



Department
for Transport

ADEPT

Association of Directors of
Environment, Economy, Planning & Transport

ADEPT

LIVELABS2

Decarbonising Local Roads

Twitter: @adeptlivelabs

www.adeptnet.org.uk/livelabs

DfT Strategic Priorities



Grow & Level-Up the Economy



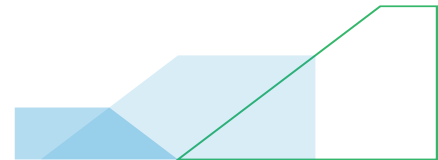
Reduce Environmental Impacts



Improve Transport for the User



Increase our Global Impact



Live Labs 1

Transport for the user

User-focused innovations
Innovations which work for all

TfWM: personas, network analysis
Suffolk, Bucks: adult social care sensors

Reducing environmental impacts

Decarbonisation (and more!) technologies
trials

Staffs: integrated mobility hubs
Central Beds: solar roads

Increase our global impact

Global market opportunities
UK as international exemplar

Cumbria: plastic road trials
Suffolk: adaptive lighting

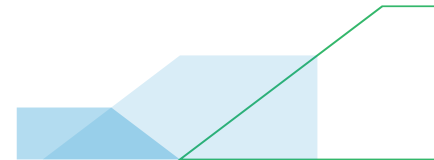
Levelling up and growth

Scalable innovation
Lessons learned and shared

Value for Money

LAs to focus on how to innovate to be more
effective with less resource

Kent: HADMS digital platform



Live Labs 2



Decarbonising the construction of new local road assets



Decarbonising local roads operations and maintenance



Decarbonising plant and machinery



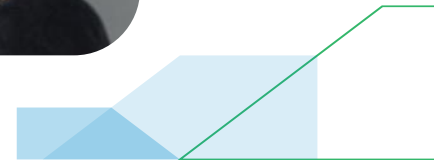
Decarbonising the local roads lifecycle



Decarbonising community environments



Baking in decarbonised resilience





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Decarbonising Local Roads

Live Labs 1 headlines



£23m fund



8 Live Labs



Activity in
over 115
locations



70
suppliers

4 core themes (plus an emerging theme)



Smart
Materials



Smart
Communications



Smart Energy



Smart Mobility



Smart
Environment
(emerging)

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LIVELABS2

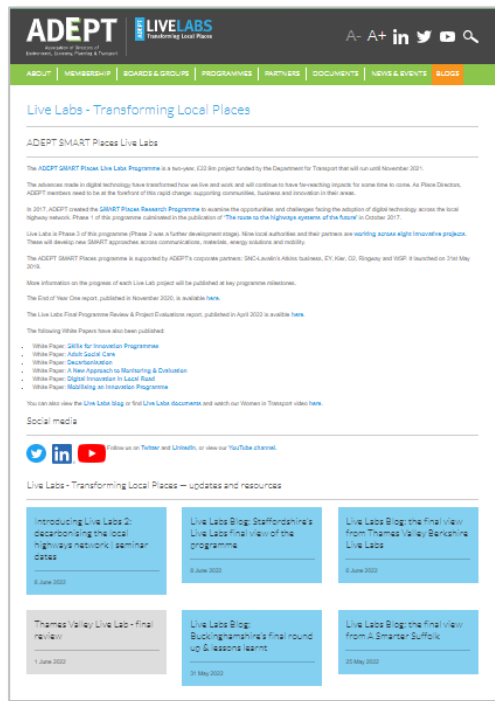
Decarbonising Local Roads



The Live Labs 1 cohort

- Cumbria
- Staffordshire
- West Midlands
- Central Bedfordshire
- Buckinghamshire
- Reading
- Suffolk
- Kent

ADEPT **LIVELABS2** Decarbonising Local Roads



Live Labs 1 information

- White Papers
- Live Lab Blogs
- News articles
- M&E reporting
- Final reports
- Events and Expos

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

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LIVELABS2

Decarbonising Local Roads

Live Labs 2

Decarbonising Local Roads

Market briefing June / July 2022, subject to change

Lifecycle impacts

The construction, renewal, adaptation and maintenance of our nation's local roads assets (£2bn per annum) make a **significant and ongoing contribution** to our greenhouse gas emissions, climate change impacts and future resilience through;

