



Projections Paper - Projecting Employment and Housing Change

West Cumbria Evidence Base

Contents

1.	Introduction.....	6
2.	Overview of the Economic Assumptions Underpinning the Scenarios.....	9
3.	Presenting the Economic Scenarios	23
4.	Economic Implications for the LDF Evidence Base and the Economic Blueprint	62
5.	Context for the Population / Household Projections.....	66
6.	Population Projections	70
7.	Household Projections	88
8.	Housing Implications for the LDF Evidence Base and the Economic Blueprint ...	98

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For and on behalf of GVA Grimley Ltd

Executive Summary

GVA were appointed in December 2010 to undertake a programme of works to assist the West Cumbria Authorities to update their LDF evidence base and produce a new Economic Blueprint and Spatial Plan to establish the future of the area, taking account of the potential for Nuclear New Build and other related investment.

This paper represents one of a series of papers which form an important part of the LDF evidence base and has been used to inform the development of the West Cumbria Economic Blueprint.

The purpose of this paper is to present collectively a series of economic, population and household forecasts and projections. These projections were produced in winter 2011 using the collective professional expertise of Experian, Sellafield Ltd, Cumbria County Council and GVA. The data underpinning these forecasts as well as the population modelling tool, POPGROUP, are held and managed by Cumbria County Council in order for them to be monitored and updated in the future.

The first part of the paper includes a detailed analysis of three economic forecasts which reflect the best information available as of November 2011. These forecasts include a baseline scenario which takes account of the latest national forecasting data, local economic development intelligence as well as detailed employment information supplied by Sellafield Ltd from the 2011 Workforce Plan. This baseline scenario is considered to represent a robust basis from which to develop planning policy. The other two forecasts factor in potential investment from the nuclear sector. The first forecast examines the potential impact Nuclear New Build would have on the West Cumbria economy with the second additionally factoring in a number of other potential new development projects at the existing Sellafield Site, with informing information again supplied by Sellafield Ltd. The outputs of this analysis have been directly used in the accompanying Employment Land Review Update for Copeland and Allerdale to establish potential levels of demand for employment land over the plan period and have also been used to base economic strategy in the form of the Economic Blueprint.

The second part of the paper uses the POPGROUP demographic software tool to present a series of population and household projections. A range of scenarios are presented including demographic trend based projections as well as projections constrained to the potential labour-force requirements implied through the economic forecasts examined in part 1. These projections will help to inform the establishment of housing policies within the LDF, alongside evidence included within the authority Strategic Housing Market Assessments (SHMAs), and provide an important source of

evidence for establishing the potential accommodation requirements associated with Nuclear New Build to which policies will need to be sufficiently flexible.

Planning for Economic Change

The analysis provides a number of important conclusions around the potential future health of both the West Cumbria economy as a whole but also the relative contributions of the two authorities of Copeland and Allerdale¹.

The Baseline Economic Forecast shows an overall reduction in employment levels across West Cumbria over the forecast period to 2026/27 of 1,800 Full Time equivalent (FTE) jobs. This level of job losses is less severe than forecast under previous economic modelling used to inform the 2007 Britain's Energy Coast Masterplan and reflects the moderation of employment reductions projected as a result of decommissioning activities as set out under the 2011 Workforce Plan. This changed employment profile at Sellafield serves to mitigate the impact of a more negative baseline employment performance of other sectors linked to the recovery of the UK from the 2009 recession and the sustained public sector job cuts.

The forecast baseline change in employment differs between Copeland and Allerdale. Copeland's employment levels are affected more significantly due the location of Sellafield², with a loss of 3,200 FTEs forecast between 2011 and 2026. Importantly though this decline is not consistently recorded over the forecast period, with employment levels slowly rising to 2014 before a sustained period of reduced total employment. In Allerdale the baseline forecast is far more positive with a total of 1,300 additional FTEs forecast over this period.

These headline forecasts represent an important context for the setting of economic policy. The strong labour force linkages between the two authorities and the differing forecast employment prospects highlight the importance of preparing complementary planning policy frameworks and strategy, with the Economic Blueprint recognising the importance of this shared perspective. Over the plan period it will be important that further employment opportunities are stimulated and facilitated, particularly within Copeland in order to manage commuting flows and support local employment. Importantly, however, the analysis of the varying health of the economy also highlights the need to invest in the transport infrastructure across

¹ Note: the economic forecasts provide data for the whole administrative authorities and do not separate out the areas covered by the National Park Planning Authority.

² Note: the forecasts are work-force based with the impacts of changes in the Sellafield workforce largely attributed to Copeland

the area to enable residents to access employment opportunities across West Cumbria.

The second economic scenario highlights the potential impact that Nuclear New Build would have on the West Cumbria economy. In headline terms it would serve to add an additional £100m to the area's GVA and serve to further mitigate the level of employment decline forecast under the Baseline Scenario. In Allerdale in 2026 the forecast shows an additional 209 FTE jobs (0.6% increase) over the Baseline Scenario. In Copeland however, the impact is more marked with an additional 1,400 FTE jobs in 2026, with this including a higher gap at the peak of construction in 2021. This still represents an overall reduction in total employment over the plan period, however, the level of decline is considerably less. Under this scenario the importance of improving infrastructure connections and ensuring the movement of the workforce across the area remains important with the imbalance between the strength of the two economies still marked.

The final scenario which factors in additional nuclear investment projects at Sellafield is the only scenario which actually shows a positive increase in total FTEs by 2026 from 2011. Under this scenario the impact of nuclear investment and spin-off effects equates to an increase in approximately 3,100 FTE jobs in 2026. Under this scenario the imbalance between the two economies is far less significant. Copeland is forecast to see an increase in FTE employment of approximately 1,220 whilst Allerdale's employment base increases by 1,860.

Planning for a Changing Population

The projected growth in an area's population and the number of households this translates into is a fundamental driver in the demand for a range of services, including in particular housing. It is very important that the authorities of West Cumbria plan to accommodate a sufficient amount of housing to meet both local needs and the needs of households moving to the area linked to the potential economic futures outlined above.

Analysis of a series of demographic trend based scenarios, using the latest data available, suggests that the level of demand generated by household growth across both authorities over the plan period is relatively low, falling below previous Regional Spatial Strategy (RSS) requirements.

However, the examination of the demographic profile of this projected population identifies that planning for this many households and this level of population change would result in a fundamental change to the population profile of the area with a notable increase in the proportion of total households which would be made up of

older persons. In tandem this would result in a reduction in the number of working age persons and in turn family households.

This is illustrated through the employment-constrained baseline scenario, particularly within Allerdale. Positive job growth coupled with this ageing population shows a sustained need to attract new working age people into the authority to take up jobs. This is not true of Copeland where the numbers of jobs under the baseline scenario are forecast to fall.

In planning policy terms this further reinforces the importance of planning jointly across the two areas and ensuring that policies are balanced. Copeland is likely to accommodate a proportion of the household forecast in Allerdale in order to alleviate potential pressure within the authority. This re-balancing of demand will be important for both authorities under a baseline economic position.

It is important that the LDF is sufficiently flexible in its policies to enable the development of New Nuclear adjacent to the existing Sellafield plant. The analysis in the paper indicates that this will have a fundamental impact on the make-up of the population at various points through the plan period, due to the requirement for additional labour force linked to the construction phase of activity.

Whilst the input assumptions represent estimates and evidenced observations at this point in time they provide an important steer for planning policy. Recognising the caveats highlighted both within this paper and within the Nuclear Topic Paper the analysis suggests that under this economic scenario there will be additional household demand across West Cumbria exceeding the levels set within RSS. In total the analysis suggests a need to deliver just over 700 dwellings per annum to ensure that the area retains and attracts the required size of workforce, assuming that approximately 50% of required labour is sourced by people permanently residing in West Cumbria. This needs to be carefully considered as the reality may be that the employment opportunities created do not directly translate into housing demand in West Cumbria but that a greater proportion of persons actually commute into the area given the temporary nature of employment.

Even under the Nuclear New Build scenario, with the majority of direct jobs being attributed to Copeland the majority of this demand will continue to be in Allerdale due to the wider demands modelled resulting from underpinning employment uplifts under the Baseline Scenario. However, where under the baseline scenario Copeland has a low level of demand and could potentially therefore alleviate pressures; the levels of demand are also high under this scenario in the authority. This could potentially pose challenges for identifying sufficient amounts of residential land across the area. This is an issue which will require further consideration by Copeland and Allerdale in the development of their Core Strategies and Land Allocation DPDs.

It is also important to recognise, as identified above, that these levels of household growth and modelled dwelling requirements do not factor in the need to provide accommodation to house temporary workers associated with the construction phase of Nuclear New Build.

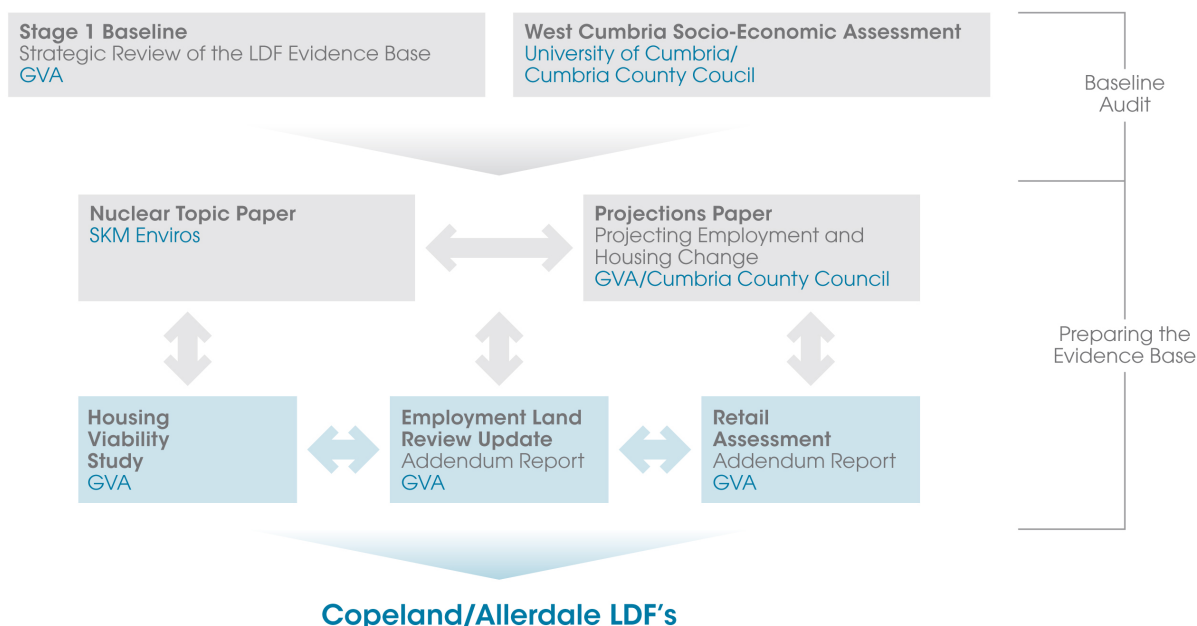
At the peak of 2022 the potential numbers of 'temporary' workers within West Cumbria could number 1,400 workers requiring accommodation. These are assumed to be largely made up of single persons not requiring permanent dwellings. The phasing of these workers arriving in the local area is also important with only just over 90 forecast in 2016 with this rising rapidly to over a 1,000 by 2020, peaking in 2022, and then falling rapidly to around 10 by 2026. The phasing of demand for temporary accommodation is therefore important linked to likely changes in the population. The forecasts suggest a lead in time for accommodation to be developed but then following 2025 a rapid exiting of stock which will need to be planned for in terms of any legacy of the site or indeed the built accommodation. The potential exists for a proportion of this the stock developed to be built to be permanent, therefore offsetting longer-term dwelling requirements to meet local need.

1. Introduction

- 1.1 GVA were appointed in December 2010 to undertake a programme of works to assist the West Cumbria Authorities to update their LDF evidence base and produce a new Economic Blueprint and Spatial Plan to establish the future of the area, taking account of the potential for Nuclear New Build and other related investment.
- 1.2 This paper represents one of a number of outputs associated with updating the LDF evidence base and informing the Economic Blueprint. These are set out in the following diagram.

Figure 1.1: Updating the LDF Evidence Base for West Cumbria and Evidencing the Economic Blueprint

West Cumbria Updating the LDF Evidence Base



Source: GVA, 2011

- 1.3 As the diagram illustrates this paper includes information which is then utilised in other evidence base reports. Primarily the paper focuses on two thematic areas of analysis:
- **Economic Projections** – The paper presents three economic forecast scenarios developed through the research. These are bespoke to this research commission and draw upon information from the Nuclear Topic Paper as well as the socio-economic baseline.

- Population / Household Projections – A number of population projections are presented, with links made to the economic projections in the first half of the paper. These population projections are translated into household projections which should be read in conjunction with the Strategic Housing Market Assessment reports relevant to each Local Authority.

1.4 This paper has been produced in partnership with Cumbria County Council and with the assistance of Experian UK and SKM Enviro Ltd.

1.5 The full report structure is set out below:

Part 1: Economic Projections

- Section 2: Overview of the Economic Assumptions underpinning the Scenarios
- Section 3: Presenting the Economic Scenarios
- Section 4: Economic Implications for the LDF Evidence Base and the Economic Blueprint

Part 2: Population / Household Projections

- Section 5: Context for the Population / Household Projections
- Section 6: Population Projections
- Section 7: Household Projections
- Section 8: Housing Implications for the LDF Evidence Base and the Economic Blueprint

Part 1: Economic Projections

2. Overview of the Economic Assumptions Underpinning the Scenarios

Purpose of the Economic Forecasts

- 2.1 The decision to develop a series of bespoke economic forecasts to underpin the programme of works was agreed at the beginning of the research process. These forecasts are intended to:
- Provide a final signed-off economic forecasting position for West Cumbria based upon the best information available at the time of development;
 - Ensure a consistency in forecasting information between Copeland and Allerdale;
 - Take account of the latest information released by Sellafield around decommissioning;
 - Factor in the latest intelligence around the shape of the current UK economy following the turbulence seen since 2007/08; and
 - Forecast economic change under both a future with and without Nuclear New Build investment to aid in developing planning policies which need to recognise both positions and their relative impact.
- 2.2 The forecasts presented within this paper supersede all previous economic forecasts and scenarios including those underpinning the previous West Cumbria Masterplan³. They are intended to be used to provide a consistent forecasting base to underpin all of the key parts of the LDF evidence base.
- 2.3 The forecasts have been signed-off through the research process by the Project Group which includes representatives from Allerdale and Copeland Councils, Cumbria County Council, Sellafield Ltd and Britain's Energy Coast.
- 2.4 All of the scenarios have been developed by Experian UK alongside Cumbria County Council.

³ Britain's Energy Coast, A Masterplan for West Cumbria, 2007

1. The Baseline Scenario

2.5 The baseline scenario has been built using a number of important datasets, including:

- The latest Experian UK forecasts for the authorities;
- Inputs and alterations from Economic Development teams from the authorities to adjust sectors. This was based upon a series of workshops in January 2011; and
- Workforce Plan information supplied by Sellafield UK Ltd.

2.6 Each of these components are considered below:

Experian baseline forecasts

2.7 The Experian baseline forecasts take account of the latest macro economic forecasts for the UK alongside a moderated position shaped through by local economic development officers and importantly the Sellafield Lifetime Plan which was published in September 2011.

UK outlook

2.8 The baseline economic forecasts presented for West Cumbria are based on Experian's April 2011 UK forecasts. The headline indicators from these forecasts are displayed in the following figure.

Figure 2.1: Experian UK Forecasts

UK	09	10	11	12	13-17
National accounts (% change, real terms)					Avg
GDP	-4.9	1.3	1.3	1.8	2.2
Consumer spending	-3.3	0.8	0.5	1.5	2.2
Investment	-15.4	3.0	4.0	5.9	5.0
Government	1.0	0.8	-0.3	-2.0	-1.2
Exports	-10.1	5.3	7.0	5.8	3.9
Imports	-11.9	8.5	5.8	4.1	3.3
Other indicators					
Employment (% change)	-2.2	-0.8	-0.2	0.3	0.8
Unemployment (% workforce)	7.6	7.9	8.2	8.0	6.5
Consumer prices (% change)	2.2	3.3	4.2	2.6	2.2
Fiscal balance (% GDP)	-10.3	-9.2	-7.7	-6.1	-3.5
Current account balance (% GDP)	-1.3	-1.9	-1.9	-2.1	-1.3
Bank Rate (% p.a)	0.6	0.5	0.7	2.1	4.2
10 yr bond yield (% p.a)	3.7	3.6	3.8	4.6	5.1
Exchange rate (US\$ per £)	1.57	1.55	1.62	1.66	1.6

© Experian Plc 2011

Source: Experian, 2011

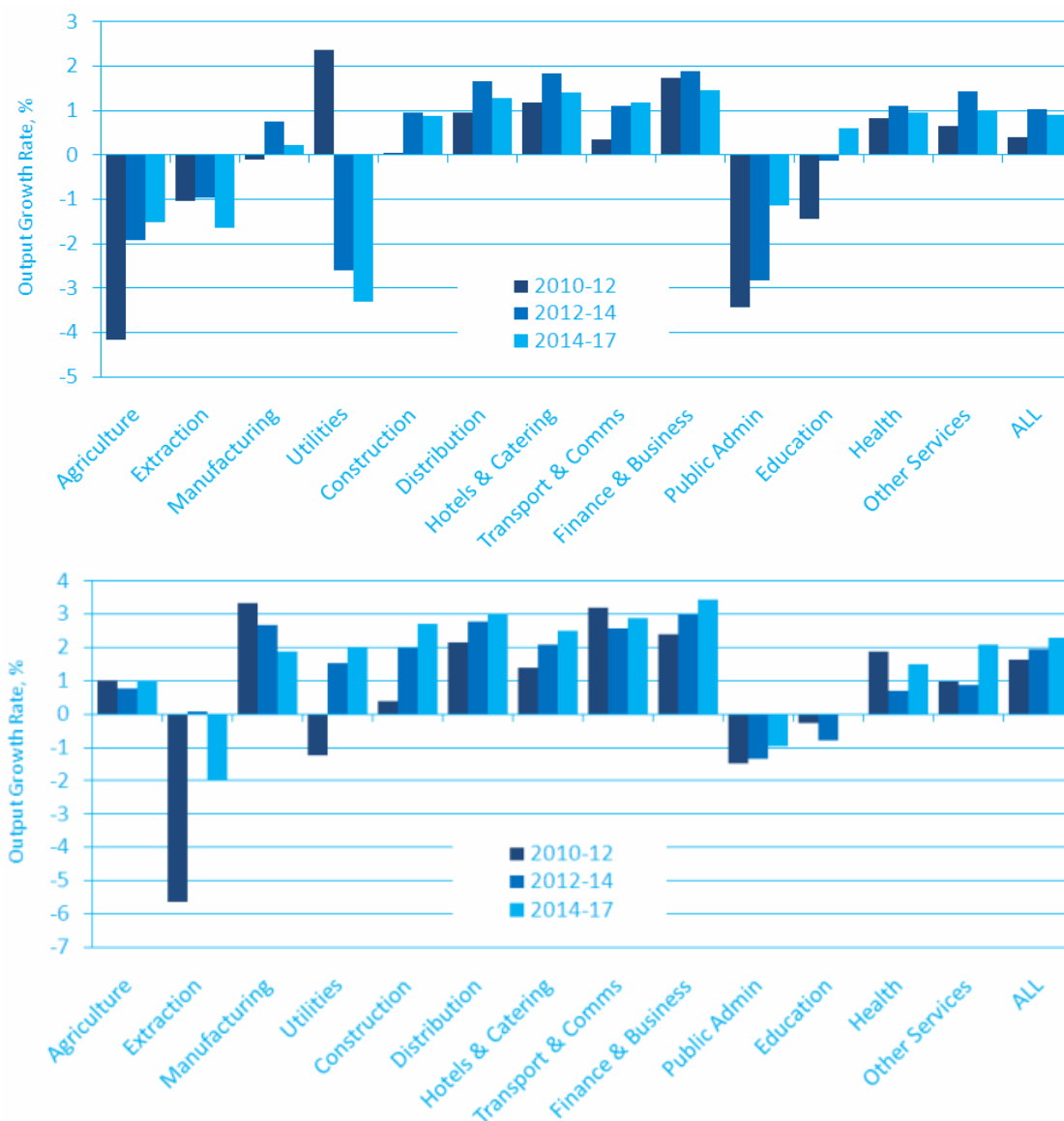
- 2.9 The UK economy has seen very little growth since 2010 quarter 3 and the Experian forecasts do not expect growth to pick up significantly over the next year. The risks to even this subdued forecast have increased considerably in the third quarter of 2011. The US and eurozone debt crises, stalling US recovery and patchy eurozone growth have heightened concerns that the global recovery is fading.
- 2.10 This would have serious implications for the UK, which is heavily dependent on exports and investment as the growth engines of its recovery. Indeed, Experian's September UK forecasts suggest GDP growth of just 0.9% this year and 1.4% for 2012. These short-term impacts will also impact on West Cumbria and have been to some extent offset by the additional adjustments made to the baseline position, as referenced in the following sub-section.
- 2.11 Medium-term UK prospects are constrained by weak household finances; less support from consumer credit, employment income and housing wealth than in the past decade; and above all the need to restore viability to government finances.

-
- 2.12 In the longer term Experian expect the UK GDP to grow at a rate of 2.2% per annum in 2013-17 with annual employment growth of 0.9% p.a over the same period. Currently, the key risk to the long-term forecast is that efforts to restore government and consumer finances seriously constrain growth.

Sectoral outlook

- 2.13 Manufacturing and, particularly, construction sectors enjoyed strong growth during most of 2010, although construction activity contracted during late 2010 and early 2011 and is expected to shrink during 2011 as a whole.
- 2.14 Experian expect that growth will remain weak during 2011 – as construction activity remains subdued, weaker household expenditure constrains growth of consumer services, and public sector cuts start to take effect. Prospects for robust output growth in manufacturing, supported by exports, are diminishing given weak global markets conditions – although short term prospects for the food and drink manufacturing sector appear more favourable.
- 2.15 Employment growth held up better than expected during 2010 and the first half of 2011 – with private sector job growth more than compensating for public sector cuts. However, the private sector economy appears to be weakening, and public cuts are starting to build, so overall Experian continue to expect to see growth weakening again later this year and possibly over 2012.

Figure 2.2: Medium-term UK industry prospects (top - GVA growth by sector, bottom - FTE employment growth by sector)



Source: Experian, 2011

Moderating the baseline position – Economic Development 2010 Workshops

- 2.16 A workshop was undertaken in 2010 with Economic Development teams from the authorities across Cumbria to adjust sectors and produce a modified baseline forecast. The purpose of producing a modified baseline for Cumbria was to ensure that local factors were fully captured. This included an assessment of the potential scale of public sector job losses, but also an evaluation of where the Experian baseline

forecast might be too pessimistic given known investment plans and local business intelligence.

- 2.17 A further scenario development workshop was also held in December 2010 to identify direct impacts that should be incorporated and these were then modelled to take account of indirect and induced impacts on the economy.
- 2.18 As part of this process, adjustments were made to the fuel refining sector based on assumptions about decommissioning and nuclear new build. However, these assumptions have been superseded by the inclusion of the latest Sellafield Lifetime Plan information (section 2.9) and the Nuclear New Build scenario presented in chapter 2.
- 2.19 For the latest baseline forecast, the direct adjustments made previously were assessed against Experian's April 2011 forecast to check whether the assumptions were still valid.
- 2.20 Finally, the County level sectoral adjustment factors were assigned to districts in Cumbria based on each districts baseline proportion of employment in each adjusted sector. The adjustment factors for West Cumbria by sector were then incorporated into the West Cumbria model.
- 2.21 In total, adjustments were made across 7 sectors, with an average annual adjustment of -600 jobs per annum relative to the Experian baseline – which represents an adjustment factor of -1%. The size of the adjustment by sector for West Cumbria is shown in the table below.

Figure 2.3: Adjustments to the Experian Forecasts based on the inputs of the Economic Development Teams across Cumbria

Sector	Average annual adjustment to Experian baseline 2011 – 2026
Public administration and defence	-180
Education	-120
Construction	-520
Gas, electricity and water	20
Hotels and catering	40
Transport	80
Transport equipment	100

Source: Experian, 2011

Sellafield – The Lifetime Plan

- 2.22 Information from the Sellafield Performance Plan was supplied by Sellafield Ltd on the annual decommissioning profile of Sellafield in terms of employment as well as information on expenditure on subcontractors.
- 2.23 A high and low range of data was provided to take into account potential efficiencies and additional activities within the existing workforce plan. On the advice of Sellafield Ltd, the mid point between the two was used to input into the baseline employment projections. This provided a moderated position as well as a level of flexibility to account for limited variations in employment levels over the Lifetime Plan period.
- 2.24 One such variation was presented following the modelling of the Lifetime plan in October 2011. The closure of the Mox plant on the Sellafield site was announced, with the immediate published impact including the loss of approximately 650 jobs. Following the announcement it is anticipated that the majority of those affected would be redeployed into existing vacancies or to take up newly created roles elsewhere on site. The net impact of the closure is therefore considered, in the context of the wider projection assumptions, to be relatively limited with the variation in total fte employment levels falling within the existing employment range, with the baseline forecast therefore not requiring an adjustment.
- 2.25 All direct employment impacts linked to the Lifetime Plan were assigned to Copeland given the location of the site. This reflects the fact that the forecasts are employment rather than resident based.
- 2.26 The model allows for the wider impact of changes to employment levels on a sector by sector basis. The wider impact, indirect and induced multiplier and labour market effects, of change are estimated in the attributing of impacts to each authority. The multiplier impacts of decommissioning are estimated for each district individually using a two region input-output model. This model allows for an estimation of the multiplier effect of an impact that occurs in Copeland by sector as well as the impact on employment by sector in Allerdale as a result of this change. For example, if 1,000 jobs were forecast to be lost from Copeland in business services, the model estimates the impact on other industry sectors in Copeland as well as the impact on all industry sectors in Allerdale. Due to the location of Sellafield the majority of wider impacts are captured within the model in Copeland.
- 2.27 A summary of some of the other modelling assumptions utilised in the integration of the Lifetime plan to the economic forecasts is set out below.
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The treatment of on-site employment

- 2.28 Employment at Sellafield is mostly defined as being allocated to the fuel refining industrial sector. A smaller proportion of employment also falls within the construction and business services industrial sectors.
- 2.29 The decommissioning information set out within the Lifetime Plan provided a breakdown of the workforce between permanent on-site employees and agency/ contract workers. Based upon guidance by Sellafield Ltd and an understanding of the current workforce profile the on-site employees were allocated to the fuel refining sector whilst agency/ contract workers were allocated to construction and business services.

Sub-contractor expenditure and employment

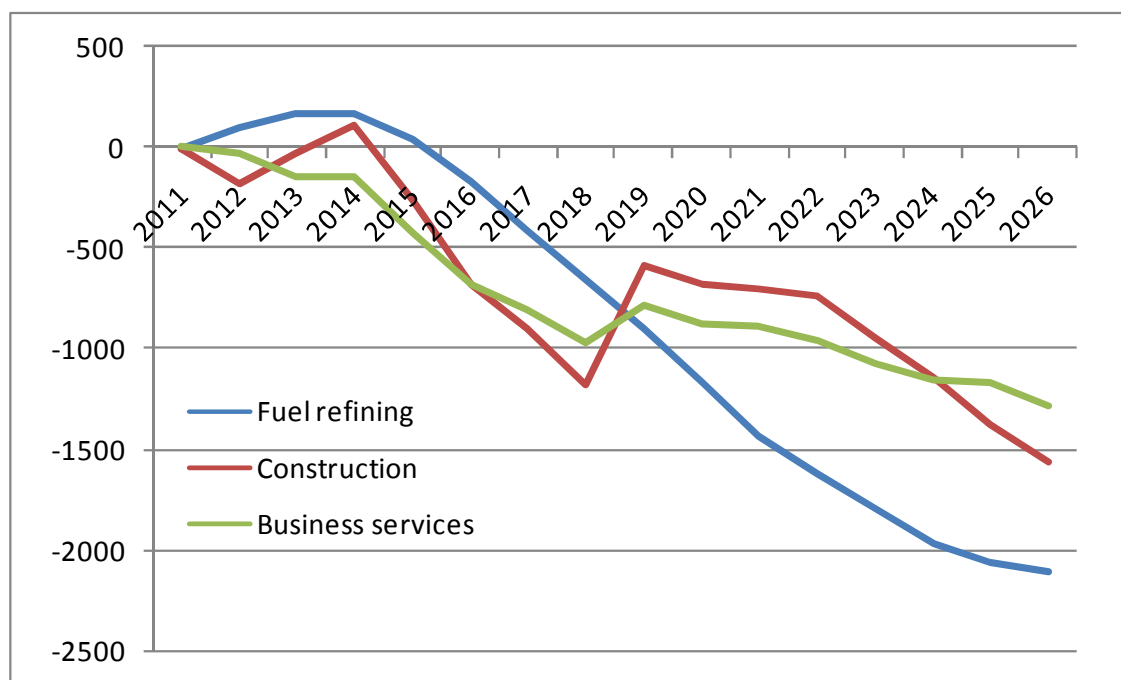
- 2.30 A large proportion of decommissioning activity on-site will be completed by sub-contractors. To understand the employment associated with sub-contractors an approach was agreed as part of the projection research to derive estimate of on-site employment from sub-contractor expenditure as follows:
1. Sub-contractor expenditure in real prices was provided by year by type of activity. The activity types were then allocated to industry sectors (fuel-refining, construction and business services);
 2. Sub-contractor expenditure was treated to be equal to turnover;
 3. Average turnover per employee by industry sector was calculated from the ONS Annual Business Inquiry 2. Turnover information from the ABI2 was deflated to real prices;
 4. Experian forecasts for each of the industry sectors were used to forecast turnover per head in each of the industry sectors out to 2026;
 5. Sub-contractor expenditure by industry sector was divided by turnover per employee by industry sector to derive average annual employment; and
 6. For some industry sectors it is apparent that more employment will occur on-site than others. A further calculation was applied to the employment estimates by year to account for this factor. For example, it was assumed that 100% of construction activity will occur on site, whilst for some business service activity the proportion will be nearer to 80%.

- 2.31 Using the above methodology sub-contractor employment by industry sector was added to the on-site employment derived from the Lifetime Plan to derive total direct decommissioning employment impacts by industry sector.

The Lifetime Plan Direct employment impacts

- 2.32 The direct impact of decommissioning on fuel refining, construction and business services is shown in the following chart.

