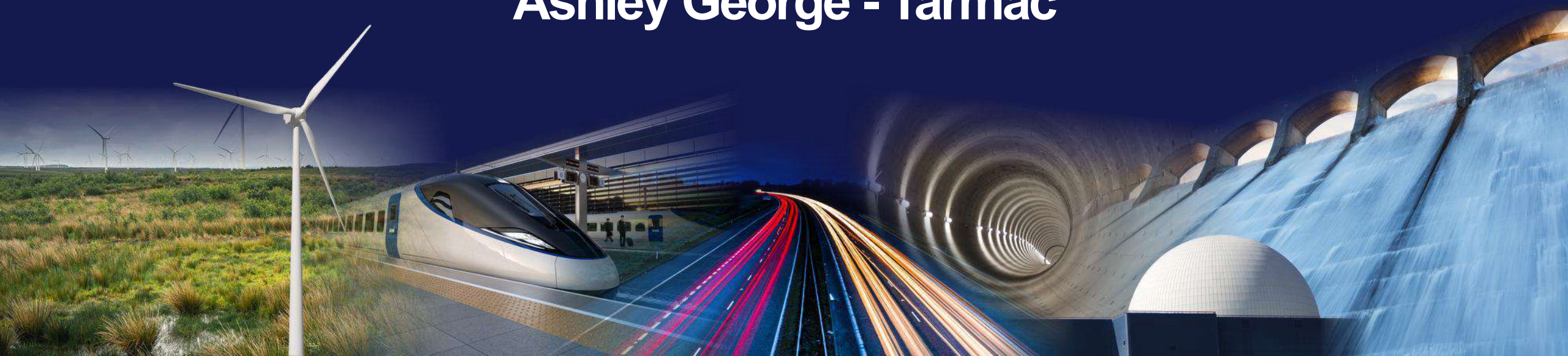
Art of the Possible in Low Carbon Roads Construction

Ashley George - Tarmac



AGGREGATES | ASPHALT | CEMENT | READYMIX | BUILDING PRODUCTS | PRE-CAST

Tarmac at a glance

6,000 people

150 operations

No.1 supplier construction solutions

£2.5bn turnover

2500 FLEET VEHICLES | **30** TRAINS | **133** QUARRIES | **51** RAP/RECYCLING PLANTS | **3** CEMENT PLANTS | **4** DREDGERS
39 BUILDING PRODUCT SITES | **65** ASPHALT PLANTS | **10** WHARVES | **106** RMX PLANTS | **17** CONTRACTING DEPOTS

CRH

The leading provider of building materials solutions that build, connect and improve our World.