- Specifications, designs and operational models
- Materials choices, production, application and use
- Plant and equipment choices, duty cycles and their efficiency
- Energy generation and use over the whole lifecycle
- The extensive supply chains and their respective impacts
- The modification, repurposing, decommissioning and demolition of assets



The current position

- **Net-zero carbon is not currently a “Business as Usual” goal**
- **Little integrated baselining work has been undertaken** to understand current impacts
- **The methods for data measurement, capture and monitoring are varied**
- **Limited shared learning and collaboration**
- **The skills needed are in short supply.**
- **Duplicated effort across the sector.**
- **Opportunities are arguably being missed to learn from other sectors**
- **Carbon impacts are not understood** by decision makers and practitioners
- **UK plc may lag behind other nations** in achieving net-zero local infrastructure.
- Climate events are **impacting the resilience and availability** of our local roads



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LIVELABS2
Decarbonising Local Roads

Our mission

“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”

Live Labs 2 principles

- Focus on **net zero carbon outcomes** rather than (just) technical capabilities
- **Demonstrable and measurable carbon savings** and associated impacts
- Attention to a **specific need and / or problem** which is **commonplace elsewhere**
- **Improved customer experience and outcomes**
- **Improved network performance, reliability and resilience**
- **Improved maintenance regimes and revenue cost savings**
- **Minimised capital costs** through innovative deployment



Live Labs 2 principles (continued)

- Reduction in infrastructure / asset costs
- Ageing assets being replaced / supplemented by sustainable alternatives
- Active private sector and academic collaboration
- Delivery of wider **benefits within and outside the UK local roads** sector
- Creating an **open and interoperable** to create innovation eco-systems
- **Potential for scalability** to other locations across the UK and internationally



Live labs 2 realm

Scope 1	Direct emissions from owned or controlled sources.	<ul style="list-style-type: none">• Fuel combustion• Company vehicles• Fugitive emissions
Scope 2	Indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed	<ul style="list-style-type: none">• Purchased electricity, steam, heat and cooling
Scope 3	All other indirect emissions that occur in a company's value chain	<ul style="list-style-type: none">• Purchased goods and services• Business travel• Employee commuting• Waste disposal• Use of sold products• Transportation and distribution (up- and downstream)• Investments• Leased assets and franchises

Live Labs 2 will cover all three scopes.

It should be noted that **it will not include the decarbonisation of general vehicles and fleets using local highway networks BUT ONLY specialist plant, construction, operation and maintenance vehicles and their use cases**, which could also include automated / autonomous technologies which can clearly help deliver the required top level outcomes.

Live Labs 2 realm (continued)

- Implement Live Lab application(s) in **new settlements / developments, existing suburbs and towns including rural areas** in geographical / non geographical clusters (inc. cross nations) or linear corridors
- Use innovative, intelligent solutions to achieve a **step change in the zero-carbon performance** of all types and life-cycle aspects of local roads
- Consider tools, techniques and technologies to help **maximise resilience in our networks** covering the full breadth of climactic impacts
- **Encompass** new and recycled materials, pre-fabrication and modular design
- Support **anticipated technology changes and future network usage** such as electric and hydrogen fuels and associated energy infrastructure
- **Capitalise on digital technologies** and data capabilities
- Span **all use cases (people, logistics and freight)** on the network



Proposals should explore

- **Baselining, measurement and data surrounding the existing carbon impacts** of the local roads sector including PAS2080 Carbon Management in Infrastructure
- Links with **national carbon budget cycles** and the concept of a **local roads carbon budget approach**
- **Linkages with other highway adaption and carbon initiatives** to maximise learning and to avoid duplication (e.g. LGA, DfT, ADEPT / Proving Services Future Highways Research Group, TRIB, LCRIG)
- Links with **emerging contract and framework procurement cycles**
- **Links with other industries** including utility companies (which is important given their ongoing interface and interdependency with local roads) and rail-based modes
- **Circular economy opportunities** to achieve net-zero carbon through innovation across the whole lifecycle
- The **needs and differences between rural, inter-urban and urban networks**

Six broad themes



Decarbonising the construction of new local road assets



Decarbonising local roads operations and maintenance



Decarbonising plant and machinery



Decarbonising the local roads lifecycle



Decarbonising community environments



Baking in decarbonised resilience

Outcomes (not exhaustive)

