

THE ECONOMIC CONTRIBUTION OF THE NDA TO THE WEST CUMBRIA ECONOMY

APRIL 2022

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TABLE OF CONTENTS

Executive summary	1
1. Introduction.....	4
1.1 Introduction	4
1.2 Economic impact analysis.....	4
1.3 Structure of this report	6
2. The economic contribution of Sellafield and LLWR.....	7
2.1 Introduction	7
2.2 Direct economic impact.....	7
2.3 Indirect economic impact	10
2.4 Induced economic impact	12
2.5 Total economic impact	13
2.6 Fiscal impact	16
3. Wider economic benefits and socio-economic context.....	18
3.1 Introduction	18
3.2 Wider economic benefits.....	18
3.3 Socio-economic context.....	21
3.4 The economic impact of the Covid-19 pandemic.....	23
3.5 Baseline forecast.....	24
Appendix 1: Socio-economic context.....	27
Appendix 2: The economic contribution of Sellafield	41
Appendix 3: Method	48

EXECUTIVE SUMMARY

The Nuclear Decommissioning Authority (NDA) commissioned Arup and Oxford Economics to estimate the economic contribution that Sellafield Ltd and Low Level Waste Repository (LLWR) Ltd made to the West Cumbria and UK economies in 2021.¹

ECONOMIC AND FISCAL IMPACT

Sellafield and LLWR directly made a substantial contribution to economic activity. In 2021, Sellafield and LLWR made a £778 million GVA contribution to UK GDP across its operations in West Cumbria and Warrington.² The GVA contribution consists of labour costs, including £598 million paid to its workforce of 11,760 employees.

Procurement spending stimulated further economic activity along the supply chain. In 2021, Sellafield and LLWR spent £1.36 billion on the procurement of goods and services from firms based in the UK. Around half of purchases (£654 million) were made from firms either based in West Cumbria or operating locally, although goods and services were bought from firms across all 12 regions and nations of the UK. The impact of this spending, both with suppliers and the further rounds of spending along the supply chain as firms purchase goods and services from other firms, forms the indirect effect. Overall, procurement spending generated £1.11 billion of GVA contribution to UK GDP, supporting over 19,500 jobs across the UK workforce. This indirect effect generated £334 million of GVA across West Cumbria, supporting 7,160 jobs across the local economy.

The wages paid to workers stimulated further household consumption. In total, household spending of wages supported by employment, both direct and indirect, generated a £633 million GVA contribution to UK GDP, supporting almost 9,070 jobs across the UK workforce. Around 84% of the direct workforce also live in West Cumbria, meaning the local economy retained a relatively high proportion of this induced effect: wage consumption contributed £259 million of GVA to the West Cumbria economy in 2021, supporting 3,870 jobs.

In total, **Sellafield and LLWR made a substantial contribution to the West Cumbria economy.** In 2021, its activity supported £1.30 billion of GVA across the local economy, equivalent to 40% of total GVA. In total, Sellafield and LLWR supported 21,650 jobs, or 28% of total employment, including more than 11,000 jobs across other firms operating in the local economy.

Sellafield and LLWR generated £2.52 billion of GVA contributions to UK GDP, supporting 40,360 jobs. This equates to a (Type II) GVA multiplier of 3.24, or £143 of indirect (supply chain) and £81 of induced (wage consumption) GVA stimulated across the UK economy for every £100 of direct GVA.


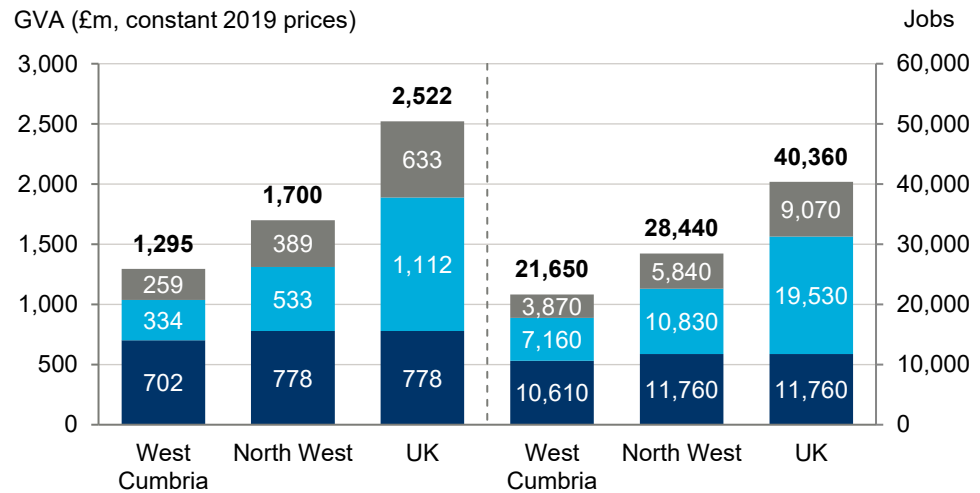
¹ For the purposes of this report, West Cumbria consists of Allerdale and Copeland, while we refer to Sellafield and LLWR refer to the activities of Sellafield Ltd and LLWR Ltd, respectively.

² All values are in constant 2019 prices unless otherwise stated.

Sellafield and LLWR also generated £603 million in tax revenues, including £277 million directly contributed by both organisations and their workforces.

Fig. 1. Total GVA and jobs, Sellafield and LLWR, West Cumbria, North West, and the UK, 2021

£1.30 billion
Total contribution to West Cumbria's GVA in 2021, supporting 21,650 jobs.

Source: Sellafield Ltd, LLWR Ltd, Oxford Economics. Note: may not sum due to rounding.

