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Dear Sir,

Reference: AA1000517 – Boral cement – submission

Thank you for the opportunity to provide comment on the application for authorisation relating to the Offtake, Operation & maintenance Agreement (**OOMA**) between Boral Cement and Stanwell Corporation which will provide Boral Cement with the exclusive right to take and purchase fly ash from Tarong Power Station.

Nucrush is supportive of the reuse of power station waste material through its incorporation into building products however we believe that access to common users should be on a basis that supports competition in the overall value chain.

By way of background, Nucrush Pty Ltd also applied for access to the Tarong Power Station material under the same Expression of Interest (EOI) process as released by Stanwell in May 2018.

With its specific properties and lower cost compared to Portland cement, fly ash provides a valuable substitute cementitious material for use in concrete. Its physical characteristics also influence concrete workability, a property valued by concrete placers.

Whilst initially shortlisted, based on the capabilities as sought by Stanwell, Nucrush was excluded from the final stages of selection.

Without questioning the integrity or professionalism by which their process was conducted, we feel that Nucrush had a material disadvantage from the outset when compared to other larger participants through a high minimum take or pay (MTOP) volume commitment sought.

The larger players through vertical integration and sheer size are more than capable of making a much larger commitment providing them with a distinct advantage and excluding the smaller independents such as the Nucrush Group from being able to compete with these criteria.

The major players have traditionally dominated the powders market, namely cement, ground slag and fly ash which generally constitute the more expensive constituents in premix concrete manufacture.

Historically, this has been enabled because of the capital-intensive nature of the infrastructure required for production and distribution of these materials within the Australian market. Access to imported cement and slag has now allowed smaller players to be involved in these markets because of the lower capital commitment required to access imported product.

This factor was a major determinant in Nucrush's involvement in the recent formation of the Southern Cross Cement JV partnership.

Access to fly ash however continues to be difficult because of the demanding commercial arrangements with the power stations. In this case the high MTOP has the effect of limiting access of the smaller players to this part of the value chain thus reducing competition at this level. The reduced competition at this level in turn effects the downstream market, so whilst it is against the interests of the smaller players, it is also against the interests of the end customer.

As a long-established substitute cementitious material, the ongoing use of fly ash powder in this capacity is almost guaranteed. It is important to point out however that the various grades of fly ash produced by each power station will determine its suitability in such use.

Whilst chemical reactivity and physical characteristics in substitution are major factors, end user specifications established around specific ash grades also limit the use of other ash grades without further processing (e.g. Qld Transport and Main Roads Technical Specifications). These factors along with site specific haulage distances from source to end user, limit the suitable and cost-effective supply sources in the region.

In the context of the above, Nucrush provides its views below to the issues as outlined in the questions raised by the ACCC;

1. Is the 10-year term of authorisation sought by Boral Cement necessary to support the proposed investment? What impact is a 10-year term likely to have on the ability of other market participants' (both buyers and sellers) to obtain access to fly ash?

ANSWER: Without knowledge of the capital and operating expenditure required for the equipment proposed, in addition to the projected offtake and the monthly charge payable to Stanwell by Boral, it is not possible to answer if the 10-year term sought by Boral Cement and their MTOP proposed is necessary to support the investment made by Stanwell through their funding of this facility.

It is acknowledged from your advice that "*Boral Cement submits that it is strongly incentivised to maximise sales to third parties without discrimination, including because its own downstream requirements are below the minimum take or pay volumes contracted under the OMMA".*

It is also clear from the information provided that in relation to third party sales, "*Boral Cement must offer the fly ash on a non-exclusive basis and on reasonable commercial terms and must use its best endeavours to maximise sales"*

Thus, whilst the third-party sales may be priced competitively against other fly ash suppliers in the region to encourage offtake, this arrangement serves to maintain the existing market framework rather than enabling smaller Independents to truly compete in this part of the value chain.

