Credit: Hufton and Crow/VIEW

INVEST IN OXFORDSHIRE

THE UK'S HIGH-GROWTH INNOVATION ECOSYSTEM

OxLEP
driving economic growth

BY 2040, OXFORDSHIRE WILL BE ONE OF THE WORLD'S TOP THREE INNOVATION ECOSYSTEMS*

**Oxfordshire Local Industrial Strategy ambition*

WHY OXFORDSHIRE?

Oxfordshire is the county surrounding Oxford, the city that for centuries has been a global centre of learning and innovation.

Today the region continues its pioneering work in the sectors that are vital for the world's future health and economic growth. It is a powerhouse for the study and application of life-changing technology in health, space, energy, future transportation, and creativity.

This publication tells you about this region's investment success stories, and shows how Oxfordshire is at the heart of collaborative efforts that are driving innovation forward around the globe.

ATTRACTIVE TO INVESTORS

STRENGTH, RESILIENCE AND GROWTH THROUGH WORLD-LEADING SCIENCE AND TECHNOLOGY CLUSTERS

Throughout uncertain times, Oxfordshire has continued to accelerate business innovation. It has one of the strongest economies in the UK, generating £23 billion GVA annually* and has created 48,000 private sector jobs in the past decade. Both of these figures are projected to double by 2040.

It is home to 1,500 high-tech companies, including several 'unicorn' businesses that have been valued at over $1 billion. It also has western Europe's highest concentration of science research facilities.

Oxfordshire is a hotbed for international investment with a 15% rise in investments in 2019/20 compared with a 4% rise nationally.

The University of Oxford has been ranked #1 in the world for the past five years *(Times Higher Education 2020)*. Oxford Brookes University is #1 for research among the UK's young universities *(THE Young University Rankings 2019)*.

Oxfordshire has a successful record in securing investment to promote growth. For example, Google Ventures, Fosun, Temasek and Tencent are investors in Oxford Sciences Innovation, a £600 million fund designed to help Oxford's outstanding scientists build and grow great businesses that can improve the world. Investors have provided seed and follow-on funding ranging from £100,000 to £10 million.

In October 2020, the University of Oxford spun out its 200th company – cybersecurity firm PhishAR – through its commercialisation arm, Oxford University Innovation.

Oxfordshire has exciting opportunities for foreign inward investment and welcomes investors that seek to build a long-term relationship with Oxfordshire and the wider Oxford to Cambridge Arc region for both investment and international trade.

Oxfordshire has seen over £2 billion in foreign direct investment since 2015

Harwell Science and Innovation Campus has been designated a Life Sciences Opportunity Zone until 2030.

KEY COMPONENTS OF OXFORDSHIRE'S ECONOMY AT A GLANCE*

48,000
new jobs created since 2011/12

£23bn
GVA generated in real terms each year

51%
of the working age population qualified to degree level or above

3.9%
GVA growth in nominal term year-on-year since 2006

#1
Oxford University global ranking

1 of 3
County areas which are net contributors to the UK exchequer

£600m
largest fund for university spinouts in Europe: Oxford Sciences Innovation

$1bn
track record of growing businesses with market value of over US$1bn

*pre-Covid figures

WORLD-LEADING SCIENCE AND INNOVATION CENTRES

Oxfordshire has the key ingredients that make up a world-class innovation ecosystem: a flourishing environment for innovation and business creation; world-leading experts in knowledge and technology development; and a dynamic, agile, and skilled workforce.

Over 200 research and technology companies in health sciences, med tech, space applications and energy operate on **Harwell Campus**. The site houses the UK's largest space cluster of over 100 growth companies. Critical assets include the Diamond Light Source, the Rosalind Franklin Institute, Faraday Institution, UK Space Agency, European Space Agency, Rutherford Appleton Laboratory, and VMIC, the UK's first dedicated Vaccines Manufacturing Innovation Centre.

Culham Science Centre hosts over 2,000 scientists carrying out world-leading research into areas such as fusion power and autonomous vehicles. Critical assets include the Culham Centre for Fusion Energy, which will design and build the world's first compact fusion reactor by 2040, RACE (Remote Applications in Challenging Environments), and the Culham Innovation Centre.