Fig. 2. Summary of economic and fiscal impacts, Sellafield and LLWR, West Cumbria and the UK, 2021

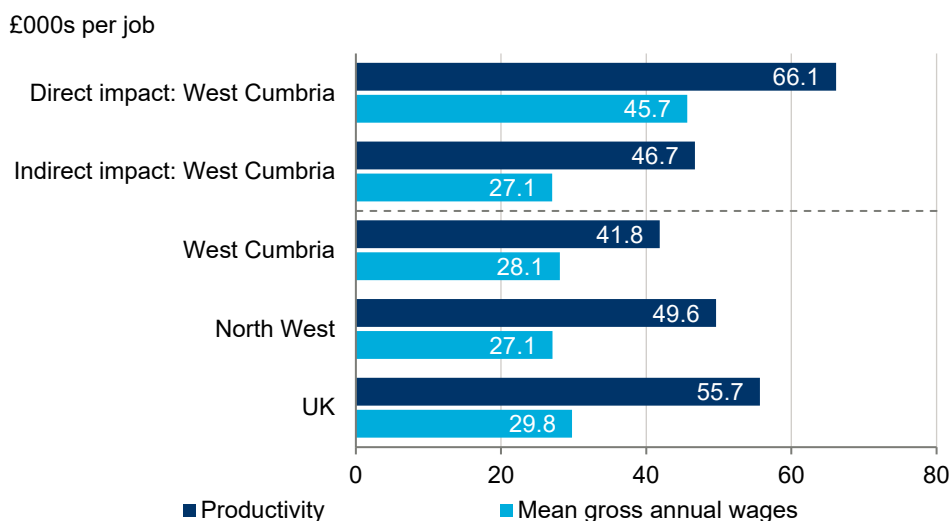


Source: Sellafield Ltd, LLWR Ltd, Oxford Economics

WIDER ECONOMIC BENEFITS AND SOCIO-ECONOMIC CONTEXT

The activities of Sellafield and LLWR provide a range of economic benefits to the West Cumbria economy. The economic footprint of both organisations provides a substantial contribution to local GVA and jobs. And through the provision of highly-productive jobs, both directly and indirectly through procurement spending, Sellafield and LLWR contribute to narrowing the otherwise greater productivity gap West Cumbria suffers to both the North West and UK economies. Sellafield and LLWR also create a range of employment opportunities for local residents.

Fig. 3. Productivity and wages, Sellafield and LLWR, West Cumbria, North West, and the UK, 2021



Source: ONS, Sellafield Ltd, LLWR Ltd, Oxford Economics

The importance of Sellafield and LLWR’s contribution to the West Cumbria economy is best understood in the context of its socio-economic characteristics. The ageing resident population is typically less-well qualified than elsewhere, and despite the provision of well-paid employment supported by Sellafield and LLWR, West Cumbria suffers from pockets of deprivation. In part due to issues of connectivity, both physical and digital, business formation rates also lag elsewhere.

The West Cumbria economy has been particularly affected by the Covid-19 pandemic. In 2020 alone, GVA contracted by 11.4%, a more severe drop in economic activity than experienced either regionally or nationally. While the recovery will see GVA recover to its pre-pandemic level in 2022, growth will lag the North West and UK thereafter, and employment is not expected to return to its pre-pandemic level into the future.

West Cumbria is expected to continue to underperform both the North West and UK economies over the coming decade. West Cumbria suffers from a productivity gap, largely relating to its sectoral structure, which tends to favour generally less-productive activities. This contributes to a weaker growth outlook into the future, as West Cumbria is underrepresented among sectors expected to drive growth, both regionally and nationally.

“ Sellafield and LLWR support highly-productive and well-remunerated employment opportunities for workers and residents of West Cumbria. ”

1. INTRODUCTION

1.1 INTRODUCTION

The Nuclear Decommissioning Authority (NDA) has commissioned Arup and Oxford Economics to estimate the economic contribution that Sellafield Ltd and Low Level Waste Repository (LLWR) Ltd made to the West Cumbria and UK economies in 2021.³

1.2 ECONOMIC IMPACT ANALYSIS

The economic footprint of Sellafield and LLWR's activity is quantified through three metrics:

- **Gross value-added (GVA)⁴ contribution to GDP** quantifies the economic value associated with economic activity generated by their operations.
- **Employment** is measured in jobs or workers.
- **Wages** of those employed directly by Sellafield and LLWR, indirectly in the supply chain, or through wage consumption.

This analysis also considers the **fiscal** contribution by considering how direct, indirect and induced activity contributes to additional tax revenues across the UK.

The potential economic impacts detailed in this report draw on a standard assessment framework that quantifies the overall economic impact across three channels (see Fig. 4):

- **Direct impact:** relates to the activities of Sellafield and LLWR;
- **Indirect impact:** captures the economic activity and employment within the supply chains that support these activities, through the procurement of goods and services from third-party suppliers; and
- **Induced impact:** comprises the wider economic benefits that arise when workers employed directly by Sellafield and LLWR, and also by companies in their supply chain, spend their earnings.

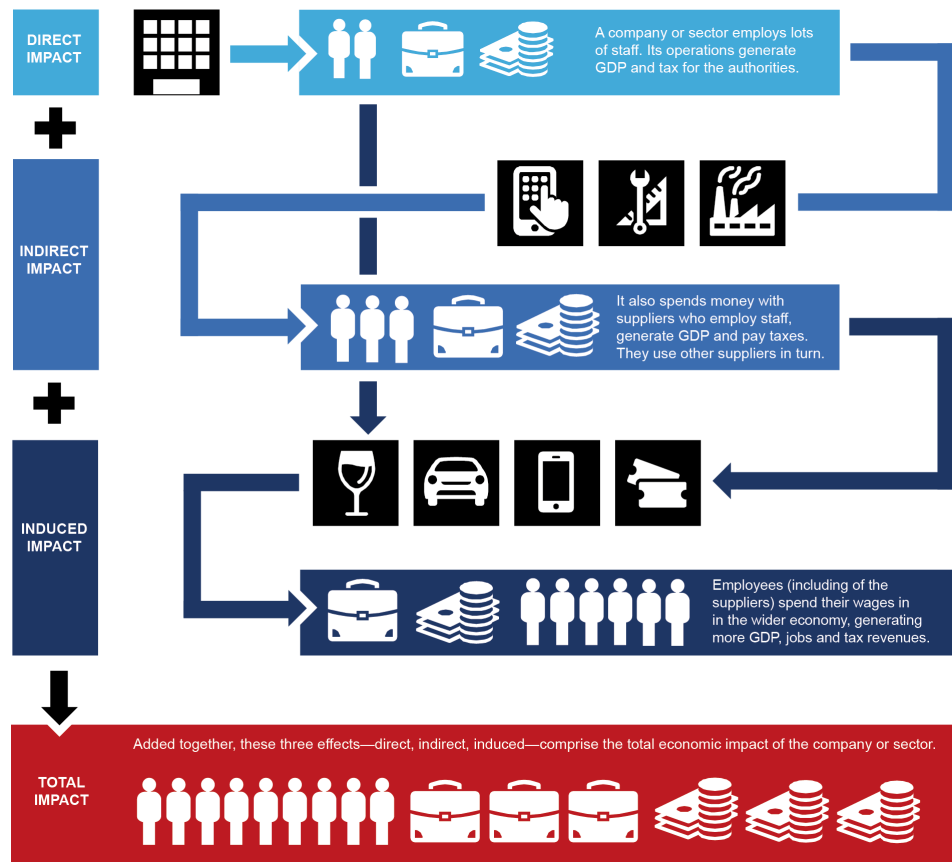
The economic impact model utilises an input-output framework to quantify the economic benefits at a national (UK), regional (North West), and local (West Cumbria) level.⁵ This framework allows us to estimate the indirect and induced impacts that are likely to flow from Sellafield and LLWR's direct activities and procurement spending.

