

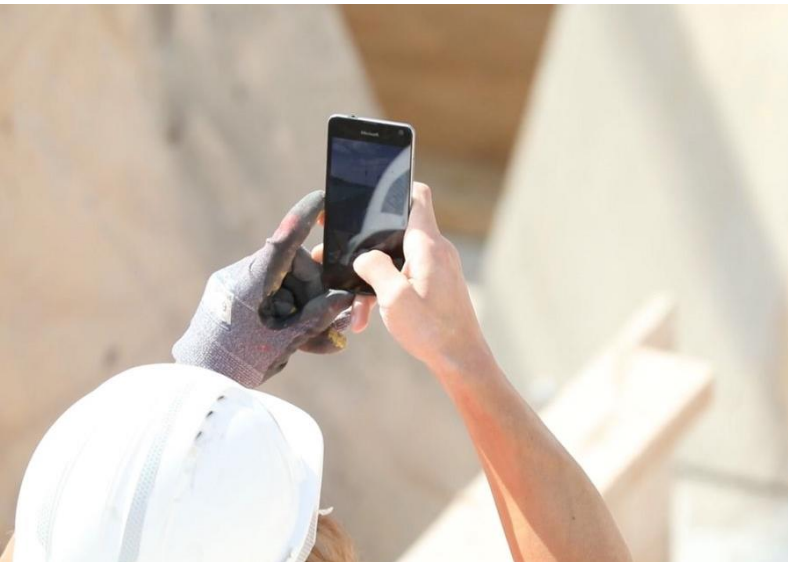


WHOLE LIFE CONSULTANTS LTD



CITB ANALYSIS

Construction skills gap analysis for the Buckinghamshire LEP



An analysis of the opportunities presented by the construction landscape in the Buckinghamshire LEP

Mar 2020



EXECUTIVE SUMMARY

The Buckinghamshire LEP area can expect sustained spending on new construction projects of more than £550million per year.

To meet this anticipated demand a total construction workforce of around 20,100 people is required in 2019 increasing to more than 20,400 in 2023. Along with significant demand from neighbouring areas but in particular in the South East and Greater London, and an aging workforce resulting in retirement, there are also risks that the Buckinghamshire LEP area may not always be able to meet demand for some occupations.

Across the area, new housing accounts for 46% of anticipated spend on new projects in 2019; with private commercial developments accounting for around 21%; infrastructure 16%; private industrial 10%.

The Buckinghamshire LEP area's opportunity

The LEP and local authorities' opportunities are to: support growing businesses; develop a more appropriately skilled and flexible workforce; drive higher level skills, match skills and the local economy and encourage job creation. This will, in turn, support the delivery of infrastructure that will enable further development and ensure that the area is prepared to exploit opportunities as they emerge and deliver the new housing that is needed.

Construction on its own makes up a huge part of the UK economy representing more than 7% of GDP. But crucially it is also an enabler. It will create the new housing that is so desperately needed; will enhance the environment; will create better public spaces and facilities that we depend on; build the facilities for new technologies and manufacturing; and create new infrastructure that enables growth and prosperity. Construction opens up opportunities for major social and economic gains.

"The Buckinghamshire LEP area will have a huge range of opportunities in construction trades and professions over the coming years. With well-paid and highly skilled job opportunities in a wide range of trades and professions, the construction industry, schools, colleges, influencers and parents should be working together to encourage young people and career changers to look at construction as a career of choice with excellent prospects. A skilled workforce will help the area's growth aspirations and leave a legacy for future generations; CITB is working with employers to inspire, attract and train this new talent for these valuable and rewarding careers."

Andy Barron, CITB Partnership Manager

High demand occupations

The top occupations for which there is greatest demand in the LEP area are:

- Wood trades and interior fit-out
- Electrical trades and installation
- Plumbing and heating, ventilation, and air conditioning trades
- Painters and decorators
- Other construction process managers
- Senior, executive, and business process managers
- Other construction professionals and technical staff
- Non-construction professional, technical, IT, and other office-based staff (excl. managers)

At risk occupations

The occupations at greatest risk of a shortfall in numbers available locally are:

- Scaffolders
- Plasterers and dry liners
- Bricklayers
- Glaziers
- Architects
- Non-construction operative

Priority occupations

The report identifies occupations for which there is high demand AND a high risk of a shortfall.

- Wood trades and interior fit-out
- Electrical trades and installation
- Painters and decorators

Occupations in context – the challenge

This report sets out a challenge to the Buckinghamshire LEP, local authorities, colleges universities, training providers, construction employers and other stakeholders – namely to attract, train, recruit and maintain a high skilled construction workforce that meets anticipated demand.

Construction offers a range of well-paid high skilled jobs for which there is demonstrable demand. The opportunity is to exploit the opportunities to achieve social and economic gains by encouraging people from the area into these roles, providing the associated support and career pathways.

This challenge is set against the backdrop of: concerns about the future availability of skilled workers and demand from other UK regions and major infrastructure projects.

The professions

There is high demand and risk associated with several professional roles which require a significant length of training before candidates become qualified. Architects require higher level qualifications plus professional accreditation, so the effect of action now will only be felt in five to ten years' time. These are jobs in demand the world over. However, these roles do not need to be permanently on-site so it is likely that some demand may be met by those working outside the region.

There are also opportunities to modernise construction and for Buckinghamshire LEP to start to encourage and adopt new technologies and new practices like off-site and modular construction to help meet demand.

Training and education

Around 55 training providers have delivered construction related training (including apprenticeships) over the last five years. A core network of ten providers has delivered around 90% of that.

The Buckinghamshire LEP area accounts for 5% of construction related training across the South East. Provision of training reduced between 2012/13 and 2016/17, with new starters decreasing by 41%. However, in comparison, across the region construction training has declined by 46%. Over the same period, apprenticeship starts have increased by 62% in the LEP area, whereas across the South East the increase has been 24%.

Recommendations

The report proposes recommendations that include:

- Develop and strengthen relevant collaborative partnerships. With a view to building collaborative holistic action plans and encouraging local stakeholders to work together and input to, and take ownership of, the construction skills actions.

- Establish a Buckinghamshire LEP area construction skills strategy and action plan that recognises collective actions and solutions that may be required in and across the area.

- Develop skills and training pathways for both current and future skills needs. Ensure training is appropriate for local needs and businesses. Develop LEP area construction training so that it is appropriate for the needs of the construction industry and local circumstances, addressing risks of supply shortfalls.

- Outreach. Build a more positive image of construction locally with young people. The construction industry, schools, colleges, influencers and parents should be working together to encourage young people and career changers to look at construction as a career of choice with excellent prospects. Emphasise that construction offers high value rewarding careers for all.

Use procurement as a lever to enable positive action. Develop smarter approaches to procurement to encourage wider contract award inclusivity of small and medium sized employers. With those tendering for construction and infrastructure contracts or those funding developments to be mandated to include provision for recruitment, training, apprenticeships and outreach.

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1. INTRODUCTION

1.1. THE COMMISSION

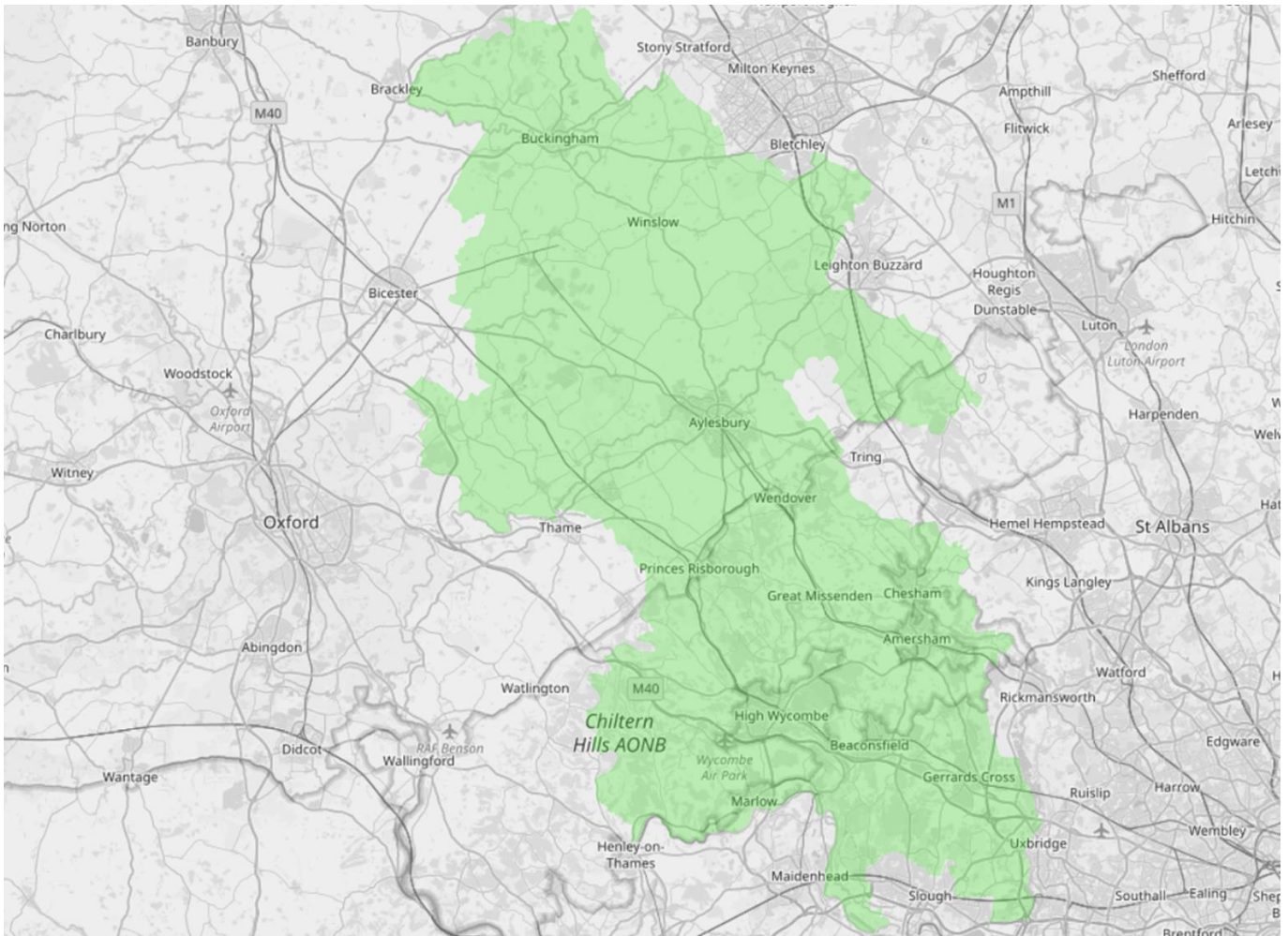


Figure 1 shows the area covered by the Buckinghamshire LEP, and Table 1 shows the local authorities involved.

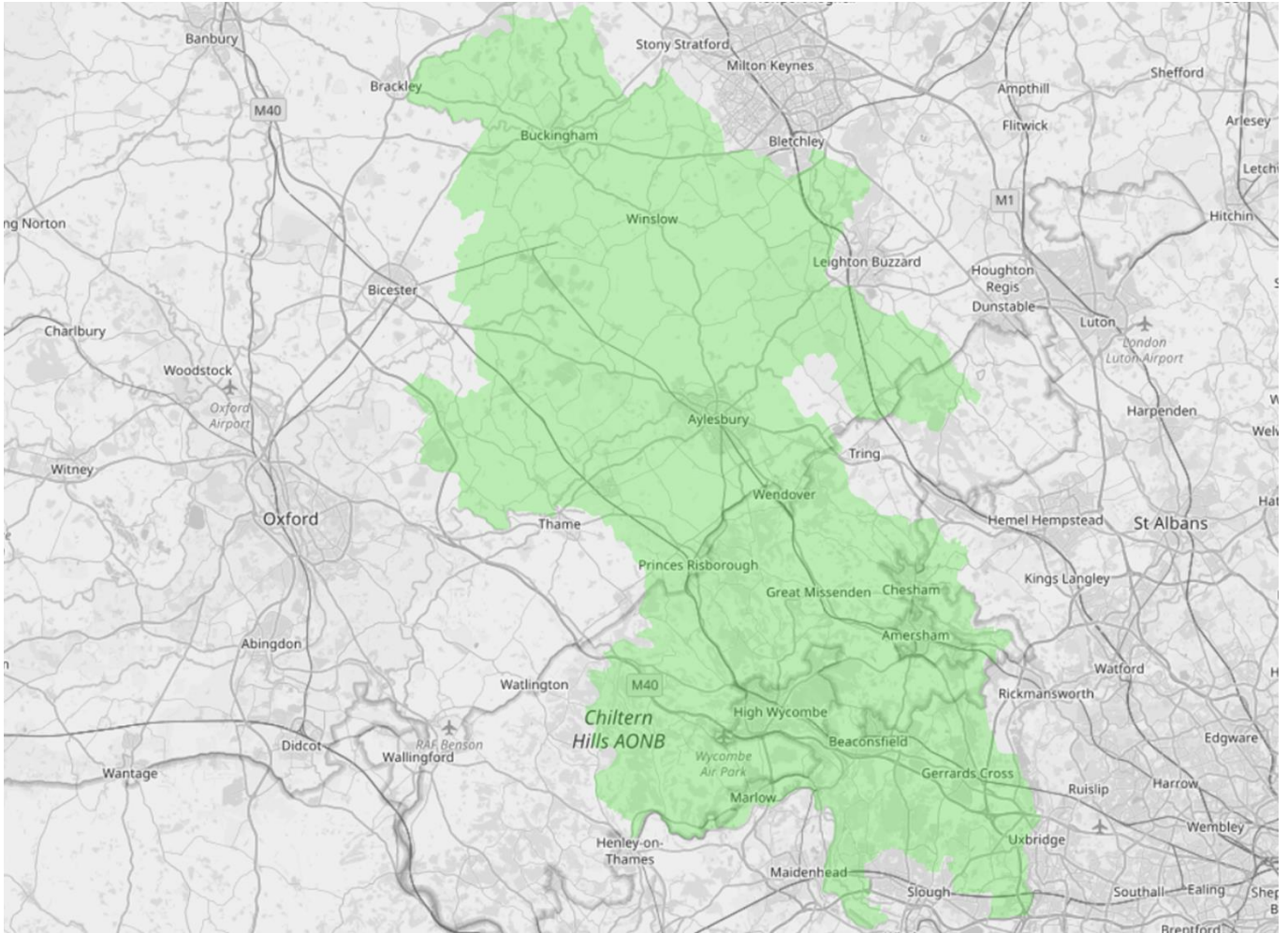


Figure 1: Buckinghamshire and surrounding areas

Table 1: Local authorities analysed

Buckinghamshire
Aylesbury Vale
Chiltern
South Buckinghamshire
Wycombe

2. LABOUR DEMAND IN THE BUCKINGHAMSHIRE LEP

The following sections provide an estimate of the labour demand predicted by our Labour Forecasting Tool that construction investment will create across the LEP over the period 2019-2023. The tool and method of analysis are described in Appendix A.

SUMMARY OF DEMAND

- Our estimate of the labour demand in the Buckinghamshire is around 20,110 people in 2019. The projected growth between 2019 and 2023 suggests that the labour demand in 2023 will be around 20,440 people.
- Around 60% of the workforce is employed in Skilled trades & operatives, the other 40% are in Managerial, professional & office based staff.
- During 2019 the most labour-intensive occupation group is “Non-construction professional, technical, IT, and other office-based staff (excl. managers)” with an annual demand of 2,690 people.
- The skilled trade & operative occupations in greatest demand are:
 - Wood trades and interior fit-out with a requirement for 2,270 people;
 - Electrical trades and installation follow with 1,530 people;
 - Plumbing and heating, ventilation, and air conditioning trades rank third, with a demand of 1,420 people.

2.1. PIPELINE OF KNOWN PROJECTS

2.1.1. Glenigan pipeline analysis

We have considered projects in the Glenigan database¹ and the National Infrastructure and Construction Pipeline (NICP)². These comprise what are referred to as the known projects.

An initial review of the Glenigan database identified 270 projects in the Buckinghamshire LEP. Of the Glenigan projects, 43 projects were removed due to missing dates. A full set of the projects which were omitted from the analysis is provided in Appendix C. The spend in projects which were removed because of missing dates is around 8.4% of the total pipeline value. It is possible that this work will take place at some point in the future but as dates are unknown it is most likely that this will be later in the forecast period. Since dates are not known it is not possible to pinpoint when the labour will be required. However, an assessment of the labour demand from potential additional projects is included in the estimates of other work as outlined in Appendix A.

The Mean Value Theorem was applied to the remainder of the pipeline to identify the significant projects. The process identified 69 significant projects accounting for 67% 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.

Appendix D provides a full breakdown of the Glenigan significant projects and their construction values. The peak year for the Glenigan spend profile is 2019. The location of the significant projects within the Buckinghamshire LEP can be seen in Figure 2. The values of the projects are proportional to the sizes of the coloured dots.

Unfortunately, it is not possible to isolate the Buckinghamshire contribution to HS2 through any sources of information that we have available (including Glenigan). However, elements of it will be picked up in the estimates of other Glenigan projects.

¹ The Glenigan database allows contractors to identify leads and to carry out construction market analysis. It is updated every quarter to provide details of planning applications from local authorities supplemented with additional project-specific data. For the purposes of this analysis we have used the 2018Q4 cut of data.

² The Infrastructure and Projects Authority (formerly Infrastructure UK and Major Projects Authority) compile annually a pipeline of UK infrastructure and construction projects and the associated annual public and private investment. For this report we have used the 2018 which includes details of around 700 projects valued at some £627bn.

