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Construction Skills Gap Analysis for the Greater London Authority

Final Report



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Summary

Introduction

The **Greater London Authority** (GLA) is working with the Construction Industry Training Board (CITB) to create a construction strategy and action plan to help take advantage of the opportunities for the construction industry across Greater London.

This report presents the results of a research exercise that contributes to an 'evidence base' to determine the employment and skills opportunities emerging in the construction industry in the GLA area. The intention is for it to be utilised by the GLA and its stakeholders to inform decision making and enable the development of the wider construction strategy for Greater London.

Construction is a significant part of the economy and is a major employer. But it also supports economic growth and job creation and has a significant impact on enhancing the built environment, in creating the facilities required of a modern economy and addresses significant social issues, such as a shortage of housing. It is also an enabler of other sectors' success by building the facilities required for commercial and industrial advances as well as the infrastructure that, in turn, supports growth. It is, therefore, important for the GLA to invest in supporting the actions proposed in this report and the wider evidence base as well as involving stakeholders in the development of the associated plans.

The analysis starts to indicate where training interventions will need to take place to ensure local opportunities are maximised and that London has the right curriculum in place to deliver solutions to meet anticipated demand.

This report is intended to support planning and encourage dialogue with stakeholders to enable evidence based decision making to take shape.

The research detailed in the report consists of both quantitative and qualitative analysis that has taken place: forecasting demand using the CITB Labour Forecasting Tool, and analysis of supply including exploring existing provision and its capacity. From that we have conducted an initial gap analysis exercise to understand where potential skills shortages might exist now and in the future.

Known demand

The analysis of submitted planning application data provides a known pipeline of construction projects the value of which is shown for each area in the following table.

The significant projects represent those projects that are greater than the average for the total number of projects for each Area. This shows that a relatively small proportion of the number of projects (between 15.6% and 18.9%) make up the majority of the value of construction (between 73% and 81.4%)

LONDON	PIPELINE [2016 – 2020] Named project pipeline	Total projects	Significant projects	%
CENTRAL	Projects	2,109	329	15.6%
	Total construction spend	£35,842m	£29,177m	81.4%
EAST	Projects	746	141	18.9%
	Total construction spend	£6,778m	£5,171m	76.3%
SOUTH	Projects	403	76	18.9%
	Total construction spend	£2,326m	£1,698m	73.0%
WEST	Projects	876	156	17.8%
	Total construction spend	£10,720m	£8,554m	79.8%
TOTAL	Projects	4,134		
	Total construction spend	£55,666m		

In addition to these known projects, there will be construction activity for which planning applications are not required – these tend to be repair and maintenance and smaller projects. Calculated estimates have been given for this work in the main report.

Also, the peak for known projects takes place during 2017 but this will regularly be supplemented with new planning applications. So the total construction pipeline for the next five years will exceed significantly the £55.6 billion indicated in the table above.

The greatest construction activity in the known pipeline is for new housing and private commercial developments.

Project type	Construction spend in 2017 (2015 values - £m)	% of total
New housing	9,662.70	31.66%
Private Commercial	9,344.30	30.62%
Public non-Housing	5,729.60	18.77%
Infrastructure	5,414.80	17.74%
Private Industrial	367.90	1.21%
Total	30,519.30	100.00%

Demand by occupation for known projects

Of the 28 occupations listed in the report, those for which there appears to be greatest demand for the known pipeline of projects are:

1.	Non-construction professional, technical, IT...	74,300
2.	Other construction professionals & technical	55,200
3.	Wood trades and interior fit-out	39,350
4.	Other construction process managers	37,850
5.	Senior, executive, business managers	34,450
6.	Electrical trades and installation	25,350
7.	Plumbing and HVAC Trades	24,450
8.	Surveyors	21,750
9.	Building envelope specialists	21,300
10.	Labourers nec*	20,400
11.	Bricklayers	19,250
12.	Architects	12,600
13.	Civil engineers	12,150
14.	Plant operatives	10,350

Gaps

Across the whole of Greater London the occupations for which there appears to be an above average relative gap are, in order of greatest gap first:

1. Plant mechanics/fitters	6. Other construction professionals and technical staff
2. Scaffolders	7. Plant operatives
3. Bricklayers	8. Logistics
4. Steel erectors/structural fabrication	9. Plasterers
5. Roofers	10. Surveyors

The analysis indicates that the gaps are not spread evenly across London – with much greater potential gaps for Central London in particular as well as for West London. Central and West London also appear to have gaps across a larger range of occupations.

Table 22 (Central); Table 23 (East) ; Table 24 (South) ; Table 25 (West) show demand as a % of 2015 employment for each of the occupational areas and within each of the four areas within Greater London and Greater London as a whole.

Gaps AND demand

One approach to identifying occupations most likely to present the London Areas with problems in the immediate future is to identify those occupations for which there appears to be both high demand AND a high relative gap between demand and existing supply.

Those occupations for which there appears high demand and a high relative gap are:

- Other construction professionals
- Bricklayers
- Surveyors
- Plumbing and HVAC trades
- Labourers
- Civil Engineers
- Plant operatives

This does not mean, and it should not be inferred, that other occupations are not: important; in demand or at risk of suffering a gap between demand and supply.

The occupations above have been highlighted only as offering a shortlist (25% of the occupations listed) where the greatest risk may be and so where the greatest benefit might be achieved by addressing any potential future shortfall. This should not be at the exclusion of considering other occupations (where there is either high demand or a high relative gap) and working with stakeholders to identify critical occupations.

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1. Introduction

This report has been produced in response to a discussion held between CITB and the Greater London Authority (GLA) seeking evidence that indicates anticipated demand for construction and associated skills needs as well as the availability of workers and training across Greater London but recognises the boundaries described by Government’s “Area Reviews” (Central, East, South and West).

The first stage of the work considered the demand for construction and the associated employment and skills needs for each of the four Area Review geographies for London.

The supply of labour is complex and fluid and so where possible, consideration has been given to the wider ‘travel to learn’ and ‘travel to work’ as construction workers often travel considerable distances to work and London, in particular, tends to draw in workers from a large area as well as being attractive to migrant workers.

The CITB research team specialises in analysis in this area and will compare the demand and supply picture to create a gap analysis at occupational level, to inform supply side interventions in the short, medium and longer term.

We have assessed the construction projects for which information is available looking ahead over a five year period.

Although for the purposes of this report London has been assessed against the four Area Review areas, workers training provision and employers do not recognise these boundaries. In some cases individual colleges have sites in more than one area, colleges are located close to boundaries meaning that as much if not more provision may be for a neighbouring area or areas, similarly workers may cross the boundaries by walking just a short distance.

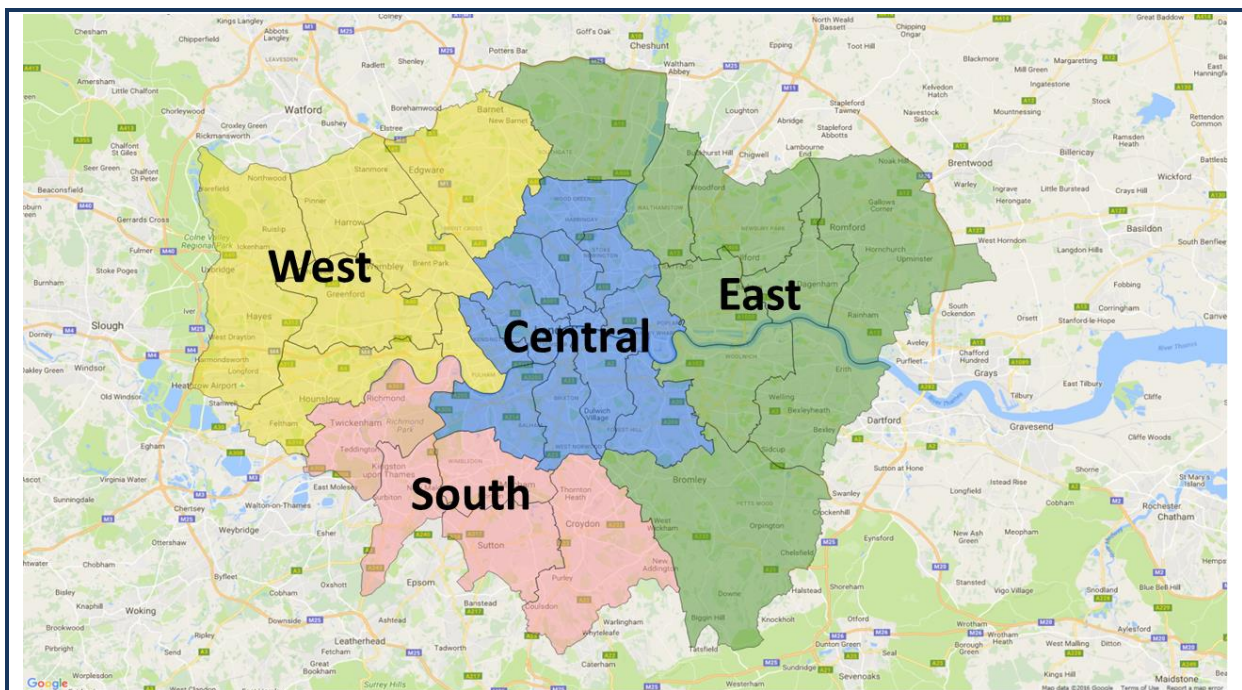


Figure 1: Map of London and surrounding areas

2. Demand analysis methodology

2.1. Introduction

Labour demand depends on the expected level and type of construction activity within a defined geographical area. This commission involves a mixture of projects with different types of work (e.g. housing, infrastructure) happening at different times. Our analysis derives as complete a picture as possible of the type and timings of projects within an area. Once this has been determined the labour demand for each project is estimated using our Labour Forecasting Tool (LFT). To produce these forecasts we have drawn on a number of sources of data. The sources used are:

- **Labour Forecasting Tool:** CITB's Labour Forecasting Tool is an online application that can forecast labour needs for a range of construction projects. The LFT forecasts monthly skills and employment needs from a project's value and start/completion dates.
- **Construction Skills Network:** The Construction Skills Network (CSN) provides market intelligence for the UK construction industry. The data it produces highlights trends and how the industry will change year-on-year, allowing businesses to understand the current climate and plan ahead for the future.
- **Glenigan Pipeline:** Glenigan produce a pipeline of forthcoming projects within each local authority of the UK. These are collated to allow contractors to identify leads and to carry out construction market analysis.
- **National Infrastructure Plan Pipeline (NIPP):** The Infrastructure and Projects Authority (formerly Infrastructure UK and Major Projects Authority) compile a pipeline of UK infrastructure projects and the associated annual public and private investment. The spring 2016 NIPP includes details of the annual spend on each of around 600 items valued at some £426bn to 2020 and beyond.

2.2. About labour forecasting

Our work in labour forecasting is underpinned by the award winning Labour Forecasting Tool (LFT). The tool was used to develop a profile of estimated labour requirements in the local authority area by creating a bottom-up approach to skills forecasting which aggregates the employment from individual projects to create an area-wide profile. The Labour Forecasting Tool can predict labour requirements (i.e. number of operatives and managers) on a month-by-month and trade-by-trade basis given no more than the type of project, its value or gross floor area where appropriate, its location and its start and end dates. The LFT produces an indication of the total construction labour demand arising for that project in each of 28 occupations listed in Appendix A. The results are presented at the trade, craft and professional levels. The labour for the project may or may not come from the immediate vicinity. In some cases (e.g. professionals) it may be based in another part of the country. The question of supply is addressed in subsequent parts of the report.

The LFT has a number of specific models to which each project is assigned. There are five standard models covering:

- New Housing
- New non-housing buildings
- Infrastructure
- Housing Repair & Maintenance
- Non-housing Repair & Maintenance

Infrastructure is disaggregated into twelve more detailed models covering project types such as road, rail and water projects.

The output from the LFT is shown in two ways:

1. Total person years by occupation: the total person years for each occupation required for the project. This output takes no account of the project duration which has been given in the original data. For instance if the total person years were 50, this means that if the project lasts for one year there would be 50 people employed for one year; if it lasted for two years then there would be an average of 25 people employed each year.
2. Total person years per year: the total number of people required each year.

The Construction Skills Network (CSN) forecasts labour requirements for the next five years. For consistency we have presented the demand forecasts for the five-year period 2016-20 used in the CSN model. Labour demand figures have been rounded to the nearest 50.

The LFT produces an estimate of the labour demand on a monthly basis. It should be noted that the workforce will only peak for a relatively short period of time. The ramp up and ramp down to that peak may be quite large and will likely be smoothed by local contracting markets. In light of that we have presented the average workforce during the year of the peak.

2.3. Pipeline analysis

To allow the labour demand to be estimated by the LFT we first need to determine the pipeline of work in an area.

2.3.1. Analysis of the Glenigan pipeline

Our principal source of pipeline data is provided by Glenigan. The Glenigan data provides details of planning applications from London boroughs, supplemented by Glenigan with additional project-specific and pre-planning data. The Glenigan pipeline does not identify every single project in an area as some small projects (typically but not exclusively those less than £250,000 in value) and predominantly those which do not require a planning application (including repair and maintenance) are not included.

The Glenigan pipeline is an extensive list of all of the projects taking place in an area. We have used the Mean Value Theorem to simplify its analysis. The Mean Value Theorem states that most information is obtained for least effort simply by considering only those data whose annual construction spend is higher than the mean. This approach is used to identify the significant projects that account for the largest amount of expenditure. Typically, this is around 20% of the projects accounting for about 80% of the value of the pipeline. These are the projects which we refer to as the significant projects.

Project values (£m) given in the Glenigan pipeline are the total value of construction and engineering works. The scope of this study is limited to the construction sector and for infrastructure projects an estimate of the engineering value has been calculated and subtracted from the total value. This provides what we have termed the construction value. The percentages applied to the total value of each infrastructure project type to derive the construction value can be seen in Table 1. The construction/engineering proportions have been validated through work we have undertaken for other clients.

An initial review of the projects in the pipeline is carried out to ensure that only projects which have (a) a defined value and (b) defined start and end dates are considered in the analysis.

The following input data is used to produce the forecasts from the Glenigan pipeline:

- The value of each project provided in the Glenigan pipeline for all projects excluding infrastructure.
- For infrastructure projects, the value used is a percentage of the value in the Glenigan pipeline, representing the construction portion of the value, excluding engineering construction. See Table 1.
- Start and end dates of each project provided in the Glenigan pipeline.
- For the significant projects, the project descriptions in the database enable us to assign the most appropriate project type (each type is driven by a different underlying model) to each forecast that is run through the LFT. Cases where a project consists of more than one type are broken down into multiple forecasts which are assigned specific project types to more closely predict the labour demand. This takes account of the different types of work within a single project, e.g. mixed developments comprising housing, commercial and industrial.
- For the rest of the projects (i.e. non-significant), the default project type allocation as defined in the Glenigan pipeline is applied, except for the infrastructure projects which are individually allocated to the most appropriate type from the available LFT infrastructure types.

Table 1: Proportion of total value related to construction

Infrastructure type	Sub-type	Construction value as a proportion of total value
Flooding	Flooding	90%
Transport	Bridges	100%
	Road Tunnel	100%
	Roads	100%
	Air Traffic Control	100%
	Airports	100%
	Ports	90%
	Stations (Underground/Network rail)	80%
	Mixed Rail	55%
	Electrification	35%
	Underground/DLR (not incl. Stations)	35%
	Rail maintenance	10%
	Trams	55%
	Contactless Ticketing	20%
Water	Water/Wastewater Treatment Works	90%
Communications	Broadband/Digital infrastructure	20%
Energy	Photovoltaics	80%
	Generation (Biomass)	50%
	Generation (Energy from Waste)	50%
	Generation (Nuclear)	50%
	Undefined Electricity Generation	40%
	Generation (Fossil fuel)	25%
	Generation (Renewables - Offshore)	20%
	Generation (Renewables - Onshore)	10%
	Gas Transmission/distribution	30%
	Electricity transmission/distribution	25%
	Interconnectors	20%
	Nuclear Decommissioning	60%
	Smart Meters	0%
	Oil and Gas	10%
Mining	Mining	80%
General infrastructure	General infrastructure	100%

2.3.2. Supplementing with the NIPP data

The NIPP data was examined to identify infrastructure projects or programmes of work taking place in the areas analysed that were not included in the Glenigan database. The NIPP data can be broken down into expenditure in each fiscal year. The construction cost was calculated from the total cost reported in the NIPP using the percentages in Table 1. Projects in the Glenigan dataset and the NIPP were combined (ensuring that there is no double counting) to create a known pipeline for the area.

Some projects in the NIPP can be clearly allocated as taking place within the area. However, some projects or programmes are allocated at a regional or national level, rather than at the area level. In these cases, we assigned an element of the work to the area in proportion to the area population (e.g. if a scheme included a variety of works in the region, then the proportion of spend used is proportional to the area's percentage of the region's population).

2.3.3. Dealing with "cliff edges" in pipelines

The data from the known projects presents a picture of the forthcoming projects. As the time horizon extends there is less clarity on what is planned. For instance, in some cases a small number of projects are due to complete in the 2020s. The small workload shown by the demand profile is highly unlikely to reflect the total amount of work that will take place at that time. It is almost certain that there will be additional projects that come on stream at that time which have not yet been considered. To overcome this "activity gap", we assume that the future workforce is approximately equal to the peak. It should be noted that the peak labour demand refers to the current "snapshot" of the scheduled construction spend. It is prudent to expect that, should the investment in future years follow the same pattern, the peak labour demand figures are likely to be roughly similar assuming the mix of projects remains consistent. The peak has, therefore, been projected forwards and backcast to create a more likely scenario of the ongoing workforce. The employment growth rate is based on the CSN employment forecast for the whole region under consideration.

2.4. Allowing for projects beyond the known pipeline

The known pipeline has two characteristics which prevent the results from providing the entire labour demand profile for the area:

- It does not record all smaller projects (roughly those of less than £250,000 value).
- It records mainly new build projects with only a small amount of repair and maintenance works included.

These two issues could have an effect on the estimate of labour demand and produce lower figures than expected. In response to these issues, the following steps are undertaken to provide an estimate of the total labour demand across a region.

1. Only the new build projects arising from the known pipeline are run through the LFT, excluding any repair and maintenance work.
2. To estimate the full amount of new build work not captured in the known pipeline we compare the total known pipeline new build spend in the region where the area analysed is located with the output estimates for the CSN for the peak year. Where an area spans multiple regions we compare the sum of the relevant regions. This allows us to estimate the new build spend for the entire region not included in the known pipeline and hence the

factor to be applied to the corresponding output for the area under consideration. In some cases the value of work in the known pipeline is higher than the CSN output forecast. In that case we assume that the known pipeline has captured the full extent of new build activity occurring within the area analysed during the peak year.

