Green skills demand in Surrey and North/Mid Hampshire

A report for Surrey County Council and Surrey Chambers of Commerce

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About this report

Navigating the economic and labour market changes required to achieve net zero will be central to the lives and livelihoods of people and communities right across the UK. With the right data and insight, local political and policy organisations have the opportunity to grow the skills and labour market that can deliver green and inclusive growth. This work was commissioned in order to further understand current green jobs and occupations within Surrey and North/mid Hampshire, including an analysis of occupations, skills, employer demand, and qualifications. These are considered within the present day, as well as projected out to the future.

About WPI Economics

WPI Economics is an economics, data insight and public policy consultancy that specialises in conducting research, analysis and modelling that makes an impact on important social and economic policy debates, such as delivering net zero and inclusive growth. We are driven by a desire to make a difference, both through the work we undertake and by taking our responsibilities as a business seriously.

About Lightcast

Lightcast (formerly Emsi Burning Glass) brings economic geography and frontier data science together to better understand local economies and what drives them. We link official statistics, proprietary data and robust economic modelling to provide an unparalleled, multi-dimensional view on labour markets and business activity down to the local authority level.

Lightcast provides three main sources of data with which to understand local labour markets:

- Structural labour market intelligence: derived from official sources produced by government, but enhanced with robust modelling to minimise the 'suppressions' which leave local details blank and projections to extrapolate trends into the future

- Job posting analytics: gathered by harvesting and deduplicating hundreds of thousands of online job postings every month and categorising them by place, job title, company and skills to capture intelligence on the talent employees are seeking out.

- Professional profiles: gathered through 'opt in' arrangements in the recruitment processing sector, and capturing job titles, companies, locations and skills of workers in the labour market – with around 17 million profiles in the UK.

Lightcast uses economic consulting, data analytics, and a variety of software tools to provide information to support successful decision-making. Analyst, our flagship labour market insight tool, gives users direct access to our wealth of data. The majority of MCAs / LEPs are using our Analyst tool to support and inform their work. We are committed to continuously improving our products and services to serve the organisations that we work with and, even now, are working to expand our datasets to better connect students, education institutions, economic developers and employers.

Headquartered in Boston, Massachusetts, and Moscow, Idaho, Lightcast is active in more than 30 countries and has offices in the United Kingdom, Italy, New Zealand and India.

Disclaimer and legal

Executive summary

This report draws on a range of insights and analysis from WPI Economics, Lightcast, and the Data City to set out the current state of play for green jobs and the green economy in Surrey and North/Mid Hampshire (collectively, the LSIP area), its strong potential for growth, as well as how this interlinks with skills provision.

Our main analytical approach, drawing on Lightcast green jobs postings, finds that there are around:

- **35,000 green jobs in the LSIP area** currently, or **3.8%** of total employees, and

This compares to a national average of 3% of total employees in green roles.[1] This means that **green employment is 23% higher in the LSIP area** than the UK as a whole.[1]

We can see below how these vary between the different local authorities within the LSIP area.

Figure 1: Percentage of jobs that are green, in Surrey and North/Mid Hampshire by Local Authority
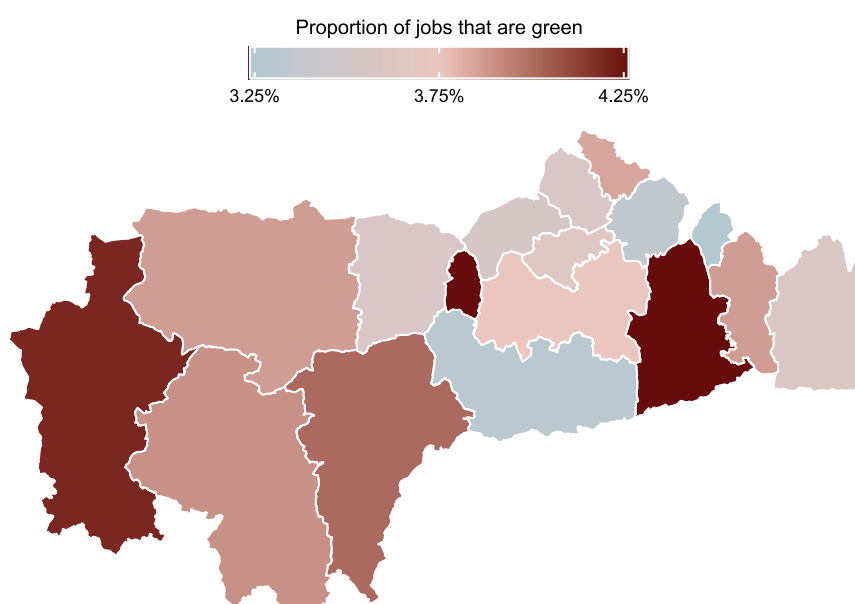
Green economy analysis

A whole range of sectors are prevalent among green economy companies in the LSIP area, drawing on the Data City analysis. In particular, there are strengths in employment within (a) **homes and buildings** and (b) **climate adaptation** policy areas, relative to the rest of the South East.

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[1] Secondary green jobs measures for the report there could be as many as 59,000 jobs in the LSIP area, however this is based on an experimental O*NET approach.

Table 1: Green economy analysis

Policy area	LSIP area	
	Number of employees	Proportion of total green economy
Reduce, Reuse, Recycle and Repair	10,919	34%
Power	9,070	28%
Homes and Buildings	3,106	10%
Climate Adaptation	3,194	10%
Green Financial, Professional and Research Services	2,685	8%
Industrial Decarbonisation	1,955	6%
Low Carbon Transport	629	2%
Natural Environment	514	2%
Total	**32,072**	

Source: The Data City

Green jobs in Surrey and Hampshire in the future

Based on a net zero policy trajectory, we project strong growth in the green economy in the LSIP area in the coming decades. The overall rate of growth of the LSIP area's green economy is forecast to be highest in the eight years leading up to 2030 at **6% per year under the central scenario.** This is a remarkable growth rate, which would **outstrip the growth of the digital sector between 2009-2019** (around 4%).[2]