Within the **Oxford City Science Area**, key development work is ongoing in sectors such as life sciences, digital health, AI technologies and quantum computing. Key assets include the Oxford BioEscalator, the Jenner Institute, the John Radcliffe, Nuffield, and Churchill Hospitals, and the Centre for Applied Superconductivity.

Oxfordshire is the centre of F1 and Formula E motor racing technology development. The cutting-edge advances made within an area known as **Motorsport Valley** have led to breakthroughs in all forms of road transport as well as aerospace and energy. Key assets include the Williams Innovation & Technology Campus.

Begbroke Science Park focuses on advanced engineering and medical tech for 35+ world leading research & technology companies. By 2032, LocateOxford, Begbroke's global innovation campus, will co-locate University engineering, physical and life sciences research here to work directly with industry. This £2 billion programme is the largest in the University of Oxford's history.

The **Oxford Science Park** is home to more than 100 companies, from start-ups to multinationals, working in areas such as drug and device development and AI within a vibrant R&D and commercial community. It offers a variety of design-and-build office and laboratory accommodation.

Milton Park is a science and technology park home to 250 companies and 9,000 people and forms one of the largest science clusters in the UK. It is part of a trial to introduce autonomous vehicles in the area.

Oxford Technology Park is a new science and technology park that offers flexible R&D space to the north of Oxford.

Oxford Business Park offers bespoke commercial office and R&D space located within reach of the city centre.

Howbery Business Park is a 70-acre business location set in Oxfordshire parkland on the banks of the River Thames.

HIGHLY-EDUCATED WORKFORCE

The county boasts over 10,000 people employed in scientific R&D and healthcare-related manufacturing. The proportion of people working in R&D is over four times the national average. Around 51% of Oxfordshire's working age population are qualified to degree level or above. (UK average 42% (ONS 2018), OECD average 38%)

INNOVATION CLUSTERS ACROSS OXFORDSHIRE

Western Europe's highest concentration of science research facilities

OXFORDSHIRE'S TRANSFORMATIVE TECHNOLOGIES

HEALTH AND LIFE SCIENCES

Oxfordshire is at the heart of one of Europe's largest and most successful life science clusters, spanning drug discovery and development, diagnostics, medical devices, digital health, precision medicine and regenerative medicine.

The region has attracted and established world-class life science businesses and is home to global players such as Abbott Diabetes Care, Alere, Ipsen and Vertex. Three start-ups have attained $1 billion 'unicorn' valuation status: Oxford Nanopore Technologies, Immunocore and Adaptimmune.

