West of England Local Skills Improvement Plan (LSIP)

Prioritised Findings - Advanced Manufacturing & Engineering

1. Introduction

The advanced manufacturing and engineering sector is a significant driver of growth and employment provision within the UK's economy. In 2022, the Royal Academy of Engineering[1] reported the value of the engineering sector amounted to £645 billion GVA, 32% of the country's economic output. A recent manufacturing report produced for the House of Commons (March 2023)[2] suggested that manufacture accounted for 9.2% of total GVA between October and December 2022, while total employment in VAT and PAYE registered businesses accounted for 2.67 million workers across the country.[3] Manufacturing and engineering roles provide 6% of total employment within the West of England region[4] and around 18% of all UK employment.[5] Manufacturing delivers around 10% of the UK's GVA nationally and 46% of the nation's exports (MAKE UK 2019), but is in decline in comparison with competitor nations (High Value Manufacturing Catapult Manufacturing the Future Workforce report).[6] The sector has reported significant needs in both new entrants to the workforce and – compounded by recent events - significant loss of experienced workers. The High Value Manufacturing Catapult published a report in 2020 reviewing the skills challenges for the future of the sector (with strong alignment with the findings within the West of England region).[7]

The skills needs' risk within this sector is to maintain its economic value and employment base in the face of the changing nature of its supply chains and meet the decarbonisation challenge e.g., via electrification,[8] aligning to the UK's Net Zero Strategy for the benefit of all in the region.[9] The opportunity is to ensure the region remains globally significant and increases productivity.

We therefore have three types of skills priority for this sector:

- *Skills Shortage Occupations reflecting the current supply and demand,*
- *Skills for new technology (upskilling of existing occupations and new occupations), and*
- *Granular skills requirements reported by employers.*

Please note we have not distinguished at this stage between advanced manufacturing and engineering requirements and capabilities but expect to further engage with sub-sectoral needs throughout the project lifespan as identified.

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[1] From *Royal Academy of Engineering* article, November 2022 A hotbed of innovation: New research reveals engineering adds up to an estimated £645bn to the UK's economy annually (raeng.org.uk)

[2] From *House of Commons Library – Economic Indicators for Manufacturing*, March 2023 SN05206.pdf (parliament.uk)

[3] From *ONS (2022) Labour Force Survey EMP13 Employment by Industry, Great Britain* https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13

[4] From *West of England Annual Skills Report,* by West of England Combined Authority, 2022 (West-of-England-Skills-Advisory-Panel-SAP-Report-Full-Report.docx (live.com)). In the public domain.

[5] From *Mapping the UK's Engineering Workforce*, by the Engineering Council, 2020 (https://www.engc.org.uk/media/3466/mapping-the-uks-engineering-workforce.pdf). In the public domain.

[6] From *Manufacturing the Future Workforce,* by High Value Manufacturing Catapult and Gatsby, 2020 (Manufacturing-the-Future-Workforce-Full-Report.pdf (catapult.org.uk)). In the public domain.

[7] From *Manufacturing the Future Workforce,* by High Value Manufacturing Catapult and Gatsby, 2020 (Manufacturing-the-Future-Workforce-Full-Report.pdf (catapult.org.uk)). In the public domain.

[8] From *The Opportunity for a National Electrification Skills Framework and Forum,* by The Faraday Institution and High Value Manufacturing Catapult, 2021 *(*National-Electrification-Skills-Forum-Brochure-FINAL.pdf (catapult.org.uk)). In the public domain.

[9]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

The West of England Plus LSIP Trailblazer 2020-21[10] also provides additional granularity into skills' needs within the aerospace cluster across the wider South West aerospace cluster and should also be addressed where applicable; a significant number of thematics and needs carry over into wider engineering and manufacturing intelligence in this LSIP, but there are greater foci on the potential of hydrogen and digitisation within this sub-sector too.