3. The new build spend not included in the known pipeline (calculated in the previous step) is assigned to the project types which reflect the mix of works recorded in the known pipeline for the area. A separate item is created for each project type (e.g. general infrastructure, housing) and assigned a value proportional to the contribution of each type within the known pipeline.
4. To calculate the R&M elements of work taking place within the LEP, the CSN output data is used to calculate the ratio of R&M to new build work in the entire region. We assumed this ratio to be constant throughout the region.
5. The LFT is used to calculate the labour demand profile based on the values of different types of work estimated above.
6. Labour demand for the peak year is then projected forward and backcast throughout the period of analysis. For this process we use the construction employment growth factors applied previously to the known projects.

2.5. Calculating total labour demand

The steps outlined above are used to produce the total construction labour demand generated by adding allowances for R&M and small new build projects to the data included in Glenigan.

2.6. Gap analysis

The gap analysis in this report appears to indicate shortfalls across a large number of occupations (in particular for central and West London). The scale of these gaps should be treated with some caution and considered in the context of local understanding of the market and the movement of construction workers around the UK. It may also be informed by other sources of data now and in the future e.g. GLA planning and employers' data.

The gaps shown are relative to one another and to similar research undertaken for other regions of the UK. However, London has an unusual profile, with relatively high employment in some areas compared to the number of residences. It is important to note that some of the apparent gaps will be filled by those living in one area but working in another. And also by workers that live in the South East and East regions as well as further afield.

In the appendices, the region/nation an employer operates in, compared with region/nation working in is shown. This indicates a significant movement of workers into London, most notably from the South East and East and this will ensure that a significant part of any apparent gap is already being managed.

2.7. Migration employment and Brexit

This report has not considered the UK leaving the European Union. At the time of writing the plans and implications are unknown both in the run up to leaving the EU and in the longer term.

It is believed that more than 11% of UK construction workers are of non-UK origin, with 88% of those being from EU countries. A significantly greater proportion of the London construction workforce is made up of migrant workers, in particular workers from the EU (estimated to be around a quarter).

So restrictions on migrant workers, at a time when shortages are being seen in some key occupations, could have a negative impact on construction in terms of projects being delayed and in wage inflation. However this may also provide an opportunity for local training and development.

In addition, some sources of funding may come to an end – e.g. for projects supported by: the European Social Fund; the European Regional Development Fund and the European Investment Bank and this may have a knock on effect to some construction projects.

Plans will need to be developed as greater clarity emerges around the potential impact and opportunities.

2.8. Thames Tideway Tunnel

The components of the Thames Tideway Tunnel do not appear in the list of known pipeline projects but are taken into consideration in the estimates of the other and unknown work.

The project will have an impact in the West, Central and East areas. Starting in Acton, West London, the 16 mile tunnel will follow the route of the River Thames to Limehouse in East London, and then to Abbey Mills Pumping Station near Stratford. It is then connected to the Lee Tunnel, for transfer to Beckton Sewage Treatment Works from where clean water is released into the Thames. Construction started in 2016 and is due for completion in 2023. The capital cost of the project is estimated at £4.2 billion and at peak will employ more than 4,000 people.

Details of the construction demand estimates are available from the Tideway Company to support the GLA's planning processes.

2.9. High Speed 2

High Speed 2 Phase 1 is likely to have a significant impact in Central and West London. The plans include a major rebuilding and expansion of Euston that includes redeveloping London Underground facilities and the local environment. The line would run from London Euston mostly in a tunnel, to a major new interchange with Crossrail and the Great Western Main Line at Old Oak Common, then along the Acton to Northolt Line past West Ruislip and alongside the Chiltern Main Line on a 2.5 mile viaduct over the Grand Union Canal and River Colne and then from the M25 to Amersham in a 6 mile tunnel.

Construction is due to start in 2017 or 2018. Phase 1 construction will be completed in 2026 while Phase 2 construction at Euston continues until 2033.

2.9.1. High Speed Rail Forecasting

At the time of writing, there is little publicly available information that allows for good forecasting of the implication of the construction of high speed rail infrastructure.

An interview with HS2 was published in Construction News in November 2014 in which it indicated a need for a monthly average total construction workforce of around 11,500 workers during construction with a peak construction workforce of more than 22,000. While many of these workers will need more traditional construction skills the expectation is for there to be skills gaps for modern construction methodologies. The interview reports an expectation that half the workforce will need skills at NVQ level 3 or above (where at the time of writing the estimate was for 80% of workers to be trained to NVQ level 2) suggesting that there is a need for upskilling of construction workers.

To some extent, HS2 is attempting to address these potential gaps with the creation of the new National College for High Speed Rail (NCHSR) in Doncaster and Birmingham.

LINK – [The article can be read at the Construction News website.](#)

High Speed 2 is likely to have more recent and relevant data about the programme's skills requirements and so an option is for the GLA to engage with HS2 in developing London's skills plans.

2.9.2. Context

The anticipated peak workforce for High Speed 2 is likely to be active across much of the route at any one time. However a significant proportion of that activity will be concentrated around specific infrastructure challenges such as the tunnels, viaducts, terminus and interchange stations being built in Central and West London.

London has a known construction workforce of around 400,000. So the total peak demand for workers for HS2 for the whole of phase 1 is, estimated at about 22,000, approximately 5.5% of London's construction workforce.

While HS2 is likely to have an impact on demand, training needs and associated factors there is no indication, at this early stage, that it will have a significant negative impact by drawing workers away from other projects. Rather, it is likely to present opportunities for which there should be time to plan, as better data about the route and specific construction elements become available.

3. A view of demand

This section provides an estimate of the labour demand that construction investment will create across the Greater London area over the period 2016-2020. It includes a detailed analysis of the projects taking place wholly within the area split into four areas, Central, East, South and West. A full list of all London boroughs analysed is presented in Table 2.

As outlined in the methodology section the demand analysis was carried out in two stages:

- The first stage comprised analysis and processing of the known pipeline to create a snapshot in time of the labour demand arising in the area from the currently recorded projects supplemented with additional data from the NIPP. This combination of the Glenigan pipeline supplemented with additional information provides a set of projects which constitute the “known pipeline”.
- Secondly, an estimate of the additional projects not included in the known pipeline is produced using the approach described in section 2.4.

Table 2: London boroughs analysed in the research

	Borough
Central	Camden
	City and County of the City of London
	City of Westminster
	Hackney
	Haringey
	Islington
	Kensington and Chelsea
	Lambeth
	Lewisham
	Southwark
	Tower Hamlets
	Wandsworth
East	Barking
	Bexley
	Bromley
	Enfield
	Greenwich
	Havering
	Newham
	Redbridge
	Waltham Forest
South	Croydon
	Kingston upon Thames
	Merton
	Richmond upon Thames
	Sutton
West	Barnet
	Brent
	Ealing
	Hammersmith and Fulham
	Harrow
	Hillingdon
	Hounslow

4. Central London

4.1. Pipeline of known projects

4.1.1. Glenigan pipeline analysis

The initial review of the Glenigan database resulted in the removal of two projects due to missing or wrong values and 148 projects due to missing dates. Also excluded were 15 projects that were clearly identified as consultancy projects. A full set of the projects which were omitted from the analysis is provided in Appendix B.

The Mean Value Theorem was applied to the remainder of the pipeline to identify the significant projects in the Central London area. The process identified 329 significant projects accounting for just over 81% of the total construction spend in the area. This allowed a detailed analysis of a large proportion of all the projects and a comprehensive consideration of the project types to which they were assigned.

Table 3 shows the number of significant projects within the Central London area, the percentage of spend arising from the significant projects and the total spend. The construction spend shown in this table takes account of any adjustments for engineering works and any incomplete, duplicate or consultancy projects. Values are shown in 2016 prices, the base price used in the Glenigan database.

Table 3: Breakdown of the significant project and total values in the Central London area, as captured in Glenigan¹

	Central London Area
Total number of projects in pipeline	2,109
Total Average Annual Construction spend (£m – 2015 values)	35,842
Number of significant projects in pipeline	329
Construction spend in significant projects (£m – 2015 values)	29,177
Percentage of construction spend in significant projects	81.4%

Appendix F provides a full breakdown of the significant projects and their construction values. The peak year for the spend profile is 2017. The location of the significant projects within Central London can be seen in Figure 2. The radius of the markers is in proportion to the value of the work taking place.

¹ The values in this table are the values from the Glenigan pipeline to which the construction element percentage has been applied and thus reflect the adjusted values of infrastructure projects values to distinguish between construction and engineering construction.

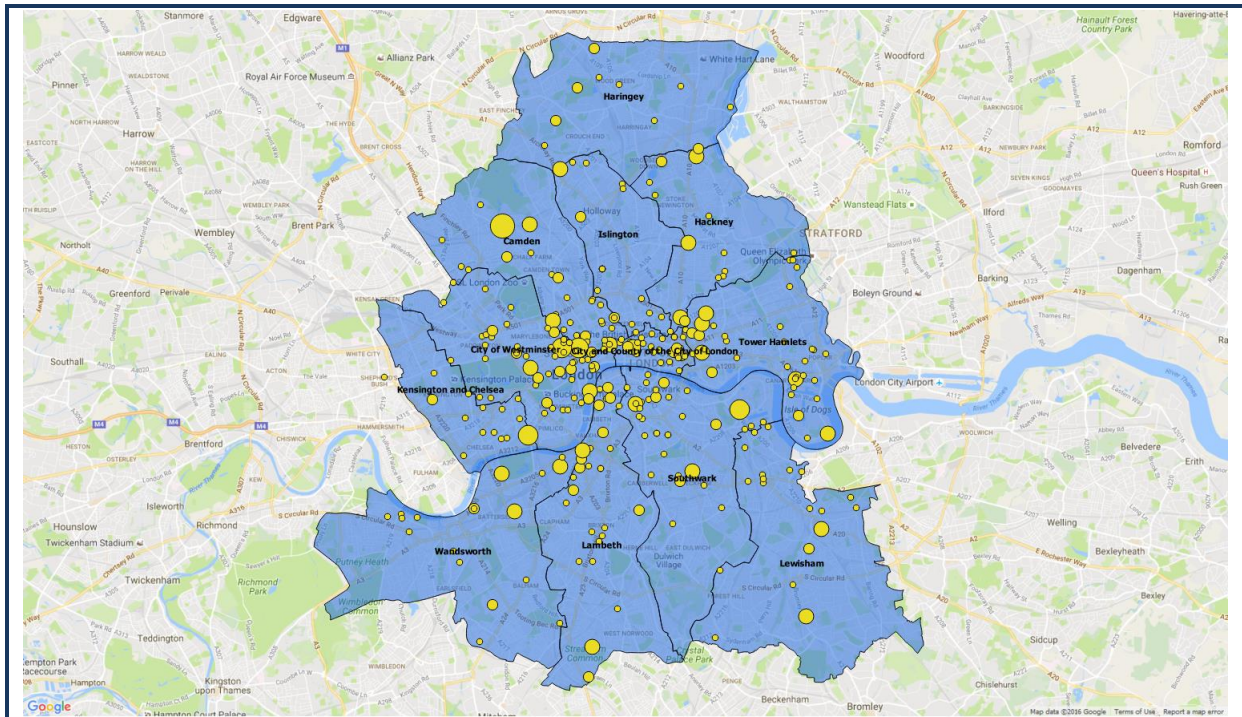


Figure 2: The Central London significant projects in Glenigan used in this analysis

4.1.2. Glenigan & NIPP spend analysis

Implementing the methodology outlined in section 2 leads to the following findings. The spend in 2017 of the total known pipeline is shown in Table 4 for new build projects only.

Table 4: New-build construction spend by project type in 2017 (total known pipeline)

Project type	Construction spend in 2017 (2016 values - £m)	% of total
Private Commercial	6,771	35%
New housing	6,320	33%
Public non-Housing	3,350	17%
Infrastructure	2,568	13%
Private Industrial	138	1%
Total	19,148	100%

Table 5 shows the infrastructure construction spend from both Glenigan and the NIPP in 2017 by sub-sector.

Table 5: Construction spend per infrastructure sub-type in 2017 (total known pipeline)

Infrastructure sub type	Construction spend in 2017 (2016 values - £m)	%of total
Transport	1,260	49%
General Infrastructure	650	25%
Water	321	13%
Energy	182	7%
Communications	149	6%
Flooding	7	0%
Total	2,568	100%

4.2. Estimate of total labour demand

As outlined in the methodology the known pipeline may not include smaller projects or repair and maintenance work. This section shows the outcomes of the analysis which includes the total construction labour demand with an employment growth rate included. In the Greater London case the known projects estimate for the region was greater than the CSN forecast for the region and it was therefore assumed that the known pipeline has captured all of the new build activity. This output is shown in Figure 3. The solid blue area shows the labour demand arising from the Glenigan and NIPP projects including any R&M included in Glenigan or the NIPP. The red shaded area shows the likely total labour demand arising from estimates of other work. The total construction labour demand including the volume of R&M inputted from the CSN model peaks for the area in 2020 at 431,350.

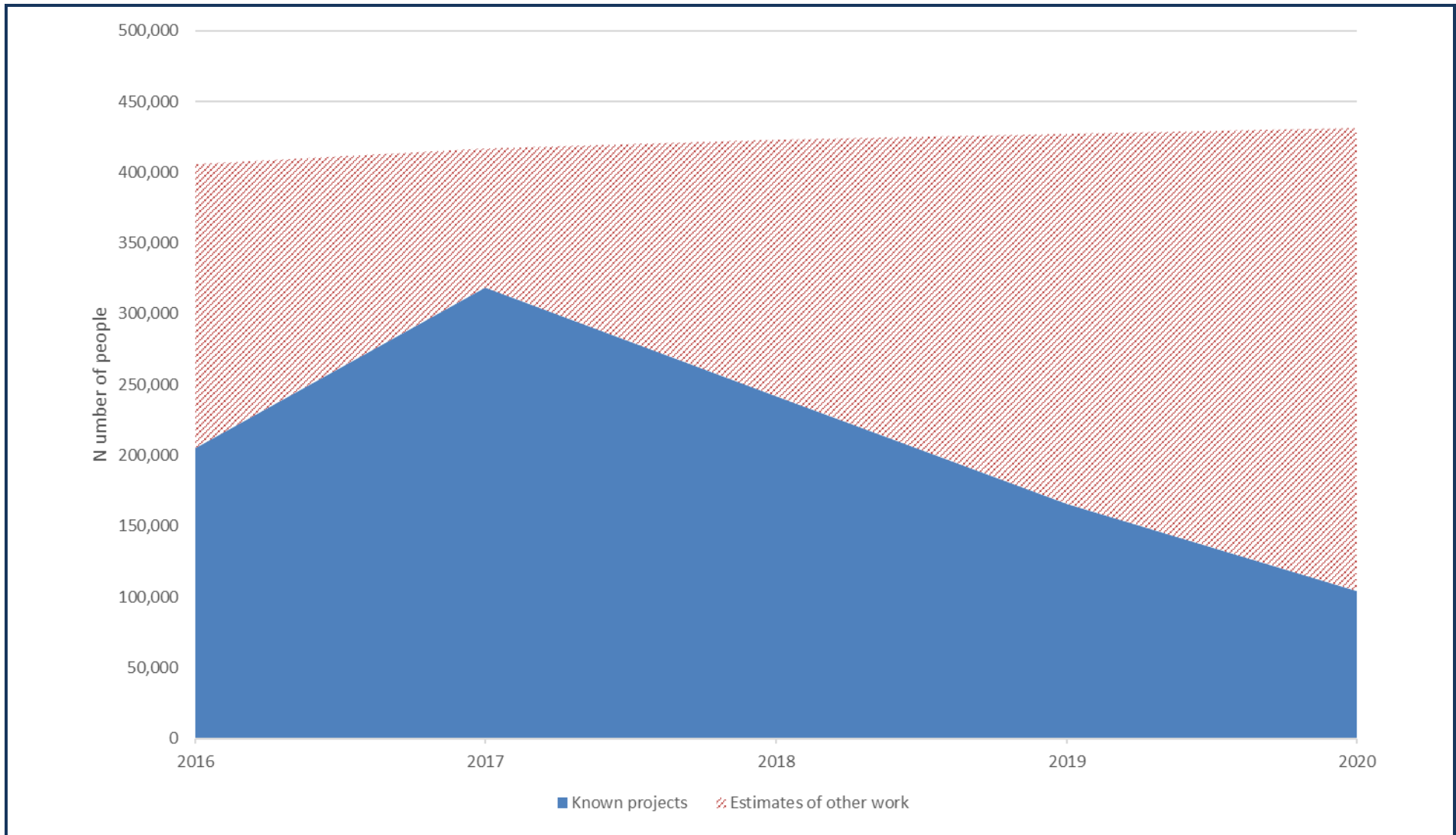


Figure 3: Total construction labour demand including estimates for both R&M and projects not in the known pipeline

4.2.1. Glenigan and NIPP labour demand

For the peak year in Glenigan of 2017 we have shown a detailed breakdown by each of the 28 occupational groups for the Glenigan and the NIPP projects. These are shown in Figure 4: Construction labour demand arising from the known projects by occupation in the peak year.

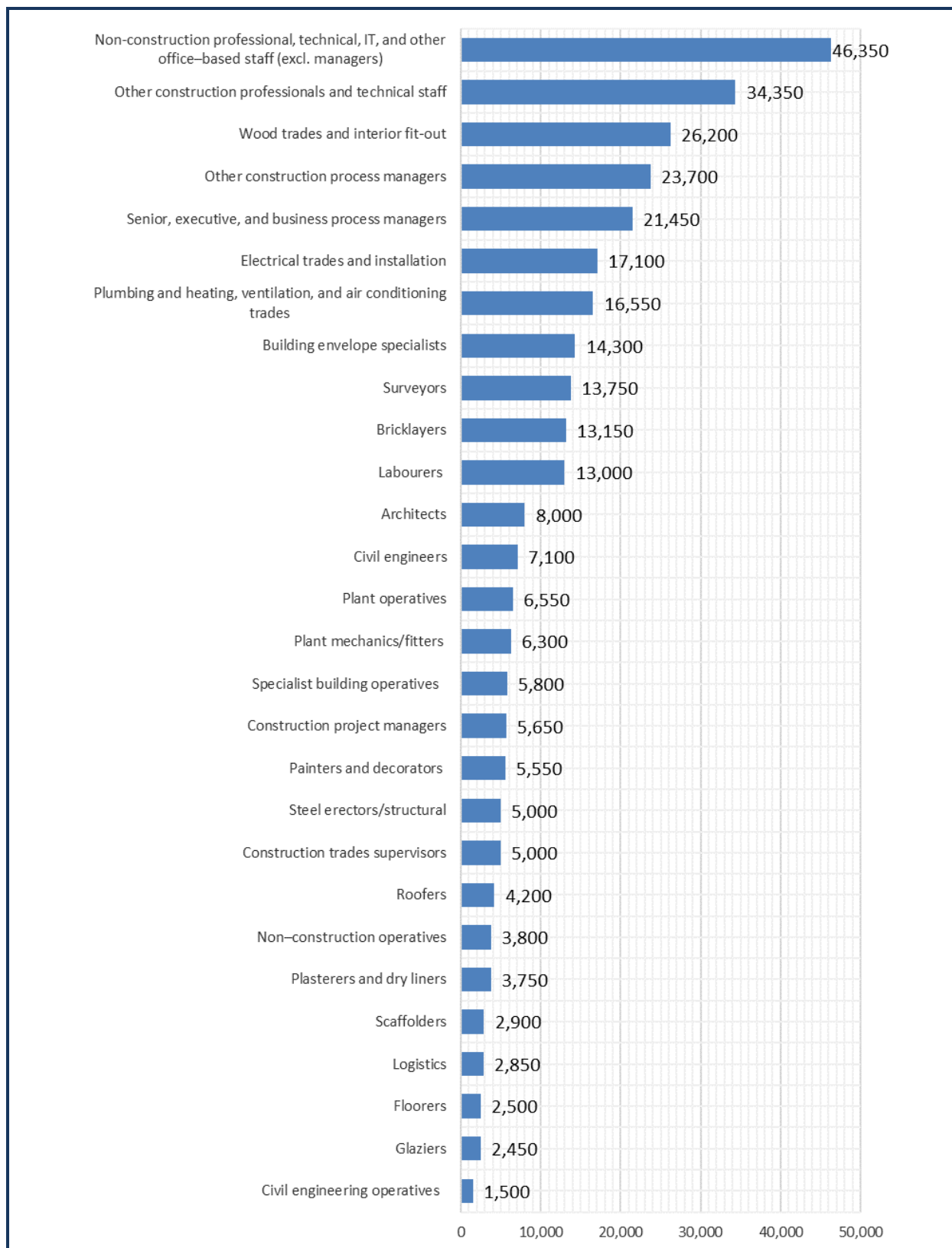


Figure 4: Construction labour demand arising from the known projects by occupation in the peak year

4.2.2. Breakdown of labour demand by project type

The labour demand generated by the total known pipeline in Glenigan and the NIPP has been calculated from the spend in each new-build project type, shown in Table 6: Known new-build projects construction labour demand.

