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CITB ANALYSIS

Construction skills gap analysis for the Cumbria Local Enterprise Partnership

Cumbria Local Enterprise Partnership

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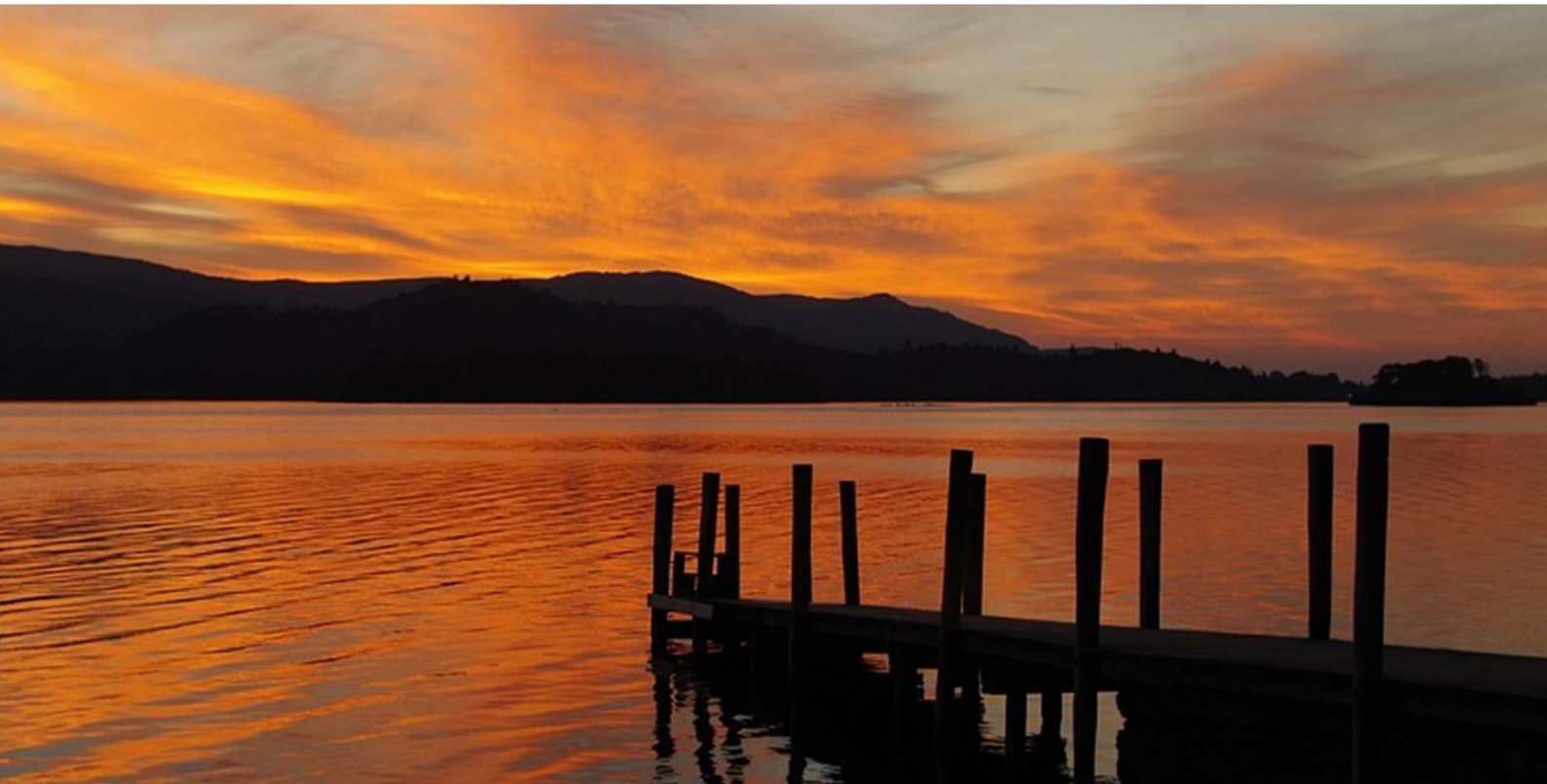
An analysis of the opportunities presented by the construction landscape in the Cumbria LEP area

May 2018



EXECUTIVE SUMMARY

The Cumbria LEP can expect sustained spending on new construction projects of well over £700 million per year for at least five years.

To meet anticipated demand, more than 21,000 construction workers are required for the foreseeable future. But with an aging workforce there are risks that Cumbria may not be able to build everything on the wish list.

Civil engineering operatives, plant mechanics and fitters, civil engineers, painters & decorators, specialist building operatives and building envelope specialists top the list of priority roles – where there is a high demand and an apparent shortage.

Infrastructure accounts for, a very significant, 60% of the anticipated new build projects; private industrial developments for 18% and new housing for 16%. [The significance of infrastructure is thought largely to be down to Sellafield and the Walney Offshore Wind Farm.]

CUMBRIA LEP'S OPPORTUNITY

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

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

"Cumbria will have a huge range of opportunities in construction trades and professions over the coming years. These are well paid, high skilled jobs that we should be encouraging young people to aspire to. These are the jobs that will shape Cumbria's future and house people for generations to come. And CITB is working with employers to attract and train new talent for these rewarding and valuable careers."

Andrew Bridge, CITB Partnership Manager for Cumbria

Priority occupations

The report identifies a number of occupations for which there is high demand AND a risk of a shortfall – i.e. where action is required to boost workers available in the Cumbria LEP.

1. Civil engineering operatives
2. Plant mechanics / fitters
3. Civil engineers
4. Painters & decorators
5. Specialist building operatives
6. Building envelope specialists

Occupations in context – the challenge

This report sets out a challenge to the LEP and local authorities, namely to attract, train, recruit and maintain a high skilled construction workforce that meets anticipated demand.

This challenge is set against the backdrop of: relatively high demand for similar skills from other industries; concerns about the future availability of skilled workers and demand from other UK regions and major infrastructure projects.

The Professions

There is high demand for several professional roles, jobs which require a significant length of training before candidates become qualified. Architects, surveyors and civil engineers require higher level qualifications plus professional accreditation, so the effect of action now will only be felt in five to ten years' time. These are jobs in demand the world over.

However, these roles do not need to be permanently on-site so it is likely that some demand may be met by those working outside the region.

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

Training and education

- There has been a reduction in the total number of construction learners starting in the Cumbria LEP – down 21% in the past four years.
- However, apprenticeships have increased over the same period by 26%.
- The only area within Cumbria to witness positive growth in starters is Copeland (29%), which is likely to be linked to Sellafield.
- Over the last four years around 40 training providers have delivered construction related training within the Cumbria LEP; ten main providers deliver 97% of provision.

Recommendations

The report proposes recommendations that include:

1. Establish a Cumbria LEP construction skills strategy and action plan. Review and develop, as appropriate, any existing construction skills strategies.
2. Develop and strengthen collaborative partnerships. With a view to building collaborative holistic action plans and encouraging local stakeholders to input to, and take ownership of, the construction skills actions.
3. Develop skills and training pathways. Ensure training is appropriate for local needs and businesses. Develop LEP area construction training so that it is appropriate for the needs of the construction industry and local circumstances, addressing risks of supply shortfalls.
4. Outreach. Build a more positive image of construction locally with young people. Increase recruitment through new entrance points, career changes and reskilling. Emphasise that construction offers high value rewarding careers for all.
5. Use procurement as a lever to enable positive action. Develop smarter approaches to procurement to encourage those bidding for construction and infrastructure contracts or those funding developments to be mandated to include provision for recruitment, training, apprenticeships and outreach.

GoConstruct is one of the construction industry's initiatives, supported by CITB, aimed at helping drawing more young people into construction careers by improve understanding of the careers and rewards available.

CONTENTS

APPENDIX CONTENTS

LIST OF FIGURES

LIST OF TABLES

FOREWORD

The Cumbria Local Enterprise Partnership and the Construction Industry Training Board are pleased to have collaborated and produced this construction sector skills report as part of a suite of eight sector plans. Construction is vital to the Cumbria economy and is worth over £700 million. The skills that the workforce have are crucial to ensure that, with the sustained spending on new construction projects over the next decade, there is real benefit generated for the people of Cumbria. It is predicted that there will be a requirement for at least 21,000 construction workers for the foreseeable future. The subsequent sector skills plan that this report informs will then feed into the Cumbrian Local Industrial Strategy 2030 with the ultimate aim of delivering sustainable business growth for Cumbria through people and skills development.

In 2014, the Cumbria Local Enterprise Partnership published the Cumbria Strategic Economic Plan (SEP), which identified four key economic drivers – skills development, business support, infrastructure improvements and environmental sustainability. The LEP and its partners, are working with a number of employer-led panels to develop sector skills plans for the eight priority sectors to inform and influence the planning and delivery of a skills curriculum that meets employer requirements and supports growth in the sector. The LEP, and partners, have sought to ensure these panels reflect the nature and geography of each sector and are an integral part of the £8.5m European Social Fund project, The Edge. The priority sectors are: advanced manufacturing, construction, health and social care, nuclear, professional services, rural, transport and logistics and visitor economy.

I want to take this opportunity to thank all the employers, sector bodies and skills providers for recognising the need to take action and for supporting the development of a construction skills plan. However, this is only the beginning and I look forward to continuing to work with the construction sector in delivering this plan, which will contribute to the creation of the Industrial Strategy 2030 and ensures the exit strategy for this plan is firmly rooted for the future.

Craig Ivison, Cumbria LEP Head of Employment and Skills

CITB has been working with Local Enterprise Partnerships (LEPs) and other authorities across England to help establish a local understanding of the risks and skills needs in the sector. It has completed more than 20 reports for LEPs and Combined Authorities across the country, including across the North West Region/. This pipeline of work has facilitated the development and refinement of a research model that is recognised as being robust and fit for purpose. The development of the Cumbria LEP Construction Skills Plan has followed this same model and the findings of the draft report were presented to members of the LEP's Skills Team in March 2018.

Since the presentation of the findings and publication of the draft report in March 2018 there have been a number of consultation events held with employers in the industry and a wide range of stakeholder organisations to get their thoughts and feedback on the research, and their views on the recommendations and subsequent action plan to be delivered once the final skills plan is published. The employer engagement was facilitated through the Cumbria Construction Training Group, which represents over 50 construction businesses across the size and scope of the industry from across the county. The stakeholder engagement was conducted through an event held by the Cumbria LEP and CITB on 15th May 2018 at the LEPs offices in Penrith. Through this engagement there was clear agreement with the research findings relating to occupational skills demands and the potential skills gaps. Some additional information was provided by a training provider about their specific construction related provision in Cumbria to supplement the evidence base but no further feedback that would impact the findings of the research.

The recommendations outlined in the report will form the basis of an action plan that will be developed and delivered by the Cumbria LEP, CITB, employers in the construction industry and stakeholders with an interest in construction. This development work with start in September 2018 and will be reviewed on a quarterly basis. Along with seven other sector plans, this construction plan will provide a meaningful sector evidence base to Cumbria LEP in its upcoming production of a Local Industrial Strategy, which sets the Vision and Mission for Cumbria through to 2030.

1. INTRODUCTION

This report is one step in maintaining an evidence base, to be utilised by the Cumbria LEP to inform decision making that will help determine the employment and skills opportunities emerging in the construction industry for Cumbria.

Construction is a significant part of the economy and is a major employer. But it 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 Cumbria LEP to invest in supporting the actions proposed in this report as well as referring to the wider evidence base available and involving stakeholders in the development of the associated plans.

This report represents the concluded research, 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 analysis starts to determine priorities for interventions to ensure local opportunities are maximised and that The Cumbria LEP has the right future skills and training pathways in place to deliver demand led solutions.

Cumbria's Strategic Economic Plan sets out to

- Create 15,000 additional full-time equivalent jobs;
- Boost Cumbria's economy by £600m more than current predictions through targeted investment in key projects;
- Increase the county's GVA growth by 0.6 percentage points above current forecasts, yielding a GVA growth rate of 2.2% during the plan period;
- Support the local planning authorities to deliver 30,000 new homes through their Local Plans;
- Raise skill levels through working with local education and training providers, reducing the proportion of Cumbria's firms facing a skills gap by 3%;
- Increase visitor expenditure by over £500m;
- Increase the number of businesses reporting growth by 5% through the Cumbria Growth Hub support;
- Achieve 100% coverage of superfast broadband.

Many of these goals are linked to the ability of the construction sector to deliver the facilities required and to make a significant contribution to the local economy.

1.1. CUMBRIA LEP AREA HEADLINES

1.1.1. Future Project Pipeline

The analysis assessed 190 construction projects with a total construction value of more than £1.8 billion. (Some of these projects will already be underway; work on others may extend well into the future.)

Of these, 51 projects (27% of the number of projects) are of greater than the average project value. This 27% of projects is worth almost £1.5 billion (or 80% of the total value), indicating the impact of a relatively small number of very large projects.

For the year of peak activity, used as giving the best indication of the future construction pipeline's impact: Infrastructure accounts for a very significant 60% of construction spend, private industrial developments for 18% and new housing for 16%.

1.1.2. Future Skills Demands

The total construction labour demand including the volume of R&M imputed peaks for the area in 2018 at 21,150.

The occupations with greatest demand are:

1. Non-construction professional, technical, IT & office-based
2. Wood trades and interior fit-out
3. Electrical trades and installation
4. Other construction process managers
5. Senior, executive, and business process managers
6. Other construction professional and technical staff
7. Plumbing and HVAC Trades
8. Labourers nec*
9. Painters and decorators
10. Civil engineering operatives nec*
11. Building envelope specialists
12. Plant mechanics/fitters
13. Specialist building operatives nec*
14. Civil engineers

1.1.3. Risk of shortages

The occupations with the greatest risk of a shortfall between the supply of workers and demand are:

1. Civil engineering operatives nec*
2. Logistics
3. Plant mechanics/fitters
4. Civil engineers
5. Construction trades supervisors
6. Painters and decorators
7. Non-construction operatives
8. Specialist building operatives nec*
9. Glaziers
10. Plant operatives
11. Plasterers & dry liners
12. Construction Project Managers
13. Senior, executive, and business process managers
14. Building envelope specialists

1.1.4. Priority occupations

The construction occupations for which there appears to be both high demand and high risk of a shortfall:

1. Civil engineering operatives
2. Plant mechanics / fitters
3. Civil engineers
4. Painters & decorators
5. Specialist building operatives
6. Building envelope specialists

There is also high demand and some risk of a shortfall for senior, executive and business process roles. However in many cases these may be performed by those based outside the area.