Figure 2.4: Lifetime Plan Direct employment impacts of decommissioning



Source: Experian, 2011

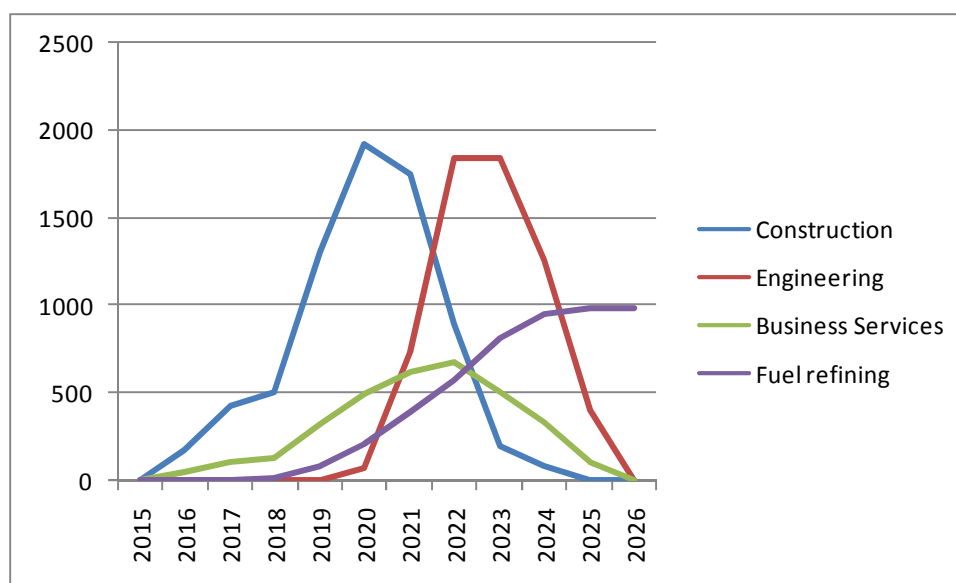
- 2.33 The chart illustrates that initially there are job gains in the fuel refining sector under decommissioning until 2015, after which employment falls steeply year on year until the end of the forecast period in 2026.
- 2.34 Business services experiences steady decline throughout the decommissioning process. After an initial decline and slight upturn, employment in the construction sector declines rapidly between 2014 and 2018. After this period, the construction sector sees some recovery before continuing on a downward trend between 2023 and 2026.
- 2.35 These forecast impacts on these specific sectors are integrated with the wider forecasts to produce a composite overall baseline economic forecast for West Cumbria.

2. Nuclear New Build Scenario

- 2.36 The proposition of Nuclear New Build represents a very 'real' future for West Cumbria. The Nuclear Topic Paper provides a detailed overview of the context for Nuclear New Build in the area. This Scenario is built around the assumption that a new Nuclear facility is delivered adjacent to Sellafield by NuGen Ltd.
- 2.37 Additional information is provided within the Nuclear Topic Paper around the anticipated impact of Nuclear New Build. This includes a review of the various sources of information and the potential caveats which should be applied in their application.
- 2.38 Principally the assumptions around Nuclear New Build have drawn upon the Cogent report: 'Next Generation: Skills for New Build Nuclear' as well as discussions with Sellafield Ltd and the authorities.
- 2.39 The following key assumptions are used to model the impact of Nuclear New Build on the economic forecasts:
- It is assumed that two new nuclear reactors will be built in West Cumbria;
 - The modelling assumes that the new build begins in 2016 with full operation by 2026 inclusive – an 11 year period;
 - Peak employment is almost 4,000 full-time equivalents (FTEs) in 2022, with an annual average employment figure of almost 2,000 FTE. This means that at the peak New Build will create an additional 4,000 jobs across West Cumbria. This needs to be offset against the falls in employment projected as a result of decommissioning which total over 5,000 over the period 2011 to 2026;
 - Nuclear new build jobs are split across 4 sectors this is shown in the chart on the following page. Consistent with the Cogent report, manufacturing has been excluded from the scenario due to the difficulties in modelling activities within this industrial sector, the majority of which occur off-site. Experian have adjusted the new build programme when compared with the profile shown in the Cogent report, with engineering jobs (mechanical and engineering jobs) following on from the construction jobs rather than peaking at the same time. On this basis:
 - Construction jobs peak in 2020 at almost 2,000 FTEs;
 - Engineering jobs peak between 2022 and 2023, at around 1,800FTEs;
 - Business services jobs, peak at almost 700 FTEs in 2022; and

- Fuel refining jobs, which is the operational employment for the new reactors peaks at the end of the period as both reactors become operational at almost 1,000 FTEs. It is as yet unknown how long these jobs would be sustained in the future, beyond the forecast period.

Figure 2.5: Breakdown of Nuclear New Build Jobs by Industrial Sector



Source: Experian, 2011

- 2.40 In terms of the distribution of the impacts of the modelled employment change forecast under the scenario the direct impacts of the majority of sectors are largely attributed to Copeland. However the direct employment impacts accruing to the engineering (metals) sector have been split equally between the two authorities. This is because employment in the sector in Copeland is very low and it is likely that the much larger employment base in Allerdale will be better positioned to deliver a large proportion of this work.

3. Nuclear Investment Scenario

- 2.41 It is recognised that the potential exists for considerable additional investment by the nuclear industry in West Cumbria beyond New build.
- 2.42 Some of this investment is dependent upon New Build and some operates separately, or is at least loosely connected. In addition, some projects involve early completion or delayed investment which in some cases has a negative impact on investment. The decision was made to incorporate all reasonable nuclear projects within this scenario based upon guidance provided by Sellafield Ltd.

Nuclear Investment Incorporated within the Scenario

2.43 Data was provided by Sellafield Ltd to inform the construction of this scenario. The following is a list of projects which are incorporated within the scenario. Further details around the individual projects are included within the Nuclear Topic Paper (SKM, 2011):

- Extension of Magnox operation plan end date
- Nuclear new build
- Early completion of SMP operations
- Late provision of a UK Mox plant in West Cumbria
- Provision of chemical pre-treatment facilities to support UK PU conversion
- Consolidation of exotic fuel management in West Cumbria
- Early closure of THORP
- Provision of new nuclear build spent fuel storage in West Cumbria
- Avoidance of provision of replacement highly active storage tanks

2.44 In order to provide a context to the employment implications of each project the following table sets out a summary of the direct employment and sub-contractor spend estimates as well as the anticipated phasing of the projects delivery.

Figure 2.6: Aggregated Nuclear Investment Projects – Employment / Sub-contractor Spend impact

Aggregated Nuclear Investment Projects			
Year	Direct Labour cost (£000's)	Direct FTEs	Supply Chain Spend (£000's)
2011	200	0	800
2012	-27,100	-470	-49,400
2013	-27,500	-470	-43,900
2014	-25,500	-440	-27,500
2015	-17,400	-300	-11,000
2016	-5,100	-80	1,700
2017	3,000	40	24,400
2018	22,700	390	49,400
2019	17,200	290	45,000
2020	6,800	110	14,800
2021	35,500	600	59,700
2022	23,000	400	48,100
2023	19,800	340	49,000
2024	45,700	790	239,900
2025	84,800	1,470	264,600
2026	101,700	1,750	292,900
2027	94,500	1,630	293,300
2028	60,600	1,050	232,500
2029	61,100	1,060	250,500
2030	60,000	1,040	250,200

Source: Sellafield Ltd, CCC, 2011

- 2.45 A similar approach to that used in the treatment of the Sellafield Lifetime Plan has been taken for each project to convert spend and job data provided by Sellafield into inputs into Experian's forecasting model. It is important to note from the list of projects included that a number of the projects result in a reduction in employment as a result of investment in technologies. This therefore has an impact in moderating the net effect of the uplift in jobs projected through the investment in Nuclear New Build set out in the preceding scenario and carried forward into this.

Other Potential Nuclear Projects not Included within the Scenario

- 2.46 In addition to the Nuclear Projects incorporated within the scenario there are a number of other potential areas of future investment by the nuclear sector which were identified by Sellafield Ltd. At this point in time it is difficult to assess when or whether these will be delivered. Given the level of uncertainty or their links to other areas of required investment these projects have therefore been omitted from the

forecasting at this time on the advice of Sellafield Ltd. However, it is recognised that they could have a major economic impact and may be factored into future projections.

2.47 These projects include:

- Geological Disposal Facility in West Cumbria
- Extension of SMP operations
- Early provision of a UK Mox plant in West Cumbria
- Extension of Thorp reprocessing (additional reprocessing)
- Extension of Thorp reprocessing (existing)
- Acceleration of broad front decommissioning
- Consolidation of intermediate level waste treatment facilities
- Increased investment in replacement national nuclear infrastructure
- Implementation of MoD Through-Life Plan

3. Presenting the Economic Scenarios

- 3.1 The outputs from each of the three economic scenarios are presented within this section. Primarily this focuses on the usual economic indicators, namely:
- Total Employment
 - Employment by Industrial Sector
 - Employment by Occupation
 - Gross Value Added (GVA)
- 3.2 It should be noted that these economic scenarios are workplace based, reflecting the location of employment and not necessarily the residence of the workforce.

Headline Findings

- 3.3 Prior to presenting the detailed analysis of the economic forecasts a short summary of the headline findings of the projections is included. This outlines the forecast changes to the economy across West Cumbria based upon the three scenarios introduced in the previous section.

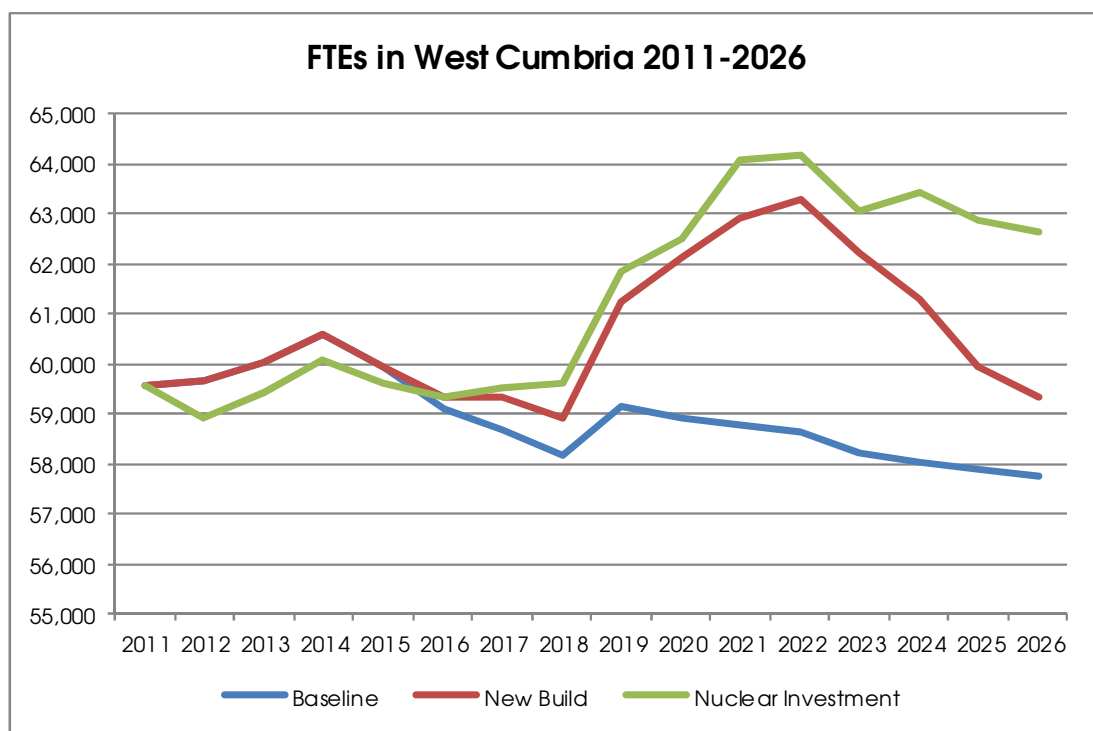
Employment Overview

- 3.4 Under the baseline scenario, West Cumbria is projected to lose from 2011, 1,800 FTEs (full time equivalent jobs) by 2026 (3.1% of the workforce). This will clearly have a notable effect on the economy of the area and its resident population.
- 3.5 Under the new build scenario, the loss of employment forecast under the baseline scenario is mitigated to an extent with the level of employment in 2026 forecast to be at a similar level to 2011. However, the trajectory of employment is less smooth with the construction of the new reactors adjacent to Sellafield causing a spike in employment levels.
- 3.6 Under the third scenario, which incorporates nuclear new build plus other planned nuclear investment associated with the current Sellafield operation, the forecasts show an initial fall in employment levels from the baseline position, with this linked to

the planned early closure of Mox⁴. The impact of nuclear new build is also evidenced under this scenario, however, the delivery of further nuclear investment projects serves to maintain the spike of employment levels witnessed under the construction phase to a greater extent. This means that the number of FTE jobs is 3,000 (5.2%) higher in 2026 than in 2011. The realisation of this scenario would therefore essentially mean that the area benefits from almost 5,000 additional jobs in the area creating a fundamentally healthier economy over the next fifteen years than that forecast under the baseline scenario.

3.7 The employment trajectories described above are illustrated in the following chart.

Figure 3.1: Forecast FTEs in West Cumbria under the three economic scenarios



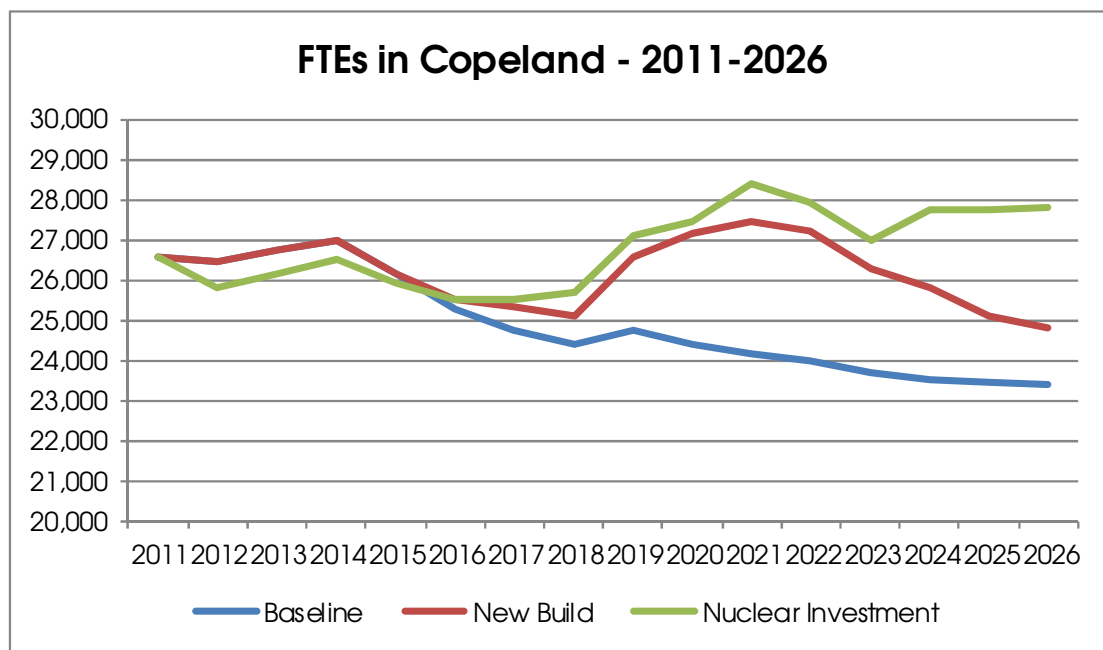
Source: Experian, 2011

3.8 The following charts split the FTEs down into the two constituent authorities in West Cumbria. Under the baseline scenario Copeland is projected to see a sharp decrease in employment, with the effects of decommissioning particularly impacting on the authority. By contrast Allerdale's employment base is projected to grow slightly over the forecast period under the baseline scenario, mainly due to growth in the service sector.

⁴ Note: This is discussed in Section 2 with the early closure of Mox confirmed. This will have an impact, as illustrated within this scenario on the baseline levels of employment.

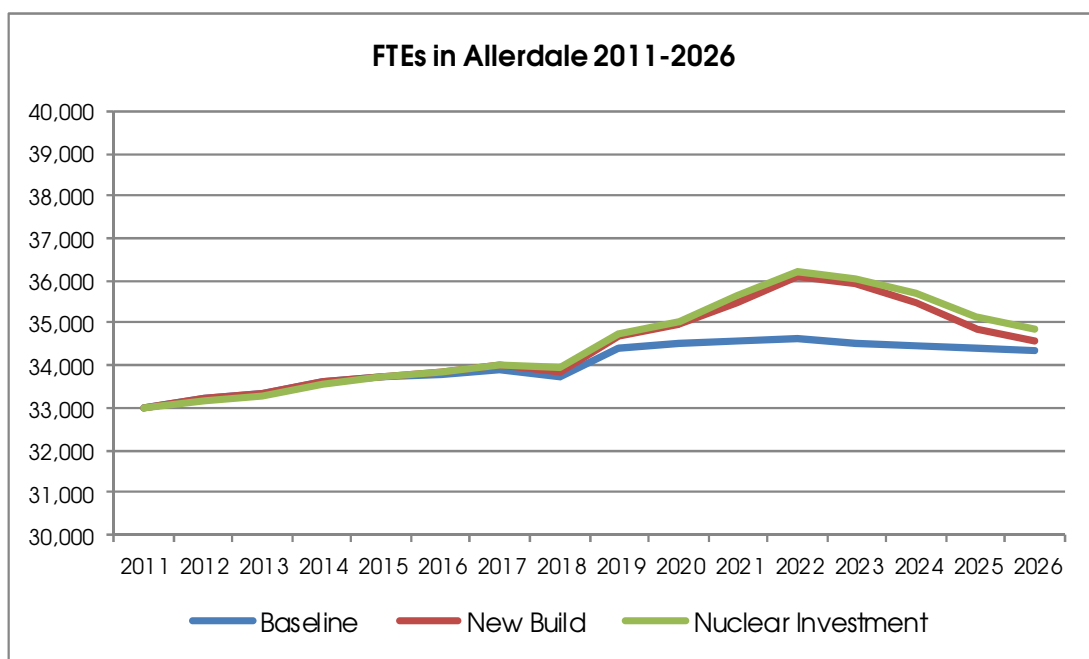
- 3.9 The location of Sellafield within Copeland has a fundamental impact on the distribution of the forecast levels of job changed, with the forecast representing employment-based projections.
- 3.10 This is particularly marked under the nuclear new build scenario and the nuclear investment scenario with the majority of jobs attributed to Copeland. This picture is developed slightly differently when considering the spatial distribution of the workforce taking up these jobs, an issue which is explored in greater detail within Section 6 of this projections paper.
- 3.11 Whilst the majority of employment change attributed to nuclear investment and new build is attributed to Copeland there are some supply chain and multiplier effects in Allerdale.

Figure 3.2: FTEs in Copeland 2011 – 2026 – the three economic forecast scenarios



Source: Experian, 2011

Figure 3.3: FTEs in Allerdale 2011 – 2026 – the three economic forecast scenarios

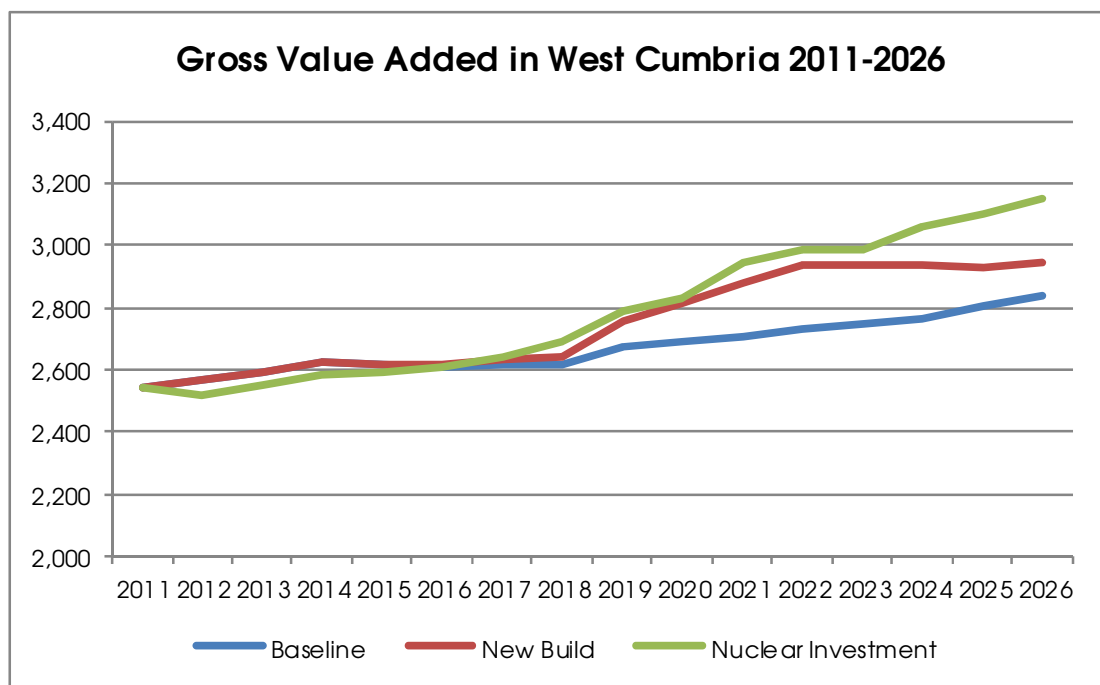


Source: Experian, 2011

Gross Value Added Overview

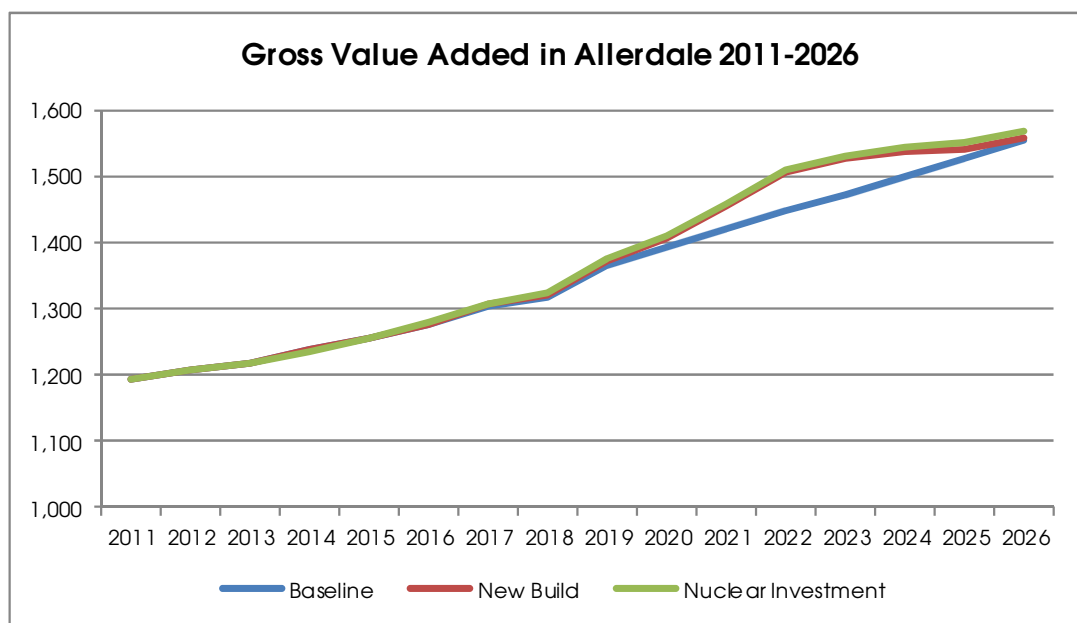
- 3.12 Whilst the previous summary section examines employment levels the forecasts also show the impact of change on Gross Value Added, the economic output of the area.
- 3.13 Under the baseline scenario, West Cumbria's GVA is expected to grow by 11.5% (£293m) by 2026. This is important, it illustrates that even with projected net job FTE job losses over the period 2011 to 2026 the economy is projected to grow in output terms.
- 3.14 Under the new build scenario, GVA in West Cumbria is projected to grow by 15.6% (£397m). The implication being that the impact of Nuclear New Build is the addition of some £100m in GVA terms to the economy. The modelling of the additional nuclear investment raises the level of GVA growth to a total increase of 23.8% over the same period (£605m). The impact of this planned investment on the economy of West Cumbria is therefore marked with the change in GVA doubling against the baseline forecast.

Figure 3.4: Gross Value Added in West Cumbria 2011 – 2026 – the three economic scenarios

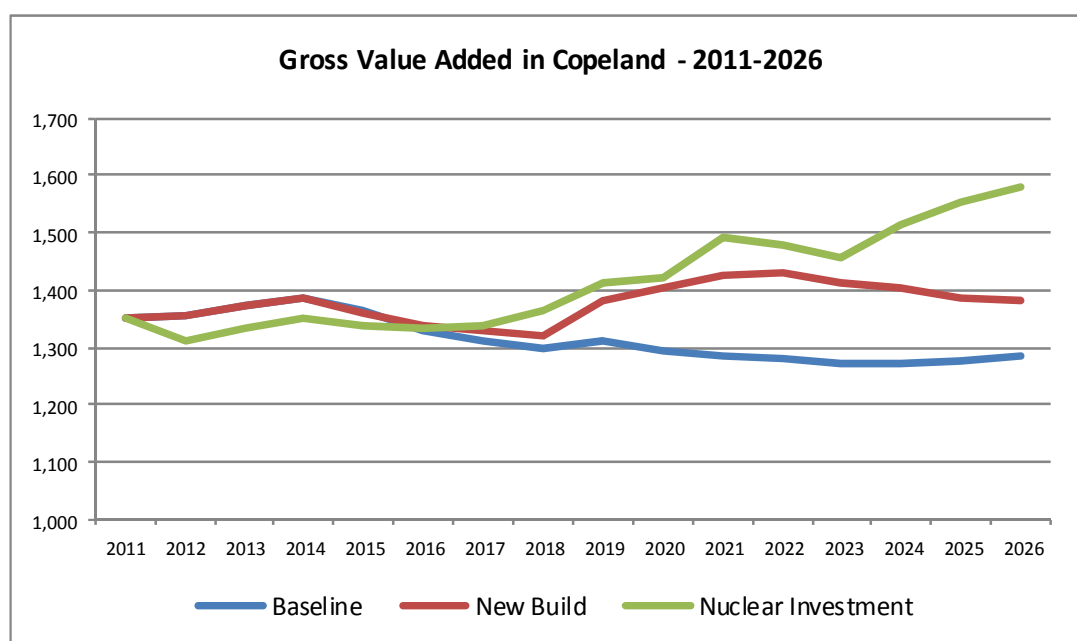


Source: Experian, 2011

3.15 The following charts break the GVA forecasts down into Copeland and Allerdale.

Figure 3.5: Gross Value Added in Allerdale 2011 – 2026 – the three economic scenarios

Source: Experian, 2011

Figure 3.6: Gross Value Added in Copeland 2011 – 2026 – the three economic scenarios

Source: Experian, 2011

-
- 3.16 The GVA growth projected under the baseline scenario is being driven by growth in Allerdale where GVA is projected to grow by 30%, in contrast to Copeland where it is projected to fall slightly (4.9%). This reflects the impact of decommissioning at Sellafield on the economy of Copeland.
- 3.17 Under the new build scenario, GVA growth in Allerdale is similar to the baseline at 30.6% and in Copeland the decline under the baseline is reversed and limited growth of 2.4% is projected. Under the nuclear investment scenario, GVA growth in Allerdale is slightly higher than the other two scenarios at 31.4% and Copeland sees a significant improvement with GVA growth of 17.1% projected.
- 3.18 Each of the scenarios are analysed below in greater detail. This includes an examination of the impact on occupations as well as the industrial sectors driving the forecast changes in the economy in each authority.

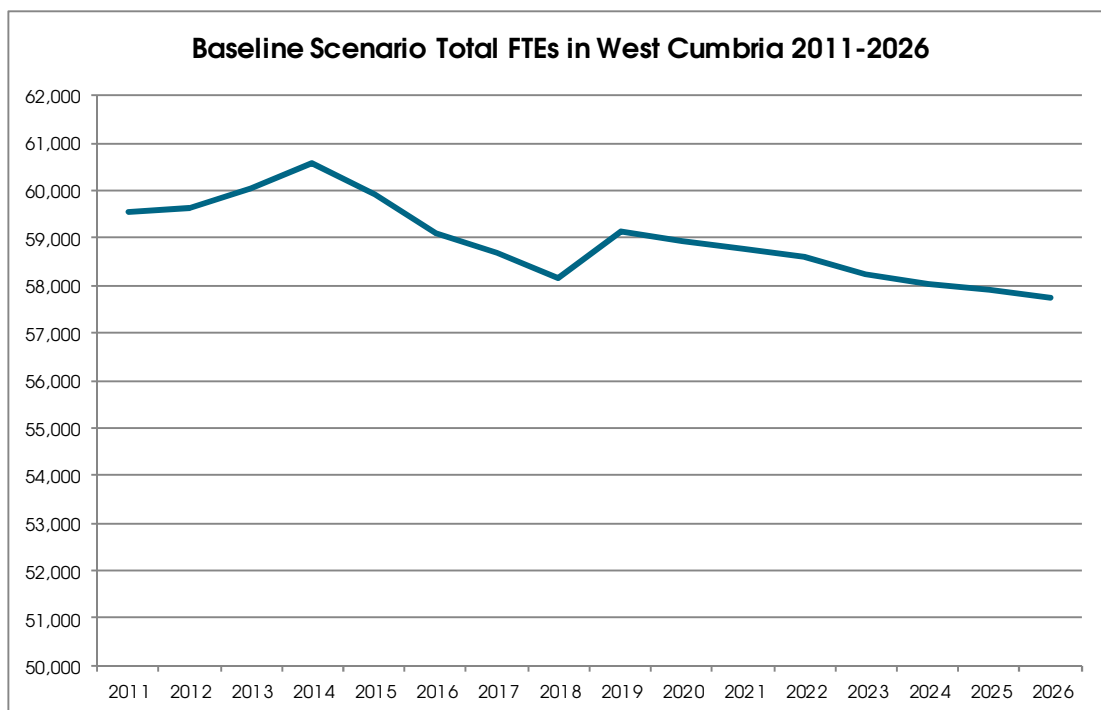
Baseline Scenario

- 3.19 As described in Section 2, this scenario includes the latest Experian UK forecasts, input by local authority Economic Development teams from January 2011 and the latest Sellafield Workforce Plan from 2011 onwards.

