



Department
for Transport

ADEPT **LIVELABS2**
Decarbonising Local Roads



Centre of Excellence for Decarbonising Roads

An ADEPT Live Labs 2 programme



ADEPT

LIVELABS2
Decarbonising Local Roads

The Live Labs 2 Mission



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“Through deployments at demonstrable scale, we will achieve a step change in the normalisation and uptake of zero-carbon techniques, solutions and materials in the local roads realm - to meet the needs of today and prepare us for an uncertain tomorrow”

<https://www.adeptnet.org.uk/livelabs2>



SCAN ME

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LIVELABS2

Decarbonising Local Roads

Key statistics



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4 soft market sessions



3-year deployment



30 bids received



+ 5-year M&E



10 to Dragons' Den



7 labs, 4 themes,
>20 partners



7 to business case



£30m programme



ADEPT

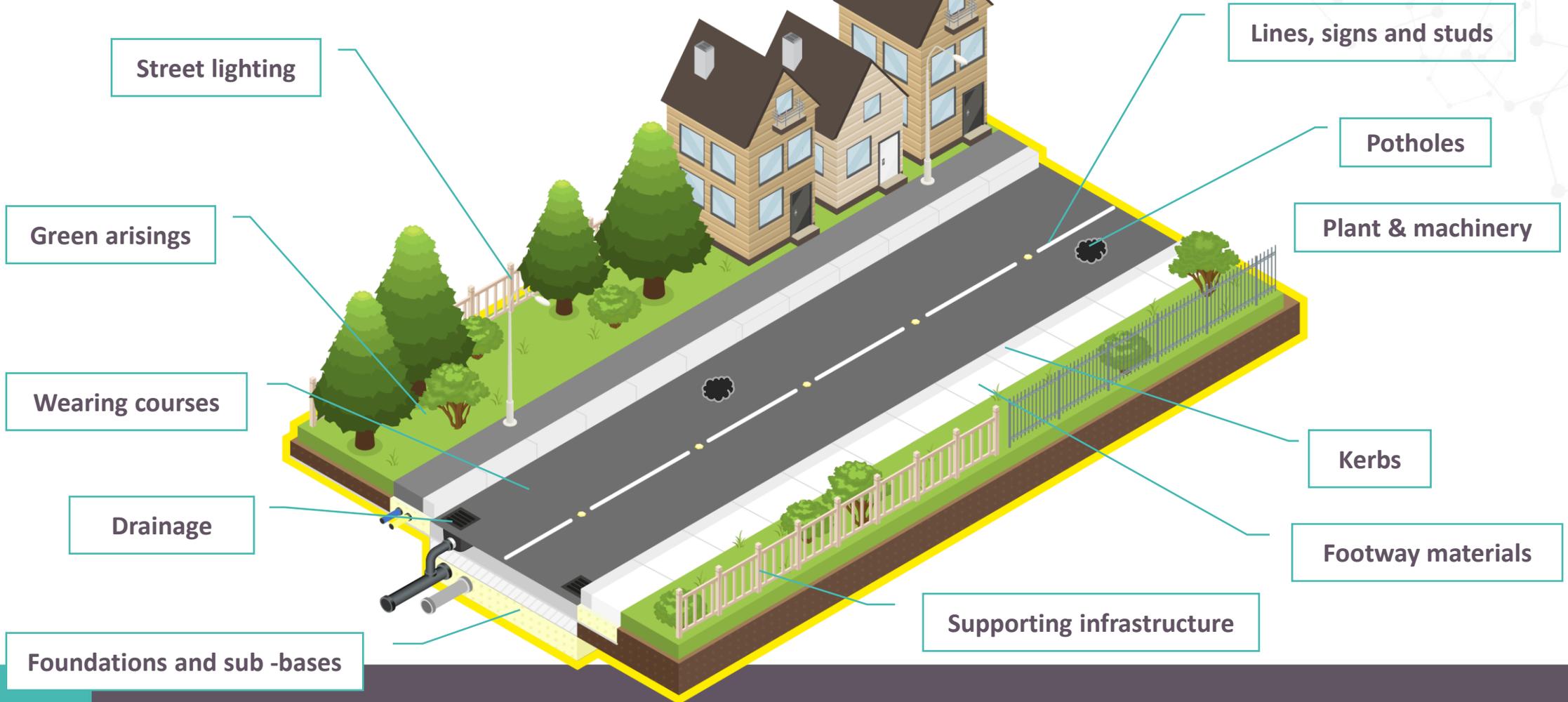
LIVELABS2

Decarbonising Local Roads

Systematic 'fence to fence' approach



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LIVELABS2

Decarbonising Local Roads

Four interconnected themes



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Green carbon laboratories



Hampshire
County Council



Somerset
Council



Liverpool
City Council

Corridors and places



Transport for
West Midlands



Centre(s) of excellence



EAST RIDING
OF YORKSHIRE COUNCIL

Future lighting testbed

Why a Centre of Excellence for material decarbonisation?

The transition to low carbon materials is critical for the sector to reach net-zero, but we are currently uncoordinated, siloed and slow to make change across LAs and the wider highways and local roads sector.

