



# Strategic Transport Leadership Board

15 July 2022

## Agenda item 6: Innovation

### *Recommendation:*

**It is recommended that the Board:**

- a) Agrees the proposed approach to innovation set out in Annex 1.**
- b) Continues to provide guidance on the focus of the Innovation Working Group through board champion engagement.**

### **1. Purpose of report**

- 1.1. This paper provides an introduction to the report at Annex 1, developed in response to the Board's request for further detail on the EEH approach to supporting and enabling innovation in the EEH region.

### **2. Key points to note**

- 2.1. The EEH transport strategy identifies our ambition: To support sustainable growth and improve quality of life and wellbeing through a world-class, decarbonised transport system which harnesses the region's global expertise in technology and innovation to unlock new opportunities for residents and businesses, in a way that benefits the UK as a whole.
- 2.2. EEH has committed in the 2022/23 business plan to directly support the development of funding bids to UK Research and Innovation (UKRI), ADEPT and Department for Transport innovation funding streams. The allocated funding aims to support the development of three multi-authority funding bids in 2022/23.
- 2.3. EEH and our constituent partners are well connected to business, academia, and the Catapults, which facilitates the development of high-quality consortiums and innovative ideas, solutions and systems that support better connectivity in the region.
- 2.4. EEH business unit is refreshing the Innovation Working Group's terms of reference – this will be presented to the next group for its approval.

### **3. A proactive approach to innovation**

- 3.1. In May 2022, the EEH Strategic Transport Leadership Board tasked EEH with developing a more proactive approach to maximising innovation opportunities. It is proposed that this is developed in three ways:
  - Building effective, market led partnerships: While partnerships across the region already exist, EEH will review the effectiveness of current arrangements particularly in the context of the Board's ambition to deliver a mobility ecosystem that is fit for the future. EEH will work with LEPs, universities, Catapult(s) and businesses to ensure our own regional mobility and connectivity challenges are a driver for innovation in the supply chain.

- **Harnessing the opportunity to trial new solutions:** As a centre of innovation in the UK, EEH will seek to harness the opportunity to trial and demonstrate new solutions and in doing so, maximising the opportunity of leveraging R&D funding available to the region. We will do this through shared funding opportunities, innovation partnerships and developing scalable propositions.
- **Thought Leadership and Sector Opportunity:** As a partnership of local authorities, working closely with government, EEH will use our position to boost the profile of the region's innovation sector. Through ministerial and MP engagement, national and regional events and sector profiling, EEH will work with businesses, universities and local partnerships to maximise the opportunities available to the region's future mobility sector.

#### **4. Next steps**

- 4.1. Following board comment and approval of the proposed approach, EEH officers will meet with the board champion for further discussion and commit to regular updates to the transport officers group and Board.
- 4.2. EEH will continue to investigate the development of an memorandum of understanding with the Connected Places Catapult and strive to develop a closer working relationships with private sector mobility innovation community in the region.

**James Golding-Graham**

**Innovation and decarbonisation manager**

**July 2022**



# Annex 1

## EEH: Enabling Innovation

July 2022

### Background

England's Economic Heartland's transport strategy recognises the unique nature of the region and committed to "harness the opportunity created by the Heartland being a centre for science and technology-based innovation".

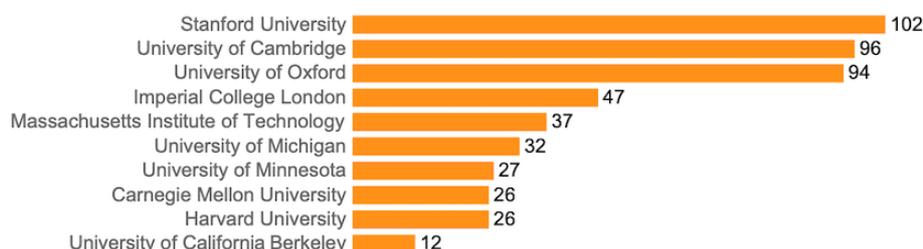
The strategy's vision, based on feedback captured through consultation and engagement places innovation at the centre of the way we should plan and deliver transport in the future, stating: "To support sustainable growth and improve quality of life and wellbeing through a world-class, decarbonised transport system which harnesses the region's global expertise in technology and innovation to unlock new opportunities for residents and businesses, in a way that benefits the UK as a whole".