Figure 2: Projected number of green jobs in the LSIP area, 2022-2050
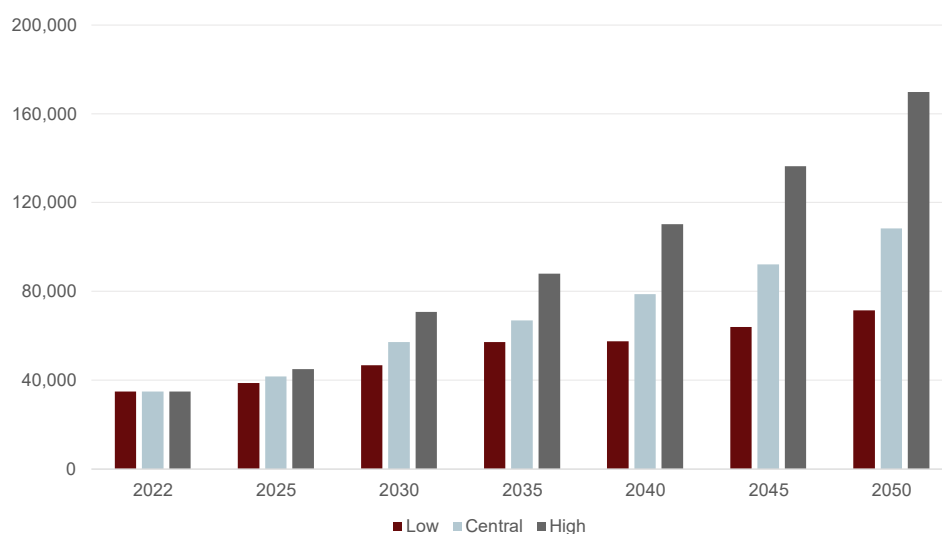
Source: WPI Economics and Lightcast

Skills development

A wide range of subjects are prevalent in the FE completions related to our top green occupations within the LSIP area, including 'white collar' subjects such as Business Management and Accounting and Finance. In addition, there are a relatively high number of achievements related to construction, social care and engineering. Apprenticeship completions related to our top green occupations are dominated by subjects related to skilled craft occupations, such as electricians and carpenters.

The evolution of a highly advanced green economy in the LSIP area will require education and skills providers to increase the number and uptake of specialist green courses, and pivot towards the skills and knowledge required by a dynamic green economy. This includes the mix of occupational specialisms and skills required in a green economy across the board, which would include more "white collar" roles as well as those traditionally thought of as 'green'. Of particular salience is the need for a much higher uptake of engineering courses and Apprenticeships in the LSIP area - five of the top twenty green occupations in 2050 are projected to be engineering roles, however, in 2021 there was a relatively low number of FE and Apprenticeship achievements in engineering and other related fields. For example, there were 680 FE completions within engineering in the LSIP area in 2021, compared to 1,510 Engineering professionals n.e.c that will be required in 2030 under the central scenario.

1. Green skills demand in the LSIP area – high level summary

Green jobs

Our analysis suggests that there are around <u>35,000 green jobs in the LSIP area currently, or 3.8% of total employees.</u>

The table below sets out the <u>top twenty green occupations</u> in the LSIP area, ranked based on the number of green jobs within that occupation in the LSIP area.

Table 2: Top 20 green occupations by number of green jobs in the LSIP area

	Occupation	Number of green jobs in the LSIP area	Proportion of jobs that are green in each occupation
1	Environment Professionals	1,668	1.00
2	Sales Accounts and Business Development Managers	1,651	0.08
3	Production Managers and Directors in Manufacturing	717	0.08
4	Physical Scientists	691	0.55
5	Refuse and Salvage Occupations	690	0.63
6	Engineering Professionals n.e.c.[2]	680	0.18
7	Biological Scientists and Biochemists	677	0.25
8	Conservation Professionals	663	1.00
9	Agricultural and Fishing Trades n.e.c.	656	0.68
10	Financial Accounts Managers	577	0.10
11	Electricians and Electrical Fitters	550	0.08
12	Health and Safety Officers	486	0.35
13	Production Managers and Directors in Construction	475	0.09
14	Chief Executives and Senior Officials	468	0.18
15	Civil Engineers	459	0.19
16	Information Technology and Telecommunications Professionals n.e.c.	458	0.05
17	Business and Financial Project Management Professionals	452	0.07
18	Large Goods Vehicle Drivers	424	0.06

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[2] Not Elsewhere Classified (n.e.c)

19	Managers and Proprietors in Other Services n.e.c.	405	0.07
20	Conservation and Environmental Associate Professionals	405	1.00
	Total		**13,252**

By looking at the top occupations based on absolute numbers of green jobs, we can see that there is a broad range of occupations making a significant contribution to the green economy of the LSIP area.

- There are a number of occupations which are largely or entirely green – such as Environmental Professionals and Conservation Professionals.

- In addition, there are occupations with a large number of overall jobs which have a non-negligible proportion of jobs with green skills – including Sales Accounts and Business Development Managers and Production Managers and Directors in Manufacturing.

- Finally, there are certain occupations that sit somewhere between these extremes, such as Biological Scientists and Biochemists, Civil Engineers, and Chief Executives and Senior Officials.

The twenty occupations above make up 38% of the green jobs in the LSIP area.

In the annex to this report, you can see alternative analysis of green jobs and occupations in the LSIP areas based on other criteria.

Green Economy in the LSIP area

To carry out this complementary analysis, WPI Economics used The Data City Explorer to look at the number of jobs in companies that (a) are in one of the 17 local authorities relevant to this analysis and (b) have been allocated into one of the 8 policy areas that make up the green economy sector developed by WPI Economics and The Data City, by the supervised machine learning process in The Data Explorer[3]. In addition, we have removed larger employers, which can skew the results by bringing in larger national employment numbers.

We have provided the results of this below, and also compared them to the identical calculations for the South East:

Table 3: Employment at green economy companies in LSIP area and wider South East of England

	LSIP area		South East
Policy area	Count	Proportion of total green economy	Proportion of total green economy
Reduce, Reuse, Recycle and Repair	10,919	34%	38%
Power	9,070	28%	26%
Climate Adaptation	3,194	10%	6%
Homes and Buildings	3,106	10%	6%

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[3] See Annex for summary of Data City approach

Green Financial, Professional and Research Services	2685	8%	13%
Industrial Decarbonisation	1,955	6%	6%
Low Carbon Transport	629	2%	4%
Natural Environment	514	2%	1%
Total	32,072		

We can see from this analysis that the LSIP area has an overrepresentation, versus the rest of the South east, in three key areas:

- **Power** - Including renewables (such as wind, solar and hydropower), nuclear power, grid infrastructure, energy storage and smart systems technology.

- **Climate adaptation -** Including flood defences, retrofitting of buildings to be resilient to extreme weather/climate events, nature-based solutions to reduce climate impacts and civil and mechanical engineering for infrastructure adaptation.

- **Homes and buildings** - Including retrofit, building new energy-efficient homes, heat pumps, smart devices and controls, heat networks and hydrogen boilers.

