Business West

2024

Gloucestershire LSIP

Green Skills Provision Report

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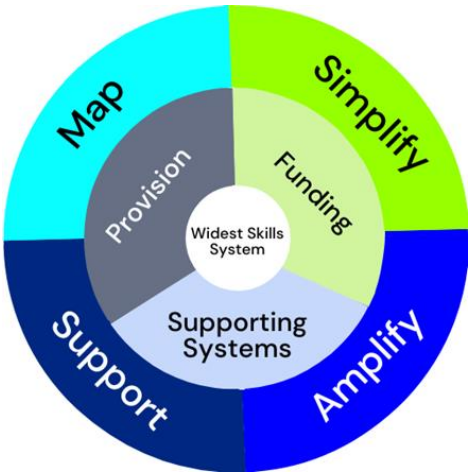
Introduction

The transition to a sustainable, low-carbon economy is an imperative goal for nations worldwide, with the United Kingdom setting a target to achieve net zero greenhouse gas emissions by 2050. In alignment with this national ambition, Gloucestershire County Council has set an even more ambitious regional commitment to reach net zero by 2045, with many of Gloucestershire's districts pledging to become carbon neutral by 2030.[1][2] To achieve these commitments, the County Council has highlighted the importance of increasing opportunities for green skills and employment.

Green skills are recognised to be one of the most important drivers in the transition to a more sustainable future,[3] with significant opportunities in Construction and Advanced Manufacturing and Engineering, particularly in retrofit and climate mitigation.[4] The Agriculture and Agri-tech also have a vital role in decarbonisation and carbon capture.[5] As highlighted by the County Council, these key sectors within Gloucestershire position the county to be at the forefront of green skills development and a potential leader in the emerging green economy.[6]

With the importance of green skills in mind, this project and subsequent report aim to gain further insight into the supply and demand for green skills in Gloucestershire. Aligning with the Stage 2 objectives of the Local Skills Improvement Plan (LSIP), this has been achieved by mapping the post-16 green skills provision in the local area, with a primary focus on the technical green skills provision such as courses in renewable energy and retrofit (see the Green Skills Venn Diagram on page six). Additionally, the research considers the wider courses related to green pathways such as Electrical Installation, Plumbing and Heating, and other relevant courses, in doing so the research



LSIP Stage 2 Objectives

[1] Net zero refers to the amount of greenhouse gases (GHGs) that are removed from the atmosphere being equal to those emitted by human activity. Emissions reductions would generally follow a certain trajectory, e.g. 1.5°C. Any residual emissions would generally focus on GHG sequestration from the atmosphere. Carbon neutrality is similar in that GHG emissions are offset, although it generally includes a wider definition of offsetting residual emissions, including emissions avoidance activities, and wouldn't prescribe a specific reduction trajectory. For more information see: National Grid, *Carbon neutral vs net zero – understanding the difference* (The difference between carbon neutral and net zero | National Grid Group)

[2] Gloucestershire County Council, *Journey to Net Zero* (Journey to net zero | Gloucestershire County Council)

[3] The Economist, *Green skills: driving the transition to a more sustainable future* (2024) (*Iberdrola_GreenSkillsOutlook_report.pdf)

[4] Gloucestershire County Council, *Gloucestershire's Economic Strategy* (April 2024) (Gloucestershire's Economic Strategy 2024-2034)

[5] Gloucestershire County Council, *Gloucestershire's Economic Strategy* (April 2024) (Gloucestershire's Economic Strategy 2024-2034)

[6] Gloucestershire County Council, *Gloucestershire's Economic Strategy* (April 2024) (Gloucestershire's Economic Strategy 2024-2034)

aims to amplify the wider courses being delivered. The project also seeks to support providers and local stakeholders by identifying some of the current gaps in green skills provision within Gloucestershire and providing insights into the demand for green skills from businesses, including preferences for training times and delivery methods.

What are Green Skills?

One of the challenges regarding green skills is the lack of consistent definition and understanding of what green skills are. Broadly defined, green skills is an umbrella term used to refer to the technical skills, knowledge, behaviours, and capabilities required to develop and support a sustainable society.[7]

Within Gloucestershire, the County Council relies on the Lightcast Green Taxonomy to assess green skills within the context of the labour market. The Lightcast Taxonomy considers a job 'green' if its description includes one of the 107 identified green skills. These skills are classified as 'green' based on their connection to green keywords and activities such as sustainability, environmental protection, and decarbonisation (see Table 1 and Table 2 below for examples). Any job with one of these skills in the description will be considered a green job within the County Council.

Between January and June 2024, there were 1,973 jobs posted in Gloucestershire that required at least one green skill, representing 3.6% of all job postings in the county. Among these 1,973 job postings, the top ten specialised skills were:

Table 1: Top Ten Specialised Skills:[8]

Specialised skill	**Number of job postings with skill (Jan-Jun '24)**
Environment Health and Safety	507
Project Management	284
Auditing	223
Occupational Safety and Health	197
Waste Management	193
Risk Analysis	186
Machinery	137
Renewable Energy	118
ISO 14000 Series	117
Construction	109

[7] Laila Takeh, Vesselina Naskinova, *A blueprint for green workforce transformation* (Deloitte, IEMA 2022) page 6 (A-blueprint-for-green-workforce-transformation-April-2022.pdf)

[8] Source: Lightcast™. 2024

Table 2: Top Ten Common Skills:[9]

Common skill	Number of job postings with skill (Jan-Jun '24)
Communication	717
Management	575
Operations	338
Planning	326
Detail Oriented	280
Customer Service	275
Problem-Solving	240
Leadership	225
Self-Motivation	154
English Language	141

For the purposes of this project, we have built upon the Lightcast definition and categorised green skills further by using the following three categories:

1. Sector-Specific Technical Green Skills: the technical skills required for the use of green technologies or methods that are focused on improving the environmental outcome of a particular activity.

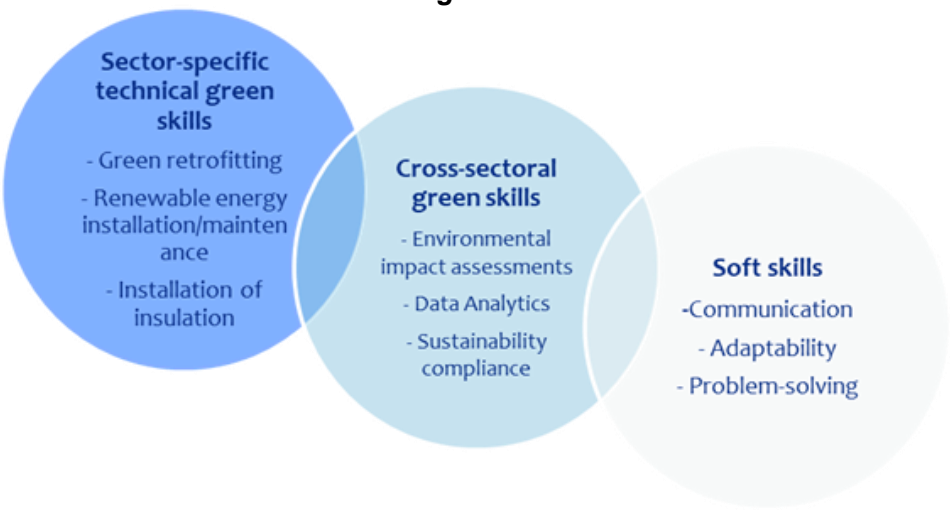
2. Cross-Sectoral Green Skills: the skills needed to carry out environmentally friendly processes and functions that are similar across several sectors of the economy.

3. **Soft Skills**: non-vocational, non-technical skills or competencies that are needed to excel in green jobs and for the wider green transition.[10]

[9] Source: Lightcast™. 2024

[10] The Economist, *Green skills: driving the transition to a more sustainable future* (2024) page 9 (*Iberdrola_GreenSkillsOutlook_report.pdf)

Venn diagram: Green Skills



These categories build on the Lightcast Taxonomy, specialised skills are broken down into sector-specific technical green skills and cross-sectoral green skills, whilst Lightcast's common skills align with the above soft skill category.

Sector-Specific Technical Green Skills

Energy and Utilities

- Renewable energy system management and integration
- Heat pump, design installation and repair
- Solar photovoltaic system design, installation and repair
- District heating and cooling systems design and operation
- Green hydrogen production, storage and management
- Wind turbine design, installation and repair

Construction

- Green retrofitting
- Sustainable building materials
- Sustainable architecture
- Life cycle assessment
- Installation of insulation, fenestration and cladding

Transport and Logistics

- Electric vehicle design, manufacture, servicing and repairs
- Battery engineering, management and recycling
- Charge point installation and operation
- Green hydrogen production, storage and management

Cross-Sectorial green skills

- Sustainability disclosure and reporting
- Environmental impact assessment
- Sustainability compliance
- Sustainable procurement
- Green/lean manufacturing

Soft Skills

- Innovation and creativity
- Environmental awareness
- Problem-solving
- Teamwork and collaboration
- Communication and influencing
- Resilience
- Project management
- Interpersonal skills

Sectorial Summaries

The following sections analyse three key sectors in Gloucestershire in the context of net zero and green skills. The three sectors are (1) Agriculture, Agri-tech and Land Management, (2) Construction and the Built Environment, and (3) Advanced Manufacturing and Engineering. These sectors are all primary areas of focus in the wider LSIP research and were chosen using a combination of factors, including where there is the most need and where we could have the most impact.

