

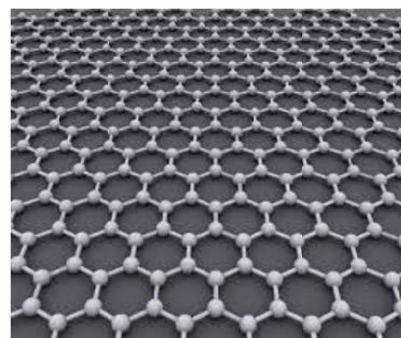


The Lancashire
Innovation Plan

Lancashire Enterprise
Partnership

A Final Report
14 March 2018

Our ref: 231-495-01
Client ref: [Click here to enter text.](#)



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A Lancashire’s Innovation Assets - Listing

Executive Summary

The Commission

- A. In Autumn 2017, the Lancashire Local Enterprise Partnership (LEP) commissioned SDG Economic Development (SDG-ED) to develop Lancashire's Innovation Plan, a new Strategic Framework to drive forward innovation across the County. Building on the work done to inform Lancashire and Sheffield's Science and Innovation Audit in 2016, the Plan provides a practical analysis of the economic role and contribution of innovation in the County's economy, with an informed assessment of how Lancashire's innovation resources – actual and latent – can be better led and deployed to drive productivity, industrial resilience, and sectoral agility in the County's economy.

Context

- B. Innovation is increasingly viewed as a key driver to improving productivity across the UK. Businesses that innovate grow faster than those that do not, and innovating economies are more resilient to market and technology change, and better equipped to plot their futures than those that do not. Sub-nationally, innovation was identified as one of the key enablers of the Northern Powerhouse, and innovation was front-and-centre of last November's UK Industrial Strategy. Internationally, work by the Organisation of Economic Development and Cooperation (OECD) is highlighting the importance of innovation, as technology brings once distant markets increasingly close to one another. So, innovation matters, and must increasingly be an imperative for how Lancashire 'works'.
- C. So, what is the local economic context we face? Gross Value Added (GVA) per head, the commonly used measure of productivity, across Lancashire's local authority geographies ranges from £31,494, (amongst the top 50 districts in the UK and within the top 20 outside London and the South East) to £14,524 (380th of 395 areas). So, our first challenge is to use innovation to help drive-up the productivity performance of our sub-areas to the levels of our county's best. Second, we have many strengths and assets to build on to move our productivity efforts forward. We are home to leading global businesses at the cutting edge of innovation in Advanced Manufacturing, supported by a supply chain cluster of high-tech small and medium-size enterprises (SMEs). There are longstanding and well-known strengths in Aerospace, Automotive, and Energy industries and exciting emerging strengths in sectors including Digital and Applied Healthcare. Moreover, the County is home to high-performing universities and Further Education providers, working closely with national centres of research excellence and knowledge transfer partnerships.
- D. It is against this background that this Plan sets out how we will use innovation more widely, deeply and, importantly, visibly to drive the resilience and productivity of our economy and enable Lancashire to achieve its full economic potential and role and sub-national and national levels. Informed by evidence and extensive consultation, this Plan has been prepared to support the innovation agenda in the County through to 2030. The Plan is not a set of rules or regulations, but rather a route map on how we want to build, diffuse, and embed innovation. It seeks to develop further what we do well currently, identify and stimulate new routeways to innovation, and develop the infrastructures required to innovate across our economy, for the benefit of our businesses, people and communities. And, as technology and markets do not stand still, this Plan has been designed with flexibility at its core, enabling us to act dynamically in the face of those new challenges that we will face in the coming years.

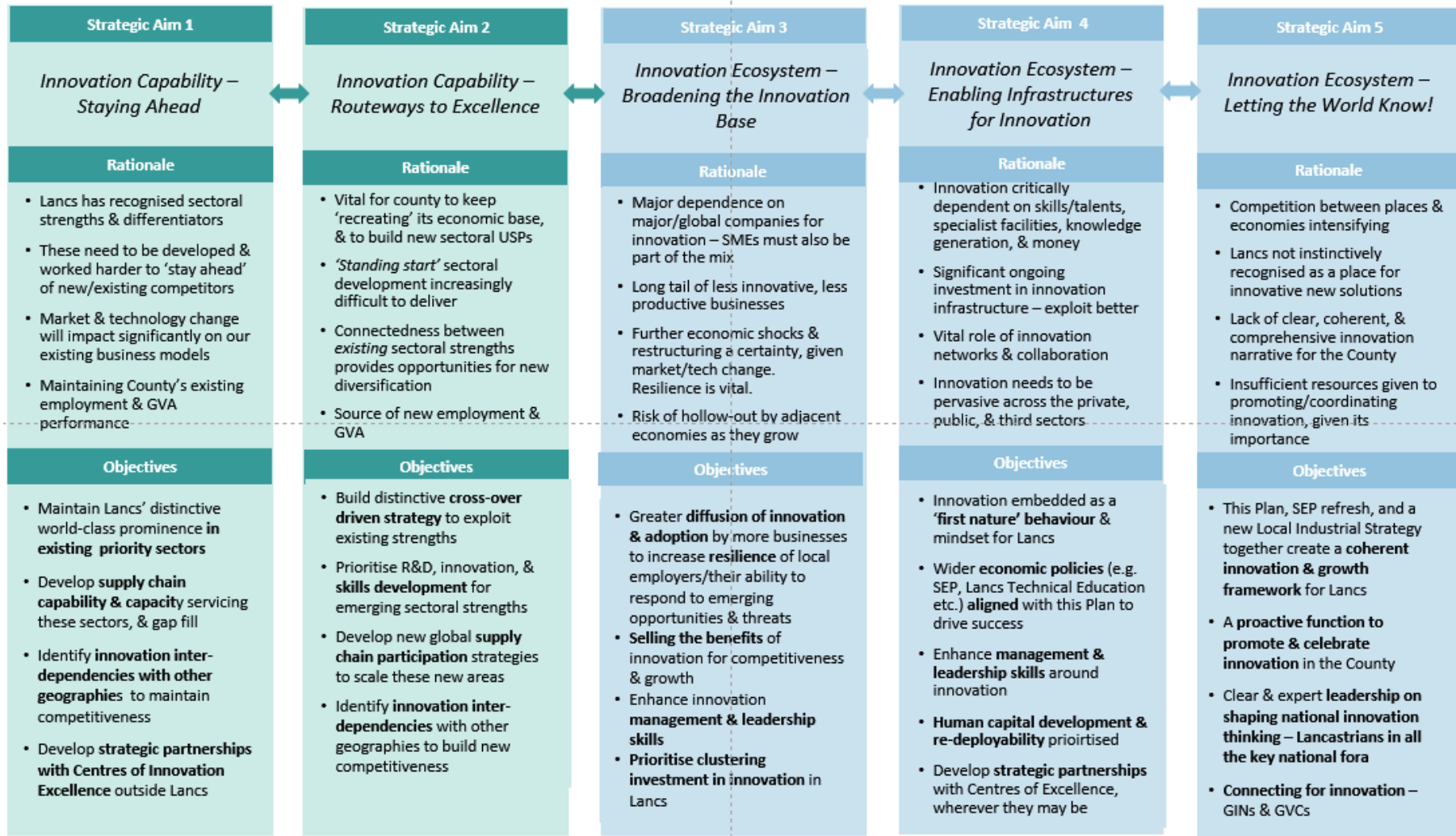
Plan Process

- E. The Plan's development launched with a series of 'scoping calls' with key senior stakeholders from across the private and public sectors. These included representatives from the Advanced Manufacturing, Aerospace, Automotive, Nuclear, Digital, and Health Sectors. The purpose of these calls was to obtain early-stage inputs from well-placed experts on those aspects of innovation activity and development in Lancashire that the emerging Plan needed to address.
- F. Alongside these consultations, a comprehensive analysis of socio-economic and innovation datasets, econometric projections was undertaken, together with a formal 'Call for Evidence' from key stakeholders in Lancashire. These analyses were combined to form an assessment of the strengths, weaknesses, opportunities, and threats (SWOT) of Lancashire's innovation 'ecosystem', providing a clear and objective assessment of where we start from innovation-wise, and where we might go to. The data analyses and SWOT assessment were presented at a SWOT workshop to give a check-and-challenge to the data and to augment the initial evidence assessment. In addition to the SWOT analysis and data analysis, an asset list of Lancashire's innovation assets was developed and iterated throughout. This 'Asset List', presented at Appendix a to this report, is a live document which will be maintained on an ongoing basis.
- G. Following the SWOT workshop, a draft Strategic Innovation Framework was developed. To test the emerging Framework a second workshop was held with stakeholders from across the County. The workshop provided additional data analysis and market futures research to enhance the evidence base, enabled the draft Framework.
- H. A final workshop was held to drive the draft framework from concept into operating reality, with the event focussing on identifying the key actions, both existing and new, that are needed to turn the framework into action. These fed into the development of the 'Action Agenda' which is described later in this document. The evidence base, the strategic framework, and the proposed actions together form our Lancashire Innovation Plan.
- I. Overall, the Plan's development involved over 70 individuals from over 50 organisations from within, and outwith, the County. This is the launch platform we start from, and as the Plan is now implemented formally we will develop and build on this.

And the Plan's underpinning framework?

- J. At the heart of the Innovation is a simple framework which sets our focus areas for attention as we work to progress innovation in the County. The key components of the framework are:
 - A Vision which describes the County's long-term innovation intent;
 - Five Strategic Aims which, at a strategic level, define those objectives the Innovation Plan is seeking to realise; These are configured as a '2x3' structure: two of our Aims relate to our *innovation capability* – the ability of existing and new businesses to develop, adopt, and commercialise innovation, and three Aims relate to building our *innovation ecosystem* – building the infrastructures, mindsets, and marketing capability across the County necessary for innovation;
 - Within each Strategic Aim, a rationale for why the Aim is needed, and a series of supporting objectives which define the broad areas of practical activity to achieve the Aim; and

VISION: by 2030, Lancs will have positioned itself as a globally connected & resilient innovation ecosystem. The way we innovate will embody excellence & collaboration, feeding through to greater commercialisation, entrepreneurship, & competitiveness in our economy. We will have a track-record as a centre for globally-competitive knowledge clusters & talent, & as a developer of new solutions to the emerging challenges of our world



← Application-inspired in our R&D & its deployment →
 ← Excellence in delivery, driven by *real* evaluation & learning →
 ← Collaborating for a competitive Lancs →

- A defined suite of actions to progress the Plan. These are a mixture of short, medium, and long-term actions that complement and enhance existing and ongoing actions.

Action Agenda

K. To make the Plan a reality, a series of actions are proposed:

- For Strategic Aim 1 'Staying Ahead', key actions will involve:
 - Focus on delivering the *Made Smart Review's* North West National Adoption Programme Pilot;
 - Connecting with Centres of Excellence outside Lancashire, so helping to improve our participation in national, and potentially international, innovation networks;
 - Working in collaboration with large employers in the County to strengthen innovation capabilities of their supply chains;
 - Developing a network of Lancashire 'Innovation Ambassadors' to work with local SMEs; and
 - Implementing a Lancashire Technology and Market Foresight Observatory.
- For Strategic Aim 2 'New Routeways to Excellence', key actions will involve:
 - Developing supply chain crossover networks;
 - Encouraging an increase in Knowledge Transfer Partnerships (KTPs);
 - Developing Test Beds in new sectors such as Digital, and initiatives such as 'Failure Labs' and 'hackathons', with different sector foci over time; and
 - Starting to analyse rigorously how overlaps and synergies between the activities and technologies of our existing sectors can be drawn out to define new areas of sectoral strengths that we can develop.
- For Strategic Aim 3 'Broadening the Innovation Base', key actions will involve:
 - Enhancing existing, or building new, leadership development programme activities, ensuring that innovation is given the same priority as wider core business disciplines;
 - Ensuring relevant capital developments include provision for incubating innovation-led start-ups;
 - Facilitating networking between innovation and incubation centres within and outwith the County to share best practice; and
 - Developing a programme of visits to Lancashire from innovation success stories across the world, helping to stimulate global networking, and bringing best practice to Lancashire's attention.
- For Strategic Aim 4 'Enabling Infrastructures for Innovation', key actions will involve:
 - Creating an 'innovation graduate' placement programme for SMEs;
 - Developing a single point of contact programme of support for innovation-led start-up or early-stage businesses;
 - Exploring options for creating a Lancashire Innovation Fund for early-stage funding for innovation-led start-ups;
 - Developing a programme to promote innovation across public and third sectors; and
 - Embedding Intellectual Property (IP) management in to innovation initiatives.
- To deliver Strategic Aim 5 'Letting the World Know!', key actions will involve:
 - Holding an annual Innovation Showcase to celebrate successful innovation in, and across, the County;

- Developing a Lancashire Innovation Marketing Strategy;
- Developing, and disseminating a portfolio of Lancashire innovation case studies; and
- Ensuring Lancashire is represented in all key national fora relating to innovation, so that forward and backward linkages to innovation in our County are promoted and developed.

Governance

- L. Strong leadership, collaboration, and willingness to deliver change are fundamental to making this Plan a reality. Leaders from across private and public sectors will need to come together to drive and deliver innovation for Lancashire. This will need a well governed and appropriately resourced approach to the invitation of this Plan. Making the most of existing resources and re-calibrating these to support the Aims of this Plan will be vital to its success.
- M. The LEP has a central role to play in driving this Plan and its success. Accordingly, the Plan proposes a new Innovation Board within the LEP's structure to provide the strategic leadership and accountability for this Plan and its delivery. The Board will be private sector-led, but be representative of publicly-funded partners and representatives of the key innovation assets in Lancashire. The Board will sit below, and report to, the LEP Main Board. Reporting to the Innovation Board, a new Innovation Director will be appointed to coordinate and lead the operational delivery of this Plan, drawing in relevant delivery partners to progress actions. The Innovation Board will integrate and complement existing innovation fora, such as the emerging Higher Education Institution (HEI) Innovation forum (which brings together HEI representatives on common innovation-facing issues), so driving a unified approach to innovation in the County.

Timeline

- N. This plan is intended to provide the strategic agenda for innovation in the County through to 2030. Between now and then, much can change, both in terms of technologies and markets. This Plan needs to be able to flex effectively to the changes, but at the same time it needs to give a level of certainty and stability such that innovation increasingly becomes a constant in the way that the County, its businesses, communities, and individuals behave. In a very real sense, the underpinning intent of this Plan is that innovation becomes the County's 'first nature'.

1 Foreword

[NB – PLACEHOLDER FOR FOREWORD FROM EDWIN BOOTH]

2 Why an Innovation Plan for Lancashire?

Introduction

- 2.1 Innovation is at the heart of the UK's Industrial Strategy, and identified therein as a key driver to improving productivity across the UK. Businesses that innovate grow faster than those that do not, and tend to be more resilient to competition. The desire for innovation to drive productivity is increasingly prevalent across the North and within Lancashire. As the Northern Powerhouse Independent Economic Review showed, the North has significant innovation assets on which to build and develop, which in turn could close the productivity gap with the rest of the UK. As this Plan will show, Lancashire also has substantial innovation assets, and potential, to play a leading role in driving innovation and improving productivity in the North.
- 2.2 This is an evidence-informed innovation plan for Lancashire, commissioned by Lancashire Enterprise Partnership (LEP), and intended to establish a vision, framework, and action plan for innovation in the County to 2030. It aims to:
- Boost Lancashire's innovative capacity and strengthen its broader innovation ecosystem;
 - Stimulate new ideas and thinking around embedding a more innovative culture in Lancashire;
 - Set a clear direction of travel for Lancashire's innovation agenda, underpinned by a coherent package of priorities and activities;
 - Encourage greater collaboration within Lancashire, and between Lancashire and national and international partners;
 - Engage all stakeholders including businesses large and small, universities, colleges, local and national government; and
 - Establish a new model for the leadership and governance of Lancashire's innovation agenda.