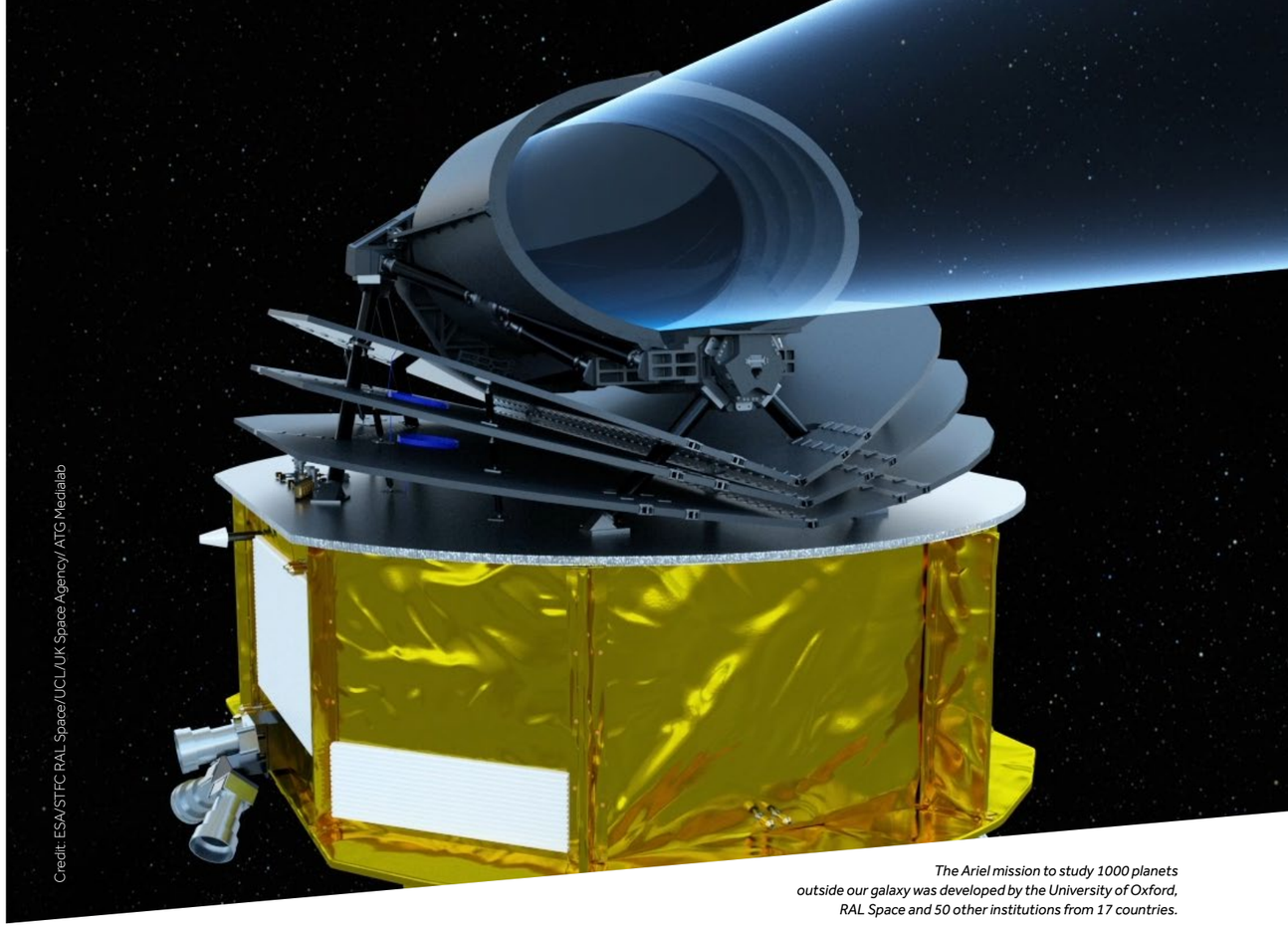
Nearly 6% of the population, or 25,000 people, work in Oxfordshire's life sciences sector

Digital technologies are transforming healthcare in a UK market expected to grow to £4 billion by 2022. Oxfordshire and its neighbouring regions have over 160 digital health companies and 430 stakeholders across industry, academia, the National Health Service and the third sector and a cluster that is speeding innovation, demonstration and rollout.

Oxford's BioEscalator nurtures early-stage biotech companies and facilitates collaboration with the NHS and academics.

COVID RESPONSE

With its unparalleled and long-held expertise in vaccinology and immunology, the region spearheaded the UK's response to the pandemic in a series of unprecedented collaborations between academia, medicine and industry. The UK's leading vaccine was developed by a Jenner Institute-led partnership and an agreement made with AstraZeneca will ensure its distribution to developing countries at cost. It is estimated that around 800 people in the region, across a variety of institutions and organisations from start-ups to multi-nationals, have been working on different aspects of the pandemic, from leading trials to developing novel therapies.



Credit: ESA/STFC RAL Space/UCL/UK Space Agency/ ATG Medialab

The Ariel mission to study 1000 planets outside our galaxy was developed by the University of Oxford, RAL Space and 50 other institutions from 17 countries.

SPACE

Since 2000, the UK's space sector has trebled in size, achieving 6% annual growth and exporting a third of its outputs. The space sector now supports 14% of UK GDP (London Economics, Jan 2019). The growth ambition is to create a sector worth £40 billion by 2030.

Companies within Harwell's Space Cluster range from start-ups to multinationals such as Airbus and Lockheed Martin. With over 100 space organisations employing over 1,000 space professionals, this is the UK's largest, and Europe's most concentrated, group of space companies.

It encompasses major assets of national and international significance such as the European Space Agency, and the new National Satellite Testing Facility, expected to be operational in 2021. Space research and technology developer RAL Space has been involved in over 210 space missions, providing space test and ground-based facilities and designing and building instruments. Other businesses on site include makers of antennas, cameras, sensors, and data analysts.

The Satellite Applications Catapult accelerates the growth of satellite applications as a focal point where SMEs, industry and end users can work together with researchers to bring ideas to commercial reality. It has seen satellite technology applied to projects ranging from mining to cocoa-growing.