1.1.5. The Industry

The Cumbria LEP construction workforce declined by 8.2% in the year to June 2017. Self-employment increased by 3% between 2012/2013 and 2016/2017. In the same period, all of the growth in the number of construction businesses has been in micro sized companies where there has been a 10% increase.

The profile of Cumbria LEP's construction companies is:

- 94 % are micro (employing fewer than 10 people),
- 5.8 % are small (employing between 10 and 49 people),
- 0.5 % are medium (employing between 50 and 249 people),
- 0.2 % large employers (those with over 250 people).

1.1.6. Training and Education

Of the North West region, the Cumbria LEP accounts for:

- 8% of the construction workforce.
- 10% of the number of construction firms.
- 9% of identified construction related training.

There has been a reduction in the total number of construction learners starting in the Cumbria LEP (down 21%), however, apprenticeship starts within the Cumbria LEP have increased over the period from 2012/13 to 2015/16 to 26%. This increase in apprenticeship starts is lower than the North West as a whole at 34% over the same period.

The only area within Cumbria to witness positive growth in starters is Copeland (29%), which is likely to be connected to Sellafield.

Almost 90% of all construction further education training provision in the Cumbria LEP is provided by five main providers (See in Table 7.) One of these, Manchester College, provides more than a quarter of all training however it is likely that a significance proportion of this is provided to offenders under contract for HM Prison.

There is basic FE training available across the full range of construction occupations plus relatively good provision of competence qualifications, which are valued by the construction industry.

1.2. SCOPE

The local authorities analysed in the research are:

- Carlisle
- Allerdale
- Copeland
- South Lakeland
- Eden
- Barrow-in-Furness

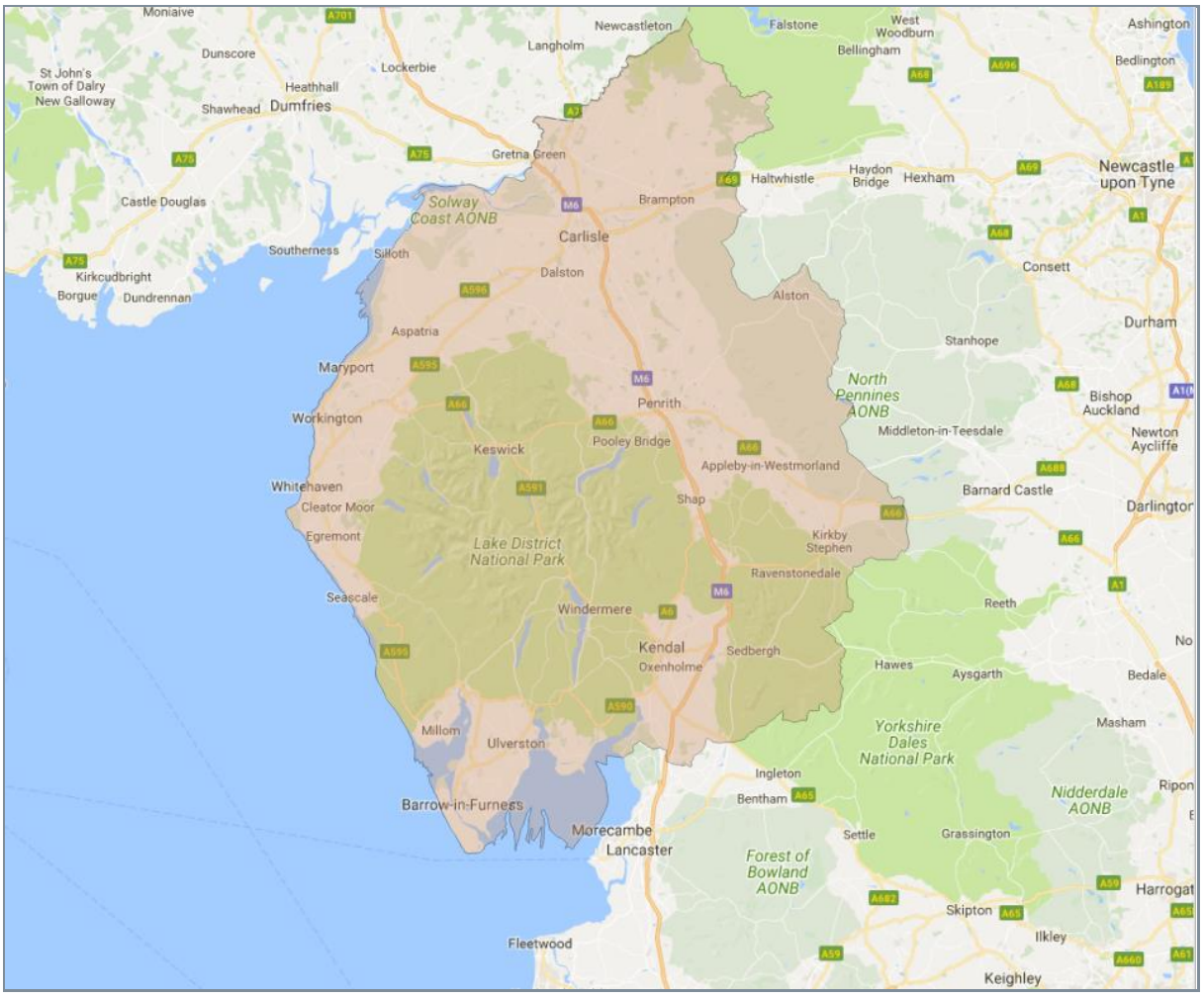


Figure 1: Map of the Cumbria LEP

2. LABOUR DEMAND IN THE CUMBRIA LEP

2.1. INTRODUCTION

The following sections provide an estimate of the labour demand that construction investment will create across the Cumbria LEP over the period 2017-2021. The outputs determined from the analysis described in Section 2 are reported along with the labour demand generated as calculated by the Labour Forecasting Tool.

2.2. PIPELINE OF DENOMINATED PROJECTS

2.2.1. Glenigan pipeline analysis

The initial review of the Glenigan database identified 245 projects in the Cumbria LEP area. Of these, four projects were removed because there was no value provided, and 37 were removed due to missing dates. Also excluded were two 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. The spend in projects which were removed because of missing dates is around £1bn (7% of the total pipeline). One project accounts for £600m of that value being an offshore gas facility in Barrow in Furness. 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. In addition twelve projects were omitted from the Glenigan dataset as these have been included in the NICP analysis.

The Mean Value Theorem was applied to the remainder of the pipeline to identify the significant projects. The process identified 51 significant projects accounting for 80% of the total construction spend in the area. This allowed a detailed analysis of a large proportion of all the projects and a comprehensive consideration of the project types to which they were assigned.

Table 1 shows the number of significant projects within the Cumbria 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 2017 prices, the base price used in the Glenigan database.

Table 1: Key data for significant projects in Glenigan[1]

	Number of projects	Construction spend (£m – 2017 values)
All Glenigan projects	190	1,834
Significant Glenigan projects	51	1,473
Percentage within significant projects	27%	80%

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 Cumbria LEP can be seen in

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

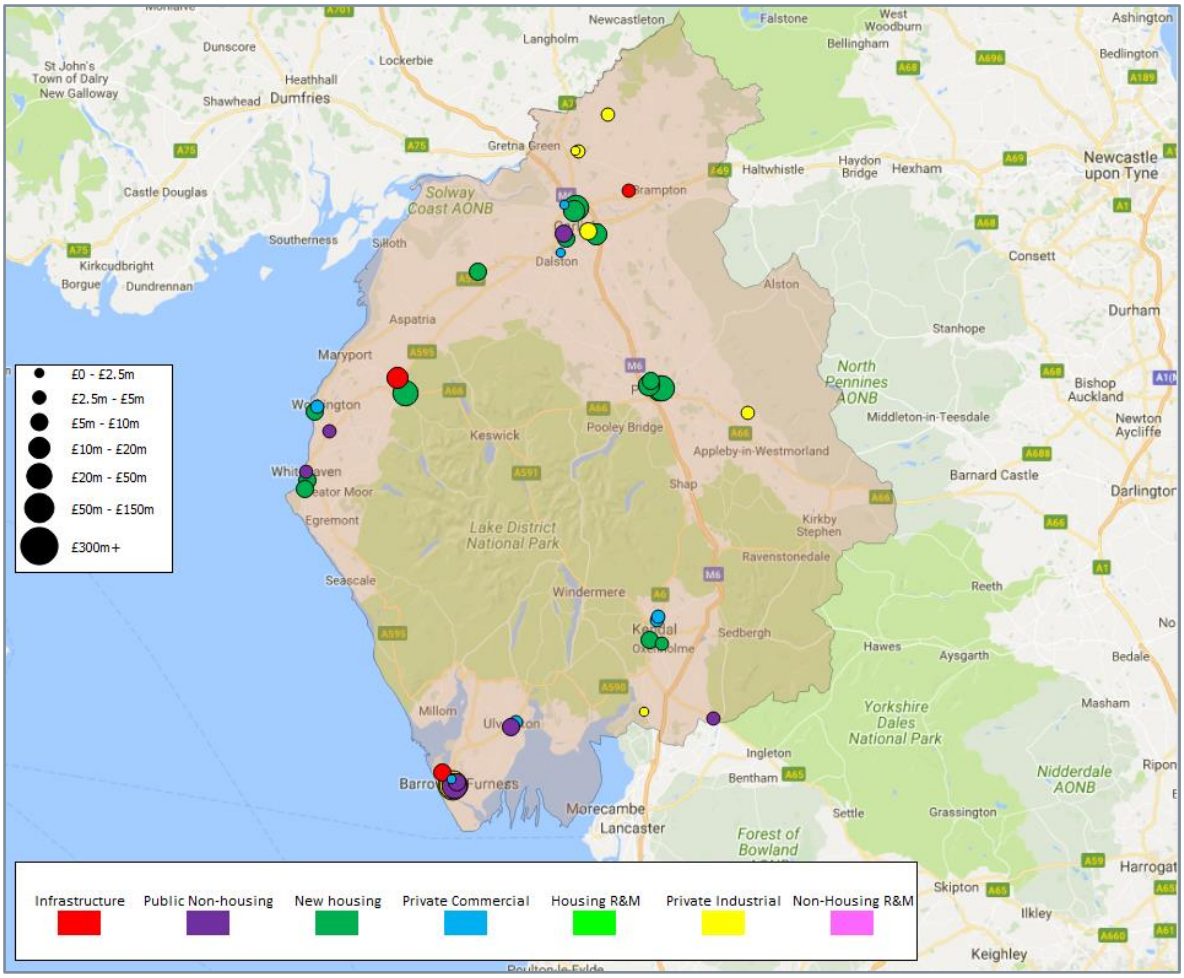


Figure 2: Location of significant projects included in the analysis

2.2.2. Glenigan & NICP spend analysis

Implementing the methodology outlined in Section 0 leads to the following findings for 2017, the peak year for denominated projects. 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 (2017 values - £m)	% of total
Infrastructure	438	60%
Private Industrial	129	18%
New Housing	113	16%
Public Non-housing	30	4%
Private Commercial	18	2%
Total	728	100%

2.2.3. NICP & Sellafield

A significant proportion of the infrastructure spend is picked up in the National Infrastructure and Construction Pipeline (NICP). These projects are picked up and recorded separately from the Glenigan analysis. There are a number of projects listed that appear to be of significance to Cumbria, notably:

- Walney Offshore Windfarm
- 33 projects listed under the NDA at Sellafield.

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 (2017 values - £m)	% of total
Energy	341	78%
Transport	48	11%
Water	47	11%
Total	438	100%

2.3. ESTIMATE OF FUTURE TOTAL LABOUR DEMAND

As outlined in the Section 0 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 2021 at 22,150 people.

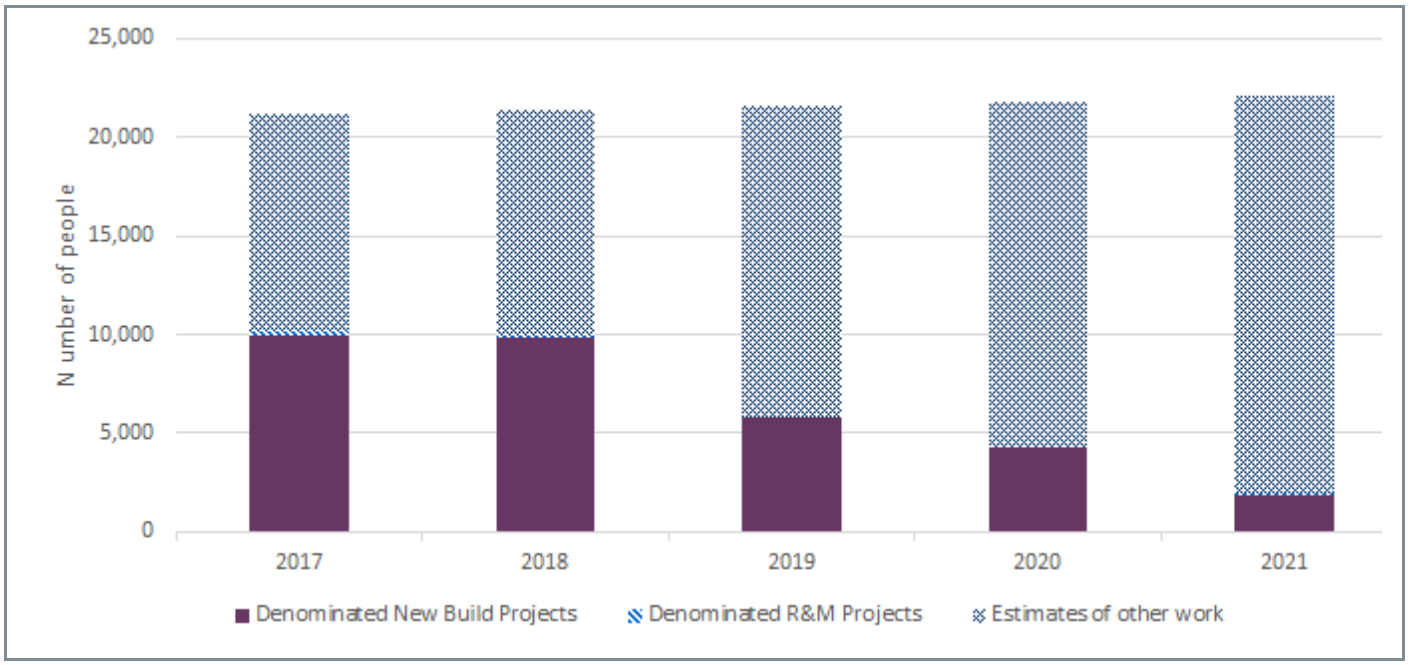


Figure 3: Total construction labour demand including estimates for both R&M and estimates of other work

2.3.1. 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.

