



# Nuclear New Build Employment Scenarios

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Cover photo: Computer generated image of what the Hinkley Point C project should look like when it is finished. Sourced with thanks from EDF Energy.





# Executive summary

UK energy demand is increasing and targets for CO<sub>2</sub> emissions reductions have to be met at a time when the UK's established nuclear power stations are coming towards the end of their operational life. If nuclear power is to continue to be part of the overall energy generation mix in future years, new nuclear power stations will have to be built.

As part of its plans, the UK Government has identified eight sites as being suitable for building the next generation of nuclear reactors and this presents the UK's construction industry with a significant opportunity, providing it has a suitably skilled workforce to carry out the work. This report was commissioned as a result of the need to gain a better understanding of the construction workforce requirements for the proposed nuclear new build (NNB) programme and its possible implications for future training requirements.

By combining the Construction Skills Network (CSN) Employment Model along with data made available from EDF Energy, and setting this against forecasts for the overall NNB programme, estimates were made of the impact that the NNB programme could have, both in terms of construction output and construction employment at both a UK and regional/national level. It is recognised that a major part of construction work on the NNB programme will require similar skills sets to those of the workforce involved in the construction of major infrastructure projects, particularly civil engineering skills. It is also recognised that there will be a requirement for substantial numbers of workers with mechanical and electrical engineering skills, which are not part of the ConstructionSkills' workforce as they are covered by SummitSkills, the Engineering Construction Industry Training Board (ECITB) and Cogent.

At a UK level the NNB programme will be a key contributor to output growth in the infrastructure sector. However, even at peak, which is dependent upon the phasing of multiple build schedules, the programme is forecast to contribute around £1.5bn per year in construction output. This represents not much more than 1% of the UK's total construction output in any year, which in turn means only a small impact on UK construction employment levels.

However, as regional construction markets are obviously smaller in terms of total output, there will be more of an impact on those areas which have designated sites. Depending upon the number of sites and reactors being built, the effect on forecasts for infrastructure output are significant and, in terms of employment, the NNB programme would generate an additional 1.5% to 2.6% of construction employment in each region at peak build. With the exception of the North West, total construction employment in 2020 for each region with designated nuclear sites is projected to be below peak construction employment during the previous economic cycle (2008/2009). There will therefore be opportunities for re-training and/or up-skilling of current construction workers to meet the needs of NNB contractors, which could also help improve the UK's wider infrastructure skills base.

When looking closely at some of the key construction occupations likely to be employed during the build process, it is possible to highlight some potential regional pinch points where demand would be greater than current supply. Building envelope specialist workers, and those who will be involved in building the very large reinforced concrete structures, such as steel fixers and concretors, constitute one area that would require careful consideration both in terms of potential numbers employed in the programme and skills levels that will be required.



# 1. Introduction

## 1.1 The project

UK energy demand is increasing and targets for CO<sub>2</sub> emissions reductions have to be met at a time when the UK's established nuclear power stations are coming towards the end of their operational life. If nuclear power is to continue to be part of the overall energy generation mix in future years, new nuclear power stations will have to be built.

As part of its plans, the UK Government has identified eight sites as being suitable for building the next generation of nuclear reactors and this presents the UK's construction industry with a significant opportunity, providing it has a suitably skilled workforce to carry out the work. This report was commissioned as a result of the need to gain a better understanding of the construction workforce requirements for the proposed nuclear new build (NNB) programme and its possible implications for future training requirements.

Broadly, Experian has utilised the existing Construction Skills Network (CSN) Employment Model, which it developed and maintains on behalf of ConstructionSkills to provide an insight into the construction employment needs of the NNB programme. The model was specifically designed to provide employment forecasts and annual recruitment requirements for the construction industry as defined by ConstructionSkills' Sector Skills Council 'footprint' (Standard Industry Codes – SIC – 41–43, 71.2, 74.9).

Thus it should be borne in mind that the outputs of this research were constrained to the CSN 'footprint' and do not cover the totality of employment on the NNB programme. It is recognised that there will be a requirement for substantial numbers of workers with mechanical and electrical engineering skills, which are not part of the ConstructionSkills' workforce as they are covered by SummitSkills, the Engineering Construction Industry Training Board (ECITB) and Cogent.

## 1.2 The approach

Experian were provided with workforce profiles and forecasts by EDF Energy based on its own research into the labour requirements likely on Hinkley Point C. These were mapped to the 26 occupational aggregates used in the CSN model (see Table 1), with input and final agreement from EDF Energy. This constrained the forecasts for NNB employment to the aggregated Standard Occupational Codes (SOC) definitions as used in the CSN model. (The Labour Force Survey data that populates the CSN model is based on SOCs, which is the official nomenclature for occupations, although this does not always accord with the definitions used by industry.)



**Table 1: EDF Energy occupations mapped against CSN occupational aggregates**

Trade	Group	CSN Occupational Aggregate
Lifts	Building Services/Mechanical	Other construction professionals and technical staff
Mechanical	Building Services/Mechanical	Other construction professionals and technical staff
Plumbing inc. Sanitary Ware	Building Services/Mechanical	Plumbing and HVAC trades
Rail Workers	Civil Engineering Op.	Civil engineering operatives (nec*) - see SOC 8143
Utilities - Comms	Civil Engineering Op.	Electrical trades and installation
Utilities - Electrics	Civil Engineering Op.	Electrical trades and installation
Utilities - Gas	Civil Engineering Op.	Plumbing and HVAC trades
Utilities - Water & Drainage	Civil Engineering Op.	Plumbing and HVAC trades
Groundworkers (Civils) inc. Piling	Civil Engineering Op.	Civil engineering operatives (nec*)
Tunnellers	Civil Engineering Op.	Civil engineering operatives (nec*)
Asphalters/Road Layers	Civil Engineering Op.	Civil engineering operatives (nec*)
Landscapers/Pitch/Track Contractors	Civil Engineering Op.	Civil engineering operatives (nec*)
Electricians (inc. FAs & Comms)	Electrical Trades	Electrical trades and installation
Brick/Block Layers	External Envelope	Bricklayers
External Walls	External Envelope	Building envelope specialists
Scaffolders	External Envelope	Scaffolders
Glaziers	External Envelope	Glaziers
Roofers	External Envelope	Roofers
Screeders	Finishing Trades	Floorers
Carpet Layers	Finishing Trades	Non-construction operatives
Decorators	Finishing Trades	Painters and decorators
Fittings, Seats Signage	Finishing Trades	Wood trades and interior fit-out
Tilers (Floor & Wall)	Finishing Trades	Floorers
General Operatives	Labourers	Labourers (nec*)
Prelims - Site Admin	Non-construction Op.	Non-construction professional, technical, IT, and other office-based staff (excl. managers)
Prelims - Caterers	Non-construction Op.	Non-construction operatives
Prelims - Cleaners	Non-construction Op.	Non-construction operatives
Prelims - Security	Non-construction Op.	Non-construction operatives
Prelims - Transport	Non-construction Op.	Logistics
Logistics - Waste Operatives	Non-construction Op.	Non-construction operatives
Logistics - Technicians	Non-construction Op.	Non-construction operatives
Logistics - Facilities Management	Non-construction Op.	Non-construction operatives
Security Specialist	Non-construction Op.	Non-construction operatives
Plant Operatives	Plant Op.	Plant operatives
Demolition	Specialist Building Op.	Specialist building operatives (nec*)
Metalworkers (Arch & General)	Specialist Building Op.	Specialist building operatives (nec*)
Ceiling Fixers	Specialist Building Op.	Specialist building operatives (nec*)
Maintenance Operatives	Specialist Building Op.	Specialist building operatives (nec*)
Concretors (Frame)	Structural Trades	Building envelope specialists - classed against SOC 5319 (nec*)
Rebar Fixers (Frame)	Structural Trades	Building envelope specialists - classed against SOC 5319 (nec*)
Precast Erectors	Structural Trades	Building envelope specialists - classed against SOC 9120
Steel Erectors (inc. Decking)	Structural Trades	Steel erectors/structural
Carpenters (Frame)	Wood Trades and Interior Fit-out	Wood trades and interior fit-out
Joiners	Wood Trades and Interior Fit-out	Wood trades and interior fit-out
Dry Liners	Wood Trades and Interior Fit-out	Plasterers and dry liners
Plasterers	Wood Trades and Interior Fit-out	Plasterers and dry liners
Raised Floor Fixers	Wood Trades and Interior Fit-out	Floorers

nec\* = not elsewhere classified.

Since a number of schemes are due to reach onsite after 2016, the forecast period was extended to 2020 to include the start dates of all eight proposed nuclear sites which were given the green light by the Government in October 2010. Using the most current information available from

government and industry, the next step involved putting together the timing, phasing and costs of the projects (with input from EDF Energy). It was assumed that 50% of total costs for the NNB programme would be allocated to the SICs related to construction.