In addition, the OMMA is also likely to provide commercial benefits to Boral for the provision of their Operation & maintenance expertise which likely has the effect of further reducing the net cost of fly ash secured by Boral under this arrangement, further reducing competition in the end user market. As stated earlier, the reduced competition at this level in turn effects the downstream market, so whilst it is against the interests of the smaller players, it is also against the interests of the end customer.

2. For each power station in Queensland including Tarong, Tarong North, Millmerran, Kogan Creek, Stanwell in Rockhampton, Callide A, B, and C, and Gladstone:

a. How much fly ash is currently produced per year?

b. What grades of fly ash are currently produced? What are the specifications of the fly ash produced for properties relevant to its use in concrete production e.g. particle size, chemical composition, colour?

c. What are the commercial applications for each grade of fly ash produced?

d. How much of the fly ash produced is suitable for use in concrete production, with or without additional processing such as milling?

e. What parties are supplied with fly ash, in what grades and quantities, and at what price?

f. What changes, if any, are anticipated to the above over the next 10 years?

ANSWER:

a. How much fly ash is currently produced per year?

Power Station	**Tonnage (000 tpa)**	**Grades & Specification Related**
Tarong	750	Good Colour and very good properties with 40% suitable for concrete grade without further processing and additional 40% after classification
Tarong North	350	Good colour and other properties. Concrete grade achievable by milling or classification
Millmerran	500	Good properties Concrete grade achievable through classification
Kogan Creek	600	Good properties Concrete grade achievable by classification
Stanwell	600	Darker colour, Concrete grade achievable by classification
Callide A	Decommissioned	N/A
Callide B	250	Marginal properties with higher LOI but with 40% suitable for concrete grade without further processing, additional 40% after classification
Callide C	350	Good properties with concrete grade achievable on 60% by classification

b. What grades of fly ash are currently produced? What are the specifications of the fly ash produced for properties relevant to its use in concrete production eg particle size, chemical composition, colour?

Refer table at point (a) above

c. What are the commercial applications for each grade of fly ash produced?

The main commercial use continues to be in concrete. A reasonable quantity of Stanwell fly ash has also been used in the mining industry for underground stabilization. There are many other uses of fly ash detailed in many publications. The Ash Development Association of Australia (ADAA) currently has the objective of investigating and developing market opportunities for the use of these materials in various industry applications such as construction, agriculture and manufacturing.

d. How much of the fly ash produced is suitable for use in concrete production, with or without additional processing such as milling?

Tarong Power Station - 40% with no processing, additional 40% after processing.

Tarong North - 100% by milling or approx. 50% by classification.

Millmerran - 60% after classification

Kogan Creek - approx. 60% after classification

Stanwell - If the market will accept darker colour and some LOI issues, then 40% with no processing, additional 40% after processing.

Callide A - decommissioned

Callide B - 40% with no processing, Additional 40% after processing.

Callide C - 60% after classification

e. What parties are supplied with fly ash, in what grades and quantities, and at what price?

Most concrete manufactures will utilise fly ash in their premix concrete that generally complies with fine grade fly ash under AS3582.1. Other ash grades are used in other applications such as brick manufacture. Quantities and pricing are commercially sensitive and not publicly available. Refer also the answer to question 7

3. Details of each supplier of fly ash to end users in Queensland and/or other east coast locations, what processing of fly ash they do, what type/grade of fly ash do they supply to end users, how much do they supply per year, and to which end users is the fly ash supplied.

ANSWER:

Est of tonnes of fly ash produced and utilized **With Marketer & process plant**

Fly ash from Victorian power stations not included. SA, Tas, & NT little or no utilization.