Table 6: Known new-build projects construction labour demand

Project Type	Labour Demand in 2017	% in 2017
Private Commercial	127,800	40%
New Housing	101,250	32%
Public Non-housing	61,550	19%
Infrastructure	19,550	6%
Private Industrial	2,350	1%
Total	312,500	100%

4.3. Summary of demand

It appears that the labour demand estimates for Central London are higher than might be expected, with a total labour demand of more than 300,000 excluding repair and maintenance. In comparison, the CSN estimate is for around 400,000 for the whole of Greater London.

We have inspected the significant projects to ensure that, on the basis of the information that is available in Glenigan, projects that have a national coverage (e.g. England-wide schools building that may be attributed to Whitehall) have been removed.

However there are a number of reasons that help explain the apparent disparity between employment demand from the CSN and LFT. Although the basis for both is the amount of work that is happening within Greater London, they use different methodologies different data sources and consider different assumptions about the work included and how associated employment is calculated. To some extent the difference is between where people live and where they work. But in addition to this:

- LFT demand is calculated from projects identified within the Glenigan database; whereas CSN demand is based on forecasts for construction output. This means the demand basis isn't the same for both, although both are producing a view on what future work is likely to be.
- LFT labour demand – is an aggregate of the labour profiles for the projects; whereas CSN employment demand looks at the relationship between the existing workforce and work being carried out and extrapolates this forward.
- In addition, the CSN accounts for inter-regional flows when calculating the ARR.

The disparity is not a just case of where people live and work, I think there are more at play, in particular. It comes back to the fact that the LFT and CSN use very different methodologies.

[It should also be noted that the most recently published CSN reports are based on data gathered in autumn 2015, whereas the Glenigan data used for the Labour Forecasting tool was taken in summer 2016 – and this may result in an additional apparent discrepancy.]

- The analysis of the labour demand arising from the construction spend in the Central London area peaks at around 431,350 people in 2020, taking account of estimates of other work including R&M in addition to the known pipeline of projects.
- More than 40% of the known new build labour demand arises from private commercial, while new housing makes up just under 32% of the total demand and public non-housing 19%. Infrastructure is 6% private Industrial makes up a little under 1%
- During 2017, the peak year of the Glenigan pipeline demand, the most labour-intensive occupation group is “non-construction professional, technical, IT and other office-based staff” with an annual demand of 46,350 people.
- The estimate of demand for trade occupations for the peak year of 2017 are as follows:
 - The trade occupation for which demand is highest is “wood trades and interior fit-out”, peaking at 26,200 people;
 - “Electrical trades and installation” then follow with about 17,100 people demanded;
 - “plumbing and heating, ventilation and air conditioning trades” rank third, with a demand of 16,550 people.

5. East London

5.1. Pipeline of known projects

5.1.1. Glenigan pipeline analysis

The initial review of the Glenigan database resulted in the removal of 51 projects due to missing dates. A full set of the projects which were omitted from the analysis is provided in Appendix C.

The Mean Value Theorem identified 141 significant projects accounting for just over 76% of the total construction spend in the area.

Table 7 shows the number of significant projects within the East London area, the percentage of spend arising from the significant projects and the total spend. The construction spend shown in this table takes account of any adjustments for engineering works and any incomplete, duplicate or consultancy projects. Values are shown in 2016 prices, the base price used in the Glenigan database.

Table 7: Breakdown of the significant project and total values in the East London area, as captured in Glenigan²

	East London Area
Total number of projects in pipeline	746
Total Average Annual Construction spend (£m – 2016 values)	6,778
Number of significant projects in pipeline	141
Construction spend in significant projects (£m – 2016 values)	5,171.0
Percentage of construction spend in significant projects	76.3%

Appendix F provides a full breakdown of the significant projects and their construction values. The peak year for the spend profile is 2017. The location of the significant projects within East London can be seen in Figure 5. The radius of the markers is in proportion to the value of the work taking place.

² The values in this table are the values from the Glenigan pipeline to which the construction element percentage has been applied and thus reflect the adjusted values of infrastructure projects values to distinguish between construction and engineering construction.

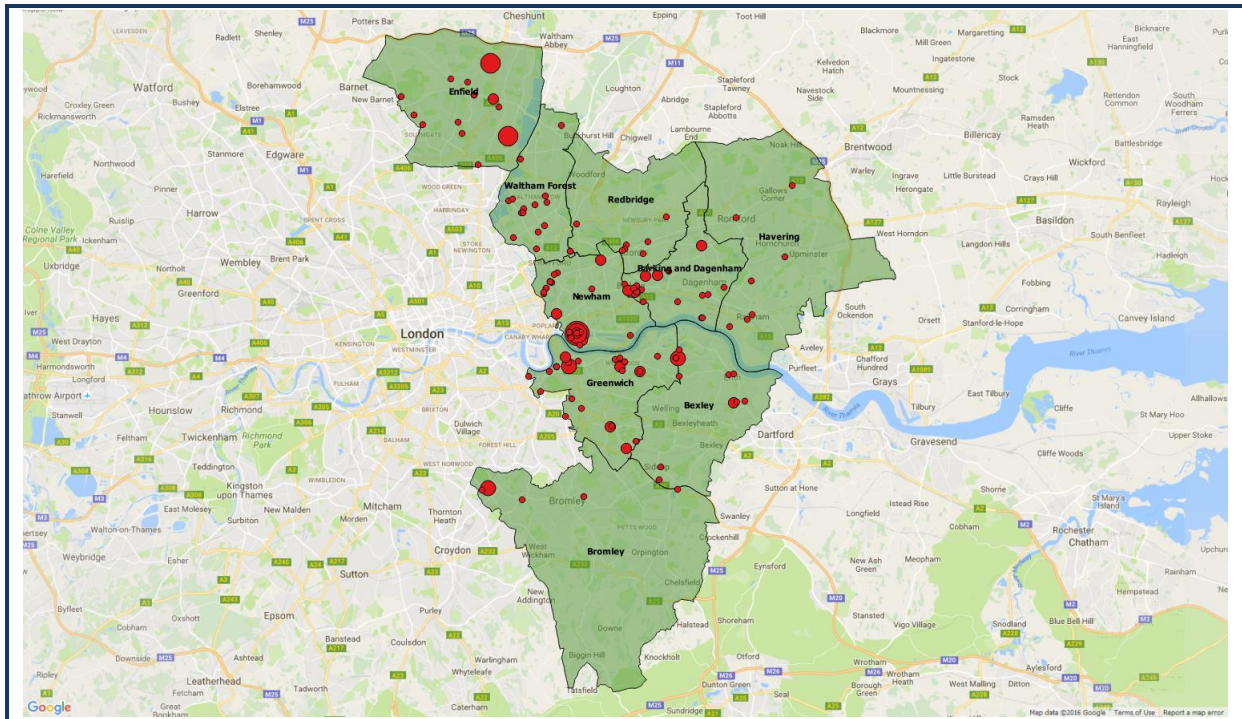


Figure 5: The East London significant projects in Glenigan used in this analysis

5.1.2. Glenigan & NIPP spend analysis

The spend in 2017 of the total known pipeline is shown in Table 8.

Table 8: New-build construction spend by project type in 2017 (total known pipeline. shows the infrastructure construction spend in the total known pipeline in 2016 by sub-sector.

Project type	Construction spend in 2017 (2016 values - £m)	% of total
New Housing	1,400	34%
Public non-housing	941	23%
Infrastructure	905	22%
Private Commercial	820	20%
Private Industrial	81	2%
Total	4,147	100%

Table 9: Construction spend per infrastructure sub-type in 2017 (total known pipeline)

Infrastructure sub type	Construction spend in 2017 (2015 values - £m)	%of total
Transport	310	34%
Water	265	29%
General Infrastructure	165	18%
Energy	87	10%
Communications	71	8%
Flooding	6	1%
Total	904	100%

5.2. Estimate of total labour demand

The estimated total labour demand is shown in Figure 6. The solid blue area shows the labour demand arising from the Glenigan and NIPP projects including any R&M included in Glenigan or the NIPP. The red shaded area shows the likely total labour demand arising from estimates of other work. The total construction labour demand including the volume of R&M inputted from the CSN model peaks for the area in 2020 at 84,000.

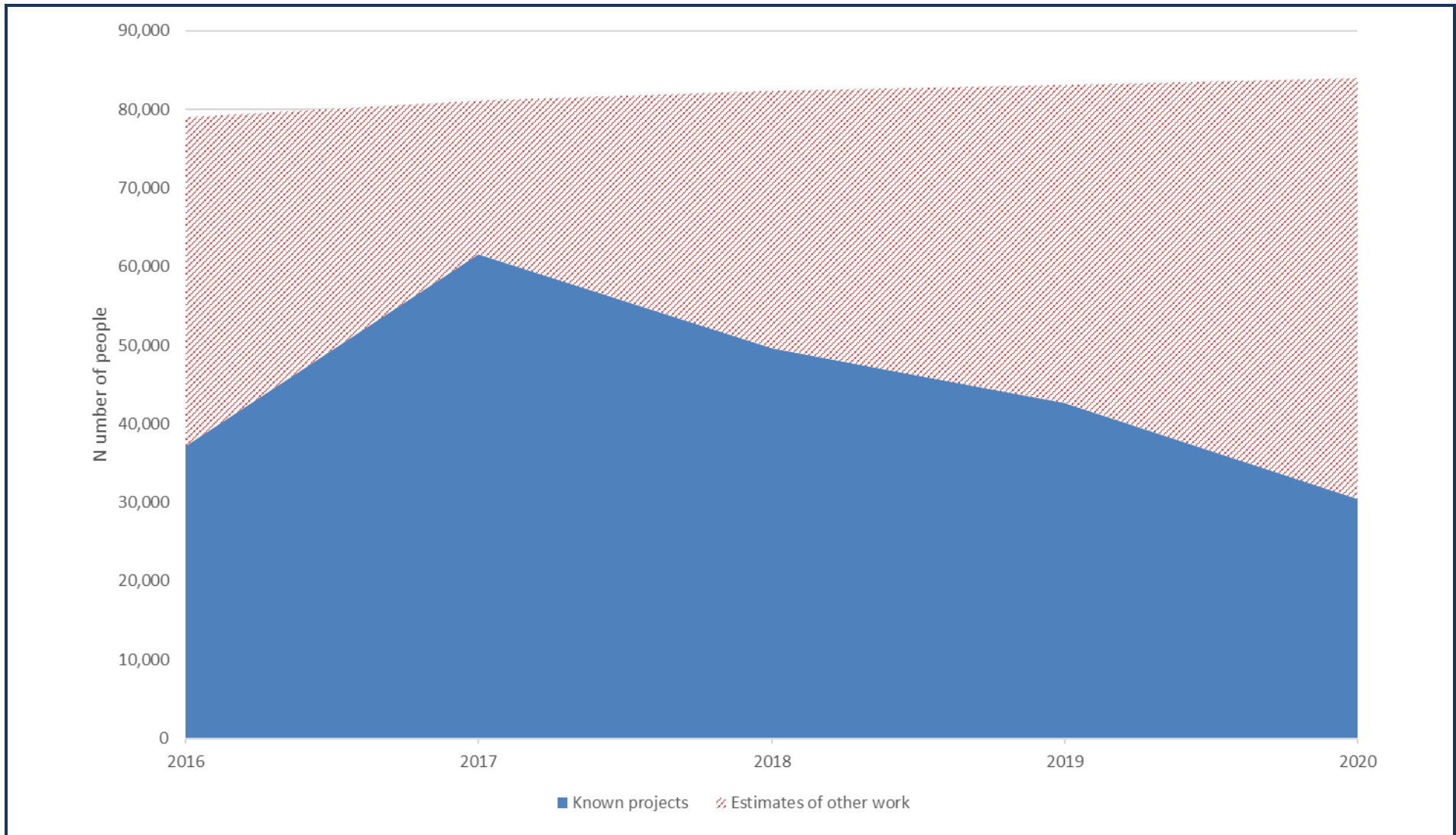


Figure 6: Total construction labour demand including estimates for both R&M and projects not in the known pipeline

5.2.1. Glenigan and NIPP labour demand

For the peak year in Glenigan of 2017 we have shown a detailed breakdown by each of the 28 occupational groups for which the forecast has been produced. These are shown in Figure 7.

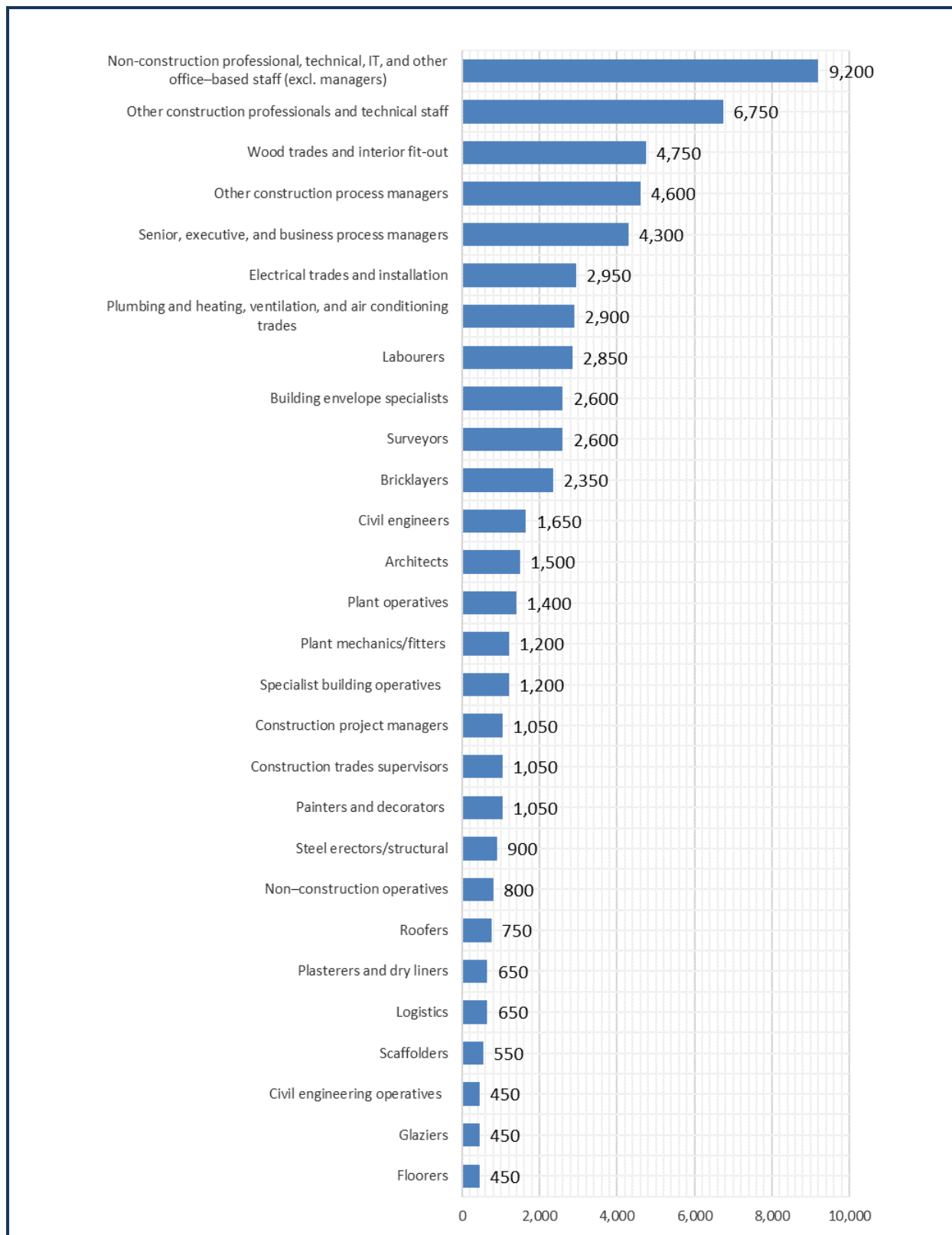


Figure 7: Construction labour demand arising from the known projects by occupation in the peak year

5.2.2. Breakdown of labour demand by project type

The labour demand has been calculated from the spend in each project type. In this section we have considered the total labour demand for the East London area, shown in Table 10.

Table 10: Known new-build projects construction labour demand

Project Type	Labour Demand in 2017	% in 2017
New Housing	20,250	33%
Public non-housing	16,100	26%
Private Commercial	13,850	23%
Infrastructure	7,600	12%
Private Industrial	1,500	3%
Total	59,300	100%

5.3. Summary of demand

- The analysis of the labour demand arising from the construction spend in the East London area peaks at around 84,000 people in 2020, taking account of estimates of other work in addition to the known pipeline of projects.
- Just less than 33% of the new build labour demand arises from new build housing, while public non-housing makes up 26% of the total demand and private commercial 23%. Infrastructure is just over 12% and private industrial makes up 3% of the labour demand.
- During 2017, the peak year of the Glenigan pipeline demand, the most labour-intensive occupation group is “non-construction professional, technical, IT and other office-based staff” with an average annual demand of 9,200 people.
- The estimate of labour demand for the trade occupations for the peak year of 2017 are as follows:
 - The trade occupation for which demand is highest is “wood trades and interior fit-out”, peaking at 4,750 people;
 - “Electrical trades and installation” then follow with about 2,950 people demanded;
 - “plumbing and heating, ventilation and air conditioning trades” rank third, with a demand of 2,900 people.