Talking Terms . . .

- 2.3 Informed by Nesta, the definition of innovation adopted by this Plan is that innovation is:
- The successful exploitation of new ideas, recognising that innovation need not derive from an advance in science or technology, but radical innovation often does;
 - Innovation that does derive from advance in the Science and Technology base needs more than this to achieve commercial success;
 - Innovation applies equally to products, processes, services, and business models; and
 - Innovation is not just the preserve of the private sector, it is equally appropriate and necessary in the public and community/voluntary sectors.

... Strengths to build on

- 2.4 Importantly, we are not starting with a blank canvas. Lancashire has many innovation strengths and assets to build on. It is home to leading global businesses at the cutting edge of advances in Advanced Manufacturing, supported by a supply chain cluster of high tech SMEs. These high value-add businesses are amongst the most productive in the country. Our strong manufacturing base is spearheaded by Aerospace, Automotive, and Energy industries but we have other key sectoral strengths including Digital and Healthcare. We are also home to high performing Universities and Further Education providers, including national centres of research excellence.
- 2.5 More generally, we have good and developing innovation links with neighbouring cities and their economic hinterlands, a high quality of life, and a diverse urban and rural environment. We must make the most of these wider assets to attract and retain the people and businesses who will drive our innovation agenda locally, drawing on access to resources and partners nationally.

... But challenges too

- 2.6 Notwithstanding these high-points, we also face significant challenges. Lancashire's economy as a whole is underperforming compared with the national average, although this masks some areas of high productivity: GVA per head across Lancashire's local authorities ranges from £31,494, (amongst the top 50 districts in the UK and within the top 20 outside London and the South East) to £14,524 (380th of 395 areas). We also face great uncertainty in wider national and global contexts - Brexit looms large and the pace of technological change is transforming where, and how, business is done. Of course, we are not unique in facing these challenges but we must find our own, place- and people-specific solutions for dealing with them.
- 2.7 The recent national Industrial Strategy, and its accompanying Sector Deals represent a new chapter in how we as a country take a more proactive and interventionist approach to growing our economy. This Innovation Plan represents a central plank in Lancashire's response to this new national agenda, sitting as part of the County's overarching economic strategy, and it will without doubt be influential on our proposed new Local Industrial Strategy. The Plan is designed to help boost productivity, raise R&D investment, grow local businesses, and attract new firms, create new and better jobs. Ultimately, the Plan needs to embed an innovation culture which allows the County to 'punch above its weight', enhance our resilience, and enables us to capitalise on change and opportunities in the global economy.

An Appetite for Change

- 2.8 The context of the Industrial Strategy, alongside the launch of this Innovation Plan, provides a momentum for driving forward the agenda which must not be lost. The engagement provided by local stakeholders in developing this Plan is a clear demonstration not only of the capacity and expertise that exists locally but also the appetite for a more visible, purposeful, and impactful innovation agenda in Lancashire. We must raise our level of ambition and back this up with the right leadership arrangements and resources. This Plan provides us with the basis for achieving these aims.

Structure of this Plan

- 2.9 The structure and content of the rest of this document are as follows:

- Chapter 2 sets out the global innovation trends that are impacting on Lancashire's economy and more widely. It summarises the implications of this Plan and Lancashire's innovation agenda of key policies at Lancashire, the North, and UK levels;
- Chapter 3 presents an analysis of relevant literature, secondary data, and econometric forecasts to identify the core components of Lancashire's economic and innovation landscape;
- Chapter 4 then assesses the strengths, weaknesses, opportunities, and threats characterising Lancashire's innovation ecosystem at present;
- Chapter 5 presents our Vision for how Lancashire's innovation economy can look in 2030;
- Chapter 6 presents the Strategic Framework for this Plan, setting out the five Strategic Aims and three Cross-cutting Themes, as well as the Rationale and Objectives for each Aim;
- Chapter 7 presents our 'Action Agenda', where we set out the practical actions required to support delivery of the Strategic Aims. These are a mixture of 'quick wins', medium-term programmes, and long-term culture change; and finally
- Chapter 8 looks at the Governance structures needed for effective and ongoing management and leadership of innovation in Lancashire.

3 Innovation Trends and Policy Context

This Section sets out the trends, policies, and future market and technology changes within which this Plan sits, and which it must respond to.

Global Innovation Trends

- 3.1 Lancashire's economy is one piece in a regional, national, and global jigsaw. This Innovation Plan plugs into this wider economic and policy context, building on key initiatives such as the recent Industrial Strategy, the Northern Powerhouse, and the Science and Innovation Audits.
- 3.2 In term of global trends, Global Value Chains (GVCs) and Global Innovation Networks (GINs) have become a central feature of world trade, encompassing developing, emerging, and developed economies. The process of producing goods is increasingly carried out wherever the necessary skills and materials are available. How Lancashire's businesses can connect into these value chains and innovation networks must form a key component of Lancashire's innovation offer.
- 3.3 Rapid market and technology change has been a key feature of all economies and shows no signs of slowing down. The 'Eight Great Technologies' identified in 2012 by the then Chancellor still hold significant relevance today. They are:
- Advanced Materials and Nanotechnology;
 - Agri-Science;
 - Big Data and Energy-efficient computing;
 - Energy and its storage;
 - Regenerative Medicine;
 - Robotics and autonomous systems (also a key feature of the recently published Industrial Strategy White Paper);
 - Satellites and the commercial applications of space; and
 - Synthetic biology.
- 3.4 As explored in Section 5, Lancashire has well established and recognised strengths in a number of these areas.

3.5 In addition to new technologies, new business models will continue to change the way we work. These models revolve around a number of themes that are relevant across multiple sectors. These include:

- An ageing workforce, working longer;
- Increasingly complex and connected markets, with increased risks;
- Vertical integration and distributed collaboration;
- Outsourcing and the automation of rote-type activities;
- Migration to the web, and leverage of ‘long-tail’ markets;
- Employment being dominated progressively by ‘non-routine’ activities which cannot be automated – such as innovation, leadership and sales;
- ‘Creativity’ being the most important leadership competency for future successful businesses; and
- Intelligence, agility, and responsiveness being the key characteristics of business performance.

3.6 With the details of post-Brexit Britain’s economic landscape continuing to emerge, many uncertainties remain. However, one thing is certain, innovation will need to be a fundamental part of local economic growth and in driving productivity increases. Business-as-usual will not tackle the existing challenges, or capitalise on the opportunities, or mitigate the risks of Britain’s new trading relationships. As with the GVC and GIN connectivity touched on above, adopting an international trading perspective will be an important part of growing Lancashire’s innovation capability and commercialisation.

UK Policy

3.7 The recent *Industrial Strategy Building a Britain fit for the future* White Paper sets out a more interventionist approach to stimulating the economy and driving productivity across the UK. Several proposed initiatives are of direct relevance to this Plan and are in areas in which Lancashire is well-positioned to capitalise on.

3.8 The *Made Smarter Review 2017* focussed on the challenges in industrial digitalisation. The Review acknowledged the opportunities the North West could capitalise on. It also recommends investment in a new National Adoption Programme (NAP). This will accelerate the development and diffusion of Industrial Digital Technologies (IDTS) through focused support to SMEs in the UK regions. As part of the NAP development, a three-year pilot project will be undertaken in the North West. The project aims to increase GVA by 15% over the pilot period, delivering an estimated £70 million benefit. The pilot will support twenty emerging technology start-ups, working directly with industry on new projects.

3.9 The North West was chosen for a pilot NAP partly because of the region’s substantial manufacturing output, producing almost 10% of the UK’s total exports, and its prominence in several industrial sectors such as Aerospace, Automotive, Chemicals, Biomanufacturing and Agriculture. Lancashire has significant strengths in these areas and should be at the forefront of delivering, and benefiting from, the pilot.

Box 1: The Industrial Strategy

Industrial Strategy Building a Britain fit for the future White Paper

- The *Industrial Strategy Building a Britain fit for the future* White Paper sets out the Government’s plan to boost productivity and earning power throughout the UK. Innovation, through ideas generation and adoption, is a fundamental pillar of the plan.
- The White Paper sets out the ‘Four Grand Challenges’ for the UK economy. These are:
 - Putting the UK at the forefront of the Artificial Intelligence and data revolution;
 - Maximising the advantages for UK industry from the global shift to clean growth;
 - Being a world leader in shaping the future of mobility; and
 - Harnessing the power of innovation to help meet the needs of an ageing society.
- To support the rapid adoption of AI technologies at scale, a new Office for AI will be set up and will work initially with six priority business sectors, most of which Lancashire has considerable strengths in, including Cybersecurity, Manufacturing, Energy, and Agricultural Technology.
- An ambition for Clean Growth will be supported by Government support for Smart Energy systems, innovation in the Low Carbon industry, and innovation in high-efficiency Agriculture. There are considerable County strengths in these areas, which could be harnessed to capitalise on this.
- The £115m ‘Strength in Places’ Fund looks to support areas to build on their science and innovation strengths and develop stronger local networks. Again, Lancashire should be well placed to access this funding.
- The launch and roll-out of Sector Deals, partnerships between government and industry, aiming to increase sector productivity. The first Sector Deals are in Life Sciences, Construction, Artificial Intelligence, Nuclear and the Automotive sector.

Source: Department for Business, Energy and Industrial Strategy, *Industrial Strategy: Building a Britain fit for the future* (2017)

3.10 The Department for Business, Energy, and Industrial Strategy (BEIS) has commissioned Science and Innovation Audits help local areas to map their research and innovation strengths and identify areas of potential global competitive advantage. Each Audit has a theme, and a number of these are of direct relevance for Lancashire, including:

- Sheffield City Region and Lancashire – High-Value Manufacturing (see Box 2).
- North West Nuclear Arc Consortium - New Nuclear Technology;
- North West Coastal Arc Eco-Innovation Partnership - Low Carbon Energy and eco-innovation;
- Northern Powerhouse Chemicals and Processing Science – Chemicals; and
- A Northern Powerhouse in Health Research – Precision Medicine and Health-Facing Bioinformatics.

Box 2: Science and Innovation Audit

Sheffield City Region and Lancashire: Science and Innovation Audit

- The *Sheffield City Region and Lancashire: Science and Innovation Audit* will inform investment decisions to stimulate productivity and economic growth across the Lancashire, Sheffield, and the wider Northern Powerhouse; driving the region’s contribution to the national industrial strategy and economic growth.
- This document was focussed on driving productivity growth through innovation in high-value manufacturing. The Audit proposes that the technological innovation in automation, robotics, data analytics, and new manufacturing techniques that drive Industry 4.0 are existing innovation strengths in the region. This, coupled with the successful translational research institutions that can drive innovation and skills, can enable Lancashire to position itself as a centre of innovation in high-value manufacturing and drive productivity growth across the County.

Source: Department for Business, Energy and Industrial Strategy, *Industrial Strategy: Building a Britain fit for the future* (2017)

Regional Strategies

- 3.11 The Northern Powerhouse Partnership focusses on encouraging cities and counties to work together across the North of England. The priorities for the Partnership are:
- Infrastructure and Assets – including transport, telecoms, housing, and new technology;
 - Education and Skills – including basic skills through to higher level and technical skills that support innovation, and the HEI sector;
 - International Competitiveness – focussing on fostering an enterprise culture, innovation, trade and international investment; and
 - Leadership and Learning – leadership within companies, promoting best practice to civil leaders and Mayors.
- 3.12 Advanced Manufacturing and Materials, Energy, Digital, and Health Innovation were identified as the four ‘Prime Capabilities’ of the North by the *Northern Powerhouse Independent Economic Review (NPIER)*. These are the economic agglomerations in which the North of England has the greatest potential global competitive advantage. These are all areas in which Lancashire has significant existing and emerging strengths both in industry and academia, and as such the County is well equipped to play a leading role in strengthening and expanding the North’s capabilities in these areas.
- 3.13 The 11 LEPs in the North of England are looking to develop a Northern approach to innovation – ‘*Innovation North*’. Building on the recommendation in the NPIER that innovation should be treated as a pan-Northern agenda, this is a fresh attempt to work collaboratively at scale to harness the power and benefits of innovation. The intention is to do this by maximising the industrial and commercial application of the North’s significant assets and capabilities. Again, Lancashire is very well equipped to play a frontline role in shaping and driving the emerging Innovation North agenda.

Local Strategies

- 3.14 Innovation excellence is one of the key objectives of *Lancashire’s Strategic Economic Plan (SEP) 2015-25*. To support the delivery of this objective, the Lancashire Growth Deal established a £270m investment framework. Examples of initiatives receiving funding as part of this framework, and which contribute to delivering the innovation excellence objective, include:
- The Centre for Quantum Technology Innovation at Lancaster;
 - The Cyber Security Innovation Centre at Lancaster;
 - The Engineering Innovation Centre at Preston; and
 - Lancaster’s Health Innovation Campus.
- 3.15 These initiatives, alongside a multitude of other assets and actions, display the commitment of local partners in key growth sectors to collaboratively deliver a step-change in innovation in Lancashire, and the sectoral and Smart Specialisation strengths on which this plan seeks to build. A non-exhaustive list of assets and facilities to support innovation in Lancashire is set out at Appendix A.
- 3.16 The *Lancashire Skills and Employment Strategic Framework* provides the template for public investment in skills and employment activities in the County and outlines the direction skills and employment providers need to take to best address need. It seeks to re-establish Lancashire as an economic powerhouse and a national centre of excellence in Advanced

Manufacturing by maximising its clear competitive strengths and capabilities in the Aerospace, Automotive, Energy and health science-related sectors.

- 3.17 Driving Lancashire forward as a national leader in the implementation of reforms to Education in England, the recently developed *Lancashire Technical Education Vision* is a framework for a dynamic and high performing post-16 technical education system in the County. With objectives and outcomes linked directly to the Skills and Employment Strategic Framework, the Vision sets out an agenda for transformative change in the delivery of Technical Education across the County. At its core, the Vision will drive new formats of training and learning, which are aligned more centrally to employer demand, so raising skills and developing the talent pool to support key existing and emerging sectors.
- 3.18 This Innovation Plan builds on and complements these existing strategic plans whilst responding to the opportunities and challenges emerging from the evidence base and stakeholder consultations.