### Innovation in the region

The region is home to many knowledge intensive industries that form a key part of the economy. The National Infrastructure Commission (SQW 2017 report) identified four main clusters: the greater Oxford area with strengths in bioscience and high-tech engineering through the Harwell campus; high performance engineering centered on Silverstone with links to Milton Keynes, Cranfield and Northampton; food tech around Bedford and the Ivel Valley; and bioscience, pharmaceuticals and digital across greater Cambridge, benefiting from the universities and well-established science parks.

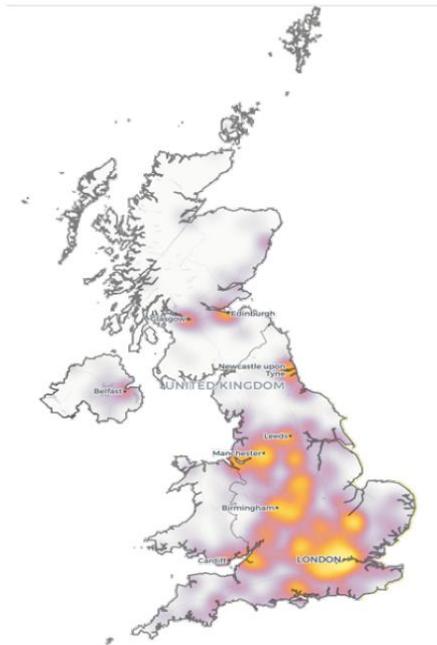
In 2015/16, Cambridge generated over 19 times the national average of patent applications. Oxfordshire, Milton Keynes, and Hertfordshire also significantly out-perform the rest of the country. In a recent Centre for Cities report, Oxford and Cambridge were the only two UK cities in the European top 20 recognised for work in promoting innovation.

Cambridge and Oxford universities are globally significant centres of innovation and develop many successful 'spinout' companies. EEH and our authority partners are well placed to benefit from this success.



### Top universities by capital raised by their spinouts 2017

Business expenditure on innovation is the highest in the country (2013-2018) and the region has successfully applied for and received a significant percentage of UKRI funding (see heat map below).



Source: BEIS analysis using UKRI funding data

## Maximising the Opportunity for Innovation

Harnessing the potential of the innovation sector in the region levers opportunities by maximising the application of new solutions and businesses that will deliver improved connectivity not just for the region but for the UK. At the same time, the value and opportunity of innovation clusters is significant, reinforcing the significance of the region as a global player.

To lever these opportunities, EEH works across a number of groups and partnerships, including the Innovation Working Group (partner-led) and the ARC Future of Mobility group as well engaging with Catapults and the wider STB community.

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### **Building effective, market led partnerships**

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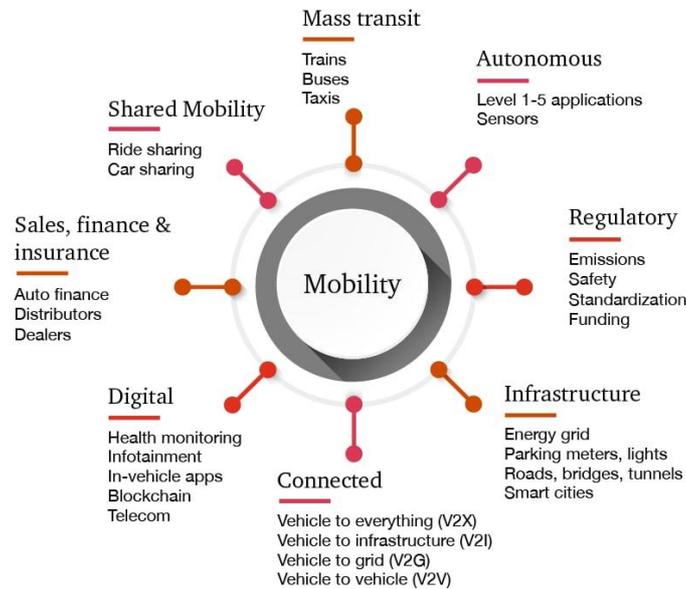
### **Thought Leadership and Sector Opportunity**

As a partnership of local authorities, working closely with government, EEH will use our position to boost the profile of the region’s innovation sector. Through ministerial and MP engagement, national and regional events and sector profiling, EEH will work with businesses, universities and local partnerships to maximise the opportunities available to the region’s future mobility sector.



## Delivering a Mobility ecosystem that's fit for the future

It's important to define what we mean when we talk about innovation and innovation in mobility. The scale and breadth of the mobility innovation ecosystem is significant and will play a notable role not just in delivering better connectivity but also in shaping our places, enabling growth, and delivering economic success.



Central to our approach is understanding when mass market adoption of these technologies may come about and how we can address market failure. Forecasting is always difficult, and dates should be considered advisory.

