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Construction Skills Gap Analysis for the Cornwall & Isles of Scilly Local Enterprise Partnership



Final report

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Executive Summary

Introduction

The **Cornwall and Isles of Scilly Local Enterprise Partnership** (CIOS LEP), is working with the Construction Industry Training Board (CITB) to create a construction strategy and action plan to help take advantage of the opportunities available to the construction industry across Cornwall and Scilly.

This report is one step in maintaining an evidence base, utilised by the LEP to inform decision making and enable the creation and execution of that wider construction strategy that will help determine the employment and skills opportunities emerging in the construction industry for the Cornwall area.

Construction will be an enabler of some of Cornwall's aspirations and is also an enabler of economic growth and job creation and has a significant impact on enhancing the built environment, in creating the facilities required of a modern economy and addresses significant social issues, such as a shortage of housing. It is also an enabler of other sectors' success by building the facilities required for commercial and industrial advances as well as the infrastructure that is, in turn, an enabler of growth. It is, therefore, essential for the C&IOS LEP to invest in supporting the actions proposed in this report and the wider evidence base as well as involving stakeholders in the development of the associated plans.

This report represents the concluded research for the LEP, which is seeking to identify issues so that a practical approach can be taken to realising the opportunities that activity in the construction sector can generate in developing skills, creating jobs and enhancing the local economy, built environment and opportunities.

The CIOS LEP is seeking immediate opportunities to investigate and respond to as well as identifying actions that can lead to longer term development.

The analysis starts to determine the priorities for interventions to address to ensure local opportunities are maximised and that the West of England has the right future curriculum in place to deliver demand led solutions.

CIOS LEP Employment and Skills strategy

The CIOS LEP Employment and Skills Strategy for CIOS for the period to 2030 refers to four strategic objectives. This report is relevant to providing evidence that supports the relevance of these objectives and the actions likely to help achieve them. Of particular note are:

1. Develop a skilled workforce for tomorrow through which
 - Enable the demand and supply of skills to meet the needs of the future economy.
 - Improve availability of STEM/STEAM skills.
 - Develop higher and degree level apprenticeships.
2. Drive employer and individual engagement and investment in skills.
 - Enable the demand and supply of skills (at all levels) to meet the needs of high employment sectors.
 - Support small, micro, social & community businesses as well as those who are self-employed to engage in training.
 - Create an effective apprenticeship service for CIOS employers.

3. Enable people to access and progress in meaningful employment.
 - Build on models of good practice and find new ways of working with people who are furthest from the labour market.
 - Support those at risk of leaving the labour market.
4. Enable people to learn about career pathways and be equipped for the world of work
 - Ensure a high standard of Careers Education Information Advice and Guidance (CEIAG) is available and accessible.
 - Enable schools, colleges, employers and others to deliver sustainable employer/school engagement and experiences.
 - Encourage development of enterprise and work readiness skills in young people.

The recommendations offered at the end of this report include reference to wider experience gained by CITB in proposing actions likely to support progress towards these strategic objectives. This is in addition to utilising the evidence established in the research.

Highlighted findings

Demand by sector

The demand analysis is based on 288 known construction projects identified from a database provided by *Glenigan*. Of these, 60 projects of above average value (20.8% of the projects), account for 72% of the value of the known projects.

For the peak year of activity (2017), the sector of greatest influence is new housing accounting for 46% of the value of the analysed projects. Infrastructure accounts for 28% and private commercial developments for 19% of investment.

When estimates of other work are considered, the labour demand generated by the total defined projects and the estimates of other work for 2017 indicate that the sectors with greatest demand for labour are:

- New housing (26%)
- Housing repair and maintenance (24%)
- Non housing repair and maintenance (22%)
- Private commercial developments (19%)

Prioritisation by occupation

There are a number of factors to consider in identifying priority occupations.

1. **Demand** – how great is the demand for workers in this occupational category? (This normally correlates approximately with existing supply.) In the report, demand is ranked across 28 occupations.
2. **Risk** – what is the perceived risk of a shortfall of workers in any one occupational group in comparison with the other 27 occupations? Risk has been given a numerical value that indicates the relative risk of a shortfall in workers. There are four occupations for which it appears there is an **immediate gap** between supply of, and demand for, workers.
3. **Site based or remote workers** – do workers in an occupational category need to be on site? Each occupation has been broadly divided into four groups:
 - **Non-construction workers** and
 - **Office based workers.**

These job roles are filled by people who spend the majority of their time based away from the construction site. They often need not be based within the locality of the site. However some of these roles may visit the site for the purposes of management, quality control or inspection.
 - **Mobile and remote workers.** These job roles are filled by occupations that do require some attendance on-site; often professional roles. However they may also be highly mobile and so can travel significant distances to get to the site from outside the region. Or they are roles that require a significant element of off-site manufacture.
 - **On-site workers.** These skilled trades roles tend to require the majority of time to be spent on site, so they need to be based within reasonable travelling distance on a day to day basis during construction.
4. **Provision of training** – for some occupations (in most cases skilled trades) some data is available on the number of relevant qualification achievements completed in the previous three academic years – this gives an indication of the training provision available and so should be helpful in engaging with training providers, and in curriculum development, to address potential shortfalls or opportunities.

Demand by occupation for known projects

Of the 28 occupations listed in the report, there are ten for which the gap analysis there appears to be greatest demand for the known pipeline of projects are (top two quartiles):

Peak demand for workers by occupation by LEP for the known pipeline – top two quartiles

	Occupation	Cornwall area
1.	Non-construction professional, technical, IT, and other office-based	3,100
2.	Wood trades and interior fit-out	2,200
3.	Other construction professionals and technical staff	1,550
4.	Other construction process managers	1,450
5.	Senior, executive, and business process managers	1,400
6.	Plumbing and HVAC Trades	1,400
7.	Electrical trades and installation	1,350
8.	Labourers nec*	1,100
9.	Painters and decorators	1,100
10.	Building envelope specialists	950
11.	Bricklayers	650
12.	Surveyors	600
13.	Specialist building operatives nec*	550
14.	Plasterers & dry liners	500

Risk of a shortfall of workers

The gap analysis indicates ten occupations for which there appears to be an immediate risk of a gap between supply of, and demand for, workers. It is possible that gap is filled by the movement of workers in and out of Cornwall and that is particularly likely for Logistics that is by its very nature mobile.

- | | |
|--|--|
| 1. Floorers | 6. Architects |
| 2. Logistics | 7. Labourers |
| 3. Civil engineering operatives nec | 8. Other construction process managers |
| 4. Non-construction operatives | 9. Construction project managers |
| 5. Specialist building operatives | 10. Construction trades supervisors |

Of these ten, a number are predominantly site based workers – shown in bold above.

[See Table 8: Occupational breakdown of risk of a shortfall for Cornwall and Isles of Scilly LEP area against current employment (Source CITB/WLC)]

Prioritising occupations – high risk AND high demand

In addition to identifying occupations at risk of shortfall (above), one approach to identifying priority occupations is to identify those occupations for which there appears to be both high demand AND high risk of a gap between demand and existing supply.

The profile for Cornwall suggests however that typically those occupations appearing at relatively high risk of a shortfall of workers are more likely to be those occupations where there is relatively lower total demand. i.e. it is noticeable that the high demand occupations and high risk occupations do not typically appear to correlate.

There is only one occupation in the top quartile of both measures:

- **Other Construction process managers.** Roles that tend not to be required on site or are mobile. Roles include: production and manufacturing; transport and distribution; waste disposal; environmental and conservation services and health and safety.

There are two further occupations appearing to be at immediate risk of a shortfall AND in the second quartile of demand:

- **Labourers**
- **Specialist building operatives**

There are two occupations in the First quartile for demand and within the top two quartiles of relative risk of a shortfall (though not appearing to be at immediate risk of a shortfall).

- **Non-construction professional, technical, IT, and other office-based**
- **Other construction professionals and technical staff**

It may be appropriate, therefore to look again at the occupations that appear likely to suffer a shortfall in workers where the roles are primarily site based – as provision for these is less likely to be able to be provided remotely.

That is: **Floorers; Logistics; Civil engineering operatives; Specialist building operatives; Labourers.**

Priority occupations and training achievements

It is notable that those site based occupations showing the greatest risk of a shortfall are typically also those for which there appears to have been high levels of training achievements. In the four years assessed the following high risk occupations appear to have had only limited training achievements:

- | | |
|-----------------------------------|------------------|
| • Flooring | 33 achievements. |
| • Civil engineering operatives | 22 achievements. |
| • Specialist building operatives | 43 achievements. |
| • Construction trades supervisors | 5 achievements. |

Training achievement data is not available for the occupations at risk, because they are professional roles requiring HE, managerial roles or non-construction roles.

Five of the occupations at least risk of shortage are also those for which greater training achievements have been delivered:

- | | |
|--------------------------------------|------------------|
| • Electrical trades and installation | 260 achievements |
| • Bricklayers | 340 achievements |
| • Wood trades and interior fit-out | 300 achievements |
| • Plumbing and HVAC Trades | 230 achievements |
| • Plant operatives | 300 achievements |

Table of Contents

1.	INTRODUCTION.....	10
2.	DEMAND ANALYSIS METHODOLOGY	11
2.1.	Introduction.....	11
3.	LABOUR DEMAND IN THE CORNWALL LEP AREA	12
3.1.	Introduction.....	12
3.1	Pipeline of denominated projects	12
3.1.1	Glenigan pipeline analysis.....	12
3.1.2	Glenigan & NICP spend analysis.....	14
3.2	Estimate of future total labour demand	15
3.2.1	Breakdown of labour demand by occupation.....	16
3.2.2	Breakdown of labour demand by project type	17
3.3	Summary of demand	17
4.	A PICTURE OF SUPPLY	18
4.1.	Main points	18
4.2.	Existing workforce.....	19
4.3.	Training provision	24
5.	MOBILITY OF THE WORKFORCE	28
5.1.	Main points	28
5.2.	Work history	28
5.3.	Workers Origins	29
5.4.	Travel to Site.....	29
5.5.	Site duration and change.....	30
5.6.	Sub-sector and sector mobility	30
5.7.	Leaving the sector.	30
6.	DEMAND AGAINST SUPPLY.....	32
6.1.	Main points	32
6.2.	Gap Analysis	33
6.2.1.	Local consultation and the mobility of professional roles	35
6.3.	Construction specific occupations	36
6.4.	Cross sector occupations	36
6.5.	Gap Analysis – Long Term.....	36
6.6.	Gap Analysis – Training Needs	39
7.	RECOMMENDATIONS AND CONCLUSIONS	40

List of Figures

Figure 1: Cornwall LEP and surrounding areas	10
Figure 2: Location of significant projects included in the analysis	13
Figure 3: Total construction labour demand including estimates for both R&M and estimates of other work	15
Figure 4: Construction labour demand by occupation in the peak year	16
Figure 5: Construction employment in Cornwall and Isles of Scilly LEP 2007 – 2016 (Source Annual Population Survey from NOMIS).....	19
Figure 6: Year on Year change in construction employment (Experian/CITB & NOMIS 2016)	20
Figure 7: Year on year change in Construction Businesses (UK Business Count, NOMIS 2016)	21
Figure 8: Size of Construction Businesses (UK Business Count, NOMIS 2016)	22
Figure 9: Furthest distance worked in past 12 months (CITB, 2015).....	29
Figure 10: Average number of weeks from planning to work on site, UK 2010- 2013 (Source: UKCG/Glenigan)	32

List of Tables

Table 1: Key data for significant projects in Glenigan.....	12
Table 2: New-build construction spend by project type in 2017 (total denominated project pipeline).....	14
Table 3: Construction spend per infrastructure sub-type in 2017 (total denominated project pipeline).....	14
Table 4: Labour demand by work type in 2017	17
Table 5: Construction occupational breakdown, 2016 (Source Experian & CITB).....	23
Table 6: Competence qualifications achievement in Cornwall and Isles of Scilly LEP as a % of total achievement in the South West as a whole (all qualification levels).....	25
Table 7: Top 5 providers within the Cornwall and Isles of Scilly LEP (Source CITB/SFA)	27
Table 8: Occupational breakdown of demand for Cornwall and Isles of Scilly LEP area against current employment (Source CITB/WLC).....	34
Table 9: Occupational breakdown of ARR for South West region as a whole (Source CITB)	37
Table 10: Proportion of total value related to construction.....	3
Appendix Table 11: Region/nation employer operates in, compared with region/nation working in currently	23

1. Introduction

The demand analysis examined the construction projects for which details were available for the local authorities of:

- Cornwall
- Isles of Scilly

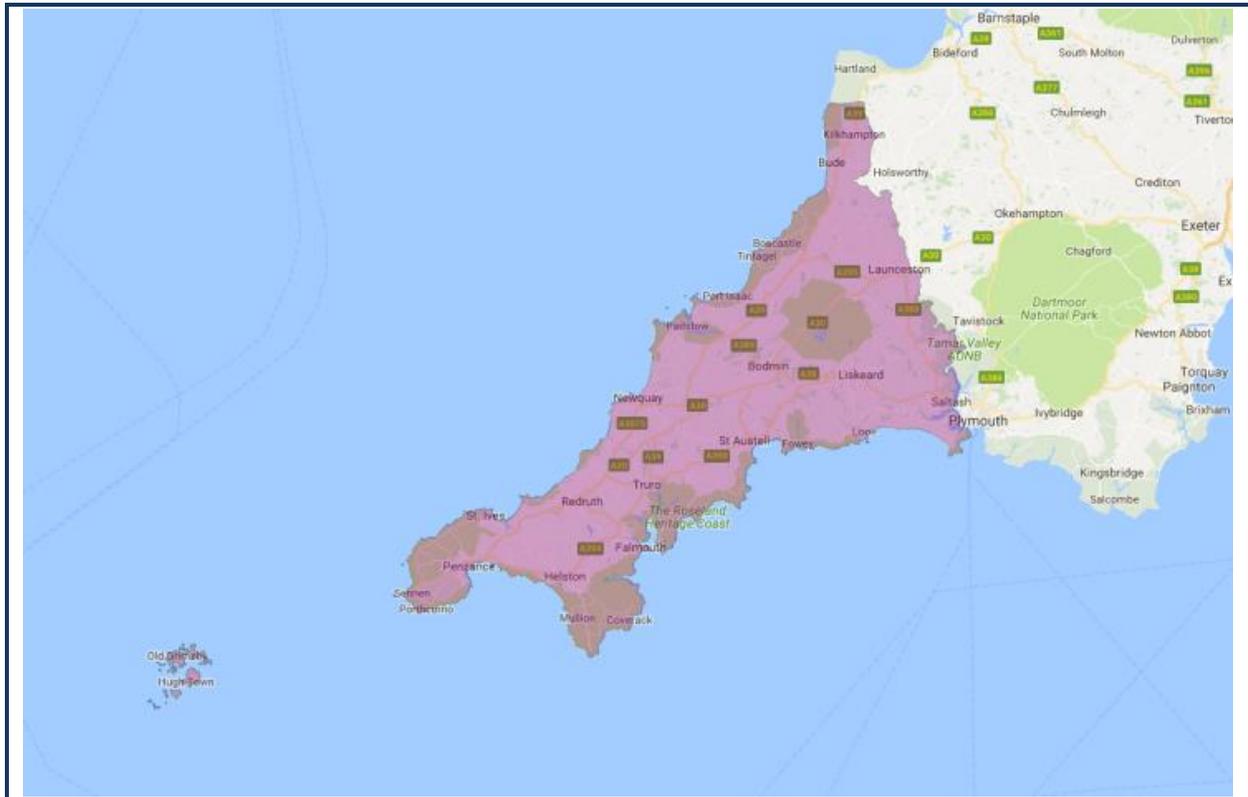


Figure 1: Cornwall LEP and surrounding areas

It is worth noting the relatively unusual geography and circumstances of the Cornwall and Isles of Scilly LEP area in comparison with many other areas.

The Isles of Scilly are remote and in terms of numbers and impact feature very little in this report.

Cornwall is surrounded, apart from the boundary with Devon by sea, the local geography means that links into the county are quite often relatively slow and so Cornwall is relatively isolated in comparison with the built up and industrialised parts of the UK. This means that in comparison with other parts of the country the flows of site-based workers and students in and out of the LEP area are more likely to be inhibited.

2. Demand analysis methodology

2.1. Introduction

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

- **Labour Forecasting Tool:** CITB's Labour Forecasting Tool is an online application that can forecast labour needs for a range of construction projects using labour coefficients derived from data provided by the Office for National Statistics (ONS). The LFT forecasts monthly skills and employment needs from a project's value and start/completion dates.
- **Construction Skills Network:** The Construction Skills Network (CSN) provides market intelligence for the UK construction industry. The data it produces highlights trends and how the industry will change year-on-year, allowing businesses to understand the current climate and plan ahead for the future.
- **Glenigan Pipeline:** Glenigan produce a pipeline of forthcoming projects within each local authority of the UK. These are collated to allow contractors to identify leads and to carry out construction market analysis.
- **National Infrastructure and Construction Pipeline (NICP):** The Infrastructure and Projects Authority (formerly Infrastructure UK and Major Projects Authority) compile a pipeline of UK infrastructure and construction projects and the associated annual public and private investment¹. The Autumn 2016 NICP includes details of the annual spend on each of around 720 items valued at some £500bn to 2020 and beyond.
- **Additional project data provided by the CIOS LEP:** In preparing the pipeline data, the list of significant projects collated from Glenigan was shared with the LEP and advance notice was given for some additional projects that were known to local stakeholders but that had not yet been recorded. These projects have been included in the demand analysis.

An explanation of the methodology is included in Appendix A.

¹ The Autumn 2016 pipeline includes both construction and infrastructure projects but for the purposes of this analysis we have solely used projects which are clearly defined specific projects rather than regional programmes of work.. This reduces the risk of double counting with data in Glenigan.

3. Labour demand in the Cornwall LEP area

3.1. Introduction

The following sections provide an estimate of the labour demand that construction investment will create across the Cornwall and Isles of Scilly LEP over the period 2017-2021. They report the outputs determined from the analysis described in Section 2 and the labour demand they generate as calculated by the Labour Forecasting Tool.

3.1 Pipeline of denominated projects

3.1.1 Glenigan pipeline analysis

The initial review of the Glenigan database identified 288 projects in the Cornwall LEP area. Of these, 49 projects were removed due to missing dates. Also excluded were 3 projects which were clearly identified as consultancy projects. A full set of the projects which were omitted from the analysis is provided in Appendix C. It is possible that this work will take place at some undefined 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, but an assessment of the labour demand is made in the estimates of other work from the additional projects.

The Mean Value Theorem was applied to the remainder of the pipeline to identify the significant projects. The process identified 60 significant projects accounting for 21% of the total construction spend in the area. This allowed a detailed analysis of a large proportion of all the projects and a comprehensive consideration of the project types to which they were assigned.

Table 1 shows the number of significant projects within the Cornwall and Isles of Scilly LEP area, the percentage of spend arising from the significant projects and the total spend. The construction spend shown in this table takes account of any adjustments for engineering works and any incomplete, duplicate or consultancy projects. Values are shown in 2016 prices, the base price used in the Glenigan database.

Table 1: Key data for significant projects in Glenigan²

	Number of projects	Construction spend (£m – 2016 values)
All Glenigan projects	288	2,869
Significant Glenigan projects	60	2,383
Percentage within significant projects	21%	83%

Appendix D provides a full breakdown of the significant projects and their construction values. The peak year for the Glenigan spend profile is 2017. The location of the significant projects within the Cornwall and Isles of Scilly LEP can be seen in Figure 2. The radius of the markers is proportional to the value of the work taking place.

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

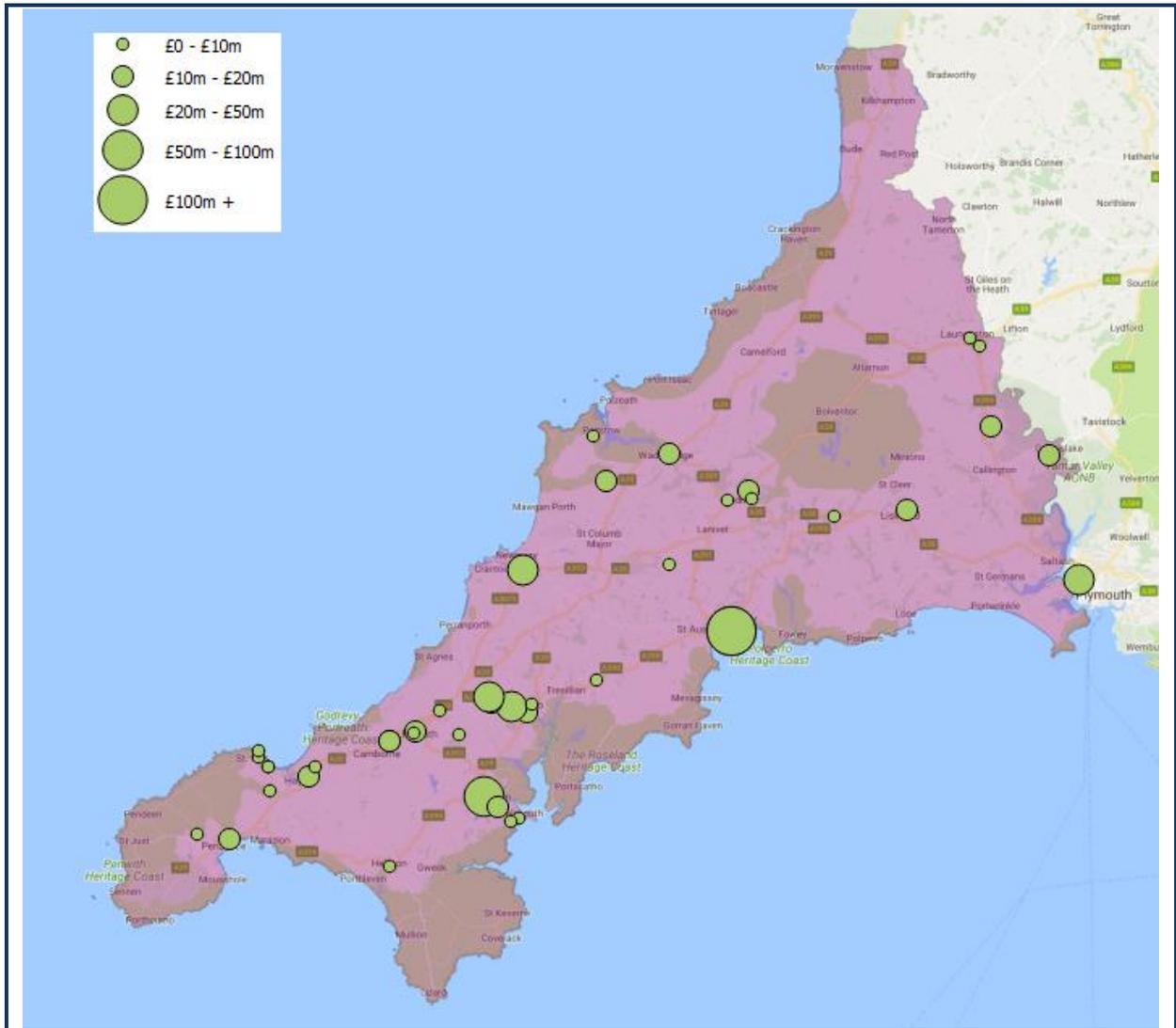


Figure 2: Location of significant projects included in the analysis

3.1.2 Glenigan & NICP spend analysis

Implementing the methodology outlined in Section 2 leads to the following findings for the peak year for denominated projects of 2017. The peak year is used because the tail off in the denominated 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 sector of new build spend for the total pipeline of denominated projects.

Table 2: New-build construction spend by project type in 2017 (total denominated project pipeline)

Project Type	Construction spend in 2017 (2016 values - £m)	% of total
New Housing	330	46%
Infrastructure	202	28%
Private Commercial	134	19%
Public Non-housing	33	5%
Private Industrial	16	2%
Total	715	100%

Table 3 shows the infrastructure construction spend from both Glenigan and the NICP in 2017, by sub-sector.

Table 3: Construction spend per infrastructure sub-type in 2017 (total denominated project pipeline)

Project Type	Construction spend in 2017 (2016 values - £m)	% of total
General Infrastructure	102	50%
Transport	88	44%
Energy	6	3%
Flooding	6	3%
Total	202	100%

3.2 Estimate of future total labour demand

As outlined in the Section 2 the denominated 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 an employment growth rate included. The solid blue area shows the labour demand arising from the new build Glenigan and NICP projects. Any R&M included in Glenigan or the NICP is also shown. The red shaded area shows the likely total labour demand arising from estimates of other work. The total construction labour demand including the volume of R&M imputed from the CSN model peaks for the area in 22,36 at 2021.