- **Reduced carbon impacts**
- Reduced air quality impacts
- Reduced safety incidents and near-misses
- Reduced noise and vibration impacts
- Reduced operation / maintenance costs and whole-life cost reduction
- Reduced maintenance 'down time'
- Reduced instances of congestion and incidents
- Reduced waste to landfill / incineration
- Improved customer experience / perceptions
- Improved community experience / perceptions
- Improved citizen engagement
- Improved local skills and innovation base
- Improved network reliability and resilience
- Improved speed of delivery
- Improved recycling and second-life applications
- Optimisation of network assets and whole system performance



Our requirements of Live Labs

- **Carbon baselining** using established or novel tools (including covering Scope 3)
- **Supplementary baselining** to establish the existing position against which **future benefits can be assessed**
- **Continual Monitoring & Evaluation of the Live Lab and its constituent components** through engagement with our appointed M&E contractor, with quarterly reviews
- **Active engagement with the Live Labs 2 cohort**, comprising **monthly “stand-ups”** to report progress, share information and insights and to enable cross programme collaboration
- **Communications and marketing activities** to externalise insights, findings and learnings (**both positive and negative**) from the outset of the programme Monthly **marcomms “stand ups”** will be held at which attendance is required
- Produce **content for blogs, White Papers, news articles, conferences and events** as and when requested
- **Wide and deep stakeholder engagement** within and beyond the local roads sector
- **Interim progress and final reports** covering (as a minimum) technical approach and detail of the solutions
- **Ex-post business case including benefits, long term benefits realisation to BAU**
- **Dedicated programme management resources inc. for communications**



Proposals must demonstrate

- A **laser sharp focus on carbon reduction**
- **Behaviour change** within and beyond industry
- **Collaboration between local highways authorities and their term maintenance providers**
- Adoption of a **collaborative approach with sub-national and regional bodies**
- Active and positive **collaboration with other local highways authorities in the Live Labs 2 programme and with those who are shadowing and tracking**
- **Demonstration of true partnership** with ADEPT partner organisations, with the private sector (including manufacturers, property developers and other industries) and education (at all levels), research and academic sectors
- An **open approach to sharing learning / insights** with local highways authorities, DfT and wider industry in the UK and internationally.
- **Scalable proposals that demonstrate value for money, are innovation focused and** are directly relevant to other areas within the UK and beyond.
- **Showcase the best of UK innovation and its export potential.**



Using the theory of change

Background	Inputs	Outputs	Outcomes	Impacts
Live Labs overarching objectives	£30m funding (inc. programme mgt)	Ways of working	Structural change	Innovations in Scope 2 & 3
DfT strategic objectives	Commissioning Board	Monitoring & evaluation	Behavioural change	New BAUs
Background of innovation	Central support & direction	Technology	Successful Live Labs / components	SME route to market and share
Local Authority challenges	Comms support		Unsuccessful Live Labs / components	UK exemplar and jobs growth
	Events			Decrease in carbon, increased AQ and health benefits

£30m fund, 3 years+, 5 or 6 labs

Proposals that specifically address how funding will leverage further contributions and investment, particularly from the private sector (including in-kind contributions) and demonstrate how they will influence wider change will be judged as adding more value.

- **Term maintenance contractor contributions** in terms of agile methods of working, demonstrable cost saving techniques and commercialisation advice.
- **Developer contributions** such as innovative solutions to reduce local authority maintenance requirements, solutions to meet future zero-carbon and place led needs.
- **Industrial / commercial contributions** in the form of materials, products, data and skills to demonstrate innovation at scale.
- **Additionality with other funding streams** (housing, education, healthcare etc.) already secured through demonstrable influence on designs and outcomes and from previous funding rounds or competitions.
- **Innovation as part of potential invest-to save** net-zero use cases using 'Live Lab' solutions.



The Competition

- This **market briefing round**
- Finalise and publish **the prospectus**
- **Six week competition period (summer '22)**
- Opportunity for **1-2-1 advice**
- Light touch submission (approx. 12 sides of A4)
- **4 nations, local govt highways leads ONLY (LAs, CAs, STBs)**
- Down select for the Dragons Den
- **Dragon's Den presentations, Q&A and assessment**
- **Funded development of outline cases** to end March 2023 for successful Labs
- **April 2023 programme commencement** for final cohort



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Thank you

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