New exemplar and responsive course provision has been recently developed and launched in response to business needs and intelligence (including via the LSIP trailblazer) including significant provision via regional and national funding for bootcamps, such as the Electric Vehicles programmes at Bath and Weston colleges, Factory 4.0 at Yeovil college and Welding at Bridgewater & Taunton College as well as at Bath College. There are currently 3 relevant T level pathways within Engineering and Manufacturing: Design and Development for Engineering and Manufacturing; Maintenance, Installation and Repair for Engineering and Manufacturing; and Engineering, Manufacturing, Processing and Control. Apprenticeship uptake within this sector is particularly strong, but there have been declines in uptake in recent years, with a 9% decline overall since 2014-15 starts.[11]

There are a number of governance structures, initiatives and networks currently or imminently in place within the region that are relevant to the future LSIP processes, and will be important to complement rather than cut across. These include (but are by no means limited to) the Employment and Skills Plan[12] - into which the LSIP will feed additional granular intelligence - and the Careers Hub[13] which connects young people, colleges/Post-16 and employers by the West of England Combined Authority (WECA). Current skills provision projects for employers within the sector include Workforce for the Future[14] and Bristol WORKS[15]. We also recommend reading the West of England Combined Authority Report from June 2022, 'Horizon Scanning: Post-16 Education and Skills Infrastructure' as this outlines occupational changes in skills needs for the Advanced Engineering and Aerospace sector amongst others.[16]

2. Labour market intelligence trends for the West of England region

Labour market tightness for the engineering and manufacturing sector comes out as top under research conducted since 2019 from the Covid Jobs Research UK group based at the universities of Edinburgh and Essex. They measure tightness as vacancies % unemployment, splitting this down into two component parts – tightness caused by vacancies being more proliferate, vs tightness caused by declines in 'search effort'. Manufacturing has seen the highest increase in labour market tightening since Q4 2019 at over 350% increase[17], primarily driven by a decline in search efforts towards vacancies in this sector, implying job seekers have a less favourable view of the career prospects that roles in the sector provides and/or that more skilled staff are remaining in their existing roles. Starkly

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[10] Available at West of England Plus LSIP Trailblazer 2020-21

[11] From *Inquiry launched into decline of UK engineering apprenticeships,* by Kelvin Ross, 2023 (Inquiry launched into decline of UK engineering apprenticeships - Power Engineering International). In public domain.

[12] From *West of England Combined Authority, Employment and Skills Plan*, 2020 https://www.westofengland-ca.gov.uk/wp-content/uploads/2019/09/West-of-England-Employment-and-Skills-Plan-July-FINAL.pdf

[13] https://www.westofengland-ca.gov.uk/what-we-do/employment-skills/careers-hub/

[14] https://www.westofengland-ca.gov.uk/growth-hub/workforce-development/workforce-future/

[15] https://www.bristol.works/employers

[16] From *West of England Combined Authority, Post 16 Education and Skills Infrastructure,* 2022 https://www.westofengland-ca.gov.uk/wp-content/uploads/2022/08/Horizon-Scanning-Post-16-Education-and-Skills-Infrastructure.pdf

[17] From *Covid Jobs Research* article, 2022 Market Tightness by Industry Post-COVID - COVID Jobs Research UK, based on seasonally adjusted ONS Labour Market Force and VACS02 survey data.

across the UK, there are now 4.58 times more vacancies in Manufacturing per worker for a job in that industry than there were in 2019.

The largest major occupation group is 'professional and skilled trades', which makes up 64% of the total workforce in this sector, which includes welding trades, IT engineers, electrical and electronic trades and plumbing and heating engineers (Mapping the UK's Engineering workforce, Engineering Council). Nationwide trends are broadly replicated for the West of England region, where the manufacturing and engineering sector currently employs 81,900 workers.[18] Engineering and production jobs postings in the region make up 10.3% of all vacancies advertised[19]. West of England 'Horizon Scanning: Post 16 Education and Skills Infrastructure' Report also highlights replacement and expansion demand within this sector[20].

As reported by the West of England Local Industrial Strategy[21], productivity in the region is higher than the average but has slowed relatively in recent years. The percentage of the working population employed in professional occupations in the region is significantly higher than averages, and those in process, plant and machine operative roles is similarly lower, with lower percentages in skilled and elementary occupations – there are significantly reported vacancy densities in all of these roles (Employer Skills Survey, Centre for Progressive Policy Analysis (LINK).