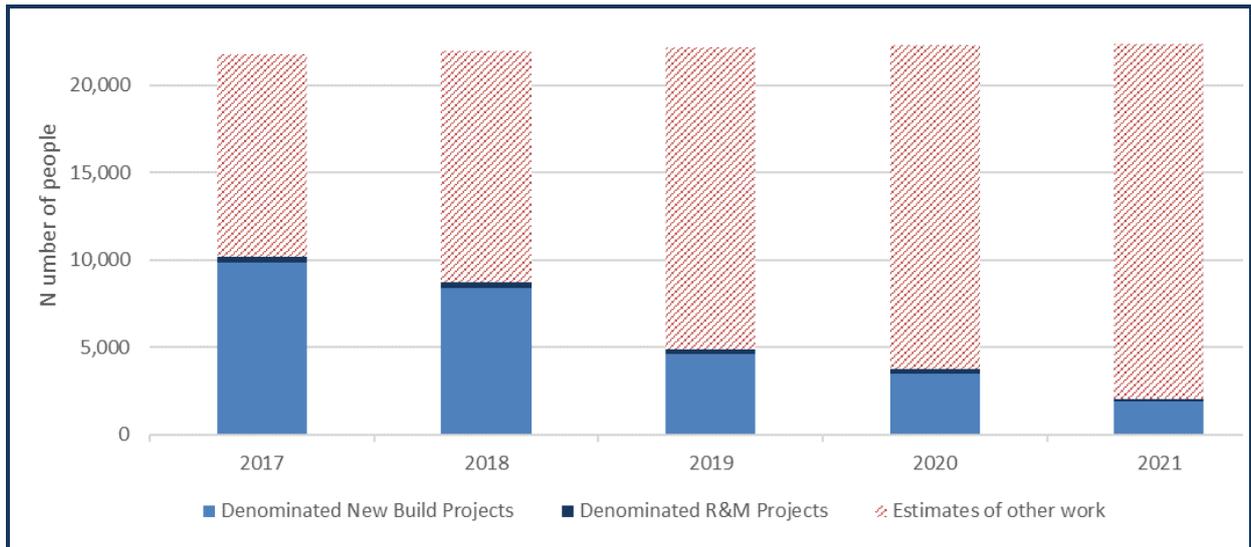


Figure 3: Total construction labour demand including estimates for both R&M and estimates of other work

3.2.1 Breakdown of labour demand by occupation

For the peak year in Glenigan of 2017 the detailed breakdown by each of the 28 occupational groups for the Glenigan and the NICP projects is shown in Figure 4. This shows the breakdown by occupation for both the pipeline of denominated projects and the estimates of other work.

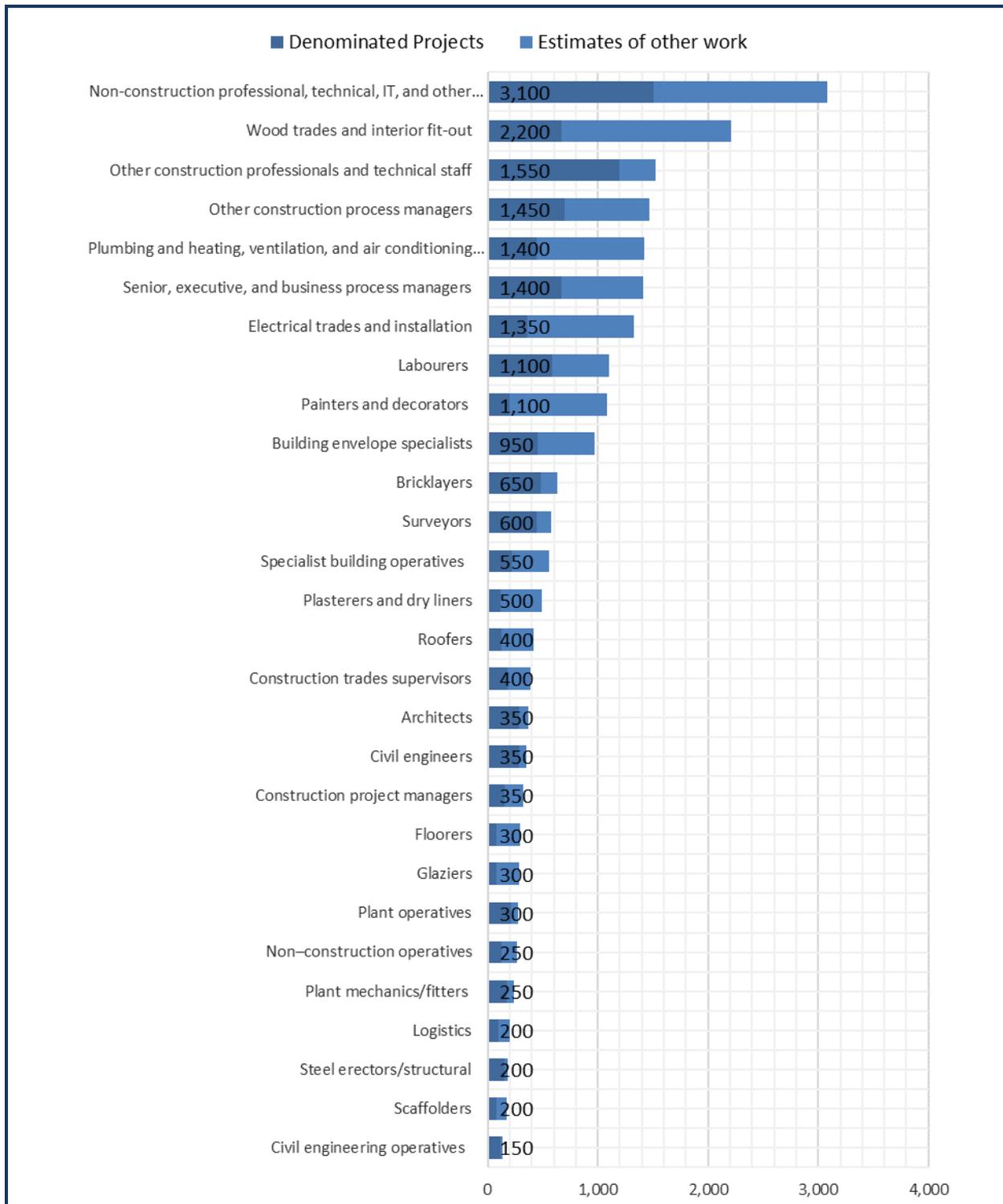


Figure 4: Construction labour demand by occupation in the peak year

3.2.2 Breakdown of labour demand by project type

Table 4 shows the labour demand generated by the denominated projects and the estimates of other work in 2017.

Table 4: Labour demand by work type in 2017

Project Type	Labour Demand from denominated projects (People)	Labour Demand from estimates of other work (People)	Total Labour Demand (People)	% of total
New Housing	5,300	350	5,650	26%
Housing R&M	200	5,200	5,400	24%
Non-housing R&M	150	4,750	4,900	22%
Private Commercial	2,450	1,650	4,100	19%
Infrastructure	1,350	-	1,350	6%
Public Non-housing	450	-	450	2%
Private Industrial	300	-	300	1%
Total	10,200	11,950	22,150	100%

3.3 Summary of demand

- The analysis of the labour demand arising from the construction spend in the Cornwall LEP area is around 22,150 people in 2017, taking account of estimates of other work including R&M in addition to the defined project pipeline of projects.
- During 2017, the peak year of the defined pipeline demand, the most labour-intensive occupation group is “non-construction professional, technical, IT and other office-based staff” with an annual demand 3,100 people.
- The estimate of labour demand for the trade occupations for the peak year of 2017 are as follows:
 - The trade occupation for which demand is highest is “Wood trades and interior fit-out” with 2,200 people demanded;
 - “Plumbing, heating and air conditioning” trades follow with 1,400 people.
 - “Electrical trades” rank third, with a demand of 1,350 people.

4. A picture of supply

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

The first element of this section takes a view on the current employment levels in the Cornwall and Isles of Scilly LEP and how this relates to overall employment across the wider South West region and the UK as a whole. The Cornwall and Isles of Scilly LEP covers Cornwall and the Isles of Scilly local authority areas and falls entirely within the Larger South West region (which in addition to those mentioned, also includes Bath and North East Somerset, Bournemouth, City of Bristol, Cheltenham, Christchurch, Cotswold, East Devon, East Dorset, Exeter, Forest of Dean, Gloucester, Mendip, Mid Devon, North Devon, North Dorset, North Somerset, Plymouth, Poole, Purbeck, Sedgemoor, South Gloucestershire, South Hams, South Somerset, Stroud, Swindon, Taunton Deane, Teignbridge, Tewkesbury, Torbay, Torridge, West Devon, West Dorset, West Somerset, Weymouth and Portland and Wiltshire). All comparisons have therefore been made against the South West region as a whole and, where applicable, the UK. Data from CITB's Construction Skills Network (CSN) is used along with official Government sources.

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

(That does not mean that the Cornwall and Isles of Scilly LEP area should not have ambitions to move workers through to higher level training and education. There may also be opportunities for more leadership and management, as well as specialist training and development.)

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

4.1. Main points

- The current construction workforce within the Cornwall and Isles of Scilly LEP is estimated at almost 25,000
- The Cornwall and Isles of Scilly LEP accounts for 11% of South West's total current construction workforce and 10% of all construction firms in the South West
- Employment in the LEP has remained fairly static from 2012 - 2015 but changes to the ONS data have shown a sharp decline in employment in 2016
- Around 37 training providers have delivered construction relevant FE courses within the Cornwall and Isles of Scilly LEP over the last 4 years, with 5 main providers delivering 94% of provision

4.2. Existing workforce

Recent trends: Workforce & Businesses

- There has been a 7% increase in the number of micro-sized construction businesses from 2012-2016 within the Cornwall and Isles of Scilly LEP, accounting for 91% of the growth in construction businesses in the LEP over this period
- The construction workforce in the LEP area accounts for approximately 11% of the overall employment in the South West.
- In 2016 self-employment in the LEP area accounted for just over 52% of total employment, higher than the ratio in the wider South West region where it accounted for almost 45%

In July 2016 the ONS reweighted the employment data to bring it in line with the latest ONS estimates. This has had a significant impact on the employment data in the Cornwall and Isles of Scilly LEP area with a decrease of over 35% between 2015 and 2016. Figure 5 below shows employment over the last 10 years in the Cornwall and Isles of Scilly LEP area.

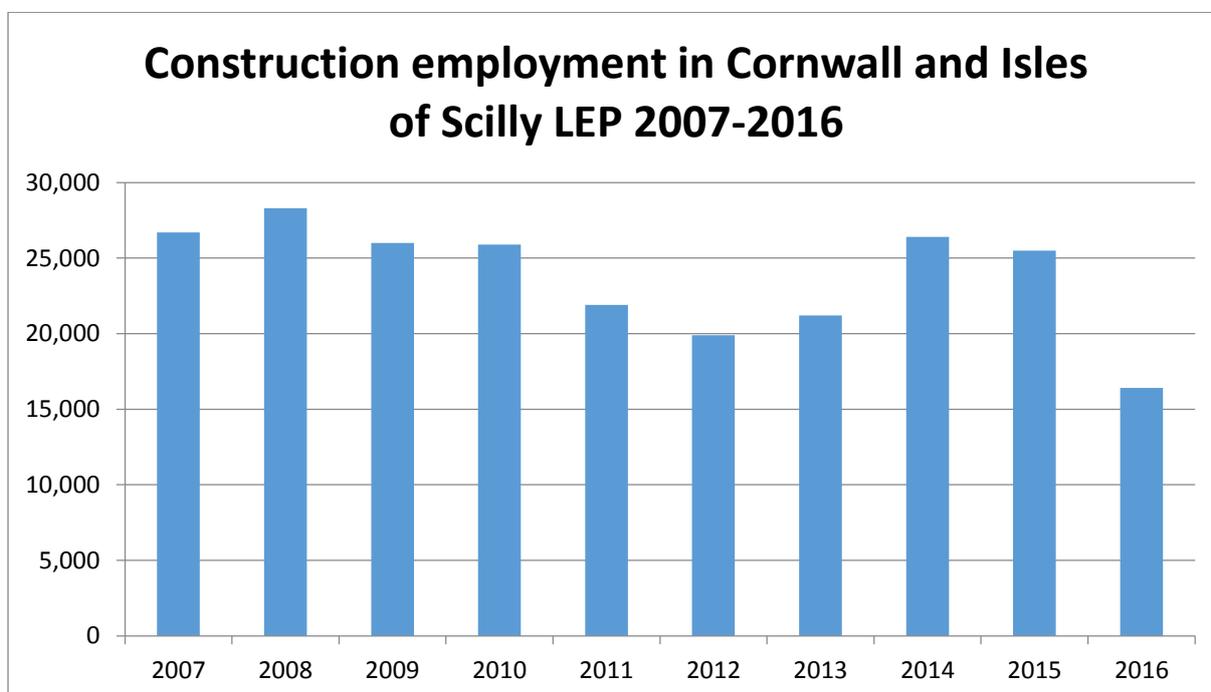


Figure 5: Construction employment in Cornwall and Isles of Scilly LEP 2007 – 2016 (Source Annual Population Survey from NOMIS)

Peak employment in the LEP area was in 2008 and in 2014 it almost reached this high again before falling significantly in 2016. Although there are some extenuating circumstances that could explain a slight fall in employment in the region such as the completion of the Cornwall Energy Recovery Centre and a change in the Cornwall Council Framework Agreement, these would not account for such a large fall in employment as indicated by the 2016 data. Also as we note further on in the chapter construction business in the LEP area have increased slightly which again would not indicate a fall in employment. We would need to wait until the 2017 data is released to see whether this significant reduction in construction employment is a true indication of employment in the LEP area or whether this is just an anomaly in the 2016 data. It is wise, therefore, to add a health warning to the latest employment data.

As we do not know the future impact of this change in employment numbers when analysing the Annual Population Survey we have taken an average percentage over the previous five years to establish the share of total construction employment in the South West that the Cornwall and Isles of Scilly LEP accounts for. On average the Cornwall and Isles of Scilly LEP accounts for around 11% of Construction Employment in the South West³ Figure 6 applies this percentage share across the CSN occupational breakdown for the South West region as a whole to give an estimate of total employment at occupation and industry level in the Cornwall and Isles of Scilly LEP. For comparison, the wider South West region has been included.

