CITB ANALYSIS

South London Partnership: Construction Labour Analysis and Low Carbon Skills Demand

Assessing the needs for traditional and low carbon construction skills in support of the work carried out by South London Partnership

May 2023

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SUMMARY

South London Partnership have commissioned this report to obtain a better understanding of the construction skills needs for work taking place within the five boroughs in the partnership plus Wandsworth. The research has sought to understand the potential skills shortages and pinch points which may arise from work taking place in the area. It has also explored some of the potential impacts of net zero targets on the need for construction skills, particularly in relation to skills required to improve the energy performance of the existing building stock.

Construction labour demand and pressures

We estimated that the labour demand for construction projects in the South London Partnership amounts to approximately 28,800 people in 2023. Such figure sits in the context of a wider construction industry which is estimated to employ around 409,000 people in the London region in the same year[1]. This means that overall, in 2023, work taking place in the South London Partnership is estimated to engage around 7% of the total construction workforce across London.

Priority occupations have been identified as those for which there is high demand and a high risk of a shortfall. This is set in the context of the wider pool construction labour across the region. However, the pressures on specific occupations will be larger in some cases. Further analysis has explored this at an occupational level and has concluded that the likely skills pinch points and pressures over the next five years potentially lie in the following occupations.

- Scaffolders
- Steel erectors/structural
- Civil engineering operatives nec
- Wood trades and interior fit-out
- Electrical trades and installation
- Roofers
- Bricklayers
- Plumbing and heating, ventilation, and air conditioning trades
- Labourers nec
- Plant mechanics/fitters
- Floorers
- Painters and decorators

Low carbon skills

Skills associated with the delivery of low carbon and energy improvement activity has also been considered. CITB's report on *Building Skills for Net Zero* highlighted that there is a need for an additional workforce across the UK of 350,000 by 2028 to deliver energy improvements. This corresponds to approximately a 13% increase in the current total workforce.

Analysis as part of this commission has explored the labour requirements for low carbon retrofit and estimated that the key occupations required to deliver energy improvements works on buildings within the South London Partnership area with an EPC rating of D and below could range between 13,300 and 6,600 people over the next five to ten years depending on the pace with which such interventions will be delivered.

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[1] https://www.citb.co.uk/about-citb/construction-industry-research-reports/construction-skills-network-csn/

1.　INTRODUCTION

The South London Partnership (SLP) wish to obtain a better understanding of the construction skills needed for work taking place locally to inform the development of their Local Skills Improvement Plan. To support this ambition, South London Partnership commissioned Whole Life Consultants Ltd and the Construction Industry Training Board (CITB) to prepare construction labour demand forecasts for the projects within the boroughs of Croydon, Kingston upon Thames, Merton, Richmond upon Thames, Sutton and Wandsworth[2].

The South London Partnership also wish to understand the potential skills shortages and pinch points which may arise from the programmes of work taking place in their boroughs. We have therefore looked at the labour required for SLP in the context of that required across the whole of the Greater London region. This will provide the Partnership with a better understanding of the risks and opportunities that the construction sector affords and an evidence base to allow them to target interventions and activity.

The construction industry is currently undergoing a number of transitions as it moves towards the delivery of net zero targets. Based on the data available from Energy Performance Certificates (EPCs) lodged for properties in the SLP area we have prepared a profile of labour demand by occupation for the low carbon sector in each of the boroughs. Although this is not a full analysis of green construction skills it provides an indication of the level of skills required to deliver the pipeline of recommendations which exist within the EPCs for the boroughs.

In the first part of the report we present the results of the wider construction skills analysis at SLP level. The second part of the report shows the result of the low carbon skills analysis. A technical annex also accompanies this report.

2.　LABOUR DEMAND IN THE SIX BOROUGHS

Using the methodology outlined in the Technical Annex accompanying this report we have prepared an analysis of the construction labour demand across the six boroughs. This is based on the known pipeline from published sources such as Glenigan[3] and supplemented with estimates of other work taking place. This section outlines the combined labour demand from the six boroughs; the individual analysis for each borough is included in the Technical Annex.

2.1.　PIPELINE OF KNOWN PROJECTS

We have analysed projects in the Glenigan database[4] and, where required, updated that list with any supplementary information provided by the Boroughs.

Table 1 shows the distribution by project type of new build spend for the total pipeline of known projects in 2023. Table 2 shows the infrastructure construction spend from the known projects in Table 1 by infrastructure sub-type.

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[2] For the purposes of employment and skills, Wandsworth is also included in the partnership although the SLP is a sub-regional collaboration of the London boroughs of Croydon, Kingston upon Thames, Merton, Richmond upon Thames and Sutton.
[3] https://www.glenigan.com/
[4] The Glenigan database allows contractors to identify leads and to carry out construction market analysis. For the purposes of this analysis we have used the Q4 2022 cut of data.

Table 1: New-build construction spend by project type in 2023

| Project Type	Construction spend in 2023 (2022 values - £m)	% of total
New housing	982	54%
Private commercial	605	33%
Infrastructure	138	8%
Public non-housing	41	2%
Private industrial	65	4%
Total	1,831	100%

Table 2: Construction spend by infrastructure sub-type in 2023

Project Type	Construction spend in 2023 (2022 values - £m)	% of total
Transport	121	88%
Water	8	6%
General infrastructure	6	4%
Energy	3	2%
Total	138	100%

2.2.   ESTIMATE OF TOTAL LABOUR DEMAND

Figure 1 shows the outputs of the analysis of future labour demand in the six boroughs. The blue area shows the labour demand arising from known projects in the Glenigan database. The grey area shows the likely labour demand arising from our estimate of work over and above that which is included in Glenigan. As outlined in the Technical Annex, the known project pipeline may not include smaller projects or repair and maintenance work.