³ Throughout this report, Sellafield and LLWR refer to the activities of Sellafield Ltd and LLWR Ltd, respectively.

⁴ Gross value added (GVA) measures the contribution to the economy of each individual producer, industry, or sector. Gross domestic product (GDP), the headline indicator of economic output at a national level, is equal to GVA plus taxes minus subsidies. At an individual firm level, GVA comprises the composition of employees (gross wages, including employer tax contributions), other net taxes and the operating surplus (profit).

⁵ An input-output model uses a matrix representation of a nation's interconnected economy to calculate the effect of changes by consumers, by an industry, or by others, on other industries and therefore on the economy as a whole.

Fig. 4. Illustration of the channels of economic impact



Source: Oxford Economics

In addition, we consider a fourth channel, the **wider economic benefits** of Sellafield and LLWR’s economic activity. This reflects the benefits that other industries and the local population may derive from its operations. While these wider economic benefits are often intangible in nature, and hence unlike the other three channels may be difficult to quantify, they remain an important consideration for understanding the overall economic impact that Sellafield and LLWR make. This includes the contribution to economic activity, productivity and earnings of the workforce employed, and the employment opportunities provided to local residents.

All figures presented in this report are in constant 2019 prices, unless otherwise stated.⁶ They are undertaken on a gross basis, which means they do not take account of any economic activity the industry may displace from other sectors, nor do they attempt to quantify how much more productive the resources are, relative to other uses. This is a standard approach for undertaking economic impact appraisal. Further detail on our methodological approach is set out in **Appendix 3**.

⁶ We consider a constant price base to compare economic variables over time, adjusting for changes in prices (inflation) over time. This ensures that we can compare variables on a like-for-like basis.

1.3 STRUCTURE OF THIS REPORT

This report takes the following structure:

- **Chapter 2** provides a summary of the socio-economic context of the West Cumbria economy;
- **Chapter 3** sets out our estimates of the contribution of Sellafield and LLWR to the West Cumbria, North West, and the UK economies;
- **Chapter 4** considers the wider economic benefits of Sellafield and LLWR's operations, and provides a summary of the socio-economic context and outlook for the West Cumbria economy;
- **Appendix 1** presents the socio-economic context;
- **Appendix 2** provides a summary of the economic contribution of Sellafield only, and
- **Appendix 3** provides a summary of our modelling approach.

2. THE ECONOMIC CONTRIBUTION OF SELLAFIELD AND LLWR

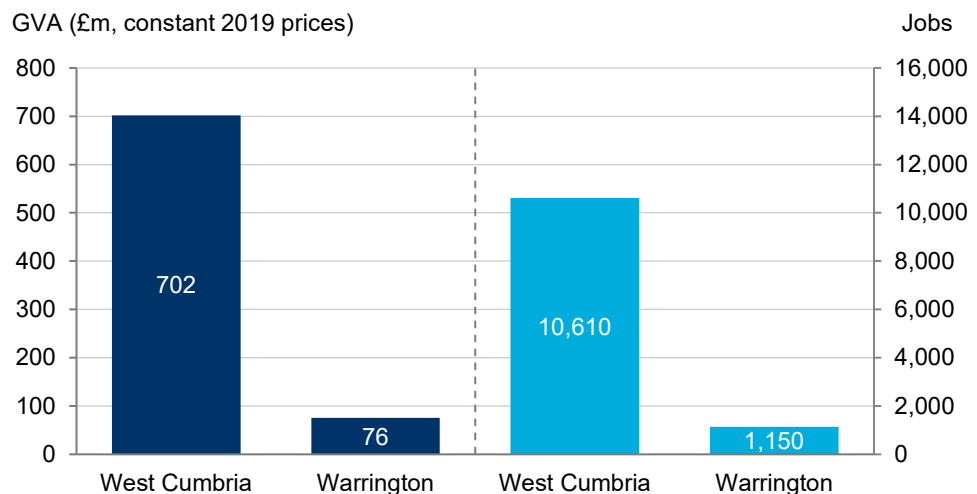
2.1 INTRODUCTION

In this section, we quantify the contribution of Sellafield and LLWR's operations on the West Cumbria, North West, and UK economies. We explore the GVA contribution to GDP, employment, wages, and taxation arising from the direct operations of both organisations, indirect effects across the supply chain, and induced effects arising from household wage consumption.

2.2 DIRECT ECONOMIC IMPACT

Sellafield and LLWR make a substantial contribution to the UK economy. Drawing on data provided by both entities, we estimate that they collectively made a **£778 million direct GVA contribution to UK GDP in 2021**. As neither organisation generates a gross operating surplus (profit), their contribution to GDP equates to the value of compensation of employees—the wages and salaries paid to the workforce (£598 million), and other labour costs, including social security and pension contributions (£180 million).⁷ They also employed 11,760 workers, mostly in West Cumbria (10,610 workers).