Baseline Total FTEs

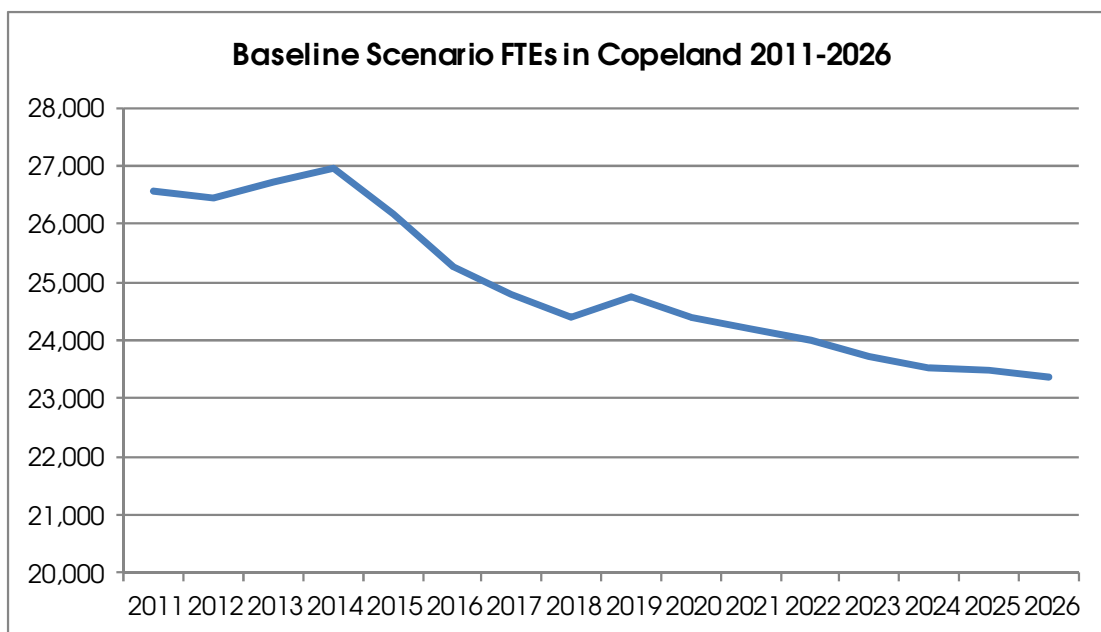
- 3.20 Under the baseline scenario, the total number of FTEs in West Cumbria starts at 59,600 in 2011 rises slightly in the short term before dipping to 58,000 by 2018. This is followed by a short term recovery due to increased subcontractor activity at Sellafield, and then by a slow, steady decrease to 57,700 in 2027. Overall, the decline is 3.1% (1,800) between 2011 and 2026.

Figure 3.7: Baseline Scenario Total FTEs in West Cumbria 2011 - 2026

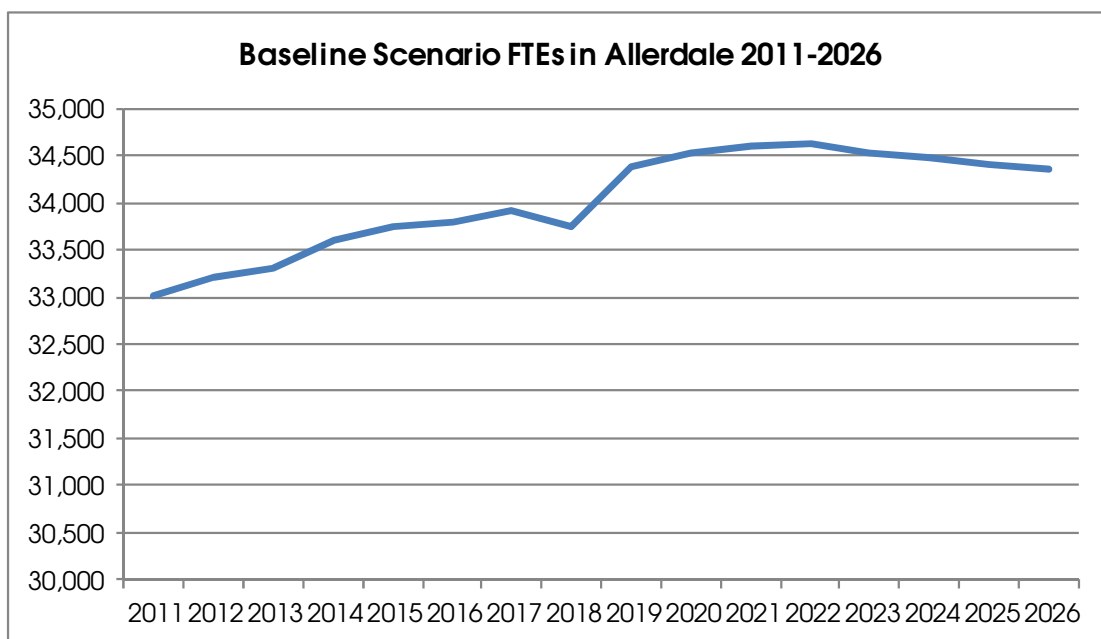


Source: Experian, 2011

3.21 The following charts split this forecast by the two authorities.

Figure 3.8: Baseline Scenario FTEs in Copeland 2011 - 2026

Source: Experian, 2011

Figure 3.9: Baseline Scenario FTEs in Allerdale 2011 - 2026

Source: Experian, 2011

-
- 3.22 The baseline trend in employment is markedly different between Allerdale and Copeland. This is driven primarily by the major employment change in the nuclear industry, which takes place at sites, mainly Sellafield, in Copeland.
- 3.23 Allerdale is projected to see moderate employment growth throughout the period, with the exception of a small dip around 2018 which is due to the spillover effect of employment reductions in construction activity associated with Sellafield. Overall, employment in Allerdale is projected to grow by 1,300 (4.1%) between 2011 and 2026. In Copeland on the otherhand, employment shows an initial increase associated with decommissioning activity before falling steadily to 2026, ending the period with 3,200 fewer FTEs (down 12%).
- 3.24 The following table shows the numbers which sits behind the charts, including annual FTEs for each authority and the change on a year-by-year basis.

Figure 3.10: Baseline Scenarios – FTEs by District and Annual Change 2011 - 2026

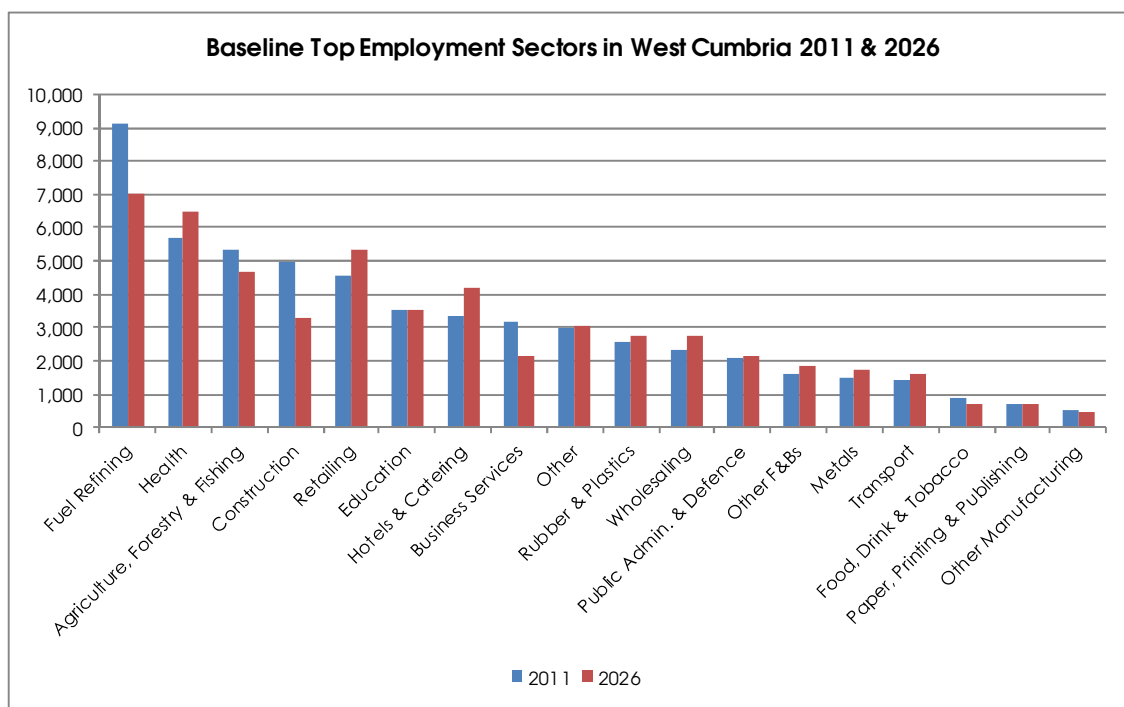
Baseline Scenario – FTEs by District and Annual Change – 2011-2026																
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Allerdale	33,007	33,207	33,307	33,610	33,752	33,797	33,919	33,747	34,389	34,526	34,601	34,629	34,530	34,489	34,411	34,352
Annual Change		200	100	303	142	45	122	-172	642	137	75	28	-99	-42	-77	-59
Copeland	26,566	26,435	26,739	26,960	26,187	25,285	24,777	24,415	24,768	24,397	24,183	23,998	23,708	23,527	23,480	23,384
Annual Change		-131	304	221	-773	-902	-508	-362	353	-371	-214	-185	-290	-181	-47	-96
West Cumbria	59,573	59,642	60,045	60,570	59,939	59,081	58,696	58,161	59,157	58,924	58,784	58,627	58,238	58,016	57,892	57,737
Annual Change		69	404	524	-630	-858	-386	-534	996	-234	-139	-157	-389	-222	-124	-155

Source: Experian, 2011

Baseline Scenario FTEs by Industrial Sector

- 3.25 The biggest sector in West Cumbria in employment terms is fuel refining with 9,100 FTEs in 2011. This is followed by health (5,700), agriculture (5,300), construction (5,000) and retail (4,500). Together, these five sectors account for 50% of all FTEs in the area.
- 3.26 During the baseline forecast period, employment in fuel refining is projected to fall by 2,100 (23.1%), construction by 1,700 (34.7%) and business services by 1,000 (32.4%). Most of this is linked to changes at Sellafield, although the construction sector is under pressure generally and is projected to lose employment in areas unrelated to the nuclear sector.
- 3.27 Several sectors are projected to experience employment growth during the period, chiefly the hotels & catering sector which is projected to grow by 850 FTEs (25.0%), the retail sector 800 (17.1%) and health 750 (12.9%).
- 3.28 The scale of current employment and the projected change by sector is illustrated in the following chart across West Cumbria. This picks out the major employment sectors to illustrate the forecast impact of economic change.

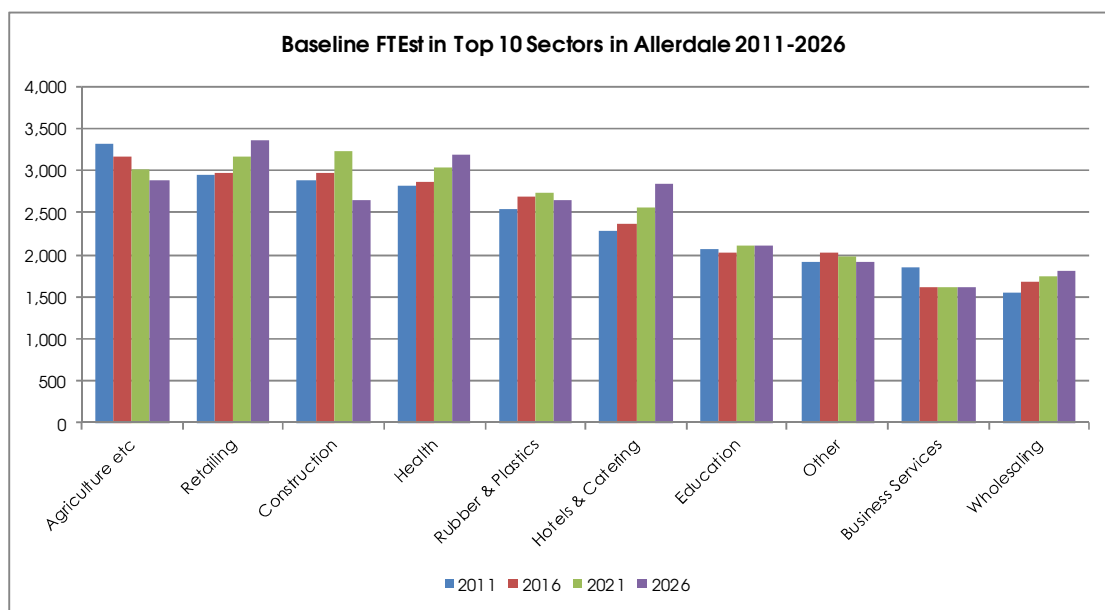
Figure 3.11: Baseline Scenario Top Employment Sectors in West Cumbria 2011 and 2026



Source: Experian, 2011

- 3.29 Looking at the individual authorities Allerdale is expected to see employment growth in retailing, health and hotels & catering throughout the projection period but is expected to see a decline in agriculture and construction. Other sectors remain relatively stable.

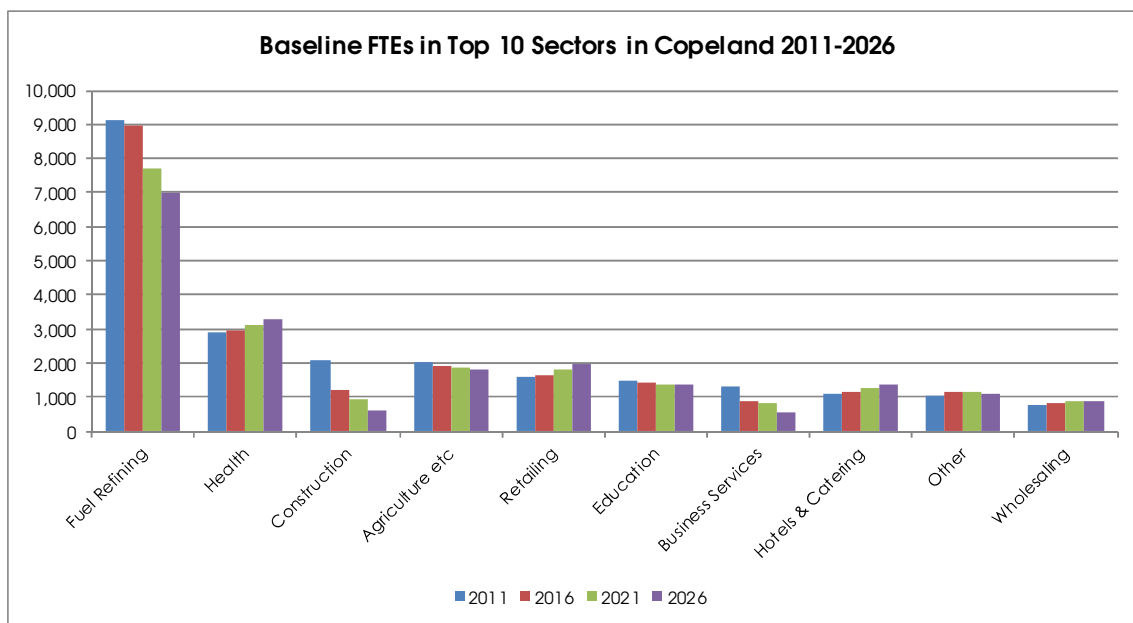
Figure 3.12: Baseline FTEs in Top 10 Sectors in Allerdale 2011 - 2026



Source: Experian, 2011

- 3.30 In contrast to Allerdale where employment is relatively evenly distributed across a number of sectors, employment in Copeland is dominated by the nuclear sector, as is demonstrated by the following chart. Despite projected employment growth in health, retailing and hotels & catering, this is insufficient to counter the projected declines in fuel refining, construction and business services in this sector.

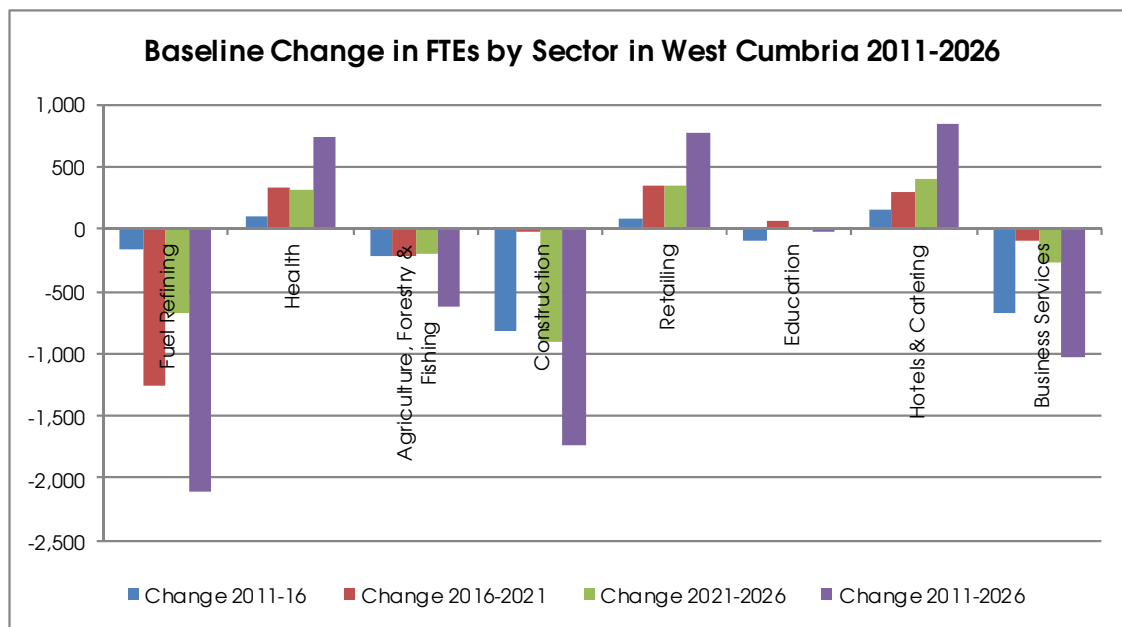
Figure 3.13: Baseline FTEs in Top 10 Sectors in Copeland 2011 - 2026



Source: Experian, 2011

- 3.31 It is important to understand how these forecast job changes vary across the plan period in order to understand how policy and strategy should look to respond. The following chart illustrates that the highest number of fuel refining jobs are lost across West Cumbria during the middle part of the plan period, 2016-2021, whilst there are two periods of notable job losses in construction in 2011-2016 and in 2021-2026.

Figure 3.14: Baseline Change in FTEs by Sector in West Cumbria – Split by five year time periods



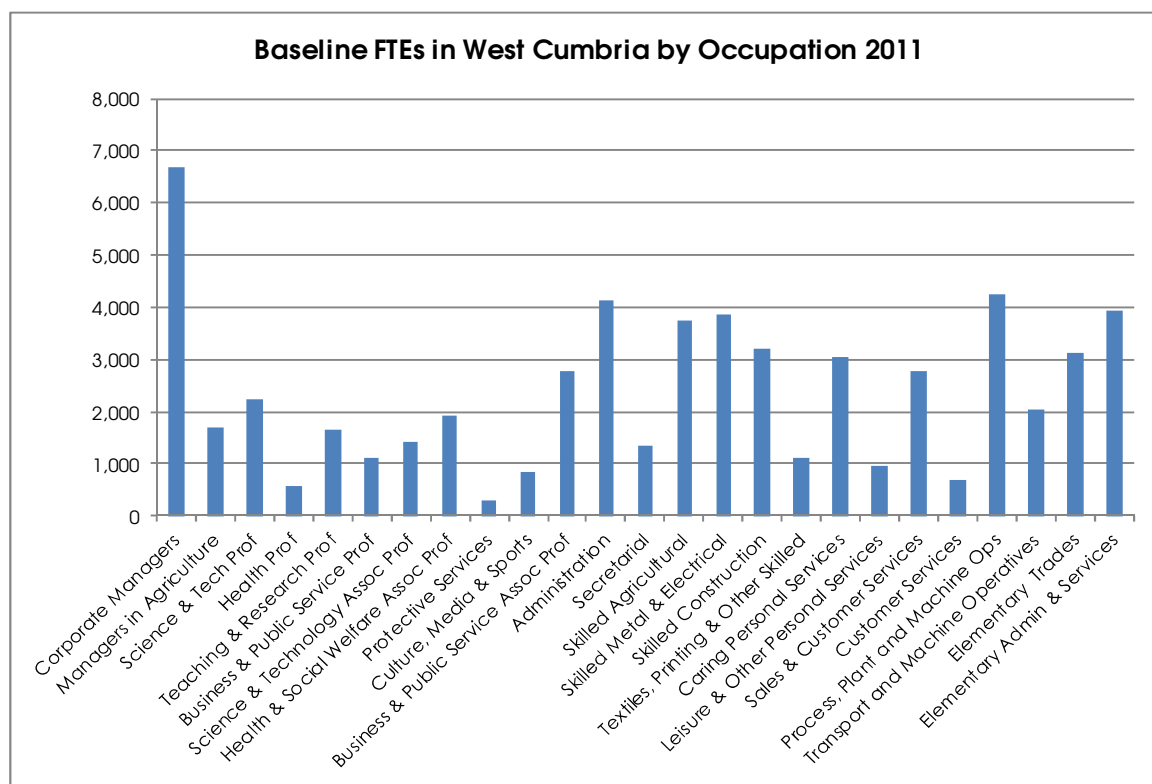
Source: Experian, 2011

Baseline FTEs by Occupation

- 3.32 The occupational structure of a local economy is determined by the industrial profile. West Cumbria's profile reflects the presence of significant manufacturing, agriculture, health and tourism related employment a legacy of the historical evolution of the economy of the area.
- 3.33 In 2011 the largest occupational group across West Cumbria is the grouping 'corporate managers'⁵, with 6,700 FTEs in this classification covering a variety of sectors. There is a notable gap in scale to the next largest occupational groups, which are: 'process, plant & machine operatives' (4,200), 'administration' (4,100), 'elementary admin & services' (4,900), 'skilled metal & engineering' (3,900) and 'skilled agricultural' (3,800).
- 3.34 This current breakdown is illustrated in the following chart.

⁵ Note: The classification 'Corporate Managers' is a broad occupational category comprising public sector managers, production, construction and engineering sector managers, finance, marketing, sales, customer service and personnel managers, office managers, distribution, warehouse and retail managers. The occupation group will therefore capture many of the jobs at Sellafield and related engineering and construction activities.

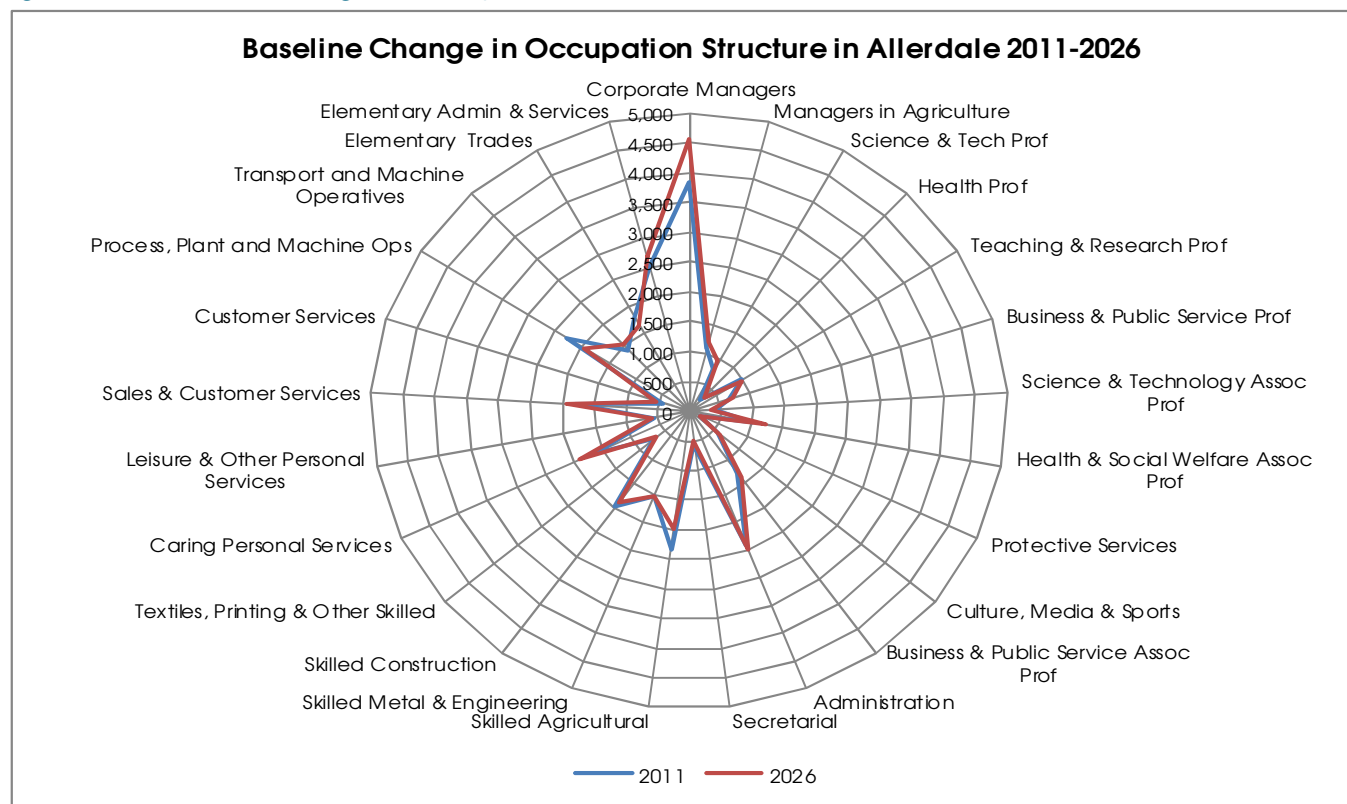
Figure 3.15: Baseline FTEs in West Cumbria by Occupation 2011



Source: Experian, 2011

- 3.35 Within the forecast period (2011 – 2026), the reduction in employment in the nuclear sector and related construction and business services, together with the growth in the health, retail and hotel & catering sectors is reflected in a shift in the balance of occupations away from process and engineering jobs and towards customer service related occupations. Clearly this will have a major impact on the demand for skills in the local workforce.
- 3.36 The following charts show the distribution of employment by occupation in 2011 and 2026 for each of the two districts. As stated earlier, this relates to jobs located in these areas, not to resident occupations and in reality, there will be movement of workforce across boundaries to take up relevant employment opportunities (an issue examined in more detail in the latter chapters of this paper).

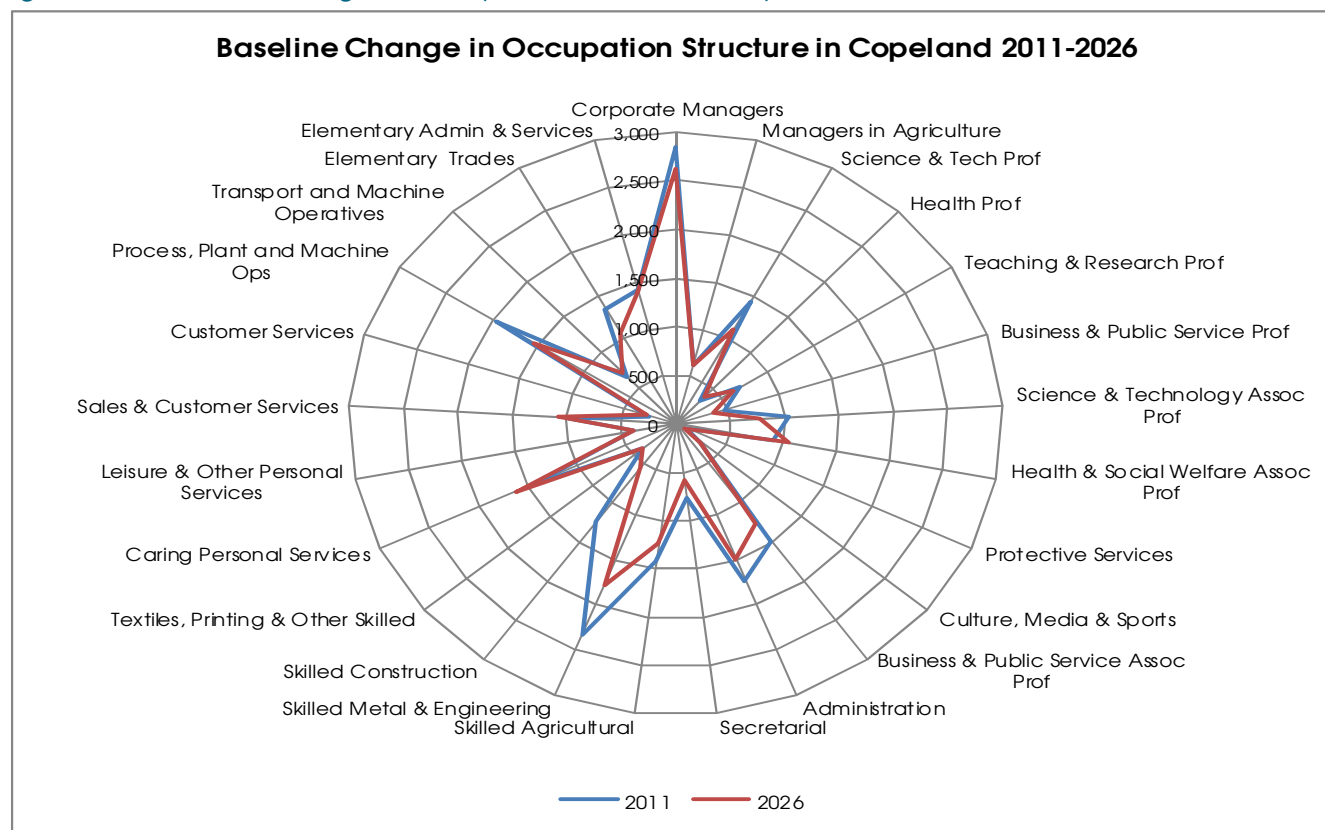
Figure 3.16: Baseline Change in Occupation Structure in Allerdale 2011 - 2026



Source: Experian, 2011

- 3.37 In Allerdale, the chart illustrates that the main changes are a demand for more corporate managers, balanced by fewer process, plant & machine operatives and fewer skilled agricultural workers.