The total construction labour demand including the volume of R&M imputed from the CSN model is 28,830 people in 2023. The projected growth between 2023 and 2027 suggests that the labour demand in 2027 will be around 29,260 people.
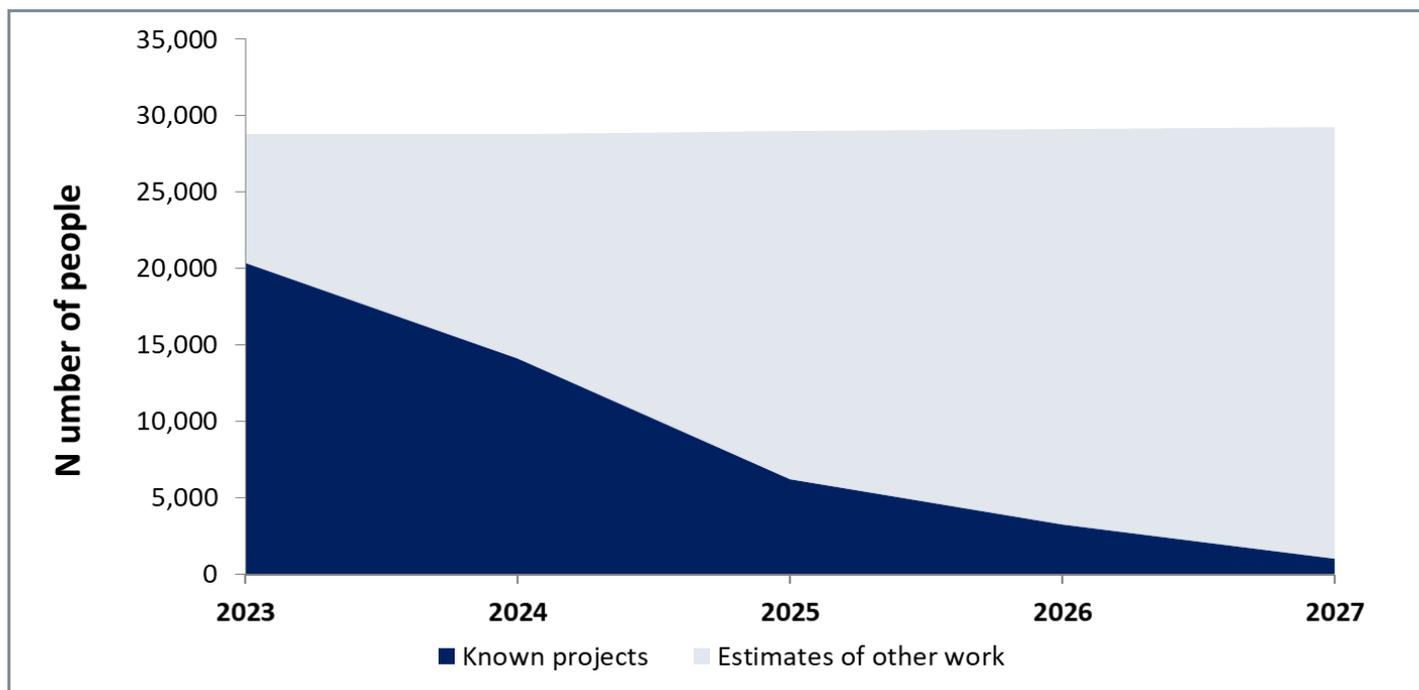
Figure 1: Total construction labour demand including estimates for both R&M and estimates of other work

A borough-level breakdown of the 2023 total labour demand is shown in Figure 2.
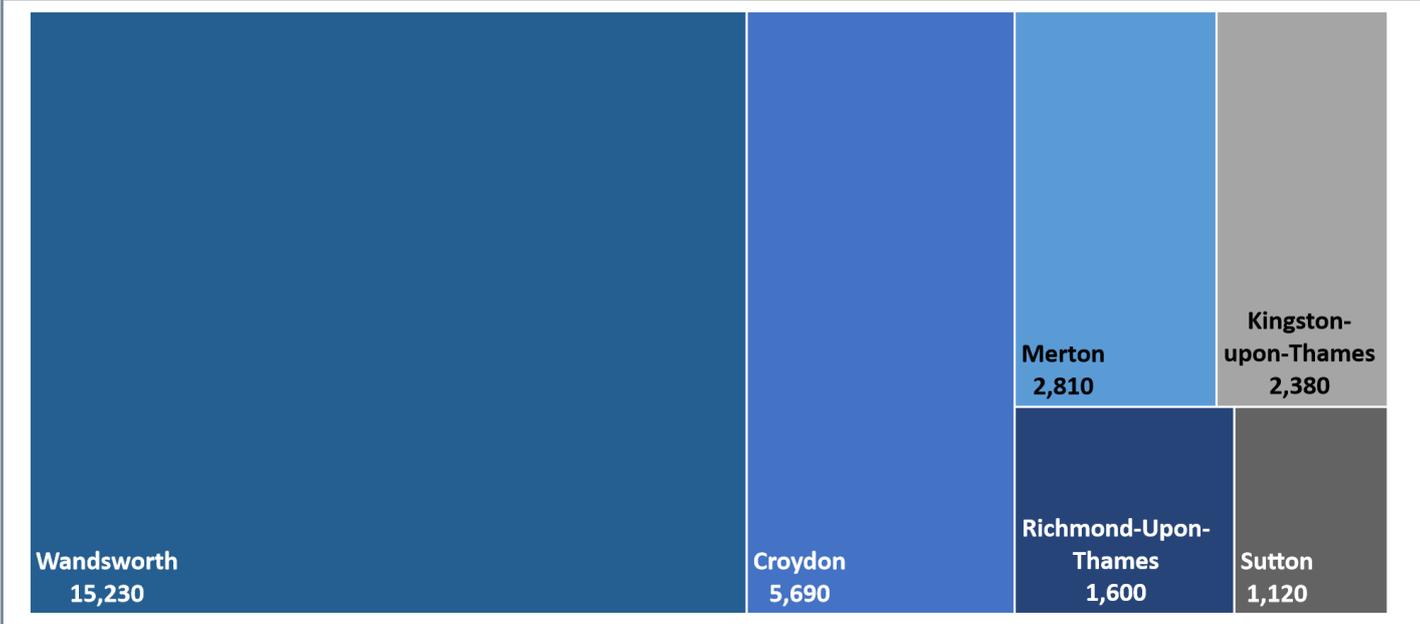

Figure 2: Total construction labour demand by borough

For 2023 the detailed breakdown for each of the 28 occupational groups for both the pipeline of known projects, estimates of other work and R&M is shown in Figure 3.
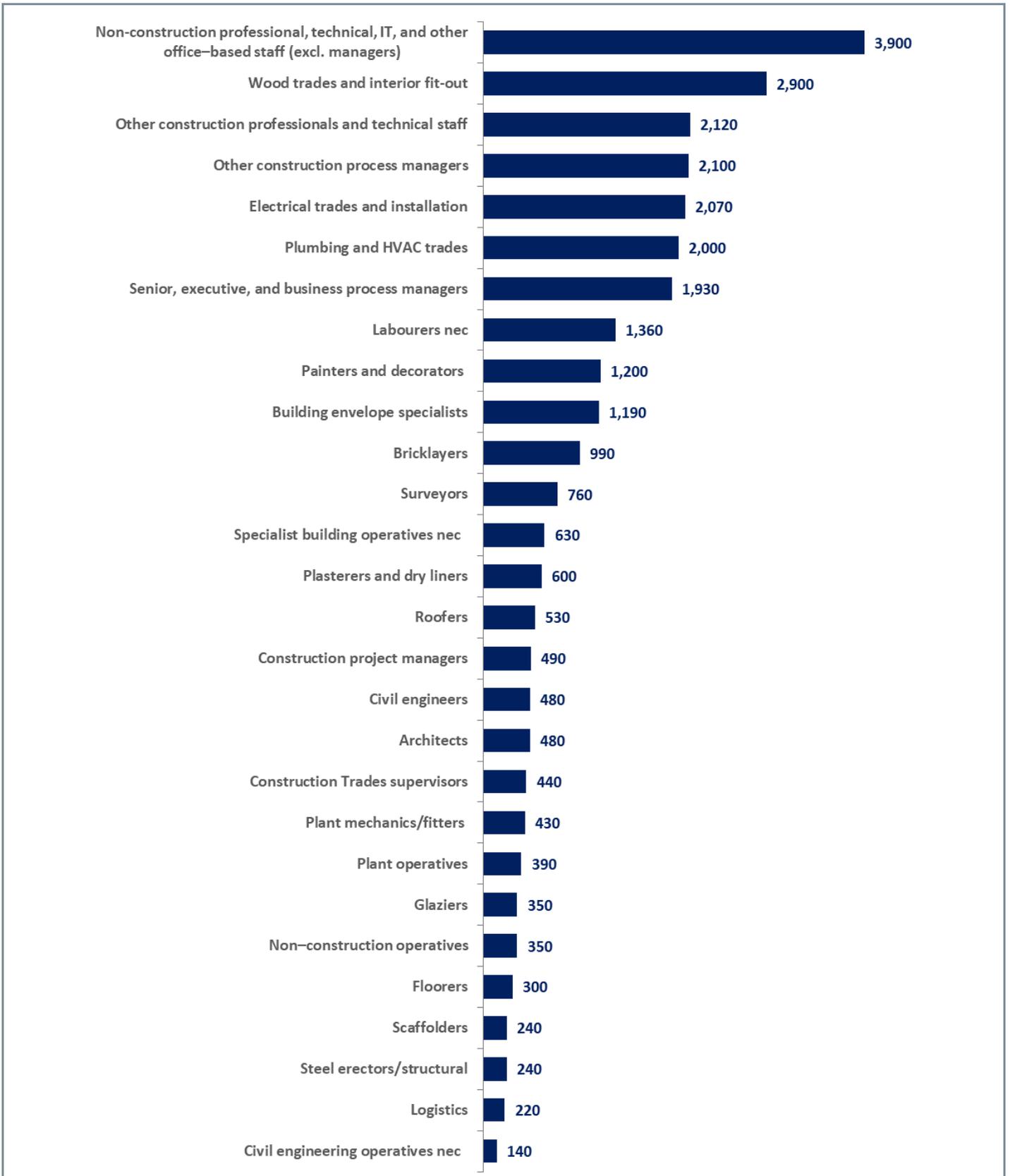