There are around 1,000 companies making up the green economy in the LSIP area, with a combined turnover of nearly £20bn. Some of these firms will be headquartered in the LSIP area, whereas others are national or multinational firms.

Projected number of green jobs in the LSIP area

Under the central scenario, we project that the number of <u>green jobs in the LSIP area will rise from 35,000 in 2022 to 57,000 in 2030 and 108,000 in 2050.</u> This represents a percentage increase of over 200% between 2022 and 2050. The overall rate of growth of the LSIP area's green economy is forecast to be highest in the eight years leading up to 2030 at 6% per year under the central scenario. After 2030, we expect that the annual rate of growth will then level out slightly at around 4% per year up to 2050.

Figure 3: Projections of green jobs in the LSIP area
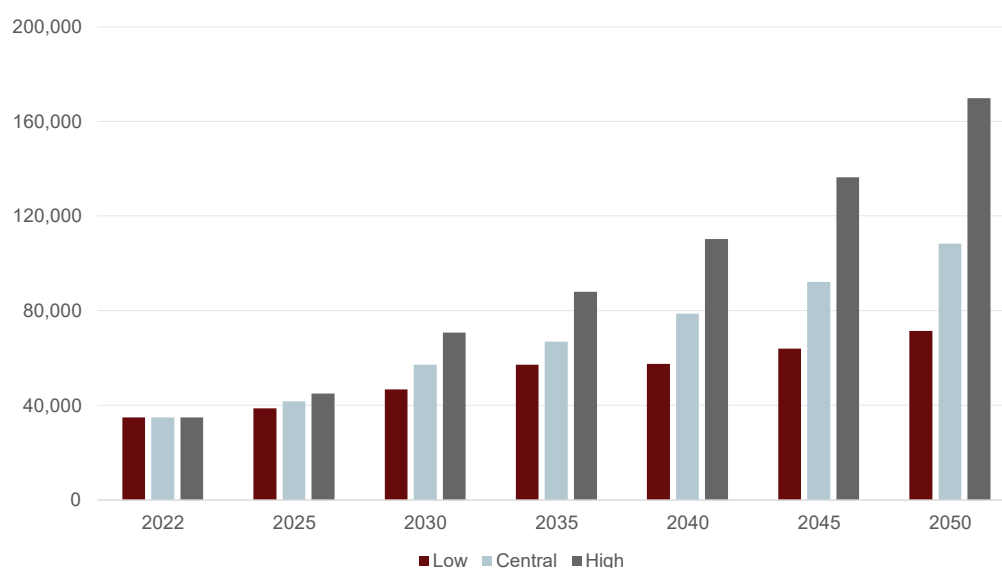
The table below set out the <u>**top twenty green occupations**</u> in the LSIP area in 2030 and 2050 under the central scenario. This table also show the increase in the number of green jobs and change in list rank relative to 2022.

Table 4: Top 20 green occupations by number of green jobs in the LSIP area in 2030 under the central policy scenario

	Occupation	Projected number of green jobs in the LSIP area 2030	Increase in the number of green jobs relative to 2022	% increase in the number of green jobs relative to 2022	Change in list rank relative to 2022
1	Environment Professionals	2,353	685	41	▬0
2	Sales Accounts and Business Development Managers	2,329	678	41	▬0
3	Physical Scientists	1,536	845	122	⬆+1
4	Engineering Professionals n.e.c.	1,510	831	122	⬆+2
5	Biological Scientists and Biochemists	1,505	828	122	⬆+2
6	Financial Accounts Managers	1,282	705	122	⬆+4
7	Civil Engineers	1,019	561	122	⬆+8
8	Production Managers and Directors in Manufacturing	1,007	290	40	⬇-5

9	Business and Financial Project Management Professionals	1,005	553	122	⬆ +8
10	Electricians and Electrical Fitters	966	416	76	⬆ +1
11	Production Managers and Directors in Construction	834	359	76	⬆ +2
12	Refuse and Salvage Occupations	825	135	20	⬇ -7
13	Managers and Directors in Storage and Warehousing	822	597	264	⬆ +31
14	Conservation Professionals	777	114	17	⬇ -6
15	Agricultural and Fishing Trades n.e.c.	769	113	17	⬇ -6
16	Health and Safety Officers	686	200	41	⬇ -4
17	Chief Executives and Senior Officials	660	192	41	⬇ -3
18	Vehicle Technicians, Mechanics and Electricians	646	469	264	⬆ +42
19	Information Technology and Telecommunications Professionals n.e.c.	646	188	41	⬇ -3
20	Construction Project Managers and Related Professionals	629	271	76	⬆ +4
	Total	**21,808**	**9,027**		

As with our analysis of the current composition of the green economy in the LSIP area, our projections into 2030 indicate that a highly varied range of occupations will make a significant contribution to the green economy.

- Many of the very large, generalist occupations, will continue to lead local green economy in terms of the absolute number of green jobs – for example, Sales Accounts and Business Development Managers and Production Managers and Directors in Manufacturing.

- Nevertheless, the projections also suggest a substantial increase in demand for more specialist and technical professionals, with a twofold increase in the number of Civil Engineers and Physical Scientists between 2022 and 2030.

- Our projections also highlight a surge in demand for more generalist operators, technicians and managers.

The twenty occupations above make up around 35% of the projected number green jobs in 2030, compared to 32% in 2022.

Outside the top 20, we can see that there are 401 green Chartered Surveyors (rank 44) and 503 green Research and Development Managers (rank 34) in 2030 in the LSIP area.

Table 5: Top 20 green occupations by number of green jobs in the LSIP area in 2050 under the central policy scenario

|	Occupation	Projected number of green jobs in the LSIP area 2050	Increase in the number of green jobs relative to 2022	% increase in the number of green jobs relative to 2022	Change in list rank relative to 2022
1	Physical Scientists	4,320	3,629	525	⬆+3
2	Engineering Professionals n.e.c.	4,248	3,569	525	⬆+4
3	Biological Scientists and Biochemists	4,233	3,556	525	⬆+4
4	Environment Professionals	3,697	2,029	122	⬇-3
5	Sales Accounts and Business Development Managers	3,660	2,009	122	⬇-3
6	Financial Accounts Managers	3,605	3,028	525	⬆+4
7	Civil Engineers	2,867	2,408	525	⬆+8
8	Business and Financial Project Management Professionals	2,828	2,375	525	⬆+9
9	Managers and Directors in Storage and Warehousing	1,906	1,681	745	⬆+35
10	Production Managers and Directors in Manufacturing	1,848	1,131	158	⬇-7
11	Business and Related Associate Professionals n.e.c.	1,627	1,366	525	⬆+26
12	Social and Humanities Scientists	1,579	1,327	525	⬆+26

