Setting the standard

SECONDARY AGGREGATES IN PRECAST CONCRETE IS A BENEFIT THE INDUSTRY CAN'T IGNORE

Upper hand: Galliford Try used Lytag concrete to support Centre Court's new roof

AS THE economic downturn continues to affect businesses throughout the construction industry, sustainability is a consideration that must not fall by the wayside.

The business benefits of working in a sustainable way are more compelling now than ever before, and government legislation is no less stringent than before the credit crunch hit.

The government's Strategy for Sustainable Construction demands that the construction industry takes action to lower its environmental impact.

The pressure on construction ▶

clients and contractors to work in a more environmentally friendly way should not be seen as an added burden, but instead as an opportunity to find more efficient ways of working and to enjoy the business benefits that can be secured as a consequence.

Considering sustainability when specifying commonly used building materials such as precast concrete can make significant improvements to a project's environmental credentials, and can lead to some crucial cost savings.

The Sustainability Charter, launched in 2007 by the British Precast Association, invited member companies to sign a series of commitments to improve their sustainability performance and demonstrates that the importance of sustainability is already well recognised within the precast industry. A simple way to make precast concrete more sustainable is to replace traditional aggregate with secondary aggregate.

Manufactured from the by-products of other industrial processes, using secondary aggregate in the place of traditional materials not only reduces the demand on natural aggregate, but also diverts thousands of tonnes of waste from landfill each year. Lytag is a prime example of a high quality, everyday material that can be used in the same way as traditional aggregate, and can also make a building more sustainable.

Manufactured from the by-product of coal-fired power stations Pulverised Fuel Ash (PFA), Lytag has been used for more than 40 years by the construction industry in a variety of precast products ranging from bespoke units to staircases, lintels, kerbs and floor panels.

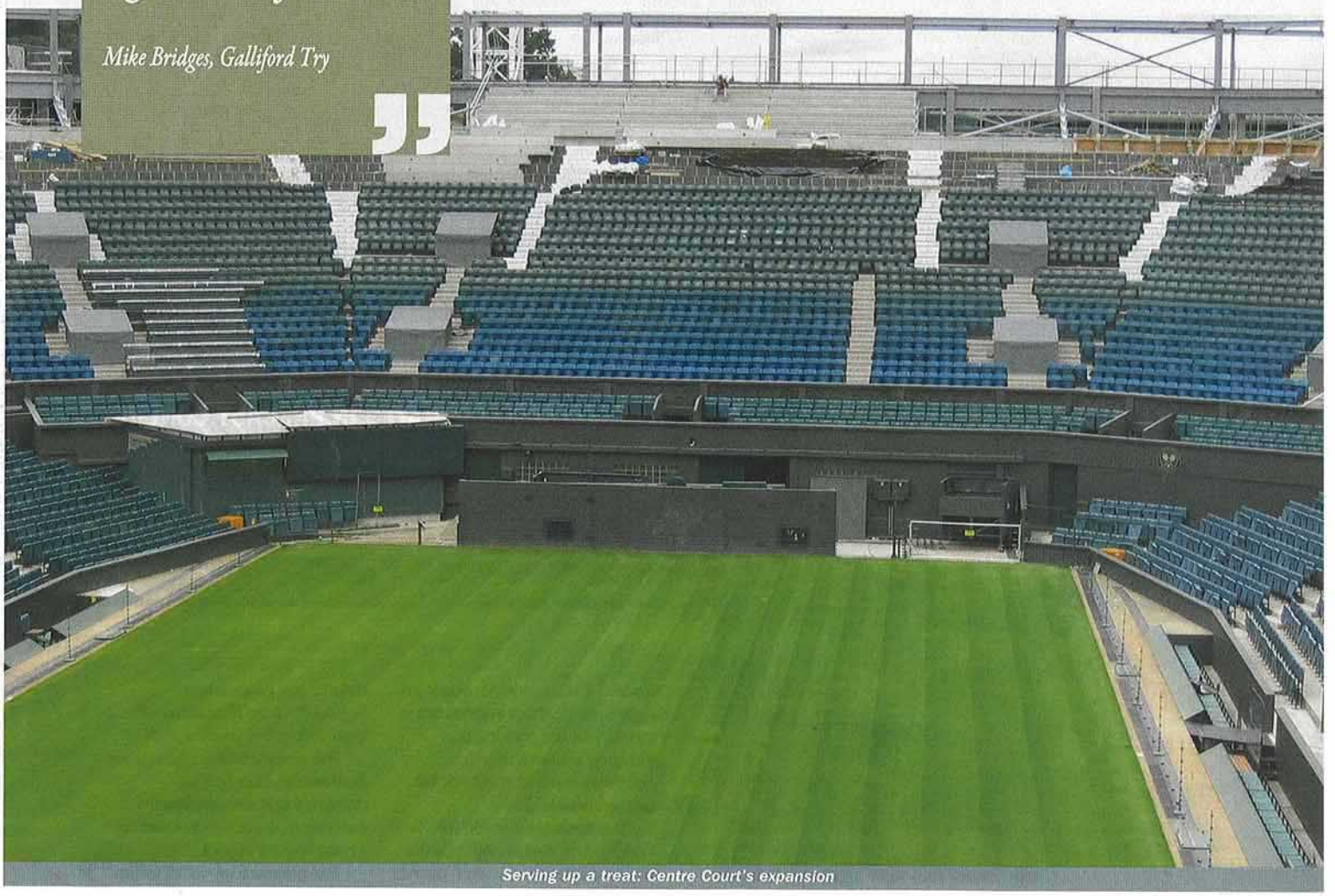
> *"By using Lytag in the precast concrete units, we have undoubtedly been saved a great deal of work"*
>
> *Mike Bridges, Galliford Try*