Figure 3.17: Baseline Change in Occupation Structure in Copeland 2011 – 2026



Source: Experian, 201

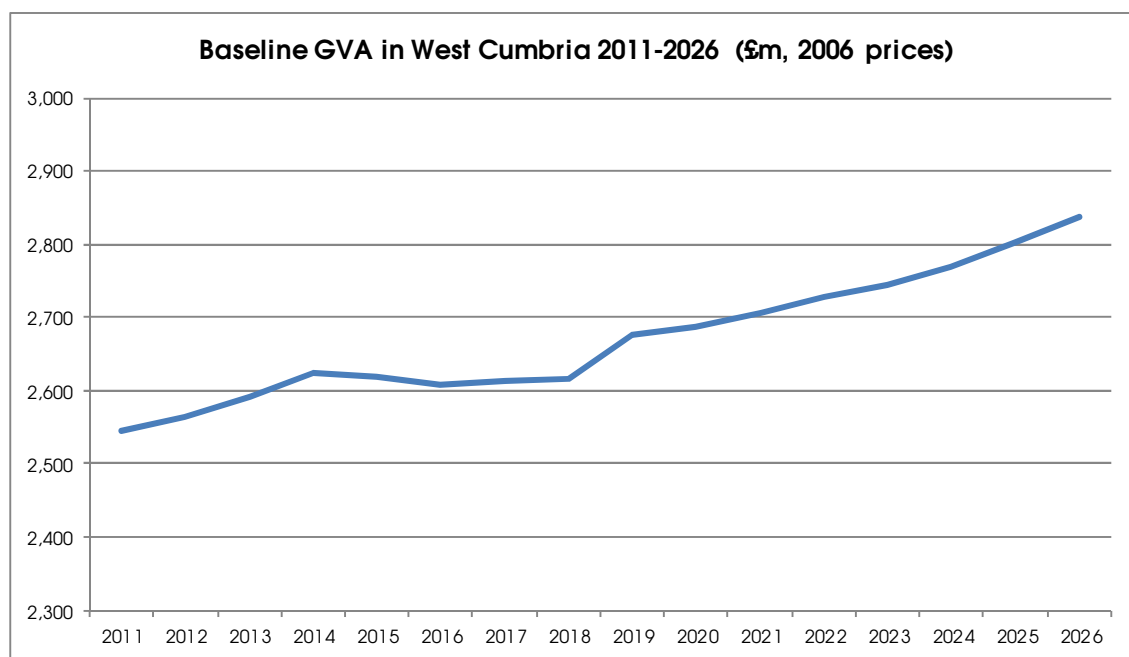
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- 3.38 In Copeland, the change in occupational distribution is more marked, reflecting the changes in the nuclear and related sectors. Here, there is a decline in the demand for process, plant & machine operatives, skilled construction, skilled metals & engineering, business & public services, administration and science professionals. There is marginal increase in the demand for health professionals, caring personal services and sales occupations.

Baseline Gross Value Added

- 3.39 Gross Value Added (GVA) represents the value of goods and services produced in an area. It is strongly influenced by wages and therefore sectors with higher average earnings per employee contribute more to GVA than low wage sectors. As a result, changes in occupational structure can influence GVA significantly, even where total employment may remain similar.
- 3.40 In West Cumbria, GVA is projected to rise by £293m (11.5%) over the period 2011-2026. In the previous 14 years, GVA in the NUTS3 area of West Cumbria (which includes Barrow) increased by 48% which demonstrates the slowdown in economic growth which is projected to occur in West Cumbria as a result of economic restructuring.
- 3.41 As the following chart shows, there is a dip in GVA around 2015-2018 reflecting the reduction in high value employment at Sellafield before there is a recovery to 2026. Not surprising, it is the fuel refining sector which sees the biggest fall in GVA (£136m) whilst retail (£76m) and health (£64m) see the biggest growth.

Figure 3,18: Baseline GVA in West Cumbria 2011- 2026



Source: Experian, 2011

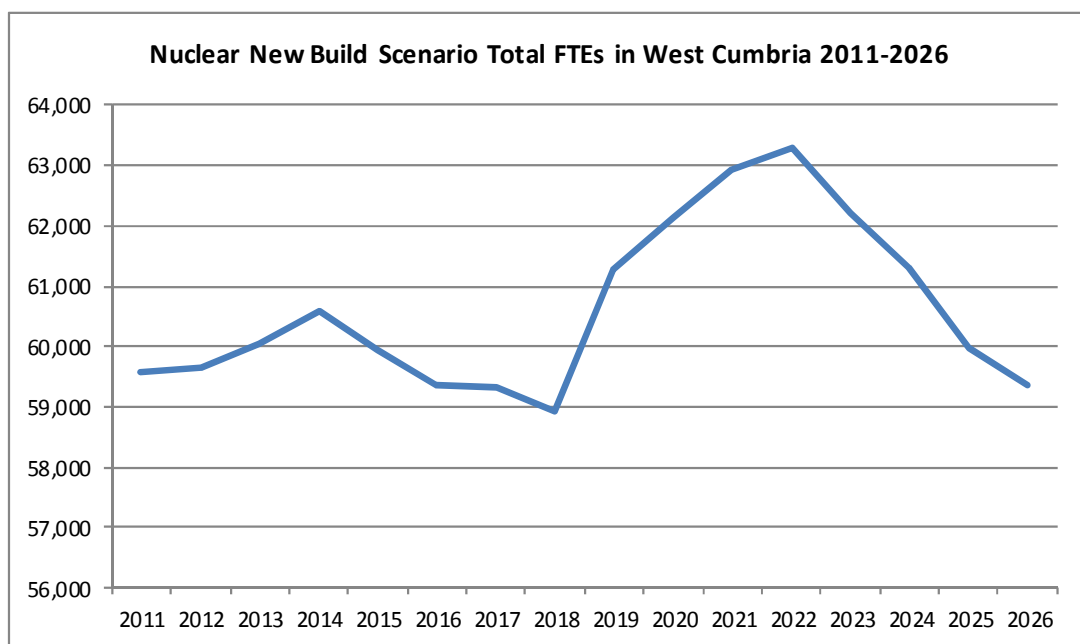
Nuclear New Build Scenario

- 3.42 This scenario takes the baseline position and factors in assumptions about a potential new nuclear facility in West Cumbria (detailed in Section 2), based on the best information currently available.

Nuclear New Build Total FTEs

- 3.43 Under the new build scenario, the total number of FTEs in West Cumbria ends the projection period in 2026 at a similar level to the current level in 2011; however this masks a period of major change in the intervening period. Employment rises in the short term to 2014 before dropping to a low of 59,000 in 2018. Thereafter there is a steep period of growth during the new build construction period, peaking at 63,300 in 2022, before falling back to 59,350 by 2026.

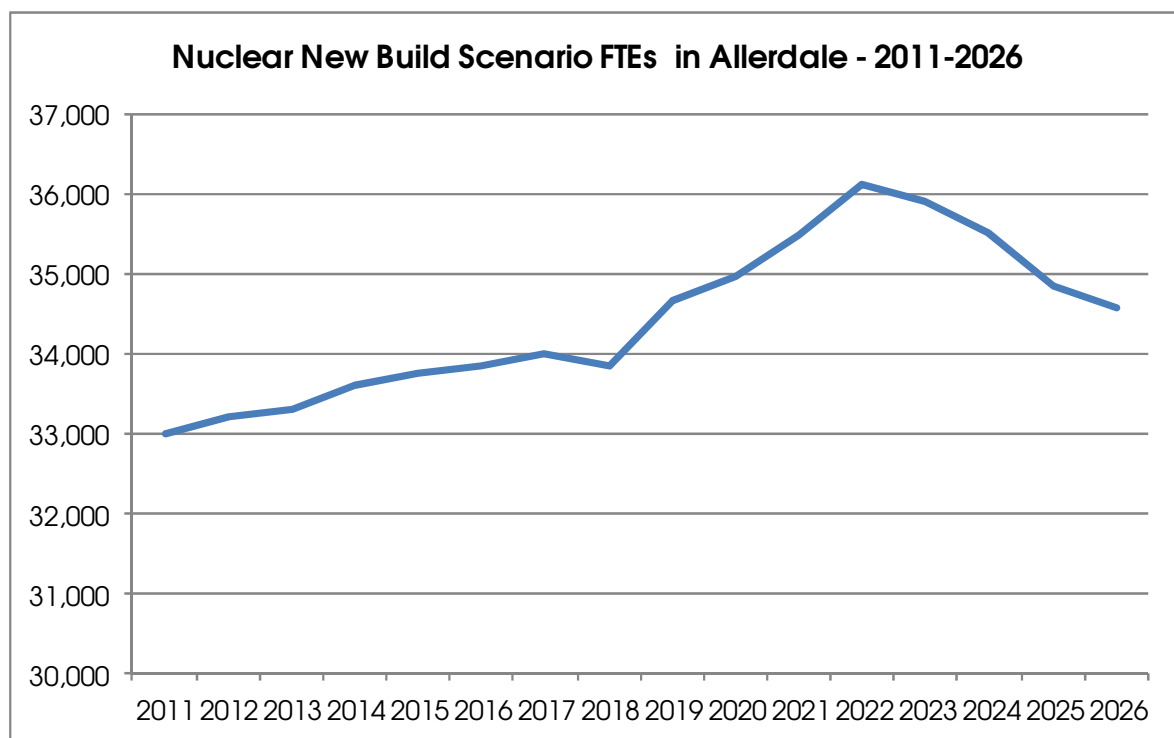
Figure 3.19: Nuclear New Build Scenario Total FTEs in West Cumbria 2011 - 2026



Source: Experian, 2011

- 3.44 The following charts show the breakdown of FTEs by the two authorities under the Nuclear New Build Scenario.

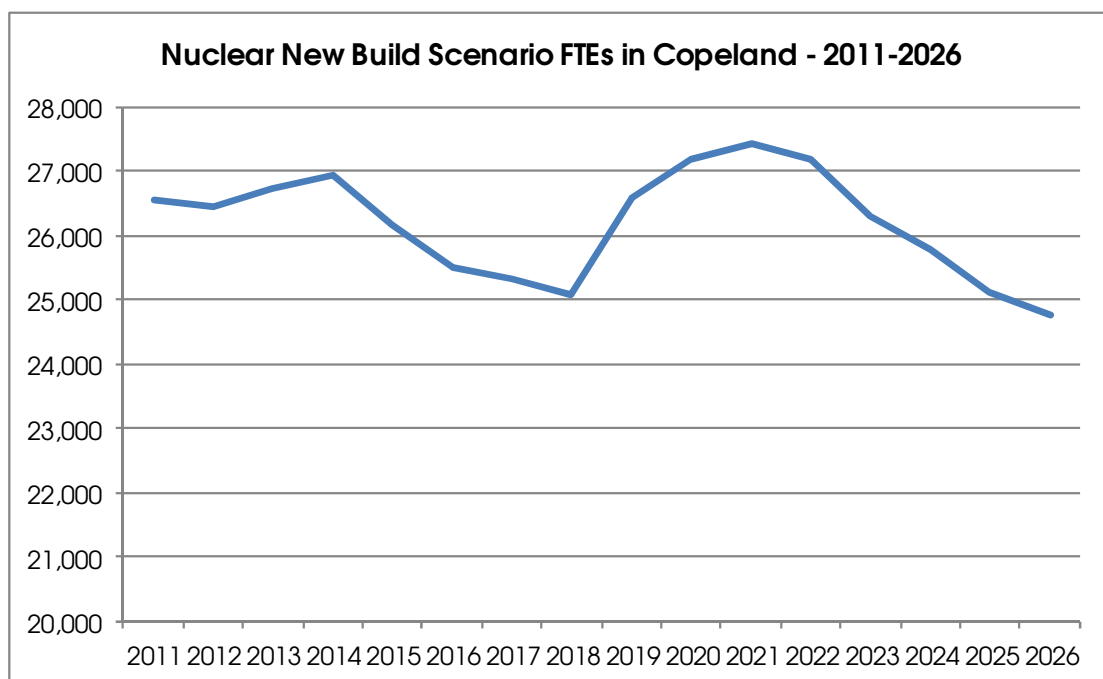
Figure 3.20: Nuclear New Build Scenario FTEs in Allerdale – 2011 – 2026



Source: Experian, 2011

- 3.45 During the projection period, under the nuclear new build scenario, Allerdale sees some increased employment growth in the latter part of the period compared to the baseline with employment 4.7% higher in 2026 (baseline 4.1% increase). As with West Cumbria as a whole, there is a boost to employment in Allerdale during the anticipated peak new build construction period as companies in the supply chain benefit from contracts.
- 3.46 In Copeland as is shown in the following chart, the trend is more varied with decline during the first half of the projection period as decommissioning takes effect. Here, employment in 2018 is 1,500 lower than in 2011. There is then a period of steep growth to 2021 when employment in Copeland peaks at 27,400 before falling back down to 24,800 as the construction phase comes to an end. By the end of the projection period, FTEs in Copeland are 6.7% lower than in 2011 (12% lower in the baseline).

Figure 3.21: Nuclear New Build Scenario FTEs in Copeland – 2011 - 2026



Source: Experian, 2011

- 3.47 The table over the page displays the forecast number of FTEs under the Nuclear New Build Scenario on an annual basis, illustrating annual levels of change for each authority.

Figure 3.22: Nuclear New Build Scenario – FTEs by District and Annual Change 2011 - 2026

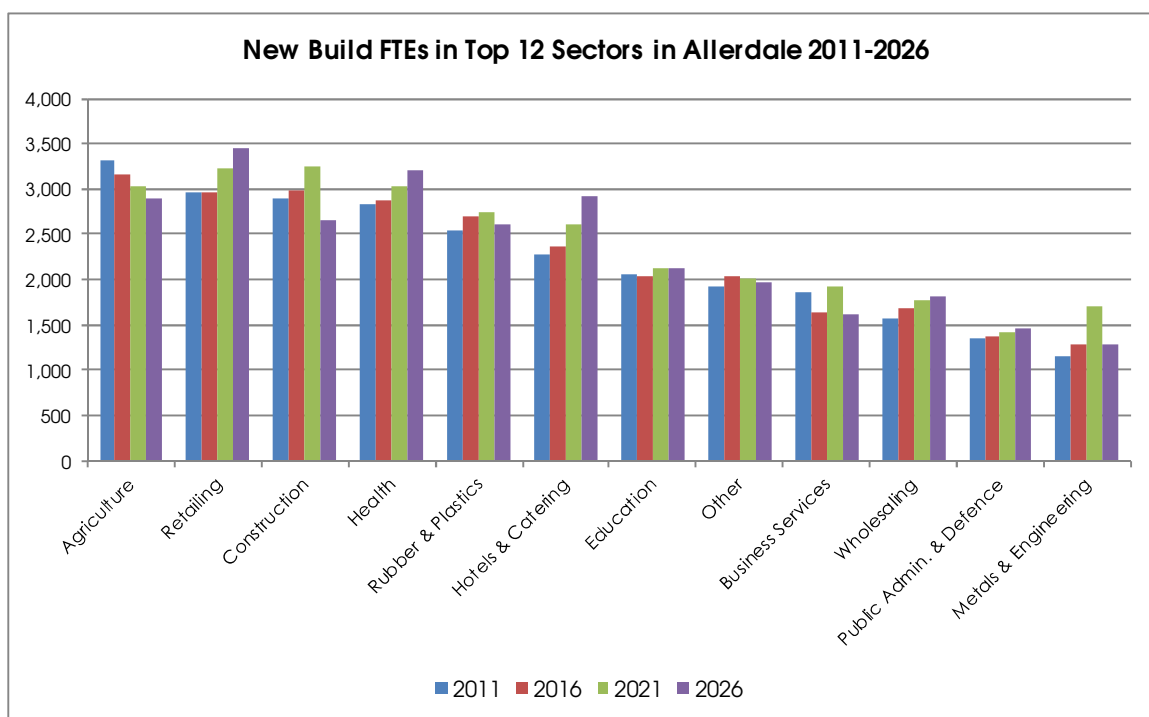
New Build Scenario –FTEs by District and Annual Change 2011-2026																
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Allerdale	33,007	33,207	33,307	33,610	33,752	33,836	34,007	33,847	34,676	34,978	35,484	36,117	35,904	35,506	34,856	34,561
Annual Change		200	100	303	142	84	170	-159	829	302	505	633	-213	-398	-649	-295
Copeland	26,566	26,435	26,739	26,960	26,187	25,519	25,329	25,083	26,583	27,172	27,433	27,193	26,295	25,791	25,107	24,784
Annual Change		-131	304	221	-773	-668	-190	-246	1,500	589	261	-239	-898	-504	-684	-323
West Cumbria	59,573	59,642	60,045	60,570	59,939	59,355	59,335	58,930	61,259	62,150	62,917	63,310	62,199	61,296	59,963	59,345
Annual Change		69	404	524	-630	-584	-20	-405	2,329	891	766	394	-1,112	-902	-1,333	-618

Source: Experian, 2011

Nuclear New Build FTEs by Industrial Sector

- 3.48 The following charts illustrate the change in FTEs by Sector under the Nuclear New Build Scenario broken down by five year periods.

Figure 3.23: New Build Scenario FTEs in Top 12 Sectors in Allerdale – Five year time periods 2011 - 2026



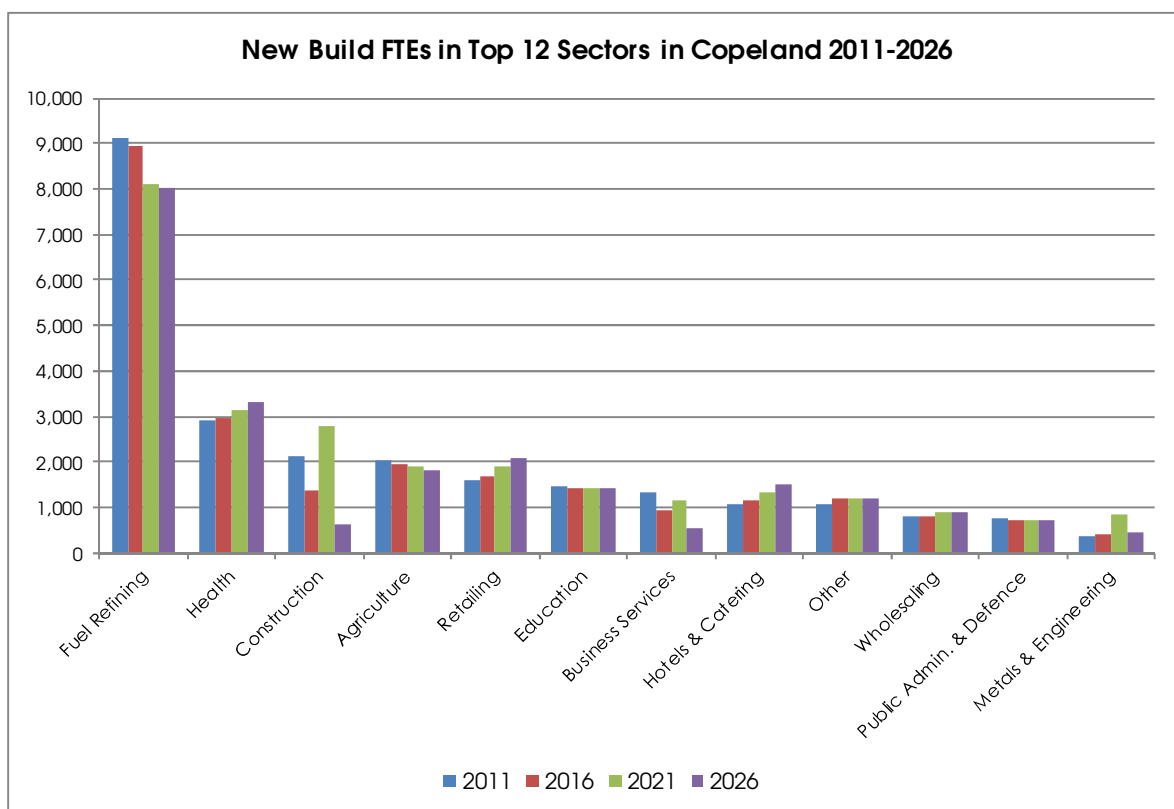
Source: Experian, 2011

- 3.49 The new build scenario sees employment growth peak in the latter half of the period in Allerdale. When contrasting sectoral growth with the baseline scenario there is a notable level of additional growth in the construction sector and in metals & engineering (where many construction related engineering jobs are found). There is also a boost to employment in business services up to 2021 before it falls back again by the end of the period. Finally the hotels and catering sector also sees a slightly elevated level of growth over the latter two periods linked to the New Build investment.
- 3.50 In Copeland, fuel refining employment falls under the new build scenario but not as far as under the baseline. Construction employment receives a major boost during the period but drops off by 2026 whilst metals & engineering also receives a major,

relatively short term jobs boost. As with Allerdale Business Services shows a boost in numbers up until 2021 before falling back again by the end of the forecast period.

- 3.51 It is worth recognising in both authorities under this scenario that of the larger sectors only retailing, health, hotels and catering and wholesaling⁶ grow in absolute employment terms over the forecasting period, a consistent picture with the baseline.

Figure 3.24: New Build FTEs in Top 12 Sectors in Copeland 2011 - 2026

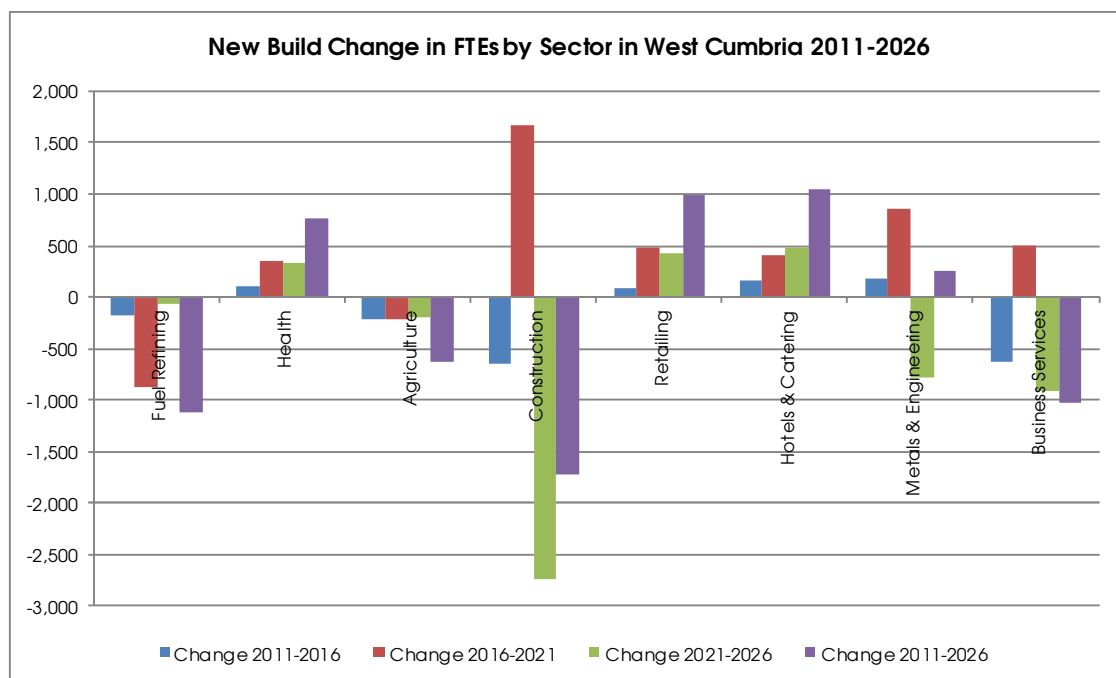


Source: Experian, 2011

- 3.52 The following chart shows the change in employment in key employment sectors in West Cumbria over 5 year blocks during the projection period. This demonstrates quite clearly the boost to jobs in construction, metals & engineering and business services during the second 5 year period but this reducing significantly in the final 5 year period as new build construction is completed and employment changes to plant operation instead.

⁶ Note: Rubber and Plastics grows as a sector in Allerdale, but is not one of the major sectors in Copeland

Figure 3.25: New Build Change in FTEs by Sector in West Cumbria – five year periods between 2011 - 2026



Source: Experian, 2011

Nuclear New Build FTEs by Occupation

- 3.53 During the 15 year projection period (2011 – 2026), the boost to employment in construction and related sectors linked to nuclear new build is reflected in the occupational profile required to service these jobs.
- 3.54 The following charts show the additional demand for FTEs across West Cumbria in the key occupations required to facilitate nuclear new build. At the peak construction period around 2021/22, there will be a need for between 800-900 additional skilled construction workers and 750 skilled metal & engineering workers related to construction activity, compared to the projected demand under the baseline scenario. There will also be a demand for up to 250 additional business services FTEs, 300+ science professionals and 400+ process, plant operatives.
- 3.55 The demand for construction workers reduces significantly by 2025/6 and to a lesser extent in the other sectors, where the demand for some additional employees continues into the operation phase of new build.

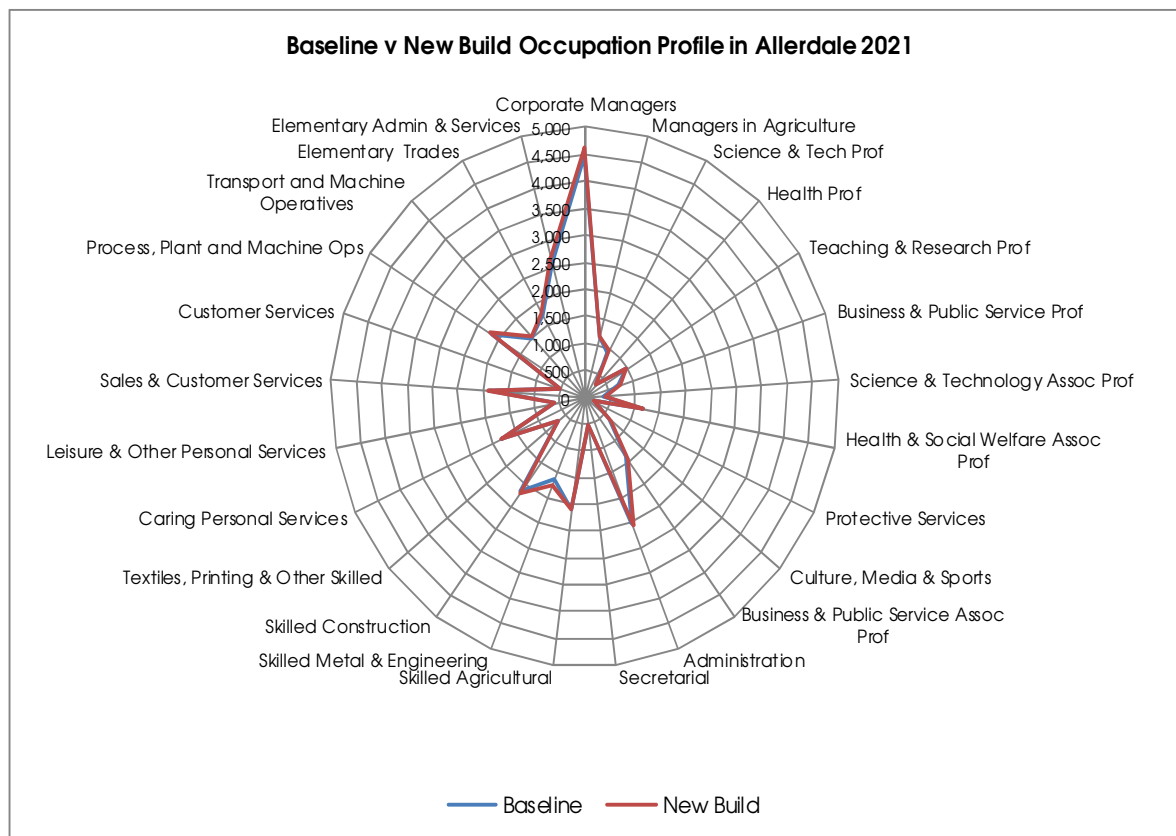
Figure 3.26: Illustrating the additional demand for FTEs by key industrial sectors across West Cumbria between 2011 and 2026



Source: Experian, 2011

- 3.56 The workforce to fill these posts will be drawn from throughout West Cumbria and in some cases beyond and therefore analysis by Local Authority area is a little misleading as it relates to the location of the jobs, not the workers (an issue explored in greater detail in the second part of this paper). However, for illustrative purposes, the following charts show the occupation profile in each district in 2021 (the peak year) in the new build scenario compared to the baseline scenario for the same year.

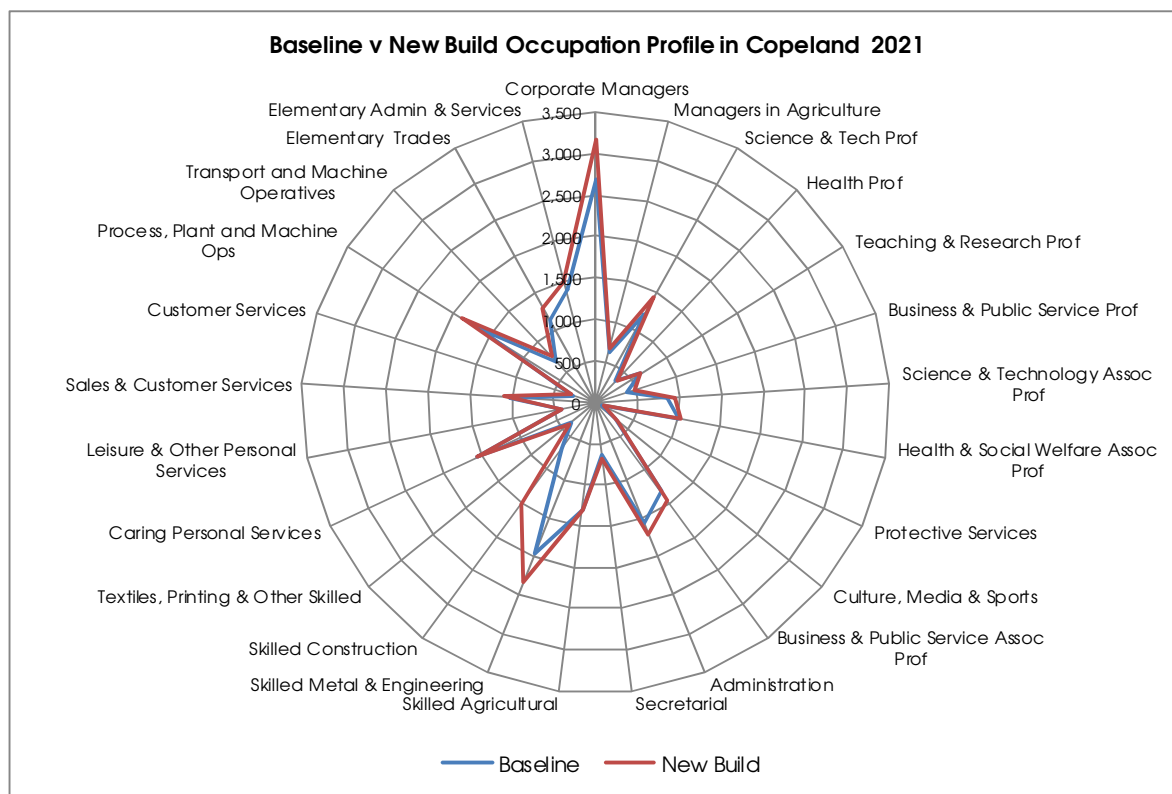
Figure 3.27: Baseline Forecast vs New Build Scenario – Occupation Profile in Allerdale, 2021 (Peak year of New Build impact)



Source: Experian, 2011

- 3.57 The changes in Allerdale are relatively minor as the majority of new build jobs are located in the Copeland area. However, there is a small additional demand for skilled construction and skilled metals & engineering occupations during the peak construction period compared to the baseline projections.
- 3.58 In contrast to Allerdale, the change in occupation demand in Copeland during the peak new build period is much more marked with significant additional demand for skilled construction and skilled metals & engineering occupations and, to a lesser extent corporate managers, business services and administration.

