Submission No 57

INQUIRY INTO COSTS FOR REMEDIATION OF SITES CONTAINING COAL ASH REPOSITORIES

Organisation: Central Coast Community Energy Association Inc (CCCE)

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To
the LEGISLATIVE COUNCIL
PUBLIC WORKS COMMITTEE
NSW Parliament

Inquiry into the costs for remediation of sites containing coal ash repositories

Dear Public Works Committee,

The Central Coast Community Energy Association Inc would like to use this opportunity to make our concerns about toxic residues of coal fired power stations heard.

The Central Coast Community Energy Association Inc (CCCE) is a community group on the NSW Central Coast interested in taking the **opportunities** of renewable energy into our own hands by planning, building and operating renewable energy power plants.
https://cccommunityenergy.org

We are also embarking on an educative mission to inform householders how renewable projects can save money and help the environment by eg installing solar panels on their rooftops. We hold public meetings to discuss the benefits of rooftop solar.

We care for the environment and want to contribute to the commend of the NSW government's investigation in regard of remediating contamination at sites associated with power stations.

Our comments on coal ash dams according to the Terms of Reference

CCCE sees a number of problems related to coal ash dams and the environment:

No waterproof lining of the ash dams.
Lining of coal ash dams is internationally **best practice**. For instance, in the US extensions to ash dams must be lined, even if the original ash dam has been unlined. Power station give the explanation that the packing of the ash itself will act as a watertight layer. However, coal ash is particulate matter and as such water permeable to some extent.

In NSW there is no lining preventing leachates from seeping into the groundwater or into adjacent water bodies because the ash is stored wet and the dams are not lined. As there is not water impermeable cap covering the ash dams, rain water will always end up in the coal ash dams and percolate through the coal ash, leaching out all contaminants.

No environmental bond.
There are **no or insufficient** environmental bonds for unplanned safety issues and for the final closure and safe remediation of the ash dams after the closure of the coal fired power stations.

Reuse targets for ash are not met.
Reuse targets for ash are 80%. However, at the moment only about 35% of the ash is reused. According to this report (https://www.powerengineeringint.com/2015/03/18/managing-coal-ash/) the Eraring power station is far behind of what can be done with reuse of coal ash.

This way inferior to best practice:
*" … the Netherlands recycles **100 %** of its coal ash because landfill is not allowed in this country. In Germany, where around 10 million tonnes of coal ash are produced per year, around **97 %** is re-used, with the rest stored only on a temporary basis. …"*

Dangers associated of very large dams
Coal ash dams are very large. In many cases the dam walls are made from compressed coal ash. This **cannot** be a long-term solution for decades to come. As severe accidents in the US have shown, coal ash slurry can flow easily because it comprises small round particles that can roll like balls down a stream. This can create a major hazard in case of the dam collapsing by an earthquake or by flooding rains.

Particulate emissions
There have been increasing issues with dust blown of the ash dam in the past. There is always a risk of dust being blown off the ash dam into the surrounding settlements contaminating large ares.

Ground water assessment insufficient
The established sampling and analysis of the ground water is **insufficient** and the results are not made public and the results are not made easily available on a website as they should be.

The same is true for air sampling. There is **only one** sampling station in the area at the Southern end of Lake Macquarie.

Difficult to rehabilitate
Ash dam will make the site difficult to rehabilitate after the end of the life time of the power station unless the coal ash is **completely** removed from the site.

Old mine shafts under the area planned for extension cause extra risk
For the Eraring power station various methods have been put forward in the application to either fill or seal the existing old mine shafts under the extension area to prevent the penetration from ash dam water into the ground water. However, no clear indication has been given which method or methods will eventually being used. There is also a **lack of risk analysis** and reference to best practice methods and their chance of success in the application.

Responsibility, Liability and cost stays with NSW government
As part of the sale of power plants to private owners the NSW government has retained the liability for future remediation, which means that ultimately the NSW tax payer will have to pay the cost of remediation.
As the liability of rehabilitation lies with the NSW government it does not have to wait for the end of life of the power plants. It can clean up the ash dams **now**, in an efficient and proper process.

Conclusion

Coal Ash dams are a dangerous and expensive legacy of coal fired power generation. Storing huge quantities of toxic materials in close proximity to residential areas and close to wetlands and water bodies is a serious problem and deserves a safe, fast and efficient solution.

The NSW government must take on its responsibility and clean up those sites. Coal ash should not be ‘stored’ but it should be reused, as done in other developed countries.

Yours sincerely,
Wolf Messthaler
Chair person of CCCE

Our comments, listed according to the structure of the Terms of Reference:

(a) prospective or current quantum of government liability for remediating contamination at sites associated with power stations

As stated in some reports, the State NSW is in charge of remediation of at least some of the power plants, like e.g. Vales Point Power Station, after their end of life, although these power plants have been sold to private investors. The details can be determined out by the legal team of the NSW government.