29 Countries

$35bn Revenue

78k People globally

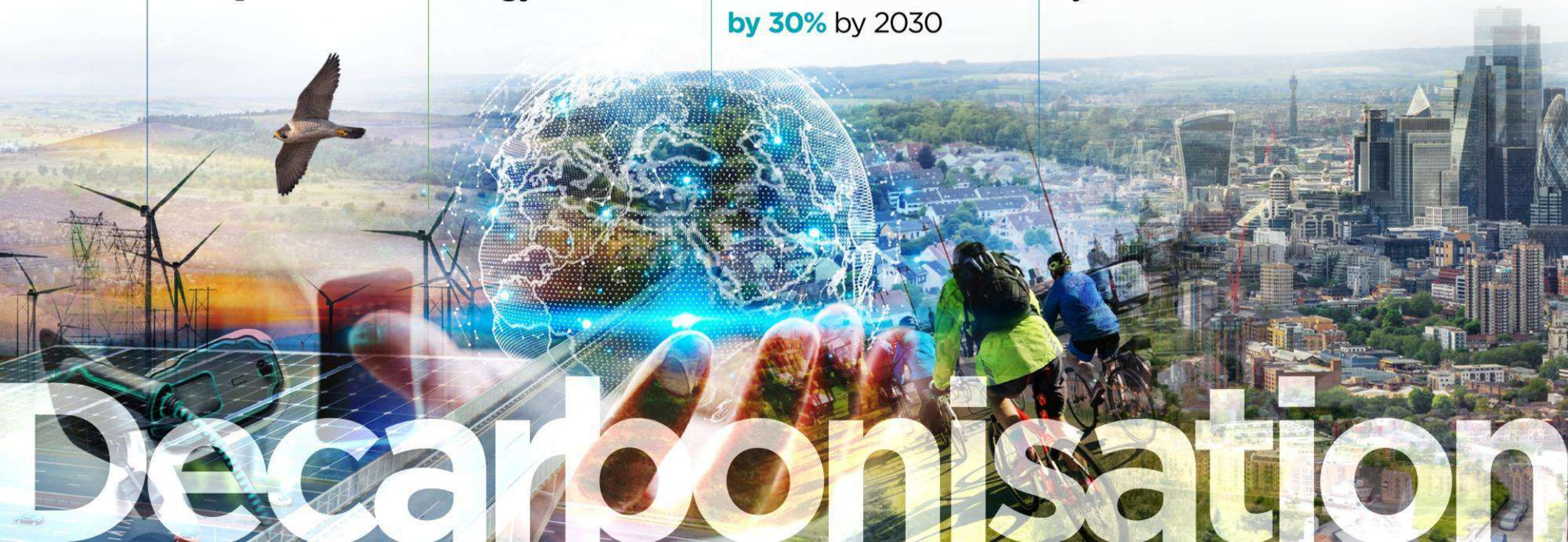
Our industry leading commitment, and obligation, to provide new, lower carbon methods of delivering high quality performing products and services. Never standing still and always striving to do better today than we did yesterday.

38% reduction in CO_2 since 1990

100% clean energy since 2018

Reduce our absolute carbon emissions by 30% by 2030

Net zero by 2050



Decarbonisation

Climate Change: Commitments and Action

Local Authority

By October 2020 over 300 councils had published Climate Emergency declarations, representing a strong bottom-up movement to deliver on national Net Zero goals.

Urgent action, carbon reduction, community resilience, green infrastructure, policy reform, sustainability goals, public engagement, renewable energy, adaptation planning.

Tarmac and CRH

Industry leading target: Absolute CO_2 emissions reduction of 30% by 2030 (from a 2021 base year)

We have currently **achieved a 14% reduction against scope 1 and 2** emissions.

We have solutions proven today to **drive the scalability for scope 3** emissions - your roads.

CEVO Asphalts

The latest design engineering that is progressing asphalt's transition towards Net Zero targets. The materials and technologies that make up our solutions portfolio starting life as research with the Carbon Trust in 2011 and the landmark resurfacing of Silverstone race circuit in 2019.

CEVO is our commitment to supplying pavement solutions that are more sustainable, durable and lower carbon.

