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13 June 2012

Christopher McClung
Plant Manager
Weston Aluminium Pty Ltd

Dear Christopher

Proposed Modification to Weston Aluminium Dross Recycling Facility (DA-86-04-01-MOD 7 and 10397 of 1995-Mod5)

I refer to the letter from the Environment Protection Authority (EPA) to Emma Barnet of the Department of Infrastructure and Planning dated 12 June 2012 (reference PART 3A DOC 12/22383; LIC 07/1378-03), which raised issues regarding the assessment of fluoride emissions within the Environmental Assessment (EA) accompanying the development application referenced above. Please find following background information and our response.

The EPA specifies four impact assessment criteria for fluoride relating to four averaging periods – 24 hours, 7 days, 30 days and 90 days. The relevant criteria are replicated in **Table 1** below.

Table 1 Impact Assessment Criteria

Pollutant	Averaging period	Criteria (µg/m^3)	
		General land use	Specialised land use
Fluoride (hydrogen fluoride)	24 hours	2.9	1.5
	7 days	1.7	0.8
	30 days	0.84	0.4
	90 days	0.5	0.25

For this assessment, the general land use criteria were adopted as there are no known specialised land uses in the surrounding area that may be sensitive to fluoride.

The ambient fluoride concentrations used in the assessment were based on historical measurements by Hydro Aluminium of the 7 day average ambient hydrogen fluoride concentrations, estimated at 0.6 µg/m^3. This concentration represented 35 % of the 7 day impact assessment criterion for fluoride (1.7 µg/m^3). Ambient fluoride concentrations for the other averaging periods were estimated by assuming they also represented 35 % of the relevant impact assessment criteria.

A screening-level approach was initially adopted in the AQIA where the maximum ground level pollutant concentrations predicted at any location within the modelling domain (i.e. including locations within the site boundary) were compared to the EPA assessment criteria. This approach resulted in predicted exceedences of the relevant fluoride criteria, which were located within the Weston Aluminium plant boundary. Further analysis was, therefore, undertaken to determine the fluoride concentrations at the closest sensitive receptor, which was determined to be the RSPCA dog shelter, approximately 100 m to the east of the Weston Aluminium eastern boundary. Predicted fluoride concentrations fell below the assessment criteria for the 24 hour, 7 day and 90 day averaging periods at this location as shown in **Table 2** (replicated from Table 11 in the AQIA). As shown, there was very little difference in ground level concentrations predicted for the dross and SPL processing.

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Table 2 Predicted Ground Level Fluoride Concentrations at Closest Sensitive Receptor

Pollutant	Averaging Period	Predicted GLCs ($\mu g/m^3$)		Criteria ($\mu g/m^3$)
		Dross	SPL	
Hydrogen fluoride	24 hours	1.32 (2.34)	1.35 (2.37)	2.9
	7 days	0.31 (0.91)	0.32 (0.92)	1.7
	90 days	0.30 (0.48)	0.31 (0.49)	0.5
Numbers in parentheses denote cumulative pollutant concentrations.				

As shown, and as noted in the EPA's letter, the EA did not provide a prediction for fluoride concentrations for the 30 day averaging period. This was because the dispersion model used in the assessment (AUSPLUME) does not provide provision for calculation of a 30 day averaging period – as such, the modelling results requested cannot be provided using the existing modelling configuration. The 30 day fluoride concentrations from the Weston Aluminium facility are, however, expected to be below the impact assessment criterion for the following reasons:

- Fluoride concentrations for both the 7 day and 90 day averaging periods were predicted to be below the respective impact assessment criteria.
- The maximum predicted ground level concentrations for the 7 day and 90 day averaging periods at the closest sensitive receptor were essentially the same (ranging from 0.30 – 0.32 $\mu g/m^3$).
- The model operates on an hourly time step; as such, all concentrations for averaging periods greater than one hour are estimated through averaging of the hourly data. As the 30 day averaging period falls between the 7 day and 90 day averaging periods, the maximum ground level concentration for the 30 day averaging period would be within the range of concentrations predicted for those averaging periods; i.e. a maximum of 0.32 $\mu g/m^3$ for both dross and SPL processing activities.
- Using the same methodology to estimate ambient fluoride concentrations for the 30 day averaging period as for the other averaging periods, the estimated 30 day ambient fluoride concentration would be 0.29 $\mu g/m^3$ (35 % of the criterion of 0.84 $\mu g/m^3$).
- The estimated cumulative 30 day fluoride concentration associated with the Weston facility processing either dross or SPL would, therefore, be expected to be 0.29 + 0.32 = 0.61 $\mu g/m^3$, which is below the 30 day impact assessment criterion of 0.84 $\mu g/m^3$.

On this basis, no exceedences of the 24 hour, 7 day, 30 day or 90 day impact assessment criteria for fluoride are predicted to occur as a result of Weston Aluminium's proposed operations as assessed in the EA.

It should also be noted that the ambient fluoride concentrations used in the assessment were based on monitoring data collected during the full-scale operation of the Hydro Aluminium facility, and that Hydro Aluminium has historically been the primary source of ambient fluoride in the Weston locality. Current ambient fluoride levels in that area are expected to be lower than those measured in previous years due to the curtailing of production operations from Potline 1 at the Hydro facility in February 2012, and will continue to decrease following the further production reductions and ultimate closure of the plant by November 2012 recently announced. As such, although the cumulative 90 day fluoride concentration predicted in the EA approached the EPA impact assessment criterion, exceedences are not expected to occur.

Yours faithfully

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