oxygen (O_2)	%	Continuous	CEM-3
Pressure	kPa	Continuous	CEM-6
Solid Particles	mg/m^3	Continuous	Special Method 2
Sulfuric acid mist and sulfur trioxide	mg/m^3	Quarterly	TM-3
Sulfur dioxide	mg/m^3	Continuous	CEM-2
Temperature	°K	Continuous	CEM-6
Type I and Type II substances in aggregate	mg/m^3	Quarterly	TM-12. TM-13 & TM-14
Velocity	m/s	Continuous	CEM-6
Volatile Organic Compounds	mg/m^3	Continuous	CEM 8
Volumetric flowrate	m^3/s	Continuous	CEM-6

Notes:
1. TM Sampling must be conducted under conditions associated with reasonable worst case emissions potential, with consideration of process load and waste composition.
Special Method 1: means US EPA Performance Specification 18 or an alternative method agreed to in writing by the EPA
Special Method 2: means US EPA Performance Specification 18 or an alternative method agreed to in writing by the EPA

L6.1 Noise generated at the premises must not exceed the noise limits in the Table below.

Location	NOISE LIMITS dB(A)			
	Day $L_{Aeq\ (15\ minute)}$	Evening $L_{Aeq\ (15\ minute)}$	Night $L_{Aeq\ (15\ minute)}$	Night $L_{A1\ (1\ minute)}$
84 Government Road, Weston	36	35	35	47
67 Government Road, Weston	39	35	35	47
72 Hart Road, Loxford	41	37	37	47
122 Mitchell Avenue, Kurri Kurri	42	41	41	48
68 Northcote Street, Kurri Kurri	38	38	38	48

L6.2 For the purpose of condition L6.1;

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays.
- Evening is defined as the period 6pm to 10pm.
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holidays.

L6.3 The noise limits set out in condition L6.1 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres/second at 10 metres above ground level.
b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
c) Stability category G temperature inversion conditions.

L6.4 For the purposes of condition L6.3:

a) Data recorded by a meteorological station installed on site must be used to determine meteorological conditions; and
b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

L6.5 To determine compliance:

a) with the $L_{eq(15\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located:

- approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
- within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable
- within approximately 50 metres of the boundary of a National Park or a Nature Reserve.

b) with the $L_{A1(1\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located within 1 metre of a dwelling façade.

c) with the noise limits in condition L6.1, the noise measurement equipment must be located:

- at the most affected point at a location where there is no dwelling at the location; or
- at the most affected point within an area at a location prescribed by conditions L6.5(a) or L6.5(b).

L6.6 A non-compliance of condition L6.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- at a location other than an area prescribed by conditions L6.5(a) and L6.5(b); and/or
- at a point other than the most affected point at a location.

L6.7 For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

M8 Requirement to Monitor Noise

M8.1 To assess compliance with Condition L6.1, attended noise monitoring must be undertaken in accordance with Conditions L6.5 and:

a) at each one of the locations listed in Condition L6.1;
b) occur annually in a reporting period;
c) occur during each day, evening and night period as defined in the NSW Industrial Noise Policy for a minimum of:

- 1.5 hours during the day;
- 30 minutes during the evening; and
- 1 hour during the night.

d) occur for three consecutive operating days.

Reporting Conditions

R4 Noise Monitoring Report

A noise compliance assessment report must be submitted to the EPA within 30 days of the completion of the yearly monitoring. The assessment must be prepared by a suitably qualified and experienced acoustical consultant and include:

c) an assessment of compliance with noise limits presented in Condition L6.1; and
d) an outline of any management actions taken within the monitoring period to address any exceedences of the limits contained in Condition L6.1.

Additions to Definition of Terms of the licence

- NSW Industrial Noise Policy - the document entitled "New South Wales Industrial Noise Policy published by the Environment Protection Authority in January 2000."

- Noise – 'sound pressure levels' for the purposes of conditions L6.1 to L6.7.