6. South London

6.1. Pipeline of known projects

6.1.1. Glenigan pipeline analysis

The initial review of the Glenigan database resulted in the removal of 27 projects due to missing dates. A full set of the projects which were omitted from the analysis is provided in Appendix D.

The Mean Value Theorem was applied to the remainder of the pipeline to identify the significant projects in the South London area. The process identified 76 significant projects accounting for 73% of the total construction spend in the area. This allowed a detailed analysis of a large proportion of all the projects and a comprehensive consideration of the project types to which they were assigned.

Table 11 shows the number of significant projects within the South London area, the percentage of spend arising from the significant projects and the total spend. The construction spend shown in this table takes account of any adjustments for engineering works and any incomplete, duplicate or consultancy projects. Values are shown in 2015 prices, the base price used in the Glenigan database.

Table 11: Breakdown of the significant project and total values in the South London area, as captured in Glenigan³

	South London Area
Total number of projects in pipeline	403
Total Average Annual Construction spend (£m – 2016 values)	2,326
Number of significant projects in pipeline	76
Construction spend in significant projects (£m – 2016 values)	1,698.7
Percentage of construction spend in significant projects	73.0%

Appendix F provides a full breakdown of the significant projects and their construction values. The peak year for the spend profile is 2017. The location of the significant projects within South London can be seen in Figure 8. The radius of the markers is in proportion to the value of the work taking place.

³ The values in this table are the values from the Glenigan pipeline to which the construction element percentage has been applied and thus reflect the adjusted values of infrastructure projects values to distinguish between construction and engineering construction.

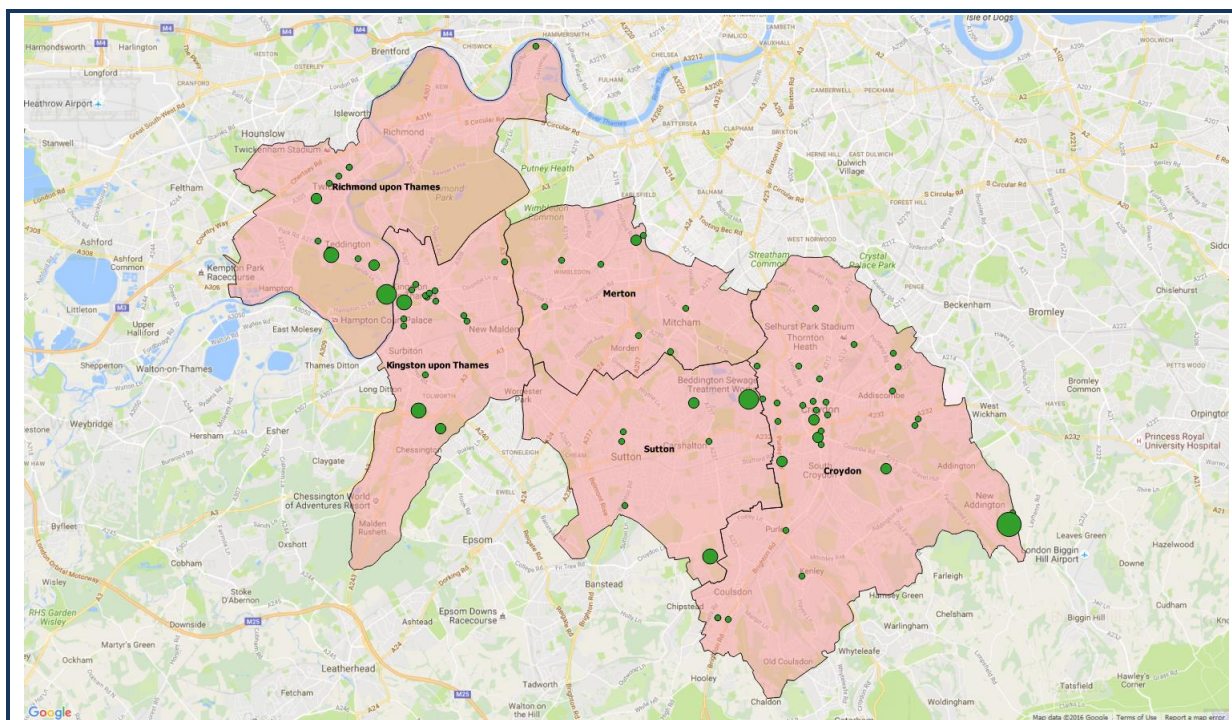


Figure 8: The significant South London projects in Glenigan used in this analysis

6.1.2. Glenigan & NIPP spend analysis

The spend in 2017 of the total known pipeline is shown in Table 12 for new build projects only.

Table 12: New-build construction spend by project type in 2017 (total known pipeline)

Project type	Construction spend in 2017 (2015 values - £m)	% of total
New Housing	479	28%
Private Commercial	451	27%
Infrastructure	446	26%
Public non-housing	301	18%
Private Industrial	6	0%
Total	1,683	100%

Table 13 shows the infrastructure construction spend in the total known pipeline in 2017 by sub-sector.

Table 13: Construction spend per infrastructure sub-type in 2017 (total known pipeline)

Infrastructure sub type	Construction spend in 2017 (2015 values - £m)	%of total
Transport	181	41%
Water	120	27%
General Infrastructure	45	10%
Flooding	41	9%
Communications	31	7%
Energy	27	6%
Total	446	100%

6.2. Estimate of total labour demand

The estimated total labour demand is shown in Figure 9. The solid blue area shows the labour demand arising from the Glenigan and NIPP projects including any R&M included in Glenigan or the NIPP. The red shaded area shows the likely total labour demand arising from estimates of other work. The total construction labour demand including the volume of R&M inputted from the CSN model peaks for the area in 2020 at 34,000.

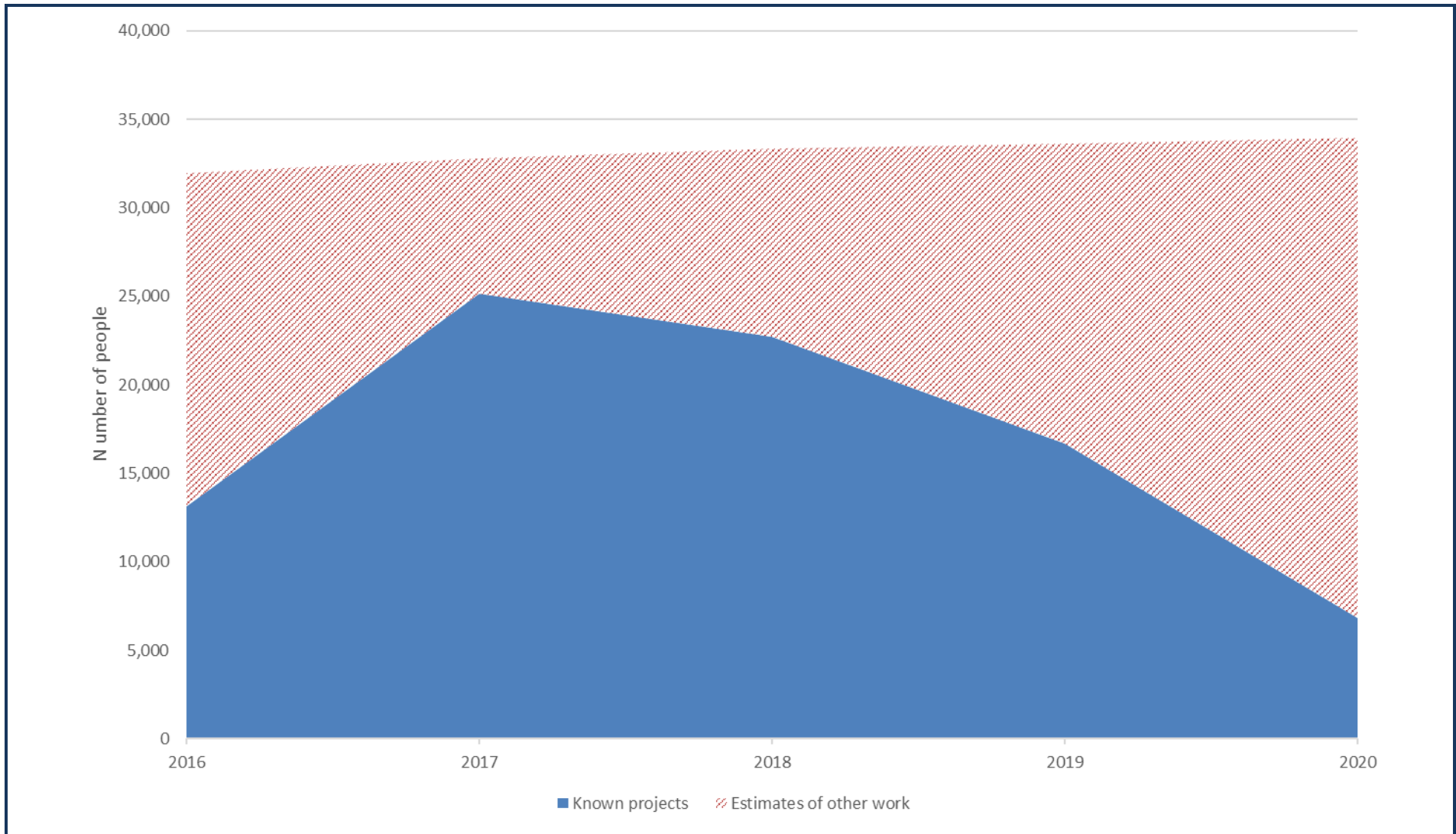


Figure 9: Total construction labour demand including estimates for both R&M and projects not in the known pipeline

6.2.1. Glenigan and NIPP labour demand

For the peak year in Glenigan of 2017 we have shown a detailed breakdown by each of the 28 occupational groups for which the forecast has been produced. These are shown in Figure 10.

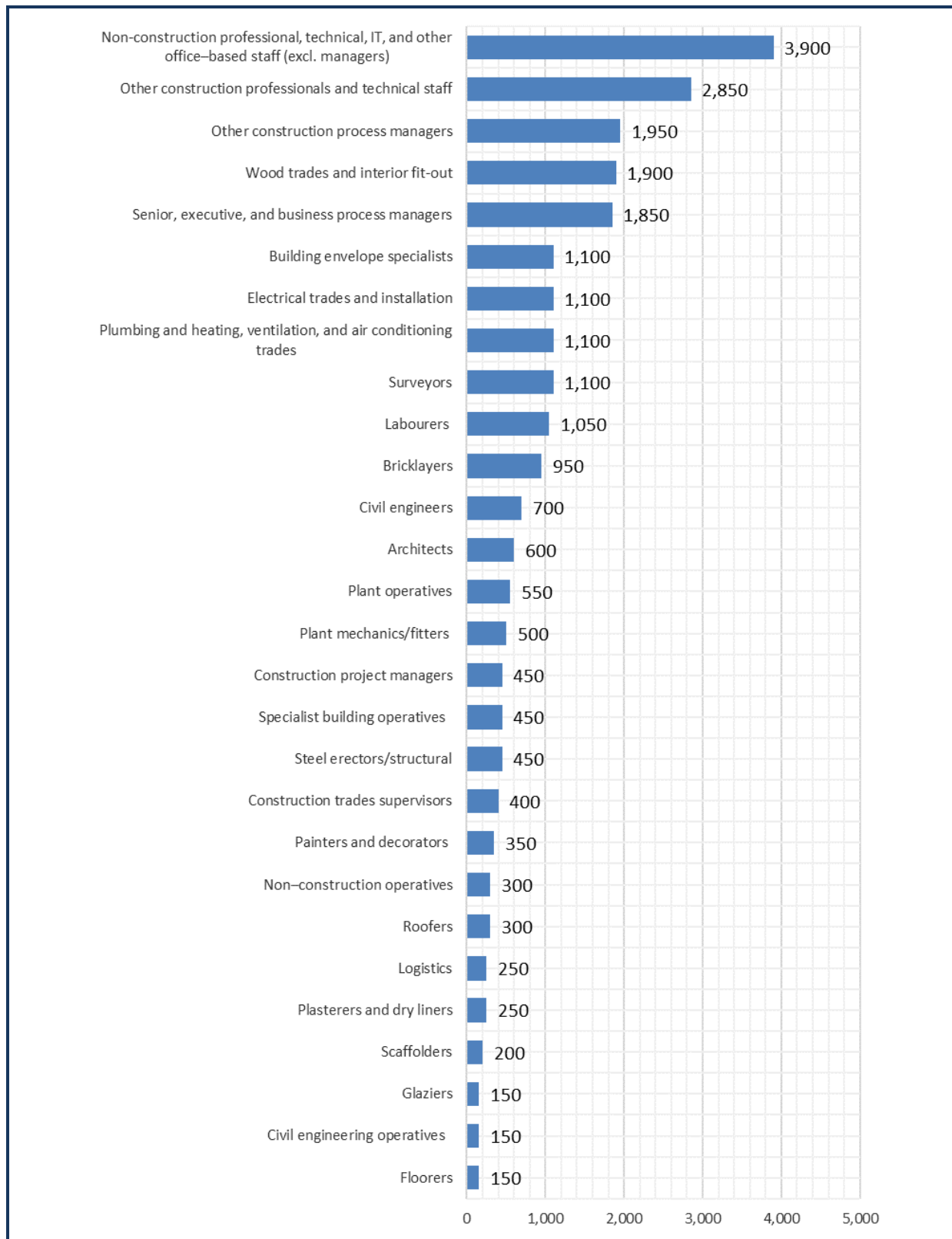


Figure 10: Construction labour demand arising from the known projects by occupation in the peak year

6.2.2. Breakdown of labour demand by project type

The labour demand has been calculated from the spend in each project type. In this section we have considered the total labour demand for the South London Area, shown in Table 14.

Table 14: Known new-build projects construction labour demand

Project Type	Labour Demand in 2017	% in 2017
Private Commercial	8,050	33%
New housing	7,300	30%
Public Non-housing	5,250	22%
Infrastructure	3,650	15%
Private Industrial	100	0%
Total	24,350	100%

6.3. Summary of demand

- The analysis of the labour demand arising from the construction spend in the South London area peaks at around 34,000 people in 2020, taking account of estimates of other work in addition to the known pipeline of projects.
- Around one third of the known new build labour demand arises from private commercial, while new housing makes up 30% of the total demand and public non-housing 22%. Infrastructure is around 15%. Private Industrial makes up 0.4% of the labour demand.
- During 2017, the peak year of the Glenigan pipeline demand, the most labour-intensive occupation group is “non-construction professional, technical, IT and other office-based staff” with an average annual demand of 3,900 people.
- The estimate of labour demand for the trade occupations for the peak year of 2017 are as follows:
 - The trade occupation for which demand is highest is “wood trades and interior fit-out”, peaking at 1,900 people;
 - “Electrical trades and installation”, “plumbing and heating, ventilation and air conditioning trades”, and “building envelope specialists” rank third, with a demand of 1,100 people each

7. West London

7.1. Pipeline of known projects

7.1.1. Glenigan pipeline analysis

The initial review of the Glenigan database resulted in the removal of 1 project which had a missing value and 63 projects due to missing dates. Also excluded were 3 projects which were clearly identified as duplicates and 2 projects which were consultancies. A full set of the projects which were omitted from the analysis is provided in Appendix E.

The Mean Value Theorem was applied to the remainder of the pipeline to identify the significant projects in the West London area. The process identified 156 significant projects accounting for just under 80% of the total construction spend in the area. This allowed a detailed analysis of a large proportion of all the projects and a comprehensive consideration of the project types to which they were assigned.

Table 15 shows the number of significant projects within the West London area, the percentage of spend arising from the significant projects and the total spend. The construction spend shown in this table takes account of any adjustments for engineering works and any incomplete, duplicate or consultancy projects. Values are shown in 2015 prices, the base price used in the Glenigan database.

Table 15: Breakdown of the significant project and total values in the West London area, as captured in Glenigan⁴

	West London Area
Total number of projects in pipeline	876
Total Average Annual Construction spend (£m – 2016 values)	10,720
Number of significant projects in pipeline	156
Construction spend in significant projects (£m – 2016 values)	8,554.7
Percentage of construction spend in significant projects	79.8%

Appendix F provides a full breakdown of the significant projects and their construction values. The peak year for the spend profile is 2016. The location of the significant projects within West London can be seen in Figure 11. The radius of the markers is in proportion to the value of the work taking place.

⁴ The values in this table are the values from the Glenigan pipeline to which the construction element percentage has been applied and thus reflect the adjusted values of infrastructure projects values to distinguish between construction and engineering construction.

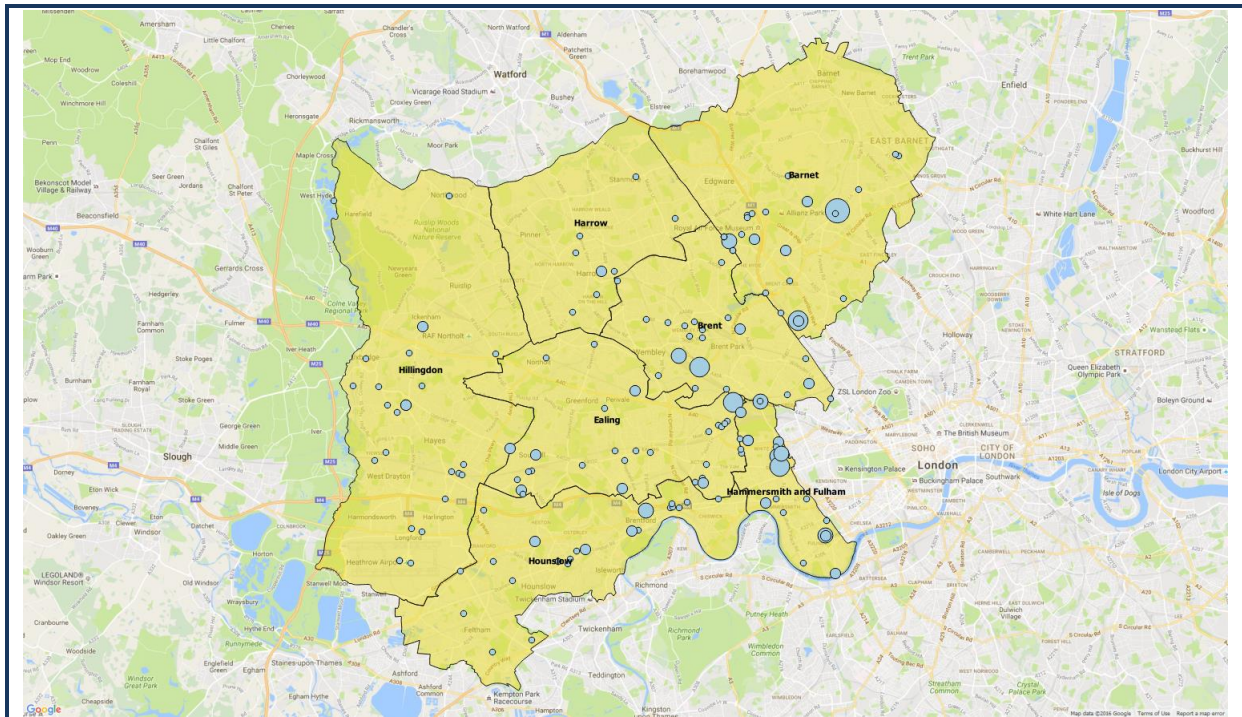


Figure 11: The significant projects in Glenigan used in this analysis

7.1.2. Glenigan & NIPP spend analysis

The spend in 2017 of the total known pipeline is shown in Table 16 for new build projects only.

