

A Summary Report  
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# Lancashire Innovation Plan Refresh – Reflections on the 2017/18 Plan

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# 1 Introduction

## Purpose

- 1.1 This is the first in a series of reports which will be produced over the period though to late Summer 2022 to help guide the refresh of the Lancashire Innovation Plan (LIP), which was developed originally by Steer Economic Development (Steer-ED) in late 2017/early 2018 and to which the Lancashire Innovation Board has been working since its formation in summer 2020<sup>1</sup>.
- 1.2 The report seeks to do three things:
- First, to summarise the key changes in the socioeconomic context for innovation in Lancashire since the LIP’s baseline was developed in 2017;
  - Second, to synthesise a first-round of qualitative feedback gathered from consultees on how and where the LIP might best be refreshed; and
  - Third, to review the practical actions that have been undertaken since 2017/18 to move the LIP from concept to operating reality.

## Methodology

- 1.3 This Report draws on three key sources of evidence:
- **An updated baseline assessment of Lancashire’s socioeconomic context**, completed by Lancashire County Council and LEP colleagues, taking account of the dramatic changes caused by the COVID-19 pandemic and Brexit, and on longer-term priority shifts to focus on low and zero carbon activities and the increasing digitalisation of industry;
  - **Twelve one-to-one consultations with key stakeholders in Lancashire’s Innovation area**, conducted by Steer-ED’s senior team members, highlighting what has worked well and what challenges remain in Lancashire to maximise its innovation potential; and
  - **A line-by-line assessment of the actions proposed in the 2017/18 LIP**, completed by Lancashire County Council and LEP colleagues, indicating progress against each action and identifying reasons for progress.

## Structure

- 1.4 This report is structured into four sections:
- **Socioeconomic Context** – a headline review of the changing socioeconomic context within which a refreshed LIP will need to sit, and to which it should respond proactively. A fuller summary including review of policy, technological, and market change is provided at Appendix C;

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<sup>1</sup> The Lancashire Innovation Board is a sub- board of the Lancashire Enterprise Partnership main board

- **Challenges and Opportunities** – a summary of the key challenges facing Lancashire in maximising innovation, and the potential new opportunities to be capitalised on by a refreshed LIP;
- **A review of the 2017/18 LIP**- observations on the relevance and successes of the 2017/18 LIP’s content, delivery, and governance; and
- **Implications and Priorities** – a concluding chapter highlighting the important conclusions from four years of the 2017/18 LIP, recommending the priorities for the refreshed LIP.

1.5 This initial ‘backwards look’ summary document is the first output of this LIP refresh study. The next output will be a summary draft paper, building on the findings of this document and a further round of 12 consultations with key stakeholders, outlining the scope of ‘innovation’ for the refreshed LIP. Both documents will feed into the fully refreshed 2022 LIP.

## 2 Socioeconomic Context

- 2.1 This section sets out an overview of the context in which the 2022 LIP refresh is taking place. It draws on the key findings from work conducted by Lancashire County Council (LCC) and the LEP on updating the socioeconomic measures from the initial baseline assessment conducted in 2017/18, for the original LIP. It also contains a summary review of the changes in political priorities at a national level since the 2017/18 LIP and in the market and technology drivers which are driving changes in the economy.

### **Socioeconomic Context Summary**

There has been a general improvement in absolute terms for most economic metrics in Lancashire since the original LIP, but relatively the position compared to the UK as a whole has become more pronounced on productivity and skills, with the gaps in both widening. Attraction and retention of talent remain priorities. Lancashire continues to have a much larger relative manufacturing sector to that of the UK, which provides opportunities to build on. Assisting businesses to adapt innovation in process and product design, and upskilling and retaining talent in the workforce are priorities in enhancing innovation in Lancashire's key sectoral specialisms and business base.

### **Updating the socioeconomic baseline: the Key messages for the LIP's refresh**

#### **Overview<sup>2</sup>**

- 2.2 The headline statistics for Lancashire's economy are presented in Table 2-1. Overall, there has been a general absolute improvement in most socioeconomic metrics since the LIP's economic baseline was constructed in 2017 but, relative to the NW and UK, there has been some divergence.

#### **Population and Employment**

- 2.3 The Working Age Population as a percentage of the total population in Lancashire has remained slightly lower than for the UK (2016-2020) and broadly the same as the NW. Economic activity and employment remains similar to the NW and UK. Employment growth has stayed below that of the NW and GB. Essentially the small gaps that existed for the 2017/18 LIP have largely remained.

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<sup>2</sup> Comparisons are between 2020 and 2017 data unless specified

**Table 2-1: Headline Statistics in 2019-21**

	Indicator	Lancs LEP	North West	UK	Source/Date
Population & Employment	Working- age Population (WAP)	922.5k	4.57m	41.84m	ONS/2020
	Working-age Population (WAP) (%)	60.9%	62.1%	62.4%	ONS/2020
	Economic Activity Rate (WAP)	77.3%	77%	78.2%	APS/2021
	Employment Rate (WAP)	74.1%	73.1%	74.3%	APS/2021
	Employment Growth (WAP) (+/- since 2015)	+1.5%	+4.8%	+2.7% (GB, UK not available)	BRES/2020
	Total number of jobs	749K			ONS/2020
Productivity & Wealth	GVA per head	£22.8k	£25.6k	£29.6k	ONS/2021
	GVA per employee	£48.9k	£51.1k	£56.7k	ONS/2021
	GVA (+/- since 1998)	+34.3%	+47.5%	+49.1%	ONS/2021
	Average Weekly Earnings	£553.50 pw	£575.20 pw	£620.80 pw	ASHE/2021
	Average House Prices	£157.5k	£181.3k	£270.0k	UKHPI/2021
Business & Sectors	Total Active Enterprises	56.9k	293.5k	3.0m	BD/2020
	Business Birth Rate	12%	13%	12%	BD/2020
	Business Death Rate	9%	10%	10%	BD/2020
	Employment in Manufacturing (% of all jobs)	14.0%	9.7%	7.9% (GB)	BRES/2020
Skills	NVQ levels (% with L4+)	36.0%	38.6%	43.0%	APS/2020
	NVQ levels (% with no qualifications)	7.8%	7.6%	6.6%	APS/2020
	Employers with Skills Gaps (Now using "Number of Staff with Skills Gaps as a %"	6%	6%	5%	UK ESS/2019
	Employers with Hard-to-Fill Vacancies	8%	8%	8%	UK ESS/2019

Source: Various, see "Source/Date" column, 2019-2021

### Productivity and Wealth

- 2.4 The productivity gap to the UK highlighted in the 2017/18 LIP has widened from 17 percentage points (pp) to 23pp (2015-2021). Average weekly earnings has also remained below the UK, constituting around 89% of the UK average (the same as in 2014). This highlights that innovation continues to be imperative for Lancashire's businesses to make headway in closing the productivity gap, which is proving resistant.

### Businesses and Sectors

- 2.5 Business birth rates and death rates have remained consistent since 2015, showing a small relative improvement, closing slightly the gap to the NW and UK average to 0pp and 1pp respectively).

2.6 Total R&D expenditure per person employed is less than half of the UK average spend based on Innovate UK figures<sup>3</sup>. Birth rates and death rates are not a unique challenge for Lancashire, but encouraging growth of innovative, highly productive businesses should be a priority.

#### Infrastructure and Assets

2.7 Lancashire has relatively strong digital infrastructure, with ultrafast<sup>4</sup> broadband coverage close to the England level at county level (68% of premises in Lancashire to 70% in England). Eight of the 15 districts have ultrafast broadband coverage above the England average, with six of these having more than 80% coverage. This is a strong and important base from which innovative businesses of all sizes can utilise, particularly given the increasing importance of digitalisation and the requirements for flexibility in working.