4 Lancashire's Economic and Innovation Landscape

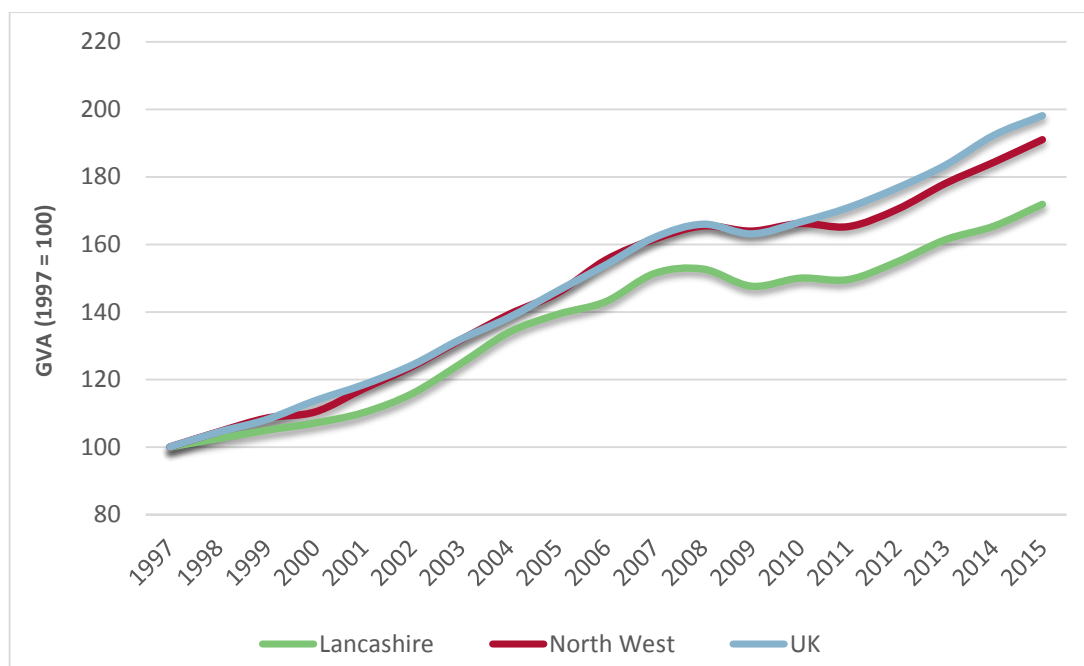
This Section presents the key trends and forecasts to show how Lancashire is performing and is likely to perform, as an economy and as an innovation ecosystem.

The Lancashire Economy¹

- 4.1 With a resident population of just under 1.5m, supporting around 630,000 jobs, and containing around 52,000 businesses, Lancashire is a key component of the North West's economy. Lancashire contains globally significant firms in sectors such as Aerospace and Nuclear, including BAE Systems, Rolls Royce, and Westinghouse as well as a significant SME base (98% of businesses in Lancashire employ fewer than 50 people). It also benefits from four universities in the area, providing a valuable mix of research-oriented and applied innovation opportunities. Lancashire experienced a decline in employment between 2007 and 2012 and has since reversed that trend, with employment now above pre-2007 levels. This is a similar trend to the North West and UK, but Lancashire's employment growth is slower than both.
- 4.2 Despite pockets of high performance and productivity, Lancashire's economy, in common with much of the North of England, is underperforming, and not reaching its full potential. The primary indicator to measure an economy's overall performance is Gross Value Added (GVA). Lancashire generated a GVA figure of £29 billion in 2015, 18.5% of the North West's total. This compares with 21% of the North West's employment, 20% of North West's total business base, and 20% of the North West's working age population. As we have seen, the spread of productivity across Lancashire varies greatly between areas within the County. The average for the County can mask areas of high value and high productivity businesses (such as those at the top-end of the Aerospace supply chain).
- 4.3 As Figure 1 indicates, although there has been consistent growth in GVA in Lancashire, it is slower than the North West and UK, and that productivity gap has widened in recent years. As shown in:

¹ A detailed SWOT assessment in the form of an extended PowerPoint presentation is available on request from Andy Walker, at Lancashire Local Enterprise Partnership.

Figure 1 – GVA Growth - Lancashire and regional and national benchmarks



Source: Department for Business, Energy and Industrial Strategy, Industrial Strategy: Building a Britain fit for the future (2017)

4.4 GVA per employee in Lancashire was £42,100 in 2015, against a figure of £50,800 for the UK, 83% of the UK average. In 2015, Lancashire’s GVA per employee was 83% of the UK average, and this issue of productivity is a long-standing and embedded one. This productivity gap matters: if GVA per employee in 2015 was at the UK level, the Lancashire economy would have generated an extra £3.1 billion. The closing of this increasing productivity deficit remains a key challenge for Lancashire.

4.5 This productivity gap with the UK exists not because employees in Lancashire work less hard than people in other areas, but because of three key drivers:

- Structural change - a shift away from Manufacturing (a historically high employing sector for the County) to lower productivity occupations – often Services and Retail;
- Skills - a legacy of educational underachievement, skills gaps in key sectors, and a relentless need to retrain workforces as new market and technology changes break-in; and
- Innovation and entrepreneurship - characterised by lower levels of R&D expenditure in the County, worsened by low start-up rates and lower inward investment levels.

The Changing Shape of Lancashire’s Economy

4.6 Econometric forecasts² suggest that, under a ‘Do Nothing’ scenario, the productivity gap will remain. By 2036, GVA in Lancashire is due to increase by just over 30% to £38.5 billion. Over the same period, UK GVA is forecasted to increase by just over 40%: the productivity gap will grow. If Lancashire’s GVA grew at the same rate as the UK over this period this would result in an additional £2.5 billion in GVA by 2036.

² Taken from Oxford Economics’ *Greater Manchester Forecasting Model (GMFM) 2017*

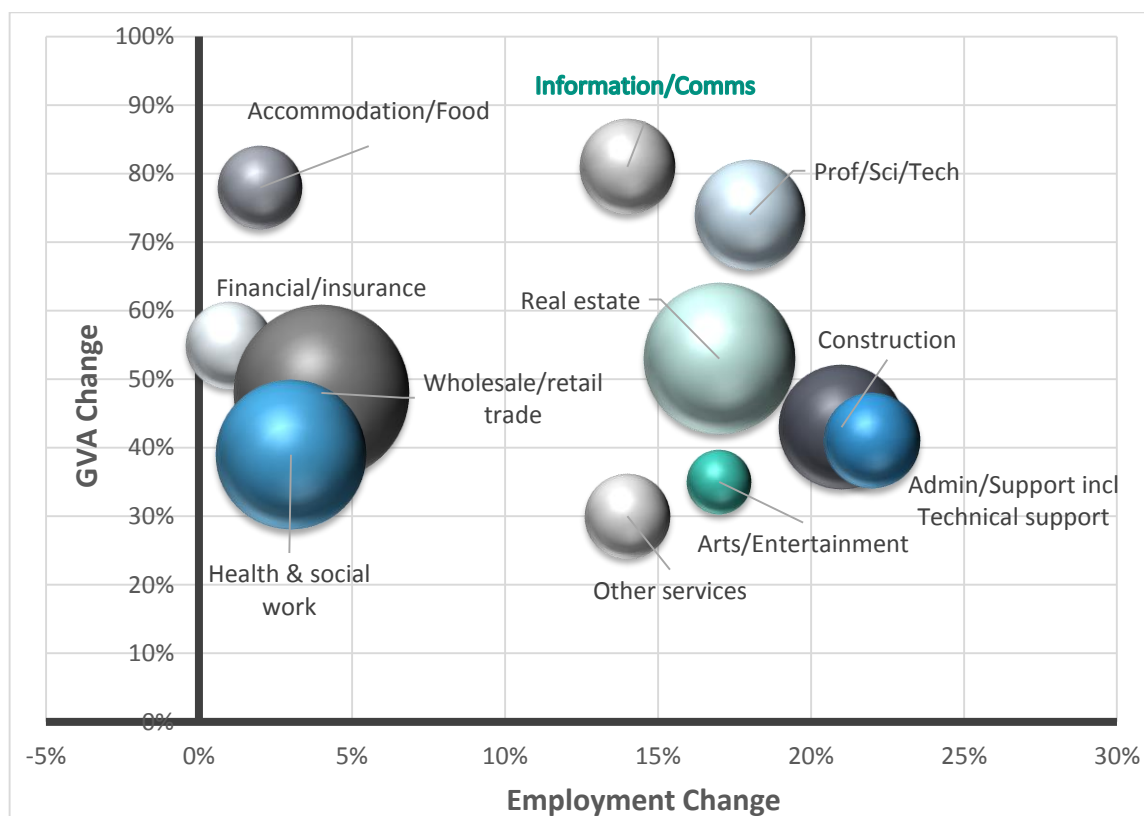
4.7 Employment growth is also forecast to remain slower than that of the UK. By 2036, employment in Lancashire is set to grow by 2.7% (an added 19,000 jobs). Over the same period, the UK employment is due to increase by 7.3%. If Lancashire’s employment grew at the same rate as the UK this would result in an extra 53,000 jobs in the local economy.

4.8 Moreover, Lancashire’s economy will experience significant change over the next two decades. Sectors are expected to perform in one of two ways:

- *Expanding sectors* which are forecasted to grow in both GVA and employment; and
- *Adjusting sectors* where GVA will increase but employment is likely to decrease.

4.9 Figure 2 below shows the *Expanding sectors*. Significant growth in both GVA and employment is forecasted in service sectors such as Professional/Scientific/Technical, Administration/Support (including Technical Support), and Information/Communications. Most sectors are forecasted to grow in GVA and employment. These data are at a broad sectoral level, which can miss the nuances and variety of job roles within each sector.

Figure 2 – Expanding Sectors in Lancashire in the period to 2036

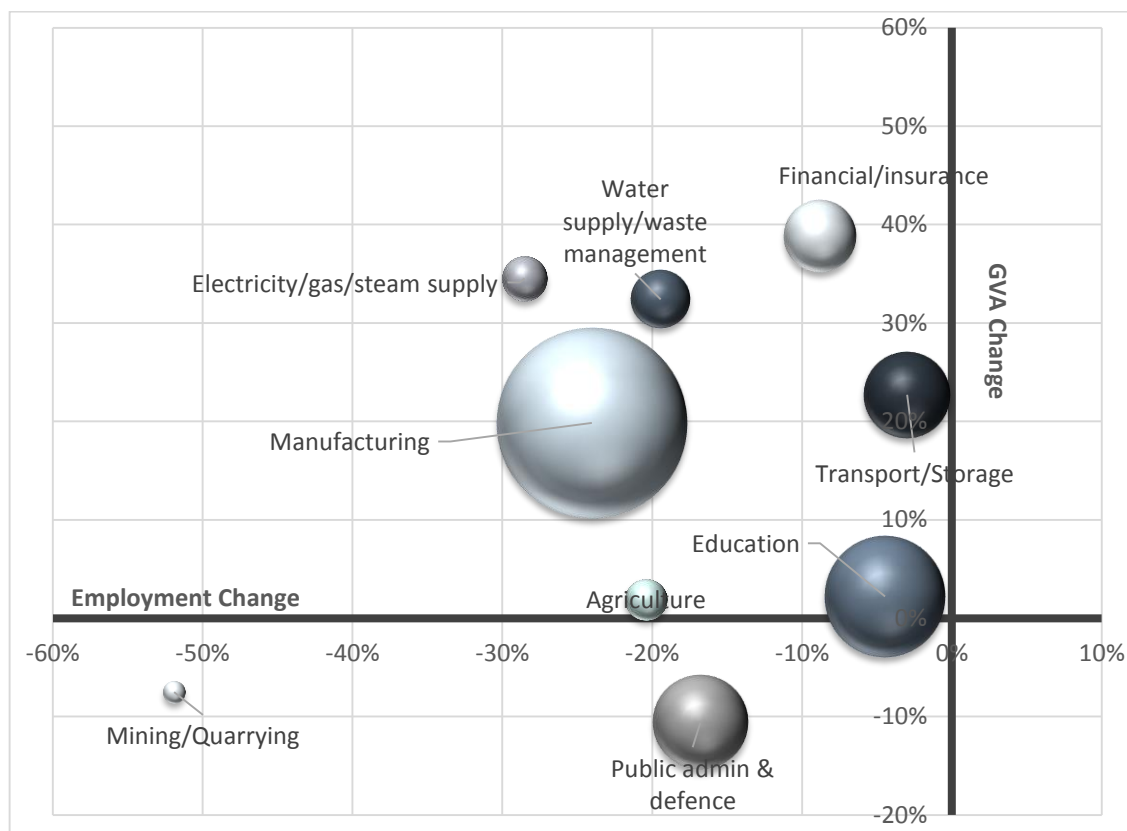


Source: BRES and ONS, Regional Accounts, 2015

4.10 Figure 3 below shows the *Adjusting sectors*. Most significantly, the current key employment sector of manufacturing is forecast to decline in employment by 24% (c.20,000 jobs) by 2036. This trend is expected nationally, however, is expected to be more keenly felt in Lancashire due to the size of the sector in the County. The fact that manufacturing is forecast to grow in GVA despite this points to the productivity opportunities in data and automation that Industry 4.0 presents. It is important to remember that these forecasts are ‘policy-off’, meaning they do not consider different policy scenarios or their implications. Interventions such as those

advocated later in this Plan, alongside ongoing actions across the County and North, can address these potential employment challenges.

Figure 3 – Adjusting Sectors in Lancashire in the period to 2023



Source: BRES and ONS, Regional Accounts, 2015

Innovation and Knowledge

4.11 Table 1 below gives an overview of Lancashire’s current performance on innovation indicators relating to STEM, graduate retention, and R&D expenditures.

Table 1 – Innovation and Knowledge Indicators

Indicator	Lancs LEP	North West	UK	Source/ Date
Graduate retention rates	80%	77% (NW average)	68% (All-LEP average)	HESA 2012/13
Undergrads in STEM/non-STEM	34%/66%	35%/65%	35%/65% (England)	HESA 2013/14
FT Post-grads in STEM/non-STEM	49%/51%	68%/32%	65%/35% (England)	HESA 2013/14
University spin-outs/start-ups since 2000	27 (1% of UK total)	156 (7% of UK total)	2,293	Spinouts UK/2017
Total R&D Expenditure (£ per person employed)	£525	£1,093	£1,070	Eurostat + BRES/2011
of which Business R&D expenditure (BERD)	£388 (74%)	£851 (78%)	£765 (71%)	Eurostat + BRES/2011

Indicator	Lancs LEP	North West	UK	Source/ Date
Employment in Professional, Scientific & Technical (% of all jobs)	5%	7%	8% (GB)	BRES/2015
Residents employed in STEM subjects	6.2%	6.9%	7.2%	APS/2014

- 4.12 There are positive signs in Graduate Retention rates in the short term, as a higher proportion of graduates remain in the area six months after graduating compared to the national average. The proportion of undergraduates studying STEM subjects is in line with the regional and national picture, suggesting that Lancashire is attracting and retaining graduates in key subjects. Private sector R&D per employee is less than half the national average, however, which could indicate either a low take-up of R&D tax credits by Lancashire businesses or that simply not enough is being spent on private sector R&D in Lancashire.
- 4.13 The *Research Excellence Framework 2014* showed that the County's HEIs have significant research strengths in several areas. The following subjects were highlighted as being highly rated:
- Allied Health Professions;
 - Chemistry;
 - Computer Science;
 - Earth Systems and Environmental Sciences;
 - General Engineering;
 - Mathematical Science; and
 - Physics.
- 4.14 Patent data provide one of several indicators of innovation performance, but is subject to biases and limitations created principally by differences between industries in the 'propensity to patent'. This means that the usefulness of patents as a measure of innovation emphasis across different LEPs is limited by the extent to which industries protect their intellectual property using patents. This limitation is however consistent across all LEPs. Firm-specific propensities to patent are commonly assumed to be a weaker source of bias than industry-specific sources.
- 4.15 Through analysis of patent applications data kindly provided by the Intellectual Property Office (IPO), Lancashire's strong emphasis on Civil Engineering patents stands out. This is broadly in line with, but much higher than, the emphasis on both the rest of the Northern Powerhouse LEPs and all LEPs. Other noteworthy aspects, are prominence in mechanical elements and in thermal processes and apparatus. These areas show relatively high levels of patenting activity in Lancashire.