Fig. 5. Direct GVA and employment, Sellafield and LLWR, UK, 2021



Source: Sellafield Ltd, LLWR Ltd, Oxford Economics

A substantial majority of workers are employed on a full-time basis. Across the two organisations, 11,780 workers or 94% of the total were employed on a full-time basis, with the remaining 670 workers (6%) employed part-time. Reliance on full-time workers is similarly high between Sellafield (94%) and LLWR (93%), although of the Sellafield workforce, a higher proportion are employed

£778 million

Direct GVA contribution to UK GDP in 2021.



⁷ The direct GVA contribution to GDP also includes taxes on production, such as business rates, although this information has not been made available.

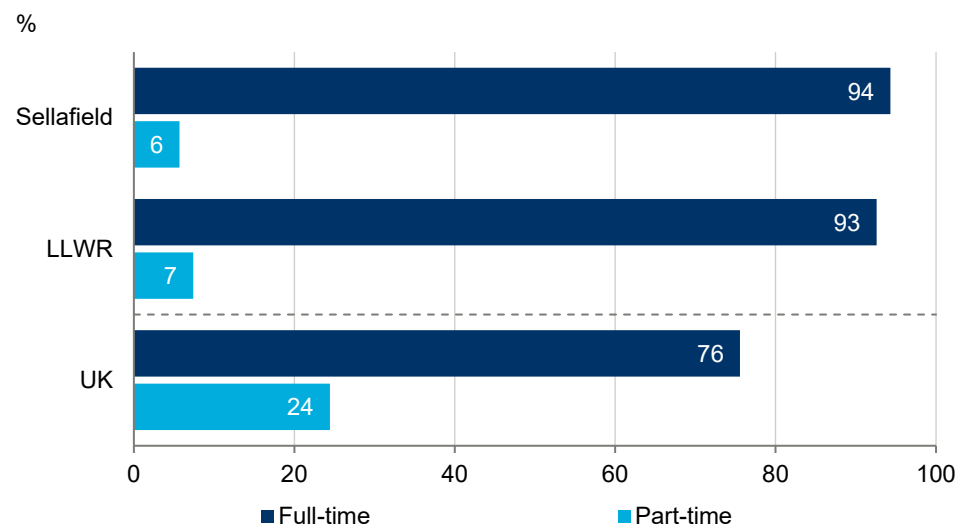
on a full-time basis in West Cumbria (95%) than in Warrington (92%). By contrast, according to the ONS, on average around three-quarters of the UK workforce were employed on a full-time basis in 2021.⁸

Sellafield also provides further data on the types of roles employed across its workforce. Permanent staff make up a substantial majority of the workforce, totalling 10,090 workers, or 88% of the total. A further 650 apprentices (6%), 120 graduates (1%), and 50 students (less than 1%) were also employed, alongside 530 Agency Supplied Workers (ASWs).

Fig. 6. Composition of the workforce by full-time and part-time, Sellafield and LLWR, UK, 2021

10,090

88% of workers employed by Sellafield are permanent staff, alongside 650 apprentices, 120 graduates, and 50 students.



Source: ONS, LLWR Ltd, Sellafield Ltd, Oxford Economics

An analysis of the location of residence of the workforce demonstrates that Sellafield and LLWR draw heavily on the local labour market. We estimate that 9,860 workers employed by Sellafield and LLWR live in West Cumbria, equivalent to 84% of the overall direct workforce. Copeland is home to over half of all workers (6,650 workers), with more than a quarter also living in Allerdale (3,210 workers).

A further 1,630 workers (14%) live elsewhere in the North West, with just 260 workers (2%) residing outside of the region. Most workers who live elsewhere in the North West are employed at Sellafield's offices in Warrington, where around a third of workers live in both Cheshire & Warrington and Greater Manchester.


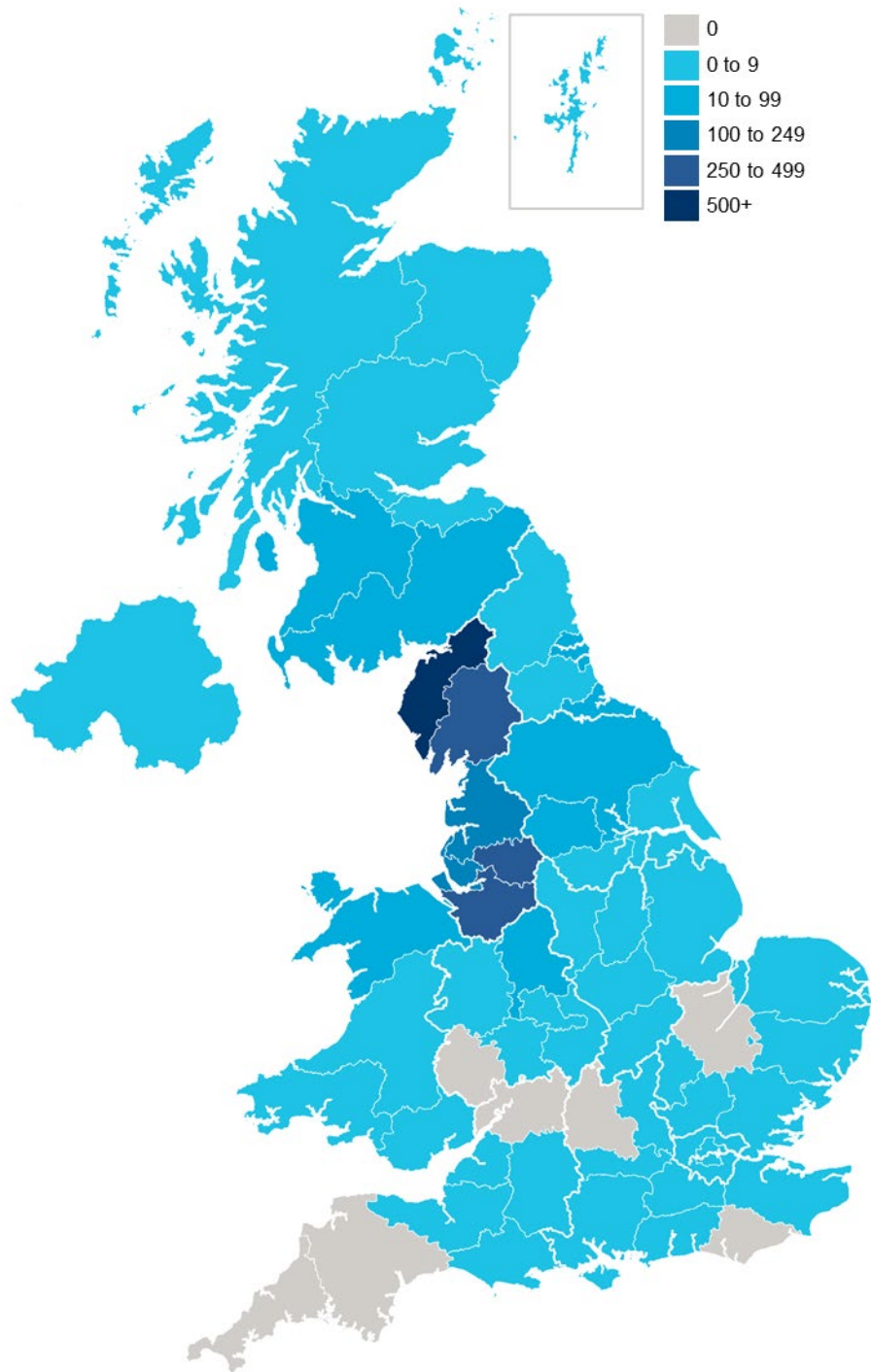
⁸ ONS, *Labour Force Survey*, Newport, 2021.