2.8 Since the 2018 LIP, certain capabilities and sectors have emerged as stronger than envisaged and have developed around particular assets. For example, North Lancashire has seen clustering around Digital, Deep Tech and Electech, focused on environmental, Aerospace and Health markets. This area in particular has been bolstered by the research intensive focus of Lancaster University, the opening of Fraser House in Lancaster (a dedicated digital and tech focused coworking space) and highlighted by the growth of companies such as Miralis, LiNa Energy, NanoSun, Forsberg and Relative Insight. This indicates the importance of creating enabling conditions and missions for innovation, rather than being too directive on fixed sectors.

#### Skills and Ideas

2.9 The percentage of people in Lancashire with degree equivalent qualifications and above (NVQ4+) is significantly below the NW and UK average. Despite having increased absolutely by 3pp (2015-2020), the gap to the NW and UK has widened by 1.5pp and 3pp respectively.

2.10 In terms of skills demanded by the county's businesses, the percentage of workers in Lancashire having skills gaps for the jobs they work is 6%, around the same as the NW and UK. The percentage of businesses with hard-to-fill vacancies is also similar to the NW and UK and doubled 2015-2019 to 8%. Just 22.7% of graduates from Lancashire work in Lancashire, compared to 65% in the UK and 97.5% for the UK (recognising that these are significantly

#### Sectoral Statistics

- Lancashire's Manufacturing sector continues to be relatively much larger than in the NW and UK, employing 13.9% of workers (compared to 9.7% and 7.8% respectively).
- The IT and Professional, Scientific and Technical sectors are, however, much lower, with an employment location quotient (LQ)<sup>1</sup> of 0.57 and 0.69 respectively to the UK.
- Manufacture of Transport Equipment (employment LQ = 5.14) is the largest Sub-sector in Lancashire and also the largest relative to the UK, highlighting Lancashire's strength in Automotive and Aerospace
- By business count, Manufacturing is also relatively the strongest sector, but to a lesser degree than by employment.

<sup>3</sup> Lancashire LEP is investigating this figure with Innovate UK (as of December 2021) to clarify whether it includes BAE Systems spend, which is significant

<sup>4</sup> Ultrafast broadband = over 100 megabits per second download capability

larger geographies). Skills shortages appear to be a UK wide challenge, although retention of skills is significantly more challenging for Lancashire.

### **Key messages for the LIP's refresh**

- Most socioeconomic metrics have improved absolutely, but there has been some divergence between Lancashire and the UK on productivity and skills.
- The productivity gap to the UK widened from 17 percentage points (pp) in 2015 to 23pp in 2021
- Lancashire continues to have a large relative manufacturing sector, constituting 13.9% of employment in the county, a LQ of 1.78 compared to the UK. Employment in this sector is, however, concentrated in fewer, larger businesses.
- Skills/talent retention remains a major challenge for Lancashire, with just 22.7% of graduates remaining to work in the county.
- The percentage of businesses with hard to fill vacancies in 2019 was 8%, double the value from 2015.

## 3 Challenges and Opportunities

### Challenges

- 3.1 Lancashire faces challenges in strengthening the role played by innovation in its economic growth. The socioeconomic update in Section highlighted some of these issues, particularly regarding skills, skills retention, and business productivity. A round of consultations with 12 public, private representative and academic sector stakeholders in Lancashire identified further challenges for maximising innovation and its impact on the economy in Lancashire.
- 3.2 Essentially the challenges can be categorised into challenges for Lancashire’s businesses and challenges for the public sector (providing effective leadership and support).

#### Challenges for businesses

##### *Supply chain innovation*

- 3.3 There is a disconnect between the innovation capabilities in some of the larger prime employers and the SMEs in their supply chains. The prime businesses in Aerospace, Energy, and Mobility are highly dependent on innovation to be successful, which means there are real opportunities for supply chain innovation. The challenge will be creating the enabling conditions for this innovation to happen. Supply chains in Lancashire have the potential to expand into equipment and technology development, but are currently focused on fabrication.

##### *Skills attraction and retention*

- 3.4 The universities in Lancashire have strong credentials, increasingly in STEM subjects, but retaining graduates in the county has proved challenging. Outside of the Aerospace cluster, there is a lack of agglomeration of activities and opportunities for potential workers. Opportunities will arise through Cyber Force, but this needs to be managed carefully. There have been some successes at recruiting entry level talent, but it has proven more difficult for businesses in the County to attract more experienced skilled workers. It is difficult to attract skilled people to locations where there is a more limited pool of potential employers.

##### *R&D spend*

- 3.5 There has been a low number and value of grants awarded in Lancashire, and businesses have noted that securing funding for R&D can be a slow and difficult process. Securing smaller levels of funding is less demanding, but often businesses, and SMEs in particular, do not have the resources available to commit to lengthy application processes. Larger levels of funding are available, but businesses need encouragement and support to raise ambitions to bid for these.

##### *Networking*

- 3.6 Compared to large cities such as Liverpool and Manchester, there is a lack of networking opportunities to help businesses develop broad and deep networks of contacts, and to



understand who is doing what in the area. The evaluation of the Made Smarter NW Pilot also highlighted a lack of understanding amongst many SMEs as to the benefits of innovation and where to access support to assist with this financially, strategically, and legally. The Electech Cluster in Lancashire was developed by a set of businesses seeking to tackle common challenges such as talent attraction and retention.

#### *Changing customer demands*

- 3.7 There has been a shift in demand from ‘off the shelf’ products to provision of bespoke solutions to challenges (as highlighted in Section 2). Provision of such challenge based services requires adaptability in innovation within businesses and an ability to quickly develop new solutions. Adoption of digital technology is essential for providing competitive services and products in this growing market.

### **Challenges for the public sector**

#### *Leadership*

- 3.8 There are challenges in aligning the priorities of the LEP and County Council and between the universities on a good proportion of some projects. At present, perceptions from consultees indicate that the innovation agenda is diluted and unfocused, with poor interconnections between different parts of the county’s ecosystem. A clear governance and delivery structure is needed, with defined roles and responsibilities. Innovation leadership in Lancashire needs to have a unified view of what innovation means to Lancashire and what aspects to focus on (e.g. should the County focus on social innovation, sector specific innovation, productivity, or utilising particular funding sources).

#### *Championing Lancashire*

- 3.9 The lack of a unified view on Lancashire’s ‘offer’ and, at least until recently, unclear leadership for the innovation agenda means that Lancashire has remained introverted in its innovation activities. Whilst other geographies have a clear sectoral focus (e.g. Liverpool and its advanced materials capabilities) or ‘innovation champions’ (e.g. Health and Social Care in Greater Manchester), Lancashire has struggled to promote its vision and thus is not well known as a ‘centre for innovation excellence’, outside its large Aerospace cluster. Partners in Lancashire need to be able to understand what other businesses and organisations are doing in the county. A system-wide view of Lancashire’s key assets (business and infrastructure) is imperative for helping to set out the county’s USP.

#### *Connectedness*

- 3.10 Lancashire’s geography is such that there are several small- to mid-sized towns spread across the county. Politically, also, there are challenges, as the County does not have a Combined Authority. Furthermore, albeit home to several universities and a number of important assets (including the AMRC (Advanced Manufacturing Research Centre at Preston), EIC (Engineering Innovation Centre) and HIC (Health Innovation Campus at Lancaster Uni)), these assets are not clustered and have not had time to become embedded in the innovation ecosystem. There is a sense that Lancashire has many parts, but that they are not optimally connected in one functioning ecosystem. In Lancashire, fewer personal networks are in place than neighbouring economies such as Liverpool and Greater Manchester. This means that developing agglomeration impacts continues to be difficult at a county level.