Human behaviour and our appetite for the adoption of new ideas and our ability to rapidly alter and change behaviours can often take government by surprise.

We have seen rapid growth in the electric vehicle (EV) sector for example (14% of vehicles sold so far in 2022 are plug-ins). This rapid uptake has resulted in a perceived lack of EV charging infrastructure.

## Likely dates for wide scaled adoption of mobility enabling technologies



| Technology                           | 2025       | 2030             | 2040       | Notes and references   |
|--------------------------------------|------------|------------------|------------|--|
| Electric cars                        | Emerging   | Widespread       | Widespread | Element Energy (2013)  |
| Level 4 passenger vehicle automation | Niche      | Emerging         | Widespread | (Underwood, 2014); (Automotive Council UK and Advanced Propulsion Centre, 2017)  |
| Level 5 passenger vehicle automation | Developing | Niche            | Widespread | (Automotive Council UK and Advanced Propulsion Centre, 2017; London Assembly, 2018) Contrarily some claim L5 is unachievable (Wolmar, 2018)  |
| Electric LGVs/vans                   | Emerging   | Widespread       | Widespread | Element Energy (2013)  |
| Electric HGVs                        | Niche      | Emerging         | Emerging   | <15 tonnes (Heid et al., 2017)   |
| Level 4 truck automation             | Developing | Niche            | Widespread | (International Transport Forum, 2017a)   |
| Level 5 truck automation             | Developing | Developing/Niche | Emerging   | 2042 self-driving trucks common (Transport Topics, 2017); 2035 (Frisoni et al., 2016)  |
| Truck platoons                       | Niche      | Emerging         | Widespread | Truck Platoons 2021-2030 (Frost and Sullivan, 2016); 2022 (European Automobile Manufacturers Association, 2017); truck platooning on highways 2025-2030 (Frost and Sullivan, 2015; Underwood, 2014)                      |
| Flying cars                          | Developing | Niche            | Emerging   | 2035, wider commercial applications (Frost and Sullivan, 2017a)  |
| Delivery drones                      | Niche      | Emerging         | Widespread | (Walker, 2017)   |
| Droids (ground-based drones)         | Niche      | Emerging         | Widespread | (Yole Développement, 2016)   |
| Hyperloop                            | Developing | Niche            | Niche      | 2030 first scheduled to complete in Saudi Arabia (Virgin, 2018); Dubai 2022 (Reuters, 2017)  |
| Autonomous underground trains        | Niche      | Niche            | Emerging   | London 2030 (Beard, 2014); although technically possible since 1967 Victoria line (Preston, 2017)  |
| Autonomous overground trains         | Niche      | Niche            | Emerging   | 1980s, DLR/Vancouver sky train for metros; 2022-2024 in France (Atelier BNP Paribas, 2017); currently semi-autonomous on Victoria, Central, Northern and Jubilee lines (Verdict, 2017); 2023 in France (Tarantola, 2017) |
| Autonomous freight trains            | Niche      | Niche            | Emerging   | Already used in Australia (Thompson, 2017; Railway Gazette, 2017; BBC, 2018a)  |

The UK population is expected to reach nearly 73 million by 2040 (ONS). Our population is ageing: Over 80% of population growth to 2041 will be in the over-65 age group, with the number of people over 85 almost doubling from 1.6 million in 2016 to 3.2 million in 2041 (ONS). Where these people live will also alter; there will be continued urbanisation, as cities grow to accommodate an increasing proportion of the population.

Rural transport provision may struggle to meet the demands of an ageing population. Left to the market, new mobility services will tend to operate in more densely populated areas. This could leave some people underserved or priced out and may exacerbate problems with accessibility in rural areas and small towns.

These national trends will occur within a changing global picture. Climate change will place increasing pressure on the natural environment. The UK will become a lower-carbon economy, with a target to reach net zero by 2050, relative to 1990 levels. There will also be a shift in global economic power and trading relations. Emerging economies are growing rapidly, decreasing the dominance of today's developed nations.