Challenges



Inherently high Co2 materials



Un-coordinated materials market and siloed working across LAs



Impending net-zero targets



75% of LAs have declared a climate emergency

Opportunities



Materials are the highest emitting area of our carbon footprint that is directly within our control



There is a wealth of best practice across the sector ready to be tapped into and shared

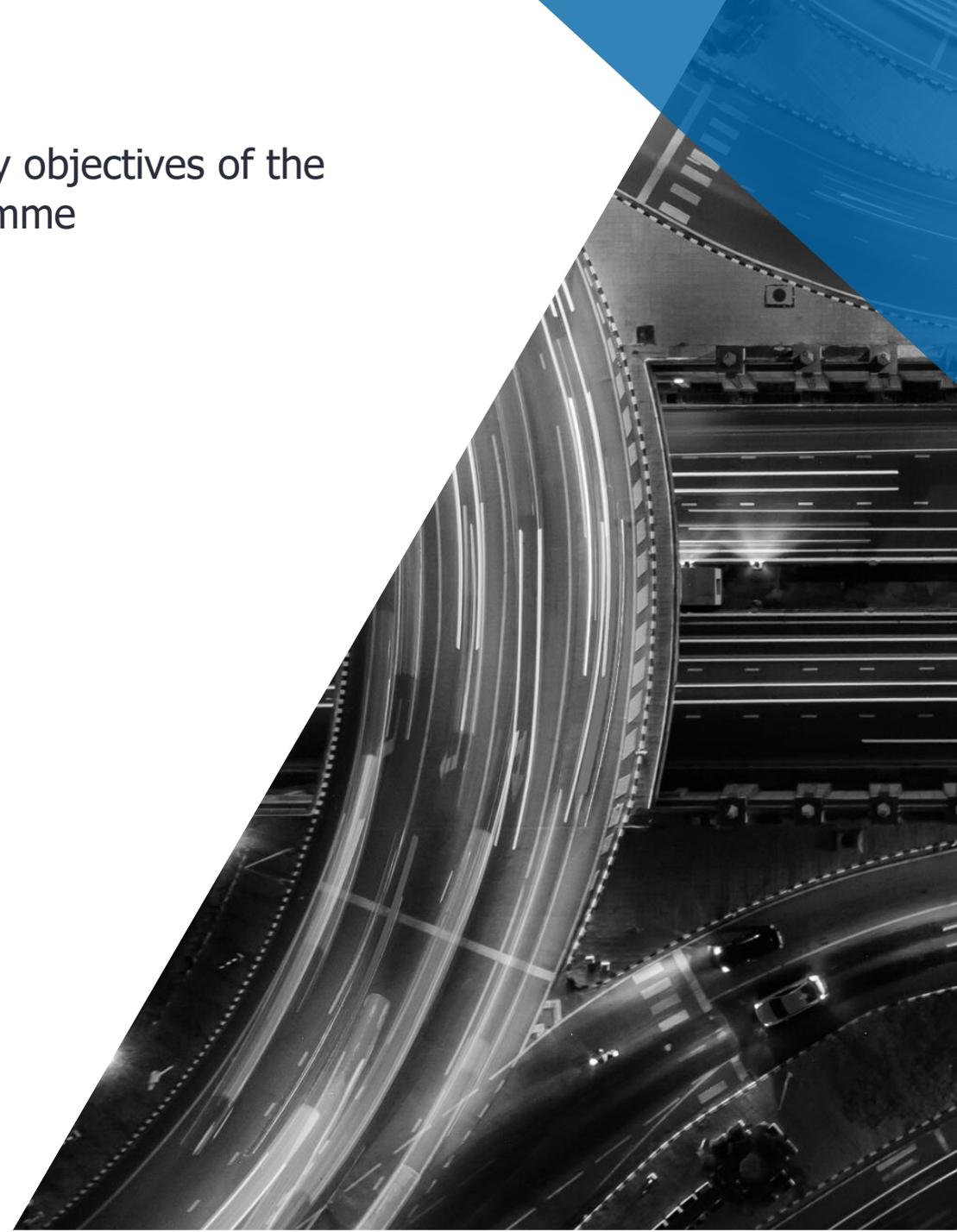
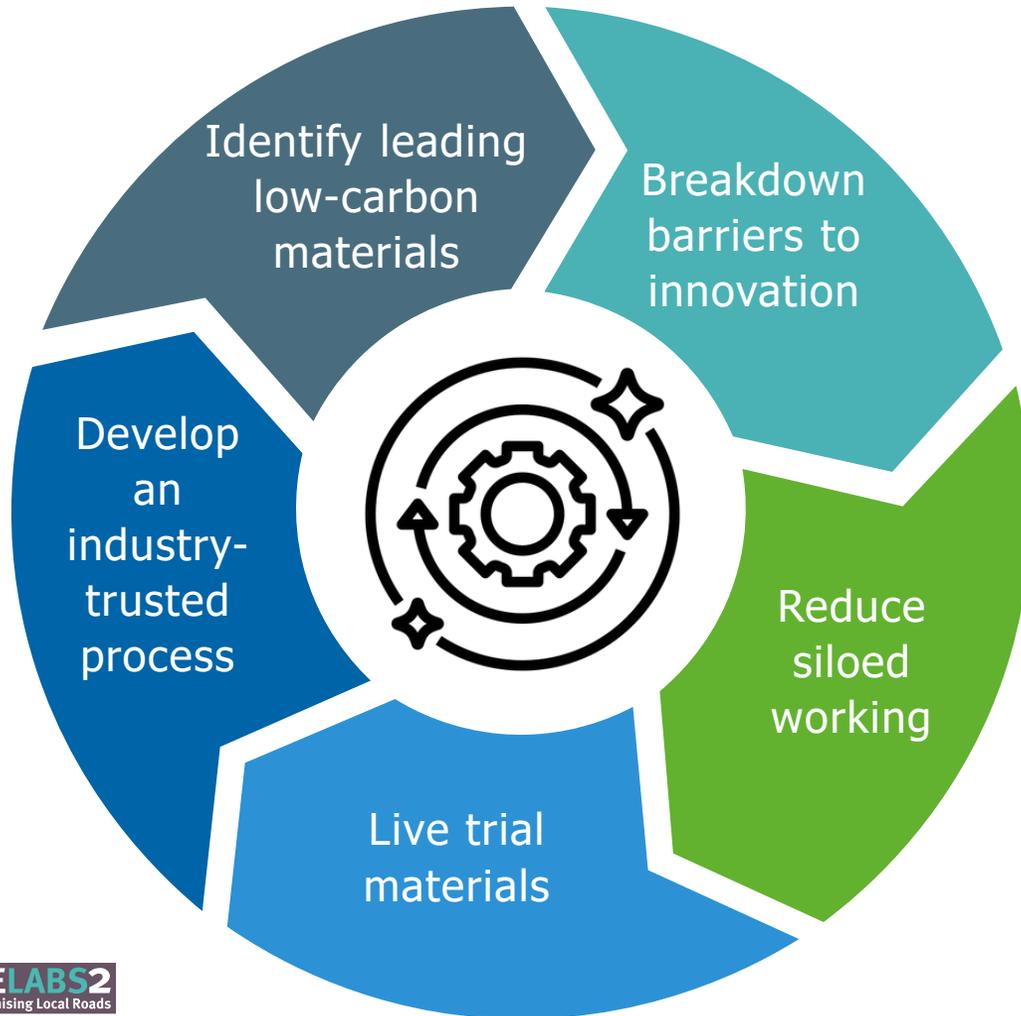


