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SUBMISSION

Bayswater Power Station Upgrade

Water management and other associated operational works including:
- augmentation of the existing Bayswater ash dam;
- increasing coal ash recycling production; and
- new salt cake landfill facility.

The Hunter Community Environment Centre (HCEC) objects to the proposed State Significant Development on the basis of an inadequate EIS and the provision of deceptive information.

HCEC was established in 2004 in recognition of the value of our unique landscape and bioregion. Together with 3,000 supporters and affiliates, we work with our community to protect biological diversity and special places, and enhance the quality of life in our region.

The Hunter suffers the brunt of the impacts of the State's coal-fired electricity generation with four of the five power stations and coal-ash dumps present in the region.

The HCEC estimates that each year, the Central Hunter River Valley suffers the effects of 36 tonnes of metals[1] leached from about 70 million tonnes of accumulated fly ash present at Bayswater and Liddell, who collectively dump about 2 million tonnes of ash per year.

While the HCEC welcomes investment by AGL in upgrades that will see a reduction in the accumulation of coal-ash and heavy metal leachate, the proposal contains no detail on the intended reuse applications to achieve the 600, 000 – 1, 000, 000 Mtpa of additional ash reuse per year, citing reliance on nearby construction projects as the only reuse avenue.

The proposal does not identify any avenues for environmentally responsible, value-added reuse of coal-ash through the manufacture of building products such as light weight aggregates for the

[1] National Pollutant Inventory reportable metals

NSW Metropolitan markets despite the growing demand from the business community to access coal-ash reserves for this purpose.

Incentivising safe coal-ash reuse requires government intervention and the HCEC believe a levy on the dumping of coal-ash would see a drastic reduction in volumes of accumulated coal-ash leading to a reduction in the heavy metal leachate polluting NSW waterways and decreasing the future liability and clean-up costs, and facilitating new industry partnerships for the beneficial reuse of waste accounting for 20% of Australia's domestic waste stream.

This submission will touch on these opportunties for improvements in coal-ash regulation to facilate an uptake in safe, value-added reuses of coal-ash with environmental and economic benefit for the Hunter region.

In addtion, the submission outline's some key deficiencies in the EIS, as well as the identification of environmental pollution risks stemming from the current approach to coal-ash waste management practiced at Bayswater power station including high-risk reuse applications and disposal methods.

1. Coal-ash and water pollution risks

Australian coal-ash contains a range of potentially toxic trace elements including heavy metals including arsenic, boron, barium, cadmium, chromium, copper, mercury, manganese, nickel, lead, selenium, thorium, thalium, uranium and zinc which are polluting surface and groundwater, posing a risk to acquatic species and birdlife populations in NSW.

We estimate there is over 200 million tonnes of coal-ash stored in unlined ash dumps in NSW leading to about 100 tonnes of metals[2] to leach every year.

Australian energy-producers have been slow to seize upon the breadth of opportunities available in NSW to reduce the volume of dumped coal-ash, with just 20% beneficially reused, well below the 53% global average.

Many of the low value uses present significant human health and environmental risks, particularly as coal-ash is exempt from hazardous waste classification under the Commonwealth National Environmental Protection Measure (NEPM), enabling the un-tracked transport of raw coal-ash for various, unknown reuse applications.

This opportunistic approach to coal-ash reuse and the lack of appropriate classification and over-sight led to AGL being fined in 2019 for the sale of coal-ash with unsafe heavy metal levels from Bayswater and Liddell, potentially from as far back as 2015. [3]

2. Deceptive information

The primary purpose of the Project is to increase the capacity of the coal ash impoundment by 12.5 M m^3 and build a salt cake landfill and not for the increase of coal ash resue.

[2] National Pollutant Inventory reportable metals

[3] https://www.newcastleherald.com.au/story/5856141/agl-admits-hunter-power-station-coal-ash-breaches/

The EIS estimates that Bayswater produced 2 million tonnes of coal ash a year. Bayswater power station is designed to burn coal with a maximum ash content of 28%, however at this ash content slagging in the boiler occurs.

Average ash content of the ROM coal delivered to AGL from Hunter mines is likely to be between 22-26%.[4] Indeed, by applying National Greenhouse Gas Emission Factors[5] to Electricity sector emissions and generation data 2018–19[6] suggests that Bayswater burns a maximum of 5,808,812 tonnes of coal. This equates to 1.28 to 1.5 million tonnes of coal ash.

Why AGL would intentionally inflate its stated coal ash production is a mystery.

3. Current coal ash contaimnemt facilities are inadequate and outdated.

AGL's ash management is poor, as it is based on unlined ash dams and mine voids to contain its unused ash. These facilities are seeping heavy metal leachate into groundwater and surface waters.