Table 16: New-build construction spend by project type in 2017 (total known pipeline)

Project type	Construction spend in 2017 (2016 values - £m)	% of total
Infrastructure	1,496	27%
New Housing	1,464	26%
Private Commercial	1,302	23%
Public non-housing	1,137	21%
Private Industrial	143	3%
Total	5,541	100%

Table 17 shows the infrastructure construction spend in the total known pipeline in 2017 by sub-sector.

Table 17: Construction spend per infrastructure sub-type in 2017 (total known pipeline)

Infrastructure sub type	Construction spend in 2017 (2016 values - £m)	%of total
General Infrastructure	770	52%
Transport	312	21%
Water	270	18%
Energy	72	5%
Communications	64	4%
Flooding	5	0%
Total	1,492	100%

7.2. Estimate of total labour demand

The estimated total labour demand is shown in Figure 12. The solid blue area shows the labour demand arising from the Glenigan and NIPP projects including any R&M included in Glenigan or the NIPP. The red shaded area shows the likely total labour demand arising from estimates of other work. The total construction labour demand including the volume of R&M inputted from the CSN model peaks for the area in 2020 at 117,800.

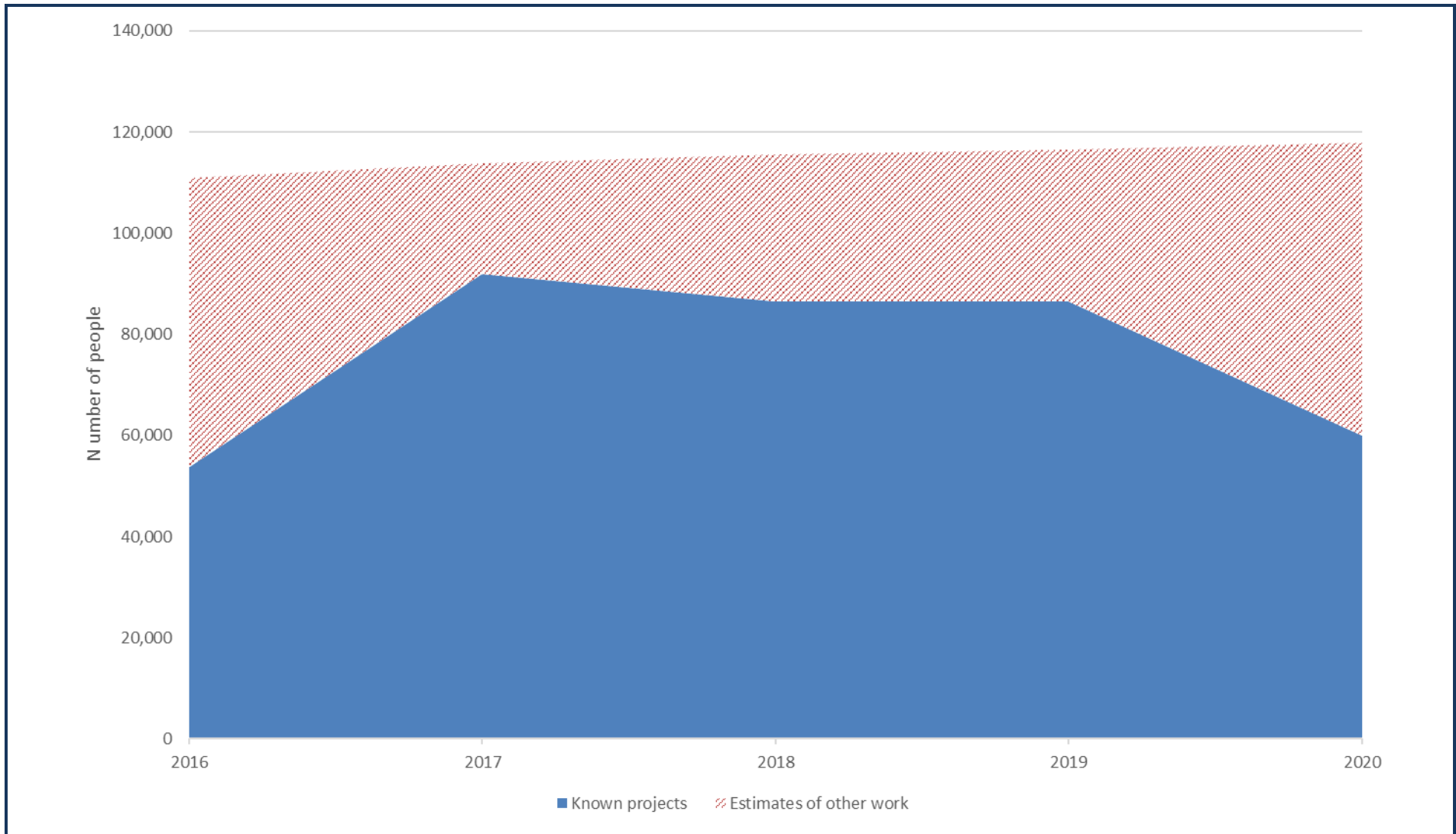


Figure 12: Total construction labour demand including estimates for both R&M and projects not in the known pipeline

7.2.1. Glenigan and NIPP labour demand

For the peak year in Glenigan of 2017 we have shown a detailed breakdown by each of the 28 occupational groups for which the forecast has been produced. These are shown in Figure 13.

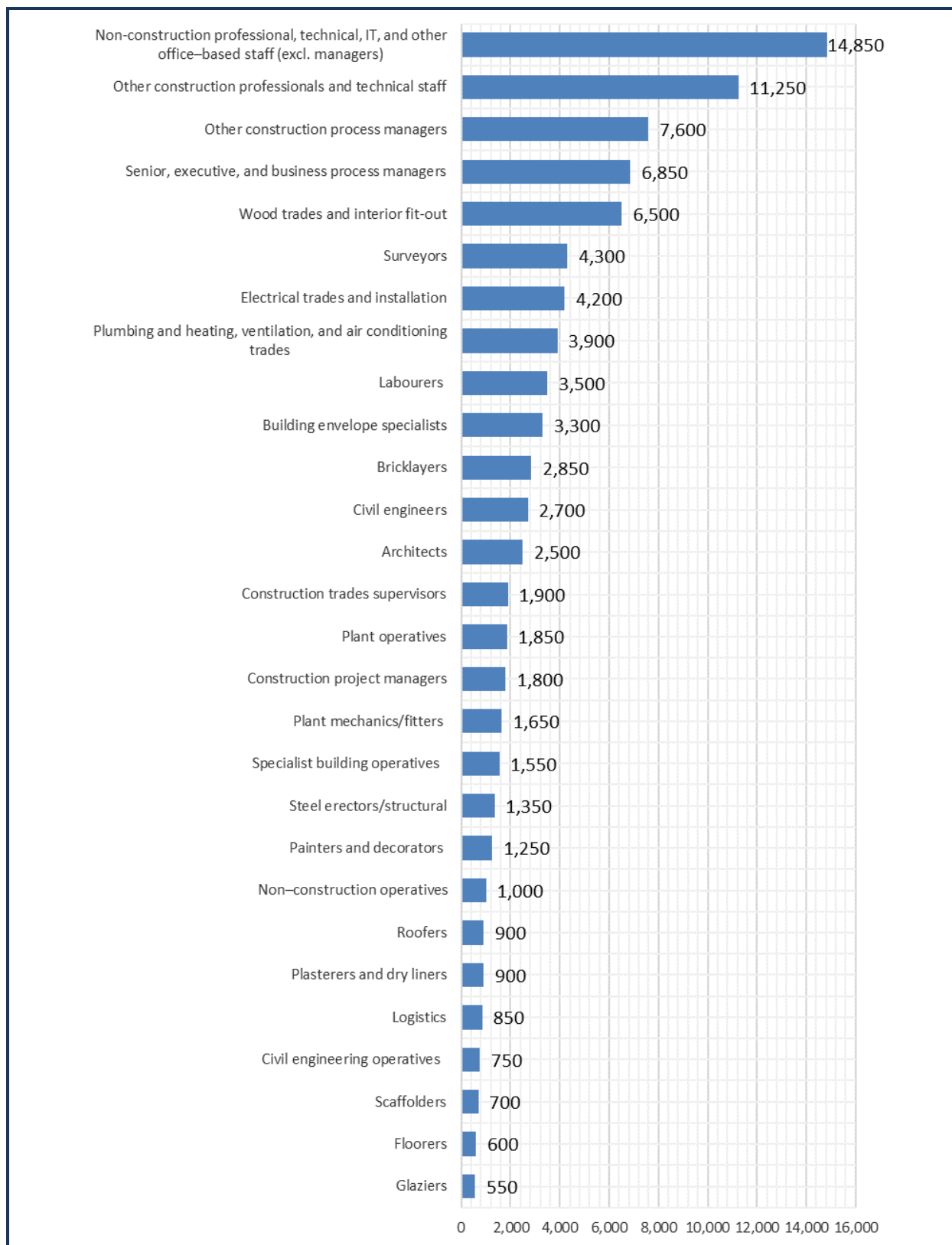


Figure 13: Construction labour demand arising from the known projects by occupation in the peak year

7.2.2. Breakdown of labour demand by project type

The labour demand has been calculated from the spend in each project type. In this section we have considered the total labour demand for the West London Area, shown in Table 18.

Table 18: Known new-build projects construction labour demand

Project Type	Labour Demand in 2017	% in 2017
Private commercial	30,300	33%
New Housing	25,800	28%
Public Non-housing	20,900	23%
Infrastructure	11,600	13%
Private Industrial	2,600	3%
Total	91,200	100%

7.3. Summary of demand

- The analysis of the labour demand arising from the construction spend in the West London area peaks at around 117,800 people in 2020, taking account of estimates of other work in addition to the known pipeline of projects.
- Around 33% of the known new build labour demand arises from private commercial, while new housing makes up 28% of the total demand and public non-housing just under 23%. Infrastructure is just under 13% and private industrial just under 3%.
- During 2017, the peak year of the Glenigan pipeline demand, the most labour-intensive occupation group is “non-construction professional, technical, IT and other office-based staff” with an average annual demand of 14,850 people.
- The estimate of labour demand for the trade occupations for the peak year of 2017 are as follows:
 - The trade occupation for which demand is highest is “wood trades and interior fit-out”, peaking at 6,500 people;
 - “Electrical trades and installation” then follow with about 4,200 people demanded;
 - “plumbing and heating, ventilation and air conditioning trades” rank third, with a demand of 3,900 people.

8. A picture of supply

When looking at the supply of workers there are two main elements to consider: the size of the current workforce and the existing amount of training.

The first element of this section takes a view on the current employment levels for Greater London and how this relates to overall employment in Great Britain. It also looks at how employment is split across the four London divisions of West Central East and South. Data from CITB's Construction Skills Network is used along with official Government sources.

For the second section, while training occurs at Further Education (FE) and Higher Education (HE) levels, the focus of this report is more often on the FE training that takes place. This is because Further Education tends to be sourced and delivered in a closer proximity to the home and workplace, whereas the length of study time and specialisms for Universities for HE typically give much greater degrees of mobility. The much longer period of time taken to acquire qualifications and experience mean most HE qualified occupations are outside the period that this report can consider.

This is also in line with the proposed devolution of the adult education budget which funds the FE provision that the recent area reviews focused upon

[That does not mean that Greater London should not have ambitions to move workers through to higher level training and education. There may also be opportunities for more leadership and management, as well as specialist, training and development.]

The demand forecasts can then be compared against employment, training and workforce mobility to give an indication of possible gaps and/or occupational pinch points.

8.1. Main Points

- The estimated workforce in Greater London is just over 400,000 and represents 15% of the total UK workforce
- The percentage of self-employed workers in London increased in 2014 and 2015 to 49% of the total workforce. In Great Britain self-employment accounts for 40% of the workforce
- Residents in the central area account for approximately 51% of the workforce
- Over 200 training providers delivered construction-relevant FE courses within the Greater London region over the last three years, however there are thirty main providers who delivered over 83% of provision
- The share of competence achievements compared with technical achievements has fallen from 42% of total achievements in 2012/13 to 31% in 2014/15.

8.1.1. Existing Workforce

Recent trends workforces and business

- Workforce in Greater London increasing at a higher rate than that of the UK as a whole
- Micro firms makeup 95% of total firms in Greater London
- Self-employment is increasing in the region.

An analysis of the Annual Population Survey shows that the Central, East, South and West areas of Greater London account for around 51%, 20%, 10% and 19% respectively of the Annual Population Survey. Table 19 applies these percentage shares across the CSN occupational breakdown for all

areas to give an estimate of total employment at occupational and industry level across the four areas within Greater London.

Just over 50% of the workforce resides in the central area, almost 40% in the West and East, with just 10% residing in the south area.

Table 19: Construction occupational breakdown (source Experian and CITB)

Occupations	Greater London	Central	East	West	South
Senior, executive, and business process managers	28851	14714	5770	5482	2885
Construction Project Managers	13367	6817	2673	2540	1337
Other construction process managers	31796	16216	6359	6041	3180
Non-construction professional, technical, IT, and other office-based staff	62804	32030	12561	11933	6280
Construction Trades Supervisors	7083	3612	1417	1346	708
Wood trades and interior fit-out	40002	20401	8000	7600	4000
Bricklayers	6458	3293	1292	1227	646
Building envelope specialists	22629	11541	4526	4299	2263
Painters and decorators	18187	9275	3637	3455	1819
Plasterers	3493	1781	699	664	349
Roofers	2809	1432	562	534	281
Floorers	2804	1430	561	533	280
Glaziers	4580	2336	916	870	458
Specialist building operatives nec*	9673	4933	1935	1838	967
Scaffolders	1339	683	268	254	134
Plant operatives	5688	2901	1138	1081	569
Plant mechanics/fitters	2957	1508	591	562	296
Steel erectors/structural fabrication	2939	1499	588	558	294
Labourers nec*	15898	8108	3180	3021	1590
Electrical trades and installation	20778	10597	4156	3948	2078
Plumbing and HVAC Trades	18206	9285	3641	3459	1821
Logistics	2740	1397	548	521	274
Civil engineering operatives nec*	1960	1000	392	372	196
Non-construction operatives	6893	3516	1379	1310	689
Civil engineers	9070	4626	1814	1723	907
Other construction professionals and technical staff	30392	15500	6078	5775	3039
Architects	14235	7260	2847	2705	1424
Surveyors	13812	7044	2762	2624	1381
Total	401441	204735	80288	76274	40144

In recent years employment in Greater London has increased, following a decline in employment since 2009. The percentage change in employment in Greater London is higher than that of the UK as a whole although in 2013 employment decreased over 2012 at a higher rate than that of the UK as shown in Figure 14.

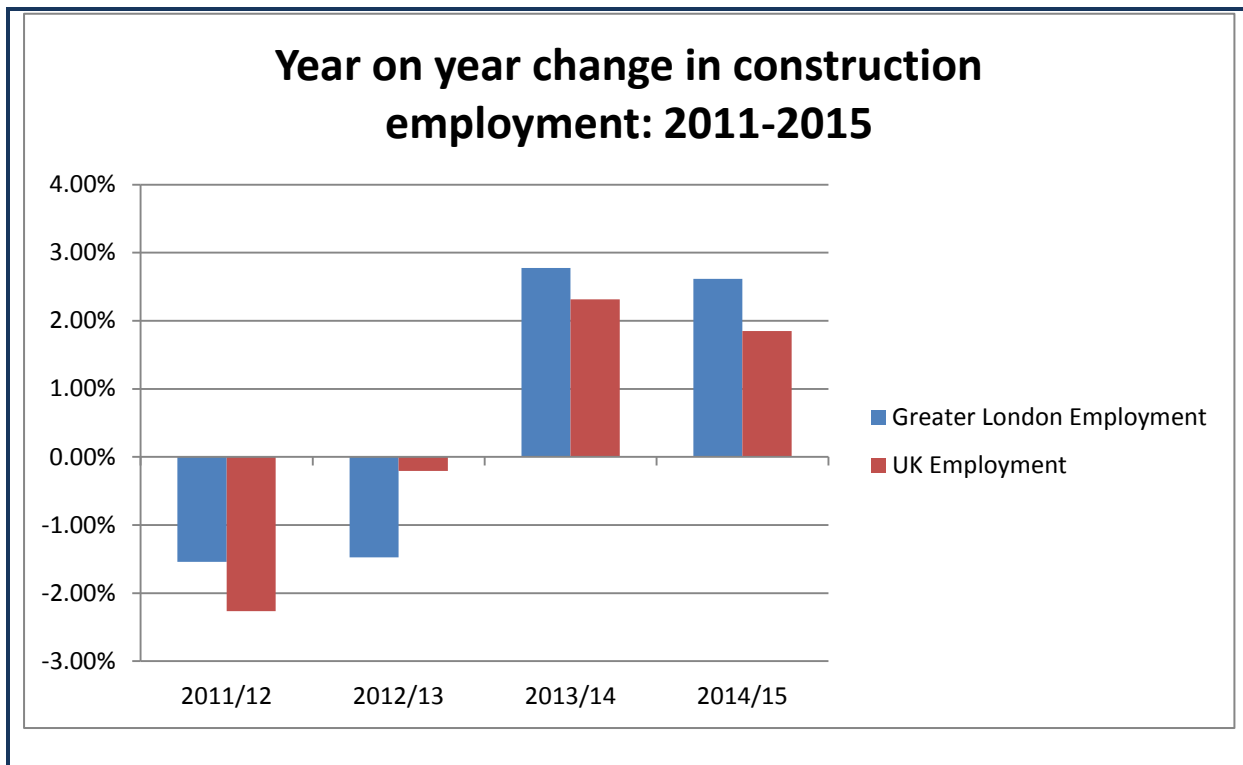


Figure 14: Year on year change in construction employment: 2011 – 2015 (Experian)

8.1.2. Employer Structure

The number of construction businesses in Greater London has increased from 2011 by over 30% to just over 39,000⁵. In 2011 construction businesses in Greater London accounted for 12% of the total number of construction businesses in Great Britain by 2015 this percentage had increased to 14%.