Live Labs can be a sector-wide springboard for low carbon materials adoption



Centre of Excellence for Decarbonising Roads

The key objectives of the
programme





Mission

Reduce the carbon emissions from road materials.

Objectives



Create an industry-trusted review process for evaluating materials.



Create a Centre of Excellence for low-carbon material innovations.



Develop a materials testing programme.

Strategy

Share knowledge across private, public and research sectors.

Reduce siloed working across local highways authorities.

Breakdown barriers to adopting low-carbon innovations.

Trial leading material innovations.

Identify leading innovations in highways materials.

Tactics

Expert Panel & Research Group

Digital Knowledge Bank

Comms Activities

Regulatory Sandbox

Skills Development

Behavioural Change

Lab Testing & Live Trials

Academic Support

Carbon Review & Evaluation

CPC Innovation Programme



Department for Transport



Transport for West Midlands

Amey



Two Campuses, One Programme

Programme Centre



Governance



Carbon Framework



Evaluation



Academic Partners



Project Management



Partnership Network, Knowledge Share & Scale

Two-way
information flow

Wider
Industry

Deliverables Key



Dual delivery



North Campus – North Lanarkshire

- Live Lab demonstrators
- Challenge-led innovation programme
- Carbon and technical review
- Material knowledge bank
- Innovation sandbox and behavioural change



South Campus – Transport for West Midlands

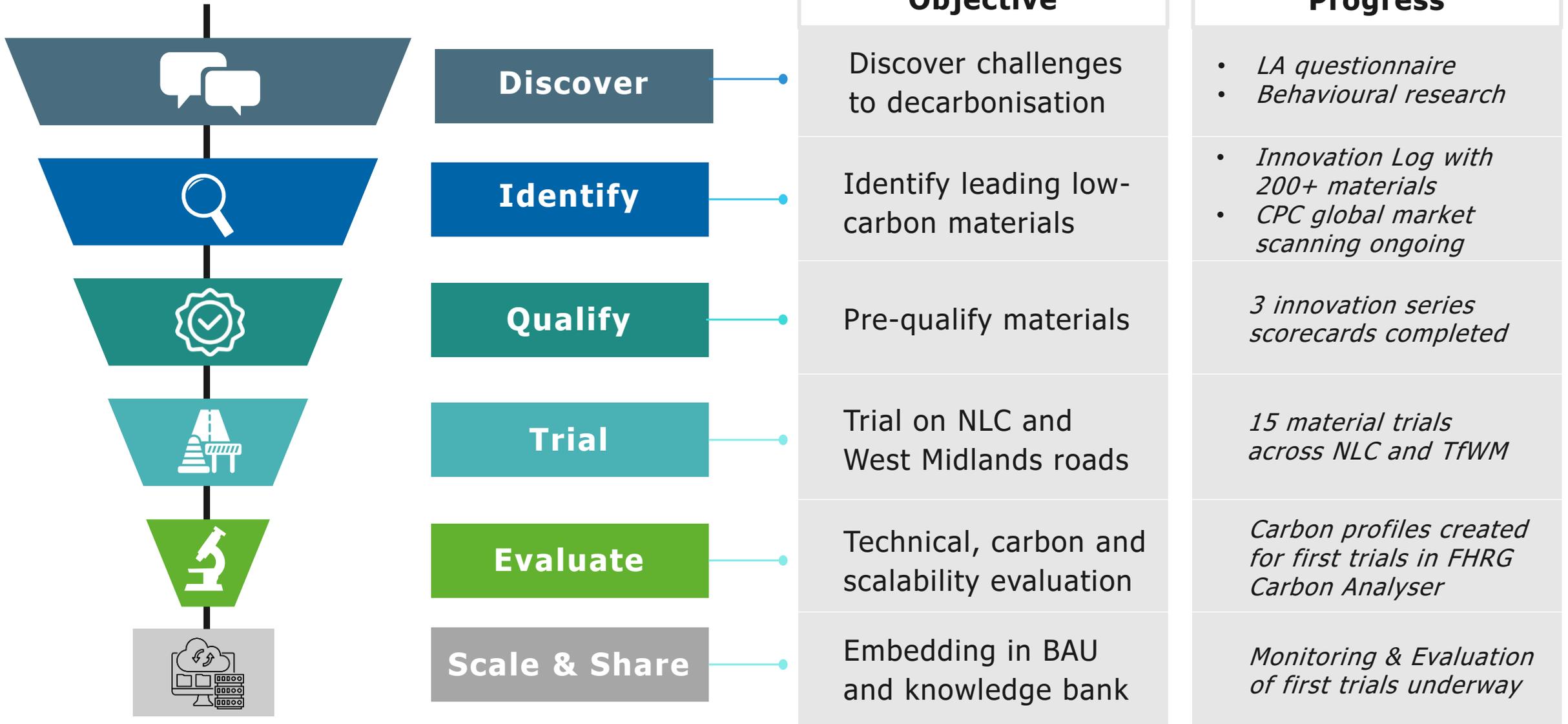
- Live Lab demonstrators
- Challenge-led innovation programme
- Carbon and technical review
- Skills development via Skills Academy
- Translation of specifications & standards

