

Low Carbon Materials

Carbon Negative Aggregate to achieve **Net Zero Asphalt**

LCM Case Study – A64 Bramham



ACLAR®

A cutting-edge trial on the A64 has delivered the UK's lowest carbon resurfacing scheme on the strategic road network without using carbon offsetting. Tarmac, a CRH Company, 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.

The trial was delivered on a 1.5 mile section of the A64 eastbound carriageway at junction 44 near Bramham in North Yorkshire. 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, use of innovative paving technology and plant equipment to deliver the significant carbon savings.

As part of the trial a 150m section was laid which utilised Low Carbon Materials' carbon negative aggregate (ACLAR®) alongside the other carbon reducing technologies, facilitating the landmark achievement of the UK's first Net Zero pavement, within this section.



PERFORMANCE TESTING RESULTS

As part of the trials extensive laboratory testing was completed. The data here shows a comparison of the AC20 binder course used throughout the project with the AC20 binder course containing ACLA.

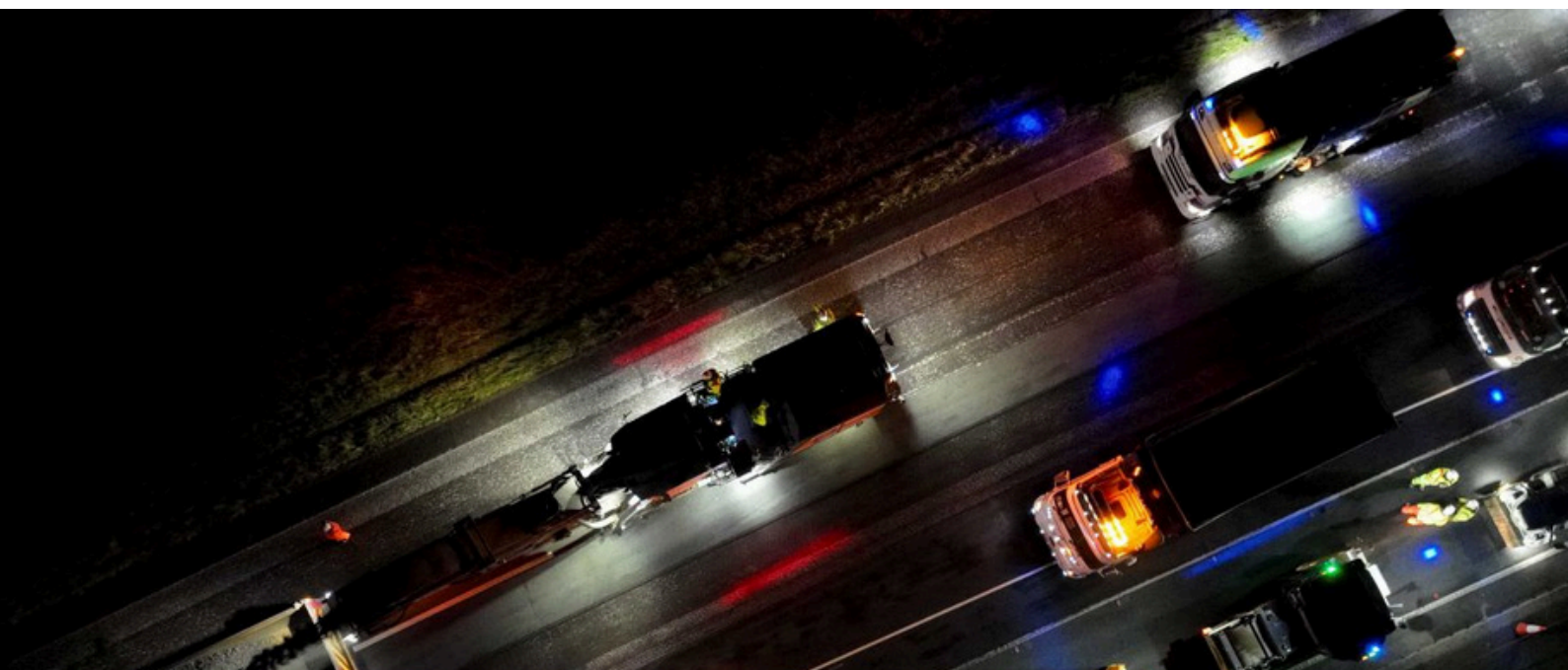
Material	Binder	RA Content	Production Temp	Comment
WARM BIO AC 20 DBM 40/60 DES	40/60 with Carbon Sink 375	40% no ACLA	Warm	Main use throughout the scheme.
	40/60 with Carbon Sink 375	40% 3% ACLA	Warm	150m zero carbon section.

