Alcoa World Alumina Australia

A global alliance between Alcoa and Alumina Ltd

Committee Secretary
Senate Standing Committees on Community Affairs
PO Box 6100
Parliament House
Canberra ACT 2600
Australia

Attn: Dr Ian Holland

Re: **Inquiry into the impacts on health of air quality in Australia – Alcoa Response to Submission 52**

Thank you for advising Alcoa of submission 52 and for giving Alcoa the opportunity to provide a response to the committee on the adverse comments it contains regarding our operations at Anglesea. Alcoa is committed to managing its operations in accordance with Australian regulations relating to the environment and health – including those related to air quality. We believe submission 52 contains several errors of fact and presents a misleading view of our Anglesea operations. Accordingly we offer the following comments.

**Introduction**

Alcoa has operated the Anglesea power station and open cut coal mine for more than 40 years and has had an amicable relationship with most of the community over that time. Emission data have been shared with the community by means of regular community consultative network meetings and via our website: http://www.alcoa.com/australia/en/info_page/anglesea_en_report.asp

Consistent with work undertaken at other Alcoa locations in Australia, in 2008 Alcoa voluntarily commissioned an Air Emission Study and Human Health Risk Assessment (HHRA) of the Anglesea power station – undertaken by independent consultants Environ Australia Pty Ltd. This was a proactive undertaking to supplement Alcoa's comprehensive real-time ambient monitoring of sulphur dioxide at six locations in Anglesea. The HHRA showed that the 99.9$^{th}$percentile 1-hour average $SO_2$ ground level concentrations did not exceed the National Environment Protection Measure (NEPM) and Victorian State Environmental Protection Policy (SEPP) air quality objective of 200ppb in the Anglesea township. In 2009 a further improvement in emission control was initiated, called the Air Quality Control System (AQCS). This proactive management system involves the use of predictive air dispersion modelling to reduce load (and therefore $SO_2$ emissions) during the development of adverse meteorological conditions. Since March 2009 there has been no non-compliance with the 1-hour average $SO_2$ NEPM or SEPP recorded at the six monitors in the Anglesea township.

**Specific Comments on Submission 52**

The caption to photo 1 (shown below left) on page 2 of submission 52 incorrectly states that the photo shows a smoke plume from the power station. In fact the photo actually shows steam from the power station's cooling tower. The actual power station stack, which was obscured by the steam plume, can be seen in the right hand photo below. Steam from the cooling tower can be seen to the right of the stack. If "smoke" was coming from the stack in photo 1 the stack itself would have been visible.


Photos 1 (left) showing cooling tower steam plume and 2 (right) actual power station stack

On page 3, the proximity of the coal mine and power station to the town is presented as conferring a health risk on Anglesea residents. This is misleading. The key consideration used to determine risk to human health from air borne emissions is ground level concentrations.

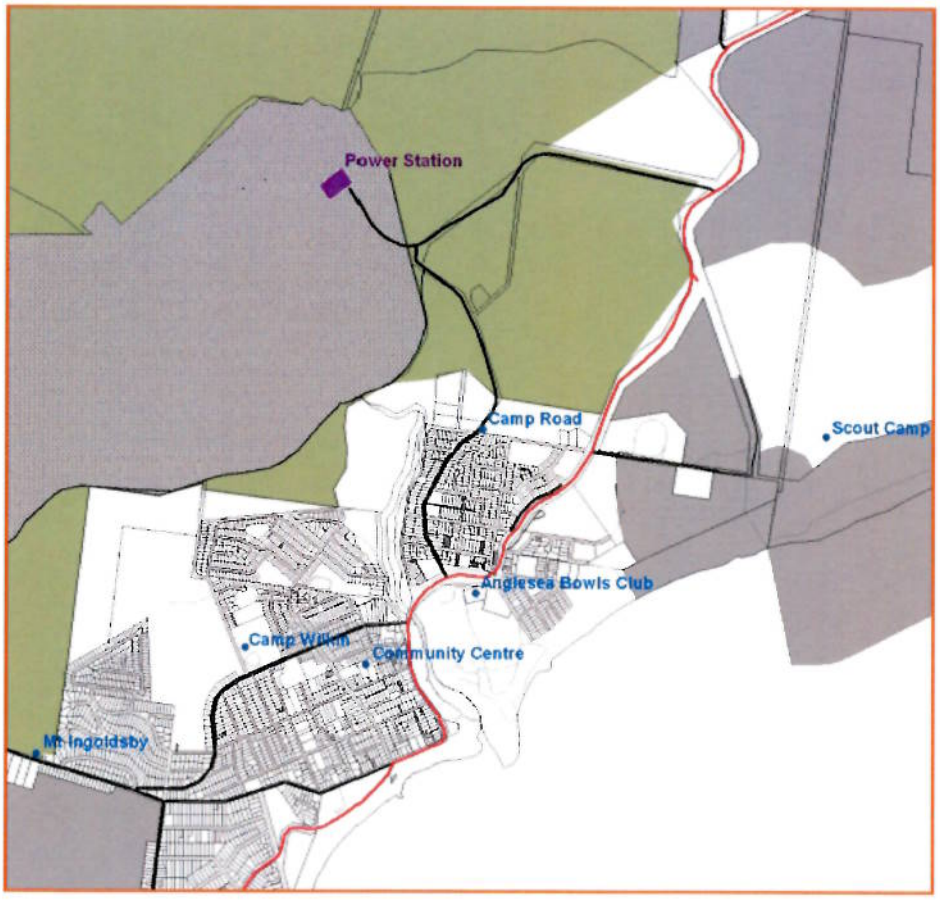
Similarly, the comparison of mass emission rates for sulphur dioxide from the Anglesea power station to the Hazelwood power station on page 4 of submission 52 is not relevant in this context. A direct inference about comparative health risks cannot be made from a comparison of mass emission data at different locations. From a health risk perspective it is ground level concentrations that are important, not mass emission rates which are only one of several determinants of ground level concentrations.