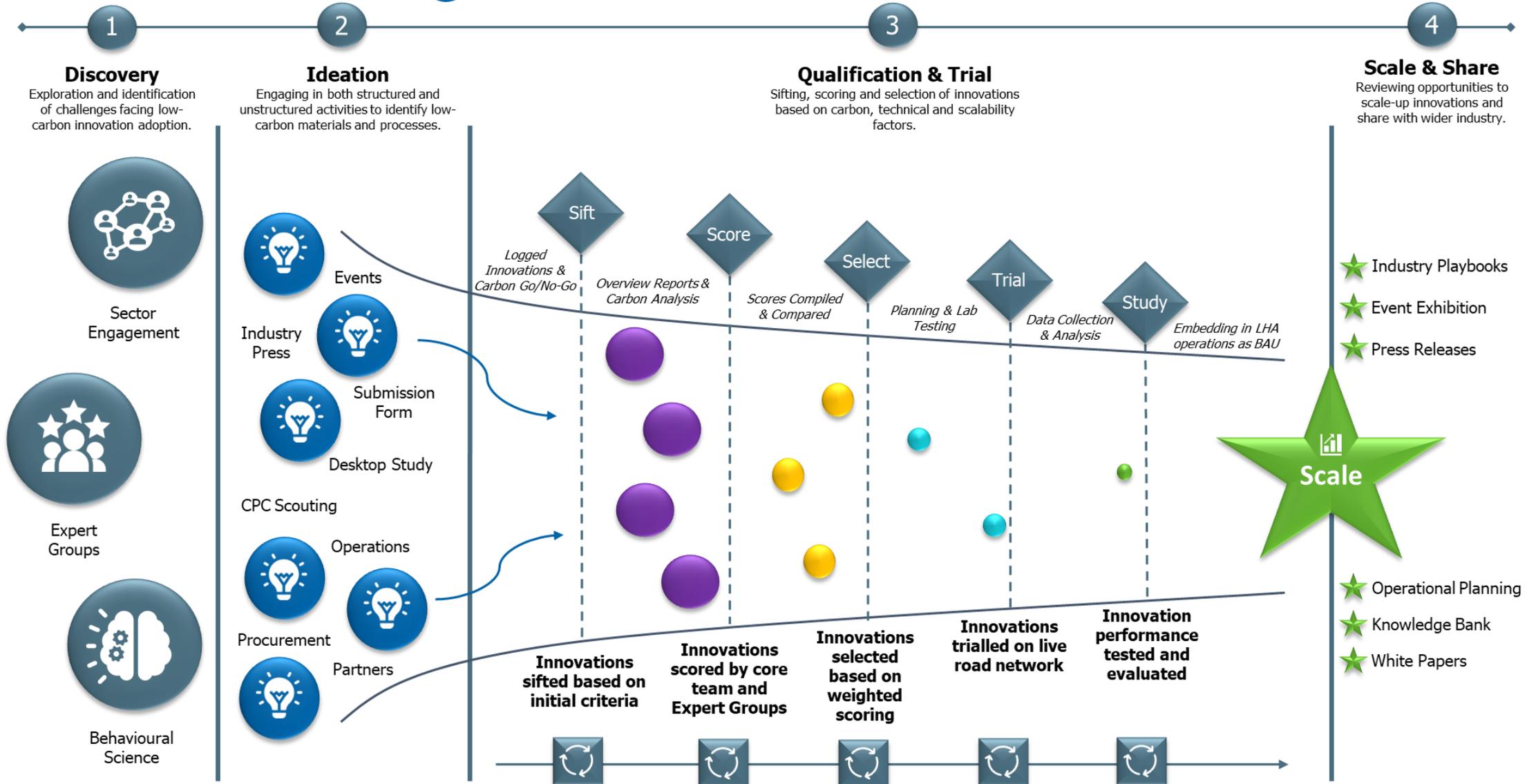
Our Partner Network

- Convening leaders from across the public, private and academic sectors to support the technical, carbon and strategic elements of the programme.
- Expert Research Group and Expert Advisory Panel



The Innovation Funnel





Case Study

Maintenance Materials

Identification & Sift

ID	Name	Material Type	Service Life	Material Type	Status	Supplier
162	Wohorm	Miscellaneous	Miscellaneous	De-icer/abrasive	Not reviewed	Procon
163	Sensocrete	1000 - Concrete/Asphalt	Concrete	Concrete additive	Not reviewed	SP Concrete
164	Minicrete	1000 - Concrete/Asphalt	Concrete	Concrete additive	Not reviewed	Minicrete
165	Buildit Concrete	1000 - Concrete/Asphalt	Concrete	Concrete additive	Not reviewed	Buildit
166	Debu-EnviroLite	1000 - Traffic Signs & Road Marking	Signage	Signage (D) Luminous	Not reviewed	Multiple Ltd
167	DEBOND	1000 - Traffic Signs & Road Marking	Signage	Sign Face	Not reviewed	SA Composites
168	Signal Print	1000 - Traffic Signs & Road Marking	Signage	Sign Face Printing Method	Not reviewed	Key Sign

Innovation Reports

Innovation Overview Report

Innovation: FM Conway Ltd

Overview of the Innovation: What kind of material, process and/or solution is it?