3. **Job postings and forecasts to meet replacement and expansion need (existing staff leaving the sector's workforce either into different sectors or retirements and new employment generation against expected sectoral growth)[22].**

Make UK's Q1 Manufacturing Outlook for 2023 suggests that live vacancies within manufacturing nationally have dropped significantly since November 2022, from 85,000 to 77,000, with a ratio of 3.2 vacancies per 100 jobs in the sector[23].

The National Foundation for Educational Research (NFER) has recently published up to date sectoral analyses of the replacement and additional labour needs by sector and LEP geography under the Skills Imperative 2035, led by Warwick Institute for Employment Research & Cambridge Econometrics[1].

For the West of England area[2] between 2020 and 2035 the Manufacturing sector is expected to require 16,390 replacement jobs as the existing workforce moves into retirement or leaves the sector for alternative employment opportunities elsewhere. This contrasts with a net fall in positions within the sector as roles are deleted, of 5,320 FTE – or 13% of 2020's estimated workforce of 41,300. In proportion to other sectors within the West of England Manufacturing is expected to comprise 4.7%

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[18] From *LEFM (March 2021), Cambridge Econometrics on West of England (2022) Horizon Scanning: Post-16 Education and Skills Infrastructure, 2022*

[19] From *Department for Education Local Skills Dashboard*, 2023 https://department-for-education.shinyapps.io/local-skills-dashboard/

[20] https://www.westofengland-ca.gov.uk/wp-content/uploads/2022/08/Horizon-Scanning-Post-16-Education-and-Skills-Infrastructure.pdf

[21] From *West of England Combined Authority, Local Industrial Strategy*, 2019 https://www.westofengland-ca.gov.uk/about-us/regional-insights/economic-overview/

[22] From *HR Magazine*, Article 2022, https://www.hrmagazine.co.uk/content/news/businesses-face-record-recruitment-difficulties/

[23] From *Make UK, Manufacturing Outlook*, 2023 https://www.makeuk.org/-/media/eef/files/reports/industry-reports/make-uk-manufacturing-outlook-2023-q1.pdf

[1] From *National Foundation for Education Research* article, 2022 https://nfer.ac.uk/key-topics-expertise/education-to-employment/the-skills-imperative-2035/

[2] From *Department for Education*, 2023 https://www.gov.uk/government/publications/labour-market-and-skills-projections-2020-to-2035

of the regional workforce in 2035, slightly down from 5.9% in 2020 (the rate of contraction being lower than other adjacent areas such as Swindon & Wiltshire and Gloucestershire).

This will partly be driven by replacement demand for traditional occupations as well as the leading role that the industry is expected to play in achieving the country's net zero targets, which will require new developments in sub sectors such as the electrification of manufacturing and decarbonising aerospace - jet zero.

4. Occupational Priorities (shortages within occupations)

We have attempted below to show some of the existing roles' needs and requirements to indicate where sectoral needs may be met via existing courses, with or without micro-interventions, but we faced significant issues with division of the existing engineering and manufacturing labour market due to gaps within labour market intelligence mentioned briefly above. Below we align some suggested roles and FE pathways via potential training needs rather than roles/shortages. We have not as yet looked at these shortages in relation to current supply volumes from colleges and ITPs, therefore these priorities are here for discussion with providers at this stage. We have attempted to RAG rate needs (Red, Amber, Green, with Red being highest) to highlight to most pressing existing role shortages within this sector, but this is based on wider speculative analyses of the changing engineering and manufacturing sectors rather than specific data sets and we therefore welcome further suggestions in delineation attempts.