Employment in the Cornwall and Isles of Scilly LEP grew in between 2012 and 2014, with a slight fall in 2015 following by the significant decline as discussed earlier in this chapter. This is different to the pattern of employment in the greater South West region where employment fell slightly in 2012, grew in 2013, declined again in 2014, increased in 2015 and then fell by 7% in 2016. Overall employment declined in the five years from 2012 to 2016 in the Cornwall and Isles of Scilly by almost 18%. In the South West region as a whole employment grew between 2012 and 2016 by just over 1%. Ref: Figure 6.

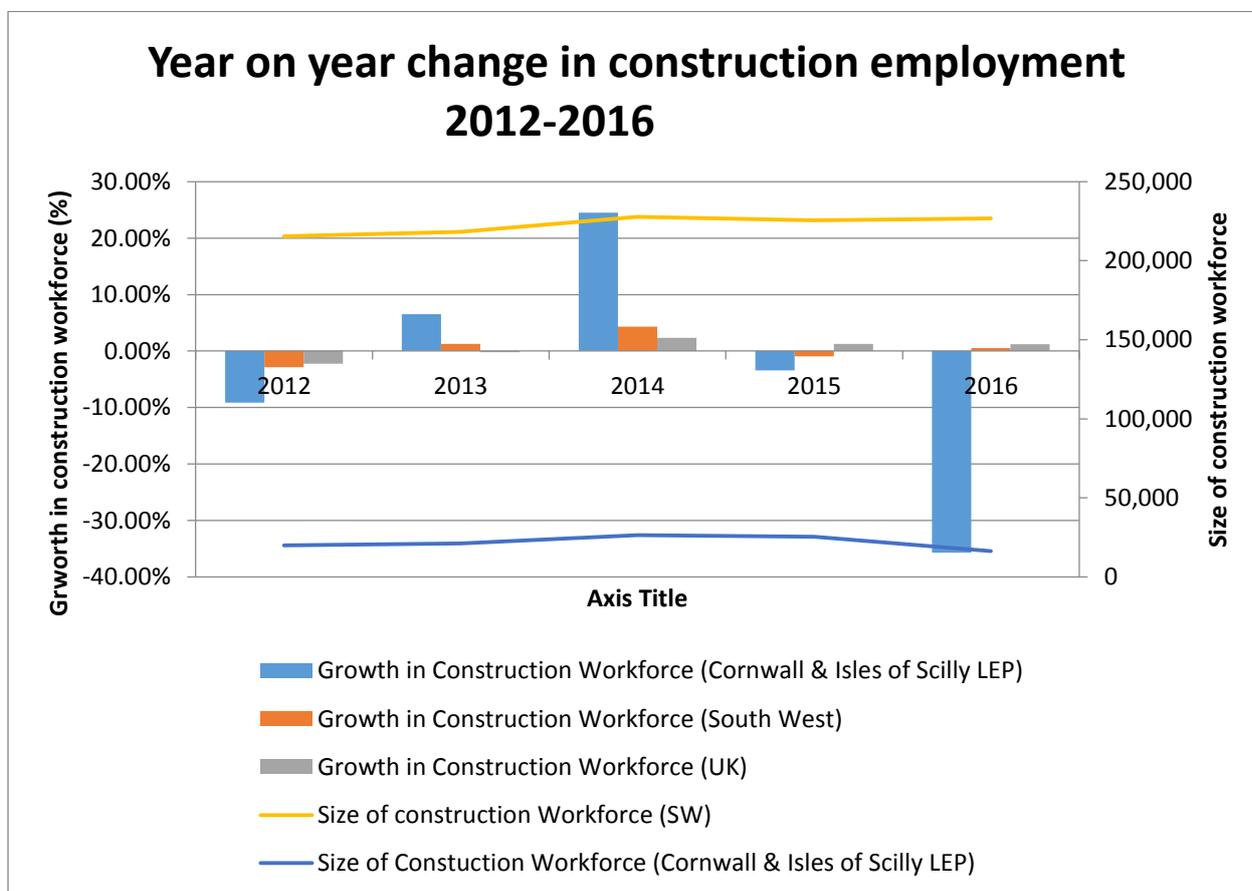


Figure 6: Year on Year change in construction employment (Experian/CITB & NOMIS 2016)

The number of construction businesses within the Cornwall and Isles of Scilly LEP has decreased very slightly from a 10.7% share of all construction businesses across the South West in 2012 to a 10.6 share in 2016. In actual numbers, the increase in construction businesses in the Cornwall and Isles of Scilly LEP area is 220 from 2012 to 2016, a rise of almost 8% over this period. Across the rest of the South West region there was an increase of 2,290 a rise of almost 10% on 2012 levels. Ref: Figure 7.

³ ONS/NOMIS (2016) Annual Population Survey Workplace Analysis by Industry 2012-2016

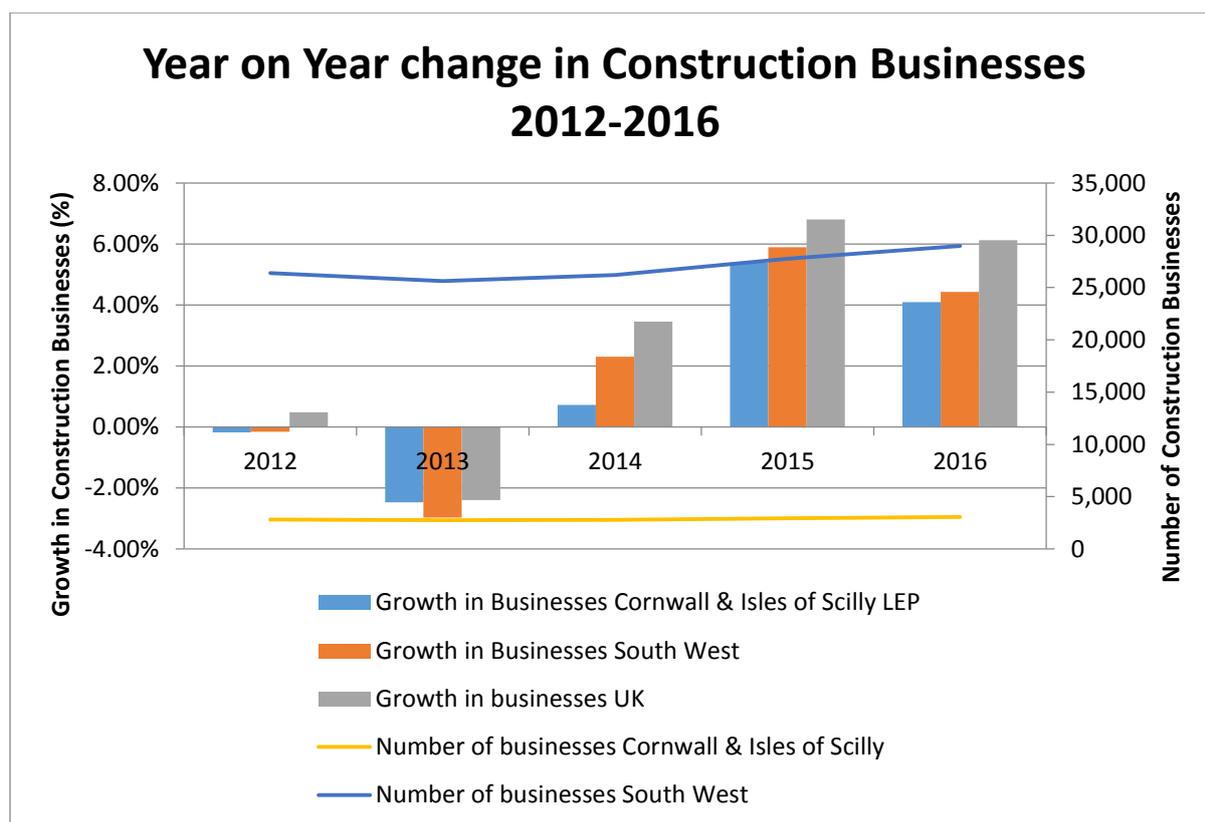


Figure 7: Year on year change in Construction Businesses (UK Business Count, NOMIS 2016)

Within the LEP area, 99% of construction businesses are located in Cornwall with just 1% recorded as being in the Isles of Scilly. We are unable to present a similar data to show the distribution of construction workforce as due to the small numbers involved the ONS data does not show a construction workforce for the Isles of Scilly. However as there are a small number of construction businesses on the islands it would be fair to assume that a proportion of the overall LEP workforce are located in the Isles of Scilly.

There are two main factors that are important when looking at construction businesses and the construction workforce, these are:

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

Overall the construction sector has high levels of self-employment with around 40% of the GB construction workforce being self-employed. However, the figure is much higher in both the Cornwall and Isles of Scilly LEP area and the South West region as a whole with self-employment being 51% and 45% respectively. The levels of self-employment within the LEP area have remained fairly static over the previous five years at round 50%. Even with the significant fall in the construction workforce in 2016, the ratio of self-employed is still around the 50% mark.

When it comes to business size, the distribution of companies across the Cornwall and Isles of Scilly LEP is very close to the pattern seen across the South West as a whole, and indeed the United Kingdom with the majority of construction companies being micro sized, i.e. fewer than ten employees, ref Figure 8.

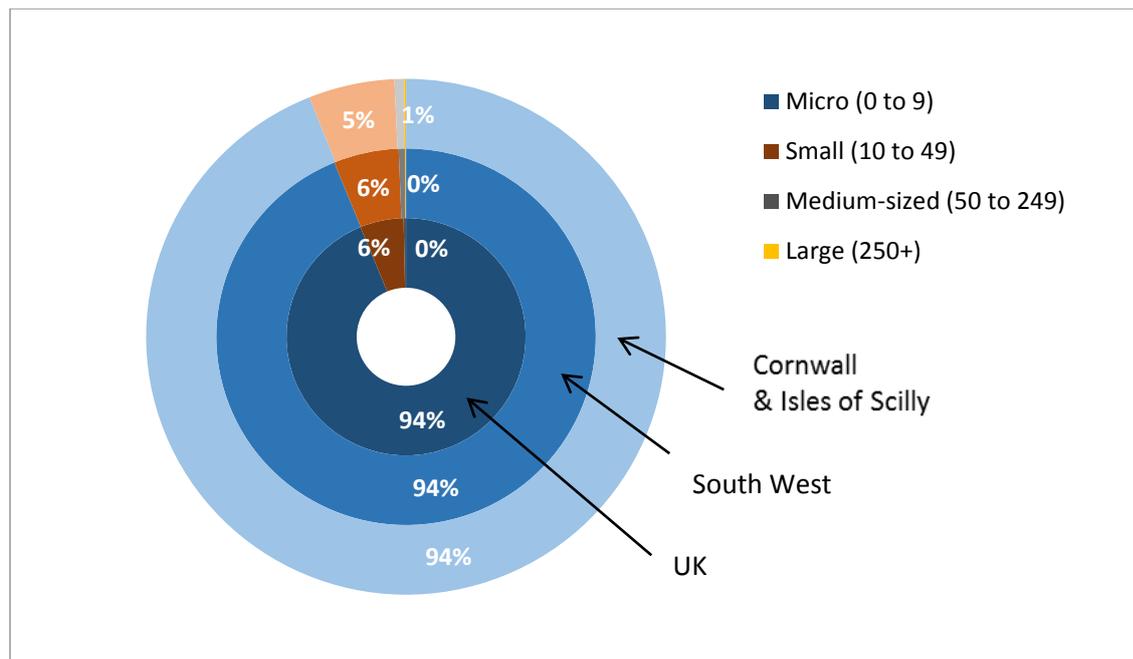


Figure 8: Size of Construction Businesses (UK Business Count, NOMIS 2016)

In the Cornwall and Isles of Scilly LEP 94% of all construction businesses are micro sized. This is exactly the same ratio as both the wider South West and the United Kingdom as a whole. The majority of the growth in construction businesses within the Cornwall LEP has been due to an increase in the number of micro sized companies, accounting for 91% of the growth of businesses from 2012 to 2016 in the LEP during this period. Growth in micro sized businesses in the South West as a whole is slightly larger than the Cornwall and Isles of Scilly LEP with increases of 9.8% and 7.8% respectively.

Table 5: Construction occupational breakdown, 2016 (Source Experian & CITB)

Occupation	Cornwall & Isles of Scilly LEP	South West
Other construction professionals and technical staff	1,663	15,121
Senior, executive, and business process managers	1,642	14,925
Other construction process managers	1,281	11,649
Surveyors	716	6,512
Construction Trades Supervisors	358	3,256
Architects	307	2,795
Civil engineers	292	2,656
Construction Project Managers	288	2,619
Wood trades and interior fit-out	3,037	27,608
Plumbing and HVAC Trades	2,032	18,474
Electrical trades and installation	1,755	15,958
Building envelope specialists	1,339	12,168
Painters and decorators	1,223	11,116
Labourers nec*	947	8,613
Bricklayers	845	7,684
Plasterers	548	4,979
Roofers	494	4,493
Specialist building operatives nec*	440	4,001
Plant operatives	425	3,867
Scaffolders	407	3,702
Glaziers	304	2,762
Steel erectors/structural fabrication	267	2,431
Civil engineering operatives nec*	259	2,355
Plant mechanics/fitters	239	2,169
Floorers	142	1,287
Logistics	103	940
Non-construction professional, technical, IT, and office-based staff	3,376	30,693
Non-construction operatives	203	1,845
Total	24,935	226,680

Key

Manager/Professional occupations
Skilled Trades
Office-based staff

4.3. Training provision

Cornwall and Isles of Scilly LEP area has:

- 94% of learner volumes covered by five main providers.
- Training across the full range of construction occupations.
- Good levels of competence qualification achievements across many construction occupations, most notably bricklayers, floorers, glaziers, painters and decorators, plasterers and dryliners and roofers.