Future investment is planned in the region in a Disruptive Innovation in Space Centre, and a Space AI and Autonomy Lab.

Harwell hosts Europe's most concentrated cluster of space organisations

Oxfordshire is within Testbed UK, a uniquely-resourced central UK region for taking CAV technologies from concept to manufacture. Oxfordshire can offer much of the UK's expertise in motorsport R&D, test and development facilities, modelling and simulation, as well as academic talent and resources.

FUTURE MOBILITY

CONNECTED AND AUTONOMOUS VEHICLES (CAV)

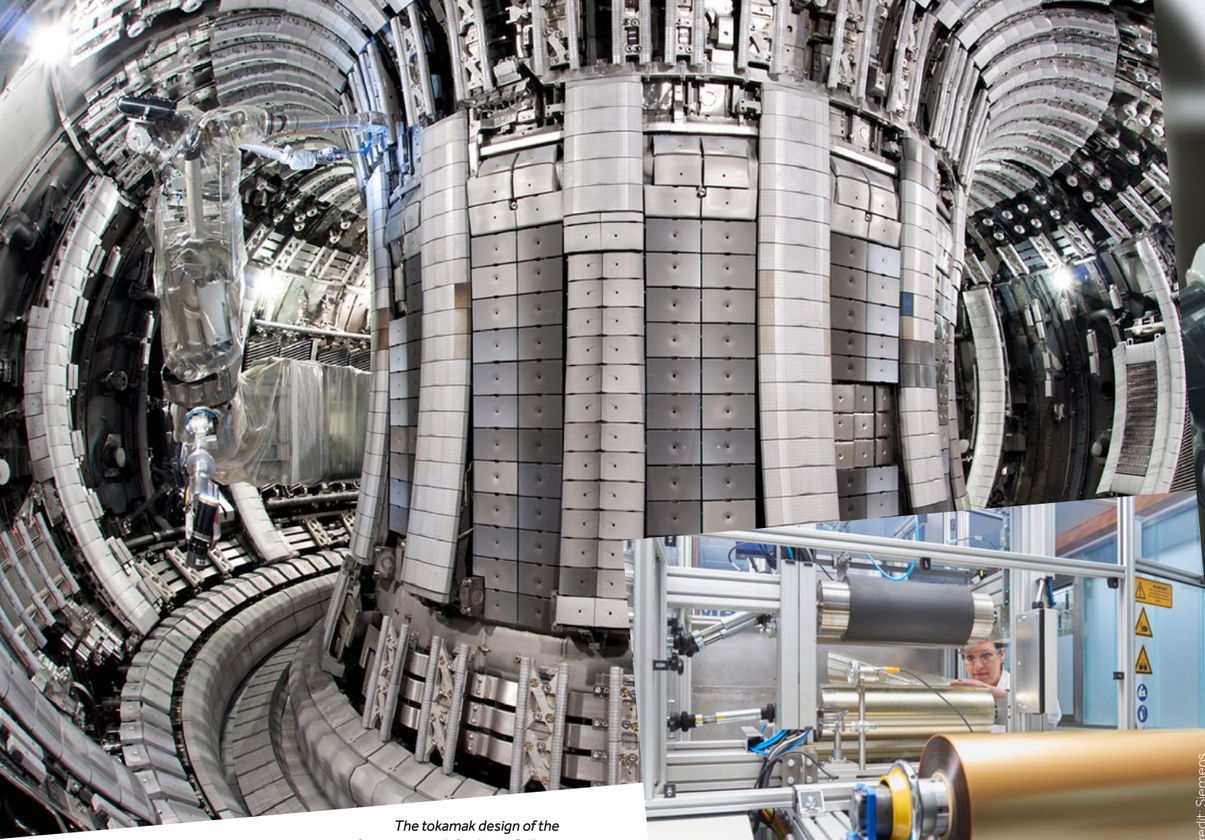
Oxfordshire is a global centre for CAV development. The CAV Pit Lane at Culham Science Centre, which opened in 2019, enables vehicle manufacturers and self-driving vehicle developers to improve and test advanced driver assistance systems (ADAS) and autonomous systems in over 80 R&D projects. Oxbotica, a University of Oxford spin-out, is now working with regional and international partners at Culham's RACE facility to accelerate universal autonomy software development. The Oxford-centred DRIVEN consortium is developing and testing a fleet of autonomous vehicles. Five AI is developing a fully autonomous shared transport service for Europe's cities. Oxford's StreetDrone was the first company in Europe to run an open-source self-driving vehicle on the road. The Darwin Satcom Lab at Harwell, backed by the UK and European Space Agencies, will use 5G and satellite technology for trialling autonomous cars.