13	Vehicle Technicians, Mechanics and Electricians	1,498	1,321	745	⬆+47
14	Electrical Engineers	1,487	1,249	525	⬆+26
15	Mechanical Engineers	1,424	1,196	525	⬆+27
16	Research and Development Managers	1,413	1,187	525	⬆+27
17	Design and Development Engineers	1,326	1,114	525	⬆+29
18	Financial Managers and Directors	1,268	1,065	525	⬆+29
19	Electricians and Electrical Fitters	1,245	695	126	⬇-8
20	Transport and Distribution Clerks and Assistants	1,214	1,070	745	⬆+59
	Total	47,294	37,007		

Compared to the 2022 composition and 2030 projections, our projections into 2050 depict a more specialised and advanced green economy in the LSIP area. Occupations closely related to Green Professional and Research Services are projected to make up the majority of the twenty largest occupations in the local green economy. Nevertheless, within this highly advanced green sector, there is a high degree of variation in terms of skills demand and specialist versus generalist dynamics. On the one hand, the overall green economy in the LSIP area. On the other hand, the projections suggest a surge in terms of both demand for and the 'greenification' of more generalist technical, managerial and financial professionals to support the growth of this increasingly diverse green economy sector – for example, the projections suggest a very large increase in the number of Business and Financial Project Management Professionals (453 in 2022 versus 2828 in 2050) and Research and Development Managers (226 in 2033 versus 1412 in 2050).

Overall, the twenty occupations listed above make up around 43% of the projected number of green jobs in the LSIP area in 2050, compared to 35% in 2030 and 32% in 2022. The concentration of jobs in the green economy within these top twenty sectors reflects the greening and specialisation of many of the larger generalist occupations listed for 2022 and into 2030.

The chart below helps to visualise the change in a series of Occupations of the projection period.

Figure 4: Green jobs changes for select occupations 2022-2050
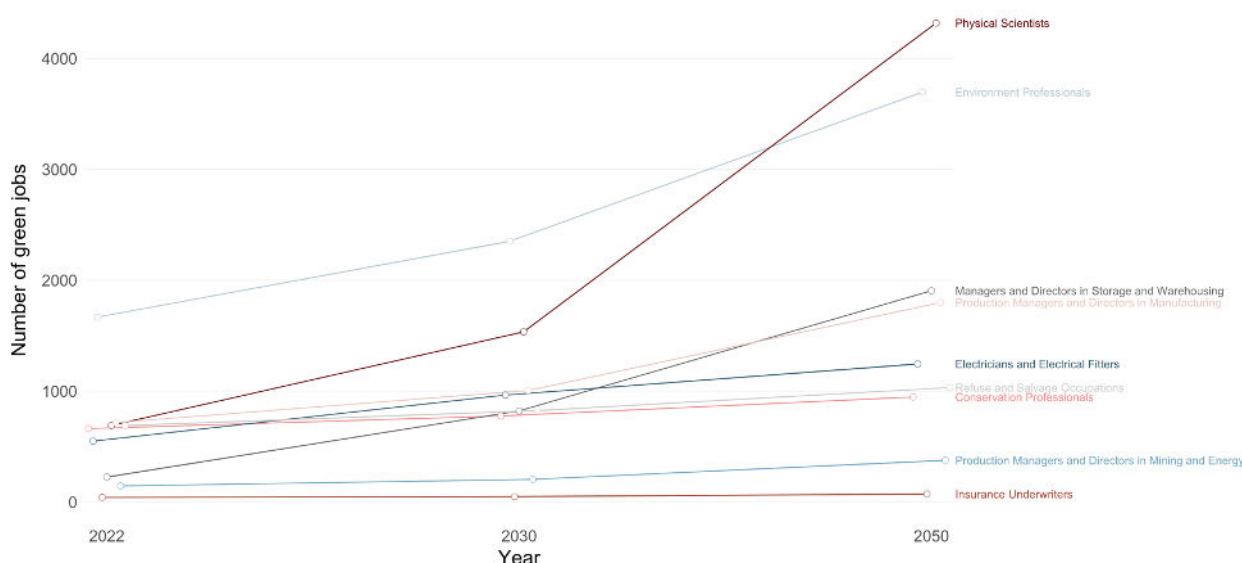
Source: WPI Economics and Lightcast analysis

Outside the top 20, we can see that there are 524 Large Goods Vehicle Drivers (rank 30) and 372 green Plumbers and Heating and Ventilating Engineers (rank 46) in 2050 in the LSIP area.

The evolution of a highly advanced green economy in the LSIP area will also require education and skills providers to deliver a greener curriculum by increasing the number and uptake of specialist green courses, and by pivoting towards the skills and knowledge required by a dynamic green economy. Of particular salience is the need for a much higher uptake of FE engineering courses and engineering Apprenticeships in the LSIP area - five of the top twenty green occupations in 2050 are projected to be engineering roles, however, in 2021 there was a relatively low number of FE and Apprenticeship achievements in engineering and other related fields. Similarly, the number of HE achievements in Science will also need see a substantial rise in order to meet increased demand for green scientific and research and development roles.

2. Education and skills

Further Education

The table below shows the most common further education achievements from levels 4-7 by sector subject area that are related to the top 20 green occupations for the LSIP area respectively. Although a wide range of subjects are included, both lists are dominated by 'white collar' roles such as Business Management and Accounting and Finance. In addition, there are a relatively high number of achievements related to construction, social care and engineering.

Table 6: Further Education achievements in the LSIP area related to top 20 green occupations by sector subject area, 2021 – levels 4 - 7 [3]

Further Education course by Sector Subject Area	Level	Number of Further Education Achievements in the LSIP area 2021
Business Management	Level 5	257
Health and Social Care	Level 5	114
ICT Practitioners	Level 4	103
Business Management	Level 4	79
Accounting and Finance	Level 4	66
Accounting and Finance	Level 7	62
Building and Construction	Level 4	61
Health and Social Care	Level 4	56
Marketing and Sales	Level 4	49
Engineering	Level 4	42
Public Services	Level 4	39
ICT Practitioners	Level 6	25
Service Enterprises	Level 4	20
Business Management	Level 6	20
ICT Practitioners	Level 7	11
Business Management	Level 7	9
Accounting and Finance	Level 6	8
Building and Construction	Level 5	4
Engineering	Level 5	3

This second table looks at lower-level FE achievements associated with the top 20 green occupations. Again, these are relatively broad in nature while also exhibiting very similar trends.