<https://www.ons.gov.uk/surveys/informationforhouseholdsandindividuals/householdandindividualsurveys/labourforcesurvey>

Fig. 7. Location of residence of the workforce by sub-region, Sellafield and LLWR, UK, 2021

9,860 jobs

84% of the workforce reside in West Cumbria, alongside a further 1,630 (14%) of workers who live elsewhere in the North East.

Source: Sellafield Ltd, LLWR Ltd, Oxford Economics

2.3 INDIRECT ECONOMIC IMPACT

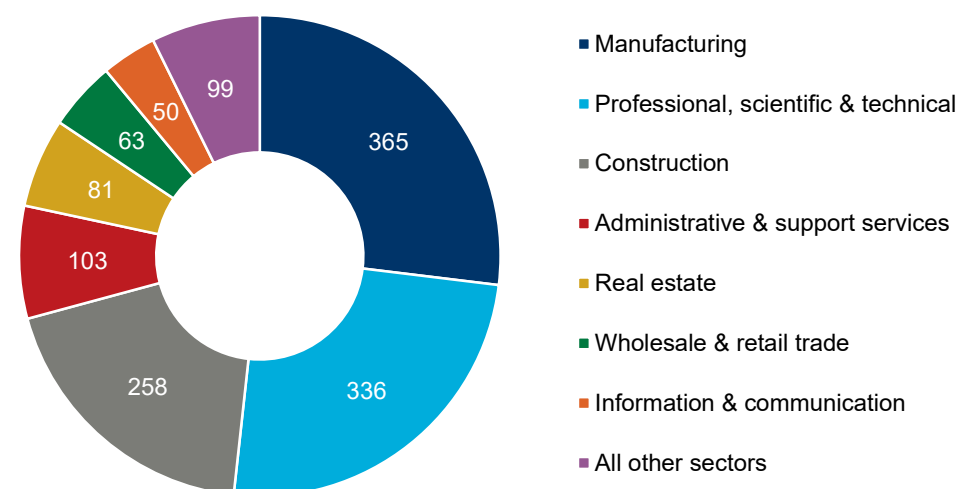
The positive contribution that Sellafield and LLWR make to the economy extends beyond its direct GVA contribution and workforce. The purchases of inputs of goods and services stimulates additional activity along the UK supply chain, as Sellafield and LLWR’s suppliers generate GVA and support employment, and in turn purchase goods and services from other firms, and so on. This is referred to as the *indirect* impact.

In 2021, Sellafield and LLWR spent a total of £1.37 billion on the procurement of goods and services, almost entirely with UK suppliers (£1.36 billion).⁹ Sellafield spent approximately £1.30 billion in the UK, alongside a further £52 million spent by LLWR.

Overall, purchases were made across suppliers operating in a variety of sectors. Manufacturing (£365 million) is the largest recipient of procurement spending. Alongside professional, scientific & technical (£336 million), these two sectors account for more than half of all procurement spending. A further 19% of spending is in the construction sector (£258 million).

Fig. 8. Procurement spending by sector, Sellafield and LLWR, UK, 2021

£m, constant 2019 prices



Source: Sellafield Ltd, LLWR Ltd, Oxford Economics. Note: may not sum due to rounding.

Sellafield and LLWR’s procurement spending is relatively concentrated among a few firms: collectively, purchases made from each organisation’s ten-largest suppliers amounted to £518 million, or 38% of all procurement spending.

Procurement spending tends to benefit local firms. We estimate that approximately £654 million is spent with suppliers in West Cumbria, equivalent to almost half of all domestic spending, with a further £17 million spent elsewhere in Cumbria, £134 million in Warrington, and £24 million elsewhere in the North West.