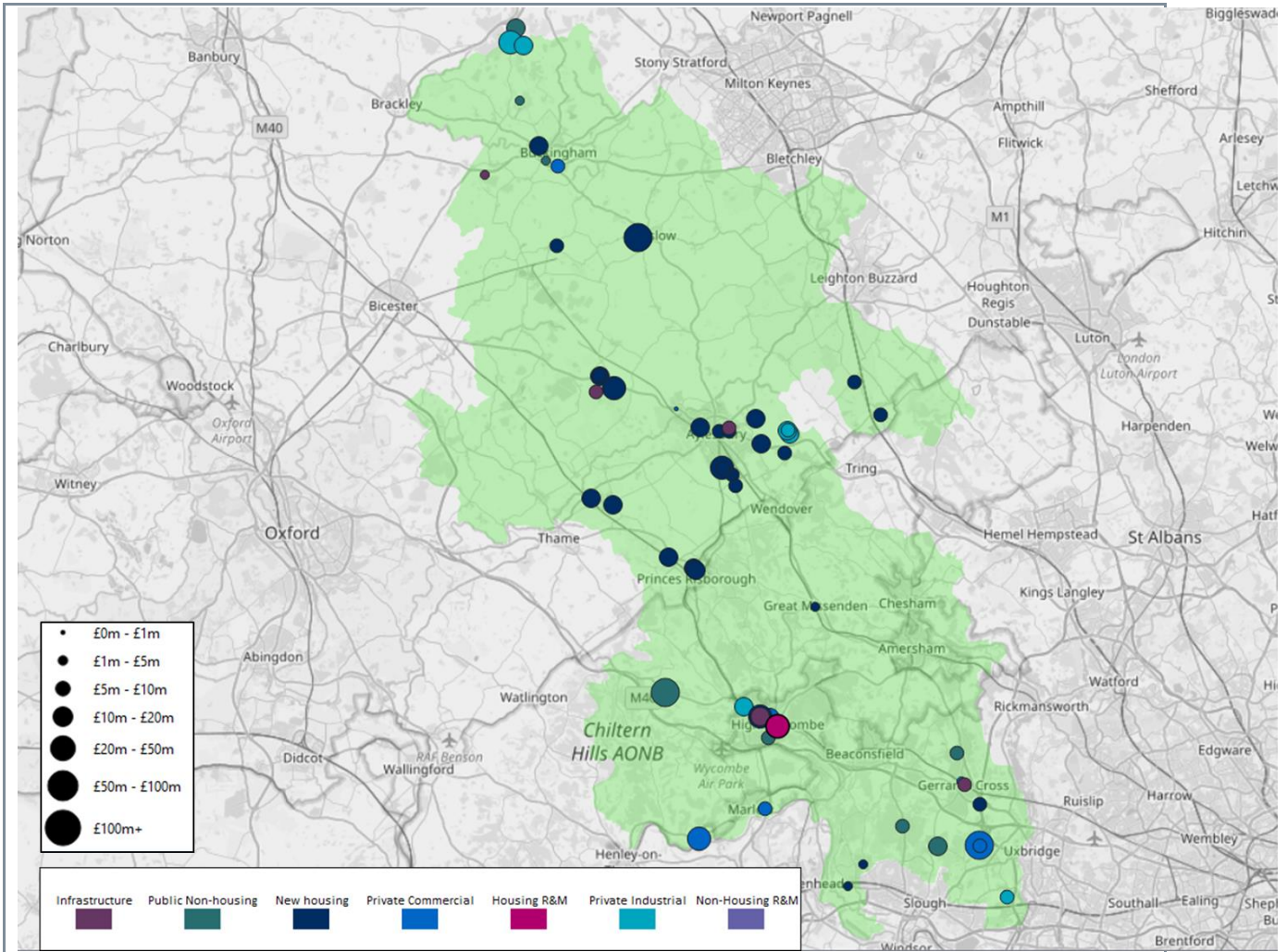


Figure 2: Location of significant Glenigan projects included in the analysis

2.1.2. The client's projects analysis

Buckinghamshire LEP provided us with a list of 42 projects for potential inclusion in the analysis. We inspected the list to check a) if any of them were already included in the Glenigan data; and b) if the data provided were sufficient to allow us to include them. We found seven projects whose descriptions were similar to those included in Glenigan. Unfortunately, the data provided for the other 35 projects lacked either the start or the end date so we were unable to include them in our analysis.

2.1.3. Glenigan & NICP spend analysis

Implementing the methodology outlined in Appendix A leads to the following findings for the peak year of 2019 for known projects. The peak year is used because the tail off in the known projects is more likely to be due to a lack of future planning rather than an actual tail off in workload.

Table 2 shows the distribution by project type of new build spend for the total pipeline of known projects.

Table 2: New-build construction spend by project type in 2019 (total known projects)

Project type	Construction spend in 2019 (2018 values - £m)	% of total
New housing	251	46%
Private commercial	115	21%
Infrastructure	89	16%
Private industrial	56	10%
Public non-housing	39	7%
Total	550	100%

Table 3 shows the infrastructure construction spend from the known projects in 2019 by infrastructure sub-type. Appendix E provides a full breakdown of the NICP and LEP projects and their construction values.

Table 3: Construction spend per infrastructure sub-type in 2019 (total known projects)

Project type	Construction spend in 2019 (2018 values - £m)	% of total
Transport	38	42%
Water	23	26%
General infrastructure	18	20%
Flooding	5	6%
Energy	5	6%
Communications	-	0%
Mining	-	0%
Total	89	0%

2.2. ESTIMATE OF FUTURE TOTAL LABOUR DEMAND

The known project pipeline may not include smaller projects or repair and maintenance work. Figure 3 shows the outcomes of the analysis of future labour demand with the forecast regional employment growth rate applied. The solid purple area shows the labour demand arising from the new build Glenigan and NICP projects. This is projected forward from the peak as shown in green. The R&M (including any in Glenigan or the NICP) is also shown along with the likely total labour demand arising from estimates of other work. The method for calculating these is provided in Appendix A. The total construction labour demand is around 20,110 people in 2019. The projected growth between 2019 and 2023 suggest that the labour demand in 2023 will be around 20,440.

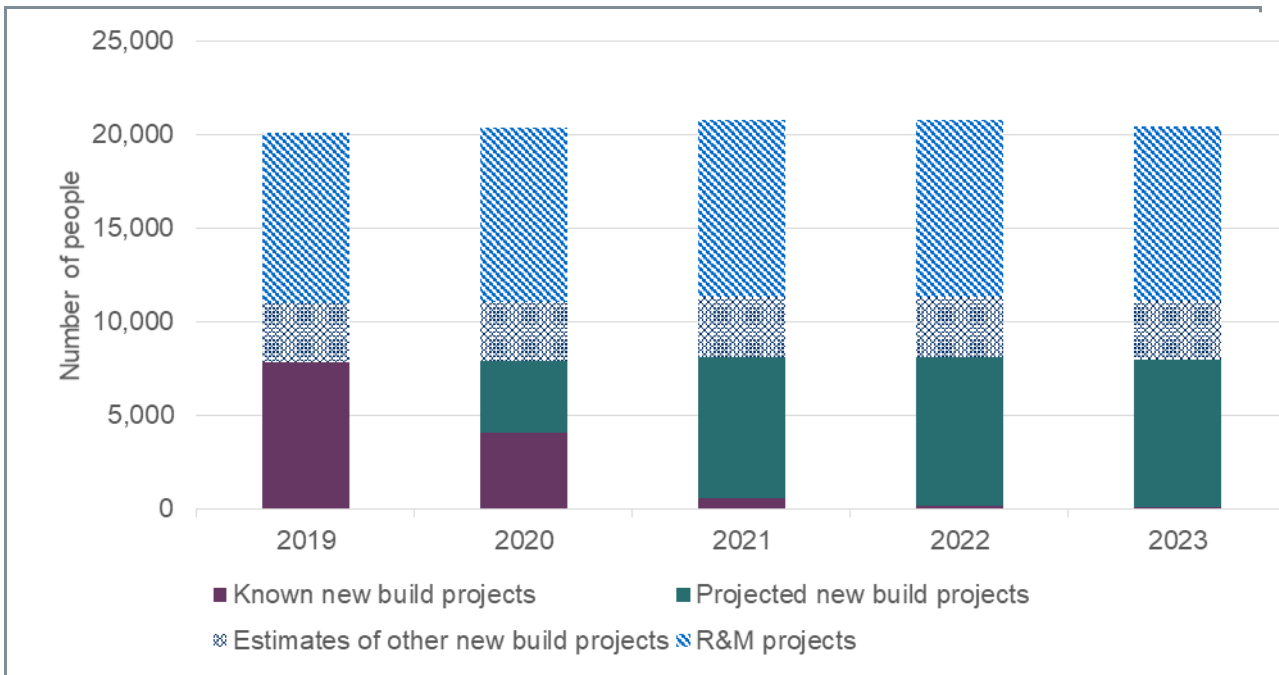


Figure 3: Total construction labour demand including estimates for both R&M and estimates of other work

2.2.1. Breakdown of labour demand by occupation

Figure 4 presents the breakdown of labour for skilled trades & operatives; and managerial, professional & office based staff. Around 60% of the workforce are in skilled trades & operative occupations.

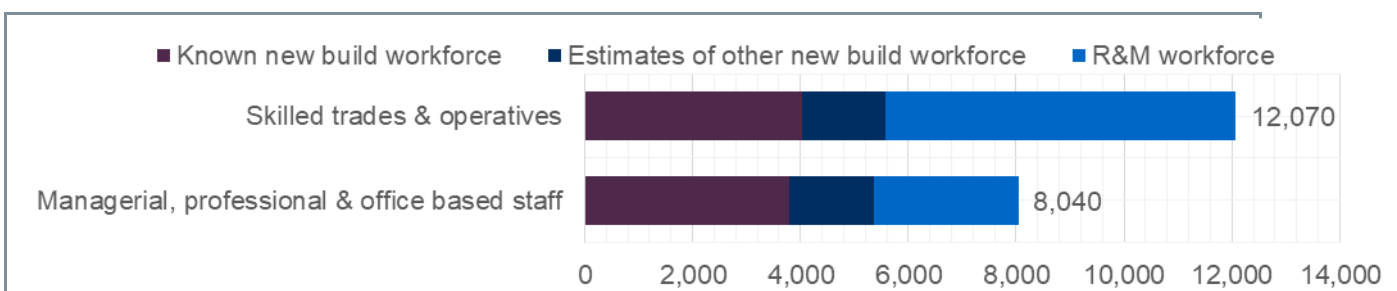


Figure 4: Total construction labour demand for 2019 by broad occupational group

For the peak year in Glenigan of 2019, Figure 5 shows the detailed breakdown for the 20 skilled trade & operative occupational groups for the pipeline of known projects, the estimates of other new-build work and the R&M work. These occupations will be predominately based at or near the location of the work.

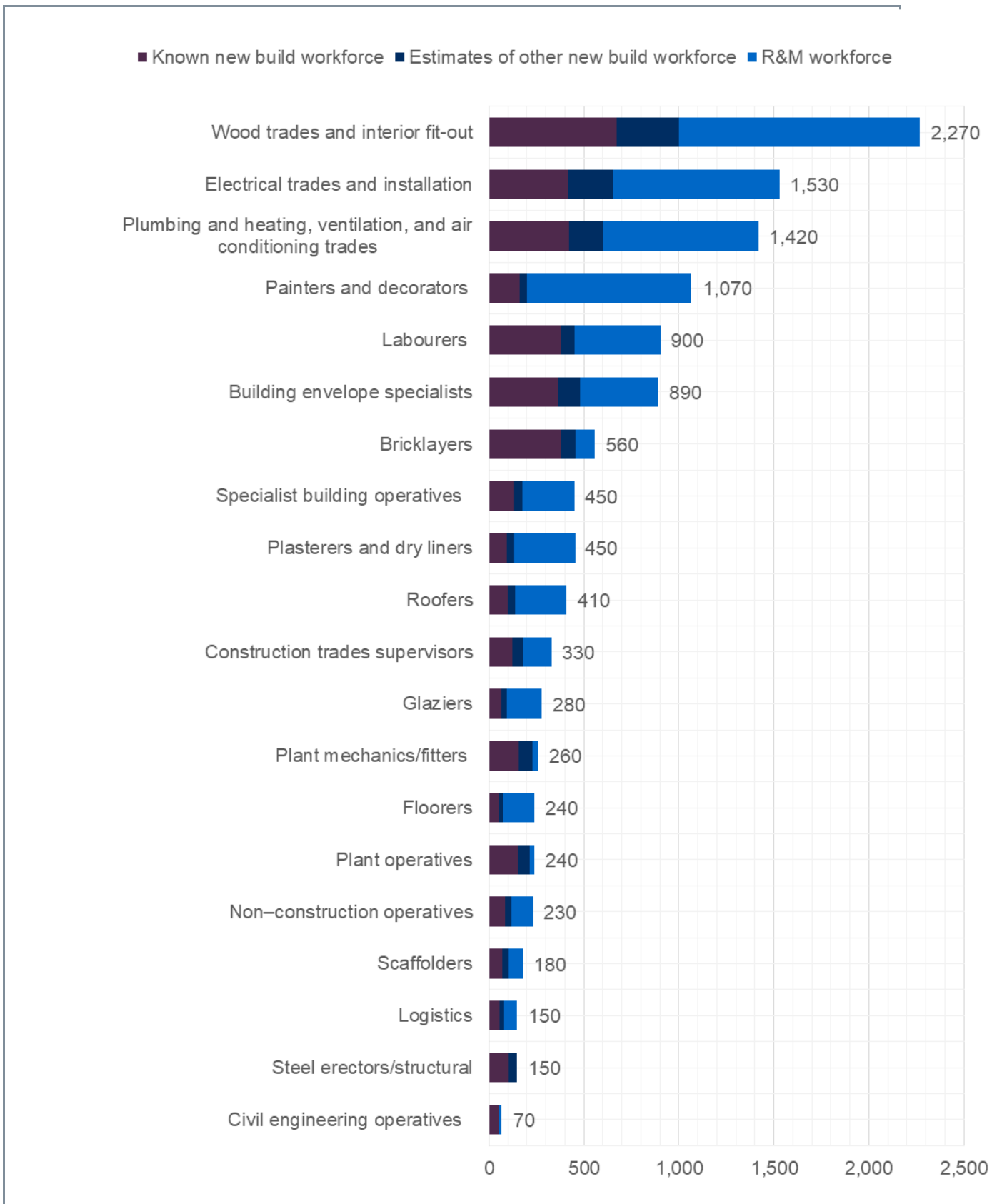


Figure 5: Construction labour demand for skilled trades & operative occupations in the peak year

Figure 6 shows a breakdown of the managerial, professional & office based occupations. Since it is possible for many of these people to work remotely from the site, they will not necessarily generate a local demand.

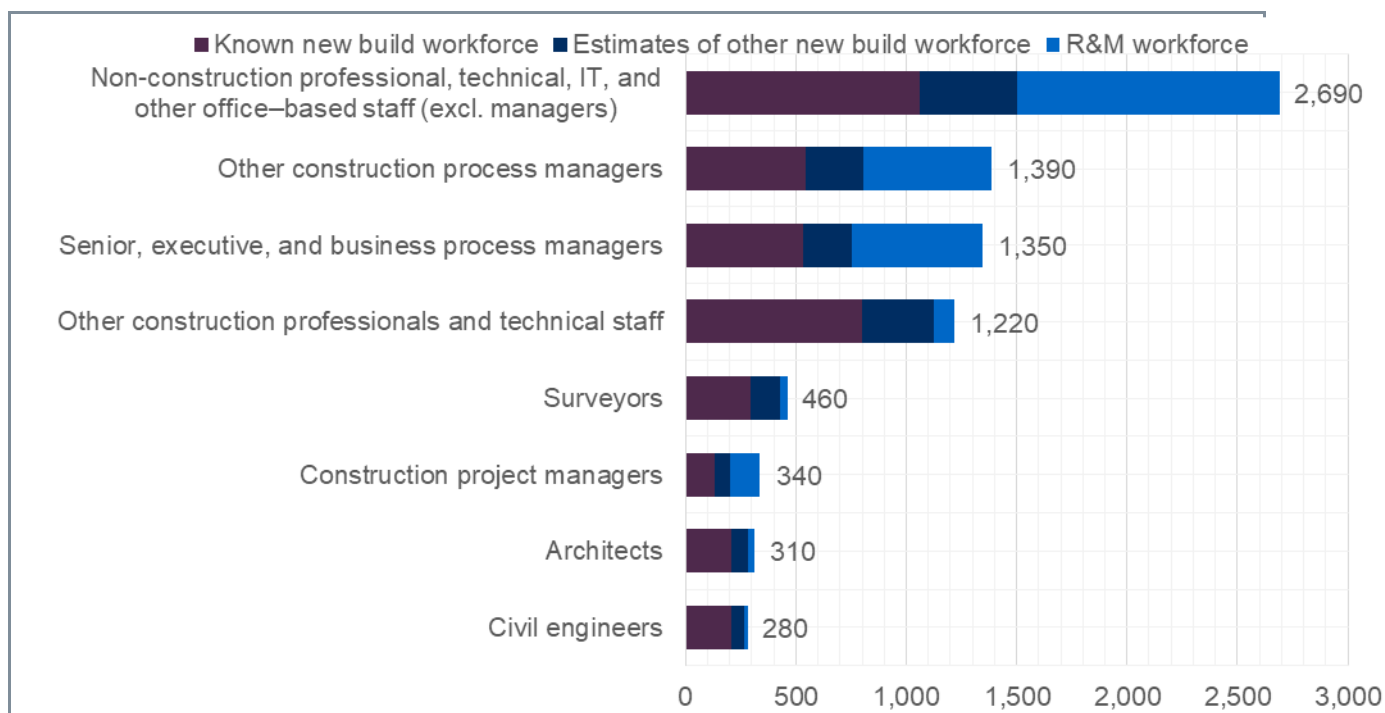


Figure 6: Construction labour demand managerial, professional & office based occupations in the peak year

2.2.2. Breakdown of labour demand by project type

Table 4 shows the labour demand generated by the known projects and the estimates of other work in 2019 broken down by project type.