**Table 2: Agreed costs and timelines of the eight NNB projects**

Project	Region	Estimated Construction Cost (£m)	Estimated start date	Estimated completion date
Hinkley Point, Somerset	SW	4,500	Q3 2011	Q4 2020
Sizewell, Suffolk	ET	4,500	Q2 2015	Q3 2026
Wylfa Peninsula, Anglesey	WA	3,750	Q1 2015	Q2 2024
Oldbury, Gloucestershire	SW	3,750	Q1 2020	Q2 2029
Sellafield, Cumbria	NW	3,750	Q3 2016	Q4 2025
Bradwell, Essex	ET	2,000	Q1 2017	Q1 2022
Hartlepool, Cleveland	NE	2,000	Q2 2017	Q2 2022
Heysham, Lancashire	NW	2,000	Q2 2017	Q2 2022

An initial obstacle encountered was that the workforce profiles provided by EDF Energy for the Hinkley Point C scheme ran from July 2012 to June 2019 – a different timeline from the one agreed during the course of this research project. This required undertaking a modelling exercise to ‘stretch’ the workforce profile over a period of 38 quarters (Q3 2011 to Q4 2020), while keeping total full time equivalent (FTE) employment the same across each of the occupations over the totality of the forecast period. Furthermore, since the employment projections produced by the CSN model are made available on an annual basis, the workforce forecasts provided by EDF Energy were annualised to bring the format of the two datasets into line with each other. The outputs of this exercise were used as a basis to model the employment projections across the other seven NNB schemes, with the caveat that it is doubtful that all the schemes will utilise the same nuclear technology.

The first round 2011 CSN forecasts included the assumption that three nuclear projects (Hinkley Point C, Sizewell C and Wylfa) would go ahead over the 2012–2016 period. The first step involved creating a Base Case without any nuclear employment – essentially removing the three schemes from the equation. The model was then rerun, overlaying the coefficients implied from the EDF Energy workforce profile to provide a view of the probable employment profile created by the NNB programme. This is likely to be more robust than if the generic infrastructure coefficients were applied.



## 2. Projected output trends

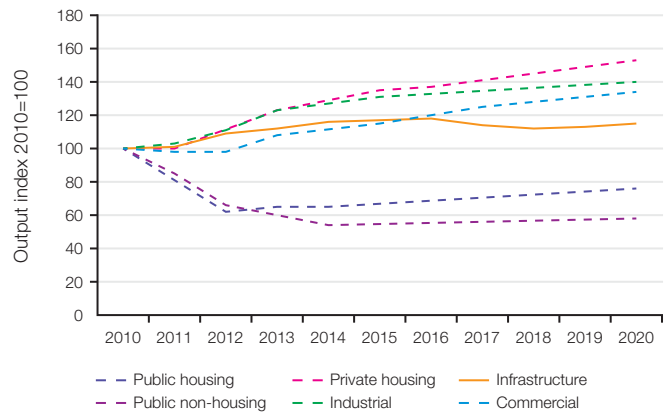
### 2.1 The UK projections

In order to understand the position of the infrastructure sector relative to the other new work sectors in both the UK and the regions affected by New Nuclear Build (NNB), we have turned our output projections into a set of indices based on 2010, the last year for which we have actual data.

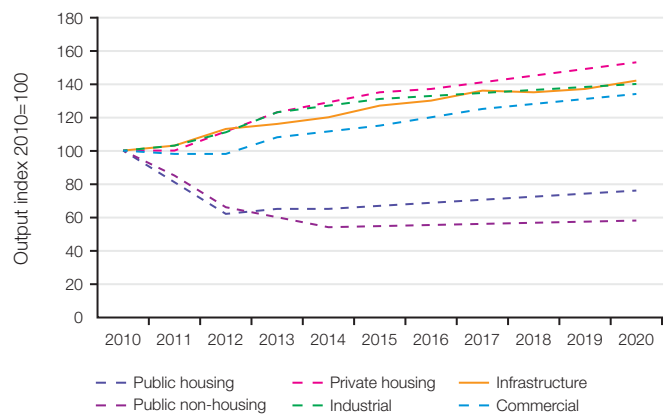
In our Base Case, the infrastructure sector only sees moderate growth across the UK as a whole, with output in 2020 15% higher than in 2010. The private housing, industrial and commercial sectors are projected to do much better, with 53%, 40% and 34% growth respectively. This may initially seem counter-intuitive, given that even without NNB projects there are some very large infrastructure schemes yet to start on site or to reach their peaks of activity. These include Crossrail, the London Gateway and Teesside ports schemes, work on large station refurbishments such as Reading and Birmingham New Street, and the Forth Replacement Crossing, to name but a few. However, infrastructure activity has been running at a high level and the sector expanded by nearly 57% in real terms between 2007 and 2010, while the private housing, industrial and commercial sectors went in the opposite direction, hit badly by the recession, and thus are starting from a relatively low base.

Not surprisingly, given public expenditure cuts, especially in Capital Departmental Expenditure Limits, the prognosis for the public sectors is poor, with significant drops in output in the early part of the period.

UK Base Case scenario



UK NNB projections



Adding in prospective output generated by the NNB programme, as set out in Table 2 on page 4, produces a somewhat different profile. In the NNB scenario, infrastructure joins the high growth sectors, expanding by 42% between 2010 and 2020, second only to private housing. Due to the phased nature of NNB projects as the timetable currently stands, activity rises in a fairly steady progression over the period, rather than in sudden jumps, at least at the UK level.

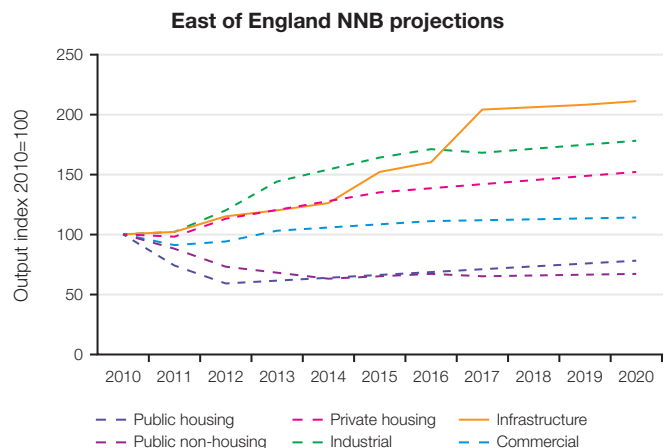
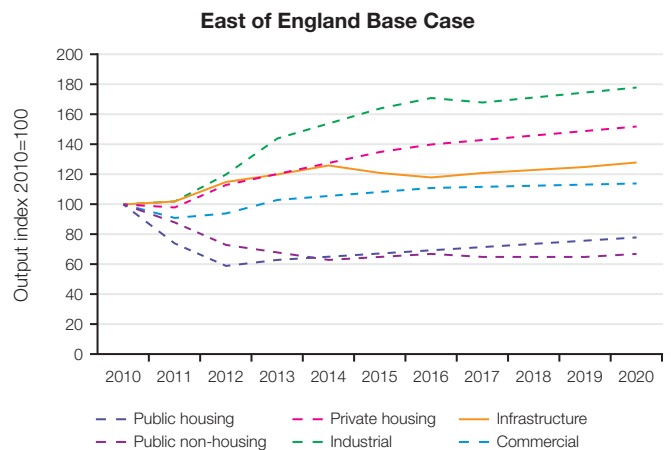
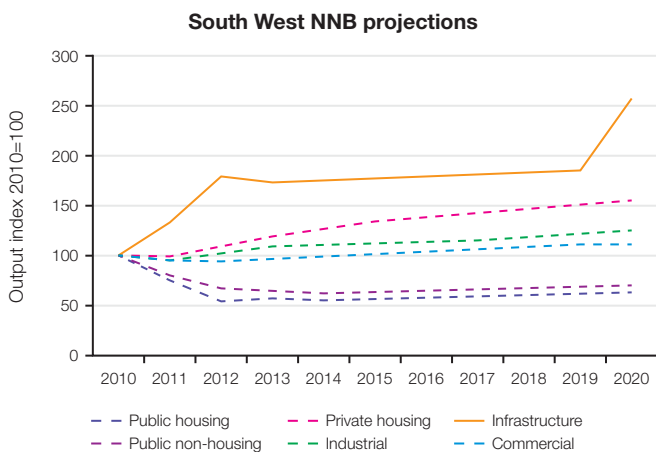
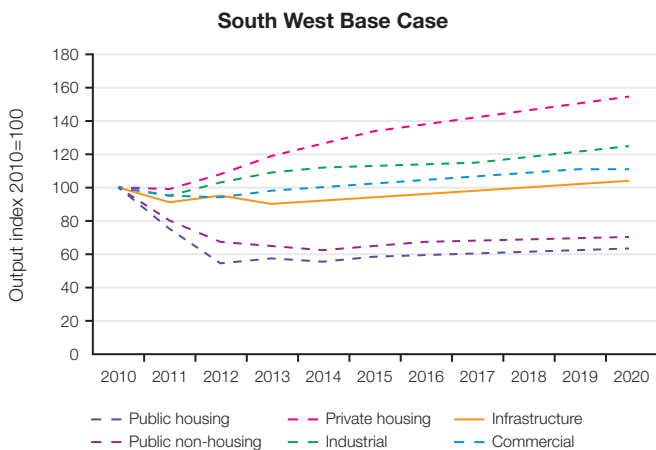
## 2.2 Regional projections

Regional construction markets are obviously much smaller than the UK one, thus the addition of major projects will have a much more pronounced effect on growth rates.