- 3.11 There was the perception among some consultees that more needed to be done to penetrate the SME base in Lancashire, with concerns that just the ‘easy to reach’ businesses engaged with support and networking programmes. This is not a Lancashire-only issue, as the Made Smarter Pilot faced challenges across the NW in engaging SMEs.

*Social innovation*

- 3.12 Some consultees highlighted the importance of ensuring innovation becomes a pervasive and all-encompassing way of thinking and working in the county in all that does – ‘Social Innovation’. Consultees saw this as embedding innovation in general practices across Lancashire, including in its public institutions. Social innovation was not covered in the 2017/18 LIP, and is an important crosscutting theme for delivering a coordinated and collaborative refreshed LIP, which

*Dependence on ‘paternal’ employers*

- 3.13 Lancashire is home to some large, innovative employers (including and BAE Systems, Rolls Royce, etc). This is a strength, but in a changing economic climate where businesses put less emphasis on the importance on ‘place’ and more on cost, talent availability, and effective supply chains there is a risk that should the large firms in Lancashire shift high value added activities to other locations, it would be damaging to the supply chains that built up a dependence on them as customers. Encouraging and enabling new, agile companies to grow and prosper will offset this risk, but is a challenge.

*Funding*

- 3.14 Uncertainty of funding for LEPs and the funding landscape in general as a result of COVID-19 and Brexit creates challenges in developing and implementing actions to progress innovation in the County. This is further highlighted by the observation in Section 2 that the County has received low levels of Innovate UK R&D funding, for example.

## Opportunities

*Online flexible working*

- 3.15 A shift to flexible, often remote, working was greatly accelerated by COVID-19, but was beginning to happen prior to 2020, enabled by improvements in digital capabilities. This shift looks to be long-term, with many businesses continuing to offer flexible and remote working opportunities as of December 2021. This provides opportunities for Lancashire in attracting and retaining innovation talent. Lancashire has several features which make it appealing for remote work, including good quality digital infrastructure and coverage, an attractive landscape, and good road and rail links to the north and south.

*The National Cyber Force (NCF) Headquarters*

- 3.16 Securing the UK’s headquarters for military operations in cyber space in Salmesbury in 2021 was a big win for Lancashire, which will directly employ 3,000 people by 2023. Cyber is a key growth area for the military and in several linked sectors, including aerospace, automotive, and advanced manufacturing, meaning that Lancashire’s attractiveness for business in digital technology, cyber defence and security will be enhanced. NCF provides a real opportunity for Lancashire to set out its offer of a place within which to work, live and, importantly, build a career in. It could be the focal point of a cluster providing multiple opportunities for skilled workers, improving the county’s ‘stickiness’ for talent and businesses.

### *Advanced Manufacturing*

- 3.17 AMRC NW, the aerospace cluster, and the NCF are all headline assets which boost Lancashire's credentials in Advanced Manufacturing. Clean energy, Electech, and automotive are all additional strength sectors where Advanced Manufacturing is becoming more pervasive. Added to this, the relative scale of Lancashire's Manufacturing sector (employment), compared to the UK average, and there are clear opportunities here for the county to innovate to stay ahead and forge new areas of advancement in manufacturing, including around cyber and new energy.

### *Decarbonisation – Net Zero*

- 3.18 Lots of innovation opportunities exist in this field, which cuts across all industries and services and is a high priority for central government. Lancashire has strong capability in clean energy, including in nuclear, hydrogen activities, and wind. A £75m commitment in the 2021 spending review to the Springfields nuclear manufacturing plant signals that alongside renewables, the government sees nuclear as a key deliverer of decarbonisation of power generation.

### *Pandemic/Brexit renaissance*

- 3.19 The COVID-19 pandemic accelerated new practices in working and manufacturing techniques, as well as making companies re-evaluate how their supply chains operate. Whilst the publicised trade opportunities from Brexit have not materialised yet, there are opportunities for businesses in Lancashire to find new markets and also adapt to changing supply chain workings. For example, in reshoring of high value manufacturing for production of bespoke products to the county. The Made Smarter Pilot highlighted that some businesses are utilising digital technology to do just this.

## **Key messages for the LIP's refresh**

### **Challenges**

- Ensuring that the capacity and capability of Lancashire's supply chains match the needs of large innovative 'prime' businesses.
- Attracting and retaining skilled individuals at all levels, but especially for senior and experienced roles.
- Creating easily accessible and simple pathways for businesses to access support for R&D activities.
- Ensure business centred networks are built and maintained both within and outwith Lancashire. Businesses with broad and deep networks of contacts find it easier to innovate.
- Establishing and maintaining strong leadership and a clear governance and delivery structure for innovation activities in Lancashire.
- Connecting Lancashire's assets together and with relevant leading organisations and institutes outside the county to build one functioning ecosystem.
- Instilling social innovation as a concept, ensuring innovation becomes pervasive across the broad range of activities in Lancashire in the public sector as well as private and academic.

## Opportunities

- Online, flexible working has become widespread and Lancashire’s digital infrastructure, attractive towns and countryside, and strong north-south transport links position it well to capitalise on workers’ increased flexibility.
- Significant assets such as the recently announced NCF headquarters can act as a focal point for setting Lancashire as a place which offers real and multiple opportunities for skilled workers to pursue careers in security and resilience.
- Lancashire’s manufacturing strengths and heritage position it well to capitalise on Industry 4.0 and expand into new, leading areas.
- Net zero is a clear national government priority area with potential for innovation across most sectors at a business level and in the generation of energy. Lancashire has strong capabilities in clean energy and nuclear, which the refreshed plan should seek to enhance.

## 4 Review of the 2017/18 LIP

4.1 At the heart of the 2017/18 LIP was a simple framework which set out focus areas for attention as a plan by which to progress innovation in the county. The 2017/18 LIP Strategic Framework is presented in Appendix A. The key components of the framework were:

- A Vision which described the county's long-term innovation intent;
- Five Strategic Aims which, at a strategic level, defined those objectives the Innovation Plan is seeking to realise; These were configured as a '2x3' structure: with two Aims relating to *innovation capability* – the ability of existing and new businesses to develop, adopt, and commercialise innovation, and three Aims relating to building an *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
- A defined suite of actions to progress the Plan. These were a mixture of short, medium, and long-term actions that complement and enhance existing and ongoing actions

### The 2017/18 LIP Strategic Framework

4.2 Perspectives on the 2017/18 LIP's Strategic Framework and Vision were gathered from consultation with 12 senior stakeholders in Lancashire. The key messages from this are summarised below:

- The majority of consultees agreed that the Vision was appropriate in content but was too long. The Vision needs to be shorter, more direct, clearly for Lancashire and logistically deliverable;
- Again, a majority of consultees agreed that the structure of the Strategic Framework was helpful and that having a one-page framework was useful. There was some disagreement over whether the 2 + 3 pillar format was the most appropriate, as there was some repetition across the pillars. In refreshing the LIP, the language in each pillar must be clear as to what it entails;
- Whilst most consultees agreed that the structure of the Strategic Framework was suitable, some noted that it was too generic. The refreshed Strategic Framework will need to ensure that it fully recognises Lancashire's opportunities, assets and challenges;
- Most consultees noted that the refreshed Strategic Framework needed to take account of the large change in context globally and nationally since 2018. It needs to reflect the situation in 2021/22 and the objectives need to be refreshed based on this; and
- Consultees generally agreed that the crosscutting themes applied to Lancashire's context, although there were differing views on whether they were optimally appropriate, with some consultees seeing them as tangible and aspirational, whereas others saw them as disconnected because of the use of language. The crosscutting themes will need to be re-

assessed in light of contextual changes (e.g. green imperative and an even greater emphasis on collaboration) and a need to be optimally clear and concise.