The submission raises, on page 4, a link between $SO_2$ and low birth weight. While this has been the subject of research the USEPA's recent Integrated Science Assessment (ISA) "concluded that the evidence relating long-term (weeks to years) $SO_2$ exposure to adverse health effects was inadequate to infer the presence or absence of a causal relationship". The endpoints considered in this assessment included adverse prenatal and neonatal outcomes.

It is important to note that the USEPA ISA concluded that the only association for which there was sufficient evidence to infer a causal relationship was between respiratory morbidity and short-term (5 minutes to 24 hours) exposure to $SO_2$. The main issue is the potential for short-term respiratory effects in people with pre-existing asthma.

The submission quotes a comment on page 4 that the USEPA has concluded "there is no safe level of exposure to $SO_2$ in particular for sensitive groups". Recent comment from the USEPA is not consistent with this statement "Therefore, the Administrator judges that a 1-hour $SO_2$ standard at 75ppb is sufficient to protect public health with an adequate margin of safety." (Note the 75ppb standard is measured as the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations).

The submission criticises on page 5 the absence of "non-industry or EPA monitoring". The facts are that extensive monitoring of $SO_2$ has been undertaken for many years at locations shown in the picture below and since July 2012 $PM_{10}$ and $PM_{2.5}$ have been monitored at two sites, Camp Road and Camp Wilkin, plus at one background site to the north of the town and power station. This monitoring has been carried out using independent consultant expertise and verification. The Victorian EPA conducted its own audit of the $SO_2$ and particulate monitoring networks and found that all aspects of the network were compliant.



On pages 7 to 9 of submission 52, comments are made about the 2008 Human Health Risk Assessment (HHRA) commissioned by Alcoa. The submission focuses on monitored $SO_2$ data during the period 2004 – 2006. It is important to note that these data had been reported to the community at the time. Also Table 5 of the 2008 HHRA report shows that the 99.9$^{th}$ percentile 1-hour average concentrations for $SO_2$ at each monitoring location from 2005 – 2006 were less than the SEPP air quality objective (200ppb) – meaning less than 9 out of 8760 hours per year exceeded the SEPP at each monitor. Since then, Alcoa implemented further improvements in emission controls through the Air Quality Control System, or AQCS, which uses predictive air dispersion modelling. There have been no non-compliances with the SEPP in the Anglesea township since March 2009. Again it is important to note that this control process and subsequent monitoring data have been reported to the community.

With regard to the air dispersion modelling, on page 7 of the submission there is the following quote from the HHRA: "the potential for the emissions from the power station to cause acute health effects is above the acceptance criteria...and is caused by the sulphur dioxide emissions from the stack". The quote is incomplete and the omitted words are actually quite important. The full quote is: "the potential for the emissions from the power station to cause acute health effects is above the acceptance criteria of 1 at some locations within the modelled domain as a result of sulphur dioxide emissions from the stack". The locations referred to are in the unpopulated area of the heath, north of the power station and away from the Anglesea township.

In the third paragraph on page 8 of the submission it is asserted that "Despite knowing that acute (e.g. hourly average) rather than long-term (e.g. monthly) $SO_2$ exposure is an important respiratory health determinant, Alcoa have continued to provide only monthly ambient monitoring data on their website". In fact the reports published on Alcoa's website, which are prepared monthly, list the maximum 1-hour average concentration for each day of the month for each of the six monitors in Anglesea.

