

Buckinghamshire Local Industrial Strategy

DRAFTv2

Executive Summary

DRAFT

1 Introduction

- 1.1 This is the [draft] Buckinghamshire Local Industrial Strategy (LIS). The core of the strategy is a programme of action to mobilise Buckinghamshire's nationally and internationally significant economic assets to increase productivity in the area and contribute to the growth of the economy nationally. It is a local chapter of the national industrial strategy. And it is intended to enable Buckinghamshire to become the strong beating heart of the Oxford-Cambridge Arc.
- 1.2 The strategy is based on rich intelligence on the economic strengths and capabilities of Buckinghamshire businesses and sets out propositions to enable them to grow and become more productive. Delivering the strategy does not only require action by businesses, but also by the anchor institutions in the area including local government, educational institutions and the health service. The strategy is also intended to provide a platform for a new deal with government to support investment in Buckinghamshire and to ensure that local organisations are empowered to drive the change that is needed to respond to the economic challenges and opportunities facing the area.
- 1.3 The LIS comprises:
- An economic vision for Buckinghamshire in 2050 with key milestones to be achieved by 2030;
 - A pen portrait of Buckinghamshire's economy today including its nationally and internationally significant economic assets and its economic drivers;
 - A description of the wider context including the National Industrial Strategy and the emerging vision for the Oxford-Cambridge Arc;
 - A summary of the Buckinghamshire's strengths, challenges and opportunities, which is based on a detailed evidence base;
 - A summary of the propositions developed to mobilise Buckinghamshire's economic assets and drivers;
 - A summary of the strategy's contribution to delivering the national economic strategy;
 - More detailed descriptions of the propositions and actions.

2 The vision

2.1 Today Buckinghamshire is the Entrepreneurial Heart of Britain. Our ambition for the next 30 is to get that heart beating stronger. Collaboration between business, society, the research community, local and central government will achieve long-term growth, building on the strength of Buckinghamshire's internationally recognised iconic brands. Organisations and sectors will work together to forge the right institutional frameworks and policies and make the right public investments.

2.2 As a result, in 2050 Buckinghamshire will have:

- A vibrant base of super-charged entrepreneurial businesses that have the ambition and capability to grow;
- An internationally-recognised capability for testing, experimentation and commercialisation which enables new ideas to be taken to the market;
- Benefitted from three decades of sustained investment in R&D and future technologies which has driven continuous improvement in productivity.

2.3 In order this achieve this, by 2030, Buckinghamshire will have:

- Exploited devolved responsibility for skills and training budgets to develop world-class vocational training which mirrors the quality of the current grammar school provision and is valued by employers and students alike;
- Led the way in providing full fibre coverage which has boosted the productivity of the area's small business base and enabled innovation in health and care and improved access to goods and services;
- Made a reality of the concept of a Living Lab and used the investment in new housing and infrastructure in the area to enable the more rapid testing and bringing to market of ideas, products and services;
- Fully exploited the cross-overs between our economic capabilities, such as immersive technologies in the creative sector and surgical advances at Stoke Mandeville, to maximise the growth of innovative businesses;
- Created new relationships between ambitious entrepreneurs and business support organisations which has nurtured a highly positive culture of business investment;
- Towns with a creative buzz which attract people to all ages to live, work and invest.

2.4 The impact of this will be evident in:

- Westcott's unique role in the UK's growing network of space villages where entrepreneurs can translate advances in space science and engineering into commercial opportunities;

- Buckinghamshire's position as an internationally significant creative conurbation where ambitious and growing SMEs benefit from their proximity to Pinewood and the National Film and Television School;
- The revitalisation of high value manufacturing in Buckinghamshire building on the Silverstone Technology Cluster as part of a wider High-Tech Super Cluster;
- A ground-breaking collaboration between industry, academia, developers and health and care providers to enable older people to live more independent and fulfilling lives;
- An economically and environmentally sustainable approach to accessibility as a service which supported by cutting edge transport technology and advanced technologies.

2.5 By 2030 we will have responded to the Grand Challenges identified in the National Industrial Strategy and:

- Led the development of encore careers in the UK;
- Established an open data store to support the commercialisation of new goods and services and public sector reform;
- Successfully reduced the reliance on car ownership through providing greater accessibility and choice.

3 Buckinghamshire today

- 3.1 Buckinghamshire has a highly productive economy with a dynamic and resilient employment base underpinned by a strong and high quality SME business community. It lies at the heart of the Oxford – Cambridge Arc, one of the UK's key growth regions with London and the UK's international gateway at Heathrow close by. We want to strengthen this advantage by capitalising on growth in new industries and technologies including digital services, upstream space, film and TV production, life-sciences and high-performance engineering.
- 3.2 Major planned housing growth, new East-West road and rail connections and significant investment across the Oxford – Cambridge Arc will create the conditions for delivering sustained economic growth in Buckinghamshire, building on our existing economic and transport links with London. Appropriately delivered, this growth can also feed the global competitiveness of key national industries, particularly clean energy, modern methods of construction, future mobility and digital healthcare.
- 3.3 Buckinghamshire is home to iconic business brands and locations: Pinewood, the National Film and Television School, Silverstone, the National Space Propulsion Facility (at Westcott Venture Park) and Stoke Mandeville, the birthplace of the Paralympic Movement. Whilst Buckinghamshire is a major contributor to the prosperity of the UK, international comparisons suggest it could be considerably more productive given additional investment in research and development, talent, new and accessible business hubs for growing sectors and new routes to market.
- 3.4 As is demonstrated in Section 4, however, Buckinghamshire must not be complacent. There are emerging weaknesses in Buckinghamshire's economy which must be addressed and, in common with other places, the area must respond to the impact of structural changes in the national and international economy. Buckinghamshire's ambition is to exploit its iconic business brands and locations, and its other nationally significant assets, to increase economic output, improve the financial outlook for our business base and contribute to tackling Britain's productivity challenge.

Delivering the vision

- 3.5 Key to delivering this vision is a set of propositions to exploit Buckinghamshire's nationally and internationally significant economic assets. Three of these assets are already well established and are important features of Buckinghamshire as a place. They are:
- Upstream space, with the National Space Propulsion Test Facilities (at Westcott Venture Park) at its core;
 - Creative and digital, building particularly on the success of Pinewood, the National Film and Television School and the recognised creative-digital cluster in the area;
 - Silverstone Park, Silverstone high technology super cluster, and the linked Enterprise Zone.
- 3.6 Two other assets, with contributions to make to the Government's grand challenges, have the potential to drive growth in the area. They are:

- Digital Health, MedTech and Advanced AI, capitalising on the global reputation of Stoke Mandeville as the birthplace of the Paralympics Movement and the potential of medical rehabilitation; and
- Future Mobility and Clean Energy, building on national infrastructure investment, including Heathrow expansion, East West Rail, Cross-Rail and HS2.

3.7 In order to underpin the propositions, the strategy identifies a set of economic drivers to enable the growth of these assets and to support growth and increased productivity across Buckinghamshire. These are:

- The skills and inspiration revolution: creating a broader technical education and training system and inspiring young people to pursue careers in businesses associated with our economic assets;
- Digital infrastructure: delivering comprehensive and future proofed digital coverage to support the transition to a digital economy;
- The living lab: creating the conditions to test, deploy and commercialise innovative new products and technologies, particularly in new developments;
- Commercialising innovation: action to accelerate the commercialisation of new products and services in Buckinghamshire;
- Business scale up and efficiency: helping Buckinghamshire businesses to compete in increasingly competitive markets.

4 The wider context

- 4.1 This strategy has been developed in the context of the development of a vision for the Oxford-Cambridge Arc and the national industrial strategy.

At the heart of the arc

- 4.2 Buckinghamshire lies at the heart of the Oxford – Cambridge Arc. Work undertaken by the National Infrastructure Commission shows that by 2050 the Arc could deliver an extra £83 - £163¹ bn GVA by 2050 and 1.1m jobs. Delivering this growth hinges on major infrastructure investment including East-West rail, the construction of an additional 1m homes and investment in some of the key initiatives set out in this strategy.
- 4.3 There are three strands to the emerging vision and narrative for the arc as a place:
- Where knowledge collides with globally leading science assets to create and shape industries;
 - Which provides a test bed for innovations which shape the 21st century;
 - With an environment where ideas and inventions are rapidly commercialised and spun out into high growth ventures.
- 4.4 This LIS is intended to nest alongside the other three industrial strategies across the Arc in a way which contributes to the Arc vision and ensures that Buckinghamshire secures maximum benefit from it.
- 4.5 Sitting at the heart of the Arc, with improved access to the assets of Oxford and Cambridge, and capitalising on the expanded global gateway at Heathrow and new and existing connections to London, Buckinghamshire has the potential to lead the commercialisation of innovation taking advantage of its test bed capabilities and the contribution of the internationally significant economic assets that this LIS is intended to support.
- 4.6 At the core of the emerging vision for the arc are six essential elements of global innovation systems which will frame the delivery of the vision. The following paragraphs and the table below show how this strategy relates to those elements.

	Iconic Brand	Keystone Assets	Liveable Place	Talent Attraction & Retention	Dynamic Business Culture	Strong Finance
Creative & Digital	✓	✓		✓		✓
Space	✓	✓		✓		✓
High Tech	✓	✓		✓		✓
Growing Med Tech	✓	✓	✓	✓		✓

¹ SQW and Cambridge Econometrics report that the transformational scenario of £163 will only be achieved if the area starts to operate as a corridor. P.128.

Future Transport		✓	✓	✓	✓	✓
Inspiration Revolution				✓		
Living Lab		✓	✓	✓	✓	
Commercialising Innovation			✓	✓	✓	✓
Business Competitiveness				✓	✓	
Digital Connectivity			✓	✓	✓	

Iconic brand and keystones assets

- 4.7 This LIS promotes a set of propositions which are designed to support the development and economic impact of the most important economic assets in Buckinghamshire. The strength of these assets is underpinned by Buckinghamshire's iconic brands: Pinewood and NFTS; Silverstone Enterprise Zone; the National Space Propulsion Test Facility (at Westcott Venture Park) and Stoke Mandeville, the home of the Paralympic movement. Two of our drivers of growth are intended to mobilise these assets so they play a bigger part in driving economic growth and raising productivity nationally and across the arc: Embedding a "Living Lab" Approach and Commercialising Innovation.

Liveable place

- 4.8 This strategy recognises the importance of a place-based approach to enabling economic growth and attracting business and employees to the area. Our living lab is intended to help meet the needs of an ageing society, our focus on future transport and energy will have significant environmental and place benefits and the strategy also recognises the need for urgent action to delivery high speed broadband coverage across the area.

Talent attraction

- 4.9 We are proposing a Skills and Inspiration Revolution in Buckinghamshire, creating a new technical education and training system, inspiring more young people into key growth sectors and addressing the housing shortage to provide appropriate homes for employees in the new economy.

Dynamic Business Culture

- 4.10 Buckinghamshire's vibrant business base is one of our most important economic assets. The LIS includes a programme to support our businesses to compete in increasingly competitive markets and increase their levels of productivity.

Strong financing

- 4.11 The propositions which form the core of our LIS have been designed to secure investment from private and public sources. However, initial investment may be needed to unlock their full potential.

The national industrial strategy

- 4.12 This strategy should be seen as a local chapter of the National Industrial Strategy. The five economic drivers are designed to exploit the five foundations of productivity identified in the national strategy: ideas, people, infrastructure, business environment and places. The five significant economic assets are those which the evidence base suggests can make the biggest contribution to tackling the

national productivity challenge and an important objective of the strategy is to ensure that Buckinghamshire is best placed to benefit from relevant national policies and programmes.

4.13 The sector deals the government has negotiated with industry have the potential to boost productivity, employment, innovation and skills. This strategy provides an opportunity to use Buckinghamshire to develop an explicit place focus to the application of the deals including, for example:

- The contribution of the Construction Sector Deal to enabling the efficient construction of planned major housing development in Buckinghamshire and equipping local businesses to benefit;
- Accessing the R&D investment pledged in the Automotive Sector Deal to stimulate investment in alternatives to the private car exploiting Buckinghamshire's Living Lab capabilities;
- Accessing the Cultural Development Fund promoted in the Creative Industries Sector Deal to support the growth of Buckinghamshire's creative industries cluster;
- Building on the Artificial Intelligence Sector Deal to support the application of AI across the propositions that form the core of this strategy;
- Exploring the potential of the Aerospace and emerging Space Sector Deals to support businesses on the Westcott Venture Park as part of the Space Growth Partnership to develop new products and services.

4.14 This strategy is intended to form the basis of a local industrial strategy deal with government. It requires a significant contribution and cultural change on the part of many local anchor institutions. We are seeking a similarly ambitious contribution from government. Policy requirements linked with the five foundations of productivity are set out in the table in annex 1. Our requests of government include

- Working with Buckinghamshire to develop an explicit place focus to deliver relevant sector deals;
- Devolution of the adult skills budget and an ability to pool apprenticeship levy;
- Support for Enterprise Zone growth;
- Sustainable growth hub funding.
- Extended investment in universal digital connectivity, particularly linked to national infrastructure

5 Buckinghamshire: the strengths, challenges and opportunities

- 5.1 Buckinghamshire has a highly productive economy: it is the third most productive LEP area in England (behind London and Berkshire). It has the highest employment rate in the Oxford – Cambridge Arc, at 81.8 per cent compared with the 75.1 per cent for England. That said, it would take a 33% increase in GDP per Capita for Buckinghamshire to get into the top 25 German regions.
- 5.2 Businesses in knowledge-intensive sectors have generated disproportionately high business and employment growth relative to the size of these sectors in Buckinghamshire. Its strength in the high technology sector is predominantly in-service businesses, and there is a nationally significant cluster of businesses in the professional, scientific and technical sector. This sector accounts for 21 per cent of businesses in Buckinghamshire, the highest share of any LEP outside London. The area also has significant strengths in the data economy.
- 5.3 Although Buckinghamshire's technological and innovative capability currently lies largely in high-value services, the evidence points to significant potential in production engineering and design for manufacturing. Historically the concentration of management consultancies in Buckinghamshire means that its relative strength has been as an intermediary between high-technology products and processes, and users, and other parts of the supply chain. The challenge now is to exploit assets such as Silverstone and Westcott to grow high value manufacturing in the area.
- 5.4 Similarly, forecast employment and GVA growth suggests that Information & Communication and Professional Scientific and Technical – the knowledge intensive employment sectors – will continue to provide Buckinghamshire with a competitive advantage to drive growth and productivity levels. Interventions are likely to be required to maintain current performance (including investment in skills in and digital infrastructure).
- 5.5 However, there are a number of warning signs about the future of the Buckinghamshire economy.
- 5.6 Buckinghamshire's impressive performance in jobs growth has slipped recently with total employment falling by 1.2 per cent between 2016 and 2017. This included a fall in professional, scientific and technical services by 15.2 per cent and a 6.3 per cent drop in information and communication technologies.
- 5.7 Buckinghamshire has a significant micro-economy with a higher proportion of micro -businesses than England or the South East. Significantly, however, it has a low share of mid-sized growth businesses, with few businesses making the journey from micro to medium sized enterprises.
- 5.8 Despite high absolute productivity, Buckinghamshire's productivity *growth* in 2016 failed to match that recorded across the United Kingdom for a fifth successive year, suggesting that constraints are resulting in diminished returns to otherwise strong economic assets. It is also significant that 29 per cent of Buckinghamshire's employment is in lower productivity value-added chains of distribution, including transport wholesale and retail (accounting for 21% of GVA).

- 5.9 Buckinghamshire needs to be at the forefront of government plans to increase R&D investment to 2.4% of Gross Domestic Product (GDP), a 50% increase, by 2027. A European Research Centre Assessment of LEP areas on a range of innovation metrics illustrates the challenge and potential in Buckinghamshire. On most indicators it ranks poorly compared with other LEPs, but it is the 2nd best performing LEP in relation to the percentage of new firms introducing new business processes (36 per cent).
- 5.10 Attention must also be given to Buckinghamshire's attractiveness as a place in which to live and work. The area has a very highly skilled population (with the 4th highest level of working aged residents educated to NVQ level 4 or above of any LEP area). But many of those people commute to London, there is a comparatively small proportion of people aged 24 to 30 and a shortage of people with intermediate and technical skills.
- 5.11 Delivering the vision for Buckinghamshire will require strong local leadership and new forms of collaboration between central government and the locality. In many cases the programmes require new ways of thinking from the private sector, the research community and public service providers, collaborating more effectively together to strengthen the internal and external ecosystem and enhance business capabilities to deliver more distinctive sources of competitive advantage and address the Grand Challenges.
- 5.12 This is particularly relevant in relation to:
- greater collaboration between business, education and training providers to deliver a skills and inspiration revolution;
 - ensuring that housebuilders, technology providers and the people leading the integration of health and social care are open to greater collaboration to deliver a new health and social care model;
 - an integrated and ambitious approach to transport planning to create the conditions for a new mobility model, integrated into local clean energy solutions;
 - enabling greater collaboration between planners, developers, housebuilders and infrastructure providers to deploy cutting edge technologies in future developments, to realise the living lab potential;
 - addressing the qualities of Buckinghamshire as a place to live and work including issues of affordability and the vitality of town centres.
- 5.13 In short, key to the success of this LIS will be business and civic leadership united in creating the opportunities for fresh thinking to address the challenges and opportunities facing Buckinghamshire and the country in ways that enable economic growth and higher productivity.