The remediation will be very expensive. The paper https://www.powerengineeringint.com/2015/03/18/managing-coal-ash/ gives an idea about the cost involved:
"… According to the ACAA, if the coal ash can be piped to the site, rather than trucked, and the ash is easy to handle, costs could be around $3–$5 per tonne.
However, when the disposal site is further away and a more complex transport solution is needed due to either higher moisture content or larger volume, the cost could rise to $20–$40 per tonne.
If a new disposal site is needed, involving an extensive permitting process, total costs will be even greater. …"

(As the paper is from 2015 and the costs are in US$, the actual cost in AU$ will be at least 50% higher in Australian dollar.)

With an estimated 60 million tons of coal ash in the Lake Macquarie area alone, remediation will be a necessary but costly activity:
In addition to the above figures it is also necessary to consider the cost of removing the coal ash from the existing storage and remediation to the existing storage site.
Picking the highest number (US$40 = AU$60) for these reasons results in a cost of more than 3 billion dollars (60,000,000 t * 60 $/t = $3,600,000,000) for the remediation of the coal ash dams at Lake Macquarie alone.

(b) prospective timing of government expenditure in relation to remediation at those sites

All sites store coal ash inferior to best practice and must be brought to a safe standard as soon as possible, even before the closure of the power plants.

(c) economic and employment opportunities associated with coal ash re-use, site remediation and re-purposing of land

There is a huge amount of work involved in remediating the existing sites. Just at Lake Macquarie there are 60 million tons of coal ash to be removed from unlined dams near open water bodies and close to populated areas. The skills required for this task are actually quite similar to the skills above ground mining. This will keep miners employed for many years to come even if mines and coal fired power station have been finally shut down.

Once remediated, the land used for coal ash dams and everything else related to power stations will provide large areas of valuable land for re-vegetation, settlements and leisure.

(d) adequacy and effectiveness of the current regulatory regime for ensuring best practice remediation of coal ash repositories

Our existing regime for dealing with coal ash is far below the state of the art and best practice. This indicates that our current regulatory regime is not up to standard.

Reuse targets for ash are 80%. However, at the moment e.g. at the Eraring power station only about 35% of the ash is reused. (https://www.powerengineeringint.com/2015/03/18/managing-coal-ash/)

Best practice is avoidance of coal ash by appropriate use or if that is not possible, by dry storage of coal ash in permanent water-protected sites.

We need to look what other countries have been doing:

- Many European countries have no ash dams at all, although they still are using coal. Coal ash is either recycled into concrete or other building materials or it is used in other safe applications.

- In the US wet storage in coal ash dams is to be abandoned and all wet stored ash has to be moved into dry storage with waterproof lining and with a watertight capping.

(e) mitigation of actual or perceived conflict of interest arising from the state having ongoing liability for remediation costs the quantum of which will be impacted by government policy and regulatory action

This is a serious conflict of interest, with the state NSW being on the one hand either the owner or the former owner and being in the responsibility for remediation and on the other hand setting and enforcing the rules for safe and proper remediations according to best practice (see d))

However, the state NSW has above all the responsibility of working for the safety and health of all of its citizens and residents.

(f) risks and liabilities associated with inadequate remediation including community and environmental health impacts

As reported in many publications leachates from coal ash dams contain heavy metals, selenium and other metals and other contaminations which leads to

(g) any other related matters

- There is no significant amount of mercury found in the leachates form coal ash in NSW. While this is as such a good thing, it points to the fact that power plants in NSW have no mercury filters installed in the exhaust gas treatment. This is far below international best practice and the mercury coming from the burned coal will be finely and widely s[read over the whole population of NSW.

- There are no or insufficient environmental bonds for unplanned safety issues and for the final closure and safe remediation of the ash dam after the closure of the coal fired power stations. This means that eventually the state NSW and in consequence the taxpay will foot the bill.

- Ground water assessment and test of air are insufficient. For instance, at Eraring power station are just four groundwater sampling sites with a samples taken every half year. And the critical components like heavy metals, arsenic and selenium are not even tested. And there is only one air

testing station in the region Central/Lake Macquarie.

- Ash dams for instance at Vales point power station are capped sith soil and rock from other building sites like the NorthConnex tunnel. This is not a water tight capping material and the coal ash must not be kept at sites where leachates can seep into the ground water and into water bodies.

- While the installation of a large solar farm of more than 30MW on the ash dam of Vales Point power station may look like a step into the right direction it will make a future remediation of the ash dam even more costly.

- The NSW government should make access to information about ash dumps transparent and available to the Australian community, including all existing management plans, details of financial assurance, rehabilitation plans, pollution incidents, fines and other enforcement actions taken by regulators, monitoring data, hydrogeological assessment, predictions for future contamination, and predictions for future land-use planning.

Conclusion

Storing so much dangerous material in close proximity to residential areas and close to wetlands and water bodies is a serious problem. The NSW government must make sure that coal ash should not be 'stored' at all anymore but it should be reused, as done in other developed countries.

Yours sincerely,
Dr Heinz-Joachim Muller
Executive Committee member of CEN
Community Environment Network, Central Coast and Lake Macquarie