Off-site manufacture

A key market for precast concrete is the off-site manufacturing sector, widely expected to grow over the coming years as its capabilities are developed further and as the its advantages are recognised by the industry more and more. In addition to the sustainability benefits of using secondary aggregate, the lightweight quality of precast concrete made with a material such as Lytag makes it an ideal choice for use in off-site construction as it can help to increase productivity, reducing unit weights or producing larger units of the same weight.

This weight reduction can lead to significant advantages in production techniques and logistics, and greater flexibility can be afforded to engineers and designers in terms of weight constraints. Lightweight aggregate enables larger panels to be manufactured, reducing joints thereby speeding up construction and reducing the cost of jointing and moulding.

Using just coarse lightweight aggregate in precast concrete provides a weight saving of around 25% over normal weight concrete, leading to significant business advantages in terms of production techniques, reduced fixings, logistics and crane requirements. Larger panels can also be cast, which reduces the number of joints, speeds up construction and cuts mould costs. External walls also have ▶



Serving up a treat: Centre Court's expansion

> *Building green doesn't need to be limiting or complex*
>
> *Alan Beattie, Lytag*

Match winner: Lytag concrete produced units 25% lighter than traditional concrete

improved thermal insulation over those cast with normal weight aggregate. By using both coarse and fine lightweight aggregate, weight savings of over 35% mean that even greater benefits of weight reduction can be made along with reduced manual handling risks in smaller precast units.

Game, set, match

The environmental and performance advantages that lightweight, secondary aggregates in precast concrete can offer engineers and contractors have been recognised by the construction teams on many of the UK's high profile structures including Wimbledon Centre Court.

At the All England Lawn Tennis Club, a project was launched in 2006 to expand Wimbledon's famous Centre Court and build a retractable roof to allow play during increasingly wet summers. The structure and its foundations needed to be able to carry the weight of the extension as if not, significant work to strengthen the existing building would be required. This was the case when architects were looking to add a further six rows of seating on the east, north and west sides of the 13,000-seater stadium to take capacity to 15,000.

Galliford Try appointed by the All England Lawn Tennis Club, chose to use Tarmac to manufacture the precast concrete units, which used Lytag. By specifying Lytag concrete it was possible to produce units that are around 25% lighter than would have been achievable by using traditional concrete, because of this the contractors did not need to undertake support work to the surrounding structure. As a result, the overall weight and loading pressure of the extension, which also covered the press boxes, media office, changing rooms and committee rooms situated below, was significantly reduced.

Mike Bridges, project director at Galliford Try, said: "I've used Lytag a great deal over the last 30 years to build a variety of different buildings and here at Wimbledon we have delivered an innovative and compliant design that meets the stringent regulations it must comply with as a sporting venue. By using Lytag in the precast concrete units, we have undoubtedly been saved a great deal of work that would have been necessary if we had used traditional weight concrete."

Building green doesn't need to be limiting or complex – looking at the traditional construction materials and choosing those which have a higher level of recycled content is an easy but significant opportunity to make a difference to a project's overall environmental impact. Using secondary aggregate in precast concrete is a tried and tested way to help meet sustainability requirements set by clients, industry and government, and the potential business advantages are benefits that the industry can