6 Mobilising our economic assets: five propositions

- 6.1 At the core of this LIS is a set of actions, interventions and asks of government which are intended to enable the growth and development of Buckinghamshire's most significant economic assets and ensure that they contribute as much as possible to the national drive to raise productivity and enable economic growth.
- 6.2 The assets identified are those which the evidence and a series of conversations with local stakeholders shows are, or have the potential to be, nationally significant. In deciding which assets to focus on two other factors were taken into account: the extent to which the asset is distinctive to Buckinghamshire; and its contribution to delivering the vision for the Oxford – Cambridge Arc.
- 6.3 This section outlines the propositions developed for each of the assets. More detailed descriptions are included in sections 9 to 13.

Upstream Space

- 6.4 Westcott Venture Park already acts as centre of attraction for SMEs and larger companies engaged in rocket propulsion R&D. It is well located in relation to a number of relevant organisations and business clusters including:
- The Satellite Applications Catapult, Harwell and the broader network of Satellite applications incubators;
 - The Avionics cluster in Stevenage and Herts;
 - The publicly facing national Space Centre at Leicester.
- 6.5 The UK currently creates £13.7bn of value from its 'upstream capabilities' in space²; and the exploitation of space and satellite technology has been announced as a focus in the National Industrial Strategy³ alongside an emerging sector deal. 'Low cost access to space' is intended to give UK companies a comparative advantage in being able to leverage the projected £250bn growth from satellite applications and 'downstream' data.
- 6.6 *"Since 2000, coordinated industry and government actions have trebled the size of the sector, and space now supports 14% of UK GDP – some £250bn. This has the potential to double over the period to 2030, if the relevant technological capabilities in the UK are nurtured and supported".⁴*
- 6.7 This value growth has been facilitated by increased access to space provided to UK companies, which is set to increase as Govt announcements in 2017 and 2018 include £50m for the development of UK based spaceport launch capability, £99m to Rutherford Appleton Labs (RAL) and

² UK Space Growth Partnership figures 2018

³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf

⁴ Stuart Martin, CEO, Satellite Applications Catapult

commercial investment of £26.5m into UK-developed SABRE rocket technologies⁵ which will be tested in Buckinghamshire at Westcott. September 2018 saw the announcement of the location of the first UK spaceport in Sutherland.

- 6.8 The challenge for Westcott is to develop an investment strategy which can complement the capabilities of close neighbours in this ecosystem in a commercially sustainable and ‘mission oriented’ way, both drawing together and complementing the institutionally driven innovations in the upstream Space sector produced at Harwell - and in other parts of the ‘UK village’ of Space Capabilities.
- 6.9 The opportunity is to work with Westcott’s already developed business plan and create something distinct from the downstream Satellite Applications and 5G Capability incubator network. Westcott is unique within this network but exists alongside 8 further ‘downstream incubator network’ sites which together represent the major hubs of the emerging ‘UK village’ capabilities being drawn together across space.
- 6.10 To grow and sustain this specialism the pipeline of skills needs to be improved, and companies in the local sector based at Westcott have identified specific skills-shortages around technicians and propulsion test specialists.
- 6.11 A long term investment plan will be developed for Westcott supported by brokering between the fragmented elements of support for the space sector. We will also support businesses at Westcott by:
- Enhancing networking across the space propulsion, UAV and next generation value chains;
 - Raising the profile of UK capabilities in upstream space focussing initially on propulsion systems;
 - Embedding international trade services into the facilities at Westcott;
 - Attracting investment from the finance community, large corporates and overseas investors;
 - Enhancing key research, development and test facilities across the Westcott Space cluster;
 - Enhancing collaboration on skills development initiatives between business and skills providers.

Creative and digital

- 6.12 Buckinghamshire is home to the globally renowned Pinewood Studios, with internationally renowned franchises including Star Wars and James Bond being filmed at the studios and using many Buckinghamshire locations, and the National Film and Television School (NFTS), the only institution of its type in the UK. Buckinghamshire also has a high concentration of people working in the creative sector, with southern Buckinghamshire recognised as a creative conurbation.

⁵ Prosperity from Space: A Partnership Strategy for the UK 2018. Available at: http://www.ukspace.org/wp-content/uploads/2018/05/Prosperity-from-Space-strategy_2May2018.pdf

- 6.13 Pinewood is a centre of excellence for film and TV production and is well placed to help deliver the 10,000 new entrants needed for the growth of the film sector as part of the DCMS supported Creative Careers Programme, helping the UK creative industries sector break the £100bn annual turnover barrier. There are over 250 businesses on the site and major expansion is currently underway. The NFTS, working with the Royal Holloway, University of London, has recently secured £10m funding to develop a cutting-edge training and research programme in immersive storytelling, exploiting the latest virtual, augmented and mixed reality technologies.
- 6.14 Buckinghamshire ranks third out of LEP areas for the proportion of its workforce employed in the creative sector, the growth of which is being driven by employment in digital technologies. The sector is a fast-growing export market for the UK, currently worth £46bn. PWC predicted in their 2018 Global Entertainment and Media Outlook that the UK entertainment and media sector will grow by three per cent a year over the next five years.
- 6.15 Businesses in this sector face major challenges and exciting new opportunities to meet the demand for new streaming services. Boundaries are blurring between traditional media segments, competition is growing horizontally and vertically as businesses seek to exploit multiple platforms and develop compelling content to engage and retain users. As these developments take hold, Buckinghamshire's creative community needs to adapt to open up new markets for experiential creative and digital content if the sector is to increase its contribution to the national economy.
- 6.16 Buckinghamshire's Growth Hub has the opportunity to pull together the SME business community and enable engagement with the wider a wider group of SMEs. Buckinghamshire New University (BNU) also offers courses in Audio and Music Production, Film and Television Production and Animation and Visual Effects.
- 6.17 In common with Buckinghamshire's wider business base, many creative businesses are small and medium-sized enterprises (SMEs), linked to anchor institutions like Pinewood and NFTS. It is therefore essential that even more is done to support these anchor institutions and the collaborative links between them and the SME supply base. It is also important to strengthen these businesses' links with relevant key research and training organisations (i.e. Catapult's, Universities and Centre's of Excellence delivering AR/VR programmes etc.), encouraging the creation of local facilities wherever possible and desirable.
- 6.18 Government support will be sought to help the film, TV and games sector to adapt to the changing technological landscape by accelerating the adoption and diffusion of augmented reality and virtual reality and ensuring some of the traditional "film making " skills (including creative, technical and trades) and deployed successfully in these emerging sectors.
- 6.19 Action will be take to support a number of strategic priorities, including securing maximum benefit from the expansion plans at Pinewood and NFTS. Action will also be taken to:
- Embed international trade resources into the film, TV and games sector;
 - Support the Screen Industries Growth Hub at Pinewood Studios;
 - Invest in key research facilities and programmes, to ensure the sector is capable of adapting to changing circumstances.

- Enhance collaboration on skills development initiatives between business and skills providers at every level of the education system.
- Develop an investment programme around town centres to create creative industry clusters and hubs, to create a ‘buzz’ in southern Bucks locations such as Iver which is benefitting from Crossrail investment, High Wycombe, Beaconsfield and Chesham.

High technology super cluster

- 6.20 The Silverstone Technology Cluster is an important component of the wider High Technology Super Cluster which spans the Oxford-Cambridge Arc. Over 4,000 companies in precision engineering are located within a one-hour radius of Silverstone. 1 in 10 of people in Buckinghamshire are employed in the high-technology sector with the wider area of Berkshire, Buckinghamshire & Oxfordshire ranked top in Europe in 2017 for share of employment in high-technology sectors.
- 6.21 There is significant potential to enable further growth of this sector in Buckinghamshire with a particular focus on exploiting the Silverstone Enterprise Zone to stimulate potential high technology cross-overs. This will attract international investment and drive the growth of the high technologies sector across the Growth corridor. It will position the current cluster and future entrepreneurs to make the most of Silverstone and the wider super cluster to build a manufacturing base with linkages across automotive and advanced engineering sectors and diversification into aerospace, space, clean-tech, healthcare, materials, and electronic sectors.
- 6.22 A major challenge for the development of the cluster will be drawing together sub-regional partners including battery development and engineering capability from the University of Buckingham, Cambridge’s cleantech, Pinewood Studios, Satellite Applications Catapult and UK Atomic Energy Authority, and major tech businesses such as Bosch, KWSP, RedBull, Delta Motorsports and TotalSim. There is also potential to exploit the Government’s £174m *Made Smarter* Industrial Strategy Challenge Fund which is currently being developed.
- 6.23 Proposed actions to stimulate the growth of the Silverstone Technology Cluster as part of the wider High Technology Supercluster include:
- Enabling businesses to engage with universities in a meaningful way;
 - Ensuring that business investment and financial incentive packages are focussed on SME innovation;
 - Continuing to build the capacity of the High-Tech Super Cluster to improve networking opportunities across the super cluster.
 - Supporting the development and application of emerging technologies in companies in the Silverstone Technology Cluster, by improving the linkages between firms within the cluster and the knowledge base, strengthening the cluster and enabling investment in the participating firms.
 - Delivering a unique new approach to skills provision in Buckinghamshire that brings all schools, FE and HE providers together with business at scale. This would include new schools and academies focusing on practical tech and STEM skills,

majoring on employer involvement, a year in trade, work experience etc. but be imbedded within mainstream provision.

- Developing the innovation ecosystem to improve B2B connectivity between businesses and universities and other centres of research excellence.
- Attracting interest from the finance community, large corporates and overseas investors.

Growing Digital Health, MedTech and advanced AI

- 6.24 The Buckinghamshire Life Sciences Partnership is leading the development of The Buckinghamshire Life Sciences Innovation Centre. Buckinghamshire is in the first wave of 8 Integrated Care Systems which will pioneer new approaches to health and care integration locally. Buckinghamshire is home to a number of global industry leaders in healthcare including Janssen/Johnson & Johnson and GE Healthcare. Stoke Mandeville is the UK's national spinal centre. The planned major housing growth, in the area around Stoke Mandeville at Aylesbury Garden Town, provides massive living lab opportunities to test the application of new technologies.
- 6.25 The two locations of the Life Sciences Innovation Campus located at Stoke Mandeville and High Wycombe are in a position to draw in capability from distinct strengths in each location:
- Stoke Mandeville is located in proximity to the Silverstone and Cranfield advanced materials and performance technologies cluster in the north of BTVLEP.
 - High Wycombe is home to a developed software and digital consultancy cluster in the South of BTVLEP.
- 6.26 The forecast future housing growth likely to come to Buckinghamshire provides the locality with an opportunity to improve the connectivity between Digital Health and MedTech firms, housebuilders and the health and social care providers to deliver a new approach to create healthy new towns and communities.
- 6.27 Action to exploit Buckinghamshire's position will include:
- Supporting collaboration between businesses and health and care providers to support the operation of the Integrated Care System and the use of technology in adult social care, expanding the capacity to support business spin-offs from the Health Care Trust and the Universities.
 - Exploiting the area's heritage as the birthplace of the Paralympic Movement to position Buckinghamshire as the "medical tech adoption accelerator" with dedicated pathways for at scale product testing and dedicated medical device regulation degree apprenticeship programmes.
 - Exploiting the opportunities offered by housing growth in the Aylesbury Garden Town and surrounds to test the application of new technologies to provide further care directly in people's homes and to advance the use of technology within clinical settings to support remote monitoring & virtual consultation.

Future Mobility and Clean Energy

- 6.28 Buckinghamshire's strengths in high-performance technologies - including the Silverstone Technology Cluster and the motorsport cluster, the 5G Catapult centre at Westcott and proximity to Milton Keynes as a potential centre for 'Smart, Shared, Sustainable Mobility' - mean that it is well-positioned to make a major contribution to the Future Mobility Grand Challenge. Major developments in Aylesbury Garden Town could also provide an ideal opportunity for trialling and rollout of new technology including CAVs across the Oxford – Cambridge Arc. The scale of national infrastructure projects in Buckinghamshire including HS2, Heathrow Expansion and East West Rail and Oxford to Cambridge Expressway all provide the opportunity to build on the national investment to coordinate digital and mobility solutions greatly enhancing the primary transport purpose of these projects.
- 6.29 Innovation capabilities around Hydrogen fuel Cell testing and development have also been identified within the Westcott Business Plan – making BTVLEP one of the only locations in the UK where the final stages of development and pre-market safety testing can be done for this technology. This in turn cross supports the viability of the Upstream space business plan.
- 6.30 Finally, the design-test-and-build capabilities that exist at Silverstone Motorsport cluster, and the proximity to the national Transport Catapult mean that the BTV area has the potential to lead the trialling and exploration. Several current BTV innovation activities also relate to developing advanced lightweight materials and composites, integration of transport systems, and promotion of electric charging points.
- 6.31 To deliver a new model of mobility, significant innovation in autonomous and low-carbon systems needs to be brought forward. Automotive supply chains currently draw on highly globalised supply chains drawing on capabilities from a number of global regions. Here the location of BTVLEP and the scale of planned infrastructure and housing delivery do offer the potential for a 'leap-frog' approach to this problem by drawing on the significant investment in the Transport Catapult at Milton Keynes, and the future-mobility innovation pipeline of OxLEP.
- 6.32 Proposed actions include:
- Maximising the potential of future housing growth to support the growth of Low Carbon Vehicles and embed at the heart of all future developments and stimulating shared mobility solutions.
 - Establish a living lab where an innovative approach to public procurement and service commissioning is established to explore, test and roll out new transport service opportunities.
 - Embedding an open innovation approach into key public sector infrastructure planning and development structures – including the Aylesbury Garden Town to enable the commissioning of innovative technological solutions and future-proof infrastructure investments.
 - Working with regional and national partners like EEH and Meridian to support the creation of a cluster of excellence in driverless car testing, to accelerate the development of this technology, grow intellectual capital and attract overseas investment in the UK.

7 Mobilising our economic drivers: five programmes

7.1 A set of five economic drivers have been identified which must be mobilised if the vision and ambition for Buckinghamshire are to be achieved. In thinking about these drivers, three factors have been considered:

- the five foundations of productivity in the Industrial Strategy;
- the specific challenges and opportunities relevant to each of the assets;
- the actions needed to mobilise the underlying economic strengths of Buckinghamshire.

7.2 This section outlines the actions proposing in relation to each of the drivers. More detailed descriptions are included in sections 14 to 17.

The skills and inspiration revolution

7.3 Buckinghamshire has a very well-educated population: almost half working age residents are qualified to NVQ level 4 or above. However, the area's economy suffers from high levels of commuting of skilled people to London and other neighbouring areas, particularly younger skilled people. A comparatively small proportion of young adults, aged 24 to 30, live in the area and there are low levels of people with intermediate and technical skills. There are concerns about the extent to which young people who do not attend a grammar school are prepared for employment in the changing economy and too many young people, particularly from poorer households and communities are leaving education with little or no meaningful work experience.

7.4 The area does, however, have the advantage of significant potential in technical and vocational education and collaboration between employers and providers. This includes two university technical colleges, the University Campus Aylesbury Vale and the Buckinghamshire Skills Hub. The Buckinghamshire Education, Skills and Training Partnership works across educational boundaries to provide flexible and creative education and training solutions.

7.5 Buckinghamshire is offering a to act as a test-bed for innovative, collaborative and shared ownership approaches between employers and education providers. This would be delivered by:

- 'Mainstreaming' successful T-Level practices on industry placement in advance of full roll out.
- Developing a much stronger collaborative approach between employers and providers, including on apprenticeships through Skills Advisory Panels.
- Creating a prestigious identity, with structured career guidance, that cuts through the perception that vocational routes are second-best to academic qualifications.

- Harnessing the assets, resources and expertise of employers for ‘mandatory’ and well-supported work experience embedded within the curriculum, potentially within a new generation of sandwich courses.

To deliver this Buckinghamshire would require devolution of the adult skills budget, and a mechanism to enable effective pooling of the apprenticeship levy.

Digital infrastructure

7.6 High quality future proofed digital connectivity is key to economic growth and improved productivity. For example by supporting remote working and reducing congestion. The DCMS has recently produced evidence showing that its Superfast Broadband Programme has seen increases in turnover per employee in the education and health sectors of 4.7 and 3.7 per cent. In Buckinghamshire data-oriented sectors have been the strongest driver of growth in terms of new business formation and employment. Buckinghamshire has a comparatively high presence of the computer consultancy and creative-digital media sectors. Despite action by BTVLEP and its partners overall high-speed broadband coverage remains below the national benchmark and coverage is below much of the rest of the Oxford – Cambridge Arc.

7.7 In the short term individual communities will be supported to secure broadband through community fibre partnerships. In addition, businesses will be supported to take advantage of the benefits of digital infrastructure including the development of Smart City approaches linked to the Garden Town and major national infrastructure development. Action will also be taken to address digital connectivity bottlenecks and ensure that digital requirements are planned in as a basic infrastructure requirement for new developments.

The living lab

7.8 The scale of new development envisaged in Buckinghamshire, particularly the Aylesbury Garden Town, provides an opportunity develop and roll out new products, services and solutions in real life situations, to support their commercialisation. This would draw on existing expertise in the area and beyond including the Satellite Applications Catapult, The University of Buckingham, the Regional Energy Hub, The Transport Systems Catapult and patient trials at Stoke Mandeville Hospital . This driver will be key to delivering our ambitions in Digital Health/MedTech, Clean Energy and Future Transport.

7.9 The development of our approach to a living lab will also draw on international experience including: the Botnic Living Lab in Lulea, Sweden, where the tech sector works closely with local people, public agencies and academia; Antwerp’s iMinds, a digital research and innovation hub; and MIT’s Wellness and Health Lab.

7.10 Early action to implement our living lab ambitions will be to establish a new collaboration between government (national and local), academia and businesses to create a rich local ecosystem to encourage and enable innovators and entrepreneurs to commercialise, test and develop their products and services in Buckinghamshire.

