

Proven performance

A64, Bramham, North Yorkshire





National Highways
Tarmac Pave
A64, Bramham, North Yorkshire
October 24

Client
Contractor
Location
Completion

‘Multiplex’ milling and echelon paving trial - A64 eastbound carriageway at junction 44 near Bramham in North Yorkshire.

The Challenge

National Highways has ambitious plans, backed by science, to decarbonise the road network. With aims to achieve Net Zero maintenance and construction activities by 2040.

The A64 challenge was to target carbon reductions and durability whilst improving surface performance.

To test the impacts of latest paving technology against International Roughness Index (IRI) and to demonstrate how performance, materials and the delivery of the programme can advance Net Zero outcomes.





The Solution

To complete works aligned to National Highways, Maintenance and Construction Emissions and Road User Emissions objectives. The trial – the first of its kind on the strategic network – was delivered on a 1.5mile section of the A64 eastbound carriageway at junction 44 near Bramham in North Yorkshire.

The section of the A64 was identified as an ideal scheme due to the unevenness of the existing carriageway and to allow a full closure needed to complete the resurfacing. This enabled Tarmac to deploy ‘Multiplex’ milling and echelon paving to target significant improvements in ride quality and durability.

A sustainable warm mix asphalt was used together with a pioneering ‘carbon sink’ bio-component binder from Shell, which locks carbon into the road to prevent it being released into the atmosphere.

The lower layer of the pavement comprised around 37 per cent recycled asphalt planings (RAP) with a further 20 per cent in the surface course to help reduce the need for primary materials.

Several zero emissions plant vehicles and prototypes were used including electric and hybrid road rollers and an electric bond coat sprayer, minimising noise and further reducing tailpipe emissions as well as CO₂. Tarmac’s Cross Green asphalt plant in Leeds, which manufactured many of the materials used on the project, was powered by a combination of biofuel and clean electricity.

Over a seven day period the team including HW Martin, Premier Roadmarkings, Kier and Mway Comms combined an extensive range of innovative low carbon materials, techniques and plant equipment to deliver the significant long-term energy and carbon savings.

Carbon Footprint Project Overview	Asphalt Quantity (t)	Project Footprint (A1 – A5) (tCO ₂ e)		
		Scenario 1	Scenario 2	w/Low Carbon Interventions
Surface Courses BIO ULTIPAVE LONGLIFE 10 SURF PMB PSV 60 BIO ULTIPAVE 10 SURF 70/100 PSV 60 ULTIPAVE 10 SURF 40/60 PSV 60	2626.2	231.9	192.3	77.0
Binder Courses BIO AC 20 DENSE BIN 40/60 DES BIO LOW CARBON AGG AC 20 DENSE BIN 40/60 DES AC 20 DENSE BIN 40/60 DES	1444.6	90.7	68.2	8.4
Base Course BIO AC 32 DENSE BASE 40/60 DES	480.8	27.6	20.3	3.2
Total (Carbon values shown in tCO₂e)	4553.7	350.2	280.8	88.7
% Carbon Reduction from Scenario 1			-19.80%	-74.68%
% Carbon Reduction from Scenario 2				-68.43%



Results and Benefits

The full road closure allowed the continuous works programme to deliver a smoother, more durable surface.

The multiplex milling was able to remove the existing long wave defects that were present and impacting on ride quality without the need to carry out any digital scans and model creation. The echelon paving, with transfer vehicles, enabled constant paving with no delivery vehicle interface to impact on ride quality. In addition, it gave a homogenous surface with no transverse or longitudinal joints. Removing points of weakness in the carriageway that are subject to premature failure.

Looking forward, the increase in ride quality (IRI from 2 to .9) will have a positive impact on durability with lesser intervention expected. The smoother surface will also decrease the amount of CO₂ produced under use.

Tarmac and National Highways together with supply chain partners successfully reduced carbon emissions on the project by 75 per cent compared to a traditional maintenance project of a similar scale, with over 260 tonnes of carbon savings delivered.

Angela Halliwell, Head of Carbon and Environmental Sustainability Strategy and Planning, National Highways, said:

“We’re taking positive steps towards a more sustainable, decarbonised future. We hope this project will pave the way for industry-wide changes, resulting in significant carbon savings and improved road surfaces for drivers.

“A net zero Britain will still travel by road, and finding low carbon ways to maintaining our road network is vital. National Highways’ carbon management system and low carbon opportunities register captures innovations like those used on this project, with the intention to make them standard procedure across the road network in future.”



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REINVENT
THE WAY
OUR WORLD
IS BUILT