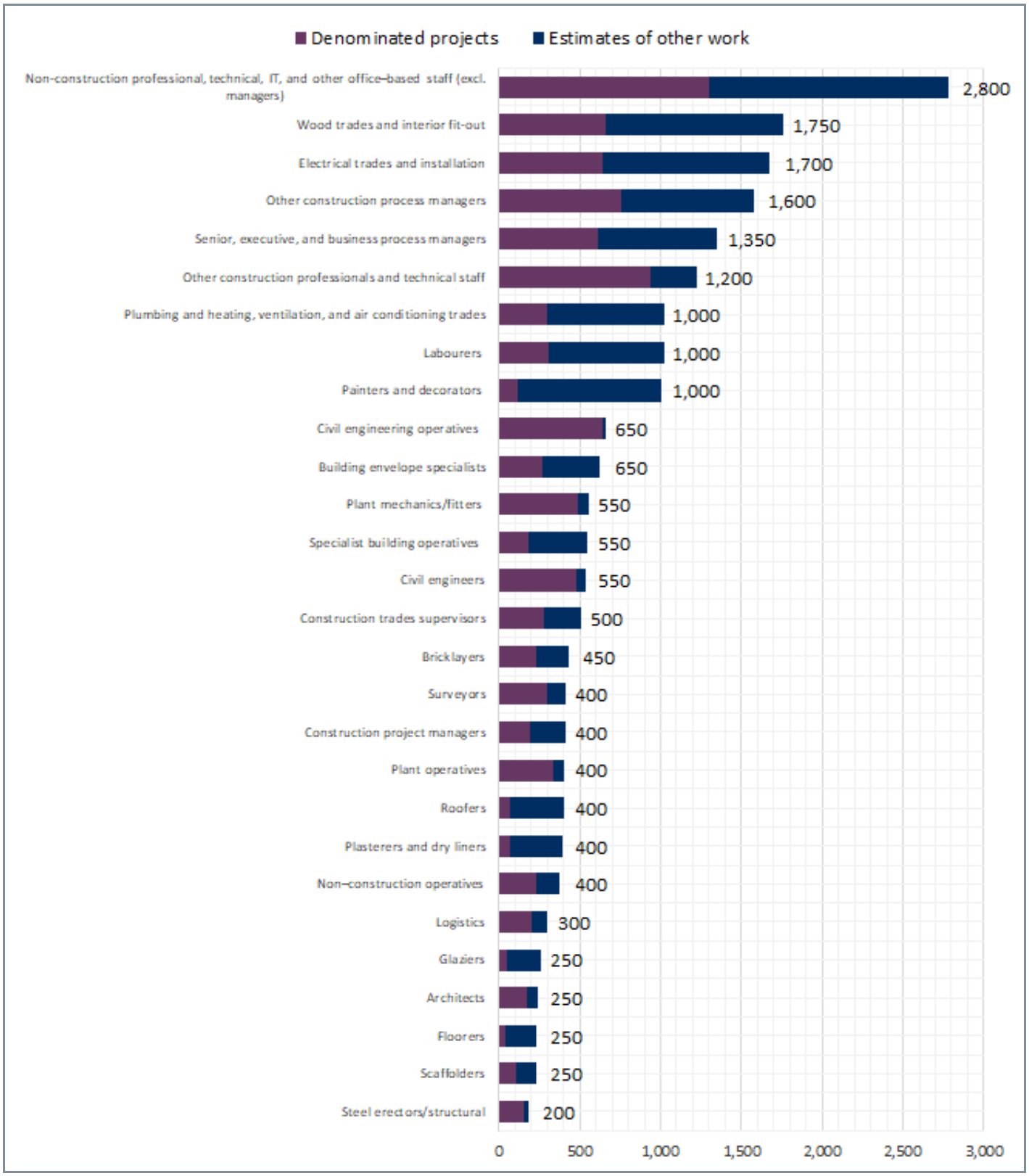


Figure 4: Construction labour demand by occupation in the peak year

2.3.2. 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
Non-housing R&M	-	7,700	7,700	36%
Infrastructure	5,000	-	5,000	24%
Private Industrial	2,450	550	3,000	14%
New Housing	1,550	600	2,150	10%
Housing R&M	150	1,500	1,650	8%
Private Commercial	400	700	1,100	5%
Public Non-housing	600	-	600	3%
Total	10,100	11,050	21,150	100%

2.4. SUMMARY OF DEMAND

- The labour demand arising from the construction spend in the Cumbria LEP area peaks at around 22,150 people in 2021, taking account of estimates of other work including R&M in addition to the pipeline of denominated projects.
- During 2017, the peak year of the denominated projects pipeline demand, the most labour-intensive occupation group is non-construction professional, technical, IT and other office based staff with an annual demand of 2,800 people.
- The estimate of the three largest labour demands in 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 a requirement for 1,750 people;
    - “Electrical trades and installation” trades follow with 1,700 people.
    - “Plumbing and heating, ventilation, and air conditioning trades” rank third, with a demand of 1,000 people.

3. CONSTRUCTION LABOUR SUPPLY IN THE CUMBRIA LEP AREA

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

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

For the second element, whilst training occurs at Further Education (FE) and Higher Education (HE) levels, the main focus of this report is on the FE that takes place. FE tends to be sourced and delivered in a closer proximity to the home and workplace, whereas the length of study time and specialisms for Universities for HE typically give much greater degrees of mobility. 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 Cumbria LEP 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 compared against employment, training and workforce mobility to give an indication of possible gaps and/or occupational pinch points.

3.1. EXISTING WORKFORCE

- The Cumbria LEP construction workforce has declined (-8.2%) in the year to June 2017.
- Current construction workforce within the LEP is estimated at just under 22,000 workers.
- The Cumbria LEP accounts for around 8% of the North West's total current construction workforce and 10% of its construction firms.
- Over half of the workforce in Cumbria are located in Carlisle and South Lakeland.
- Self-employment within construction in the LEP has increased slightly, by 3% from 2012/2013 to 2016/2017, with 7,000 self-employed workers within the area.
- There has been a 10% increase in the number of micro sized construction businesses from 2013 to 2017 within Cumbria, which has accounted for all (100%) of the growth in construction business in the LEP over this period.

An analysis of the Annual Population Survey shows that the Cumbria LEP area accounts for around **8%** of construction employment in North West region as a whole. This is the number of workers employed by employers within the Cumbria LEP. Table 7 applies this percentage share across the CSN occupational breakdown for the North West region as a whole to give an estimate of total employment at occupational and industry level in the Cumbria LEP area. For comparison, the wider North West region has been included.

In Cumbria strong construction workforce growth was achieved in 2015/16, of 16%. However, the numbers of construction workers fell to -8.2% in 2016/17. This is a different pattern to the North West as a whole, as in 2016/17 a 1.6% growth in workers for this area was witnessed.

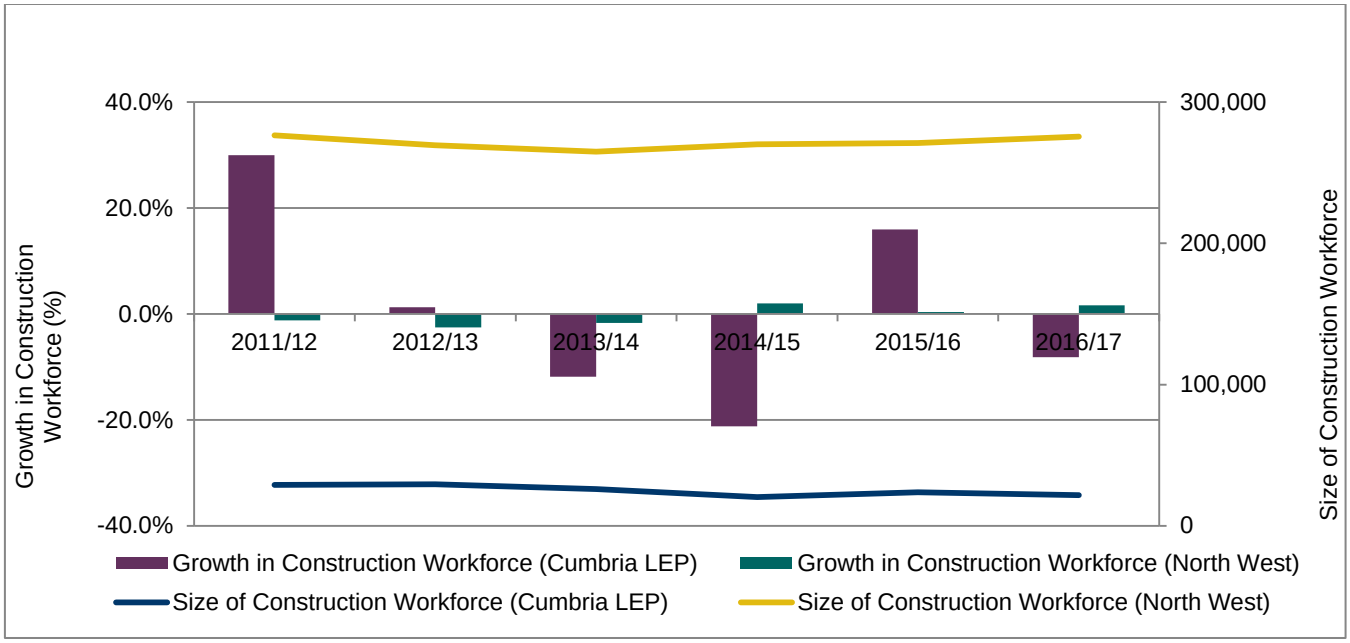


Figure 5: Year on year change in construction employment 2011/12 to 2016/17 (Experian/CITB & Nomis 2017)

In 2017, construction business within the Cumbria LEP made up a 10% share of the North West region, compared with 8% of construction workers. A small decrease from 2013 where the share of businesses in Cumbria was 11% in the North West. In actual numbers, there has been a slight increase in the number of construction businesses in Cumbria from 2,540 in 2013 to 2,765 in 2017, a 9% rise over this timeframe. When looking at the North West region as a whole the rise was much larger over the same time period, with an increase of 5,695 construction businesses, a 24% increase. This is shown in Figure 6 below.

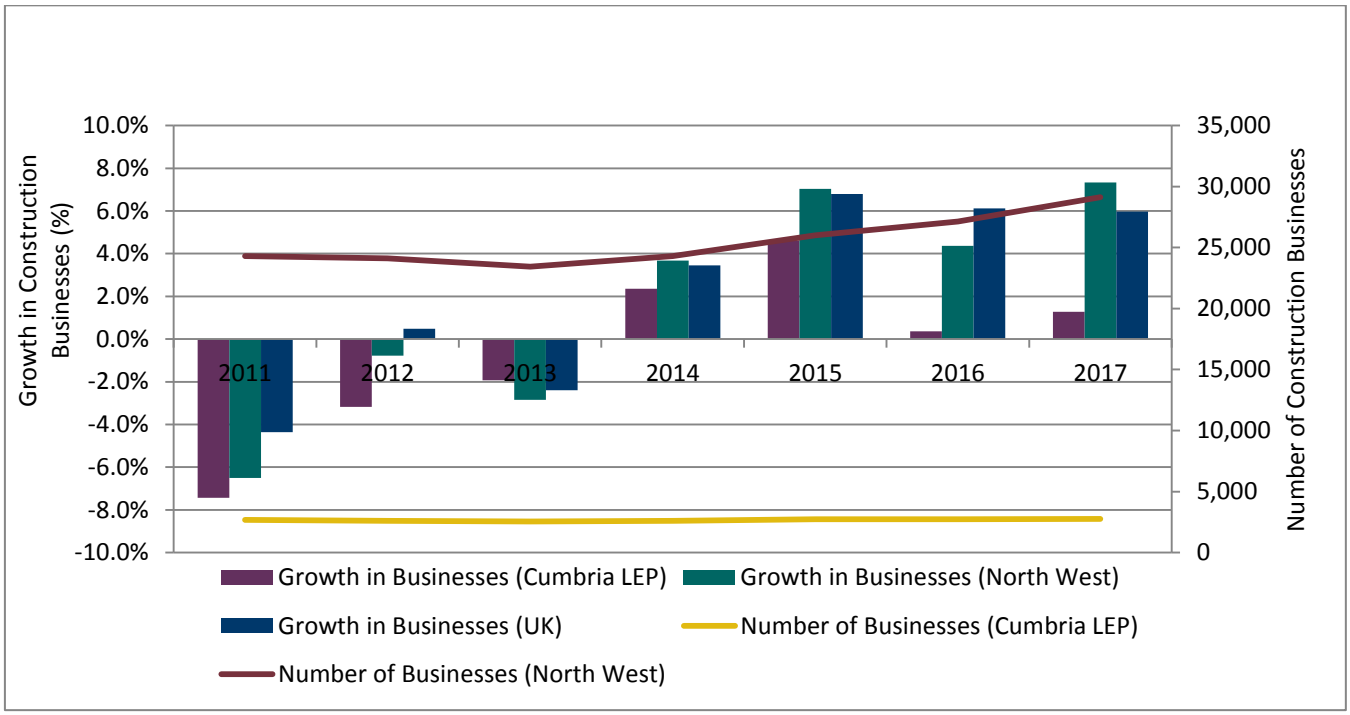


Figure 6: Year on year change in Construction Business (UK Business Count, NOMIS 2017)

Figure 7 shows the distribution of construction businesses within the Cumbria LEP, and Figure 8 shows the distribution of the construction workforce. There are clear differences between the two;

- It would appear Eden,South Lakeland and Allerdale have a higher share of businesses compared to the construction workforce. Over 90% of firms within the Cumbria LEP are micro sized (less than 10 employees), similar to that of the North West as a whole.