Problem Statement: Description of the innovation, description, evaluation and cost of... (text partially obscured)

Technical Case: A list and description of the key technical performance information for the innovation. This may include: (text partially obscured)

Business Case (if any): A brief description of the business model of the innovation, including: (text partially obscured)

Scoring

	1	2	3	4	5	6	7	8	9	10
1.00	1	2	3	4	5	6	7	8	9	10
2.00	1	2	3	4	5	6	7	8	9	10
3.00	1	2	3	4	5	6	7	8	9	10
4.00	1	2	3	4	5	6	7	8	9	10
5.00	1	2	3	4	5	6	7	8	9	10
6.00	1	2	3	4	5	6	7	8	9	10
7.00	1	2	3	4	5	6	7	8	9	10
8.00	1	2	3	4	5	6	7	8	9	10
9.00	1	2	3	4	5	6	7	8	9	10
10.00	1	2	3	4	5	6	7	8	9	10

Selection

Centre of Excellence for Decarbonising Roads

Innovation Matrix for Maintenance Materials

Material	1	2	3	4	5	6	7	8	9	10	Link to Evidence
1.00	3.6	3.0	2.6	2.8	3	4.2	3.2	3	3.1	1.3	Green
2.00	3.1	2.9	2.8	3.3	3	4.2	3.4	3	3	1.1	Green
3.00	4.3	3.6	3.2	3.4	4	4.5	4.2	3	4	1.9	Green
4.00	2.1	1.8	2.1	2.2	2	1.6	2	2	0.7	0.6	Red
5.00	1.8	1.5	1.2	1.3	1	1.4	1	1	0.2	0.1	Red
6.00	1.5	1.2	1	1.1	1	1.1	1	1	0.1	0.1	Red
7.00	1.2	1	0.8	0.9	0.8	0.8	0.8	0.8	0.1	0.1	Red
8.00	0.8	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.1	0.1	Red
9.00	0.6	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.1	0.1	Red
10.00	0.4	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.1	0.1	Red

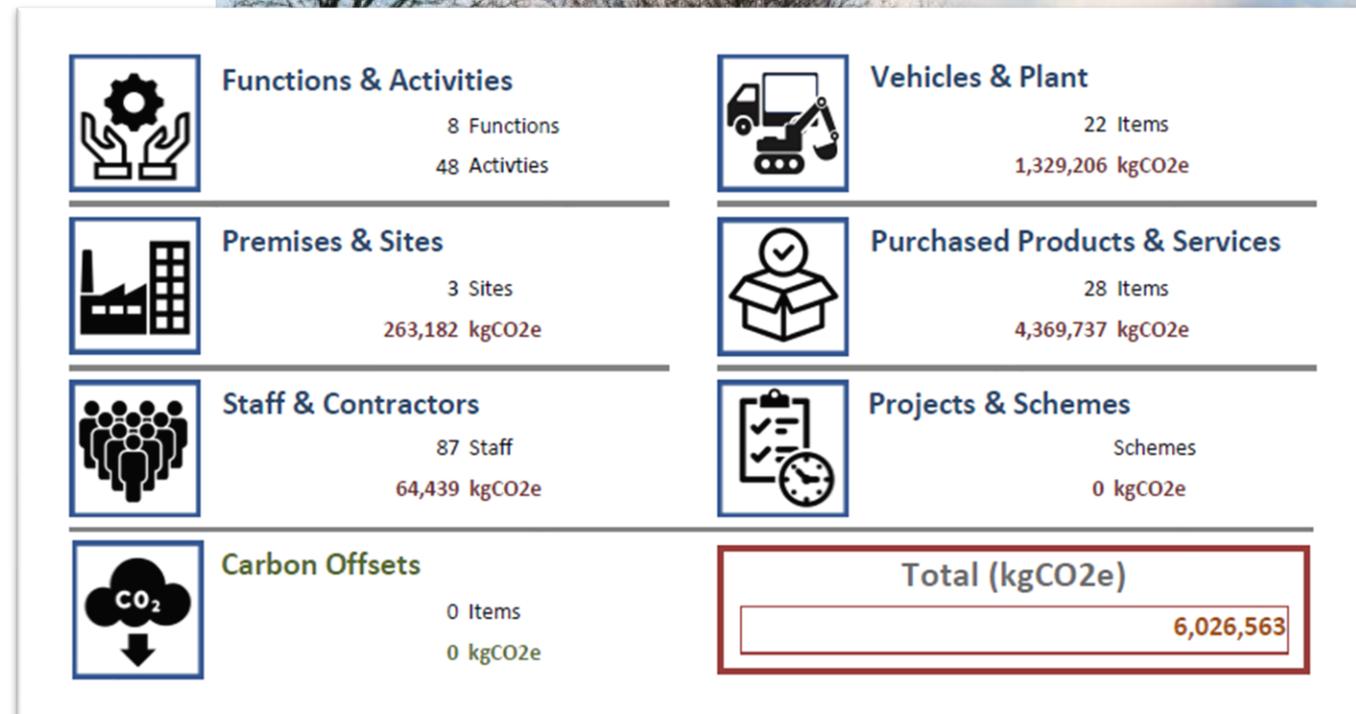
Our First Step: Carbon Baseline of NLC

Calculated for financial year 2022-2023 for all NLC local road services to baseline future carbon savings of the programme and identify carbon hotspots