Table 4: Labour demand by project type in 2019

Project type	Known pipeline labour demand in 2019 (people)	Estimates of other work labour demand in 2019 (people)	Total labour demand in 2019 (people)	% of total in 2019
Private commercial	2,070	3,020	5,090	25%
Housing R&M	610	4,020	4,630	23%
Non-housing R&M	-	4,530	4,530	23%
New housing	3,230	110	3,340	17%
Private industrial	990	-	990	5%
Infrastructure	850	-	850	4%
Public non-housing	670	-	670	3%
Total	8,420	11,680	20,100	100%

3. CONSTRUCTION LABOUR SUPPLY IN THE BUCKINGHAMSHIRE LEP AREA

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

The first element is to take a view on construction employment in the Buckinghamshire LEP and how this relates to employment across the South East region and the UK. The Buckinghamshire LEP falls entirely in the South East region. Comparisons are made against the South East region and, where applicable, the UK. Data from CITB's Construction Skills Network (CSN) is used along with official Government sources. Employment and employers are considered together as they are intrinsically linked, particularly as a large proportion of construction workers are employed within micro businesses or are self-employed, where the business location is also the home location.

For the second element, whilst training occurs at Further Education (FE) and Higher Education (HE) levels, the main focus of this report is on the FE that takes place. FE 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. Nevertheless, Higher Education in the region is also analysed, but should be considered in the context of the greater mobility levels of the learners at this level.

Finally, the demand forecasts are compared against employment, training and workforce mobility to give an indication of possible gaps and/or occupational pinch points.

3.1. MAIN POINTS

- Current construction workforce within the LEP area is estimated at around 16,700 workers.
- The small majority of the workforce is located in Aylesbury Vale (39%), a third from Wycombe (35%), 13% are from Chiltern and 13% from South Buckinghamshire.
- It accounts for just over 4% of the South East total current construction workforce and 7% of its construction firms.
- Employment levels in Buckinghamshire LEP have steadily risen over the last seven years.
- Over the last five years approximately 55 training providers have delivered construction related training within the LEP; the top ten main providers delivered over 90% of provision.

3.2. EXISTING WORKFORCE

- The Buckinghamshire LEP construction workforce has experienced a huge increase of 30% in the last 7 years
- 95% of Buckinghamshire LEP businesses are Micro sized (0-9 employees), identical to the South East region as whole

An analysis of the Annual Population Survey shows that the Buckinghamshire LEP area accounts for just over 4% of construction employment in the South East region as a whole. This is the number of workers employed by employers within the Buckinghamshire LEP. Table 6 applies this percentage share across the CSN occupational breakdown for the South East region as a whole to give an estimate of total employment at occupational and industry level in the Buckinghamshire LEP area. For comparison, the South East region has been included.

On a year to year basis workforce growth has been unsteady in the LEP. A yearly pattern of decrease/increase/ increase can be observed in Figure 7. The highest increase was witnessed in 2014/15 of 38%; one of the greatest decreases was just a year later of -21%. Most recently, growth in the LEP has plateaued in 2016/17; the South East as a whole has experienced constant, steady growth over the last 5 years.

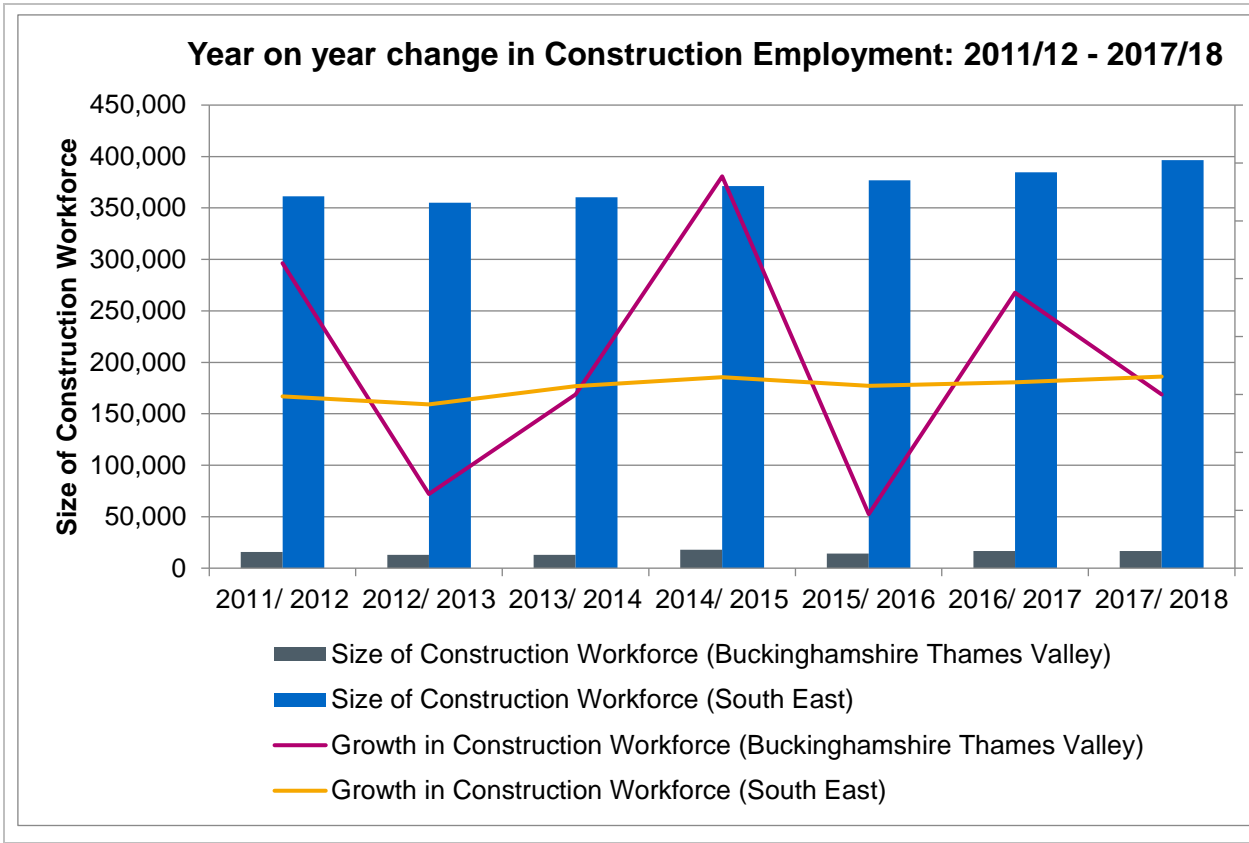


Figure 7: Year on year change in Construction Employment (Experian/CITB & NOMIS 2017)

The number of construction businesses within the LEP has stayed completely consistent at 7% of all construction businesses across the South East between 2010 and 2018. However, in actual numbers there has been a rise in construction businesses within the LEP, from around 3,200 in 2011 to 3,800 in 2018, a 14% increase in actual numbers. Looking at the South East, there was an increase of over 10,000 businesses within the area, over the same timeframe, a rise of 19% on 2010 levels.

Figure 10 shows the distribution of construction businesses within the South East LEP and Figure 11 shows the distribution of the construction workforce. There are clear differences between the two;

- Comparing business to workforce distribution indicates that South Bucks and Chiltern have a higher share of businesses compare to the construction workforce.
- Over 95% of firms within the LEP are micro sized (less than 10 employees), similar to that of the South East as a whole.

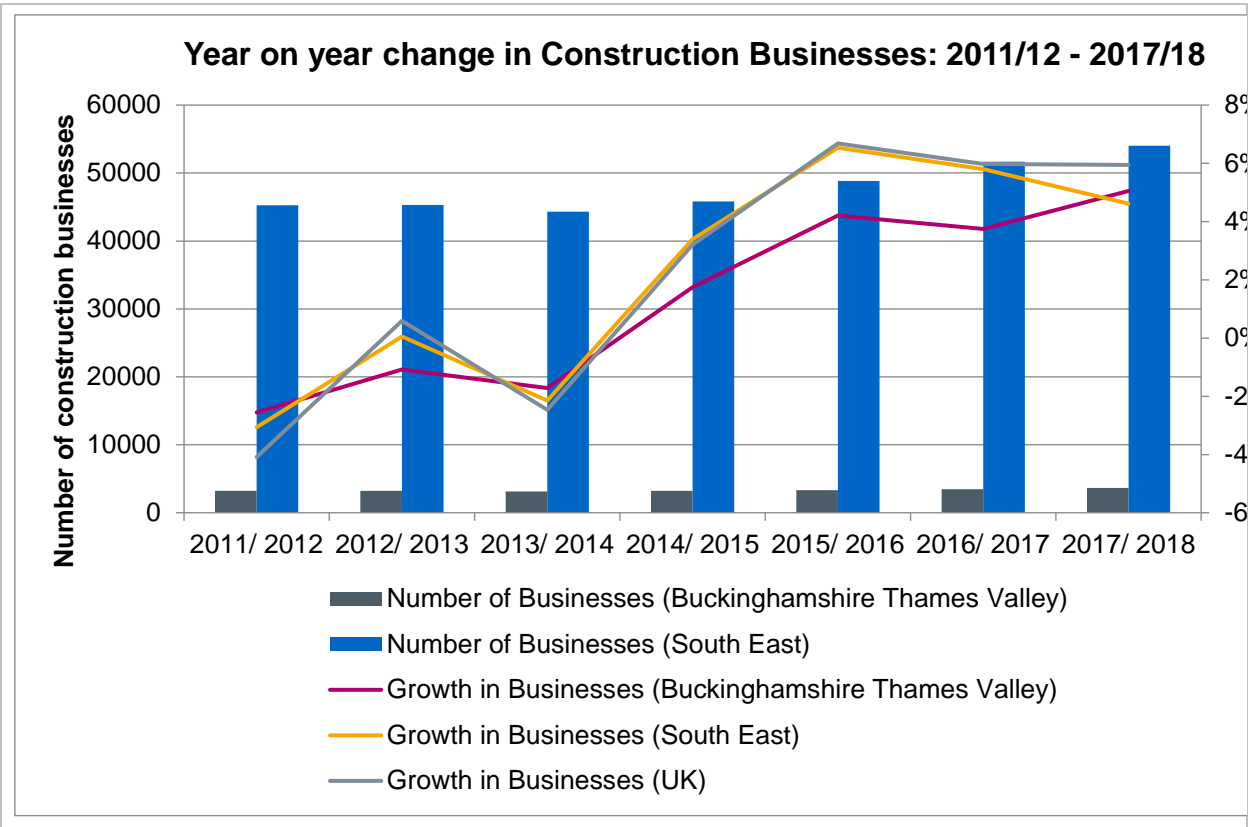


Figure 8: Year on year change in Construction Businesses (UK Business Count, NOMIS 2017)

The local authority areas in the LEP with the largest share of the businesses and workforce are Wycombe and Aylesbury, accounting for 65% and 74% of the total, respectively [achieved by adding the percentages of the two local authorities].

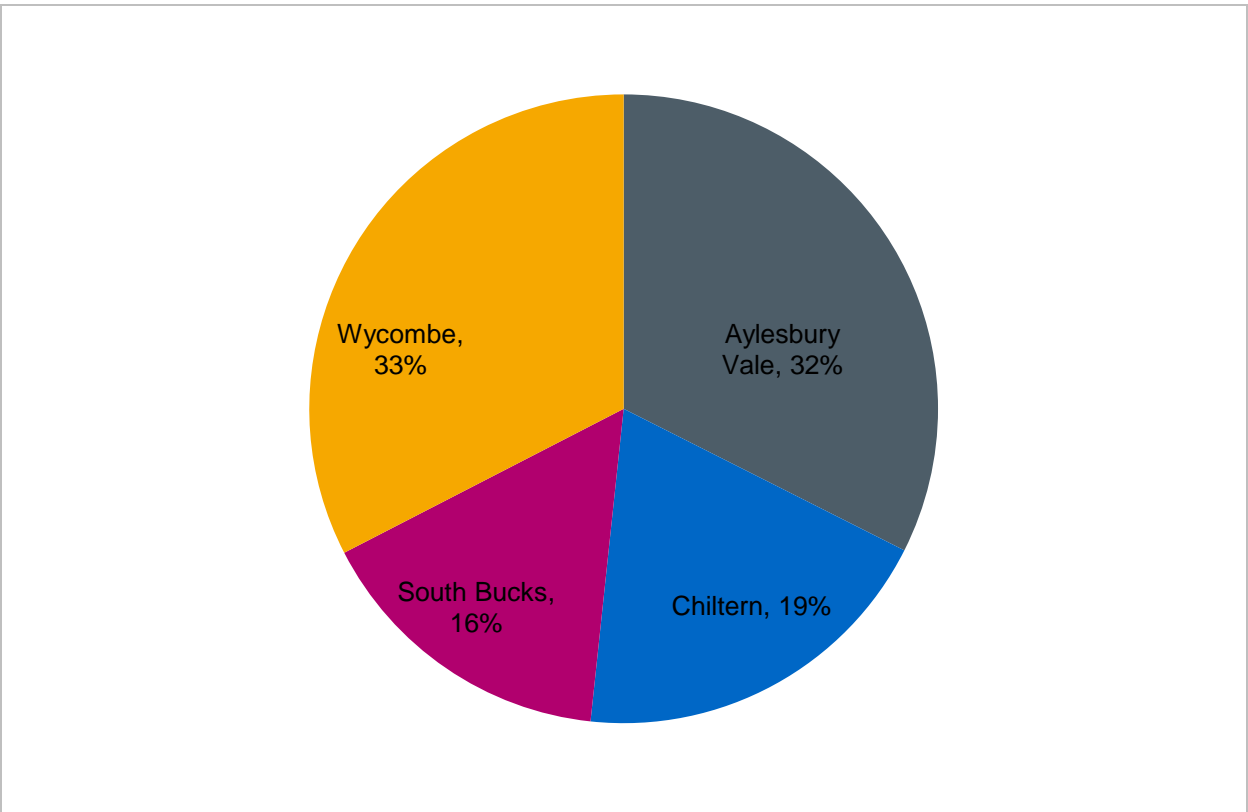


Figure 9: Distribution of construction businesses within the Buckinghamshire LEP (UK Business Count, NOMIS 2018)

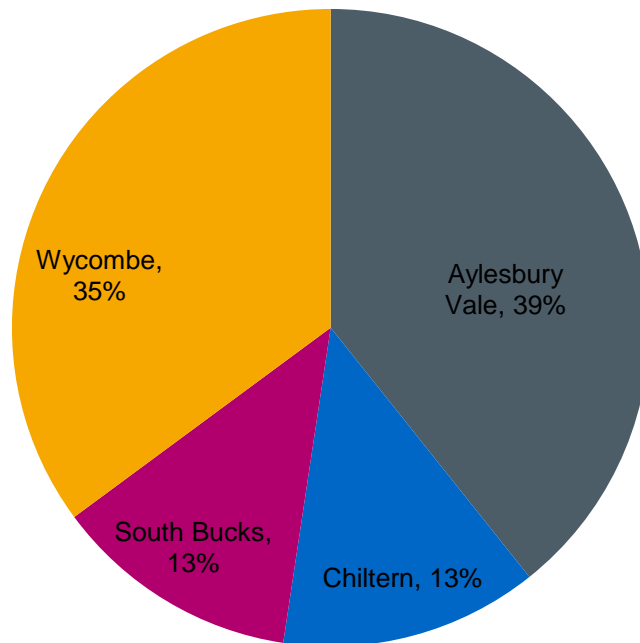


Figure 10: Construction employment by area within the Buckinghamshire LEP area (2018, NOMIS)

When assessing the patterns between workforce and number of businesses it is important to note two main factors when looking at the construction sector:

- Direct employment vs self-employment
- Size of business.

The construction sector has high levels of self-employment with around 40% of the UK construction workforce being self-employed; which is replicated in Buckinghamshire Thames Valley. Interestingly, the figure for self-employment in the South East is higher, at 45%.

When looking at business size, the distribution of companies across the LEP area is on the whole similar to the South East and the United Kingdom. The majority of companies are micro sized: 95% for the LEP and South East, 94% for the UK).

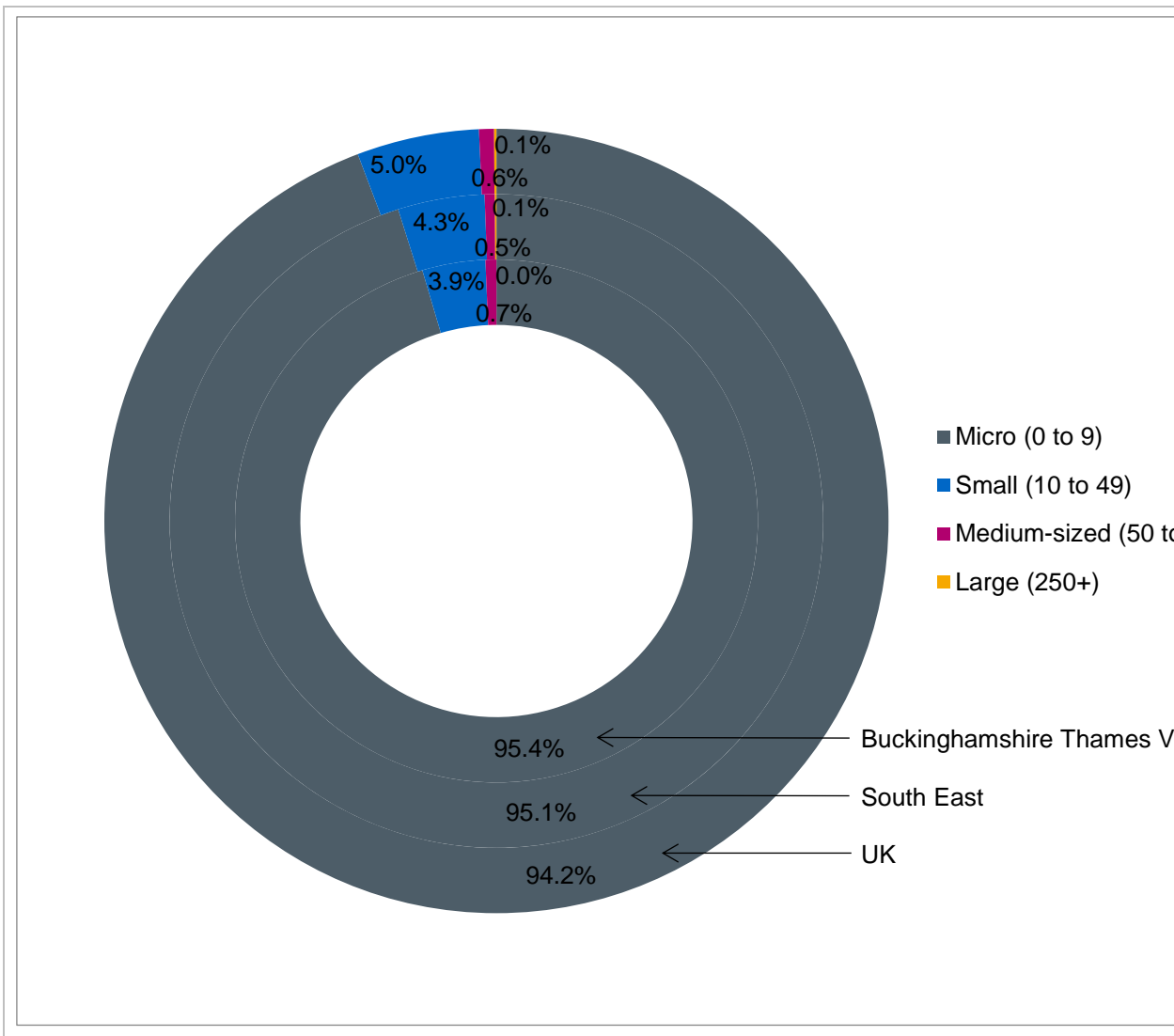


Figure 11: Construction Businesses by Size (UK Business Count, NOMIS 2018)

Table 5: Current construction workforce - occupational breakdown, 2017 (Source Experian & CITB)

Construction workers in the Buckinghamshire area listed by occupation [Calculated as 4.2% of the CSN data for the South East Region]	Buckinghamshire	South East
Other construction professionals and technical staff	1590	37650
Senior, executive, and business process managers	1210	28810
Other construction process managers	1170	27820
Surveyors	340	8070
Construction Project Managers	340	8070
Civil engineers	240	5800
Construction Trades Supervisors	230	5540
Architects	200	4700
Wood trades and interior fit-out	1650	39260
Plumbing and HVAC Trades	1180	28110
Electrical trades and installation	1080	25620
Labourers nec*	900	21270
Painters and decorators	790	18830
Building envelope specialists	770	18400

Bricklayers	340	8080
Specialist building operatives nec*	320	7670
Roofers	300	7150
Plasterers	250	6050
Plant operatives	230	5370
Plant mechanics/fitters	190	4590
Floorers	180	4210
Glaziers	170	3990
Logistics	130	3170
Steel erectors/structural fabrication	110	2630
Scaffolders	90	2190
Civil engineering operatives nec*	60	1540
Non-construction professional, technical, IT, and other office-based staff	2490	59110
Non-construction operatives	120	2930
Total	16,700	396,630

Note: numbers rounded to the nearest 10 (explaining difference in value between occupations and total)

Note: nec*: not elsewhere classified; HVAC: Heating, ventilation and air-conditioning.