Table 7: Further Education achievements in the LSIP area related to top 20 green occupations by sector subject area, 2021 – levels 1-3 and N/A

Further Education course by Sector Subject Area	Level	Number of Further Education Achievements in the LSIP area 2021
Science	Level 3	8549
Health and Social Care	Level 2	3885
Business Management	Level 3	2888
Service Enterprises	Level 2	1805
Health and Social Care	Level 3	1495
ICT Practitioners	Level 3	1365
Health and Social Care	Not Applicable/ Not Known	1067
Building and Construction	Level 2	1048
Public Services	Level 3	743
Engineering	Level 3	718
Building and Construction	Level 1	691
Business Management	Level 2	617
Horticulture and Forestry	Level 2	478
Engineering	Level 2	427
Transportation Operations and Maintenance	Level 2	424
Building and Construction	Level 3	391
Accounting and Finance	Level 3	356
Agriculture	Level 3	341
ICT Practitioners	Level 2	327
Service Enterprises	Level 3	324

Apprenticeships

Table 8 shows the most common apprenticeship achievements by sector subject area that are related to the top 20 green occupations in the LSIP area. It is dominated by subjects related to skilled craft occupations, such as electricians and carpenters.

Table 8: Apprenticeship achievements in the LSIP area related to top 20 green occupations by sector subject area, 2021 – all levels

Apprenticeship course	Level	Number of Achievements in the LSIP area 2021
Installation electrician and maintenance electrician	Level 3	39
Motor vehicle service and maintenance technician (light vehicle)	Level 3	33
Carpentry and joinery	Level 2	24
Horticulture or landscape operative	Level 2	13
Facilities management supervisor	Level 3	10
Power network craftsperson	Level 3	7
Advanced carpentry and joinery	Level 3	6
Building services engineering installer	Level 2	4
Property maintenance operative	Level 2	4
Engineering technician	Level 3	3
Surveying technician	Level 3	3
Maintenance and operations engineering technician	Level 3	2
Rail engineering technician	Level 3	2
Engineering design and draughtsperson	Level 3	1
Passenger transport operations manager	Level 4	1

Higher education

Higher education courses have also been covered by this analysis. This data has been aggregated up to a broad subject area to avoid data disclosure issues. We can see that the achievements are spread across business/generalist, engineering and science degrees.

Table 9: HE achievements in Surrey and Hampshire

Subject area	Number of Achievements 2021
Business	6,742
Engineering	3,069
ITC	2,398
Architecture and urban planning	2,313
Science	2,118
Social science	1,810
Medicine and related subjects	1,010

It is well established that levels of gradate mobility are far higher in HE than for FE or apprenticeships, and that those completing courses in the LSIP area are highly likely to take up work elsewhere. As a result, the above analysis also takes into account achievements in universities in Hampshire that are outside the LSIP area. More generally, it also means some caution should be taken in drawing conclusions from the HE findings in particular, as they may not relate as closely to local employment.

Annex 1: Top 50 occupations

The top occupations below reflect **61%** of the green jobs in the LSIP area in 2021

Table 10: Top 50 green occupations in LSIP region by absolute number of jobs

SOC	Occupation	Green share (%)	Number of Green jobs
2142	Environment Professionals	1.00	1,668
3545	Sales Accounts and Business Development Managers	0.08	1,651
1121	Production Managers and Directors in Manufacturing	0.08	717
2113	Physical Scientists	0.55	691
9235	Refuse and Salvage Occupations	0.63	690
2129	Engineering Professionals n.e.c.	0.18	680
2112	Biological Scientists and Biochemists	0.25	677
2141	Conservation Professionals	1.00	663
5119	Agricultural and Fishing Trades n.e.c.	0.68	656
3538	Financial Accounts Managers	0.10	577
5241	Electricians and Electrical Fitters	0.08	550
3567	Health and Safety Officers	0.35	486
1122	Production Managers and Directors in Construction	0.09	475
1115	Chief Executives and Senior Officials	0.18	468
2121	Civil Engineers	0.19	459
2139	Information Technology and Telecommunications Professionals n.e.c.	0.05	458
2424	Business and Financial Project Management Professionals	0.07	452
8211	Large Goods Vehicle Drivers	0.06	424
1259	Managers and Proprietors in Other Services n.e.c.	0.07	405
3550	Conservation and Environmental Associate Professionals	1.00	405
1132	Marketing and Sales Directors	0.04	385
9233	Cleaners and Domestics	0.02	365
4161	Office Managers	0.06	363

2436	Construction Project Managers and Related Professionals	0.14	359
5223	Metal Working Production and Maintenance Fitters	0.07	346
4159	Other Administrative Occupations n.e.c.	0.01	345
1224	Publicans and Managers of Licensed Premises	0.17	339
2136	Programmers and Software Development Professionals	0.02	336
5314	Plumbers and Heating and Ventilating Engineers	0.06	328
1251	Property, Housing and Estate Managers	0.06	323
8133	Routine Inspectors and Testers	0.16	295
5111	Farmers	0.11	267
6139	Animal Care Services Occupations n.e.c.	0.08	264
9272	Kitchen and Catering Assistants	0.01	263
3113	Engineering Technicians	0.11	261
2133	IT Specialist Managers	0.03	260
3539	Business and Related Associate Professionals n.e.c.	0.06	260
2114	Social and Humanities Scientists	0.42	253
2314	Secondary Education Teaching Professionals	0.02	248
2123	Electrical Engineers	0.22	238
2434	Chartered Surveyors	0.10	229
2122	Mechanical Engineers	0.11	228
2150	Research and Development Managers	0.14	226
1162	Managers and Directors in Storage and Warehousing	0.06	226
2462	Quality Assurance and Regulatory Professionals	0.09	219
2126	Design and Development Engineers	0.09	212
1131	Financial Managers and Directors	0.02	203
9260	Elementary Storage Occupations	0.01	202
7111	Sales and Retail Assistants	0.01	202

5330	Construction and Building Trades Supervisors	0.14	201
Total			**21,497**

The top 50 occupations below reflect **63%** of the projected number of green jobs in the LSIP area in 2030.