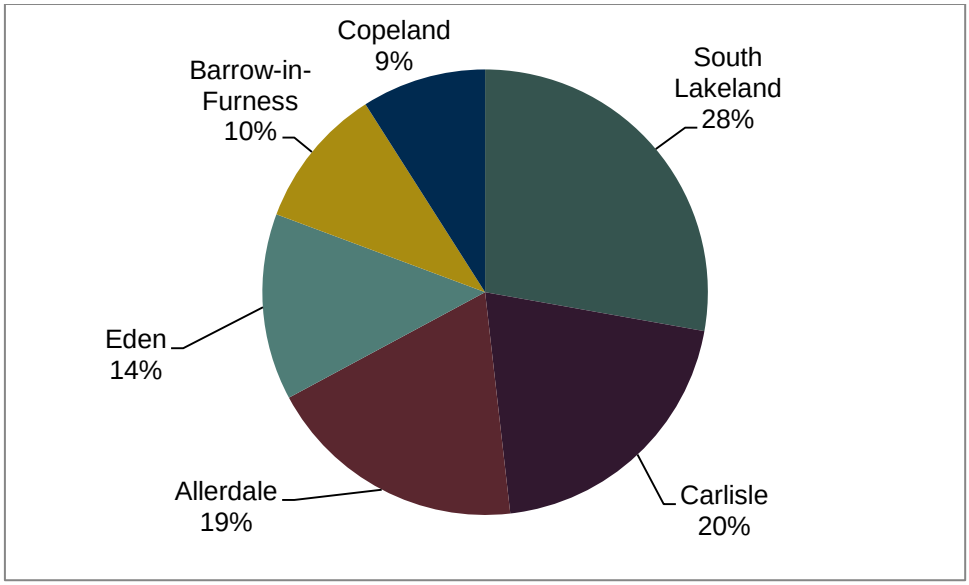


Figure 7: Distribution of construction businesses within the Cumbria LEP (UK Business Count, NOMIS)

Looking at Figure 8, in 2016/17 the main local authorities within Cumbria with the largest share of the workforce are Carlisle and South Lakeland which together represent 56% of the total. Between 2012/2013 and 2015/2016 the areas that have increased their shares of construction employment are Copeland (9.0%), Carlisle (5.8%) and Barrow in Furness (4.0%), and South Lakeland (3.3%), which have typically had a higher share of construction employment. Over the same timeframe Allerdale has experienced a decline in its construction workforce of 9.1%.

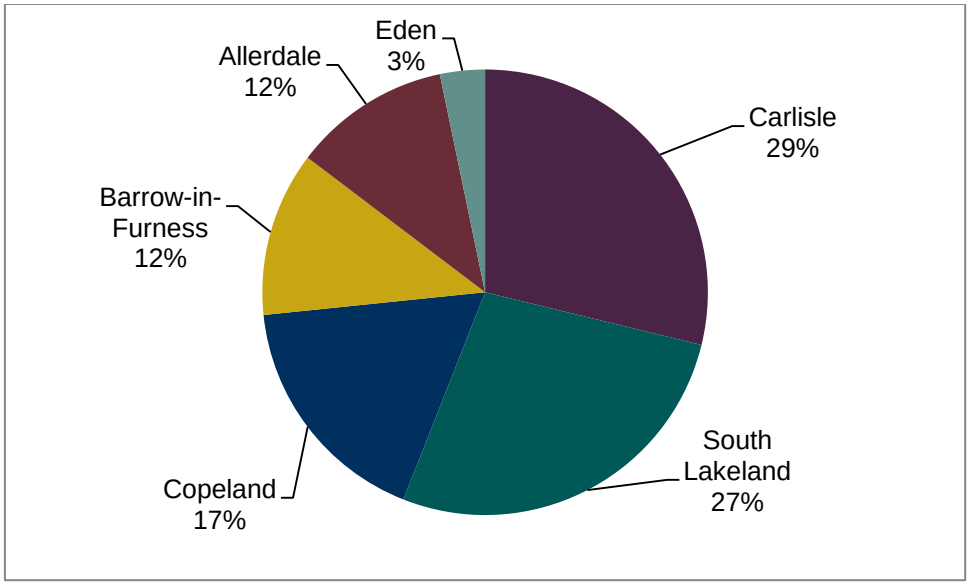


Figure 8: Construction employment by area within the Cumbria LEP (2017, NOMIS)

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

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

The construction sector has high levels of self-employment with around 41% of the UK construction workforce being self-employed; for the North West this is 37%. The figure for self-employment in the Cumbria LEP is 38%.

In the Cumbria LEP, higher proportions of companies are micro (94%), compared with the North West and the UK. Within the Cumbria LEP area with 5.8% of the total number of construction companies are classed as small, which is a slightly lower proportion than the proportion of small companies in the North West (6.0%), but higher than the UK (5.2%). It would appear there is a smaller proportion of medium sized construction companies within the Cumbria LEP (0.5%), compared to the North West (0.8%) and the UK (0.6%).

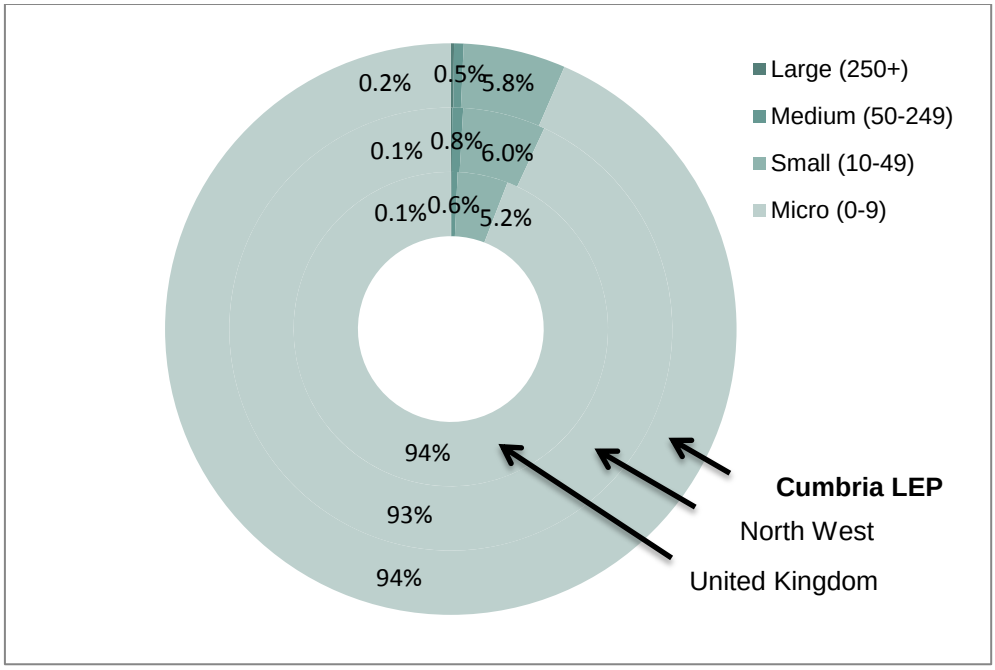


Figure 9: Size of construction business (UK Business Count, Nomis 2017)

In the Cumbria LEP and the North West there has been growth in micro companies since 2013, (10% and 26% growth respectively).

Table 5: Current construction workforce – occupational breakdown, 2016 (Source Experian & CITB)

Occupation	Cumbria	North West
MANAGERIAL, PROFESSIONAL & OFFICE BASED ROLES		
Other construction professionals and technical staff	1,700	21,580
Other construction process managers	1,690	21,360
Senior, executive, and business process managers	1,330	16,900
Surveyors	520	6,590
Construction Project Managers	400	5,030
Civil engineers	380	4,870
Construction Trades Supervisors	380	4,870
Architects	280	3,580
Non-construction professional, technical, IT, and other office-based staff	3,090	39,050
SKILLED TRADES		
Wood trades and interior fit-out	2,080	26,360
Electrical trades and installation	1,770	22,470
Plumbing and HVAC Trades	1,360	17,240
Labourers nec*	1,260	15,960
Building envelope specialists	620	7,870
Painters and decorators	780	9,900
Specialist building operatives nec*	440	5,550
Bricklayers	620	7,800
Roofers	450	5,760
Plasterers	370	4,630
Plant mechanics/fitters	370	4,690
Plant operatives	360	4,610
Glaziers	210	2,700
Floorers	270	3,460
Logistics	180	2,240
Steel erectors/structural fabrication	190	2,370
Scaffolders	240	3,060
Civil engineering operatives nec*	90	1,200
Non–construction operatives	300	3,770
Total	**21,760**	**275,450**

Note: numbers rounded to the nearest 10

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

3.2. TRAINING PROVISION

Overall, the volume of training in Cumbria reduced between 2012/13 and 2015/16, with the number of new starters decreasing by 21% over this period. This fall is considerably larger than, the decline witnessed in the North West region as a whole of 14%.

CITB analysis of Education and Skills Funding Agency (ESFA) Individualised Leaner Records from 2012/13 through to 2015/16 academic years for construction learners shows that:

- The Cumbria LEP accounts for 9% of identified construction related training across the North West area.
- There has been a reduction in the total number of construction learners starting in the Cumbria LEP (-21%), a higher reduction than the North West region (-14%).
- Apprenticeship starts within the Cumbria LEP have increased over the period from 2012/13 to 2015/16 to 26%, which is positive. However, this increase in apprenticeship starts is lower than the North West as a whole at 34% over the same period.
- When looking at other Education and Training construction learner starts (i.e. non-Apprenticeship construction qualifications) there has been reductions both in the Cumbria LEP and in the North West (-27% and -21% respectively).
- The only area within Cumbria to witness positive growth in starters is Copeland (29%).
- Over the last four years around 40 training providers have delivered construction related training within the Cumbria LEP; ten main providers deliver 97% of provision.

“Knowledge” based qualifications describe those qualifications that typically have a theoretical basis so are more likely to be ‘classroom based’. “Competence” based qualifications, in the main, achieve a recognised NVQ and so a link can be made between the qualification title and the likely occupation that an individual will have. For example someone starting or achieving a Bricklaying qualification is highly likely to be working as a Bricklayer as competence based qualifications are based on an assessment of work based skills.

Table 8 shows qualification achievements over the last four years for the identified competence based qualifications, comparing achievement volumes against the overall pattern for the North West as a whole. From this analysis there appear to be patterns for particular occupations.[2]

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

- Level 2 (67%),
- Level 3 (32%)
- Level 4 and above (1%).

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

The **first** group of occupations to be identified for the **main training volumes**, which are broadly similar with the overall training pattern seen in the North West. These are:

- Wood trades and interior fit-out
- Bricklayers
- Plant operatives
- Electrical trades and installation
- Plumbing and HVAC Trades

Here the qualification achievements are consistent with or slightly higher than the overall share of training being achieved in the LEP area or there is a larger volume of training being delivered against them. For occupations such as wood trades and plumbing, the volume of training will be related to their share of employment, while for others such as plant operators, training will be more related to the need to demonstrate competence for these roles through card scheme monitoring (for example the CPCS Card scheme for Plant Operatives).

[2] The information shown in Table 6has been produced by mapping qualification reference numbers and titles to the most appropriate Construction Skills Network occupations. This has been built up over a number of years by CITB with over 1,800 qualifications reviewed and linked where possible. Note: there are some qualifications that have broad or generic titles that cannot be linked to distinct occupations

Table 6: Competence qualification achievements in Cumbria LEP as a % of total competence qualification achievements in North West region as a whole (Source: CITB/ESFA)

Construction Occupations	12-13	13-14	14-15	15-16	Total Achievements	Total
Total	8%	8%	9%	10%	2,054	9%
Main Occupations						
Wood trades and interior fit-out	14%	13%	14%	17%	476	14%
Bricklayers	15%	16%	17%	21%	267	17%
Plant operatives	7%	3%	3%	3%	233	5%
Electrical trades and installation	7%	12%	10%	7%	214	9%
Plumbing and HVAC Trades	6%	6%	7%	8%	204	7%
Occupations with good provision						
Painters and decorators	11%	15%	28%	11%	176	16%
Plant mechanics/fitters	0%	11%	17%	18%	44	13%
Civil engineering operatives nec*	11%	18%	7%	10%	98	11%
Roofers	16%	11%	8%	11%	60	11%
Occupations to Monitor						
Plasterers and dry liners	5%	10%	11%	5%	46	7%
Glaziers	5%	5%	8%	3%	40	6%
Specialist building operatives nec*	10%	2%	2%	5%	76	5%
Scaffolders	1%	5%	5%	5%	30	4%
Low Overall Learner Volumes						
Floorers	5%	7%	3%	18%	29	6%
Building envelope specialists	1%	2%	3%	2%	29	2%
Construction Trades Supervisors	7%	6%	0%	0%	21	6%
Other construction professionals and technical staff	4%	4%	0%	10%	6	4%
Construction managers	0%	9%	18%	0%	5	3%
Logistics	0%	0%	0%	0%	0	0%
Steel erectors/structural	0%	0%	0%	0%	0	0%

*nec – not elsewhere classified

Note: Total achievements are across the period 2012-13 to 2015-16 have been rounded to the nearest 10.

The second group-occupations with good provision: where there appears to be a higher level of provision for occupations such as painters & decorators, plant mechanics/fitters, civil engineering operatives nec* and roofers. It could be that there are providers with particular specialisms in these areas operating with the LEP, or a particular need for this type of training.

The third group – occupations to monitor: identifies a small number of occupations where we would expect higher levels of training, again linked to either the occupational size and/or demonstrating competence. This cluster includes plastered and dry liners, glaziers, specialist building operatives nec* and scaffolders, and represents where training happening within the LEP is lower than would be expected. It is possible that individuals within the Cumbria LEP may be travelling outside the area for this type of training.

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

In the Cumbria LEP area between 2012/13 and 2015/16, 45 different providers have been delivering training. Interestingly, the majority of training (97%) is being delivered by ten main providers, as shown in Table 7**.** It is important to note, it is believed that the majority of this training is delivered by a subsidiary of The Manchester College to those in HM Prisons.

Table 7: Top 10 training providers delivering training to the Cumbria LEP by number of starts – excluding apprenticeships (Source: CITB/ESFA)

Provider	2012-13	2013-14	2014-15	2015-16	Total (Learner Aims)	% Share of Total Quals	% of Quals Ofqual Registered
Manchester College,	808	1,246	391	169	**2,614**	27.6%	27%
Lakes College West Cumbria	663	475	390	353	**1,881**	19.8%	83%
Carlisle College	452	411	388	470	**1,721**	18.2%	82%
Furness College	293	367	335	285	**1,280**	13.5%	75%
Kendal College	300	267	188	190	**945**	10.0%	91%
Preston College	122	88	33	2	**245**	2.6%	96%
NCG	125	67	40	0	**232**	2.4%	94%
Cumbria County Council	38	58	21	45	**162**	1.7%	0%
The Construction Skills People Ltd	0	0	64	0	**64**	0.7%	100%
Dudley College	0	30	1	0	**31**	0.3%	100%

Not all of the providers in Table 7 are in the Cumbria LEP area, providers which are outside of the remit are; the Manchester College, Preston College, NCG, The Construction Skills People LTD and Dudley College. Looking at providers inside the Cumbria LEP, the largest providers of construction training are Lakes College West Cumbria, Carlisle College and Furness College. All colleges in Table 7 that are based in Cumbria provide a high percentage of Ofqual registered qualifications (all above 75%), than the average for the area of 67%.