- 4.3 Overall, the Vision and Strategic Framework sat well with the consultees engaged with, particularly regarding the structure. It is clear that for the refreshed LIP, the Strategic Framework needs to be updated to so the objectives are cognizant of and address the different challenges and opportunities facing Lancashire post 2021. The Vision needs to be tightened and clarified, and each of the aims must be clear and defined and relevant to Lancashire. The 2 + 3 structure of the Strategic Aims remains appropriate for Lancashire, but it needs to be specifically tailored to Lancashire. The main challenge will be in ensuring the aims and objectives are delivered with strong leadership and clarity on responsibility.

### Summary of 2017/18 LIP delivery

- 4.4 A line-by-line review of the actions proposed by the 2017/18 LIP was undertaken by LCC and the LEP, looking at the current status and a review of relevance to a refreshed plan. This section is informed by the line-by-line review and the 12 interviews conducted by Steer-ED with key stakeholders in Lancashire. The key findings of this review and consultations are summarised below, separated by each 'Strategic Aim'.
- 4.5 Regarding resourcing, the line-by-line review highlighted that there has been [little dedicated resource for delivery of the 2017/18 LIP. Resourcing has come from the universities (through their own networking/industry engagement programmes, The=rough LCC's Innovation budget, from LEP and LCC core staff, some central government funding (e.g. Made Smarter), and through an Innovation Manager role, funded by the universities. It is clear that the refreshed LIP will need to be explicit in who is responsible for delivering each proposed action, to ensure resourcing can be arranged.

#### Strategic Aim 1: Staying Ahead

##### *Content*

- 4.6 Planned actions in this Strategic Aim have focussed around network building and improving the participation of businesses in Lancashire's innovation ecosystem. It has included connecting with centres of excellence outside of Lancashire (including the MIT Regional Entrepreneurship Acceleration Program and the Med Tech Cluster at STFC Daresbury), implementing and delivering networks within the county and an observatory operated by LCC and the LEP to ensure Lancashire remains focused on technology development.

##### *Delivery*

- 4.7 The creation of a role funded by three of Lancashire's universities (Innovation Manager) has helped to ensure that there is some dedicated resource to executing this part of the LIP. Further to this, the Made Smarter Pilot was delivered in the NW by Manchester's Growth Company, and had relatively high take-up in Lancashire. For networking, a resource was hired in September 2021, for roll out of an 'Innovation Ambassadors' programme, which has been prepared to engage with SMEs. A Technology and Market Foresight Observatory now has dedicated resource of £30,000 for establishment of a pilot in 2021/22. Actions building connections with large employers and centres of excellence outside Lancashire have progressed somewhat, but needs to ramp-up for the refreshed LIP, alongside engagement with SMEs.

## **Strategic Aim 2: New Routeways to Excellence**

### *Content*

- 4.8 Planned actions for this Strategic Aim were split between development of networks and knowledge transfer in crossover sectors, mapping strategically areas of synergy in existing sectors and developing Test Beds in new and emerging sectors, where initiatives to catalyse crossover innovation could be located.

### *Delivery*

- 4.9 Mapping and analysis of sectors, activities and potential synergies has advanced to a degree through the LEP Sector Groups, with sector plans developed. This work will feed into the Technology and Market Foresight Observatory in Strategic Aim 1. There has been an increase in the number of Knowledge Transfer Partnerships and placements in Lancashire, although actions to ‘fill in’ gaps in supply chains have been less advanced. £10,000 budget has been allocated for 2021/22 to secure funding for larger projects in this space. Little traction has been gained on developing Test Beds, and these remain largely at conceptual stage. Further clarification on actions to take forward will be required in the 2022 LIP.

## **Strategic Aim 3: Broadening the Innovation Base**

### *Content*

- 4.10 Planned actions in this Strategic Aim focus on leadership development in business, providing capital developments with space for innovative businesses and embedding these in a wider network, and developing a series of outreach visits to Lancashire from innovation success stories globally.

### *Delivery*

- 4.11 Several programmes, including Made Smarter, the Productivity Innovation Centre, and Productivity through People have begun to make headway in uplifting the importance of innovation considerations for business leadership in the county since the 2017/18 LIP. The Made Smarter Leadership Programme<sup>5</sup>, in particular, although limited in scale, received high levels of satisfaction from businesses which were engaged. The first two cohorts of this were delivered exclusively by Lancaster University. There have also been several capital projects delivered or in development in Lancashire since the 2017/18 LIP, including Fraser House (Lancaster University) and AMRC North West (opened Autumn 2021). There has been little progress on international outreach and engagement, which has been hampered a lack of dedicated county-wide resource.

## **Strategic Aim 4: Enabling Infrastructure for Innovation**

### *Content*

- 4.12 Planned actions focused on graduate, early stage business, and public/third sector innovation support programmes to embed innovation in practices across Lancashire’s businesses and sectors. A specific action around embedding intellectual property management into innovation initiatives was also proposed.

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<sup>5</sup> Made Smarter Leadership Programme: A 6-month leadership programme specifically designed for business leaders of manufacturing SMEs wanting to improve their productivity through the adoption of new industrial digital technologies (IDTs)

### *Delivery*

- 4.13 Delivery has been limited in this Strategic Aim, with little resource currently identified to deliver the proposed actions. Early stage exploratory work has been done looking at the potential delivery mechanisms for a single point of contact start-up support programme and a ‘Lancashire Innovation Fund’, but as yet has not progressed to delivery. It will be important to secure dedicated resource for delivery of such programmes and align with and learn from the findings of innovation enabling projects such as Made Smarter. A placement scheme for graduates could improve graduate retention rates (based on findings from the Made Smarter Evaluation), but will need a dedicated coordinating resource to deliver at scale.

### **Strategic Aim 5: Letting the World know!**

#### *Content*

- 4.14 Planned actions for this Strategic Aim concentrated on promotion and marketing of Lancashire’s innovation strengths and opportunities and in ensuring it was represented on key national fora to create linkages between national and Lancashire priorities for innovation.

#### *Delivery*

- 4.15 Delivery since 2020 has been affected somewhat by COVID-19 restrictions on travel and face-to-face meetings, although some activities such as an Innovation Festival and Innovation Month have been hosted by the County Council. On further marketing and promotion activities, some progress has been made, with a budget (LCC and LEP) identified for case study development and dissemination for 2021/22, an Innovation Marketing Manager hires in September 2021 (LCC), and enhanced engagement with public sector for a (e.g. Innovate UK, EPSRC). However, there has been little actual delivery since the 2017/18 LIP.

### **Key messages for the LIP’s refresh**

- The 2+3 Strategic Aim structure, underpinned with applied crosscutting themes works well, and should largely be retained. The challenge is updating the specific objectives and contextualising them for Lancashire in the present context, which is very different to that of 2017.
- Delivery has been stemmed by lack of resourcing to deliver on the actions in the 2017/18 LIP. Significant and reliable resourcing will need to be secured to ensure execution of the 2022 LIP.
- Much of the work completed to date on the 2017/18 LIP has been in evidence gathering and setting up of processes to deliver on the 2017/18 LIP. Some additional resourcing on a number of actions has been secured/set aside for 2022, but not through one collective drive.
- Execution of the plan has been slow, with the Innovation Board only being established in 2020 and little visible progress being made on creating soft innovation enabling support (Strategic Aim 4).