CITB analysis of Skills Funding Agency Individualised Learner Records from 2012/13 through to 2015/16 academic years for construction learners shows that:

- The Cornwall and Isles of Scilly LEP accounts for 10% of identified construction related training across the South West region.
- Whilst there has been an increased in the overall number of learners starting across the Cornwall and Isles of Scilly LEP (10%), this has occurred against a backdrop of a 15% reduction in learners starting across the wider South West region as a whole.
- However apprenticeships starts have increased in both the Cornwall and Isles of Scilly LEP area and the South West region as a whole with increases of 13% and 7% respectively.
- Positively, construction training within the Cornwall and Isles of Scilly LEP is balanced more towards what would be classed as “competence” based qualifications that are generally sought by construction employers, as opposed to “knowledge” or theory based provision.

Looking at the “Competence” based qualification (which are in the main NVQs) a link can be made between the qualification title and the likely occupation that an individual will have. For example someone starting or achieving a Bricklaying 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: Competence qualifications achievement in Cornwall and Isles of Scilly LEP as a % of total achievement in the South West as a whole (all qualification levels) looks at qualification achievements over the last four years for the identified competence qualifications, comparing achievement volumes against the overall pattern with the South West as a whole. From this analysis there looks to be patterns for particular occupations.

[The information shown in Table 6: Competence qualifications achievement in Cornwall and Isles of Scilly LEP as a % of total achievement in the South West as a whole (all qualification levels) has been produced by mapping qualifications reference numbers and titles to the most appropriate Construction Skills Network occupations. This has been built up over a number of years by CITB with over 1,800 qualifications reviewed and linked where possible. Note: there are some qualifications that have broad or generic titles that cannot be linked to distinct occupations.]

Table 6: Competence qualifications achievement in Cornwall and Isles of Scilly LEP as a % of total achievement in the South West as a whole (all qualification levels)

Construction Occupations	2012-13	2013-14	2014-15	2015-16	Total Achievements	Total %
Main Occupations						
Bricklayers	18%	17%	16%	24%	340	19%
Electrical trades and installation	14%	10%	9%	5%	260	9%
Painters and Decorators	15%	14%	13%	6%	80	13%
Plant Operatives	12%	16%	25%	21%	300	17%
Plumbing and HVAC	7%	14%	11%	13%	230	11%
Wood trades and interior fit-out	9%	10%	9%	10%	300	10%
Occupations to monitor						
Floorers	5%	10%	11%	4%	33	8%
Plant mechanics/fitters	10%	2%	3%	0%	4	4%
Specialist building operative	10%	2%	3%	8%	43	6%
Other construction professionals and technical staff	0%	4%	0%	5%	3	3%
Occupations with good provision						
Civil engineering operatives nec*	4%	2%	1%	3%	22	2%
Glaziers	3%	12%	19%	17%	90	11%
Plasterers and dry liners	19%	10%	20%	5%	42	13%
Roofers	17%	33%	35%	0%	32	20%
Scaffolders	9%	2%	4%	9%	32	5%
Low overall learner volumes						
Building envelope specialist	8%	0%	0%	0%	17	2%
Construction trades supervisors	2%	13%	0%	0%	5	6%
Total					1835	10%
Occupations not delivered in LEP area						
Construction Managers						
Logistics						
Steel Erectors/Structural						

*nec – not elsewhere classified

Note: Total achievements are across the period 2012 – 2013 to 2015 – 2016

The majority of the achievements referred to in Table 6: Competence qualifications achievement in Cornwall and Isles of Scilly LEP as a % of total achievement in the South West as a whole (all qualification levels) are at level 2 with a smaller proportion at level 3 and a very small minority at level 4 and above.

The percentage comparison as a whole is used as a device to demonstrate the provision of training in the Cornwall and Isles of Scilly LEP by occupations relative to one another to gauge where provision is relatively high or low.

- **Relatively high provision is highlighted in green**
- **Relatively low provision is highlighted in red**

There are a group of occupations that account for the main training volumes, which are generally consistent with the overall pattern seen in the South West. These are:

- Bricklayer
- Electrical trades and installation
- Painters and Decorators
- Plant Operatives
- Plumbing and HVCA trades
- Wood trades and interior fit out

Here the qualification achievements are consistent to the overall share of training being achieved in the LEP area or there is a larger volume of training being delivered against them. For occupations such as wood trades, bricklaying and plumbing the volume of training will be related to their share of employment, while for other 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.

The **second group - Occupations to monitor**: identifies a small number where we would expect higher levels of training, again linked to either the occupational size and/or demonstrating competence. For this cluster, which covers, floorers, plant mechanics/fitters, specialist building operatives nec* and construction professionals and technical staff, the share of training happening within the LEP is slightly lower than would be expected. It is possible that individuals with the Cornwall and Isles of Scilly LEP may be travelling outside the area for this type of training.

For the **third group – Occupations with good provisions**: the reverse is the case and there appears to be a higher level of provision for occupations such as civil engineering operatives, glaziers, plasterers and dry liners, roofers and scaffolders. 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 **final two groups – occupations where the low level of learner volumes or no learner volumes** make 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 terms of training providers, from 2012/13 to 2015/16 37 different providers have delivered training for the Cornwall and Isles of Scilly LEP area. However there is a consistent pattern with 94% of training being delivered by a core network of five providers. See Table 8: Occupational breakdown of risk of a shortfall for Cornwall and Isles of Scilly LEP area against current employment (Source CITB/WLC).

Table 7: Top 5 providers within the Cornwall and Isles of Scilly LEP (Source CITB/SFA)

Providers	2012-13	2013-14	2014-15	2015-6	Total	% share of total quals
Cornwall College	1243	1354	1821	1218	5636	73%
Truro and Penwith College	233	291	348	335	1207	16%
Bridgewater College	18	169	1		188	2%
DMT Business Services Ltd	1	79	9	13	102	2%
Plymouth City Council	16	7	34	36	93	1%

The two largest providers are located within the Cornwall and Isles of Scilly LEP with Cornwall College being the top provider delivering 73% of the qualifications delivered over the past four years. It is also interesting to note that the majority of the learner starts are regulated starts (86%)

The profile is typical of many geographic areas in that there is a relatively small group of FE colleges delivering 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 Cornwall and Isles of Scilly LEP is showing an increase in learner starts over the past four years of 10% this compares to the South West where starts have decreased by 15% over the same period.

Looking within the main programmes of learning being undertaken, the main reason for the increase in learner starts is the increase in Apprenticeship starts. This is a very positive trend for the LEP area as construction employers tend to have a preference for practical or competence based skills.

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 picture of mobility within the workforce. Data specific to the South West will be analysed to understand how this might impact on future training interventions and the supply of job opportunities for local people.

5.1. Main points

- Nearly a third of South West construction workers have worked in the construction industry for over 20 years (31%) and more than half have worked in the industry for at least 10 years (55%).
- Overall three quarters of all construction workers in the South West were interviewed in the same region in which they were living in when they started their construction career (76%). This is lower than Northern Ireland which has the highest proportion (97%) but higher than London which has the lowest proportion (50%).
- The average distance from workers' current residence to their current site was 24 miles. The UK average is 22miles.
- Almost three quarters of all South West construction workers are confident when they finish their current job their next job will allow them to travel to work from their permanent home on a daily basis (73%).
- Overall nearly half of all construction workers have only worked on one project type.
- Almost half (48%) of South West construction workers say they definitely will be working in construction in five years-time and a further two fifths (38%) think it is quite likely or very likely they will.

5.2. Work history

Nearly a third of South West construction workers have worked in the construction industry for over 20 years (31%) and more than half have worked in the industry for at least 10 years (55%). The most likely reason for working in the region is because they grew up there/have always lived there (73%) higher than the UK average of 55%. The majority of construction workers in the region have remained in the South West for all or most of their career (83%), this compares with a UK average of 80%. Also in the majority of cases, the last site workers were based was also in the South West (76%)

In terms of the regions/nations in which workers' current employer operates in, workers in the south West (83%) reported that their employer operated within the region/nation they were currently working in. In addition 18% reported operating in the South East, 15% in the West Midlands and 10% in both the North East and Wales. This is shown in Appendix Table 11: Region/nation employer operates in, compared with region/nation working in currently.

5.3. Workers Origins

Workers were asked which region they were living in just before they go their first job in construction in the UK. Overall three quarters of construction workers in the South West (76%) were interviewed in the same region in which they were living in when they started their construction career. By region/nation the highest proportion is 97% in Northern Ireland whilst the lowest is 50% in London.

In addition three quarters of construction workers in the South West (76%) have remained in the same region as they did their first qualification/training in. By region/nation, the highest proportion is 96% in Northern Ireland, followed by 95% in Scotland. At the lower end of the range, only around half of construction workers in the East of England (50%), South East (55%) and London (58%) are based in the same region/nation as where their first qualification was achieved.

5.4. Travel to Site

The majority of construction workers were interviewed on a site that was located within the same region/nation as their permanent home (83%) with 7% travelling in from the South East, 2% from Wales and the West Midlands and 1% from East of England, London and Northern Ireland.

All workers were asked to indicate the furthest distance they have worked from their permanent or current home in the last 12 months. Figure 9 shows that within the South West, approximately 1 in 6 construction workers have worked no more than 20 miles away (16%) and a further third have worked between 21 and 50 miles away (31%). This leaves half that have worked more than 50 miles away from their permanent home (51%), with a quarter that have worked between 51 and 100 miles away (26%) and a quarter that have worked more than 100 miles away (25%). Workers in the South West were amongst those most likely to have travelled more than 100 miles from their home to their site in the last 12 months.

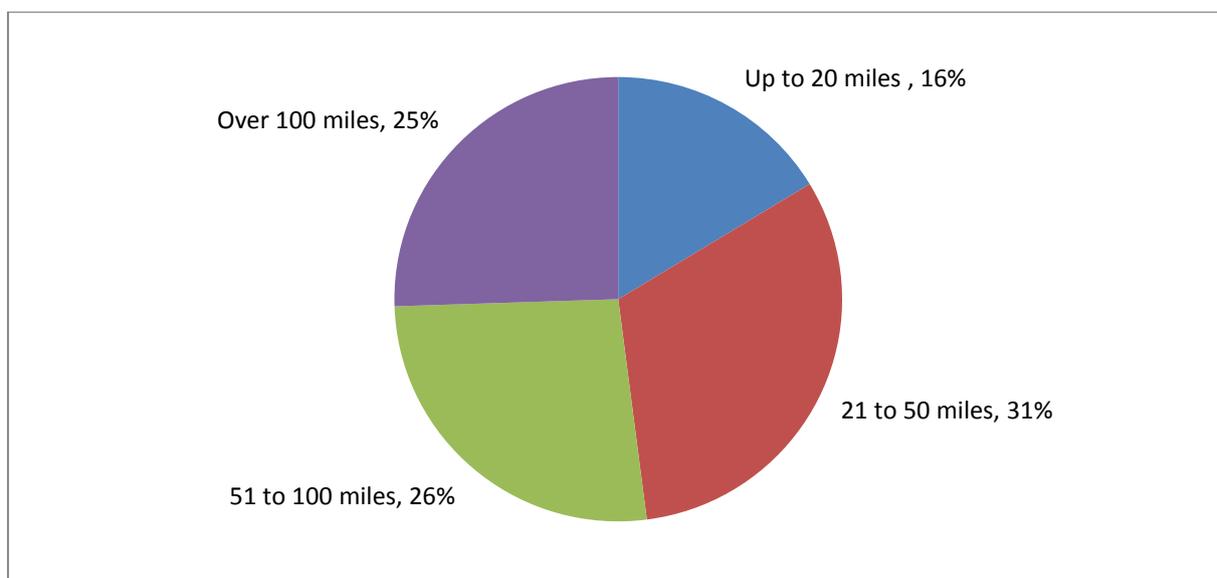


Figure 9: Furthest distance worked in past 12 months (CITB, 2015)

However within the South West, the average distance from workers current home to their current site was 24.1 miles. This compares to an average of 21.9 miles across the UK.

5.5. Site duration and change

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

A quarter of all construction workers in the South West (24% cf. 23% in 2012) do not expect to work on that site for more than a month, including 6% that only expect to be there for about a week or less. A further quarter anticipated being on site for more than a month, but less than a year (24%), compared with a significantly higher proportion in 2012 (40%). Another quarter expect to stay on that site for a year or longer (27%), which is a significant increase compared with 2012 (17%), suggesting more stable employment than in 2012. However in the remaining quarter of cases (24%) workers did not know how much longer they could expect to be on site, indicating that a significant minority of temporary workers are living with a certain amount of uncertainty and insecurity.