5 Lancashire's Innovation Ecosystem

This Section sets out the strengths, weaknesses, opportunities, and threats (SWOT) assessment of the Lancashire innovation ecosystem

- 5.1 Through a range of stakeholder consultations, data analysis, and a review of over 40 documents received via a 'Call for Evidence', this section will present the strengths, weaknesses, opportunities, and threats (SWOT) for innovation in Lancashire.
- 5.2 The SWOT was conducted through four lenses. These are:
- People/Human Capital – covering demographics, mindsets, skills and occupation offer, education, and access to work;
 - Infrastructure/Assets – covering sites, premises, (and the cost and location of these), housing, environment, transport, and national strategic infrastructures (digital/energy/waste/water/flood risk);
 - Knowledge – covering Further and Higher Education, research institutions, innovation systems, networks, and commercialisation processes; and
 - Money and External Business Expertise – covering access to finance, accounting and legal professions, intellectual property management, and marketing.

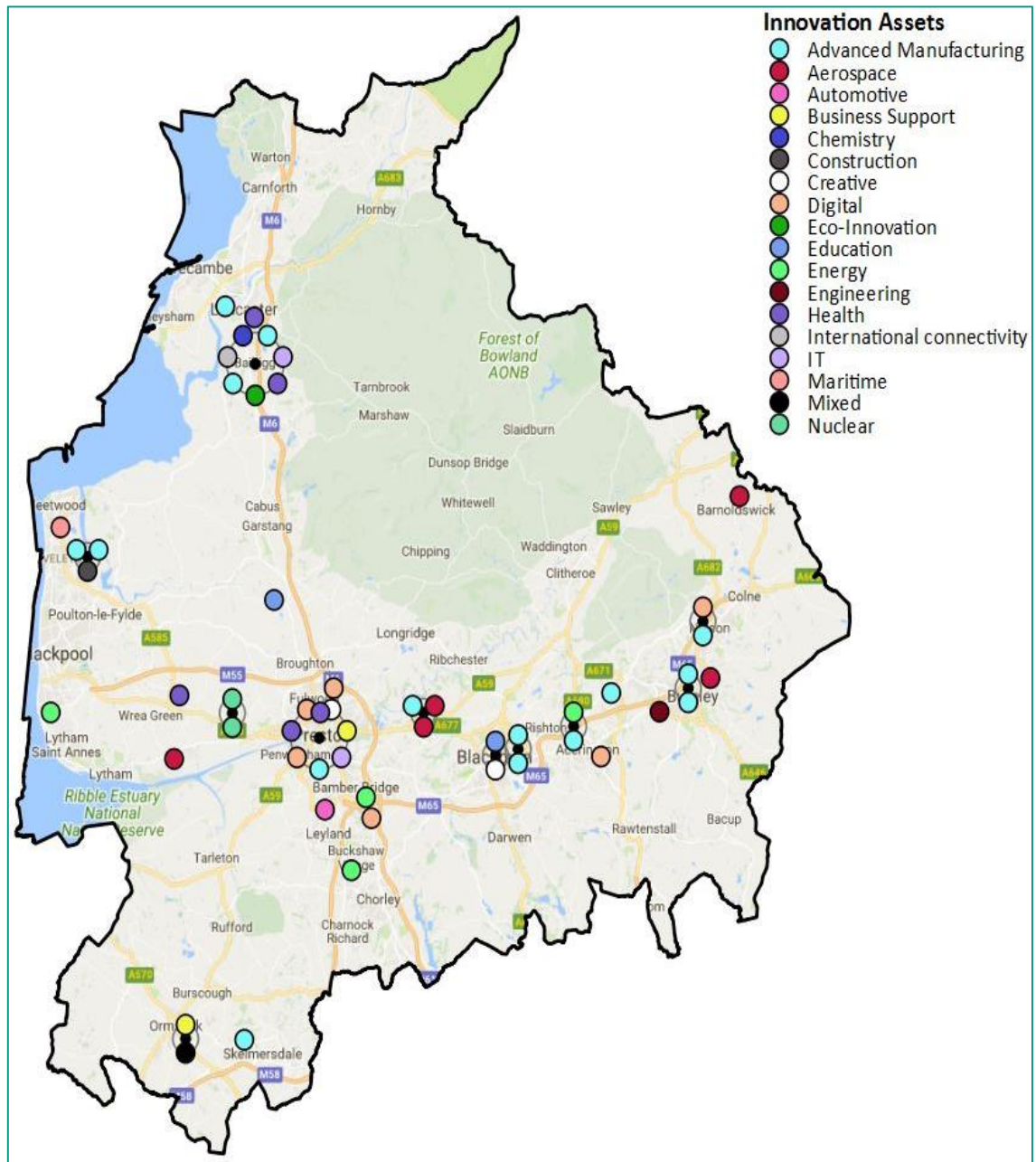
Strengths

- 5.3 Lancashire has well established and recognised strengths in the Aerospace, Automotive, Energy, Nuclear, Digital, and Health Innovation sectors. There are strengths in biological sciences, Life Sciences and Healthcare, Advanced Manufacturing and materials, and Digital. Protecting, enhancing, and diffusing these strengths across their supply chains and across sectors will be a key feature of the future innovation landscape in Lancashire.
- 5.4 The local HEIs have research strengths in STEM subjects, in particular, Computer Science, Mathematical Science, and General Engineering, and provide significant research and consultancy services (with a total income of £26m from contract research and consultancy services across the four HEIs in 2015/16). There are translational research centres such as the Engineering Innovation Centre at UCLan, the North West Advanced Manufacturing Research Centre at Samlesbury, and the forthcoming Lancaster Health Innovation Campus which can be catalysts for research development and adoption across the local economy and beyond.
- 5.5 Graduate retention rates are good in Lancashire, and strong Further and Higher Education provision is starting to show in the improving rates of residents with higher level skills.

Maintaining and continually improving these will be key to ensuring a pipeline of talent to support Lancashire’s businesses and innovation capabilities.

- 5.6 Analysis of the IPO patenting data indicates strong intellectual property advances in areas such as Civil Engineering, Mechanical Elements, Medical and Computer Technology, and Thermal Processes. Ongoing analysis of patenting data can provide an indication of emerging innovation specialisms and differentiators. Providing support for businesses in generating and managing their intellectual property can help them to protect their intellectual property assets and maximise the value from them.

Figure 4 – Lancashire Innovation Asset Map



Source: SDG-Economic Development, 2018

- 5.7 As Figure 4 above shows, Lancashire also has considerable innovation assets that can be developed, connected, and utilised to support this Plan's innovation agenda. As part of this Plan's preparation, an asset mapping exercise was undertaken through consultation with stakeholders. This map is non-exhaustive, and it is expected that the forthcoming Eco-Innovation Science and Innovation Audit will add to it.
- 5.8 The summary of this mapping work, which is set out more fully in Appendix A, was as follows:
- The County has 54 assets that support and enable innovation, covering into 16 sectors;
 - The most represented sectors include Advanced Manufacturing (15), Digital (6), Energy (5), Aerospace (5), and Health (5);
 - There is a concentration of assets along the West to East corridor (M55-M6-M65);
 - There is a substantial concentration of assets around the Lancaster University and UCLan Campuses; and
 - Digital assets appear to be disparately distributed, with no apparent signs yet of clustering.
- 5.9 The key message here is that there are significant innovation assets and areas of innovation strength in Lancashire. These need to be supported, developed and expanded to ensure these stay ahead of the competition and play a greater role in innovation and productivity in Lancashire.

Weaknesses

- 5.10 The productivity gap (Lancashire is at 83% of the UK's level of GVA per worker, and 93% the level of the UK excluding London and the South East), and relatively slow GVA growth are long-standing challenges in the area. Lancashire is not unique in this regard. The focus on the average can mask areas of high value-added businesses, particularly in Advanced Manufacturing. In addition, a lack of inward investment and new office space in key centres has prevented the development of a high performing service sector based around a regional centre, a challenge compounded by Lancashire's geography and location.
- 5.11 Larger businesses are well connected to higher level skills and export opportunities, SME connectivity to talent and international trade opportunities is more limited. This can restrict the survival chances and growth of smaller businesses. This also contributes to the current lack of innovation diffusion and the long tail of less innovative companies, which was identified as a national problem in the Industrial Strategy.
- 5.12 Although higher level skills are improving, the proportion of residents with NVQ4 (Graduate level) and above is still lower than the national rate (32.8% compared to 38.2%). Reducing this gap can play a large role in reducing the productivity gap, as lower level skills are cited as a key factor in productivity deficits.
- 5.13 There is currently a low level of R&D expenditure per person employed in Lancashire, which is just less than half the national average. This could be due to a lack of take-up in R&D tax credits, particularly in sectors other than Manufacturing. Large companies often report R&D spend through their headquarters, meaning a large company with a site in Lancashire, even one that primarily focuses on R&D, will be under-reported in terms of R&D spend. This can lead to Lancashire being under-represented in R&D spend statistics. However, how to increase both R&D tax credits take-up and overall private sector R&D investment, in both time and money, is still a significant innovation challenge for Lancashire.

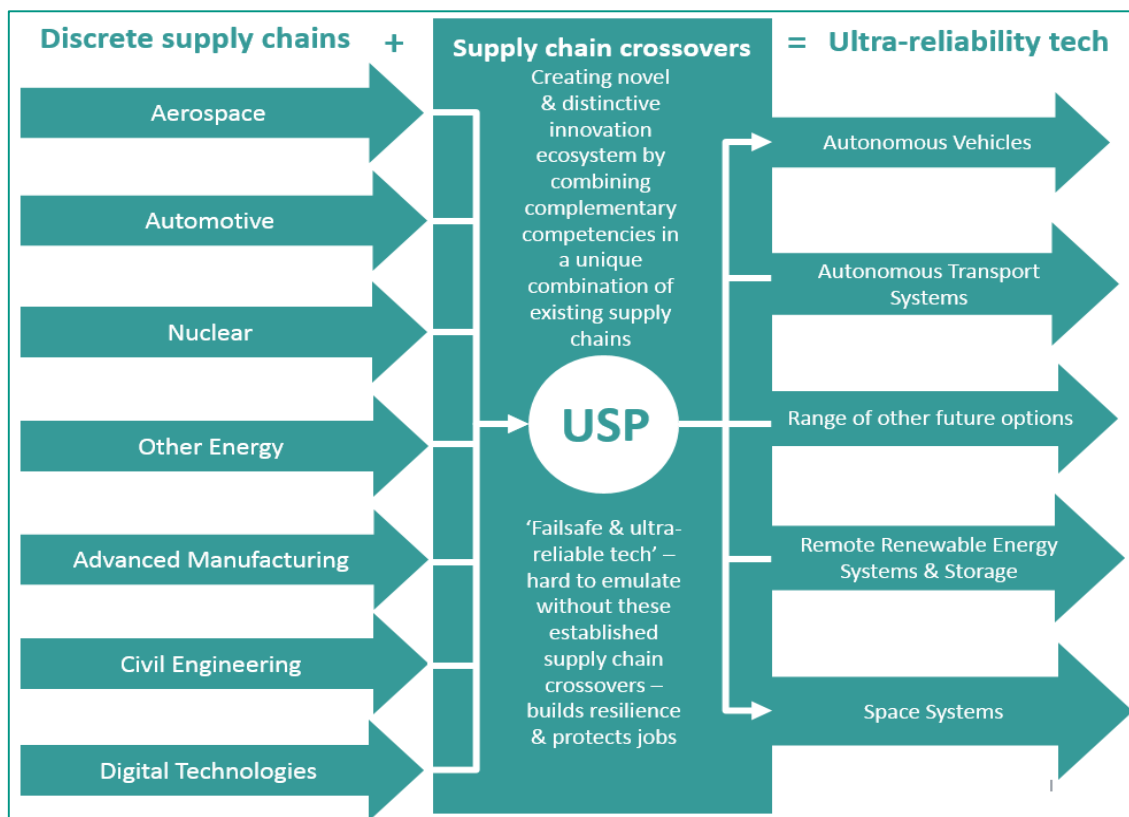
Opportunities

- 5.14 Lancashire's strengths in industries at the forefront of Industry 4.0 mean it is well placed to capitalise on the productivity improvements associated with increased automation and adoption of new technology. Developing an innovation corridor in Advanced Manufacturing, as recommended by the Sheffield City Region and Lancashire SIA, is one way the benefits of Industry 4.0 can be maximised.
- 5.15 The connectedness and adjacency of several high-tech sectors present real sectoral cross-over opportunities for Lancashire. This is the ways in which the different established activities in Lancashire can be brought together to drive new innovations. An example of this is how Automotive and Aerospace technology and Digital Systems are integrated to develop autonomous vehicles. More recently, Preston was successful in its bid to become a national test-bed for the UK's development of drone technology, this building on the work of the 'Civic Drone Centre' established by the University of Central Lancashire with a £250k investment in 2014. This not-for-profit centre brings together expertise and stakeholders including Local Authorities, communities, and businesses, and has developed and demonstrated many novel drone solutions. The Centre is an important part of the new £32m Engineering Innovation Centre opening in Preston in early 2019.
- 5.16 As the Industrial Strategy is being implemented, there will be opportunities for Lancashire to position itself as a flagship area for some of the key initiatives including cyber security, health innovation, and clean growth. There will be a need to ensure Lancashire is able to articulate its offer in these areas with an emphasis on innovation. There have been considerable, and much needed, investment in capital innovation schemes in Lancashire covering key sectors. The opportunity now is to ensure that these are utilised and their effectiveness is maximised, and the use of these schemes could be a key selling point for Lancashire.
- 5.17 Partnerships and collaboration between businesses and the knowledge base, as well as with Centres of Excellence both within and outside of Lancashire should be a focus of the coming years. This willingness to work cross-sectorally and beyond the Lancashire boundary will open up new routeways for innovation for Lancashire institutions. These crossovers can provide major opportunities for Lancashire because there is an unusual mix of sectors and supply chains in the County with untapped potential to combine capabilities to open up new competitive opportunities. An example of this is given in the panel at **Error! Reference source not found.**, this focuses on how Lancashire's existing supply chain strengths might be mixed to produce a new capability in 'ultra-reliable technologies'.

Threats

- 5.18 Growing competition from overseas, particularly in key sectors such as Aerospace and Automotive, presents an ongoing threat. As developing economies can often produce at a lower cost this presents cost challenges for Lancashire and UK business alike. The ability to remain competitive in these markets will be just as important as being innovative.
- 5.19 There is a perception currently of a dependence on major employers and multi-nationals for innovation and a focus on key sectors potentially at expense of other, emerging sectors. The focus on diffusion of innovation, in both initial support and in adoption, throughout supply chains and across sectors will go some way to changing this perception.

Figure 5 – Potential Supply Chain Crossovers



Source: SDG Economic Development, 2018

- 5.20 In uncertain international trading conditions, multi-nationals that have supply chains in Lancashire may look to take these off-shore. Alternatively, multi-nationals with supply chains abroad may look to 'on-shore' these. The challenge for Lancashire will be to protect existing supply chains and being able to 'bid' for any new opportunities that may arise.
- 5.21 As with much of the UK, Lancashire faces the challenge of replacing an ageing workforce, as well as a forecast employment decline in some key sectors such as manufacturing. There are challenges around re-training and re-skilling those whose roles are affected by increased automation, as well as need to maintain a pipeline of talent to meet this demand. These issues have been explored in detail in the recent preparation of the Vision for Technical Education in Lancashire, and it will be imperative that this Plan and that Vision mesh and work seamlessly together to 'synergise' their innovation and skills efforts.
- 5.22 Lancashire's location and geography presents ongoing connectivity challenges, and the county can be 'passed by' by key infrastructures. Other areas nearby, such as Sheffield, Manchester, and Liverpool have a stronger 'innovation profile', with a defined leadership and national assets. Both working with these areas to develop stronger links and showing what Lancashire can offer that is unique from them will be an ongoing strategic challenge.