Accounting for carbon emissions across Scopes 1, 2 and 3 for sites & premises, staff & contractors, vehicles & plant, and purchased products & services

Key insights:

Although material carbon is significant, energy transition will be necessary to significantly decarbonise



Key Results

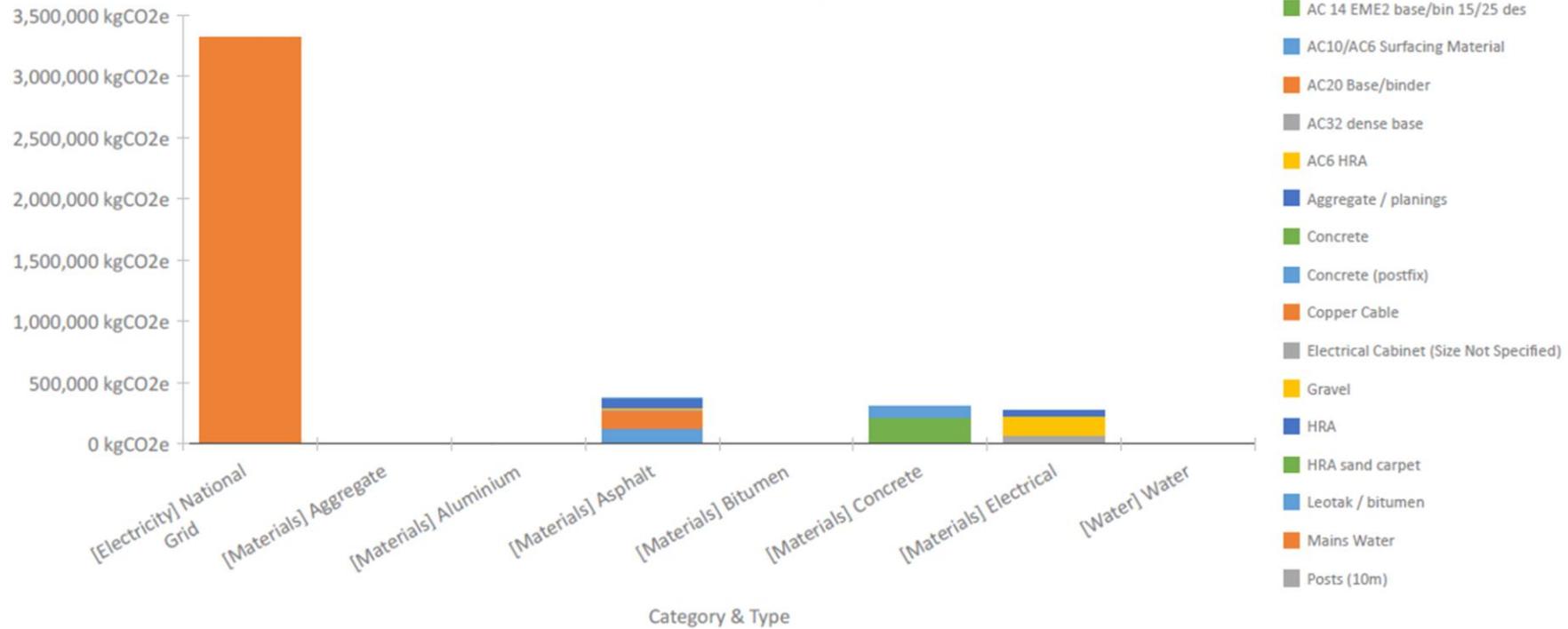
Dashboard Charts
North Lanarkshire Council

Service
Highways [2022]

Future Highways
Research Group



Emissions By Category & Type





Case Study

NLC Pothole Trials

Initial Results

Carbon: est. 37.5% saving for GreenPatch

Technical: expected increased longevity from 3 out of 4 materials

Next Steps

- Monitoring and evaluation of repair performance over the next 7 years
- Full carbon profiles in Carbon Analyser
- Transition to best performing materials as BAU in NLC

Approach



Materials Trialled

- Degafloor Degafill (MMA-based cold-mix)
- Roadmender Elastomac (mastic asphalt)
- FM Conway GreenPatch (cold-mix with RAP)
- Meon Permafyx (MMA-based cold-mix)



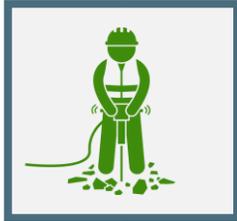
Trial Methods

- A, B, and C road sites in NLC
- 27-28th February and 11th – 12th April 2024
- Creation of 18 simulated potholes and 18 patches 2m apart on 'Amber' roads



Control and Benchmark

- Benchmark solutions: HRA and standard cold-mix material
- Applied on the same road, same size potholes, same operatives, and same weather



Operative Feedback

- Health & safety implications of hot-mix mastic asphalt
- Openness and interest in MMA solutions
- GreenPatch is a simple switch from BAU

Approach



Materials Trialled

- 13 materials and methods demonstrated, including the same materials as the North Campus, as well as Colpatch, Roadpatch, and Velocity Patching



Trial Methods

- A, B, C and old/new residential road sites across 6 combined authorities in West Midlands
- March 2024
- Tested on 'normal' potholes