The youngest workers, aged 16-19 are most likely to be unsure of how much longer they can expect to work for (35% don't know).

Almost three quarters of all construction workers in the South West 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 (73%).

5.6. Sub-sector and sector mobility

All 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 an increase in the proportion of construction workers that have been working on new housing within the South West; up from 76% to 83%. For all other types of projects the proportion of construction workers that have worked on them has fallen since 2012; public non-housing from 52% to 33%; private industrial work from 48% to 30%; commercial work from 51% to 34%; infrastructure projects from 35% to 23%; housing repair from 46% to 36%.

Overall nearly half of all construction workers have only worked on one project type (47%), compared with closer to a quarter in 2012 (28%), which again suggests a pattern of increased stability in the sector.

5.7. Leaving the sector.

In order to assess the potential outflow from the sector in the next five years (led by worker preference), all workers were asked how likely it is that in 5 years-time they will still want to be working in construction. Within the South West, almost half of the construction workers say they definitely will be (48%); a further 38% think it is very or quite likely; 5% consider it unlikely; just 2% say they definitely won't be and a further 3% hope to be retired by then, while 4% 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): 49% believe they will definitely want to be working in the construction sector, 25% believe it is very likely they will want to be working in the construction sector and 14% believe it is

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 5 years-time which is less than in 2012 (13%).

Overall the findings from the Mobility Study indicate a stable, well established workforce across the South West. There is some evidence of movement between other regions/nations specifically the South East. However on the whole the workforce have grown up in the region, undertaken their initial construction training in the region 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 5years' time.

Setting the Mobility Study research against the overall workforce and business patterns noted earlier indicated that whilst the South West as a whole region has a stable workforce, workers with the West of England LEP will not be limited to working only within the LEP – they may travel to work in other areas of the South West outside of the West of England LEP. Likewise, workers in other areas of the South West will also be travelling to work with the West of England LEP.

6. Demand against supply

6.1. Main points

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

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

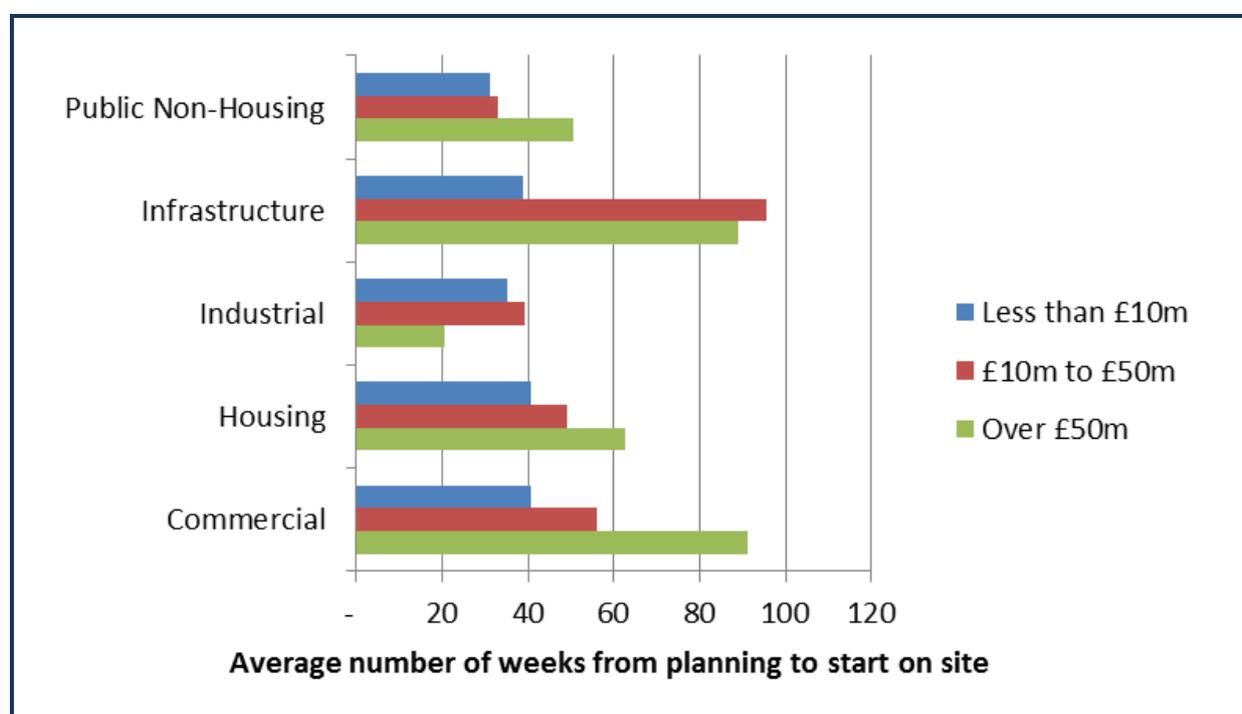


Figure 10: Average number of weeks from planning to work on site, UK 2010-2013 (Source: UKCG/Glenigan)

There will also be work carried out that does not require planning permission, for example household repair and maintenance (R&M) work, and this can account for a significant share of work in the construction sector. Current estimates for R&M work in the South West indicate that it accounts for 29% of yearly construction output.⁴

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 plasterers and banksmen/bankpersons are most likely to have only worked on one project type, while bricklayers, site managers, dryliners, and scaffolders are more likely to have worked on a wide range of projects.⁵

⁴ CITB(2016) Construction Skills Network

⁵ CITB(2015) Workforce Mobility and Skills in the UK Construction Sector

6.2. Gap Analysis

With current construction employment in the Cornwall and Isles of Scilly LEP regions estimated at almost 25,000, the identified demand forecast from projects in Glenigan accounts for 87% of current employment in 2017 before reducing, as the identified projects visibility decreases. See Table 8.

Table 8: Occupational breakdown of risk of a shortfall for Cornwall and Isles of Scilly LEP area against current employment (Source CITB/WLC)

Occupation	Cornwall & Isles of Scilly LEP employment	Relative risk of a shortfall rated – 2017 demand v 2016 employment
Architects	307	1.20
Other construction process managers	1,281	1.14
Construction Project Managers	288	1.14
Construction Trades Supervisors	358	1.09
Other construction professionals and technical staff	1,663	0.92
Senior, executive, and business process managers	1,642	0.86
Surveyors	716	0.80
Civil engineers	292	0.47
Floorers	142	2.05
Logistics	103	1.97
Civil engineering operatives nec*	259	1.34
Non-construction operatives	203	1.33
Specialist building operatives nec*	440	1.26
Labourers nec*	947	1.16
Plant mechanics/fitters	239	1.00
Glaziers	304	0.94
Plasterers	548	0.91
Painters and decorators	1,223	0.89
Roofers	494	0.85
Electrical trades and installation	1,755	0.76
Bricklayers	845	0.75
Wood trades and interior fit-out	3,037	0.73
Building envelope specialists	1,339	0.72
Plumbing and HVAC Trades	2,032	0.70
Steel erectors/structural fabrication	267	0.67
Plant operatives	425	0.66
Scaffolders	407	0.43
Non-construction professional, technical, IT & office-based	3,376	0.91
Total	24,935	0.87

Key

Manager/Professional occupations	Skilled Trades	Office-based staff
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Note nec* not elsewhere classified, HVCA Heating, ventilation and air-conditioning

Table 8 shows that there are some possible disparities where demand is expected to outstrip the current estimates for employment available locally. These occupations show high relative gap in comparison with other occupations.

In Table 8 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 RED** – [Second quartile] appear to be at risk of a shortfall and should be reviewed to determine where opportunities for further training and development exist
- **AMBER** – [Third quartile] still demonstrate a risk of a shortfall but should be monitored and tested to compare with local qualitative opinions.
- **GREEN** – [Bottom quartile] appear to be at relatively 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 roles appearing to be at greatest risk of a shortfall compared with local supply are:

Among skilled trades

- Floorers
- Logistics
- Civil engineering operatives nec*
- Specialist building operatives nec*
- Labourers nec*
- Plant mechanics/fitters
- Glaziers
- Plasterers

Among professional and managerial roles

- Architects
- Other construction process managers
- Construction Project Managers
- Construction Trades Supervisors
- Other construction professionals and technical staff

There also appears to be a high demand for Non-construction operatives.

Whilst some of these occupations are construction specific, others have cross sector implications

6.2.1. Local consultation and the mobility of professional roles

Local consultation has indicated that the local experience of some individuals does not tally with this analysis. In particular it has been noted that for **surveyors**, some local experience has been that there is a shortage of available skills. Whereas the available data indicates a lower relative risk of a gap for this occupation.

There are a number of possible explanations for this disparity. It is possible that the local shortage experienced by some is not uniform. There is anecdotal evidence available to indicate significant shortages of surveyors in other parts of the country and as a mobile and often remote occupation, it is possible that surveyors based in the West of England are working on projects outside the region. It is possible that ONS data has under presented slightly the number of Surveyors based in the South West. Additionally, around one third of surveyors are recorded as working outside construction and so it is possible that the West of England appears to have a disproportionate number of surveyors that are not available to the construction industry.

6.3. Construction specific occupations

Demand for **Architects** is a reflection of the wider UK shortage, although there is some anecdotal evidence to suggest that there is oversupply in London and South East that may go some way to mitigate against shortages elsewhere. Additionally as professionally qualified occupations which tend to require degree qualifications, there will be at three education and training before becoming qualified plus years to gain experience. And if candidates are to be encouraged to join these 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 would require workers to be drawn into the Cornwall and Isles of Scilly LEP area from the wider region and possible beyond.

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

6.4. 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.

Non-construction operatives move between construction and other sectors such as manufacturing and wholesale/distribution. It is possible that experienced workers could be required by other sectors as well as construction across the broader South West region.

Logistics skills also have an element of cross over, particularly with retail and transport sectors, which could mitigate potential demand. When compared to other occupational groups it is also lower in actual numbers which magnifies percentage changes.

In addition to the major projects identified in the Glenigan Pipeline, there will also be other work carried out in the South West LEP area that is captured with the demand analysis where additional workers will be required. This additional work includes projects that are less than £250,000 as well as repair and maintenance work that does not require planning consent and this is expected to mean a total workforce demand of almost 36,000 between 2017 and 2019.

This is quite static level of future work that would account for around 90% of current employment which indicates that future demand in most cases will be focused on replacing current workforce levels and equipping the with appropriate skills rather than an overall increase in demand

6.5. Gap Analysis – Long Term

When looking at the longer term past 2017, the amount of known work in the LEP area decreases. To give a view on the gap analysis across the wider range of work and over longer term, the annual Average Recruitment Requirement (ARR) details within the wider South West CSN 2017-2021 report can be used, bearing in mind on average the Cornwall and Isles of Scilly has related to around 11% of regional employment in recent years. With this relative share, it is fair to assume that the Cornwall and Isles of Scilly will face similar long term demand to those of the South West as a whole.

Table 9: Occupational breakdown of ARR for South West region as a whole (Source CITB)

Occupation	2016 Employment Forecast (South West)	ARR 2017-2021 (South West)	ARR as % of 2016 Employment Forecast
Non-construction professional, technical, IT, and other office-based staff	30,693	1080	4%
Senior, executive, and business process managers	14,925	380	3%
Wood trades and interior fit-out	27,608	370	1%
Plasterers	4,979	270	5%
Bricklayers	7,684	250	3%
Surveyors	6,512	250	4%
Painters and decorators	11,116	240	2%
Electrical trades and installation	15,958	240	2%
Roofers	4,493	230	5%
Plumbing and HVAC Trades	18,474	210	1%
Other construction process managers	11,649	190	2%
Glaziers	2,762	130	5%
Building envelope specialists	12,168	70	1%
Construction project managers	2,619	60	2%
Construction trades supervisors	3,256	50	2%
Floorers	1,287	<50	<4%
Specialist building operatives nec*	4,001	<50	<1%
Scaffolders	3,702	<50	<1%
Plant mechanics/fitters	2,169	<50	<2%
Steel erectors/structural fabrication	2,431	<50	<2%
Logistics	940	<50	<5%
Civil engineers	2,656	<50	<2%
Other construction professionals and technical staff	15,121	<50	0%
Plant operatives	3,867	-	0%
Labourers nec*	8,613	-	0%
Civil engineering operatives nec*	2,355	-	0%
Architects	2,795	-	0%
Total	224,835	4,180	2%

Key

Manager/Professional occupations	Skilled Trades	Office-based staff
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The CSN 2017-2021 has identified the following occupational requirements either as actual volumes or as percentage of current employment. These occupations are:

- Non-construction professional, technical, IT, and other office-based staff (volume and % of employment).
- Senior, executive, and business process managers (volume).
- Wood trades and interior fit-out (volume).
- Plasterers (volume and % of employment).
- Bricklayers (volume).
- Surveyors (volume and % of employment).
- Painters and decorators (volume).
- Electrical trades and installation (volume).
- Roofers (volume and % of employment).
- Glaziers (% of employment).