Occupation	Demand
Non-construction professional, technical, IT, and other office–based staff (excl. managers)	3,900
Wood trades and interior fit-out	2,900
Other construction professionals and technical staff	2,120
Other construction process managers	2,100
Electrical trades and installation	2,070
Plumbing and HVAC trades	2,000
Senior, executive, and business process managers	1,930
Labourers nec	1,360
Painters and decorators	1,200
Building envelope specialists	1,190
Bricklayers	990
Surveyors	760
Specialist building operatives nec	630
Plasterers and dry liners	600
Roofers	530
Construction project managers	490
Civil engineers	480
Architects	480
Construction Trades supervisors	440
Plant mechanics/fitters	430
Plant operatives	390
Glaziers	350
Non–construction operatives	350
Floorers	300
Scaffolders	240
Steel erectors/structural	240
Logistics	220
Civil engineering operatives nec	140

Figure 3: Construction labour demand by occupation in 2023

Table 3 shows the labour demand generated by the known projects and the estimates of other work in 2023.

Table 3: Labour demand by work type in 2023[5]

Project Type	Labour demand from known projects (people)	Labour demand from estimates of other work (people)	Total labour demand (people)	% of total in 2023
Private commercial	111,120	1,880	113,000	46%
Non-housing R&M	-	49,290	49,290	20%
New housing	40,510	-	40,510	16%
Housing R&M	10,340	10,480	20,820	8%
Public non-housing	13,410	-	13,410	5%
Infrastructure	5,360	3,410	8,770	4%
Private industrial	870	90	960	<1%
Total	181,610	65,150	246,760	100%

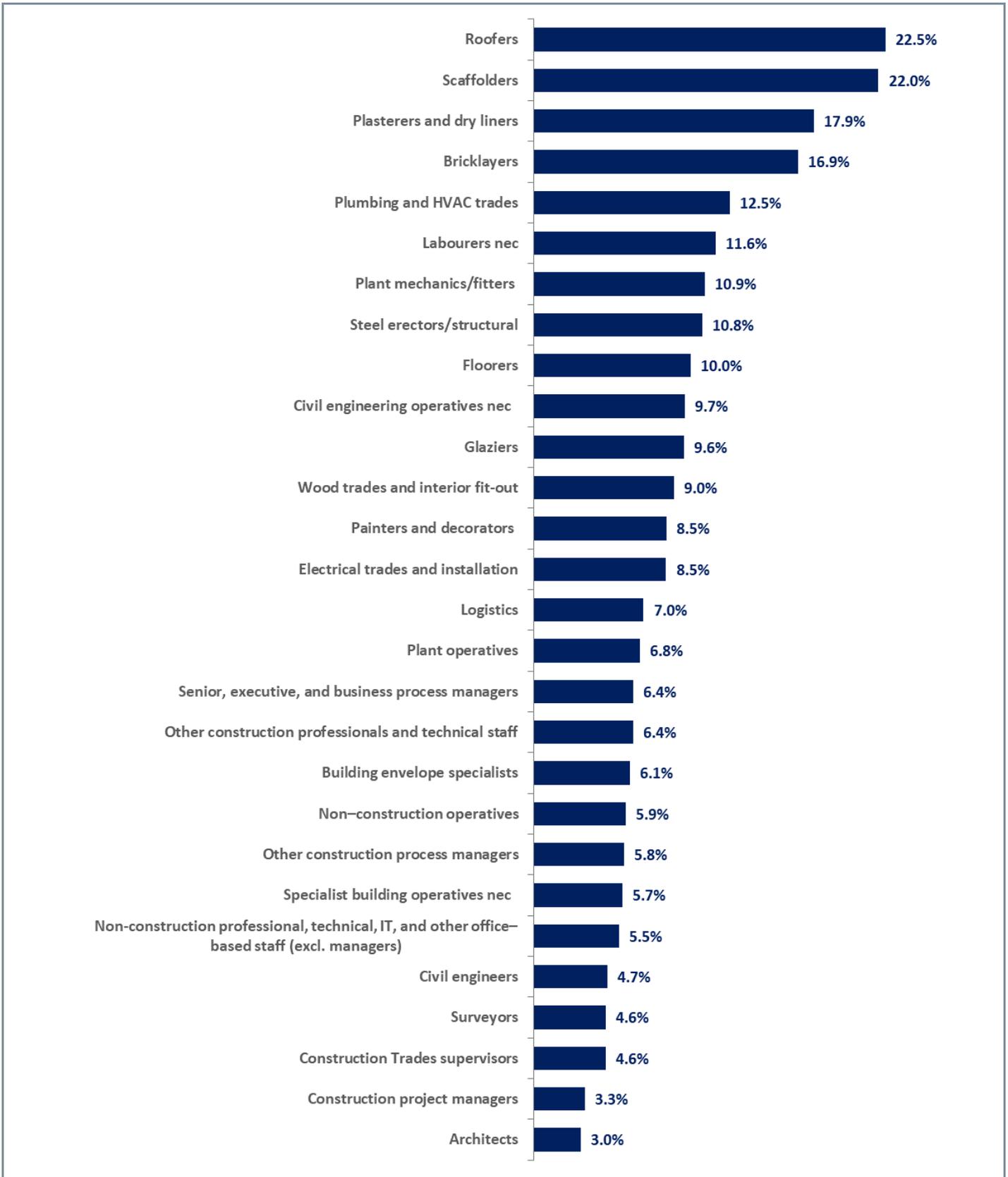# 3.   POTENTIAL SKILLS SHORTFALLS

The South London Partnership have asked for an assessment of priority occupations for which there is high demand and a high risk of a shortfall. It is important to consider the local labour demand forecast for South London Partnership in the context of the wider pool of construction labour in the Greater London region. The wider construction industry is estimated to employ around 409,000 people in the London region in 2023[6]. This means that overall, at peak, projects in the South London Partnership area are estimated to engage around 7% of the total construction workforce across London. However the pressures on specific occupations will be larger in some cases. To understand how this will impact at an occupational level we have considered two measures to put the South London Partnership workforce in context and identify potential mismatches in skills. These are:

- The **demand for labour by occupation in the wider construction sector**. This is taken from the CITB Construction Skills Network Forecast forecasts averaged over the period 2023-2027.

