The Wilco Group

Bayswater Power Station Upgrade

Whilst we are in support of the Bayswater upgrade project; in its current form, the project brief is limiting the potential outcomes.

We see a unique opportunity to offer a very different solution to that which is currently being proposed. Our solution is more environmentally friendly, is based on an Australian patented process and provides a great business opportunity to monetise a waste resource stream.

The current project brief is written around an expansion of Bayswater's existing method of disposal of their coal ash. The plan is to create an extension of the ash storage containment dam and pump ash slurry to an adjoining coal mine site for use as landfill. That which is left-over, stays in the ash dam, which when full, would be capped and the land returned to agriculture.

The project also includes the construction and operation of a salt cake landfill facility to store the salt cake produced from an approved caking plant. The facility would be designed to accommodate up to 50,000 tonnes of salt cake per year.

As well as augmentation of the existing ash dam and improvements to salt and water management systems, the upgrade seeks to increase coal ash recycling activities to produce up to 1,000,000 tonnes per annum of ash-derived product material and reuse of coal ash, with average production expected to be 600,000 tonnes per annum. Reuse of coal ash currently accounts for only 170,000 tonnes per annum.

We see the approach (as outlined above), a waste of valuable resources and a missed opportunity!

Our proposal is to take the coal ash and chemically convert it into aggregate for use in concrete. In doing so, we also see an opportunity to use the brine solution to manufacture the alkali-activator that is necessary for the aggregate process. All elements of the proposed process use existing technology in one form or another, which would simply be re-arranged in a different configuration.

We plan to bring together a consortium of like-minded business organisations who as a group, will have the necessary skills and knowledge to deal with this proposal. Our team will have:

- access to expertise in mining and civil engineering (to extract coal ash currently in storage and to handle freshly generated ash),
- access to expertise in chemical engineering (to process the coal ash and brine into a usable building product) and
- access to market (to move the product into building and construction applications in Newcastle and Sydney)

The base technology for the manufacture of the aggregate from coal ash is covered by patent WIPO 2016/023073 A1. Coal ash is the major ingredient (80%). The mix requires an alkali-activator, which could largely come from utilising the available brine solution in a chlor-alkali membrane process.

Since the aggregate technology patent was first lodged, extensive trials have been conducted in conjunction with RMIT University to show that the product passes relevant Australian Standards for light-weight aggregate and makes good quality structural-grade concrete. It is ideally placed for making pre-cast concrete elements, such as slabs and beams.

In addition, production trials have been undertaken in the USA which show that it is possible to up-scale the process from laboratory to a commercially-viable operation. We are now ready to establish the process in the market.

The aggregate plant that we are proposing for the Bayswater Power Station would have the capability to deal with all of its 600,000 tpa output of ash with a surge capacity equivalent to 1,000,000 tpa. During non-peak periods, the aggregate plant's excess capacity would be used to process legacy ash that is currently stored in containment ponds.

According to the Bayswater briefing documents the overall Project has an estimated capital investment value of $51.9 million.

In our case, the margin made on selling the aggregate would off-set the capital cost over the life of the investment. This is a major point of difference to the original proposal which simply extends storage facilities and hopes to sell off extra ash through its ash reprocessing plant. The cost to build a chlor-alkali plant has not been calculated at this stage. However, the margin made on selling the chlorine would go to off-setting the cost of building the plant and the caustic soda produced represents a major cost saving to the aggregate plant.

A proposal utilising our capability will:

a) Provide an absolute and complete means of coal ash remediation, rather than deferring the problem for future generations to deal with.
b) Pay for itself over the life of the project.
c) Encapsulate into concrete, the heavy metal toxins that come from the coal ash.
d) Provide a solution to the nearby Liddell Power Station which is due for closure in 2023.
e) Create products for the building and construction markets which will add significant benefit to green-star ratings.
f) Create a method for dealing with the 650 million tonnes of ash currently stored in Australia.
g) Create a precedent for dealing with the 500 million tonnes of excess coal ash that is generated globally, each and every year, let alone that which is already held in storage.

It is also particularly important to note that the existing coal ash storage facilities at Bayswater will reach capacity within two years. To build any sort of facility capable of handling up to 1,000,000 tonnes per annum, will take considerable time. Probably two years or more. The project needs to be expedited as soon as possible.

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