6 Our Vision for an Innovation Economy

Our Vision Statement for Lancashire's Innovation Economy is as follows:

By 2030, Lancashire will have positioned itself as an internationally connected and resilient innovation ecosystem. The way we innovate will embody excellence and collaboration, feeding through to greater commercialisation, entrepreneurship, and competitiveness in our economy. We will have a track-record as a centre for globally competitive knowledge clusters and talent, and as a developer of new solutions to the emerging challenges of our world.

- 6.1 By 2030, the our Plan's Vision sees Lancashire as an internationally connected innovation ecosystem. This means Lancashire adopts and implements proactively innovations from elsewhere and ideas generated in Lancashire are exported across the globe. By 'doing' innovation better, Lancashire's economy will be more resilient and capable of managing economic shocks, through greater diffusion and adoption of innovation across sectors and throughout supply chains, and ensuring a supply of talent to businesses of all sizes.
- 6.2 Lancashire will '*collaborate to compete*', by driving crossovers between sectors to develop new innovation opportunities and markets. Through strategic marketing, business support, and intellectual property management, Lancashire will develop greater commercialisation opportunities, support innovation-led business start-ups, and remain competitive in existing sector strengths and become competitive in emerging sectors.
- 6.3 Lancashire's existing and new knowledge clusters will operate at a global scale, attracting research talent in key specialisms and developing new research specialisms and commercialisation opportunities. Solutions to emerging challenges in Energy, health, mobility, and data security will be developed in Lancashire.
- 6.4 Many of the aspects of our vision apply elsewhere. However, this is to be expected given the world's economies are increasingly connected, both digitally and through global value chains and business networks. We do not apologise for defining shared challenges with other places. But in our Plan, we will address these with Lancastrian determination, and invention, making sure we understand what works for our place, our businesses, and our people.
- 6.5 The next section will outline the Strategic Framework for delivering this vision.

7 Our Strategic Framework for an Innovation Economy

This Section sets out our Strategic Framework, and the Aims that will deliver the vision set out in the previous Chapter.

Framework Structure

- 7.1 Our Framework for innovation is made up of five Strategic Aims. These are configured as a '2x3' structure: two of our Aims relate to our innovation capability (the ability of existing and new businesses to develop, adopt, and commercialise innovation), and three Aims relate to our innovation ecosystem (building the infrastructures, the mindset, the marketing capability necessary for innovation). This will be delivered through a mixture of 'quick wins', medium-term programmes, and long-term culture change. Quick wins are possible: if Lancashire's businesses matched current best practice (such as in the Nuclear sector and Japanese Advanced Manufacturing) this would immediately result in significant productivity gains. The medium-term programmes and a longer term culture change are the focus of the Plan's Framework.
- 7.2 Underpinning the five Aims are three 'cross-cutting themes'. These are the key behaviours that will characterise the way this Framework is implemented and progressed.

Innovation Capability

Strategic Aim 1 – 'Staying Ahead'

- 7.3 Lancashire has recognised sectoral strengths and differentiators that are a core part of the local economy. These are under threat from increased global competition and need to be developed, enhanced, and connected with other sectors to stay ahead of new and existing competitors. Significant market and technology change is coming, and indeed is already underway in many sectors. These changes also present significant opportunities for Lancashire to unlock productivity and participate in new and emerging global supply chains.
- 7.4 This will impact significantly on business models and employment, and Lancashire's existing sector strengths will need to anticipate these changes to embrace the opportunities and mitigate the risks posed by them. Protecting and enhancing these long-standing sectoral strengths is fundamental for Lancashire as they represent a major employment and GVA contribution to the county
- 7.5 To maintain these existing capabilities, this Strategic Aim will focus on:

- Maintaining Lancashire’s distinctive world-class prominence in priority sectors;
- Developing supply chain capability and capacity servicing these sectors, and gap fill;
- Identifying innovation inter-dependencies with other geographies; and
- Developing strategic partnerships with Centres of Excellence outside Lancashire.

Strategic Aim 2 – ‘New Routeways to Excellence’

- 7.6 In addition to these existing strengths, it is vital that Lancashire continues to develop and recreate its economic base, and create presence and expertise in new sectors, allowing the County to exploit market and technology change. Sectoral development is increasingly difficult to deliver from a ‘standing start’, and emerging sectors need to be identified and nurtured at an early stage. Connectedness between our existing sectoral strengths provides opportunities for the diversification and broadening of the supply chain and can provide expanded or new sources of employment and GVA.
- 7.7 To develop these routeways to excellence, this Strategic Aim will focus on:
- Building distinctive cross-over driven strategy (where different sectoral strengths ‘cross-over’ into new sectors) to exploit existing strengths;
 - Prioritising R&D, innovation, and skills development for emerging sectoral strengths;
 - Developing new global supply chain participation strategies to scale these new areas;
 - Identifying innovation inter-dependencies with other geographies; and
 - Developing strategic partnerships with Centres of Excellence, wherever they may be.

Innovation Ecosystem

Strategic Aim 3 – ‘Broadening the Innovation Base’

- 7.8 To combat the current perceived dependence on large and multinational companies for innovation, SMEs must be seen as an integral part of the innovation mix across all sectors. This will tackle the problem in Lancashire, and indeed the UK as it was pointed out in the Industrial Strategy White Paper, of a long tail of less innovative and less productive companies.
- 7.9 With further economic shocks and economic restructuring, a certainty given the rate of market and technology change, resilience is vital to the ongoing success of an economy. By broadening innovation capacity and capability across the whole of the local economy, the effects of an economic shock to one of the large companies in Lancashire can be better absorbed. Without a broader innovation base, there is also the risk of a hollowing out of the Lancashire economy to adjacent economies.
- 7.10 To broaden the innovation base, this Strategic Aim will focus on:
- Creating greater diffusion of innovation and adoption across the local economy to increase the resilience of local employers and their ability to respond to emerging opportunities and threats;
 - Selling the benefits of innovation for competitiveness and growth;
 - Enhancing management and leadership skills around innovation; and
 - Prioritising FDI and clustering investment in innovation in Lancashire.

Strategic Aim 4 – ‘Enabling Infrastructures for Innovation’

- 7.11 Innovation is critically dependent on a mix of skills and talent, access to specialist facilities, knowledge and ideas generation, and funding. These are required for innovation to be

developed, adopted, and commercialised. As part of this, there has been significant investment in innovation infrastructure in Lancashire, developing facilities in key sectors.

7.12 This is about having the ‘soft’ infrastructures in place utilising innovation networks and collaboration across private and public-sector organisations. Ultimately, innovation needs to be a pervasive mindset and behaviour across organisations of all sizes in the private, public, and third sectors.

7.13 To enable infrastructures for innovation, this Strategic Aim will focus on:

- Ensuring Innovation is embedded as a ‘first nature’ behaviour and mindset for Lancashire;
- Ensuring wider economic policies (e.g. SEP, Lancashire’s Technical Education Vision) are aligned with this Plan to drive success;
- Enhancing management and leadership skills around innovation;
- Prioritising human capital development and re-deployability; and
- Developing strategic partnerships with Centres of Excellence, wherever they may be.

Strategic Aim 5 – ‘Letting the World Know!’

7.14 Competition between places and economies is intensifying, and with new global trading relationships to be shaped and developed, this is likely to continue. Lancashire is not instinctively recognised externally as a place for innovative, can-do solutions. We know what we are good at, others do not.

7.15 This is partly due to the lack of a clear, coherent, and comprehensive innovation narrative. There are innovation success stories in Lancashire but these are yet to be pulled together to show Lancashire’s innovation offer. This has resulted from insufficient resources given to promoting and coordinating innovation. Increasing the visibility of the importance of innovation in Lancashire will correct this.

7.16 To let the world know, this Strategic Aim will focus on:

- Developing this innovation plan and SEP refresh to help establish a coherent innovation and growth framework for Lancashire;
- Developing a proactive function to promote & celebrate innovation in the county;
- Providing clear and expert leadership in shaping national innovation thinking; and
- Connecting for innovation – through Global Innovation Networks and Global Value Chains.

Cross-Cutting Themes

7.17 Three cross-cutting themes will underpin and set the culture and delivery approach to the Strategic Aims. These are as follows:

Application-inspired in our R&D and its deployment

- This theme is about the application of R&D and innovation, not just its creation. Lancashire will be a place that adopts innovation generated within Lancashire and beyond, putting ideas into action. R&D in Lancashire will focus on practical solutions to emerging and large-scale challenges. These ideas will be commercialised and exported to different markets both domestic and international.

Excellence in delivery, driven by *real* evaluation and learning

- We understand that delivery of this Plan will be challenging. We need to understand that the structures and processes that have supported innovation in the past may not be

suitable to meet the challenges of the future. In developing, restructuring, and creating new process and structures we need to look to learn from our experiences, and those of other places.

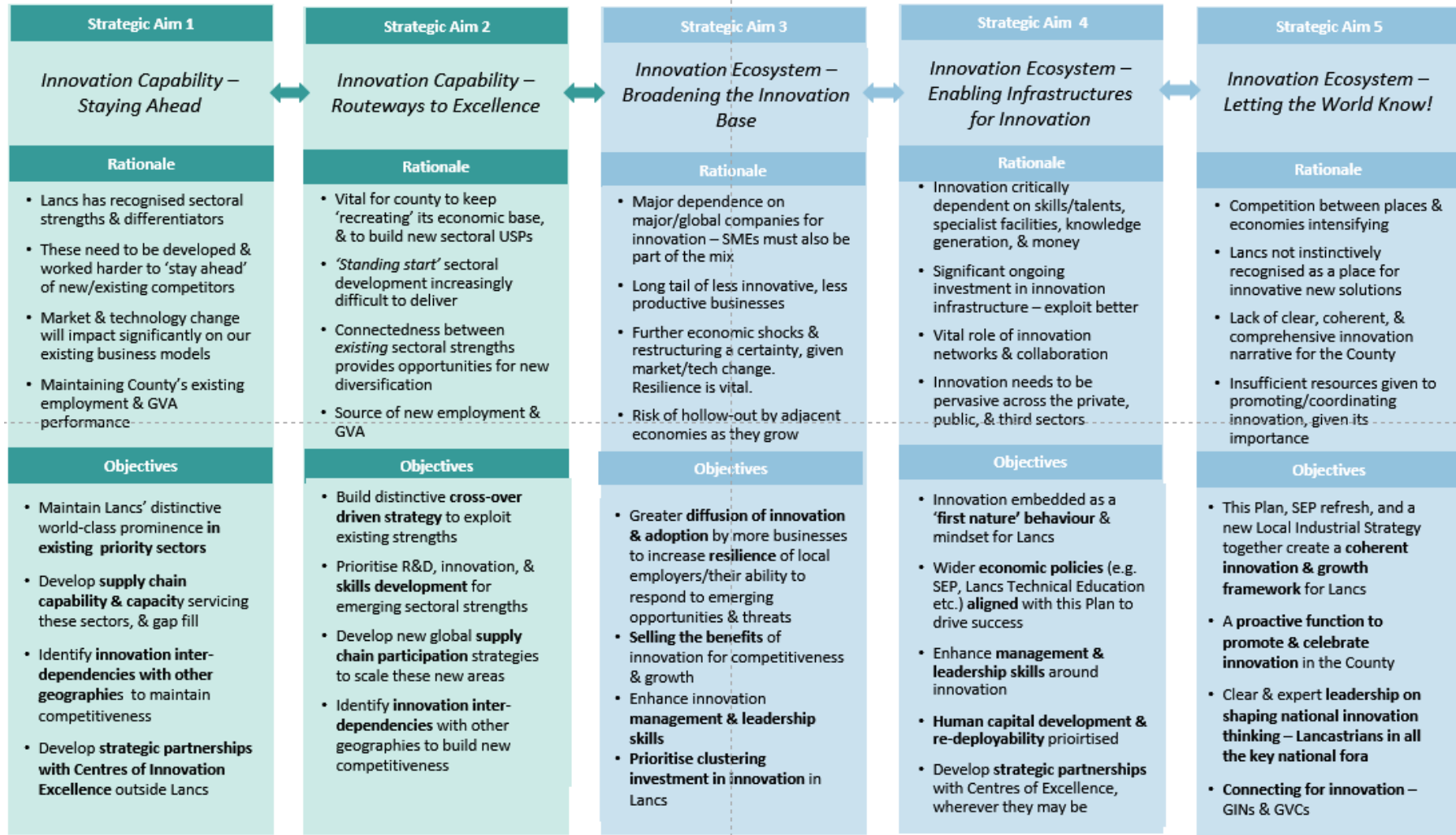
Collaborating for a competitive Lancashire

- As with the ultra-reliable technology crossover example from earlier, there are significant collaboration opportunities for Lancashire's innovators. This can be within and across both supply chains and sectors. This will strengthen existing sector assets and Smart Specialisations, and support new routeways to innovation. Exploiting these crossovers will develop Lancashire's capabilities, infrastructures, and build resilience across the economy.

7.18 Our Plan on a page is in Figure 6.

Figure 6 – The Lancashire Innovation Plan Strategic Framework

VISION: by 2030, Lancs will have positioned itself as a globally connected & resilient innovation ecosystem. The way we innovate will embody excellence & collaboration, feeding through to greater commercialisation, entrepreneurship, & competitiveness in our economy. We will have a track-record as a centre for globally-competitive knowledge clusters & talent, & as a developer of new solutions to the emerging challenges of our world



← Application-inspired in our R&D & its deployment →
 ← Excellence in delivery, driven by *real* evaluation & learning →
 ← Collaborating for a competitive Lancs →

8 Our Action Agenda for an Innovation Economy

This Section sets out our Action Agenda, the actions and activities recommended to implement the Vision and Framework.

- 8.1 Whilst the Vision and Strategic Framework are for the long term, an Action Agenda is typically subject to regular review (e.g. every couple of years). The focus of our Action Agenda is therefore on what can be done over the next few years to progress Lancashire's Innovation Plan; some of these actions are 'stand-alone' and can be completed in the short term, others are contributions to longer-term developments.
- 8.2 The prime emphasis in this Section is on those new actions, which, in consultation with partners, we judge are of major importance for Lancashire's future innovation capacity and capability. They are not, however, the only actions; through partners' ongoing commitments and activities, a wide range of activity is already underway in Lancashire.
- 8.3 As part of the development of this Action Agenda, high-level, activity mapping work was undertaken to identify existing and pipeline actions that could contribute to the delivery of our Innovation Plan. Below is a selection of key existing and emerging actions that will contribute to our Plan's delivery. These are indicative and not exhaustive.
- **Lancashire Health Innovation Campus** – this multi-phased campus will provide R&D space and facilities for the development of new services and technologies for health-related care. The aim of the development, based beside Lancaster University's Bailrigg campus, is to drive advances in technologies, products and ways of working to improve health and Healthcare. The vision is to create a world-class centre of excellence for innovation and research in population health;
 - **The Engineering Innovation Centre** – opening fully in 2019, the Engineering Innovation Centre (EIC) will capitalise on the location of the University of Central Lancashire at the centre of one of the most intensive engineering and manufacturing areas in the UK. The EIC will be equipped to the highest standard with technology demonstration areas and specialist work areas to create an integrated space for teaching, research and knowledge exchange;
 - **Edge Hill University Innovation Technology Hub** – the Hub will create new and refurbished, high-quality space for teaching, learning, student employability, enterprise and knowledge exchange activities. The facility will support expansion in Digital Creative

and Food Science (Biotechnology), to include bioinformatics, product design and prototyping;

- **Advanced Manufacturing Research Centre (AMRC)** – based at Sarnesbury, the AMRC North West will provide a regional centre tailored to the needs of North West companies, and aims to accelerate and demonstrate innovative technologies, tools, and techniques to competitively manufacture products and components using latest manufacturing techniques; and
- **Lancashire Energy HQ** – located at Blackpool and Fylde College, the Energy HQ is to provide national Energy training headquarters designed to meet the training needs of the Energy and oil and gas sectors.