Each section provides an overview of the sector in relation to net zero and green skills, highlighting any specific labour market intelligence (LMI) and expected areas of growth. The report then highlights the post-16 provision in Gloucestershire that is relevant to specific green job pathways within each sector. Where there is no regional provision available, the research has highlighted other initiatives offered by regional providers, as well as examples of other courses delivered outside of Gloucestershire (prioritising courses within the South West region). The report will refer to different qualification levels (i.e., Level 2/Level 3), for more information on what qualification levels mean please see Gov.UK.[11]

Agriculture, Agri-tech and Land Management

Agriculture is a major contributor to the local economy. The Gloucestershire agri-food supply chain employs over 50,000 people, representing 14.9% of the workforce. The sector generated a GVA of £1.39 billion in 2017, accounting for 8.8% of the local economy.[12] These figures are notably higher than the national average. In 2022, agriculture's contribution to the UK economy (Gross Value Added at basic prices) was £13.9 billion (0.6% of GDP).[13] However, agriculture in Gloucestershire is also a significant contributor to regional greenhouse gas emissions.[14] The sector is responsible for approximately 16% of the total emissions in the local area, primarily due to livestock digestion, manure management, and the use of synthetic fertilisers.[15]

This sector, which encompasses traditional farming practices, advanced agricultural technologies, and comprehensive land management strategies, is integral to reducing greenhouse gas emissions and promoting sustainable practices. Innovations such as precision farming, drone technology, and

[11] GOV.UK, *What qualification levels mean* (**What qualification levels mean: England, Wales and Northern Ireland - GOV.UK (www.gov.uk)**)
[12] Gloucestershire County Council, *Food and Farming* (Food and farming | Gloucestershire County Council)
[13] Department for Environment Food and Rural Affairs *Agricultural in the United Kingdom 2022, Accredited Official Statistics Summary* (February 2024) (Summary - GOV.UK (www.gov.uk))
[14] Gloucestershire County Council, *Food and Farming* (Food and farming | Gloucestershire County Council)
[15] National Food Strategy, *An Independent Review for Government, The Plan* (2021) (https://www.nationalfoodstrategy.org/)

smart sensors are crucial for reducing emissions and improving resource efficiency.[16] These technologies require a workforce skilled in data analysis, remote sensing, and the application of advanced agricultural machinery.

Additionally, we can expect a growing demand for skills in organic farming, agroecology, and regenerative agriculture as the National Food Strategy highlights the need to reduce the use of pesticides and industrial fertilisers to achieve net zero emissions in the sector.[17] These practices aim to reduce chemical inputs, enhance biodiversity and improve soil health, contributing to lower emissions and more sustainable land use.[18]

Green jobs in the agricultural sector offer higher levels of pay compared to the average salary for comparable roles. According to PWC's Green Jobs Barometer, entry-level green roles in 60% of occupations command an average pay premium of 23%. This includes higher-than-average pay in entry-level green jobs within agriculture.[19] However, there is a mismatch between the qualifications of the existing workforce and the skills needed to fill these new positions. According to the Green Jobs Barometer, agriculture, forestry and fishing have a surplus of workers at almost every qualification level except for degree-level positions, with 44% of new green jobs in these industries requiring degrees. Another challenge is the aging workforce within the sector. Attracting younger entrants through the appeal of nature-related green jobs could address some of these issues, provided there is access to relevant training and qualifications.[20]

Opportunity Sub-sectors:

- New Product Development, Quality Management
- Systems, Global Regulatory
- Technology (Robotics, Sensors, Lighting, Irrigation)
- Food Safety and Farm Hygiene
- Analytical Testing and Microbiology
- Equine-related Services
- Cyber Security Services[21]

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[16] Agri-Tech Centre, *The Future of UK Agri-Tech* (April 2024) (British-Agri-Industries-Role-of-Agri-Tech-White-Paper-V8-double.pdf (ukagritechcentre.com))
[17] National Food Strategy, *An Independent Review for Government, The Plan* (2021) (https://www.nationalfoodstrategy.org/)
[18] Soil Association, *Home-grown: A roadmap to resilient fruit and vegetable production in England* (https://www.soilassociation.org/policy-reports/)
[19] PWC, *Green Jobs Barometer* (PWC, December 2023) page 7 (green-jobs-barometer-2023.pdf (pwc.co.uk))
[20] PWC, *Green Jobs Barometer* (Green Jobs Barometer - PwC UK)
[21] Agri-Tech Centre, *The Future of UK Agri-Tech* (April 2024) (British-Agri-Industries-Role-of-Agri-Tech-White-Paper-V8-double.pdf (ukagritechcentre.com))

Post-16 Education Pathways – Agriculture, Agri-tech and Land Management

In Gloucestershire, Hartpury University and Hartpury College is one of the leading providers of Agricultural provision. Whilst Hartpury does not deliver short modular technical green skills provision, environmental sustainability is embedded within the courses they offer. In September 2024, Hartpury College will deliver several Agricultural and Engineering T-Levels that focus on environmental management and sustainability, which will enable the learner to gain the skills and experience needed to pursue a career in agriculture.[22] One of the T-Levels offered by Hartpury College is the Land-Based Engineering T-Level which focuses in part on sustainability and the role of technology in the agricultural sector.[23] Upon completing this T-Level, an individual working as a Land Based Engineer could advise farmers and businesses on agricultural concerns including sustainable land use and irrigation, they could also help to improve the efficiency of vehicles and equipment.[24]

Whilst outside the scope of the LSIP, which focuses primarily on post-16 technical education, Hartpury University and Hartpury College offer sustainability-related academic qualifications, including the A-level in Environmental Science and the MSc Sustainable Agriculture Postgraduate Degree.[25] Similarly, the Royal Agricultural University, another leading Agricultural provider in Gloucestershire, offers several academic undergraduate degrees specialising in Environmental Sustainability.[26] The University also delivers further Agricultural courses that embed sustainable practices, the role of technology and data, and environmental protection into the course delivery.[27]

At the time of writing, there are no short modular green skill courses delivered in Gloucestershire for Agriculture and there is a much higher concentration of technical and academic qualifications instead. Examples of short, modular green skills provision outside of Gloucestershire include the Level 2 Regenerative Land-Based Systems Skills Bootcamp delivered by the Apricot Centre for residents of Devon, funded by the Department for Education and Devon County Council (you have

[22] For more information see: Hartpury College, *T Levels: Everything you need to know*, from Hartpury College (T Levels | Hartpury College) and Gov.UK, *Introduction of T Levels*, from Gov.UK, 2023 (Introduction of T Levels - GOV.UK (www.gov.uk))
[23] Hartpury College, *Land-Based Engineering T-Level* (T Level in Land-Based Engineering (hartpury.ac.uk))
[24] Prospect, *Land-based engineer* (Land-based engineer job profile | Prospects.ac.uk); For more information on the T-Levels offered by Hartpury College, see their website.
[25] For more information on the courses available at Hartpury College see: Hartpury College, *Study at Hartpury College,* from Hartpury College (Study | Hartpury College) and for Hartpury University see: Hartpury University, *Study at Hartpury University*, from Hartpury University (Study | Hartpury University)
[26] For the list of Environmental Degrees see: Royal Agricultural University *Environmental Degrees* from the Royal Agricultural University (Environment degrees | Royal Agricultural University (rau.ac.uk))
[27] For example, Royal Agricultural University, *BSc (Hons) Agriculture* from the Royal Agricultural University (BSc (Hons) Agriculture | Royal Agricultural University (rau.ac.uk) and Royal Agricultural University, *MSc Sustainable Agriculture and Food Security* from the Royal Agricultural University (MSc Sustainable Agriculture and Food Security | Royal Agricultural University (rau.ac.uk))

to be a resident of Devon to sign up for the Bootcamp).[28] Additionally, New Anglia Local Enterprise Partnership for Norfolk and Suffolk is delivering two Agricultural and Land Management Bootcamps in Arboriculture and Horticulture, both offering a Level 2 Award in Practical Environmental and Conservation Skills.[29]