In the Base Case scenario, infrastructure output growth in the South West is projected to be poor. The region has suffered for many years from a dearth of major projects, which tend to be more important for infrastructure than other sectors of the construction industry. There are one or two projects in the pipeline in the energy and transport sub-sectors, but they are at very early stages of development as yet, thus cost and timing are uncertain.

The addition of Hinkley Point and then Oldbury at the end of the forecast period makes a very significant difference to activity levels in the South West infrastructure sector, given that it averages £500m–£600m of output per year. Under the NNB scenario the sector sees very strong growth this year and next as work on Hinkley Point ramps up, and then a further spike in 2020 as Oldbury starts on site.

Infrastructure output in the East of England is projected to be 28% higher in 2020 than in 2010 in the Base Case scenario, a better rate of growth than in the UK as a whole. Growth is centred on the early part of the period as work on the London Gateway ports project and related transport infrastructure drives expansion. This project also leads to very good growth in the industrial sector as distribution and logistics facilities are developed to handle goods from the new port.





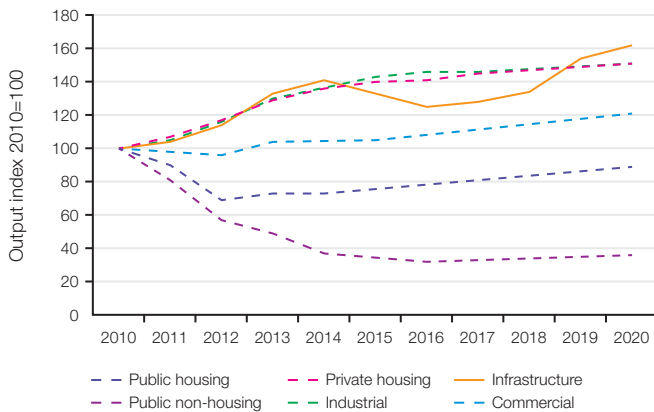
In the NNB scenario, nothing much changes in the infrastructure output profile until 2015 when work on Sizewell is projected to begin. However, it is not until Bradwell starts in 2017 that the infrastructure sector takes over as the strongest growth sector. By 2020 infrastructure output should have more than doubled compared with its 2010 level.

Even without NNB, the infrastructure sector is projected to be the best performing in the North West between 2010 and 2020, with output rising by 62% over the period. Growth in the early part of the period is driven by further expansion of the Manchester Metrolink and the Mersey Crossing. A hiatus is expected in the middle part of the period as these schemes complete before infrastructure works related to the long-term redevelopment of Liverpool Docks and Wirral Waters kicks in.

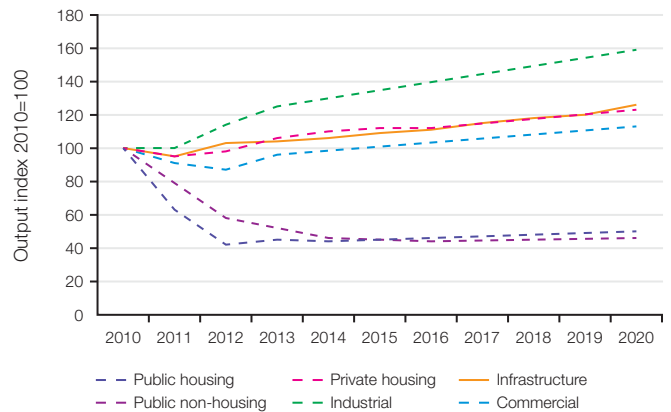
NNB projects increase the difference in performance between infrastructure and the other new work sectors in the second part of the period, with Sellafield due to start in 2016 and Heysham in 2017 under current projections. These two projects potentially starting so close together is likely to lead to a big surge in output in 2017.

Infrastructure is expected to fare reasonably well in the North East in the next decade, with output in 2020 26% above its 2010 level in real terms. While the Tyne Tunnel is due to complete soon, the £300m Teesport expansion has now begun and there are a number of energy and transport projects in the pipeline. The North East is another region where industrial construction is expected to perform best over the next decade, albeit it is recovering from a very low base.

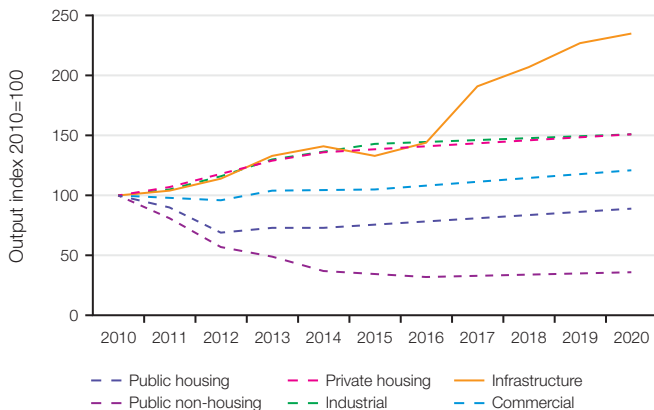
**North West Base Case**



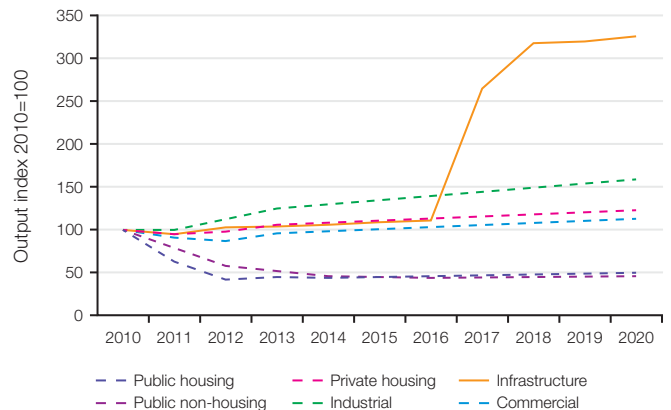
**North East Base Case**



**North West NNB projections**

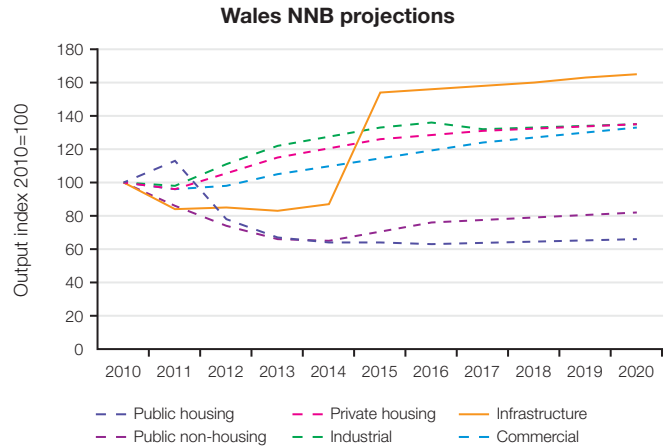


**North East NNB projections**

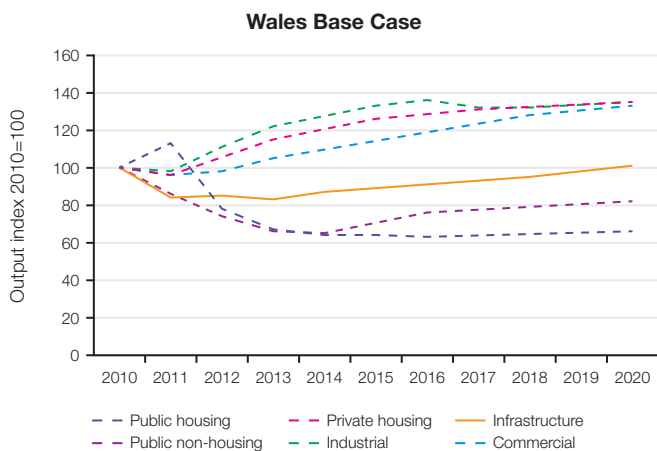


The construction market in the North East is one of the smallest in the UK and infrastructure output averages around £200m in real terms in a 'normal' year. Thus the injection of around £2bn of construction work on the proposed new nuclear plant at Hartlepool will have a very significant impact on the sector. Output is likely to more than double between 2016 and 2017 as the project gets underway, and by 2020 it could be over three times its 2010 level.

Infrastructure output in Wales is expected to fall in the short term, with questions still hanging over the two proposed biomass power plants. In the short term, output in the sector will be driven by relatively small road and rail projects. In the Base Case scenario, infrastructure output ends 2020 in much the same place as it was in 2010 in real terms.



The NNB scenario is significantly different after 2015 when work on the Wylfa plant is projected to start. Wales has a significantly bigger infrastructure sector than the North East, but that does not stop output nearly doubling in 2015. By 2020 activity is projected to be 65% higher than it was in 2010.





# 3. Employment projections

Two scenarios have been constructed in order to research the potential effects on construction employment to 2020: one without the NNB programme factored in (Base Case) and the other with it (Nuclear scenario).

