

17/12/2013
Surf Coast Air Action
P.O. Box 606
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Essential Services Commission
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2 Lonsdale Street
Melbourne, 3000.
licences@esc.vic.gov.au

Dear Sir/Madam,

Alcoa of Australia Limited (ABN 93 004 879 298) has applied for a licence under the Electricity Industry Act 2000 to generate electricity at the Anglesea Power Station, Victoria.

The Commission may grant or refuse to grant a licence for any reason it considers appropriate having regard to its objectives under the Essential Services Commission Act 2001 and the Electricity Industry Act 2000. These objectives have been addressed below.

Surf Coast Air Action is a group of Anglesea residents who have for many years held concerns regarding the health, social, environmental and economic costs of Alcoa's Anglesea open cut brown coal mine and power station.

Currently, Alcoa's Anglesea coalmine and power station provides heavily subsidised electricity to Alcoa's Point Henry smelter which is predicted to close by mid 2014. Alcoa's application for a licence to generate electricity raises questions as to whether they are repositioning Alcoa's Anglesea operations as a power provider to the State of Victoria rather than to Alcoa's Point Henry smelter. When the Point Henry smelter closes, SCAA believes that Alcoa will propose to either sell or continue to operate the mine and power plant as a stand alone electricity generator.

Anglesea is a small seaside town of approximately 2500 permanent residents on Victoria's Surf Coast. It lies on the iconic Great Ocean Road, one of Australia's premier tourist destinations. Over the summer months the population swells to greater than 16 000¹. In addition to being a popular family holiday destination, Anglesea has a number of school camp facilities which are used throughout the year by primary and secondary school children from Geelong and Melbourne. Anglesea has a primary school, occasional care, kinder and nursing home.

Despite EPA Victoria's recommended separation distance of 500 metres for industry involved in production of coal products/derivatives from sensitive land use (including primary schools and residential)², Alcoa's brown coal fired power station is approximately 1 kilometre from the Anglesea Primary School (completed in 2011) and town boundary.

Despite EPA Victoria's recommended separation distance of 1000 metres for an open cut coalmine from sensitive land use², Alcoa's open cut brown coal mine is less than 500 metres from homes in Anglesea.



Diagram 1: Location of Coal Mine and Power station in Anglesea, Victoria.

References

1. Surf Coast Shire Council Anglesea Structures Plan Review Your Place Your Future Planning for a Sustainable Anglesea Background Paper 2 – Population and Housing, Final Draft, July 2011.

http://www.SurfCoast.vic.gov.au/My_Property/Building_Planning/Planning/Strategic_Projects_Studies/Anglesea_Structure_Plan_Review

2. EPA Victoria. Recommended separation distances for industrial residual air emissions. Publication number 1518 March 2013.

<http://www.epa.vic.gov.au/~media/Publications/1518.pdf>

In making this submission SCAA refers to the commission's objectives as detailed in;

Version No. 030 Essential Services Commission Act 2001 No. 62 of 2001 Version incorporating amendments as at 1 July 2008

Section 8 - Objective of the Commission

(1) In performing its functions and exercising its powers, the objective of the Commission is to promote the long term interests of Victorian consumers.

Granting Alcoa a licence to generate electricity will not promote the long term

interests of Victorian consumers.

The power station has been in operation since 1961. It is an old and polluting power station which, should it continue to operate, will require significant financial investment to remain operational.

The coalmine and power station emit high levels of pollutants including sulphur dioxide (SO₂) and particulates.

While Alcoa satisfies current EPA Victoria Air Quality Standards, in September 2011, the National Environment Protection Council (NEPC) released the review of the Ambient Air Quality National Environment Protection Measure¹. The review found that there are **significant health effects at current levels of air pollution and that the current standards are not meeting the requirements for adequate protection of human health**. The review made recommendations for improved air quality standards.