### **Further perspectives on the 2017/18 LIP**

- 4.16 Engagement with key stakeholders in the County revealed several key and common points about the implementation and execution of the 2017/18 LIP. These are summarised below.



### **What has worked well?**

- 4.17 The majority of consultees agreed that the 2017/18 LIP's design works well, that some key building blocks have been put in place. Consultees also agreed that the cross-sectoral Lancashire Innovation Board, established in 2020 was a welcome move (albeit three years after the original LIP was completed) and has put in place a developing structure. However, the Board has been in place for less than 18 months, and so is seen to be still developing its leadership and responsibilities.
- 4.18 Consultees agreed that the county has some strong assets and building blocks, which have continued to be developed since 2018, including the AMRC NW, the Health Innovation Campus (Lancaster University), and Engineering Innovation Centre (UCLAN). Whilst this is a strong base of assets, the linkages between them are not well developed. Linkages outside the county are also not well developed. As businesses and markets continue to globalise, building these connections outside of administrative boundaries is increasingly important.
- 4.19 The Electech cluster, set up between a small number of businesses to tackle common challenges has been a successful demonstrator albeit on a small scale, and Productivity through People, Made Smarter, and Boost have been useful at developing peer-to-peer networks and useful for sharing knowledge and information for businesses.
- 4.20 Commitment from the universities has been welcome and has led to a funded (Innovation Manager) position, which has helped to pull together activities and stakeholders and begin delivery of the 2017/18's LIP's actions. There is perception that the university strengths and activities are complementary, although it is also recognised that yet further close working and synergy can be achieved.
- 4.21 The Innovation Festivals in 2020 (virtual) and 2021 (hybrid across five venues) were well received, although consultees were not clear on what actions and activities came out of these events. Furthermore, a set of workshops on clean energy and low carbon were effective at bringing people together and led to publication of a report summarising Lancashire's strengths.

### **What has not worked so well?**

- 4.22 Whilst the general feeling was that the 2017/18 LIP was relevant, well designed and had led to some important actions, such as establishment of the Innovation Board and running of Innovation events, there was agreement that much more should and could have been achieved.
- 4.23 A key limitation on action to date was the lack of resource/capacity to deliver the Plan, with LEP organisation uncertain. A number of the actions have had no dedicated resource allocated to them, meaning that despite the work done preparing each for delivery, there has not been capacity to execute the integrated suite of action as envisaged in the 2017/18 LIP. This is doubly disappointing given the considerable work done by the 2017/18 LIP development process to build broad and deep enthusiasm to take the LIP forward.
- 4.24 Progress on executing the Plan was noted as being slow, with the Innovation Board only established in mid-2020, and difficulties in aligning the priorities of public sector stakeholders in Lancashire. The lack of defined clear leadership and responsibility has been a challenge for execution of the 2017/18 LIP. There is a disconnect currently between leadership and delivery, with the Innovation Board being a good forum to discuss and develop strategy and ideas, but it then being unclear on who is responsible for delivery for aspects of the Plan. This has been

demonstrated by the fact that several important capital investments have been developed (e.g. AMRC, EIC, HIC), but that these have not been embedded fully into the innovation ecosystem within and outwith Lancashire. The lack of clarity on who at a senior level was taking the plan forward has been a significant influence on how the Plan has not fully been delivered. There is a sense that the momentum gained in developing the plan collaboratively and with direction was lost in execution.

- 4.25 Promotional activities associated with the 2017/18 LIP have also been limited. Lancashire as an ecosystem has continued to be disconnected, with a lack of clarity in the County on how it should promote itself. Work has been done in the LEP Sector Groups to move forward strategic thinking on Lancashire's key strengths, but externally this has not been promoted clearly. Although progress has been made, there remains a need for greater organisational coherence between the County and the LEP. Adopting an 'Innovation Figurehead' for Lancashire would be an important step towards developing a clear, consistent and communicable message on Lancashire's innovation capabilities and promoting this to the right, influential people. Within the county too, there have been some good initiatives on supporting SMEs to become more innovative, but the reach of these remains shallow, often with the same businesses engaging with multiple programmes. The 2022 LIP needs to include actions to increase the penetration of support further into the SME community.

### Key messages for the LIP's refresh

- Lancashire has a number of significant innovation assets, but these are not optimally linked as a functioning ecosystem. Connections also need to be made outside the county's boundaries.
- The Electech cluster has been a successful demonstrator but was largely led by businesses and is t a small scale.
- The universities in Lancashire have shown commitment to developing the innovation ecosystem and have complementary activities, but further close working and synergy can be achieved.
- A key limitation on action to date was the lack of resource/capacity to deliver the 2017/18 LIP's suite of action..
- It remains unclear who is responsible for delivery of the LIP at a county level. Clarity is needed on leadership of the 2022 LIP and how this leadership links to delivery.
- The reach of support/networking actions into the SME community remains shallow, often with the same businesses engaging with multiple programmes.

## 5 Implications and Priorities

- 5.1 The review of 2017/18 actions, consultation with 12 key stakeholders, and an update of the socioeconomic baseline in Lancashire gives useful insight into how the socioeconomic context has changed and how the 2017/18 LIP and associated innovation activities have progressed. This section summarises the key implications of these insights for the 2022 LIP refresh and clarifies what needs to be prioritised in refreshing the LIP.

### Implications

- 5.2 The 2017/18 LIP has not been delivered as envisaged as a suite of complementary actions. There remain actions which have had no allocated resource, and there have been resourcing issues across the action plan. Leadership at a county level and responsibility at an action level has not been well aligned, meaning the plan has been delivered when resources have become available, rather than being clear from the outset.
- 5.3 The socioeconomic context in which Lancashire's innovation ambitions sit has changed in a global and national perspective. Brexit and especially COVID-19 have had huge impacts on the way people work, the priorities people and businesses have for their products and actions, and the way products are constructed through supply chains.
- 5.4 Within this, the socioeconomics of Lancashire relative to the UK have not shifted dramatically. The productivity gap still exists and attracting and retaining talent remain major challenges, but there are also opportunities. Lancashire is an attractive place to live, has some leading and developing sectoral strengths, and a growing innovation asset base. Lancashire also has a relatively large manufacturing sector compared to most other parts of the UK and the fourth largest aerospace cluster in the world. This is a useful starting position, but clear leadership is required to ensure the county's innovation ecosystem is aligned, functions cohesively, and is promoted effectively beyond its boundaries.
- 5.5 With the acceleration of technology-industry convergence points (e.g. digital and health, digital and manufacturing and even digital and service/public sectors), there is a continued need for a deeper understanding of the County's business base in these growth areas to identify clustering opportunities.

### Priorities

- 5.6 Work has been ongoing to highlight market opportunities for Lancashire, based on analysis of the business base and consultation through LEP Sector Groups. It has identified Healthy Productive Communities, Advanced Manufacturing and Mobility, Clean Technology Commercialisation, and Cyber Security, Space and DARQ Technologies as areas where innovation, where targeted, can deliver productivity benefits for Lancashire. Across the stakeholders interviewed, it was clear that Digital, Advanced Manufacturing, and Clean Growth were clear sectoral priorities, where Lancashire has compelling strengths (assets and businesses).