Key
Manager/Professional occupations
Skilled Trades
Office-based Staff

4. TRAINING PROVISION

4.1. MAIN POINTS – TRAINING PROVISION

- Over the last five years around 55 training providers have delivered construction related training within the LEP; the top ten main providers delivered over 90% of provision.
- Over the last four years, training volumes in the LEP have fallen, while apprenticeships starts have increased slightly
- Good levels of competence qualifications achievements are found within the following occupations: Plumbing and HVAC Trades, Electrical trades and installation, Wood trades and interior fit-out, and Civil engineering operatives nec*

Overall, the volume of training in Buckinghamshire LEP has reduced significantly between 2012/13 and 2016/17, with the number of new starters decreasing by 40% over this period. This fall is larger than the decline witnessed in the South East region as a whole of 19% over the same period.

CITB analysis of Education and Skills Funding Agency (ESFA) Individualised Learner Records from 2012/13 through to 2016/17 academic years for construction learners shows that:

- The Buckinghamshire LEP area accounts for 5% of identified construction related training across the South East region
- There has been a reduction in the total number of construction learners starting in the Buckinghamshire LEP (-41%). A reduction is also found in the South East region of -19%.
- Apprenticeship starts within the Buckinghamshire LEP have increased over the period from 2012/13 to 2016/17 by 62%. This increase is much higher than the South East Region, which saw a 24% increase over the same period.
- When looking at other Education and Training construction learner starts (i.e. non-Apprenticeship construction qualifications) there have been reductions both in the Buckinghamshire LEP and in the South East (-56% and -26% respectively).
- Most areas within the LEP have stagnated in terms of growth or fallen slightly between 2012/13 to 2016/17. However, South Bucks has propped up positive growth by its 900% increase (going from less than 10 in 2012/13 to almost 100 in 2016/17).

“Knowledge” based qualifications describe those qualifications that typically have a theoretical basis so are more likely to be ‘classroom based’. “Competence” based qualifications, in the main, achieve a recognised NVQ and so 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 qualification is highly likely to be working as a Bricklayer as competence based qualifications are based on an assessment of work based skills.

Table 6 shows qualification achievements over the last five years for the identified competence based qualifications, comparing achievement volumes against the overall pattern for the South East as a whole. From this analysis there appear to be patterns for particular occupations.³

The majority of the achievements referred to in Table 6 are at:

- Level 2 (49%),
- Level 3 (51%)
- Level 4 and above (0%).

The percentage comparison with the South East region as a whole is used to demonstrate how the provision of training in the Buckinghamshire LEP by occupation is relatively high or low against the regional context.

³ The information shown in Table 6 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

The main training volumes identified are very similar to the overall training patterns seen in the South East. The first group, 'Main occupations' contains only Plumbing and HVAC Trades. The qualification achievements are consistent with or slightly higher than the overall share of training being achieved in the LEP area or there is a larger volume of training being delivered against them – in this case, both apply. For Plumbing and HVAC Trades, the volume of training will be related to its share of employment, while for others such as plant operators, training will be more related to the need to demonstrate competence for these roles through card scheme monitoring (for example the CPCS Card scheme for Plant Operatives).

Table 6: Competence qualification achievements in Buckinghamshire LEP as a % of total competence qualification achievements in South East region as a whole (Source: CITB/ESFA)

Construction occupations	12-13	13-14	14-15	15-16	16-17	Total Achievements	Total
Main Occupations							
Plumbing and HVAC Trades	21%	5%	18%	2%	6%	570	12%
Occupations with good provision							
Electrical trades and installation	7%	4%	3%	5%	6%	220	5%
Wood trades and interior fit-out	6%	5%	4%	2%	4%	200	4%
Civil engineering operatives nec*	3%	4%	7%	5%	28%	140	9%
Occupations to monitor							
Bricklayers	5%	6%	2%	2%	2%	60	3%
Building envelope specialists	15%	3%	2%	13%	0%	40	9%
Plant operatives	2%	1%	1%	1%	0%	40	1%
Floorers	4%	8%	5%	11%	0%	30	6%
Specialist building operatives nec*	3%	1%	2%	2%	1%	30	2%
Construction Trades Supervisors	5%	0%	59%	7%	0%	30	8%
Low Overall Learner Volumes							
Glaziers	5%	7%	3%	2%	3%	20	3%
Painters and decorators	1%	1%	6%	2%	1%	20	2%
Scaffolders	6%	6%	2%	0%	4%	20	4%
Plasterers	5%	2%	4%	2%	0%	<10	3%
Plant mechanics/fitters	0%	10%	10%	0%	0%	<10	4%
Other construction professionals and technical staff	0%	0%	0%	0%	8%	<10	1%
Construction managers	0%	0%	20%	0%	0%	<10	2%
Roofers	3%	0%	0%	0%	0%	<10	1%

There is a second group of occupations with good provision: where there appears to be a higher level of provision for occupations such as Electrical trades and installation, Wood trades and interior fit-out and Civil engineering operatives nec*. It could be that there are providers with particular specialisms in these areas operating with the LEP, or a particular need for this type of training.

The third group – occupations to monitor: identifies a number of occupations where we would expect higher levels of training, again linked to either the occupational size and/or demonstrating competence. It is possible that individuals within the Buckinghamshire LEP area may be travelling outside the area for this type of training.

Lastly there is a group of occupations where the low level of learner volumes makes it difficult to judge patterns across the years. Whilst the training provider network can adjust to cover changes in demand, there will be a requirement for a certain volume of training to make it viable for a provider to deliver it. These occupations could suffer from this intermittent demand or learners could be travelling further afield to more specialist training providers.

In Buckinghamshire LEP between 2012/13 and 2016/17, 55 different providers have been delivering training. The majority of training is being delivered by three main providers, as shown in 7.

Table 7: Top three training providers delivering training to the Buckinghamshire LEP by number of starts – excluding apprenticeships (Source: CITB/ESFA)

Provider	12-13	13-14	14-15	15-16	16-17	Total (Learner Aims)	% share of Total Quals	% Quals Ofqual Regulated
Amersham and Wycombe College	530	350	540	370	240	2020	44%	17%
Aylesbury College	350	300	210	180	200	1240	27%	5%
Milton Keynes College	150	110	190	60	130	640	14%	64%

Milton Keynes College is obviously not inside the Buckinghamshire LEP. Of the top three training providers, the majority provide a high percentage of Ofqual registered qualifications (in total around 80%). The average for provision for the area as whole is above 90%.

This profile is typical of many LEP areas, where 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.

The rest of the training providers have been omitted due to an apparent cease in training, as seen in Table 9. Three have dissolved: Haydon Training Services Limited in December 2018, Scientam in May 2015 and Education & Youth Services Limited in May 2017. Eastleigh college would still appear to offer courses in the Construction and Built Environment, however there was no data available for 2016- 17. The other three are still operable and seem to specialise in general online courses.

Table 8: Next seven training providers delivering training to the Buckinghamshire LEP by number of starts – excluding apprenticeships (Source: CITB/ESFA)

Provider	12-13	13-14	14-15	15-16	16-17	Total (Learner Aims)	% share of Total Quals	% Quals Ofqual Regulated
Haydon Training Services Limited	<50	50	80	60	-	220	5%	74%
Eastleigh College	50	<50	<50	<50	-	60	1%	100%
Exemplas Holdings Limited	-	<50	<50	-	-	50	1%	100%
Scientam Limited	50	-	-	-	-	<50	1%	100%
Education & Youth Services Limited	-	<50	<50	-	-	<50	1%	100%
Peopleplus Group Limited	-	-	<50	-	-	<50	1%	100%
Total People Limited	-	<50	<50	-	-	<50	1%	100%

Table 9: Unique Learner starts by area, construction subjects, all levels (Source: CITB/ESFA)

Local Authority	2012-13	2013-14	2014-15	2015-16	2016-17	% Net change	% Quals at Level 2+
Aylesbury Vale	710	630	540	440	420	-41%	51%
Chiltern	40	50	80	110	60	43%	62%
South Bucks	80	30	30	150	80	-2%	95%
Wycombe	580	430	610	350	270	-53%	70%
Grand Total	1390	1100	1220	1030	820	-41%	62%

As a whole, Buckinghamshire LEP area is showing a significant decrease in the number of construction learner starts of -41% across the five years, when the wider South East region experienced a lower, but still significant decline of -18% over the same period.

In the LEP there has been a 62% increase in the number of apprenticeship starts between 2012/13 and 2016/17. Whilst the college based courses are an important stepping stone or progression route for learners to acquire knowledge, construction employers tend to have a preference for practical or competence based skills, so it is positive that the LEP has witnessed this increase in apprenticeships over these four years. Apprenticeships are investigated in more detail in the next section.

4.2. APPRENTICESHIPS

In the Buckinghamshire LEP area overall volumes of training are declining, whereas numbers of apprenticeship starts within the area are increasing, by a large margin.

The Local Authority areas within the Buckinghamshire LEP making the biggest contribution to this increase from 2012/13 to 2016/17 are South Bucks and Wycombe; together they contributed toward an increase of approximately 110 apprenticeship starts. Despite a comparatively small decrease in Aylesbury Vale and Chiltern, overall growth in the LEP is still strong.

When looking at Table 11 the number of apprenticeship starts rose by 62% from 2012/13 to 2016/17, compared to a decrease (-41%) throughout the same time frame for the total number of construction learner starts within the LEP area. The increase in apprenticeship starts within the South East region from 2012/13 to 2016/17 was greater than in the Buckinghamshire LEP, with a 24% increase.

Table 10: Unique apprenticeship starts by area (Buckinghamshire LEP), all construction subjects (Source: CITB/ESFA)

Local Authority	2012-13	2013-14	2014-15	2015-16	2016-17	Increase/decrease	% Net Change
South Bucks	10	20	10	120	80	70	900%
Wycombe	40	40	70	70	70	40	103%
Aylesbury Vale	120	100	120	120	110	-10	-9%
Chiltern	20	30	20	20	20	<-10	-17%
Grand Total	160	160	200	300	260	100	62%

When considering apprenticeship starts by occupation between 2012/13 and 2016/17 the biggest increases in volumes (increases of 50 and higher) have been in Civil engineering operatives nec* and Building envelope specialists. Otherwise, movement is positively small, or non-existent. Eight occupations which have experienced stagnation are plumbing and HVAC trades, other construction staff, bricklayers, plasterers, floorers, specialist building operatives nec*, plant mechanics/fitters and painters and decorators.

Table 11: Unique apprenticeship starts by occupation (Buckinghamshire LEP), construction subjects (Source: CITB/ESFA)

Occupation	12-13	13-14	14-15	15-16	16-17	Increase / decrease
Civil engineering operatives nec*	0	10	0	100	50	50
Building envelope specialists	0	0	0	0	50	50
Glaziers	0	<10	<10	<10	20	20
Construction Trades Supervisors	0	0	0	<10	10	10
Electrical trades and installation	50	40	60	60	60	10
Wood trades and interior fit-out	30	50	50	50	40	10
Scaffolders	0	0	<10	<10	10	10
Plumbing and HVAC Trades	40	30	60	40	40	<10
Other construction professionals and technical staff	0	0	<10	10	<10	<10
Bricklayers	10	20	20	20	20	<10
Plasterers	<10	0	<10	<10	<10	<10
Floorers	0	<10	0	0	0	0
Specialist building operatives nec*	0	<10	<10	<10	0	0
Plant mechanics/fitters	<10	0	<10	<10	0	<10
Painters and decorators	10	10	<10	<10	<10	<10

Table 12 considers apprenticeship starts by provider. About 50 different providers in total have delivered apprenticeships in construction for the Buckinghamshire LEP area between 2012/13 and 2016/17. The bulk of training is being delivered by 2 providers which account for almost 60% of all provision in the LEP. Aylesbury College delivered around 70 construction apprenticeships within the LEP in 2016/2017 and appears to be the leading provider in apprenticeship starts.

Table 12: Unique apprenticeship starts by provider in Buckinghamshire LEP (subjects (Source: CITB/ESFA))

Local Authority	2012-13	2013-14	2014-15	2015-16	2016-17	Total	% Share
Aylesbury College	90	70	90	80	70	390	40%
Amersham and Wycombe College	30	30	50	50	50	200	21%
CITB- Constructionskills	20	20	30	40	30	140	15%
Hull College	0	0	0	70	<10	80	8%
Brooklands Technical College	0	0	0	0	60	60	6%
Eastleigh College	0	<10	0	<10	10	20	2%
JTL	<10	<10	10	<10	10	20	2%
Activate Learning	<10	<10	<10	<10	<10	20	2%

Please note: as the result of a 2017 merger between Aylesbury College and Amersham and Wycombe College, the Buckinghamshire College Group was formed. This data is not necessarily reflective of the current events, as was last collated in 2016/ 17.

4.3. HIGHER EDUCATION

There are five broad HE qualifications that relate to construction: Architecture, Building, Landscape & garden design, Planning, Civil Engineering, and a small number of other courses linked to architecture, building & planning. All these courses are offered at universities accessible to the Buckinghamshire area. Of these construction related courses, the three that are most relevant to delivering construction projects are Civil Engineering, Architecture, and Building.

There are a number of significant challenges to address in understanding Higher Education's place in UK construction. Most significantly, those starting and completing HE level qualifications tend to be willing to travel significant distances to study and then find employment. For many students the opportunity to leave home and move to a new town or city is one motivation for entering Higher Education. In the UK, this has become normalised. University students are more likely to move into a region to study and then, once graduated, out of a region to find employment.

A 2014 study undertaken by Education Phase on behalf of TV Licensing indicated that the average distance from home to place of HE study was around 90 miles. This also indicated that of the sample, only around 5% of HE students were studying within 20 miles of home but that 78% moved 60 or more miles or were from overseas.

However, when questioned, different institutions respond differently – with some universities indicating that they believe they attract students from closer to home while others have a more national and often international focus. This is, in part, down to the course type and its availability elsewhere. But there appears to be a rough correlation between the UCAS points required for entry to some universities and the distance students' travel. Typically the most demanding universities draw students from a greater average distance.

4.3.1. Local provision

Within the area, higher education is provided by:

- Amersham and Wycombe College
- Aylesbury College
- Milton Keynes College
- Serco Ltd

4.3.2. Degree level apprenticeships

Some provision for higher level training for professional roles is available as degree apprenticeship programmes that attract government subsidy and are available to potential students as debt free education.

This is an attractive opportunity that could be highlighted to applicants and employers but that also requires support from employers to recruit at age 18 rather than 21 (graduate). This may help fill some higher level skills gaps earlier as the apprentice can start to make a contribution in their professional roles after one year of study.

4.4. CAREER PROGRESSION

Relatively limited information is available to explain any trends in career progression. The complexity of occupations, qualifications and the inability to track individuals make establishing a clear picture extremely difficult.

There is some anecdotal evidence to suggestions that:

- i. Some more experienced workers are able to move into supervisory roles.
- ii. Some experienced workers take on a greater variety of occupational skills (and are therefore able to say they have experience working in several occupations).
- iii. There is more structured career progression among the professions (backed by professional development/CPD routes through professional chartership, to allow individuals to work progressively towards Member or Fellow status. However not all professionals will be a part of a professional body).
- iv. The professions are more likely to work to an older age in their chosen field. However this is balanced against professionals tending to start at an older age as a result of the need for higher level education and accreditation.

In December 2016 CITB commissioned a report considering “Career progression in the construction industry”. This identified a number of trends in relation to the Progression of construction workers into teaching and training roles.

Anecdotal evidence suggests that the primary issue, especially amongst full-time teaching staff, is fear about losing touch with one’s professional or vocational background. There is a view that that regular return to industry should be facilitated so that technical teachers could refresh their practical knowledge, skills, and stay abreast of innovation.