Table 11: Top 50 green occupations in LSIP region by absolute number of 2030 projected jobs

	Occupation	Projected number of green jobs in the LSIP area 2030	Increase in the number of green jobs relative to 2022	% increase in the number of green jobs relative to 2022	Change in list rank relative to 2022
1	Environment Professionals	2,353	685	41	0
2	Sales Accounts and Business Development Managers	2,329	678	41	0
3	Physical Scientists	1,536	845	122	1
4	Engineering Professionals n.e.c.	1,510	831	122	2
5	Biological Scientists and Biochemists	1,505	828	122	2
6	Financial Accounts Managers	1,282	705	122	4
7	Civil Engineers	1,019	561	122	8
8	Production Managers and Directors in Manufacturing	1,007	290	40	-5
9	Business and Financial Project Management Professionals	1,005	553	122	8
10	Electricians and Electrical Fitters	966	416	76	1
11	Production Managers and Directors in Construction	834	359	76	2
12	Refuse and Salvage Occupations	825	135	20	-7
13	Managers and Directors in Storage and Warehousing	822	597	264	31
14	Conservation Professionals	777	114	17	-6

15	Agricultural and Fishing Trades n.e.c.	769	113	17	-6
16	Health and Safety Officers	686	200	41	-4
17	Chief Executives and Senior Officials	660	192	41	-3
18	Vehicle Technicians, Mechanics and Electricians	646	469	264	42
19	Information Technology and Telecommunications Professionals n.e.c.	646	188	41	-3
20	Construction Project Managers and Related Professionals	629	271	76	+4
21	Large Goods Vehicle Drivers	598	174	41	+21
22	Business and Related Associate Professionals n.e.c.	578	318	122	+22
23	Plumbers and Heating and Ventilating Engineers	575	247	76	+23
24	Managers and Proprietors in Other Services n.e.c.	571	166	41	+24
25	Conservation and Environmental Associate Professionals	571	166	41	+25
26	Property, Housing and Estate Managers	567	244	76	+26
27	Social and Humanities Scientists	562	309	122	+27
28	Marketing and Sales Directors	543	158	41	+28
29	Electrical Engineers	529	291	122	+29
30	Transport and Distribution Clerks and Assistants	524	380	264	+30
31	Cleaners and Domestics	515	150	41	+31
32	Office Managers	512	149	41	+32
33	Mechanical Engineers	506	278	122	+33
34	Research and Development Managers	503	276	122	+34
35	Other Administrative Occupations n.e.c.	487	142	41	+35

36	Metal Working Production and Maintenance Fitters	485	140	40	+36
37	Publicans and Managers of Licensed Premises	479	139	41	+37
38	Programmers and Software Development Professionals	474	138	41	+38
39	Design and Development Engineers	471	259	122	+39
40	Financial Managers and Directors	451	248	122	+40
41	Management Consultants and Business Analysts	416	229	122	+41
42	Routine Inspectors and Testers	416	121	41	+42
43	Managers and Directors in Transport and Distribution	405	294	264	+43
44	Chartered Surveyors	401	173	76	+44
45	Natural and Social Science Professionals n.e.c.	396	218	122	+45
46	Animal Care Services Occupations n.e.c.	372	108	41	+46
47	Kitchen and Catering Assistants	371	108	41	+47
48	Engineering Technicians	368	107	41	+48
49	IT Specialist Managers	367	107	41	+49
50	Construction and Building Trades Supervisors	353	152	76	+50
	Total	**36,174**	**15,017**		

The top 50 occupations below reflect **68%** of the projected number of green jobs in the LSIP area in 2050.

Table 12: Top 50 green occupations in LSIP region by absolute number of 2050 projected jobs

	Occupation	Projected number of green jobs in the LSIP area 2050	Increase in the number of green jobs relative to 2022	% increase in the number of green jobs relative to 2022	Change in list rank relative to 2022
1	Physical Scientists	4,320	3,629	525	+3
2	Engineering Professionals n.e.c.	4,248	3,569	525	+4
3	Biological Scientists and Biochemists	4,233	3,556	525	+4
4	Environment Professionals	3,697	2,029	122	-3
5	Sales Accounts and Business Development Managers	3,660	2,009	122	-3
6	Financial Accounts Managers	3,605	3,028	525	+4
7	Civil Engineers	2,867	2,408	525	+8
8	Business and Financial Project Management Professionals	2,828	2,375	525	+9
9	Managers and Directors in Storage and Warehousing	1,906	1,681	745	+35
10	Production Managers and Directors in Manufacturing	1,848	1,131	158	-7
11	Business and Related Associate Professionals n.e.c.	1,627	1,366	525	+26
12	Social and Humanities Scientists	1,579	1,327	525	+26

13	Vehicle Technicians, Mechanics and Electricians	1,498	1,321	745	+47
14	Electrical Engineers	1,487	1,249	525	+26
15	Mechanical Engineers	1,424	1,196	525	+27
16	Research and Development Managers	1,413	1,187	525	+27
17	Design and Development Engineers	1,326	1,114	525	+29
18	Financial Managers and Directors	1,268	1,065	525	+29
19	Electricians and Electrical Fitters	1,245	695	126	-8
20	Transport and Distribution Clerks and Assistants	1,214	1,070	745	+59
21	Management Consultants and Business Analysts	598	1171	525	+35
22	Natural and Social Science Professionals n.e.c.	578	1114	525	+37
23	Health and Safety Officers	575	1078	122	-11
24	Production Managers and Directors in Construction	571	1076	126	-11
25	Chief Executives and Senior Officials	571	1038	122	-11
26	Refuse and Salvage Occupations	567	1033	50	-21
27	Information Technology and Telecommunications Professionals n.e.c.	562	1016	122	-11
28	Chemical Scientists	543	968	525	+47
29	Conservation Professionals	529	948	43	-21

30	Large Goods Vehicle Drivers	524	939	122	-12
31	Agricultural and Fishing Trades n.e.c.	515	938	43	-22
32	Managers and Directors in Transport and Distribution	512	938	745	+65
33	Managers and Proprietors in Other Services n.e.c.	506	897	122	-14
34	Conservation and Environmental Associate Professionals	503	897	122	-14
35	Metal Working Production and Maintenance Fitters	487	891	158	-10
36	Laboratory Technicians	485	863	525	+47
37	Marketing and Sales Directors	479	853	122	-16
38	Construction Project Managers and Related Professionals	474	812	126	-14
39	Cleaners and Domestics	471	810	122	-17
40	Office Managers	451	805	122	-17
41	Production and Process Engineers	416	799	525	+46
42	Brokers	416	777	525	+48
43	Other Administrative Occupations n.e.c.	405	765	122	-17
44	Publicans and Managers of Licensed Premises	401	752	122	-17
45	Programmers and Software Development Professionals	396	745	122	-17
46	Plumbers and Heating and	372	741	126	-17

	Ventilating Engineers				
47	Property, Housing and Estate Managers	371	731	126	-17
48	Financial and Accounting Technicians	368	695	525	+48
49	Finance and Investment Analysts and Advisers	367	693	525	+49
50	Routine Inspectors and Testers	353	653	122	-19
	Total	73,730	53,284		

Annex 2: Proxy O*NET analysis

Many occupations are "greening" over time, as additional green skills are demanded for occupations. We have analysed this using the Lightcast jobs posting data. Lightcast classify a job posting as green on the basis of either a green job title or the presence of green skills in the requirements for the role. We propose two types of green occupation:

1. "Green occupations" - occupations with a high share of job postings with a green job title. This group of occupations may be a proxy for the group of occupations that are likely to grow in demand with the growth of the green economy.