Role	R	A	G	Priority/possible action and funding source. Growth in:
Production and entry level roles; Machinists, fitters, operatives	x			Apprenticeships Full Time 16 to 19
Project management			X	Apprenticeships Full Time 16 to 19 T levels
Data analysts	X			Apprenticeships Full time 16 to 19
Electrical engineers		X		Apprenticeships Full time 16 to 19
Mechanical engineers		X		T levels Higher Apprenticeships Full time and part time HE
IT Business Analysts, Architects and Systems Designers			X	T Levels Apprenticeships HE
Civil Engineers			X	T levels Higher Apprenticeships Full time and part time HE
Quality Control and Planning Engineers			X	T levels Higher Apprenticeships Full time and part time HE
Production Managers			X	T levels Higher Apprenticeships

			Full time and part time HE

The best available existing delineation of sector specific engineering and manufacture technical pathways is provided via the Institute for Apprenticeships in their occupational maps[24]

Engineering, Design and Development Pathway		
Technical (L3)	**Higher (L4 -5)**	**Professional (L6-7)**
Design and Development Technician	Design and Development Technical Manager	Design and Development Engineer
Engineering, Manufacturing, Process and Control Pathway		
Fabrication and Welding Operative/Technician	Fabrication and Welding Technologist	
Food and Science Manufacturing Operative/Technician		
Manufacturing and Process Operative/Technician		Manufacturing Engineer
Manufacturing Operative		
Plant Operative/Technician	Manufacturing, Plant and Process Technologist	Plant and Process Engineer
Print and Packaging Operative/Technician	Print and Packaging Technologist	Print and Packaging Engineer
Quality Improvement and Project Control Technician	Quality Improvement and Project Control Manager	Quality Improvement, Health and Safety Professional
Maintenance, Installation and Repair Pathway		
Technical	**Higher Technical**	**Professional**
Manufacturing/Process Maintenance Operative/Technician	Manufacturing/Process Maintenance Advanced Technician	Manufacturing/Process Maintenance Engineer
Service, Repair and/or Overhaul Operative/Technician	Installation, Service, Repair and/or Overhaul Advanced Technician	Installation and Service Engineer

5. Occupational Opportunities – Skills for new technologies

We can identify some of the more imminent technological needs within this sector, in particular through the High Value Manufacturing Catapult's 'Manufacturing the Future Workforce' report of 2020, alongside the incorporation of LSIP primary input and source documentation. The HVMC report highlights the importance of 'early adoption and exploitation of innovation' as critical in the UK's

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[24] From *Institute for Apprenticeships and Technical Education Occupational Maps*
https://www.instituteforapprenticeships.org/occupational-maps/

industrial strategy, and outlines this sectors importance in identifying and incorporating new technologies for productivity and efficiency.

The 'Made Smarter' review in 2017 suggested that technologies grouped under 'Industry 4.0' (automation, data, connectivity and AI/Machine Learning for optimisation and efficiency) could create around 175,000 additional jobs in the next decade, which extrapolated to a West of England economy would equate to 3,400 new roles, on top of the existing workforce. In particular, the aerospace cluster in the region is expected to ramp up production and incorporate higher volume delivery methodologies, so will require significant numbers of new employees in both existing and to be identified roles.

There is existing demand within all of these technologies but it is limited in volume. However, it is expected that there will come a point relatively soon, where many of these technologies will grow rapidly in volume. When depends very much on Government policy. We have therefore broken down technological and expected sectoral needs into broad areas or specific to a technology. We have identified in the table below, the main occupations which are likely to be affected. In the next section of the report we provide a more granular identification of employers stated needs. We have divided these technologies into wider 'role areas' to indicate level and depth of need, and intend to deep-dive into these during the secondary phase of the LSIP delivery.

Please note that the Combined Authority are simultaneously holding discussions with FE providers attached to green skills' needs and meeting the challenges and opportunities decarbonisation present for the future, and will ensure that our ongoing process and delivery aligns these as fully as possible.

Right now our priority is that Colleges and other providers of training for these occupations, gear up their practical facilities as far as possible and begin (if not already), to offer both the upskilling needed and new occupational programmes where there is local demand. We hope to have discussions with providers about how demand could be stimulated further and timing of growth.