In personal correspondence from John Meritt, EPA Victoria's CEO, he wrote,

“NEPC noted that the review’s recommendations will be prioritised and responded to through the development of the National Plan for Clean Air. The Council of Australian Governments (COAG) Standing Council on Environment and Water are responsible for developing the National Plan for Clean Air. By the end of 2014, the following elements will be completed for COAG endorsement;

- 1. New air quality standards and an exposure reduction framework*
- 2. Proposals for laws, regulations, incentives and guidance.*
- 3. Partnerships or other actions for implementing emission and exposure reduction actions*
- 4. Improved monitoring and reporting and*
- 5. Agreed jurisdiction action list for ongoing implementation.*

The Minister for Environment and Climate Change leads the Victorian Government’s involvement in this process. Once finalised, new national air standards will be reflected in Victorian State environment protection policy.”

Without significant investment in currently available pollution reduction technology, Alcoa's Anglesea coal mine and power station will be unable satisfy new national air quality standards. It is of note that in May 2006 Alcoa announced that, despite a number of measures adopted to try and minimize SO₂ emissions, these actions did not completely eliminate the high SO₂ levels. It was concluded that the best option for Anglesea was to install SO₂ scrubbing technology². However, since this time (and despite millions of tax payer dollars), Alcoa have informed the community that this option is too expensive and it has not proceeded.

Local and international scientific and medical evidence shows that Alcoa's Anglesea operations emit SO₂ and particulates at levels that are harmful to health. The NEPC has stated clearly that there is **a risk of adverse health impacts at and below current standards**. If an electricity generation licence

is granted to Alcoa for its Anglesea operations it must stipulate that currently available best practice pollution reduction technology is installed. Alcoa has installed such technology in their US coal fired power stations however has deemed it unnecessary to install in Anglesea to protect the health of Australians. Alcoa has stated that the previously mooted option of SO₂ scrubbing technology is financially non-viable for Alcoa's Anglesea operations. The coalmine and power station are therefore commercially non-viable and will not promote the long term interests of Victorian consumers.

Additionally, even if SO₂ scrubbing technology is installed, the particulate pollution from both the power station and coal mine would remain a dangerous and unacceptable health risk for Anglesea residents.

The long term interests of Victorian consumers will also be impacted upon by the effects of climate change, especially with regard to increased energy demand. Granting a licence to a high CO₂ emitting power source such as Anglesea's coal fired power station will add to CO₂ emissions and contribute to the weather, environmental, health and economic effects of climate change, all of which will impact significantly on the costs paid by the Victorian consumer.

References

1. National Environment Protection (Ambient Air Quality) Measure Review. National Environment Protection Council, May 2011.

<http://www.scew.gov.au/sites/www.scew.gov.au/files/resources/9947318f-af8c-0b24-d928-04e4d3a4b25c/files/aaqdiscppreviewoftheaaqnepmdiscussionpaperaqstandardsfinal201007.pdf>

2. Anglesea Environment Report, May 2006, Alcoa Australia.

http://www.alcoa.com/australia/en/pdf/Community/May_2006_Anglesea_Power_Station_Environment_Report.pdf

(2) Without derogating from subsection (1), in performing its functions and exercising its powers in relation to essential services, the Commission must in seeking to achieve the objective specified in subsection (1) have regard to the price, quality and reliability of essential services.

Given the aging infrastructure of the power plant and Alcoa's plan to dig deeper and not wider, significant funds will need to be spent to ensure the safety and reliability of the Anglesea coal mine and power station. This will impact upon price for the Victorian consumer.

In its licence application, Alcoa asserts that, should the application not be granted, the reliability of the system will be reduced by having one less generator. This is incorrect. In the 2013 National Electricity Market's Supply-Demand Snapshot it was identified that, under a medium economic growth scenario, while Queensland reaches reserve deficit in 2019–20, **no other regions** reach a reserve deficit within the next 10 years.