Results of a 2010 study into what employers wanted from training and trainers showed that, while they prioritised industry skills and knowledge above education skills and knowledge, a complex mixture of the two was required, which was generally felt to be lacking.

This suggests that initiatives aiming to utilise ‘retirees’ in Vocational Education Training (VET) needs to consider how individuals can keep their skills up-to-date.

In this sense whilst any initiative to engage retirees in training has some benefit in terms of keeping skilled people engaged with the sector it creates another challenge if employers perceive those individuals to have ‘out-dated’ skills.

4.5. WIDER TRENDS

Overall, the Buckinghamshire LEP qualifications are on trend with both the South East and the UK.

4.5.1. Occupational qualification trends

Figure 12 visualises the occupational shares in both the UK (left axis) and Buckinghamshire LEP (right axis). There are clear similarities; noticeably, the LEP seems slightly more concentrated on the Civil engineering operative nec* and Plant operative occupations,

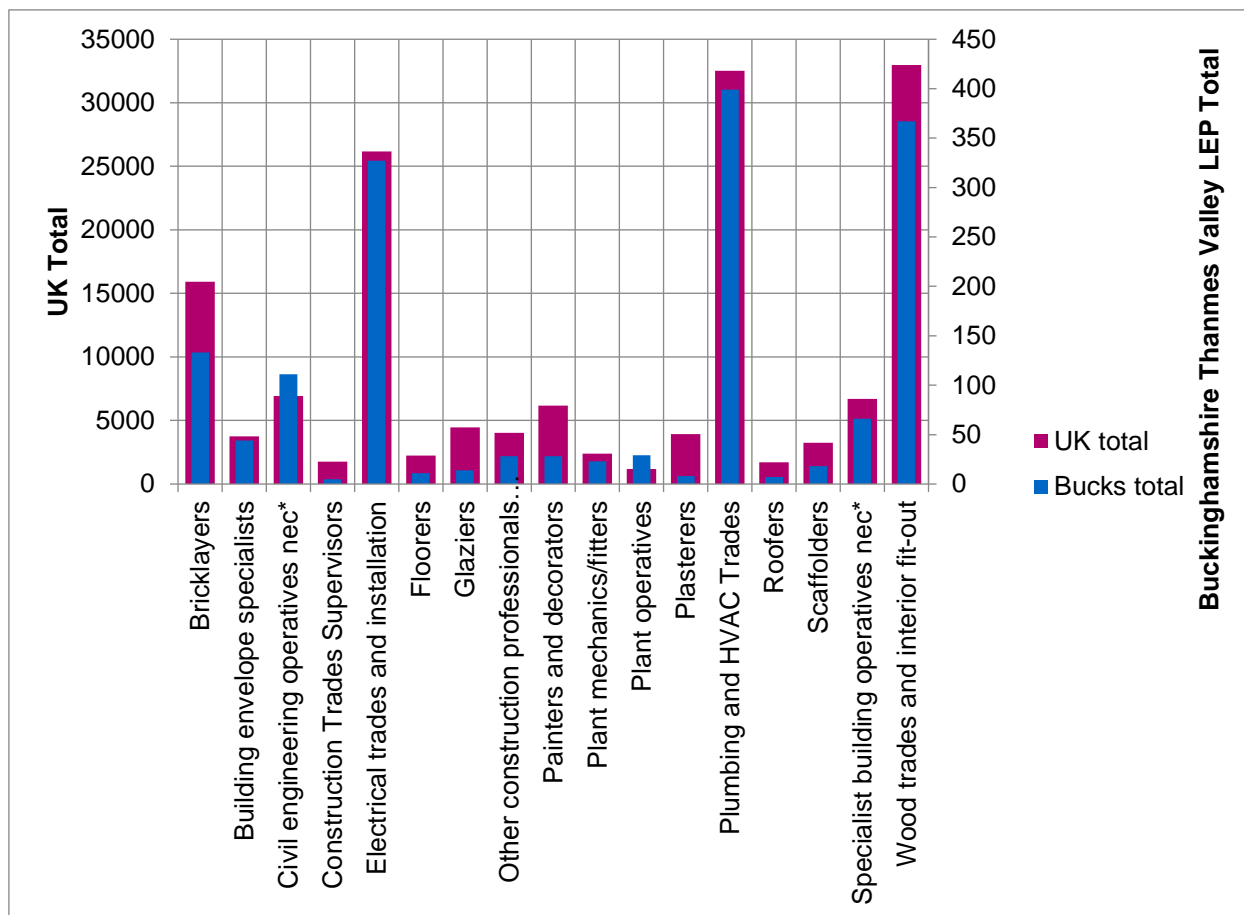


Figure 12: Construction qualification by occupation within the UK and Buckinghamshire LEP (Source: CITB/ESFA)

4.5.2. Qualifications

In terms of actual qualification, Buckinghamshire LEP is broadly similar to the West Midlands and UK. Of its top 50 qualifications, it has in common 72% with the West Midlands and 70% with the UK. The common qualifications it appears to provide more of than the WM and UK are:

- Diploma in **Highways** Maintenance - Excavation Operations (Construction) (QCF)
- NVQ Diploma in **Plant** Operations (Construction) (QCF)
- Diploma in Construction Operations - **General Construction** (QCF)
- Extended Diploma in Bench **Joinery** (QCF)
- NVQ Diploma in Construction Operations and Civil Engineering Services - **Highways** Maintenance (Construction) (QCF)
- Certificate in Construction **Operations** (Construction) (QCF)
- Certificate in **Highways** Maintenance - Excavation and Reinstatement Operations (Construction) (QCF)
- Diploma in **Highways** Maintenance - Excavation Operations (QCF)
- NVQ Diploma in Built **Environment** Design (QCF)
- Certificate in **Plant** Operations (Groundworks) (QCF)

The LEP would appear to have slightly more in common with the UK than the South East. For example, of the LEP's top 10, it shares 60% of its qualifications with the UK areas, and 50% with the South East - as shown in Table 12.

Table 13

Qualification	Ranking		
	WM Total	Bucks total	UK total
NVQ Diploma in Wood Occupations (Construction) (QCF)	1	1	1
NVQ Diploma in Plumbing and Heating (QCF)	2	2	2
NVQ Diploma in Installing Electrotechnical Systems and Equipment (QCF)	6	3	6
Diploma in Site Carpentry (QCF)	38	4	7
NVQ Diploma in Trowel Occupations (Construction) (QCF)	5	5	3
NVQ Diploma in Installing Electrotechnical Systems and Equipment	3	6	4
Extended Diploma in Site Carpentry (QCF)	39	7	19
Diploma in Bench Joinery (QCF)	40	8	24
Extended Diploma in Bricklaying (QCF)	16	9	27
NVQ Diploma in Domestic Plumbing and Heating (QCF)	41	10	14

5. 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 the South East Region will be analysed in order to understand how this might impact on future training interventions and the supply of job opportunities for local people.

Appendix E shows the region or nation an employer currently operates in, compared with the region or nation they were previously working in. This is taken from the CITB survey into Workforce Mobility and Skills and gives an indication of the inter-regional movement of workers. In comparison with other English regions, the South East has a relatively large proportion of workers who travel to other regions to work, as well as a large proportion of workers travelling into the South East to work.

As some respondents would have indicated that they had worked in more than one region, the totals for percentage figures in the table exceed 100%.

5.1. WORK HISTORY

Half of construction workers in the South East have worked in the construction industry for at least 10 years (50%), compared to a higher UK average (56%), with more than a quarter working in the construction industry for over 20 years (28%). The most likely reason for working in the region is because they grew up there/have always lived there (45%). The majority (72%) of construction workers in the region have remained in the South East for all or most of their career, again slightly lower than the UK average of 80%.

Further proof of the higher levels of fluidity of the construction workforce in the South East is emphasised by the finding that only just over half of the workers (56%) here reported their last construction site they worked on was also in the South East.

In terms of the regions/nations in which construction workers' current employer operates in, just under two thirds (65%) of workers in the South East reported that their employer operated within the same region they were currently working in (i.e. also the South East), the lowest of all regions in the UK. This is perhaps unsurprising given the South East's proximity to the capital, with 27% reporting their employer operated in London, whilst a high percentage cited their employer operating in the East of England (19%), the South West (18%) and the East Midlands (12%), as shown in Appendix E.

5.2. 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 more than half of all construction workers in the South East were living in the South East when they started their construction career (55%). Workers currently based in the South East are therefore amongst those least likely to have remained in the same region in which they were based when they started their construction careers, on a par with the East of England (55%) and only ahead of London (50%) in this respect.

Furthermore construction workers in the South East are again least likely to have stayed in the region where they studied for their first qualification (also 55%), with the East of England (50%) and London (58%) again also low. Unsurprisingly, there is a higher than average mention by workers in the South East (14%) of construction workers achieving their qualification in London, and vice-versa 24% of workers in London mentioning achieving their qualification in the South East, emphasising the high degree of mobility between these two regions for learning and training.

5.3. TRAVEL TO SITE

Appendix F shows that the majority of construction workers interviewed in the South East currently both work at a site in the South East and have a current residence in the South East (58%). This means that 42% of construction workers in the South East are travelling into the region for work from another region in which their current residence is based. This figure of

42% is the highest of any region in the UK, and highlights the extent to which workers are willing to travel into the South East to work, mostly from neighbouring regions: from London (12%), East Midlands (9%), East of England (8%) and South West (8%). When looking at the corresponding figures for the London region, 12% of the Capital's workforce has a current residence based in London but are travelling to the South East to work. Given the South East construction workforce currently stands at 384,720 and the Greater London construction workforce at 417,660, we can estimate that around 46,000 construction workers currently commute from the South East to London to work and around 50,000 currently commute from London to the South East to work. We can therefore infer from this that the extent to which the South East and London 'suck' construction workers in from each other's region is well balanced.

Workers in the South East were also asked to indicate the furthest distance they have worked from their permanent or current home in the last 12 months. Just over half have worked more than 50 miles away from their permanent home (55%), with 31% having worked between 51 and 100 miles away and 24% having worked more than 100 miles away. Workers based in South East were broadly similar to the UK average (21%) in terms of the proportion of workers that have travelled more than 100 miles from their permanent home to work in the last 12 months.

However, the average (mean) distance from workers' current residence (taking into account temporary residences) to their current site was 27 miles for the South East, slightly higher than the UK average of 22 miles. This indicates that although construction workers in the South East display willingness to travel some distance to work, this is likely to be intermittent.

5.4. 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 continue working at their current site of work.

Around a fifth of all construction workers in the South East (21%) do not expect to work on that site for more than a month, including 8% that only expect to be there for about a week or less. 29% expect to stay on that site for a year or longer, a notable increase compared with 2012 (12%), suggesting more stable employment in the South East than in 2012. However in more than a fifth of cases (22%) workers do not know how much longer they can expect to be on site.

Three quarters of all construction workers in the South East 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 (77%).

5.5. SUB-SECTOR AND SECTOR MOBILITY

All construction workers were asked which 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 small increase in the proportion of construction workers that have worked on new housing within the South East, up from 82% to 84%. For all other types of projects the proportion of construction workers that have worked on them has fallen since 2012; this includes housing repair and maintenance (down from 47% to 41%), commercial work (down from 51% to 35%), private industrial (down from 43% to 30%), and infrastructure (down from 32% to 21%).

Around a half of all construction workers have only worked on one project type in the South East (47%), a large increase compared with 18% in 2012, which again suggests a pattern of increased stability in the sector.

5.6. 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. Within the South East, more than two fifths of construction

workers say they definitely will be (43%) and a similar proportion think it is very or quite likely (42%). Just 2% say they definitely won't be and a further 2% hope to be retired by then, while 7% 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), 43% believe they will definitely want to be working in the construction sector and a further 43% believe it is very likely or quite likely they will want to be working in the construction sector. Only 8% think on any level that they will not want to be working in the construction sector in five years' time which is less than in 2012 (16%).

5.7. MAIN POINTS – MOBILITY

Overall the findings from the Mobility survey indicate a fairly stable, well established workforce across the South East, albeit prone to some movement to and from neighbouring regions. Evidence of movement between neighbouring regions is unsurprisingly most notable with regards to London, although also significant to and from the East Midlands, the East of England and the South West. On the whole though, the workforce in the South East has grown up in the South East or London, undertaken their initial construction training in the South East or London and have stayed there for the majority of their working life. Additionally, optimism across the workforce is high with a majority expecting to still be in the construction industry in five years' time.

Setting the Mobility survey research against the overall workforce and business patterns noted earlier indicates that whilst the South East as a whole region has a fairly stable workforce, workers within the Enterprise M3 LEP will not be limited to working only within the LEP – they may travel to work in other areas of the South East region as well as perhaps outside of the region, most likely in London. Likewise, workers in other areas of the South East, as well as potentially other regions, will also be travelling to work within the Enterprise M3 LEP.

More than a quarter of all construction workers in the South East have worked in the industry for at least 20 years (28%). Half have done so for 10+ years (50%).

More than half of all construction workers in the South East were living in the South East when they started their construction career (55%). Workers based in the South East are amongst those least likely to have remained in the same region in which they were based for their first construction job, with many moving to London to work.

42% of all construction workers interviewed in the South East travelled into the region from another region in which their current residence is based, the highest of any region in the UK. Within the South East, the average (mean) distance from workers' current residence (taking into account temporary residences) to their current site was 27 miles (22 miles is the UK average).

Three quarters of all construction workers in the South East 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 (77%).

Overall about half of all construction workers in the South East have only worked on one project type (47%).

Over two fifths of construction workers in the South East say they definitely will be working in the industry in five years' time (43%) and a further third think it is very or quite likely (42%).

5.8. HIGH SPEED TWO (HS2)

High Speed Two Ltd has been granted the powers by Parliament to begin the construction of Phase One of HS2 which will be the new high speed line between London, Birmingham, Crewe, Manchester and Leeds. The HS2 route passes through Buckinghamshire from the South near Chalfont St Giles, to the South of Amersham and Aylesbury eventually heading North out of the county near Turweston.

5.8.1. INDICATIVE SCHEDULE AND IMPACT

The Government's information states that: The construction of the whole phase one route will take approximately eight years, from the moment that site clearance work starts to the completion of railway installation. This will be followed by a period of testing and commissioning before the first services commence in 2030.

As part of the phase one work, an infrastructure maintenance depot is planned to be built at Calvert, Buckinghamshire. This depot will connect to the northbound and southbound HS2 mainline tracks just south of Twyford and at Calvert Green to allow maintenance trains to access the route. Rail chords will also connect the depot to existing rail lines to Bicester and Bletchley.

5.8.2. Brexit – demand calculations and forecasting

Economic forecasts in this report are predicated on the Brexit position at the time of writing.

The baseline forecasts that have informed the Construction Skills Network assumes that a deal will eventually be struck within a four year time horizon and it will include some form of trade access to the single market. As it is unlikely that the terms will be as good as the current situation, we have made a small downgrade to our long term export and investment projections, compared to our pre-Brexit vote baseline. No adjustments have been made to underlying population projections in our base case but downside risks clearly exist on this front from a potential slowdown in EU migration.

At the time of writing the proposals meant that after a proposed Brexit transition period, all migrants planning to live and work in Britain would have to demonstrate they are sufficiently skilled by meeting a minimum salary threshold. That figure has not yet been specified but, at present, non-EU migrants must earn more than £30,000 a year to work in the UK, so the assumption is that it will be a similar figure for EU migrants.

Low skilled people will be able to migrate to the UK but only in limited numbers. For example, the government in October 2018 announced a pilot scheme allowing British farmers to bring in fruit and vegetable pickers for up to six months each year during the harvest season. However, it has ruled out a wider system of sector-by-sector exemptions.

The current negotiations are just on the immediate terms of Brexit, the actual trade deal will take much longer to finalise, hence a four-year horizon.

6. THE DIFFERENCE BETWEEN DEMAND AND SUPPLY

6.1. MAIN POINTS

The occupations for which there appears to be the greatest risk of a shortfall between anticipated peak demand and the estimated supply of workers are:

Among skilled trades:

- Scaffolders
- Plasterers and dry liners
- Bricklayers
- Glaziers

Among professional and managerial roles:

- Architects

Non-construction roles

- Non-construction operatives

Before looking at demand for construction compared with supply of construction workers, 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.

It is also important to note that the demand calculations are based on data covering the Buckinghamshire LEP area, whereas the supply figures are an extrapolation of data from the South East region.

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 UK Contractors Group UKCG 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 take the longest time whereas lower value work in general, along with work in the industrial sector, is able to get on site quickest.

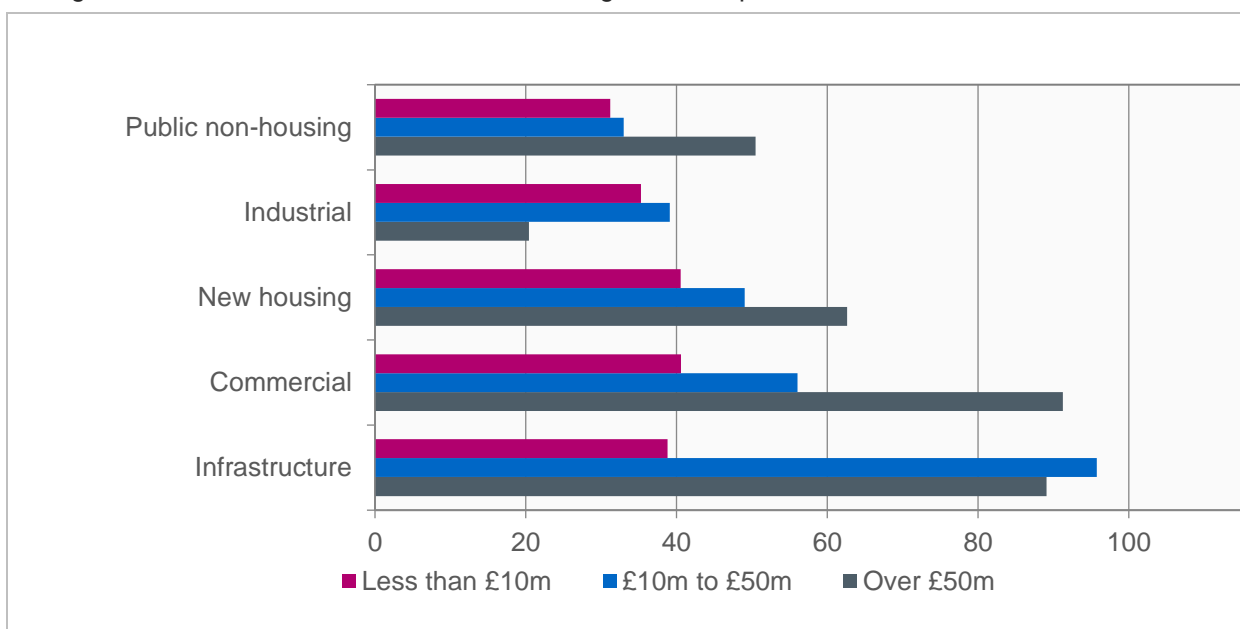


Figure 13: Average number of weeks from planning to work on site, UK 2010-2013 (Source: UKCG/Glenigan)

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.