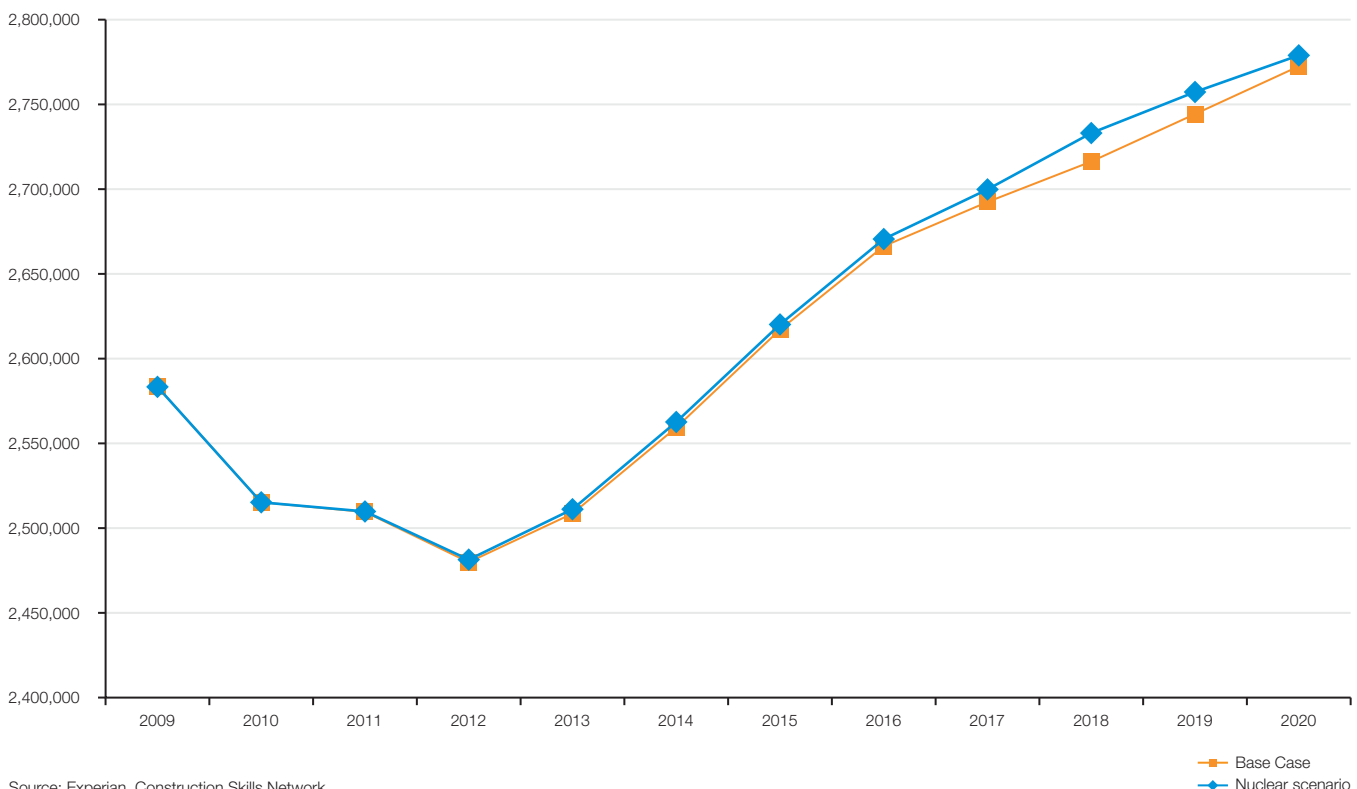
## 3.1 The UK perspective

Under the Base Case scenario, construction employment in the UK is expected to rise by 10.5% – or by almost 263,000 – to around 2.78 million between 2011 and 2020. When the eight nuclear projects are factored into the equation, construction employment is predicted to increase by 10.7%, or by around 269,000. There are four primary reasons why the addition of the NNB programme makes little difference to overall employment projections at a UK level. These are:

- The programme is spread over a considerable period of time (2011 to 2029) and our agreed phasing suggests that output will peak at around £1.5bn a year, not much more than 1% of total construction output in any one year.
- Construction of this nature is much more capital intensive and less labour intensive than in many other construction sectors, such as housing or repair and maintenance.
- Our model is only designed to extend to 2020; thus we have not produced figures for the period 2021–2029
- Construction, as defined within the CSN Model, is a broad definition covering relevant professional occupations.

It should also be noted that the Base Case scenario takes no account of the possible substitution of other new generating facilities in the absence of NNB, which would inevitably be an outcome given the energy capacity issues that the UK is facing.

UK construction employment profile: comparing the Base Case against the Nuclear scenario



Source: Experian, Construction Skills Network

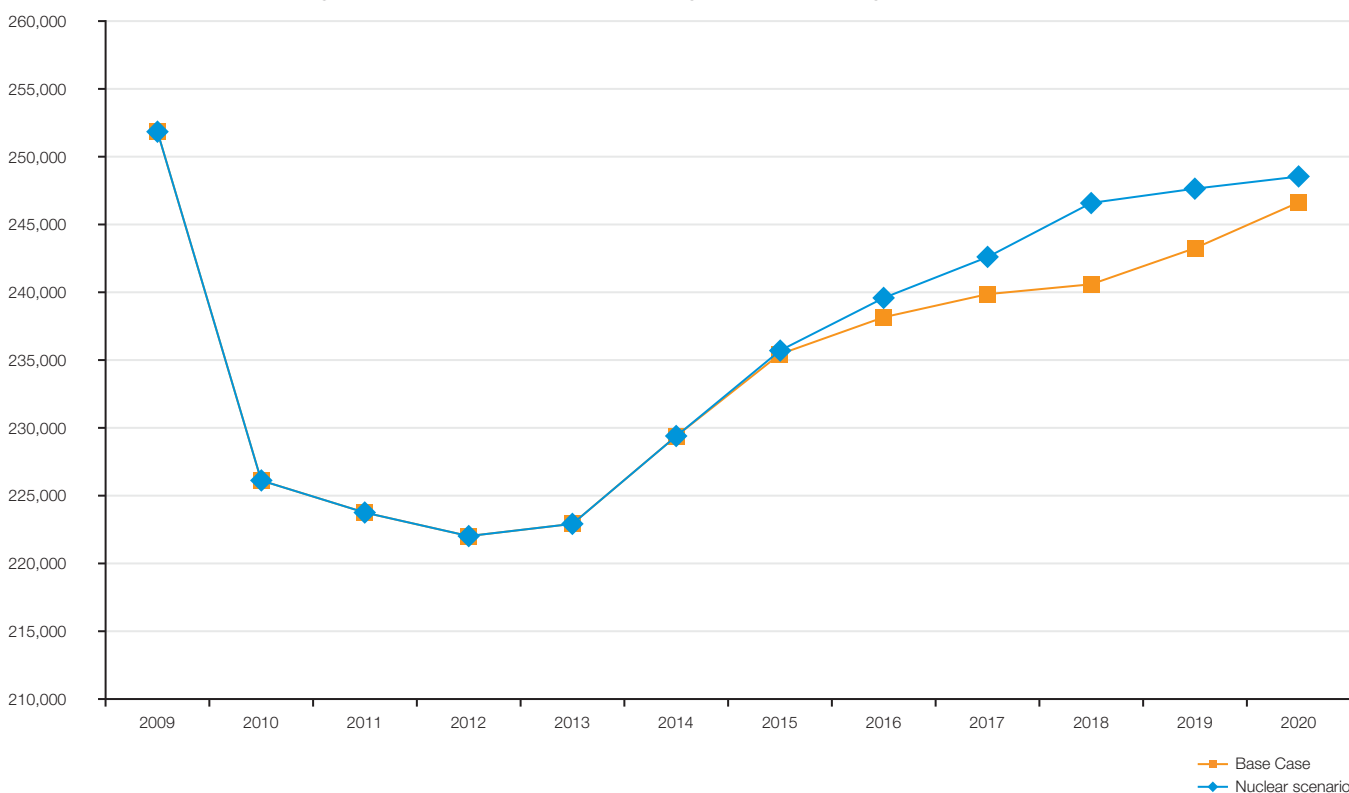
The largest employment differences are predicted to occur in 2018, 2019 and 2020, although even in 2018 the increase in total UK construction employment is only 0.6% compared to the Base Case scenario, representing a little below 17,000 full-time equivalents (FTE). This is on the basis of work starting at the Bradwell, Hartlepool and Heysham sites in 2017, meaning that seven of the eight NNB projects would be in construction phase by then, the laggard being Oldbury in Gloucestershire.

### 3.2 The regional perspective

However, NNB projects are not spread evenly across the 12 UK regions and nations, but are due to be built in five regions – the East of England, the South West, Wales, the North East and the North

West. Two projects each are due to be built in the East of England, the South West and the North West, while Wales and the North East will benefit from one project apiece. In the context of much smaller regional construction markets, the employment requirement generated by the NNB programme will be much bigger proportionally than for the UK as a whole. The remaining regions and devolved nations will not benefit directly from the NNB programme, although undoubtedly a significant proportion of the workforce, particularly for specialist activities, is likely to be sourced from outside the region of location. The charts below illustrate the effect on employment for the five regions/nations which have the potential to see nuclear power station construction activity.