8.4 These examples and the action mapping that has been undertaken so far shows that there is considerable activity underway across the private and public sectors. The Growth Deal has stimulated many innovation-related initiatives and partners including HEIs, FE providers, Innovate UK, ESIF and of course, the business community has and continues to invest tens of millions in maintaining and growing Lancashire's innovation capacity and ecosystem. Co-ordination and collaboration to join these actions together will ensure opportunities are not missed.

8.5 The remainder of this Section identifies y key actions that can be pursued to deliver the Vision and Framework set out in this Plan. These will be grouped under each Strategic Aim, however, as with existing actions, they are likely to contribute to the delivery of more than one Strategic Aim.

Strategic Aim 1 - Innovation Capability – Staying Ahead

Action	Rationale	Objectives	Outputs	Outcomes
Deliver North West National Adoption Programme Pilot	<ul style="list-style-type: none"> Recommended in the <i>Made Smarter Review 2017</i> Lancashire well positioned to play a leading role 	<ul style="list-style-type: none"> Accelerate development/diffusion of Industrial Digital Technologies through focussed support to SMEs 	<ul style="list-style-type: none"> Three-year pilot project delivered as per <i>Made Smarter Review</i> recommendation 	<ul style="list-style-type: none"> Leadership maintained and resilience improved Collaborations with other North West LEPs/innovation assets developed and strengthened
Connect with Centres of Excellence/Sectoral clusters outside Lancashire (both domestically and internationally)	<ul style="list-style-type: none"> Lancashire has recognised sector strengths that need to be maintained and developed further 	<ul style="list-style-type: none"> Identify relevant Centres of Excellence in both the UK and abroad Develop strategic partnerships with these to develop new opportunities in new markets 	<ul style="list-style-type: none"> Directory of Centres of Excellence/Clusters Connections with these centres/clusters made New opportunities for collaboration identified 	<ul style="list-style-type: none"> Connections either created or deepened, new markets expanded into Commercial benefits of new opportunities are exploited
Work in collaboration with large employers in the County such as BAE, Westinghouse, HEIs, the NHS etc to strengthen innovation capabilities of their supply chains in Lancashire	<ul style="list-style-type: none"> Significant expertise within Lancashire businesses/public sector Scope of supply chain capability and capacity to be developed 	<ul style="list-style-type: none"> Share best practice in innovation development and adoption Develop capacity and capability in supply chains 	<ul style="list-style-type: none"> Large employers deliver capacity-building initiatives to their supply chains Improved innovation in County's supply chains 	<ul style="list-style-type: none"> Supply chains will have greater ability to innovate Increase in collaborative innovation initiatives between Tier 1 companies and their supply chains
Develop a network of Lancashire 'Innovation Ambassadors' to work with local SMEs in developing innovation capabilities, and in promoting Lancashire's innovation offer	<ul style="list-style-type: none"> Innovation expertise exists in Lancashire and should be utilised Existing strengths need to be developed continually 	<ul style="list-style-type: none"> Existing strengths to be publicised more broadly, and lessons diffused and embedded with SMEs Existing innovation strengths publicised more widely via a coherent and consistent innovation narrative 	<ul style="list-style-type: none"> A network of ambassadors appointed Innovation narrative agreed and disseminated 	<ul style="list-style-type: none"> Lancashire's innovation offer is understood more widely Lancashire is well-positioned to bid for funding and new Centres of Excellence/Catapults
Develop Lancashire Technology and Market Foresight Observatory	<ul style="list-style-type: none"> Lancashire should be driving and shaping market and tech change 	<ul style="list-style-type: none"> Lancashire stakeholders are informed of market trajectory and tech changes 	<ul style="list-style-type: none"> Reports and insights easily accessible and available for Lancashire stakeholders 	<ul style="list-style-type: none"> Lancashire is on the front foot in driving, shaping, and implementing change

Strategic Aim 2 – New Routeways to Excellence

Action	Rationale	Objectives	Outputs	Outcomes
Develop supply chain crossover networks, working to Smart Specialisation model disciplines	<ul style="list-style-type: none"> Vital for Lancashire to create new USPs Connectedness between existing strengths provides opportunities for diversification 	<ul style="list-style-type: none"> Crossovers between supply chains to be identified and developed New technologies and innovations developed through crossover opportunities 	<ul style="list-style-type: none"> New innovation collaborations developed across sectors New technologies developed and adopted across sectors New sector potential identified and championed 	<ul style="list-style-type: none"> Lancashire’s sectoral strengths combine to develop new USPs for the County (e.g. ultra-reliable, technologies)
Encourage increase in Knowledge Transfer Partnerships (KTPs) and commercialisation opportunities that flow from these	<ul style="list-style-type: none"> Examples of successful KTPs exist across HEIs/businesses Successful in developing and commercialising innovation 	<ul style="list-style-type: none"> Double the number of KTPs in Lancashire Establish KTPs in emerging sectors 	<ul style="list-style-type: none"> Number of KTPs in Lancashire is doubled KTPs support existing strengths and are developed in emerging sectors 	<ul style="list-style-type: none"> Closer connection between HEIs and broader number and range of businesses KTPs successfully commercialise ideas in new sector strengths
Building on existing Test Beds (e.g. Lancashire and Cumbria Innovation Alliance Health and Care Test Bed), and develop these in new sectors e.g. Digital	<ul style="list-style-type: none"> Existing Test Bed examples within Lancashire Foundations of other Test Beds exist within Lancashire (e.g. Digital cluster in Lancaster) 	<ul style="list-style-type: none"> Invest in and develop clusters to create Test Beds in emerging sectors Innovations developed in Test Beds to be commercialised 	<ul style="list-style-type: none"> Existing Health and Care Test Bed is supported and developed New Test Beds in areas such as Digital are developed 	<ul style="list-style-type: none"> Lancashire becomes the ‘go to’ place for innovation testing Ideas developed and tested within Lancashire are adopted and commercialised
Rotate monthly initiatives such as “Failure Labs” and hackathons around existing key innovation facilities, with a different sector focus each month	<ul style="list-style-type: none"> Investment in a range of innovation facilities Utilises these in developing innovation across sectors 	<ul style="list-style-type: none"> Allow businesses to utilise existing facilities for testing and developing innovative ideas Tackle existing and future problems through dedicated hackathons across sectors 	<ul style="list-style-type: none"> “Failure Lab” space developed to enable businesses to test and develop new ideas Monthly hackathon held, at a different location and with a different sector focus each month 	<ul style="list-style-type: none"> Businesses are supported and encouraged to test new ideas in Lancashire Lancashire seen as being at the forefront of developing innovative solutions to global problems

Strategic Aim 3 – Broadening the Innovation Base

Action	Rationale	Objectives	Outputs	Outcomes
Enhance existing or develop a new leadership programme focussing on innovation development, adoption, and diffusion	<ul style="list-style-type: none"> Innovation skills and leadership are critical in delivering the innovation agenda Successful leadership programmes have been delivered in Lancashire however they haven't focussed specifically on innovation 	<ul style="list-style-type: none"> Develop leadership programme specific to innovation, either through enhancing existing programme or developing a new one Enable/incentivise innovators from SMEs from a range of sectors to access/complete the programme 	<ul style="list-style-type: none"> Innovation Leadership Programme to be developed SMEs from across Lancashire complete the programme 	<ul style="list-style-type: none"> Innovation leadership and management skills are strengthened across the business base Innovation in SMEs is more prominent, the 'long tail' of less innovative companies is reduced
Ensure that new and expanded innovation/science parks, and other relevant capital developments, include provision for incubating innovation-led start-ups	<ul style="list-style-type: none"> Capital investment in facilities across the County Space available to provide start-up/incubation space in innovation-led new businesses 	<ul style="list-style-type: none"> Provide start-up and grow-on space for SMEs in Lancashire Support business start-ups to grow, further building Lancashire's business base 	<ul style="list-style-type: none"> Start-ups occupy incubation space within Lancashire's innovation assets Increase in start-ups and survival for innovation-led businesses in Lancashire 	<ul style="list-style-type: none"> Lancashire's business base and economy grow through new start-ups in high growth innovative sectors
Facilitate networking between innovation and incubation centres to share best practice and deliver business support	<ul style="list-style-type: none"> Innovation assets/incubation space spread across the county Support/networking between these can be ad hoc and disjointed 	<ul style="list-style-type: none"> Develop networks between innovation/incubation space to deliver business support Share best practice via innovation/incubation centres and between SMEs within them 	<ul style="list-style-type: none"> New networks between innovation/incubation centres are developed Business support is easily accessible and delivered efficiently 	<ul style="list-style-type: none"> SMEs are supported to grow and develop Innovation/incubation centres in Lancashire are highly competitive locations for start-ups across a range of sectors Innovation business support is tailored and delivered utilising the network
Programme of visits from innovation success stories across the world to Lancashire to celebrate the difference innovation can make	<ul style="list-style-type: none"> Innovation successes from across the world not always promoted to SMEs, public, and voluntary sectors Benefits of innovation not always clearly articulated 	<ul style="list-style-type: none"> Identify relevant innovation success stories, and coordinate visits from key players involved The innovation story and the difference it made is clearly articulated 	<ul style="list-style-type: none"> Visits from relevant innovation success stories co-ordinated and delivered Attended by representatives from across Lancashire's economy 	<ul style="list-style-type: none"> Lancashire stakeholders understand and apply lessons from global best practice

Strategic Aim 4 – Enabling Infrastructures for Innovation

Action	Rationale	Objectives	Outputs	Outcomes
Create an innovation graduate placement programme for SMEs to increase the number of SMEs with graduate talent	<ul style="list-style-type: none"> Lancashire’s graduate retention is good However, difficulties to recruit to higher-level jobs 	<ul style="list-style-type: none"> Connect graduate talent to Lancashire’s SME base, particularly in key innovation sectors Create new opportunities for both Lancashire graduates and Lancashire businesses 	<ul style="list-style-type: none"> Increase in graduate talent from Lancashire HEIs working in Lancashire SMEs Lancashire SMEs benefit from higher level skills 	<ul style="list-style-type: none"> Lancashire’s SMEs has a higher skilled workforce, becoming more innovative and resilient Connections between HEIs and SMEs is strengthened
Via Boost, develop a specific, single point of contact programme of support for innovation-led start-up or early-stage businesses,	<ul style="list-style-type: none"> Boost already a successful business support programme Can be expanded to directly support innovation 	<ul style="list-style-type: none"> Enhance Boost’s offer in innovation-specific advice to SMEs Develop a single-point-of-contact for SMEs to navigate the innovation landscape 	<ul style="list-style-type: none"> Boost’s offer to SMEs will be enhanced with a specific innovation offering SMEs will access Boost for Innovation support 	<ul style="list-style-type: none"> Lancashire SMEs are supported throughout the innovation process The support SMEs need is available from a single point of contact
Explore options for creating a Lancashire Innovation Fund for investing in early-stage funding for innovation-led start-ups, funded by public and private sector partners	<ul style="list-style-type: none"> Access to finance, and the disjointedness of the funding landscape, can be a barrier for start-ups 	<ul style="list-style-type: none"> Identify potential options for a Lancashire Innovation Fund, to provide financial support to innovation-led start-ups Assess the viability of these options 	<ul style="list-style-type: none"> Successful investment which attracts further interest from market funders 	<ul style="list-style-type: none"> Funding is accessible for start-ups and tailored to Lancashire’s business needs Lancashire supports its innovation-led businesses to start-up and grow Returns on investment for funders
Programme to promote innovation across public and third sectors	<ul style="list-style-type: none"> Innovation is often seen as the preserve of large private sector companies Need for public and community and voluntary organisations to innovate to be more efficient and forward-looking 	<ul style="list-style-type: none"> Promote the opportunities for and benefits of innovation to public and voluntary sector organisations Innovation to become pervasive mindset across the whole Lancashire economy 	<ul style="list-style-type: none"> Public and voluntary sector organisations are aware of innovation opportunities and adopt innovative processes Innovation is generated not just in the private sector 	<ul style="list-style-type: none"> Lancashire’s whole economy is innovation-focussed Innovation mindset is pervasive across the private, public, and third sectors
Embed Intellectual Property (IP) in innovation initiatives	<ul style="list-style-type: none"> IP a key part of innovation development and commercialisation 	<ul style="list-style-type: none"> Working with the IPO, develop IP capability and capacity across Lancashire 	<ul style="list-style-type: none"> Wider and deeper understanding of IP management 	<ul style="list-style-type: none"> IP in Lancashire is well managed and protected IP developed in Lancashire is commercialised

Strategic Aim 5 – Letting the World Know!

Action	Rationale	Objectives	Outputs	Outcomes
Holding an annual Innovation Showcase to celebrate successful innovation in the round, share good practice, and provide opportunities to engage with potential investors (sponsored by a local large company)	<ul style="list-style-type: none"> Lancashire is a ‘well-kept secret’ in UK innovation Innovation success stories not broadcast widely enough 	<ul style="list-style-type: none"> Hold an annual Innovation Showcase in Lancashire, sponsored by local business, to promote and celebrate innovation in Lancashire 	<ul style="list-style-type: none"> Innovation successes celebrated Good practice shared Potential investors are aware of and can engage with Lancashire businesses 	<ul style="list-style-type: none"> Lancashire’s innovation successes are celebrated and shared widely Potential investors are clear on Lancashire’s innovation offer and target investment in the area
Develop Lancashire Innovation marketing strategy utilising existing assets and opportunities to act as centres for attracting inward investment	<ul style="list-style-type: none"> Lack of coherent, strategic marketing narrative about innovation in Lancashire 	<ul style="list-style-type: none"> Develop a coherent narrative of Lancashire’s innovation successes, capabilities, and opportunities Drive inward investment into Lancashire’s innovation strengths 	<ul style="list-style-type: none"> A marketing strategy, with an agreed and coherent narrative about Lancashire’s innovation offer, to be developed Strategy to be delivered via multiple channels to ensure the widest audience in the UK and internationally is engaged 	<ul style="list-style-type: none"> Lancashire’s innovation offer is understood both domestically and internationally County’s innovation offer to Inward investment is increased and business developed as a result
Develop and disseminate a portfolio of innovation case studies showing how innovation has enabled Lancashire SMEs to grow	<ul style="list-style-type: none"> Innovation in Lancashire perceived as a preserve of large companies Innovation in SMEs and emerging sectors less well known 	<ul style="list-style-type: none"> Develop case study examples of successful SMEs that have grown through innovation Share best practice examples to increase awareness and inspire other SMEs 	<ul style="list-style-type: none"> A suite of case studies developed and disseminated Innovation in Lancashire’s SMEs better understood 	<ul style="list-style-type: none"> Lancashire SMEs grow through access to new, larger markets Lancashire’s full innovation offer is well known, both domestically and internationally
County setting the agenda in National Forums	<ul style="list-style-type: none"> Lancashire not well-represented in national innovation policy-making forums Lancashire “responding to” rather than “shaping and driving” policy 	<ul style="list-style-type: none"> Lancashire’s voice to be heard in the national debate Lancashire plays a prominent role in shaping, developing, and implementing national policy 	<ul style="list-style-type: none"> Lancashire represented in national policy forums 	<ul style="list-style-type: none"> Lancashire’s innovation offer and expertise is well known and sought after Lancashire drives national policy-making

9 Leadership and Management of this Innovation Plan

This section sets out the governance recommendations to drive and monitor progress in the delivery of our Plan.