Materials capability

Recycled asphalt planings

Warm-mix technologies

Bio-binder asphalt

Shell Agesafe/bio

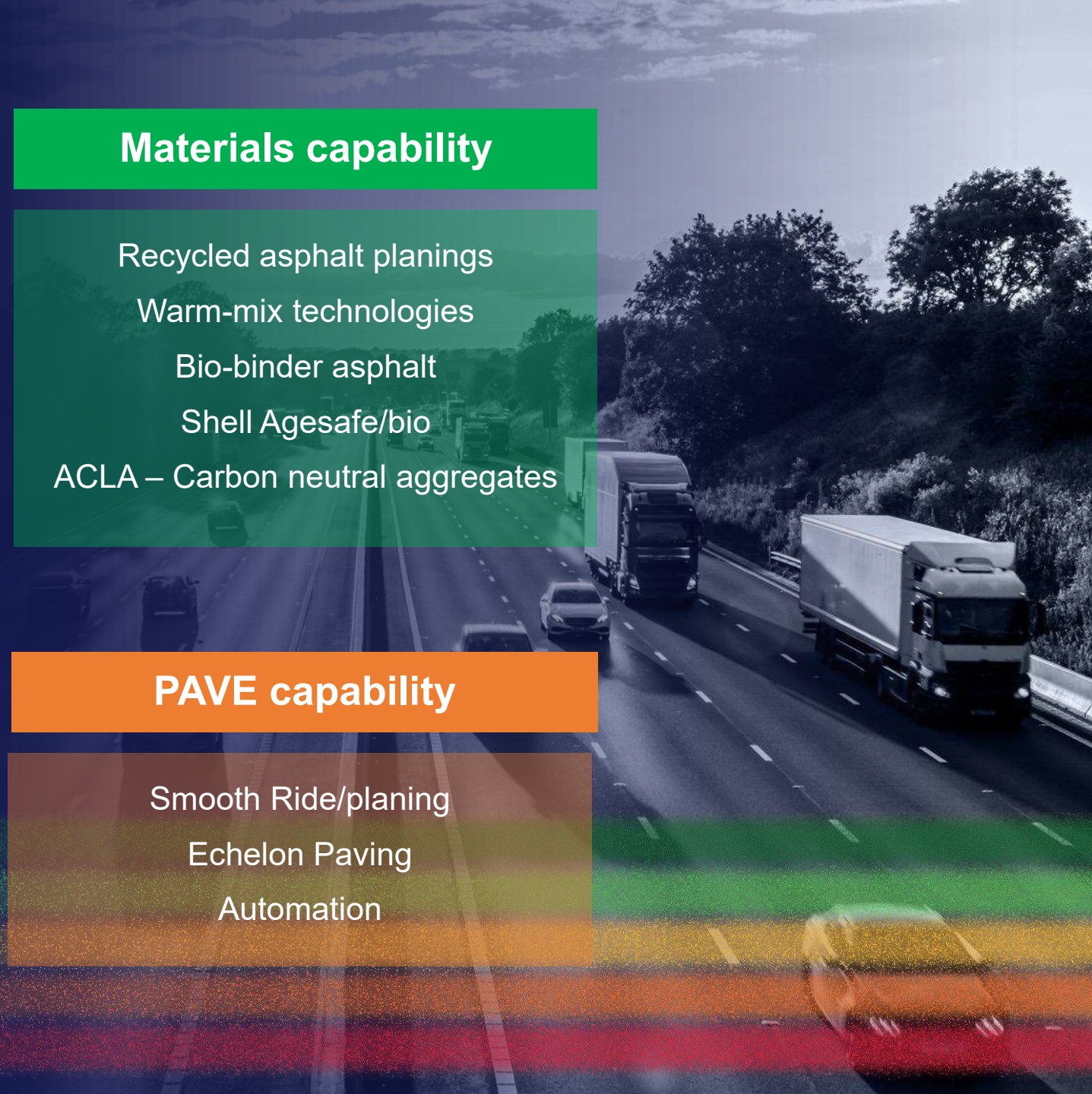
ACLA – Carbon neutral aggregates

PAVE capability

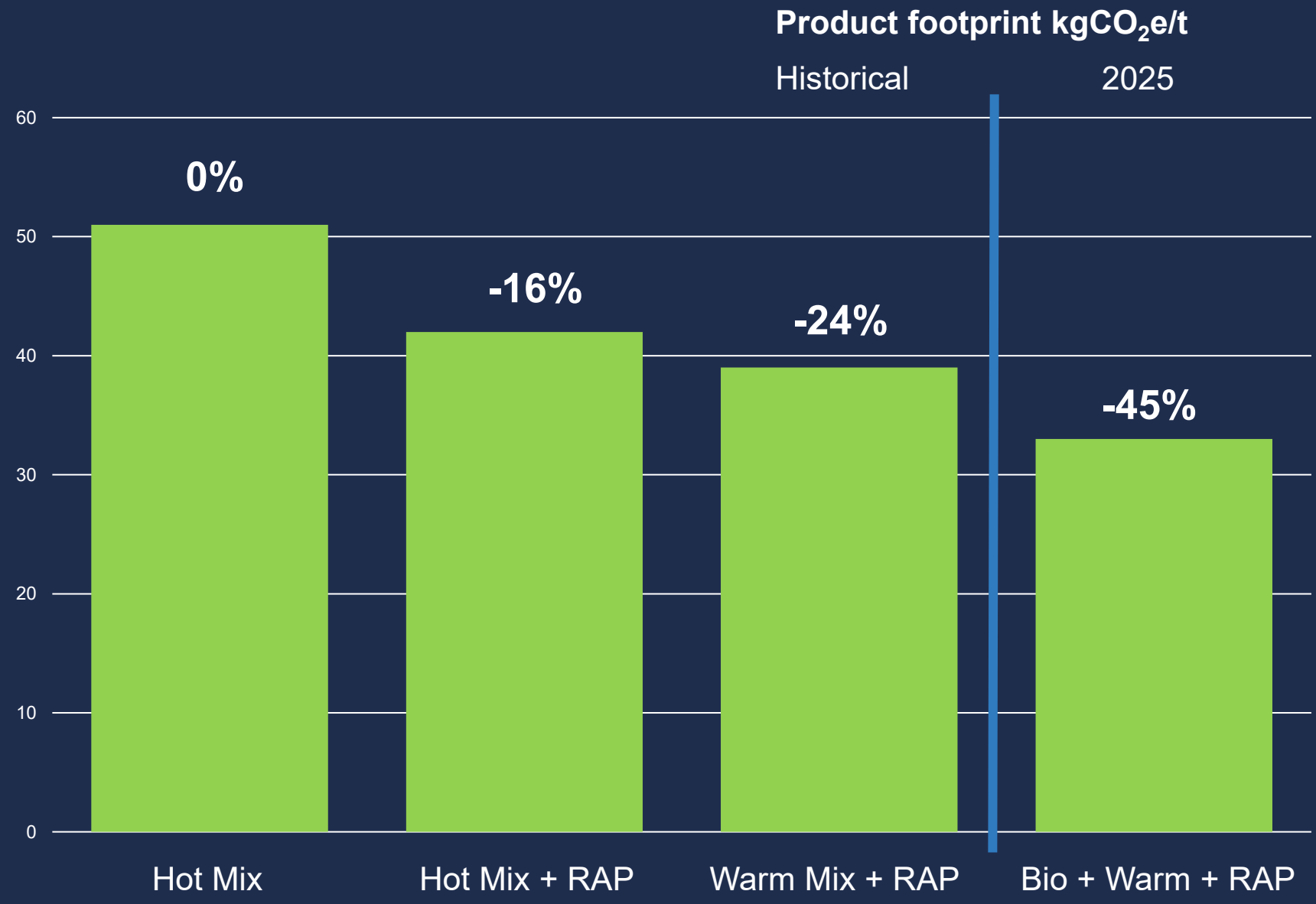
Smooth Ride/planing

Echelon Paving

Automation



Asphalt – the journey so far

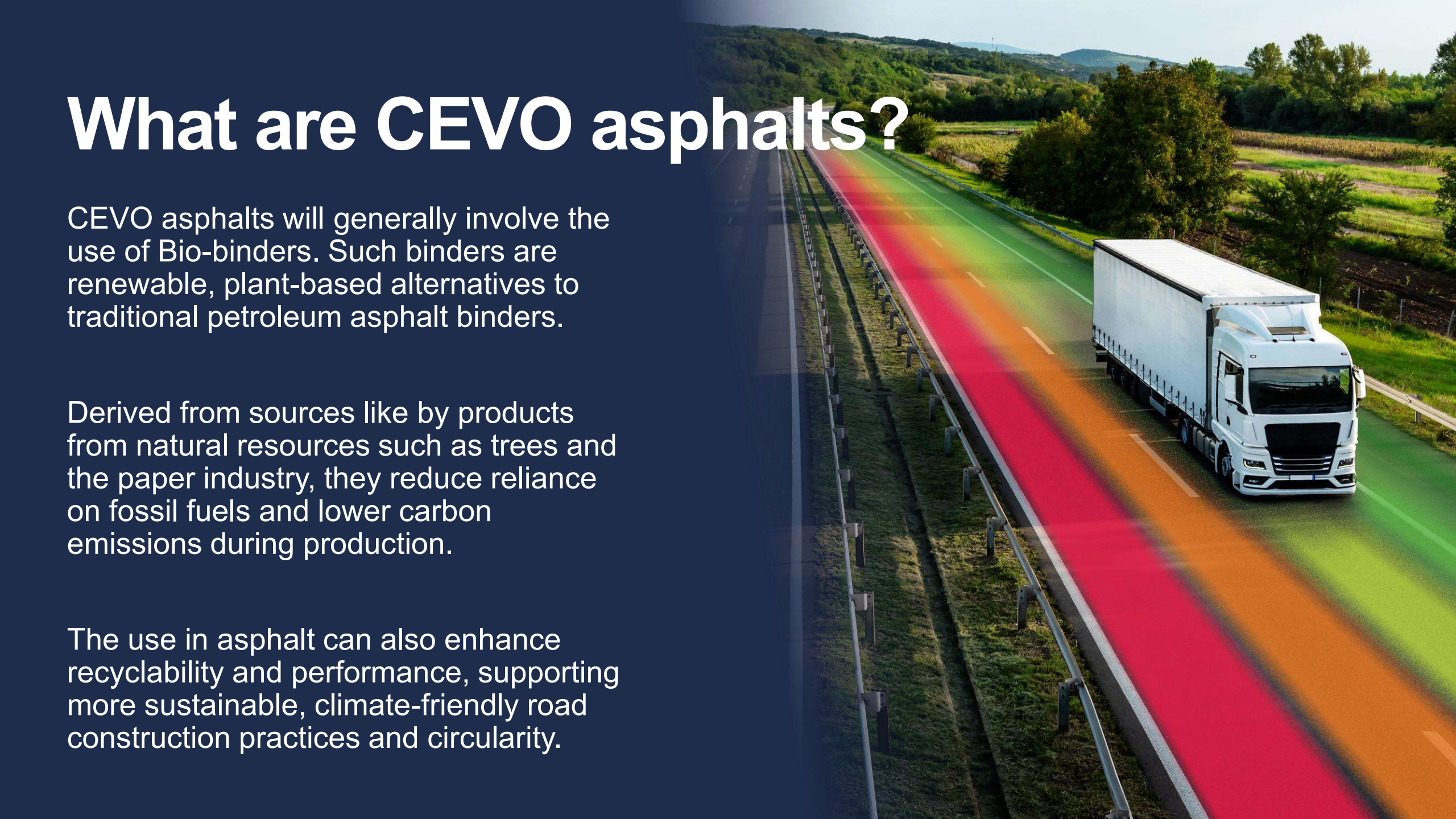


What are CEVO asphalts?

CEVO asphalts will generally involve the use of Bio-binders. Such binders are renewable, plant-based alternatives to traditional petroleum asphalt binders.

Derived from sources like by products from natural resources such as trees and the paper industry, they reduce reliance on fossil fuels and lower carbon emissions during production.

The use in asphalt can also enhance recyclability and performance, supporting more sustainable, climate-friendly road construction practices and circularity.




PAVE
TECHNOLOGY SOLUTIONS
Lean construction
Digital technology
Fuel transition
Smooth ride
Carbon sink
Bio-bitumens
Digital records
Paving and milling
Digital roads
It is time to enter a
new generation
of PAVE
Piloted at
Silverstone race
circuit in 2019
we are now using
industry-leading
technology to
deliver the roads
of the future.

Low rolling resistance asphalt

- Improved ride quality – improved vehicle dynamics
- Reduce the tyre's rolling resistance, but don't compromise safety
- Danish paper in 2016 identified up to **7% reduction in fuel consumption** is possible by changing characteristics
- Research project undertaken by Tarmac on A11.