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

Table 8 looks at training provision across individual local authorities within Cumbria;

- Decreases are witnessed in all local authorities, most notable in Eden, Allerdale and South Lakeland.
- Only one increase can be found in Copeland.
- Allderale has the lowest level of qualifications at level 2 or above (57%),followed by Barrow-in-Furness (59%).
- It would appear Copeland is performing the best in Cumbria due to the rise in starters from 2012/13 to 2015/16, and the highest level of qualifications at level 2 or above (91%).This may be because training and schemes offered by the Sellafield Ltd site is based in Copeland.

Table 8: Unique Learner starts by area, construction subjects, all levels (Source: CITB/ESFA)

Local Authority	12-13	13-14	14-15	15-16	Change	% Net change	% Quals at Level 2+
Allerdale	630	535	479	389	-241	-38%	57%
Barrow-in-Furness	327	353	363	292	-35	-11%	59%
Carlisle	485	498	504	482	-3	-1%	77%
Copeland	176	296	277	227	51	29%	91%
Eden	134	69	78	73	-61	-46%	66%
South Lakeland	364	284	231	227	-137	-38%	77%
Grand Total	**2,009**	**1,936**	**1,809**	**1,595**	**-414**	**-21%**	**69%**

Overall, the Cumbria area has witnessed a decline in the number of construction learner starts of – 21% across the 2012/13 to 2015/16 period, a larger decrease than that of the North West which experienced at -14% decline over the same timeframe.

In the Cumbria area there has been a strong increase of 26% in the number of apprenticeships starts over the 2012/13 to 2015/16 period. This increase can be considered as positive for the Cumbria area, as construction employers tend to have a preference for practice or competence based skills. However, it is important to note college based courses are considered to be an important stepping stone or progression route for learners to acquire knowledge. Apprenticeships are analysed in more detail in the next section.

3.3. APPRENTICESHIPS

In the Cumbria LEP area it is apparent overall volumes of training are on the decline, whereas numbers of apprenticeship starts within the area are increasing, which could be positive for the area. When looking at Table 9 it is clear that the number of apprenticeship starts rose by 26% from 2012/13 to 2015/16, compared to the decrease (-21%) throughout the same time frame for the total number of construction learner starts within Cumbria. The increase in apprenticeships starts within the North West region from 2012/13 to 2015/16 was greater than in the Cumbria LEP with at 34% increase.

Within Cumbria, the local authorities who have had an input on the increase of apprenticeship starts over the 2012/13 to 2015/16 period are notably; Carlisle, Allerdale, Copeland and Barrow-in- Furness, which account for 120 starts. Eden has remained static in the number of apprenticeship starts, and the South Lakeland local authority has witnessed a decline of 10.

Table 9: Unique apprenticeship starts by area (Cumbria LEP), construction subjects (Source: CITB/ESFA)

Local Authority	2012-13	2013-14	2014-15	2015-16	Increase/ decrease	% Net Change
Carlisle	130	170	220	200	70	54%
Allerdale	90	110	120	120	30	33%
Copeland	40	50	70	50	10	25%
Barrow-in-Furness	80	100	80	90	10	13%
Eden	40	40	40	40	0	0%
South Lakeland	110	120	140	100	-10	-9%
Total	420	510	570	520	110	26%

Note: Number of starts and any increase/decrease have been rounded to the nearest 10.Rag rating indicates Local Authority performance against the average for all Local Authorities in the LEP (26%).

When considering apprenticeship starts by occupation between 2012/13 and 2015/16 the biggest increases in volumes (increases of 10 and higher) have been in bricklaying, electrical trades, floorers, painters and decorators, plasterers and dry liners, scaffolders and specialist building operatives nec*. The only occupation to experience a decrease over the same time was civil engineering operatives nec*. Between 2012/13 and 2015/2016, wood trades and interior fit out have the highest volume of apprenticeships starts.

Table 10: Unique apprenticeship starts by occupation (Cumbria LEP), construction subjects (Source: CITB/ESFA)

Occupation	2012-13	2013-14	2014-15	2015-16	Increase / decrease
Bricklayers	50	70	60	80	30
Electrical trades and installation	60	70	90	70	10
Floorers	<10	10	10	10	10
Painters and decorators	30	40	40	40	10
Plasterers and dry liners	20	20	20	30	10
Scaffolders	<10	<10	<10	10	10
Specialist building operatives nec*	<10	10	10	10	10
Building envelope specialists	0	20	30	<10	0
Construction Trades Supervisors	0	0	0	<10	0
Glaziers	10	10	10	10	0
Other construction professionals and technical staff	<10	<10	10	<10	0
Plant mechanics/fitters	20	10	20	20	0
Plant operatives	<10	<10	0	<10	0
Plumbing and HVAC Trades	60	60	70	60	0
Roofers	<10	10	10	<10	0
Wood trades and interior fit-out	120	130	130	120	0
Civil engineering operatives nec*	20	20	30	<10	-20

Note: Number of starts and any increase/decrease have been rounded to the nearest 10.

Table 11: Unique apprenticeship starts by provider in Cumbria LEP (Source: CITB/ESFA)

Local Authority	2012-13	2013-14	2014-15	2015-16	Total	% Share
CITB	166	177	192	201	736	36.6%
Carlisle College	68	103	103	112	386	19.2%
JTL	37	56	67	55	215	10.7%
Lakes College West Cumbria	31	40	67	43	181	9.0%
Kendal College	52	44	55	27	178	8.9%
Furness College	36	36	21	39	132	6.6%
Lancaster And Morecambe College	13	14	14	20	61	3.0%
Genii Engineering & Technology Training Limited	2	11	19	8	40	2.0%
North Lancs. Training Group Limited (The)	1	2	9	7	19	0.9%
The Vocational College Limited	4	9	2	1	16	0.8%
York College	3	5	6	2	16	0.8%
Total People Limited	2	3	7	1	13	0.6%

JTL Training apprenticeship training

In consultation, JTL reports that much of its work is in collaboration with the colleges of FE, through which knowledge delivery is sub-contracted. At the time of writing it was noted that JTL has 192 learners on apprenticeships: 173 on the four-year electrical apprenticeship and 19 on domestic plumbing.

JTL reports that recruitment has increased in recent years so more learners are expected to complete and enter the industry over the next few years.

JTL reports that apprenticeship completions have remained stable over the past four years, ensuring a steady supply of qualified and competent tradespersons entering the workforce in Cumbria.

JTL completions	2012-2013	2013-2014	2014-2015	2015-2016	Total
Electrical	32	28	32	27	**119**
Plumbing	2	2	7	10	**21**
Total	**32**	**30**	**39**	**37**	**140**

While colleges deliver a significant number of construction qualifications on full time pathways, these do not always lead to an individual gaining competence and enter the sector without further qualifications and development. In comparison and apprenticeship completion is a measure of competence and gives a good indication of tradespersons entering the sector.

JTL reports a 77.8% success rate for its North West region apprenticeships.

4. MOBILITY OF THE WORKFORCE

4.1. MAIN POINTS – MOBILITY

- Two fifths of North West construction workers have worked in the construction industry for at least ten years; two-thirds have worked in the industry for at least 10 years (66%).
- The majority of construction workers in the North West (91%) started their construction career there. Workers in the North West are among the most likely to have remained in the same region/nation in which they were based for their first construction job.
- Within the North West, the average (mean) distance from workers' current residence (taking into account temporary residences) to their current site was 20.5 miles (22 miles is the UK average).
- More than three quarters of all construction workers in the North West are confident that when they finish their current job they will get a job that allows them to travel from their permanent home to work on a daily basis (79%).
- Overall around two fifths of all construction workers have only worked on one type of project (43%)
- Around half of construction workers in the region aged under 60 say they definitely will be working in the industry in 5 years' time (52%) and a further third think it is very or quite likely (33%).

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

Table 12 shows the region or nation an employer currently operates in, compared with the region or nation they were previously working in. This is taken from the CITB survey into Workforce Mobility and Skills and gives an indication of the inter-regional movement of workers. In comparison with other English regions, the North West has a relatively large proportion of workers who spend some or all of their time in the region to work.

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

Table 12: 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 & 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
Unweighted bases	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%

4.2. WORK HISTORY

Two thirds of construction workers in the North West have worked in the industry for at least 10 years (66%), which is much higher that the UK average (56%), with more than a third working in the construction industry for over 20 years (40%). Within the North West the most likely reason for working in the region is because they grew up there/have always lived there (69%), with a further 6% mentioning other reasons to do with their family. The majority of construction workers in the region have remained in the North West for all or most of their career (91%), again higher than the UK average of 80%.

The stability of the construction workforce in the North West is emphasised by the finding in the majority of cases (89%) workers reported their last site was also in the North West.

In terms of the regions/nations in which workers' current employer operates in, the majority (93%) of workers in the North West reported that their employer operated within the region they were currently working in, whilst a very low percentage cited their employer operating in Yorkshire and Humber (4%) and London (4%).

4.3. WORKER ORIGINS

Workers were asked which region/nation they were living in just before they got their first job in construction in the UK. Overall nearly all construction workers in the North West (91%) were interviewed in the same region in which they were living in when they started their construction career. Workers currently based in the North West are among the most likely to have remained in the same region in which they were based when they started their construction careers, on par to Yorkshire and Humber (90%) and Wales (94%) in this respect.

Furthermore construction workers in the North West, are again most likely to have stayed in the region where they studied for their first qualification (90%), with the North East, Scotland and Northern Ireland having higher percentages. This finding emphasises the low levels of mobility within this region for leaning and training, as well as working.

4.4. 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. However, one in eight workers in the North West are travelling into the region for work from another region/nation in which their current residence is based (12%, including those travelling into the region from a neighbouring region/nation).

Workers in the North West were asked to indicate the furthest distance they have worked from their permanent or current home in the last 12 months. Figure 10 shows over a third have worked more that 21-50 miles from their permanent home (35%). Furthermore, just over half (51%) have worked more than 50 miles away from their permanent home, with 23% working 51-50 miles away and 28% working more than 100 miles away.

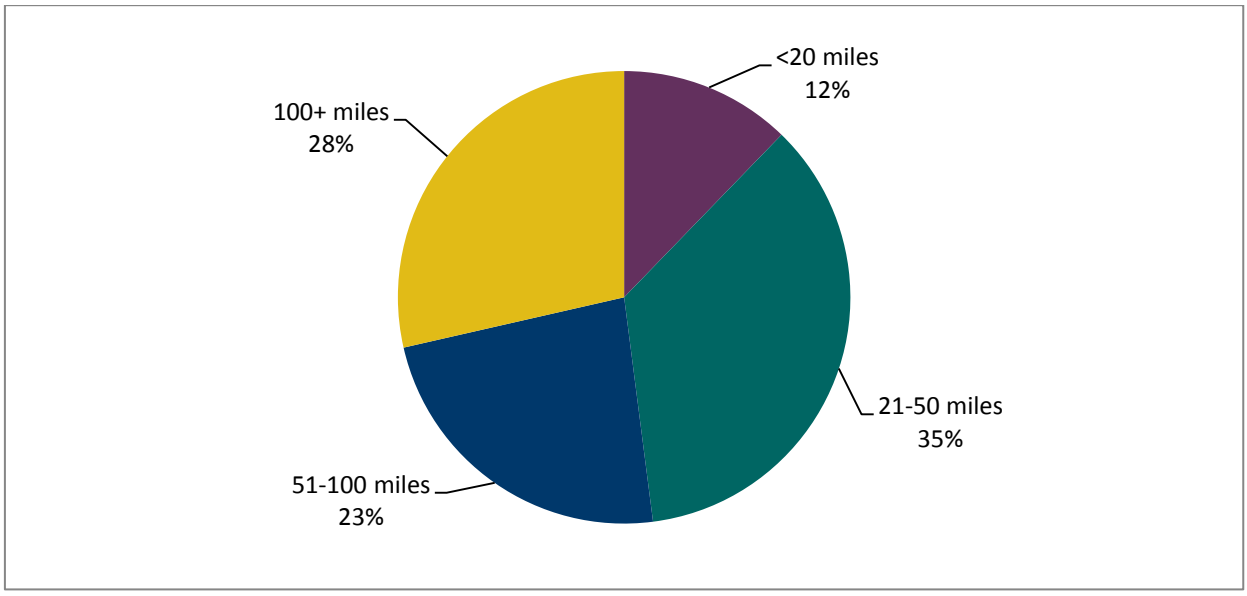


Figure 10: Furthest distance worked in the past 12 months (CITB, 2015)

The average (mean) distance from workers current residence (taking into account temporary residence) to their current site was 20.5 miles, for the North West, slightly lower that the UK average of 22 miles. This indicates workers in the North West display willingness to travel some distance to work, this is likely to be intermittent.

4.5. 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 continue working at their current site of work.

Around a fifth of all construction workers in the North West (21%) do not expect to work on that site for more than a month, including 5% that only expect to be there for about a week or less. A quarter expect to stay on that site for a year or longer (23%), which is a significant increase compared with 2012 (6%), suggesting more stable employment than in 2012. However in a further one quarter of cases (27%) workers did not know how much longer they could expect to be on site.

More than three quarters of all construction workers in the North 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 (79%).

4.6. SUB-SECTOR AND SECTOR MOBILITY

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

Compared with 2012 there has been a significant increase in the proportion of construction workers that have been working on new housing within the North West; up from 72% to 93%. For all other types of projects the proportion of construction workers that have worked on them has fallen since 2012.

In the North West, two fifths of all construction workers have only worked on one project type (43%), compared with a fifth in 2012 (21%), which again suggests a pattern of increased stability in the sector.

4.7. 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 North West, half the construction workers say they definitely will be (51%); a further third think it is very or quite likely (33%); 4% consider it unlikely; just 2% say they definitely won't be and a further 5% hope to be retired by then, while 5% 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): 52% believe they will definitely want to be working in the construction sector, 22% believe it is very likely they will want to be working in the construction sector and 11% believe it is quite likely they will want to be working in the construction sector. Only 7% think on any level that they will not want to be working in the construction sector in five years' time which is less than in 2012 (15%).