Figure 15 shows the distribution of construction businesses within the four areas of Greater London

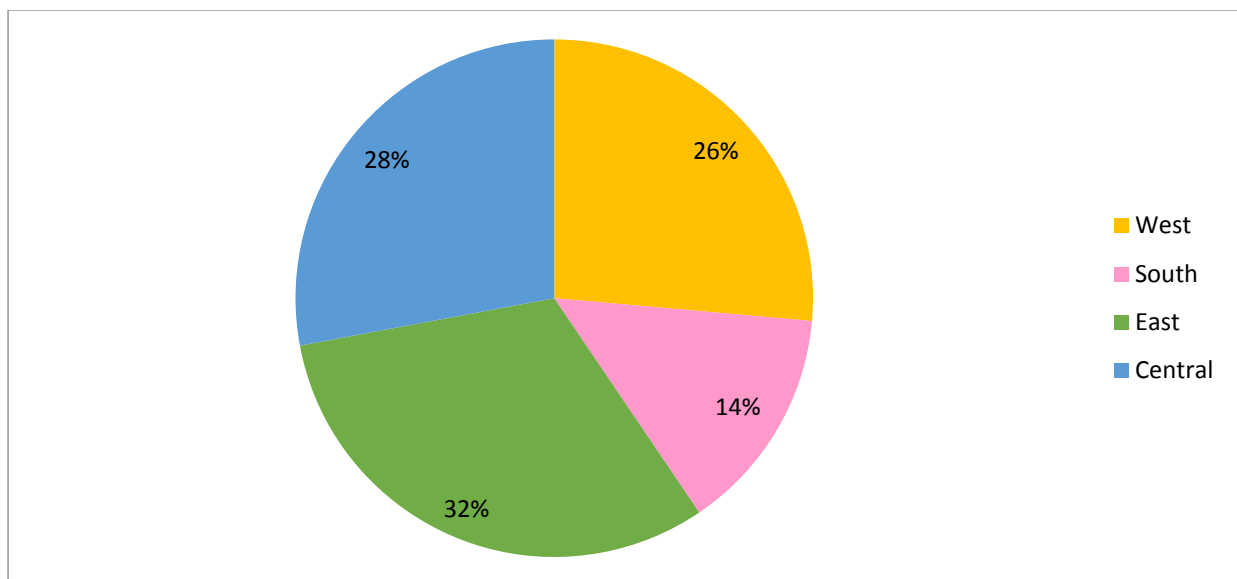


Figure 15: Comparison of Business Location in Greater London (Source UK Business counts 2015 NOMIS)

⁵ NOMIIS UK Business Counts viewed 22/08/16

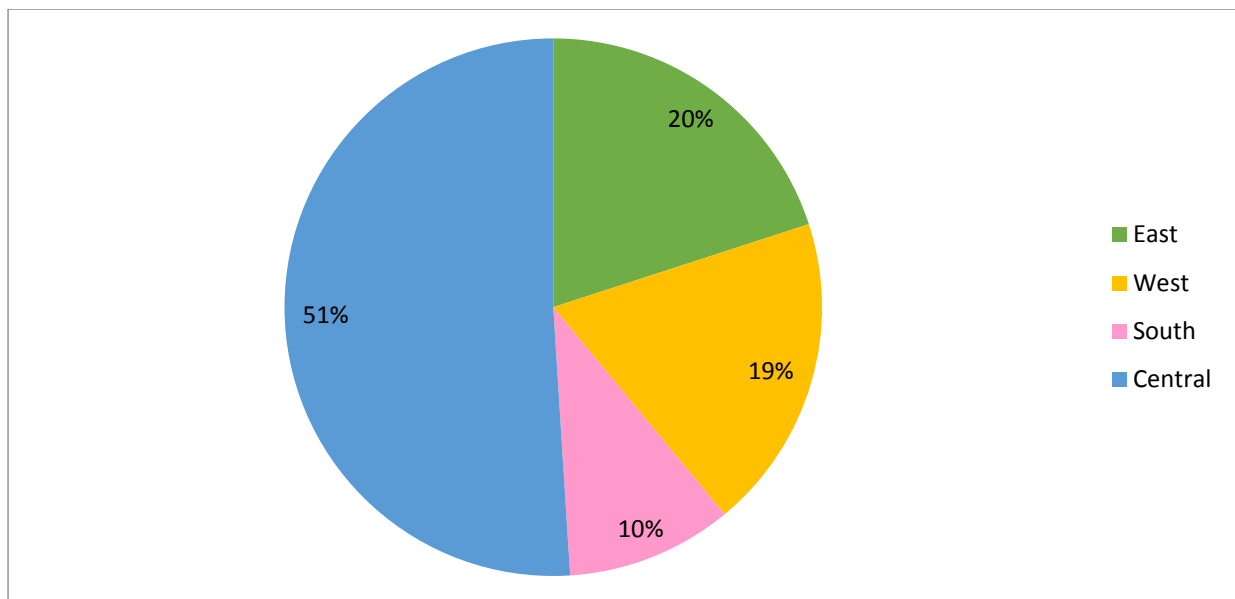


Figure 16: comparison of construction employment by location in Greater London (2015 NOMIS)

Figure 15 and Figure 16 show the distribution by location of businesses and employment in Greater London by area. Businesses are much more evenly distributed across the East, West and Central areas, whereas with employment over half of the construction workers work in the Central area.

This slightly different pattern between workforce and number of businesses highlights two of the main factors that are important when looking at the construction sector. These are:

- Direct employment Vs self-employment
- Size of businesses.

Overall the construction sector has high levels of self-employment with around 40% of the GB construction workforce being self-employed. In Greater London 49%, almost half the construction workforce are self-employed. Since 2011 the directly employed workforce has risen by almost 5% but the self-employed workforce has risen by just over 31%. It would seem that this increase in self-employment is the main driver in the increase in the Greater London construction workforce.

When it comes to Business size (excluding self-employment) the distribution of construction companies in Greater London is similar to that for Great Britain with the 95% of the capital's construction companies being micros, compared to just over 93% for Great Britain.

Figure 17 shows the distribution of construction businesses by size in Greater London

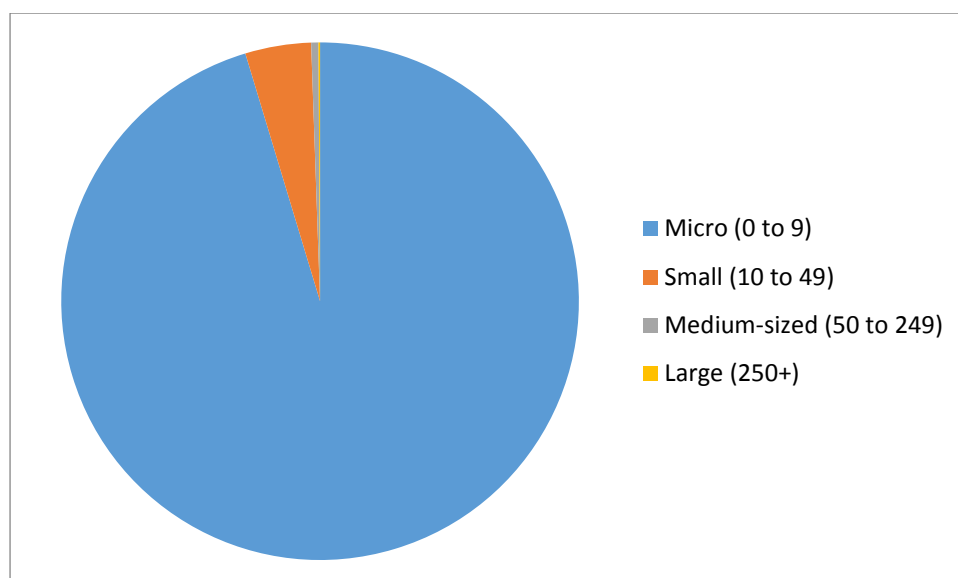


Figure 17: Distribution of Businesses by size (Source NOMIS 2015)

Micro firms form over 95% of the construction businesses in Greater London, with just over 4% of small organisations and less than 1% of medium and large. When looking at the four areas South, East and West businesses comprise of over 96% of micro firms but the Central area has a smaller proportion of micro companies but a larger proportion of large firms in Greater London are situated in the central area.

8.2. Training Provision

Greater London has

- 83% of learner volumes delivered by 30 main providers.
- Training is delivered across a broad range of construction occupations (defined against traditional categories but may not necessarily include new advanced technologies).
- Good levels of competence qualification achievements (rather than knowledge & theory based qualifications) linked to wood trades and interior fit outs, specialist building operatives and electrical trades and insulation.

CITB analysis of Skills Funding Agency individualised Learner Records for 2012/13, 2013/14 and 2014/15 academic years for construction learners showed that:

- Overall learner starts in Greater London increased by 1.91% from 2012/13 to 2013/14 and by 9.05% from 2013/14 to 2014/15
- Apprenticeship starts increased by 8.89% and 16.65% and FE and technical starts by 1.02% and 8.01% respectively for the same periods. This shows that most of the increase in starts was due to an increase in apprenticeship starts.
- Although apprentice starts are increasing, learning in construction in Greater London is still mainly focused on FE and technical qualifications (not linked to apprenticeships) and, in 2014/15 academic year, they accounted for 87% of the starts.
- In terms of the London areas, the East area had the most starts, with 9,739 in the 2014/15 year, 1,028 of these were apprenticeship starts.

Looking at the “Competence” based qualifications (which are in the main NVQs) a link can be made between the qualification title and the likely occupation that an individual will have. For example someone starting or achieving a bricklaying qualifications is highly likely to be working as a bricklayer as competence based qualifications are based on an assessment work based skills.

Table 20 looks at qualification achievements over the last year for the identified competence based qualifications, looking at achievement volumes for each occupation against the total qualification achievement for Greater London and comparing this against the achievement pattern England. From this analysis there looks to be patterns for particular occupations.

[The information shown in Table 20 has been produced by mapping qualification reference numbers and titles to the most appropriate Construction Skills Network occupations. This has been built up over a number of years by CITB with over 1,800 qualifications reviewed and linked where possible. Note: there are some qualifications that have broad or generic titles that cannot be linked to distinct occupations.]

Table 20: Construction occupational breakdown, 2015 (Source Experian & CITB)

Construction Occupations	Greater London Achievement	% of overall Greater London Achievements	% of England Achievements
Bricklayers	236	3.85%	6.58%
Building envelope specialists	492	8.02%	3.80%
Civil engineering operatives nec*	350	5.71%	7.94%
Construction managers			0.31%
Construction Trades Supervisors	58	0.95%	0.74%
Electrical trades and installation	837	13.65%	11.81%
Floorers	219	3.57%	2.59%
Glaziers	192	3.13%	4.21%
Logistics	53	0.86%	0.26%
Non-construction operatives	29	0.47%	0.45%
Other construction professionals and technical staff	101	1.65%	1.00%
Painters and decorators	496	8.09%	3.98%
Plant mechanics/fitters	7	0.11%	1.04%
Plant operatives	253	4.12%	15.43%
Plasterers and dry liners	127	2.07%	2.42%
Plumbing and HVAC Trades	435	7.09%	11.49%
Roofers	20	0.33%	1.54%
Scaffolders	124	2.02%	2.28%
Specialist building operatives nec*	868	14.15%	6.38%
Steel erectors/structural	185	3.02%	1.03%
Wood trades and interior fit-out	1052	17.15%	14.70%

The majority of the achievements referred to in Figure 11 are at Level 2 (over 80%), with a smaller proportion at Level 3 (about 17%) and a small minority at Level 4 and above

The percentage comparison with England is used as a device to demonstrate the provision of training in Greater London by occupations relative to one another to gauge where provision is relatively high or low. Relatively high provision is highlighted in green; relatively low provision is highlighted in pink.

Occupations with good provision: occupations where the provision in Greater London is higher than that of the England as a whole includes Building Envelope Specialist, Painters and Decorators, Specialist Building Operatives and Wood Trades and Interior Fit-out.

However there are a number of occupations where the provision is below that of England these are Bricklaying, Civil Engineering Operatives, Plant mechanics/fitters, plant operatives and roofers.

Table 21: looks at the competence based qualification achievements in the four London areas

Area	2012/13	2013/14	2014/15
Central	3546	1753	2297
East	2687	1827	1776
South	499	272	380
West	2119	1657	1683

In all the areas the number of achievements fell from 2012/13 to 2013/14 however achievements rose again in the 2014/15 academic year except for the East area where the decline continued.

In terms of training providers, from 2012/13 through to 2014/15 over 200 different providers have delivered training within Greater London, however there is a consistent pattern with over 80% of training being delivered by a core network of providers.

The main providers in the Greater London region and the number of achievements in 2014/15 are as follows:

College	Total Achievements 2014/15
Newham College of Further Education	868
Lambeth College	372
College of North West London	258
Uxbridge College	234
Ealing and Hammersmith and West London College	215
South Thames College	182
Barnet and Southgate College	141
Barking and Dagenham College	129
Havering College of Further and Higher Education	109
Lewisham and Southwark College	104
Bromley College of Further and Higher Education	84

Other main providers and achievements in 2014/15 are:

College	Achievements in 2014/15
Eastleigh College	422
Dudley College	283
CITB	237
West Nottinghamshire College	206
Basingstoke College	160
Swindon College	130
Northbrook College	129
South Leicestershire College	105
Gateshead College	77

A number of the providers are from outside the area which means that either London based learners attended colleges outside of the area or these out of area colleges provided site based assessments in the Greater London area.

The typical profile of many geographic areas is that a relatively small group of FE colleges deliver the majority of construction training. A smaller proportion of additional training is then delivered by a larger number of other providers. Sometimes these smaller specialist providers can operate far from the normal base of those for whom they provide training. In total this training covers the majority of the main occupations involved in the construction workforce

8.3. Additional Training

There appears to be a difference in the mix of training that is delivered by the main providers. For some, the focus is on what we would class as main qualifications recognised within the Ofqual database, for example:

- Level 2 NVQ Diploma in Wood Occupations (Construction) (QCF)
- Level 2 Diploma in Bricklaying (Construction) (QCF)
- Level 2 Diploma in Site Carpentry (Construction) (QCF)
- Diploma in Plumbing Foundation (QCF)
- Level 3 Diploma in Site Carpentry (Construction) (QCF)

These are regarded as the main qualifications linked to competence card schemes.

However some providers also deliver what we've categorised as *Additional Learning*, which is training that, in Ofqual terms, may not be a full regulated qualification. This type of training can be wide ranging in its nature. Some of examples are:

- Preparing and Operating Boom-type Mobile Elevating Work Platforms (MEWPs) in the Workplace.
- Non-regulated provision, Level 2, Building and Construction.
- Establishing Work Area Protection and Safety in the Workplace.
- Erecting and Dismantling Access/Working Platforms in the Workplace.

Main Training Provider in Greater London	Additional Learning	Main Qualifications
A	25%	75%
B	23%	77%
C	14%	86%
D	9%	91%
E	8%	92%
F	7%	93%
G	6%	94%
H	4%	96%
I	0%	100%
J	0%	100%

Of the main providers based in Greater London most of the delivery is focused on the main qualifications, with two colleges delivering 100% of main qualifications. Even college A with the highest percentage of additional learning qualifications, they still only account for a quarter of all the construction qualifications they deliver.

Main Training Provider outside of Greater London	Additional Learning	Main Qualifications
A	86%	14%
B	8%	92%
C	0%	100%
D	0%	100%
E	0%	100%
F	0%	100%
G	0%	100%
H	0%	100%
I	0%	100%

For colleges that are based outside of London but providing construction training to Greater London residents. Apart from college A where delivery of additional learning accounts for 86% of the total qualifications, for the rest of the colleges the delivery is at or almost 100% main qualifications.

8.3.1. Higher level training provision

It is notable that across London and the UK only a very small proportion of training is provided at levels 4 and 5 – where anecdotal evidence suggests there is increasing demand and gaps in provision.

9. Mobility of the Workforce

Construction workforces are fluid by nature and this section of the report will look at findings from the CITB survey into Workforce Mobility and Skills in the UK Construction Sector 2015 to give a picture of mobility within the workforce. Data specific to Greater London⁶ will be analysed to understand how this might impact on future training intervention and the supply of job opportunities for local people.

9.1. Main Points

- Around a fifth of all Greater London construction workers have worked in the industry for at least 20 years (19%). More than two fifths have done so for 10+ years (43%).
- Only half of all construction workers in Greater London were interviewed in the same region/nation in which they were living in when they started their construction career (50%).
- The average (mean) distance from Greater London's construction workers' current residence (taking into account temporary residences) to their current site was 19 miles (22 miles is the UK average)
- Seven in ten Greater London construction workers are confident that when they finish their current job their next job will allow them to travel to work from their permanent home on a daily basis
- Overall half of all construction workers in Greater London have only worked on one project type (51%),
- Two fifths of construction workers say they definitely will be working in the industry (38%) and a further two fifths think it is very or quite likely (40%)

9.2. Work History

Nearly 1 in 5 Greater London construction workers have worked in the construction industry for over 20 years (19%) and more than 2 in 5 have worked in the industry for at least 10 years (43%). The main reason for construction workers locating in Greater London is due to their employers sending them.

Not quite half of the construction workforce in Greater London has worked in there for their entire career which is much lower than the UK average of 80%.

In terms of the regions/nations in which workers' current employer operates in, the majority (84%) of workers in Greater London reported that their employer operated within the region they were currently working in, while 27% operated in the East of England, 27% in the South East and 13% in the North East, as shown in Appendix J.

9.3. Worker Origins

Workers were asked which region/nation they were living in just before they got their first job in construction in the UK. Overall half of all construction workers in Greater London (58%) were

⁶ CITB (2015) Workforce Mobility and Skills in the UK Construction Sector – Greater London

interviewed in the same region in which they were living in when they started their construction career.

Furthermore half of construction workers in Greater London are again most likely to have stayed in the region where they studied for their first qualification (58%); a quarter of workers achieved their qualification in the South East (24%). Additionally, there is a higher than average mention by workers in south East (9%) and East of England (20%) of achieving their qualification in Greater London.

9.4. Travel to Site

The majority of construction workers were interviewed on a site that was located within the same region/nation as their permanent home with 29% of construction workers in Greater London travelling into the region for work from another region in which their current residence is based (which includes those travelling to/from work from a neighbouring region).

Workers in Greater London were asked to indicate the furthest distance they have worked from their permanent or current home in the last 12 months. Figure 18 shows that almost a third have worked more than 50 miles away from their permanent home (31%), with less than a fifth that have worked between 51 and 100 miles away (19%). Workers based in Greater London were amongst those least likely to have travelled more than 100 miles from their permanent home to work in the last 12 months

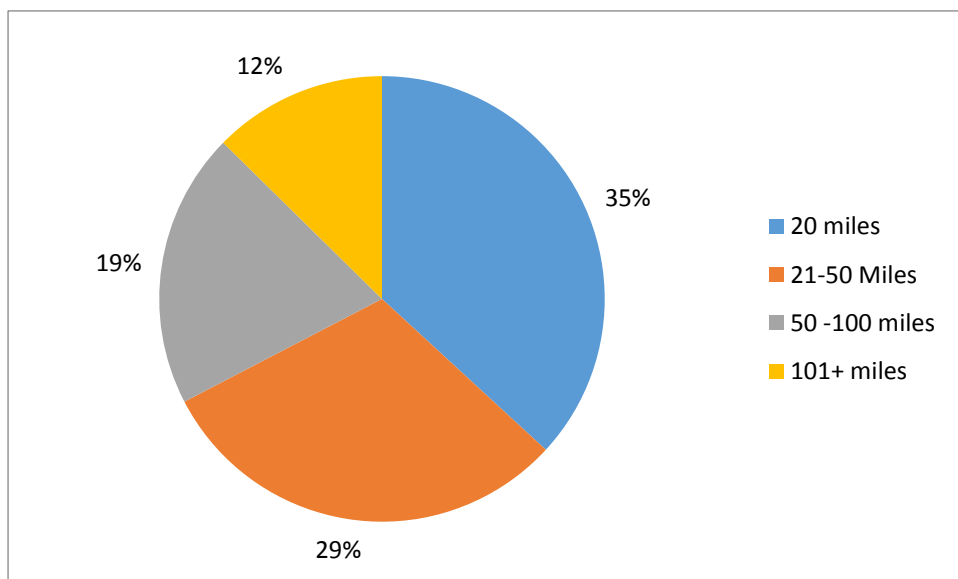


Figure 18: Furthest distance worked in the past 12 months (CITB 2015)

9.5. Site duration and change

In order to get a measure of workplace stability, workers were asked to indicate how long in total they expect to work at that specific site during this phase.