Additionally, since publication of the 2013 ESOO, supply side changes impacting the adequacy results include only commitment of the Portland Stage 4 Wind Farm (47.2 MW) in Victoria. This project **further defers** reserve deficits in Victoria.¹

Reference

1. Australian Energy Market Operator 2013 Supply Demand Snapshot for the National Electricity Market, November 2013
<http://www.aemo.com.au/Electricity/Planning/Electricity-Statement-of-Opportunities>

Section 8A - Matters which the Commission must have regard to

(1) In seeking to achieve the objective specified in section 8, the Commission must have regard to the following matters to the extent that they are relevant in any particular case—

(a) efficiency in the industry and incentives for long term investment;

As outlined above, Alcoa's Anglesea coalmine and power station are old and polluting and as such, will require significant funds spent to ensure safety and reliability. The installation of SO₂ scrubbers alone is estimated to be in the order of \$70-100 million. While reducing SO₂ emissions, scrubbers will use more water and Alcoa has stated that there will be loss in station efficiency¹.

Given bipartisan support for a reduction in green house gas emissions, the continued operation of the Anglesea coal mine and coal fired power station can not be incentivised for long term investment. Long term investment opportunities will be with the renewable energy sector.

Reference

1. Anglesea Environment Report, May 2006, Alcoa Australia.
http://www.alcoa.com/australia/en/pdf/Community/May_2006_Anglesea_Power_Station_Environment_Report.pdf

(b) the financial viability of the industry

Given the very high costs of safe and reliable continued operation, especially when new air quality measures are introduced, the Anglesea coalmine and power station pose a financial risk to any owner/investor.

(c) the degree of, and scope for, competition within the industry, including countervailing market power and information asymmetries.

SCAA has no comment regarding this objective.

(d) the relevant health, safety, environmental and social legislation applying to the industry

Health and Safety

The health and safety of both permanent and visiting populations of Anglesea are at risk from air pollution from Alcoa's coalmine and power station due to;

- Very close proximity.
- Aging and outdated power station infrastructure, not in keeping with current best practice.
- Particulates from both the open cut coalmine and the coal fired power station.
- Very high sulphur dioxide (SO₂) emissions from the combustion of locally mined brown coal which has **10 times** the Sulphur content of brown coal mined in the Latrobe Valley (3% vs. 0.3%).¹

Particulates

In a recent report on air pollution, the World Health Organisation classified particulate matter, a major component of outdoor air pollution, as **carcinogenic to humans**.²

In Australia, Metal ore and coal mining are the largest sources of PM₁₀. Electricity generation is the 6th largest source. Electricity generation is the largest reported source of PM_{2.5}. Coal mining is the second largest source.

Thus, Anglesea has the largest sources of both PM₁₀ and PM_{2.5} and both the first and second largest sources of PM_{2.5} 1km and less from town residences and primary school.

Particulates refer to a broad group of pollutants that can enter the respiratory system in the form of fine particles. PM₁₀ and PM_{2.5} are the most studied, with data demonstrating increased cardiorespiratory morbidity and mortality (including lung cancer) along with low birth weight, associated with both acute and cumulative exposures. An average increase in 10µg/m³ is associated with a 3-4% increase in all-cause mortality.³

Ultrafine particulates (PM_{0.1}) are potentially more hazardous. All subtypes are documented by-products of the mining and burning of coal, and large scale studies overseas have shown particulates to be key determinants of the adverse health effects suffered by communities in proximity to these activities.⁴

In December this year, The Lancet reported that long-term exposure to fine particulate air pollution is associated with natural-cause mortality, even within concentration ranges *well below* the present European annual mean limit value.⁵

Australia's own National Environment Protection Measure Review concludes that for particulates, there is no evidence of a threshold for effects.⁶

Given the proximity of Anglesea to Alcoa's open cut coal mine, from which coal dust (particulates) disperse onto the town, and the power station and stack, from which particulates are also generated, Anglesea residents are clearly at risk from acute and cumulative exposures and acute and cumulative adverse health impacts.

