

## CONCRETE

# The crunch must not hit green builds

In uncertain times, sustainability must make economic and environmental sense



## SUSTAINABILITY

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As economic concerns overshadow all else, it is crucial that organisations continue in their commitment to reduce environmental impact.

The legislative drive for more sustainable construction, for example, is no less stringent than before the effects of the credit crunch set in.

But pressures for greener construction need not be an added burden so much as an opportunity to find more efficient ways of working, and to enjoy the business benefits that can be secured through prioritising sustainability.

Concrete made using a lightweight, secondary aggregate is a prime example of how a material can help a project to be more sustainable, while also allowing flexibility of design and offering cost savings.

Waste reduction is a particular focus for making construction more sustainable, as shown in the Strategy for Sustainable Construction (June 2008), where the Government target of halving the amount of construction, demolition and excavation waste currently sent to landfill by 2012 was set out.

Using secondary aggregate

diverts waste as it can be made from a variety of materials that would otherwise be sent to landfill.

This includes colliery spoil, china clay waste and power station ash.

The sustainability benefits of secondary aggregate are two-fold, as using the material also avoids quarrying natural materials.

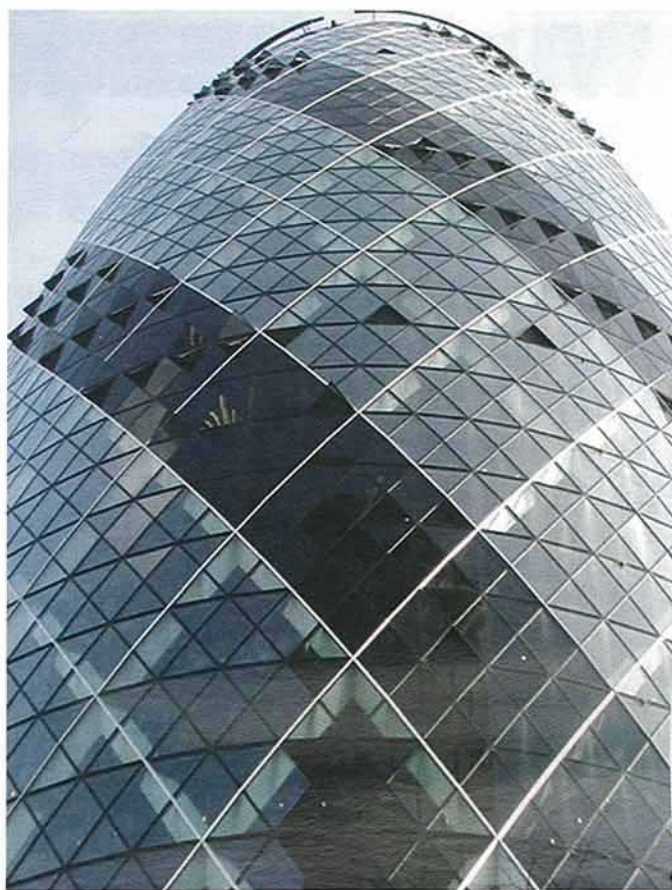
As more innovative designs and taller structures are expected by clients, versatility becomes an increasingly important factor when building with concrete.

## Same structural integrity

Manufacturing concrete using lightweight aggregate makes it a significantly lighter material than that made with traditional aggregate. This can mean concrete about 25 per cent lighter, but with the same structural integrity.

In design terms, this can help overcome restrictions caused by concrete's dead weight, and provides architects, engineers and contractors with the flexibility to deliver structures that would be unachievable or require design or time scale compromises with heavier material.

The lighter weight of the concrete also offers cost savings. Additional work to support the concrete's dead weight can be avoided, transport of material can be quicker and



The Gherkin was designed to appear less bulky than other buildings

on-site time and labour savings can be considerable.

All these factors can help clients and contractors to save on costs while reducing the environmental impact of a project.

Using lightweight aggregate in concrete is a proven practice - and many high-profile buildings have benefited from the performance and sustainability advantages on offer.

One example is the 'Gherkin' that was opened in London in 2004.

## Slim line

Developed by Swiss Re and designed by architect Norman Foster of Foster+Partners, the 40-storey building has been designed to appear less bulky than other buildings of a comparable size.

Using lightweight aggregate not only enabled the distinctive tapered shape of the building

to be structurally feasible, but also boosted the sustainability credentials of the project.

This specified recycled materials whenever possible in the 180 m-high tower that used 4 mm to 12 mm coarse aggregate and 4 mm / 8 mm aggregate for no fines screeds.

For the gherkin, and many other structural projects, using concrete made with lightweight, secondary aggregate has played a major part in helping the building to meet design and environmental objectives.

As the construction industry continues to work towards greater sustainability in a difficult economic climate, its use offers a quick win towards sustainability and cost efficiency that the industry can ill afford to ignore.

Gareth Moores is executive chairman of Lytag

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