Occupations	Production and Technician	Professional	Technical Support (IT)
Technology			
AI	Awareness/understanding /operations /repair and maintenance	Awareness and understanding	Software development
Automation, robotics and cobotics	Awareness and understanding/ operations/repair and maintenance	Awareness and understanding	Software development
Cyber security	Awareness	Awareness	Cyber security specialists
Sensors, Data, AI and analysis	Awareness and understanding/operation/repair and maintenance	Awareness and understanding/operation	Data analysis
Industrial digitalisation and digital design	Awareness	Awareness and understanding/design	Software operation
Advanced manufacture – emerging materials, composites, lightweighting, AI driven design, rapid prototyping,	Awareness and understanding	Awareness and understanding/design	Software operation

3d printing, decarbonisation			
Transformation, systems integration and change management	Awareness and understanding	Awareness and understanding/design	Awareness and understanding

6. Businesses Reported Skills Needs - Granular Business Intelligence via LSIP

Please note that the LSIP research will continue until April 2023 in the first phase, with additional needs, refinements, deep dives and any identified new foci to continue longer term until May 2025. These below skills needs' findings are based on the initial 3 months of LSIP research and delivery and indicate expected 'direction of travel' in the final report. As any additional needs are identified and verified we will share prior to report release with stakeholders via most appropriate identified means.

The ERB has worked to gather current in-depth business intelligence on perceived unmet needs, understanding of current delivery and potential economic and technological changes. The intention of the LSIP research methodology is to add current and granular intelligence to existing understanding and not to replace prior research into skills needs, particularly those datasets which could be considered statistically robust.

We have divided these findings into approximated areas of need, and - alongside the sections above on occupational shortages and industrial trends – expect these to form a reasonably comprehensive picture intended to address current and expected unmet needs within the sector, both in terms of interventions in existing provision (micro or modular) and identification of potential new provision (although this falls primarily towards in-work and modular needs due to the methodology utilised in the LSIP primary research phase). The areas these are outlined under are:

- Critical Workplace, Core and Transferable skills
- Core Digital Skills
- Sector Specific, Technological Change and Digitalisation Skills Needs
- Decarbonisation, Sustainability and Alignment to the UK's Net Zero Strategy Skills Needs
- *Systemic/Labour Market/Other reported needs*

We have indicated where we believe businesses have reported these needs most significantly in terms of where they fit within career and occupational progression (from new entrants through to experienced) and believe these are areas of funding and provision that align more or less closely:

Experienced Current Employees (upskilling, modular, CPD)	Experienced/ Occupationally Competent New Employees (upskilling, skills gaps, new work functions)	Career movers from another sector (part experienced and/or direct/linked training e.g. Boot Camps	Those in both work and formal training e.g. apprentices	Younger/New Entrants/non-experienced 16-19 and adults
For Example: In-house, innovation/AEB/LSIF	For Example: In-house/bespoke/ Innovation/AEB/ LSIF	For Example: AEB, Bootcamps, Other DfE e.g. certificates of future technology, In-house, LSIF	For Example: Apprenticeship	For Example: T Levels, other 16 to 19 vocational, Vocational HE and preparatory

We do not intend to be prescriptive in suggestions where FE Providers (and others) may see an ability to respond to LSIP skills needs findings, more to indicate where we see opportunities for action that align with occupational progression, life stages and current (particularly mainstream) funding mechanisms. These therefore represent the options we want to discuss with providers, alongside and within ongoing conversations and planning with the Combined Authority regarding provision and in particular implications of the Employment and Skills Plan. We are aware of the support provided (and planned) via the West of England Careers Hub and other initiatives and will welcome the opportunity prior to report release to ensure synergies and collaborative work rather than replication.

Critical Workplace, Core and Transferable Skills

Need Statement	Provisional Priority	Experienced Current Employees (upskilling, modular, CPD)	Experienced/ Occupationally Competent New Employees (upskilling, skills gaps, new work functions)	Career movers from another sector (part experienced and/or direct/linked training e.g. Boot Camps	Those in both work and formal training e.g. apprentices	Younger/New Entrants/non-experienced (16-19) and adults
Core skills reported as vital across new roles: • Maths and physics • communication • Appropriate work ethic, timekeeping and calendar management • Business skills within engineering roles: sales, communications, 'financial viability in my role'	1. Explore implementation of Skillbuilder(or similar) and work entry skills in pre-16 and post-16 academic education and Eng Apprenticeship 2. Work with education to increase take up of maths and physics and GCSE and A level together with manufacturing AAQ once available 3. Add business skills content to post 16 vocational programmes and Apprenticeships				X	X
						X
				X	X	X