East of England employment profile: comparing the Base Case against the Nuclear scenario

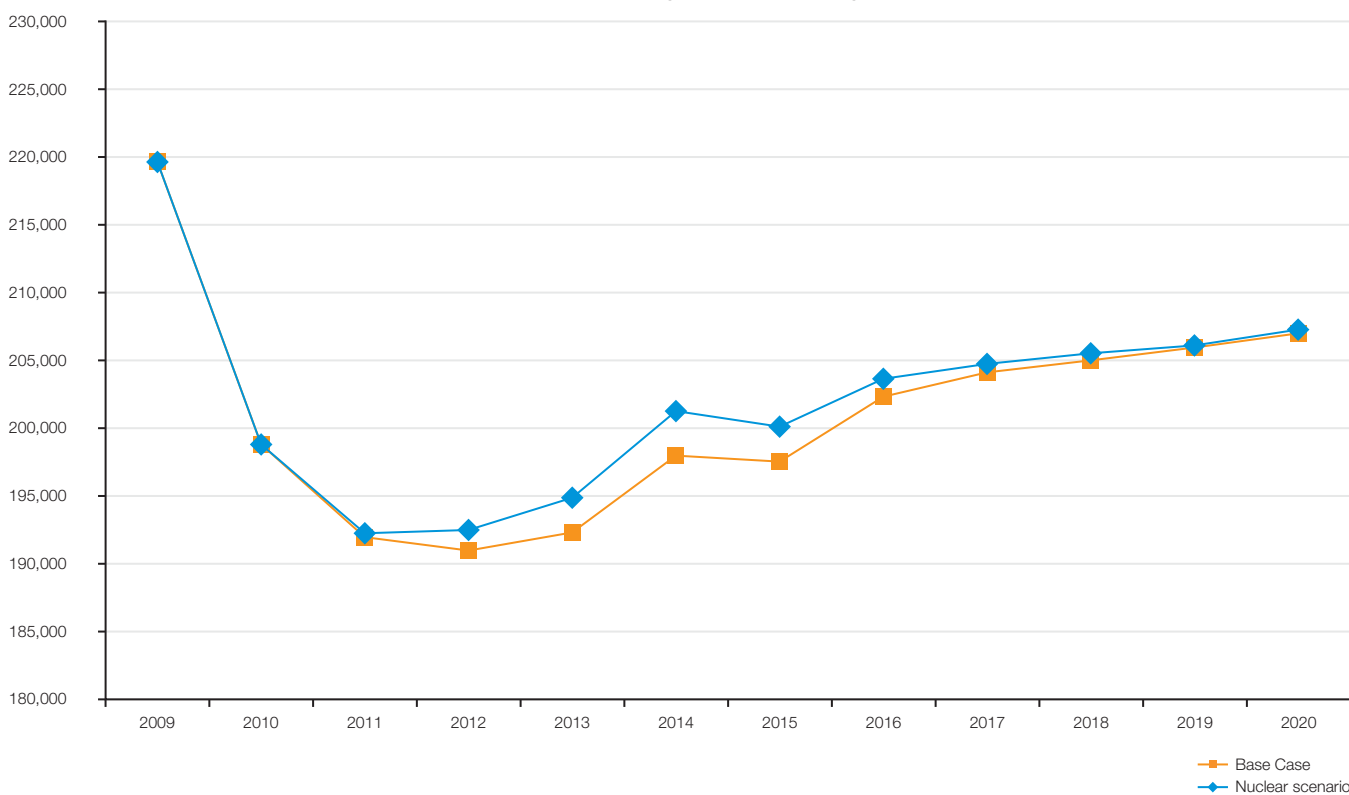




Two new nuclear power stations are expected to be built in the East of England, at Sizewell and Bradwell. Work at Sizewell is projected to start in Q2 2015, with Bradwell to follow in Q1 2017. On this profile the difference in employment

requirements in comparison with the Base Case scenario will peak in 2018 at around 6,000, representing around 2.5% of the region's construction employment.

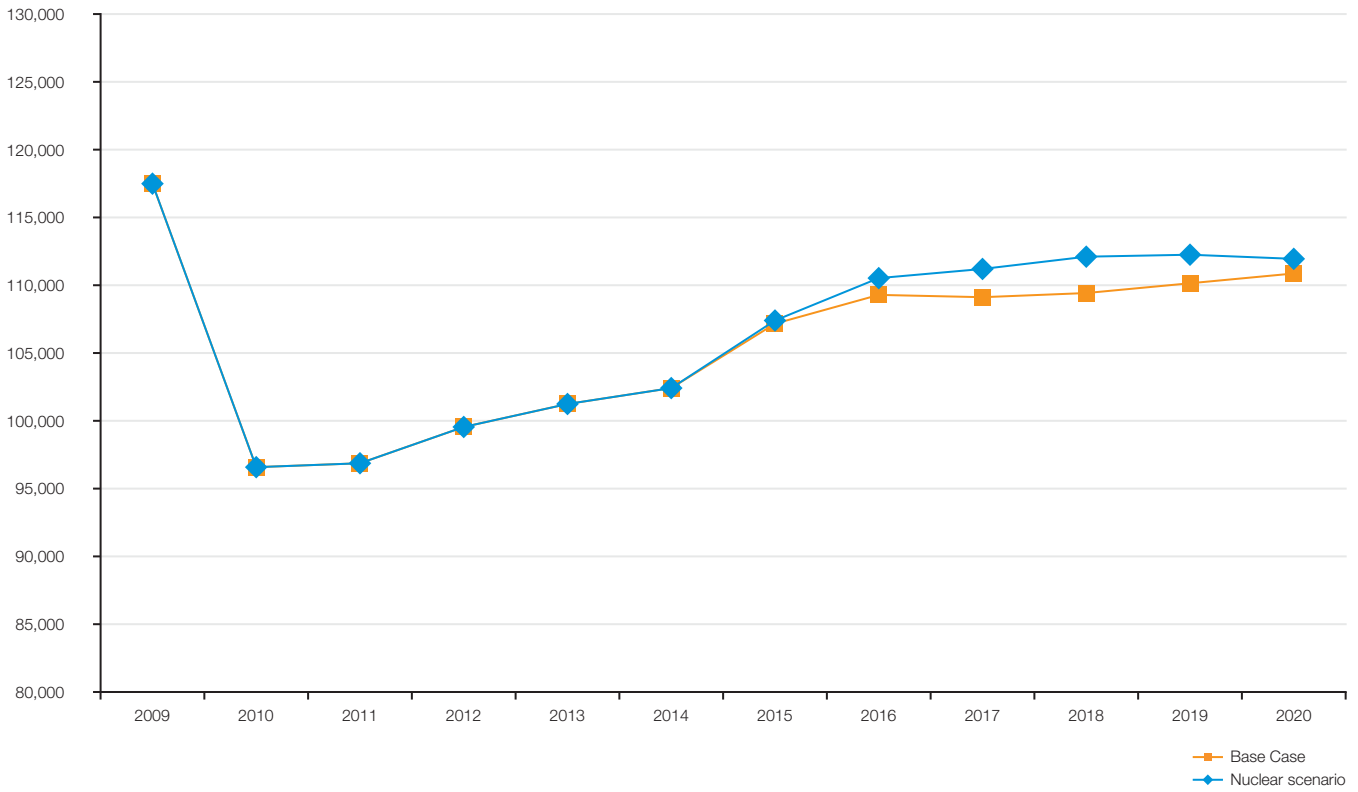
South West employment profile: comparing the Base Case against the Nuclear scenario



The South West is also projected to see two new nuclear power stations built, at Hinkley Point and Oldbury. Hinkley Point is due to be the first of the projects to get on site with a construction start in Q3 2011. In contrast, Oldbury is likely to be the last to begin, with a projected start in Q1 2020. This

means that the majority of the work on Oldbury is outwith this forecast scenario. The difference between the nuclear build employment requirements and the Base Case peaks at around 3,300 in 2014, around 1.7% of total South West construction employment.