Control and Benchmark

- Applied on similar road types, in similar weather, and with oversight from core team



Operative Feedback

- Difficulty with operational ease with some materials due to narrower conditions of use



Case Study

TfWM Pothole Trials

Next Steps

- Monitoring and evaluation of repair performance over the next 7 years
- Full carbon profiles in Carbon Analyser
- Transition to best performing materials as BAU in TfWM LAs

Initial Results

Carbon: est. 37.5% saving for GreenPatch

Behavioural Change

How we are leveraging behavioural science to design a fit-for-purpose knowledge bank

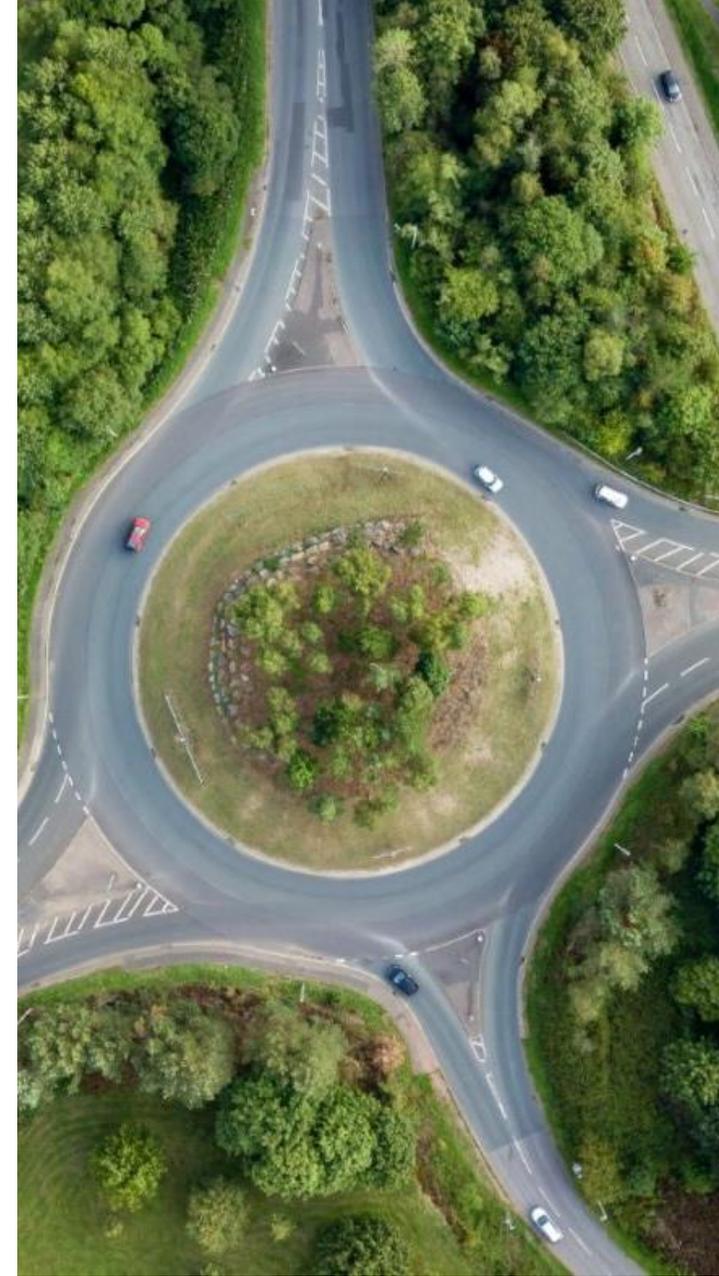
10 qualitative, end-user interviews held with LAs across Scotland and England

Identification of individual, social and material influences on LA behaviour when identifying and adopting material innovations

Operational, informational, organisational, and functional requirements identified for the knowledge bank development based on LA feedback

Full behavioural research report available on our website

 www.decarbonisingroads.co.uk



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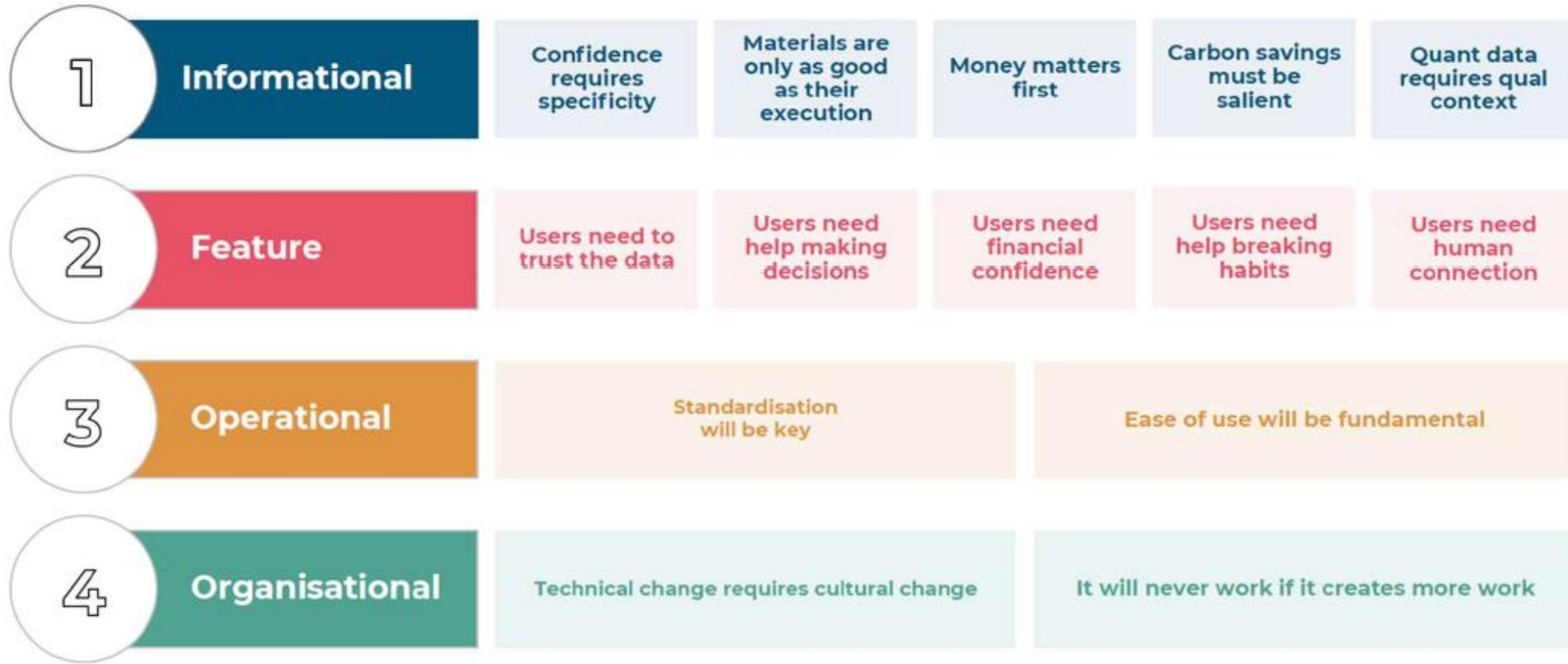