Figure 3.28: Baseline Forecast vs New Build Scenario – Occupation Profile in Copeland, 2021 (Peak year of New Build impact)

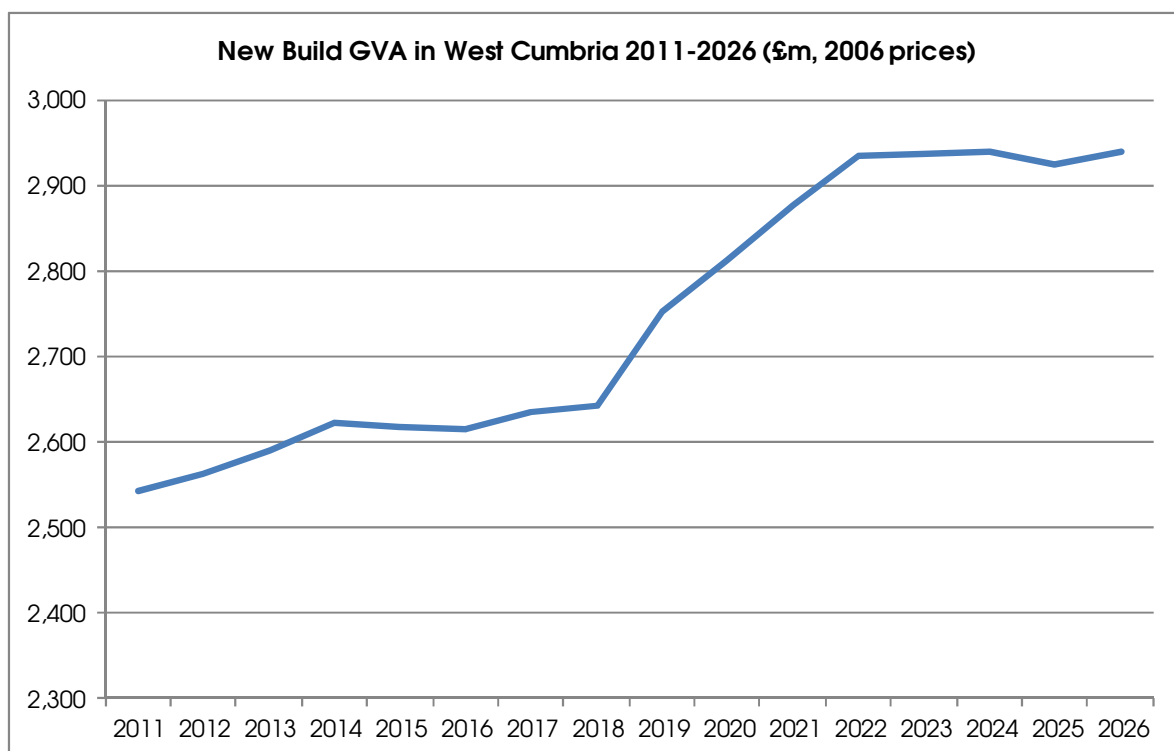


Source: Experian, 2011

Nuclear New Build Gross Value Added

- 3.59 Under the new build scenario, GVA in West Cumbria is projected to rise by 15.6% over the period 2011-2026 (compared to 11.5% under the baseline). There is initial growth, followed by a period of no growth as the impact of decommissioning takes effect. From 2019 to 2024 there is a period of strong growth as the employment related to new build adds value to the local economy and then GVA growth stalls as the direct linked employment comes to a close.

Figure 3.29: New Build Scenario GVA in West Cumbria 2011 - 2026



Source: Experian, 2011

Nuclear Investment Scenario

- 3.60 This scenario takes the baseline and nuclear new build scenarios and incorporates a number of additional nuclear-related projects. These projects have a varying impact on employment during the projection period, sometimes negative as projects draw to a close, but more frequently positive where they relate to new activity.

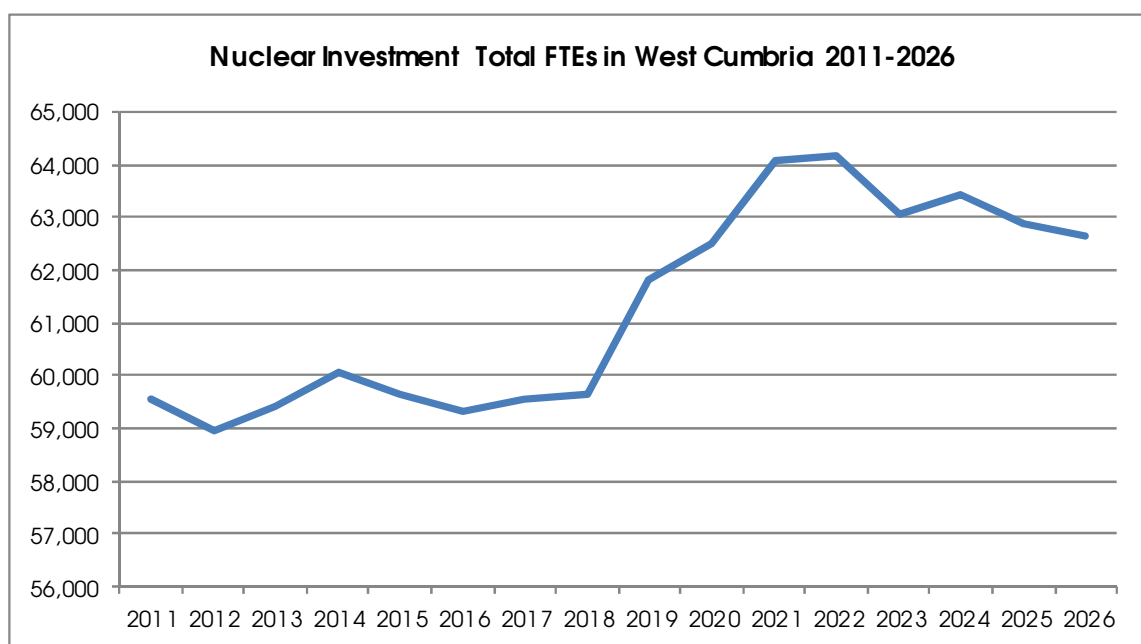
Nuclear Investment Scenario Total FTEs

- 3.61 Under the nuclear investment scenario, there is an initial decrease in employment largely due to the inclusion of the closure of the Mox plant in this scenario, with the major jobs impact occurring in 2012. The dip in employment seen in the baseline and new build scenarios around 2014-2016 is less pronounced under the nuclear investment scenario as other projects absorb some of the job losses elsewhere in the sector. There is then a strong period of growth from 2018-2022 as nuclear new build and other projects come on stream, requiring significant additional employment. From 2022 onwards there is a slight decline in FTEs but much less significant than under

the new build scenario as new projects provide some continuity of employment numbers.

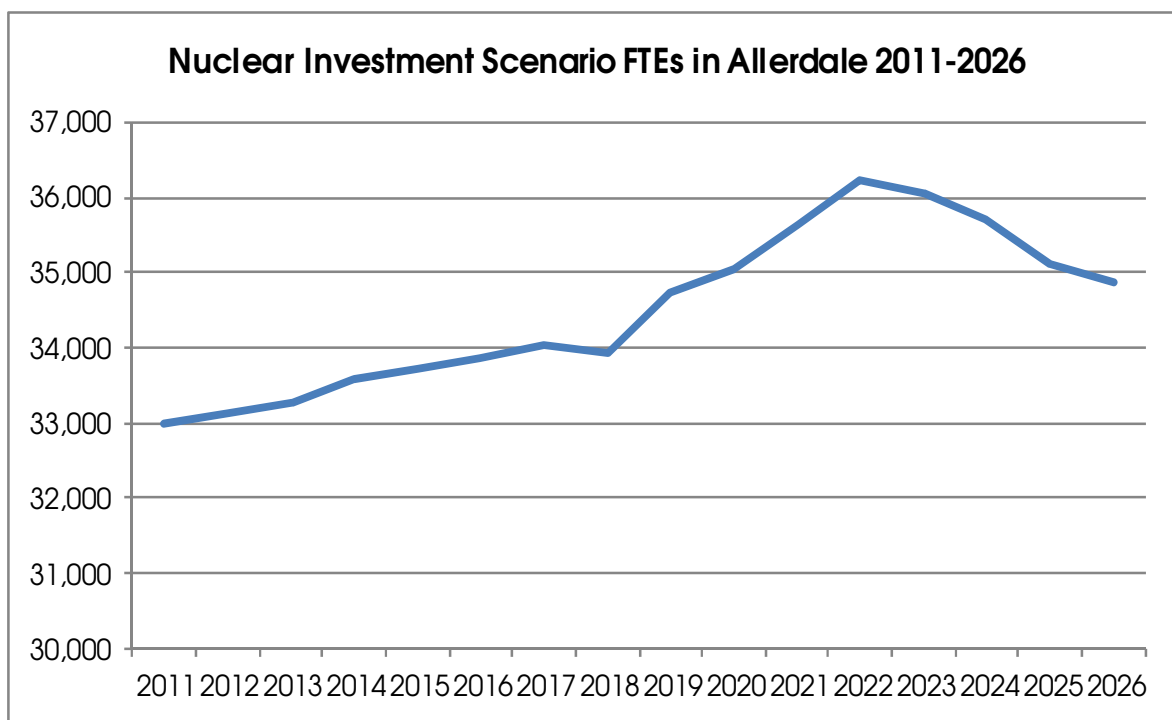
3.62 These trends are illustrated in the following chart.

Figure 3.30: Nuclear Investment Scenario Total FTEs in West Cumbria 2011 - 2026



Source: Experian, 2011

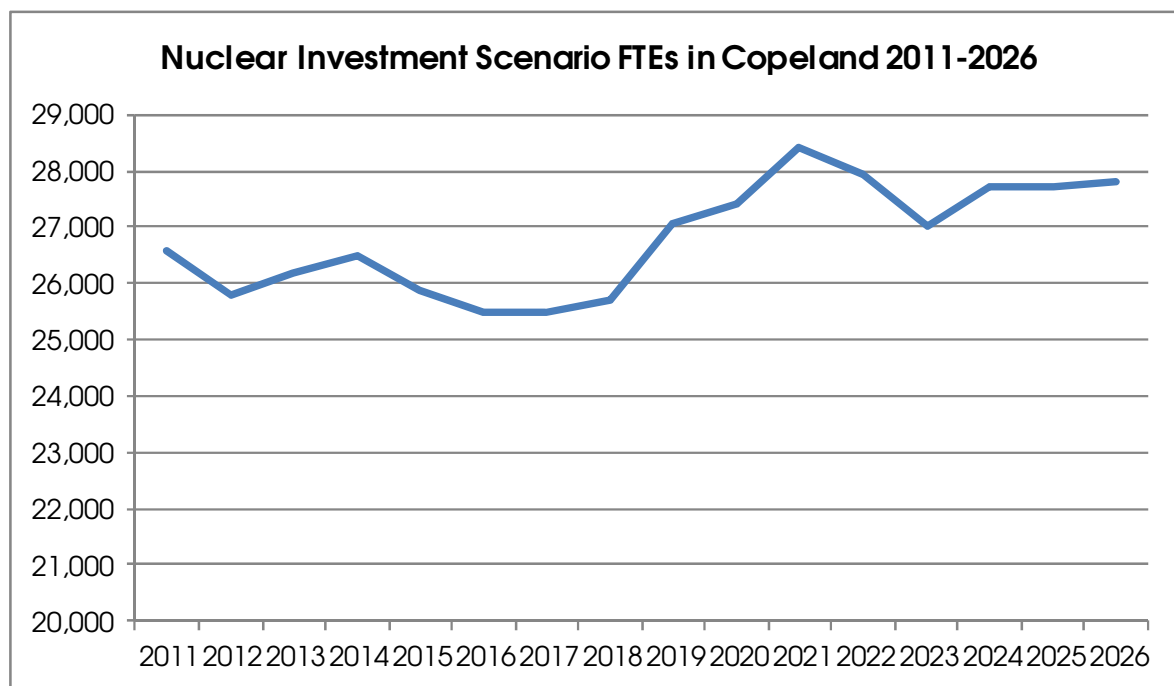
3.63 The following charts split this FTE forecast between the two authorities. As with the Nuclear New Build Scenario it is important to note that these are employment-based projections rather than resident based.

Figure 3.31: Nuclear Investment Scenario FTEs in Allerdale 2011 – 2026

Source: Experian, 2011

- 3.64 During the projection period, under the nuclear investment scenario Allerdale sees much the same employment trend as under new build with total FTEs 5.6% higher in 2026 (4.7% higher under new build, decline of 3.1% under baseline). In Copeland, the trend is a little more varied but the peaks and troughs are less pronounced than under the baseline and new build scenarios. In particular, the nuclear investment scenario sees the retention of many jobs towards the end of the projection period with total FTEs in Copeland ending the period 4.6% higher than in 2011.

Figure 3.32: Nuclear Investment Scenario in FTEs in Copeland 2011 – 2026



Source: Experian, 2011

- 3.65 The table over the page displays the FTE employment figures annually for both authorities as well as the change annually under the Nuclear Investment Scenario.

Figure 3.33: Nuclear Investment Scenario – FTEs 2011 - 2026

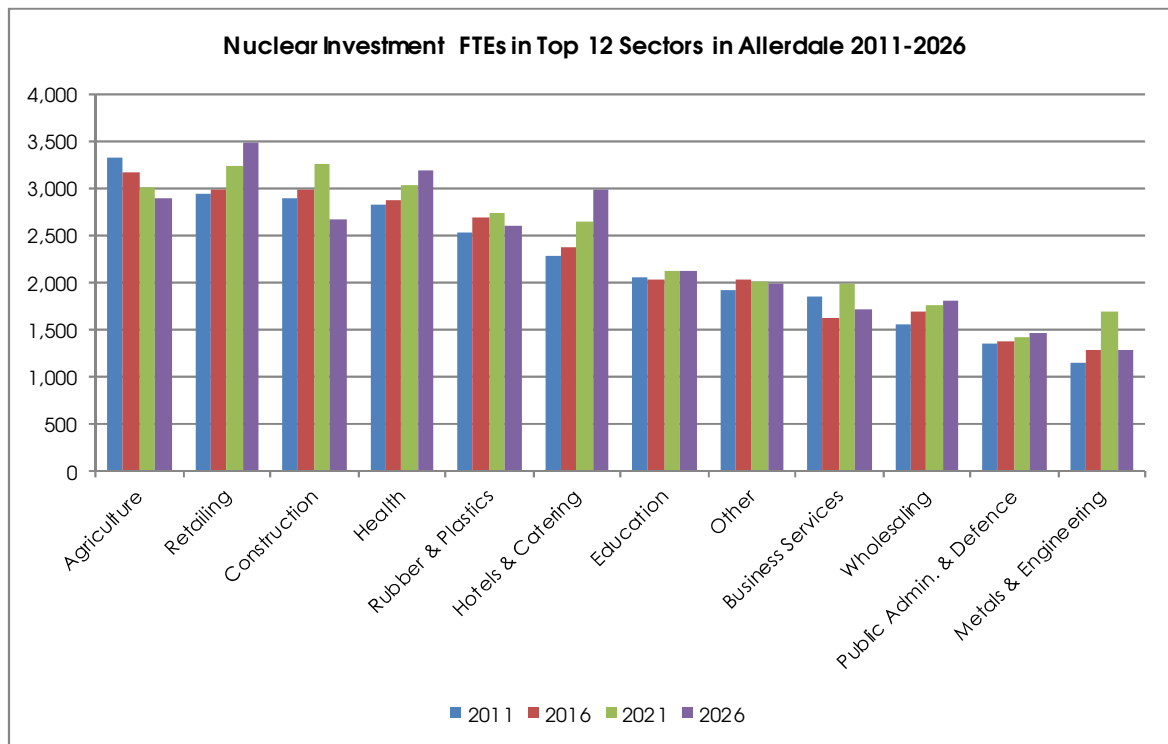
Nuclear Investment Scenario – FTEs 2011-2026																
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Allerdale	33,007	33,144	33,268	33,570	33,734	33,850	34,037	33,933	34,747	35,050	35,645	36,236	36,047	35,690	35,118	34,870
Annual Change		138	124	302	164	116	187	-104	814	303	594	592	-189	-357	-572	-248
Copeland	26,569	25,793	26,171	26,491	25,899	25,486	25,504	25,694	27,084	27,433	28,426	27,933	27,001	27,738	27,734	27,793
Annual Change		-776	377	321	-592	-413	18	190	1,390	349	993	-493	-933	738	-4	59
West Cumbria	59,576	58,938	59,439	60,062	59,633	59,337	59,542	59,627	61,831	62,484	64,071	64,170	63,048	63,428	62,852	62,663
Annual Change		-638	501	623	-428	-297	205	86	2,204	652	1,587	99	-1,122	380	-576	-189

Source: Experian, 2011

Nuclear Investment Scenario FTEs by Industrial Sector

The following charts show the change in FTE employment by industrial sector in five year periods under the Nuclear Investment Scenario by authority. The charts only show the 12 largest industrial sectors by employment.

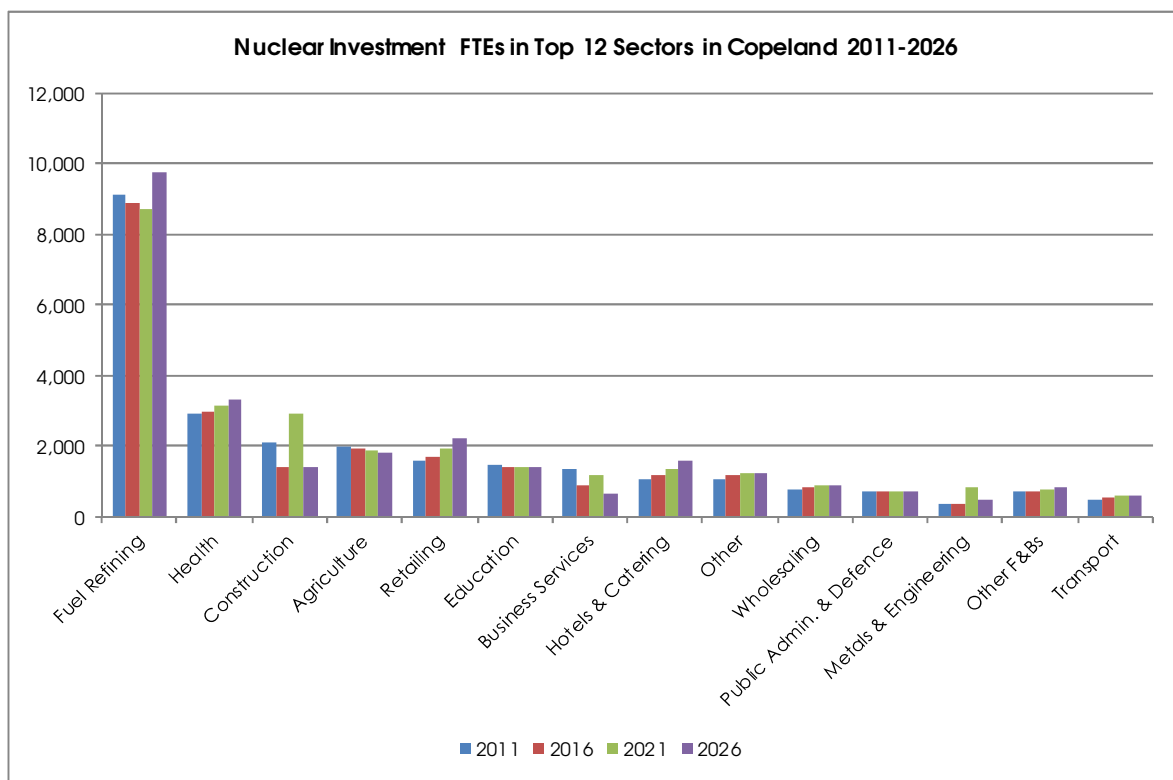
Figure 3.34: Nuclear Investment Scenario FTEs in Top 12 Sectors in Allerdale 2011 - 2026



Source: Experian, 2011

- 3.66 The nuclear investment scenario sees employment growth peak in the second half of the projection period in Allerdale. In particular there is growth in the construction sector and in metals & engineering and there is also a boost to employment in business services. Sectors such as retailing, health and hotels & catering are projected to grow under all 3 economic scenarios in Allerdale.
- 3.67 In Copeland, fuel refining employment falls initially but then recovers in the final part of the projection period as nuclear investment projects commence and require additional employment. The boost to construction and metals & engineering is also apparent and more sustained than under the Nuclear New Build scenario.

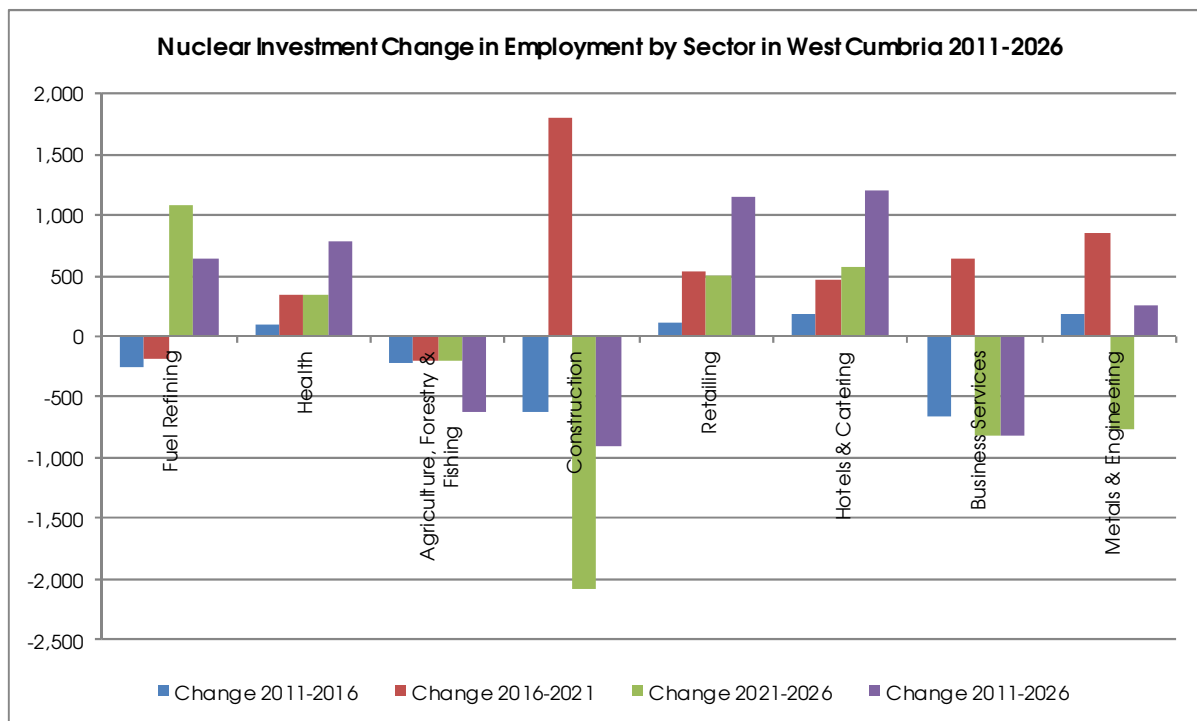
Figure 3.35: Nuclear Investment Scenario FTEs in Top 12 Sectors in Copeland 2011 – 2026



Source: Experian, 2011

- 3.68 The following chart shows the change in employment in key sectors in West Cumbria over 5 year blocks during the projection period under the Nuclear Investment Scenario. The key difference between this scenario and the new build scenario is the reversal of the decline in fuel refining employment which sees growth in the final part of the projection period.

Figure 3/36: Nuclear Investment Scenario Change in Employment by Sector in West Cumbria 2011 - 2026

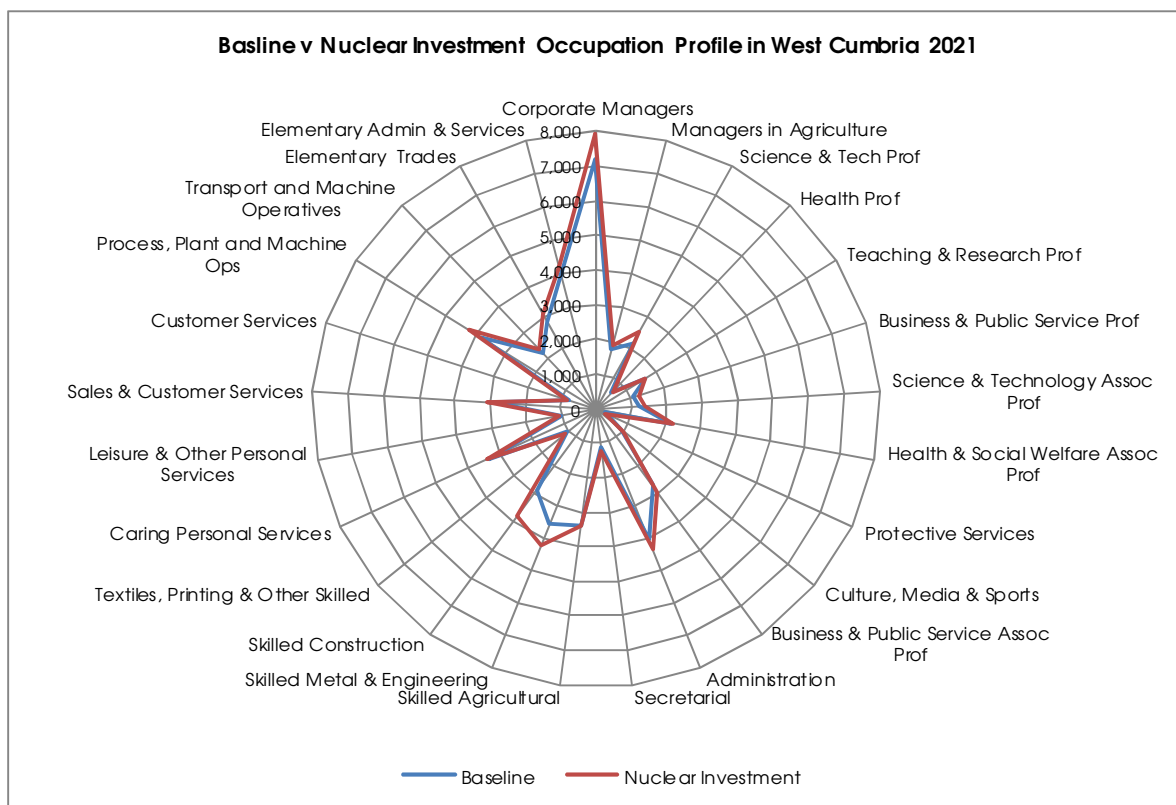


Source: Experian, 2011

Nuclear Investment FTEs by Occupation

- 3.69 As with the Nuclear New Build Scenario, the occupation profile under the nuclear investment scenario reflects the additional employment in construction, metals & engineering and business services, together with the additional fuel refining employment in this scenario.
- 3.70 The following chart shows the occupation profile of the baseline and nuclear investment scenarios in 2021, the year when employment is at its highest in the latter. There is increased demand for employees in skilled construction, skilled metal & engineering, process, plant and corporate management occupations.

Figure 3.37: Baseline Scenario vs Nuclear Investment Scenario – Occupation Profile in West Cumbria 2021 (peak year in employment terms)

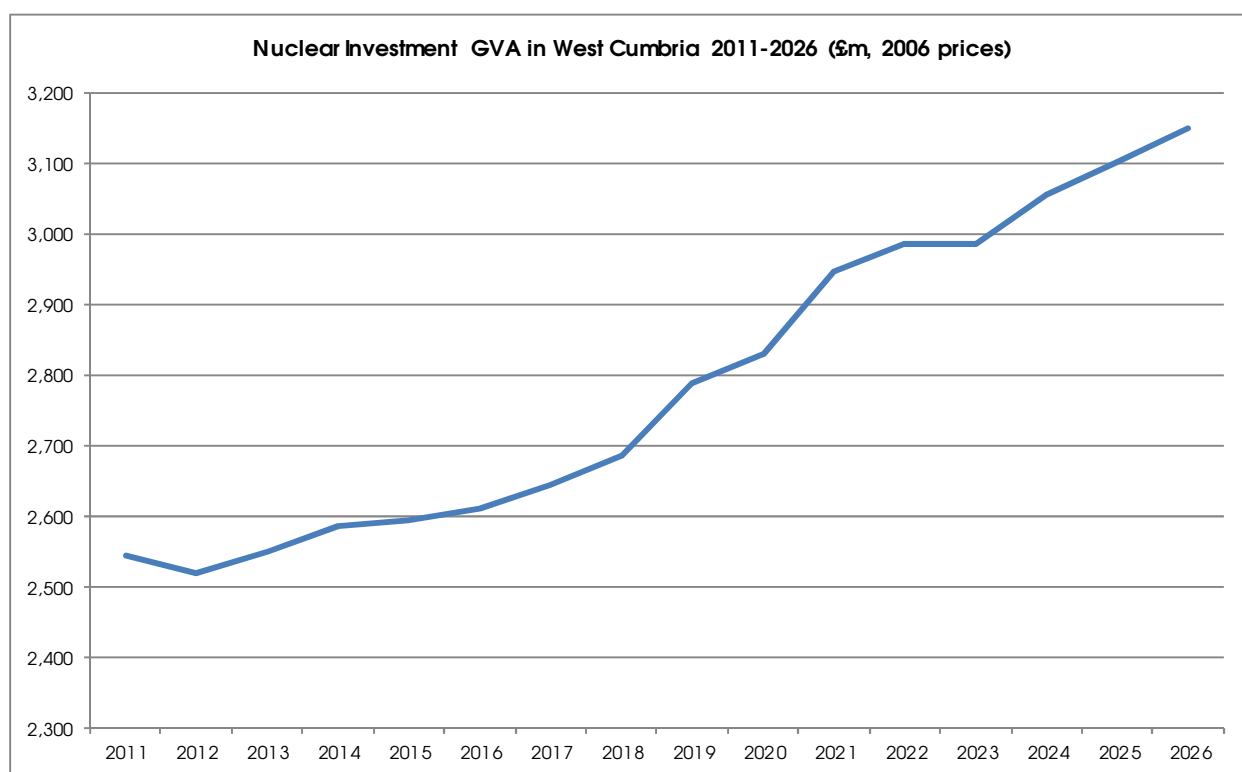


Source: Experian, 2011

Nuclear Investment Gross Value Added

- 3.71 Under the nuclear investment scenario, GVA in West Cumbria is projected to rise by 23.8% over the period 2011-2026 (compared to 11.5% under the baseline and 15.6% under the nuclear new build scenario). There is an initial dip due to the impact of the Mox closure but then steady growth throughout the rest of the projection period.
- 3.72 Unlike the new build scenario, in the nuclear investment scenario, GVA growth is sustained towards the end of the period due to increased investment activity.