- 9.1 Strong leadership, collaboration, and willingness to deliver change are fundamental to making this Plan a reality. Leaders from across the private and public sectors will need to come together to deliver innovation for Lancashire.
- 9.2 Innovation, and this Plan, should be at the heart of a local industrial strategy. Utilising innovation to drive forward our existing sectoral assets and develop new routeways to excellence will be key to unlocking Lancashire’s substantial productivity potential.
- 9.3 This will require a well governed and an appropriately resourced approach to implementation. Making the most of existing resources and re-calibrating these to support the Aims of this Plan will be vital to its success.

Functions and Forms

- 9.4 Drafting strategies and plans are easy; implementing them is hard. The situation will not be any different in progressing this Plan in Lancashire; successful implementation will only come about through drive, commitment, and hard work.
- 9.5 Lancashire does not start from scratch as it approaches implementing this Plan. There is now a wide body of evaluation experience focusing on what makes for economic, efficient, and effective implementation. As Partners take this Plan forward, these evaluation lessons will give helpful pointers and short-cuts on how to do implementation well. More than any other, clarity on the functions and then the forms of implementation will be the most important consideration.
- 9.6 In function terms, implementation of Lancashire’s Innovation Plan needs to achieve the following:
- **A real understanding of the socio-economic state of innovation and related activity in Lancashire, absolutely and relatively.** The evidence assembled during drafting this Plan provides a firm foundation to build on, but this will need to be refreshed regularly and, crucially, partners will need to move their focus on from the data numbers to the causes and explanations underlying these. Clarity on who is responsible for providing the data and identifying when new data become available for comparison will be important;

- **A long-term vision of where Lancashire should, and could, be as an innovation economy.** This is hard to do within the constraints imposed by public sector spending uncertainty. This said, it is vital in ensuring the stability of the Plan, despite external changes and uncertainty, that the Vision is understood and kept. It is helpful to identify what levers are available and who owns them so that all parties are clear what may be achievable, rather than allowing subsequent actions to become just a wish list;
- **Robustness in making the hard choices resulting from our Vision.** Simply put, ‘doing what you’ve always done gives what you’ve always got’. If Lancashire is going to move ahead as an innovation economy, then those activities underway that are not contributory must be left behind;
- **Best of class design, implementation, and delivery of actions to take the Plan forward.** This will require looking way beyond Lancashire borders to see how specific innovation and economic challenges have been addressed elsewhere. It may also mean, on occasions, facing up to the fact that delivery capability within Lancashire is not of the calibre or scale needed to tackle the challenges we face, and not being uncomfortable about securing solutions from elsewhere in the UK or further afield;
- **A real commitment to monitoring and evaluation,** so that the relevance and appropriateness locally of Plan actions are constantly reviewed, and delivery impact evidenced and maximised;
- **The continuing enthusiasm of partners,** to ensure that the process of implementation remains consensual and inclusive and that energies and resources are fully captured. Clarity of ownership of the actions proposed by this Plan between partners is particularly important. If there is a clear leader, let them lead. Where there is a collaborative action, we will spell out who will actually be responsible for galvanising activity; and
- **Consistent and influential presentation of Lancashire’s innovation agenda,** as set out in this Plan, in local, regional, national, and international for a. This Plan must become established as the definitive statement of innovation in the County. Developing a common language or shorthand for the key actions so that everyone recognises them easily can be important to avoid confusion or unhelpful related actions being developed in parallel by partners.

9.7 Having agreed what the key functions demanded of the Plan are, then and only then, should attention focus on defining suitable forms by which these functions can be delivered. All too often, albeit with best intentions, forms for implementation are agreed before functions have been properly specified. Defining the form that implementation should take is a matter for local Partners. Again, however, any form will through its structure need to embody the following:

- **Legitimacy from, and accountability to, the businesses, people, and communities of Lancashire.** Typically, this is realised through a wide partnership group, and in a Lancashire context that will be designed to ensure ownership of, and support for, the Plan from the totality of partners in the County;
- **Strategic Leadership capable of charting the long-term path for the Plan’s direction and implementation.** This group will be responsible for the overall strategic direction of the Plan, and for championing Lancashire and its innovation priorities to key audiences. This Plan’s recommendation is that a new Innovation Board is established to provide this leadership, bringing together individuals with a well-developed understanding of innovation, and strong familiarity with the wider sub-regional, sub-national, and national

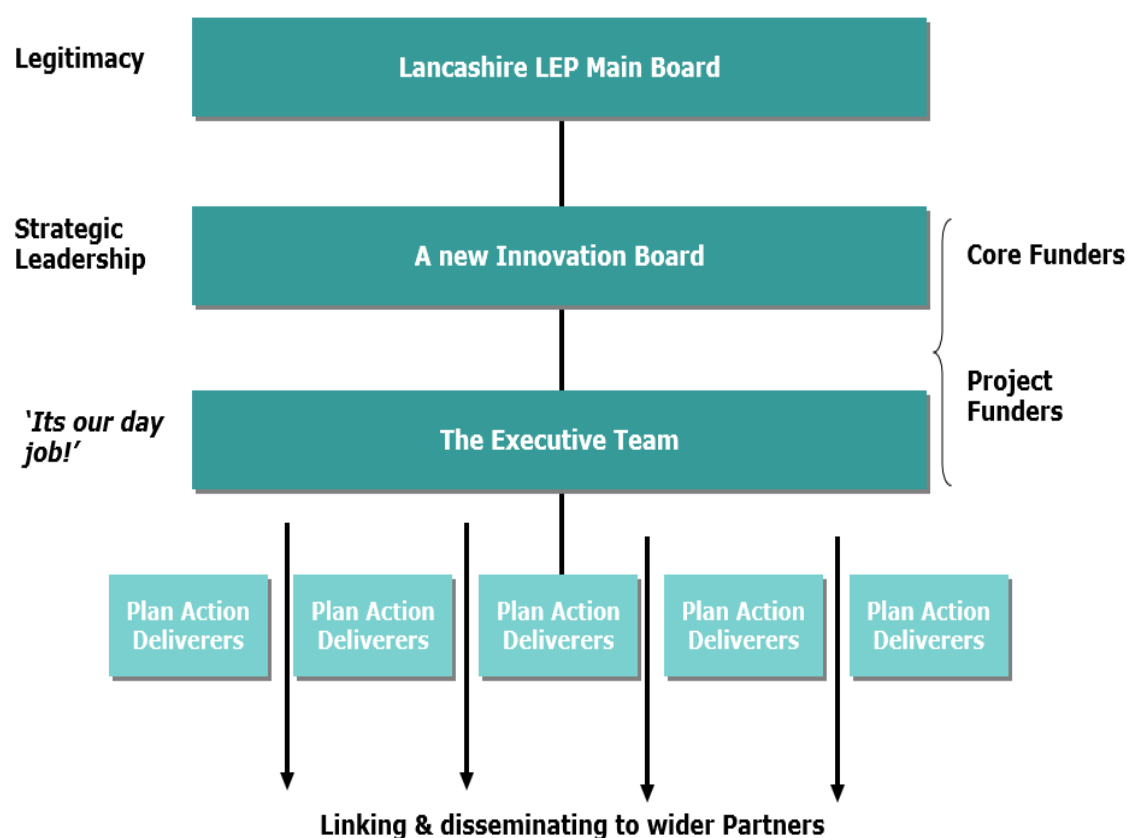
policy contexts. The emphasis on membership of this new sub-board should be the calibre of thinking and experience, not representation;

- **An Operational Executive, which has principal responsibility for overseeing, coordinating, and shaping the practical delivery of this Plan**, and leading its monitoring and evaluation. It will not directly deliver the Plan but would work closely with those partner agencies capable of progressing actions, providing them with resources, support, and encouragement. The Operational Executive will have a crucial role in looking across delivery to make sure the various structural elements of the Plan are coherent and aligned; it will also provide the administrative and secretariat requirements of the wider partnership; and
- **A Delivery Infrastructure, responsible for taking forward those actions defined by this Plan**. As far as possible, these actions will be delivered through the range of existing delivery bodies active in Lancashire. Some of these will be based within the County, others outside but with activities on the ground. As mentioned earlier, it will be important for all partners to be clear about prioritisation and sequencing - some 'quick-win' actions will be pragmatic and achievable quickly, others will be more challenging and will only start to bear fruit in two or three years, and others (around culture and thinking) will be generational.

A proposed governance model for this Plan

9.8 In terms of Governance, we recommend the creation of an Innovation Board, whose remit will be to oversee the delivery of this plan and ensure its accountability. This (sub) board will sit beneath the LEP (main) Board and interact with delivery actors as summarised below:

Figure 7 – Proposed Governance Model



Source: SDG-Economic Development

- 9.9 The Innovation Board will be private sector-led and be made up of senior leaders who can think openly and freshly about innovation issues. The Board will sit underneath and report to the LEP Board. An Innovation Director will be appointed to coordinate and lead the operational delivery of the Innovation Plan and will report to the Innovation Board.
- 9.10 The Innovation Board will integrate with and complement existing Innovation/LEP governance structures. This includes the emerging Lancashire HEI Innovation Forum being championed by the County's HEIs, and the dedicated post that HE partners are funding to progress innovation within and across the County

Next Steps

- 9.11 As this Plan has shown, Lancashire has significant innovation assets in key sectors, as well as the potential for developing strengths in emerging sectors. These are the foundations of a bright innovation-driven future for Lancashire, providing a multitude of opportunities for growing and strengthening the local economy.
- 9.12 Implementation of this Plan is vital to the growing the productivity of Lancashire, the North West, the wider Northern Powerhouse, and ultimately the national economy. Lancashire's existing innovation assets are key components for unlocking the productivity of the North, and with focus and determination, we can do more. Be it in terms of place, understanding our drivers, and recognising our foundations, through this Plan we can make a real contribution to industrial strategy.
- 9.13 Now, it is over to you to implement this Plan. With your drive, collaborative spirit, and innovative thinking, Lancashire can become the place for innovative ideas and adoption. Lancashire can a centre for innovation, known not just across the North or the UK, but globally. This Plan comes at a turning point in the UK's economic relationship with the rest of world, and Lancashire can be at the forefront of innovation, creating solutions to global problems and being a driver of UK productivity.

A Lancashire’s Innovation Assets – Listing (non-exhaustive)

Organisation Name	Asset Name	Asset Type	Asset Status	Location	Postcode	Background	Sector	Service Offer	Age
Accrington and Rossendale College	Lancashire Centre for Excellence for Digital Technology and Innovation	Growth Deal Project	Existing	Accrington	BB5 2AW	The Centre is a partnership project between Accrington and Rossendale College, Risual Education Ltd and Microsoft, providing a state-of-the-art learning space equipped with the latest Microsoft technologies. It will enhance teaching and learning and enable students to develop the digital literacy skills they need to be effective citizens and members of the workforce.	Digital	Education// Skills Development	2017
Asahi Glass Chemicals	Asahi Glass Chemicals	Company/ Key Asset	Existing	Thornton-Cleveleys	FY5 4QD	One of the world’s leading producers of fluorochemicals and fluoro chemical materials. The UK site at Thornton-Cleveleys, which produces fluoropolymers such as polytetrafluoroethylene (PTFE), is the largest that the company operates outside Japan.	Construction	Chemical Manufacturer	1999 onwards
BAE Systems	Samlesbury Aerodrome	Company/ Key Asset	Existing	Balderstone	BB2 7LF	Samlesbury Aerodrome is a disused airfield at Balderstone near Samlesbury. The aerodrome is owned by defence company BAE Systems	Aerospace	Advanced Manufacturing	2012 onwards

Organisation Name	Asset Name	Asset Type	Asset Status	Location	Postcode	Background	Sector	Service Offer	Age
BAE Systems	Warton Aerodrome	Company/ Key Asset	Existing	Preston	PR4 1AX	<p>which uses the site for manufacturing of several aircraft types. The aerodrome is part of Lancashire Enterprise Zone.</p> <p>Warton Aerodrome is in Warton village on the Fylde in Lancashire, England. The airfield is a major assembly and testing facility of BAE Systems Military Air & Information. It is also part of Lancashire Enterprise Zone.</p>	Aerospace	Advanced Manufacturing	2012 onwards
BAE Systems	BAE Systems' Training Academy (Academy for Skills and Knowledge)	Skills & Training	Existing	Balderstone	BB2 7LF	<p>The Academy for Skills & Knowledge (ASK) is 7,400m² in size and situated on the Samlesbury Aerospace Enterprise Zone alongside BAE Systems' military aircraft advanced manufacturing centre. It will train all the apprentices and graduates in the Company's military aircraft business as well as providing life-long learning and skills development activities for 13,000 employees for at least the next four decades. The ASK will also act as a collaborative skills-hub for the North West's engineering and manufacturing sector and offer an exciting learning education centre for school children from five to 14 years old.</p>	Aerospace	Education/ Skills Development	Opened December 2016

Organisation Name	Asset Name	Asset Type	Asset Status	Location	Postcode	Background	Sector	Service Offer	Age
Blackburn & Darwen Borough Council; the Lancashire LEP; and The Arts Council England	Making Rooms - Lancashire's First Fab Lab	Growth Deal Project	Existing	Blackburn	BB1 7JN	<p>The Making Rooms is an independent Community Interest Company (CiC) which aims to:</p> <ul style="list-style-type: none"> - Help create more jobs in the creative and manufacturing sectors by enabling and supporting new business creation - Improve employability by giving people future creative and technical skills - Increase participation in Science, Engineering, Technology, Mathematics and The Arts - Improve the well-being of Lancashire residents by providing fun, interesting and self-development activities and enabling people to design and make their own products 	Creative Industries	Creative of Centre and Innovation	2016 onwards
Blackpool & the Fylde College	Maritime Engineering Facility	Growth Deal Project	Existing	Fleetwood	FY7 8JZ	Specialist marine engineering centre accommodation at the internationally renowned centre of excellence.	Maritime	Education/ Skills Development	2016
Blackpool & the Fylde College	Lancashire Energy HQ	Growth Deal Project	Existing	Blackpool	FY4 2QS	Development of a National Energy HQ to meet the training needs of the energy and oil and gas sector.	Energy	Education/ Skills Development	2017
Edge Hill University	Innovation Technology Hub	Growth Deal Project	Existing	Ormskirk	L39 4QP	The Edge Hill Technology Hub provides high quality space for teaching, learning, student employability, enterprise, and knowledge exchange activities. The facility supports expansion in Digital Creative and Food	Digital Creative and Food Science (Biotechnology)	Education/ Skills Development/ Business Support	2016+

Organisation Name	Asset Name	Asset Type	Asset Status	Location	Postcode	Background	Sector	Service Offer	Age
Edge Hill University	Business Insight3 (Bi3)/Edge hill Partnership	KTP	Existing	Chorley	PR6 7EN	<p>Science (Biotechnology), and includes bioinformatics, product design and prototyping.</p> <p>Bi3 supply security and customer intelligence solutions based on the latest technology available in video analytics, people counting, facial recognition, access control devices, queue management, facial marketing, digital and network storage. Utilising research expertise from Edge Hill's Centre for Data Analysis and Representation this 24-month KTP was designed to develop a holistic software framework that integrates multiple data capture devices, reporting and analysing data from a variety of sources.</p>	Data and Cyber Security	Data and Cyber Security solutions	2014 onwards
Edge Hill University	Productivity and Innovation Centre	Business Support	Planned	Ormskirk	L39 4QP	<p>The Productivity and Innovation Centre is an output driven programme of intensive workshops, with accompanying support from academic subject experts, which takes SMEs through a rapid innovation process to achieve two outcomes:</p> <p>1. SMEs adopt and embed highly effective rapid innovation processes in their business; a framework</p>	HE Business Support	Skills Development/Business Support	2018