Also, whilst different types of projects can be categorised by their type of build, such as housing, commercial or 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 sectors. For example, evidence from the 2015 Mobility research shows that occupations such as banksmen / bankspersons, labourers/general operatives, roofers and bricklayers are most likely to have only worked on one project type, while site managers and painters and decorators are more likely to have worked on a wider range of projects⁴.

⁴ CITB(2015) Workforce Mobility and Skills in the UK Construction Sector – North West

6.2. GAP ANALYSIS

Buckinghamshire LEP current construction employment is estimated at just under 17,000; this accounts for around 80% of the identified 2019 demand forecast. The demand forecast reduces in later years as current visibility for future identified projects decreases. Employment and demand by occupation for 2018 is shown in Table 14.

Table 14: Occupational breakdown of demand for Buckinghamshire LEP against current employment

	<i>Buckinghamshire LEP area 2019 Demand</i>	<i>Shortfall 2019</i>
SKILLED TRADES		
Scaffolders	180	2.0
Plasterers and dry liners	450	1.7
Bricklayers	560	1.6
Glaziers	280	1.6
Electrical trades and installation	1,530	1.4
Roofers	410	1.4
Steel erectors/structural	150	1.4
Specialist building operatives not elsewhere classified (nec*)	450	1.4
Wood trades and interior fit-out	2,270	1.4
Painters and decorators	1,070	1.3
Floorers	240	1.3
Plant mechanics/fitters	260	1.3
Plumbing and heating, ventilation, and air conditioning trades	1,420	1.2
Building envelope specialists	890	1.1
Logistics	150	1.1
Plant operatives	240	1.0
Civil engineering operatives not elsewhere classified (nec*)	70	1.0
Labourers nec*	900	1.0
PROFESSIONAL ROLES		
Architects	310	1.6
Construction trades supervisors	330	1.4
Surveyors	460	1.4
Other construction process managers	1,390	1.2
Civil engineers	280	1.1
Senior, executive, and business process managers	1,350	1.1
Construction project managers	340	1.0
Other construction professionals and technical staff	1,220	0.8
NON CONSTRUCTION ROLES		
Non-construction operatives	230	1.8
Non-construction professional, technical, IT, and other office-based staff (excl. managers)	2,690	1.1
TOTAL	20,120	0.8

Source: CITB/WLC

Note: nec*: not elsewhere classified; HVAC: Heating, ventilation and air-conditioning.

Table 14 shows that there are some possible disparities where demand is expected to outstrip the current estimates for employment available locally. These occupations show a relatively high gap in comparison with other occupations.

The gap analysis compares the number of workers calculated as being required to meet the peak construction demand (as described in the demand section of this report) with the number of workers estimated as being available in the Buckinghamshire LEP area (as described in the supply section of the report). This gives an indication as to the comparative shortfall between construction occupations. The colouring system represents an equal, four- way split of occupations amongst the range of shortfall numbers. As the shortfall numbers themselves are not equally spread throughout, there is an uneven share of occupations highlighted.

Those occupations highlighted:

- **RED** – [Top quartile] are at high risk of an immediate shortfall of workers and are worthy of urgent consideration for action to increase numbers of skilled workers.
- **AMBER** – [Second quartile] appear to be at moderate risk of a shortfall and should be reviewed to determine where opportunities for further training and development exist
- **BLUE** – [Third quartile] do not appear to demonstrate an immediate risk of a shortfall but should be monitored and tested to compare with local qualitative opinions.
- **GREEN** – [Bottom quartile] appear to be at low risk compared with other occupations. This does not mean changes in construction demand, training provision or the movement of workers will not change this status and so monitoring is recommended.

Those occupations most likely to be at risk appear to be:

Among skilled trades:

- Scaffolders
- Plasterers and dry liners
- Bricklayers
- Glaziers

Among professional and managerial roles:

- Architects

Non-construction roles

- Non-construction operatives

LEP reports from London in 2017 and the SEMLEP in 2018 validate all but one of these occupations being in high demand; scaffolders in particular top both lists. The only occupation unique to Buckinghamshire is Plasterers and dry liners.

6.2.1. Construction specific occupations

The greatest risk of shortage is among scaffolders; reports from connecting LEPS London (2017) and the SEMLEP (2018) both have scaffolders among the top of their lists.

Entry to this occupation, as well as other 'at risk' occupations - plasterers and dry liners, bricklayers and glaziers - is normally through work experience. Training such as NVQs offer the quickest way to get qualified, with entry levels taking up to a year to complete (of course it can take much longer to become fully skilled and experienced). There is currently a low volume of training in the local area to meet existing demand, which has the potential to be increased should demand for these courses grow. Skilled workers could also travel from neighbouring regions to meet short-term spikes in demand.

The high risk associated among professional and managerial roles is with Architects, and is a reflection of the wider UK shortage⁵. Additionally, as professionally qualified occupations, which tend to require degree qualifications, there will be at several years of education and training before becoming qualified plus years more to gain experience. And if new candidates are to be attracted to join professions, it is likely that encouragement is required some years before they start training.

It is therefore highly likely that the short-term demand increase identified would require workers to be drawn into the Buckinghamshire LEP area from the surrounding regions.

⁵ Migration Advisory Committee (MAC) Shortage Occupation List 2015

It should also be noted that for some professional workers often have an office location away from the site location and travel between them. And for some, there is anecdotal evidence to suggest that demand is met by provision based in other centres of population.

6.2.2. 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.

Excluding 'non– construction operatives', the vast majority of these occupations work within construction. However, just three fifths of Glaziers do not – the majority of those outside the sector work in manufacturing.

6.2.3. Other factors

The shortcoming of a regions occupational supply is assessed in its shortfall against demand (elaborated upon in section 6.2) but also the volume of its demand, as follows. Occupations with unusually high demand are:

- Wood trades and interior fit-out
- Electrical trades and installation
- Plumbing and heating, ventilation, and air conditioning trades
- Painters and decorators
- Other construction process managers
- Senior, executive, and business process managers
- Other construction professionals and technical staff
- Non-construction professional, technical, IT, and other office–based staff (excl. managers)

These occupations can be cross referenced with the 'at risk' occupations previously identified, to create a list of those with a large increase compared to current supply and a large increase overall:

- Wood trades and interior fit-out
- Electrical trades and installation

6.3. 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?'**

For Architects, much of this demand would typically be met from graduate level recruitment which would not be restricted to supply from within the Buckinghamshire LEP area. Therefore, a training needs analysis specific to the Buckinghamshire LEP area is unlikely to give useful information.

Poor levels of competency provision appear to be in place for the highest shortfall occupations. Scaffolders, plasterers/ dry liners, and glaziers all have low overall volumes.

Bricklayers do not appear in the low overall learner volumes group, however, whilst numbers are comparatively good within the LEP, they are poor compared to all other LEP's; the learning volumes for Bricklayers in the Buckinghamshire LEP are the lowest in England.

For occupations where the risk of shortfall exists, but is not so great: including plumbing and HVAC trades, electrical trades, wood trades and civil engineering operatives, provision appears to be very good.

Is there the required volume of training across a good spread of occupations?

For most trades training is at rates similar to the rest of the South East region.

7. CONCLUSIONS AND RECOMMENDATIONS

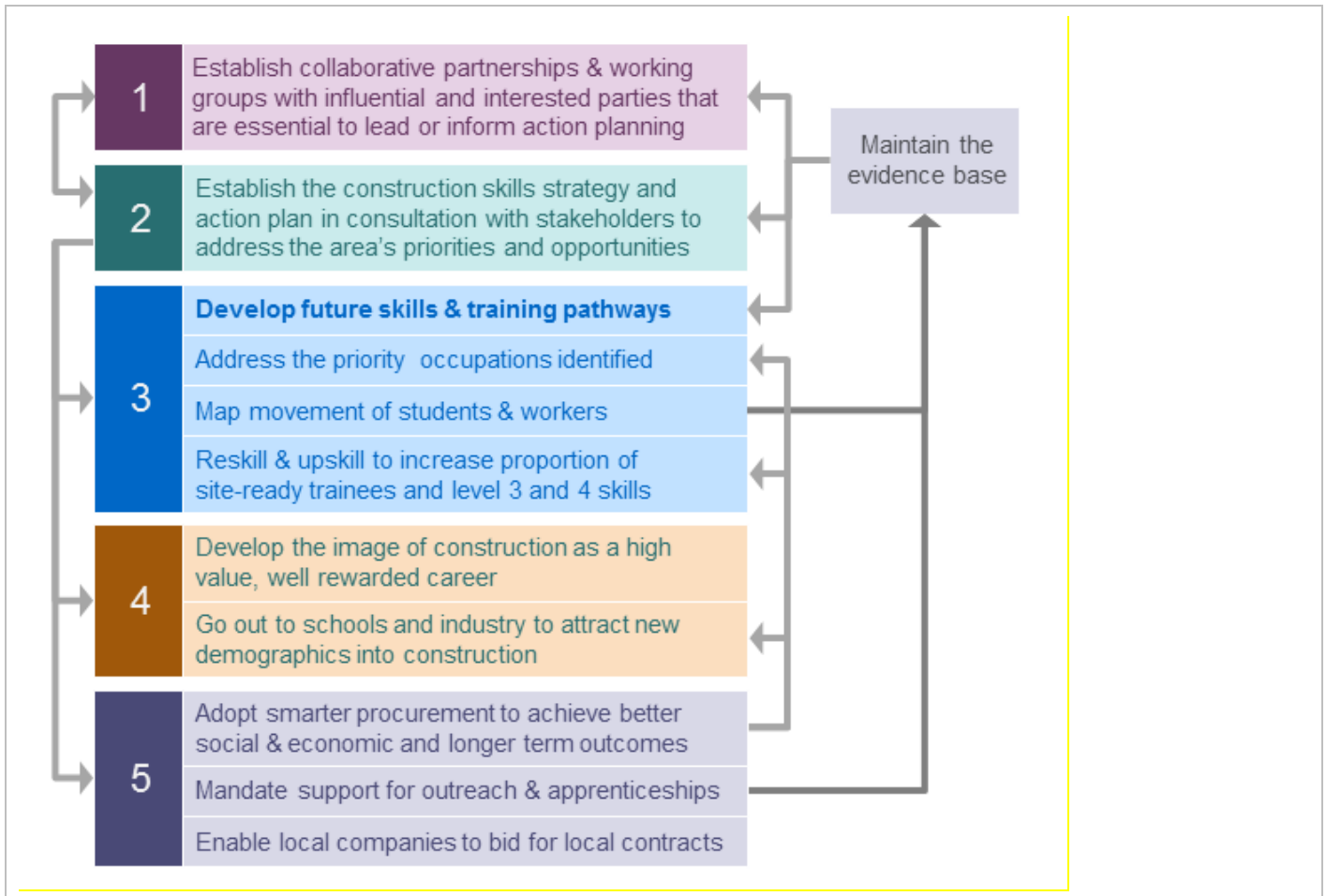
The aim of the Buckinghamshire LEP should be to achieve progress in addressing the long term and immediate challenges that the construction industry faces in the area. Balancing the supply of construction workers and skills against future demand and ensuring that a well-qualified workforce is in place is likely to be assisted by the Local

Enterprise Partnership encouraging collaboration between influential local stakeholders. Positive progress is likely to be the result of a succession of incremental and interlinked actions undertaken by organisations working towards common goals.

There is strong evidence to suggest that the Buckinghamshire LEP area will suffer a shortage for some construction occupations. While these may be drawn in from others areas, it seems more likely that any net effect will be for workers to be drawn to other neighbouring areas of population and so the risk of inadequate local skills is that construction may be delayed or increase in price, inhibiting the achievement of local social and economic goals.

Action planning

It is the responsibility of the Local Enterprise Partnership and its influential stakeholders to review the recommendations, develop a strategy and agree an action plan to address the construction challenges and opportunities that exist in the Buckinghamshire area. The LEP need not deliver the action plan but needs to take a leading role in coordinating and overseeing or delegating action and monitoring progress



7.1. COLLABORATIVE PARTNERSHIPS

7.1.1. Conclusion

It will be essential to ensure that those interested in construction and with an influence over outputs and construction skills in the Buckinghamshire LEP area work together.

Some significant initial progress has already been made with a network of colleges and private training establishments, sector specialists and other organisations already working together. However there will be significant opportunities to work together to: align better the training delivered with the needs of construction employers; to find new opportunities for drawing people into construction related careers and to deliver action that addresses the following recommendations.

7.1.2. Recommendation

- a. The LEP should ensure that relevant stakeholders and influencers are engaged. Share available evidence with them with a view to building collaborative action plans. Points of common interest should be established to encourage these stakeholders to input to, and take ownership of, the construction skills actions. This will maintain a sense of shared ownership of the challenges, priorities and solutions. Those stakeholders should include: local construction businesses; major employers; local authorities; developers (especially those interested in housing); housing associations; those responsible for managing infrastructure (transport and utilities); construction training providers, local influencers and universities.
- b. Early on, establish a construction working group comprising those with a remit to develop, or influence in, the built environment in the LEP area and neighbouring areas and task it with delivering outputs that achieve the LEP's desired social and economic outcomes. This should take ownership of 7.2 below.
- c. Longer term projections and the development of scenarios may enable an assessment of the potential impacts of major initiatives that may skew demand. Scenario planning and actions around skills pathways and career development should, in response, focus on delivering appropriate levels of high quality training to meet the future demand for site based trades (see related recommendations below).
- d. Identify demographic data available and associate actions with opportunities for target candidates where the greatest potential social and economic impact can be gained by addressing occupational shortfalls or other priorities.
- e. Establish processes whereby those responsible for: setting local regulation and funding developments can agree with construction suppliers holistic outcome-based approaches for tackling social and economic opportunities. This might consider moving towards a balance of awarding contracts based on good value for money and achieving wider benefits linked to: the built environment; training; support for apprenticeships; outreach; etc. This links to requirements outlined in the *Public Services (Social Value) Act*.

7.2 SKILLS STRATEGY: ACTION PLANNING AND EXPLOITATION

Establish (or develop) a Buckinghamshire LEP area construction skills strategy and action plan which recognises collective and potentially unique actions and solutions that may be required across the LEP area.

7.1.3. Conclusions

An ambition to develop construction skills and training pathways should be to match training and development with the needs of employers and the local economy. In support of this ambition, further understanding is needed of where the potential sources of people are to meet the needs of the Buckinghamshire LEP area and what the end-to-end skills and training pathways are that need to be in place to enable improved flows of people and skills supply to meet demand. These pathways may include localised initiatives supporting training needed by particular groups to enable them to access more formalised elements of training and careers pathways.

In the Local Enterprise Partnership area over 90% of Further Education (FE) training is provided by ten providers; so the greatest potential impact is through mediated collaboration with and between the FE colleges.

The majority of training provision is at low – mid levels. These may be a necessary introduction to construction in an individual's development but often are insufficient in meeting the needs of employers and so very often do not lead to a career in the occupation for which the individual has received trained. This is supported by an apparent mismatch between training achievements and supply for some occupations.

Also, construction employers have expressed concern that often those newly qualified and having gained site access through a CSCS card or similar are not equipped with the variety of skills required – these might include general competencies such as numeracy, literacy, timekeeping, productivity, interpersonal skills.

This suggests a need to work with colleges, employers and graduating students to help ensure that a greater proportion move into appropriate additional and vocational training and the career for which they have a qualification.

7.1.4. Recommendations

- a. Develop the Buckinghamshire LEP construction skills strategy along with an action plan that ensures priority is given to trades highlighted in this report as being:
 - In high demand AND at high risk of a shortfall ('priority occupations').
 - In high demand
 - At high risk of a shortfall

Priority occupations	High demand occupations	At risk occupations
<ul style="list-style-type: none"> • Wood trades & interior fit-out • Electrical trades & installation • Painters and decorators 	<ul style="list-style-type: none"> • Wood trades & interior fit-out • Electrical trades and installation • Plumbing and HVAC • Painters and decorators • Senior, executive, and business managers • Other construction managers, professionals and technical staff • Non-construction staff 	<ul style="list-style-type: none"> • Scaffolders • Plasterers and dry liners • Bricklayers • Glaziers • Architects • Non-construction operative

- b. Most local authorities are under pressure to maintain the provision of new housing but there are apparent shortages in some occupations in demand by house builders. A recommended action is to establish with local construction suppliers whether this trend is likely to continue and if so ensure that training provision addresses future demand for occupations of relevance, in particular site-based roles of relevance to house builders (see below).
- c. 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 support delivery of new training interventions.

- d. Early consideration should be given to those occupations that need to be site-based, for which demand cannot be met by office based roles that could be located outside the LEP area.

Site based roles

While it is important to have sufficient provision of all construction roles locally, it is possible that in some cases the provision can be met from outside the LEP area.

Many professional roles such as architects, surveyors and senior managers may only need to visit the construction site occasionally. There may also be roles that are more mobile that travel to the site for a short duration but can operative over a large area – for example plant or scaffolding

However there are many roles that can only operate on the construction site and for which local provision is essential. Examples of those roles – also particularly relevant in house building include: bricklayers; building envelope specialists; electrical trades and installation; floorers; glaziers; painters and decorators; plasterers & dry liners; plumbing and HVAC trades; roofers; wood trades and interior fit-out. Most of the roles identified as being in high demand or at risk for the Buckinghamshire LEP area are these site based roles.