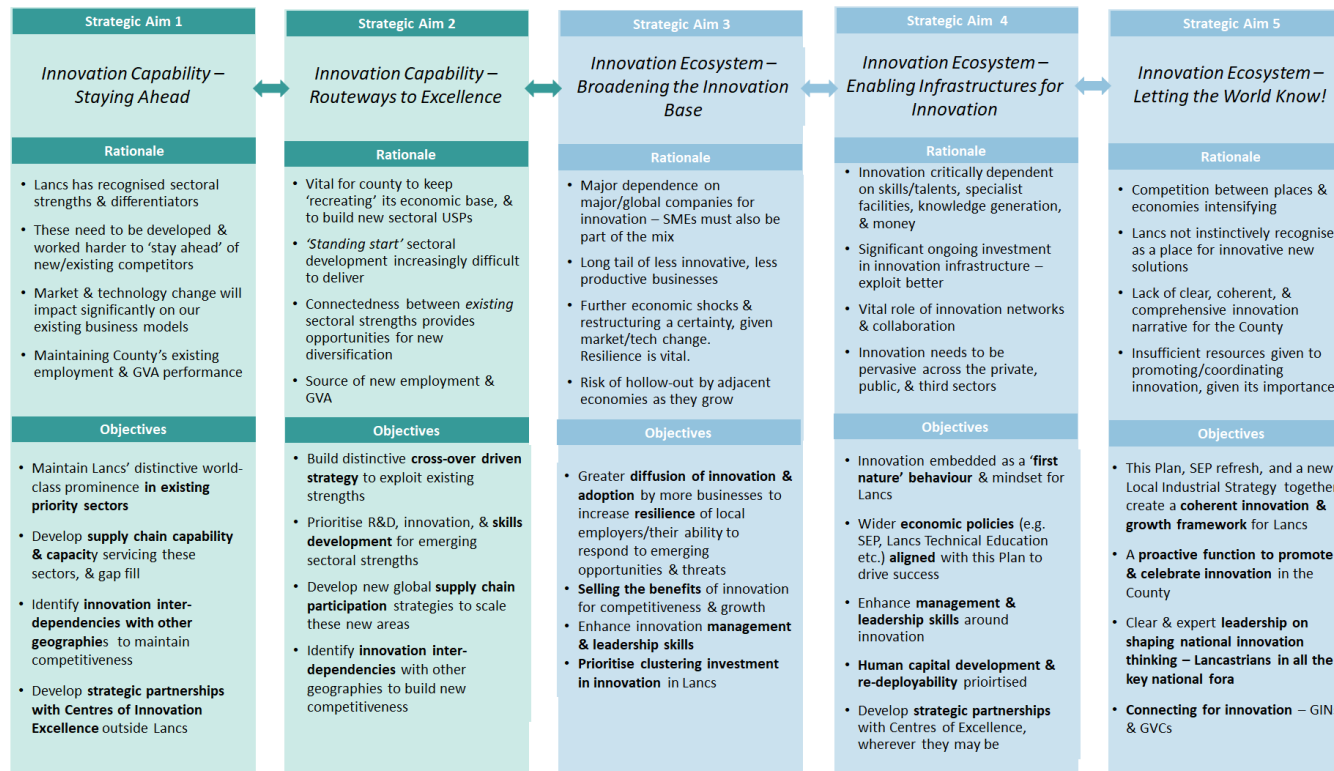
- 5.7 Furthermore, the challenge of gaining and retaining talent to resource innovative businesses and facilitate agglomeration benefits in Lancashire is clear. COVID-19 accelerated trends of new ways of working, which can be capitalised on by Lancashire, but it must ensure that its key selling points for people and businesses are clear and broadly and strategically communicated.
- 5.8 Lancashire will, in executing a refreshed LIP, need to collaborate further across stakeholders to develop specific, joined-up and impactful actions that add value to the assets it has. In so doing, it will need to embed a culture of innovation in businesses and the public sector, that generates high growth businesses and associated high wage jobs. An important aspect of this will be in improving its storytelling and promotion.
- 5.9 There needs to be a clear narrative for Lancashire’s strengths and demonstrable evidence for why it is a good place for innovative businesses and people to move to and remain in. Important in developing this narrative will be the inclusion of Social Innovation as a cross-cutting theme for the refreshed LIP. Ensuring that innovation and innovative thinking becomes engrained in and pervasive across wide-ranging activities and organisations in Lancashire will ensure innovation is rooted in the ecosystem.
- 5.10 It is clear that delivering a successful 2022 LIP will require clear leadership and responsibility delegation. The Innovation Board is an important tool here, but each action developed or refreshed for the 2022 LIP will need to have a clear ‘owner’, who is responsible for delivery. There must also be clarity in who is responsible for execution of the Plan as a whole and who can drive it forward as a unified vehicle for enhancing innovation in Lancashire.
- 5.11 Fundamentally, however, finding suitable resource to deliver actions from the 2022 refreshed LIP is the highest priority. A lack of resources has essentially meant that the 2017/18 LIP has remained as a plan and not been fully executed. Unless significant, reliable resource streams can be found, then the LIP will continue to remain as a plan, without being fully enacted.

## Close

- 5.12 The next stage of the development of the refreshed LIP will be to investigate at a more granular level these priorities. It will utilise information from 12 further consultations with senior stakeholders, a more detailed review of work by the LEP Sector Groups, and a summary of econometric projection data, to identify areas of potential growth.
- 5.13 The consultations and assessment of Sector Group work will add to the content of this report and give insight into the following key questions:
- What actions need to be kept and built on (e.g. the broad architecture and shape of the framework);
  - The modifications that need to be made (e.g. recontextualising the content in particular relating to the Strategic Aims) to align them with the current situation; and
  - How the process of refreshing can help to unearth and address the issues of non-implementation that have characterised lack of progress so far (e.g. resource constraints and suboptimal linkages between leadership and delivery).

# Appendix A -The 2017/18 LIP 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 →

## Appendix B - List of Consultees

<b>Name</b>	<b>Organisation</b>
Andy Walker	Lancaster County Council
Chris Mayne	Electech Cluster
Claire Whelan	ANSUKA (BCW Manufacturing)
Dion Williams	Lancaster University
Graham Baldwin	University of Central Lancaster
Jane Dalton	Groundswell Innovation
Lindsay Roche	Westinghouse
Mark Allanson	Edgehill University
Matt Wright	Lancashire LEP
Melissa Conlon	AMRC
Rick Holland	Innovate UK
David Bailey	Aerospace Consulting

# Appendix C - Context within which the Refreshed LIP sits

A.1 This section sets out an overview of the context in which the 2022 LIP refresh is taking place. It draws on the key findings from work conducted by Lancashire County Council (LCC) and the LEP on updating the socioeconomic measures from the initial baseline assessment conducted in 2017/18, for the original LIP. It also contains a summary review of the changes in political priorities at a national level since the 2017/18 LIP and in the market and technology drivers which are driving changes in the economy.

## Updating the socioeconomic baseline: the Key messages for the LIP's refresh

### Overview<sup>6</sup>

A.2 The headline statistics for Lancashire's economy are presented in Table 0-1. Overall, there has been a general absolute improvement in most socioeconomic metrics since the LIPs economic baseline was constructed in 2017 but, relative to the NW and UK, there has been some divergence.

