CASE STUDY

A421 ROAD IMPROVEMENT SCHEME GETS GREEN CREDENTIAL BOOST BY USING PULVERISED FUEL ASH (PFA)

RWE Power International supplied 115,000 tonnes of PFA to the A421 road improvement scheme helping ensure the scheme met its environmental targets.

PFA from RWE Power International is delivered to site

The old A421 between the M1 and Bedford South Bypass was largely single carriageway with more than 25,000 vehicles travelling this route each day, leading to considerable congestion at peak hours. This high traffic flow resulted in unreliable journey times, a poor accident record and reduced quality of life for local residents.

Improvements to the trunk and local road network were essential, with regional authorities in South East Milton Keynes and mid-Bedfordshire planning extensive housing and commercial development, including 32,000 new houses by 2026.

Transport infrastructure issues are addressed in the Government's 10 year plan to tackle congestion and pollution. This strategic plan included the introduction of a £202m project to construct a new 13km dual carriageway between Junction 13 of the M1 and the Bedford South Bypass.

The scheme

Construction of the scheme started early in 2009, with RWE Power International responsible for supply of PFA for the western end of the project where, upon final completion in December 2010, the new carriageway will link with the M1.

Balfour Beatty was appointed as the Principle Contractor for the project with preparatory works beginning in October 2008. This included site clearance, the establishment of a main site office and compound, fencing and archaeological investigations. Major construction work commenced in February 2009.

Although the Highways Agency was the end customer and Balfour Beatty the main scheme contractor, the earthworks for the western end of the project were subcontracted to John Jones, a specialist in this field.

RWE Power International was selected to provide PFA to John Jones and supply commenced in March 2009. The material was easily transported by road, over a four month period, from RWE's Didcot A power station in Oxfordshire. An average of 2,400 tonnes of PFA was delivered to site daily.

The PFA supplied by RWE Power International was used as a fill material, building up the surface level to create a roundabout and embankments where the new road meets the M1.

RWE
The energy to lead

A wheeled grader used to spread thin layers of ash on site

Hauliers and mobile plant on site

PFA being compacted on built up embankment

Why PFA?

Alternatives to PFA were considered as engineering fill for the scheme, including clay and spoil resulting from the construction of parts of the new road. However, none of these were available in sufficient quantities, nor did they possess the same environmental credentials as PFA.

The properties of PFA ensure that it is an ideal engineering fill material for major civil engineering projects where extensive landscaping is required. Benefits of its use include reduced settlement in poor underlying soils, resulting in minimal long term measurable settlement after placement and full compaction.

In addition, PFA is lightweight, which helps keep materials and haulage costs down. Its immediate and increasing strength ensures long term stability. PFA's low permeability is also beneficial in allowing construction work to continue in bad weather conditions.

Contractors for the project were involved in the early stages of the scheme, to address environmental impacts from the beginning, ensuring that the 'green' credentials of the scheme reached high standards. The PFA supplied by RWE Power International helped contribute to the sustainable approach to construction of the new A421.

Speaking of the suitability of PFA for the project, John Ferguson, Chief Materials Engineer of Balfour Beatty commented, *"In this day and age, sustainability is essential for all major construction projects. Using PFA helps to significantly reduce environmental impact, and the quality and consistency of the PFA supplied by RWE Power International, contributed towards high standards of construction for the new Junction 13 of the M1."*

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