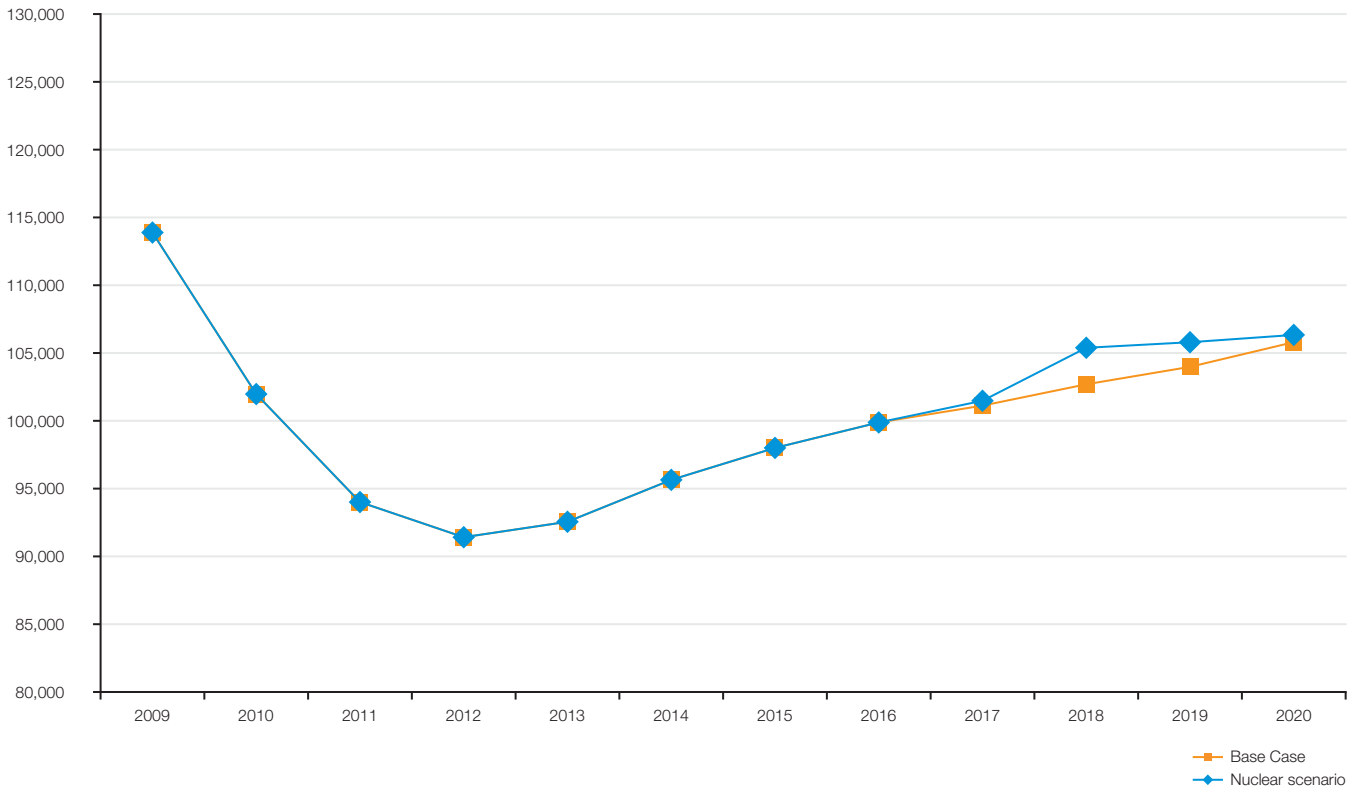
Wales employment profile: comparing the Base Case against the Nuclear scenario



The NNB project at Wylfa in Anglesey is projected to start on site in Q1 2015 and lead to a peak difference in employment requirements of just

under 2,700 in 2018, 2.5% of the total Welsh construction workforce.

North East employment profile: comparing the Base Case against the Nuclear scenario

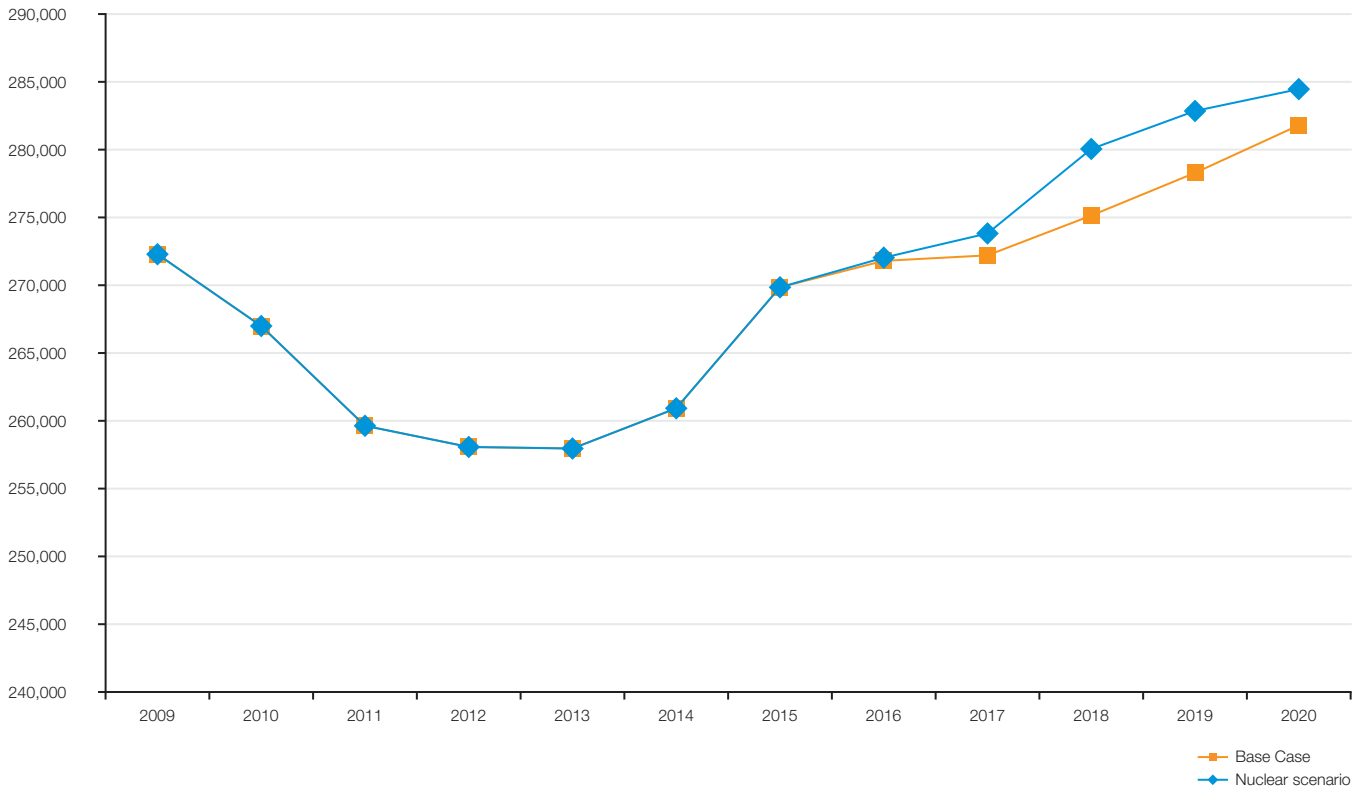


The North East's NNB project at Hartlepool is projected to start on site in Q2 2017. The difference in employment requirement with the Base Case

scenario is also expected to peak at around 2,700 in 2018, 2.6% of the North East's total construction workforce.



North West employment profile: comparing the Base Case against the Nuclear scenario



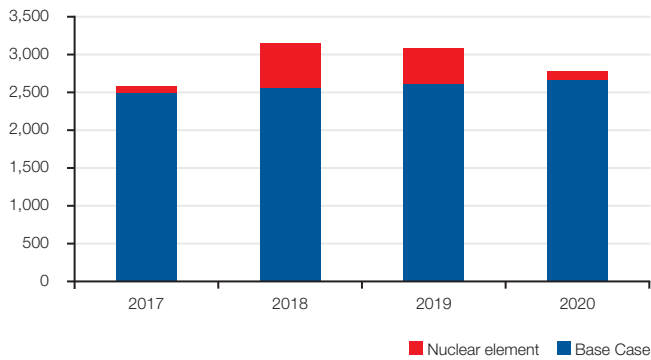
The North West has two new nuclear power stations in the pipeline, one at Sellafield in Cumbria, with construction projected to start in Q3 2016 and a second at Heysham in Lancashire commencing in Q2 2017. The difference in employment requirement with the Base Case scenario is expected to peak at around 4,900 in 2018, 1.8% of the North East’s total construction workforce.

Of the five regions, only the North West is forecast to have employment levels in 2020 above the peak seen in 2008/2009. This means that for the South East, North East, East of England and Wales, re-skilling and up-skilling of the existing workforce is likely to be a key issue, while for the North West, attracting new talent while also re-skilling and up-skilling will be more of an issue.

# 4. Potential pinch points

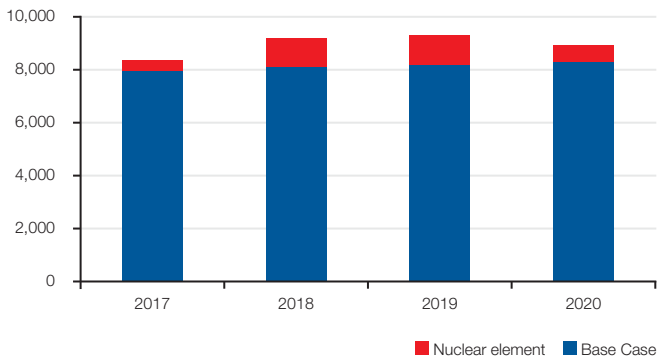
## 4.1 Building envelope specialists

NE – building envelope specialists



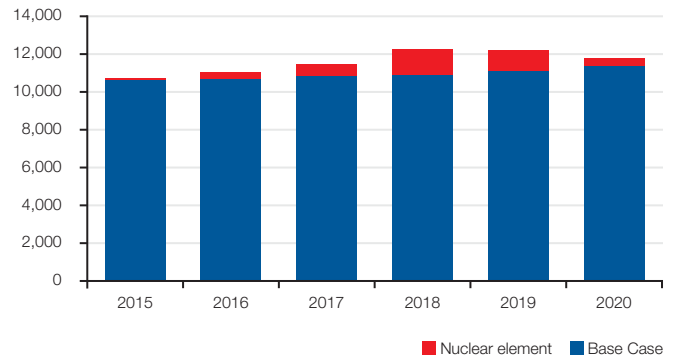
For building envelope specialists in the North East, the largest requirement is projected to be in 2018 and 2019. In the former year, nuclear work is expected to account for 19% of total employment in the occupation and in the latter year, 16%.