- e. Identify demographic data available and associate, as far as possible, relevant skills and training pathways and actions with opportunities for those where the greatest potential social and economic impact can be gained by addressing occupational shortfalls or other priorities.
- f. Develop a co-ordinated approach to training and skills development that, as far as possible, integrates the development of multiple skills to enhance the success rates of initial construction training. (See 7.3 below.)

7.2. DEVELOP FUTURE SKILLS AND TRAINING PATHWAYS

7.2.1. Conclusions

It is clear there is high demand for several construction occupations and so there will be continuing demand to train people in essential skills. There are also some apparent gaps between supply and demand where immediate action would help address shortfalls in the near future.

CITB has received anecdotal evidence that in some locations, colleges would like to support the provision of more apprenticeships but that employers are not always providing the opportunities.

Construction training needs to improve the success rate of producing site-ready, competent, multi-skilled workers.

There will also be a developing need for new skills to address new construction methods (e.g. offsite and modular build and the need for BIM applications.) [BIM is Building Information Modelling.]

The CITB report – ‘Faster, Smarter, More Efficient: Building Skills for Offsite Construction’ – provides an assessment of how the adoption of offsite is changing the skills and training landscape for construction.

7.2.2. Recommendations

- g. By working together the major colleges should avoid duplication of effort or share resources, enhance specialisations and explore innovative ways of delivering the curriculum that meets employers’ and students’ needs.
- h. The aims of this should be 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. Pilot a range of options incrementally to test validity and effectiveness and achieve the most expedient solutions.
- i. Introduce understanding of the need for other competencies so that training includes: understanding other construction roles; future skills; the potential career pathways between construction roles.
- j. For some candidates it may be that training should also incorporate development of other competencies such as: numeracy, literacy, interpersonal skills, time management, and productivity.
- k. Action to address future skills needs should be incremental and take into consideration the delivery of training that supports construction industry needs – i.e. establish site ready proficient workers. Emphasis should be on ensuring that initial training leads individuals into more advanced and competency based training and high quality sustainable apprenticeships.
- l. Identify and facilitate how FE colleges and employers can engage with specialist training providers as well as with major projects, to establish greater provision for priority roles:
- m. Address any anticipated specific local needs and ensure that training delivers what employers need as part of a complete package of training initiatives.
- n. This may involve establishing training pathways through which students can complete initial knowledge based training before progressing into vocational training and apprenticeships and gaining site experience (while finishing their training).
- o. In the longer term there may also be opportunities for the LEP 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 (across the UK). For example that may be in high demand for the many significant projects that are expected to proceed in the Buckinghamshire LEP area and further afield and that will increasingly need to utilise developing technology e.g. Building Information Modelling (BIM).
- p. Consideration should also be given to building an understanding of the economic and transport inhibitors that may prevent people accessing training and apprenticeships. Are there options for ensuring that training is provided where it is accessible; that those with limited financial support can receive support with the provision of appropriate clothing and equipment or that there is assistance with transport to remote worksites. This is particularly relevant for remote and sparsely populated places which, in the Buckinghamshire area present challenges to some potential students

7.3. OUTREACH: BUILD A MORE POSITIVE IMAGE OF CONSTRUCTION WITH YOUNG PEOPLE AND INCREASE RECRUITMENT THROUGH NEW ENTRANCE POINTS, CAREER CHANGERS AND RESKILLING.

7.3.1. Conclusion

Construction is sometimes associated with negative and inaccurate stereotypes that deter potential recruits, with education choices and career decisions often influenced in school and sometimes at a very early age.

It is increasingly clear that influences and preferences are established early in childhood and so it may be appropriate to build a positive profile of construction with children before the age of 11 as well as during secondary education.

7.3.2. Recommendation

- q. With an anticipated long term demand for some skills, the potential exists for a schools outreach programme to build a positive perception of construction as offering high value rewarding careers and encourages applications for construction skills courses and apprenticeships from a broader spectrum of young people – in particular ethnic minorities and women.
- r. There are further opportunities for outreach with those aged 16 and above, in particular those studying relevant STE(A)M subjects but who have not considered that they lead into interesting and rewarding careers in construction or supporting construction.

[CITB has supported employers and other stakeholders across the construction and built environment to develop an industry led initiative called Go Construct (www.goconstruct.org). This initiative inspires individuals to find out more about the sector, to access an experience with employers from school engagement via the Construction Ambassador scheme and find work experience placements.]

- s. There may also be more mature audiences that can be encouraged to move into construction careers. This may include people with relevant transferable skills (e.g. from manufacturing or ex-military see *Careers Transition Partnership*) or those where there is a significant social gain by ensuring they are in valuable employment, e.g. ex-offenders and so contact should be made with HM Prison Service and DWP. Targeted intervention should be included within the construction skills action plan.
- t. There is an opportunity to maximise Go Construct and introduce other similar employer and local authority led initiatives to raise engagement between the local employers, educators and individuals from all backgrounds (e.g. the Careers and Enterprise Company.)
- u. For the long term, Careers advice should engage very young audiences – i.e. pre-secondary education – to address early on negative stereotypes that may deter some groups from construction careers.
- v. Early on careers advisors educators and parents should be targeted to change perceptions of construction among significant influencers.

Go Construct is one of the construction industry's initiatives; supported by CITB, aimed at helping to attract more young people into construction careers by improving understanding of the careers and rewards available.

7.4. USE PROCUREMENT AND PLANNING REGULATION TO ENABLE SKILLS DEVELOPMENT

7.4.1. Conclusion

Construction is delivered through construction employers and suppliers, funded by private developers as well as by local authorities and regulated by local planning authorities. These organisations are better placed to prepare for the future if they have certainty on construction plans and programmes. Small and micro companies, in particular, have limited ability to maintain the processes and people to search for local opportunities or enable collaboration to support larger projects.

Public bodies have a requirement under the Public Services (Social Value) Act to ensure procurement addresses wider social, environmental and economic benefits.

The opportunities for small and micro companies (with limited resources and means) to respond to complex requirements, or invest in delivering services outside a basic construction contract, are severely limited.

Larger suppliers have expressed the view that some problems encountered with section 106 agreements include that: they are poorly thought out in terms of delivering tangible benefits; rarely are developed with contractors and agreed outputs are not measured and reported against.

7.4.2. Recommendations

- w. The potential exists through smarter approaches to procurement (including co-ordinated approaches to Section 106 agreements) to encourage those tendering for construction and infrastructure contracts or those funding developments to be mandated to include provision for recruitment, training, apprenticeships and outreach that is co-ordinated across the Local Enterprise Partnership area, to achieve both good value for money and wider social benefits.
- x. Early engagement with employers to discuss any such approach should be adopted as standard to find ways of ensuring that such requirements take into consideration the industry's needs and circumstances. (i.e. discuss wider social gains with potential suppliers well before tender documents are published. Let construction contractors input to sections 106 discussion.).
- y. Provision could be made to hold contractors to account for commitments made. Such an approach could be co-ordinated through the Buckinghamshire LEP and local authorities and be a requirement of planning applications and local authority and public sector contracts.
- z. 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.
- aa. Consideration of the use of smaller lots when procuring schemes and supporting access for small and medium sized employers onto frameworks and supply chains to enable them to grow their businesses which will build further delivery capacity across the Buckinghamshire LEP area.

7.5. MAINTAINING AND ENHANCING THE EVIDENCE BASE

Utilise local qualitative knowledge and experience to inform the findings of this report. And use other sources of data available to help inform decision making. CITB publishes a range of research of relevance to the construction industry but other relevant information is also regularly published.

As part of this report, the Buckinghamshire LEP is given 12 months access to the Labour Forecasting Tool, including the source project data used to compile this report. This should be utilised as part of the action planning process to test scenarios, and to update and check the evidence base that supports decision making as circumstances change.

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 at regular intervals according to the need and capability.

END

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Version	Date	Details of modifications
First draft	01/05/19	

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CITB Analysis

Construction skills gap analysis for the Buckinghamshire LEP



Appendices to the Construction skills gap analysis for the Buckinghamshire LEP

May 2019



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APPENDIX A. DEMAND ANALYSIS METHODOLOGY

Introduction

The Construction Skills Network (CSN) provides labour market intelligence for the construction industry. Developed by Experian on behalf of CITB it forecasts labour demand in each of 12 UK regions and provides forecasts of how the industry will change year on year. It is not designed however to predict labour demand at a sub-regional level. For this purpose, we use our prize-winning Labour Forecasting Tool (LFT) developed on behalf of CITB. Labour demand is calculated by converting the volume of construction activity forecast to take place in any geographical region into forecast labour demand using labour coefficients (the number of person years required to produce £1m of output). For the sake of consistency with ONS terminology the 'volume of activity' is referred to as 'output' throughout this report. The following sections describe:

- the sources of data we use;
- how the output is calculated;
- how we deal with the absence of comprehensive data that is the typical situation beyond the first year or two of our analysis;
- how we reconcile any differences between the results produced by the LFT and those produced by the CSN;
- the steps we take to deal with any shortcomings in the sources of data; and
- how the LFT converts output into labour demand.

Calculating construction output

Data sources

There are two principal sources of data: the Glenigan database and the National Infrastructure and Construction Pipeline (NICP).

Glenigan

The original purpose of the Glenigan database is to allow contractors to identify leads and to carry out construction market analysis. It is updated every quarter to provide details of planning applications from local authorities supplemented with additional project-specific data. Of particular relevance to this report, it provides a description of each project, its name, location, value, and in most cases, projected start and end dates. It contains many tens of thousands of projects. The Glenigan pipeline does not identify every single project in an LEP: projects which are small (typically but not exclusively those less than £250,000 in value), and most that involve repair and maintenance are not included.

We have used the latest available cut of Glenigan data including all the relevant projects which started before 2017 but excluding those which are already complete. We have included in our analysis only those projects shown to be at the following planning stages because there is a reasonable probability that these projects will be realised in practice.

- Planning not required
- Detail plans granted
- Reserved matters granted
- Application for reserved matters
- Plans approved on appeal
- Listed building consent

The values of some infrastructure projects given in the Glenigan database are the total value of construction and engineering works. In these cases, since the scope of this study is limited to the construction sector, 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 are shown in Table A1. The construction/engineering proportions have been validated through work we have undertaken for other clients and have been used in the production of Infrastructure UK's National Infrastructure Plan for Skills and the Construction Skills Network forecasts.

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, and that no projects are duplicated. For example "major leads" and "frameworks" may include smaller projects that are separately identified in the database.

Because of the size of the database, it is impossible to review the details of every project. Instead, we identify the small number of projects that represent the greatest value, the so-called significant projects. To do this, we use the Mean Value Theorem developed at the University of Dundee which states that maximum information from any set of data is obtained simply by considering the data whose value is greater than the average. This is a version of the Pareto rule which suggests that 80% of the value in a data set is contained within the 20% of items whose value is the greatest. The significant projects are then thoroughly inspected to make sure that the information reported in the Glenigan database is consistent and accurate as far as can be ascertained. Any anomalies are resolved, if necessary by returning to the source of the data. Since this process typically picks up the projects whose value represents 80% of the total, the scope for any errors in the remaining data to have a significant impact is severely limited.

Table A1: 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
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%

For the significant projects, the project descriptions in the database are assigned the most appropriate project type to be used when the data is input to the LFT (each type is driven by a different underlying model). 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 which may exist within a single project, e.g. mixed developments comprising residential, commercial and industrial buildings. For the non-significant projects, the default project type defined in the Glenigan pipeline is applied.

In order to maintain consistency with the CSN we have limited our forecast to the same time period as the most recently published CSN forecast.

NICP data

The Infrastructure and Projects Authority (formerly Infrastructure UK and Major Projects Authority) compiles a pipeline of UK infrastructure and construction projects and the associated annual public and private investment.

We examine the NICP data to identify infrastructure projects or programmes of work taking place in the region under consideration that are not included in the Glenigan database. The construction cost is calculated from the total cost reported in the NICP using the percentages in Table A1. Projects in the Glenigan dataset and the NICP are combined (ensuring that there is no double counting) to create a pipeline of 'known' projects for the LEP. We have only considered those projects which are specifically allocated to the region under consideration in the NICP (i.e. projects at a national level have not been considered).

The pipeline includes both construction and infrastructure projects but for the purposes of this analysis we have included only projects which are clearly defined specific projects rather than regional programmes of work. This reduces the risk of double counting in the Glenigan data.

CSN data

The CSN model produced by Experian also uses Glenigan as a major source of data relating to the volume of construction activity in the UK. Experian supplement the Glenigan data with market intelligence collected by a variety of means including a series of 'Observatories' held every six months in each region, at which representatives of the industry are invited to comment on the validity of Experian's data and findings. In Experian's annual CSN report, their estimate of the output in each of the following sectors is published:

- Public housing
- Private housing
- Infrastructure
- Public non-housing
- Industrial
- Commercial
- Housing repair and maintenance
- Non-housing repair and maintenance

Aligning the Glenigan pipeline with CSN output

The following process is undertaken to ensure that the value of work in the Glenigan pipeline is aligned with output as measured by the CSN.

1. Considering the government region within which the research LEP lies, identify only the new build in the known projects by removing all repair and maintenance projects.
2. Compare the output identified in the known projects as new build at the regional level with the CSN new build at the regional level sector by sector e.g. residential, non-residential, infrastructure etc.
3. If in any sector the known new-build regional output for the peak year is more or less than that forecast by the CSN for the same year then the value of each new build known project is factored by the following ratio:

$$\frac{\text{Value of CSN new build at regional level for given sector}}{\text{Value of known new build projects at regional level for given sector}}$$

The outputs calculated in this way are referred to as 'factored new build outputs'

This process takes account of both projects (typically less than £250k in value) not included in the known projects and those whose value or probability of realisation is over-optimistic.

4. To take account of housing repair and maintenance (R&M) at the research LEP level, it is assumed that the proportion of the total output represented by housing R&M is the same at the local LEP level as it is at the regional level in the CSN. The Glenigan new build factored housing output is therefore multiplied by the following ratio:

$$\frac{\text{Value of CSN housing R\&M at regional level}}{\text{Value of CSN new build housing at regional level}}$$

to derive the output in housing R&M to be added to the factored new build output

5. The non-housing R&M to be added to the factored new build non-housing output is calculated in a similar way.

Dealing with the 'cliff edge'

As the time horizon extends there is less clarity on what is planned. As a result, the number of known projects declines the further into the future we look. This apparently declining workload is highly unlikely to reflect the total amount of work that will take place in the future. It is almost certain that there will be additional projects that come on stream which are yet to be identified. To overcome this 'cliff edge' effect we assume, based on an analysis of historical data, 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.

A consequence of this approach is the implicit assumption that the proportion of people in each occupation in the additional projects remain unchanged year on year.

Calculating total labour demand

Our Labour Forecasting Tool is used to determine the labour demand generated by the construction outputs in the peak year. The LFT can determine the labour demand generated by a pipeline of construction projects given only the project types, their start and end dates and their locations. It quantifies the month-by-month demand in each of the 28 occupational groups shown in Appendix B. To do this, it uses labour coefficients (person years to produce £1m of output) derived from historical ONS data. The labour coefficients are updated annually as new data becomes available, and indexed to take account of different locations and changes in prices.

There are different labour coefficients for each occupation and for each of the following project types:

- residential
- non-residential
- infrastructure
- residential R&M
- non-residential R&M

Infrastructure projects can be broken down into the types shown in Table A1.

APPENDIX B. OCCUPATIONAL DEFINITIONS

Reference is made in this report to a range of occupational aggregates for construction occupations. This appendix contains details of the 166 individual occupations which are aggregated into 28 occupational aggregates.