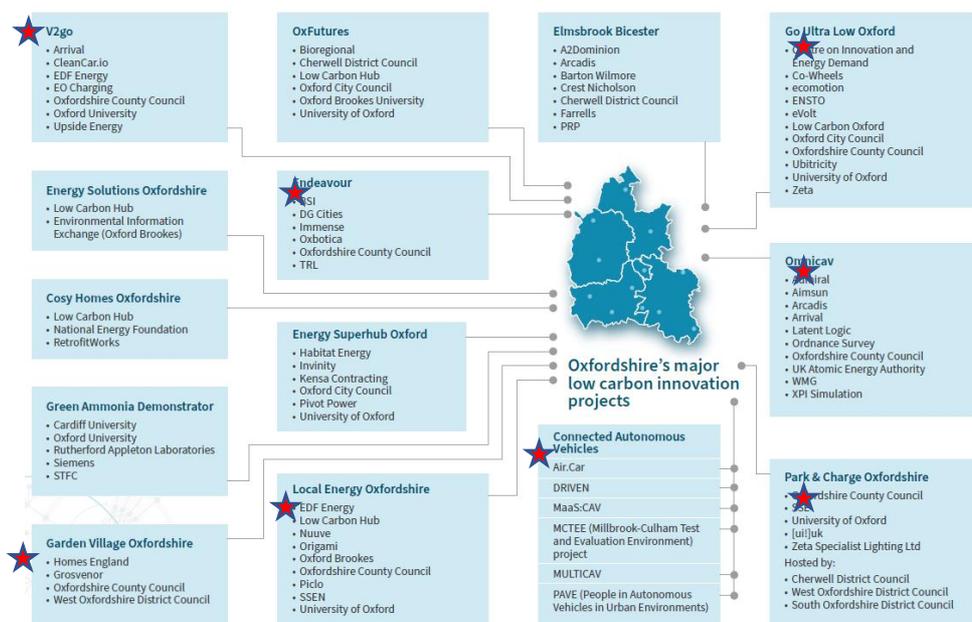
Many of these trends will affect the transport and mobility sector. New trends, business models and innovative technologies offer potential solutions to some of the challenges we face. Some are more likely to succeed in higher-density areas, or in areas with younger populations, and these could be targeted for roll-out. Others, such as remote-working technologies or diversifying land use, if shaped and implemented carefully, could reduce the overall travel demand.

Innovation and the enablement of innovation plays a part in all these scenarios. However, the extent of the scale and ambition of deployment and the level of influence and involvement of local agencies and government in facilitating and shaping how and where it is supported will inevitably shape the future that comes to pass.

## Successes and blockers to collaboration

Many EEH authorities have been successful in developing strong committed partnerships with innovators in the mobility sector.

Oxfordshire County Council have since 2014, been actively engaged with its universities', local SMEs and corporates, supporting the testing, and trailing of new technology and mobility and energy solutions. With a focus on developing real word demonstrators, Oxfordshire has successfully participated in projects with a total funding value (all partners) of around £150 million, with income of around £12 million into the council and project partners.

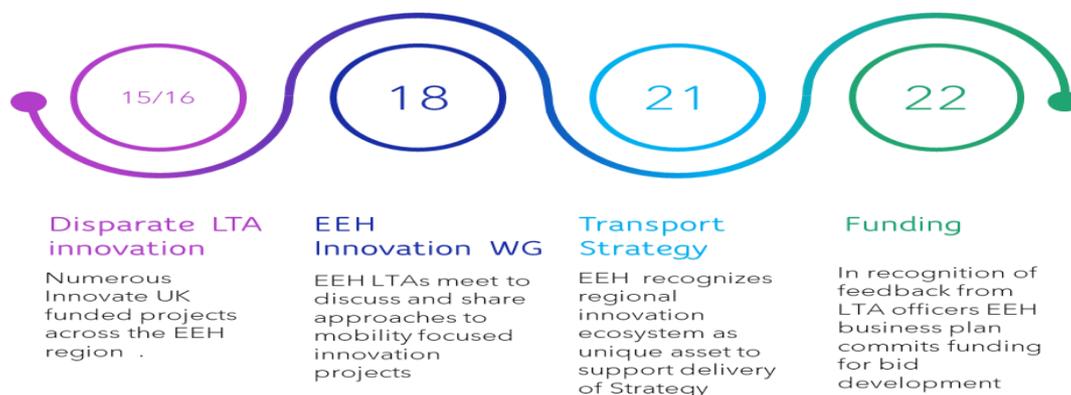


Whilst there has been significant work undertaken by several authorities, more can be achieved. Almost all innovation funding allocated to consortiums containing authorities in the EEH region has focused on delivery/demonstration in a single locality. The opportunity to scale deployment at a regional level is significant.

Other STBs and economic areas take this approach. Midlands Connect/Transport for the West Midlands and Transport for the North have successfully developed consortiums that are addressing challenges (hydrogen/ wider energy systems) and delivering outcomes for their authorities and economy.