- The **annual recruitment requirement (ARR) for each occupation in the construction sector** for the short term from 2023-2027. The ARR takes into account current workforce flows into and out of construction, such as movements between industries, migration, sickness and retirements. The ARR provides an indication of the number of new employees, in addition to current labour flows (i.e. over and above that which may be expected to occur naturally based on past data), that would need to be recruited into construction each year to realise forecast output. Due to the paucity of data, flows from training are not included.

Figure 4 shows the South London Partnership demand as a percentage of the 2023 labour demand across the whole construction sector in London. This shows that in London, roofers on South London Partnership projects account for more than 22.5%% of the overall roofer workforce in London. Similarly for scaffolders for which South London Partnership projects account for around 22%. This is not because of a particularly high demand for roofers or scaffolders in the South London Partnership pipeline but because of relatively low numbers in the wider industry. However, these represent a very high draw on the overall workforce for these occupations which is reflected in the prioritising of the occupations later in this section.

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[5] Due to rounding totals might not correspond to the sum of the parts.
[6] https://www.citb.co.uk/about-citb/construction-industry-research-reports/construction-skills-network-csn/

Figure 4: South London Partnership demand as a percentage of the 2023 wider industry demand in London

Figure 5 shows the average annual recruitment requirement for London as a percentage of the numbers employed also in London. This provides an indication of what proportion of the existing workforce needs to be recruited on an annual basis. The analysis shows that there are 25 relevant occupational groups which have an ARR more than zero. This analysis is independent of the South London Partnership pipeline and reflects the wider industry pressures. It shows that scaffolders have the highest share of ARR in London.
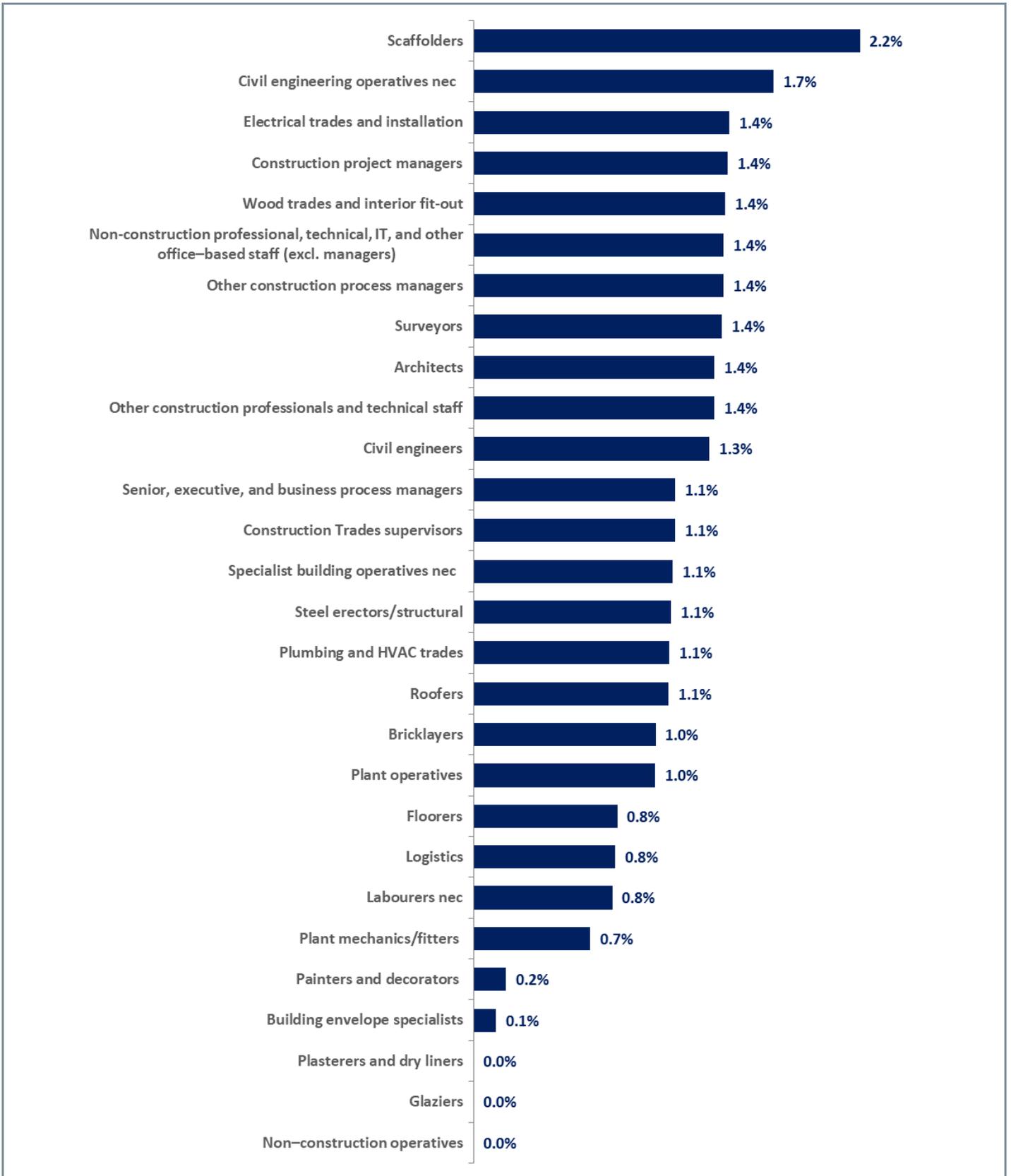
Figure 5: Average annual recruitment requirement as a percentage of the average 2023-27 wider industry demand in London

Table 4 provides details of those occupations where the South London Partnership demand is more than average and for which there is some ARR. This gives an indication of the occupations on which there may be skills pressures. These have been ranked by the size of the average South London Partnership demand as a share of the London demand. There is some variation in the annal recruitment requirement between occupations but this is minimal. Detailed measures for all 28 occupations can be found in the Technical Annex. Further details are provided in the next section on the impact of these occupations on the low carbon workforce.

Table 4: Key occupational pressures in the South London Partnership

Occupation	Labour demand in South London Partnership in 2023	2023 labour demand in Greater London from CSN*	Labour demand in South London Partnership boroughs as a percentage of the 2023 labour demand in Greater London	Average 2023-27 ARR as a percentage of the labour demand in Greater London	Construction employment as a share of employment in all sectors (2019) - UK wide
High priority					
Scaffolders	240	1,090	22.0%	2.2%	92.0%
Steel erectors/structural	240	2,230	10.8%	1.1%	18.0%
Civil engineering operatives nec[7]	140	1,450	9.7%	1.7%	43.0%
Wood trades and interior fit-out	2,900	32,310	9.0%	1.4%	68.0%
Electrical trades and installation	2,070	24,450	8.5%	1.4%	39.0%
Medium Priority					
Roofers	530	2,360	22.5%	1.1%	98.0%
Bricklayers	990	5,860	16.9%	1.0%	98.0%
Plumbing and heating, ventilation, and air conditioning trades	2,000	15,970	12.5%	1.1%	81.0%
Labourers nec[7]	1,360	11,680	11.6%	0.8%	81.0%
Plant mechanics/fitters	430	3,940	10.9%	0.7%	9.0%
Floorers	300	2,990	10.0%	0.8%	91.0%
Painters and decorators	1,200	14,100	8.5%	0.2%	67.0%

Table 5 provides details of those occupations where the South London Partnership demand is more than average but there is no ARR.