Figure 3.38: Nuclear Investment Scenario GVA in West Cumbria 2011 - 2026



Source: Experian, 2011

3.73 The following section draws out the implications of the economic data presented within this section in terms of future policy and strategy planning.

4. Economic Implications for the LDF Evidence Base and the Economic Blueprint

- 4.1 The analysis set out within Sections 2 and 3 provides an updated picture of the potential future shape of the West Cumbria economy.
- 4.2 In policy terms it is important that consideration is given to the forecast baseline situation as this should be considered to represent the basis from which policy should respond. The application of a consistent set of evidenced assumptions provides a valuable baseline context to inform the development of Core Strategy policies in Copeland and Allerdale.
- 4.3 Within West Cumbria the Baseline Scenario presents a forecast of employment change which factors in the latest national economic assumptions around the relative health of the UK economy and West Cumbria's resilience to the impacts of wider macro changes as well as the latest information from the Sellafield Lifetime Plan around changes to employment linked to decommissioning. This is particularly important given the important role that the nuclear sector plays in the wider economy of West Cumbria.
- 4.4 Importantly in headline terms the Baseline Scenario forecast shows:
- An overall reduction in employment levels across West Cumbria. The forecasts show that in 2026/27 under a baseline position there will be 57,700 FTe jobs compared with 59,600 FTe jobs in 2010/11, representing a decrease of approximately 1,800 FTe jobs over this period;
 - This level of job losses is less severe than previously reported in a number of employment scenarios prepared to underpin the original Energy Coast Masterplan and reflect the moderation of job losses projected under decommissioning as set out in the 2011 Sellafield Lifetime Plan. However, they also include the impact of the recession on West Cumbria affecting a number of other industrial sectors in the economy not directly related to the Nuclear industry, including Public Sector jobs in health and education;
 - The forecast change in baseline employment differs between Copeland and Allerdale. Copeland's employment levels are affected more significantly due to the location of Sellafield, with a loss of 3,200 FTEs forecast between 2011 and 2026. Importantly though this decline is not consistently recorded over the forecast period, with employment levels slowly rising to 2014 before the decommissioning process starts to result in job losses, with notable levels of job losses then recorded

annually until 2019. In Allerdale the baseline forecast is far more positive with a total of 1,300 additional FTEs forecast by 2026 from 2011.

- The forecast changes to the economy impact on the occupational structure as well as the industrial structure. Within Copeland there are projected declines in the demand for process, plant and machine operatives, skilled construction, skilled metals & engineering, business & public services, administration and science professionals. In Allerdale, the analysis indicates that under the Baseline Scenario the main occupational changes are a demand for more corporate managers, balanced by fewer, process, plant and machine operatives and fewer skilled agricultural workers.

- 4.5 The headline impacts forecast under the baseline economy paint an interesting picture to which policy will need to respond. The balance in the strengths of the two economies within West Cumbria is clearly an important issue for the policies of both to consider.
- 4.6 Whilst these forecasts are workplace-based and therefore likely to skew the impact of decommissioning towards Copeland it is clear that under a baseline scenario that Copeland will be significantly affected economically by the reduction in employment at Sellafield as well as the resilience of its wider economy to national changes. This is further supported by the analysis in the Nuclear Topic Paper which shows the high dependency of many of the surrounding settlements on employment at Sellafield e.g. Whitehaven, Egremont, Cleator Moor and Millom. In Allerdale settlements such as Workington also show high dependency but other parts of the Borough are much less exposed.
- 4.7 It will be important that further employment opportunities are stimulated and facilitated within Copeland. A twin strategy must also be a sustained investment in the infrastructure across West Cumbria to ensure that residents across the area, but in particular in those settlements north of Sellafield, are able to access job opportunities in Allerdale where the economy, under a Baseline Scenario, is going to perform more strongly. Consideration also needs to be given for those more northern parts of Copeland as to the availability of job opportunities in areas further north, for example Barrow, which are not considered within this research but have been examined through other research produced by the County Council.
- 4.8 As well as the baseline scenario the analysis also looks at two further scenarios which factor in different levels of investment in the nuclear sector. As noted in Section 2 and in the accompanying Nuclear Topic Paper, national policy decisions currently suggest that it is likely that nuclear new build will be a significant economic driver within West Cumbria.
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- 4.9 The delivery of this investment in nuclear new build would in particular have a significant impact on the economy of Copeland but also across West Cumbria. In headline terms it would serve to add an additional GVA of approximately £100m into the area and serve to mitigate the level of employment decline forecast under the Baseline Scenario. In Allerdale in 2026 the forecast shows an additional 209 FTE jobs (0.6% increase) over the Baseline Scenario. In Copeland however the impact is more marked, with an additional 1,400 FTE jobs in 2026 than the baseline scenario, with this including a higher gap at the peak of construction in 2021. Whilst this still suggests an overall reduction in FTE employment from a 2011 base the impact of decommissioning is mitigated.
- 4.10 Under this scenario the importance of improving infrastructure connections and ensuring the movement of the workforce across the area remains important with the imbalance between the strength of the two economies still marked.
- 4.11 **The final scenario which factors in additional nuclear investment projects is the only scenario which actually shows a positive increase in total FTE's by 2026 from 2011.** Under this scenario the impact of nuclear investment and spin-off effects equates to an increase in approximately 3,100 FTE jobs in 2026. Under this scenario the imbalance between the economies of the two authorities is far less significant. Copeland is forecast to see an increase in FTEs of 1,224 whilst Allerdale base increases by 1,863. It is important to note that these forecasts are employment-based under this scenario, the assumption being that the vast majority of jobs created in or around Sellafield are within Copeland.
- 4.12 Decisions around the investment in the nuclear industries of West Cumbria will evidently have a fundamental impact on the health of the economy in the area and the distribution of employment opportunities. This poses a challenge for policy to provide for a position forecast under the baseline scenario which shows a wide deviance in the location of jobs between Copeland and Allerdale or a more balanced position which is dependant on substantial investment in and around Sellafield.
- 4.13 The employment forecasts have been used to underpin demand analysis of future employment land in the accompanying West Cumbria Employment Land Review update as well as the analysis in part 2 of this paper which looks at the potential impact on the areas population and households and therefore demand for housing. These add further evidence to the importance of jointly planning for the economic future of West Cumbria between the two authorities, a fundamental principle of the Economic Blueprint prepared by the Partners in 2011.
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Part 2: Population / Household Projections

5. Context for the Population / Household Projections

Purpose of the Population / Household Projections

- 5.1 Part 2 of this paper presents a detailed analysis of population and household projections to help inform the development of planning policy and future investment strategies.
- 5.2 The projected growth in an area's population and the number of households this translates into is a fundamental driver in the demand for a range of services, including in particular housing. It is very important that the authorities of West Cumbria plan to accommodate a sufficient amount of housing to meet both local needs and the needs of households moving to the area linked to the potential economic futures outlined in Part 1 of the paper.
- 5.3 Under the previous Labour Government, regionally set housing targets were an important component of the planning process in enabling levels of development which addressed this imbalance both locally and cumulatively at a national level.
- 5.4 These statutory targets are in the process of being revoked and a new policy approach is starting to emerge. Whilst policies have yet to be finalised the retention of housing targets remains a key element of the Core Strategy informing each authority's position in terms of its five year land supply. However, there exists greater flexibility for these to be shaped to directly reflect local understanding of demand for housing.
- 5.5 Given the uncertain policy climate at the time in which this research is being written the analysis within this Part of the paper is intended to provide the two local authorities with consistent robust analysis of the drivers of housing demand in order to assist in the process of developing and validating future housing targets. Importantly the application of a standardised set of assumptions across the two authorities ensures that policies will be consistent and balanced across the geography of the area.
- 5.6 The evidence base here is not intended to be directly transferable for authorities to translate evidence based household growth rates into housing targets within emerging policy. The demand based analysis presented within this paper will need to be balanced against further detailed analysis of individual circumstances and factors influencing potential supply and demand, not least environmental and wider infrastructure constraints. It is recognised that this evidence will be used to inform

policies contained within the two Core Strategy documents which will then be subject to a process of public consultation.

The Approach to Developing an Appropriate Range of Projections

- 5.7 Predicting how the population and household structure of an area will change in the future is not an exact science. It is therefore sensible to construct a range of potential scenarios of change which take account of a number of important drivers, including:
- Natural Change – The balance between births and deaths in an area represents a core driver of locally derived demand. A greater number of births than deaths will mean that an area will grow simply through the retention of its existing population. If the opposite is the case the population will in turn decline over time;
 - Migration – The inflow and outflow of people driven by a range of factors influences significantly both the overall growth of a population but also the way in which the population is structured. For example the influx of large numbers of people to an area to take up employment opportunities will lead to an immediate growth in working age individuals, predominantly younger persons, who by settling in the area will lead to an increased number of families and therefore births; and
 - Employment change – As noted above the availability, or lack of, employment opportunities is a key determinant of migration levels. In addition changes in the structure of the economy and therefore employment trends influence household income and hence the ability to afford different products.
- 5.8 This Part of the report therefore considers these structural drivers of change – economic and demographic trends – and the implications of these for maintaining a balanced housing market.
- 5.9 Prior to presenting the projections a short summary of historic demographic data is included below. This complements the analysis presented in Part 1 around the economy and builds on data presented within the University of Cumbria and Cumbria County Council's Socio-Economic Assessment of West Cumbria report.

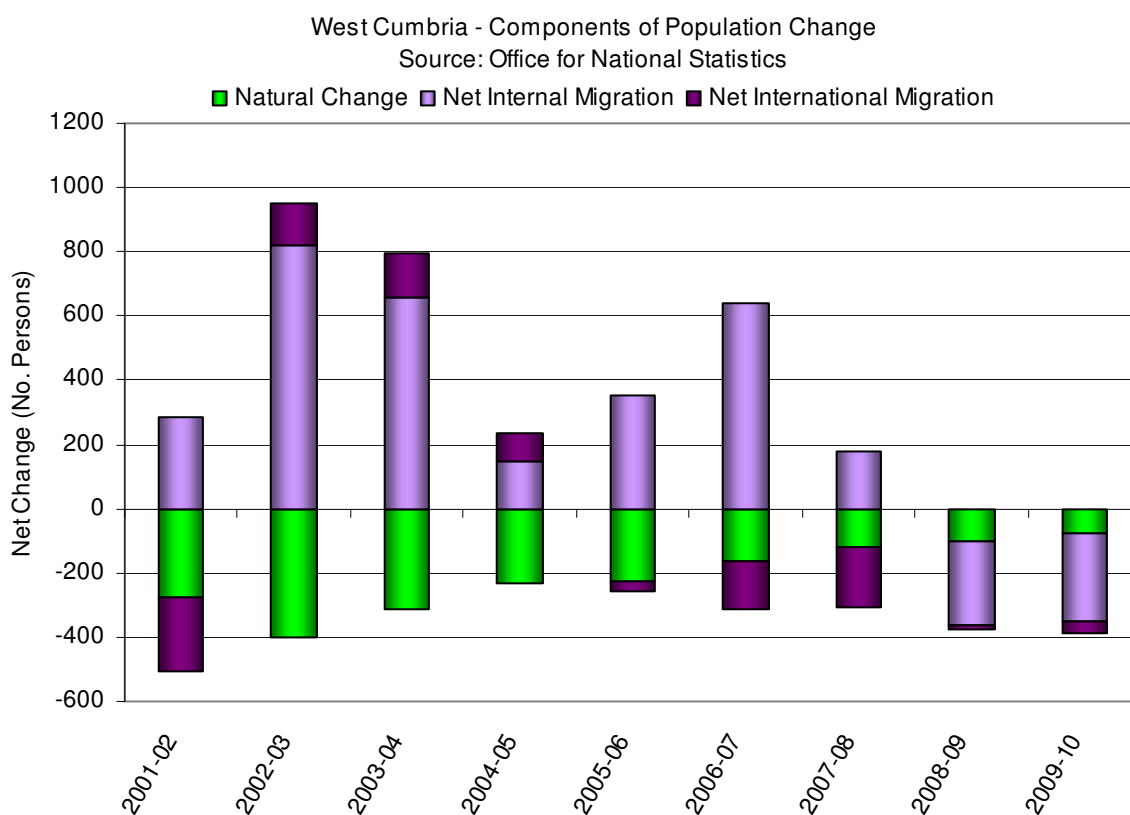
Historic Demographic data

- 5.10 Changes to population are driven by three demographic factors or components. Natural Change i.e. the difference between births and deaths, internal migration i.e. the net movement in and out of an authority from other parts of the UK and finally

International Migration, the net movement of people into and out of the authority from outside of the UK.

- 5.11 Between 2001 and 2010 the population of Copeland and Allerdale combined has remained relatively stable. The population grew slowly to around 2007 but based on the ONS mid-year estimates datasets has subsequently contracted over the last couple of years. The following chart presents the historical impact annually of these three components on driving population change across the two authorities.

Figure 5.1: Demographic Components of Change



Source: ONS, 2011

- 5.12 The chart clearly illustrates that natural change has historically served as a 'drag' factor on the population, with a greater number of deaths than births. The impact of this factor has lessened since 2006.
- 5.13 Up until the last two years of data internal migration has played an important role in driving population growth. High levels in 2002 – 2004 and 2006-2007 in particular are notable and are likely to be linked to economic opportunities in the area. Equally the negative net migration levels seen over the last two years are likely to be linked to the

loss of employment opportunities across West Cumbria as identified in Part 1 of this paper. This is particularly pronounced in Copeland where the net migration levels have been more distinct an issue examined in greater detail through the following Section.

- 5.14 Finally, international migration has played a relative minor role in population change and has oscillated in net terms over the period, showing a gain between 2002 and 2005 and a fall between 2006 and 2008.

Structure of Part 2

- 5.15 Section 6 first considers a range of different population scenarios which balance these drivers. These are broken down to illustrate the impact of change on the age structure of the population over the projection period. Projections are produced which estimate change up until 2031. This covers the full Core Strategy period.
- 5.16 Section 7 advances the analysis by converting the population projections into household projections. These projections are then broken down into a number of different household types which have an important impact on the sizes and types of housing that will be required as well as the overall number.
- 5.17 This Part of the report concludes, in Section 8, with an overview of the implications of the work, in particular in the development of Housing Policies within the two Core Strategies. This includes translating the household projections into hypothetical dwelling requirements. This provides the authorities with an evidence base output which should be read alongside the published SHMA's referenced above and used to inform debate and discussion around the setting of housing targets within policy.

6. Population Projections

- 6.1 Within this section a number of projections of how the population of Allerdale and Copeland may change in the future are explored.
- 6.2 These projections are built using a range of data inputs and assumptions, the key ones of which are documented throughout the paper. In order to model these factors the analysis uses the POPGROUP model, to which Cumbria County Council subscribes.
- 6.3 POPGROUP is a family of demographic models developed to forecast population, households and the labour force for areas and social groups. Population projections use a standard cohort component methodology whilst the household projections use a standard household headship rate methodology, as employed by ONS and DCLG respectively⁷.
- 6.4 The section initially presents a series of core scenarios. These core scenarios include a scenario which aligns demographic projection data with the baseline economic forecast presented in Section 3. These are followed by a section exploring the potential impact of Nuclear New Build and other Nuclear investment drawing on the economic forecasts presented under these scenarios in Section 3.

The Core Scenarios

- 6.5 Utilising the drivers set out within Section 5 a number of core scenarios have been developed. These scenarios include variations on five key driver led projections alongside a benchmark scenario driven from the 2008 based sub-national population projections published by the ONS.
- 6.6 In summary the five core scenarios of projected population change are:
- [ONS 2008-based Sub-National Population Projections \(SNPP\)](#). This dataset is presented throughout as a benchmark against which to compare alternative scenarios. In terms of the population projection element of this scenario this data has not been recalibrated in any way.

⁷ POPGROUP is used by over 90 local and regional organisations in the UK and has been subject to extensive enhancement and development over the last ten years. It uses MS Excel workbooks to manage its data inputs and outputs and provides great flexibility to enable users to experiment and analyse alternative forecasts. A more detailed description of the population and household projection methodologies is available from the User Guide and Reference Manual on the POPGROUP website. The mathematical calculations for each method are documented at the end of each of the manuals. www.ccsr.ac.uk/popgroup/about/manuals.html.

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- Zero Net Migration – This represents another demographic ‘trend-based’ scenario. Under this hypothetical scenario population projections are modelled based on the impact of a zero net migration position, i.e. migration factors are exactly balanced. This represents a hypothetical position as this set of circumstances could never reasonably be expected to occur. However, it provides an important insight into the anticipated levels of population change which will occur driven by locally generated demographic pressures alone;
 - Ten Year Migration-led Scenario – This is a ‘trend-based’ scenario developed using a similar methodology to the SNPP although it takes a longer-timeframe from which to base average levels of the different components. The scenario draws upon more recent data from the mid-year estimates released by the ONS to develop updated projections in that it uses the 2008/09 and 2009/10 datasets. This updated information therefore draws on more recent observed evidence on births, deaths and migration to calibrate an alternative projection which is based on a longer time frame (ten years).
 - Five Year Migration-led Scenario – This again represents a demographic trend-based projection and uses the same methodology as the SNPP, using a five year period. It takes the latest natural change indicators and adds in the latest migration counts and schedules based on the average rate per 1,000 of the population migrating over the last five years by single year of age and gender. This therefore uses two subsequent mid-year estimate datasets than the SNPP 2008/09 and 2009/10. The schedule is weighted to give weight to the most recent year’s data (weightings are 0.1, 0.1, 0.2, 0.3, 0.3); and
 - Employment constrained scenario – Unlike the preceding four scenarios this represents a ‘policy constrained’ projection. Rather than simply extrapolating forward a historic trend this adopts a forward looking perspective. This scenario takes the five year migration-led scenario as its base and constrains the population to the baseline scenario forecast presented in Section 3. The construction of this scenario is achieved by applying parameters which measure the relationship between the population and the labour force (economic activity rate) and between the labour force and the number of jobs in an area (labour force: jobs conversion factor). This takes into account the level of unemployment but also the degree to which residents live and work within the area in question. In an employment constrained scenario, net in-migration will occur if the size of the labour force is insufficient to match the number of jobs forecast to be created. Net out-migration will occur if there are too few jobs for the labour force. The scenario assumes that economic activity rates, unemployment rates and the commuting ratio for the authorities continue to reflect recent performance levels.
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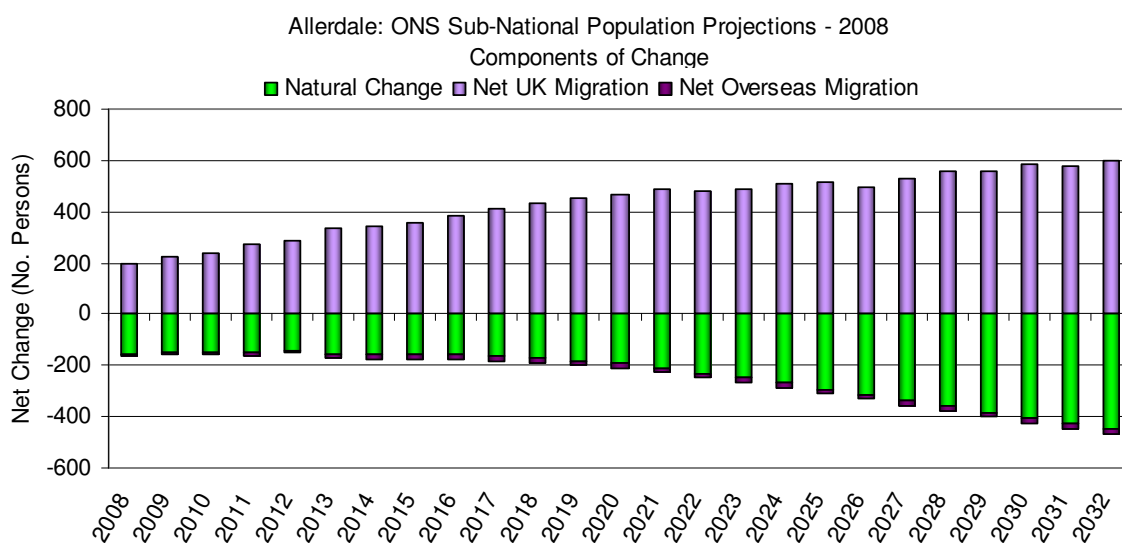
- 6.7 These scenarios are considered in turn below. Levels of population change are presented within the analysis over the period 2011 to 2026. This represents a fifteen year planning period and aligns with the approximate end-dates of the economic forecasts presented in the first half of this paper. For a number of the scenarios the modelling enables the projections to extend to 2034, with the charts illustrating this longer term trajectory of change. It is important to recognise that the longer the projection period the greater the level of potential error in the change forecast but these longer projections are included as they provide a useful context for future policy development.

Core Scenario 1 – SNPP

- 6.8 This scenario presents the ONS 2008-based Sub National Population Projections (SNPP). The mid-year ONS estimates (MYE) of population, analysed within Section 5, provide the base historical data for the SNPP, which are produced every two years. These datasets provide projections for a 25 year time horizon.
- 6.9 Assumptions used by the SNPP are based on recent evidence on births, deaths and migration, plus they incorporate evidence from an expert panel which has provided guidance on likely future trends in fertility, mortality and migration. SNPP are constrained to the total population estimated in the national population projections (NPP).
- 6.10 The SNPP are trend based using the ONS mid-year estimates up to 2007/08. When considering the components of change in the previous section it is clear that an extrapolated trend will include a net positive level of internal migration and a sustained negative net effect from natural change. This is illustrated through the following chart which shows the projected components of change over the projection horizon from the base date of 2008⁸. It is important to note that the other Core Scenarios all use the latest mid-year estimates data presented in Section 5 which includes data up to 2009/10 and therefore provide observed counts for these years rather than the projected figures shown under this Scenario.

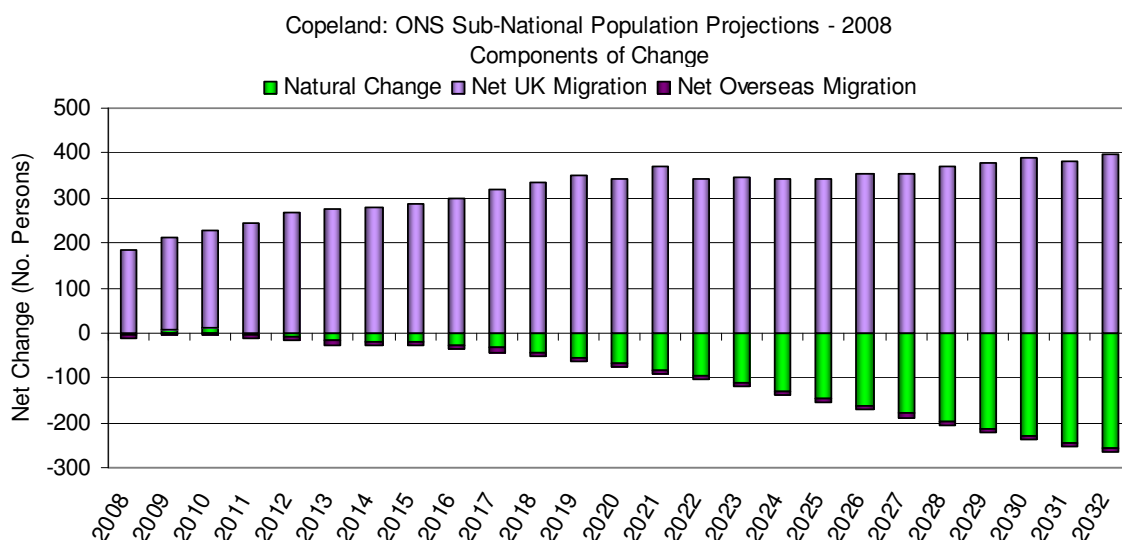
⁸ Note: the projection period ends at 2032 under this national dataset with the base date being 2008

Figure 6.1: Core Scenario 1 SNPP – Components of Change, Allerdale



Source: SNPP, 2010, Cumbria County Council, 2011

Figure 6.2: Core Scenario 1 SNPP – Components of Change, Copeland



Source: SNPP, 2010, Cumbria County Council, 2011

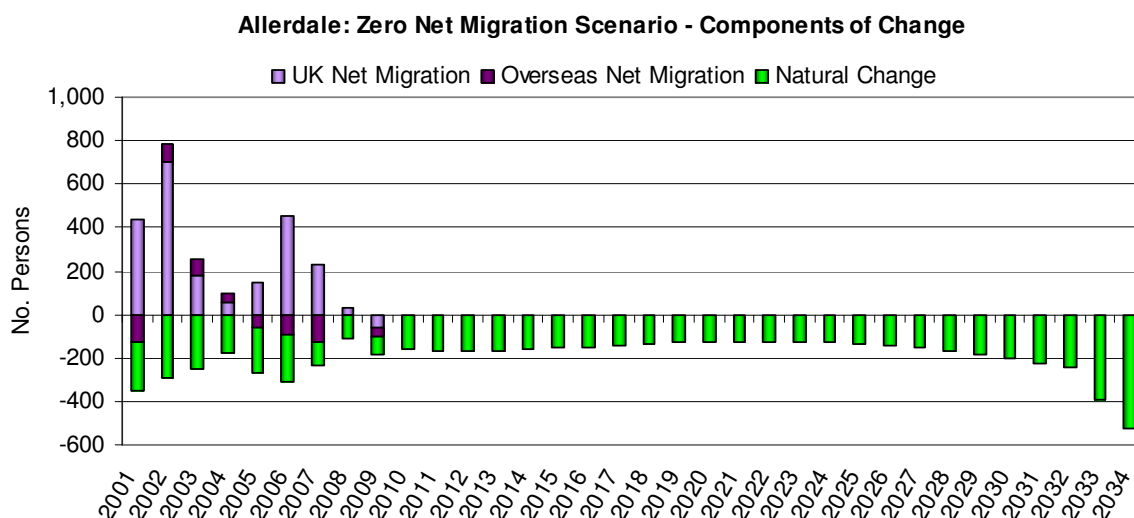
- 6.11 The SNPP projections project an uplift in population in both authorities with a sustained trend of migration into the authorities driving this increase. In total the population is projected to increase in Allerdale by approximately 3,010 between 2011 and 2026 (15 years) and 3,050 in Copeland.

- 6.12 Over the latter years of the projection the natural change component increasingly serves to reduce the net impact of migration with higher levels of deaths than births projected in both authorities. This has a particularly pronounced effect in Allerdale.

Core Scenario 2 – Zero Net Migration

- 6.13 This scenario assumes a zero level of net migration from 2010 onwards⁹. This therefore assumes that the existing population is not changed in net terms by migratory factors as they are balanced. Levels of population change are therefore attributed to the natural change component.
- 6.14 Historically, as noted in Section 5, natural change has since 2001 acted as a negative contributor to change, with more deaths than births across West Cumbria year on year.
- 6.15 The projection forward of this trend is illustrated through the following two charts for the authorities.

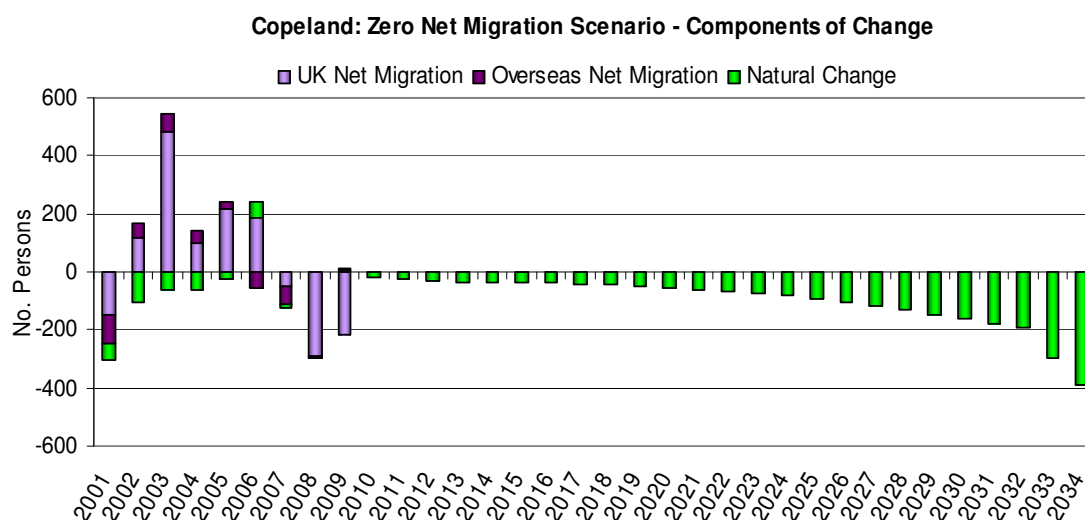
Figure 6.3: Core Scenario 2 Zero Net Migration – Components of Change, Allerdale



Source: SNPP, 2010, Cumbria County Council, 2011

⁹ As noted under Core Scenario 1 the latest ONS mid-year estimates data is used for 2009/10 with the projection period starting from 2010

Figure 6.4: Core Scenario 2 Zero Net Migration – Components of Change, Copeland



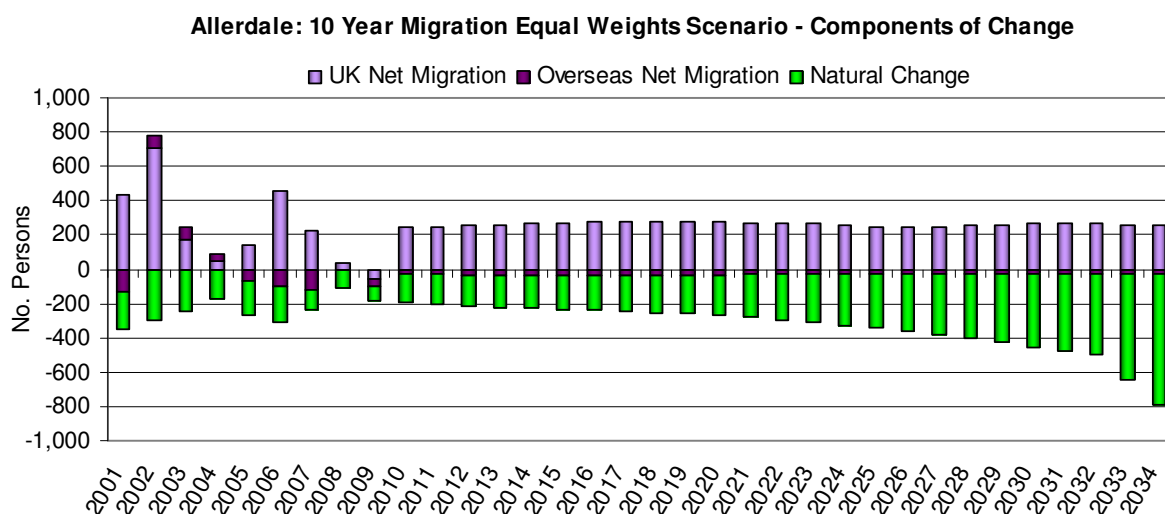
Source: SNPP, 2010, Cumbria County Council, 2011

- 6.16 Under this Scenario the impact of an increasingly ageing population in Allerdale results in a more marked decrease in the population, a total decrease of approximately 2,150 persons between 2011 and 2026. In Copeland natural change also has a negative impact although the population is only projected to decrease by 780 persons over this period.