Transport for
West Midlands

Amey



End-User Requirements



Next Steps

Key milestones in 2024

Market Scanning & Trials

- Signage – signposts and signfaces
- Resurfacing & Surface treatments
 - Concrete solutions

Material Evaluations

Full carbon and technical evaluations of materials, with support from University of Nottingham, Aston University and FHRG

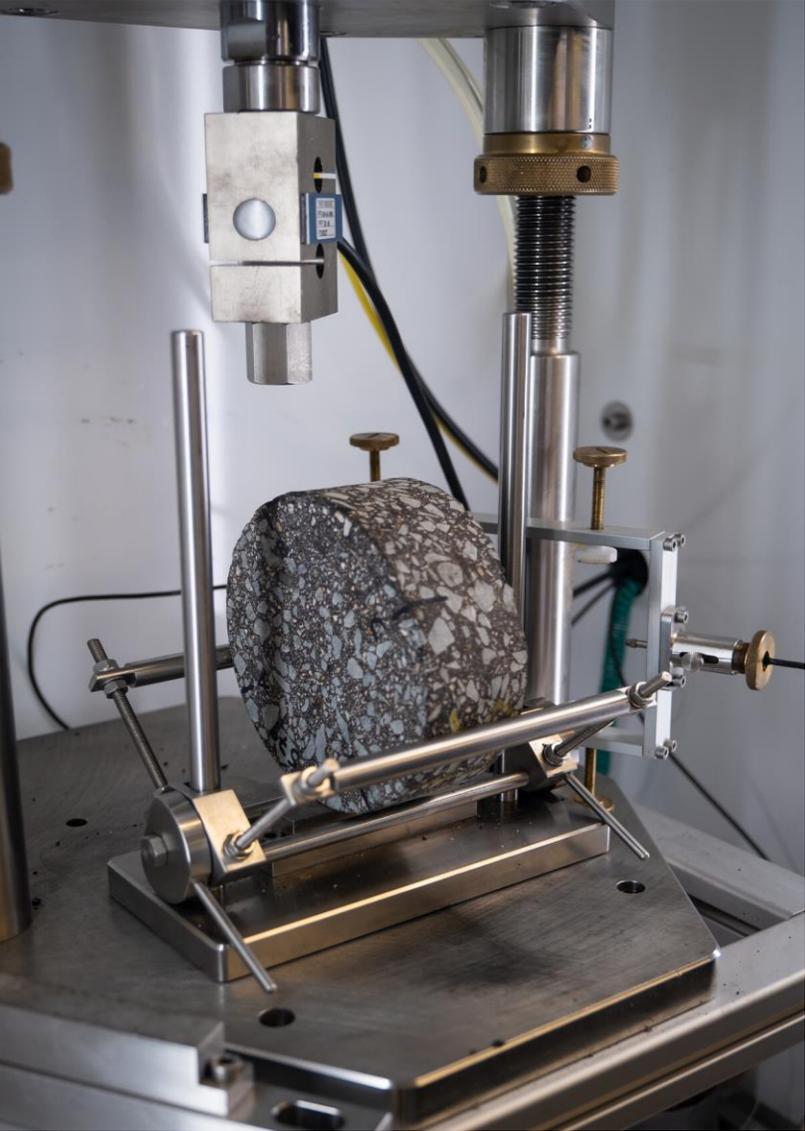
Industry Playbook

Creation of best practice and guidance for LAs to identify, trial and evaluate low-carbon materials, with support from Connected Places

Knowledge Bank

Launch of the knowledge bank at the end of 2024, ready for LAs to use

The Knowledge Bank



How Can You Get Involved?

Join the UK-wide movement to decarbonise road materials

▶ **Get in touch to partner with us**, share your innovation experiences and get first access to the knowledge bank

▶ **Share innovations for the materials testing programme**, gaining access to sector leaders and live trial sites

▶ **Complete our survey for local authorities** so we can provide the most value for the sector through our live trials

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 www.decarbonisingroads.co.uk