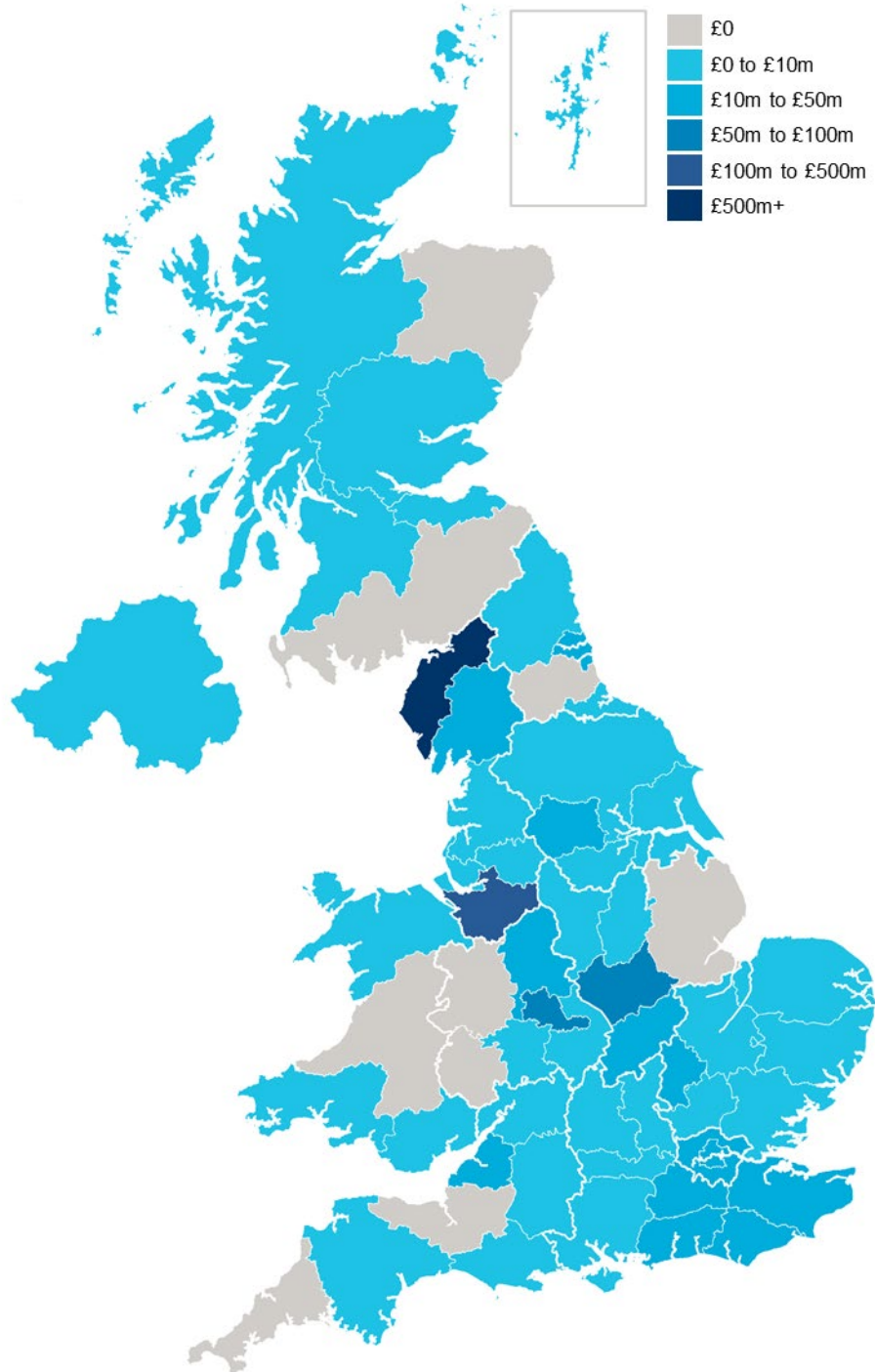
£1.36 billion
Total procurement spending with UK-based suppliers in 2021.

⁹ These estimates scale up Sellafield spending among its 100-largest suppliers, which constitute 95% of all procurement spending, to the total. It also excludes £9.3 million (£9.8 million in 2021 prices) of purchases from LLWR by Sellafield to avoid double-counting.

However, purchases are made from firms located in all 12 regions and nations of the UK. Around 39% of purchases (£526 million) are made outside of the North West. The South East is the second-largest recipient of procurement spending (£141 million), followed by the West Midlands (£128 million) and East Midlands (£88 million).

Fig. 9. Procurement spending by sub-region, Sellafield and LLWR, UK, 2021

£654 million
Total procurement spending in West Cumbria in 2021.

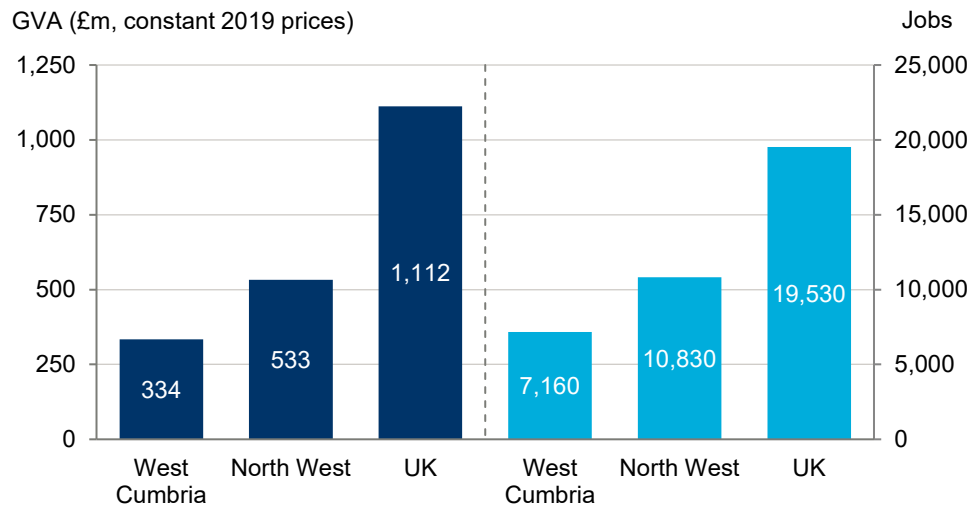



Source: Sellafield Ltd, LLWR Ltd, Oxford Economics

Overall, we estimate that Sellafield and LLWR's procurement spending stimulated a **£1.11 billion GVA contribution to UK GDP along its supply chain, supporting 19,530 jobs across the UK workforce**. The indirect GVA contribution is less than Sellafield and LLWR's total domestic procurement spending (£1.37 billion), as firms along the supply chain will draw on imported goods and services, the value associated with which will be realised abroad.

Approximately £334 million (or 30%) of GVA was retained within West Cumbria, supporting 7,160 jobs across the local workforce. While West Cumbria is home to almost half of all domestic procurement spending, suppliers will purchase goods and services from elsewhere, resulting in a 'leakage' of spending and the value associated with it to elsewhere in the UK. In total, almost half of all indirect GVA will be generated across the North West (£533 million), supporting 10,830 jobs.