References

1. Alcoa of Australia Pty. Ltd. Anglesea Environment Improvement Plan, 2008.
http://www.alcoa.com/australia/en/pdf/EIP_Anglesea_0809.pdf
2. International Agency for Research on Cancer, World Health Organisation. Press Release No 221, 17th Oct 2013. IARC: Outdoor air pollution a leading environmental cause of cancer deaths. <http://www.euro.who.int/en/health-topics/environment-and-health/air-quality/news/news/2013/10/outdoor-air-pollution-a-leading-environmental-cause-of-cancer-deaths>
3. Kjellstrom, Neller and Simpson Air pollution and its health impacts: the changing panorama Med J Aust 2002; 177 (11): 604-608-
<https://www.mja.com.au/journal/2002/177/11/air-pollution-and-its-health-impacts-changing-panorama>
4. Castleden, Shearman, Crisp and Finch The mining and burning of coal: effects on health and the environment Med J Aust 2011; 195 (6): 333-335
<https://www.mja.com.au/journal/2011/195/6/mining-and-burning-coal-effects-health-and-environment>
5. Beelen et al. Effects of long-term exposure to air pollution on natural-cause mortality: an analysis of 22 European cohorts within the multicentre ESCAPE project The Lancet, Dec 9, 2013
<http://press.thelancet.com/airpollutionmortality.pdf>
6. National Environment Protection (Ambient Air Quality) Measure Review. National Environment Protection Council, May 2011
<http://www.scew.gov.au/system/files/resources/3405e986-afe9-bdb4-5d2c-383f3ea1e911/files/aaq-review-report-2011.pdf>

Sulphur Dioxide

Alcoa's Anglesea power station is less than one tenth the size and output of Hazelwood power station in Victoria's LaTrobe Valley, however emits **3 times** the total volume of SO₂.

	Alcoa Anglesea 150Mw Power Station	Hazelwood 1600Mw Power Station
Sulphur Dioxide	35 000 000 kg/year	12 000 000 kg/year

Table 1: SO₂ Emissions from Anglesea and Hazelwood Power Stations.
Source: National Pollutant Inventory, 2010/2011.^{1,2}

In October 2011, the Victorian EPA's Principal Scientist Dr Lynette Denison wrote;

- Ambient levels of sulphur dioxide (SO₂) are associated with increases in mortality (mainly respiratory causes), hospital admissions and emergency department attendances, exacerbation of asthma and reduction in lung function.
- SO₂ has also been linked with low birth weight which is a risk factor for developmental problems.
- People with asthma and other existing respiratory disease, **the elderly (>65 years) and children** are groups within the population that are particularly sensitive to the effects of SO₂.
- The World Health Organization (WHO) and the United States Environmental Protection Agency (USEPA) have concluded that **there is no safe level of exposure to SO₂** in particular for sensitive groups.³

References

1. Australian Government Department of Sustainability, Environment, Water, Population and Communities National Pollutant Inventory Alcoa Anglesea Power Station.
<http://www.npi.gov.au/npidata/action/load/emission-by-individual-facility-result/criteria/state/VIC/year/2011/jurisdiction-facility/00004359>
2. Australian Government Department of Sustainability, Environment, Water, Population and Communities National Pollutant Inventory International Power Hazelwood
<http://www.npi.gov.au/npidata/action/load/emission-by-individual-facility-result/criteria/state/VIC/year/2011/jurisdiction-facility/00004337>
3. Denison, Lynette. Victorian Civil And Administrative Tribunal Dual Gas Demonstration Project Works Approval WA 67043 Expert Report, October 2011
http://www.epa.vic.gov.au/compliance-enforcement/comments/dualgas-docs/L_Denison_Expert_Report.pdf

Anglesea Primary School

In May 2011, Anglesea children began to attend the new Anglesea Primary School. The school is only 1.2 kilometers from the Alcoa power station and 1 kilometer from the open cut coal mine.^{1,2}



Photo 1: Anglesea Primary School with power station visible in background.

Prior to building the school and in the months prior to completion the Victorian Department of Education and Early Childhood Development (DEECD) requested Air Quality and Noise Assessments of the new school site. These assessments were completed in August 2006 and December 2010 by Synergetics Environmental Engineering. Copies of the reports can be accessed through the Surf Coast Air Action website, via the weblinks listed at references 1 and 2 below.