NW – building envelope specialists



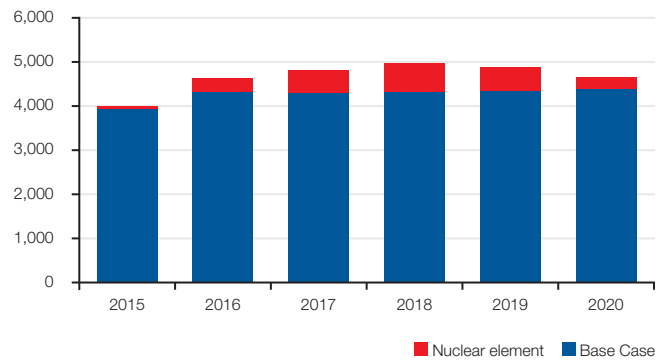
For building envelope specialists in the North West, the largest requirement is projected to be in 2018 and 2019. In each of the two years, nuclear work is expected to account for 12% of total employment in the occupation.

ET – building envelope specialists



For building envelope specialists in the East of England, the largest requirement is projected to be in 2018 with nuclear work expected to account for 11% of total employment in the occupation.

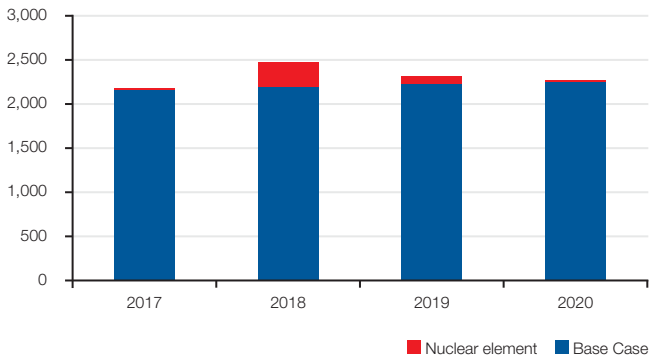
WA – building envelope specialists



For building envelope specialists in Wales, the largest requirement is projected to be over 2017–2019. In 2017, nuclear work is expected to account for 10% of total employment in the occupation; in 2018, 13%; and in 2019, 11%.

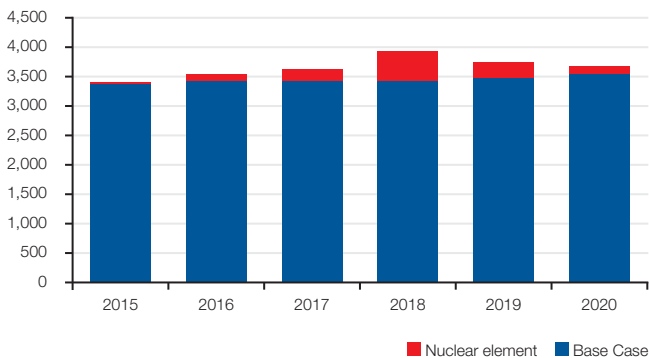
## 4.2 Plant operatives

NE – plant operatives



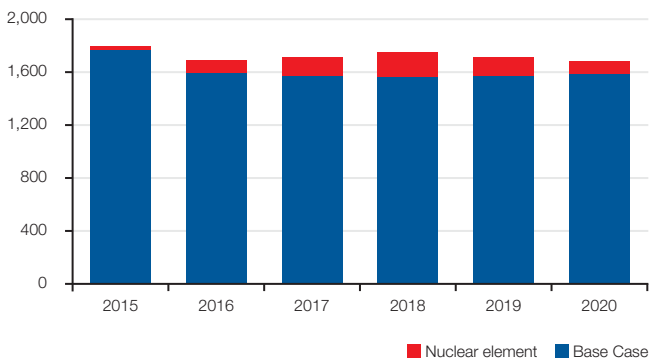
For plant operatives in the North East, the largest requirement is projected to be in 2018 with nuclear work expected to account for 11% of total employment in the occupation.

ET – plant operatives



For plant operatives in the East of England, the largest requirement is projected to be in 2018 with nuclear work expected to account for 13% of total employment in the occupation.

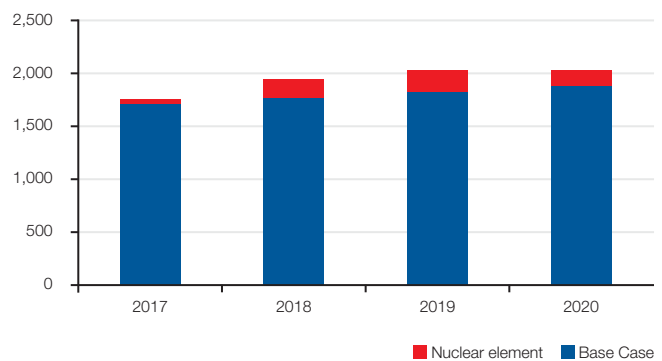
WA – plant operatives



For plant operatives in Wales, the largest requirement is projected to be in 2018 with nuclear work expected to account for 10% of total employment in the occupation.

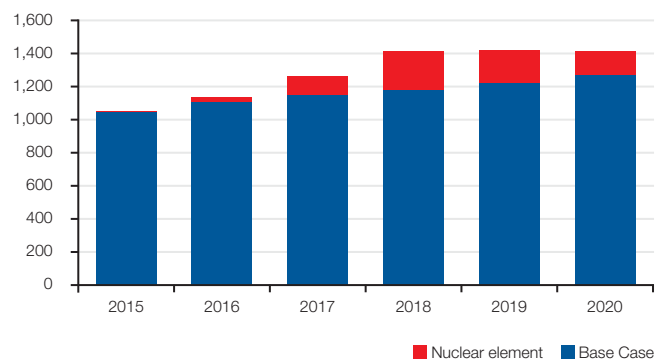
## 4.3 Scaffolders

NW – scaffolders



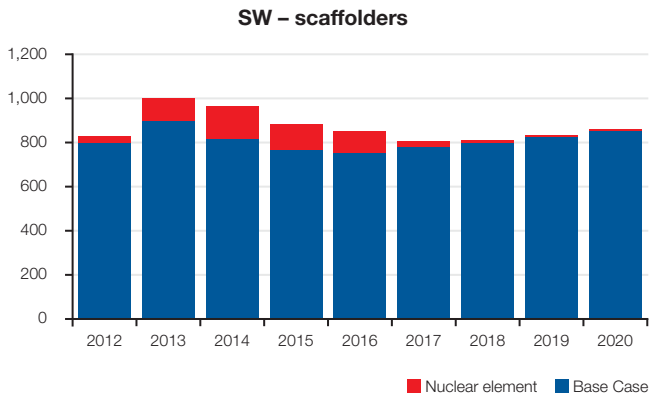
For scaffolders in the North West, the largest requirement is projected to be in 2019 with nuclear work expected to account for 10% of total employment in the occupation.

ET – scaffolders



For scaffolders in the East of England, the largest requirement is projected to be in the final three years of the forecast period. In 2018, nuclear work is expected to account for 17% of total employment in the occupation; in 2019, 14%; and in 2020, 10%.

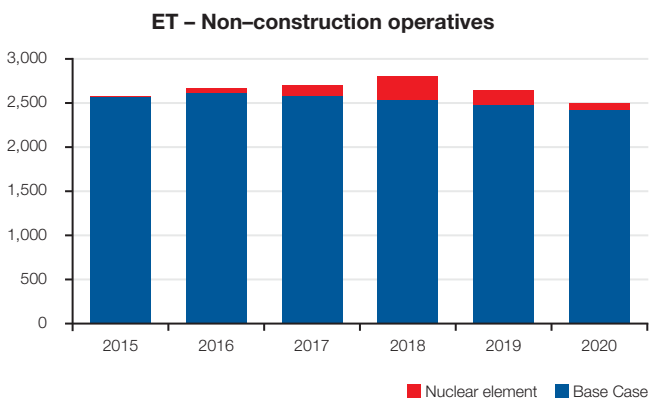




For scaffolders in the South West, the largest requirement is projected to be between 2013 and 2016. In 2013, nuclear work is expected to account for 11% of total employment in the occupation; in 2014, 16%; in 2015, 14%; and in 2016, 12%.

#### 4.4 Non-construction operatives

For non-construction operatives in the East of England, the largest requirement is projected to be in 2018 with nuclear work expected to account for 10% of total employment in the occupation.



#### 4.5 A closer look at building envelope specialists

One of the limitations of the Standard Occupational Classifications (SOCs) is that they do not necessarily reflect the importance of specific types of skills to specific projects. In the case of the NNB programme, the workforce analysis undertaken by EDF Energy for the Hinkley Point project has indicated that concretors and rebar fixers play important parts in the construction of new nuclear facilities.

Analysis of the data supplied by EDF Energy indicates that concretors are likely to make up 10% of the workforce on a NNB project and rebar fixers some 16%. Unfortunately, in official government statistics, no SOCs exist for these two occupations and they are believed to be subsumed in the Building Envelope Specialist occupational category used in the CSN.