Fig. 10. Indirect GVA and jobs, Sellafield and LLWR, West Cumbria, North West, and the UK, 2021



Source: Sellafield Ltd, LLWR Ltd, Oxford Economics

2.4 INDUCED ECONOMIC IMPACT

The households of Sellafield and LLWR employees, and those supported by its supply chain spending, spend a proportion of their wages on household expenses and at retail, leisure, and other outlets. This stimulates economic activity at these firms, and also along their supply chains. This is referred proportion to as the *induced* impact.

In total, we estimate that Sellafield and LLWR paid its employees £598 million in gross wages & salaries. This equates to an average of £50,800 per job—more than twice the median gross wage across the UK workforce (£24,600 per worker), and 41% higher than the mean gross wage (£29,800 per worker).¹⁰

¹⁰ ONS, *Annual Survey of Hours and Earnings 2021: Provisional results*, Newport, 2022.

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/bulletins/annualsurveyofhoursandearnings/2021>

£1.11 billion

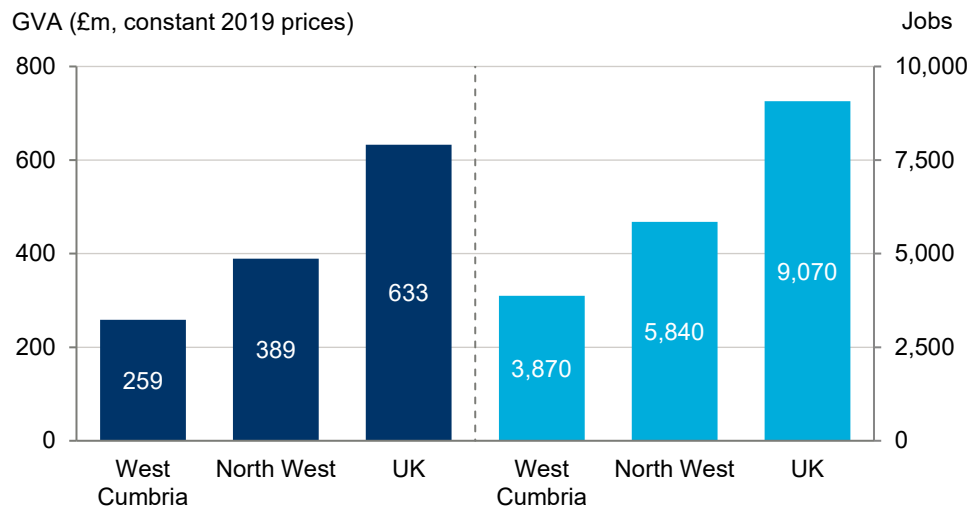
Indirect GVA contribution to UK GDP in 2021.

£337 million of GVA across West Cumbria.

We estimate that a further £562 million is earned by the employees of suppliers and other firms along the supply chain.

In total, **the household consumption of wages supported by Sellafield and LLWR are estimated to generate a further £633 million GVA contribution to UK GDP, supporting 9,070 jobs across the UK workforce.** West Cumbria supports around two-fifths of all induced GVA generated across the UK, equating to £259 million, and supporting 3,870 jobs. The relatively high proportion of induced effects occurring in West Cumbria is partly a reflection of the reliance on the local workforce: 81% of direct wages are paid to workers living locally. The North West similarly supports more than half of GVA generated by the induced effect, £389 million, and 5,840 jobs.

Fig. 11. Induced GVA and jobs, Sellafield and LLWR, West Cumbria, North West, and the UK, 2021



Source: Sellafield Ltd, LLWR Ltd, Oxford Economics. Note: may not sum due to rounding.

2.5 TOTAL ECONOMIC IMPACT

Combining the three channels—direct, indirect, and induced—we find that **Sellafield and LLWR contributed £2.52 billion to UK GDP in 2021.** In addition to the £778 million directly generated in West Cumbria and Warrington, supply chain (indirect) impacts added £1.11 billion of GVA and 19,530 jobs, while wage consumption (induced) impacts added a further £633 million of GVA and 9,070 jobs.

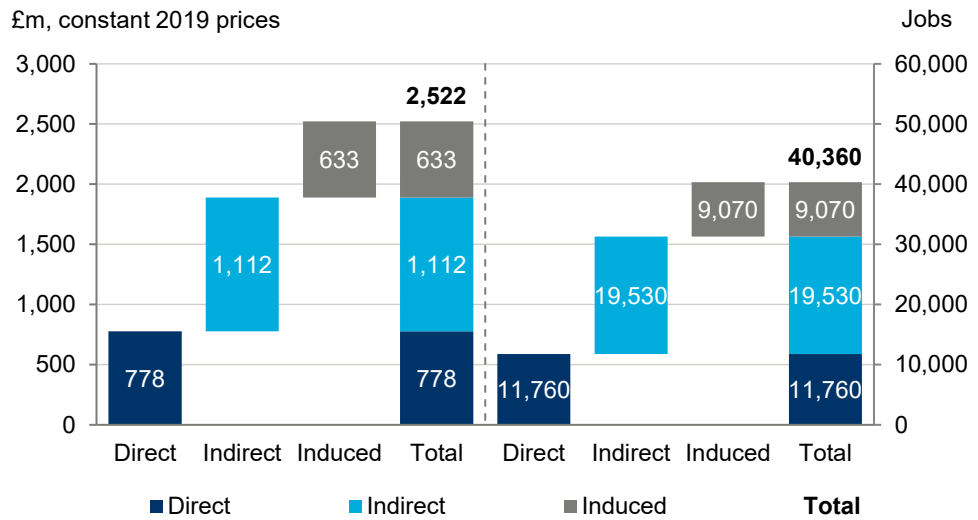
This equates to a (Type II) GVA multiplier of 3.24, or £143 of indirect (supply chain) and £81 of induced (wage consumption) GVA stimulated across the UK economy for every £100 of GVA directly generated by Sellafield and LLWR's operations in West Cumbria and Warrington.

£633 million

Induced GVA contribution to UK GDP in 2021.

£259 million of GVA across West Cumbria.