Table 0-1: Headline Statistics

	Indicator	Lancs LEP	North West	UK	Source/Date
Population & Employment	Working- age Population (WAP)	922.5k	4.57m	41.84m	ONS/2020
	Working-age Population (WAP) (%)	60.9%	62.1%	62.4%	ONS/2020
	Economic Activity Rate (WAP)	77.3%	77%	78.2%	APS/2021
	Employment Rate (WAP)	74.1%	73.1%	74.3%	APS/2021
	Employment Growth (WAP) (+/- since 2015)	+1.5%	+4.8%	+2.7% (GB, UK not available)	BRES/2020
	Total number of jobs	749K			ONS/2020
Productivity & Wealth	GVA per head	£22.8k	£25.6k	£29.6k	ONS/2021
	GVA per employee	£48.9k	£51.1k	£56.7k	ONS/2021
	GVA (+/- since 1998)	+34.3%	+47.5%	+49.1%	ONS/2021
	Average Weekly Earnings	£553.50 pw	£575.20 pw	£620.80 pw	ASHE/2021
	Average House Prices	£157.5k	£181.3k	£270.0K	UKHPI/2021
Business & Sectors	Total Active Enterprises	56.9k	293.5k	3.0m	BD/2020
	Business Birth Rate	12%	13%	12%	BD/2020
	Business Death Rate	9%	10%	10%	BD/2020
	Employment in Manufacturing (% of all jobs)	14.0%	9.7%	7.9% (GB)	BRES/2020
Skill	NVQ levels (% with L4+)	36.0%	38.6%	43.0%	APS/2020

<sup>6</sup> Comparisons are between 2020 and 2017 data unless specified

	Indicator	Lancs LEP	North West	UK	Source/Date
	NVQ levels (% with no qualifications)	7.8%	7.6%	6.6%	APS/2020
	Employers with Skills Gaps (Now using "Number of Staff with Skills Gaps as a %")	6%	6%	5%	UK ESS/2019
	Employers with Hard-to-Fill Vacancies	8%	8%	8%	UK ESS/2019

Source: Various, see "Source/Date" column, 2019-2021

## Population and Employment

- A.3 The Working Age Population as a percentage of the total population in Lancashire has remained slightly lower than for the UK (2016-2020) and broadly the same as the NW. Economic activity and employment remains similar to the NW and UK. Employment growth has stayed below that of the NW and GB. Essentially the small gaps that existed for the 2017/18 LIP have largely remained.

## Productivity and Wealth

- A.4 The productivity gap to the UK highlighted in the 2017/18 LIP has widened from 17 percentage points (pp) to 23pp (2015-2021). Average weekly earnings has also remained below the UK, constituting around 89% of the UK average (the same as in 2014). This highlights that innovation continues to be imperative for Lancashire's businesses to make headway in closing the productivity gap, which is proving resistant.

## Businesses and Sectors

- A.5 Business birth rates and death rates have remained consistent since 2015, showing a small relative improvement, closing slightly the gap to the NW and UK average to 0pp and 1pp respectively).

- A.6 Total R&D expenditure per person employed is less than half of the UK average spend based on Innovate UK figures<sup>7</sup>. Birth rates and death rates are not a unique challenge for Lancashire, but encouraging growth of innovative, highly productive businesses should be a priority.

## Infrastructure and Assets

- A.7 Lancashire has relatively strong digital infrastructure, with ultrafast<sup>8</sup> broadband coverage close to the England level at county level (68% of premises in Lancashire to 70% in England). Eight of the 15 districts have ultrafast broadband coverage above the England average, with six of these having more than 80% coverage. This is a strong and important base from which innovative businesses of all

## Sectoral Statistics

- Lancashire's Manufacturing sector continues to be relatively much larger than in the NW and UK, employing 13.9% of workers (compared to 9.7% and 7.8% respectively).
- The IT and Professional, Scientific and Technical sectors are, however, much lower, with an employment location quotient (LQ)<sup>1</sup> of 0.57 and 0.69 respectively to the UK.
- Manufacture of Transport Equipment (employment LQ = 5.14) is the largest Sub-sector in Lancashire and also the largest relative to the UK, highlighting Lancashire's strength in Automotive and Aerospace
- By business count, Manufacturing is also relatively the strongest sector, but to a lesser degree than by employment.

<sup>7</sup> Lancashire LEP is investigating this figure with Innovate UK (as of December 2021) to clarify whether it includes BAE Systems spend, which is significant

<sup>8</sup> Ultrafast broadband = over 100 megabits per second download capability



sizes can utilise, particularly given the increasing importance of digitalisation and the requirements for flexibility in working.

- A.8 Since the 2018 LIP, certain capabilities and sectors have emerged as stronger than envisaged and have developed around particular assets. For example, North Lancashire has seen clustering around Digital, Deep Tech and Electech, focused on environmental, Aerospace and Health markets. This area in particular has been bolstered by the research intensive focus of Lancaster University, the opening of Fraser House in Lancaster (a dedicated digital and tech focused coworking space) and highlighted by the growth of companies such as Miralis, LiNa Energy, NanoSun, Forsberg and Relative Insight. This indicates the importance of creating enabling conditions and missions for innovation, rather than being too directive on fixed sectors.

### **Skills and Ideas**

- A.9 The percentage of people in Lancashire with degree equivalent qualifications and above (NVQ4+) is significantly below the NW and UK average. Despite having increased absolutely by 3pp (2015-2020), the gap to the NW and UK has widened by 1.5pp and 3pp respectively.
- A.10 In terms of skills demanded by the county's businesses, the percentage of workers in Lancashire having skills gaps for the jobs they work is 6%, around the same as the NW and UK. The percentage of businesses with hard-to-fill vacancies is also similar to the NW and UK and doubled 2015-2019 to 8%. Just 22.7% of graduates from Lancashire work in Lancashire, compared to 65% in the UK and 97.5% for the UK (recognising that these are significantly larger geographies). Skills shortages appear to be a UK wide challenge, although retention of skills is significantly more challenging for Lancashire.

### **Key messages for the LIP's refresh**

- Most socioeconomic metrics have improved absolutely, but there has been some divergence between Lancashire and the UK on productivity and skills.
- The productivity gap to the UK widened from 17 percentage points (pp) in 2015 to 23pp in 2021
- Lancashire continues to have a large relative manufacturing sector, constituting 13.9% of employment in the county, a LQ of 1.78 compared to the UK. Employment in this sector is, however, concentrated in fewer, larger businesses.
- Skills/talent retention remains a major challenge for Lancashire, with just 22.7% of graduates remaining to work in the county.
- The percentage of businesses with hard to fill vacancies in 2019 was 8%, double the value from 2015.

### **Political Priorities**

- A.11 Here, the major changes in political priorities since the 2017/18 LIP are summarised. It will be important to take these changes into account when refreshing the 2017/18 LIP, particularly when considering external sources of funding for actions.
- A.12 COVID-19 and Brexit are the two largest large scale socioeconomic 'shocks' to have happened since the 2017/18 LIP and have had an influence on political prioritisation, particularly COVID-19.

### **Moving on from Industrial Strategy**

- A.13 At the time of the 2017/18 LIP, the UK government prioritised economic growth and productivity through a national Industrial Strategy which targeted a number of Grand Challenges based on national strengths and opportunities (Healthy Ageing; Future of Mobility; Clean Growth; Data &

Digital) alongside drivers of productivity (Ideas; People; Infrastructure; Business Environment; Places). In March 2021, this transitioned to the UK's Plan for Growth ('Build Back Better'), which has a stronger emphasis on levelling up the economy, creating high value jobs, and maximising trading opportunities.