Roles within the sector that need further recognition of progression pathways: • Tendering/procurement/sales (including persuasion & negotiation skills) • Administration • accounting • marketing & comms roles	4. Work with employers and providers to implement Apprenticeships for these employee occupation including progression to higher levels within Occ. Maps	X	X	X	X	
Importance of new entrants 'hitting the ground running' and continuation of learning/study mindset	As 1 and 3 above			X	X	X
Understanding hybrid working and importance of collaborative practise in project management – effective rollout of company culture	5. Project management short course programme	X	X	X		
Relevant and timely leadership and management training, commercial and contractual understanding	6. Manufacturing management development programme (apprenticeship funded?)	X	X			
Succession and backfilling planning, including how to effectively recruit and retain.	6(a)Workforce planning support offer across manufacturing (LSIF)	X	X	X	X	X
Effective internal communication (project teams and planning)	As 5 and 6 above	X	X	X	X	X
Mental health, resilience and 'embracing challenge'	7. Establish HR support group across the area	X	X	X	X	X
Understanding innovation and new project planning	As 5 above					
Smaller companies – some need for additional company structuring, tax, R&D and incentives, how to recruit and retain	8. SME management programme (LSIF?)					

Core Digital Skills

Need Statement	Provisional Priority	Experienced Current Employees (upskilling, modular, CPD)	Experienced/Occupationally Competent New Employees (upskilling, skills gaps, new work functions)	Career movers from another sector (part experienced and/or direct/linked training e.g. Boot Camps	Those in both work and formal training e.g. apprentices	Younger/New Entrants/non-experienced (16-19) and adults
Further understanding of core digital platforms and 'what good looks like': Microsoft – Excel still integral to lots of work/roles, effective use of Teams and Outlook Presenting and webinars Google platforms – meet, hangouts, drive etc	9. Training in basic practical digital skills both in the workplace and in FTE (as in construction4.)	X	X	X	X	X
CRM usage, internal IT infrastructure and development, enterprise communications systems, internal use, rollout, adoption and integration	As 9 above(relevant staff)	X	X	X	X(relevant Apprenticeships)	
Needs for understanding coding/softdev becoming wider across engineering roles – python in particular, computer modelling	10, Upgrading short course programme for relevant roles	X	X	X	X	
Design engineering requirements across wider roles: CDT, technical drawing, CAD	As 10 above	X	X	X	X	
Planning and management tools and methodologies – Agile, SCRUM. JIRA	As 10 above	X	X	X	X	
Wider need for understanding of cloud storage, digitisation, data and analytics, turning data into intelligence	As 10 above	X	X	X	X	
Recognition that internal training does not keep up with software and needs	As 10 above	X	X	X	x	

Sector Specific and Technological Change

Need Statement	Provisional Priority	Experienced Current Employees (upskilling, modular, CPD)	Experienced/ Occupationally Competent New Employees (upskilling, skills gaps, new work functions)	Career movers from another sector (part experienced and/or direct/linked training e.g. Boot Camps	Those in both work and formal training e.g. apprentices	Younger/New Entrants/non-experienced (16-19) and adults
Understanding project flow and efficiencies from R&D stages through prototyping, build, QA and certification	As 10 above	X	X	X	x	
Lean manufacture and quality improvement, design thinking and methodologies	As 10 above	X	X	X	x	
Electrification as a core sectoral change (and needs attached to high voltages, H&S, batteries and storage, codes and standards) gas systems and replacements – significant needs for electrical engineers	11. Short course programme for all managers and other relevant staff covering electrification/low carbon	X	X	x	X	X
Growth sectors mentioned for sectoral knowledge– space, NNB, SMR and fusion						
3d printing and scanning	As 10 above	X	X	X	X	
Design engineering – need for understanding across roles, more design requirements in more engineering and manufacturing roles	As 10 above	X	X	X	X	
Automation, robotics, cobotics gaining in wider awareness and adoption	As 10 above	X	X	x	X	