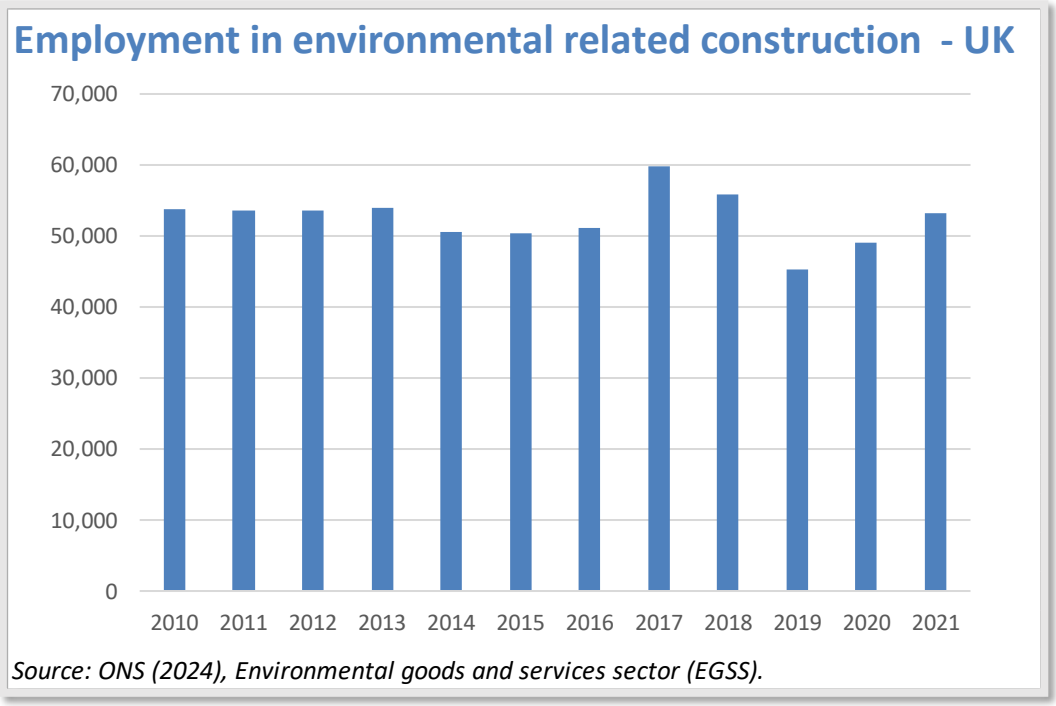
Despite a gap in short modular technical green skills provision, several significant initiatives are underway in Gloucestershire. The Royal Agricultural University offers several short 'professional courses', some of which include elements of environmental sustainability.[30] For example, the 'Insight to Agriculture (Farming for Non-Farmers)' course considers the role of renewables in the Agricultural sector, as well as natural capital and biodiversity net gain (carbon neutrality) and the future of farming.[31] The Royal Agricultural University also leads a research cluster focused on sustainability, regeneration, and biodiversity in agriculture. The research cluster is working to develop 'improved methods of cultivation, with nutrient recovery, low-carbon agriculture, soil conservation and planting regimes, to enable long-term sustainability, achieving net zero-carbon, and healthier food'.[32] Further initiatives have been led by Hartpury University, where Director of Agriculture, Matt Bell, has created a 'breeding index' to identify cows that are more productive over their lifespan with lower carbon emissions.[33] The index can be replicated on any dairy herd and demonstrates additional sustainability initiatives underway in the local area.

[28] Apricot Centre, *Skills Bootcamp in Regenerative Land-Based Systems* (Level 2 Skills Bootcamp: Regenerative Land-Based Systems | The Apricot Centre - cultivating sustainability)
[29] Suffolk New College, *Skills Bootcamps,* from Suffolk New College (Skills Bootcamps - New Anglia)
[30] For more information see here: Royal Agricultural University, *Professional Training* (Professional training | Royal Agricultural University (rau.ac.uk))
[31] Royal Agricultural University, *Insight to Agriculture (Farming for Non-Farmers) Course* (Insight to Agriculture (Farming for Non-Farmers) Course | Royal Agricultural University (rau.ac.uk))
[32] For more information, see Royal Agricultural University *Sustainability, regeneration and biodiversity in agriculture* from the Royal Agricultural University (Sustainability, regeneration and biodiversity in agriculture | Royal Agricultural University (rau.ac.uk))
[33] Hartpury University and Hartpury College, *Hartpury pioneers breeding more 'sustainable' cows as the future for the dairy industry*, from Hartpury University and Hartpury College, April 2023 (Hartpury pioneers breeding more 'sustainable' cows as the future for the dairy industry)

Construction and The Built Environment

In Gloucestershire, the construction sector is a cornerstone of the local economy, accounting for 13.5% of total enterprises.[34] As one of the top three sectors expected to see the greatest growth in jobs up to 2050,[35] construction plays a critical role in Gloucestershire's economic future.

The Local Government Association projects that Gloucestershire will need 12,500 direct jobs in the low-carbon and renewable energy economy by 2030, with this figure rising to 20,000 by 2050.[36] This growth is closely tied to the expanding need for retrofit and climate mitigation initiatives, which will provide significant opportunities for the construction sector.[37] The Construction sector is therefore not only vital for economic development but also essential for driving Gloucestershire's transition toward a sustainable, low-carbon future.



Source: ONS (2024), Environmental goods and services sector (EGSS).

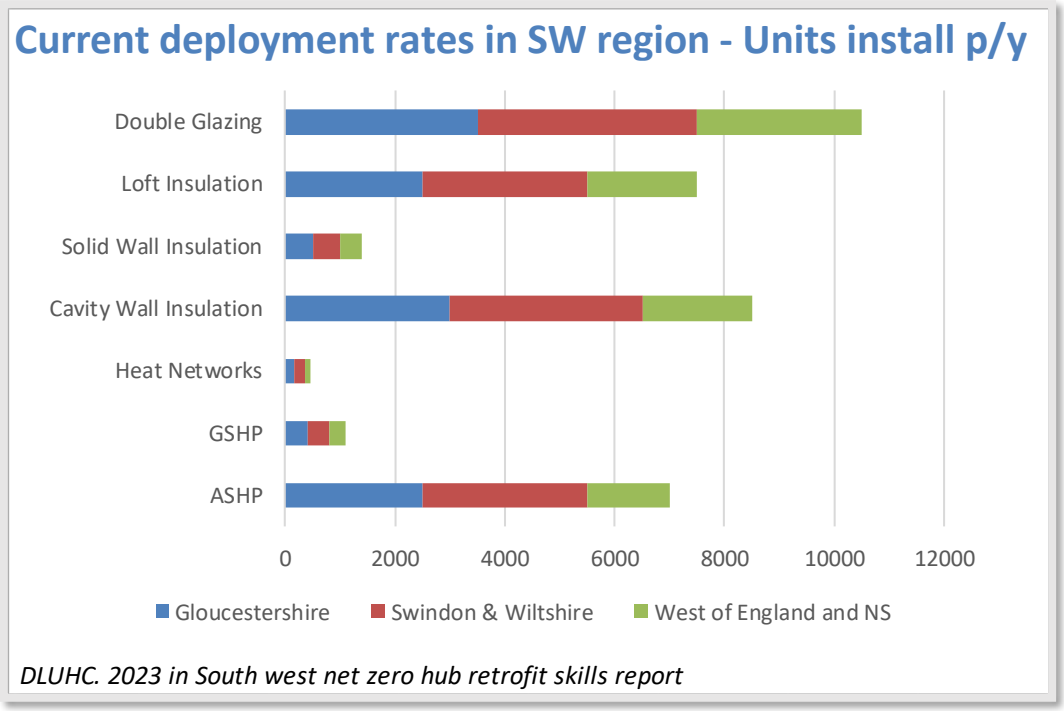
The built environment plays a pivotal role in Gloucestershire's transition to a green economy, reflecting broader national trends. In the UK, operational emissions from the energy required to heat, cool, and power our buildings account for 19% of the carbon footprint. A significant 25% of UK emissions are directly attributable to the built environment, making it the second largest source of climate emissions after surface transport. With 80% of the buildings that will be occupied in 2050

[34] Office for National Statistics, *Activity, size and location* (Activity, size and location - Office for National Statistics (ons.gov.uk))
[35] Oxford Economics in Gloucestershire County Council, *Gloucestershire's Economic Strategy* (April 2024) (Gloucestershire's Economic Strategy 2024-2034)
[36] Local Government Association, *Local green jobs* (Local green jobs - accelerating a sustainable economic recovery | Local Government Association)
[37] Gloucestershire County Council, *Gloucestershire's Economic Strategy* (April 2024) (Gloucestershire's Economic Strategy 2024-2034)

already existing today, decarbonising this existing stock is crucial for meeting climate commitments.[38]

Gloucestershire is uniquely positioned to lead in this transition, with substantial opportunities for green skills and jobs. Retrofitting buildings is a key strategy, driving demand for skilled roles such as heat engineers, solar installers, insulation installers, and retrofit assessors and coordinators. This not only addresses the environmental imperative but also stimulates the local economy by creating new employment opportunities.[39]

Efforts must focus on retrofitting social housing and the public estate, alongside supporting residents to access retrofit information, suppliers, and financing. By enhancing the energy efficiency of buildings, Gloucestershire can significantly contribute to the UK's goal of reducing emissions by 78% by 2035 and achieving net zero by 2050, while fostering a sustainable, green economy.[40]

