

# Recovery and Renewal of the Sheffield City Region

## A New Model for Economic & Social Transformation

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Led by:



The  
University  
Of  
Sheffield.

**Sheffield  
Hallam  
University**  
Knowledge Applied



Sheffield Teaching Hospitals  
NHS Foundation Trust

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# A New Model for Economic & Social Transformation

The UK economy is at a crossroads. We need to drive long-term productivity growth by supporting new investments in technology and sustainability. And we need to do so in a way which supports the levelling up agenda, particularly for people and parts of the country that have historically not benefitted from economic growth. Moreover, the COVID-19 pandemic has brought to the fore the extent to which health and economic success are inextricably linked. In short, we need a new model for transformation – one that applies research and innovation to the most urgent problems and opportunities our country faces today, and one which links people to these opportunities.

As leading anchor institutions in our region, we set out a **£316 million programme** that will deliver **£1.6bn of increased Gross Value Added (GVA)**, as well as scaling up existing and catalysing new R&D intensive high-value clusters, and creating thousands of high-skilled employment opportunities. This is a shovel-ready submission. We are able to deliver the capital investments within the next three years and all of the revenue-funded programmes within the next five years, leading to a long-term transformation of our region. By providing improved skills training and business support, we will ensure residents and businesses in the City Region will benefit and prosper.

## This new model will:



Use **well-established research and innovation strengths** as catalysts for levelling up, improving population health, and enabling the economy to build back better



**Transform the skills base for the advanced economy** - boosting productivity and driving economic growth



**Tackle entrenched social and health challenges** to ensure the benefits of growth are felt by all – helping our region to level up



**Find answers to pressing environmental questions**, helping the UK to achieve net zero carbon emissions by 2050

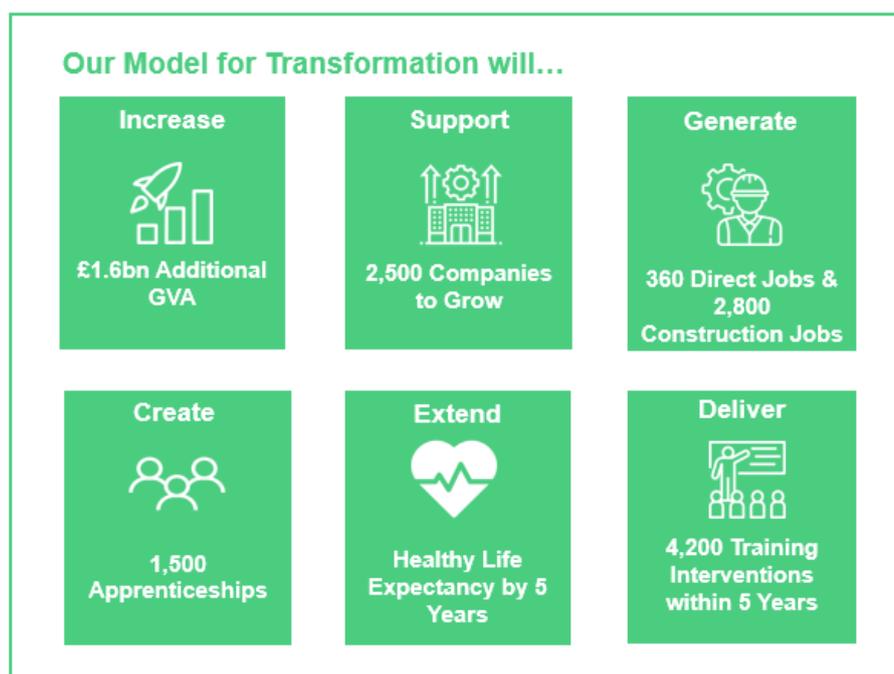


**Provide a model for change** that can be adapted and replicated in other parts of the UK

Sheffield City Region (SCR) is at the heart of the United Kingdom. It has driven the industrial revolutions of the last three centuries. **In the last two decades, the region has successfully taken a lead in manufacturing innovation**, developing a global reputation in high precision engineering, low-carbon technologies, as well as in advanced design and materials. It has secured significant growth in several high productivity sectors, including in advanced manufacturing and digital technologies. The University of Sheffield's Advanced Manufacturing Research Centre (AMRC), as part of the High Value Manufacturing Catapult, has drawn new innovation-led businesses to the region such as Boeing, McLaren Automotive, BAE Systems and Rolls Royce as well as their supply chains.