Troubleshooting, servicing and maintenance (inc. higher H&S needs) in technician and engineering roles	As 10 above (relevant staff)	X	X	X	X	
AI, machine vision, sensors, Machine Learning	As 10 above	X	X	X	x	
Commissioning, systems integration, Systems modelling	As 10 above	x	x	X	x	

Net Zero Skills

Need Statement	Provisional Priority	Experienced Current Employees (upskilling, modular, CPD)	Experienced/Occupationally Competent New Employees (upskilling, skills gaps, new work functions)	Career movers from another sector (part experienced and/or direct/linked training e.g. Boot Camps	Those in both work and formal training e.g. apprentices	Younger/New Entrants/non-experienced (16-19) and adults
Energy efficiency understanding (against energy crisis mitigation) – energy prices impacting change.	As 11 above	X	X	X	X	X
Sustainability assessments – calculations and monitoring, lifecycle assessments, whole life concept	As 11 above	X	X	X	X	
Sustainability and requirements within role, company and sector, wide understanding. How to effectively implement change, manage risks and liabilities	As 10 above	X	X	X	X	
Decarbonisation of fuels – electrification, alternative fuels and hydrogen	As 11 above	X	X	X	X	
Materials and changes – alternatives, efficiency in process and design, waste and packaging – some needs for polymers, chemicals and bio-substrates	As 11 above	X	X	X	X	
How to effectively communicate sustainability internally and externally	As 11 above	X	X	X	X	

Need Statement		Experienced Current Employees (upskilling, modular, CPD)	Experienced/ Occupationally Competent New Employees (upskilling, skills gaps, new work functions)	Career movers from another sector (part experienced and/or direct/linked training e.g. Boot Camps)	Those in both work and formal training e.g. apprentices	Younger/ New Entrants/ non-experienced (16-19) and adults
Understanding funding for net zero, legislative changes and expected changes	As 11 above	X	X	X	X	
Carbon neutrality and offsetting	As 11 above	X	X	X	X	
Sustainability and innovation as interlinked drivers of change	As 11 above	X	X	X	X	

Local Skills & Labour System Feedback

Please note that although these are not explicitly skills needs, these are other issues highlighted by employers and stakeholders that may require addressing alongside interventions in provision directly.

Need Statement	PROVISIONAL PRIORITIES	Experienced Current Employees (upskilling, modular, CPD)	Experienced/ Occupationally Competent New Employees (upskilling, skills gaps, new work functions)	Career movers from another sector (part experienced and/or direct/linked training e.g. Boot Camps)	Those in both work and formal training e.g. apprentices	Younger/ New Entrants/ non-experienced (16-19) and adults
Widest sector reports significant issues with recruitment against expected sector growth	Part C LSIP					
Sector/industry preferences for short/modular/remote/flexible training provision, with smaller orgs reporting not able to release 20% for apprenticeships etc	As 10 and 11 above 12. Review Apprenticeships design to incorporate more OTJ in the workplace	X	X	X	X X	
Entry level applicants often lacking in calibre	Covered under 1 and 3 above				X	X
Investment for automation is difficult (depreciation versus physical footprint expansion)	Discuss with CA					
Businesses mixed recognition of need for workforce development planning as part of strategic growth	As 6(a) above	X	X	X	X	X
Retention & attraction difficult, large recognition of lack of diversity (esp. women in engineering) but no cohesive understanding how to effectively address	Part C LSIP					
Disconnect between industry salaries and FE salaries makes it hard to encourage industry professionals into teaching	13. Cross are initiative to recruit to FE teaching/training(				X	X

	see also construction)					
Good recognition and understanding of benefits of VR/AR/video and simulation as beneficial practises for closing gaps	LSIP Part C					
Some non-city locations are becoming less attractive to younger workers looking for hybrid roles	LSIP Part C					
Sector looking for longevity in initiatives, legislation and training provision to provide certainty in planning	LSIP Governance with CA					