Table 5 Possible additional occupational pressures in the South London Partnership

Occupation	Labour demand in South London Partnership in 2023	2023 labour demand in Greater London from CSN*	Labour demand in South London Partnership boroughs as a percentage of the 2023 labour demand in Greater London	Average 2023-27 ARR as a percentage of the labour demand in Greater London	Construction employment as a share of employment in all sectors (2019) - UK wide
Plasterers and dry liners	600	3,350	17.9%	0.0%	98.0%
Glaziers	350	3,640	9.6%	0.0%	56.0%

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[7] nec = not elsewhere classified

4.   LOW CARBON SKILLS DEMAND FOR RETROFITTING

To understands the likely scale of the challenge the six London boroughs part of the South London Partnership might face in delivering energy improvements on their building stock, we have undertaken an analysis of data related to energy performance certificates (EPCs) associated with properties in the Borough. EPCs provide an assessment of the energy performance of properties on a scale of A to G, and outline the recommendations made by the assessor on how this performance might be improved.

From the EPCs which are available we have carried out an analysis of the recommendations[8] which require low carbon skills. The number of interventions represents the volume of activity which is required to be delivered. Using this volume of activity, we have used the appropriate models within CITB's Low Carbon Labour Forecasting Tool to derive the overall workforce by occupation. In carrying out the analysis, it was necessary to make the following assumptions.

- Only properties with an EPC rating of below band C were included.

- Only EPCs lodged since 2013 have been included. Where multiple EPCs have been lodged for the same property the most recent EPC has been used.

- We have assumed that the distribution of recommendations for properties which do not have an EPC is the same as for properties for which an EPC is available.

4.1.   AREA-WIDE RESULTS

Figure 6 and Figure 7 show the breakdown of the performance ratings reported in EPCs published since 2013 for domestic and non-domestic properties in the six boroughs. Just over 50% of the properties have a rating D and below. EPCs are not available for all the properties in the area, but we estimate that the ones lodged cover approximately 59% of all domestic properties in the area's stock and 57% of all the non-domestic ones, based on the number of buildings in the six boroughs.[9]
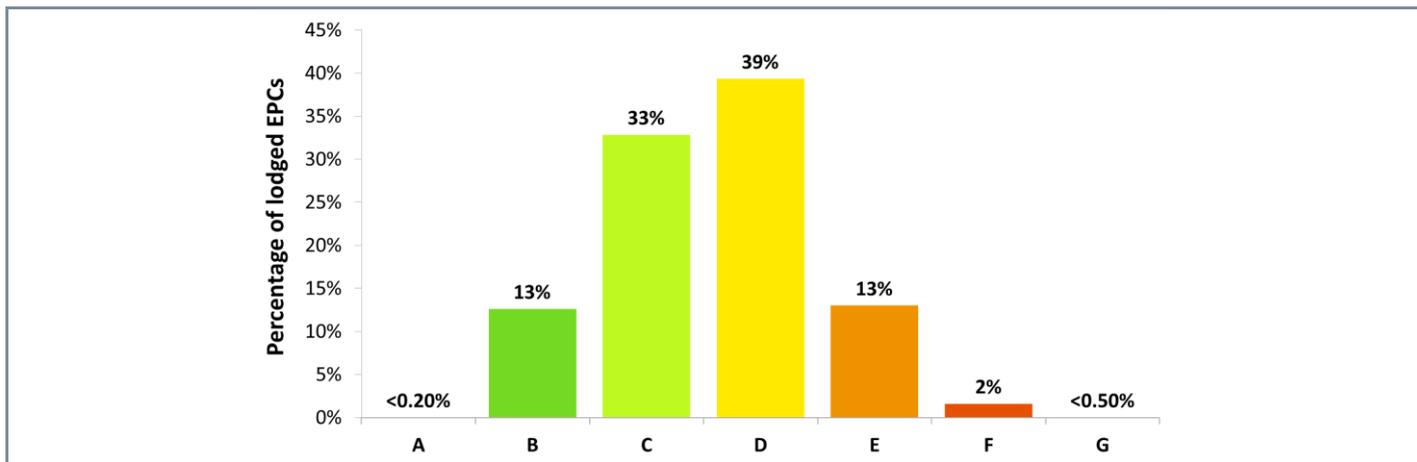

Figure 6: EPC profile of domestic properties across the six boroughs

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[8] Examples of the recommendations which are included in the EPCs are air source heat pump, cavity wall insulation, low rise external solid wall insulation, Internal solid wall insulation
[9] Number of domestic buildings in the boroughs derived from Valuation Office Agency statistics.
Number of non-domestic buildings in the boroughs derived from Department for Business, Energy & Industrial Strategy data published as part of the National Energy Efficiency Data Framework.
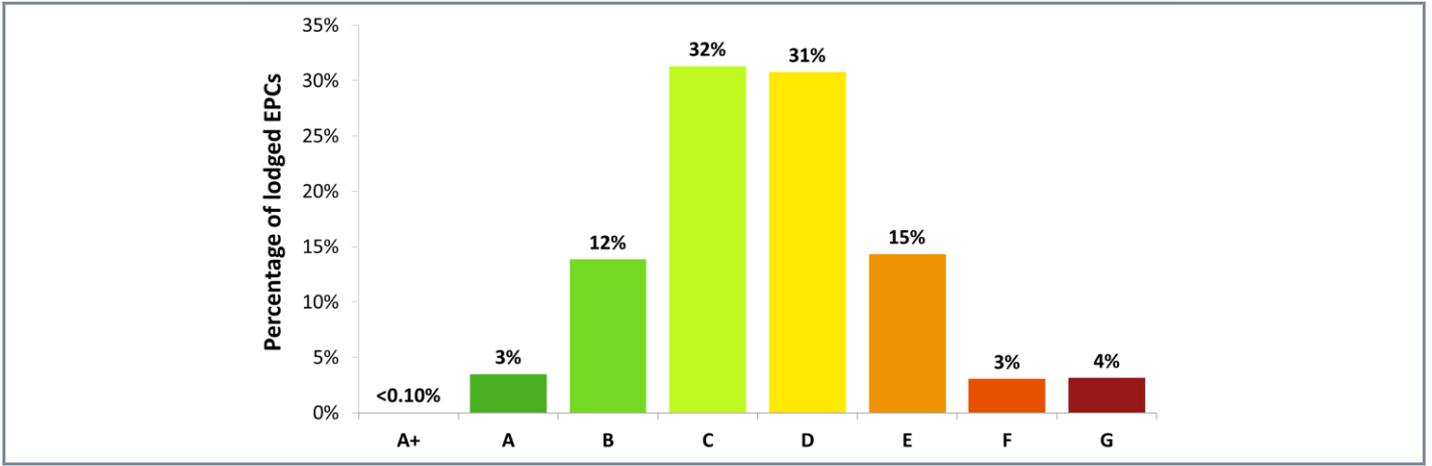
Figure 7: EPC profile of non-domestic properties across the six boroughs