This proposal sets out a **transformative model** for regional post Covid renewal developed by Sheffield's two universities and teaching hospital. Evidence from around the world demonstrates how effective partnership of this type can be in driving economic and social development. Our partnership will harness the achievements of the last two decades and accelerate the advanced economy of the SCR - making industrially-led research and innovation, advanced education, and health the drivers of improvement.

The Government's ambition to level up productivity across the UK requires a new model for transformation – one that applies science and innovation to the most urgent problems and opportunities our country faces today, and one which links people to these opportunities. Maximising investment opportunities in places like the SCR will be critical to the UK achieving the commitment to increase R&D expenditure to 2.4% of GDP by 2027. There have been significant successes in driving R&D led investment linked to the universities, but there is more to do. Within this proposal, we set out a compelling case for going even further, scaling and broadening existing infrastructure and building on our unique strengths, and our proven success in turning research investment into productivity gains.



**This is our collective commitment to social and economic transformation for our region**, building on our track-record of partnership through systematic innovation and regeneration. It is consistent with proposals already made by the region's mayor and Local Enterprise Partnership and aligns with their longer-term vision for an innovation-led economy. Proposals described here to scale up and grow new innovation clusters form part of a wider place based approach and align with or form part of the CSR submissions from the Northern Health Science Alliance, and the N8 Research Partnerships' 'Net Zero North', and the 'Accelerating Post Covid Economic Renewal in the North' projects in which The University of Sheffield is a key partner.

Together, as anchor institutions, we have been at the forefront of the COVID-19 response. We want to be part of the recovery and renewal for our region. This is a genuine partnership of outstanding institutions, rooted in place and working for the common good.

With the support of Government, we are ready to move quickly. The interventions proposed build on existing innovations and assets, enabling us to **commence projects quickly with immediate impact**. We have the support of the SCR Mayor and Local Enterprise Partnership and seek government investment to put these proposals into action so we can continue to transform the city region economy and to provide a trail-blazer for other regions and cities.



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# Building an Advanced Economy

The government has set out a focus on future skills and innovation as a foundation for national economic recovery. Our region's 45,000 SMEs have enormous potential to drive economic recovery, but face challenges in adopting innovation to drive their growth. Drawing on our collective strengths and grasp of the challenges our region faces, we will build the skills, innovation and enterprise on which the advanced economy depends: future-focused, agile, technology-rich and connected across the region.

Our plans complement the SCR's Economic Renewal Plan and the government's own Kickstarter, Traineeship and Apprenticeship schemes but go much further. They build on existing successful collaborations such as the Sheffield Innovation Programme and RISE graduate recruitment program, both of which are jointly delivered by the Sheffield universities, and which have supported over 500 businesses a year with talent development and the adoption of innovations arising from the region's research base.

## The SCR Advanced Economy Institute (AEI)

The Advanced Economy Institute (AEI) will bring together skills training and SME support to lead the advanced economy for the Sheffield City Region. The Institute will be a visible symbol of the City Region's ambitions, and a highly accessible place for learners and businesses. The AEI will deliver change in two critical areas:

- **Advanced Economy Skills:** programmes to create a complete pipeline of skills development for the City Region.
  - A targeted programme of pre-apprenticeship support for 3,000 18-24 year olds that helps develop the baseline skills needed for progression to higher level apprenticeships and qualifications, especially in advanced manufacturing, healthcare, net zero technologies and MedTech.
  - Salary support for companies to take on new apprentices in this challenging time – creating 3,000 new apprenticeships in needed sectors.
  - A programme of 1,000 internships for SMEs that provides a pathway into work for young people.
  - A range of short courses for businesses that help develop advanced economy skills: leadership; software engineering; Artificial Intelligence; project management, health tech development, advanced manufacturing, and digital marketing.
  - A unique wellbeing-driven leadership development programme that will ensure employers have the skills and knowledge to sustain positive wellbeing in their people, which will improve employee engagement, attract and retain talent, and lower absence rates.

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**This programme will help more young people into work, create a more secure pipeline of skills for SCR businesses, and create the long-term conditions for SMEs to grow.**

- **SME Innovation and Growth:** support for growing SMEs to utilise new technologies and drive innovation. Specifically, we will offer a spectrum of support for a range of business types:
  - An entrepreneurship programme providing help to quickly establish an effective business vehicle, create an online presence, access finance, build business plans, comply with regulatory requirements and start trading within a month.
  - A digital clinic providing support to companies who need help to digitise and move activity online. This will help support home working and therefore contribute to sustainability and economic resilience.
  - An innovation hub providing a practical resource for SME leaders to access advice and support, proof of concept, innovation testing, and talent planning as well as support for import/export and international investment. It will create SCR 'soft landing zones' in key markets.