Non-construction professional, technical IT and other office-based staff are likely to have skills that can be transferred over a range of industries so there will exist a wider pool of potential recruitment to draw from in this instance.

Plasterers, Surveyors and Roofers have been identified due to a combination of comparatively high ARR by volume and ARR as a percentage of current employment notably above the regional average.

Wood trades and interior fit-out, Bricklayers, Painters and decorators and Electrical trades and installation have been identified in volume terms because of their comparatively high ARR by volume.

Glaziers, the ARR as a percentage of current employment is notably above the regional average at 5% which could indicate a potential occupational pressure to meet forecasted demand.

6.6. Gap Analysis – Training Needs

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

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

Taking the first of these ***'is there the training in the areas of potential demand?'*** the demand analysis identified shortages of architects, other construction process managers, construction project managers and construction trade supervisors this were not covered within the training supply analysis as these would be met by graduate recruitment which would not be restricted to supply from within the Cornwall and Isles of Scilly LEP area. With the wider impacts on these occupations a training needs analysis specific to the Cornwall and isles of Scilly LEP area is unlikely to give credible views.

Logistics was also identified within the demand analysis as a potential gap and this occupational area is not delivered in terms of training supply however as this area is not construction specific we would therefore anticipate demand to be more influenced by retail/warehouse/transport demands.

The Cornwall and Isles of Scilly already delivers a significant volume of civil engineering operatives, glazing, plastering and drylining roofing and scaffolding as well as bricklaying, wood trades and painting and decorating. The view would be at the moment that there is capability to meet demand.

The second question ***'is there the volume of training required across the spread of occupations?'*** receives a mixed in response. There would appear to be:

- Provision for training across the range of occupations excluding logistics and steel erection.
- A core of providers who deliver the majority of training.
- Good provision of competence qualifications for certain occupations including civil engineering operatives, glazing, plasterer, roofers and scaffolders.

However:

- There are occupations such building envelope specialist and construction trade supervisors where the levels of competence based training appears to be slightly low.

Although limited, the growth that is occurring in education and training for Cornwall and the Isles of Scilly LEP appears to be within the practical, competence based qualifications that employers have a preference for, as opposed to the “knowledge/theory” based qualifications.

7. Recommendations and conclusions

7.1. Recommendation 1

Skills strategy: pipeline identification, planning and exploitation

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

- The geography of Cornwall may sometimes limit or inhibit the movement of workers, and more likely students ability to access the location of training provision, it may be appropriate to consider this as a series of smaller geographic areas. It seems sensible also to base these geographic areas on infrastructure that enable or hinder the movement of workers and students.
- Longer term projections and the development of scenarios may enable an assessment of the potential impacts of major initiatives that may skew demand. Housing appears to be of particular significance to Cornwall's construction economy and there appear to be some notable demand, and risk of gaps, for some occupations of importance to housing.

7.2. Recommendation 2

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

An ambition of a future construction skills curriculum should be to match training and development with the needs of employers and the local economy. The vast majority of training is provided by Cornwall College in St Austell. With some outcomes delivered by Truro and Penwith College. This may indicate that large numbers of potential students (for whom the costs and logistic of transport to college are prohibitive) construction training is difficult or impossible to access.

- a) It is possible that mediated collaboration, between these two FE colleges and other training providers could help make training more accessible. By working together the major colleges can avoid duplication of effort or share resources, enhance specialisations and explore innovative ways of delivering the curriculum that meets employers and student's needs. That may, for example mean taking the training to potential students.
- b) 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. A starting point may be to consider those occupations where there appears to be high demand and a high relative gap.
- c) One potential opportunity may be to identify and facilitate how FE colleges and employers can engage with specialist training providers as well as with major projects, to establish greater provision to address what is a common complaint of construction employers. That is – new starters are not often enough 'site ready' so a curriculum might including working with employers to enhance new starters' site readiness and behaviours.
- d) An early action plan should assess if employers are facing specific skills shortages 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.

7.3. Recommendation 3

Reskilling and upskilling construction workers and those from other sectors

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

This may benefit from considering the Cornwall construction economy in the context of the wider economy and other sectors. Although Cornwall appears to have less of a shortfall of construction workers compared with some regions, it is also possible that changes in UK employment as a result of the UK leaving the European Union may have an impact that should be monitored. Also, it is a certainty that construction workers will retire and leave the industry for other reasons and need to be replaced.

It may be that there is greater potential value in helping residents to take up high value construction opportunities rather than move into other sectors.

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

It also appears that a significant proportion of construction training delivered is at level two, as well as at level one. However there may be an opportunity to develop a curriculum that moves workers up through the skills levels and develops more training at levels three, four and above and in specialisms likely to be in demand in the longer term.

7.4. Recommendation 4

Collaborative partnerships

Establish a construction skills group and identify potential partners within the area where they have an interest in construction outputs and construction skills and share analysis with them with a view to engaging them in contributing to building collaborative holistic action plans.

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

These stakeholders should be encouraged 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. (However it may also require compromise.)

The CIOS LEP should have some economic and political significance and influence and should use this influence considerably to leverage others to work together to achieve positive prioritised and co-ordinated action. This may in particular include establishing immediately, closer working relationships with the largest projects taking place across the region (that will have disproportionate significance) in developing and supporting the skills strategy. A notable example is the proposed Eco-Town at West Carclaze near St Austell.

7.5. Recommendation 5

Outreach

**Continue with efforts to build a more positive image of construction with young people.
Continue with efforts to build a positive image of construction with under-represented groups.
And increase recruitment through new entrance points, career changes and reskilling.**

Construction is sometimes associated with negative and inaccurate stereotypes that deter potential recruits, with education choices and career decisions often influenced in school and sometimes at a very early age. With an anticipated long term demand for some skills, the potential exists for an outreach programme that goes out to schools to build a positive perception of construction for the future as offering high value rewarding careers for all. And subsequently encourages applications for construction skills courses and apprenticeships from a broader spectrum of young people – in particular ethnic minorities and women.

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

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

There is an opportunity to maximise Go Construct and other employer led initiatives to raise engagement between the local employers, educators and individuals from all backgrounds.

7.6. Recommendation 6

Use procurement as a lever to enable skills development

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

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

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

7.7. Recommendation 7

Procurement and supply opportunities to be co-ordinated through the LEP and or local authorities

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

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

Better awareness of who to speak with in relation to providing services to major contractors may enable local sub-contractors to shift a greater proportion of their work and resources within the Cornwall LEP area so improving their efficiency (by reducing distance to site), and benefitting the local economy.

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

7.8. Maintaining & enhancing the evidence base

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

Appendices

Appendix A. Demand analysis methodology

A.1. 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 details on 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 take account of any shortcomings in the sources of data; and how the LFT converts output into labour demand.

A.2. Calculating construction output

A.2.1. Data sources

There are two principal sources of data: the Glenigan database and the National Infrastructure and Construction Pipeline (NICP). Once we have elicited the appropriate date, the results are sent to the Cornwall LEP to supplement and/or confirm.

A.2.2. 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 area: 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 10. 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 10: Proportion of total value related to construction

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

For the significant projects, the project descriptions in the database are thoroughly inspected and 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 housing, commercial and industrial.

For the non-significant projects, the default project type defined in the Glenigan pipeline is applied.

In order to maintain consistency with the CSN, whose forecasts extend only as far as 2020/21, we have limited our analysis of the Glenigan data to the annual spends up to and including 2020/21.

A.2.3. NICP data

The Infrastructure and Projects Authority (formerly Infrastructure UK and Major Projects Authority) compile a pipeline of UK infrastructure and construction projects and the associated annual public and private investment. For this report we have used the Autumn 2016 NICP which includes details of around 720 projects valued at some £500bn.

The NICP data is examined to identify infrastructure projects or programmes of work taking place in the Cornwall LEP 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 10. Projects in the Glenigan dataset and the NICP are combined (ensuring that there is no double counting) to create a pipeline of 'denominated' projects for the area. We have only considered those projects which are specifically allocated to the Cornwall LEP in the NICP (i.e. projects at a National level have not been considered).

The Autumn 2016 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 with data in Glenigan.

A.2.4. 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

A.2.5. 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 Cornwall LEP lies (in this case, the South West), identify only the new build in the denominated projects by removing all repair and maintenance projects.
2. Compare the output identified in the denominated 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 denominated 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 denominated project** is factored by the following ratio:

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

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 denominated projects and those whose value or probability of realisation is over-optimistic.

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

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

A.2.6. Dealing with the ‘cliff edge’

As the time horizon extends there is less clarity on what is planned. As a result, the number of denominated 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.

A.2.7. Calculating total labour demand

Our Labour Forecasting Tool is used to determine the labour demand generated by the construction outputs in the peak year calculated as described in Sections 2.2, and 2.4. 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 A. 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 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 10.

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.

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 managers

- (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 managers

- (2436) Construction project managers and related professionals

3 Other construction process managers

- (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)

- (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
5 Construction trades supervisors	
	(5250) Skilled metal, electrical and electronic trades supervisors (5330) Construction and building trades supervisors
6 Wood trades and interior fit-out	
	(5315) Carpenters and joiners (8121) Paper and wood machine operatives (5442) Furniture makers and other craft woodworkers (5319) Construction and building trades nec (25%)
7 Bricklayers	
	(5312) Bricklayers and masons
8 Building envelope specialists	
	(5319) Construction and building trades nec (50%)
9 Painters and decorators	
	(5323) Painters and decorators (5319) Construction and building trades nec (5%)
10 Plasterers	
	(5321) Plasterers
11 Roofers	
	(5313) Roofers, roof tilers and slaters
12 Floorers	
	(5322) Floorers and wall tillers
13 Glaziers	
	(5316) Glaziers, window fabricators and fitters (5319) Construction and building trades nec (5%)
14 Specialist building operatives not elsewhere classified (nec)	
	(8149) Construction operatives nec (100%) (5319) Construction and building trades nec (5%) (9132) Industrial cleaning process occupations (5449) Other skilled trades nec

15 Scaffolders	
	(8141) Scaffolders, staggers and riggers
16 Plant operatives	
	(8221) Crane drivers (8129) Plant and machine operatives nec (8222) Fork-lift truck drivers (8229) Mobile machine drivers and operatives nec
17 Plant mechanics/fitters	
	(5223) Metal working production and maintenance fitters (5224) Precision instrument makers and repairers (5231) Vehicle technicians, mechanics and electricians (9139) Elementary process plant occupations nec (5222) Tool makers, tool fitters and markers-out (5232) Vehicle body builders and repairers
18 Steel erectors/structural fabrication	
	(5311) Steel erectors (5215) Welding trades (5214) Metal plate workers, and riveters (5319) Construction and building trades nec (5%) (5211) Smiths and forge workers (5221) Metal machining setters and setter-operators
19 Labourers nec	
	(9120) Elementary construction occupations (100%)
20 Electrical trades and installation	
	(5241) Electricians and electrical fitters (5249) Electrical and electronic trades nec (5242) Telecommunications engineers
21 Plumbing and heating, ventilation, and air conditioning trades	
	(5314) Plumbers and heating and ventilating engineers (5216) Pipe fitters (5319) Construction and building trades nec (5%) (5225) Air-conditioning and refrigeration engineers
22 Logistics	
	(8211) Large goods vehicle drivers (8212) Van drivers (9260) Elementary storage occupations (3541) Buyers and purchasing officers (50%)

	(4134) Transport and distribution clerks and assistants
23 Civil engineering operatives not elsewhere classified (nec)	
	(8142) Road construction operatives (8143) Rail construction and maintenance operatives (8123) Quarry workers and related operatives
24 Non-construction operatives	
	(8117) Metal making and treating process operatives (8119) Process operatives nec (8125) Metal working machine operatives (8126) Water and sewerage plant operatives (8132) Assemblers (vehicles and metal goods) (8133) Routine inspectors and testers (8139) Assemblers and routine operatives nec (9249) Elementary security occupations nec (9233) Cleaners and domestics (9232) Street cleaners (5113) Gardeners and landscape gardeners (6232) Caretakers (9241) Security guards and related occupations (3319) Protective service associate professionals nec
25 Civil engineers	
	(2121) Civil engineers
26 Other construction professionals and technical staff	
	(2122) Mechanical engineers (2123) Electrical engineers (2126) Design and development engineers (2127) Production and process engineers (2461) Quality control and planning engineers (2129) Engineering professionals nec (3112) Electrical and electronics technicians (3113) Engineering technicians (3114) Building and civil engineering technicians (3119) Science, engineering and production technicians nec (3121) Architectural and town planning technicians (3122) Draughtspersons (3115) Quality assurance technicians (2432) Town planning officers (2124) Electronics engineers

	(2435) Chartered architectural technologists (3531) Estimators, valuers and assessors (3116) Planning, process and production technicians
27 Architects	
	(2431) Architects
28 Surveyors	
	(2433) Quantity surveyors (2434) Chartered surveyors