A fifth of all construction workers in Greater London (19%) expect to work on that site for a year or longer, which is a significant increase compared with 2012 (14%), suggesting some improvement with regard to stability. However a further fifth of workers (22% cf. 26% in 2012) do not know how much longer they can expect to be on site, indicating there is still a considerable degree of uncertainty.

Seven in ten of all construction workers in Greater London are confident that when they finish this job they will get a job that allows them to travel from their permanent home to work on a daily basis (78%).

9.6. Sub-sector and sector mobility

All workers were asked which of types of construction work they have spent periods of at least 3 months at a time working in.

Compared with 2012 there has been a significant increase in the proportion of construction workers that have been working on new housing in Greater London; up from 66% to 73%. This echoes the national trend. For most other types of projects the proportion of construction workers that have worked on them has fallen since 2012; the exception being commercial work, which has remained at a similar level.

Overall half of all construction workers in Greater London have only worked on one project type (51%), compared with just over a third in 2012 (37%), which again suggests a pattern of increased stability in the sector.

9.7. Leaving the sector

In order to assess the potential outflow from the sector in the next five years (led by worker preference), all workers were asked how likely it is that in 5 years' time they will still want to be working in construction. Amongst construction workers of all ages in Greater London nearly two fifths say they definitely will be (38%); a further two fifths think it is very or quite likely (40%); 6% consider it unlikely; just 3% say they definitely won't be and a further 3% hope to be retired by then, while 11% don't know.

Excluding those aged 60 and over (as those over 60 may be assumed to be considering retirement in the next 5 years): 39% believe they will definitely want to be working in the construction sector, 25% believe it is very likely they will want to be working in the construction sector and 15% believe it is quite likely they will want to be working in the construction sector. Only 11% think on any level that they will not want to be working in the construction sector in 5 years' time which is similar to 2012 (12%).

Across the wide range of issues covered within the 2015 survey it seems there are a number of signs of increased stability amongst the UK construction workforce but this is not reflected in the findings within Greater London. There has been little change in the propensity to be employed directly by companies as opposed to being self-employed or employed by an agency and construction workers in Greater London are less likely than the UK average to be directly employed (39%, compared with a UK average of 54%). The proportion that is in temporary employment is also significantly higher in Greater London than the UK average (36%, compared with 23%).

In terms of mobility the proportion of construction workers in Greater London that have worked within the region for their entire construction career has been on an upward trend since 2007 (46% cf. 37% in 2012 and 28% in 2007). In the majority of cases (77%) workers' last construction sites were in Greater London. However, this proportion is lower than in many other regions/nations, the range being from 49% in the East of England to 94% in Scotland. Furthermore, only half of construction workers in Greater London (50%) were living in the region when they got their first job in construction in the UK. This proportion is the lowest across all regions/nations. These findings suggest that Greater London has one of the highest rates of movement in and out of the region across the UK.

10. Demand against supply

Before looking at demand against supply, it should be noted that the Glenigan dataset used to produce the demand view is based on projects that are picked up at various stages of the planning process. As such there will be projects in the pipeline that may not go ahead or be subject to delay; additionally there will be newer projects that will be added to the list. In this respect the view is essentially a snapshot of what potential work could look like.

When looking forward, there will be less visibility on future projects for work that requires shorter planning times. Research carried out by CITB on behalf of UKCG (Figure 19, unpublished) showed that the lead time from planning to work starting on site varied by the type of work and value. Large scale infrastructure and commercial projects took the longest time whereas lower value work in general along with work in the industrial sector was able to get on site quickest.

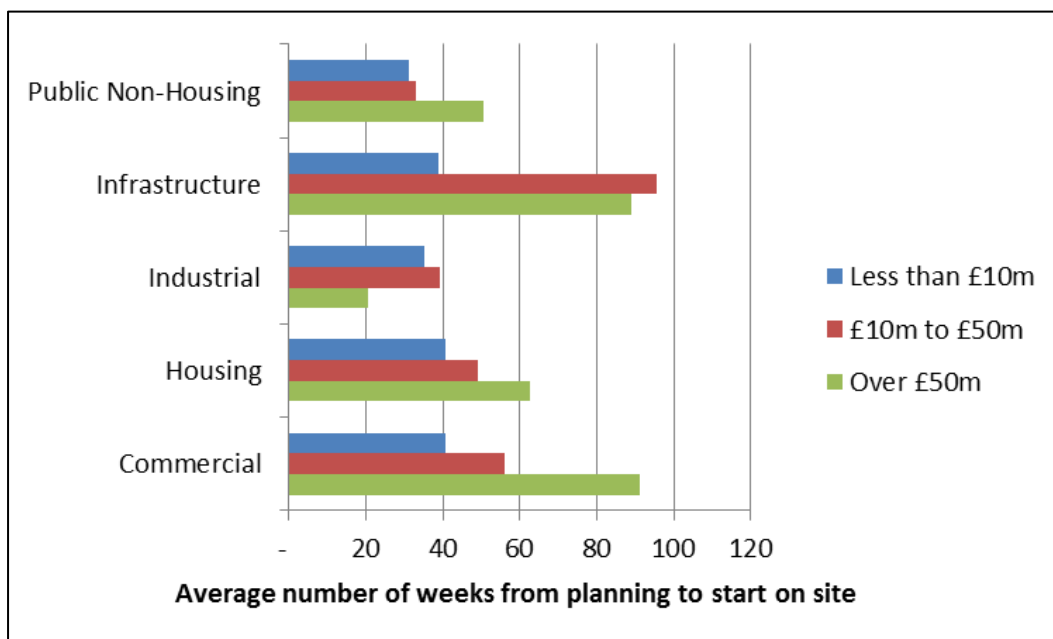


Figure 19: Average number of weeks from planning to work on site, UK 2010-2013 (Source UKCG/Glenigan)

There will also be work carried out that does not require planning permission, for example household repair and maintenance (R&M) work, and this can account for a significant share of work in the construction sector. Current estimates for R&M work in Greater London indicate that it accounts for 32% of yearly construction output⁷

Also, while different types of projects can be categorised by their type of build, such as housing, commercial and industrial, the workforce skills required are less easy to categorise in the same way as some occupations will be able to apply their skills across a number of different sectors. For example, evidence from the 2015 Mobility research⁸ shows that occupations such as plasterers and banksmen/bankpersons are most likely to have only worked on one project type, while bricklayers, site managers, dryliners, and scaffolders are more likely to have worked on a wide range of building projects.

⁷ CITB(2016) Construction Skills Network – Greater London

⁸ CITB(2015) Workforce Mobility and Skills in the UK Construction Sector – Greater London

11. Gap Analysis

11.1. Main Points

The gap analysis is established by comparing data from two different sources. The report takes one measure of the demand for construction within the boundaries of the four London areas. That is then compared with an extrapolation of data from a different source to establish a nominal figure for construction workers for each of those areas.

In comparison with other areas of the UK, where similar reports have been produced these relative gaps look high. However, the gap analysis excludes reference to other important factors, for example that London draws in a large number of construction workers from The South East and East Anglia as well as from further afield. As a result the identified demand forecast from projects in Glenigan appears to account for almost 124% of employment – and much of this apparent gap will be addressed already by the workers travelling into and towards London from other regions.

The gap analysis percentages should not be seen as providing an absolute number – rather they provide an indication of the potential gap by occupation and area in comparison with other occupations and areas to show where the risks of gaps are not the scale of any gap.

This indicates that the gaps are likely to be greatest in the Central area and to some extent the West areas. But it is assumed that to a large extent (and as is the case with other industries) workers are more likely to live in the outlying parts of London and from further afield and travel into Central London.

Table 22 (Central); Table 23 (East) ; Table 24 (South) ; Table 25 (West) show demand as a % of 2015 employment for each of the occupational areas and within each of the four areas within Greater London and Greater London as a whole.

Table 22: Occupational breakdown of demand for Central Area against current employment (Source CITB/WLC)

Occupation	Central 2015 Estimated Employment	2017 Demand as % of 2015 Employment	Gap Analysis Rating
Scaffolders	683	421.06%	4.2
Plant mechanics/fitters	1508	418.20%	4.1
Bricklayers	3293	399.88%	3.9
Steel erectors/structural fabrication	1499	334.58%	3.3
Roofers	1432	292.28%	2.9
Plant operatives	2901	225.38%	2.2
Other construction professionals and technical staff	15500	221.49%	2.2
Plasterers	1781	211.04%	2.1
Logistics	1397	205.40%	2
Surveyors	7044	195.30%	1.9
Average gap for Central area provides indicative midpoint		189.86%	
Floorers	1430	175.53%	1.7
Plumbing and HVAC Trades	9285	178.17%	1.7
Labourers nec*	8108	160.46%	1.6
Electrical trades and installation	10597	161.23%	1.6
Civil engineering operatives nec*	1000	151.09%	1.5
Civil engineers	4626	153.85%	1.5
Senior, executive, and business process managers	14714	145.83%	1.4
Other construction process managers	16216	146.07%	1.4
Non-construction professional, technical, IT, and other office-based staff	32030	144.77%	1.4
Construction Trades Supervisors	3612	138.10%	1.3
Wood trades and interior fit-out	20401	128.54%	1.2
Building envelope specialists	11541	124.10%	1.2
Glaziers	2336	105.41%	1
Specialist building operatives nec*	4933	117.42%	1
Non-construction operatives	3516	108.33%	1
Construction Project Managers	6817	82.65%	0.8
Painters and decorators	9275	59.98%	0.5

Table 23: Occupational breakdown of demand East area against current employment (Source CITB/WLC)

Occupational Area	East 2015 Estimated Employment	2017 Demand as % of 2015 Employment	Gap Analysis Rating
Plant mechanics/fitters	591	204.25%	2
Scaffolders	268	198.82%	1.9
Bricklayers	1292	182.91%	1.8
Steel erectors/structural fabrication	588	155.40%	1.5
Roofers	562	130.07%	1.3
Plant operatives	1138	121.22%	1.2
Logistics	548	116.02%	1.1
Civil engineering operatives nec*	392	115.89%	1.1
Other construction professionals and technical staff	6078	111.38%	1.1
Plasterers	699	95.55%	0.9
Labourers nec*	3180	90.41%	0.9
Civil engineers	1814	91.63%	0.9
Surveyors	2762	94.15%	0.9
Average gap for East area provides indicative midpoint		94.13%	
Senior, executive, and business process managers	5770	74.55%	0.7
Other construction process managers	6359	72.18%	0.7
Non-construction professional, technical, IT, and other office-based staff	12561	73.06%	0.7
Construction Trades Supervisors	1417	74.23%	0.7
Floorers	561	77.63%	0.7
Electrical trades and installation	4156	70.53%	0.7
Plumbing and HVAC Trades	3641	79.65%	0.7
Specialist building operatives nec*	1935	62.32%	0.6
Wood trades and interior fit-out	8000	59.59%	0.5
Building envelope specialists	4526	57.96%	0.5
Non-construction operatives	1379	56.23%	0.5
Glaziers	916	47.98%	0.4
Construction Project Managers	2673	39.67%	0.3
Painters and decorators	3637	28.78%	0.2

Table 24: Occupational breakdown of demand for South area against current employment (Source CITB/WLC)

Occupation	South 2015 Employment	2017 Demand as % of 2015 Employment	Gap Analysis Rating
Plant mechanics/fitters	296	171%	1.7
Scaffolders	134	161%	1.6
Bricklayers	646	150%	1.5
Steel erectors/structural fabrication	294	152%	1.5
Roofers	281	108%	1
Plant operatives	569	94%	0.9
Logistics	274	91%	0.9
Other construction professionals and technical staff	3039	94%	0.9
Civil engineering operatives nec*	196	82%	0.8
Average gap for South area provides indicative midpoint		76%	
Plasterers	349	71%	0.7
Civil engineers	907	78%	0.7
Surveyors	1381	78%	0.7
Senior, executive, and business process managers	2885	63%	0.6
Other construction process managers	3180	61%	0.6
Non-construction professional, technical, IT, and other office-based staff	6280	62%	0.6
Construction Trades Supervisors	708	60%	0.6
Labourers nec*	1590	66%	0.6
Plumbing and HVAC Trades	1821	60%	0.6
Floorers	280	54%	0.5
Electrical trades and installation	2078	53%	0.5
Wood trades and interior fit-out	4000	47%	0.4
Building envelope specialists	2263	49%	0.4
Specialist building operatives nec*	967	48%	0.4
Non-construction operatives	689	45%	0.4
Construction Project Managers	1337	35%	0.3
Glaziers	458	37%	0.3
Painters and decorators	1819	20%	0.2

Table 25: Occupational breakdown of demand for West area against current employment (Source CITB/WLC)

	West 2015 Employment	2017 Demand as % of 2015 Employment	Gap Analysis Rating
Plant mechanics/fitters	562	291%	2.9
Scaffolders	254	281%	2.8
Bricklayers	1227	234%	2.3
Steel erectors/structural fabrication	558	238%	2.3
Civil engineering operatives nec*	372	199%	1.9
Other construction professionals and technical staff	5775	195%	1.9
Roofers	534	170%	1.7
Plant operatives	1081	169%	1.6
Logistics	521	164%	1.6
Surveyors	2624	164%	1.6
Civil engineers	1723	157%	1.5
Construction Trades Supervisors	1346	142%	1.4
Average gap for West area provides indicative midpoint		141%	
Plasterers	664	132%	1.3
Senior, executive, and business process managers	5482	125%	1.2
Other construction process managers	6041	126%	1.2
Non-construction professional, technical, IT, and other office-based staff	11933	124%	1.2
Labourers nec*	3021	116%	1.1
Plumbing and HVAC Trades	3459	113%	1.1
Floorers	533	109%	1
Electrical trades and installation	3948	107%	1
Wood trades and interior fit-out	7600	85%	0.8
Specialist building operatives nec*	1838	83%	0.8
Construction Project Managers	2540	71%	0.7
Building envelope specialists	4299	77%	0.7
Non-construction operatives	1310	78%	0.7
Glaziers	870	66%	0.6
Painters and decorators	3455	36%	0.3

Table 26: Occupational breakdown of demand for Greater London against current employment (Source CITB/WLC)

Occupation	Greater London 2015 Estimated Employment	2017 Demand as a % of 2015 employment	Gap Analysis Rating
Plant mechanics/fitters	2957	326.54%	3.2
Scaffolders	1339	324.06%	3.2
Bricklayers	6458	300.04%	3
Steel erectors/structural fabrication	2939	262.12%	2.6
Roofers	2809	218.21%	2.1
Other construction professionals and technical staff	30392	181.71%	1.8
Plant operatives	5688	180.67%	1.8
Logistics	2740	168.29%	1.6
Plasterers	3493	159.03%	1.5
Surveyors	13812	157.48%	1.5
Average for London area provides indicative midpoint		150.06%	
Civil engineering operatives nec*	1960	146.29%	1.4
Civil engineers	9070	134.33%	1.3
Plumbing and HVAC Trades	18206	134.30%	1.3
Floorers	2804	131.17%	1.3
Labourers nec*	15898	128.43%	1.2
Electrical trades and installation	20778	121.91%	1.2
Senior, executive, and business process managers	28851	119.41%	1.1
Other construction process managers	31796	118.96%	1.1
Construction Trades Supervisors	7083	118.24%	1.1
Non-construction professional, technical, IT, and other office-based staff	62804	118.24%	1.1
Wood trades and interior fit-out	40002	98.42%	0.9
Building envelope specialists	22629	94.46%	0.9
Specialist building operatives nec*	9673	93.01%	0.9
Architects	14235	88.64%	0.8
Non-construction operatives	6893	85.86%	0.8
Glaziers	4580	79.59%	0.7
Construction Project Managers	13367	67.12%	0.6
Painters and decorators	18187	45.27%	0.4

Note: nec*: not elsewhere classified

HVAC: Heating, ventilation and air-conditioning. Architects are excluded from Table 9 and subsequent analysis because excess local demand will likely be met by national and possibly international supply.

Table 22 to Table 26 show that there are a number of disparities where demand outstrips the current employment for a number of occupations. The top five for Greater London as a whole and for which there is a gap in every one of the four Areas are:

- Plant mechanics/fitters
- Scaffolders
- Bricklayers
- Steel erectors/structural fabrication
- Roofers

For each of these occupations 2017 demand is exceeding current employment. There are also a number of additional occupational areas which might experience slightly less demand pressure but where for Greater London as a whole there appears to be an above average relative gap:

- Other construction professionals and technical staff
- Plant operatives
- Logistics
- Plasterers
- Surveyors

Closely followed by Civil Engineering Operatives.

While most of these occupations are construction specific, some have cross-sector implications.

11.1.1. Construction specific occupations

Scaffolders, Bricklayers Roofers and Plasters could all be considered to be construction specific occupations.

These occupational areas appear to show a high to medium gap between current employment and peak demand. However, given that Greater London has one of the highest rates of movements into and out of the region. It could be the case that many of these perceived skill gaps will be filled by workers from other regions. Appendix J, which shows the region/nation an employer operates from, compared with the region/nation they are working in, indicates that this is the case. London already has a large number of workers that live in the South East and East Anglia and these will address part of the apparent gap.

11.1.2. Cross-sector occupations

As skills in these occupations can be used in other sectors, the degree to which demand can be met will be influenced by factors other than construction demand.

Plant Operatives and plant mechanics and fitters move between construction and other sectors such as manufacturing and wholesale/distribution. It is possible that experienced workers could be required by other sectors as well as in the Greater London. Logistics skills have an element of cross over, particularly with retail and transport sectors which would mitigate potential demand. When compared to other occupational groups it is also lower in actual numbers which magnifies percentage changes.

As noted earlier, there will be other work carried out in the Greater London Area that will not have been captured in the demand analysis. There will be additional workers required for projects that

are less than £250,000 along with repair and maintenance work that does not require planning consent, and as noted earlier this is expected to mean a total workforce demand of just over 53,000 between 2016 and 2018.

This is quite a static level of future work that would account for around 83% of current employment, which indicates that future employment demand will be more focused on replacing the current workforce levels and equipping them with appropriate skills, rather than an overall increase in demand.