5. DEMAND AGAINST SUPPLY

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

It is also important to note that the demand calculations are based on data covering the Cumbria LEP area, whereas the supply figures are an extrapolation of data for the North West Region.

When looking forward, there will be less visibility on future projects for work that requires shorter planning times. Research carried out by CITB on behalf of 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.

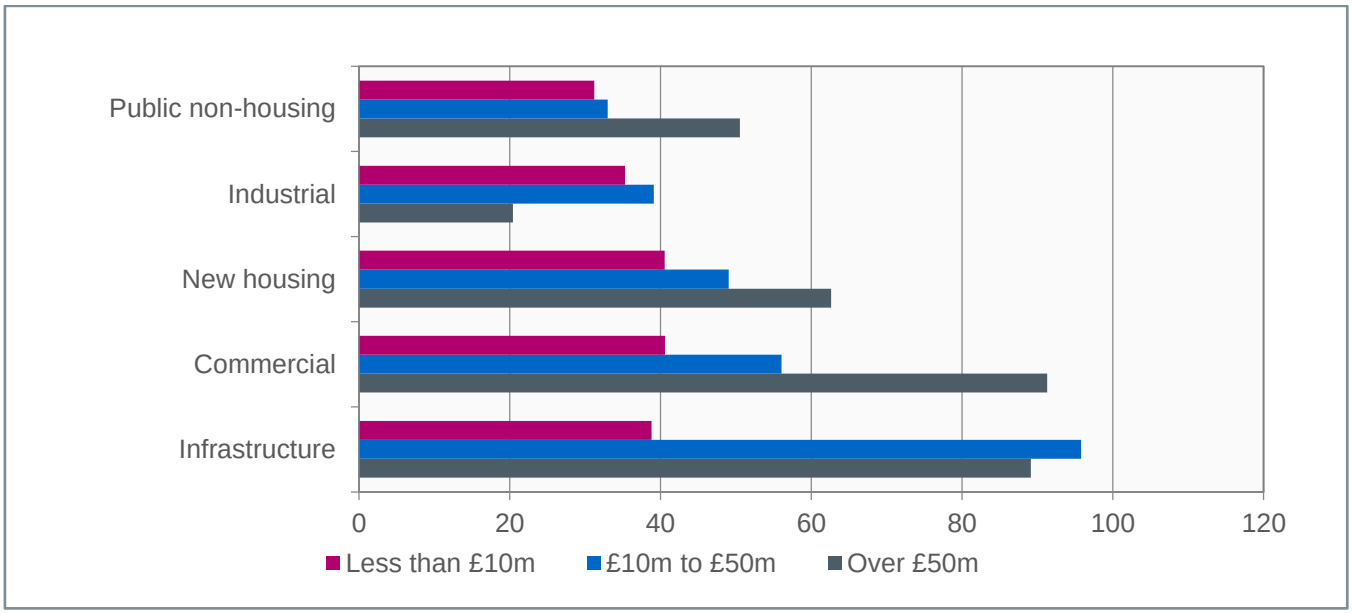


Figure 11: Average number of weeks from planning to 2ork on site, UK2010-2013 (source UKCG/Glenigan)

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 North West indicate that it accounts for 34% of yearly construction output[3].

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 general operatives, bankspersons, roofers and bricklayers are most likely to have only worked on one project type, while painters and decorators, carpenters and joiners, and site managers are more likely to have worked on a wide range of projects.

5.1. GAP ANALYSIS

With current construction employment in the Cumbria area estimated at just under 22,000, the identified demand forecast for 2018 from projects in Glengian accounts for 97% of current employment.

[3] CITB (2017) Construction Skills Network – North West

Table 13: Occupational breakdown of demand for Cumbria LEP area against current employment (Source CITB/WLC)

Occupation	Cumbria LEP current employment	Relative risk of shortfall
Civil engineering operatives nec*	90	6.08
Logistics	180	1.56
Plant mechanics/fitters	370	1.36
Painters and decorators	780	1.33
Glaziers	210	1.28
Specialist building operatives nec*	440	1.25
Plasterers	370	1.12
Building envelope specialists	620	1.07
Plant operatives	360	1.04
Scaffolders	240	0.96
Steel erectors/structural fabrication	190	0.95
Electrical trades and installation	1,770	0.94
Roofers	450	0.9
Floorers	270	0.88
Wood trades and interior fit-out	2,080	0.87
Labourers nec*	1,260	0.86
Bricklayers	620	0.81
Plumbing and HVAC Trades	1,360	0.8
Civil engineers	380	1.28
Construction Trades Supervisors	380	1.24
Senior, executive, and business process managers	1330	1
Construction Project Managers	400	0.99
Other construction process managers	1,690	0.91
Non-construction professional, technical, IT, and other office-based staff	3,090	0.89
Architects	280	0.88
Surveyors	520	0.78
Other construction professionals and technical staff	1,700	0.69
Non–construction operatives	300	1.19
Total	21,760	0.97

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

Table 13 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 13 those occupations highlighted:

- RED – [Top quartile] are at high risk of an immediate shortfall of workers and are worthy of urgent consideration for action to increase numbers of skilled workers.
- AMBER – [Second quartile] appear to be at risk of a shortfall and should be reviewed to determine where opportunities for further training and development exist
- BLUE – [Third quartile] do not appear to demonstrate an immediate risk of a shortfall but should be monitored and tested to compare with local qualitative opinions.
- GREEN – [Bottom quartile] appear to be at 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.

The gap analysis compares the number of workers calculated as being required to meet the peak construction demand (as described in the demand section of this report) with the number of workers estimated as being available in the Cumbria area (as described in the supply section of the report). This gives an indication as to the comparative risk of a shortfall between construction occupations. Those risks appear most likely to be in the following occupations:

Among skilled trades:

- Civil engineering operatives nec*
- Logistics
- Plant mechanics/fitters
- Painters and decorators
- Glaziers
- Specialist building operatives nec*
- Plasterers
- Building envelope specialists
- Plant operatives

Among professional and managerial roles:

- Civil engineers
- Construction trades supervisors
- Construction project managers

Furthermore, there appears to be relatively high demand for non-construction operatives.

While some of these occupation are construction specific, others have cross-sector implications.

5.1.1. Construction specific occupations

Demand for **Civil engineers, Architects** and **Surveyors** is a reflection of the wider UK shortage. Additionally as professionally qualified occupations, which tend to require degree qualifications, there will be at least three years of education and training before becoming qualified plus years more to gain experience. And if new 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 identified would require workers to be drawn into the Cumbria LEP area from the wider North West region and 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 that demand is met by provision based in other centres of population.

5.1.2. Cross-sector occupations

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

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 across the broader North 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 projects identified in the Glenigan Pipeline, there will also be other work carried out in the Cumbria area, that is estimated and included within the demand analysis, where additional workers will be required. This additional work includes projects valued at less than £250,000, as well as repair and maintenance work that does not require planning consent. As noted earlier, this is expected to result in a total workforce demand of just over 21,000.

This is quite a static level of future work that would account for around 97% of current employment, which indicates that future employment demand in most cases will be focused on replacing the current workforce levels and equipping them with appropriate skills, rather than an overall increase in demand.

CIVIL ENGINEERING OPERATIVES

The indication is from the data available there a notable risk of a shortfall for Civil Engineering Operatives. There are number of points to take into consideration in understanding the probable reasons for this. Approximately 20% of the infrastructure work in the North West region takes place in Cumbria. A large proportion of the civil engineering operatives will work in this area but may also be working in other sectors. [About half of civil engineering operatives work in construction.]

Most of this is driven by Sellafield. This means that one might expect more that 20% of the north is west's civil engineering operatives to be in Cumbria.

Civil engineering operatives in the North West are a smaller proportion of the overall employment than they are in the UK as a whole (0.5% compared to 0.8%). As it is necessary to use UK-wide labour coefficients this will appear as a small overestimate And this is further exacerbated by the relatively small numbers in these occupations in the region.

5.2. GAP ANALYSIS – LONG TERM

When looking at the longer term past 2018, 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 the longer term, the annual Average Recruitment Requirement (ARR) details within the North West CSN 2018-2022 report can be used if it is weighted to reflect the fact that Cumbria LEP accounts for about 8% of the construction workforce in the North West.

The short term demand and long term demand for skilled workers in an area can be quite different. A greater or lesser proportion of the short term demand will be met by workers from outside the area, who will stay for only as long as the demand exists. This is especially true for highly skilled or niche jobs where it wouldn't be viable to train people to meet a temporary spike in demand.

Where the demand for specific skills becomes a long term need, then reliance on a migratory workforce is not feasible, and this then becomes an annual recruitment requirement to be met by recruiting new workers to the industry. As would be expected, the relative requirement for occupations in the longer term is lower than the short term spike in demand created by the scale of some of the know projects discussed in this report.

It is also worth noting that some of the professional occupations, notably architects, give a slightly misleading picture in terms of supply and demand as they can be based almost anywhere in the world, and don't necessarily need to visit the construction site. Others, such as Surveyors, will travel widely to construction projects, so a high demand in one area need not be met by employees from that area over the long term.

There are several occupations where the overall long term demand creates a need for workers that is not reflected in the short term pipeline of known projects, e.g. plasterers, logistics operatives, and civil engineers nec. This allows slightly longer to plan for how to match supply with demand, and should also afford more time to meet more of this demand via local training.

The long term forecast for Cumbria identifies a range of occupations with a high occupational requirement, either as a proportion of employment or as a percentage of overall demand. These occupations are:

- Wood trades and interior fit-out (volume)
- Other construction process managers (volume)
- Non-construction professional, technical, IT, and other office-based staff (volume)
- Electrical trades and installation (volume)
- Labourers nec* (volume and % of employment)
- Plumbing and HVAC Trades (volume and % of employment)
- Bricklayers (volume and % of employment)

Several other occupations share a moderately high demand figure which would require monitoring – shown in Table 14 below:

Table 14: Occupational breakdown of ARR for the Cumbria LEP area (Source CITB)

Occupation	2016 Employment ACTUAL (Cumbria)	ARR Cumbria LEP 2018- 2022	ARR as % of 2016 Employment Forecast
Wood trades and interior fit-out	2,080	60	2.70%
Other construction process managers	1,690	50	2.94%
Non-construction professional, technical, IT, and other office-based staff	3,090	50	1.51%
Electrical trades and installation	1,770	50	2.54%
Labourers nec*	1,260	40	3.20%
Plumbing and HVAC Trades	1,360	40	3.14%
Bricklayers	620	30	5.22%
Senior, executive, and business process managers	1,330	20	1.25%
Painters and decorators	780	20	2.23%
Plasterers	370	20	5.55%
Other construction professionals and technical staff	1,700	20	1.07%
Construction Trades Supervisors	380	10	3.33%
Building envelope specialists	620	10	2.17%
Roofers	450	10	2.46%
Glaziers	210	10	3.39%
Plant operatives	360	10	3.51%
Plant mechanics/fitters	370	10	2.14%
Logistics	180	10	4.83%
Civil engineering operatives nec*	90	10	6.14%
Architects	280	10	3.67%
Floorers	270	<10	1.46%
Steel erectors/structural fabrication	190	<10	2.49%
Civil engineers	380	<10	1.04%
Construction Project Managers	400	-	-
Specialist building operatives nec*	440	-	-
Scaffolders	240	-	-
Non–construction operatives	300	-	-
Surveyors	520	-	-
	21,730	**490**	**2.24%**

5.3. GAP ANALYSIS – TRAINING NEEDS

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

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

Taking the first of these, both the demand analysis and CSN has identified civil engineering operatives nec*, glaziers, logistics, and construction trade supervisors in the greatest demand. Furthermore, demand analysis alone also recognises painting and decorating, plant mechanics/fitters, specialist building operatives nec* and civil engineers.

Logistics is not a construction specific occupation; therefore supply and demand are more influenced by demand from other sectors including: retail, warehousing and transport.

For architects, surveyors, and civil engineers demand would typically be met from graduate level recruitment, which would not be restricted to supply from within the Cumbria LEP.

Training for manual occupations, as measured by learner aims, has declined in the Cumbria LEP and the wider North West, meaning that there is likely to be a need, in the short-term at least, to rely on workers from outside the area to meet demand.

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

- Provision for training across the range of occupations
- A core of providers who deliver the majority of training
- Good provision of competence qualifications for certain occupations, most notably wood trades and interior fit-out, bricklayers, plant operatives, electrical trades and installation ,plumbing and HVAC Trades, painters & decorators, plant mechanics/fitters, civil engineering operatives nec* and roofers
- There are occupations, such as plasterers and dry liners, glaziers, specialist building operatives nec*, scaffolders ,floorers, building envelope specialists, construction trades supervisors and steel erectors/structural where the levels of competence based training appear to be lower than we would expect.

6. CONCLUSIONS AND RECOMMENDATIONS

The aim of the Cumbria LEP should be to achieve progress in addressing the long term and immediate challenges that the construction industry faces in the area. However, balancing the supply of construction workers and skills against future demand and ensuring that a well-qualified workforce is in place is likely to be assisted by the LEP encouraging collaboration between influential local stakeholders. Positive progress is likely to be the result of a succession of incremental and interlinked actions undertaken by organisations working towards common goals.

There are six recommendations.

6.1. ESTABLISH COLLABORATIVE PARTNERSHIPS

Conclusion

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

There is an opportunity to work together to: align better the training delivered with the needs of construction suppliers; to find new opportunities for drawing people into construction related careers and to deliver action that addresses the following recommendations..

Recommendation

a) The LEP should ensure that relevant stakeholders and influencers are engaged. Share available evidence with them with a view to building collaborative holistic action plans. Points of common interest should be established to encourage these stakeholders to input to, and take ownership of, the construction skills actions. This will maintain a sense of shared ownership of the challenges, priorities and solutions. Those stakeholders include: local construction businesses; major employers; local authorities; developers (especially those interested in housing); housing associations; those responsible for managing infrastructure (transport and utilities); construction training providers, local influencers and universities, Sellafield. 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 and employment strategic framework.

b) An early action may be to establish a construction working group comprising those with a remit to, or influential in, developing the built environment in the Cumbria LEP and neighbouring areas and task it with delivering outputs that achieve the Combined Authorities desired outcomes.

c) Longer term projections and the development of scenarios may enable an assessment of the potential impacts of major initiatives that may skew demand. [For example, the Cumbria LEP area appears to have an aspiration to increase the provision of new housing. However, the immediate pipeline suggests significant investment in other sub sectors, notably infrastructure.] An action for the LEP is to establish whether this trend is likely to continue and if so ensure that training provision addresses future demand for occupations of relevance, in particular to house builders.

d) An early action plan should assess if employers are facing specific skills shortages or skills wage inflation and what short-term interventions can be activated to address them. If issues are identified, consideration should be given to pursuing funding that can be utilised to support delivery of new training interventions.

