

**AGGREGATES, CEMENT AND READY-MIX CONCRETE
MARKET INVESTIGATION**

Note of call with Drax Power Station on 1 August 2013

1. The Competition Commission (CC) explained that its investigation of the aggregates, cement and RMX markets had begun in January 2012. In May 2013 it published its provisional findings (PFs). The CC had provisionally found that a number of features of the cement market gave rise to an adverse effect on competition (AEC), in particular with respect to the supply of ground granulated blast furnace slag (GGBS). The purpose of the meeting was to discuss pulverized fuel/fly ash (PFA), which could be supplied from coal-fired power generators as a cement substitute.
2. Drax Power Station (Drax) confirmed that it produced PFA that could be sold as a cement substitute and which required no further processing. It told us that it produced high-quality PFA in line with EN-450 requirements and up to 80 per cent of material produced by Drax met this standard. The quality of the Drax PFA was as a result of Drax having the most efficient combustion process among the UK coal-fired power stations, as it was the most modern, and because Drax was able actively to manage the carbon content of the PFA it produced, to ensure it was suitable for use as a cement substitute. Drax was committed to minimizing disposals of PFA into landfill (landfill disposal would cost Drax £2.50/tonne) and having the right factory controls in place to ensure this. The remaining 20 per cent of PFA produced at Drax did not go through the beneficiation process (to remove carbon) as it was an expensive process which was not viewed as commercially viable for Drax.
3. Drax noted that broadly three types of PFA were produced in the market. These were EN-450 standard, run-of-station ash (outside the EN-450 specification) and general conditioned ash (for fill). EN 450 was produced from other power stations and some of this material required beneficiation. 40 to 50 per cent of PFA on the total market was EN-450 standard.
4. The beneficiation process capability was limited within Great Britain. Power Minerals Limited, a small company which acted as PFA selling agents, could supply PFA as it had a beneficiation plant to purify ash. Other companies which could produce PFA included ProAsh at Longannet, and West Burton, Cottam, Rugeley and Aberthaw power stations. Rocktron technology (a type of beneficiation technology) had been tried at Fiddler's Ferry power station but was too expensive and now ash was just disposed of in ponds at Fiddlers Ferry. However, it was noted that due to forthcoming environmental EU regulations many UK coal-fired power stations would close over the coming years and this would progressively reduce and ultimately end the production and supply of PFA.
5. Drax confirmed that around [redacted] per cent of the PFA produced at Drax was sold per year as EN-450 specification, amounting to [redacted] tonnes per year of PFA EN-450 standard. The rest of Drax's EN-450 ash was either sold as conditioned ash or run-of-station ash (to other parts of the construction industry) or went to landfill as Drax—and its ash customers—had limited silo storage capacity for PFA (see below). The total sales of cement replacement ash in the UK was 922,000 tonnes in 2011 (figures from the UK Quality Ash Association), of which Drax supplied around half.
6. The production of PFA was seasonal, with more PFA produced in the winter months when the power station was working at increased capacity. However, it was noted that this did not match the demand for PFA from the construction industry which was

during the summer months when the majority of construction work took place. While PFA could be stored for several months, many cement producers did not have the capability to store the product. One cement producer (Cemex) did purchase some PFA in the winter as it had some storage capacity. Drax did offer a reduction on the price of PFA in the winter. However, the lack of storage capacity meant that many could not purchase the reduced-price PFA in winter.

7. The main purchasers of Drax's PFA were (in order) [REDACTED]—in total accounting for about 80 per cent of Drax's sales. Small volumes were also sold to independent RMX producers via Power Minerals acting as Drax's agent.
8. Drax confirmed that it sold EN-450 PFA to the market for between [REDACTED] per tonne ex-works. Security and continuity of supply were the main reasons why customers chose to purchase PFA from Drax—as the largest coal-fired power station in the UK it had better availability of material than the other power stations. As the material was relatively cheap, it was the cost of transport that was the determining factor in purchasing decisions, such that, subject to material availability, it would be the power station closest to the customer that won that customer's business. Drax had built a railhead at its power station in order to reduce transport costs (transport of PFA from most of the other power stations was by truck). Drax believed that [REDACTED] were its closest competitors but competition was generally dictated by the location of the purchaser and the transport costs of moving the PFA. Drax sought to ensure that it maintained its independence and therefore resisted any exclusivity agreements which the cement producers had on occasion proposed.
9. In setting the price for its PFA, Drax did not monitor or take into account the price of cement. The price for PFA was generally dependent on what the cement industry was prepared to pay, since customers understood that Drax would have to pay for landfill if it could not sell the PFA.
10. Drax was aware of which firms supplied GGBS but it had little visibility of the GGBS price. Drax was often confronted with the situation that if it tried to raise its price of PFA then purchasers would discuss moving over to GGBS. The price of PFA had only increased in line with inflation in recent years. Although GGBS was more expensive than PFA (by a factor of two or three times) it was a superior product for cement replacement, because (a) it was manufactured explicitly as a cement replacement and was therefore of a very consistent quality, and (b) as a result of its chemical composition, it could be blended with cement in greater proportions than PFA (CEM II vs CEM III). Drax understood there to be good availability of GGBS.
11. Cement producers did not cite the possibility of using limestone as an alternative to PFA in producing blended cement as a bargaining chip during negotiations to purchase PFA.
12. Demand for PFA had decreased somewhat during the recession but the recession did not appear to have increased buyer strength and the downturn in demand for PFA had not been as severe as the downturn in construction more broadly, possibly because PFA was a cheaper substitute for cement in an industry looking to cut costs. Going forward, the biggest challenge was in meeting future anticipated demand from customers.
13. Drax noted that if it was operating at full capacity then it would have enough PFA to satisfy customer demand and did not need to prioritize customer orders. However, if the power station was not operating at full capacity then less PFA would be produced and customer orders would be subject to a pro rata allocation system—this would

tend to happen at some point every year. Cement firms used the lack of reliability in the supply of PFA to beat the price down.

14. Drax did not import PFA but had discussed importation with Power Minerals Limited. Over the coming years Drax would move from coal-fired to increasingly biomass powered and would therefore not be producing as much PFA. Power Minerals Limited was owned by a German coal-fired power generation company, which could produce and store large amounts of PFA (likely to be in part because the costs of disposal to landfill were higher in Europe—around £20/tonne). Power Minerals could therefore in future look to import PFA from Europe, although transport costs would be the determining factor in whether this was commercially viable or not.
15. Over the next few years it was anticipated that UK PFA production would reduce significantly due to the closure of UK coal-powered stations, as a result of various EU environmental directives. PFA production would halve over the next three years at Drax. The initial tranche of coal-fired power station closures (~10GW capacity) would occur by 2015 with the remaining coal-fired stations likely to close by the early 2020s. Due to the UK carbon tax and the British Government having its own unilateral emissions targets, the European directives did not have the same effect across Europe, for example in Germany, new coal stations were being built.