**This programme will improve business productivity, develop alternative channels for trading, build resilience, and drive innovation.**

## Office of Data Analytics

A new initiative, building on partnerships developed during the pandemic between the institutions and public agencies, to share some of the rich data sets we hold in order to inform agile decision making and stronger impact. The Office for Data Analytics will embed data sharing and utilisation to address the economic, health, and social issues facing the region. It will provide an evidence base to target interventions and measure the impacts of investments, and attract strategic investment to the region.

**With a Government investment of £65m we aim to create the skills needed for companies to thrive, to help businesses on their own growth journeys, and to use data to enhance everything we do.** We believe that this can create a broad-based, step-change for the economy that will be transformational for our dynamic SMEs as well as local residents who can benefit from new employment opportunities. This will be a huge symbol of renewal and growth for the UK.

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# Delivering Advanced Manufacturing & Sustainable Energy Technologies

A transition to a net zero economy will require us to move from manufacturing characterised by single-use, poor recyclability and waste, to one in which repair, reuse and recycling are designed into products from the start. We will need to ensure that the energy that powers our homes, business, and vehicles is clean and sustainable.

Our region can make a major contribution to UK leadership in this transition. **We are renowned for our leadership in advanced manufacturing.** The University of Sheffield's AMRC and the Nuclear Advanced Manufacturing Research Centre (NAMRC) have developed a blueprint for HE/industry interaction in sectors requiring highly specialised manufacturing approaches – creating high value jobs requiring technical expertise, attracting inward investment, and building supply chains locally. The AMRC and NAMRC sit at the heart of the Advanced Manufacturing Innovation District (AMID), bringing public, private and university partners together to create a leading example of innovation led economic growth. It is home to 244 private sector companies and nearly 3,700 jobs, many of which are high value. Nearly 70% are concentrated in knowledge intensive industries that conduct extensive amounts of R&D, with a particular concentration of jobs with a focus on engineering, computer science and mathematics.

Our proposals will **build on the region's strengths** in advanced and sustainable manufacturing to leverage R&D assets into **a targeted group of new innovation clusters, focusing on sustainable manufacturing, energy and net zero technologies.** This expanded innovation cluster will be co-located in some of the most challenged and deprived communities in the country, making a highly visible statement of ambition and growth.

## The AMRC Sustainable Manufacturing Centre

**We will develop a state-of-the-art Sustainable Manufacturing Centre alongside the AMRC.** The Centre will support the development of globally competitive, sustainable manufacturing technologies in the UK's drive towards a net zero economy by demonstrating how to design and manufacture products that have the minimum environmental impact throughout their life cycle. The new Centre will itself embody sustainable manufacturing ideas by incorporating energy generation and circular economy design of equipment. The Centre will provide programmes of support to **help regional manufacturers benefit from new techniques and market opportunities:**

**Supply Chain Development:** The Centre will build new opportunities for regional supply chains, which leverage the latest advances in advanced materials, sustainability and digital approaches, **working with regional businesses to co-design projects** compatible with their R&D programmes, technology roadmaps and business plans.

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**Technical skills to support sector growth:** The shortage of skilled staff in automation means too many companies don't have internal champions who are comfortable with adopting new technologies. We will offer bespoke skills programmes and flexible learning spaces which will equip future designers & engineers with the necessary circular economy skills to implement sustainable manufacturing into their organisations. This will include CPD provision at all levels in order to lead and manage manufacturing in a sustainable way and respond to current shortages of engineers at higher technical levels.

**With £47m investment, this activity will raise productivity, boost investment and exports and position the UK as a leader in sustainable manufacturing techniques.**

## Delivering Growth Through Energy & Net Zero Technologies

The SCR Energy Strategy has demonstrated that **this region is a hub for energy innovation and decarbonisation expertise** including The University of Sheffield's Nuclear AMRC, Energy Research Institute and Translational Energy Research Centre. These assets are innovating, testing, demonstrating, and validating energy technologies, challenges, and processes that feed into the cutting edge of energy science and research. They play a crucial role in de-risking and commercialising new technologies for the region's companies, and presenting a competitive inward investment offer for the low carbon sector. We will grow this innovation cluster through targeted investments in:

- **The Advanced Nuclear Technologies Centre (ANTC).** Delivered by The University of Sheffield's Nuclear AMRC with its industrial partners, this project will take a lead in shaping nuclear energy's role in a decarbonised future energy system, and contributing to clean growth. It will build on our successful work on advanced modular reactors, and can be expected to attract inward investment from the nuclear industry and nuclear non-departmental government bodies, as well as support delivery against the Nuclear Sector Deal £2bn target by 2030, and help sustain jobs in the wider supply chain. The ANTC will fully integrate its research with market need and national energy demand. It will support the supply chain by working with companies to help access market opportunities and exploit new technologies. By linking these sectoral opportunities with the local labour market we will deliver regional impact and highly skilled jobs.

**UKAEA STEP program:** The region is currently bidding for the opportunity to house the prototype plant for the UK Atomic Energy Authority STEP program. Success here is crucial to the continued growth of this cluster.

- **Sustainable Aviation Fuels Innovation Centre (SAFIC):** The transition from clean to sustainable fuel is essential for the future of aviation. This unique facility will host commercial pilot-scale facilities for the production, utilisation, testing and certification of sustainable liquid fuels for aviation. Existing carbon capture technologies on site and the proximity to Doncaster Airport create the opportunity to manufacture at scale and test easily. SAFIC will work with local firms to create supply chain opportunities.

**With £54m investment we will build on existing successes to deliver two new innovation nodes that position the UK to thrive in specific energy sub-sectors.**

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# Transforming Health Outcomes

COVID-19 has confirmed what we already knew: that population health, personal and collective well-being and economic success are inextricably linked. Our capacity to provide effective treatments and build greater resilience through better health are economic as well as social imperatives.

To address these challenges, we need to **accelerate local strengths in biotechnology innovation** and link these to areas of clinical excellence, and we need to **build long-term population well-being** by addressing economic and health disadvantage, accelerating critical treatment capability, and building an ecosystem which supports a fundamental transition from treatment to prevention.

## Accelerating Bio-medical Innovation

The UK has a strong tradition in the pharmaceutical and biotechnology industries and punches above its weight as a global leader in biomedical research. We have the capabilities to expand the healthcare innovation economy in the North of England, building on exceptional biomedical research within The University of Sheffield and Sheffield Teaching Hospitals Trust, along with the complementary expertise at Sheffield Hallam University. We will achieve this through the following investments:

- **Gene Therapy Innovation and Manufacturing Centre (GTIMC): Building on research excellence at The University of Sheffield's Neuroscience Institute**, the GTIMC will establish an important biomedical cluster in the region, by ensuring that scientific research and innovation is translated into new gene therapy treatments. The proposals for the development of this facility and the ability to carry out bench to bedside translational research and innovation through a close collaboration with the regional health system have already attracted additional investment from the health technology sector and the pharmaceutical industry. A key outcome will be the commercialisation of Intellectual Property (IP) arising, and the generation of spin-out firms based on the latest research in the field, as well as the creation of an R&D intensive inward investment pipeline.
- **Weston Park Cancer Centre (WPCC):** We will expand the WPCC to deliver cutting-edge innovation through cancer treatment in novel chemotherapy, immunotherapy and radiotherapy. This project will expand translational research capacity at the WPCC, one of the handful of dedicated centres in the UK, helping to support greater commercialisation of new innovations. This link to our plans for the GTIMC (see above) to establish an innovation pathway for the development of Advanced Medicinal Therapy Products (ATMPs). These products can use cell based or gene based technologies: in the latter case innovations from the GTIMC will be translated into new treatments through the early phase trials at WPCC. It will support improved provision of NHS oncology services to two million people across the Sheffield City Region with the potential to significantly improve the outcomes of patients with cancer.

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- **Laboratory space incubation facilities:** Commercialisation of the clinical research carried out in the region is currently limited by the lack of flexible lab space for spin-outs and start ups to incubate and grow. To support the growth of local bioscience spin-outs and start-ups we will identify and build out complementary facilities associated with and co-located with our key research clusters. This will ensure that we have the space needed to grow and commercialise translational developments generated at the GTIMC and WPCG amongst others.
  - **Developing the talent base to support cluster growth:** a program of **Health Innovation Fellowships** will allow us to grow the health technology talent pool and leaders of the future to support the development of this cluster.