ELECTRIC VEHICLES

BMW chose the iconic Cowley plant in Oxford to make its first electric MINI. 'Unicorn' start-up Arrival – valued at €3 billion after investment from Hyundai, Kia and BlackRock – is developing an electric bus and an electric small van at its global R&D centre and van production site in Banbury, and has chosen Bicester as the site of its new bus microfactory. Electric motor producer YASA, which can produce up to 100,000 compact, lightweight and efficient motors every year, has raised more than £30 million from investors since being spun out from the University of Oxford in 2009. Saietta's breakthrough AFT electric motor is currently in low volume production at Upper Heyford, where it has access to 20 miles of private test tracks. A new centre of excellence to help make EVs more efficient and affordable has been set up by the University of Oxford in partnership with Bath University, Siemens and Jaguar Land Rover.

MOTORSPORT

Roborace, the creator of the world's first driverless electric racing platform, has had its HQ in Banbury since 2017. The town is also the home of one of the founding Formula E race teams, Mahindra Racing. Williams Advanced Engineering has created high performance batteries and has found commercial applications for its development work in motors and materials. Chinese automotive manufacturer NIO has based its Formula E performance technology research centre and advanced engineering group at Begbroke Science Park.



The tokamak design of the fusion research facility in Culham

Credit: Siemens

Siemens chose Harwell for its £1.5m proof-of-concept plant that is testing the use of ammonia as a way to store and transport hydrogen in energy systems

ENERGY

Oxfordshire is a unique centre for the development of future energy systems.

ENERGY STORAGE

Around 35 companies and 900 people contribute to research into electrochemical energy storage in Harwell's EnergyTec Cluster. The Faraday Institution, which links 20 universities and 30 industry partners, is a key stakeholder. Its Fast Start project has supported innovators such as: ZapGo, which is developing a new approach to energy storage; Nextrode, a consortium working to revolutionise battery electrode manufacture; Oxis Energy, a developer of lithium sulphur batteries; Nexeon, a world leader in engineered silicon materials for battery applications, and V2GO, a project funded by InnovateUK with a consortium of businesses, investigating how electric vehicles can be used to store and flow electricity back into the grid.

The Culham Centre for Fusion Energy, home to 30 industry, academic and public organisations, is a major centre of energy expertise. UKAEA at Culham is a lead participant in the EUROfusion programme and operates JET, the largest fusion device in the world. Oxfordshire is also home to Tokamak Energy and First Light Fusion, two of the world's leading fusion start-up companies. The £220 million STEP (Spherical Tokamak for Energy Production) programme aims to deliver the world's first fusion reactor by 2040.

LOW CARBON

With a potential to grow by 11% pa until 2030, the low-carbon economy is of prime importance in helping the region lead the green recovery. Oxford has committed to becoming the first UK city to introduce a zero emission zone and the Energy Superhub (ESO) has four demonstrator projects.

The Oxford Low Carbon Hub is located at the newly-built Wood Centre for Innovation (WCFI) alongside start-ups and early stage science and technology companies.

FUTURE AND TRANSFORMATIVE TECHNOLOGY

ROBOTICS AND AI

The University of Oxford is at the forefront of AI research in the UK. Its centres of excellence include the Centre of Doctoral Training in Autonomous and Intelligent Machines and Systems, the Oxford-Man Institute of Quantitative Finance, Oxford Robotics Institute and the Big Data Institute. A strategic collaboration with Amazon Web Services is building a portfolio of new research projects relating to AI, robotics, cyber-physical systems, and human-centred computing. The Oxford-Singapore Human-Machine Collaboration Programme (HMC) is an international multidisciplinary university-industry collaboration driven by computer and engineering sciences.