It is also alleged in the same paragraph that Alcoa "neglected to monitor at the site of the new Anglesea Primary School, which sits literally in the shadow of the power station". In fact ambient $SO_2$ has been monitored at a location just over the road from the new school in Camp Road for more than eight years, since 1 August 2004. See attached a Google Maps photo showing the Alcoa ambient monitoring station location 100-150 metres from the Anglesea Primary School.


Photo 3 Showing location of Camp Road Ambient Air Monitoring Station to the primary school

In the last paragraph on page 8 of the submission there is a comment about the 2008 HHRA saying that "It makes no effort to look at the combined impact of pollutants". In fact the HHRA followed the methodology of the Victorian EPA, which is to include in the assessment any emission that has a maximum ground level concentration exceeding the SEPP design criteria. This is a conservative (health protective) methodology as the design criteria concentration is lower than the SEPP air quality objective. If an emission's maximum ground level concentration does not exceed the design criteria it is not thought to be a meaningful contributor to health risk.

Mention is also made in paragraph 5 on page 12 of submission 52 of "other toxic elements released with coal combustion", however no mention is made of the fact that the 2008 HHRA undertook air dispersion modelling of arsenic, mercury, fluoride, cadmium and lead and all were well below their respective guideline values.

Despite the claim on page 8 of the submission that there is "well documented scientific evidence to the contrary", Alcoa remains confident that the power station air emissions are safe for Anglesea residents. The 2008 HHRA looked at health risk in the township and found the acute hazard index and chronic hazard index were less than 1 in all residential areas – indicating no cause for concern. As part of its commitment to update the 2008 HHRA for Anglesea, Alcoa commenced an independent 12 month ambient dust monitoring program ($PM_{2.5}$ and $PM_{10}$) at three locations in Anglesea and the results are being published on our website. The HHRA is currently being updated with more recent data, including fine particulates data from the mine, and will be made public during quarter 2, 2013.

Reference is made in submission 52 to the USEPA guideline for sulphur dioxide emissions of 75ppb and the comment is made that "Alcoa would be prohibited from operating the Anglesea power station in their home country." It should be noted that the USEPA standard requires attainment by

August 2017 and the 75ppb standard is measured as the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. It is not intended to be applied to raw data, as has been done in submission 52, particularly in the graphs published on page 11. The result is that the exceedance of the US standard has been overestimated. Also, the EU standard of 350ug/$m^3$ as a 1 hour average permits 24 exceedances per year. This fact is omitted in submission 52 when making comparison with Anglesea data, with the result again being an overstatement of exceedances of the EU standard in the discussion and graphs.

On page 6 of the submission there is discussion on the extension of Alcoa's coal mining lease in Anglesea. It is alleged that "As the mining operation expands and coal combustion continues, the current hazard to public health (and the natural environment) will intensify." This could be misinterpreted to mean that there will be an increase in the rate of mining and power production at Anglesea and therefore an increase in emissions. This is not correct. Alcoa expects to continue mining and rehabilitation at the same pace as now and to maintain the current level of power production. In addition, Alcoa has guaranteed that over 90% of its mine lease in Anglesea will remain protected and managed similar to a national park. Current and future coal mining operations will be restricted to within a 665 hectare area. The remaining 6,400 hectares of Anglesea Heathland will continue to be cooperatively managed by Alcoa, the Department of Sustainability and Environment (DSE) and Parks Victoria.

**Conclusion**

Alcoa has been a member of the Anglesea community for more than 40 years. During that time Alcoa has continuously improved its environmental standards and maintained the Anglesea power station to a high standard. It has one of the highest levels of operational availability of any coal-fired power station in Australia. There are effective emission controls in place and a very modern and advanced system of predictive air dispersion modelling, which triggers a reduction in power station load when meteorological conditions are likely to be adverse.

The work that Alcoa has voluntarily undertaken with the HHRA, together with the continuous monitoring of sulphur dioxide at six different locations in the Anglesea township, provides high confidence that the power station air emissions are safe for Anglesea residents.

Yours Sincerely,

Tim McAuliffe

Director Environment & Sustainability;
Director Government Relations
Alcoa of Australia

References:

Environmental Protection Agency 40CFR Parts 50, 53 and 58 Primary National Ambient Air Quality Standard for Sulfur Dioxide; Final Rule. Federal Register / Vol 75 No 119 / Tuesday, June 22, 2010 / Rules and Regulations. Available at http://www.epa.gov/ttnnaaqs/standards/so2/fr/20100622.pdfEuropean Commission Air Quality Standards. Available at http://ec.europa.eu/environment/air/quality/standards.htm