11.2. Gap Analysis – Longer Term

When looking at the longer term past 2016/2017, the amount of known work in the Greater London area decreases and there will also be work, such as R&M, that is not identified in the analysis. To give a view on the gap analysis across the wider range of work and over the longer term, the annual Average Recruitment Requirement (ARR) details within Greater London CSN 2016-2020 report can be used. And the CSN 2016-2020 ARR is consistent with the analysis in identifying a requirement for:

- Plasters
- Plant Operatives
- Logistics

For both Plasters and Logistics the ARR is a significant share compared to current employment 5% and 7% respectively which again follows the pattern of the earlier analysis. This emphasises a potential short term and long term gap for these occupations.

The CSN 2016-2020 ARR does however identify some other occupations with an occupational requirement where the % of current employment is high. These occupations are:

- Building Envelope Specialists (5%)
- Floorers (7%)
- Glaziers (10%)
- Civil Engineers (5%)

For all of the above, the ARR as a percentage of current employment is above the regional average, which indicates a potential occupational pressure to meet forecasted demand.

With these seven occupations the ARR will be picking up the long term trend across the region, covering both new work and R&M. Although this may seem to be different to the gap analysis based on the Glenigan details, it will be picking up the full range of work that is forecast to happen and the slightly different view would also reflect occupations that would be more involved with R&M work.

11.3. Gap Analysis – Training Needs

Looking at the future demand against current competence based training, there are two aspects:

- Is there training in the areas of potential demand?
- Is there the volume of training required across the spread of occupations?

Taking the first of these “is there the training in the areas of potential demand?” The demand analysis and CSN identify plant operatives, logistics and plastering skills as being in demand. As

covered earlier, logistics skills and plant operators are not construction specific; therefore we would anticipate supply and demand to be more influenced by retail/warehouse/transport demands.

Plant Operatives is one of the occupations where achievements in London are lower than the UK as whole which could also indicate a weakness in supply, within plant operative training, one of the factors will be the exact type of training required, i.e. is an operative trained to use a particular type of machine. Further work would have to be carried out to determine the extent to which specialist skills in these areas would match future demand.

The second question “is there the volume of training required across the spread of occupations?” is possibly mixed in response. There would appear to be:

- Provision for training across the range of occupations
- A core of providers who deliver the majority of training
- Good provision of competence qualifications for certain occupations

However there are occupations, such as bricklaying, Civil Engineering Operatives, Plant Mechanics, Plant Fitters Plumbers and Roofers where the levels of competence based training appears to be slightly low.

Education and training within the Greater London area appears to be moving towards delivery of more “knowledge and theory” based qualifications where it is the practical, competence based training that employers at a national level have often previously expressed a preference for.

11.3.1. Outstanding questions

Questions remain, and so there is a need for further investigation, about:

- Higher level training – the extent to which training is helping progress workers from level two through to levels 4 and 5. This might include higher level apprenticeships that deliver capabilities at level 4 and 5.
- Greater understanding is required about the extent to which those students that enter construction training progress to become capable members of the construction workforce. Investigation of the relative success rate from student starts to active workers could identify any barriers that hinder progression and then propose opportunities for improving the success rate – which would have positive economic benefit. (CITB is planning future research that may help to start to track this.)

12. Conclusions

12.1. Demand

The known pipeline of demand indicates that the construction sectors of greatest demand for the whole of London are:

- New housing 30.85%
- Private commercial development 29.84%
- Public non-housing development 18.29%
- Infrastructure 17.29%

Based on the demand for and supply of workers considering only the supply from within the GLA area, the greatest relative gaps appear to be for:	The occupations for which there appears to be the greatest total demand – based on known projects for the total GLA area are:
<ol style="list-style-type: none"> 1. Plant mechanics/fitters 2. Scaffolders 3. Bricklayers 4. Steel erectors/structural fabrication 5. Roofers 6. Other construction professional & technical 7. Plant operatives 8. Logistics 9. Civil engineering operatives nec* 10. Surveyors 11. Plasterers 12. Civil engineers 13. Labourers nec* 14. Plumbing and HVAC trades 	<ol style="list-style-type: none"> 1. Non-construction professional, technical, IT, and other office-based staff 2. Other construction professionals and technical staff 3. Wood trades and interior fit-out 4. Other construction process managers 5. Senior, executive, and business process managers 6. Electrical trades and installation 7. Plumbing and HVAC Trades 8. Surveyors 9. Building envelope specialists 10. Labourers nec* 11. Bricklayers 12. Architects 13. Civil engineers 14. Plant operatives

There are 28 occupations listed so the lists above show the top two quartiles for relative gap and known demand. The seven occupations in bold represent the 25% of occupations for which there appears to be high demand and a high relative gap.

If a prioritisation is required to attempt to address the greatest need, one option may be to start by considering provision for those occupations where there appears to be both high demand and a relatively large gap between supply and demand. These may be, for example, those shown in bold in the table above: Bricklayers; other construction professional & technical; plant operatives; surveyors and civil engineers.

12.2. Observations on London's geography

London is a unique proposition with: challenges, infrastructure, influence, and resources that are unlike, and exceed in scale by a significant margin, any other UK region.

The report has considered London in four areas that correspond with the boundaries described by the Area Reviews. However, in many ways these are unhelpful. The employers; workers; students employers; infrastructure and transport planners will be unaware of these boundaries. And so in many cases the movement of workers and students will cross the Area boundaries.

The four areas are not equal in size, population and infrastructure and notably the Thames presents for the East Area a significant geographic obstacle. The East Area's extremities are around 40 miles apart and it includes nine London boroughs. In area the East is approximately twice the size of the South area, which has five London boroughs and extremities that are about 20 miles apart.

By way of example, it is unlikely that there will be a significant movement of students and workers between Enfield and Bromley (both in the East Area) in comparison with say Enfield and Haringey or Barnet (in different areas but adjoining one another).

The greatest demand is (as would have been expected) from the central area. And so the expectation is that the greatest movement of workers will be to the centre from the three other Areas.

Demand outstrips supply and the pull of London

The greatest obvious difference between the data available for London in comparison with reports undertaken for other parts of the UK is the apparent and significant gap between demand for, and supply of, workers. This is most notable for the Central areas, closely followed by the West Area and to a lesser extent East and South.

However we do not believe that this gap exists to the extent the data suggests.

London has a huge pull on the rest of the UK. Just as we expect that workers move from outer London to the Central Area so we believe workers travel into outer and central London from outside London. We believe there is a very significant movement of workers into all London Areas from The South East and East of England regions but also that in some cases workers travel a significant distance and are bolstered by migrant workers – encouraged by the economic significance of London and enabled by transport infrastructure that radiates out from London.

There is some evidence to support this is Appendix J. This indicates the location of construction firms and where they are working by region. This suggests that compared with most English regions more London employers are operating in London (84%) and that significant numbers of employers based in the East of England (27%) and the South East (27%) operating in London.

In addition – Greater London, the South East and the East of England have the lowest number of workers who are based in the area where they did their first qualification – indicating that workers have moved to London and the South East from other regions. Also in London 8% of the workforce were in temporary accommodation, the second highest in the survey (where the UK average is 6%).

What does seem likely is the opportunity for London to provide more of its own construction workers and that can only be achieved through greater and more appropriate training. The fact that London draws in so many workers from so wide an area means that it is likely that there will nearly always be opportunities for London based students to find employment in London and so the risk over overprovision is limited.

Training provision

Although there are more than 200 providers delivering construction-relevant FE courses, 83% of that provision has been from thirty main providers. London is a geographically large and populous area and so it makes sense that engagement starts with those organisations that have the greatest potential impact.

- Newham College of Further Education [two main sites in the East Area]
- Lambeth College [in the Central Area]
- College of North West London [three sites in the West Area]
- Uxbridge College [two sites in the West Area]
- Ealing and Hammersmith and West London College [four sites across the West Area]
- South Thames College [five sites across Wandsworth, Tooting and Merton – so situated in both the Central and Southern Areas].
- Barnet and Southgate College [On the boundary of East and West areas but also close to the Central area.
- Barking and Dagenham College [In the East area]
- Havering College of Further and Higher Education [In the East area]
- Lewisham & Southwark College [In the Central Area but with one site close to the East area]
- Bromley College of Further and Higher Education [Sites in the East area].

Training quality

This report has not considered measures to define whether training meets required levels of quality. This is complex and subjective but also of critical importance. And it is assumed that the quality and relevance of training is considered as a key component of discussions and planning that result from this report's recommendations.

[Quality should be monitored by providers through their self-assessment process, as well as by Ofsted during routine inspections.]

13. Recommendations

13.1. Recommendation 1

Skills strategy: pipeline identification, planning and exploitation

Review and develop, as appropriate, a London construction skills strategy to ensure that any gap between demand and skills provision for high demand or priority professions and trades does not become a problem and ensuring that there is sufficient local provision for high demand occupations.

- For London it may be appropriate to consider this as a series of smaller geographic areas. It seems sensible also to base these geographic areas on infrastructure that enable or hinder the movement of workers and students.
- Longer term projections and the development of scenarios may enable an assessment of the potential impacts of major initiatives that may skew demand.
- Increasing the provision of construction workers in London is unlikely to result in a significant negative oversupply. The only potential negative impact of training more is to limit: a) the number of people travelling to London to work; b) limit slightly the number of London people available for other sectors.

13.2. Recommendation 2

Reskilling and upskilling construction workers and those from other sectors

A holistic construction skills plan may also benefit from identifying cross-sectoral occupational impacts on labour requirements and opportunities.

This may benefit from considering the London construction economy in the context of the wider economy and other sectors. London clearly has a shortfall of local construction workers – though this appears partly to be filled from outside London and by migrant workers.

It may be that there is greater potential value in helping London residents to take up high value construction opportunities rather than move into other sectors. Also, despite a relatively buoyant economy, London still suffers a higher rate of unemployment than the neighbouring East and South East regions. This may mean there are opportunities to help move unemployed people into construction training.

This may also include recognising the potential demand for “non-construction professionals...” and the opportunity to support the development of career progression opportunities that upskill construction workers to take on more senior and managerial and affiliated roles. Such an approach would need to be matched with the recruitment and development of construction skills – so as not to create a shortage of trades by encouraging them to move into managerial roles.

It also appears that a significant proportion of construction training delivered is at levels one and two. However the relatively positive profile of London in relation to the skills and workforce gap and training provision may mean there is an opportunity to develop a curriculum that moves workers up through the skills levels and develops more training at levels three, four and above and in specialisms likely to be in demand in the longer term.

13.3. Recommendation 3

Identify potential partners within the Area and or the Region; share analysis with them and engage them in contributing to building collaborative holistic plans.

CITB has recently completed delivery of a Joint Investment strategy for Greater London. This was developed and delivered in conjunction with a wide variety of stakeholders with the aim of gaining early buy-in and a sense of shared ownership of the challenges.

Those stakeholders include: local construction businesses; major employers; London boroughs; those responsible for managing infrastructure (transport and utilities); construction training providers, local stakeholders and influencers.

The momentum gained from the work done to-date work should be maintained with continuing engagement with those (and new) stakeholders, with them encouraged to input to the development of the construction skills strategy. This will maintain a sense of shared ownership of the challenges, priorities and solutions. (However it may also require collaboration and compromise.)

The Greater London Authority has huge economic and political significance and influence and should use this influence considerably to leverage others to work together to achieve positive prioritised and co-ordinated action. This may in particular include establishing immediately, closer working relationships with the largest projects taking place across London (that will have disproportionate significance) in developing and supporting London's skills plan and in aligning developments with the Mayor's proposed Construction Academy Scheme.

For example collaboration is essential with organisations such as: High Speed 2; the Tideway Company; the Old Oak and Park Royal Development Corporation (OPDC). It may also be helpful to establish similar relationships with those in control of the significant frameworks listed in the appendix of major projects. These frameworks could have influence over significant construction spend and so it would be useful to understand their scope and opportunities.

13.4. Recommendation 4

Develop the future curriculum, the provision and appropriateness of construction skills training.

- a) An ambition of a future construction skills curriculum should be to match training and development with the needs of employers and the local economy. As the bulk of training is delivered by a relatively small number of the larger colleges, the greatest potential impact is through mediated collaboration, between the FE colleges to: reduce the provision of under-subscribed courses; add provision for over-subscribed courses; add additional or enhance specialist courses to reflect the potential need for new construction skills and balance the provision of training with anticipated demand from the construction contractors locally. By working together the major colleges can avoid duplication of effort or share resources, enhance specialisations and explore innovative ways of delivering the curriculum that meets employer needs. However there are also opportunities to engage with private training providers to align their offering with the whole curriculum.
- b) One potential opportunity may be to identify and facilitate how FE colleges and employers can engage with specialist training providers like the Tunnelling and Underground Construction Academy (TUCA) or CITB, as well as with major projects such as High Speed 2, to establish greater provision for higher level and specialist skills to ensure more individuals are site ready for some of London's specific needs.

- c) In the longer term there may also be opportunities for the Greater London Authority to work with those colleges that offer Higher Education qualifications and Universities to consider how they can attract, train and retain the higher level, advanced and 'future' skills for which there appears to be demand and inadequate provision. For example that may be in high demand for the many significant projects that are expected to proceed in London and that will increasingly need to utilise developing technology (e.g. BIM). See recommendation 9.
- d) An early action plan should assess if employers are facing specific skills shortages or skills wage inflation and what short-term interventions can be activated to address them. If issues are identified, consideration should be given to pursuing funding that can be utilised to pump-prime training interventions.
- e) A common complaint of construction employers is that new starters are not often enough 'site ready' so a curriculum might including working with employers to enhance new starters' site readiness and behaviours.

13.5. Recommendation 5

Identify movement of workers and students and inhibitors to movement

Although for the purposes of this report London has been assessed against the four Area Review areas, it appears in many cases that the provision of workers and training crosses these boundaries. In some cases, individual colleges have sites in more than one area and in many cases colleges are located close to the boundaries between areas meaning that as much if not more provision may be for a neighbouring area or areas as for the area in which the college is located.

With this in mind, and in order to support activity associated with recommendation 4, it seems appropriate to try and identify the flows of students and workers – what are their origins and destinations? What local infrastructure enables or inhibits these flows?

A better understanding of the movement of people may help ensure that the collaboration in delivering an appropriate, balanced and shared curriculum that meets industry demand is possible. The most appropriate collaborative efforts may be across the Area boundaries rather than wholly within them.

13.6. Recommendation 6

Outreach – build a more positive image of construction with young people and increase recruitment through new entrance points, career changes and reskilling.

Construction is sometimes associated with negative and inaccurate stereotypes that deter potential recruits, with education choices and career decisions often influenced in school. With an anticipated long term demand for some skills, the potential exists for an outreach programme that goes out to schools to correct negative perceptions, build a positive image and encourages applications for construction skills courses and apprenticeships from a broader spectrum of young people – in particular ethnic minorities and women.

Similarly there are opportunities for outreach with those aged 16 and above, in particular those studying relevant *STE(A)M* subjects but have not considered that they lead into interesting and rewarding careers in construction or supporting construction.

CITB has supported employers across the construction and built environment to come together working with a number of stakeholders to develop an industry led initiative called Go Construct

(www.goconstruct.org). This initiative inspires individuals to find out more about the sector, discover career opportunities, access an experience/encounter with employers from school engagement via the Construction Ambassador scheme to work experience placements.

In addition, the London Ambition careers strategy, which includes the London Ambitions is the new London careers portal and has many of the same aims as Go Construct but is not sector specific. CITB has discussed with the GLA how London Ambitions and Go Construct can be linked for construction careers and this is an opportunity that should be actioned.

There is an opportunity to maximise the usage of these employer led initiatives to raise engagement between the local employers, educators and individuals from all backgrounds.

13.7. Recommendation 7

Use procurement as a lever to enable skills development

The potential exists through smarter approaches to procurement to encourage those bidding for construction and infrastructure contracts to be mandated to include provision for co-ordinated recruitment, training, apprenticeships and outreach within their responses to tender. Provision would also be required to hold contractors to account for commitments made. Such an approach could be co-ordinated through London boroughs and be a requirement of planning applications and local authority and public sector contracts.

It may also be possible to encourage major contracting businesses to follow such an approach in support of the Region's skills and economic development. Early engagement with employers to discuss any such approach is recommended.

Similarly procurement of major contracts, or conditions of planning consent could mandate the sharing of supply and sub-contracting through a locally managed portal available to businesses based within the region.

Bespoke support has been available to London Boroughs to help them embed the NSAfC Client Based Approach through the Joint Investment strategy over the last two years. This was in addition to the standard support which has now been reverted to. Even with the additional bespoke support freely available, uptake has been very limited. The GLA should embed the NSAfC Client Based Approach (or equivalent) and promote a similar proactive approach among London Boroughs?

13.8. Recommendation 8

Procurement and supply opportunities to be co-ordinated through the Combined Authority or London boroughs

Establish, as far as possible, processes and communication that help enable local companies to compete for, or be involved, with projects undertaken within the London boroughs. Doing so will help create a more stable and sustainable local construction economy and may give local companies greater confidence to invest in recruitment and training.

Opportunities might include establishing a process whereby, once major construction contracts are awarded, details of the primary contractors are shared with local planning authorities and published in order to allow discussions to take place around meeting emerging skills needs and establishing collaborative opportunities in the London boroughs.

Better awareness of who to speak with in relation to providing services to major contractors may enable local sub-contractors to shift a greater proportion of their work and resources within the

London boroughs so improving their efficiency (by reducing distance to site), and benefitting the local economy.

Business information providers are available that provide a wealth of detail on the construction market, projects and contracts – that have the potential to be of benefit to firms in the local supply chain. The Greater London Authority and or London boroughs could put in place a contract to share such data with local firms.

13.9. Recommendation 9

London is already a hub for higher level skills

– Develop a plan that expands this into skills relevant to the future of construction

As the home of a number of significant universities and colleges, London is already recognised as a world centre for higher education. It may be there are opportunities to engage with relevant institutions to establish opportunities to develop the future of construction and civil engineering.

The opportunity may be to ensure that the workforce is not just trained but “well trained” (typically above average and with skills likely to be of significance and in demand in the future).

Building the profile to exploit that centre of excellence would also require a sophisticated and holistic communication plan or integration with existing communication planning.

Where there are opportunities apprenticeships should be delivered at higher levels – 3, 4 and 5.

There may be opportunities for the GLA to use its influence and engagement with significant projects (e.g. High Speed 2) to address what is seen as a shortfall in workers qualified at levels 3, 4 and 5. *See also recommendations 4 and 5.*

13.10. Maintaining & enhancing the evidence base

Utilise the licence to use the CITB Labour Forecasting Tool to regularly update the evidence base that supports decision making as circumstances change and to demonstrate construction pipeline opportunities. Ensuring that pipeline visibility assists the local industry in reducing risks such as economic instability or maintaining sustainable employment. The demand forecasts produced using data from Glenigan are the result of a snapshot at a moment in time and so it is wise to update demand forecasts on a regular basis – six monthly is suggested.