QUANTUM

Oxford is fast becoming the UK's hub for quantum computing. The University of Oxford has more than 200 quantum researchers and a Global Quantum Computing Centre is in the pipeline. Promising start-ups include Oxford Quantum Circuits, which is harnessing quantum technology to the world's most pressing challenges, from climate change to accelerating drug discovery. It has already delivered the UK's most advanced quantum computer and is seeking funding for the next stage of its development. ColdQuanta UK is leading a consortium of companies to develop three projects in quantum atomics, including work on a new, ground-breaking quantum positioning system (QPS) or gyroscope.

Bicester Motion: artist's impression.

INVESTMENT OPPORTUNITIES

Oxfordshire has one of the highest concentrations of innovation assets in the world, together providing a rich and economically critical network of employment, R&D and creative nodes which offer significant opportunities to scale up and develop new products and services.

Two major regional capital investment projects are actively seeking investors:

Bicester Motion

The world's first automotive leisure resort and visitor attraction. Dedicated to the experience of driving as well as demonstrating the very latest in high-tech engineering, this luxury resort will feature a 344-bed hotel, spa and conference development – and its own airfield. The resort's promoters are seeking investor partners for this £140 million project.

Culham Science Centre

The centre is seeking a partner to invest up to £70 million to deliver up to 30,000 square metres of commercial space to support a waiting list of occupiers in the nuclear science and related technologies sector.

ENTERPRISE ZONES

Oxfordshire has two Enterprise Zones which are a key part of the government's plan to support new companies looking to locate or expand their existing operations in Oxfordshire. These designated areas at Harwell, Didcot and Milton Park - already home to a significant portion of the region's scientific, R&D, and high-tech businesses - offer a significant financial incentive to investors through rates discounts and in some cases accelerated planning to ensure rapid development times.

GARDEN TOWNS

New, planned, garden communities will play a vital role in helping to correct the UK's severe imbalance in the supply and demand for housing. Three of these sustainable and future-proofed developments are planned for Oxfordshire. Designed from the start to offer high quality housing, incorporating digital infrastructure, they will include leisure, business and cultural amenities as well as public services – altogether offering a range of exciting investment opportunities. The UK Government is working with local delivery partners to support innovative investment vehicles and find funding solutions – including the potential for capital investment or loans – to drive delivery of garden communities, which in Oxfordshire comprise:

- Bicester Garden Town 13,000 homes
- Didcot Garden Town 15,000 homes
- Oxfordshire Cotswolds Garden Village 2,200 homes.

GROWTH CAPITAL INVESTMENT

Oxfordshire is full of exciting young ventures and has some of the fastest growing companies working on tomorrow's game-changing technology. Many are ready for their next stage of growth and are seeking partners to help them scale up. These start-ups and the more established high-tech companies, spun out from the universities and research institutes, offer early stage investment and growth capital opportunities. Our inward investment team can make key introductions for future fruitful partnerships.

OXFORDSHIRE'S GLOBAL INVESTORS

In 2019, **Waymo**, the Alphabet subsidiary, acquired **Latent Logic**, which uses deep learning to help autonomous vehicles interact safely with humans. Waymo has now chosen Oxford for its first European engineering hub.

Intuitive Surgical, a global leader in minimally invasive care and the pioneer of robotic-assisted surgery, chose Oxford Science Park for its UK & Ireland headquarters and training suite.

Novo Nordisk is a Danish global healthcare company with more than 90 years of innovation in diabetes care and in serious chronic conditions such as haemophilia, growth disorders and obesity. Employing over 42,100 people in 79 countries, one of its four global research units is in Oxford, where it works to solve complex scientific challenges using human genetics, big data and cutting-edge technologies.

Ipsen is a leading biopharmaceutical group focused on developing innovative medicines in oncology, neuroscience and rare diseases. The French company has three main R&D centres, one in France, one in the USA, and one in Oxford.

Penlon, a world-class medical device company established in Oxford in 1943, develops, manufactures and exports anaesthesia and other medical products to over 90 countries. In 2015 it was acquired by Indian medical equipment manufacturer BPL Medical Technologies and has gone on to develop new products in anaesthesia systems. in early 2020 it developed a new ventilator and provided 12,000 to the NHS in just four months.

Mahindra Racing is one of the ten founding teams – and the only Indian team – of the FIA Formula E Championship. It selected Banbury, Oxfordshire, as its manufacturing base. Mahindra Group is one of India's largest companies, with a presence in over 100 countries through its conglomerate interests in electric vehicles, agricultural technology and IT.