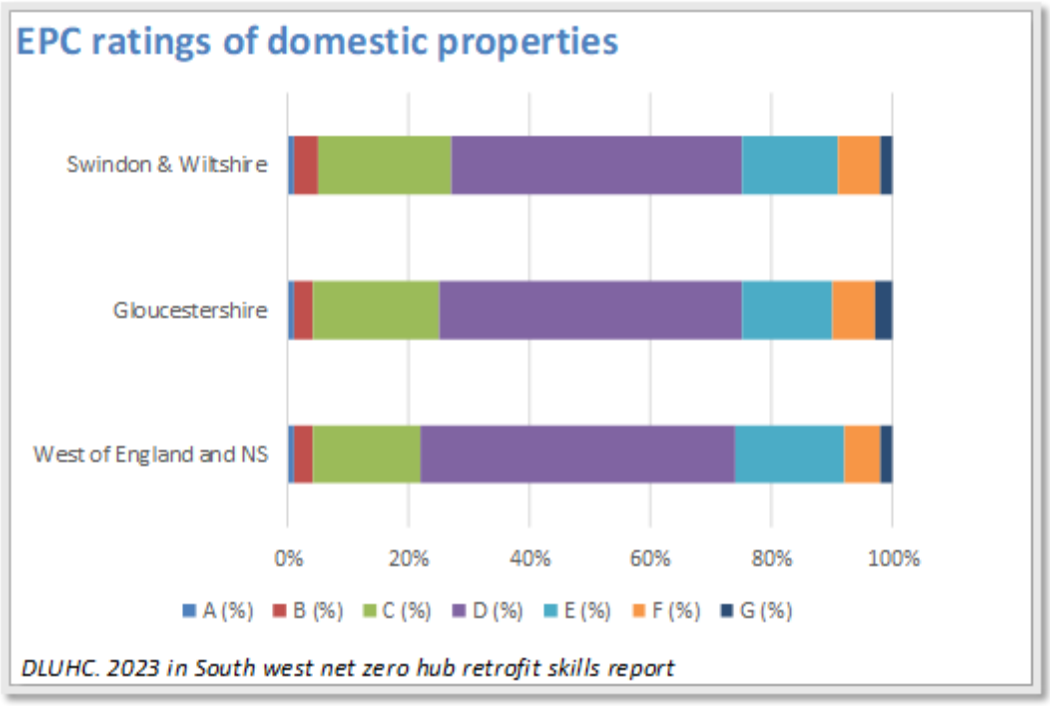


DLUHC. 2023 in South west net zero hub retrofit skills report

According to a Gemserv report for the South West Net Zero hub, the available evidence indicates that the South West is leading the UK in the installation of low-carbon heating systems. Data analysis on accredited low-carbon heating installations reveals that the region has an average deployment rate of 11 installations per 1,000 households, surpassing the UK average of 7.5. Despite these higher rates, even the leading areas in the South West fall significantly short of the levels needed to

[38] UK GBC, *Climate Change Mitigation* (https://ukgbc.org/our-work/climate-change-mitigation/)
[39] Gloucestershire County Council, *Retrofit* (Retrofit | Gloucestershire County Council)
[40] UK GBC, *Climate Change Mitigation* (https://ukgbc.org/our-work/climate-change-mitigation/)

achieve net zero within the required timeframe, a challenge mirrored by the UK's overall deployment rate.[41]



Post-16 Education Pathways- Construction and the Built Environment

In terms of the areas where we can expect jobs to grow in Gloucestershire, we know that significant growth is expected in the low-carbon and renewable energy industries, and we can expect to see a growing need for heat engineers, solar installers, and insulation installers. With these job roles in mind, the below section highlights some of the post-16 education pathways relevant to these job roles, focusing primarily on the technical post-16 green skills provision but also considering the wider provision that is available and relevant to the pathways.

Heat Engineers (Heat Pump Installers/Technicians)

To ensure deployment rates are met for heat engineers, we need to retain those currently working within the industry, upskill those currently installing oil and gas boilers, and attract new entrants to enter the industry. For new entrants to the workforce, as outlined by the National Careers Service, an individual could first take a college course in a related subject like plumbing and heating, or a T Level in Building Services Engineering for Construction.[42] At the time of writing, the Building Services Engineering T-Level is not delivered in Gloucestershire, and the nearest providers offering the T-

[41] Gemserv, South West Net Zero Hub, *South West Net Zero Hub Retrofit Skills Report* (April 2023) (SWNZH-retrofit-skills-report-FINAL-2.pdf (swnetzerohub.org.uk))

[42] National Careers Service, *Heat pump engineer* from the National Careers Service (nationalcareers.service.gov.uk/job-profiles/heat-pump-engineer); Green Careers Hub, *Heat Pump Installer* (Heat Pump Installer - Green Careers Hub)

Level would be Herefordshire, Ludlow and North Shropshire College in Hereford, or Yeovil College in Somerset.[43]

Based on the provision in Gloucestershire, an individual could instead complete a plumbing and heating course. Gloucestershire College offers Level 1 and Level 2 Plumbing, which learners could complete before progressing onto the Level 3 Apprenticeship in Plumbing and Domestic Heating, also offered by Gloucestershire College. Whilst the Apprenticeship at Gloucestershire College is focused on fossil fuels rather than renewable technologies, learners could complete the apprenticeship before progressing onto a separate heat pump course to gain the skills and knowledge needed to become a heat pump engineer.

South Gloucestershire and Stroud (SGS) College also offers several Plumbing and Heating courses (ranging from Level 1 – Level 3). This includes the Level 3 Plumbing and Domestic Heating Technician Apprenticeship, which covers gas, oil, and solid fuel burners as well as environmental technologies like heat pumps, solar thermal systems, biomass boilers and water recycling systems.[44]

To become a heat pump engineer an individual would then need to take an additional course specialising in heat pumps. At the time of writing, heat pump courses are delivered by two providers in Gloucestershire - SGS College and Optimum Energy Solutions. The course details are in the table below:

Provider	Name of Course	Location	Length	Funded or Cost/Fee
SGS College	Level 3: Skills Bootcamp - Air Source Heat Pump	Berkeley Green SGS; Forest of Dean Growth Hub	60 hours	Fully/partially funded
Optimum Energy Solutions	Level 3: Air Source Heat Pump Systems (non-refrigerant Circuits) *	In-person, Gloucestershire	3 days	Cost/fee
Optimum Energy Solutions	Low-Temperature Hot Water Heating Systems*	In-person, Gloucestershire	2 days	Cost/fee
Optimum Energy Solutions	Level 3: Understanding Electrical Obligations for Heat Pump Installation*	In-person, Gloucestershire	1 day	Cost/fee

**Please note the courses delivered by Optimum Energy Solutions are run on demand*

[43] HM Gov, *Find your nearest T Level* (Find a T Level | T Levels)
[44] SGS College, *Construction Courses* Plumbing and Domestic Heating Technician L3 Apprenticeship (sgscol.ac.uk)

Whilst the Building Services Engineering for Construction T-Level is not delivered in Gloucestershire, Cirencester College delivers Building Services Design T-level which is 'designed to provide students with a strong foundation in building services engineering including heating, ventilation, air conditioning, plumbing and electrical systems.'[45] However, as outlined by Cirencester College, this T level is primarily aimed at learners who want to work at a management level within construction, it is not the right type of course for individuals looking to learn a trade such as plumbing.

This report also wanted to highlight that an additional route that is not currently available in Gloucestershire would be the Level 3 Low Carbon Heating Technician Advanced Apprenticeship.[46] An Apprentice on this course would learn to plan, select and size, install, commission, service and maintain (including fault finding, diagnosis and repair) zero carbon central heating and hot water systems, including but not limited to ground source heat pumps and air source heat pumps.[47] The Low Carbon Heating Technician Apprenticeship is not currently delivered within Gloucestershire and the nearest provider is the South West Construction Academy (SWCA) in Bristol or Windsor Forest College Group, Langley College, in Slough.[48] It should be noted that Gemserv's 2023 Retrofit Report highlighted that the take-up of heating apprenticeships is far below what is required to upskill the number of heat engineers required for net zero goals to be achieved, which highlights the need to stimulate demand for these pathways and related courses.[49]

Solar Installer

There are a number of different routes an individual could take to become a solar installer. For example, an individual could first complete a course in Electrical Installation.[50] Within Gloucestershire, SGS College and Gloucestershire College offer several courses in Electrical Installation, ranging from Level 1 to Level 3. A Level 2 Electrical Installation course equips learners with the skills to become a trainee electrician, whilst the Level 3 Installation Electrician/Maintenance Electrician Apprenticeships allow learners to progress into full-time employment.

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[45] Cirencester College, *Construction: Building Services Design T-level* (Construction: Building Services Design T-level – Cirencester College)
[46] National Careers Service, *Heat pump engineer* from the National Careers Service (nationalcareers.service.gov.uk/job-profiles/heat-pump-engineer)
[47] IfATE, *Low Carbon Heating Technician* (Low carbon heating technician / Institute for Apprenticeships and Technical Education)
[48] SWCA, *Low Carbon Heating Technician* (Low Carbon Heating technician L3 Apprenticeship | SWCA (swconstructionacademy.co.uk))
[49] Gemserv, South West Net Zero Hub, *South West Net Zero Hub Retrofit Skills Report* (April 2023) page 51 (SWNZH-retrofit-skills-report-FINAL-2.pdf (swnetzerohub.org.uk))
[50] Go Construct, *Solar Panel Installer* (Solar Panel Installer Job Description & Duties | Go Construct)

Once the relevant electrical qualifications have been obtained, an individual could undertake a specialist solar panel installation course. At the time of writing, there is only one solar panel installation course delivered in Gloucestershire by SGS College, the course details are in the table below:

Provider	Name of Course	Location	Length	Funded or Cost/Fee
SGS College	Level 3: Skills Bootcamp - Solar PV	Berkeley Green SGS; Forest of Dean Growth Hub	60 hours	Fully/partially funded

Currently, this Skills Bootcamp is the only solar training course available within Gloucestershire, however, there are additional short-term solar courses delivered outside the local area. The BPEC Solar Photovoltaic Systems course is offered by Herefordshire, Ludlow & North Shropshire College,[51] and the LCL-accredited Installation and Maintenance of Small Scale Solar Photovoltaic Systems course is delivered by NAPIT Training in Bristol,[52] both of these courses are paid-for training programs that are delivered over three days.