Power Station	Boiler units	Tonnes make 000	Tonnes utilized 000	% utilized	Note	Marketer	Process Plant
Queensland							
Stanwell	4 x 350	600	50	8%		Ex bin sales	None
Gladstone	6 x 280	400	200	50%		CA	Buell Class
Callide	2 x 350 + 2 x 400	600	120	20%		CA	Buell Class
Kogan Creek	1 x 750	600	0	0%		None	
Tarong N	1 x 450	350	100	29%		Ex bin sales	None
Tarong	4 x 350	750	0	0%	1	Note 1	
Millmerran	2 x 425	500	250	50%		IFB	Buell Class
Total Qld		3800	720	19%			
NSW							
Bayswater	4 x 660	1300	200	15%	2	Hyrock	14 ft Sturt Whirlwind
						FAA	Comex rotating cage
Liddell	4 x 500	500	0	0%		None	
Eraring	4 x 720	1300	450	35%		FAA	Buell Class
						Daracon	Rotating cage class
Vales Pt	2 x 600	800	200	25%		Adbri	Buell Class
Mt Piper	2 x 660	700	200	29%		FAA	12 ft Sturt Whirlwind
Total NSW		4600	1050	23%			
WA							
Collie	2 x 170	200	20	10%		FAA	None
Muja	4 x 60	150	0	0%		None	
Bluewaters	2 x 200	250	10	4%		None	
Total WA		600	30	5%			
Total		9000	1800	20%			

Note 1. No fly ash has been utilized from Tarong since 2016. Stanwell Corp have let contract to Boral. Commissioning 2021

Note 2. Bayswater sales included. Assume current EPA difficulties will be resolved,

4. Please explain any geographical challenges or realities in relation to the supply or acquisition of fly ash. For example, does the location of a prospective purchaser of fly ash limit the suppliers from whom they can acquire fly ash? Are there practical or economic limits on how far fly ash can be transported?

ANSWER: Fly ash can be transported by road, rail or sea freight as currently occurs within Australia and globally. The user choice for transport will generally by driven by "end to end" proximity to transport infrastructure (e.g. rail head or sea port) overall demand volumes and the ability to backload products which will also help dictate overall freight economics.

For the smaller Independents, proximity to a viable supply source is very much a major factor in determining the economic viability of fly ash usage. The Independents are generally geographically constrained, limiting their supply options through distance.

Independents are generally also not in a position to strike national "swap" deals as available to the major players where many are represented nationally and have access to similar products in other regions (ref. also the answer to question10).

5. In the absence of the arrangements between Stanwell and Boral Cement, how is fly ash from Tarong PS likely to be managed in the future? Would it be sold? If so, how, by and to whom?

ANSWER: As a long-established substitute cementitious material, the ongoing use of fly ash powder in this capacity is almost guaranteed. Supply volumes available through processing at Tarong Power Station would appear to significantly support regional market demand. This is supported the historical recovery of fly ash from Tarong Power Station for market use and the interest shown through the more recent EOI process.

Market demand for this product from Tarong Power Station would be favoured by its quality and proximity to end users where competitive pricing is realised. Stanwell could consider a vehicle which would allow local smaller companies to remain independent of the control through which the larger companies can dominate market outcomes. There is sufficient engineering experience and capability available in Australia to support the establishment such a vehicle. Such a vehicle would not preclude access to this supply to further establish marketing and downstream product development programs. It would however ensure that all concrete users had access without disadvantage.

6. What are the uses for fly ash and is the expected demand for fly ash likely to change in the future.

ANSWER: As referenced earlier, fly ash provides a long-established substitute cementitious material and its ongoing use in this capacity is unlikely to change in the foreseeable future. It has also found uses in agriculture, mining backfill and block manufacture. With its production related to coal combustion, any future downturn in coal fired power stations in support of cleaner technologies could possibly impact its current availability against ongoing demand. This in turn could make third party access more restrictive particularly during times where any reduced overall output is compounded with facility maintenance outage periods at which time any available ash would likely be retained by the party in control for their own downstream use as opposed to unbiased rationing to all users such as to limit impact on competition.