Core Scenario 3 – Ten Year Migration Trend

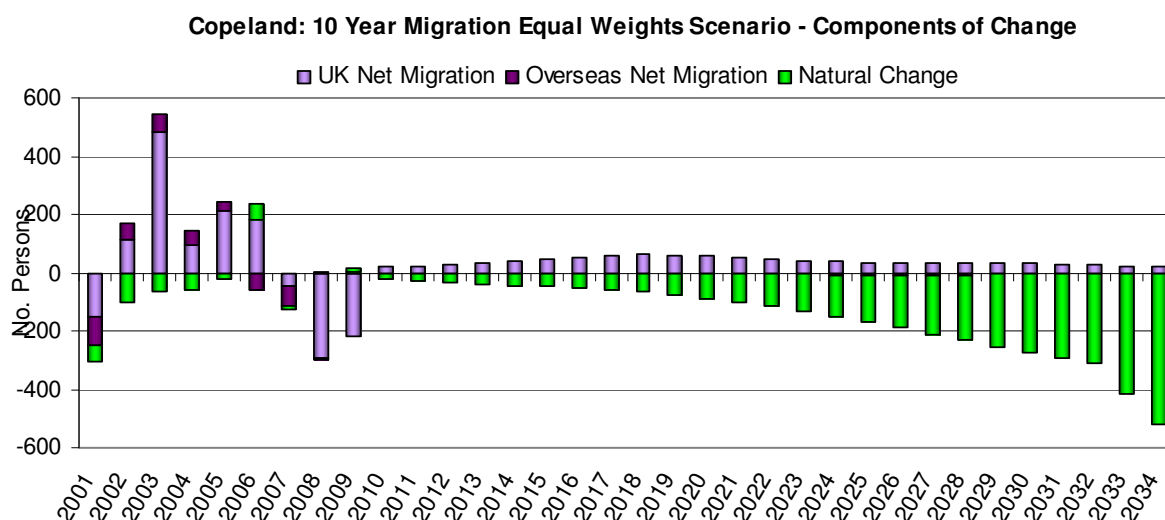
- 6.17 This represents another 'trend-based' scenario. These projections are classified as 'migration-led' as they take no account of any future market capacity to deliver or availability of residential land, but rather project forward a continuation of recent historical demographic trends of growth or decline.
- 6.18 The scenario considers the long term ten year trend of migration change, going back from 2009/10. Across West Cumbria this historical long-term trend has been positive, with particular high levels of internal migration recorded in the first three years of the last decade.
- 6.19 The projection forward of comparatively high levels of migration into West Cumbria has an impact on the overall level of population change. This is demonstrated through the following charts.

Figure 6.5: Core Scenario 3 Ten Year Migration – Components of Change, Allerdale



Source: SNPP, 2010, Cumbria County Council, 2011

Figure 6.6: Core Scenario 3 Ten Year Migration – Components of Change, Copeland



Source: SNPP, 2010, Cumbria County Council, 2011

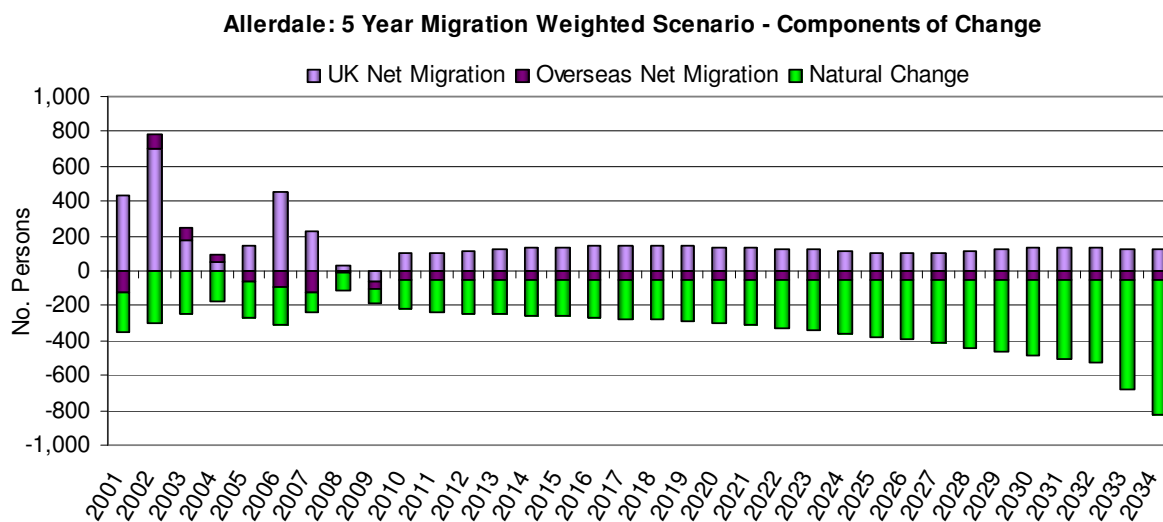
6.20 Based on a projection forward of trends over the last ten years Allerdale's population is projected to show a marginal level of growth, 32 persons between 2011 and 2026. As the chart above shows this is primarily driven by migration. In Copeland the population is projected to fall by just over 500 persons over the same time period. This reflects the changes to migration levels over the preceding ten years. Whilst the

period 2002 to 2007 saw positive net migration into Copeland the years either side have seen decreases which have resulted in a low average level which is then projected forward.

Core Scenario 4 – Five Year Migration Trend

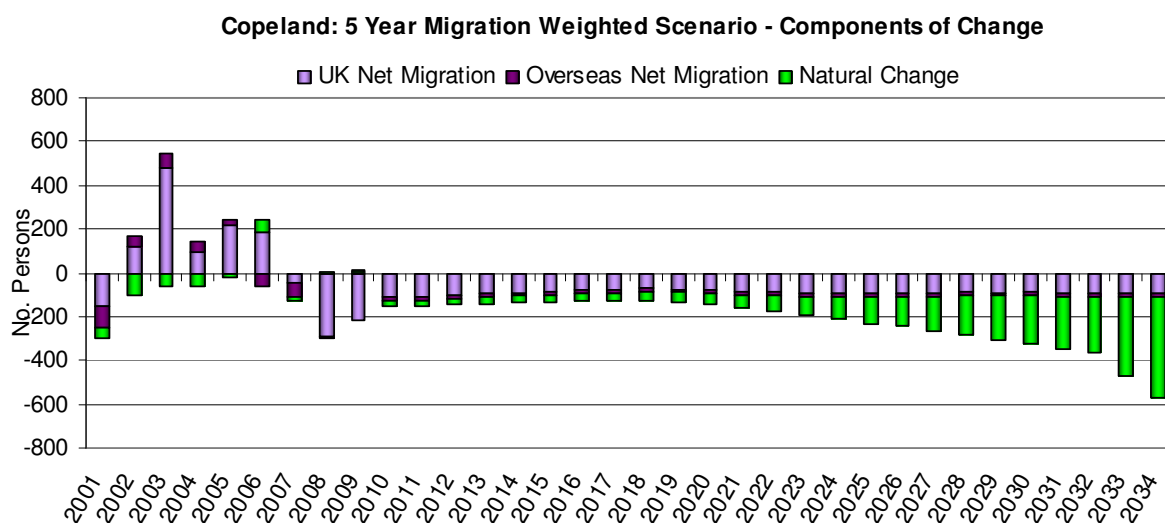
- 6.21 This scenario bases the projected change in migration on more recent trends i.e. the last five years. In addition the scenario weights the projection to the more recent years data, the latest year being 2009/10.
- 6.22 This has an important impact given the information presented in Section 5 which showed that the last two years, 2008/09 and 2009/10, have both seen a reversal of trends in total net migration across West Cumbria. Rather than the positive impact of migration from 2001 up to 2008 across West Cumbria, the last two years (three years in Copeland) have seen a net out-migration. This therefore has a bearing on the levels of migration projected to occur going forward.
- 6.23 This is demonstrated through the following charts.

Figure 6.7: Core Scenario 4 Five Year Migration – Components of Change, Allerdale



Source: SNPP, 2010, Cumbria County Council, 2011

Figure 6.8: Core Scenario 4 Five Year Migration – Components of Change, Copeland



Source: SNPP, 2010, Cumbria County Council, 2011

- 6.24 The weighting of the projections to factor in more recent years data results in a projected population decline in Allerdale as a result of lower levels of projected net migration. Indeed the difference is marked with a projected population decrease of approximately 2,500 persons between 2011 and 2026. In Copeland negative net migration levels are projected forward, reflecting the negative levels seen over the last three years. This results in a projected decline in population of approximately 2,340 persons over this period. It is evident in the case of Copeland that this reduction in migration levels seen over the last three years is closely tied to the loss of employment over this period, as evidenced within Part 1 of this paper.

Core Scenario 5 – Employment-constrained Baseline

Economic Forecast

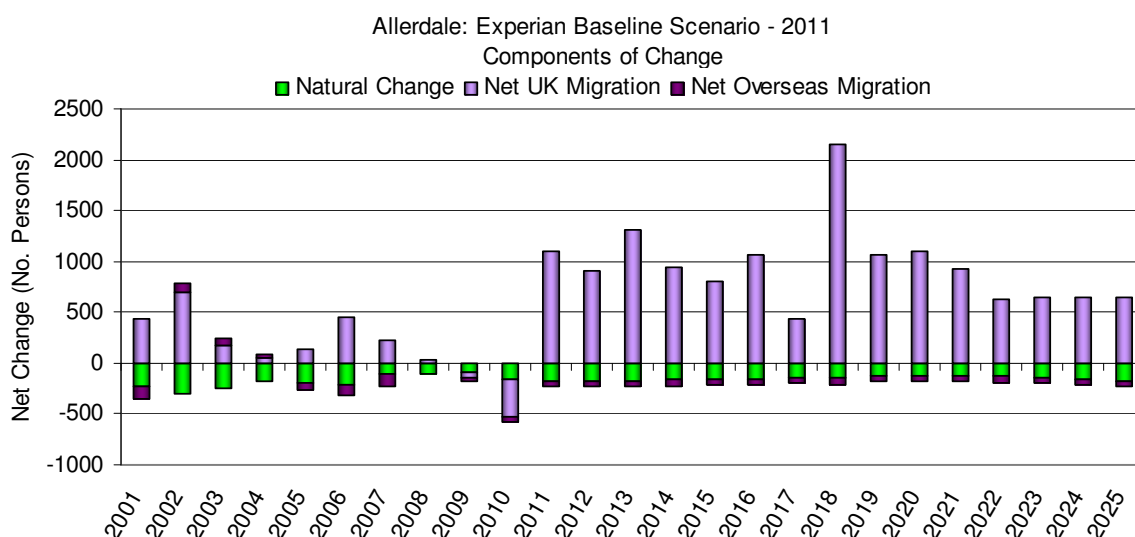
- 6.25 This scenario is a constrained scenario rather than a trend based scenario. Demographic trends, driven by the five year migration-led scenario, are aligned with the Baseline Scenario employment forecast set out in Section 3, which acts as a constraint on the levels of population change projected over the plan period.
- 6.26 The scenario therefore matches up the level of working age population required to meet the anticipated employment requirements in the two areas going forward. In linking the economy and labourforce a number of assumptions are made:

- The ratio between the working age population in employment and the number of jobs is calculated using an average ratio over the five year period 2007 - 2011. An average over this period is used as this represents a relatively turbulent time economically and the average is therefore perceived to be more representative than a single year. The base date of 2007 for calculating this average is used as this represents the start of the Sellafield Workforce Plan and therefore the use of more locally bespoke employment data. This ratio is held constant throughout the projection period. This integrates an assumption around retaining levels of commuting with the balance of people working and living locally set through this ratio and by default the numbers of persons commuting into each authority to take up job opportunities;
- Economic activity rates have been sourced from the Census and have been assessed against more recent data collected through the Annual Population Survey (APS) to confirm that they still remain appropriate. Economic activity rates have been moderated to recognise that the profile of older aged persons in particular is likely to change going forward. This reflects plans to raise pensionable ages¹⁰ and a sustained pressure on many people to continue to supplement potential pensions with income from employment. The economic activity rates of older person residents of Cumbria were compared against national averages and the following assumptions have been applied to create a more accurate labour-force profile:
 - For males aged 65-69 a 2% increase in economic activity rates was applied in 2011 with an incremental increase then applied of up to 20% by 2020. 2020 is the date at which the male retirement age is due to be 66;
 - For females aged 60 – 64 a 5% increase in economic activity rates was applied in 2011 with an incremental increase then applied by up to 90% by 2026; and
 - For females aged 65 – 69 an incremental uplift to 5% was applied to 2019 and a further incremental increase to 15% was applied to 2026. This reflects changes to female pension ages which are due to be in place, with the pension age raising to 65 by 2016/18 and to 66 by 2020.
- Unemployment proportions are held constant throughout the projection period with the ratio between the workforce and jobs noted above establishing this level based on an average calculated over the period 2007 to 2011.

¹⁰ Note: Key Changes include – Gradual increase of the State Pension for women born on or after 6th April 1950 to 65 between 2010 and 2020; the State Pension age for men and women will increase from 65 to 66 between April 2024 and April 2026 (DWP, Changes to the State Pension, 2009); and from the 6th April 2020 the State Pension age will be 65 for both men and women (NI Direct, Changes to the State Pension, 2010).

- 6.27 The aligning of jobs and the labour-force in particular affects migration levels. A shortfall in the labour-force to match employment opportunities results in the population model drawing in additional in-migrants (of working age) to fill these jobs. If the opposite is true then the net migration rate will lead to a de-population of the working age component recognising that they will seek employment opportunities elsewhere.
- 6.28 The impact of these constraints is shown in the following chart. In particular it is important to compare the assumed annual net effect of internal UK migration in both authorities. This should be interpreted in the context of the headline outputs of the baseline economic forecast (which incorporates job numbers associated with decommissioning as supplied by Sellafield Ltd).

Figure 6.9: Core Scenario 5 Employment-constrained Baseline Scenario – Components of Change, Allerdale



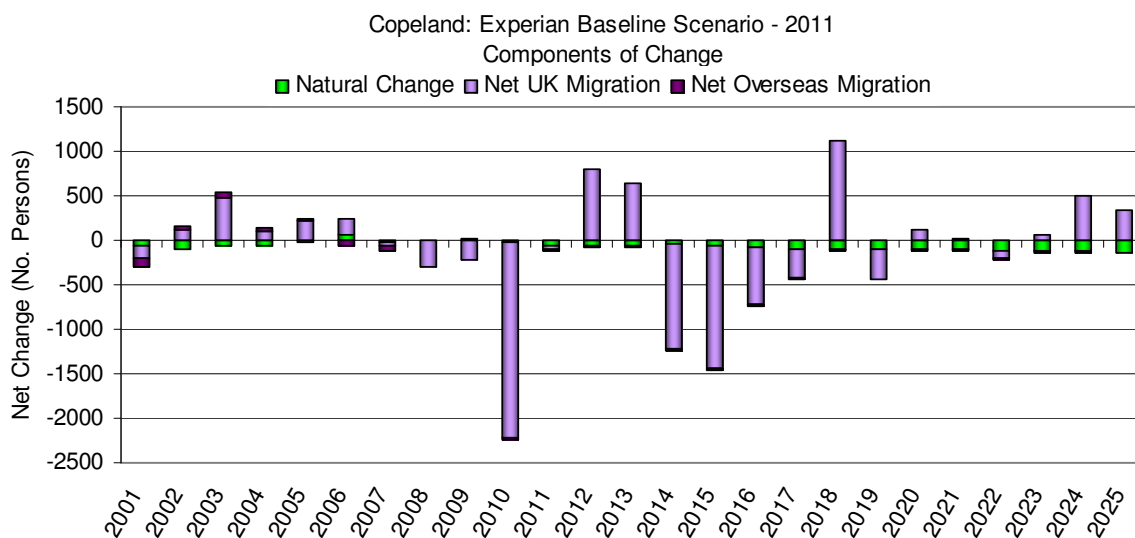
Source: SNPP, 2010, Cumbria County Council, 2011

- 6.29 Under this scenario the positive economic forecast for Allerdale under the baseline economic scenario, set out in Section 3, has a marked impact on population levels. Under the core demographic scenarios the population of Allerdale is projected to age notably which impacts on the available working age population available to resource employment opportunities. The impact in the modelling process is that the POPGROUP model assumes that additional people of working age are required to migrate into the authority to take up these job opportunities. This has a knock on effect in the natural change component as well as this influx of younger persons in

turn models through the time period and increases the numbers of children countering the ageing of the existing population.

- 6.30 The result of this simplistic perspective of the link between employment and population presents a greater variance annually than you would in reality expect to see given the more sedentary nature of people. It is important therefore to consider the general trend rather than the annual levels of change, the change between 2018/19 a clear example with a forecast increase of 642 jobs that year under the Experian forecast resulting in an uplift in the working-age population in term with the assumption being that they are accompanied by other family members. The result being a significant uplift in population over a single year.
- 6.31 Over the period 2011 and 2026 under this set of baseline economic circumstances the modelling projects that the population would increase by 11,240. A significantly higher level of growth than the demographic based projections would predict and one which reflects the forecast strength of the economy compared to recent years.

Figure 6.10: Core Scenario 5 Employment Constrained Baseline Scenario – Components of Change, Copeland



Source: SNPP, 2010, Cumbria County Council, 2011

- 6.32 The impact of the simple modelling link between employment and population inherent in the POPGROUP model is again illustrated in Copeland. The forecast significant changes in employment levels on an annual basis in the authority, largely linked to activity at Sellafield results in the model projecting large swings in migration trends. The next few years, from 2011, where employment levels are projected to increase result in a reversal of recent trends and show net in-migration to the

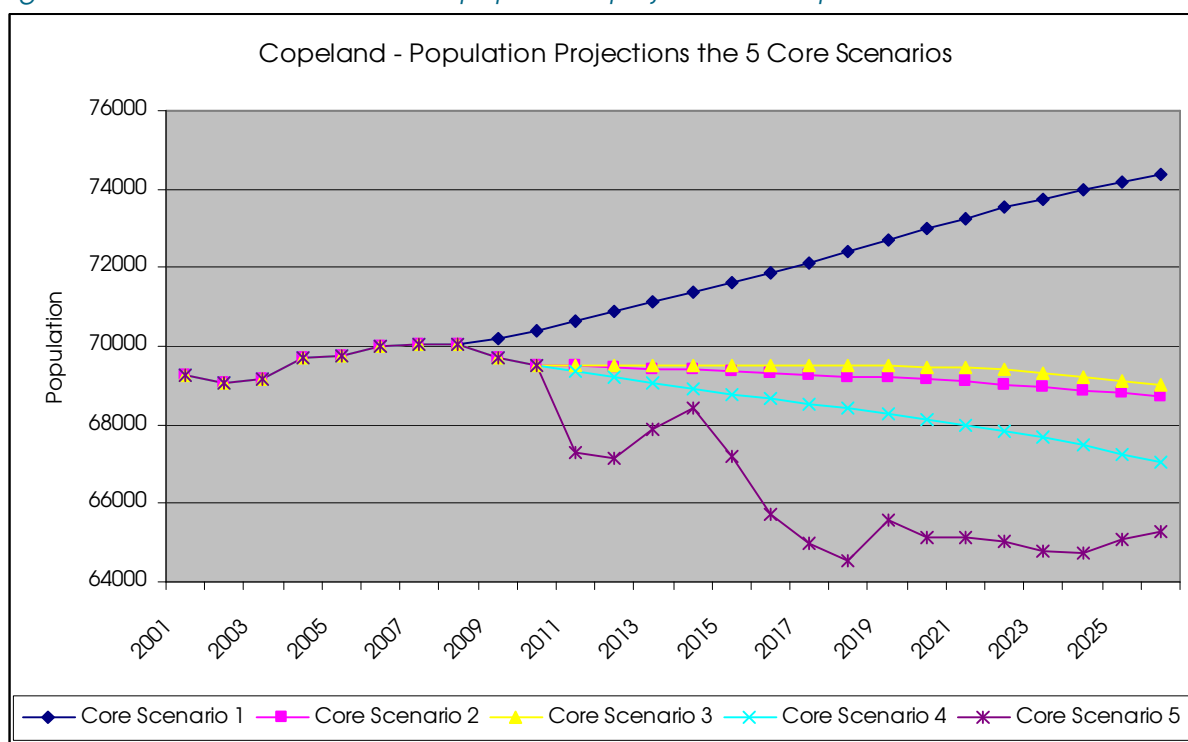
authority. Notably the significant level of out-migration projected in 2010 represents a re-balancing in the model to match the high levels of job losses which have been seen in the authority over the last couple of years, again largely linked to the decommissioning process.

- 6.33 Over the period 2011 to 2026 the population of Copeland, under the baseline economic scenario, is projected to decrease by approximately 2,000 persons. This reflects the projected decline over this period of the number of FTE jobs in the authority by 3,200.

Contrasting the Projections under the 5 Core Scenarios

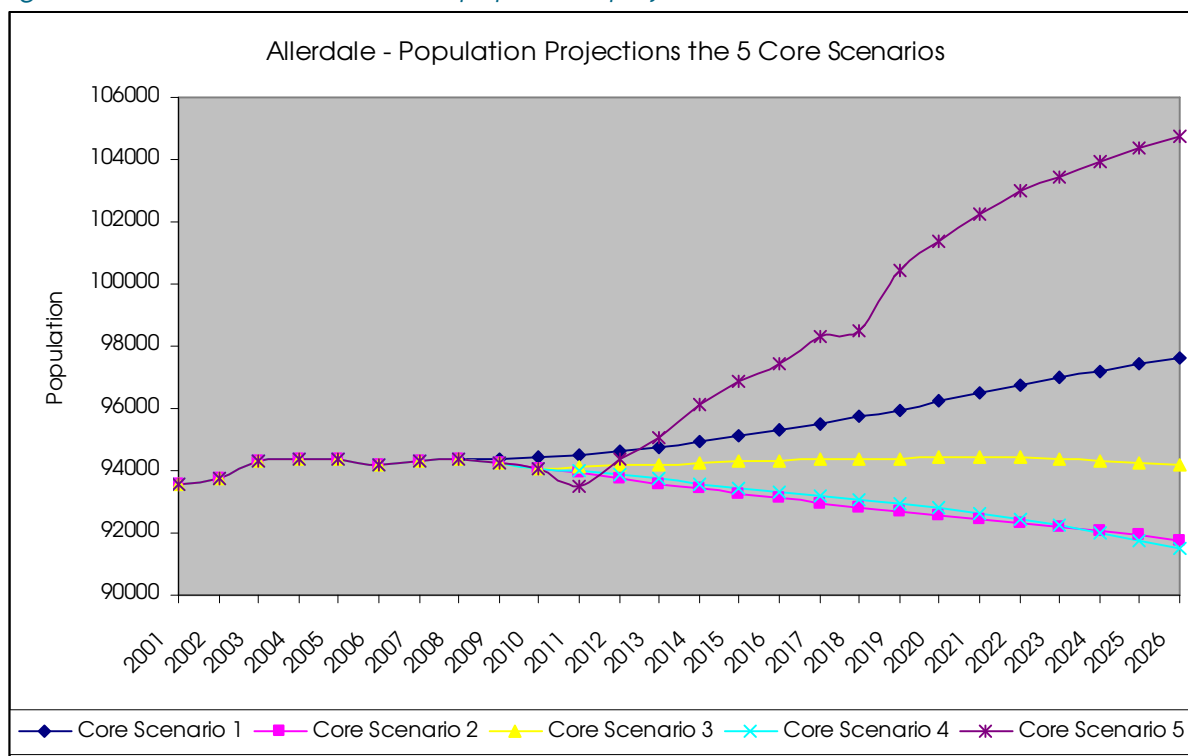
- 6.34 The following chart presents the trajectory of population change for each for each of the Core Scenarios for Copeland. This is then proceeded by a comparable chart for Allerdale.

Figure 6.11: The five Core Scenarios population projections – Copeland



Source: Cumbria County Council, GVA, 2011

Figure 6.12: The five Core Scenarios population projections – Allerdale



Source: Cumbria County Council, GVA, 2011

6.35 A number of interesting conclusions can be drawn from analysis of the Core Scenarios:

- The population in Copeland is projected to fall under all of the modelled scenarios, with only the SNPP showing a positive increase. This relies on sustained levels of in-migration reflecting pre-recession levels over the preceding five years or so. The analysis of the economy in Copeland in Section 3 suggests that under a baseline forecast this level of in-migration of persons, if working-age, would out-pace employment opportunities.
- In Allerdale the modelled demographic projections all show a small decline in population. Again this contrasts with the SNPP which as for Copeland is based on a more buoyant economic period. The baseline employment forecasts for Allerdale, analysed in Section 3, forecast substantial job growth, over 1,300 FTEs over this period. When coupled with the demographic projections of an ageing population the modelling assumes that levels of net-migration of working age adults into the authority is required in significant numbers to match this growth. The population is further swelled with these households assumed, based on the current profile of the authority to be made up of families including dependants.

Nuclear Scenario – Considering the Impact of Nuclear New Build

- 6.36 The two Nuclear investment based economic forecast scenarios introduced in Section 3 represent hypothetical scenarios in that they are based on estimated data sources, as noted within the Nuclear Topic Paper and Part 1 of this paper.
- 6.37 The Nuclear New Build Scenario in particular however integrates a number of assumptions around the potential levels of labour required to service the investment. These labour assumptions, including the occupational split of the potential workforce, can be used to provide hypothetical indications of the way in which the population of the two authorities may change going forward under a scenario where Nuclear New Build occurs within West Cumbria.

Key Population Modelling Assumptions

- 6.38 The following assumptions have been extracted from the Nuclear Topic Paper and the development of the economic forecasts by Experian:
- In terms of the construction workers identified within the economic forecast the split of local / non-local workers for the main New Build phase will be circa 50%/50%. Therefore of the total workers classified as in industrial sectors 'construction' and 'metals' and directly attributed to Nuclear New Build 7,008 are removed from the population modelling and are therefore not translated into households to create demand for dwellings over the plan period. Further detail on this element is shown below under the sub-heading 'Temporary Construction Workers';
 - Local workers will assume to require a matching of the labourforce of the area with new employment opportunities, as per the employment-constrained scenario. This is likely therefore to lead to further in-migration of permanent populations into the area;
 - The local workforce for both construction and operational positions will need to be within a 90 minute drive time. This encompasses the vast majority of both Copeland and Allerdale. The assumption has been made that the current (2007) commuting flows factored in as an assumption under the Baseline Economic Scenario are retained. This therefore assumes that the current commuting flows for all workers across the authorities are used to define the proportion of these local workers who live and work within Copeland and Allerdale.

The Temporary Construction Worker Population

- 6.39 As noted above an element of the workforce employed to construct the two new nuclear reactors will not be local to West Cumbria. It is inevitable, based on the narrative within the Nuclear Topic Paper and examples of similarly scaled construction projects elsewhere around the UK and further afield, that workers need to be brought in from elsewhere.
- 6.40 Based upon the analysis presented within the Nuclear Topic Paper which references initial views from contractors it has been assumed that 50% of the labour will be sourced outside of West Cumbria. This relates primarily to the workforce involved in directly construction and/or preparation of key components. On this basis 50% of all workers associated with Nuclear New Build in the 'construction' and 'metals' industrial sectors have been removed from the economic forecasts which are used to drive the employment-constrained population projections under this scenario. The numbers of removed 'non-local' workers are shown annually over the construction period in the following table.

Figure 6.13: Assumed Non-Local Workers associated with Nuclear New Build

Jobs removed from the Employment-Constrained Scenario to reflect non-local labour-requirements											
Authority / Sector	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Allerdale											
Metals	0	0	1	1	21	188	466	465	319	101	0
Copeland											
Metals	0	0	1	1	21	193	478	477	327	104	0
Construction	92	222	265	684	1,005	918	472	113	52	11	12
Total	93	223	266	687	1047	1298	1416	1055	698	215	12

Source: Cumbria County Council, Experian, 2011

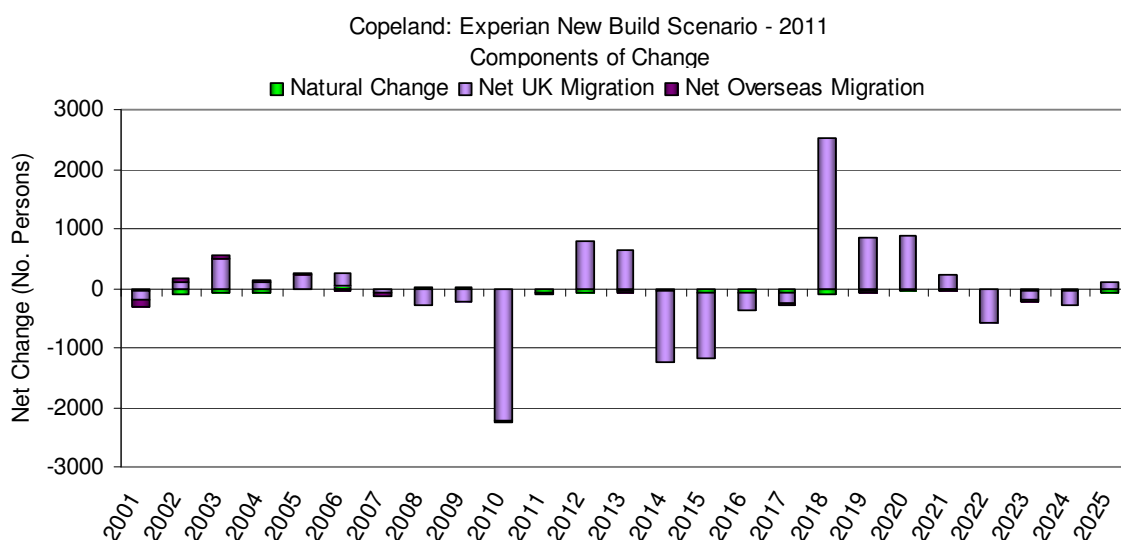
- 6.41 The table illustrates that the peak of non-local workers is reached in 2022, midway through the construction phase. The total assumed number of workers is 1,416 in that year. In terms of planning for the needs of this 'special population' it can be assumed that all non-local workers will be assumed to be single persons. They therefore should not be modelled as part of the wider population in terms of changing family circumstances with this impacting on the overall number of persons within West Cumbria.
- 6.42 Importantly this element should not be planned for in a traditional sense as they will only require temporary accommodation and as noted above are not therefore included within the population or household modelling under the New Build Scenario.