The Synergetics assessments relied upon data supplied by Alcoa only. Prior to the Synergetics reports (and since) there has been no non-industry or EPA monitoring of pollutant levels in Anglesea. The only pollutant for which ground

level concentrations were supplied (by Alcoa) was SO₂, as continuous monitoring is required as a condition of Alcoa's licence³. Critically, for the reports, there was no measurement of ground level concentrations of particulates. All figures and estimates (other than SO₂) rely upon modeled data, again supplied to Synergetics by Alcoa.

These assessments are inadequate. They do not provide evidence that there is not a health risk to a vulnerable population. They do not provide the grounds upon which to make decisions regarding health. It is our view that independent (non-industry, non-Alcoa dependent) monitoring should have been conducted. Furthermore, there should have been a review of the adequacy of the consultant's reports. Additionally, DEECD should have sought additional health expert opinion, including an assessment from the Department of Health.

As noted above, recent WHO⁴ and USEPA Air Quality Guidelines^{5,6} have reviewed and reduced the levels at which adverse health impacts occur for a number of pollutants. It is of note that the levels at which negative health effects impact upon vulnerable populations (including children), have been reduced significantly for both **SO₂ and particulates**⁷. This is of particular concern for and relevance to Anglesea.

The Synergetics report (2010) acknowledges, "The literature consistently demonstrates that PM₁₀ and PM_{2.5} in particular (but also NO₂, CO and **SO₂**) exert consistent, measurable adverse health effects on humans even below the current limits...The NEPM (National Environment Protection Measure) discussion paper states that for these pollutants 'the standards have been adopted with the acknowledgement that there is a level of residual risk associated with those standards.'" The report however relies upon NEPM values (1998) to conclude that the new school site does not pose a health risk.⁸ The conclusions of the Synergetics report are therefore inconsistent with the section of the NEPM discussion paper it quotes and as such is misleading and incorrect.

References

1. Synergetics Environmental Engineering Air quality and noise assessment of a new site for the Anglesea Primary School for Department of Education and Training, 3 August 2006. <http://www.angleseairaction.org/school-site-2006.pdf>
2. Synergetics Environmental Engineering Draft report: Air quality and noise assessment for the new Anglesea Primary School for Department of Education and Early Childhood Development (DEECD), 13 December 2010. <http://angleseairaction.org/attachments/article/8/school-site-2010.pdf>
3. EPA Victoria Environmental Licence Alcoa of Australia Limited holder of Licence EM32162 Issued 26 June 1997 last amended 08 February 2012. <https://appprod.epa.vic.gov.au/LicenceReform/LicenceView.aspx?id=216&ParentId=&ParentMode=ReadOnly>

4. WHO Air Quality Guidelines Global Update 2005 Particulate matter, ozone, nitrogen dioxide and sulphur dioxide, WHO 2006
http://www.euro.who.int/_data/assets/pdf_file/0005/78638/E90038.pdf
5. USEPA (2008), Integrated Scientific Assessment, Sulphur Dioxide
<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=198843>
6. USEPA (2008), Integrated Scientific Assessment, Particulate Matter
<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=216546>
7. Denison, Lynette. Victorian Civil And Administrative Tribunal. Dual Gas Demonstration Project Works Approval WA 67043 Expert Report, October 2011
http://www.epa.vic.gov.au/compliance-enforcement/comments/dualgas-docs/L_Denison_Expert_Report.pdf
8. Synergetics Environmental Engineering, 2010, pg. 16.

Environment

Despite community opposition, in 2011 the Victorian State Government re-signed Alcoa's mining lease allowing for mining operations to continue for another 50 years and to expand by another 246 hectares into Anglesea Heath. Anglesea Heath is one of the richest and most biologically diverse vegetation communities in the world, one that is home to more than 700 different plant species and a third of all orchid species found in Victoria.¹

No baseline health study was submitted. No local health data of any sort is available.

As the mining operation expands and coal combustion continues, the current hazard to public health (and the natural environment) will intensify. Over time as the population expands, increasing numbers of people will be exposed and their health put at risk.