Insulation Installer

Cavity wall insulation is the second most required skill across the South West region.[53]

As outlined by the National Careers Service, individuals looking to become a cavity insulation installer could look at the following Apprenticeships: Level 2 Commercial Thermal Insulation Operative,[54] or the Level 3 Industrial Thermal Insulation Technician.[55] Based on gov.com there are only two providers in the UK offering these Apprenticeships – both outside of the South West

[51] Herefordshire, Ludlow & North Shropshire College, *Solar Photovoltaic Systems (MCS Accredited) (*Solar Photovoltaic Systems (MCS Accredited) - HLNSC)

[52] NAPIT Training, *LCL Awards Level 3 Award In the Installation and Maintenance of Small Scale Solar Photovoltaic Systems (LCL-SPV-3)* (Solar Photovoltaic (PV) Course - NAPIT Training)

[53] Gemserv, South West Net Zero Hub, *South West Net Zero Hub Retrofit Skills Report* (April 2023) page 47 (SWNZH-retrofit-skills-report-FINAL-2.pdf (swnetzerohub.org.uk))

[54] IfATE, *Commercial Thermal Insulation Operative* (Commercial thermal insulation operative / Institute for Apprenticeships and Technical Education)

[55] IfATE, Industrial Thermal Insulation Technician Industrial thermal insulation technician / Institute for Apprenticeships and Technical Education

region.[56] Another pathway for individuals would be the Level 2 NVQ in Insulation and Building Treatments,[57] however, this NVQ is not delivered within the South West region.[58]

Nevertheless, there are insulation courses offered in the wider South West region by the Green Construction Advisory Panel, in collaboration with industry bodies, INCA, SWIGA, and the NIA. The courses currently being delivered are in the following areas: draft proofing, floor insulation, loft insulation, external wall insulation, and internal wall insulation.[59] The courses are delivered as Level 2 qualifications, all of which are endorsed by the NOCN, and vary between one and three days in duration. Individuals within Gloucestershire could therefore upskill via one of the above-mentioned courses. To register for one of the courses, individuals must be employed or self-employed and working within a trade installing the type of insulation the course is focused on. Alternatively, individuals in Gloucestershire could consider a construction or building-related course and then apply to an employer directly to gain work experience as an insulation installer on the job.

The research also wants to highlight the AccXel Construction Skills Accelerator Centre in Gloucestershire. In collaboration with education partners, qualifications at AccXel range from Level 2 NVQs, Level 3 Apprenticeships, Postgraduate Degrees, as well as personal development courses. AccXel aims to develop the next generation of construction professionals through its training program while upskilling the current workforce. To see the list of Construction courses delivered by AccXel, please visit their website.[60]

[56] Buildskill Colchester/Buildskill Doncaster; or Thermal Insulation Contractors Association Darlington

[57] City & Guilds, *Insulation and Building Treatments* Insulation and Building Treatments qualifications and training courses | City & Guilds (cityandguilds.com)

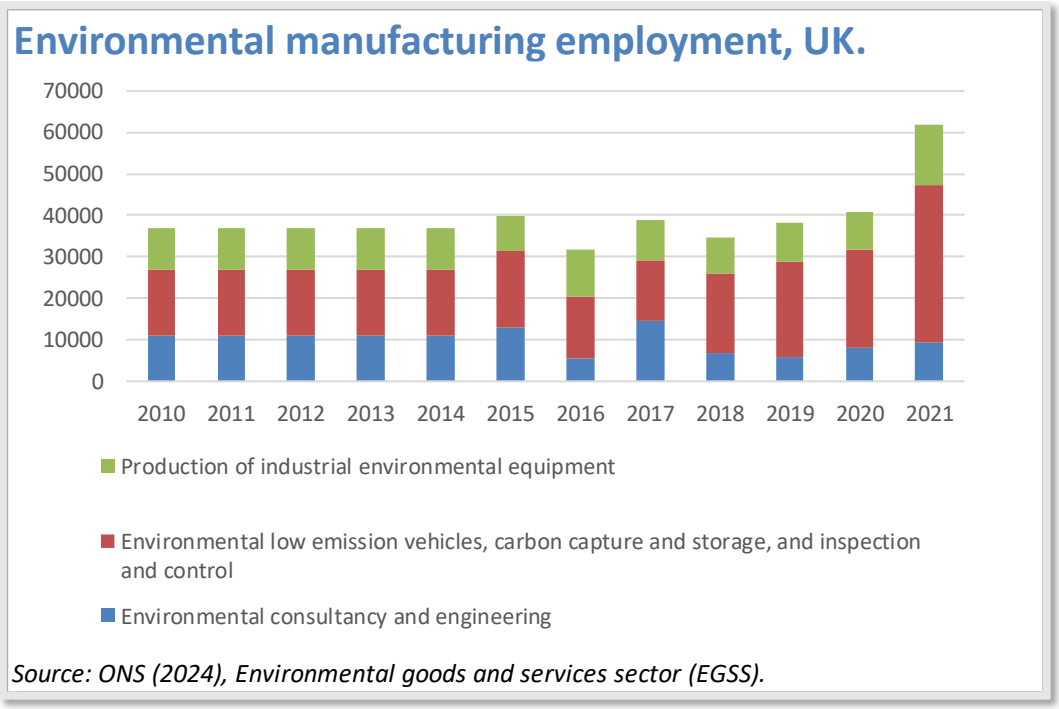
[58] For providers delivering this NVQ nationally, see the approved providers on the City and Guilds website: Insulation and Building Treatments qualifications and training courses | City & Guilds (cityandguilds.com)

[59] Green Construction Advisory Panel, *Courses: Insulation* (Insulation – Green Construction Advisory Panel (thegcap.co.uk))

[60] For more information and to see the list of courses AccXel currently delivers, see AccXel's main website: Home - AccXel

Advanced Manufacturing and Engineering

The manufacturing sector has a great history of being flexible and innovative to overcome challenges. The challenges of the net zero transition and the impacts of Covid-19 have increased the need for this sector's sustainability and resilience so that the country and the sector can prosper in a low-carbon economy. The manufacturing industry will play a major role in six decarbonisation areas that will be key to enabling the UK to achieve its 2050 net zero target. The six decarbonisation areas are resource efficiency, transport, low-carbon energy, built environment, greening supply chains and product standards.[61]

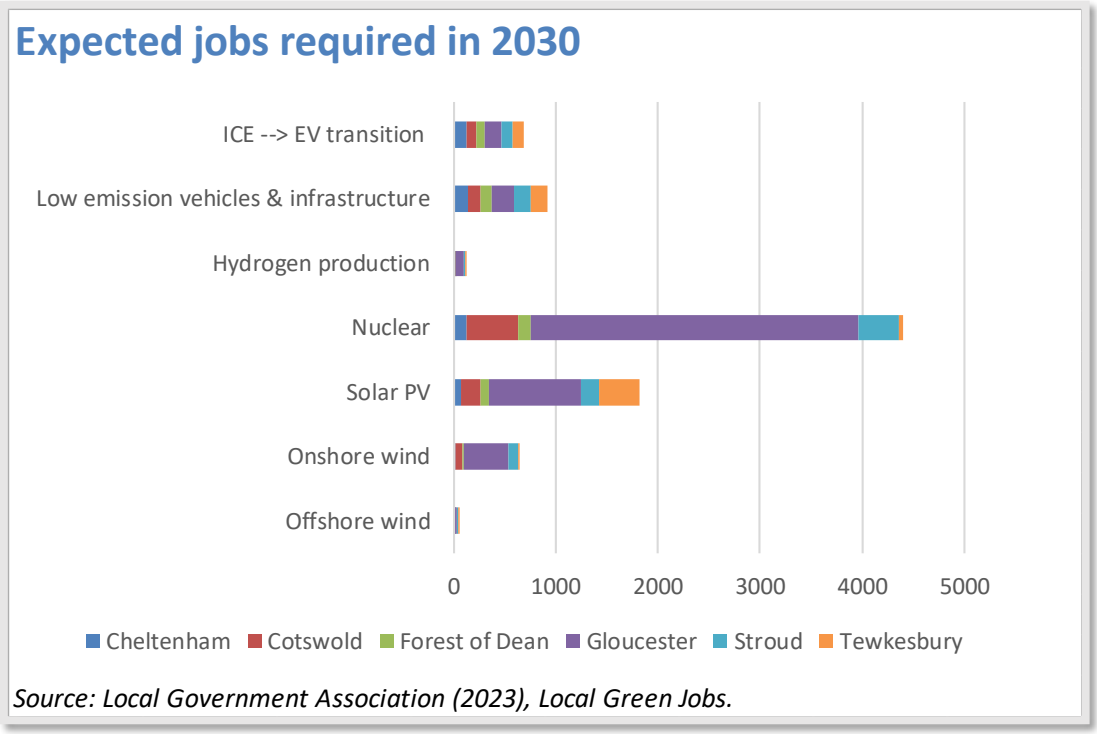


Source: ONS (2024), Environmental goods and services sector (EGSS).