**With a Government investment of £100m, we have the ability to create a biomedical cluster of national importance in the Sheffield City Region, one which combines basic and translational research with a strong emphasis on working with the wider sector to deliver economic outcomes. This work will deliver cutting edge treatment to people in the Sheffield City Region and improve health outcomes.**

### **Delivering innovative health interventions and infrastructure**

Our three institutions are focused on ensuring better health outcomes using transformative infrastructure and innovative healthcare technology and approaches. We call this a 'health crucible': a rapid-feedback system which explores innovative ideas and translates them into deliverable health solutions.

Our region is already building an international reputation in this area, with innovative assets such as Sheffield Hallam's Advanced Wellbeing Research Centre (AWRC), the centrepiece of the Olympic Legacy Park, already working with industry, communities and the public sector to improve population health.

Our population profile and capacity for healthcare innovation mean the City Region is ideally placed to lead developments which could be transformative. In Darnall and St Helens Ward in Barnsley, for example, 55% of households are estimated to be in poverty before housing costs, whilst 51% of children aged 10-11 are overweight and obese.

At the same time, the Sheffield City Region hosts a growing number of micro and SMEs in health and care, as well as manufacturing companies translating their technologies into health and care applications. Further success requires not only innovative products but also an in-depth understanding of user needs and profiles; clinical and user evaluation, now essential for regulatory and market understanding; and importantly, a route to sustainable adoption.

Through our approach, **we will co-create, test and prototype solutions in some of the most challenged communities in the UK, whilst also fostering an innovation environment for health-focused SMEs to thrive.** We will make the SCR an exceptional environment for improving population health outcomes and developing health and wellbeing innovations through the following initiatives:

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- **A Living Lab:** Based at the AWRC, this investment will support residents within economically disadvantaged communities to achieve better health and personal wellbeing, with an emphasis on tackling obesity, type 2 diabetes and increasing life expectancy. It will include a community-owned facility for physical activity as well as providing a training centre for the community, students and wellbeing apprentices. The Living Lab will also comprise an innovation fund to enable community-led innovations to be implemented. These initiatives will be complemented by real-time population health research, drawing on Living Lab experiences, testing what works elsewhere, and tailoring it to the SCR.
  - **Upscaling the AWRC Wellbeing Accelerator:** Investment in this existing facility will allow it to act as an accelerator by: identifying high-growth potential MedTech innovations within SMEs, offering proven R&D support and a batch production facility to run trials, as well as creating a hospital-based site to road-test and incubate innovation into the NHS and help navigate regulatory hurdles and commissioning expectations. A seed equity fund will unlock private investment to radically upscale innovations. By bringing together the established MedTech Co-operatives of Sheffield Hallam and Sheffield Teaching Hospital, this unique 'chain' will assist over 250 SMEs, as well as raising the capacity of 100 SCR aspirational SMEs/start-ups. In addition, support for programmes such as **Design for Better Lives** and **Lab4Living** will develop creative interventions for more vulnerable elderly citizens seeking longer independent living. These, in partnership with the design industry, will develop smarter and sustainable health interventions, supporting people to live as independently as possible.
  - **Expanding RICOVR-plus:** The expansion of the AWRC's COVID-19 research and innovation unit, this will link with recovery pathways being developed at Sheffield Teaching Hospitals and healthcare partners in the SCR. Sheffield Teaching Hospitals will draw on its regional and national advanced rehabilitation capabilities to provide support to the evaluation and advancement of rehabilitation for those severely affected by the disease and helping them back to work. This is a critical investment for the UK at this important time to deal with an emerging problem from the COVID-19 pandemic.
  - **Skills for Health Innovation:** Sheffield is already extensively engaged in training NHS staff in innovation with a national reputation for service improvement technology, a capability that will be expanded with the aim of embedding and spreading MedTech innovation know-how across the UK. With this investment, we will radically upscale the skills development and training, linking the NHS, industry and academic expertise in order to be better able to exploit new ideas for public benefit and to create sustainable economic growth.