Astroscale's innovative satellite technologies will clean up orbital debris and support the long-term sustainable use of space. In 2020 it closed a $191m Series E funding and was awarded the Grand Prix from UNESCO's Netexplo Innovation Forum. The Japanese company has based its UK office and operations centre at Harwell Campus.

South Korean companies **Hyundai** and **Kia** have together invested €100m in **Arrival**, making it one of the UK's largest unicorns. Arrival is developing its new Generation 2 category of electric vehicles – designed to be assembled in microfactories located to serve local communities – in Oxfordshire.

OXIS makes lithium-sulphur batteries which have five times more energy than traditional rechargeable lithium-ion batteries, making them an ideal for electric vehicles and aeroplanes. Its laboratories and dry room facilities are at the Culham Science Centre. Following a £3.8m investment from Brazilian private equity firm Aerotec in 2020, fuel cell mass production will take place in Brazil from 2023.

Element Six specialises in providing synthetic diamond, cubic boron nitride and other superhard materials for industrial use. Part of the De Beers Group, Element Six employs over 1,900 people and has manufacturing sites in the UK, Ireland, Germany, South Africa, and the US. It chose Harwell for its global innovation centre, where its research into the use of synthetic diamond materials in quantum applications will help Europe to remain at the forefront of this new era of technology.

Israeli company **hiSky** has based its R&D centre at Harwell, with the assistance of £9m of funding from the UK Space Agency. hiSky aims to be the world's first low-cost satellite network operator, bringing innovative technology to voice and data satellite communications.

In October 2018, the UK and Australian Space Agencies agreed to form a SpaceBridge, unlocking a world-first international space collaboration spearheaded by the UK's Satellite Applications Catapult, and the new Australian SmartSat Collaborative Research Centre.

Emerging and sustainable technologies will be integrated into major housing developments as part of a 'Living Labs Testbed.'

A DESIRABLE PLACE TO LIVE AND WORK

LOCATION

Oxfordshire is located in the south-east of England and is supremely well-connected. The city of Oxford is an hour from London and 45 minutes from London Heathrow, the UK's largest airport. Trains run frequently from Oxford's two mainline stations, linking it to London in less than an hour as well as to Birmingham, the north and the south coast. The UK's two major rail infrastructure developments, Crossrail and HS2, will speed these connections further.

Oxfordshire's unique position is amplified by being part of the Arc, an area that sweeps broadly between Oxford and Cambridge. Exciting new investment in infrastructure is set to consolidate existing collaborations and enhance connections across this innovation heartland.

LIVING SPACE

The county has a population of 682,000 with plenty of space to live, breathe and grow. In the next 10 years, 29,400 new homes in carefully-planned developments and garden villages will be added to the county, which also boasts the UK's first eco town, Bicester. The region also has outstanding schools and world-renowned hospitals.

Oxford is an hour from London and 45 minutes from London Heathrow

CULTURE, COUNTRYSIDE AND LIFESTYLE

Oxfordshire is glowing with heritage, from the dreaming spires of the historic city of Oxford to the UNESCO world heritage site and birthplace of Sir Winston Churchill, Blenheim Palace. Visitors to Oxford can enjoy the world's first university museum, the Ashmolean, as well as the Pitt Rivers Museum, the University Museum of Natural History, and the University Botanic Gardens. Lovers of the arts can access the Sheldonian Theatre and the Holywell Music Room, while Stratford-upon-Avon, Shakespeare's home, is within easy reach.

Outside the city, the landscape varies from the lush Thames valley to the wooded Chiltern hills in the south and the rolling Cotswolds to the north and west.

Luxury shopping destination Bicester Village, which in 2019 attracted seven million visitors, is one train stop from Oxford. Home to more than 160 boutiques of world-famous brands, as well as cafés and services such as valet parking, it offers savings of up to 60% all year round. Over 100 leading retail, food and leisure brands have also been attracted to the £500 million Westgate Oxford since it opened in 2017. Lock 29, National Centre for Food & Drink Provenance, chose Banbury when it opened in 2020.

OxLEP
driving economic growth

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Oxfordshire Local Enterprise Partnership

HM Government