Organisation Name	Asset Name	Asset Type	Asset Status	Location	Postcode	Background	Sector	Service Offer	Age
Lancashire and Cumbria Innovation Alliance (LCIA)	Lancashire NHS Test Bed	AHSN	Existing	Wesham	PR4 3AL	<p>of evidence based decision making regarding the business and market case for an (technical/technological) innovation and evidence based practice (need/demand/efficacy based) in product, service or process development. This outcome specifically improves the productivity of SME innovation.</p> <p>2. The release of new to firm and new to market product, service or process innovations by the SME participants. SMEs participants in the Centre will be identified from the outset on the basis that they have existing innovation assets at Technology Readiness Level (TRL) 2, 3 or 4, and would benefit from support (experiencing barriers and or need to reduce to time to market) to efficiently move those assets through to beyond TRL level 7 ready for commercial release.</p> <p>The Lancashire and Cumbria Innovation Alliance (LCIA) has been awarded the opportunity to take part in NHS England’s Test Bed, a two-year pilot looking at how the use of technology</p>	Health Technologies	Healthcare	2016+

Organisation Name	Asset Name	Asset Type	Asset Status	Location	Postcode	Background	Sector	Service Offer	Age
						<p>can help provide modernised, innovative healthcare. The LCIA Test Bed is one of seven across England. It is hosted by Lancashire Care NHS Foundation Trust and is made up of several partners including Lancaster Health Hub, the Fylde Coast vanguard and the Better Care Together vanguard, as well as several innovators who, led by Philips, bring with them a wealth of expertise in a variety of healthcare technologies. The purpose of this Test Bed is to provide frail and older people living with dementia or other long-term conditions such as Chronic Obstructive Pulmonary Disease (COPD) or diabetes the opportunity to use technology to improve their overall health and wellbeing so they can stay will in the community and avoid unnecessary hospital admissions.</p>			
Lancashire County Council	Advanced Manufacturing Research Centre (AMRC) North West	Growth Deal Project	Planned	Samlesbury	BB2 7LF	<p>Delivery of a new regional hub of the national Advanced Manufacturing research Centre (AMRC) at the Samlesbury EZ site. The proposal is key to lifting productivity and growth in a priority growth sector of local and national</p>	Advanced manufacturing	Advanced manufacturing R&D	

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Lancashire LEP	Boost Business Lancashire	Business Support	Existing			<p>significance and will enable Lancashire's businesses to compete and trade internationally. The proposal builds on Lancashire and Sheffield's successful Science and Innovation Audit submission to Government – the Northern Powerhouse Advanced Manufacturing Corridor. The proposal also complements existing Growth Deal investment in UCLan's Engineering and Innovation Centre in Preston.</p> <p>Lancashire's business growth hub, providing advice and support to businesses across the county, including access to finance, employment, and skills development programmes.</p>	Public Sector Business Support	Business Support	
Lancaster University	Centre for Global Eco-Innovation	ERDF Project	Existing	Lancaster	LA1 4YQ	<p>The Centre for Global Eco-Innovation is the only centre of its kind in Europe and is part financed by the European Regional Development Fund. It brings together the expertise, resources and global contacts of Lancaster University and the University of Liverpool, together with international commercialisation consultancy Inventya Ltd.</p>	Eco-Innovation	R&D	2012+

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Lancaster University	Lancaster Health Innovation Campus	ERDF Project/ Growth Deal Project	Planned	Lancaster	LA1 4YW	<p>SME-led collaborative R&D partnership with two world-ranking universities underpin the development of new products, processes and services for the global marketplace, which by virtue of their use, manufacture, raw materials, reuse or disposal, deliver positive environmental impacts.</p> <p>A multi-phased campus providing R&D space and facilities for the development of new services and technologies for health-related care. The aim of the development, based beside the University's Bailrigg campus, is to drive advances in technologies, products and ways of working to improve health and healthcare. The vision is to create a world-class centre of excellence for innovation and research in population health:</p> <ul style="list-style-type: none"> - Transforming health care and practice regionally and globally - Achieving significant impact on local health outcomes - Providing major contributions to regional economic development - Supporting service reform 	Healthcare	Education/ Skills Training	Scheduled for completion September 2019

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Lancaster University	Academic Centre of Excellence in Cyber Security Research - (Security Lancaster Research Centre)	Research	Existing	Lancaster	LA1 4YF	<p>in the public sector</p> <p>The Academic Centre of Excellence in Cyber Security Research (ACE-CSR) is hosted within the University's flagship cross-disciplinary Security Lancaster Research Centre. Inaugurated by Baroness Pauline Neville-Jones in October 2012, the centre is nationally and internationally renowned for its inter-disciplinary, systems-centred research, that blends computer science and communications aspects of cyber security with approaches from behavioural and social sciences.</p>	Information Technologies	Fundamentals of Computing, Information & Knowledge Management, Networks & Distributed Systems, Software Engineering	2012 onwards
Lancaster University	Advanced Manufacturing Capital for Skills Development & Employer Engagement	Growth Deal Project	Planned	Lancaster	LA1 4YW	<p>The project centres on the purchase of equipment to be situated at both Lancaster University and Lancashire Enterprise Zone (EZ) sites. The environments at both Lancaster and the EZ will provide Lancashire learners with access to unique, nationally leading and highly relevant equipment informed by underlying research expertise.</p>	Advanced Manufacturing	Education/ Skills Development	Financial completion Sept 2017, Project completion Sept 2021
Lancaster University	Collaborative Technology Access Programme	ERDF Project	Existing	Lancaster	LA1 4YB	The Collaborative Technology Access Programme (cTAP) provides businesses access to	Chemistry	Education/ Skills Development/ Business Support	2015 onwards

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	(cTAP)					facilities and expertise located in the Chemistry Department now unavailable to inward investing businesses within the UK. The facilities include Nuclear magnetic resonance (NMR) spectroscopy, chromatography and mass spectrometry instruments, molecular beam epitaxy machine (which is used to manufacture semiconductor devices), next generation 3D microprinting system with a range of applications including bioengineering, Raman spectrometer, SEM Microscope, FT infrared spectrophotometer, high performance liquid chromatograph, X-ray fluorescence spectrometry, nanoscribe.			
Lancaster University	Lancaster China Catalyst Programme	HEFCE Project	Existing	Lancaster	LA1 4YQ	The Lancaster China Catalyst programme aims to exploit the global links of Lancaster University for the benefit of UK companies. From 2014-2017, with initial investment from the Higher Education Funding Council for England (HEFCE), Lancashire County Council and participating businesses.	International Connectivity	International Connectivity	2014 onwards
Lancaster University	Lancaster Campus	Growth Deal	Existing	Lancaster	LA1 3JD	This project reflects the first phase of investment at	Health Technologies	Healthcare/Education & Skills Development	2017

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	Teaching Hub (Health and Social Care)	Project				Lancaster to deliver a new latest teaching hub providing staff and students with fully flexible space. The new teaching hub will provide an environment conducive to multi-professional higher-level learning and opportunities to increase community and employer engagement. It will support growth in qualified professionals and deliver CPD to upskill existing workforce.			
Myerscough College	Myerscough College - Farm, Innovation Technology Centre	Growth Deal Project	Existing	Preston	PR3 0RY	<p>A sector leading centre of excellence for industry training and research. A major flagship build for agriculture and associated courses at Myerscough. The FFIT Centre boasts facilities to support food research and development with the aim of creating a resource that both local businesses and students can use to investigate opportunities to process and add value to on-farm produce.</p> <p>Includes specialist teaching, demonstration and research facilities including a teaching laboratory, soil laboratory, instrumentation room, production development kitchen.</p>	Education/ Skills Development	Education/ Skills Training/ Business Support	2017 onwards
National Nuclear	National Nuclear	Company/ Key Asset	Existing	Preston/Warrington	PR4 0XJ/WA3	The National Nuclear Laboratory is a UK	Nuclear Energy	Nuclear Services Technology Provider	2009

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Laboratory	Laboratory				6AE	<p>government owned and operated nuclear services technology provider covering the whole of the nuclear fuel cycle. It is fully customer-funded and operates at six locations in the United Kingdom. Activities at Springfields (Preston) include:</p> <ul style="list-style-type: none"> - Nuclear physics and advanced reactors - Fuel Design and Manufacture - Specialist Analytical Services - Process Chemistry <p>NNL's activities in its leased facilities at Springfields (Preston Lab) and Sellafield (Central Lab and Windscale Lab) are operated under Command & Control regimes by Springfields Fuels Ltd and Sellafield Ltd respectively. Activities carried out under those regimes are constrained by the relevant Environmental Permits and Nuclear Site Licences held by Springfields Fuels Ltd and Sellafield Ltd.</p> <p>Activities at Risley include:</p> <ul style="list-style-type: none"> - Modelling and simulation - Engineering - Project Management - Corporate Functions - Environment 			
Nelson & Colne	Advanced	Growth	Existing	Nelson	BB9 7YT	Expansion and remodelling	Engineering/	Educations/ Skills	2016

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College	Engineering & Manufacturing Innovation Centre	Deal Project				of educational facilities and the creation of new advanced engineering, laboratory, workshop and classroom facilities.	Advanced Manufacturing	Training	
Paccar Ltd	PACCAR (Leyland Trucks)	Company/Key Asset	Existing	Leyland	PR26 6LZ	Leyland's 710,000-square-foot manufacturing facility features a technologically advanced production system which incorporates electronic work instructions (EWI) to deliver engineering designs, build instructions and quality records to employees by interactive touch screens. Leyland builds the full DAF product range (LF, CF and XF models) for right and left-hand drive markets. The site is also the UK home of the successful PACCAR Parts business, who special in aftersales support and spares distribution across the UK and Europe.	Automotive	Advanced Manufacturing	1998 onwards
Precision Polymer Engineering	Precision Polymer Engineering	Company/Key Asset	Existing	Blackburn	BB1 3EA	PPE develops novel elastomer materials to meet sealing applications including extreme temperatures and chemically aggressive environments. In addition, PPE can mold rubber seals and rubber gaskets in sizes to suit any sealing application and manufacture them in lead times as fast as 48 hours.	Advanced Manufacturing	Advanced Manufacturing	1975
Rolls Royce	Rolls Royce -	Company/	Planned	Barnoldswick	BB18	Two new engines being	Aerospace	Advanced	Advanced

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	Advanced and Ultrafan Engines	Key Asset			6DZ	<p>developed: the Advance and UltraFan, predicted for launch in 2020 and 2025. The high efficiency core compression and turbine system incorporated into Advance will deliver the highest overall pressure ratio of any commercial turbofan engine ever-made resulting in greater efficiency and lower CO2 emissions.</p> <p>UltraFan takes the evolution of Advance further, featuring all the same technology and more. This will deliver further fuel efficiency and CO2 reductions, and provide a further significant reduction in engine noise.</p>		Manufacturing	from 2020, Ultrafan from 2025
Safran Nacelles	Safran Nacelles	Company/ Key Asset	Existing	Burnley	BB10 2TQ	<p>Safran Nacelles is one of the two main integrators of aircraft engine nacelle systems in the world. With more than 18,000 equipment in service, Safran Nacelles proposes a range of nacelle systems to suit each type of aircraft: regional jets, business jets and commercial aircraft of more than 100 seats for medium- and long-range travel.</p> <p>Safran Nacelles designs, integrates and ensures</p>	Aerospace	Advanced Manufacturing	2005

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						customer support and services for aircraft engine nacelle systems.			
Sanko-Gosei Ltd	Sanko-Gosei Ltd	Company/ Key Asset	Existing	Skelmersdale	WN8 8EB	Sanko-Gosei specialise in plastic moulding production for air conditioning systems, automotive systems, office automation, precision injection moulding, communication systems, and injection moulding tooling.	Advanced Manufacturing	Advanced Manufacturing	1987
Training 2000	Training 2000	Growth Deal Project	Existing	Blackburn	BB1 3BD	Training 2000 offer training, study programmes & apprenticeships in North Lancs in sectors including digital, engineering, financial services, automotive, and cyber security	Engineering/ Advanced Manufacturing	Skills and Training	2016
Trebor Developments/ Burnley Council	Burnley Vision Park	Growth Deal Project	Existing	Burnley	BB12 0AN?	High quality 5-acre business park to accommodate advanced manufacturing/engineering sectors and to include 46,000 sq. ft. first phase incubator, workspace and grow-on space.	Business space aimed to attract businesses in the advanced manufacturing and digi-tech industries	Business Space	2017
UCLAN	National test bed for the UK's development of drone technology	Research	Existing	Preston	PR1 2HE	Preston was successful in its bid to become a national test-bed for the UK's development of drone technology, this building on the work of the 'Civic Drone Centre' established by the University of Central Lancashire with a £250k investment in 2014. This not-for-profit centre brings together expertise and	Aerospace Digital Society	Demonstrator	2018

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						stakeholders including Local Authorities, communities, and businesses, and has developed and demonstrated many novel drone solutions. The Centre is an important part of the new £32m Engineering Innovation Centre opening in Preston in early 2019			
UCLAN	Engineering Innovation Centre	Growth Deal Project	Planned	Preston	PR1 2HE	Opening fully in 2019, the Engineering Innovation Centre (EIC) will capitalise on the location of the University at the centre of one of the most intensive engineering and manufacturing areas in the UK to create an internationally competitive facility that will bring together the region’s expertise from within academia and industry. The EIC will be equipped to the highest standard with technology demonstration areas and specialist work areas to create an integrated space for teaching, research and knowledge exchange.	Engineering/Advanced Manufacturing	Engineering/Advanced Manufacturing training facilities	2019 onwards
Victrex	Victrex	Company/Key Asset	Existing	Thornton-Cleveleys	FY5 4QD	Victrex plc is a British-based supplier of high performance polymer solutions. It is a constituent of the FTSE 250. The company’s headquarters and manufacturing facilities are based in the UK with	Advanced Manufacturing	Advanced Manufacturing	1993 onwards

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						technical and customer support facilities in multiple markets, serving more than 40 countries. Victrex serves a diverse range of industries including aerospace, automotive, electronics, oil and gas and medical.			
Vinnolit GMBH	Vinnolit GMBH	Company/ Key Asset	Existing	Thornton-Cleveleys	FY5 5LR	Vinnolit produces and markets a wide range of PVC products suitable for all kinds of PVC applications, e.g. in the building & construction sector, in the automotive industry or in the medical sector. Whether the PVC is for window profiles, pipes, rigid film, flooring, wall covering, technical coatings, automotive sealants, cable sheathing or medical applications, Vinnolit can offer a suitable product. Additionally Vinnolit produces and markets intermediates such as caustic soda, vinyl chloride and tin tetrachloride, which are needed in the chemical industry as well as in other branches.	Chemicals/ Advanced Manufacturing	Advanced Manufacturing, R&D	1998 onwards
Westinghouse Springfields Fuels Ltd	Nuclear Fuel Production	Company/ Key Asset	Existing	Preston	PR4 0XJ	Springfields is a nuclear fuel production installation in Salwick, near Preston. The key assets/services/products are nuclear fuel manufacture, uranium recovery, and nuclear	Nuclear Energy	Nuclear Fuel Manufacture	1940s+

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						decommissioning.			

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