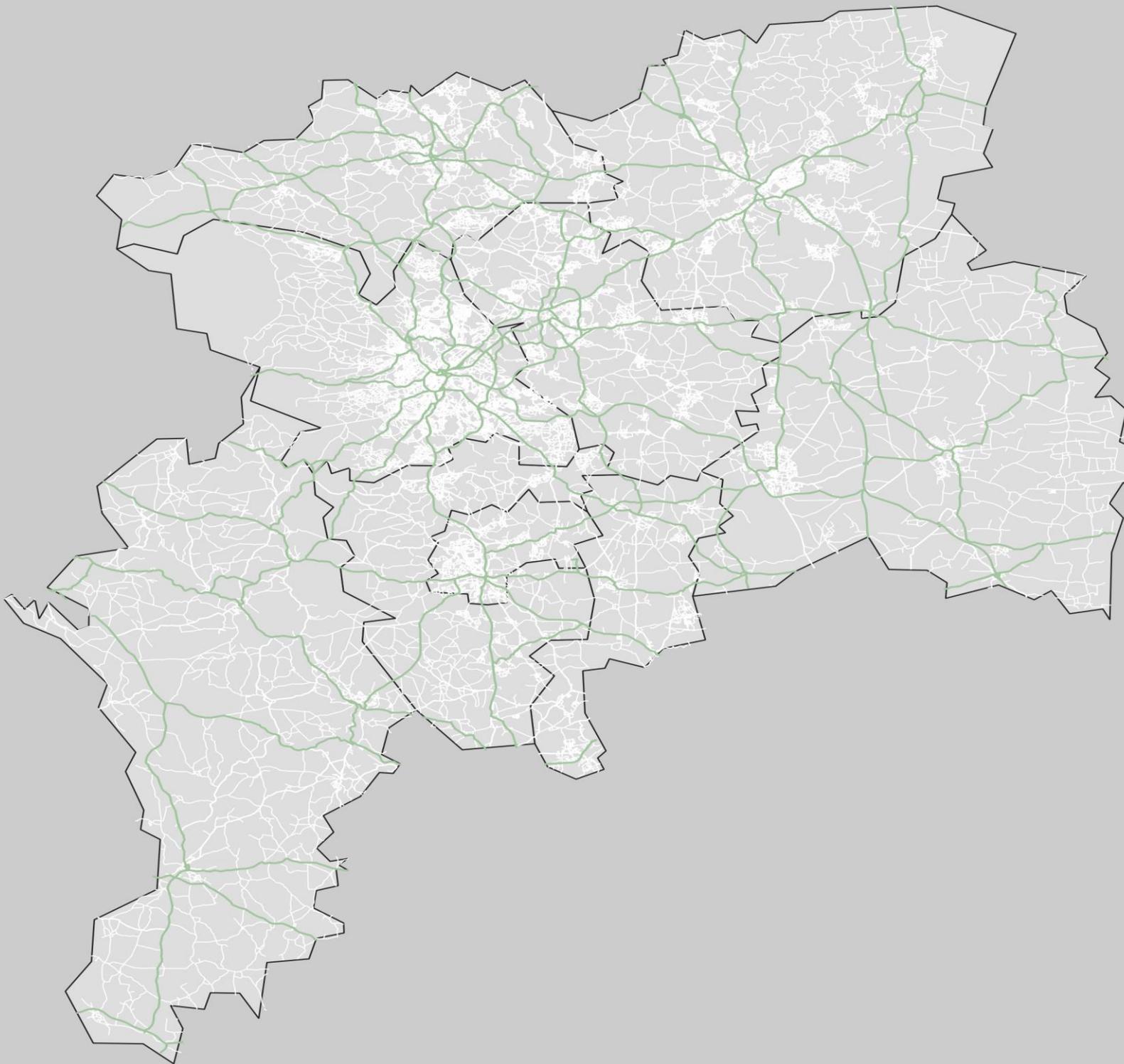
**With a Government investment of £50m, we can improve the health of tens of thousands of residents in the SCR through the Living Lab, as well as helping to start, grow and spread new medical innovations that create economic value and improve lives. With our RICOVR-plus unit we can support the UK's response to the COVID-19 pandemic.**

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## Our Vision & Commitment

This is a programme of transformational change: it draws on the assets and expertise of three exceptional research, teaching and innovation institutions, working together for a common purpose. We will work with our Mayor and Local Authorities to deliver this transformation. Alongside our private sector partners, and building on our extensive experience in delivering economic and social renewal, we will support over 2,500 companies and deliver £1.6 billion of GVA alongside 3,000 new jobs, 1,500 apprenticeships and 4,300 training interventions within the next five years. In addition, our ambition is to extend the life expectancy of the SCR population by five years. As set out in the SCR's Strategic Economic Plan and Covid Renewal Action Plan, these outcomes are critical for the renewal and recovery of our region.

This proposal expresses the commitment of the leading anchor institutions to invest our collective energies, resources and expertise to achieve these aims. In doing so, we offer government something else too: a new model for regional transformation based on improved life chances for all underpinned by education, innovation and health.



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