Advanced engineering and manufacturing contribute 14.9% of Gloucestershire's total GVA.[62] The local area has a wide cluster of engineering and manufacturing businesses, developing essential component parts for a diverse range of products and purposes. The aerospace industry is part of a sector with excellent growth prospects, with the invention of hydrogen electric engines for zero-emission flight. Employment in manufacturing in the local area is significantly higher than the national and regional averages, a trend matched by the GVA output of the sector.[63]

[61] MAKE UK *Manufacturing Sector Net Zero Roadmap* (2022) (Net Zero Report 2022 MAY23.pdf)
[62] Regional gross value added (balanced) by industry, ONS Gloucestershire County Council, *Gloucestershire's Economic Strategy* (April 2024) (Gloucestershire's Economic Strategy 2024-2034)
[63] Business Register and Employment Survey, ONS in Gloucestershire County Council, *Gloucestershire's Economic Strategy* (April 2024) Gloucestershire's Economic Strategy 2024-2034

Gloucestershire's economic strategy places great emphasis on attracting investment in green energy generation, including alternative and renewable energy as well as small modular nuclear reactors. It is believed that through generating greater self-sufficiency of green energy, the local area will be better able to support its key industries to meet their energy needs, whilst supporting the transition to a carbon-neutral economy. Attracting investment in this sector could also generate high-value jobs locally and bring significant opportunities to the county's residents.[64]



Source: Local Government Association (2023), Local Green Jobs.

Post-16 Education Pathways- Advanced Manufacturing and Engineering

Electric and Hybrid Vehicles

There are various different green roles within the Electric and Hybrid Vehicle Industry, including but not limited to Electric Vehicle Technician/Mechanic, Electric Vehicle Charging Point Installer, and Battery Technician/Engineer.[65] Depending on the job role and required qualifications, Gloucestershire College offers several Automotive Diplomas and Apprenticeships ranging from Level 1 to Level 3.[66] If an individual wants to design and install electric vehicle charging points, they

[64] Gloucestershire County Council, *Gloucestershire's Economic Strategy* (April 2024) (Gloucestershire's Economic Strategy 2024-2034)
[65] South London Careers Hub, *EV Installer* (Green Job Profiles | EV Installer (careershub-south.london))
[66] For the full list of courses see here: Gloucestershire College, *Motor Vehicle* (Motor Vehicle | Gloucestershire College (gloscol.ac.uk))

could also look at one of the many Electrical Installation courses delivered by SGS College and Gloucestershire College.[67]

Gloucestershire College has recently invested half a million pounds to enhance its Electric and Hybrid Vehicle Workshops and learning spaces. The investment ensures that learners have everything they need to develop a wide range of skills, from maintenance and diagnostics to testing and repairs. The workshops host a range of electric and hybrid electric vehicles, on-site electric vehicle charging points, and electric and hybrid electric vehicle-compliant tooling and diagnostic equipment from manufacturers including Bosch KTS, Snap-On, Autel, and LAUNCH.[68]

Gloucestershire College also delivers one of the only courses specialising in Electric Vehicles. The IMI Level 3 Award in Electric/Hybrid Vehicle System Repair and Replacement provides learners with the knowledge and skills required to work safely on electric and hybrid vehicles. It allows learners to develop the skills needed to carry out diagnostic, testing and repairs on electric and hybrid vehicles.[69]

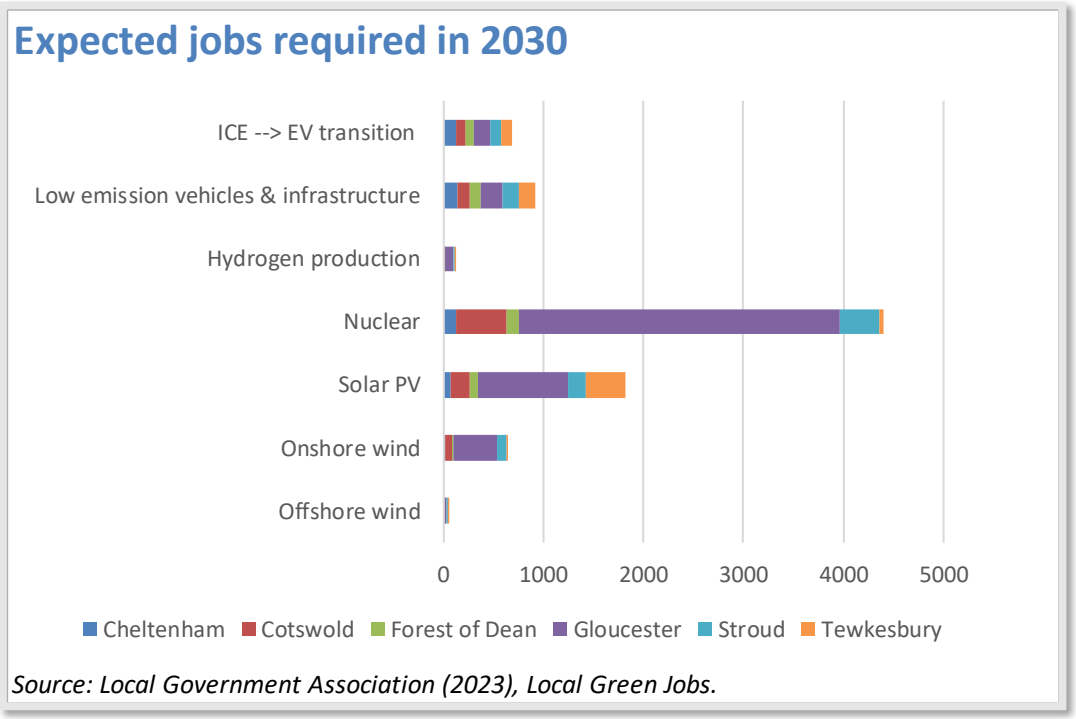
Provider	Name of Course	Location	Level	Length	Funded or Cost/Fee
Gloucestershire College	Electric/Hybrid Vehicle System Repair and Replacement Qualification	Gloucestershire College, Gloucester	Level 3	60 guided learning hours, delivered flexibly and part-time	Fully/partially funded

International Automotive provider Calex also offers the Electric Vehicle Maintenance & Repair Apprenticeship which is geared towards training the next generation of Electric Vehicle Service Technicians.[70] Upon completing the Apprenticeship, learners would finish with the Level 3 Motor Vehicle Service and Maintenance Technician - Light Vehicle Apprenticeship in Gloucestershire (also offered by Gloucestershire College).[71] However, whilst apprentices on the Calex course would work in Gloucestershire, the block training would take place in Coventry.

[67] South London Careers Hub, *EV Installer* (Green Job Profiles | EV Installer (careershub-south.london))
[68] Gloucestershire College, Motor Vehicle Workshops (Motor Vehicle Workshops | Gloucestershire College (gloscol.ac.uk))
[69] Gloucestershire College, *Skills Bootcamps* (Skills Bootcamps | Gloucestershire College (gloscol.ac.uk))
[70] Gov.UK *Electric Vehicle Maintenance & Repair Apprenticeship - Baylis Vauxhall Gloucester* (Electric Vehicle Maintenance & Repair Apprenticeship - Baylis Vauxhall Gloucester – Find an apprenticeship – GOV.UK (findapprenticeship.service.gov.uk))
[71] Gloucestershire College, *Motor Vehicle Service and Maintenance Technician (Light vehicle) Apprenticeship* (Course Details | Gloucestershire College (gloscol.ac.uk))

Nuclear

As shown in the graph below, a significant number of jobs are expected in Gloucestershire's nuclear industry by 2030. Currently, there are no specific nuclear courses in the county, but discussions are underway for Gloucestershire to site some of the first new nuclear Small Modular Reactors (SMRs). SGS College, and its Berkeley Green Campus, are at the centre of the potential development and could become the primary provider of the workforce needed to build and operate these SMRs.[72]



Source: Local Government Association (2023), Local Green Jobs.