2. "Greening occupations" – occupations where 'green skills' are mentioned within a high proportion of job postings. These occupations may represent occupations likely to see a change in the skills-set they require due to the growth of the green economy.

Table 13 below shows this data for the top 20 green occupations (by number of green jobs). Occupations such as Conservation and Environment Professionals can be thought of as green occupations, whereas greening occupations include Sales Account and Business Development Managers, Electricians and Electrical Fitters and Civil Engineers.

Table 13: Green job titles and green skills proportions for top 20 green jobs in LSIP area

	Occupation	SOC code	Number of green jobs in the LSIP area	Proportion of green job postings that have a green job title	Proportion of green job postings that mention green skills
1	Environment Professionals	2142	1,668	67%	33%
2	Sales Accounts and Business Development Managers	3545	1,651	4%	96%
3	Production Managers and Directors in Manufacturing	1121	717	1%	99%
4	Physical Scientists	2113	691	36%	64%
5	Refuse and Salvage Occupations	9235	690	86%	14%
6	Engineering Professionals n.e.c.	2129	680	21%	79%
7	Biological Scientists and Biochemists	2112	677	41%	59%
8	Conservation Professionals	2141	663	61%	39%
9	Agricultural and Fishing Trades n.e.c.	5119	656	0%	100%
10	Financial Accounts Managers	3538	577	0%	100%
11	Electricians and Electrical Fitters	5241	550	20%	80%
12	Health and Safety Officers	3567	486	24%	76%

13	Production Managers and Directors in Construction	1122	475	2%	98%
14	Chief Executives and Senior Officials	1115	468	40%	60%
15	Civil Engineers	2121	459	2%	98%
16	Information Technology and Telecommunications Professionals n.e.c.	2139	458	4%	96%
17	Business and Financial Project Management Professionals	2424	452	8%	92%
18	Large Goods Vehicle Drivers	8211	424	0%	100%
19	Managers and Proprietors in Other Services n.e.c.	1259	405	24%	76%
20	Conservation and Environmental Associate Professionals	3550	405	100%	0%

Annex 3: FE further data

The table sets out greater detail on the FE courses in the LSIP area with greater than 5 completions, by showing the sector subject area 3 (proprietary to Lightcast) within which these fall.

Table 14: Sector Subject Area 3 (SSA3) achievements in the LSIP area

SSA3 name	SSA2 name	Achievements	Award Level
Business	Business Management	2520	Level 3
Science (General)	Science	2478	Level 3
Biological Sciences	Science	1340	Level 3
IT/Computing	ICT Practitioners	1032	Level 3
Physical Sciences	Science	800	Level 3
Public Services	Public Services	500	Level 3
Applied Science	Science	373	Level 3
Engineering (General)	Engineering	346	Level 3
Business Management	Business Management	335	Level 2
Medical Science	Science	327	Level 3
ICT Practitioners n.e.c.	ICT Practitioners	312	Level 3
Business Management	Business Management	291	Level 1
Business	Business Management	258	Level 3
Business Management	Business Management	232	Level 3
Electrical and Electronic Technology	Building and Construction	222	Level 2
Construction	Building and Construction	216	Level 1
Construction	Building and Construction	208	Level 2
ICT Practitioners n.e.c.	ICT Practitioners	201	Not Applicable/ Not Known
Agriculture	Agriculture	186	Level 3
Business Management	Business Management	186	Level 3
Environmental Science	Science	182	Level 2
Electrical and Electronic Technology	Building and Construction	160	Level 3
Finance	Accounting and Finance	156	Level 2
Land Based Studies	Agriculture	155	Level 3

Agriculture	Agriculture	151	Level 7
Land Based Studies	Agriculture	136	Level 2
Engineering (General)	Engineering	133	Not Applicable/ Not Known
Science (General)	Science	125	Level 5
Horticulture and Forestry n.e.c.	Horticulture and Forestry	123	Not Applicable/ Not Known
Horticulture and Forestry n.e.c.	Horticulture and Forestry	103	Level 2
ICT Practitioners n.e.c.	ICT Practitioners	102	Level 3
Public Services	Public Services	92	Level 3
Health and Safety	Health and Social Care	79	Level 2
Business Management	Business Management	74	Level 2
Engineering n.e.c.	Engineering	71	Level 2
Accounting and Finance n.e.c.	Accounting and Finance	67	Level 6
Construction	Building and Construction	63	Level 4
Finance	Accounting and Finance	61	Level 3
Biological Sciences	Science	60	Level 6
Aerospace Engineering	Engineering	59	Level 4
Land Based Studies	Agriculture	57	Level 1
Business Management n.e.c.	Business Management	55	Level 4
Service Enterprises n.e.c.	Service Enterprises	54	Level 2
Environmental Conservation	Environmental Conservation	52	Level 1
Marketing and Sales n.e.c.	Marketing and Sales	49	Level 4
Environmental Conservation	Environmental Conservation	47	Level 4
Business Management n.e.c.	Business Management	47	Level 2
IT/Computing	ICT Practitioners	41	Level 4
Applied Science	Science	38	Level 2
Accounting and Finance n.e.c.	Accounting and Finance	37	Level 3
Health and Safety	Health and Social Care	37	Level 7

Public Services	Public Services	36	Level 2
Horticulture and Forestry n.e.c.	Horticulture and Forestry	34	Not Applicable/ Not Known
Environmental Conservation	Environmental Conservation	33	Level 2
Medical Science	Science	28	Level 1
Construction	Building and Construction	27	Level 7
Horticulture and Forestry n.e.c.	Horticulture and Forestry	26	Level 4
ICT Practitioners n.e.c.	ICT Practitioners	25	Level 1
Business	Business Management	23	Level 3
Engineering (General)	Engineering	23	Level 2
Service Enterprises n.e.c.	Service Enterprises	22	Level 1
Environmental Management	Environmental Conservation	22	Level 1
Operational Management	Business Management	21	Level 2
Business Management	Business Management	20	Level 2
Aerospace Engineering	Engineering	18	Level 3
Engineering (General)	Engineering	16	Level 3
ICT Practitioners n.e.c.	ICT Practitioners	15	Level 6
Agriculture	Agriculture	14	Level 3
IT/Computing	ICT Practitioners	11	Level 1
Engineering n.e.c.	Engineering	11	Not Applicable/ Not Known
Sales	Marketing and Sales	11	Level 5
Environmental Conservation	Environmental Conservation	11	Level 2
Environmental Management	Environmental Conservation	10	Level 1
Business Management	Business Management	9	Level 2
Electrical and Electronic Technology	Building and Construction	9	Level 2
Built Environment	Building and Construction	9	Level 4
Public Services	Public Services	8	Level 2