Commercialising innovation

7.11 Buckinghamshire also has a strong record of business start-ups, but more needs to be done to help those businesses to grow. There is massive potential for local and regional universities to support

the growth of these businesses through knowledge transfer focussing in particular on businesses with the potential and ambition to grow.

- 7.12 The first step will be to identify and meet the demand for specific support and mentoring to help SMEs in Buckinghamshire to become investment ready. .
- 7.13 Investment in the network of Innovation Hubs in Buckinghamshire where there is evidence of demand and market failure. These hubs will need to be business-led, with input from education institutions and other centres of excellence, with services provided including: technology and knowledge transfer; open innovation; support for commercialisation and the development of new approaches to skills provision.

Business support and reducing business costs

- 7.14 Buckinghamshire has one of the top five Growth Hubs in the country, offering a range of support services to businesses across Buckinghamshire. It is important to future proof this offer and secure commitment to continuity of funding for locally required support, defined by our business community.
- 7.15 Action to develop a wider eco-system of business support and encourage wider take-up of it will include:
- Leadership and Management Development: Establishing Mentoring and Business Growth Programmes delivered by a range of providers and coordinated by the Local Growth Hub, to support business scale up aspirations and capability;
 - Innovation Support: Stimulus to encourage innovation in the form of vouchers to incentivise investment in R&D.
 - Supply Chain Development: A programme of supply chain mapping and development driven by a detailed analysis of market need, trade flows and opportunities for investment at scale.
 - Rural Business Support: An offer that fits our rural economy which can be broken into strong land and food-based parts of our local economy but also homeworkers in rural locations.
 - Incubation and Coworking Spaces: high quality business accommodation with access to plug and play services combining 3D printers, ultrafast broadband and collaborative working practises. This will help develop the leadership capacity that our firms need to grow into new domestic and overseas markets.
 - Collaboration Tools: Creating a new Sharing Platform where employers can share resources, facilities etc to prevent down time and the risk of incurring additional costs and ultimately increase business productivity.

8 Delivering the National Industrial Strategy

8.1 This strategy should be seen as a local chapter of the National Industrial Strategy. The five propositions and the actions proposed to mobilise the economic drivers apply the five foundations of productivity in Buckinghamshire. The strategy is intended to both contribute to tackling the four grand challenges and ensuring that Buckinghamshire benefits from the government's focus on those challenges.

8.2 The table below shows how the foundations feature in this strategy:

Applying the foundations of productivity in Buckinghamshire	
Ideas	Programmes of activity on Buckinghamshire as a living lab and commercialising innovation are designed to contribute to the growth of an innovative economy. This will contribute to the delivery of all five of our propositions.
People	The Skills and Inspiration Revolution is specifically designed to ensure that businesses in Buckinghamshire have access to a skilled, motivated and ambitious workforce. This is key to the delivery of all of our propositions. A commitment to ensuring that the planned new housing development contributes to the attractiveness and affordability of Buckinghamshire as a place to live and work.
Infrastructure	A programme of activity on digital connectivity reflects the importance of digital infrastructure to our economy. This strategy will ensure that Buckinghamshire benefits from the planned investment in road and rail across the Oxford – Cambridge Arc.
Business Environment	Proposed action to reduce business costs and commercialising innovation are designed to support the growth of small and start-up businesses in Buckinghamshire.
Places	Place is a central theme of this strategy. Four of the five propositions have a core place focus: Pinewood, Westcott, Silverstone and Stoke Mandeville. The living lab programme is intended to use the planned major development in Buckinghamshire as a platform for testing, applying and commercialising ideas and innovations. There is also committed to ensuring that action is taken to make the area a more attractive and affordable place to live, work and invest.

8.3 The table in annex 1 develops this analysis further. It takes the key policies in the National Industrial Strategy relevant to each of the foundations, links them to the policies set out in this strategy and the relevant policy requirements to deliver this local industrial strategy. It forms the key element of a possible local industrial strategy deal between the government and Buckinghamshire.

Addressing the grand challenges

8.4 The National Industrial Strategy sets out four Grand Challenges, global trends that will have a transformative impact on our society and economy: ageing society, artificial intelligence and data; clean growth and future of mobility.

Each of these challenges manifests itself in Buckinghamshire with implications, in terms of both opportunities and challenges, for the area's economic assets and drivers. In order to focus action in Buckinghamshire to both contribute to the grand challenges and benefit from the government's focus on them, this strategy identifies a Buckinghamshire mission for each of them. This mirrors the approach the government has adopted nationally. The table below sets out the missions, the rationale for them and the contribution of Buckinghamshire's economic assets and drivers.

Ageing Society	AI and Data
Buckinghamshire Mission: To lead the development of encore careers in the UK in a way which increases the productivity of micro businesses in Buckinghamshire	Buckinghamshire Mission: To establish an open data store to support the commercialisation of new goods and services and public service reform
<p>In common with many other places, Buckinghamshire faces the pressures of the ageing society, but our demographic profile means that these pressures are more acute than most. A distinctive feature of its economy is the large number of SMEs many of which are micro businesses run by people in the final years of their careers. There is potential for micro businesses to contribute more to the economy through, for example greater networking and collaboration between them. Encore careers come towards the end of people's working lives and provide both fulfilment and an income, contributing to people's health and wellbeing. Buckinghamshire aims to become a centre of excellence for supporting encore careers with a particular focus on micro businesses. This would form an element of the work programme to Stimulate Business Productivity which would provide businesses support to encore career entrepreneurs and enable networking and collaboration between them.</p>	<p>The creation of a new unitary council in Buckinghamshire provides a unique opportunity for a new approach to the collection, availability and use of data. Data is key to driving public service transformation and to creating opportunities for new commercially provided products and services. It is also relevant to the exploitation of Buckinghamshire's economic assets and drivers including; creative and digital; high technologies; digital health; future transport; the living lab; and commercialising innovation. Developing an open data store would transform the scope for collaboration between businesses and public service providers in Buckinghamshire, creating new business opportunities and improved services for residents including, for example, transport information, encouraging physical activity and providing health and care in people's homes.</p>
Clean growth and the Future of Mobility	
Buckinghamshire Mission: to successfully reduce the need for car ownership through providing greater accessibility and choice	
<p>There is a danger that additional economic growth and development in Buckinghamshire will lead generate increased congestion. This will have significant implications for productivity, health and well-being and the attractiveness of the area as a place to live and work. Concepts such as the sharing economy and waste minimisation could be applied in the transport field to reduce both car ownership and use. Locations such as Silverstone, Westcott and Cressex in High Wycombe are already looking at demand-led transport services and car and bike sharing scheme have also been explored. Two possible pilot projects include:</p> <ul style="list-style-type: none"> • Giving priority to a public fleet of e-vehicles in key locations and routes; • Introducing responsive transport services between major business locations and 	

transport hubs.

DRAFT

The propositions

9 Upstream Space at Westcott Venture Park

Why is this a core proposition in Buckinghamshire?

“Space is a UK success story. Since 2000, coordinated industry and government actions have trebled the size of the sector, and space now supports 14% of UK GDP – some £250bn. This has the potential to double over the period to 2030, if the relevant technological capabilities in the UK are nurtured and supported⁶”. – UK Prosperity from Space, May 2018

- 9.1 This historical growth has been facilitated by the significant amount of space R&D activity being led by UK based institutions and a strong programme of investment from the UK Space Agency (UKSA) and the European Space Agency (ESA).
- 9.2 Going forward, this growth looks set to continue, as global demand for launch capability increases, major international space programmes become increasingly constrained and UK Government policy continues to prioritise improved and independent access to space⁷.
- 9.3 The UK currently creates £13.7bn of value from its ‘upstream capabilities’ in space and £250bn from satellite applications and ‘downstream’ data⁸. The exploitation of Space and satellite technology has been announced as a focus in the National Industrial Strategy⁹ alongside an emerging sector deal, with international policies continuing to prioritise ‘low cost access to space’, in order to increase the flow of private investment in the sector, stimulate greater innovation and enable new missions.
- 9.4 Of all emerging technology areas, the UK’s premier Global research specialism is within ‘Satellites and the commercial application of space technologies.’ In this area the UK leads every nation in the world in terms of the ‘field weighted citation impact’ of research¹⁰. However, while the ‘reach and impact’ of UK research is highest, there are several active competitors with national research programmes that produce greater levels of research due to higher research funding levels.
- 9.5 Within the UK’s ecosystem of space capabilities, Westcott Venture Park is in a key position to drive progress in overcoming traditional innovation hurdles, by supporting firms to develop new products and services by providing them with access to a range of specialist test, validation and commercialisation facilities as opposed to a single purpose research base.

The National Space Propulsion Test Facility

⁶ Stuart Martin, CEO, Satellite Applications Catapult

⁷ [Prosperity-from-Space-strategy_2May2018.pdf](#)

⁸ UK Space Growth Partnership figures 2018

⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf

¹⁰ https://www.elsevier.com/__data/assets/pdf_file/0018/507321/ELS-BEIS-Web.pdf

- 9.6 The UK government has clearly announced an intent and set of strategic policies to bring the full innovation cycle of space technologies, including sustainable market benefits, to the UK. In July 2016, the UK Space Agency announced their intention to invest £4.12m in the creation of the National Propulsion Test Facility, at Westcott, giving the UK a new facility for rocket propulsion testing. The UK Space Agency investment adds new capabilities for the UK space sector including:
- The creation of a new vacuum facility which, when used together with the existing industry owned rocket firing test cells, will allow the simulation of high-altitude testing of thrusters up to 2kN.
 - The upgrade an existing industry owned test chamber to improve capabilities in the 25N thrust range.
 - Open the facilities, alongside a smaller 1N thruster test chamber at the site, for the community to use.
- 9.7 This investment builds on The National Space Technology Strategy¹¹ which highlighted the importance of a number of Access to Space Technologies as being important for the future, including low cost chemical propulsion for high thrust (small launch vehicle) systems; Low cost chemical propulsion for lower thrust (orbit transfer) systems; improved electric propulsion for orbital transfer and station keeping; systems engineering tools for launch systems; lightweight and low cost thermo-structural materials with potential both for game changing reusable launch vehicles, and ultra-low cost expendable vehicles; and spacecraft platform designs that enable miniaturisation and significant cost savings.
- 9.8 The increased attention on alternative safer chemical propellants (also referred to as Green Propellants) and the successful ventures of commercial space companies (such as SpaceX, Blue Origin, Virgin Galactic etc.) present an exciting ‘opportunity rich’ environment for technological advancement, and business growth. In particular the renewed interest in a UK light launcher, targeted at enabling low cost access to space for companies, will generate a rapid expansion in the industry sector with the proper investment.

Incubation Centre, Innovation Hub and 5G Step Out Facility

- 9.9 In parallel with these developments, BTVLEP also supported the Satellite Applications Catapult (SAC) to establish an Incubation Centre, Innovation Hub and 5G Step Out Centre at Westcott Venture Park and secured Enterprise Zone status for part of the site.
- 9.10 The 5G step-out centre for advanced communications at Wescott is the result of a collaboration between the SAC and the University of Surrey’s 5G Innovation Centre. Alongside the incubation facility and innovation centre, these facilities will support the creation and development of new companies and grow new enterprises, creating jobs and serving as a powerful attractor to external organisations to locate activities at Westcott. This will add to the nucleus of high-tech companies that already exist on site and will enrich the development of multi-disciplinary skills, purpose-built

¹¹https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=3&ved=0CCsQFjAC&url=http%3A%2F%2Fconnect.innovateuk.org%2F%2Fdocument_library%2Fget_file%3FgroupId%3D1583550%26folderId%3D14584920%26title%3DNational%2Bspace%2Btechnology%2Bstrategy%2BApril%2B2014&ei=9PC8U4bCBuWS7AbXx4DACQ&usg=AFQjCNHs1aVDIeXPVF9wzf31DFzkNTZ-fw&bvm=bv.70138588,d.ZGU

facilities, capabilities and network links to rapidly progress new technologies and concepts to market.

- 9.11 The focus on the sector, and level of expected investment and economic return, alongside the Government's welcome active industrial policy puts Westcott Venture Park at the centre of the UK's emerging ecosystem of space capabilities.

Westcott Space Cluster

- 9.12 In addition, The Westcott Space Cluster is home to a growing nucleus of space related companies developing new innovative technologies in rocket propulsion, 5G communications and autonomous systems. The Space Cluster within the Westcott Park will help to exploit the business opportunities inherent in the emerging field of Connected Autonomous Vehicles (CAVs), including Unmanned Aerial Vehicles (UAVs), by capitalising on parallel investments in instrumentation and communications infrastructure.
- 9.13 For example, Reaction Engines is constructing a new engine test facility at Westcott and plans to undertake the first ground-based demonstration of its SABRE™ air-breathing rocket engine at the new test facility, thereby enabling testing of critical subsystems and their SABRE engine core, scheduled to commence in 2020. The project represents a substantial investment for Reaction Engines, which will consist of a multi-purpose propulsion test stand designed to accommodate various test engine configurations, an assembly building, workshops, offices and control room. The location of workshops and other support facilities alongside the test stand will enable configuration changes to the engine to take place at the site, reducing the down time between testing phases and accelerating the development programme of the SABRE engine.

What is the challenge and opportunity?

- 9.14 There is significant scope for investment in the facilities at Westcott Venture Park to support the development and testing of disruptive innovations in the Space and Satellite Applications sectors, to complement the work of the many of the early stage space research and development facilities based elsewhere across the Oxford – Cambridge Arc.
- 9.15 Although a rural location, Westcott Venture Park is geographically close to other major centres of innovation, including Oxford and Harwell, and also London and the rest of the south-east. These characteristics provide a strategic advantage for Westcott in its alignment to the UK Space sector and its ambitions for the future.
- 9.16 By focusing on the development and test of innovative propulsion, UAV and next generation resilient communication networks, Westcott Venture Park possesses the potential to develop a powerful ecosystem that accelerates the commercialisation of new technology and applications for high growth markets. Developing close links with the UK and European Space Agencies will maximise the potential of the facility. The Venture Park will be connected and networked nationally and internationally through close connection to the International Space sector stakeholder community.
- 9.17 This vision will exploit a number of advantages that set Westcott Venture Park apart as a location for a modern-day space innovation hub. These include: open space in a rural location, ideal for testing rocket engines, but also for testing and ensuring the safe and secure use of UAVs and novel

communications systems in a controlled environment with good line of site visibility; a licensing, regulatory and health & safety regime that allows for use of potentially explosive materials but is also suitable for many other safety critical activities; plenty of land for development and expansion; and a good security infrastructure.

- 9.18 The medium-term goal will be to further develop the facilities at Westcott Venture Park to test, validate and commercialise disruptive innovations being developed within the Space Sector and build on the National Space Propulsion Test Facilities. The Westcott facility forms an important part of an expanding national strategy to develop early applications for 5G technologies within the emerging global digital economy.
- 9.19 This will add further growth opportunities to the area and will create the environment for Universities and industry to collaborate on high profile projects. This will provide a catalyst for graduate retention through apprenticeships and high-tech job opportunities in the region.
- 9.20 Demand for the National Space Propulsion facilities are anticipated to grow significantly, and therefore further complementary investment is needed to avoid capacity bottlenecks that will block routes to market in the UK at a key stage. This unique capability also provides the opportunity to offer safety compliance testing for fuel-cell technologies, to some extent de-risking activities through diversification and supporting the commercial case for investment that generates returns into the medium term
- 9.21 Westcott also presents an important opportunity to collaborate between the UK's slightly fragmented rocket propulsion research community – convening top actors, researchers and experts in the field in a more applied and commercially collaborative setting. Where a number of key innovations of the past have domestically been institutionally led, this has also led to other countries consolidating a comparative advantage in developing innovation for market. The UK must now address this traditional comparative weakness to develop the domestic launch potential, which can then leverage access to larger global commercial markets.
- 9.22 Lastly, a significant opportunity exists to develop an in-orbit service demonstration centre at Westcott, to enable the provision of a commercial service for deorbiting small satellites. Servicing and manufacture of space systems in orbit will become an increasingly attractive proposition in the next few years, together with the necessity to provide debris removal and other measures to protect the space environment. Over 4,500 satellites orbit the Earth, providing critical services including global communication and positioning capabilities. Upwards of 15,000 satellites are expected to be launched over the next 10 years, including into orbits that are already highly populated. There are growing concerns that a collision between uncontrolled space debris and an active satellite could cause global commercial and security risks and lead to a cascading debris effect making these orbits unsustainable. In order to address this issue, SAC is already working with partners to deliver a scalable, tailored and re-usable facility to meet the complex demands of advanced satellite constellations, as part of a national network of operations facilities. Their ultimate ambition is to make this innovative facility available for companies around the UK to access.
- 9.23 Collectively, our overall LIS proposition is to develop Westcott's role as a strategic location to facilitate cross-over and new business models that bring together up and downstream markets and

translate these into commercial value providing a formal link between downstream entrepreneurs and upstream capabilities, to create a 'UK village' of upstream space capabilities.

What is the current position?

"The survey identifies the Westcott propulsion facility as a potential site for a national centre for chemical propulsion: a propulsion hub. The site is already well developed and is acting as a centre of attraction to SMEs and larger companies engaged in propulsion R&D. There is a similar geographical case due to the majority of the interested parties being within a similar 75-miles radius" – UK Space Facilities Review, 2017, UKSA.

