

“Through the 18 months of collaboration between multiple business functions and our partners, we created an extremely efficient project that significantly reduced our carbon footprint. The A12 project featured striking innovations, including the re-use of the existing concrete carriageway into a CBGM material so avoiding unnecessary material going to a waste depo which hadn’t been done previously on the National Highways Network.”

Frank Haughey, Regional Technical Manager

# Planet

## Circular Economy

### A12 Reuse of Concrete (CBGM)

In December 2022, Tarmac began resurfacing works on the A12, removing 3.5km (52 lane km) of concrete road and replacing it with asphalt. We implemented our sustainability approach to this project, promoting innovation, efficiency and collaboration during the 18 months pre-construction phase which was completed in 2024.

As a result, Tarmac developed a specific Cementitious Bound Granular Mixture (CBGM) aggregate product from recycled concrete arisings. The material was processed locally at our Colchester quarry, reducing time and carbon emissions. Multiple departments worked together to build a CBGM plant on site, acquiring planning permission to build new access routes and extending working hours to optimise working windows and closures.

With a shared drive to reduce our carbon footprint, both our technical and operational teams identified the need to maximise the use of the concrete planings, with a series of mix designs for a CBGM C8/10 product being drawn up and tested at our industry leading technical centre in Ettingshall. The product was trialled and approved in collaboration with National Highways and AECOM before its use on the strategic road network. Through this advanced approach, we successfully reduced carbon and waste across the concrete roads framework, while supporting National Highways’ ambition of using new technologies and methods for durable modern roads.

Using CBGM was an innovative solution which provided a closed loop recycling process, reduced virgin aggregate reliance, and saved 148.74 tonnes of CO<sub>2</sub>e. Over 54kt of concrete was removed and 100% of planings were recycled at our local recycling facility in Colchester, with a total of 27.5kt of CBGM product being reused back on to the A12.



Zero materials were sent to landfill disposal, achieving a carbon saving of c.35 tonnes of CO<sub>2</sub>e.

The Tarmac technical team developed a carbon calculator to precisely capture the CO<sub>2</sub> savings. Our enhanced carbon calculator allowed us to accurately measure the carbon footprint at each stage of the project, providing us with comprehensive ‘live’ carbon data. The tool enabled us to monitor the amount of carbon saved from reduced reliance on virgin aggregates and their associated processing requirements.

Our Pave technology systems automatically captured all project data, helping us measure performance and work more efficiently. Over the course of the project we:

- Removed and recycled 32,000 tonnes of concrete back into the A12
- Manufactured 13,000 tonnes of CBGM on site, using recycled concrete
- Delivered 60,000 tonnes of asphalt to site
- Reconditioned 3.5km of road across two three-lane carriageways

After delivering this trial with National Highways and Sisk, we have since implemented the CBGM solution across other schemes, helping shape industry best practice. This project has demonstrated how sustainable use of materials can deliver substantial environmental benefits, paving the way for future advancements in the industry.