Some analysis recently undertaken by ConstructionSkills, based on Ofqual certificates gained over the past five years, indicates that concretors may account for 2% of building envelope specialists, and rebar fixers 4.5%. On this basis, concretors in the UK numbered around 1,900 and rebar fixers 4,300 in 2010, the last year for which we have actual data. This represents just 0.07% of the total UK construction workforce in the case of the former and 0.17% in the case of the latter.

This indicates that these two occupations are much more important for NNB than for UK construction as a whole.

The analysis of the Ofqual data by ConstructionSkills would suggest the following profile for demand for concretors and rebar fixers between 2011 and 2020 in the Base Case scenario (see Table 3).

**Table 3: Estimated demand for concretors and rebar fixers in the Base Case scenario**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Building Envelope Specialists - of which:	95,202	95,165	96,522	101,953	105,953	103,948	105,292	106,438	107,765	109,114
Concretors	1,904	1,903	1,930	2,039	2,119	2,079	2,106	2,129	2,155	2,182
Rebar fixers	4,284	4,282	4,343	4,588	4,768	4,678	4,738	4,790	4,849	4,910

Estimated demand for these two occupations in the NNB scenario would look like the following (Table 4).

**Table 4: Estimated demand for concretors and rebar fixers in the NNB scenario**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Building Envelope Specialists - of which:	95,265	95,556	97,123	102,751	106,701	105,008	107,029	110,243	111,058	110,578
Concretors	1,926	2,039	2,139	2,316	2,379	2,447	2,709	3,450	3,299	2,691
Rebar fixers	4,319	4,498	4,675	5,028	5,180	5,262	5,696	6,888	6,666	5,718

Comparing the two sets of figures provides a view on the level of increase in the requirement for concretors and rebar fixers that could be created by the NNB programme (Table 5).

**Table 5: Estimated increase in demand for concretors and rebar fixers – Base Case v NNB scenarios**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Building Envelope Specialists - of which:	63	391	601	798	748	1,059	1,737	3,805	3,293	1,464
Concretors	22	136	209	277	260	368	603	1,321	1,143	508
Rebar fixers	35	216	332	440	412	584	958	2,099	1,816	808
% increase compared with nuclear-free scenario										
Concretors	1%	7%	10%	12%	11%	15%	22%	38%	35%	19%
Rebar fixers	1%	5%	7%	9%	8%	11%	17%	30%	27%	14%

As can be seen from the above analysis, the NNB programme could have a significant impact on the demand for concretors and rebar fixers over the next decade and particularly in the years 2017 to 2019, with implications for training programmes for these two skills going forward. However, two

caveats should be reinforced in relation to these estimates: 1) there was limited evidence upon which to base the original split of concretors and rebar fixers from building envelope specialists, and 2) the level of preciseness of the above figures should be viewed as indicative only.

# 5. Conclusions

With UK construction output each year forecast to be around £100bn, it would take a monumental project to influence construction employment figures at a UK level. It is, therefore, no surprise to see that the overall employment demand created by output from the NNB programme is small in relation to total UK construction employment. Even the 2012 Olympics and Crossrail, two of the biggest projects in the UK, would struggle to show an impact on UK construction employment levels. However, this does not detract from the fact that thousands of construction workers will have been involved, and there have been opportunities for workers to acquire relevant and sustainable skills.

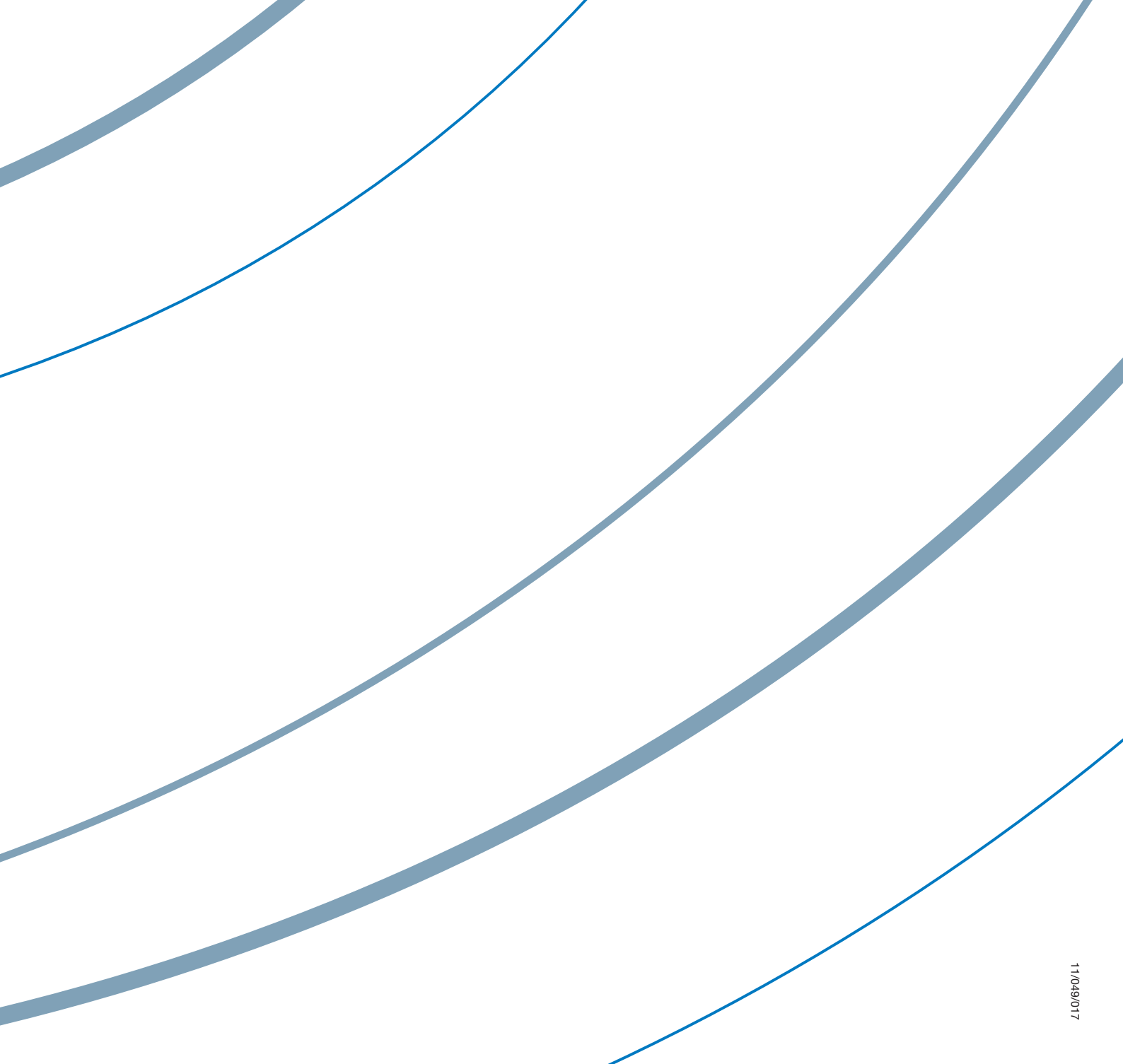
Although details of the full nuclear new build programme have yet to emerge, forecasts based on available information indicate that the period between 2018 and 2020 is likely to be the peak employment period for the overall construction workforce, with multiple projects being on site at similar times.

When looking in more detail at a regional level of analysis, the nuclear new build programme, like all major projects, has a more marked effect. It is therefore at this level where the focus needs to be as individual nuclear new build projects will have a noticeable effect, both in terms of output and employment, in the areas where there are proposed sites.

This is particularly evident when looking at forecasts for infrastructure output with and without the planned nuclear new build, and a good example of this is the forecast for the South West of England. Construction of Hinckley Point C, very likely to be the first of the nuclear new build sites, nearly doubles the forecasted output for infrastructure work during the build phase of the project, and there would be similar effects across all the other areas with proposed nuclear sites.

When the NNB programme is considered, employment in most of the regions with designated sites looks set to remain below peak construction employment (2008/2009). A key issue will therefore be the re-skilling and up-skilling of existing workers to meet NNB requirements. Workforce issues become very important when considering potential occupational pinch points that may emerge to reflect the importance of specific types of skills to specific projects. In the case of the nuclear new build programme, the workforce analysis undertaken indicates that concretors and steel fixers (rebar fixers) will play an important part in the construction of new nuclear facilities. This highlights the need for training and skills development that takes account of specific project requirements, at the appropriate geographic locations, and set against the anticipated overall demand. The commitment to employment and the training of clients and partners throughout the supply chain involved in the build programme should necessarily reflect these potential occupational pinch point areas.

As the Sector Skills Council for the construction industry, ConstructionSkills is ideally placed to provide sector research, intelligence, advice, guidance, skills and education programme delivery and, of course, levy and grant to the construction industry. We will continue to use this extensive capability to add value to the work of strategic partners such as EDF Energy, the Nuclear Energy Skills Alliance, and Skills Forums to improve labour forecasting and skills projections across the full UK nuclear new build programme.



11/04/2017