If the plans proceed, the site will not only develop the next generation of nuclear reactors, but it will also provide a centre for training staff who will work on the building and operation of the technology, ultimately preparing the next generation of nuclear technicians to meet the growing demand in the industry. Outside of Gloucestershire, the National College for Nuclear at Bridgewater & Taunton College delivers several courses in nuclear, from entry-level courses for school leavers to Apprenticeships, professional development courses, and degree-level qualifications.[73]

[72] Ian Mean, *Berkeley nuclear talks progressing* (Punchline Gloucester, 11th June 2024) (Berkeley nuclear talks progressing Rolls Royce Small Modular Reactors (punchline-gloucester.com))

[73] For more information, see: Bridgewater & Taunton College, *Nuclear Courses* (Nuclear | Bridgwater & Taunton College (btc.ac.uk))

In terms of the wider engineering provision in Gloucestershire, there are a number of engineering courses in the local area that support green pathways. Cirencester College delivers the T Level in Design and Development for Engineering and Manufacturing, which offers specialisms in Mechanical Engineering, Electrical/Electronic Engineering, and Manufacturing Engineering. The T-Level also includes a focus on sustainable green engineering.[74] Gloucestershire College delivers Level 2 Mechanical Engineering through to Level 6 Embedded Electronic Systems Design and Development Engineer Degree Apprenticeship, alongside Engineering courses at Level 3 and Level 4.[75]

In addition, SGS College offers the BTEC Extended Diploma in Engineering, the BTEC Extended Certificate in Engineering, and the National Diploma in Engineering at the Berkeley Green UTC, the latter two courses allow students to study Engineering alongside further STEM courses.[76] Lastly, Hartpury College delivers the Land-Based Engineering T-Level, discussed previously in the report under 'Post-16 Education Pathways – Agriculture, Agri-tech and Land Management' (page 10).

[74] Cirencester College, *Engineering T-Level* (Engineering T-levels – Cirencester College)
[75] For the full list of Engineering courses delivered by Gloucestershire College please see their website: *Gloucestershire College, Engineering Courses* (Engineering | Gloucestershire College (gloscol.ac.uk))
[76] For more information on the courses at SGS Academy Trust, *Engineering* (Engineering | SGS Berkeley Green UTC (sgscol.ac.uk))

Highlights from Green Skills Engagements

The following section summarises key highlights from a Sustainability Training Survey we shared with businesses in our three LSIP local areas (Gloucestershire, the West of England and North Somerset, and Swindon and Wiltshire). Although the survey sample size was smaller than anticipated and may not fully represent regional business needs, further research is planned to better identify the training needs of businesses and potential ways we can stimulate demand. Where useful for wider context, the below analysis also includes insights from businesses we engaged with during our wider green skills and LSIP research.

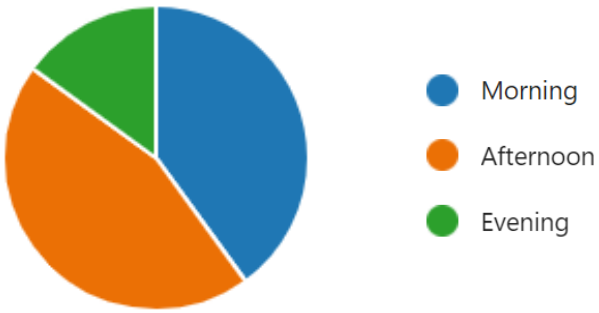
The majority of businesses that responded to the survey and had undertaken sustainability-related training in the past five years chose accredited training programs, followed by industry-certified training and then non-accredited training. Most respondents participated in short-term training, with the majority of courses under a week, followed by those lasting 1-4 weeks and 1-3 months, both receiving equal responses.

Very few respondents engaged in training for more than 6 months, indicating a preference for shorter courses when upskilling in sustainability-related areas. This is also reflected in our wider LSIP research which found that businesses overwhelmingly prefer training that is flexible, rapid, and modular where feasible.

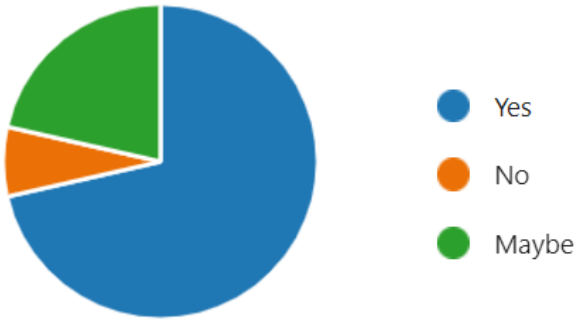
Preferred mode of delivery:

1. In-person
2. Blended learning (online and in-person)
3. Online
4. Apprenticeships; or External Training Providers (same number of votes)

Preferred time for training sessions:



We also asked businesses if they are considering offering additional green services or products:



Skills Shortages and Training Gaps

One business representative expressed: “we have a massive shortage of skills in the renewable sector - colleges are still training in boilers and not heat pumps. There are few skilled electricians in the renewable industry and our costs for training are spiralling with courses too few and far between.”

Stimulating Demand

While training providers are eager to engage with renewable energy and environmental technology, they require assurance of sufficient demand. Unfortunately, demand for technical green skills courses, such as those on heat pumps, has been lower than anticipated in the local area. Our wider LSIP research into green skills provision has indicated that the mode of delivery significantly impacts demand, with shorter courses (typically courses under a week) often attracting more interest. Demand for renewable energy courses is also heavily impacted by government regulations and grants, which play a crucial role in influencing demand for training.

One training provider, which offers renewable technology courses throughout the United Kingdom, has only delivered one course in Gloucestershire due to insufficient demand. The course saw nearly 1,000 learners participate in the training when a grant was available. However, after the grant expired, participation fell to approximately 20 learners, highlighting the importance of financial incentives to drive business demand for training.

It is essential to highlight the value added to a business by undertaking the training. One of the businesses we engaged with highlighted how they had felt disincentivised to undertake training if they were not learning practical skills that could be immediately applied. Business owners also need to be convinced that they are proposing the right training for their staff that aligns with market demand and industry requirements. Many businesses are currently subcontracting specialists to fill skill gaps, such as in retrofit projects, rather than upskilling their own staff. This raises the question

of how to help businesses see the long-term benefits of upskilling in sustainability-related areas rather than focusing on short-term solutions.

Recommendations

To conclude, this research has identified the following recommendations to enhance the development of green skills in Gloucestershire.

Improved Clarity and Monitoring

There is a need for greater clarity in defining green skills and the relevant green job pathways, at a regional and national level. In addition to improving the understanding of the green skills essential for a sustainable future - and raising awareness about how individuals can access and transition into sustainable job roles - this clarity will also enable better monitoring of green skills development and the provision of related training in the future.

A potential solution could involve enhancing tools such as the Lightcast Career Coach to better identify green job roles and the qualifications associated with them. This would provide clearer guidance on what constitutes green skills and jobs while supporting learners looking to enter the green job market by adding further clarity on the various green pathways.

The research also highlights the need to continue attracting new entrants into the industries that will be core for the green transition, such as the industries discussed in this report. By encouraging new entrants to the workforce and raising awareness of the highly skilled roles within these industries, we can help stimulate demand for green skills training and ensure that we are developing the workforce needed for the green transition. Early years outreach within schools is one of the crucial ways we can ensure we are attracting new entrants to the industries.

In addition, the report emphasises the importance of ongoing monitoring and evaluation of green skills provision in the local area, as well as the wider support available to businesses. The report recommends further research into areas of need, based on the current gaps in green skills provision and forecasted demand for specific green roles.

National Resources Mapping Green Skills Courses

Various resources map green skills courses at a national level (including the National Careers Hub,[77] Gov.UK: Skills Bootcamp Training Providers),[78] however, the research was unable to find a consolidated and up-to-date repository for national green skills provision. Creating a comprehensive resource would enable easier access and monitoring of green training opportunities for learners and employers, streamlining the process of finding appropriate courses as well as enabling improved

[77] National Careers Service Careers advice - job profiles, information and resources | National Careers Service
[78] Gov.UK Transparency data Skills Bootcamps training providers Skills Bootcamps training providers - GOV.UK (www.gov.uk)

monitoring of the current green skills provision and areas of need. The research also recommends that the National Careers Service website would be improved if there was an option to filter by ‘green skills’ courses, alongside the option to view search results on a map, and the ability to export results to Excel. These improvements would allow for easier analysis and filtering.

Consistency in Course Titles

Lastly, the research highlighted how some qualifications (for example, the Building Services Engineering for Construction T-Level) were listed under different names depending on the provider's website, which can cause confusion when searching for relevant qualifications. Clearer and more consistent labelling of courses would help alleviate this issue and make it easier for individuals to navigate the pathways available to them.

Annex A: Gloucestershire Post-16 Technical Green Skills Provision

The below table provides the list of post-16 Technical Green Skills courses delivered in Gloucestershire, believed to be accurate at the time of research (June 2024 - August 2024).