Science (General)	Science	8	Level 6
Accounting and Finance n.e.c.	Accounting and Finance	7	Level 2
Accounting and Finance n.e.c.	Accounting and Finance	5	Level 3

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Annex 4: Methodology

Main green jobs analysis

To carry out the main green jobs analysis, Lightcast:

- Searched its job postings library for job postings with a 'green job title' in the LSIP area by SOC4 occupation in the past 12 months (Jan 22 – Dec 22)

- Searched its job postings library for job postings without a 'green job title' but with a 'green skills' in the LSIP area by SOC4 occupation in the past 12 months (Jan 22 – Dec 22)

- Summed up the two types of green job postings and divided it by the number of unique job postings in the LSIP area by SOC4 occupation in the past 12 months (Jan 22 – Dec 22) to calculate the share of 'green' job postings for each occupation

- Adjusted the 'green share' for three SOC codes which Lightcast and WPI agreed to treat as 100 per cent 'green' in previous research. These are: 2141 Conservation professionals, 2142 Environment professionals and 3550 Conservation and environmental associate professionals

- Applied this 'green share' to the number of jobs in 2022 in each SOC4 occupation in the LSIP area to calculate the number of green jobs currently available in the LSIP area economy.

Data City analysis

The Data City offers a data product, Real-Time Industrial Classifications or RTICs, built using the proprietary natural language processing (NLP) technology hosted in The Data Explorer (The Data City's platform). RTICs are an alternative method to build sector-wide datasets for industries that are not directly represented by traditional frameworks for industrial classification. The Data City's NLP analyses the website text of companies and groups them according to common language patterns. This way, the platform groups together companies that describe their activity in similar ways or offer the same products and/or services.

On previous projects carried out by WPI Economics and The Data City mapping the Green Economy, we developed detailed taxonomies of the green economy based on the sector breakdown in chapter 2 of the Green Jobs Taskforce main report. We've classified around 13500 businesses as operating within the Green Economy. The sub sectors - or 'policy areas' that make this up are below:

Sector	Definition
Homes and buildings	Including retrofit, building new energy-efficient homes, heat pumps, smart devices and controls, heat networks and hydrogen boilers.
Low carbon transport	Including low or zero emission vehicles, aviation, maritime, rail and road; public transport, walking and cycling

Power	Including renewables (such as wind, solar and hydropower), nuclear power, grid infrastructure, energy storage and smart systems technology.
Industrial decarbonisation	Including hydrogen production for industrial use, electrification of industrial processes, carbon capture, utilisation & storage (CCUS), and energy efficiency in industrial settings (e.g. heat retention).
Green professional and research services	Including green finance, climate change research & development and climate change strategy, and policy activity. Also including monitoring and abatement activity for localised pollution such as air and water pollution.
Climate adaptation	Including flood defences, retrofitting of buildings to be resilient to extreme weather/climate events, nature-based solutions to reduce climate impacts and civil and mechanical engineering for infrastructure adaptation.
Reduce, reuse, recycle and repair	Including waste management (i.e. diversion from landfills) and circular economy.
Natural environment	Activities that enhance the natural environment, often supporting carbon sequestration. Including woodland planting, restoring peatland, wetland restoration and habitat protection.

Using the Data City platform, we have provided the overall number of employees at the companies that (a) have a physical presence in Surrey and Hampshire and (b) are grouped within these existing sub sectors by The Data City process. One shortcoming of this approach is that it cannot isolate the location of jobs within a company, and so total employment numbers can be distorted by the presence of companies with a large number of jobs nationally. In order to account for this, we excluded companies with more than 2,000 employees from our calculations.

Education analysis

To look at education data, WPI and Lightcast agreed a set of green occupations to start the investigation from. These were the top 20 occupations with the largest number of green jobs in the LSIP area. For each of these occupations, Lightcast then mapped the most common education pathways associated to them.

It is important to note that multiple education courses can lead to the same occupation and vice versa, that the same education course can lead to different occupations.

1. **Further education courses:** this analysis includes full time equivalent achievements for all courses relevant to the green economy taught by one of the institutions within the LSIP area. The results are aggregated at Sector Subject Area 2 for analysis purposes. A more granular list of relevant courses is available as Lightcast proprietary Sector Subject Area 3 categorisation and it is different from official Learning Aims codes which are even more granular.

2. **Apprenticeships**: this analysis includes all apprenticeships achievements relevant to the green economy from providers within the LSIP area respectively.

3. **Higher education courses**: this analysis includes all higher education achievements from all courses relevant to the green economy taught by one of the institutions within the LSIP area plus the wider Hampshire region. The inclusion of Hampshire institutions beyond the LSIP boundary was two-fold:

    o Disclosive issues: data need to be aggregated to a certain level for it to be made available. The broader geography allows for more data to be shared.

    o Unlike FE and apprenticeship provision, which is very local in nature, HE provision is less tight to a local economy, meaning it is more likely to see achievers crossing geographical boundaries and working in an area different from the one they studied it. Hence, the universities offering green courses just outside the boundaries of the LSIP area may actually be teaching students that will end up working within the LSIP boundaries.

The results presented in the report are aggregated up at a broad subject area to avoid any disclosure issues.

Projections

We produced the projections for this report to 2030 and 2050 by applying existing work on the growth trajectories of the different occupations. These sources included:

- Ricardo energy and environment for the Climate Change Committee (CCC) (2017) 'UK business opportunities of moving to a low-carbon economy'

- Ecuity for LGA (2021) 'Local green jobs - accelerating a sustainable economic recovery'

These contains sector specific growth rates which we have applied to individual occupations where this is appropriate. Where particular occupations clearly fit within one of these sectors we have applied specific growth rates, and where they do not we have applied a broader average based on all environmental sectors.

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[1] Lightcast internal analysis

[2] https://wpieconomics.com/site/wp-content/uploads/2021/10/London-Green-Jobs-and-Skills-slidedeck-FINAL.pdf