Table A2: Occupation definitions

Occupations included within construction occupational aggregates (Four-digit codes refer to Office for National Statistics Standard Occupational Classification Codes).	
1 Senior, executive, and business process managers⁶	
(1115) Chief executives and senior officials (1131) Financial managers and directors (1132) Marketing and sales directors (1133) Purchasing managers and directors (1135) Human resource managers and directors (1251) Property, housing and estate managers (1136) Information technology and telecommunications directors (2150) Research and development managers	(1162) Managers and directors in storage and warehousing (1259) Managers and proprietors in other services nec (1139) Functional managers and directors nec (2133) IT specialist managers (2134) IT project and programme managers (3538) Financial accounts managers (3545) Sales accounts and business development managers
2 Construction project managers⁶	
(2436) Construction project managers and related professionals	
3 Other construction process managers⁶	
(1121) Production managers and directors in manufacturing (1122) Production managers and directors in construction (1161) Managers and directors in transport and distribution (1255) Waste disposal and environmental services managers	(3567) Health and safety officers (3550) Conservation and environmental associate professionals
4 Non-construction professional, technical, IT, and other office-based staff (excl. managers)⁶	
(3131) IT operations technicians (3132) IT user support technicians (3534) Finance and investment analysts and advisers (3535) Taxation experts (3537) Financial and accounting technicians (3563) Vocational and industrial trainers and instructors (3539) Business and related associate professionals nec (3520) Legal associate professionals (3565) Inspectors of standards and regulations (2136) Programmers and software development professionals (2139) Information technology and telecommunications professionals nec (3544) Estate agents and auctioneers (2413) Solicitors (2419) Legal professionals nec (2421) Chartered and certified accountants (2424) Business and financial project management professionals (2423) Management consultants and business analysts (4216) Receptionists (4217) Typists and related keyboard occupations (3542) Business sales executives (4122) Book-keepers, payroll managers and wages clerks (4131) Records clerks and assistants (4133) Stock control clerks and assistants (7213) Telephonists (7214) Communication operators (4215) Personal assistants and other secretaries (7111) Sales and retail assistants (7113) Telephone salespersons	(3541) Buyers and procurement officers (3562) Human resources and industrial relations officers (4121) Credit controllers (4214) Company secretaries (7129) Sales related occupations nec (7211) Call and contact centre occupations (7219) Customer service occupations nec (9219) Elementary administration occupations nec (2111) Chemical scientists (2112) Biological scientists and biochemists (2113) Physical scientists (3111) Laboratory technicians (3421) Graphic designers (2463) Environmental health professionals (2135) IT business analysts, architects and systems designers (2141) Conservation professionals (2142) Environment professionals (2425) Actuaries, economists and statisticians (2426) Business and related research professionals (4124) Finance officers (4129) Financial administrative occupations nec (4138) Human resources administrative occupations (4151) Sales administrators (4159) Other administrative occupations nec (4162) Office supervisors (7130) Sales supervisors (7220) Customer service managers and supervisors (4161) Office managers

⁶ Managerial, professional & office based staff

5 Construction trades supervisors⁷	
(5250) Skilled metal, electrical and electronic trades supervisors	
(5330) Construction and building trades supervisors	
6 Wood trades and interior fit-out⁷	
(5315) Carpenters and joiners	(5442) Furniture makers and other craft woodworkers
(8121) Paper and wood machine operatives	(5319) Construction and building trades nec (25%)
7 Bricklayers⁷	
(5312) Bricklayers and masons	
8 Building envelope specialists⁷	
(5319) Construction and building trades nec (50%)	
9 Painters and decorators⁷	
(5323) Painters and decorators	(5319) Construction and building trades nec (5%)
10 Plasterers⁷	
(5321) Plasterers	
11 Roofers⁷	
(5313) Roofers, roof tilers and slaters	
12 Floorers⁷	
(5322) Floorers and wall tillers	
13 Glaziers⁷	
(5316) Glaziers, window fabricators and fitters	(5319) Construction and building trades nec (5%)
14 Specialist building operatives not elsewhere classified (nec)⁷	
(8149) Construction operatives nec (100%)	(9132) Industrial cleaning process occupations
(5319) Construction and building trades nec (5%)	(5449) Other skilled trades nec
15 Scaffolders⁷	
(8141) Scaffolders, staggers and riggers	
16 Plant operatives⁷	
(8221) Crane drivers	(8222) Fork-lift truck drivers
(8129) Plant and machine operatives nec	(8229) Mobile machine drivers and operatives nec
17 Plant mechanics/fitters⁷	
(5223) Metal working production and maintenance fitters	(9139) Elementary process plant occupations nec
(5224) Precision instrument makers and repairers	(5222) Tool makers, tool fitters and markers-out
(5231) Vehicle technicians, mechanics and electricians	(5232) Vehicle body builders and repairers
18 Steel erectors/structural fabrication⁷	
(5311) Steel erectors	(5319) Construction and building trades nec (5%)
(5215) Welding trades	(5211) Smiths and forge workers
(5214) Metal plate workers, and riveters	(5221) Metal machining setters and setter-operators
19 Labourers nec⁷	
(9120) Elementary construction occupations (100%)	
20 Electrical trades and installation⁷	
(5241) Electricians and electrical fitters	(5242) Telecommunications engineers
(5249) Electrical and electronic trades nec	
21 Plumbing and heating, ventilation, and air conditioning trades⁷	
(5314) Plumbers and heating and ventilating engineers	(5319) Construction and building trades nec (5%)
(5216) Pipe fitters	(5225) Air-conditioning and refrigeration engineers
22 Logistics⁷	
(8211) Large goods vehicle drivers	(3541) Buyers and purchasing officers (50%)
(8212) Van drivers	(4134) Transport and distribution clerks and assistants
(9260) Elementary storage occupations	
23 Civil engineering operatives not elsewhere classified (nec)⁷	
(8142) Road construction operatives	(8123) Quarry workers and related operatives
(8143) Rail construction and maintenance operatives	
24 Non-construction operatives⁷	

⁷ Skilled trades & operatives

(8117) Metal making and treating process operatives	(9249) Elementary security occupations nec
(8119) Process operatives nec	(9233) Cleaners and domestics
(8125) Metal working machine operatives	(9232) Street cleaners
(8126) Water and sewerage plant operatives	(5113) Gardeners and landscape gardeners
(8132) Assemblers (vehicles and metal goods)	(6232) Caretakers
(8133) Routine inspectors and testers	(9241) Security guards and related occupations
(8139) Assemblers and routine operatives nec	(3319) Protective service associate professionals nec
25 Civil engineers⁶	
(2121) Civil engineers	
26 Other construction professionals and technical staff⁶	
(2122) Mechanical engineers	(3119) Science, engineering and production technicians nec
(2123) Electrical engineers	(3121) Architectural and town planning technicians
(2126) Design and development engineers	(3122) Draughtspersons
(2127) Production and process engineers	(3115) Quality assurance technicians
(2461) Quality control and planning engineers	(2432) Town planning officers
(2129) Engineering professionals nec	(2124) Electronics engineers
(3112) Electrical and electronics technicians	(2435) Chartered architectural technologists
(3113) Engineering technicians	(3531) Estimators, valuers and assessors
(3114) Building and civil engineering technicians	(3116) Planning, process and production technicians
27 Architects⁶	
(2431) Architects	
28 Surveyors⁶	
(2433) Quantity surveyors	
(2434) Chartered surveyors	

APPENDIX C. GLENIGAN PROJECTS REMOVED FROM BUCKINGHAMSHIRE THAMES VALLEY

This appendix contains a list of all the Glenigan projects removed from the analysis, stating the reason for their exclusion.

Table A3: Removed Glenigan projects from Buckinghamshire Thames Valley

	Heading	Local authority	Value (£m)	Start date	End date	Reason for omission
1	5 Flats & 1 Retail Unit	Aylesbury Vale	0.4			Missing dates
2	Bridge	Chiltern	0.4			Missing dates
3	Garden Centre (Extension/Alterations)	Wycombe	0.4			Missing dates
4	4 Tennis Courts	Aylesbury Vale	0.5			Missing dates
5	10 Flats	South Buckinghamshire	0.6			Missing dates
6	School Sports Pavilion (Extension)	South Buckinghamshire	0.6			Missing dates
7	9 Flats/3 Retail & 1 Office Units	Wycombe	0.6			Missing dates
8	10 Flats/Houses & 2 Retail Units	Chiltern	0.6			Missing dates
9	Vehicle Workshop/Office Building	Wycombe	0.7			Missing dates
10	Church (New/Conversion)	Aylesbury Vale	0.7			Missing dates
11	14 Assisted Living Flats & 1 Care Home	Aylesbury Vale	0.8			Missing dates
12	16 Sheltered Flats	Aylesbury Vale	0.8			Missing dates
13	2 Flats & 1 Office/1 Shop/Financial Services	South Buckinghamshire	0.8			Missing dates
14	15 Flats	Aylesbury Vale	0.9			Missing dates
15	9 Houses & 1 Office	Wycombe	0.9			Missing dates
16	School Classrooms Block (Extension)	Chiltern	0.9			Missing dates
17	11 Flats (Extension)	Wycombe	1.0			Missing dates
18	Temporary Flying School/Club Building	Aylesbury Vale	1.1			Missing dates
19	School Nursery/Teaching Building (Extension)	Aylesbury Vale	1.2			Missing dates
20	Community Centre (Extension)	Wycombe	1.2			Missing dates
21	Industrial Unit (Extension/Alterations)	Wycombe	1.3			Missing dates
22	Hotel (Extension/Alterations)	Wycombe	1.3			Missing dates
23	School (Extension)	Chiltern	1.4			Missing dates
24	12 Flats	Wycombe	1.5			Missing dates
25	20 Flats/Houses (New/Conversion)	Aylesbury Vale	1.7			Missing dates
26	Leisure Centre (New/Alterations)	Chiltern	1.9			Missing dates
27	25 Houses/1 Depot & Offices (New/Alterations)	Aylesbury Vale	2.0			Missing dates
28	Sports Pavilion	Wycombe	2.0			Missing dates
29	10 Light Industrial Units & 1 Storage (Conversion/Alterations)	Aylesbury Vale	2.7			Missing dates
30	Industrial Unit	Aylesbury Vale	2.9			Missing dates
31	Office (Extension)	Wycombe	4.0			Missing dates
32	School Classrooms/Sports Centre(New/Extension)	Aylesbury Vale	4.7			Missing dates
33	86 Flats (Conversion)	South Buckinghamshire	4.8			Missing dates
34	92 Flats (Conversion)	Aylesbury Vale	5.0			Missing dates
35	Office & Industrial Unit (Extension)	Aylesbury Vale	5.4			Missing dates
36	School Classroom (Extension)	Wycombe	5.8			Missing dates
37	Council Offices (Refurbishment)	Aylesbury Vale	6.0			Missing dates
38	Care Home	Aylesbury Vale	6.6			Missing dates
39	School Dining & Classroom Block (Extension/Alterations)	Chiltern	7.0			Missing dates
40	Care Home	South Buckinghamshire	9.7			Missing dates

	Heading	Local authority	Value (£m)	Start date	End date	Reason for omission
41	Office Building	South Buckinghamshire	10.0			Missing dates
42	201 Flats/108 Houses/3 Sports/Fitness Units	Chiltern	15.6			Missing dates
43	Hotel (Conversion/Extension)	South Buckinghamshire	31.8			Missing dates

APPENDIX D. SIGNIFICANT GLENIGAN PROJECTS IN BUCKINGHAMSHIRE THAMES VALLEY

This appendix provides a list of all the significant projects analysed. The projects appear in the order they were put into the LFT.

Table A4: Significant Glenigan projects in Buckinghamshire Thames Valley

	Description	Local authority	Value (£m)	Start date	End date	Project type
1	8 Film Studio Buildings (Extension/Alterations)	South Buckinghamshire	54.5	03/09/2018	14/11/2019	Private Commercial
2	241 Houses	Aylesbury Vale	52.9	02/10/2017	01/12/2021	New housing
3	228 Flats & 1 Commercial Unit(New/Extension)	Wycombe	51.2	24/12/2019	19/01/2021	New housing, Public Non-housing, Infrastructure
4	Hotel (Extension/Alterations)	Wycombe	48.5	12/08/2019	16/08/2021	Private Commercial
5	Housing (Refurbishment)	Wycombe	36.6	19/10/2017	21/10/2021	Housing R&M
6	167 Supported Living Units & 1 Clubhouse	Wycombe	32.3	07/01/2019	07/01/2021	Public Non-housing
7	190 Residential Units	Aylesbury Vale	28.0	01/01/2018	30/06/2021	New housing
8	Housing (Refurbishment)	Aylesbury Vale	25.0	18/07/2016	05/03/2020	Housing R&M
9	65 Houses & 10 Flats	Aylesbury Vale	21.0	12/06/2017	30/09/2020	New housing
10	Flats	Aylesbury Vale	20.0	07/08/2017	04/02/2019	New housing
11	74 Dwellings	South Buckinghamshire	20.0	08/01/2018	31/01/2020	New housing
12	117 Houses & 18 Flats	Aylesbury Vale	19.8	01/08/2016	31/12/2019	New housing
13	Light/General Industrial & Storage Units	Aylesbury Vale	19.3	28/05/2019	19/05/2020	Private Industrial
14	189 Houses & 45 Flats	Aylesbury Vale	18.1	06/08/2019	30/03/2021	New housing
15	233 Homes	Aylesbury Vale	16.7	07/08/2017	02/08/2019	New housing
16	210 Residential Units	Aylesbury Vale	15.8	16/09/2019	17/09/2021	New housing
17	81 Houses & 15 Flats	Wycombe	15.0	27/11/2017	10/01/2020	New housing
18	75 Extra Care Units	Aylesbury Vale	14.0	03/06/2019	02/12/2019	New housing
19	3 Distribution/Warehouse Units	Aylesbury Vale	13.4	23/07/2018	23/03/2019	Private Industrial
20	150 Houses & 10 Flats	Wycombe	12.5	10/09/2018	10/09/2020	New housing
21	125 Houses & 12 Bungalows	Aylesbury Vale	10.8	24/06/2019	24/07/2020	New housing
22	Office & Shop/Bank (Extension/Alterations)	Wycombe	10.2	25/03/2019	23/12/2019	Private Commercial
23	Workshop Building	South Buckinghamshire	10.0	06/08/2018	26/07/2019	Private Commercial
24	Hotel/Pub/Restaurant	Aylesbury Vale	10.0	13/05/2019	16/11/2020	Private Commercial
25	112 Residential Units (Conversion)	Aylesbury Vale	8.9	04/11/2019	30/11/2020	New housing
26	113 Houses & 4 Flats	Aylesbury Vale	8.8	24/06/2019	24/07/2020	New housing
27	2 Industrial/Distribution Building Units	Aylesbury Vale	8.8	20/08/2018	07/06/2019	Private Industrial
28	34 Flats	South Buckinghamshire	8.3	08/04/2019	18/05/2020	New housing
29	Industrial Workshop & Car Storage Unit	Aylesbury Vale	8.0	12/03/2018	29/03/2019	Private Industrial
30	Hotel	Wycombe	8.0	17/09/2018	24/06/2019	Private Commercial
31	95 Houses & 5 Bungalows	Aylesbury Vale	7.5	27/10/2019	27/11/2020	New housing
32	12 Industrial Units	Wycombe	7.3	13/05/2019	18/11/2019	Private Industrial
33	135 Residential Units	Aylesbury Vale	7.2	07/10/2019	02/11/2020	New housing
34	91 Houses & 4 Flats	Aylesbury Vale	7.1	25/08/2019	25/02/2020	New housing
35	94 Houses	Aylesbury Vale	7.1	09/07/2018	05/08/2019	New housing
36	93 Houses	Aylesbury Vale	7.0	24/06/2019	24/07/2020	New housing
37	Multi Storey Car Park	Chiltern	6.9	08/07/2019	23/03/2020	Infrastructure
38	80 Houses & 4 Flats	Aylesbury Vale	6.8	08/05/2019	03/06/2020	New housing

	Description	Local authority	Value (£m)	Start date	End date	Project type
39	81 Houses	Aylesbury Vale	6.1	27/10/2019	27/11/2020	New housing
40	68 Houses & 12 Flats	Aylesbury Vale	6.1	31/07/2019	26/08/2020	New housing
41	Museum (Extension/Alterations)	Aylesbury Vale	5.6	12/03/2018	29/03/2019	Public Non-housing
42	Car Park (Extension)	Aylesbury Vale	5.4	21/10/2019	06/07/2020	Infrastructure
43	Waste Transfer Centre	Aylesbury Vale	5.4	04/02/2019	11/11/2019	Infrastructure
44	3 Warehouse Units	Aylesbury Vale	5.3	24/09/2018	01/07/2019	Private Industrial
45	Storage Facility	South Buckinghamshire	5.3	24/06/2019	24/09/2020	Private Industrial
46	Supermarket	Aylesbury Vale	4.4	20/08/2018	28/01/2019	Private Commercial
47	School (Refurbishment)	South Bucks	3.7	11/12/2017	03/06/2019	Public Non-housing
48	3 Aircraft Hanger (New/Extension)	Aylesbury Vale	3.2	15/04/2019	21/10/2019	Infrastructure
49	25 Houses & 9 Flats/1 Pub (New/Conversion)	Chiltern	2.9	20/02/2019	20/08/2019	New housing
50	Care Home	South Buckinghamshire	2.9	17/06/2019	16/03/2020	Public Non-housing
51	Commercial/Retail Units	Wycombe	2.8	10/08/2018	08/02/2019	Private Commercial
52	48 Retirement Flats	South Buckinghamshire	2.7	06/05/2019	06/11/2019	New housing
53	12 Flats	South Buckinghamshire	2.2	20/09/2018	30/01/2019	New housing
54	School	Wycombe	2.2	22/10/2018	20/09/2019	Public Non-housing
55	Light Industry	South Buckinghamshire	2.2	06/08/2018	22/02/2019	Private Industrial
56	Bakery (Extension/Alterations)	South Buckinghamshire	2.1	21/10/2019	20/01/2020	Private Industrial
57	Community Building	Chiltern	2.0	21/01/2019	04/11/2019	Public Non-housing
58	Teaching Accommodation	Aylesbury Vale	1.6	24/06/2019	24/02/2020	Public Non-housing
59	Cinema (Alterations)	South Buckinghamshire	1.5	05/02/2019	07/05/2019	Private Commercial
60	School (Alterations)	Aylesbury Vale	1.3	10/10/2018	06/02/2019	Public Non-housing
61	Convenience Store (Fit-out works)	Aylesbury Vale	0.9	01/07/2019	02/08/2019	Private Commercial

APPENDIX E. NICP AND LEP PROJECTS IN BUCKINGHAMSHIRE THAMES VALLEY

This appendix provides a list of all the NICP and LEP projects analysed. The projects appear in the order they were put into the LFT.

Table A5: Appendix Table 1: NICP and LEP projects in Buckinghamshire Thames Valley

	Name	Value (£m)	Start date	End date	Source
1	Southern Water: Wastewater Service AMP6	24.8	01/04/2018	31/03/2020	NICP
2	Local Enterprise Partnerships Allocation for Transport in Strategic Economic Plans - South East	23.3	01/04/2018	31/03/2021	NICP
3	Highways Maintenance Block Funding (SR10 allocation)	20.7	01/04/2018	31/03/2021	NICP
4	South East Water: Water Service AMP6	9.5	01/04/2018	31/03/2020	NICP
5	Southern Water: Water Service AMP6	9.5	01/04/2018	31/03/2020	NICP
6	M4 Junctions 3-12	8.4	01/04/2018	31/03/2021	NICP
7	South East Development programme	8.4	01/04/2018	31/03/2021	NICP
8	Integrated Transport Block - South East	8.1	01/04/2018	31/03/2021	NICP
9	UK Power Networks - South East (SPN) RII0	7.8	01/04/2018	31/03/2021	NICP
10	Affinity Water: Water Service AMP6	7.8	01/04/2018	31/03/2020	NICP
11	Oxford Flood Alleviation Scheme	4.6	01/04/2018	31/03/2021	NICP
12	South East Construction programme	3.3	01/04/2018	31/03/2021	NICP
13	South East	3.1	01/04/2018	31/03/2021	NICP
14	National Productivity Investment Fund Round 1 South East	2.9	01/04/2018	31/03/2020	NICP
15	Sutton & East Surrey Water: Water Service AMP6	2.7	01/04/2018	31/03/2020	NICP
16	Scottish and Southern Energy Southern (SSES) RII0	1.9	01/04/2018	31/03/2021	NICP
17	Southsea	1.3	01/04/2018	31/03/2021	NICP

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Version	Date	Details of modifications
First draft		

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