Net Zero Road

ART OF THE POSSIBLE

2023

Hartlepool and Stockton deliver the lowest carbon surface in the UK – **No offsetting**

83% carbon reduced
from 3 schemes

2024

Following the pioneering delivery of the Local Authority exemplars

A64 demonstrated
73% carbon savings

Aligned to Maintenance, Construction and Road User Emissions

Roads of the future

At Tarmac, we invented the modern road surface – we like to think we have been reinventing it ever since.

Today, as we advance **Net Zero solutions** we are determined to **deliver our customer's ambitions** and our own commitments.

The art of the possible – Stockton and Hartlepool
October ' 23

Three local roads in the North-East of England have become what we believe are the UK's lowest carbon road resurfacing schemes. By combining material and plant technology, carbon emissions were reduced by 80% compared to conventional approaches.

A64 – National Highways roadmap targets Durability, carbon, smoothness
October '24

The works, the first of its kind on the strategic network – were delivered on a 1.5 mile section of the A64 eastbound carriageway at junction 44 near Bramham in North Yorkshire.

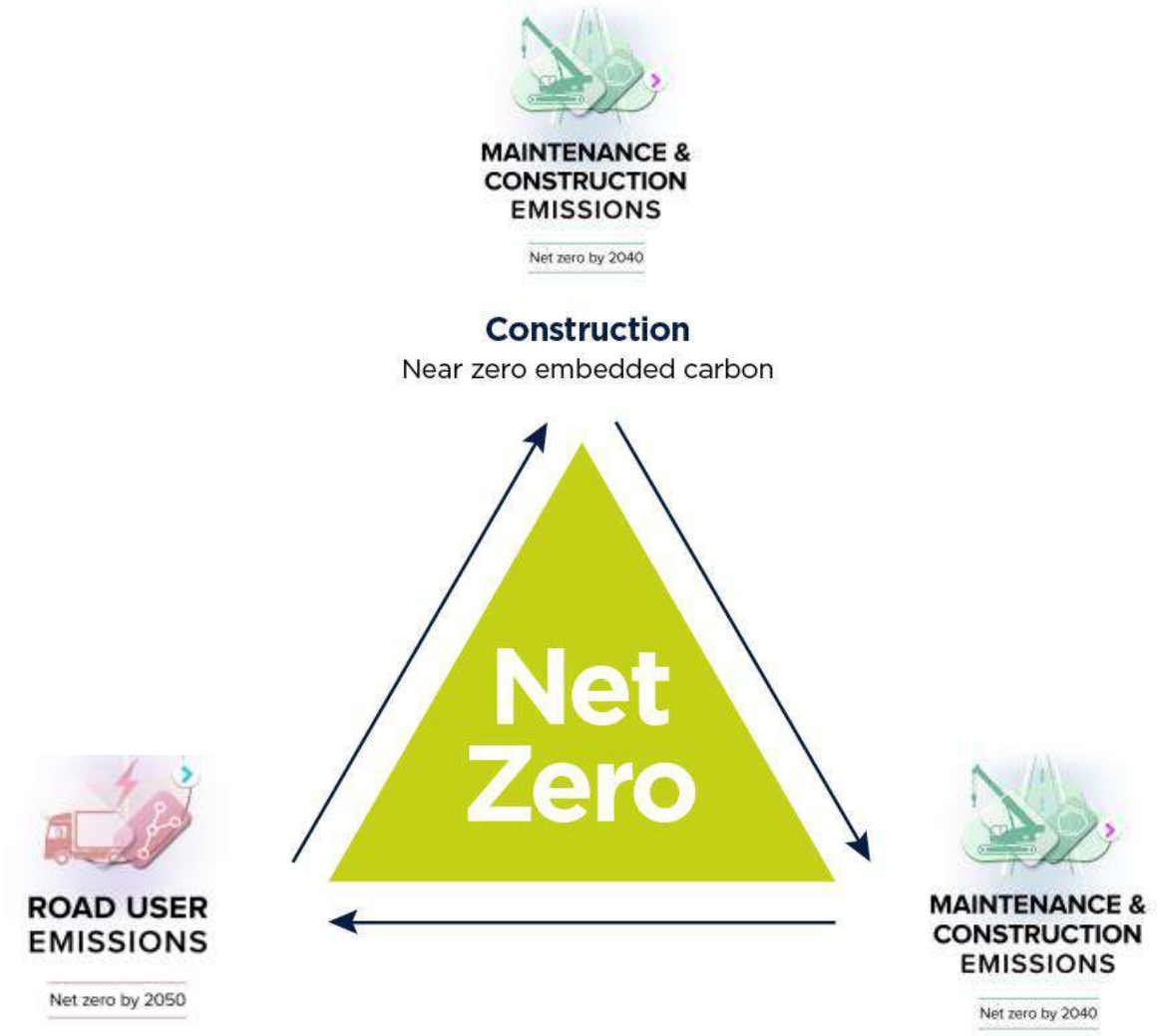
Over a seven day period we combined an extensive range of innovative low carbon materials, techniques and plant equipment to deliver the significant carbon savings.