- 9.24 The UK Space Agency is part of the national Mission Oriented Innovation Network. The Mission Oriented Innovation Network model offers an opportunity to catalyse otherwise disparate or isolated activity around a particular end goal. The UK Govt announcement of the intention to develop domestic UK launch capability has created a new sector-based focus around upstream space and UK launch capability. Westcott has a role in this sector focused mission-oriented network in terms of its unique trial and test capabilities. Adopting such an approach would enable a commercial rather than institutionally driven innovation focus, to stimulate higher level jobs, thereby addressing a key current market failure.
- 9.25 This is based on the clear rationale that there are high levels of uncertainty about which technologies will make it into commercially viable markets. A lack of knowledge from venture capital and investors about specific technologies has led and will continue to generate sub-optimal levels of investment without some active intervention of this type.
- 9.26 This should be understood as a catalytic approach that targets the network failures involved in this type of pre-market activity with high costs and long lead-in times. As with the development of domestic aviation capability historically, the markets involved in UK launch and Earth Orbit capability are unlikely to develop without strategically co-ordinated policy intervention, but once in place this can command significant returns and technological spill-overs to first-mover nations¹².
- 9.27 We can therefore use location quotients to understand how specialised this sector is in Buckinghamshire. BTVLEP has a location quotient of 2 with respect to the national aviation sector¹³ in terms of this type of manufacturing employment, and a location quotient of 2.89 for Upstream Space Innovation investment as a further specialism within that¹⁴. A location quotient of over 1.5 is classified as significant at a national scale.

¹² https://ec.europa.eu/energy/sites/ener/files/documents/case_study_3_technical_analysis_spillovers.pdf Countries first adopting and developing a technology innovation are considered as a lead market, the market in which innovation takes place and the demand for the new technology is higher than in other countries of the world. This implies that firms can realise cost and quality advantages and technological leadership... Many studies identify technological leadership as the core source of first-mover advantage.

¹³ This also captures aviation supply chains. Not all areas with an aviation sector have developed upstream space capabilities; however, all areas with upstream space capability have skills and technical supply chain requirements that draw on specialist aviation capabilities.

¹⁴ That is to say – the proportion of innovation activity directed at space as a percentage of overall aviation and space activity is around three times higher in BTVLEP than average.

- 9.28 Westcott benefits from having strong connections and interactions with the established upstream sector and emerging capabilities from the wider sector, both domestically and internationally. This combination of strengths will help to position the facility in new markets and fill competence gaps.
- 9.29 Earth observation and telecoms markets are experiencing significant growth with an increase in demand expected from accurate earth imagery; Internet of Things; ubiquitous connectivity and 5G.
- 9.30 In-orbit servicing and manufacture of space systems will become an increasingly attractive proposition in the next few years, as will the need for debris removal and other measures to protect the space environment. Launch capability is currently missing from the UK upstream value chain – although maintaining an ongoing focus on launch systems is important to address a growing market and provide a holistic national capability

The UK upstream sector must continue to build on its competences and innovation to take advantage of the growth opportunities in these markets.

- 9.31 To grow and sustain all these specialisms the pipeline of skills needs to be improved, and companies based at Westcott have identified specific skills-shortages around technicians and propulsion test engineers. With respect to the type of skills and labour requirements needed to support further commercial activity – Upstream (access to space) is primarily a manufacturing sector: the ability to produce and combine advanced avionics and rocketry technologies is underpinned by specialist engineering, miniaturisation, digital manufacturing and advanced materials capabilities that have been developed as niche areas of UK growth within an otherwise declining manufacturing sector.
- 9.32 In parallel with these developments, institutional investment and subsidy is needed to support the growth of the upstream supply chain, to take advantage of emerging commercial markets. A mission-oriented technology commissioning strategy that can address this wage-driven skills gap will continue to be important.

How will Buckinghamshire exploit its position?

- 9.33 International market analysis of demand in the space sector supports the ambition for the UK to realise a £26.3bn expansion for launch and associated upstream product life-cycle services, to enable the upstream segment to reach £40bn by 2035 in terms of domestic and international demand. Importantly this will yield a projected £250bn in downstream value chains as low-cost access to space is expanded. At the current 19% corporation tax rate, this would generate an additional annual £47.5bn return to the exchequer in terms of national tax-take.
- 9.34 The conditions for this market to flourish are partly contingent however on supporting and expanding the unique role of Westcott in:
- Developing the key sub-capabilities for domestic low-cost launch, including innovative propulsion technologies.
 - Developing and testing UAVs and novel communications systems in a controlled environment.
 - Developing additional in-orbit servicing and manufacturing capabilities.

- Brokering early demand from domestic companies (and international inward investment) to support the growth of the sector.

9.35 By capitalising on Westcott's upstream potential Buckinghamshire can exploit the economic benefits associated with the sector. The upstream sector – currently worth £13.7bn in added value to the UK economy is set to reach £40bn by 2035. Productivity per-worker in the upstream sector is £75k¹⁵. This is significantly higher than the national average for productivity per-worker of £46k. Increasing demand for these roles and increasing the contribution to productivity further through greater levels of commercialisation can contribute significantly to the productivity performance in BTVLEP, which already leads UK areas.

9.36 As the area helps initiate relationships between upstream launch capability and downstream specialisations, this has the potential to generate significant 'pull-through' effects for national productivity by creating entirely new value streams, and platforms for UK companies to access these.

How will this be delivered?

9.37 The overarching strategic priorities required to deliver this proposition involve a mix of government, private sector and LEP activity and investment to deliver greater productivity in this area. The proactive role played by BTVLEP in identifying and developing the Westcott offer has already been recognised as a national exemplar as part of the Space Growth Partnership. By developing a long-term investment plan for Westcott which reflects the active Industrial Policy being pursued in space, and its significance to the future of UK prosperity, a greater international presence will prevail. A medium-term commitment will also helpfully incentivise more immediate and short-term investment plans.

9.38 By expanding the role and remit of – for example – Innovate UK/UKRI¹⁶ to drive investment at Westcott, brokerage between otherwise commercially separate and potentially fragmented elements of the sector can be better managed to target UK objectives highlighted in the sector deal more effectively.

9.39 We commit to developing a commercially focussed but also mission oriented network at the site that begins to draw in wider capabilities and learning from the UK space village, addressing emerging future service demand by:

- Enhancing networking across the Space Propulsion, UAV and next generation communications value chains.
- Raising the profile of the UK capabilities in upstream space, to an international audience, focussing initially on chemical propulsion and propulsion systems.
- Embedding International Trade services into the facilities at Westcott to act as a key link in the UK space supply chain and creating additional brokerage capacity with international and domestic demand.

¹⁵ Upstream Space SIA.

¹⁶ Innovate UK are already an active investor at Westcott, which has received the 5th highest level of investment in Space from innovate UK of 38 LEPs. Within this, it is well understood that the location has a unique specialism with particular requirements.

- Attracting interest from the finance community, large corporates and overseas investors.
- Enhancing key research, development and test facilities across the Westcott Space Cluster.
- Enhancing collaboration on skills development initiatives between business and skills providers at every level of the education system.

10 Creative and digital centred around Pinewood & the National Film and Television School

Why is this a core proposition in Buckinghamshire?

“The headline findings suggest 47 rapidly-growing creative clusters across the UK. These 47 account for three-quarters of all UK creative businesses, 80% of creative employment, and 87% of GVA. They range from the ‘usual suspects’ of a heavy London concentration and ‘hip’ cities (identified as Brighton, Bristol, Manchester, Edinburgh, Liverpool) to less expected centre variously described as ‘motorway towns’ like Slough, Luton, Warrington and Wigan and ‘creative conurbations’ like High Wycombe and Aylesbury” – NESTA, the geography of creativity, 2016.

- 10.1 Buckinghamshire has a high concentration of creative sector employees with recognised ‘creative conurbations’ in the southern parts of Buckinghamshire. It is also home to the globally renowned Pinewood Studios and the National Film and Television School (NFTS). Buckinghamshire is also home to nascent talent in experiential and immersive creative content buoyed by a recent award of £10m in funding to Story Futures. This new creative technology has practical crossover application with education and learning, leisure and sport and health and care sectors to name a few. The rapid development of this technology is opening up opportunities for wider commercial use and should be exploited through application of our drivers.

Pinewood Studios

- 10.2 Buckinghamshire is home to Pinewood - a world-renowned centre for excellence in state-of-the-art film and TV production and home to some of the most iconic franchises in film history including James Bond and Star Wars. The Pinewood brand has already been exported to international studios in the United States and Malaysia. Pinewood offers the creative industries a unique complement of world-class facilities and services and expertise and is home to established brands that can continue to drive the UK’s fast growing £46bn creative exports market.
- 10.3 Pinewood’s new site is currently expanding rapidly, and there is an opportunity to embed supportive assets such as a facility to support creative skills and SME incubation.

The National Film and Television School

- 10.4 Buckinghamshire is also home to The National Film and Television School (NFTS), the only UK film school listed in the Hollywood Reporter's top international film schools list, which has been described in the Guardian newspaper as the 'World's Best Film School'. NFTS alumni have won 11 Oscars and 138 BAFTAs and their alumni network extends across the globe and is home to the country's only 4K television studio and film studios which were supported by BTVLEP through its Local Growth Fund investment. .
- 10.5 In the middle of 2018, NFTS was awarded the status of National Centre for Immersive Content, as part of The Story Futures project. This project, which is led by Royal Holloway and includes Brunel University and the NFTS as key partners presents a significant opportunity to test how 'augmented, virtual, mixed and extended reality' can be used across a range of industries – to create new revenue streams for commercial brands and to understand changing consumer behaviour. The challenge will be to ensure greater take up of experiential platforms and encourage larger organisations like the BBC, ITV, and Sony to work in and with Buckinghamshire.

Other important skills providers

- 10.6 To address the skills gaps that exists in crew and production roles, Creative Media Skills based in the heart of Pinewood Studios has developed a higher education offer in collaboration with Buckinghamshire New University and Buckinghamshire College Group to develop 'set ready' talent with networks of contacts. This illustrates a response to the wider challenge for the UK industry: with the influx of big-budget films and high-end TV this had led to gaps in provision of below-the-line talent¹⁷.
- 10.7 A skills audit of the UK Film and Screen Industries also showed concern from screen employers that education and training is not suitable for job roles¹⁸. Buckinghamshire New University (BNU) offers courses in Audio and Music Production, Film and Television Production and Animation and Visual Effects. There is an opportunity to build on the work done in collaboration between BNU and Creative Media Skills and showcase courses like film and television production at BNU that are recognised as giving students the skills needed for a job in the media¹⁹.

What is the challenge and opportunity?

- 10.8 Consumers are more connected than ever before, boundaries are blurring between traditional media segments and competition is heating up horizontally and vertically as the media industry becomes the battle ground for internet, technology and telecoms companies. With mature segments looking for new sources of revenue and competition intensifying, securing and maintaining multiple platforms and developing compelling content to engage and retain users will be key to forging trusted relationships with users.
- 10.9 As these developments take hold, Buckinghamshire's creative community needs to adapt to open up new markets for experiential creative and digital content if the sector is to maintain and enhance its

¹⁷ <https://www.screendaily.com/news/how-the-uk-is-addressing-its-crew-shortage/5116050.article>

¹⁸ http://www.theworkfoundation.com/wp-content/uploads/2016/10/420_A-Skills-Audit-of-the-UK-Film-and-Screen-Industries.pdf

¹⁹ <https://www.screenskills.com/education-training/tick/>

contribution to UK Plc. Pinewood, The National Film and Television School (NFTS) and other key skills providers can support this transition.

- 10.10 PWC predict In their [2018 Global Entertainment & Media Outlook](#), that the UK entertainment and media sector will grow at a compound rate of 3% per annum over the next 5 years to be worth £76 billion by 2022. Digital spend continues to drive the sector growing at 7% per year over this period and the fastest growing sectors will be Virtual Reality (VR) and E-Sports, with the UK representing the largest markets in EMEA for both. There is a very real opportunity for Buckinghamshire to build on its work in e-gaming and immersive technology.
- 10.11 As many of the creative businesses that exist in the area tend to be small and medium-sized enterprises (SMEs), linked to anchor institutions like Pinewood and NFTS, we need to continue to strengthen these anchor institutions and the collaborative links between these institutions and the SME supply base. We also need to strengthen these organisations links with relevant research organisations (i.e. Catapult's, Universities and Centre's of Excellence delivering AR/VR programmes etc.), encouraging the creation of local facilities wherever possible and desirable.
- 10.12 There is a further opportunity – articulated by the chief executive of Ofcom²⁰ - to develop a mutually owned streaming service that shows the best of British Film and TV. Buckinghamshire is well placed to play a strong role in such a bid to showcase the best of British talent.

What is the current position?

- 10.13 Buckinghamshire is well placed to build on its existing creative cluster strengths illustrated by high concentrations of creative employment. BTVLEP's share of employment is more than twice the LEP average and BTVLEP ranks 3rd out of all 38 LEPs for the proportion employed in the creative sector.
- 10.14 Digital technology – namely growth in computer consultancy – is driving creative growth. The digital sector itself is the fastest growing 'major' employment sector since 2010 in BTVLEP (+59%; +6850 jobs). A significant portion of creative industry strength therefore lies in its connection with the high-tech sector.
- 10.15 Buckinghamshire is more specialised in certain DCMS sub-sectors than the national level: music, performing and visual arts; film, TV, video, radio and photography IT, software and computer services; publishing; and advertising and marketing all represent significant strengths in the local area.
- 10.16 Southern Buckinghamshire has also been highlighted as a rapidly-growing creative cluster and more specifically 'creative conurbations'²¹. This NESTA study shows that the creative strengths extend beyond large infrastructural assets, to encompass a significant number of SMEs. Some of these SMEs currently lack significant support with the UK's staple creative industry organisations.
- 10.17 Pinewood Studio itself currently has a 200-acre site directly employing 300 people. This is driving interest from new sub-economies of the creative sector such as e-games and the National e-games Association. Around 177 additional businesses exist on site to provide a range of production and post-production services to meet the needs of studio clients. As set out in the Bazalgette review

²⁰ <https://www.ft.com/content/dd2c36f2-f268-11e8-ae55-df4bf40f9d0d>

²¹ NESTA, the geography of creativity 2016.

there is currently a glut in skilled crews and production teams in the creative industry. As new creative occupations emerge across virtual, augmented and mixed reality technologies, skills development will be central to ensuring qualifications are fit for the sector.

- 10.18 In 2018 the NFTS and Royal Holloway, University of London with the support from BTVLEP won £10m of funding to “develop cutting-edge training and research programmes in immersive storytelling to ensure the UK creative workforce is the most skilled in the world in the use of virtual, augmented and mixed reality technologies”.²² This represents significant ambition for the testing and implementation of immersive technology in Bucks.
- 10.19 Alongside VR, AR and other immersive technologies Buckinghamshire is leading the way in e-sports. The area is home to the e-games²³ group and the International eGames Committee (IEGC), a not-for-profit organisation positively shaping the future of competitive gaming.

How will Buckinghamshire exploit its position?

- 10.20 Buckinghamshire will work to maximise Pinewood and the National Film and Television School’s potential as a catalyst for new and growing creative content and stimulate the development of linked technology firms. This would support a cluster of national and international importance, well connected with other creative and tech hubs in London and the Growth Corridor, with a focus on attracting international investment and driving up exports.
- 10.21 This will unlock skills bottlenecks in specialist creative fields, including digital and VR/ AR to create the next-generation of UK media export success; and super charge latent growth in the sector across the whole geography.
- 10.22 The opportunity arising with new national policy around T-Levels combines technical education (in the classroom) with strong ‘on the job’ learning in industry (with a minimum of 45 days in industry during the qualification). While Buckinghamshire will not benefit in the short-term from the national roll out programme, due to the location of T-Level delivery, it is keen to adopt the principles of industry experience early and will explore this potential.

How will this be delivered?

- 10.23 We are seeking government support to help the Film, TV and Games sector to adapt to the changing technological landscape, by accelerating the adoption and diffusion of Augmented Reality and Virtual Reality and ensuring some of the traditional ‘film making’ skills (storytelling, lighting etc) that exist in the sector are deployed successfully in these emerging ‘tech’ sectors.
- 10.24 This will also require the adaptation of the skills system, to improve their ability to prepare people to work in these emerging sectors.
- 10.25 To achieve this, Buckinghamshire will focus on supporting a limited number of strategic priorities:

²² <https://nfts.co.uk/blog/nfts-royal-holloway-university-london-awarded-£10m-funding-run-national-centre-immersive>

²³ <http://www.egames.org/index.html?ig>

- Open Buckinghamshire as an international creative gateway. Maximise Pinewood's expansion plans through a connected Innovation Park with increased access to Heathrow Airport and Western Rail Access to Heathrow.
- Maximise Pinewood and NFTS' expansion plans to enable them to adapt to the changing industry landscape and to capitalise on the vast array of filming locations in Buckinghamshire, building on the reputation as being the most filmed county in England..
- To support the NFTS to formalise their global alumni network, to strengthen networking, leadership and management development opportunities.
- To generate new forms of immersive creative content and gain buy-in from creative giants. This will help exploit crossover of the UK's 2nd largest export industry (television) and support the significant IT, software and computer services sector in Buckinghamshire.
- Raising the profile of the UK capabilities in immersive content and connect emerging work in immersive technology with creative industry giants e.g. BBC/Netflix, to an international audience.
- Embedding International Trade Resources into the Film, TV and Games sector in the area to act as a key link in the UK immersive content supply chain and create additional brokerage capacity with international and domestic demand.
- Attracting talent and interest from the finance community, large corporates and overseas investors by showcasing and building on the example set by Creative Media Skills to help address national skills gap and create set-ready workers.
- Investing in key research facilities and programmes, to ensure the sector is capable of adapting to changing circumstances.
- Enhancing collaboration on skills development initiatives between business and skills providers at every level of the education system.
- Develop an investment programme around town centres to create creative industry clusters and hubs, to create a 'buzz' in Southern Bucks locations such as Iver which is benefitting from Crossrail investment, High Wycombe, Beaconsfield and Chesham.
- Open a Centre for Immersive Technology (C4IT) for skills training, testing of concepts, working collaboratively with the School of Computing at Buckingham.

