



## NEW ESTATE ROAD | ROYAL ALBERT BASIN, LONDON



The use of LECA® geotechnical fill (LWA) as a lightweight fill solution for infrastructure works at the Royal Albert Basin helped to cut a whole week off an already short earthworks programme. Main contractors Birse Civils faced the challenge of mitigating the impact of a new highway built over

existing twin 2,100mm diameter sewers in soft ground conditions where there was a risk of damage and settlement.

Leca® LWA was specified as the solution to providing a 'load neutral' design, preventing any additional loading on the Thames Water storm sewers. These are situated four to six metres below final ground level, above Thames gravel and a combination of soft clays and made ground.

An assessment of the sewers revealed them to be in good condition, although it was felt that any further loading might cause failure, resulting in an estimated replacement cost of £2 million.

Civil engineers Clarke Bond Group Limited and Birse Civils devised a scheme to remove the existing overburden and replace it with Leca® LWA 10-20mm fill to achieve 'load neutral' status. Approximately 4700m<sup>3</sup> of Leca® LWA was used to create the mass fill for the highway, with loads delivered by high sided, 60m<sup>3</sup> articulated tipper vehicles from stockpiles shipped directly into a local port.

The Leca® LWA was tipped into the void, levelled by a tracked earth moving blade or dozer and compacted in one metre layers using the same vehicle.

A geotextile layer was placed to separate the Leca® LWA from the sub-base material. The cohesion of Leca® LWA of 0kN/m<sup>2</sup> and the ability to compact it in one metre layers, allowed it to be placed onto wet, boggy sub formation that would usually prevent normal earthworks operations due to fear of heave and compaction time, delaying an already stretched construction program.

## FACTS

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**Amount of material:** 4,700m<sup>3</sup> of [LECA® LWA \(10-20mm\)](#)

**Interesting Fact:** LECA® LWA was specified as the solution to providing a 'load neutral' design, preventing any additional loading on the Thames Water storm sewers.

**Main Contractor:** Birse Civils

Leca® LWA had the added benefit of providing a 'green' lightweight fill solution on a project where Birse Civils was committed to using environmentally friendly materials and processes wherever possible. For example, for every 1m<sup>3</sup> of clay excavated, approximately 5m<sup>3</sup> of Leca® LWA lightweight aggregate is produced.

The use of Leca® LWA also allowed the contractors to excavate and fill service trenches during the construction process without the risk of undermining during utility or maintenance works. The whole process took just two weeks from start to finish.

Comments Birse Civils Project Manager, Paul Lilley: "Everything went fantastically well despite working through two of the wettest weeks of the spring. We didn't have to stop work once and our team was very pleased with the ease-of-use in the application of the material.



“In all, it has helped to save us a week on the overall programme to date.”

The £10 million Royal Albert Basin infrastructure project was programmed over 48-weeks and was carried out on behalf of client London Development Agency with the London Borough of Newham as local highways authority.