

## **Eraring PS Mod 2 Ash Recycling Facility.**

Dear Sir or Madam

This proposal appears to have two objectives, to allow Daracon to market more concrete grade fly ash to the construction industry and to assist Origin Energy to meet their EPA recycling targets of 80%. Comments as follows,

### **Background**

I have been active in the ash recycling industry for the past 40 years.

From 1994 to 1999 I was manager of Flyash Australia (FAA). From 1999 I have acted as consultant to the industry. As manager of FAA the sales of concrete grade fly ash increased markedly with growth in NSW and fly ash railed to the Gold Coast, Victorian and small scale to the SA markets. Fly ash was also shipped to Tasmania in reasonable volumes. Non concrete sales were pursued with assistance to Pacific Power to construct high fly ash content roads and the construction of a blending facility at the FAA Eraring plant to supply some 200,000 tonne of conditioned fly ash to the nearby Rhondda coal mine.

From 1999 to 2000 I acted as consultant to FAA including managing changes to the fly ash collection system necessitated by Eraring power station constructing the CCP plant.

From 2000 to 2019 I consulted to Bulk Flyash Grouts (BFG) subsequently acquired by Daracon. Initially the work involved sourcing fly ash for underground mine filling. Some 250,00 tonne was utilized from Eraring. We then pursued the option to source concrete grade fly ash from the station. In 2012 I devised a simple method to separate fine fly ash from the Eraring CCP plant. The method was patented No 2016203225 by me and discussed with Eraring Energy under a confidentiality agreement dated 10 Feb 2012. In 2014 further discussions with a full submission were made to Eraring staff including a drawing of the process identical to the drawing shown in the Modification Report Fig 5. A further confidentiality agreement was signed by BFG. As Eraring seemed to have no use of the process, I recently assigned the patent to another friendly party.

In 2017 a BFG a customer required 30000 tpa of concrete grade fly ash to support his sales of cement. I designed and we constructed a rotating cage classifier. This unit is still installed at Eraring as part of the Daracon facility.

## **Fly Ash Quality**

The document calls up AS 3582.1.1998 in clause 2.3.2. This Standard has been revised to AS 3582.1.2016 but makes little difference. It correctly states that fine grade fly ash has a minimum value of 75% passing a 45-micron sieve. As this is a minimum value most marketers use a target of 85% passing a 45-micron sieve to ensure compliance. There is no mention of carbon content measured by the loss on ignition (LOI) of the fly ash. The above Standard has a maximum value of 4% LOI for compliance. Some specifications call for a lower value. This has been an issue in the past with fly ash from some boiler units not suitable for processing.

## **Fly ash Collection and Processing.**

Fly ash is separated from the gas stream in large fabric filters. Unlike modern filters that reverse pulse to clean the bags Eraring uses a mechanism to shake or rap the bags. This has been adapted to classify the ash. Fine fly ash is drawn to and held on the bags by the ID fans with coarse fly ash dropping into a lower hopper. On cleaning the bags shake, the fine fly ash is then directed to two dedicated Eraring PS silos, one between units 1 & 2 with the second to the west of the CCP plant. The coarse fly ash is directed to the CCP plant. Testing has shown that approx. 75% of fine ash and 25% coarse ash is delivered by this process. If FAA take 600,000 tpa for processing, then 200,000 tpa of coarse ash is sent to the CCP plant. FAA further classify this fly ash through a Buell classifier resulting in, my estimate 500,000 tpa concrete grade fly ash, 100,000 tpa coarse reject returned to the CCP plant.

Hence ash produced tpa = 1,400,000 -150,000 bottom ash= 1,250,000 fly ash.

FAA use 800,000 tpa then maximum 450,000 tpa left for processing by others.

## **Classification Plant**

There seems some confusion in the document. Clause 2.3.2 describes the Daracon facility. It describes the Daracon classifier under 5 bullet points. This description is the process shown in Fig 5 and patented as outlined earlier. There is no indication on how fly ash from this system is utilized. It is more likely that the new Brolton/Daracon classifier will be the primary plant for classification.

The feed to the Daracon classifier is directed from the CCP silos A & B. These silos are fed at a rate of 450,000 tpa after the FAA take. Reject or non-shake fly ash from the FAA process 200,000 tpa, reject fly ash from the FAA classifier 100,000 tpa and reject from the Daracon classifier say 180,000 tpa is also directed to CCP silos A & B. It is assumed from experience at the plant that the new Daracon classifier will achieve 60% product, 40% reject split.

If all the reject fly ash can be directed to one silo say silo A and the feed to the classifier taken from silo B, then 450,000 x 60% or 270,000 tpa concrete grade fly ash will result. This is short of the 450,000 tpa required. The reject fly ash can be re classified but yield likely to be low and classifier wear high.

### **Conclusions**

While any venture to increase ash usage is most welcome some aspects of this proposal need further consideration as follows.

1. The proposal is to increase concrete grade fly ash volumes only.
2. There are a myriad of new fly ash uses available. The Government Inquiry into the remediation of ash dam sites highlighted many proposals worth consideration. In the past when manager of FAA I proposed a lightweight aggregate plant of 500,000 tpa capacity. It was initially envisaged that the plant costs would be borne 50/50 by FAA and Pacific Power. About this time the NSW power industry was commencing the corporatisation process and FAA were reluctant to fund the entire venture. For these reasons, the venture lapsed.
3. With the closure of the station targeted for 2032 and as stated by Origin CEO some wind down in production to this date it may be more prudent to incorporate fly ash from the storage dams in any future proposals.
4. While this proposal may allow Daracon increased fly ash sales it does little to allow Origin to meet its EPA targets.

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