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

f) Identify demographic data available and associate, as far as possible, actions with opportunities for those where the greatest potential social and economic impact can be gained by addressing occupational shortfalls or other priorities.

6.2. SKILLS STRATEGY: PIPELINE IDENTIFICATION, PLANNING AND EXPLOITATION

Review and develop, as appropriate, existing construction skills strategy. Establish a Cumbria LEP construction skills strategy and action plan.

Conclusions

It is clear that training provision does not always align with demand and does not appear to address the requirements of construction employers. (E.g. much training delivered at lower levels (level 2 in particular but with a good proportion at level 3). Although apprenticeship starts have increased much training is knowledge rather than competency based.

There is also a need to draw into construction related careers new people to take on new roles and to replace those likely to retire or move on in the future.

Recommendations

Develop the Cumbria LEP construction action plan to ensure that priority is given to trades and professions highlighted in this report as being:

1. In high demand AND at high risk of a shortfall.
2. In high demand
3. At high risk of a shortfall

An ambition of the developing construction skills strategy should be to guide the development of training pathways (see below) that match training and development with the needs of employers and the local economy. In the LEP area ten main providers deliver 97% of construction training, with 89% provided by just the biggest five so the greatest potential impact is through mediated collaboration, with and between the FE colleges and employers.

6.3. DEVELOP FUTURE SKILLS AND TRAINING PATHWAYS

Conclusions

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

A common complaint of construction employers is that new starters are not often enough site ready so pathways might include working with employers to enhance new starters' site readiness and behaviours. It appears that the majority of training provision is at low levels that are a necessary step in an individual's development but insufficiently often meet the needs of employers.

Some anecdotal evidence received by CITB suggests that:

i. *In many cases, construction FE courses are completed but do not lead to a career in the occupation for which they are trained. Although this cannot be quantified, this is supported by an apparent mismatch between training achievements and occupational supply. This suggests a need to work with colleges, employers and graduating students to help ensure that a greater proportion move into appropriate additional and vocational training and the career for which they have a qualification.*

ii. *There is also anecdotal evidence that colleges would like to support the provision of more apprenticeships but that employers are not always providing the commitment to place and develop apprentices, even though employers report a preference for competency training and a concern that too often knowledge based training does not produce site-ready workers.*

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

The CITB report – 'Faster, Smarter, More Efficient: Building Skills for Offsite Construction' – provides an assessment of how the adoption of modern methods of construction are changing the skills and training landscape for construction.

Recommendations

a) 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 students' needs.

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.

c) A starting point may be to consider those occupations where there appears to be high demand and a high relative gap. An option is to pilot a range of solutions to test validity and effectiveness and achieve the most expedient solutions.

d) Action to address future skills needs should be incremental and take into consideration the delivery of training that supports construction industry needs – i.e. establish site ready proficient workers. Emphasis should be on ensuring that training shifts towards or leads to the provision of more competency based training and high quality sustainable apprenticeships.

e) 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:

- 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.
- Address any anticipated specific local needs and ensure that training delivers what employers need as part of a complete package of training initiatives.

f) This may involve establishing training pathways through which students can complete initial knowledge based training before progressing into vocational training and apprenticeships and gaining site experience (while finishing their training).

g) Consideration should also be given to building an understanding of the economic and transport inhibitors that may prevent people accessing training and apprenticeships. Cumbria's geography may make it difficult for some young people to access training of they live in remote areas. Are there options for ensuring that training is provided where it is accessible; that those with limited financial support can receive support with the provision of appropriate clothing and equipment or that there is assistance with transport to remote worksites.

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

Conclusion

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

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

Recommendation

a) 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.

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

c) 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.

d) There may also be more mature audiences that can be encouraged to move into construction careers. This may include people with relevant transferable skills (e.g. from manufacturing or ex-military) or those where there is a significant social gain by ensuring they are in valuable employment, in particular the unemployed but also ex-offenders and so contact should be made with DWP and HM Prison Service. Targeted intervention should be included within the construction action plan.

e) There is an opportunity to maximise Go Construct and introduce other similar employer and local authority led initiatives to raise engagement between the local employers, educators and individuals from all backgrounds. (E.g. Careers and Enterprise Company.)

6.5. USE PROCUREMENT AS A LEVER TO ENABLE SKILLS DEVELOPMENT

Conclusion

Construction is delivered through construction suppliers, often funded by private developers as well as by local authorities and regulated by local planning authorities. These organisations are better placed to prepare for the future if they have certainty on which to base their plans. The proportions that are small and micro companies are high and these companies have limited ability to maintain the processes and people to search for local opportunities or that enable collaboration to support larger projects.

Recommendations

a) The potential exists through smarter approaches to procurement (including co-ordinated approaches to Section 106 agreements) to encourage those bidding for construction and infrastructure contracts or those funding developments to be mandated to include provision for recruitment, training, apprenticeships and outreach that is co-ordinated across the LEP area.

b) Provision could be required to hold contractors to account for commitments made. Such an approach could be co-ordinated through the Cumbria LEP and local authorities and be a requirement of planning applications and local authority and public sector contracts.

c) Early engagement with employers to discuss any such approach is recommended to find ways of ensuring that such requirements take into consideration the industry's needs and circumstances.

d) 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.

6.6. MAINTAINING & ENHANCING THE EVIDENCE BASE

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

The Cumbria LEP should utilise the license to use the CITB Labour Forecasting Tool (LFT) to update and test the evidence base that supports decision making as circumstances change and to demonstrate the construction pipeline opportunities. Access to the LFT is provided free of charge in the first year after publication of this report.

END

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Version	Date	Details of modifications
First draft	December 2017	Collated demand and supply data
Draft v6	January 2018	First draft to share with Cumbria LEP
V7	May 2018	Final Version incorporating consultation feedback

The findings and conclusions set forth in this report represent the best professional judgment of CITB and Whole Life Consultants based on information made available to it at a point in time. The authors have relied on, and not independently verified, data provided to it by independent sources and sources of information cited in the report. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. We accept no responsibility to third parties to whom this report, or any part, thereof is made available. Any such party relies upon the report at their own risk.

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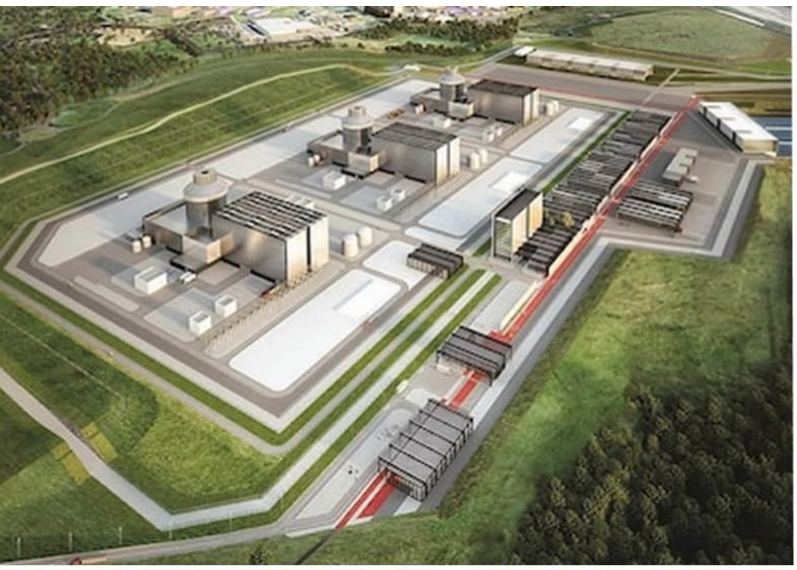
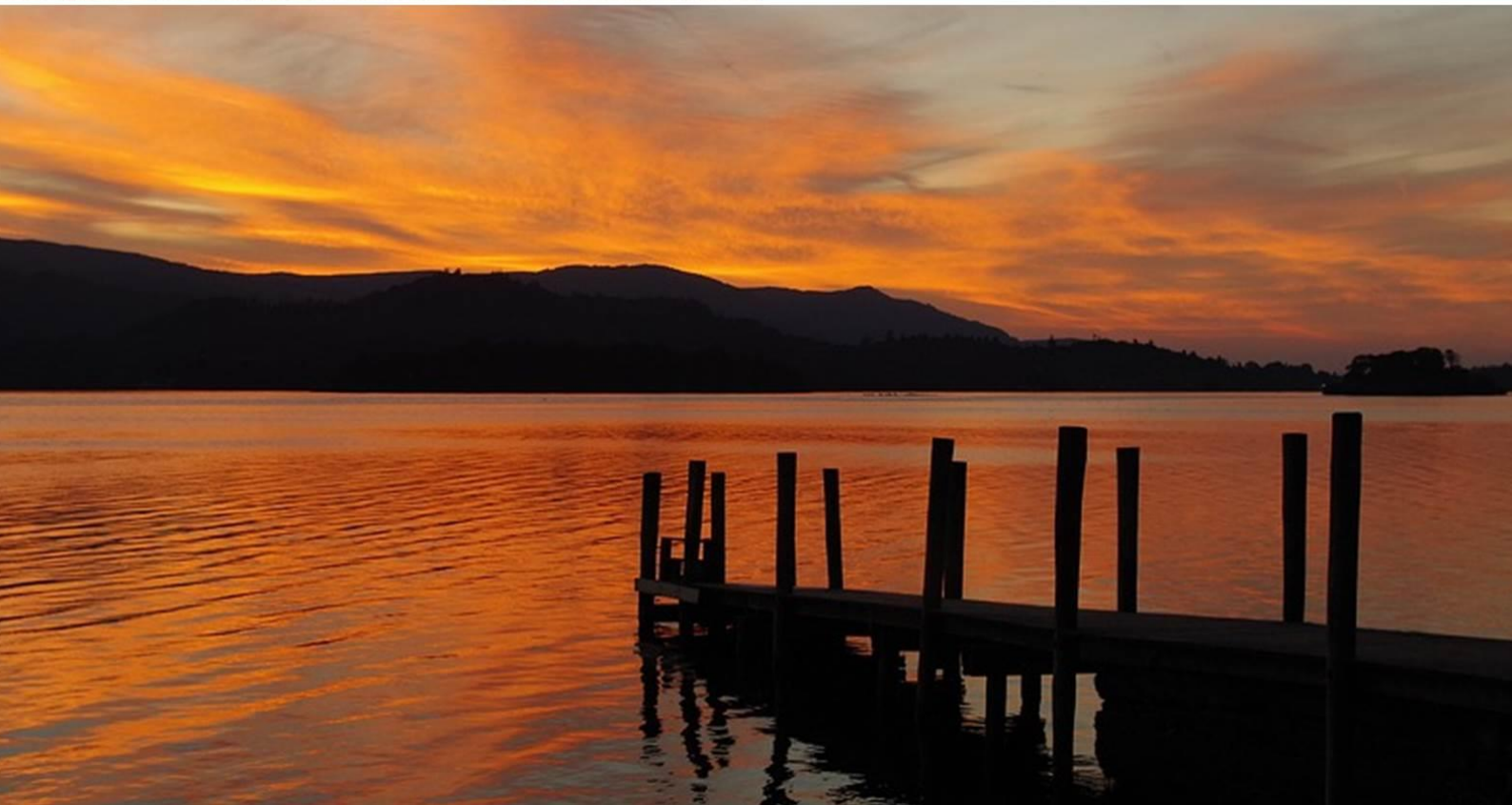
CITB Analysis

Construction skills gap analysis for the Cumbria Local Enterprise Partnership



Appendices to the Construction skills gap analysis for the Cumbria Local Enterprise Partnership

May 2018



APPENDIX CONTENTS

LIST OF TABLES

APPENDIX A. DEMAND ANALYSIS METHODOLOGY

Introduction

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

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

Calculating construction output

Data sources

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

Glenigan

The original purpose of the Glenigan database is to allow contractors to identify leads and to carry out construction market analysis. It is updated every quarter to provide details of planning applications from local authorities supplemented with additional project-specific data. Of particular relevance to this report, it provides a description of each project, its name, location, value, and in most cases, projected start and end dates. It contains many tens of thousands of projects. The Glenigan pipeline does not identify every single project in an 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 Appendix Table 1. 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.

Appendix Table 1: Proportion of total value related to construction

Infrastructure type	Sub-type	Construction value as a proportion of total value
Flooding	Flooding	90%
Transport	Bridges	100%
	Road tunnel	100%
	Roads	100%
	Air traffic control	100%
	Airports	100%
	Ports	90%
	Stations (underground/Network Rail)	80%
	Mixed rail	55%
	Electrification	35%
	Underground/DLR (not incl. stations)	35%
	Rail maintenance	10%
	Trams	55%
	Contactless ticketing	20%
Water	Water/wastewater treatment works	90%
Communications	Broadband/Digital infrastructure	20%
Energy	Photovoltaics	80%
	Generation (biomass)	50%
	Generation (energy from Waste)	50%
	Generation (nuclear)	50%
	Undefined electricity generation	40%
	Generation (fossil fuel)	25%
	Generation (renewables - offshore)	20%
	Generation (renewables - onshore)	10%
	Gas Transmission/distribution	30%
	Electricity transmission/distribution	25%
	Interconnectors	20%
	Nuclear decommissioning	60%
	Smart meters	0%
	Oil and gas	10%
Mining	Mining	80%
General infrastructure	General infrastructure	100%

For the significant projects, the project descriptions in the database are assigned the most appropriate project type to be used when the data is input to the LFT (each type is driven by a different underlying model). Cases where a project consists of more than one type are broken down into multiple forecasts which are assigned specific project types to more closely predict the labour demand. This takes account of the different types of work which may exist within a single project, e.g. mixed developments comprising residential, commercial and industrial building. For the non-significant projects, the default project type defined in the Glenigan pipeline is applied.

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

NICP data

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

The NICP data is examined to identify infrastructure projects or programmes of work taking place in the Local Authority 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 Appendix Table 1. 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 Local Authority 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.