11 High technologies centred around Silverstone Park & Technology Cluster

Why is this a core proposition in Buckinghamshire?

“The Aylesbury Enterprise Zone aligns directly with Buckinghamshire Thames Valley Local Enterprise Partnership’s Strategic Economic Plan, which identifies Silverstone Park, Westcott Venture Park and Arla/Woodlands as three key employment locations all of which have greater, untapped potential to add value to the high-performance technology/motorsport; space propulsion/environmental engineering; and agri-food/human health sectors.” Aylesbury Vale Enterprise Zone.

- 11.1 The Silverstone Technology Cluster, with Silverstone Park and the world-famous Silverstone circuit at its heart, is a world-leading cluster of high-tech and advanced engineering businesses. It is an important component of the wider High technology Supercluster that spans the Oxford-Cambridge Arc. Over 4,000 companies operating in the high technology sector are based within a one-hour radius of Silverstone bringing benefits of co-location, networking and a specialist skills pool with strong local roots.
- 11.2 While the Silverstone site is a sub-regional asset which straddles more than one LEP, the strategic investment enabled by MEPC’s leadership of the Park and BTVLEP’s success in securing Enterprise Zone status for part of the site, is driving investment and innovation which would not otherwise have been possible.
- 11.3 Whilst the cluster is best known for its motorsport heritage, it has developed and broadened in recent years, to cover many of the specialisms developed in the motorsport sector (light-weighting, composites, aerodynamics, advanced engineering, telemetry etc.) which are now being deployed into a range of parallel markets. Today, the concentration of talent that exists serves a wide variety of sectors that are reliant on state-of-the-art technologies, cutting edge design and manufacturing.
- 11.4 Other sectors making active use of high-performance technologies include aerospace, automotive, defence, electronic sensors, marine medical devices and motorsport.
- 11.5 Other important elements of the Silverstone High Technology Cluster include:
 - The Silverstone University Technical College: a centre of excellence for young people seeking a career in high performance engineering.
 - Silverstone Innovation Centre: providing serviced offices, situated in a supportive environment, ideal for growing businesses.
 - Silverstone Sports Engineering Hub: a new 26,000 sq ft state-of-the-art innovation centre for British high-performance cycling.
 - Silverstone Park Metrology Facility: Britain's first dedicated sub-contract inspection metrology centre.

- Strong links to relevant pre-eminent universities and knowledge centres in the wider sub-region, including Universities, Catapult Centres, Manufacturing Groups etc.
- The Silverstone Experience: a STEM education and visitor experience, due to open in Spring 2019.

11.6 The area in which the cluster is situated continues to grow (in terms of population, geographic coverage and employment) and as its scale increases, its skills mix grows. This growth within the 'wider sub-region' is very important in stimulating the growth of some of new skills and capabilities (such as Industry 4.0 developments, for example).

What is the challenge and opportunity?

11.7 There is an opportunity to further develop the Silverstone high-tech cluster by building on the Enterprise Zone, as well as strong performance in the high-tech sector by businesses in the south of Buckinghamshire and different spheres of tech expertise across the corridor. There are also significant potential benefits from Silverstone's position at the centre of the wider High Technology Supercluster which has a prime location between London and the Midland Engine.

11.8 This will attract international investment and drive the growth of the high technologies sector across the Growth corridor. It will position the current cluster and future entrepreneurs to make the most of Silverstone to build a manufacturing base with linkages across automotive and advanced engineering sectors and diversification into aerospace, space, clean-tech, healthcare, materials, and electronic sectors. This will include identifying and exploiting opportunities for innovation transfer and collaboration with other sectors that underpin the Grand Challenges including Future Mobility and Artificial Intelligence.

11.9 A major opportunity for the development of the cluster is to improve the connectivity and linkages between different capabilities in the super cluster – including the advanced engineering sectors, aerospace, space, clean-tech, healthcare, materials, and electronic sectors possesses the potential to stimulate disruptive innovations.

11.10 To develop this emerging global high-tech super cluster by exploiting Silverstone's international brand and the existing world-leading motorsport and technology cluster. This will attract international investment and drive the growth of the wider high technologies sector across the Corridor and nationally.

11.11 Enabling the growth of high value manufacturing, including enabling cross-sector applications for additive and digital manufacturing is key to delivering the government's Industrial Strategy. There is potential to enable the further growth of this sector in Buckinghamshire, with a particular focus on exploring the potential of High-Technology crossovers.

11.12 Government has recently invested £20m in a place-based *Made Smarter* pilot programme in the North West. It is currently developing a business case for a £147m *Made Smarter* challenge fund.

11.13 Businesses have expressed concerns about the difficulties they face in engaging with universities in a meaningful way and the focus of much investment and incentive packages on large businesses rather than SMEs.

What is the current position?

- 11.14 MEPC is currently leading a bid to draw together key Oxford – Cambridge Arc tech capabilities with a focus on enabling entrepreneurs to pursue technologically driven business models. This represents the scale of ambition in and around Buckinghamshire. Between 2009-2014 the total number of jobs in Higher Performance Technology Motorsport in the core of the Silverstone Cluster grew by 4% compared to 2% nationally²⁴.
- 11.15 BTVLEP and the motorsport industry more generally has a legacy of commercially driven (rather than government research²⁵ driven) approaches to new technologies, which positions it to complement the innovation strengths of neighbours.
- 11.16 There is clear evidence of commercially driven innovation in Buckinghamshire. The ERC report 'Benchmarking local innovation – the innovation geography of England 2017' identifies that the percentage of Oxford – Cambridge Arc firms introducing new practices is variable: Buckinghamshire is second only to Cheshire and Warrington with 36%.
- 11.17 High technology in the broadest – Eurostat compiled definition – places BTVLEP fourth on a list of LEPs for higher concentrations²⁶ employed in high-tech industries at a national level and above neighbouring Oxford – Cambridge Arc LEPs. Buckinghamshire's high-tech sector employs 24,545 people.
- 11.18 Buckinghamshire has a locational advantage in service-based high-technology industries and certain aspects of more knowledge-intensive manufacturing.
- 11.19 In the High-Performance Engineering (HPE)²⁷ sector, there are currently 16,420 employees, which is a 12% increase from the 2015 level. This is the 6th highest proportional increase amongst all 38 LEPs.

How will Buckinghamshire exploit its position?

- 11.20 The circuit itself is located just south of Towcester and North of Buckingham, housing two business parks and a rapidly expanding Enterprise Zone with strong links and proximity to the F1 supply chain and wider motorsport cluster. Through MEPC's leadership and locally brokered institutional investment, the EZ has secured significant investment in Buckinghamshire.
- 11.21 Organisations across the High Tech Super Cluster are working together to develop a vision and marketing plan for the cluster, identify and share growth opportunities, showcase R&D facilities and attract interest from the finance community, large corporates and overseas investors. As well the Silverstone Technology Cluster and Silverstone Park, other organisations involved include: Oxford Innovation, Bosch, Cambridge Cleantech, the UK Atomic Energy Authority and Catapult Satellite Applications.

²⁴ Silverstone Cluster Report, SQW.

²⁵ For example, central government supports Oxford University with >£500m in annual research grant, which the University can also use to leverage additional VC through networks. Of all LEP areas, BTVLEP has the lowest level of government investment in HE led R&D. It has several 'mature' companies with capabilities in HT's that 'grow more slowly, are stable, and are less likely to have a legacy of dependence on FDI or quick return VC than 'high growth start-ups'.

²⁶ Concentration/ specialisation is measured using location quotients whereby a value greater than 1 indicates that there is a higher concentration (proportionally) of that industry compared to the national level.

²⁷ Uses definition developed by Northamptonshire Enterprise Partnership: High Performance Engineering in Northamptonshire 2011.

- 11.22 In identifying these sector cross overs, there is further potential to enable the growth of this sector in Buckinghamshire, with a particular focus on exploring the potential of High-Technology linkages. The area in which the cluster is situated continues to grow (in terms of population, geographic coverage and employment) and as its scale increases, its skills mix grows. This growth within the 'wider sub-region' is very important in stimulating the growth of some of new skills and capabilities such as Industry 4.0 developments with increased automation and data exchange in manufacturing.

How will this be delivered?

- 11.23 To achieve the above goal of stimulating the growth of the Silverstone Technology Cluster as part of the wider High Technology Super Cluster Buckinghamshire has established a clear set of strategic priorities which include:

- Enabling businesses to engage with universities in a meaningful way;
- Ensuring that business investment and financial incentive packages are focussed on SME innovation;
- Continuing to build the capacity of the High-Tech Super Cluster to improve networking opportunities across the Arc.
- Supporting the development and application of emerging technologies in companies in the Silverstone Technology Cluster, by improving the linkages between firms within the cluster and the knowledge base, strengthening the cluster and enabling investment in the participating firms.
- Delivering a unique new approach to skills provision in Buckinghamshire that brings all schools, FE and HE providers together with business at scale. This would include new schools and academies focusing on practical tech and STEM skills, majoring on employer involvement, a year in trade, work experience etc. but be imbedded within mainstream provision. This would also support a regional focus on new and flexible Centres of Technology at the heart of the Growth Corridor.
- Developing the innovation ecosystem to improve B2B connectivity between businesses and universities and other centres of research excellence.
- Attracting interest from the finance community, large corporates and overseas investors.

12 Growing Digital Health, Med Tech and Advanced AI

Why is this a core proposition for Buckinghamshire?

- 12.1 This proposition is framed around the grand challenge of an ageing society. In Buckinghamshire, the care work force is expected to increase by 32% by 2030. Health is forecast to see the next highest

growth in the number of jobs by 2030. As a sector with low wages and low levels of real productivity growth, Residential care and Social Work represent a significant drag on productivity in Buckinghamshire and the UK. Innovative approaches to medical technology and caring will be essential for an ageing population and older retirement ages.

Buckinghamshire Healthcare Trust

- 12.2 Linking in part to the Ageing Society Grand Challenge, the Healthcare Trust is delivering programmes of community interaction to support social prescribing. This is intended to encourage greater use of technology by clinicians and community users and minimise the need to visit clinical services. This as an approach will bring forward social, financial and mental health benefits as an overall contributor to reducing need.
- 12.3 Of particular note is the Hospital Estates Strategy, intended to rationalise the Stoke Mandeville estate to prioritise emergency and essential clinical services supported by clinical training facilities and technology innovation incubator. This creates a further opportunity for learning from patient experience through testing and practical application of new technologies through our living lab driver.

What is the challenge and opportunity?

- 12.4 Buckinghamshire is at the forefront of the development of integrated care systems and is helping to solve health and social care challenges by accelerating business innovations (and budding businesses) to market. Stoke Mandeville Hospital is committed to developing a more entrepreneurial approach and the Buckinghamshire Research and Innovation Partnership is well placed to bring these strands together with local businesses and exploit the expertise across the corridor.
- 12.5 The proposition to underpin future growth in the MedTech sector therefore has two components:
- Unlocking the ‘short-tail’ potential – i.e. increasing the scale of employment in high-value activities by creating opportunities through stronger links to an emerging ‘high-tech super-cluster’ and directing innovation more strategically at a ‘grand challenge’ scale.
 - Addressing the ‘long tail’ – current scale employment in the health and social care sectors is expected to grow significantly, and the productivity per-worker in social care sectors can be unlocked through commissioning more technology-oriented approaches and promoting associated skills and training pathways that utilise UTC and T-Level routes to deliver step-change approaches.
- 12.6 The forecast future housing growth likely to come to Buckinghamshire provides the locality with an opportunity to improve the connectivity between MedTech firms, housebuilders and the health and social care providers to deliver a new approach to create healthy new towns.
- 12.7 As Buckinghamshire has historically not benefitted from significant support from UKRI and central government to create additional capacity to strengthen supply chain linkages between housing developers, tech solution providers and health and social care organisations, there is a danger that future developments will not adapt to suit the needs of the ageing population.

What is the current position?

- 12.8 The Buckinghamshire Life Sciences Partnership is leading the development of The Buckinghamshire Life Sciences Innovation Centre.
- 12.9 Buckinghamshire is home to a number of global industry leaders in healthcare including Janssen/Johnson & Johnson and GE Healthcare who have supported the bid. Stoke Mandeville is the UK's national spinal centre. Buckinghamshire is in the first wave of 8 Integrated Care Systems which will pioneer new approaches to health and care integration locally. The planned major housing growth, in the area around Stoke Mandeville at Aylesbury Vale Garden Town, provides massive living lab opportunities to test the application of new technologies.
- 12.10 SMEs that helps form new companies and helps established SMEs get product to market.
- 12.11 The two locations of the Life Sciences Innovation Campus located at Stoke Mandeville and High Wycombe are in a position to draw in capability from distinct strengths in each location:
- Stoke Mandeville is located in proximity to the Silverstone and Cranfield advanced materials and performance technologies cluster in the north of BTVLEP.
 - High Wycombe is home to a developed software and digital consultancy cluster in the South of BTVLEP.
- 12.12 This sits alongside Buckinghamshire integrate care system (ICS) – one of the first in the country – and Buckinghamshire's HSC venture. The ICS will deliver more “joined-up care close to home, making it easier for people to get urgent care when they need it, improving and simplifying care for diabetes and musculoskeletal problems, improving access to mental health services and improving the prevention, diagnosis and treatment of cancer”.²⁸ Buck HSC venture includes a virtual hub part of an accelerator programme for
- 12.13 BTVLEP lies at the heart of a regional level World Leading Life Sciences cluster of over 700 businesses supported by key research institutions. Our key evidence on the MedTech sector within the BTVLEP area suggests that while it has some key strengths in pharmaceuticals, it has not achieved the same overall level of momentum in sector development as for example OxLEP or GCGP LEP. The conditions which have supported the sector in these locations – such as strong strategically directed research partnerships have in the past been lacking in Buckinghamshire, but this is not the case moving forwards and there is a strategic opportunity to promote the location as a key future growth node in the UK's world famous ‘Golden Triangle’ for Life Sciences.
- 12.14 This proposition is underpinned by five potential capabilities in Buckinghamshire:
- A model of self-funding care delivered through the private sector that is generating innovations in the market place.
 - The ability to deliver innovation supporting MedTech applications through the horizontal application of technology already developed in the motorsport industry, digital-AI (for example current AVDC work with Alexa), and bespoke additive manufacturing.

²⁸ <https://www.england.nhs.uk/integratedcare/integrated-care-systems/buckinghamshire-ics/>

- The potential for the commissioning of innovation at scale to address ageing population and other growing population needs. Stoke Mandeville has a heritage legacy of pioneering innovative and technology-based approaches and the Buckinghamshire Research and Innovation Partnership has the institutional capability to draw together these multiple strands.
- The potential for improved approaches to skills delivery at scale to create a productivity revolution in the delivery of health and social care (i.e. utilising new skills and technologies in combination).
- Proximity to Heathrow providing a speedy route to market for healthcare products that can be transported across the globe as seen with GE Healthcare innovations in cancer detection.

How will Buckinghamshire exploit its position?

- Nurture collaboration between businesses and health and care providers to support the operation of the Integrated Care System and the use of technology in adult social care, expanding the capacity to support business spin-offs from the Health Care Trust and the Universities.
- Improve quality HE/research input to develop some ‘state of the art’ thinking around commercialisation and taking products to market.
- Utilise heritage as the birthplace of the Paralympic Movement to position Buckinghamshire as the “medical tech adoption accelerator” with dedicated pathways for at scale product testing and dedicated medical device regulation degree apprenticeship programmes.
- Exploit the opportunities offered by housing growth in the Aylesbury Garden Town and surrounds to test the application of new technologies to provide care in people’s homes and to advance the use of technology within clinical settings to support remote monitoring & virtual consultation.
- Expand the UK’s first Independent Medical School at the University of Buckingham and develop a cross curricular programme looking at the use of artificial intelligence in healthcare applications.

How will this be delivered?

- 12.15 In the first instance a steering group to be created bringing together the Healthcare Trust, CCG, local authority partners and BTVLEP to ensure that cross-overs between the various initiatives referred to above are identified and that the potential of business to develop the commercial application of new ideas and to support health and care providers in better meeting the needs of local people is exploited to the full particularly in relation to the use of new technologies and the potential of living lab applications.

13 Future Transport and Clean Energy

We aim to position Buckinghamshire, together with its Oxford – Cambridge Arc partners, as a premier centre for innovation, testing and trialling of technologies and infrastructure for the

development and roll-out of approaches to future mobility within future transport. The proximity of Milton Keynes as a potential centre for 'Smart, Shared, Sustainable Mobility' means Buckinghamshire Thames Valley LEP is well positioned to develop new approaches to this grand challenge.

We propose to develop links with other key assets, notably high-performance technology (Silverstone) and Space (Wescott) and develop SME and large business (BMW) collaborations with HE through innovative capabilities & explore the potential for bespoke high-quality engineering workspace and facilities.

Why is this a core proposition for Buckinghamshire?