73%

A64 Bramham:
High performance, low carbon pavements

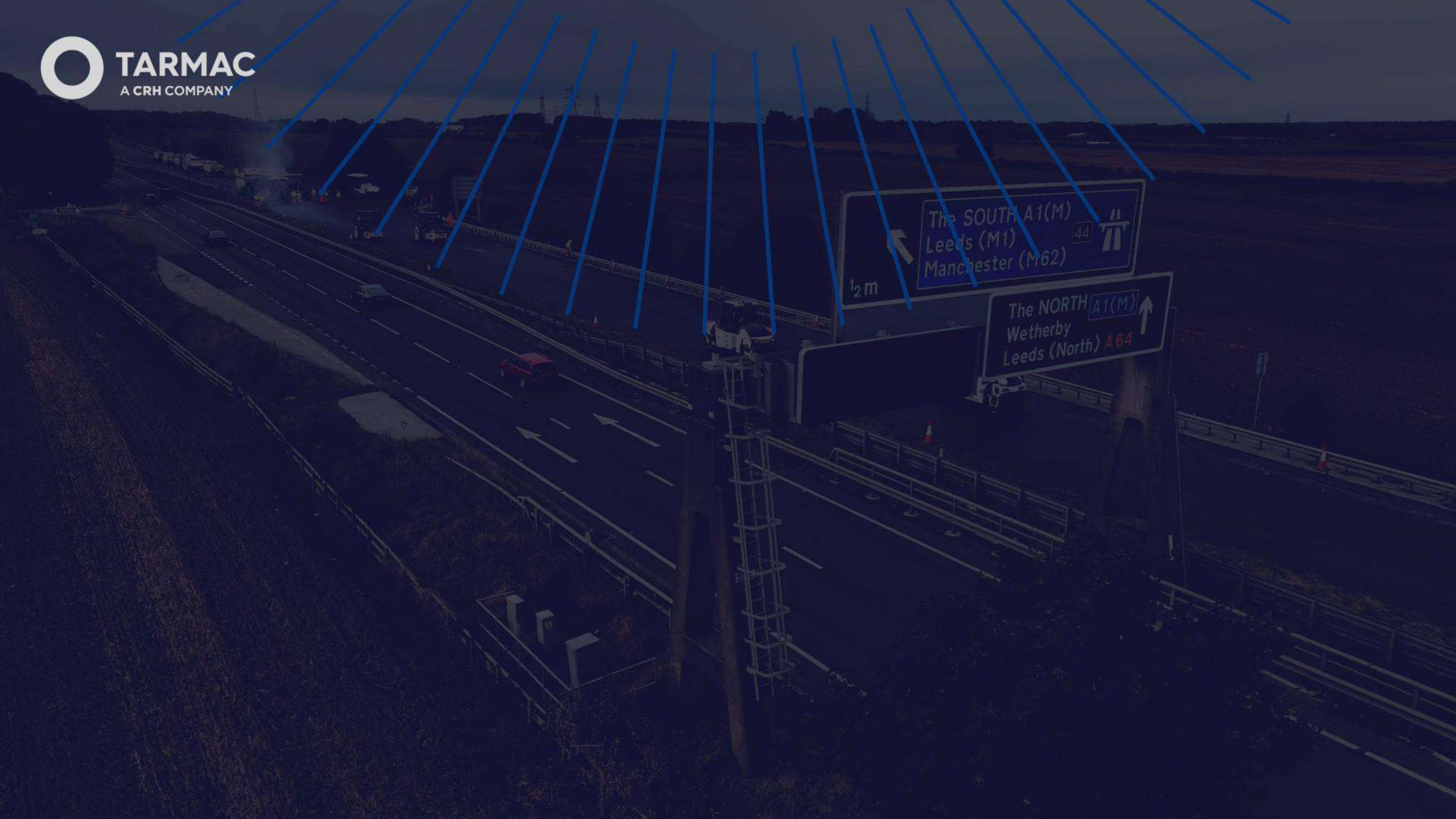
Project aims:
To build on the success of our **'Art of the possible'** solution to deliver performance improvement across **three initiatives**.