7. Which suppliers supply concrete in Queensland and/or other east coast locations? Which current suppliers of concrete use fly ash in production? From whom do these concrete suppliers acquire fly ash, where is that fly ash produced, and how much fly ash do they acquire per year?

ANSWER:

Concrete Supplier	**Fly ash used**	**Sourced from**
Boral (incl. sub. Qcrete)	Yes	Tarong North via Sunstate (as JV Partner) and Millmerran
Holcim (incl. sub. Excel)	Yes	Callide (as JV Partner through Cement Australia) and Millmerran
Hanson (incl. sub. Hymix)	Yes	Callide (as JV Partner through Cement Australia) and Millmerran
Hytec (sub. of Adbri)	Yes	Tarong North via Sunstate (as JV partner) and Millmerran

Neilsens	Yes	Millmerran (as JV partner)
Sunmix	Yes	Millmerran (as JV Partner)
Wagners	Yes	Millmerran (as JV Partner)
Cordwells	Yes	Millmerran (as JV Partner)
Nucon	Yes	Millmerran
Boodles	Yes	Tarong North via Sunstate and Millmerran
Zannows	Yes	Cement Australia (Millmerran)
Grahams	Yes	Millmerran
Brims	Yes	Millmerran
Mansell	Yes	Millmerran
Austmix	Yes	Cement Australia (Millmerran)
Corbetts	Yes	?

Estimated fly ash quantities used by each supplier are dependent of their concrete volumes produced. This is commercially sensitive data which is not published.

8. Is the total usage of fly ash acquired by the concrete suppliers in Queensland and/or other east coast locations expected to increase in the future, either through increased usage of fly ash in concrete or by increased production of concrete? If so, over what timeframe? Will this change if the arrangements between Stanwell and Boral Cement are implemented? Please outline any difficulties which may exist in acquiring concrete grade fly ash.

ANSWER: As mentioned earlier, fly ash provides a long-established substitute cementitious material and its ongoing use in this capacity is unlikely to change. The total usage of fly ash by the concrete suppliers will likely remain closely aligned to both housing and infrastructure growth. Technical specifications which currently limit its use in concrete in various mixes may be adapted to align with a growing circular economy. Technical advances to support the increased use of fly ash, both through its existing use in concrete and through innovative products are more likely to evolve where access to fly ash is unrestrictive.

9. To what extent is it feasible to store fly ash once it is produced? Are there practical or economic limitation on how much fly ash can be stored, and/or the locations where it can be stored?

ANSWER: The storage requirements for fly ash are well established and are not dissimilar to those required for other powders such as cement and ground slag.
The storage of fly ash is not constrained by time (i.e. it doesn't have a shelf life) and thus its storage would generally be limited by practical and economic constraints dictated by supply vs. demand. Whilst Fly ash is recognised as a regulated waste, the

various related legislation in Qld does provide for its use as a resource through an End of Waste Code for Coal combustion products. The code does state that “If the waste is not being used in accordance with the relevant requirements and/or conditions of this EOW code, or another type of permit that allows for its use, it is considered a waste and must be disposed of appropriately at a facility that is lawfully able to receive the waste”. As such it could be deemed that storage capacity at any site could be capped through application of the legislation as currently applied.

10. Any other issues you consider relevant to the ACCC’s assessment of this matter.

ANSWER: Whilst coalfired power station capital and operating cost requirements do differ based on many factors not limited to, age, size, proximity to coal reserves, treatment of waste streams etc., ex-gate pricing of processed fly ash from different regions, appears to be significantly influenced by transport distances to the end user as opposed to the actual cost of its production at source. It is understandable that power stations would not wish to have multiple end user’s equipment established on their sites, however restricting access to the uncontaminated source material to common users will likely only offer support for the ability to restrain regional market pricing as opposed to promoting competitive product development and use.

I trust that this information will assist the ACCC in its determination and once again I would like to thank you for the opportunity to provide comment on this important issue.

Yours Sincerely

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