- 13.1 Buckinghamshire's strengths in high-performance technologies - including the Silverstone Technology Cluster and the motorsport cluster, the 5G Catapult centre at Westcott and proximity to Milton Keynes as a potential centre for 'Smart, Shared, Sustainable Mobility' - mean that it is well-positioned to make a major contribution to the Future Mobility Grand Challenge. Major developments in Aylesbury Garden Town could also provide an ideal opportunity for trialling and rollout of new technology including CAVs across the Oxford – Cambridge Arc.
- 13.2 Buckinghamshire has been identified as having innovation capabilities around Lithium Ion battery development supported by investment through Innovate UK. The forecast reduction in the energy-unit-costs of Lithium Ion battery technology is set to have a significant effect in terms of the international and global demand. The 85% reduction in the unit cost of energy from batteries 2010 to 2030 is also set to drive a comparable increase in technological penetration from 3% to 27% of the global private car market by 2030, with the EU and UK set to lead demand (and therefore achieve higher penetration rates earlier).
- 13.3 Innovation capabilities around Hydrogen fuel Cell testing and development have also been identified within the Westcott Business Plan – making BTVLEP one of the only locations in the UK where the final stages of development and pre-market safety testing can be done for this technology. This in turn cross supports the viability of the Upstream space business plan.
- 13.4 The 5G centre further support the potential for drone testing, and supportive planning uses are in place to enable this. The commercial viability of final mile drone delivery increases as population density lowers for single package deliveries, meaning that BTV has the place, infrastructure people and ideas to pioneer this innovation sector. In turn, this can create productivity impacts and a step change in growth for logistics, home care, pharmaceuticals and potentially a range of other sectors.
- 13.5 Finally, the design-test-and-build capabilities that exist at Silverstone Motorsport cluster, and the proximity to the national Transport Catapult mean that the BTV area has the potential to lead the trialling and exploration, with several current BTV innovation activities also relating to developing advanced lightweight materials and composites, integration of transport systems, and promotion of electric charging points.

What is the challenge and opportunity?

- 13.6 With significant investment in transformational infrastructure across BTVLEP area, combined with local capabilities, we have an opportunity to work with corridor partners to create a step change in future mobility and transport solutions, to ensure this growth supports, rather than undermines our productivity. The first challenge is to position Buckinghamshire, with Corridor partners, as a main

centre for innovation, testing and trialling of technologies, infrastructure and the regulation for the development and roll-out of approaches to future mobility. Maximising economic, social and business benefits from being at the forefront of these developments will be central to plans.

- 13.7 As transport is now the highest emitting sector of the economy, responsible for around 26% of the UK's greenhouse gases, future investment must be positioned away from negative environmental issues to address low emission targets. The government has launched an Industrial Strategy mission to put the UK at the forefront of the design and manufacturing of zero emission vehicles and for all new cars and vans to be effectively zero emission by 2040²⁹.
- 13.8 There is significant investment taking place across Buckinghamshire in major infrastructure for road, rail and with this comes a clear opportunity for investment in smart transport concepts to future-proof the next generation of transport. Infrastructure investment and delivery of new settlements creating new, and in many cases intensified patterns of movement will require new approaches to smart mobility.
- 13.9 A second challenge arises immediately from the first: Electric vehicles could place additional demands on an already constrained network, potentially exacerbating the existing connecting issues or making electric vehicle charging infrastructure delivery challenging. Mapping of current grid capacity with timeframes of future growth in domestic & non-domestic connections in order to identify future pinch points on the network would provide valuable intelligence on future needs.
- 13.10 Further context underpinning the rationale of this proposition:
- Air quality initiatives in Bucks provide an additional basis to move to greater electric vehicles use, particularly where air pollution issues are present and in particular around the A404/M40 Handy Cross junction and town centre area of High Wycombe
 - Government grants are available for EV charging infrastructure, helping reduce the cost of installing more charging points.
 - Aylesbury Garden Town provides an opportunity to design electric vehicle infrastructure into plans at an early stage.
 - Unlike domestic and commercial-industrial emissions, transport is the single source of growing emissions in BTVLEP.

What is the current position?

- 13.11 England's Economic Heartland (the emerging sub-national transport body) has highlighted the need to build in new models of service delivery, to encourage new business models for service delivery while encouraging investment in modes of travel and services that are more resource efficient, less polluting and can be considered a catalyst for the growth agenda to ensure benefits from this investment can be spread out across new and existing communities.

²⁹ See <https://www.gov.uk/government/publications/reducing-emissions-from-road-transport-road-to-zero-strategy>

13.12 In recognising the need to reduce the environmental impact of travel and deliver a truly integrated transport system, new opportunities for investment by businesses are also created through technologies associated with CAV and other models of 'Mobility as a Service'.

13.13 Key capabilities in Buckinghamshire include:

- Local industry partners include Bosch, Ceres Power with the Bosch group committed to R&D in automation, electrification and connectivity; and Ceres Power perfecting the invention of the lithium battery and fuel cell.
- The design-test-and-build capabilities that exist at Silverstone Motorsport cluster, and the proximity to the national Transport Catapult mean that the BTVLEP area has the potential to lead trialling and exploration, with several current BTVLEP innovation activities also relating to developing advanced lightweight materials and composites, integration of transport systems, and promotion of electric charging points.
- Hydrogen fuel Cell testing and development³⁰ makes BTVLEP one of the only locations in the UK where the final stages of development and pre-market safety testing can be done for this technology. This supports the viability of the Upstream space business plan.
- The 5G centre further supports the potential for drone testing, and supportive planning uses are in place to enable this. The commercial viability of final mile drone delivery increases as population density lowers for single package deliveries, meaning that BTVLEP has the place, infrastructure people and ideas to pioneer this innovation sector. In turn, this can create productivity impacts and a step change in growth for logistics, home care, pharmaceuticals and potentially a range of other sectors.

How will Buckinghamshire exploit its position?

13.14 To deliver a new model of mobility, significant innovation in autonomous and low-carbon systems needs to be brought forward. Automotive supply chains currently draw on highly globalised supply chains drawing on capabilities from a number of global regions.

13.15 Locations such as BTVLEP wishing to shift away from the current mobility model therefore face a trade-off in terms of the local ambition not representing sufficient demand to influence these global supply-chains; while at the same time lacking the full set of capabilities domestically to produce a solution 'in-house'.

13.16 Here the location of BTVLEP and the scale of planned infrastructure and housing delivery do offer the potential for a 'leap-frog' approach to this problem by drawing on the significant investment in the Transport Catapult at Milton Keynes, and the future-mobility innovation pipeline of OxLEP.

13.17 Transport for London (TfL) operates several services in BTVLEP with Amersham and Chesham stations falling within the top north-westerly geography of TfL's remit. Part of BTVLEP is already integrated with London's wider Oyster/transport network and the economic benefits associated with this.

³⁰ This has been identified in the Westcott Business Plan.

- 13.18 This is a further significant market that represents a specific opportunity for Buckinghamshire. Connected Autonomous Vehicles and Autonomous Buses are an area where potential is being explored by TfL and is of interest to Buckinghamshire in relation to mobility as a service in new Garden Town developments. Likewise, App based services offer disruptive technology that can provide new services away from traditional modes of transport.
- 13.19 Chiltern Railways has already been part of a market-leading trial of ‘post-pay’ technology to support seamless travel and intelligent mobility. The trial of a smartphone app, “ninja”, has been used travel from London Marylebone. Further investment in these models of transport will support transport solutions that throttle residents’ ability to move around by train.
- 13.20 TfL have started making use of OpenData approaches facilitated by apps such as CityMapper.³¹ This kind of sharing of anonymised user data is seen as key to creating innovation and competition – as well as contributing to improving the overall service. Promoting competition while maximising the efficiency of services is a challenge where TfL recognise some key trade-offs exist; and commissioners must take a ‘whole system’ approach to the implications of introducing new services.
- 13.21 Cranfield University is also currently exploring the potential for ‘beyond line of sight’ trials for drones (these are currently heavily regulated and for the most part prohibited). This trial will explore the potential of 5G technology to support key tests around performance and safety by combining remote sensor and AI approaches to facilitating safe and efficient use of drones and offering the potential to substitute van-based final mile delivery.

How will this be delivered?

- 13.22 To recognise the strategic opportunity that the sub-regional and corridor innovation pipeline represents, in combination with the potential to enable sustained growth in the future mobility sector through making sure planned infrastructure is future-proofed with respect to emerging future mobility models and aspirations.
- 13.23 Going further, the role of infrastructure planning and design in the short-term should focus on how infrastructure can create and support markets for innovation. The local future-mobility innovation network should be consulted by NIC commissioners on how infrastructure, including that of potential new settlements could support or enable commercial markets for future mobility – in effect recognising the ‘tacit’ role that the shape and design of the new built environment will have on future transport needs and behaviours.
- 13.24 By connecting to all major national infrastructure projects and using the digital opportunity from HS2, Expressway and East West Rail to serve potential automated transport, the required expansion of digital connectivity for neighbouring communities can also be delivered.
- 13.25 The strategic priorities to 2030 and beyond are to stimulate investment in alternative modes of travel to the private car; drive the development of transport models that can then satisfy an individual customer while stimulating investment in existing infrastructure to enable the deployment of new alternatives (such as CAV). This will be delivered by:

³¹ There are now over 600 apps power by TfL data used by 42 per cent of Londoners. Other benefits of this open data has generated annual economic benefits and savings of up to £130m and supported the growth of London Tech economy to the value of £14m pa in GVA and over 700 jobs.

- Maximising the potential of future housing growth to support the growth of Low Carbon Vehicles and embed at the heart of all future developments and stimulating shared mobility solutions.
- Establish a living lab where an innovative approach to public procurement and service commissioning is established to explore, test and roll out new transport service opportunities.
- Embedding an open innovation approach into key public sector infrastructure planning and development structures – including the Aylesbury Garden Town to enable the commissioning of innovative technological solutions and future-proof infrastructure investments.
- Working with regional and national partners like EEH and Meridian to support the creation of a cluster of excellence in driverless car testing, to accelerate the development of this technology, grow intellectual capital and attract overseas investment in the UK.

DRAFT

The economic drivers

14 The Skills and Inspiration Revolution: Creating a new technical education and training system and inspiring young people to pursue ‘creative-tech’ careers

Why is this core for Buckinghamshire?

- 14.1 Buckinghamshire has a very well-educated population with 47.7% of working age residents with NVQ level 4+ and a high proportion working in the high-tech sector (1 in 10). However, it suffers from a brain drain of skilled people who commute to London and elsewhere and has a comparatively small proportion of young adults (aged 24-30) residing locally. Furthermore, the proportion of working age residents with just intermediate/ technical skills is relatively low compared to national levels. Buckinghamshire needs to adapt to the increased demand for creative-technical and vocational skills and retain its talent pool, if it is to retain and grow its productivity.

What is the challenge and opportunity?

- 14.2 Current practice represents a significant challenge. At secondary school level, Buckinghamshire has a selective 11+ system. Grammar schools provide some 32% of secondary places but about 80% of Buckinghamshire's children do not attend these schools. Student numbers in the sixth forms of upper schools (secondary modern etc.) are reducing with a greater level of disparity appearing to reduce the overall inclusivity agenda.
- 14.3 This pattern of secondary education, coupled with the people needs of local employers, places a huge emphasis on the quantity and quality of technical and vocational education and the route it provides into good-quality jobs. Despite investment at a local level in careers and Enterprise Advisors, concerns remain about access and opportunity for those from less well-connected families – the result is too many young people are leaving education with little or no work experience.
- 14.4 The opportunity is to build on what is already there. Established programmes such as Young Enterprise and the activities of the Buckinghamshire Skills Hub are doing good work in making connections between school and the world of work but suffer from limited resources which do not match the challenge. Other issues relate to the availability of quality IAG (Independent Advice and Guidance on careers), the challenge of attracting teachers of technical subjects, and the difficulties employers are experiencing, despite the support available, with the new apprenticeships system.

- 14.5 T-levels³² represent both a significant opportunity at a national level but a challenge for Buckinghamshire. The roll out of T-levels will support opportunities for expanding vocational learning opportunities. For them to be a successful driver of technical education, relevant disciplines linked to the local business base, are required in order for them to succeed as a key driver for improving Buckinghamshire's prosperity. There are clear opportunities around industry placements to work with businesses to commit to a minimum of 45-weeks compared to 1-2 weeks of work experience and to develop occupationally specific practical and technical skills.

What is the current position?

- 14.6 It is important to recognise existing strengths in technical and vocational education and support provided to bring employers and providers together including:

- **Bucks University Technical College** specialising in developing education and skills with relevance to the construction computing sectors. Its industry partners, which included Taylor Wimpey, Cisco and McAfee, ensure students gain the right skills and motivation and are given a genuine work-related learning experience that will improve their employability within the sectors.
- **Silverstone University Technical College (UTC)**, based in neighbouring Northamptonshire, provides a centre of excellence for young people wanting to break into the specialist fields of High-Performance Engineering and Business & Technical Events Management.
- **University Campus Aylesbury Vale** providing HE and FE courses with a strong emphasis on working with employers.
- **Buckinghamshire Education, Skills and Training (BEST)** partnership between Buckinghamshire College Group, Buckinghamshire New University and Buckinghamshire University Technical College, works across educational boundaries to bring a new approach to working with employers and individuals to provide flexible and creative education and training solutions.
- **Buckinghamshire Skills HUB** was established by BTVLEP to address the challenges identified above in partnership with Buckinghamshire Business First (BBF). The Hub participates in national programmes as well as developing local solutions. The under 19 Skills Programme promotes links between employers and educators, delivering through a range of national and local programmes. Participation has been growing significantly but the HUB's latest progress report recognises a continuing disconnect between local business and the future workforce.

How will Buckinghamshire exploit its position?

- 14.7 This crosscutting education and skills intervention would support all of the assets identified in the emerging LIS. It would also support the Oxford – Cambridge Arc contribution to all Grand Challenges. Creating human capital that is skilled and ambitious is also fundamental to transforming the economy by addressing the five foundations of productivity.

³² T-levels – new flagship technical education programmes - have been introduced as part of a broader remit to develop technical routes into skilled employment. T-levels are designed to prepare students for entry into skilled employment (including higher level apprenticeships), either immediately or after higher levels of technical education (L4+).

14.8 Drawing from technical education models, Skills Actions Groups (SAGs) and Skills Advisory Panels (SAPs) will be well positioned to provide guidance on the new approach and support the provision of a test-bed for innovative, collaborative and shared ownership approaches between employers and education providers. This would be delivered by:

- ‘Mainstreaming’ successful T-Level practices on industry placement in advance of full roll out.
- Developing a much stronger collaborative approach between employers and providers, including on apprenticeships through Skills Advisory Panels.
- Creating a prestigious identity, with structured career guidance, that cuts through the perception that vocational routes are second-best to academic qualifications.
- Harnessing the assets, resources and expertise of employers for ‘mandatory’ and well-supported work experience embedded within the curriculum, potentially within a new generation of sandwich courses.

How will this be delivered?

14.9 In partnership with government departments (DfE and BEIS) as well as business and education, the BTVLEP area provides an ideal test-bed for embedding selected key features of the technical education and T-Levels. It also has expertise and experience of creating job-ready employees through its expertise and link-up in Pinewood and FE/ HE providers and emerging needs at Westcott Venture Park.

14.10 In delivering this new generation of technical education, the Buckinghamshire business base is readying itself through the refreshed Skills Advisory Panel and embryonic Sector Skills Groups to ensure greater involvement from the private sector to set and drive the agenda.

14.11 To deliver this successfully however, Buckinghamshire will develop new employer-led models to address nascent skills needs that require:

- A long-term plan to devolve the Adult Education Budget (AEB) at a level that allows maximum flexibility for the locality and engages with residents and businesses front and centre.
- Further policy developments to enable effective pooling of the Apprenticeship Levy and an opportunity to coordinate initiatives and deliver more of the government’s 3m by 2020 target.
- Early access to the policy and delivery criteria for the Shared Prosperity Fund to develop programmes with businesses and training providers to future proof skills development and retraining needs.

15 Digital Infrastructure: Delivering high-speed broadband coverage in order to support the transition to a digital economy

Why is this core for Buckinghamshire?

- 15.1 The digital revolution continues to remain one of the largest driving forces in the national economy and has become known as the 4th industrial revolution. A symbiotic relationship between digital technology and general industrial output has meant that investment in one can lead to large improvements in the capability of the other, and Buckinghamshire as a whole is an example of this. Investment into digital infrastructure has seen superfast broadband coverage move from affecting 68.6% of its premises in January 2013, through to 94.1% of its premises by January 2018.
- 15.2 The role of digital infrastructure in this was clearly outlined by the Department for Digital, Culture, Media & Sport, as they stated that the chief beneficiaries of their Superfast Broadband Programmes had been the education and health sector, where gains in turnover per worker were 4.7% and 3.7% respectively.³³ In order to enhance the full capabilities of these sectors, digital infrastructure will need to underpin growth.
- 15.3 Data oriented sectors in Buckinghamshire have been the strongest driver of growth in terms of new business formation and employment³⁴, and BTVLEP has a high location quotient for computer consultancy and creative-digital media sectors. These sectors have benefitted from the expansion of infrastructure provision and expanded as an economic base for employment in the area, driving productivity growth. To ensure this growth can be sustained, both barriers to connectivity and policies to address these are considered below.

What is the challenge and opportunity?

- 15.4 The challenge for Buckinghamshire is twofold: **1:** improve infrastructure to facilitate ongoing conditions for organic growth **2:** ensure the skills pipeline and talent attraction can keep pace with this growth.
- 15.5 With respect to the opportunity BTVLEP has significant assets to support future growth in digital sectors, both established and emerging. It has a very high skills base³⁵, high levels of entrepreneurialism³⁶ with advantages in terms of the maturity and acumen of local business

³³ Department for Digital, Culture, Media & Sport, *Evaluation of the Economic Impact and Public Value of the Superfast Broadband Programme: Final Report* (August 2018), p.38.

³⁴ A typically micro-business sector, 'digital' has accounted for 59% of jobs growth 2010-2016, adding 6,850 new jobs to the area.