The data provided by Tarmac demonstrates that the ACLA containing mix is compliant with the asphalt material specifications outlined in "Clause 929 - Dense Base and Binder Course Asphalt Concrete (Design Mixtures)" of Specification for Highway Works 0900 Series.

The results highlight no detrimental effects on the performance of the material on account of the inclusion of ACLA®.

One result of particular interest is the Indirect Tensile Strength Ratio (ITSR). This is an accelerated weathering test used to give an indication of the effect of water on long term performance. The ratio of the indirect tensile strength of weathered samples compared to that of dry samples is expressed as a percentage. A result of 95% is a very positive indicator for good long term performance.

	Reference >>>	WARM BIO AC 20 DBM 40/60 DES	WARM BIO AC 20 DBM 40/60 DES + ACLA
		24/0884	24/0882
Grading	31.5	100	100
	20	96	98
	14	80	74
	10	69	59
	6.3	52	46
	4.0	42	37
	2.0	30	28
	0.5	18	18
	0.25	13	13
	0.063	7.0	6.6
Bitumen	Found B/C (%)	4.4	4.5
Voids	Refusal air voids (%)	0.7	0.5
	In situ gauge air voids (%)	3.9	3.1
Stiffness	ITSM (MPa)	9742	9996
Wheel tracking	WTS _{AIR}	0.05	0.05
	PRD (%)	4.1	3.7
Water sensitivity	ITSR (%)	86	95



Decarbonising UK Roads

Through strategic collaborations we have demonstrated ACLA is easily adoptable, scalable and can have a huge impact. ACLA has been demonstrated effectively in residential roads across the UK with numerous local authorities as well as on the M11 and A64 motorway on the strategic road network with National Highways.

"Within an eight month period a new, unproven, untested material has been thoroughly tested against Highway Specifications and successfully trialled on the National Highways strategic road network. Eight months ago I didn't believe that would be possible. It is amazing what can be achieved through effective collaboration."

**Paul Cole, Chief Engineer,
Skanska**

"The characteristics of the material seem very similar to what we expect compared to a conventional material"

**Robert Syer
Project Manager, Tarmac**

"We initially encountered Low Carbon Materials at the Highways UK show. Upon investigating the product, we quickly realised its potential interest for Redbridge."

**David Shelley
Director for Kenson Highways**

"ACLA is going to be a material that is likely to be used in the future to reduce the carbon potential in future projects."

**Melissa Giusti,
Project Manager, National Highways**

"Redbridge is always striving to find innovative ways to reduce our emissions. We're proud to be the first London borough partnering with Kensons, Low Carbon Materials, and Tarmac to deliver this pioneering new trial."

**Redbridge Council's Cabinet Member for
Environment and Sustainability, Cllr Jo
Blackman**

Find out more:
lowcarbonmaterials.com/casestudies

"ACLA is a fantastic innovative material. It is flexible to use and easy to achieve very low carbon values through all mixes. The benefit of using this product is you can store it virtually anywhere. No special storage or equipment is required. Having used ACLA, I see it as a front-line tool against carbon level reduction in 2025."

**Dave Whitehouse, Head of Research and Product
Development at Tynedale Roadstone Ltd. MGL Group**

"MGL Group's continued partnership with Low Carbon Materials and Durham County Council reinforces our shared commitment to a sustainable future. By collaborating on further schemes, including our work at Front Street, Sunnyside, where the Rainton Construction team is laying our net zero asphalt, we aim to decarbonise the built environment and create a lasting positive impact."

**Dave Elliott
MGL Group's Joint Chief Executive**

"ACLA offers a simple and scalable solution that can be readily adopted by the public and private sector in their pursuit of their net zero targets."

**Natasha Boulding
LCM CEO**



THE EARTHSHOT PRIZE

2022 Finalist to 'Fix our Climate'

"This new material will play a key role in carbon reduction and, when used in conjunction with other sustainable materials, allows the whole project to be significantly lower in emissions than standard resurfacing works."

**Alan Patrickson
Durham County Council's Corporate Director for
Neighbourhoods and Climate Change**

Decarbonising Asphalt

ACLA[®]

**SAME PROCESS.
LOWER CARBON.**



Carbon Negative



A Drop-in Solution



Low Volume
Requirements



EPD



Widespread UK
Adoption



Decarbonised
Road Projects

contact@lowcarbonmaterials.com
www.lowcarbonmaterials.com