Figure 8 and Figure 9 show a breakdown of the recommended interventions[10] reported in EPCs published since 2013 for domestic and non-domestic properties In EPC band D and below in the six boroughs.
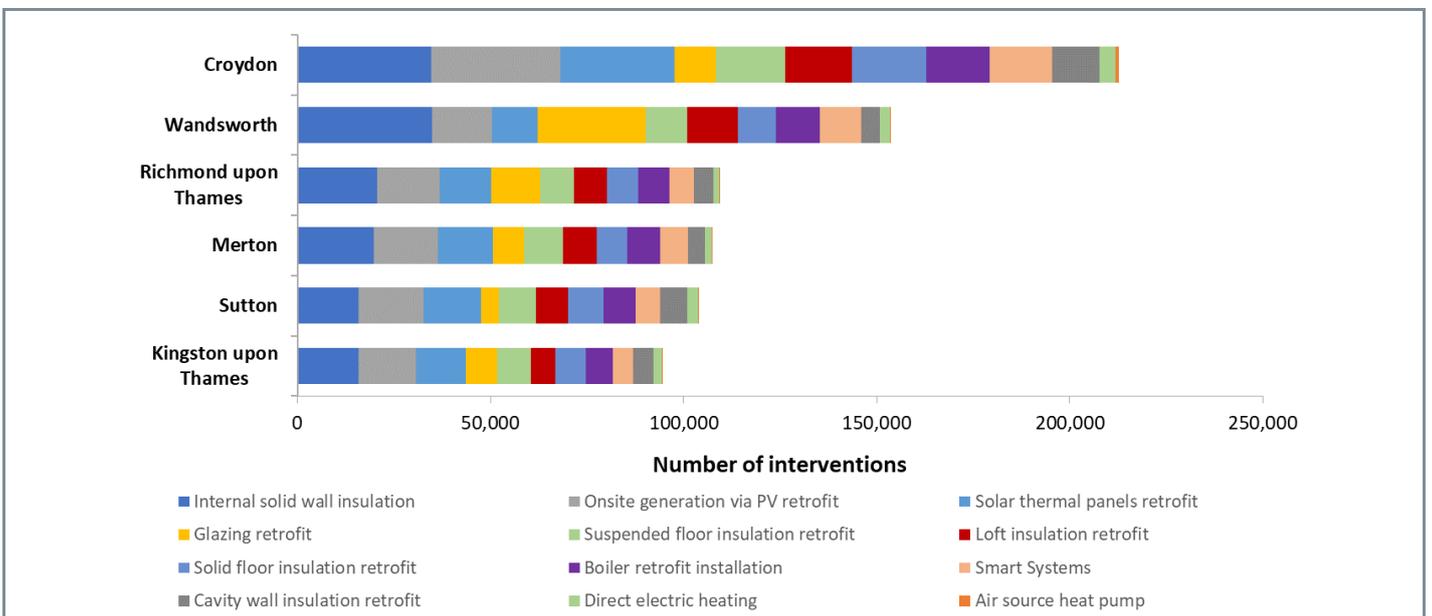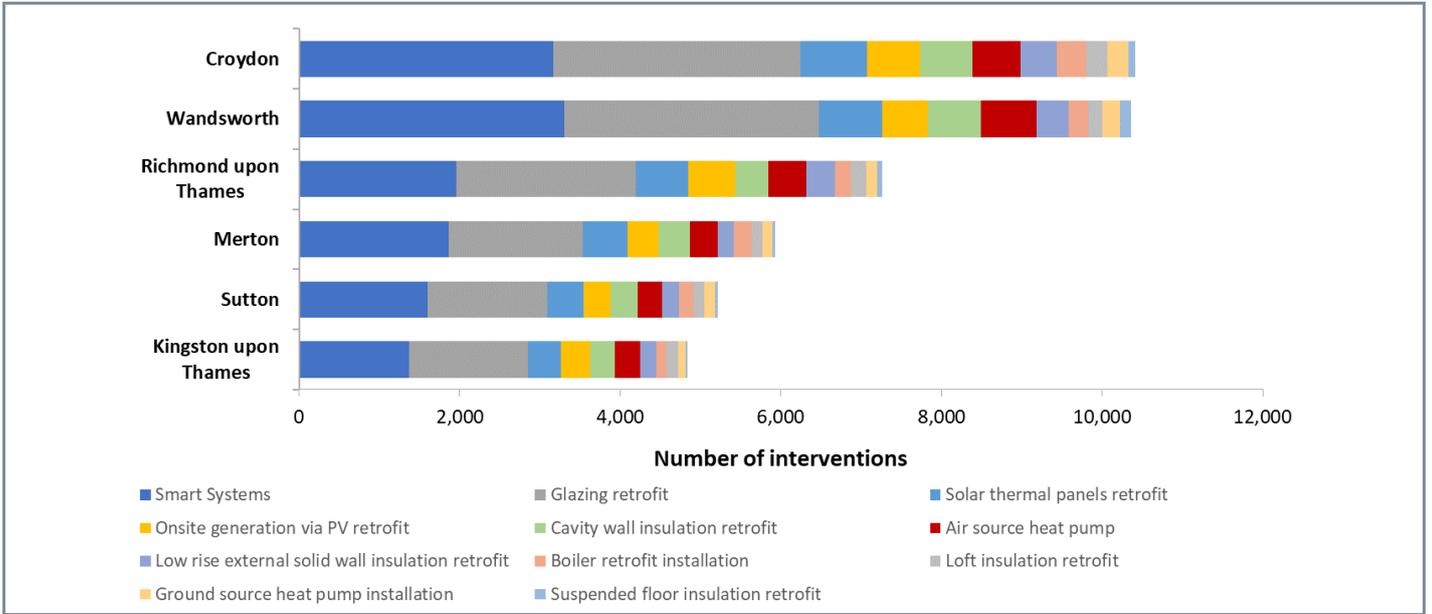

Figure 8: Energy improvement interventions recorded in domestic EPCs across the six boroughs

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[10] EPC recommended interventions have been crossed mapped against the set of interventions underpinning the CITB Low carbon tool. Reported figures refer to interventions post-cross mapping.

Figure 9: Energy improvement interventions recorded in non-domestic EPCs across the six boroughs

Further details on the number of interventions by borough are outlined Table 6.