Reference

1. Geelong Environment Council, Victorian National Parks Association, ANGAIR, Friends of Eastern Otways, Anglesea Heathlands A coal mine for 50 years or protected forever? July 2011
<http://angleseaaairaction.org/heathland.pdf>

Social

Vulnerable populations such as children and the elderly are especially at risk from adverse health effects of air pollution from Alcoa's Anglesea coalmine and power station. Many parents of Anglesea Primary School are appropriately concerned about risks to their children's health. They have spoken of the anxiety caused by the burning of diesel, which is well

documented as carcinogenic¹, about which no prior information or warning has been provided. In recent months, large clouds of visible smoke (not steam/water vapour) from the chimney stack have caused significant concern. When parents have made inquiries, Alcoa has provided different and conflicting explanations. Conflicting explanations provided by Alcoa have included both the burning of diesel and aluminium rich coal.

Alcoa is dividing and damaging the Anglesea community. There are a significant number of Anglesea parents who, due to Alcoa's ongoing pollution and the disregard it demonstrates for the need to communicate with parents of a vulnerable population, can no longer trust that the health of their children is being protected. As the school accepts sponsorship from Alcoa, there is reluctance from school leadership to address this urgent health hazard. In addition to the school, there are other community organisations which accept sponsorship from Alcoa. This sponsorship effectively reduces the ability of groups and individuals in Anglesea to speak up about their concerns regarding Alcoa's pollution and the known impacts upon health and environment.

The proximity of the school to the power station and coal mine is an issue which a number of residents, based on an understanding of the available scientific, medical and governmental literature, believe is a significant health risk. A growing number have decided to send their children to other Primary Schools. This is a sad and difficult decision for these parents who have spoken of their disappointment at not being able to send their children to the local primary school and, as families, being involved with the school and wider Anglesea community. Because of the health risks posed by Alcoa, Anglesea families have been unable to participate and contribute to and with the school, further fracturing our small community. Lowering enrolments also affects the level of funding the school receives, with negative impacts on staff/student ratios.

Alcoa, through the pollution emitted from the Anglesea coalmine and power station, and Alcoa management's ongoing dismissal of the legitimate concerns about the health impacts of this pollution, is harming and splitting the community of Anglesea. It cannot claim to support and strengthen Anglesea despite trying to use its funds to do so. The anxiety, uncertainty and division directly caused by Alcoa are an additional and significant social and health cost for Anglesea.

Reference

1. International Agency for Research on Cancer. World Health Organisation. Press Release No213, 12 June 2012. IARC: Diesel Engine Exhaust Carcinogenic.
http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf

(e) the benefits and costs of regulation (including externalities and the gains from competition and efficiency) for— (i) consumers and users of

**products or services (including low income and vulnerable consumers);
(ii) regulated entities;**

SCAA has no comment regarding this objective.

(f) consistency in regulation between States and on a national basis;

As outlined above, when new national air quality standards are introduced, Alcoa Anglesea will be required to make significant investment into pollution reduction technology.

(g) any matters specified in the empowering instrument.

SCAA has no comment regarding this objective.

(2) Without derogating from section 8 or subsection (1), the Commission must also when performing its functions and exercising its powers in relation to a regulated industry do so in a manner that the Commission considers best achieves any objectives specified in the empowering instrument.

SCAA has no comment regarding this objective.

With regard to the objectives of the Electricity Industry Act 2000 (listed below), SCAA's responses to the above Essential Services Commission act also apply.

Electricity Act 2000

Section 10 - Objectives of the Commission

The objectives of the Commission under this Act are—

(a) to the extent that it is efficient and practicable to do so, to promote a consistent regulatory approach between the electricity industry and the gas industry; and

(b) to promote the development of full retail competition.

Anglesea residents represented by Surf Coast Air Action appreciate your consideration of this submission. It is SCAA's position that a licence to generate electricity should not be granted. Removing 150 megawatts will have no effect on reliable electricity supply for Victoria and will have negligible impacts upon power prices, yet will deliver significant health, social, environmental and economic benefits to Anglesea. SCAA awaits with interest the outcome of Alcoa's application for a Licence under the Electricity Industry Act 2000 to generate electricity at the Anglesea Power Station.

Sincerely,

Dr Jacinta Morahan
Surf Coast Air Action