2.0 NetZero

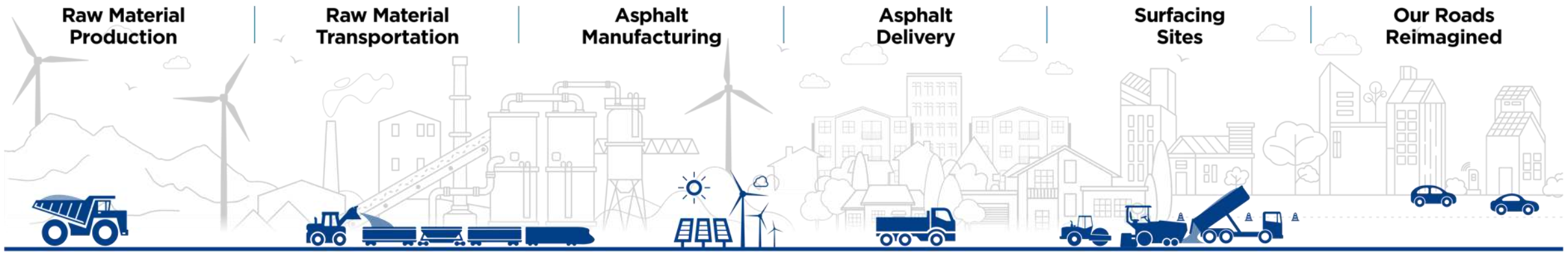


High Performance Pavements: Smoother Roads
Reducing in-use tyre rolling resistance, reducing fuel burn & carbon.

High Performance Pavements: Extended Pavement life
Reduced carbon through less maintenance interventions.


TARMAC
A CRH COMPANY
The SOUTH A1(M)
Leeds (M1)
Manchester (M62)
44
½ m
The NORTH A1(M)
Wetherby
Leeds (North) A64

Roads of the future | Ambition - Net Zero Road 2.0



Raw Material Production	Raw Material Transportation	Asphalt Manufacturing	Asphalt Delivery	Surfacing Sites	Our Roads Reimagined
Use of HVO in Mobile Plant	Aggregates by Rail	ACLA Low Carbon Aggregates	Asphalt Road HVO Blends	Surfacing Fleet HVO Blends	Industrialised Construction
Bio-Bitumen Scope 3 footprint	Bitumen transported with HVO Fuel	Gas Transition Multi-fuel burner to HVO	AI Distribution Intelligence	ePaver	Low CO_2
Use of HVO for RAP Processing	RAP & Filler reused at Asphalt Plant	Use of HVO in Mobile Plant		eBond coat sprayer	Material Science
		Minimised drying energy through use of low moisture aggregates		Longer life roads through echelon paving minimising joints	Digital Technology
		Use of Bio Bitumens, Long-life Bitumens and Bio WMA		PAVE low rolling resistance technologies (smoother roads)	Circular Economy
		Optimised RAP Content up to 40%			Water Management

Thank You