- 6.43 It is important to recognise that the non-local workforce will need to be located within a relatively close proximity to the site. The modelling has not distributed these workers between Copeland and Allerdale, although given the need to ensure proximity it is evident that the majority will need to be housed within Copeland.

A Re-modelled Population

- 6.44 The impact of these assumptions is shown in the re-modelled population projection below. This integrates the underpinning assumptions under the Nuclear New Build economic forecast and is initially presented as a components of change chart.

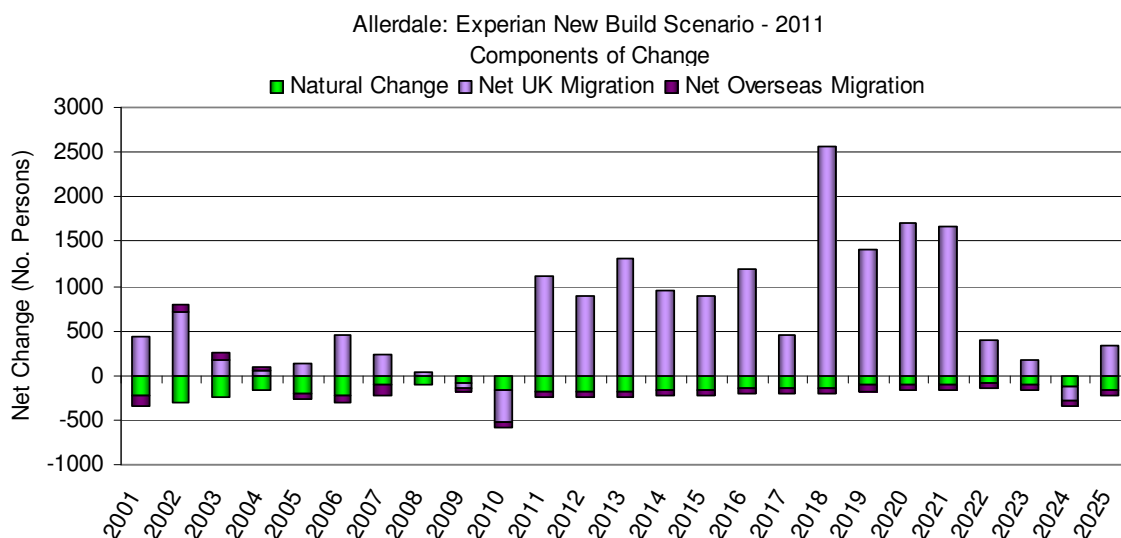
Figure 6.14: Components of change under the Employment constrained Nuclear New Build Scenario Copeland.



Source: GVA, SKM, Cumbria County Council, Experian, 2011

- 6.45 The reduced forecast employment losses in Copeland under the Nuclear New Build economic scenario are modelled through in population terms. In particular this is pronounced around the peak periods of construction activity on the reactors. It is important to note as per the assumptions described in the modelling of this scenario that only 50% of total jobs directly resulting from this process are suggested to impact on the local population and therefore the impact of employment levels peaking in this period are reduced somewhat. However, under this scenario in contrast to Core Scenario 5 the population is projected to increase by approximately 1,250 persons.

Figure 6.15: Components of change under the Employment constrained Nuclear New Build Scenario Allerdale



Source: GVA, SKM, Cumbria County Council, Experian, 2011

- 6.46 The impact in Allerdale of the Nuclear New Build employment projections are less pronounced, as would be expected given the lower levels of employment uplift under this scenario when compared to the baseline forecast. However, the growth in jobs does have an effect on the projected population with a slightly higher level of population growth modelled between 2011 and 2026 of approximately 11,890 persons.

Nuclear Scenario – Other Nuclear Investment

- 6.47 The other nuclear investment projects documented under the Nuclear New Investment economic forecast are built on information provided by Sellafield. These do not include assumptions around the link between local and non-local labour required to deliver or in a number of cases detailed data around the types of employment likely to be generated. On this basis these investment projects have not been translated into population or household projections. As further information emerges in relation to these projects projections will be able to produced and updated.

7. Household Projections

- 7.1 This Section converts the population projections introduced in Section 6 into household projections.
- 7.2 This is undertaken using the DCLG / ONS assumptions around current and projected headship rates that underpin the latest DCLG published 2008 based Sub-National Household Projections.
- 7.3 Prior to presenting the projected change in household numbers under the various population scenario a short section examines the process of estimating households and 'checks' official datasets against local proxy data in the form of Council Tax records.

Checking Household Estimates

- 7.4 Each of the Council's have supplied Council Tax data broken down by total dwellings and then by numbers of empty properties and second homes. This data can be used as a proxy for occupied properties, i.e. total stock minus the other two elements, to contrast with the estimated numbers of households under the POPGROUP model.
- 7.5 The following tables contrast the POPGROUP dataset with the Council Tax dataset as well as showing the levels of vacancy of stock in the authorities. Importantly this shows a relatively high level of consistency in terms of the DCLG sub-national household estimates (input into POPGROUP) and the Council Tax datasets, in particular for Copeland. This suggests that the estimated counts of households have accurately tracked development activity and the occupation of properties.
- 7.6 In Allerdale there is a greater difference between the two figures. The POPGROUP household estimates appear to have underestimated the number of households in the authority if the numbers of properties recorded as occupied through Council Tax is used as a proxy. This appears to be a long-term undercount with the difference remaining relatively steady. If the population estimates are considered as robust, as prepared by the ONS through the mid-year estimates the implication is that the headship rates (household sizes) used in the DCLG sub-national household projections are slightly too high and are therefore in the translation of population into households slightly under-counting the number of households. The scale of the difference is not however, considered significant enough to undertake a re-alignment of the household size within the authority. The results of the 2011 Census should be used to contrast the recorded number of occupied properties using Council Tax data with the

evidenced population of the Borough and its breakdown into different household types.

- 7.7 The Council Tax data indicates that vacancy rates across both authorities have remained relatively constant over recent years. Vacancy rates have remained relatively low across both authorities, with a 3% vacancy recognised as a standard level of churn. Importantly though the analysis highlights the impact of second homes. If these are factored in arguably there is a significant amount of latent stock which is not occupied all year in both authorities. These numbers of second homes are likely to be influenced by those areas in the Lake District National Park and other proximate settlements.

Figure 7.1: Contrasting Council Tax and POPGROUP datasets – Vacancy – Copeland

Copeland	2006/07	2007/08	2008/09	2009/10	2010/11	2006 - 2010 Change
Council Tax Total Dwellings	32,257	32,425	32,552	32,589	32,771	332
Council Tax Occupied Properties	30,756	30,883	31,039	31,080	31,201	324
% Vacant including second homes	4.7%	4.8%	4.6%	4.6%	4.8%	0
% Vacant (only empty properties)	2.2%	2.4%	2.2%	1.9%	2.2%	0
POPGROUP Household Estimates	30,749	30,877	30,935	31,054	n/a	305
Difference - Occupied Dwellings / POPGROUP Household Estimates	-7	-6	-104	-26	n/a	n/a
Ratio	1.00	1.00	1.00	1.00	n/a	n/a

Source: Cumbria County Council, Copeland Council Tax Dept, 2011

Figure 7.2: Contrasting Council Tax and POPGROUP datasets – Vacancy – Allerdale

Allerdale	2005	2006	2007	2008	2009	2010	2011	2005 - 2010 Change
Council Tax Total Dwellings	44,030	44,162	44,294	44,557	44,732	44,854	45,006	824
Council Tax Occupied Properties	41,977	41,968	42,352	42,477	42,672	42,812	42,992	835
% Vacant including second homes	4.7%	5.0%	4.4%	4.7%	4.6%	4.6%	4.5%	-0.1%
% Vacant (only empty properties)	2.6%	1.8%	1.9%	2.0%	1.9%	1.9%	1.9%	
POPGROUP Household Estimates	40,897	40,992	41,159	41,276	41,396	41,461	n/a	564
Difference - Occupied Dwellings / POPGROUP Household Estimates	-1,080	-976	-1,193	-1,201	-1,276	-1,351	n/a	n/a
Ratio	0.97	0.98	0.97	0.97	0.97	0.97	n/a	n/a

Source: Cumbria County Council, Allerdale Council Tax Dept, 2011

Household Projections – Core Scenarios

- 7.8 The following tables set out the levels of projected household change between 2011 and 2026 for both Copeland and Allerdale under each of the Core Scenarios. Core Scenario 1 is not included in this comparison. As noted in Section 6 this projection is driven by ONS mid-year estimates up to 2007/08 and does not therefore take account of the last couple of years of data which reflect the impact of the recession on the UK and West Cumbria.

Figure 7.3: Household Projections – Core Scenarios: Copeland

Scenario	Copeland									
	Private Household Population			Household Size			Households			Annual Change (15 years)
	2011	2026	Change 2011 - 2026	2011	2026	Change 2011 - 2026	2011	2026	Change 2011 - 2026	
CS 2 Zero net migration	68,114	67,049	-1,065	2.18	2.04	-0.14	31,195	32,863	1,667	111
CS 3 10 year Migration-trend (equal)	68,131	67,335	-797	2.18	2.00	-0.18	31,273	33,688	2,415	161
CS 4 5 year Migration-trend (weighted)	67,987	65,380	-2,606	2.18	1.99	-0.19	31,211	32,844	1,633	109
CS 5 Employment-constrained baseline forecast	65,900	63,628	-2,272	2.17	1.98	-0.19	30,380	32,105	1,725	115

Source: Cumbria County Council, 2011

Figure 7.4: Household Projections – Core Scenarios: Allerdale

Scenario	Allerdale									
	Private Household Population			Household Size			Households			Annual Change (15 years)
	2011	2026	Change 2011 - 2026	2011	2026	Change 2011 - 2026	2011	2026	Change 2011 - 2026	
CS 2 Zero net migration	92,419	89,904	-2,516	2.23	2.11	-0.12	41,516	42,603	1,087	72
CS 3 10 year Migration-trend (equal)	92,633	92,243	-390	2.22	2.08	-0.14	41,677	44,385	2,708	181
CS 4 5 year Migration-trend (weighted)	92,468	89,585	-2,884	2.22	2.07	-0.15	41,603	43,213	1,610	107
CS 5 Employment-constrained baseline forecast	92,007	102,770	10,763	2.22	2.11	-0.11	41,427	48,662	7,236	482

Source: Cumbria County Council, 2011

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- 7.9 The data in the tables on the preceding page clearly show a spread of potential levels of household change, which in turn equate to different annual levels of projected growth. Core Scenario 2 is not considered here in the analysis as it is considered a hypothetical scenario and is used for reference only.
- 7.10 Within Allerdale Core Scenarios 3 and 4 show that the authority is projected to see an increase in the range of 110 – 180 households per annum. However, the employment-constrained baseline scenario (CS 5) shows a substantially higher level of household growth, of over 450 households per annum. This reflects the high level of population increase projected under this scenario which links to the level of job growth and the projected changes to the size of the working age population under the demographic scenarios.
- 7.11 In Copeland Core Scenarios 3 and 4 show a projected range of per annum levels of household growth between 110 and 160. The impact of the employment constraint in Scenario 5 serves to moderate the upper level of household growth to an annual projected increase of 115 households over the time period. This reflects the forecast decrease in population linked to a fall in employment opportunities within the authority under the baseline economic scenario.

Breakdown by the type of household and the age of the population

- 7.12 The household projections are broken down by 17 different household types and the population projections are broken down into five year age bands. Understanding how the demographic profile of the area will change in relation to these elements is important as it represents an important factor in driving the types and sizes of properties which are likely to be required in the future.
- 7.13 The following tables show for each authority the projected change in household numbers broken into four merged household type classifications (the full 17 classifications are not shown here but have been modelled.) for each scenario.

Figure 7.5: Projected change in household type 2006 – 2031 – Copeland

Household Type	Core Scenario 2	Core Scenario 3	Core Scenario 4	Core Scenario 5
Absolute Numbers				
One Person	2,404	2,611	2,294	2,312
Couple Household or Mixed Adult Household	308	866	473	509
Family Household (Adults and Children)	-646	-672	-725	-701
Other Households	-398	-389	-409	-394
Total	1,667	2,415	1,633	1,725
Proportions				
One Person	144%	108%	140%	134%
Couple Household or Mixed Adult Household	18%	36%	29%	29%
Family Household (Adults and Children)	-39%	-28%	-44%	-41%
Other Households	-24%	-16%	-25%	-23%

Source: CCC, GVA, 2011

Figure 7.6: Projected change in household type 2006 – 2031 – Allerdale

Household Type	Core Scenario 2	Core Scenario 3	Core Scenario 4	Core Scenario 5
Absolute Numbers				
One Person	1,697	2,232	1,877	3,600
Couple Household or Mixed Adult Household	840	1,803	1,350	3,205
Family Household (Adults and Children)	-1,357	-1,301	-1,561	355
Other Households	-93	-26	-57	75
Total	1,087	2,708	1,610	7,236
Proportions				
One Person	156%	82%	117%	50%
Couple Household or Mixed Adult Household	77%	67%	84%	44%
Family Household (Adults and Children)	-125%	-48%	-97%	5%
Other Households	-9%	-1%	-4%	1%

Source: CCC, GVA, 2011

- 7.14 Within both authorities the projections under all of the scenarios show a significant uplift in single person and couple households. This reflects the ageing of the population and wider national trends. Interestingly within Allerdale the impact of the in-migration of working age people under the employment-constrained scenario (CS 5) shows a different trend in family households than shown under the demographic scenarios. The same trend is not evident in Copeland as the reduction in employment opportunities sees working age family households migrate out of the authority.

- 7.15 This is further illustrated through the following two tables which show the proportional breakdown of the population of each authority by age in 2011 and 2026 for each of the Core Scenarios considered above.

Figure 7.7: Projected change in the age profile of the population 2011 – 2026 – Copeland

Copeland	Proportion of overall Population					
	Core Scenario 3		Core Scenario 4		Core Scenario 5	
Age Band	2011	2026	2011	2026	2011	2026
0-4	5.1%	4.2%	5.0%	4.4%	5.0%	4.5%
5-9	5.1%	4.6%	5.0%	4.6%	5.1%	4.3%
10-14	5.5%	4.8%	5.5%	4.6%	5.6%	4.4%
15-19	5.9%	4.5%	5.9%	4.2%	6.0%	4.5%
20-24	5.3%	4.2%	5.4%	4.1%	5.0%	4.4%
25-29	5.4%	4.3%	5.4%	4.6%	5.1%	5.4%
30-34	5.1%	4.8%	5.1%	5.1%	5.0%	5.8%
35-39	5.7%	5.7%	5.7%	6.1%	5.7%	5.6%
40-44	7.3%	5.9%	7.3%	6.1%	7.3%	5.4%
45-49	8.3%	5.9%	8.3%	5.8%	8.4%	5.2%
50-54	7.8%	5.5%	7.7%	5.4%	7.8%	6.0%
55-59	6.8%	6.1%	6.8%	6.1%	6.8%	7.6%
60-64	7.4%	7.7%	7.4%	7.6%	7.5%	8.5%
65-69	5.8%	8.4%	5.8%	8.2%	5.9%	7.6%
70-74	5.0%	7.3%	5.0%	7.2%	5.1%	6.2%
75-79	3.8%	5.7%	3.8%	5.6%	3.9%	6.1%
80-84	2.6%	5.1%	2.6%	5.1%	2.6%	4.1%
85-89	1.5%	3.0%	1.5%	3.0%	1.5%	2.7%
90+	0.7%	2.2%	0.7%	2.3%	0.7%	1.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: CCC, GVA, 2011

Figure 7.8: Projected change in the age profile of the population 2011 – 2026 – Allerdale

Allerdale	Proportion of overall Population					
	Core Scenario 3		Core Scenario 4		Core Scenario 5	
Age Band	2011	2026	2011	2026	2011	2026
0-4	5.3%	4.5%	5.3%	4.4%	5.3%	5.0%
5-9	5.1%	4.8%	5.1%	4.8%	5.1%	5.2%
10-14	5.6%	5.2%	5.6%	5.1%	5.6%	5.2%
15-19	6.0%	5.4%	6.0%	5.4%	6.0%	5.2%
20-24	4.6%	4.2%	4.6%	4.3%	4.6%	4.2%
25-29	4.7%	4.5%	4.7%	4.6%	4.7%	4.9%
30-34	4.6%	5.3%	4.6%	5.4%	4.6%	6.3%
35-39	5.7%	4.9%	5.7%	4.9%	5.7%	5.6%
40-44	7.4%	5.1%	7.4%	5.0%	7.4%	5.3%
45-49	7.8%	5.0%	7.8%	4.9%	7.8%	4.9%
50-54	7.4%	6.1%	7.4%	6.1%	7.4%	5.9%
55-59	6.8%	7.7%	6.8%	7.8%	6.8%	7.4%
60-64	8.0%	7.9%	8.0%	8.0%	8.0%	7.5%
65-69	6.2%	7.2%	6.2%	7.2%	6.2%	6.8%
70-74	5.2%	6.2%	5.2%	6.2%	5.2%	5.8%
75-79	4.1%	6.6%	4.1%	6.7%	4.2%	6.1%
80-84	2.9%	4.5%	2.9%	4.5%	2.9%	4.2%
85-89	1.7%	2.9%	1.7%	2.9%	1.7%	2.7%
90+	0.9%	2.0%	0.9%	2.0%	0.9%	1.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: CCC, GVA, 2011

Considering the Impact of Nuclear New Build and Other Nuclear Investment

- 7.16 As with the analysis in Section 6 a separate analysis is presented examining the potential implication of Nuclear New Build on household numbers across the two areas. This links with the analysis in Section 6 and importantly, as with the population projections under this economic scenario does not include temporary workers migrating into the authority for the short-term to assist in the construction of the nuclear new build project. As noted in Section 6 these temporary workers are all projected to represent single person households without dependants.
- 7.17 The table on the following page provides comparable information for the Nuclear New Build employment-constrained scenario for both authorities. The outputs of Core Scenario 5 are included for reference.

- 7.18 The impact on household demand is marked within Copeland, with a per annum projected growth of 214 compared with the 115 under Core Scenario 5. This reflects the uplift in employment presumed within the authority resulting from nuclear new build. The impact in Allerdale is less pronounced, although it does serve to further elevate household demand over the fifteen year period.

Figure 7.9: Household Projections Employment Constrained Scenario Nuclear New Build, Copeland

Copeland	Private Household Population		Change 2011 - 2026	Household Size		Change 2011 - 2026	Households		Change 2011 - 2026	Annual Change (15 years)
	2011	2026		2011	2026		2011	2026		
Nuclear New Build Scenario	65,900	66,873	973	2.17	1.99	-0.18	30,380	33,591	3,211	214
Core Scenario 5	65,900	63,628	-2,272	2.17	1.98	-0.19	30,380	32,105	1,725	115

Source: GVA, CCC, Experian, 2011

Figure 7.10: Household Projections Employment Constrained Scenario Nuclear New Build, Allerdale

Allerdale	Private Household Population		Change 2011 - 2026	Household Size		Change 2011 - 2026	Households		Change 2011 - 2026	Annual Change (15 years)
	2011	2026		2011	2026		2011	2026		
Nuclear New Build Scenario	92,007	103,412	11,405	2.22	2.11	-0.11	41,427	48,940	7,514	501
Core Scenario 5	92,007	102,770	10,763	2.22	2.11	-0.11	41,427	48,662	7,236	482

Source: GVA, CCC, Experian, 2011

8. Housing Implications for the LDF Evidence Base and the Economic Blueprint

- 8.1 This Section utilises the analysis presented in Sections 6 and 7 to highlight potential policy and strategy implications of the work examining the projected change in population and household numbers.
- 8.2 This analysis should be read in conjunction with the existing SHMA reports covering the authorities and is intended to complement the analysis within these looking at future changes in household numbers. The Projections Paper is not intended to update the analysis in the SHMA documents relating to affordable housing need which has been calculated using a separate methodology.
- 8.3 Prior to outlining the implications of the research it is important to recognise the geographical issues raised by the overlap of the National Park boundary into both authorities.

Considering the Lake District National Park

- 8.4 It is important to note that the population and household projections are built at a local authority level. They therefore cover parts of the authority which fall within the National Park Planning Area. The balancing of demand and supply will need to be agreed through policy. The Lake District National Park Authority's Core Strategy was adopted in October 2010.
- 8.5 Policy CS18 establishes that the housing target for the Lake District National Park between 2010 and 2025 will be 900 dwellings. This will be achieved by allocating sites for 100% affordable housing (with the exception of the West Distinctive Area where an appropriate mix of housing will be acceptable) and by maximising the potential from individual development opportunities.
- 8.6 The Core Strategy establishes six distinctive areas, due to geographical shared areas the northern and western areas are of particular relevance in the development of aligned policies in Copeland and Allerdale.
- 8.7 The Core Strategy states that the North Distinctive Area, which includes Keswick in Allerdale, will be the location of 25% of all development, with the majority focused in the rural service centres of Keswick and Caldbeck. Area based policies recommend that 10% of all development should occur in the West Distinctive Area, with Gosforth and Bootle as rural service centres. Gosforth is identified as an important gateway for the National Park, and as being able to accommodate further development.

Translating Household Growth Projections into Dwelling Requirements

- 8.8 The levels of household change forecast under each of the scenarios have been translated into net hypothetical housing requirements.
- 8.9 In order to translate household projected growth into dwellings a standard 3% vacancy factor is taken into account. This recognises that the market requires a proportion of stock to be empty at any given point in time to enable turnover.
- 8.10 The following table sets out net range of hypothetical dwelling requirements for each of the main scenarios. This includes Core Scenarios 3 and 4 which are the demographic led projections, Core Scenario 5 which is the baseline employment constrained scenario as well as the Nuclear New Build employment constrained scenario. It is important to note that under Nuclear New Build scenario a proportion of the employment generated is linked to construction workers, a proportion of which, as set out in the Nuclear Topic Paper, will not settle permanently in the authority but only require temporary accommodation. These are not included within these hypothetical dwelling requirements.

Figure 8.1: Hypothetical net dwelling requirements – Copeland

Scenario	Projected Household Change 2011 - 2026	Dwellings Required factoring in 3% vacancy	Annual Dwelling Requirement (15 years)
CS 2 Zero net migration	1,667	1,717	114
CS 3 10 year Migration-trend (equal)	2,415	2,488	166
CS 4 5 year Migration-trend (weighted)	1,633	1,682	112
CS 5 Employment-constrained baseline forecast	1,725	1,777	118
Nuclear New Build Scenario	3,211	3,307	220

Source: GVA, Cumbria County Council, 2011

- 8.11 The following table sets out the range of hypothetical net dwelling requirements for Allerdale.

Figure 8.2: Hypothetical net dwelling requirements – Allerdale

Scenario	Projected Household Change 2011 - 2026	Dwellings Required factoring in 3% vacancy	Annual Dwelling Requirement (15 years)
CS 2 Zero net migration	1,087	1,120	75
CS 3 10 year Migration-trend (equal)	2,708	2,789	186
CS 4 5 year Migration-trend (weighted)	1,610	1,658	111
CS 5 Employment-constrained baseline forecast	7,236	7,453	497
Nuclear New Build Scenario	7,514	7,739	516

Source: GVA, Cumbria County Council, 2011

Contrasting Requirements with the Residential Land Supply Position

- 8.12 The requirements identified above are driven solely by projected demand driven by demographic and employment factors. It is important in presenting a fuller picture to inform the authority's future development of housing targets to balance projected demand against the potential supply of housing land.
- 8.13 The accompanying Housing Viability Studies – Copeland and Allerdale (2011) provides a detailed appraisal of the potential housing land identified through the Authorities SHLAAs. The potential supply is tabulated below. It is important to note that this does not represent a policy position around supply but represents the supply of sites considered through the SHLAA evidence base.
- 8.14 For reference the supply is compared against the existing RSS target with both viable and marginal sites considered to represent a potential deliverable supply at this point in time.

Figure 8.3: General Viability Testing – Baseline Scenario: Copeland

Viability Threshold	General SHLAA Viability Testing				Sites by Market Location			Potential Supply (Years)
	Number of Sites	Proportion of Sites	Number of Dwellings	Proportion of Dwellings	High	Moderate	Low	RSS Target – 230
Viable	3	2%	145	1.6%	3	0	0	6
Marginal	41	23%	1,240	13.9%	0	41	0	
Unviable	138	76%	7,538	84.5%	0	30	108	
Total Sites	182	100%	8,923	100%	1.6%	39.0%	59.3%	

Source: GVA, 2011

- 8.15 Within Copeland the lower levels of household demand forecast projected in all of the scenarios would mean that the viable supply of land would meet demand for a longer time period. Only the Nuclear New Build scenario shows a level of dwelling requirement which is close to the previous RSS figure.

Figure 8.4: General Viability Testing – Baseline Scenario: Allerdale

Viability Threshold	General SHLAA Viability Testing				Sites by Market Location			Potential Supply (Years)
	Number of Sites	Proportion of Sites	Number of Dwellings	Proportion of Dwellings	High	Moderate	Low	RSS Target – 267
Viable	21	9%	393	3.4%	20	1	0	8
Marginal	72	30%	1,847	16.0%	0	72	0	
Unviable	149	62%	9,326	80.6%	0	24	125	
Total Sites	242	100%	11,567	100%	8.3%	40.1%	51.7%	

Source: GVA, 2011

- 8.16 Evidently within Allerdale if the higher dwelling requirements identified through the employment constrained scenarios were compared against the supply position this would markedly reduce the overall time for which the viable supply would meet demand. However, if the demographic scenarios were used this would result in a longer supply of land from the existing viable supply.

The Implications for Policy

Understanding how much housing to plan for

- 8.17 The analysis has shown that under the current demographic trend based scenarios the level of demand generated by household growth across both authorities is relatively low, falling below previous RSS requirements.

- 8.18 However, planning for this many households and this level of population change would result in a fundamental change to the population profile of the area with a notable increase in the proportion of total households which would be made up of older persons. In tandem this would result in a reduction in the number of working age persons and in turn family households.
- 8.19 This is illustrated through the employment-constrained baseline scenario, particularly within Allerdale. Positive job growth coupled with this ageing population shows a sustained need to attract new working age people into the authority to take up jobs. This is not true of Copeland where the numbers of jobs under the baseline scenario are forecast to fall.
- 8.20 In planning policy terms this further reinforces the importance of planning jointly across the two areas and ensuring that policies are balanced. Copeland is likely to accommodate a proportion of the household forecast in Allerdale in order to alleviate potential pressure within the authority. This re-balancing of demand will be important for both authorities under a baseline economic position.

How should policy look to plan for the impact of Nuclear Investment in terms of housing demand?

- 8.21 The analysis has also considered the impact of Nuclear New Build. As noted in Section 6 the Nuclear New Build economic forecast represents a 'hypothetical' potential future until further confirmation of the investment is secured and additional information is made available around the exact nature of investment. It has not therefore been modelled as a Core Scenario. However, it is important that the LDF is sufficiently flexible in its policies to enable the development of New Nuclear adjacent to the existing Sellafield plant. As the analysis in Sections 6 and 7 show this will have a fundamental impact on the make-up of the population at various points through the plan period, due to the requirement for additional labour force linked to the construction phase of activity.
- 8.22 Whilst the input assumptions represent estimates and evidenced observations at this point in time they provide an important steer for planning policy. Recognising the caveats highlighted both within this paper and within the Nuclear Topic Paper the analysis suggests that under this economic scenario there will be additional household demand across West Cumbria exceeding the levels set within RSS. In total the analysis suggests a need to deliver just over 700 dwellings per annum to ensure that the area retains and attracts the required size of workforce. This needs to be carefully considered as the reality may be that the employment opportunities created do not directly translate into housing demand in West Cumbria but that a greater proportion

of persons actually commute into the area given the temporary nature of employment.

- 8.23 This requires careful consideration as the volatility of the economy in the area is evident under the baseline position. The danger would be that a position of over-provision of housing emerges with development activity meeting the needs of demand during a peak period of activity, even with the assumptions around 50% of the workforce not permanently locating in the area. The result being a potential surplus of housing in the area, undermining the performance of the market and increasing concentrations of low-demand market characteristics post 2026. This will need to be carefully monitored, however, it is an important role of the economic investment within the Economic Blueprint for West Cumbria to sustain employment opportunities over the longer-term which if successful would retain demand for housing.
- 8.24 Even under the Nuclear New Build scenario, with the majority of direct jobs being attributed to Copeland the majority of this demand will continue to be in Allerdale due to the wider demands modelled resulting from underpinning employment uplifts under the Baseline Scenario. However, where under the baseline scenario Copeland has a low level of demand and could potentially therefore alleviate pressures the levels of demand are also high under this scenario in the authority. This could potentially pose challenges for identifying sufficient amounts of residential land across the area. This is an issue which will require further consideration by Copeland and Allerdale in the development of their Core Strategies and Land Allocation DPDs.
- 8.25 It is also important to recognise, as identified above, that these levels of household growth and modelled dwelling requirements do not factor in the need to provide accommodation to house temporary workers.
- 8.26 At the peak of 2022 the analysis in Section 6 suggests that the potential numbers of 'temporary' workers within West Cumbria could number 1,400 workers requiring accommodation. As noted in the analysis the assumption is that these are single person households and do not require permanent dwellings. The phasing of these workers coming into the area is also important with only just over 90 forecast in 2016 with this rising rapidly to over a 1,000 by 2020, peaking in 2022, and then falling rapidly to around 10 by 2026. The phasing of demand for temporary accommodation is therefore important linked to likely changes in the population. The forecasts suggest a lead in time for accommodation to be developed but then following 2025 a rapid exiting of stock which will need to be planned for in terms of any legacy of the site or indeed the built accommodation. The potential exists for some of the stock developed to be built to be permanent, therefore offsetting longer-term dwelling requirements to meet local need.