Table 6: Number of recommended interventions by borough, by property type

Intervention	Croydon			Kingston upon Thames			Merton			Richmond upon Thames			Sutton			Wandsworth			Total
	Domestic	Non-domestic	Total	Domestic	Non-domestic	Total	Domestic	Non-domestic	Total	Domestic	Non-domestic	Total	Domestic	Non-domestic	Total	Domestic	Non-domestic	Total	Total
Air source heat pump	947	598	1,545	160	314	474	123	346	469	238	480	718	197	309	506	43	690	733	4,445
Boiler retrofit installation	16,430	361	16,791	6,966	125	7,091	8,539	216	8,755	8,175	202	8,377	8,342	179	8,521	11,313	249	11,562	61,097
Cavity wall insulation retrofit	12,231	644	12,875	5,210	306	5,516	4,333	390	4,723	4,912	411	5,323	6,897	334	7,231	4,803	662	5,465	41,133
Direct electric heating	4,139	n/a	4,139	2,186	n/a	2,186	1,798	n/a	1,798	1,577	n/a	1,577	2,781	n/a	2,781	2,605	n/a	2,605	15,086
Glazing retrofit	10,743	3,085	13,828	8,101	1,482	9,583	8,011	1,673	9,684	12,773	2,243	15,016	4,677	1,488	6,165	28,048	3,171	31,219	85,495
Ground source heat pump installation	n/a	259	259	n/a	92	92	n/a	127	127	n/a	137	137	n/a	136	136	n/a	223	223	974
Internal solid wall insulation	34,534	n/a	34,534	15,812	n/a	15,812	19,685	n/a	19,685	20,663	n/a	20,663	15,778	n/a	15,778	34,790	n/a	34,790	141,262
Loft insulation retrofit	17,203	268	17,471	6,393	153	6,546	8,798	138	8,936	8,571	187	8,758	8,208	132	8,340	13,164	169	13,333	63,384
Low rise external solid wall insulation retrofit	n/a	458	458	n/a	196	196	n/a	206	206	n/a	355	355	n/a	209	209	n/a	399	399	1,823
Onsite generation via PV retrofit	33,520	661	34,181	14,824	372	15,196	16,619	385	17,004	16,244	578	16,822	16,809	332	17,141	15,632	563	16,195	116,539
Smart Systems	16,180	3,162	19,342	5,262	1,367	6,629	7,371	1,864	9,235	6,315	1,956	8,271	6,335	1,600	7,935	10,883	3,299	14,182	65,594
Solar thermal panels retrofit	29,521	830	30,351	13,005	411	13,416	14,361	553	14,914	13,160	653	13,813	14,924	459	15,383	11,702	797	12,499	100,376
Solid floor insulation retrofit	19,254	n/a	19,254	7,939	n/a	7,939	7,701	n/a	7,701	8,045	n/a	8,045	9,303	n/a	9,303	9,714	n/a	9,714	61,956
Suspended floor insulation retrofit	18,031	86	18,117	8,673	22	8,695	10,125	34	10,159	8,774	65	8,839	9,641	32	9,673	10,820	141	10,961	66,444
Total	**212,733**	**10,412**	**223,145**	**94,531**	**4,840**	**99,371**	**107,464**	**5,932**	**113,396**	**109,447**	**7,267**	**116,714**	**103,892**	**5,210**	**109,102**	**153,517**	**10,363**	**163,880**	**825,608**

We estimated that approximately 66,250 person-years will be required to deliver the modelled interventions on the selected property stock. Details of the borough-level breakdown can be found in Figure 10.
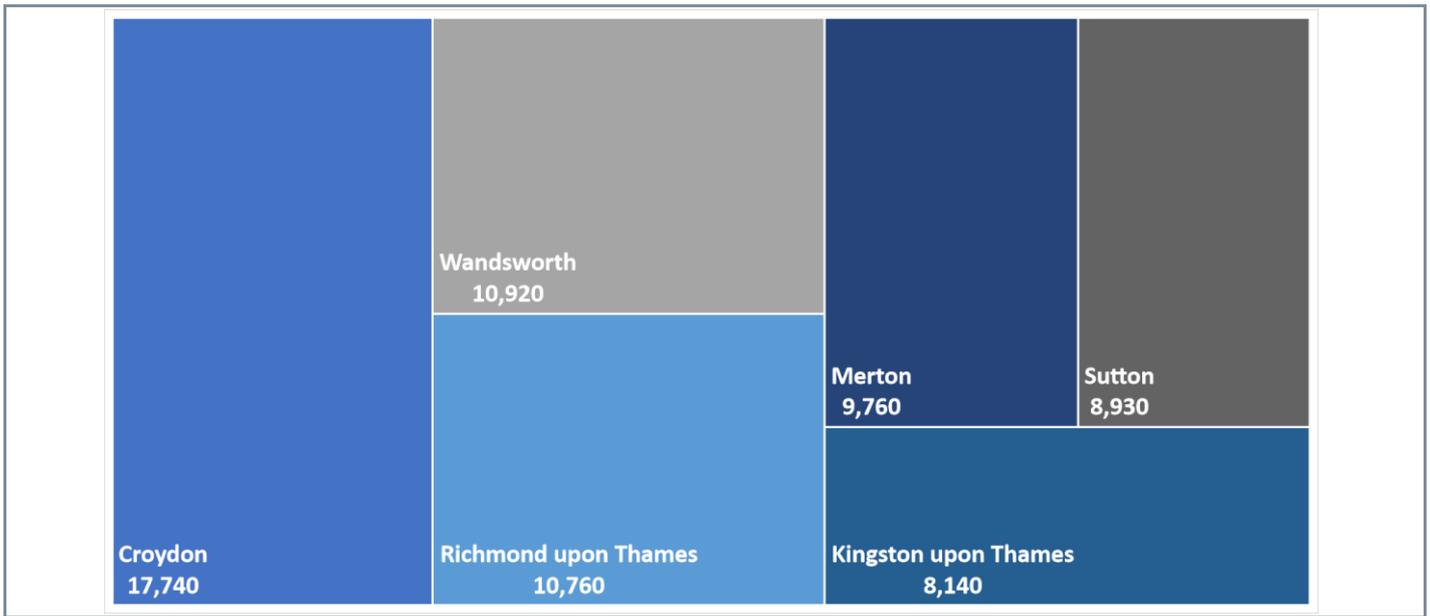
Figure 10: Estimated low carbon skill need for the six boroughs: (person-years)

While knowing the total number of person-years required to deliver a given set of interventions is useful to understand the scale of the task, it is also important to understand the context in which the delivery is going to take place.

One of the aspects which can be used to contextualise the skill needs is the average number of people required on a year-by-year basis.

The average number of people required on a yearly basis to deliver the recommended EPC interventions depends on how ambitious the implementation plans are. To illustrate this we considered two scenarios.

- Scenario 1: suggested interventions are being delivered over a 5-year period. This allowed us to align the low carbon skill demand analysis with the timeframe considered for the five-year period from 2023-27 for the wider construction demand analysis.

- Scenario 2: a less ambitious scenario allowing for delivery of the interventions over a 10-year period from 2023 to 2032.

Based on these scenarios, we estimated that the annual labour demand for low carbon skills needed to improve the energy performance of buildings rated D and below is between 13,250 and 6,620 over the next five to ten years. The average annual low carbon skills demand by occupation for these two scenarios is shown in Figure 11.