³⁵ 47.7% of residents hold a degree or higher compared to 38.6% nationally.

³⁶ ONS business demography 2018.

leaders³⁷. It has an established cluster and network; and Buckingham University is expanding its school of computing. Commercial routes to market in London and wider demand for digital media content are supported through commercial anchors such as Pinewood, while the healthy start-up and micro-business base provide local demand for specialist computer management consultancy services.

- 15.6 The first challenge to overcome to maximise this opportunity is the coverage and quality of provision. While BTVLEP has both reduced the gap in coverage and closed the difference with the national benchmark, coverage remains below the national par³⁸. In terms of the quality of coverage, BTVLEP has to some extent benefitted from the application of 'inside out' approaches to ultra-fast provision, though while targeting under-served areas this has not necessarily delivered quality improvements targeted at the areas of highest growing demand and high levels of disparity in coverage require a more broad-based whole-area approach to address.
- 15.7 Digital capabilities which are suitable and sufficient for today's economy will be outmoded and outperformed by other regional, national and international economies if they do not develop at pace. One of the main examples for the demand for better connectivity can be seen in the average download speeds which are being accessed across the country, as this grew by 125.19% between Quarter 1 2013 and Quarter 1 2018 from 13.5mbps to 30.4mbps, with no signs of this trend slowing.³⁹
- 15.8 The driving force of this trend is the ever-increasing sophistication of digital skills and their applications in the market. Currently coding and programming have particularly high premiums attached to them in the labour market, reflecting competition for talent and some level of unmet demand.

What is the current position?

- 15.9 Due, at least in part, to the rural geography of Buckinghamshire, digital infrastructure remained at low levels until approximately 6 years ago, at which point Buckinghamshire Thames Valley Local Enterprise Partnership joined Buckinghamshire County Council in an attempt to change this. The Connected Counties programme became the local variation of the national Broadband Deliver United Kingdom (BDUK) in order to deliver superfast broadband connectivity to residents across Buckinghamshire and Hertfordshire. The programme is now within its second contract and aims to deliver approximately 57,000 improved connections within Buckinghamshire. This has assisted in improving superfast broadband coverage in Buckinghamshire from 68.6% in January 2013 through to 95.16% by October 2018.
- 15.10 In addition to the increase in broadband coverage, the LEP has also overseen the development of new innovative technology clusters. Pertinent for this segment is the development of the 5G test bed facilities within Westcott Enterprise Zone, allowing Buckinghamshire to be on the forefront on the next level of innovation in telecommunications. Furthermore, 15 community fibre partnerships

³⁷ Local demographic analysis; <http://i4j.info/wp-content/uploads/2013/05/i4jDaneStanglerDemographicsandEntrepreneurship-1.pdf>

³⁸ At the start of the connected counties programme Buckinghamshire trailed behind that of England as a whole by 5.5%; but by January 2018, this gap closed to 1.4%.

³⁹ 'UK Superfast and Fibre Coverage', *Think Broadband*, <http://www.labs.thinkbroadband.com> [accessed 6 November 2018].

(CFPs) have either been signed or have already been completed within Buckinghamshire since the start of 2016, showing an appetite for broadband locally even when the infrastructure needs to be crowdsourced.

- 15.11 Whilst current super-fast broadband coverage levels are now at 95% in line with national targets, the Buckingham Parliamentary Constituency to the north of the county remains below 90%.
- 15.12 In addition to this point, it should also be noted that across the growth corridor, Buckinghamshire still remains behind its counterparts in the area of digital connectivity. In the areas of Superfast coverage and mean download speeds accessed, Buckinghamshire remains behind all of its corridor counterparts, whilst in the area of ultrafast coverage, it is second from last.

How will Buckinghamshire exploit its position?

- 15.13 Beyond fundamentally underpinning productivity growth across sectors, digital is closely tied to the ability to target new innovations. Our emerging approach to living labs and the testing ground they will provide for new innovations will need to be supported by full fibre functionality.
- 15.14 Buckinghamshire will exploit its position by planning for full-fibre installation at the point of groundwork completion by working with major infrastructure providers to promote the digital connectivity interests of BTVLEP, particularly in cases such as HS2 and East-West Rail where the benefits will impact not only Buckinghamshire, but partners within the growth corridor and in turn national productivity.

How will this be delivered?

- 15.15 The overall ambition is to ensure Buckinghamshire-wide coverage of high-quality connections is accelerated by national infrastructure investment, going beyond the current ambition. This will achieve countywide full fibre coverage by 2033 but require earlier intervention where it is deemed that a public-private partnership can result in greater benefits for local businesses and residents.
- By comprehensively mapping all coverage – including cellular, 5G and broadband to support wider commercial investment. This will require growing the Broadband Team and ensuring skills and talent can match the ambition so that it is able to support individual communities in their attempts to get broadband through community fibre partnerships (CFPs), as well as to advise on which public funds are available to them.
 - By supporting the drive towards consumer & business adoption & diffusion of digital, artificial intelligence & machine learning technologies & undertaking applied research projects with firms with high value potential in the Digital & Care sectors, helping companies to exploit advances in these technologies (particularly, linked to the development of “Smart City” concepts linked to local planned Garden Town Developments’.
 - To continue to explore the potential of and remain at the forefront of digital innovation by addressing digital connectivity bottlenecks, and planning in digital requirements as a key part of basic infrastructure for new and existing communities.

The Living Lab: Establishing the conditions to scale up testing and deployment of innovative new products and technologies in future developments.

Why is this core for Buckinghamshire?

15.16 This driver has the potential to address three factors which could have a significant collective impact on the Buckinghamshire economy. They are:

- The major investment in infrastructure and housing development planned for Buckinghamshire;
- The scope to do more to exploit our economic assets in relation to digital health and medical technologies and future mobility and clean energy;
- The relevance to Buckinghamshire of the grand challenges.

15.17 The emerging vision for the Oxford-Cambridge Arc refers to its role as a test bed for innovations. Buckinghamshire's location and assets means that it is well-placed to test new innovation at scale.

What is the challenge and opportunity?

15.18 The ability of organisations to bring solutions to market faster is a challenge that needs to go beyond research and into practical application and testing of new products and ideas on ready-made audiences. Not by creating a test environment that's representative of real-life scenarios but by delivering innovations in a real-life situation and characterised by situated experimentation, diversity and participation, learning, and evaluation⁴⁰.

15.19 BTVLEP has an ideal opportunity to place people at the centre of this concept, drawing on existing experience of the Westcott 5G Test Centre and work of Stoke Mandeville Hospital relating to patient trials. The new generation of living lab for Buckinghamshire should not simply be about retrofitting SMART technology in existing communities but leading with the technology that can design and deliver new communities at scale, for example, through the emerging Aylesbury Garden Town masterplan.

15.20 By using a real-life environment, application of new ideas and technologies can deliver a Buckinghamshire-wide difference in the grand challenges. The opportunities are countless, and the applications are yet to be imagined.

⁴⁰ <https://www.scribd.com/document/386099304/Conference-Proceedings-OLLD18#>

- 15.21 BTVLEP has a new requirement that goes beyond research and needs to focus on application and commercialisation of new products and services, creating a formal living lab framework to enable more rapid testing and introduction of ideas, products and services.

What is the current position?

- 15.22 By testing concepts in a living environment, organisations can understand how their technology is perceived and how it tackles real-world challenges, speeding up research and development processes and demonstrating commercial viability by bringing solutions to market faster. The environment can also be used by policy makers to design experience and refine new policies and regulations in real-life scenarios and evaluate potential impacts before approval.
- 15.23 Another benefit of the Living Lab concept is greater collaboration. It provides a safe environment for groups of innovators to model the impact of change, enabling organisations to expose solutions to the 4 Grand Challenges set out by government. This requires strong leadership to enable decision-making when the future is uncertain.
- 15.24 International examples that have transferability to a new BTVLEP wide model at Aylesbury Garden Town include:
- Botnic Living Lab in Lulea, Sweden where the tech sector works closely with the public sector and academia to accelerate new ICT innovations and are reported to have sped up the innovation process from idea to market launch. This has been done through a process of co-creation and improvement of ideas to address challenges and through the creation of new business opportunities for small businesses. This example has crossover challenges with the Super High Technology cluster.
 - iMinds in Antwerp, which is a digital research, and entrepreneurship hub seeking to address fragmentation in the creative industries. A similar example to the challenges within the creative and digital economy of BTVLEP.
 - MIT's Wellness and Health Lab which uses the campus as a test bed to identify patterns in the spread of the flu and can apply learning to challenges at Stoke Mandeville.

How will Buckinghamshire exploit its position?

- 15.25 The development of the Aylesbury Garden Town, along with the major national infrastructure schemes such as HS2, Heathrow expansion, East West Rail and the Oxford to Cambridge Expressway together with a development of the 5G testbed at Westcott provide the assets to support the testing and development of new innovative services and products to benefit both the growing Buckinghamshire communities and to provide learning outcomes for other parts of the country.
- 15.26 A living lab framework will be developed to facilitate the of hackathons, Service Jams, Proto-hacks, specialist ideation programmes etc. all have a part to play in supporting early stage entrepreneurs to work with 'patient' clients locally to test and validate their innovative ideas. This will be supported by high levels of strategic cooperation between national and local government, local universities and the private sector alongside open access to ultra-fast communications and data platforms data platforms. A well-coordinated ecosystem of support and an appetite to help innovators and

entrepreneurs⁴¹. Through establishing these living labs, we will have broker a network of leading businesses at the forefront of their own sectors.

- 15.27 In addition to providing a responsive programme of support for start-up business, we need to improve the connectivity between anchor institutions in the locality and potential entrepreneurs, to establish an experiential programme of activities to support the stimulation of new business ideas (ideation) and accelerate their development and commercialisation.
- 15.28 The advantage of supporting early stage entrepreneurs to work with anchor institutions in this way is that it can also help these larger organisations tackle particularly challenging and ‘thorny’ transformation issues.

How will this be delivered?

- 15.29 Action will include:
- A collaboration between local government, developers and service providers to exploit the potential of the new housing development;
 - The extension of the step out test facilities at the Westcott Venture Park to support the wider use of 5G applications within Health and Social care, clinical and emergency services applications.
 - The establishment of a partnership between the England’s Economic Heartland programme together with HS2 Ltd, East West Rail and Highways England to provide extended community access to the digital connectivity and legacy access alongside the new transport corridors.

16 Commercialising Innovation: Supporting a network of centres to accelerate the commercialisation of innovation in Buckinghamshire

Why is this core for Buckinghamshire?

- 16.1 BTVLEP has a strong record of start-ups but more needs to be done to support scale-up so that more businesses achieve their potential including: better use of data to target growing businesses; enhanced leadership and access to talent; access to and take-up of finance; improved access to markets through international trade and government procurement, better supply chain support. There is also more scope for universities to support the development of innovative businesses

⁴¹ <https://www.adelaidesmartcitystudio.com/about/adelaide-living-lab/>

through spin out businesses and, more importantly, knowledge transfer and support for other innovative businesses with potential and ambition to grow.

What is the challenge and opportunity?

- 16.2 Buckinghamshire has the benefit of nationally significant business clusters supported by a developing network of innovation centres and activities that are nurturing the start-up and growth of innovative businesses. Our consultation with businesses, and other partners within these clusters, has identified the need for a more integrated approach that works across the clusters to provide a coherent ‘innovation eco-system’ with a strong focus on the commercialisation of ideas, access to markets and collaboration to promote ‘cross-over’ innovation.
- 16.3 Challenges include the ability to move ideas into commercialisation at pace. The ability to move early stage ideas into a commercial position is compounded by a lack of understanding of how to protect an idea. We need to develop an ‘innovation protector’ as standard NDA’s only go so far.
- 16.4 The risk adverse nature of the public sector and in particular the NHS, does not promote innovation and while our proposition to encourage med-tech solutions will help to shift the balance, this must be delivered at a scale and pace that delivers real commercial opportunities.
- 16.5 Current funding opportunities do not yet offer the right solution. Programmes such as Innovate UK can be off putting to the business community as the length of the application process and effort required is out with the rewards. Small scale innovation grants or vouchers delivered in a high-risk capacity would support businesses to scale up ideas and move prototypes into production.

How will Buckinghamshire exploit its position?

- 16.6 Establish a Buckinghamshire-wide Innovation Hub as a cross-cutting approach to supporting innovation and commercialisation *[and specialist skills provision]* embracing existing and potential business strengths that play strongly to the Government’s Grand Challenges.
- 16.7 Whilst having a primarily Buckinghamshire focus, the Hub should be charged with working closely with partners across the Corridor and other neighbouring areas to identify opportunities for collaboration and to draw in wider expertise from universities and other organisations that support business innovation. The role played by Royal Holloway in leading the StoryFutures programme is a good example of the type of collaboration that the Hub should facilitate.

How will this be delivered?

- 16.8 In terms of the single ask, we outline the rationale as follows: Govt needs to recognise the traditional ‘valley of death’ that UK innovations face, and act to protect key domestic innovation and technologies that have strategic relevance to the Grand Challenges. We have identified several of these through the development of our 5 propositions, and recognise that a common approach across propositions could be based on:
- Identifying Strategically relevant innovation capability.
 - Anchoring this activity in the UK through commissioning against mission-oriented objectives.
 - Networking these capabilities with appropriate support.

- 16.9 To maximise the impact of this approach - the single ask is therefore to create bespoke sector-focussed innovation commissioning function. Several elements of the above approach are already underway, but simply need to be brought together more formally. Recognising that some activities funded by bodies such as Innovate UK at earlier TRL's 1-2 may end up being produced and marketed outside the UK - there is a need to recognise that an expanded mission-focussed sector-based remit for Innovate UK to target gaps around TRL's 3 and 4 could address a this.

17 Stimulating Business Productivity: Supporting businesses to compete in increasingly competitive markets

Why is this core for Buckinghamshire?

- 17.1 Buckinghamshire is largely a micro firm economy, with a small number of large, international firms and a strong track record for new business start-ups. This profile is maintained by a strong track record of stimulating start-ups and encouraging business survival, but more could be done to support businesses to enhance their productivity and scale-up to achieve their full potential and contribute more to the economy.
- 17.2 The achievement of this goal is dependent on the better use of data to identify supply chain opportunities and target businesses with scale-up potential; inspiring businesses to invest in business improvement; driving the take up of leadership and management development programmes; improving the quality and relevance of skills programmes; improving investment readiness services and access to finance; and supporting businesses to access new markets, through more effective international trade and public sector procurement opportunities.
- 17.3 The Local Growth Hub is ideally placed to integrate and co-ordinate this support, to provide businesses with a holistic set of solutions, packaged to meet their particular needs. The Local Growth Hub can also provide valuable intelligence to inform the development of new business support solutions, to meet the articulated needs of business.
- 17.4 In addition, there is also more scope for universities, research organisations and centres of expertise to support the development of innovative businesses by stimulating graduate entrepreneurship, business spin-outs and knowledge transfer to support innovative businesses with potential and ambition to grow.
- 17.5 Buckinghamshire also benefits from nationally significant business agglomerations, although more can be done to support the emerging clusters and networks that support these agglomerations. A developing network of innovation centres and support activities are also starting to nurture innovative start-up businesses in these key sectors.
- 17.6 Our consultation with businesses, and other partners within these sectors, has identified the potential need for a suite of scale-up services built around a strong peer-peer learning model, to

inspire businesses to invest in business improvement, commercialise new ideas, open up new markets, stimulate business collaboration, promote best practice adoption and encourage 'industrial symbiosis' across like-minded, ambitious firms.

- 17.7 In addition, the changing trading landscape, combined with heightened trade tensions, points towards the need to adopt a stronger supply chain approach, identifying potential supply chain risks and particular opportunities to onshore capability, in order for whole industries to maintain their competitiveness.

What is the challenge and opportunity?

- 17.8 Despite the strong evidence that seeking and acting on external advice increases profitability; many businesses generally avoid external business advice. The reasons for this are complex but can be overcome through concerted investment and action.
- 17.9 Encouraging entrepreneurs and firms to invest in business improvement activities is generally made easier by strong and stable markets, high levels of public investment in business support and the overall continuity and quality of delivery.
- 17.10 Conversely, low levels of business confidence and piecemeal, short-term funding programmes generally create greater uncertainty and inhibit the development of high-impact solutions. There are also certain specialist areas of support - characterised by 'market failure' or latent demand - that require additional stimulation and support.
- 17.11 In an area like Buckinghamshire, which is forecast to undergo significant growth over the next economic cycle, one of the major opportunities to stimulate growth stems from 'locking-in' the value of this growth into the locality by improving the connectivity between these opportunities and local supply chains (using a well-established model of local wealth creation).
- 17.12 Linked to this supply chain approach is the need to also identify potential sectors and supply chains that are particularly exposed to heightened trade tensions and the potential introduction of trade tariffs, to explore whether onshoring capability improves the overall resilience and competitiveness of the sector.
- 17.13 The opportunity however is clear. We want to grow the overall productivity of the firms that exist in Buckinghamshire and our overall contribution to UK Plc by helping businesses to improve their productivity, their propensity to innovate and reduce their costs. In order to do so, we need to create a targeted programme of high calibre business support to encourage aspirational businesses to innovate, reduce costs and enhance their resilience in the face of increased global competition.

What is the current position?

- 17.14 Building on our position of having a Growth Hub in the top 5 position in the country puts us in a strong position to deliver further innovations in the business support arena.
- 17.15 As one of our key local assets, the Buckinghamshire Local Growth Hub has created a strong peer-peer business community – one that is supported, encouraged and facilitated by Buckingham Business First (BBF). Led by business, for business, the Buckinghamshire Growth Hub has strong

business membership and capability as well as strong links to other public, private, academic and voluntary sector providers of support.