## EEH Innovation support timeline





Through engagement with the Innovation Working Group, EEH identified a number of key pain points that delay or deter officers from collaborating across local authority boundaries.

- The competitive nature of UKRI funding
- Identification of collective, region scale challenges
- Experience / familiarity with UKRI application process
- Resources/ time/ cost to bid
- Relevant connections to government of SMEs
- Delays to internal approval process

To address this EEH has committed to provide funding to support authorities in the bidding process. Several specialist funding/bid management consultancies (and increasingly tier 1 providers and SMEs) offer this service – providing project and stakeholder management and bid writing services. This removes several of the core barriers to collaborative bid development, reduces risk and burden for EEH authority partners.

## Why now – Government commitment to funding

Government spending commitments have significantly increased the scale of the opportunity. The £39.8 billion R&D budget for 2022-2025 will help deliver the government's Innovation Strategy and drive forward ambitions as a science superpower.

The research and development budget, worth £39.8 billion, has been allocated across the Department for Business, Energy and Industrial Strategy's partner organisations.

The 2022 Spending Review committed record levels of investment over the next three years, with R&D spending set to increase by £5 billion to £20 billion per annum by 2024-2025. This is a 33% increase in spending over the current parliament by 2024-2025 – supporting the commitment to ensure total R&D spending reaches 2.4% of GDP by 2027.

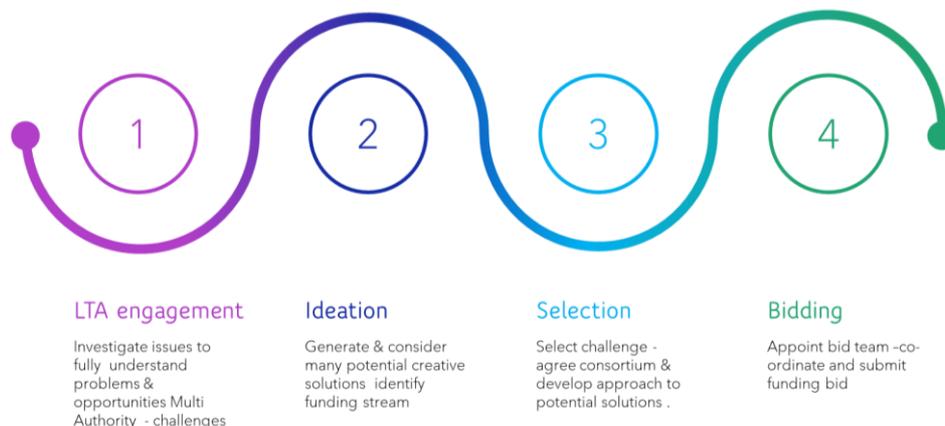
A significant proportion of the budget has been allocated to UK Research & Innovation (UKRI), which will receive over £25 billion across the next three years, reaching over £8.8 billion in 2024-2025. This will include an increase in funding for core Innovate UK programmes by 66% to £1.1 billion in 2024-2025, helping connect companies to the capital, skills and connections they need to innovate and grow.

Sir Patrick Vallance and Lord Browne who co-chair the Council for Science and Technology make several core recommendations key to local authority partners. Specifically, 'to increase public sector R&D funding of late-stage research and development, and implementation, not at the expense of pure or early-stage research but in addition to it. This will be critical to stimulate private sector investment and to get the most out of our truly excellent science base'.



This points to a clear route for local transport authorities to access funding for innovation and support the deployment of innovative mobility and connectivity solutions in the region.

## Next steps



The EEH Innovation Working Group will meet with a new Chair in place in July 22. This will be the first meeting for nearly six months and marks a refreshed approach for the group and welcomes new officer representatives.

EEH is developing terms of reference for the Innovation Working Group which will set out the model for the operation of the group, membership, governance and crucially, a framework for identifying common challenges and the conditions associated with the provision of funding for bid development and/or the commissioning of discrete research benefiting multiple authorities and facilitating innovation in the region's mobility ecosystem.

The Innovation Working Group will agree a prioritisation matrix ensuring that all proposals are given fair consideration for funding. In practice this means projects/ideas that support feasibility studies/innovation/piloting in more than one EEH authority and directly support transport strategy outcomes will be looked upon more favourably.

A Board Champion will be appointed by the EEH Chair who will report back to the board on challenges, opportunities, and blockers to developing funding bids that address the region's mobility challenges.

Further work will be undertaken to engage the Catapults to support EEH's aims and deliver tangible outcomes for the region. We will continue to explore all avenues including the development of regionally focused innovation challenges with partners from across the economy accelerating the delivery of the EEH transport Strategy.