There is some overlap with those occupations which were high and medium priority for shortfalls in the wider construction analysis. This includes plumbing and HVAC trades, scaffolders and roofers.
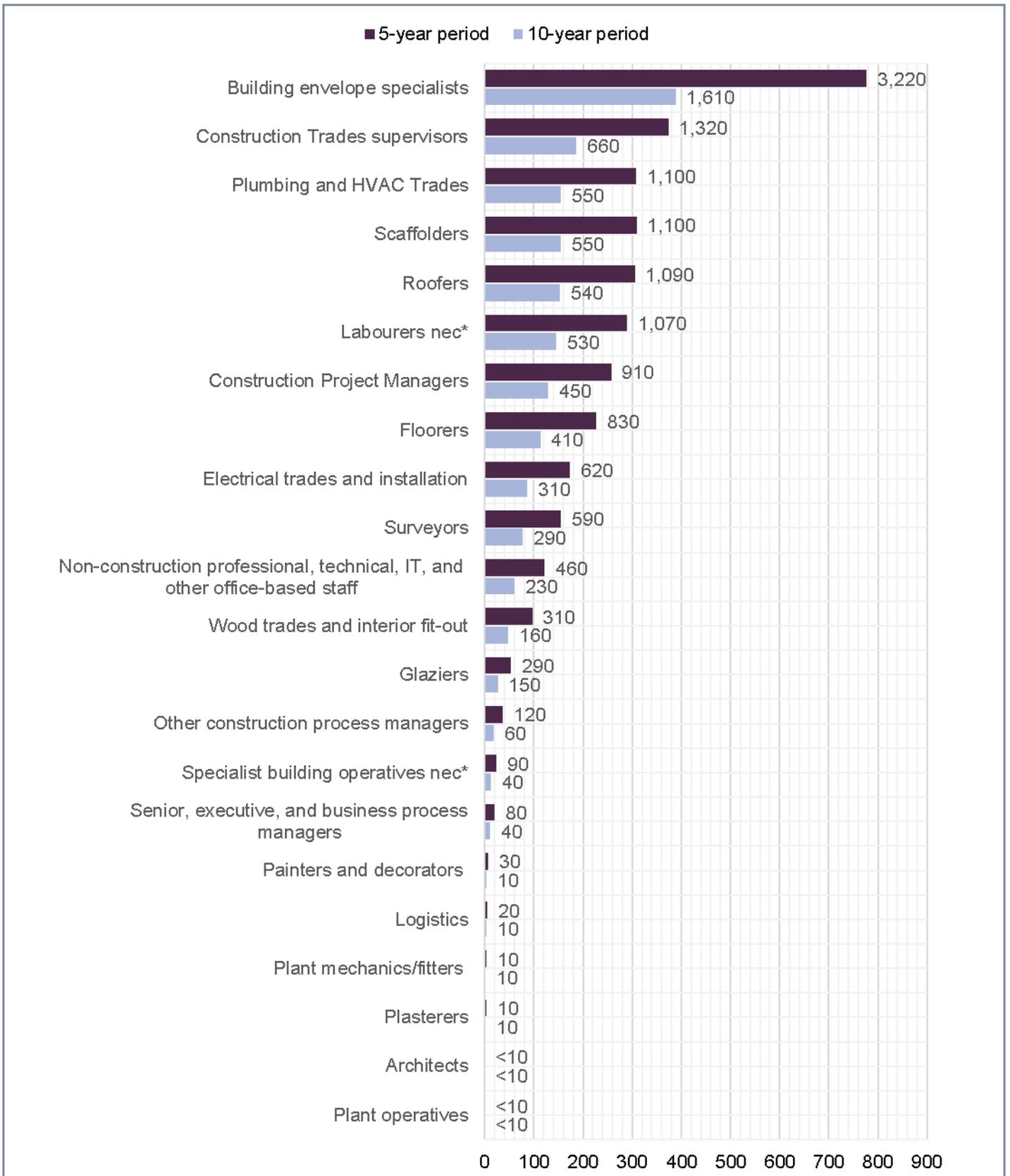
Figure 11: Low carbon skills demand by occupation for 5 year and 10 year implementation scenarios[11]

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[11] Building envelope specialists are any trade involved with the external cladding of a building other than bricklaying, for example, curtain walling. The include SOC Code 5319 - Construction and building trades not elsewhere classified.

Under scenarios 1 and 2, estimated low carbon skill needs could account for up to 46% of the total construction labour demand over the 2023-27 period. Figure 12 shows how this breaks down for each of the six boroughs, firstly over five years and then over 10 years compared to the 2023 labour demand for construction labour. In Richmond upon Thames and in Sutton, in the five-year scenario the retrofit workforce is higher than the 2023 construction labour.
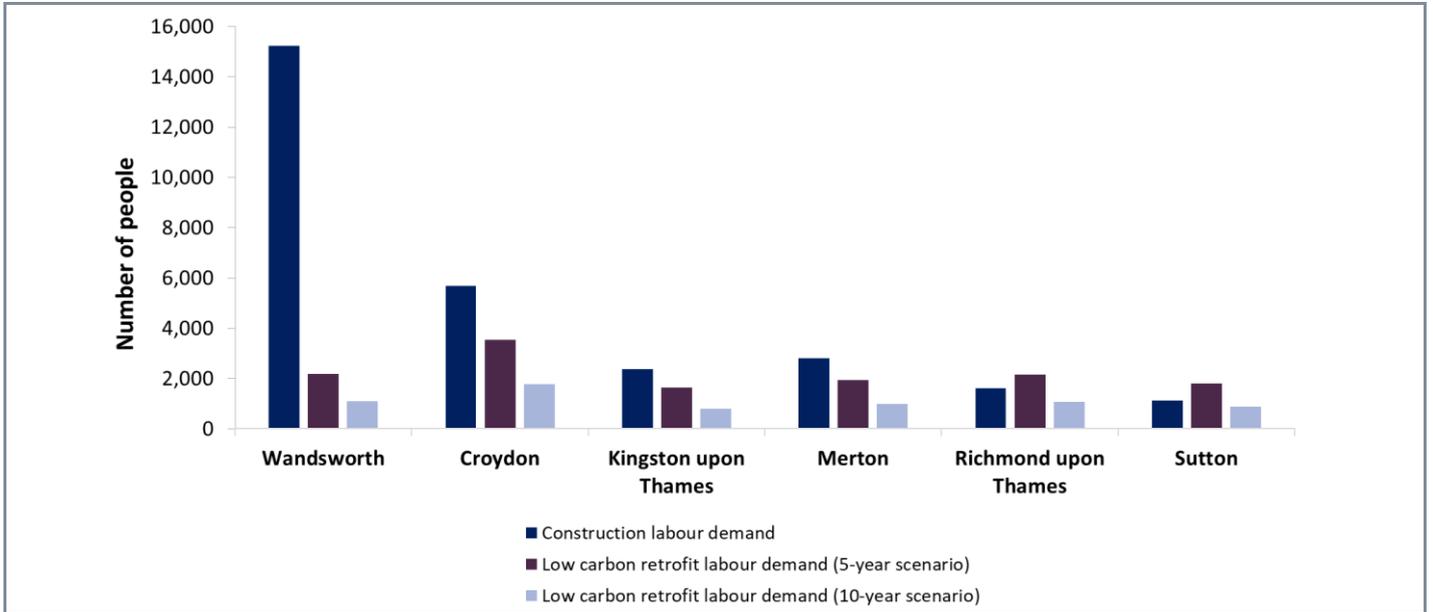
Figure 12: Construction and low carbon labour demand by borough in five and ten-year scenarios

The four largest low carbon skill demands for low carbon retrofit are as follows.
- Building envelope specialists:[12] 24% of the total demand
- Construction trades supervisors: 10% of the total demand
- Plumbing and heating, ventilation, and air conditioning trades: 9% of the total demand
- Scaffolders: 8% of the total demand.

Borough-level details of the low carbon skills needs for commercial retrofitting can be found in the Technical Annex.

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[12] Building envelope specialists are any trade involved with the external cladding of a building other than bricklaying, for example, curtain walling. The include SOC Code 5319 - Construction and building trades not elsewhere classified.

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Version	Date	Details of modifications
Rev A	31 March 2023	First issue
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