- A.14 Build Back Better highlighted emphases on developing stimulative infrastructure, developing the UK's skills base to boost productivity, supporting and incentivising innovation, levelling-up, supporting the transition to net zero, and increasing Britain's global standing in markets. Green practices, as highlighted in Build Back Better, had already been a UK government priority, and was solidified in the government's ten point plan for accelerating net zero ambitions.
- A.15 Brexit brought about changes to trade and also in the funding landscape for R&D and innovation. The UK Shared Prosperity Fund is set to replace the EU Structural Funds in 2022, but there remain uncertainties about how this will be administered. Lancashire as a county performed well at winning ERDF funding, but as this source no longer exists, the approach to bidding for funding needs to be refreshed in this developing context. Further to this, the government's Levelling-up White Paper, now delayed until 2022, is expected to outline changes to local governance, which may have further implications for funding. It is also set to define the government's full levelling-up agenda, which again, will outline where national priorities are focused
- A.16 Build Back Better highlighted that an Innovation Strategy would subsequently be produced, which was published in August 2021. The UK Innovation Strategy is built on lessons from COVID-19 response, which recognises the importance of innovation. It also includes announcement of an Innovation Missions Programme, setting out to link science, industry, investment and world trade. This strategy has several key implications for the refreshed LIP, which are summarised below.

### **Key messages for the LIP's refresh (Focus on Innovation Strategy)**

- The Innovation Strategy commits the UK government to increase public spend on R&D to £22 billion per year.
- It will be operationalised by Innovate UK, with Regional Heads tasked with co-design of cluster priorities.
- There will be a strong focus on high-growth technology driven sectors with sector visions which demonstrate current competitive advantage, future growth potential, and how they support net zero, 'Global Britain', and levelling-up
- Important delivery mechanisms are highlighted as:
  - Test Beds, Living Labs and Digital Twins.
  - Smart, safe use of data
  - Expansion of iCure (a venture funding programme), Help to Grow Digital, Made Smarter, Innovate UK Edge, SiPF (but with no new funding announced), SPF
  - Setting up of hubs for Cyber-physical Infrastructure in places.
  - Review and mapping of R&D institutions in the UK.
  - EPSRC Prosperity Partnerships.
  - A new Business Innovation Forum and office for Science and Technology Strategy.
  - National Cyber Strategy for 2022.

## Market and Technology Foresight

A.17 COVID-19 and Brexit delivered socioeconomic shocks which have accelerated changes in ways of working, trade, and use of technology. However, technology has been continually driving changes in markets and economies, particularly since the application of digital technology to different sectors has become more pervasive. Technology is changing how traditional industries operate (e.g. there is a huge shift towards personalisation of medicine, with more emphasis on patient specific treatments and remote technology use to prolong healthy lives).

A.18 Key drivers of technology trends in industry can largely be categorised into market led and external drivers. Market led drivers include the emergence of secure digitalisation, customisation/ personalisation (of products and services) and automation (e.g. AI, IoT, 3D printing). These trends have been accelerated by COVID-19 and overlaid by the need for new working practices and resilience in supply chains.

A.19 Alongside market led trends are external drivers including the imperative for low and zero carbon practices, health pressures (from long term ageing populations and shorter term health threats), and political influences (such as Brexit and the growing economic threat of China). These multiple drivers highlight the importance of businesses having digital and technology ‘starting blocks’ in place to enable them to adapt to new and developing business models, market demands, working practices, and contextual changes.

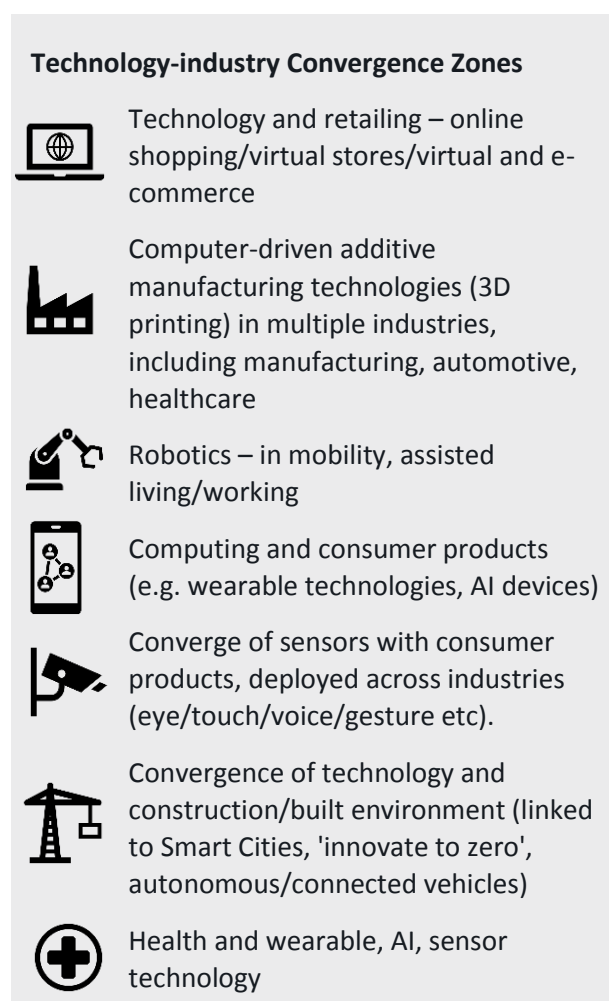
A.20 Technology consequently opens up new opportunities and influences the shape of the economy. Essential technologies including IoT, AR/VR, Blockchain, Drones/Robots, 3D printing and AI are being deployed across multiple sectors, leading to rapid change in how traditional sectors are operating at ‘convergence zones’. Some examples of technology-industry convergence are highlighted in Figure C-1.

A.21 Technology and market trends have wide ranging implications which all stress the importance of businesses and people adapting and developing new and transferable skills. Some key observations which must be considered for the 2022 LIP include:

### *Technology and markets*

- **Connectivity and the Internet of Things (IoT)** will increase demand for additional, personalised functionality in products and services;
- The **automation of ‘knowledge work’** will remove roles previously regarded as ‘safe’ from digitalisation, particularly in light of the growing capabilities in China and India;

Figure 0-1: Examples of technology-industry convergence



- **Demand led mass customisation/servitisation** of products and services in sectors from electronics, manufacturing and even healthcare and genomics is growing. COVID-19 enhanced digitalisation of activities in businesses 25 times faster than previously; and
- **The dominance of China in manufacturing supply chains is set to continue to grow.** With other Asian countries, such as India experiencing rapid growth in digital services, the shift to Asia being the major global market is accelerating. By 2040, Asia will account for 50% of global GDP and 40% of consumption.

#### *Long-term pandemic influences*

- **E-grocery and virtual healthcare** are expected to continue at higher levels than pre-COVID-19 levels post-pandemic, having accelerated in the pandemic;
- Healthcare, pharma, construction, ICT, banking and retail (e-commerce) all experienced **pandemic-related productivity growth** of 0.8-3.0% annually, which is expected to continue to at least 2024;
- Demand for health technical support, health professional, STEM professional, manager, creative, and business/legal professional roles is expected to **increase post-pandemic** in the UK, with office support, food service, and customer service roles expected to decline;
- The **top 20% of companies by profit are pulling away from peers**, although the number of business start-ups has also rapidly increased during the pandemic (US data); and
- 25% of the workforce in advanced economies is able to continue **working from home** 3-5 days per week, suggesting that flexibility in workplace practices is here to stay.

### **Key messages for the LIP's refresh**

- Technology driven market change has been accelerated rapidly by the pandemic, with digitisation in businesses occurring up to 25 times faster than pre-pandemic levels.
- Healthcare, pharmaceuticals, construction, ICT, banking, and e-commerce all experienced pandemic-related growth, which is expected to continue.
- Demand for skilled professionals in health, STEM, creative, and business/legal consultancy are expected to increase post-pandemic, further straining the supply:demand ratio in these areas
- China and Asia are set to become dominant consumers, expected to make up 40% of all consumption by 2040.
- Demand-led customisation/servitisation of products and services presents challenges for businesses but also opportunities for innovative businesses to forge new markets at technology-industry convergence points