CSN data

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

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

Aligning the Glenigan pipeline with CSN output

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

1. Considering the government region within which the Local Authority lies (in this case, the North 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:

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

   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) at the Cumbria LEP level, it is assumed that the proportion of the total output represented by housing R&M is the same at the Cumbria LEP level as

it is at the regional level in the CSN. The Glenigan new build factored housing output is therefore multiplied by the following ratio:

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

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

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

Dealing with the 'cliff edge'

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

Calculating total labour demand

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

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.

Appendix Table 2: Occupation definitions

Occupations included within construction occupational aggregates (Four-digit codes refer to Office for National Statistics Standard Occupational Classification Codes).	
1 Senior, executive, and business process managers	
(1115) Chief executives and senior officials	(1162) Managers and directors in storage and warehousing
(1131) Financial managers and directors	(1259) Managers and proprietors in other services nec
(1132) Marketing and sales directors	(1139) Functional managers and directors nec
(1133) Purchasing managers and directors	(2133) IT specialist managers
(1135) Human resource managers and directors	(2134) IT project and programme managers
(1251) Property, housing and estate managers	(3538) Financial accounts managers
(1136) Information technology and telecommunications directors	(3545) Sales accounts and business development managers
(2150) Research and 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	(3567) Health and safety officers
(1122) Production managers and directors in construction	(3550) Conservation and environmental associate professionals
(1161) Managers and directors in transport and distribution	
(1255) Waste disposal and environmental services managers	
4 Non-construction professional, technical, IT, and other office–based staff (excl. managers)	
(3131) IT operations technicians	(3541) Buyers and procurement officers
(3132) IT user support technicians	(3562) Human resources and industrial relations officers
(3534) Finance and investment analysts and advisers	(4121) Credit controllers
(3535) Taxation experts	(4214) Company secretaries
(3537) Financial and accounting technicians	(7129) Sales related occupations nec
(3563) Vocational and industrial trainers and instructors	(7211) Call and contact centre occupations
(3539) Business and related associate professionals nec	(7219) Customer service occupations nec
(3520) Legal associate professionals	(9219) Elementary administration occupations nec
(3565) Inspectors of standards and regulations	(2111) Chemical scientists
(2136) Programmers and software development professionals	(2112) Biological scientists and biochemists
(2139) Information technology and telecommunications professionals nec	(2113) Physical scientists
(3544) Estate agents and auctioneers	(3111) Laboratory technicians
(2413) Solicitors	(3421) Graphic designers
(2419) Legal professionals nec	(2463) Environmental health professionals
(2421) Chartered and certified accountants	(2135) IT business analysts, architects and systems designers
(2424) Business and financial project management professionals	(2141) Conservation professionals
(2423) Management consultants and business analysts	(2142) Environment professionals
(4216) Receptionists	(2425) Actuaries, economists and statisticians
(4217) Typists and related keyboard occupations	(2426) Business and related research professionals
(3542) Business sales executives	(4124) Finance officers
(4122) Book-keepers, payroll managers and wages clerks	(4129) Financial administrative occupations nec
(4131) Records clerks and assistants	(4138) Human resources administrative occupations
(4133) Stock control clerks and assistants	(4151) Sales administrators
(7213) Telephonists	(4159) Other administrative occupations nec
(7214) Communication operators	(4162) Office supervisors
(4215) Personal assistants and other secretaries	(7130) Sales supervisors
(7111) Sales and retail assistants	(7220) Customer service managers and supervisors
(7113) Telephone salespersons	(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, stagers 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	(8123) Quarry workers and related operatives
(8143) Rail construction and maintenance operatives	
24 Non–construction operatives	
(8117) Metal making and treating process operatives	(9249) Elementary security occupations nec
(8119) Process operatives nec	(9233) Cleaners and domestics
(8125) Metal working machine operatives	(9232) Street cleaners
(8126) Water and sewerage plant operatives	(5113) Gardeners and landscape gardeners
(8132) Assemblers (vehicles and metal goods)	(6232) Caretakers
(8133) Routine inspectors and testers	(9241) Security guards and related occupations
(8139) Assemblers and routine operatives nec	(3319) Protective service associate professionals nec
25 Civil engineers	
(2121) Civil engineers	
26 Other construction professionals and technical staff	
(2122) Mechanical engineers	(3119) Science, engineering and production technicians nec
(2123) Electrical engineers	(3121) Architectural and town planning technicians
(2126) Design and development engineers	(3122) Draughtspersons
(2127) Production and process engineers	(3115) Quality assurance technicians
(2461) Quality control and planning engineers	(2432) Town planning officers
(2129) Engineering professionals nec	(2124) Electronics engineers
(3112) Electrical and electronics technicians	(2435) Chartered architectural technologists
(3113) Engineering technicians	(3531) Estimators, valuers and assessors
(3114) Building and civil engineering technicians	(3116) Planning, process and production technicians
27 Architects	
(2431) Architects	
28 Surveyors	
(2433) Quantity surveyors	
(2434) Chartered surveyors	

APPENDIX C. GLENIGAN PROJECTS REMOVED FROM THE CUMBRIA LEP AREA

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

Appendix Table 3: Removed Glenigan projects from Cumbria LEP

	Project description	Local Authority	Value (£m)	Start Date	End Date	Reason for omission
1	Flood Defence Work	Carlisle	0.0	13/10/2017	13/07/2018	Missing Values
2	Flood Defence Works	Eden	0.0	01/11/2017	01/08/2018	Missing Values
3	Flood Defence (Alterations)	Allerdale	0.0	30/10/2017	30/07/2018	Missing Values
4	Animal Building	Eden	0.0	09/10/2017	09/04/2018	Missing Values
5	Industrial Unit (Extension)	Allerdale	0.3			Missing dates
6	5 Industrial Units	Eden	0.3			Missing dates
7	Workshops/Office	Allerdale	0.3			Missing dates
8	8 Sheltered Housing Units & 1 Nursing Home	Copeland	0.4			Missing dates
9	Convenience Store/Office/Restaurant (Conversion/Extension)	South Lakeland	0.5			Missing dates
10	School (Extension)	Allerdale	0.5			Missing dates
11	Flat & Golf Club House	South Lakeland	0.5			Missing dates
12	Demolition	Copeland	0.5			Missing dates
13	10 Flats & 1 House	Allerdale	0.6			Missing dates
14	Storage Building	Eden	0.6			Missing dates
15	Hotel (Extension)	Carlisle	0.6			Missing dates
16	13 Flats	Allerdale	0.7			Missing dates
17	Agricultural Showroom/Workshop	Carlisle	0.7			Missing dates
18	Waste Transfer Stations (Extension)	Barrow-In-Furness	0.7			Missing dates
19	Care Home (Extension/Alterations)	Carlisle	0.7			Missing dates
20	Care Home (Extension)	Allerdale	0.9			Missing dates
21	12 Houses	Allerdale	0.9			Missing dates
22	Industrial Unit (Refurbishment)	Barrow-In-Furness	1.0			Missing dates
23	14 Houses	Eden	1.1			Missing dates
24	Village Hall	South Lakeland	1.1			Missing dates
25	11 Bungalows	Eden	1.2			Missing dates
26	24 Elderly Extra Care Flats	Eden	1.2			Missing dates
27	Offices & Industrial Workshop	Eden	1.4			Missing dates
28	Supermarket	South Lakeland	1.4			Missing dates
29	Church Community Hall/Cafe	Carlisle	1.8			Missing dates
30	3 Supermarket & Retail/Office Buildings	South Lakeland	2.2			Missing dates
31	Anaerobic Digester Plant	Carlisle	2.4			Missing dates
32	Submarine Building (Extension)	Barrow-In-Furness	2.4			Missing dates
33	Retail Unit & Multi Storey Car Park	Carlisle	2.9			Missing dates
34	94 Houses	Allerdale	4.3			Missing dates
35	Highly Active Liquid Effluent Facility	Copeland	250.0			Missing dates
36	Deep Water Port Facility	Barrow-In-Furness	100.0			Missing dates
37	Offshore Gas Facility	Barrow-in-Furness	600.0			Missing dates
38	355 Houses	South Lakeland	26.6			Missing dates
39	22 Holiday Flats/5 Holiday	Eden	1.4			Missing dates

	Project description	Local Authority	Value (£m)	Start Date	End Date	Reason for omission
	Lodges/1 Managers Flat (New/Conversion)					
40	Demolition	Carlisle	0.7			Missing dates
41	16 Residential Units	Eden	1.2			Missing dates
42	Construction Consultant Framework	Carlisle	15.0	02/10/2017	04/10/2021	Consultancies
43	Design Services Alliance	Copeland	1500.0	17/04/2012	17/07/2020	Consultancies

APPENDIX D. SIGNIFICANT GLENIGAN PROJECTS IN THE CUMBRIA LEP AREA

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

Appendix Table 4: Significant Glenigan projects in Cumbria LEP

	Description	Local Authority	Construction Value £m	Start Date	End Date	Project Type
1	Submarine Yard Redevelopment	Barrow-in-Furness	300.0	01/04/2015	01/04/2023	Private Industrial
2	Extra Care Housing & Supported Living Accommodation Framework	Carlisle	185.0	26/04/2017	23/04/2025	New housing
3	Central Yard Complex	Barrow-In-Furness	130.0	09/10/2015	15/12/2017	Private Industrial
4	Capital Schemes Framework	Carlisle	84.4	17/12/2015	19/12/2019	Public Non-housing, Infrastructure
5	Water Main	Allerdale	57.5	08/05/2017	16/05/2022	Infrastructure
6	713 Residential Units	Eden	47.8	06/07/2015	05/03/2018	New housing
7	505 Residential & 1 Village Hall/1 Retail Unit	Eden	35.0	07/12/2015	15/12/2017	New housing, Public Non-housing, Private Commercial
8	Sewage Water Treatment	South Lakeland	27.1	07/11/2016	06/03/2020	Infrastructure
9	Production Facility	Barrow-In-Furness	26.0	05/12/2016	05/06/2018	Private Industrial
10	320 Residential Units	Allerdale	24.0	04/07/2016	07/09/2018	New housing
11	277 Houses	Carlisle	20.8	11/10/2017	11/11/2018	New housing
12	230 Houses	Eden	17.3	16/04/2018	13/05/2019	New housing
13	Thirlmere pipeline works (Aqueduct)	Allerdale	14.3	05/06/2017	11/01/2019	Infrastructure
14	166 Houses	Carlisle	12.5	16/04/2018	16/05/2019	New housing
15	172 Houses & Bungalows	Carlisle	12.1	25/08/2018	22/09/2019	New housing
16	School	Copeland	11.2	08/05/2017	10/06/2019	Public Non-housing
17	Hotel & Restaurant	Barrow-In-Furness	10.0	08/01/2018	07/01/2019	Private Commercial
18	Supermarket & Petrol Filling Station	South Lakeland	8.8	23/10/2017	19/11/2018	Private Commercial, Infrastructure
19	110 Residential Units	South Lakeland	8.3	16/04/2018	16/05/2019	New housing
20	110 Residential Units	Copeland	8.3	19/03/2018	16/09/2019	New housing
21	Training Facility	Barrow-In-Furness	7.9	27/02/2017	12/03/2018	Public Non-housing
22	Council Reactive & Planned Preventative Maintenance	Carlisle	7.6	07/10/2013	07/10/2017	Public Non-housing
23	100 Houses	Carlisle	7.5	02/10/2017	02/11/2018	New housing
24	96 Houses & 2 Bungalows	Eden	7.4	12/03/2018	08/04/2019	New housing
25	96 Residential Units	Copeland	7.2	27/11/2017	24/12/2018	New housing
26	91 Residential Units	Allerdale	6.8	11/05/2018	08/06/2019	New housing
27	69 Houses & 10 Bungalows	Allerdale	5.8	03/07/2018	03/07/2019	New housing
28	Aerodrome (Extension/Alterations)	Barrow-In-Furness	5.6	08/11/2017	08/07/2018	Infrastructure
29	34 Industrial/Office/Storage & Distribution Units	Carlisle	5.5	18/12/2017	21/01/2019	Private Industrial
30	Motorway Maintenance	Carlisle	5.0	19/06/2017	18/10/2032	Infrastructure
31	Motor Vehicle Dealership Facility.	South Lakeland	4.8	14/07/2018	09/02/2019	Private Commercial
32	Car Dealership/Workshop	Carlisle	4.7	15/12/2017	15/03/2018	Private Commercial,

	Description	Local Authority	Construction Value £m	Start Date	End Date	Project Type
						Private Industrial
33	2 Egg Laying Units	Eden	4.5	01/11/2017	01/05/2018	Private Industrial
34	Animal Building	Carlisle	4.4	25/10/2017	25/04/2018	Private Industrial
35	Deployment/Training Centre & Hostel Accommodation	Eden	4.1	11/08/2018	11/08/2019	Public Non-housing, Private Commercial
36	Hospital (Extension)	Barrow-In-Furness	4.1	26/09/2016	27/10/2017	Public Non-housing
37	Runway (Refurbishment)	Carlisle	3.7	05/03/2018	04/03/2019	Infrastructure
38	Hotel	South Lakeland	3.6	03/04/2017	18/12/2017	Private Commercial
39	Storage (Extension)	Carlisle	3.4	26/04/2016	12/12/2017	Private Industrial
40	65 Residential Units	South Lakeland	3.3	01/03/2018	01/09/2018	New housing
41	Special Educational School	South Lakeland	3.0	15/02/2018	15/08/2019	Public Non-housing
42	Supermarket (New/Alterations)	Allerdale	2.8	15/07/2018	11/02/2019	Private Commercial
43	Primary Care Centre (Extension/Alterations)	Barrow-In-Furness	2.7	05/02/2018	06/05/2019	Public Non-housing
44	Care Home	Carlisle	2.1	02/10/2017	01/10/2018	Public Non-housing
45	Care Home	Copeland	1.9	13/11/2017	19/11/2018	Public Non-housing
46	College (Extension)	Allerdale	1.8	24/10/2016	09/10/2017	Public Non-housing
47	Supermarket (Conversion)	Barrow-In-Furness	1.5	30/10/2017	22/01/2018	Private Commercial
48	School All Weather Sports Pitch (Extension)	South Lakeland	1.4	24/04/2017	15/01/2018	Public Non-housing
49	Industrial Building (Extension)	Carlisle	1.4	28/08/2017	27/10/2017	Private Industrial
50	Hotel (Extension/Alterations)	Carlisle	0.5	14/07/2017	14/01/2018	Private Commercial
51	Garden Centre Sales Building (Extension/Alterations)	South Lakeland	0.5	17/07/2017	09/03/2018	Private Industrial

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