Provider	Name of Course	Location	Level	Length	Funded or Cost/Fee
Cirencester College	Construction: Building Services Design T-level	Cirencester	Level 3	2 years	Fully/partially funded
Cirencester College	Construction: Design, Surveying and Planning T-level	Cirencester	Level 3	2 years	Fully/partially funded
Cirencester College	Engineering: Green Futures (Maintenance, Installation and Repair)	Cirencester	Level 3	2 years	Fully/partially funded
South Gloucestershire and Stroud (SGS) College	Green Skills Bootcamps (Air Source Heat Pump or Solar PV)	Berkeley Green SGS; Forest of Dean Growth Hub	Level 3	60 guided learning hours, delivered flexibly and part-time	Fully/partially funded
Gloucestershire College	Electric/Hybrid Vehicle System Repair and Replacement Qualification	Gloucestershire College, Gloucester	Level 3	60 guided learning hours, delivered flexibly and part-time	Fully/partially funded
Optimum Energy Solutions	Air Source Heat Pump Systems (non-refrigerant Circuits)	In-person, Gloucestershire	Level 3	3 days	£695 + certification fee & VAT (grant funding may be available)
Optimum Energy Solutions	Low Temperature Hot Water Heating Systems	In-person, Gloucestershire		2 days	£425 + certification fee and VAT
Optimum Energy Solutions	Understanding Electrical Obligations for Heat Pump Installation	In-person, Gloucestershire	Level 3	1 day	£417.60 + VAT
Optimum Energy Solutions	Surveying and Calculation of Building Heat Loss	In-person, Gloucestershire	Level 3	3 days	£1,617.60

Annex B: Enrolments at Further Education Colleges in Gloucestershire

The below tables provide further insight into the total number of enrolments at further education colleges within Gloucestershire from 2020-2024. The data is based on the Department for Education statistics and available data from Further Education providers in Gloucestershire.[79] Volumes are rounded to the nearest ten and where there were fewer than five enrolments, this was listed as low uptake and has therefore not been counted in the tables below. Figures for 2023/24 are provisional and cover the first three quarters (Aug 2023 to Apr 2024). All other years are final, full-year figures.

Agriculture, Horticulture and Animal Care

	2020/21	2021/22	2022/23	2023/24
Level 2	90	60	50	50
Level 3	60	30	30	30
Total	140	90	80	80

Data is based on Cirencester College, Gloucestershire College, Hartpury College of Further Education, and South Gloucestershire and Stroud College.

Construction, Planning and the Built Environment

	2020/21	2021/22	2022/23	2023/24
Level 1	30	110	40	40
Level 2	140	100	100	60
Level 3	50	30	10	30
Total	220	240	150	130

Data is based on South Gloucestershire and Stroud College, and Gloucestershire College.

[79] Gov.UK, 'Explore our statistics and data' (Create your own tables - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk))

Engineering and Manufacturing Technologies

	2020/21	2021/22	2022/23	2023/24
Level 1	10	*No data/low*	*No data/low*	*No data/low*
Level 2	1000	600	440	330
Level 3	190	240	160	140
Level 4	20	10	*No data/low*	*No data/low*
Total	1220	850	600	470

Data is based on Cirencester College, Gloucestershire College and South Gloucestershire and Stroud College.

Annex C: Gloucestershire Training Provider Details

Provider Name (A-Z)	Website	Contact details
AccXel	Home - AccXel	Contact Us - AccXel
Cirencester College	Cirencester College – Sixth Form College	Contact us – Cirencester College
Gloucestershire College	Further Education, Higher Education, Apprenticeships | Gloucestershire College (gloscol.ac.uk)	Contact us | Gloucestershire College (gloscol.ac.uk)
Hartpury University & Hartpury College	Hartpury University and Hartpury College	Get in touch | Hartpury University & Hartpury College
Optimum Energy Solutions	Heat Pumps | United Kingdom | Optimum Energy Solutions, Climate change	Ground and Air Source Heat Pump contact (optimum.uk.com)
Royal Agricultural University	Royal Agricultural University: Growing Futures since 1845 (rau.ac.uk)	Contact us | Royal Agricultural University (rau.ac.uk)
South Gloucestershire and Stroud (SGS) College	South Gloucestershire and Stroud College | Welcome (sgscol.ac.uk)	Contacts - SGS College

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15. Prospect, *Land-based engineer* (Land-based engineer job profile | Prospects.ac.uk);
16. Hartpury College, *Study at Hartpury College* (Study | Hartpury College)
17. Hartpury University, *Study at Hartpury University* (Study | Hartpury University)
18. Royal Agricultural University, *Environmental Degrees* from the Royal Agricultural University (Environment degrees | Royal Agricultural University (rau.ac.uk))
19. Royal Agricultural University, *BSc (Hons) Agriculture* (BSc (Hons) Agriculture | Royal Agricultural University (rau.ac.uk)

20. Royal Agricultural University, *MSc Sustainable Agriculture and Food Security* (MSc Sustainable Agriculture and Food Security | Royal Agricultural University (rau.ac.uk))
21. Apricot Centre, *Skills Bootcamp in Regenerative Land-Based Systems* (Level 2 Skills Bootcamp: Regenerative Land-Based Systems | The Apricot Centre - cultivating sustainability)
22. Suffolk New College, *Skills Bootcamps* (Skills Bootcamps - New Anglia)
23. Royal Agricultural University, *Professional Training* (Professional training | Royal Agricultural University (rau.ac.uk))
24. Royal Agricultural University, *Insight to Agriculture (Farming for Non-Farmers) Course* (Insight to Agriculture (Farming for Non-Farmers) Course | Royal Agricultural University (rau.ac.uk))
25. Royal Agricultural University *Sustainability, regeneration and biodiversity in agriculture* (Sustainability, regeneration and biodiversity in agriculture | Royal Agricultural University (rau.ac.uk)
26. Hartpury University and Hartpury College, *Hartpury pioneers breeding more 'sustainable' cows as the future for the dairy industry* (April 2023) (Hartpury pioneers breeding more 'sustainable' cows as the future for the dairy industry)
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32. National Careers Service, *Heat pump engineer* from the National Careers Service (nationalcareers.service.gov.uk/job-profiles/heat-pump-engineer)
33. Green Careers Hub, *Heat Pump Installer* (Heat Pump Installer - Green Careers Hub)
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35. SGS College, *Construction Courses* Plumbing and Domestic Heating Technician L3 Apprenticeship (sgscol.ac.uk)
36. Cirencester College, *Construction: Building Services Design T-level* (Construction: Building Services Design T-level – Cirencester College)
37. IfATE, *Low Carbon Heating Technician* (Low carbon heating technician / Institute for Apprenticeships and Technical Education)

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39. Go Construct, *Solar Panel Installer* (Solar Panel Installer Job Description & Duties | Go Construct)
40. Herefordshire, Ludlow & North Shropshire College, *Solar Photovoltaic Systems (MCS Accredited) (*Solar Photovoltaic Systems (MCS Accredited) - HLNSC)
41. NAPIT Training, *LCL Awards Level 3 Award In the Installation and Maintenance of Small Scale Solar Photovoltaic Systems (LCL-SPV-3)* (Solar Photovoltaic (PV) Course - NAPIT Training)
42. IfATE, *Commercial Thermal Insulation Operative* (Commercial thermal insulation operative / Institute for Apprenticeships and Technical Education)
43. IfATE, *Industrial Thermal Insulation Technician* Industrial thermal insulation technician / Institute for Apprenticeships and Technical Education
44. City & Guilds, *Insulation and Building Treatments* Insulation and Building Treatments qualifications and training courses | City & Guilds (cityandguilds.com)
45. Green Construction Advisory Panel, *Courses: Insulation* (Insulation – Green Construction Advisory Panel (thegcap.co.uk))
46. AccXel, *Homepage* (Home - AccXel)
47. MAKE UK *Manufacturing Sector Net Zero Roadmap* (2022) (Net Zero Report 2022 MAY23.pdf)
48. South London Careers Hub, *EV Installer* (Green Job Profiles | EV Installer (careershub-south.london))
49. Gloucestershire College, *Motor Vehicle* (Motor Vehicle | Gloucestershire College (gloscol.ac.uk))
50. Gloucestershire College, *Skills Bootcamps* Skills Bootcamps | Gloucestershire College (gloscol.ac.uk)
51. Gloucestershire College, *Motor Vehicle Workshops* (Motor Vehicle Workshops | Gloucestershire College (gloscol.ac.uk))
52. Gloucestershire College, *Skills Bootcamps* (Skills Bootcamps | Gloucestershire College (gloscol.ac.uk))
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55. Gloucestershire College, *Motor Vehicle Service and Maintenance Technician (Light vehicle) Apprenticeship* (Course Details | Gloucestershire College (gloscol.ac.uk))

56. Ian Mean, *Berkeley nuclear talks progressing* (Punchline Gloucester, 11th June 2024) (Berkeley nuclear talks progressing Rolls Royce Small Modular Reactors (punchline-gloucester.com))
57. Bridgewater & Taunton College, *Nuclear Courses* (Nuclear | Bridgwater & Taunton College (btc.ac.uk))
58. Cirencester College, *Engineering T-Level* (Engineering T-levels – Cirencester College)
59. For the full list of Engineering courses delivered by Gloucestershire College please see their website: *Gloucestershire College, Engineering Courses* (Engineering | Gloucestershire College (gloscol.ac.uk))
60. For more information on the courses at SGS Academy Trust, *Engineering* (Engineering | SGS Berkeley Green UTC (sgscol.ac.uk))

The majority of this research was completed June 2024-August 2024. If you would like to discuss the Gloucestershire LSIP Green Skills Provision Report or our findings in more detail, please contact Chloe Barratt, Project Coordinator and Green Skills Lead on the LSIP Chloe.barratt@businesswest.co.uk.