17.16 Some of the business growth support services provided by the Growth Hub include:

- A Coaching for Growth programme - built around a peer group, action learning set structure.
- A pool of businesses volunteers willing to offer their support to fledgling start-ups – by either acting as a Start Up Champion or through the provision of free or discounted B2B services (e.g. free website creation – plus many others).
- Growth Champions – helping to create the aspiration within business to grow.
- An Investment Readiness service, supporting businesses to secure the finance they need to grow.

17.17 The Local Growth Hub is supported by a mixed funding model. This supports the resilience of the Hub. Investment in core infrastructure has made it easy for suppliers and customers to access, with a highly detailed client management system and strong team with deep knowledge of the business support environment. The model is flexible with deep and wide reach into most of our business community.

How will Buckinghamshire exploit its current position?

17.18 Building on its top five Growth Hub position and membership base of over 11,000 businesses, offering a range of support services to businesses across Buckinghamshire, we need to future proof the existing offer by securing a commitment to continuity of funding for locally delivered support and strengthen the offer to better inspire and make possible the growth aspirations of the regions' businesses and entrepreneurs.

17.19 In order to accelerate the growth and economic impact of our business base, investment is needed in a range of priority areas, including driving up demand for business improvement and plugging more specialist gaps in support. This will result in a direct impact on helping to scale up ambitious businesses, particularly if we are to respond to the challenges and opportunities posed by Brexit and address the long tail of productivity.

17.20 By establishing a stronger eco-system of business support and encouraging wider take up, we want to encourage businesses to invest in those key actions which will improve their productivity and develop distinctive sources of competitive advantage. While a large proportion of this support will come from BBF, the market must remain open to new innovations.

How will this be delivered?

17.21 Our overall strategic priorities for enhancing the productivity of business are to:

- Stimulating growth aspiration – working with ambitious entrepreneurs to promote a highly positive culture of business investment.
- Maintaining and strengthening the Local Growth Hub – as the first stop shop of support.

- Establishing a strong eco-system of business support – plugging gaps in the specialist services that can have a direct impact on scaling up ambitious businesses.

17.22 In order to achieve this ecosystem of support, we need to prioritise:

- Leadership and Management Development: Establishing Mentoring and Business Growth Programmes delivered by a range of providers and coordinated by the Local Growth Hub, to support business scale up aspirations and capability;
- Innovation Support: Stimulus to encourage innovation in the form of small-scale vouchers to incentivise investment in R&D.
- Supply Chain Development: A programme of supply chain mapping and development driven by a detailed analysis of market need, trade flows and opportunities for investment at scale.
- Rural Business Support: An offer that fits our rural economy which can be broken into strong land and food-based parts of our local economy but also homeworkers in rural locations.
- Incubation and Coworking Spaces: high quality business accommodation with access to plug and play services combining 3D printers, ultrafast broadband and collaborative working practises. This will deliver the leadership capacity that our firms need to grow into new domestic and overseas markets.
- Collaboration Tools: Creating a new Sharing Platform where employers can share resources, facilities etc to prevent down time and the risk of incurring additional costs.

17.23 Encouraging businesses to invest in business improvement requires multi-agency action and differentiated and diverse messaging. The overall effectiveness of the communication programme can be strengthened by collaboration at the level of place, to share resources and agree common messaging.

17.24 The scale of the impact delivered is likely to be dependent on a range of factors, including the scale of the overall investment in business support, the general confidence in the market, the level of competition, the effectiveness of the services delivered etc.

17.25 With the breadth of spending in Buckinghamshire linked to the future growth of the area likely to be quite significant (to deliver services, new infrastructure and new products) we foresee that significant opportunities exist to retain wealth in the local economy. Given this situation, we want to explore the potential of improving supply chain linkages to lock the value of this growth into the locality.

17.26 In addition, heightened trade tensions and the potential introduction of trade tariffs pose potential threats for certain sectors that are overly reliant on key overseas supplies. In these situations, onshoring capability may help maintain the resilience of the sector.

17.27 Our primary ask of government is for a strong commitment to stimulating the business improvement marketplace, continuity of funding for business support and flexibility to deliver an enhanced programme of business support, targeted at supporting our indigenous ambitious businesses with scale up potential.

17.28 In turn, we can offer the government a robust and professional business support system, that draws in public, private, academic and voluntary sector partners and commissioners to deliver a highly effective programme of business improvement that can bring more opportunities to local firms,

identify supply chain opportunities, stimulate innovative products and services and enhance the skills and capabilities of business.

Annex 1

Bucks Policy on / off position against 5 Foundations

Foundation	Key Policies in NIS	Bucks position on existing NIS policies	Bucks LIS policy requirement
People Ensuring good jobs and greater earning power for all	<p>Establish a technical education system that rivals the best in the world, to stand alongside our world-class higher education system</p> <p>Invest an additional £406 million in maths, digital and technical education, helping to address the shortage of science, technology, engineering and maths (STEM) skills</p> <p>Create a new National Retraining Scheme that supports people to re-skill, beginning with a £64 million investment for digital and construction training.</p> <p>Institute for Apprenticeships launched</p> <p>T-Levels launched with first ones commencing in 2020/21 academic year</p>	<p>New Academy and Free School with High Tech and Space as a priority sector required in Bucks</p> <p>Secure devolution of Adult Skills Budget, to enable retraining of adults to develop the skills needed, in particular by HPT sector</p> <p>Local Institute of Coding to incorporate learning which solves real-world business problems and develops business, technical and interpersonal skills in equal measure while supporting sectors undergoing digital transformation via new digital training programmes</p> <p>Bring forward T-Levels at a corridor level in subjects relevant for the local economy for example Digital route: Software applications design and development T Level</p> <p>Construction route:</p>	<p>Dedicated skills and education development manager for the HPT sector to support the specialisation of the skills system to better support the sector.</p> <p>Deploy UKSPF to support pre-14 STEM inspiration activities</p> <p>Delegate adults' skills budget.</p> <p>Partner with BTVLEP to embed key aspects of technical education including routes in creative and tech employment.</p> <p>Secure local pooling of the Apprenticeship Levy to support development of the economy</p> <p>Aggregate demand for Technician</p>

Foundation	Key Policies in NIS	Bucks position on existing NIS policies	Bucks LIS policy requirement
	Advanced Maths Premium and Institute of Coding launched	Design, Surveying and Planning T Level	Apprenticeships and T-levels Build on/ promote current programmes in Buckinghamshire that are similar to T-levels e.g. BNU recognised as giving students the skills needed for a job in the media.
Targets	£3m apprenticeship starts target by 2030		Link to development of 'Encore Careers'
Infrastructure A major upgrade to the UK's infrastructure	<p>Increase the National Productivity Investment Fund (NPCIF) to £31 billion, supporting investments in transport, housing and digital infrastructure</p> <p>Support electric vehicles through £400 million charging infrastructure investment and an extra £100 million to extend the plug-in car grant</p> <p>Boost our digital infrastructure with over £1 billion of public investment, including £176 million for 5G and £200 million for local areas to encourage roll out of full-fibre networks.</p>	<p>Current BCC NPCIF investments include A418 Corridor improvements Aylesbury to M40 (£2.18m from DfT) AND A40 (£4.13m from DfT) London Road High Wycombe improvements.</p> <p>BCC working with regional partners to explore potential for EVs</p> <p>Committed to delivering high-speed broadband coverage and prioritising ultrafast broadband. Superfast broadband coverage moved from 68.6% in 2013 to 94.1% in 2018. Map all coverage including</p>	<p>Continued investments to support transport (e.g. E-W rail), housing (NIC additional 1m across Ox-Camb Arc), and digital infrastructure. Include expressway connection to Vale Parkway, Science Vale Loop to Thames and M40.</p> <p>Create a developer forum to engage on NGA requirements to link Garden Town and new future settlements alongside other opportunity sites (housing and commercial).</p> <p>Unlock economies of scale through MaaS in new housing developments to provide 'transport on demand'</p> <p>Support electric</p>

Foundation	Key Policies in NIS	Bucks position on existing NIS policies	Bucks LIS policy requirement
	<p>Bidding round closed for the £840m Transforming Cities Fund, with announcements due in late 2018</p> <p>Announced the successful bidders for the initial phase of the 5G Testbeds and Trials Programme (5GTT), including areas in the Midlands, West and Northern England, Wales and Scotland</p> <p>Road to Zero Strategy launched – the ambition to see at least half of new cars to be ultra-low emission by 2030</p>	<p>cellular, 5G and broadband.</p> <p>Emphasise Buckinghamshire's role in the Oxford-Cambridge Arc. (£74m allocated to Cambridgeshire and Peterborough as part of Transforming Cities Fund)</p> <p>Investing in 5G capability at Westcott. Launch of 5G Step-Out Centre and Westcott Business Incubation Centre at Buckinghamshire. 5G step-out a testbed for 5G terrestrial and satellite infrastructure.</p> <p>From 10 to 1,800 in 6 years (up to March 2018 and up from 1,082 at the same point last year) – the increase in electric vehicles in Buckinghamshire recognises the 2030 target. Wycombe 773 EVs, AV 507, Chiltern 310, and South Bucks 271.</p>	<p>vehicles through rollout of charging infrastructure investment by accelerating take up of the plug-in car grant</p> <p>To work with BTVLEP and infrastructure providers to plan for full-fibre installation that will benefit HS2, East-West Rail and the arc.</p> <p>Government needs to commit substantial investment to support proposed new road and rail links to achieve the Oxford-Cambridge Arc.</p> <p>Role out the 5GTT to BTV's 5G step-out centre to plug BTV into UK 5G network.</p> <p>Establish a Local Energy Innovation Zone at Westcott – use tech in electric vehicle system (hydrogen, battery storage) to develop innovative local energy systems.</p>
<p>Business environment</p> <p>To be the best place to start and grow a business.</p>	<p>Launch and roll-out Sector Deals – partnerships between government and industry aiming to increase sector productivity. The first Sector Deals are in life sciences, construction, artificial intelligence</p>	<p>Well placed with National Space Propulsion Facility to link with emerging Aerospace Deal. Creative industry partners branching out to key players e.g. Royal Holloway, NFTS and Pinewood</p>	<p>More focus on linking smaller creative firms with creative industry giants would enable Buckinghamshire to benefit more centrally from further creative sector deals.</p> <p>BTVLEP and SAC to</p>

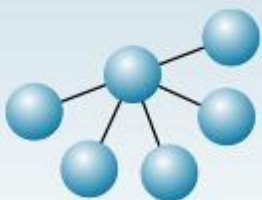
Foundation	Key Policies in NIS	Bucks position on existing NIS policies	Bucks LIS policy requirement
	<p>and the automotive sector</p> <p>Drive over £20 billion of investment in innovative and high potential businesses, including through establishing a new £2.5 billion Investment Fund, incubated in the British Business Bank</p> <p>A review of what actions could be most effective in improving productivity of SMEs, including how to address the 'long tail' of less productive businesses.</p> <p>£2.5bn British Patient Capital (BPC) programme launched to enable long-term investment in innovative companies across the UK</p> <p>Published an Export Strategy to support British businesses looking to export to the global market</p> <p>Completed the call for evidence for the Business Productivity Review – how to improve the productivity of SMEs looking at leadership, technology, and business support</p>	<p>Studios.</p> <p>Buckinghamshire has a robust and professional business support system, that draws in public, private, academic and voluntary sector partners and commissioners to deliver a highly effective programme of business improvement. Bucks has one of the top 5 Growth Hubs in the country.</p> <p>Buckinghamshire to exploit its high proportion employed in the creative sector with the export sector currently worth £46bn and Pinewood brand exported to US and Malaysia.</p> <p>BBF is involved in the consultation around the Business Productivity Review. This LIS has stimulating business productivity: supporting businesses to compete in increasingly competitive markets as a core economic driver.</p>	<p>secure government investment to develop the business case to set up an in-orbit service demonstration centre at Westcott. Extend the boundary of the EZ on the Westcott site to support business growth and enable local investment. Investment to develop an Advanced Man centre at Silverstone park.</p> <p>A strong commitment to stimulating the business improvement marketplace, continuity of funding for business support and flexibility to deliver an enhanced programme of business support, targeted at supporting our indigenous ambitious businesses with scale up potential.</p> <p>Commit funding to Growth Hub on a longer-term basis (particularly with withdrawal of ERDF and ESFs)</p> <p>Build on strong export performance in Space to drive a Global Britain by creating investment propositions to grow local exporting capability and building</p>

Foundation	Key Policies in NIS	Bucks position on existing NIS policies	Bucks LIS policy requirement
			on defence links at Westcott. Promote the creative sector on an industrial scale as identified in the Bazalgette review.
<p>Places</p> <p>To have prosperous communities across the UK.</p>	<p>Agree Local Industrial Strategies that build on local strengths and deliver on economic opportunities.</p> <p>Create a new Transforming Cities fund that will provide £1.7 billion for intra-city transport. This will fund projects that drive productivity by improving connections within city regions</p> <p>Provide £42 million to pilot a Teacher Development Premium. This will test the impact of a £1000 budget for high-quality professional development for teachers working in areas that have fallen behind.</p> <p>Cultural development fund Expression of Interest stage attracted a high level of interest</p> <p>Published the Strengthening Local Economic Partnerships paper</p> <p>First phase of Skills Advisory Panels</p>	<p>BTVLEP is a trailblazer LIS.</p> <p>Buckinghamshire currently struggles to attract industrially experienced and technical teachers. LIS focuses on improving/advancing STEM and other high-quality teaching objectives.</p> <p>Buckinghamshire fits with requirement: towns and cities outside of London who want to make the most of culture's contribution to their local economy. Will make the most of links into London, large concentration of culture/ creative</p>	<p>Commit to an implementation plan (and funding) that leads on from the LIS.</p> <p>Unlock economies of scale through MaaS in new housing developments to provide 'transport on demand' and reducing fragmentation between transport modes.</p> <p>Support Buckinghamshire's mission to become the home of encore careers with a focus on providing professional development for teachers.</p> <p>Commit funding to Buckinghamshire to improve cultural development of Buckinghamshire's urban centres and encourage younger workers to stay in the area.</p> <p>Provide further technical support on</p>

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	<p>piloted in seven areas</p>	<p>employees, and reduce outflow of young workers.</p> <p>Buckinghamshire Thames Valley completed first phase of SAP. Combined SAP with Skills Board. Sections Action Groups already being used to test accuracy and relevancy of sector data compared to what is happening on the ground.</p>	<p>building skills evidence bases for LISs (through SAPs). Make data available so that it is possible to do stage 2,3,4 and 5. Showcase case studies of best practice in early rounds of SAPs. Provide more information on ways to understand existing (mainstay) sectors as opposed to growth sectors e.g. social care, education and other hard to recruit for sectors that can be used to test data and develop actions.</p>
<p>Ideas</p> <p>To be the world's most innovative economy</p>	<p>Raising total research and development (R&D) investment to 2.4% of GDP by 2027</p> <p>Increasing the rate of R&D tax credit to 12%</p> <p>Investing £725 million in new Industrial Strategy Challenge Fund programmes to capture the value of innovation.</p> <p>Raised R&D tax credit to 12%</p> <p>Announced Wave 1 and 2 of the Industrial Strategy Challenge Fund</p> <p>Currently shortlisting</p>	<p>Buckinghamshire committed to investment in R&D e.g. continued investment in propulsion at Westcott.</p> <p>Opportunity to exploit 5G Catapult centre</p> <p>Exploit benefits of 5G Catapult centre for innovative, high-growth SMEs, linking AI and CAV testing, trialling, and capitalising on 'beyond-line of sight drone testing' capability for applications within new urban settlements, rural communities and in orbit operations.</p> <p>Map Buckinghamshire's (and the arcs)</p>	<p>Explore demand for bespoke engineering space (in N. Aylesbury) from e.g. BMW-MINI; engineering R&D across the corridor; battery tech; and MaaS.</p> <p>Support the Integrated Care System and technology used in adult social care.</p> <p>Establish a new Investment Fund, incubated in the British Business Bank.</p> <p>Secure support from UKRI for a National Space Propulsion Research Partnership (NSPRP) - a post-doc educational resource to develop, test and deploy new</p>

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	Wave 3 bids	<p>innovation ecosystem.</p> <p>Buckinghamshire welcomes next rounds of innovation funding.</p> <p>Buckinghamshire try to position itself as a place to test and demonstrate applied research particularly with links to Catapult.</p> <p>Buckinghamshire's LIS supports technologies of the future e.g. Space, medical and transport technologies.</p> <p>Drivers include commercialising innovation and living lab.</p>	<p>propellants and propulsion systems.</p> <p>Develop a blueprint across local capabilities in transport and future energy to understand the networks that need to be nurtured.</p> <p>Encourage UKRI to invest in relevant research facilities at Silverstone to strengthen the innovative potential of the Silverstone Technology Cluster.</p> <p>Work with the School of Computing at Buckingham to open a Centre for Immersive Technologies (C4IT).</p> <p>Develop quality HE/research to develop thinking around commercialisation by connecting and developing collaboration between businesses and health and care providers to generate local value.</p> <p>Put in place a Hack Manager, to develop collaborations with relevant local, national and international public sector, 'tech' organisations and education providers to stimulate open innovation/ideation</p>

Foundation	Key Policies in NIS	Bucks position on existing NIS policies	Bucks LIS policy requirement
			<p>programmes in the space sector.</p> <p>Establish a local Energy Innovation Zones at key locations to develop innovative integrated local energy system.</p> <p>Invest more into Smart Specialisation Hub to better understand local/ regional/ national innovation systems.</p>



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