EPA monitoring for AGL's Bayswater EPL show concentrations of boron are consistently orders of magnitude above ANZECC 95% protection, long-term irrigation, and recreational use Guidelines.

Pikes Gulley ash dump

The Environmental Site Assessment (ESA) Environmental Resources Management (ERM) prepared in preparation of the sale of Macquarie Gneration to AGL[7] identified seepage at the toe of the dam wall in Pikes Gully and saline groundwater seepage at and below a small dam located South of the Pikes Gully Ash Dam. Seepage from the ash repository had the potential to be saline and contain arsenic and heavy metals (specifically barium, beryllium, boron, cadmium, chromium, cobalt, lead, manganese, mercury, molybdenum, nickel, thallium, selenium and/ or zinc).

The ESA by ERM detected boron, cadmium, copper, lead, manganese, nickel, and zinc at concentrations in excess of the adopted ecological (ANZECC) and/or human health (drinking water) screening values in groundwater samples collected. Lead and nickel were reported above the recreational screening values within 2 monitoring wells.

Groundwater collected by ERM from all monitoring wells at the ash dam boundary reported metals concentrations greater than the adopted ecological screening values.

Pollution Reduction Programs have failed to noticeably reduce the heavy metal contamination.

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[4] https://www.business.nsw.gov.au/industry-sectors/industry-opportunities/mining-and-resources/coal/coal-producing-companies-and-product-specifications

[5] https://publications.industry.gov.au/publications/climate-change/system/files/resources/cf1/national-greenhouse-accounts-factors-august-2019.pdf

[6] http://cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/electricity-sector-emissions-and-generation-data/electricity-sector-emissions-and-generation-data-2018-19

[7] ERM, 2014. Project Symphony – Bayswater Power Station. Stage 2 Environmental Site Assessment.

[7] https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiry-details.aspx?pk=2556

Ravensworth Rehabilitation site

The Ravensworth Rehabilitation Site (the former Ravensworth No. 2 Mine (the location of Void 1 to 4) and a section of the Ravensworth South Mine (the location of Void 5), is currently used for the disposal of fly ash.

The practice of disposing coal-ash in mine voids is of concern due to unknown impacts of the interaction between varying pH levels of mine water and heavy metals in coal-ash.

There is no evidence to rule out or define the long-term impacts on ground and surface water of ash placement in mine voids, with existing studies showing that disposal of ash degrades water quality in most instances. One study identified substantially increased levels of metals including aluminum, arsenic, cadmium, chloride, chromium, lead, manganese, nickel, selenium, and sulfate in ground and surface water after ash placement in the mine void.[8]

ERM's ESA identified that the base of the mine voids is expected to be in contact with regional groundwater flow. Monitoring has indicated that water within Void 4 is relatively saline with an average electrical conductivity of 7079 gS/cm. A comparison of data collected prior to the ash disposal commencing indicates that boron and molybdenum concentrations had increased by approximately a factor of six and an order of magnitude respectively between 1992/1995 and 2012.

ERM found trace metals that exceeded the adopted screening criteria around the mine void including copper exceeding the ecological based screening criteria, nickel exceeding both the drinking water guideline and ecological screening criteria, and zinc exceeding the ecological screening criteria.

3. Salt cake landfill and risk to groundwater

The ability of a clay barrier to mitigate potential groundwater impacts from the proposed salt cake land fill is not established in the EIS and the potential degradation of the clay barrier over time warrants the installation of an additional impermeable membrane to ensure that leachate does not make its way into groundwater.

4. Coal-ash reuse opportunties

While the reuse of between 0.6 and 1 million tonnes of coal ash is commendable, we question whether these rates can be sustained without Government support for the ash resue industry to identify new markets and conduct pilot projects to determine suitability of the ash for reuse products.

Coal ash reuse rates and targets have continually disappointed, largely due to resitrictive contracts given to cement companies. We believe additional ash resue can only be safely conducted for high volume sintered ash products such as light weight aggregates, tiles and bricks.

[8] https://earthjustice.org/sites/default/files/library/reports/earthjustice_waste_deep.pdf

AGL could faciliate ecnomic benefits for the Hunter region and properly address the coal-ash waste dumping issue, through the establishment of on-site processing plants to decontaminate ash dumps at a high volume and manufacture safe coal ash products.

However, to ensure coal ash is resued at maximum possible rates a cost must be imposed on generators for dumping ash in unlined containment facilities. We believe at least $20 a tonne would be above the cost of providing adequate reuse options and incentivise maximum safe coal ash resue.