Appendix C. **Glenigan projects removed from the Cornwall LEP**

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

Number	Heading	Local Authority	Value (£m)	Start Date	End Date	Reason
1	Retail Unit	Cornwall	0.6			Missing Values
2	Sailing Clubhouse	Cornwall	0.3			Missing Values
3	5,107 Eco Homes	Cornwall	1000.0			Missing Values
4	14 Flats	Cornwall	1.1			Missing Values
5	Industrial Unit (Extension)	Cornwall	0.4			Missing Values
6	Vehicle Storage & Inspection Facility	Cornwall	0.5			Missing Values
7	Solar Photovoltaic Arrays	Cornwall	0.8			Missing Values
8	Leisure Centre & Restaurant (Extension/Alterations)	Cornwall	1.1			Missing Values
9	Veterinary Practice & Office	Cornwall	2.5			Missing Values
10	13 Industrial/Office Units	Cornwall	3.1			Missing Values
11	30 Houses/Flats	Cornwall	2.3			Missing Values
12	School (Extension/Alterations)	Cornwall	1.2			Missing Values
13	Hotel (Extension/Alterations)	Cornwall	0.8			Missing Values
14	12 Flats	Cornwall	0.7			Missing Values
15	37 Flats & 6 Shops	Cornwall	2.1			Missing Values
16	18 Holiday Flats (New/Alterations)	Cornwall	0.8			Missing Values
17	Public House	Cornwall	1.0			Missing Values
18	Retail Unit (Alterations)	Cornwall	0.5			Missing Values
19	Football Club House	Cornwall	0.4			Missing Values
20	10 Houses/7 Bungalows & 2 Flats	Cornwall	1.4			Missing Values
21	42 Live/Work Units	Cornwall	2.1			Missing Values
22	Supermarket	Cornwall	3.2			Missing Values
23	22 Holiday Lodges	Cornwall	1.7			Missing Values

24	Village Hall	Cornwall	0.6			Missing Values
25	Holiday Eco-Village	Cornwall	50.0			Missing Values
26	Hotel (Extension)	Cornwall	0.3			Missing Values
27	Retail Unit Mezzanine Floor (Alterations)	Cornwall	0.7			Missing Values
28	10 Flats & 2 Retail Units	Cornwall	0.7			Missing Values
29	Children's Play Centre Building	Cornwall	0.9			Missing Values
30	Indoor Training/Sports Facility Building	Cornwall	1.3			Missing Values
31	Swimming Pool & Workshop	Cornwall	1.4			Missing Values
32	Carbon Plant/Equipment Building	Cornwall	1.0			Missing Values
33	3 Houses& 1 Golf Club House	Cornwall	0.3			Missing Values
34	Care Home (Extension)	Cornwall	0.6			Missing Values
35	40 Residential Units	Cornwall	3.0			Missing Values
36	334 Holiday Lodges/32 Staff Flats & Ancillary Facilities	Cornwall	6.6			Missing Values
37	Harbour Museum & Restaurant	Cornwall	1.7			Missing Values
38	10 Flats/5 Town Houses& 3 Shop/Office Units	Cornwall	0.9			Missing Values
39	Hotel & Restaurant (Extension)	Cornwall	2.0			Missing Values
40	14 Dwellings	Cornwall	1.1			Missing Values
41	2 Industrial Units	Cornwall	0.3			Missing Values
42	Office	Cornwall	0.4			Missing Values
43	8 Houses& 7 Flats/1 Town House	Cornwall	1.2			Missing Values
44	11 Flats & 1 House (New/Conversion)	Cornwall	0.6			Missing Values
45	School Additional Classrooms (Extension)	Cornwall	0.4			Missing Values
46	14 Flats	Cornwall	0.7			Missing Values
47	Football Club House	Cornwall	0.4			Missing Values

48	28 Houses& 2 Flats	Cornwall	2.3			Missing Values
49	Leisure Parks Facilities Building	Cornwall	0.4			Missing Values
50	Consultancy Services (Framework)	Cornwall	400.0	07/07/2014	02/07/2018	Missing dates
51	Design Team Consultant Framework Contract	Cornwall	1.0	09/01/2017	11/01/2021	Missing dates
52	Consultants Framework	Cornwall	120.0	31/03/2014	26/03/2018	Missing dates

Appendix D. **Significant Glenigan projects in the Cornwall LEP**

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

WLC ID	Heading	Local Authority	Forecast Value (£m)	Start Date	End Date	Project Type
CloS0166	Construction and Civil Engineering Works Framework	Cornwall	512.3	03/04/2017	05/04/2021	Infrastructure
CloS0092	511 Residential/Commercial Units	Cornwall	250.0	02/01/2017	07/12/2019	New housing, Private Commercial
CloS0222	Carriageway (Improvements)	Cornwall	102.5	01/10/2019	01/10/2021	Infrastructure
CloS0279	Residences Phase 3	Cornwall	58.5	01/05/2017	01/08/2020	New housing
CloS0203	Hospital (New/Refurb)	Cornwall	56.8	08/05/2017	10/05/2032	Public Non-housing
CloS0231	Maintenance & Compliance Framework	Cornwall	40.0	01/04/2013	01/04/2017	Non-housing R&M
CloS0241	Maintenance & Compliance Framework	Cornwall	40.0	01/09/2017	01/09/2021	Non-housing R&M
CloS0292	441 Houses& 72 Flats	Cornwall	38.5	14/08/2017	10/09/2018	New housing
CloS0130	Trunk Road (Improvements)	Cornwall	28.7	10/06/2015	12/04/2017	Infrastructure
CloS0096	380 Houses/Flats	Cornwall	28.5	19/07/2017	15/08/2018	New housing
CloS0314	Loading Facility and Fire Fighting Upgrade	Cornwall	25.4	07/02/2017	06/08/2019	Infrastructure
CloS0100	293 Houses& Flats	Cornwall	22.0	09/11/2015	09/11/2018	New housing
CloS0018	260 Houses& 42 Flats	Cornwall	19.6	09/03/2017	21/03/2019	New housing
CloS0020	275 Houses, Hotel & 3 Retail Units	Cornwall	18.7	10/09/2017	07/10/2018	New housing, Private Commercial

WLC ID	Heading	Local Authority	Forecast Value (£m)	Start Date	End Date	Project Type
CloS0050	236 Holiday Units & 1 Leisure Park	Cornwall	17.8	06/03/2017	02/04/2018	Private Commercial
CloS0295	Residential Development	Cornwall	15.0	23/11/2015	04/08/2017	New housing
CloS0281	111 Houses	Cornwall	13.3	01/08/2016	01/12/2018	New housing
CloS0300	50 Houses& 40 Flats	Cornwall	12.0	27/06/2016	16/10/2017	New housing
CloS0031	150 Houses	Cornwall	11.3	09/11/2017	07/12/2018	New housing
CloS0313	149 Houses	Cornwall	11.2	06/03/2017	13/04/2018	New housing
CloS0123	147 Residential Units	Cornwall	11.0	29/07/2017	26/08/2018	New housing
CloS0009	98 Houses/8 Bungalows & 8 Flats	Cornwall	11.0	25/01/2016	20/02/2017	New housing
CloS0225	Supermarket	Cornwall	10.9	02/10/2017	30/04/2018	Private Commercial
CloS0262	104 Houses& 40 Flats	Cornwall	10.8	01/08/2016	27/10/2017	New housing
CloS0024	133 Houses& 5 Flats/1 Football Club (New/Alterations)	Cornwall	10.4	27/02/2017	30/03/2018	New housing
CloS0147	140 Residential Units & 1 School	Cornwall	9.8	01/08/2016	11/05/2018	New housing
CloS0280	108 Houses& 10 Flats	Cornwall	8.9	20/09/2016	17/10/2017	New housing
CloS0311	30 Houses& 14 Flats	Cornwall	8.8	25/07/2016	22/12/2017	New housing
CloS0082	14 Residential/Commercial Units	Cornwall	8.5	04/01/2016	04/08/2017	New housing, Private Commercial
CloS0004	82 Houses& 49 Flats	Cornwall	8.3	04/07/2016	31/07/2017	New housing
CloS0206	Housing Development	Cornwall	8.3	07/12/2015	17/05/2017	New housing

WLC ID	Heading	Local Authority	Forecast Value (£m)	Start Date	End Date	Project Type
CloS0005	Train Depot (Enhancement)	Cornwall	8.2	18/07/2016	18/05/2017	Infrastructure
CloS0155	76 Houses& 28 Flats	Cornwall	7.8	10/04/2017	11/05/2018	New housing
CloS0107	86 Houses& 15 Flats	Cornwall	7.6	07/03/2016	08/09/2017	New housing
CloS0041	98 Residential Units & Lodge House	Cornwall	7.4	14/12/2015	13/02/2017	New housing
CloS0112	70 Houses& 27 Flats	Cornwall	7.3	20/03/2017	16/04/2018	New housing
CloS0208	College Campus	Cornwall	7.2	04/04/2016	31/07/2017	Public Non-housing
CloS0294	94 Houses	Cornwall	7.1	11/09/2017	15/10/2018	New housing
CloS0233	Rugby Stadium & Hotel	Cornwall	7.0	08/05/2017	07/05/2018	Private Industrial
CloS0299	88 Residential Units & 1 Hotel (New/Extension)	Cornwall	6.7	14/08/2017	10/09/2018	New housing
CloS0210	77 Houses& 9 Flats	Cornwall	6.5	21/11/2016	18/12/2017	New housing
CloS0190	67 Houses/26 Flats & 4 Commercial Units	Cornwall	6.2	12/03/2018	08/04/2019	New housing, Private Commercial
CloS0008	22 Flats	Cornwall	6.0	16/01/2017	26/02/2018	New housing
CloS0228	80 Houses	Cornwall	6.0	23/02/2017	22/03/2018	New housing
CloS0063	56 Houses& 16 Flats/3 Bungalows	Cornwall	5.6	20/10/2017	01/12/2018	New housing
CloS0274	71 Houses	Cornwall	5.3	10/04/2017	07/05/2018	New housing
CloS0301	Scorrier	Cornwall	5.0	01/09/2017	01/09/2018	Private Commercial
CloS0323	Waste Transfer Station	Cornwall	4.5	05/06/2017	04/06/2018	Infrastructure
CloS0059	Archive Store	Cornwall	4.4	07/11/2016	27/04/2018	Public Non-housing

WLC ID	Heading	Local Authority	Forecast Value (£m)	Start Date	End Date	Project Type
CloS0249	Theatre (Extension/Alterations)	Cornwall	3.9	03/07/2017	12/02/2018	Private Commercial
CloS0237	College (Extension)	Cornwall	3.7	13/02/2017	13/02/2018	Private Industrial
CloS0149	39 Apart Hotel Units	Cornwall	3.6	01/05/2017	11/12/2017	Private Commercial
CloS0287	Art Gallery (Extension/refurbishment)	Cornwall	3.4	01/06/2015	26/01/2017	Public Non-housing
CloS0030	Hotel (Extension/Alterations)	Cornwall	3.4	31/10/2016	30/06/2017	Private Commercial
CloS0338	Highways (Improvements)	Cornwall	1.4	09/01/2017	09/07/2017	Infrastructure
CloS0175	Restaurant/Public House	Cornwall	1.3	01/05/2017	28/07/2017	Private Commercial
CloS0180	17 Holiday Lodges	Cornwall	1.3	06/03/2017	10/04/2017	Private Commercial
CloS0068	Rugby Football Club Development	Cornwall	1.1	12/06/2017	19/01/2018	Private Industrial
CloS0254	Livestock Building	Cornwall	1.0	03/07/2017	08/01/2018	Private Industrial

Appendix F. Region employer operates in, compared with working in

Appendix Table 11: Region/nation employer operates in, compared with region/nation working in currently

Region/nation employer operates in	Region/nation currently working in											
	EM %	EE %	GL %	NE %	NW %	NI %	SC %	SE %	SW %	WA %	WM %	YH %
East Midlands	83	16	8	13	3	2	4	12	8	7	24	11
East of England	12	67	15	11	2	1	4	19	8	7	9	6
London	10	27	84	13	4	1	5	27	12	7	9	6
North East	9	9	8	93	3	1	4	6	7	7	8	15
North West	11	9	8	14	93	1	4	6	7	11	11	10
Northern Ireland	3	3	3	2	1	99	3	2	1	3	2	1
Scotland	6	4	6	9	1	2	97	2	4	4	5	4
South East	13	23	27	12	3	*	4	65	21	7	11	6
South West	9	5	7	10	3	*	4	18	83	10	15	5
Wales	6	5	5	8	3	*	4	3	10	96	14	4
West Midlands	21	9	8	12	6	*	4	7	12	9	92	8
Yorkshire and the Humber	15	10	7	19	4	1	5	6	8	8	8	88
Republic of Ireland	1	2	3	*	*	2	1	1	1	2	2	*
Other parts of Europe	*	*	*	1	0	0	0	0	*	0	1	0
Outside Europe	*	1	0	*	0	0	0	0	*	0	*	0
Other / Unsure	1	3	2	3	2	*	1	3	1	*	1	3
<i>Unweighted bases</i>	410	366	452	427	435	274	463	439	494	290	352	369

Source: Workforce Mobility and Skills in the UK Construction Sector 2015 Report. BMG Research on behalf of CITB. Base: All respondents. *denotes less than 0.5%