Fig. 12. Total GVA and jobs, Sellafield and LLWR, UK, 2021

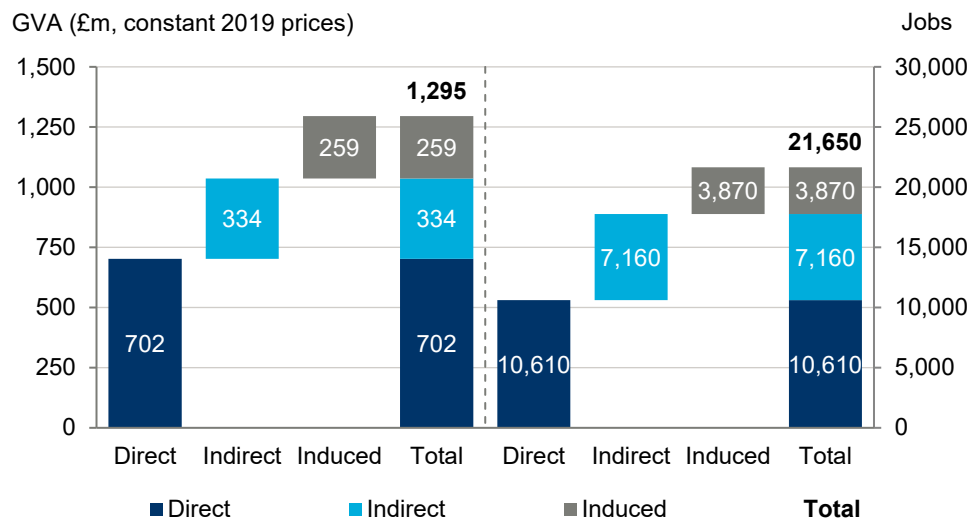


Source: Sellafield Ltd, LLWR Ltd, Oxford Economics. Note: may not sum due to rounding.

Sellafield and LLWR’s operations generated a £1.30 billion contribution to West Cumbria’s GVA in 2021, supporting 21,650 jobs. West Cumbria therefore benefits from a (Type II) GVA multiplier of 1.85: every £100 of GVA directly generated by Sellafield and LLWR in West Cumbria supports a further £48 of GVA along the supply chain, and £37 of GVA through household wage consumption. Similarly, every 100 jobs directly employed by Sellafield and LLWR supports a further 67 jobs across the supply chain, and 37 jobs due to wage consumption, elsewhere in West Cumbria.

A majority of the economic impact across West Cumbria occurs in Copeland—£1.22 billion of GVA and 20,520 jobs—alongside a further £77 million of GVA and 1,130 jobs supported across Allerdale.

Fig. 13. Total GVA and jobs, Sellafield and LLWR, West Cumbria, 2021



Source: Sellafield Ltd, LLWR Ltd, Oxford Economics. Note: may not sum due to rounding.

£2.52 billion

Total GVA contribution to UK GDP in 2021, supporting 40,360 jobs.



£1.30 billion

Total contribution to West Cumbria’s GVA in 2021, supporting 21,720 jobs.



COMPARISON WITH THE 2017 STUDY

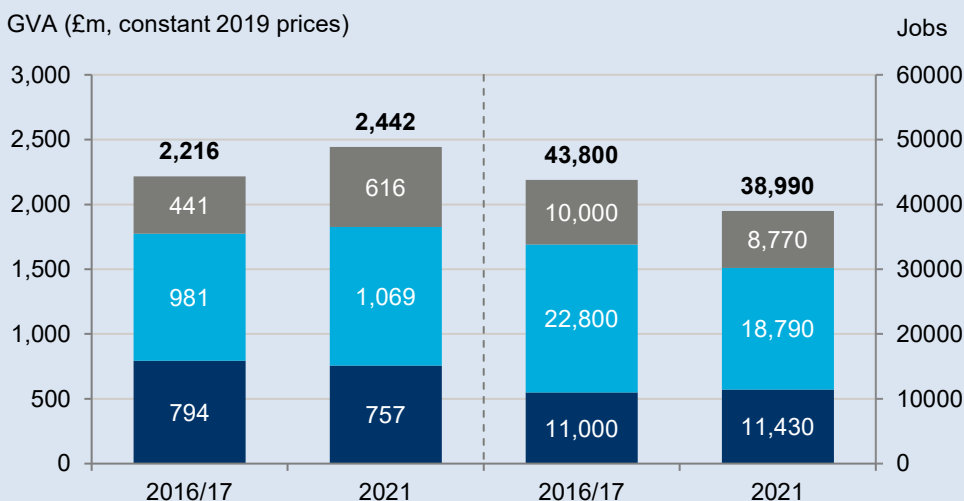
We may compare the economic contribution of Sellafield in 2021 to Oxford Economics' equivalent estimates of Sellafield's economic contribution in 2017.¹¹

This comparison shows that the GVA contribution to the UK economy has increased since the 2017 study. In 2021, we estimate that Sellafield generated a £2.44 billion GVA contribution to UK GDP, £227 million (10%) more than its overall contribution in 2016/17 (£2.22 billion). However, the contribution to employment has fallen slightly, from 43,800 jobs in 2016/17 to 38,990 jobs in 2021.

The overall direct GVA contribution has fallen, from £794 million to £757 million. Coupled with an increase in the direct workforce, this has led to a fall in average productivity, from £72,200 per job in 2016/17 to £66,200 per job in 2021. Sellafield's direct operations may therefore have contributed to the falling average levels of productivity observed across West Cumbria in recent years (see Appendix 1).

However, a reduction in direct GVA is offset by higher procurement spending, contributing to a greater indirect GVA effect. The composition of procurement spending has also changed: while manufacturing forms the largest share of current purchases by sector, procurement data for 2017 indicates that proportionately more was spent on construction, professional, scientific & technical services, and administrative & support services. In addition, higher incomes and wage consumption have in turn resulted in a greater induced effect.¹² The overall impact of these effects is to increase the (Type II) GVA multiplier, from 2.79 in 2016/17 to 3.22 in 2021. However, in employment terms, additional indirect and induced GVA is more than offset by general improvements in productivity across the workforce, leading to a lesser contribution of both indirect and induced jobs, relative to the 2017 study.

Fig. 14. Total GVA and jobs comparison to the 2017 study, Sellafield, UK



Source: Sellafield Ltd, Oxford Economics. Note: may not sum due to rounding.

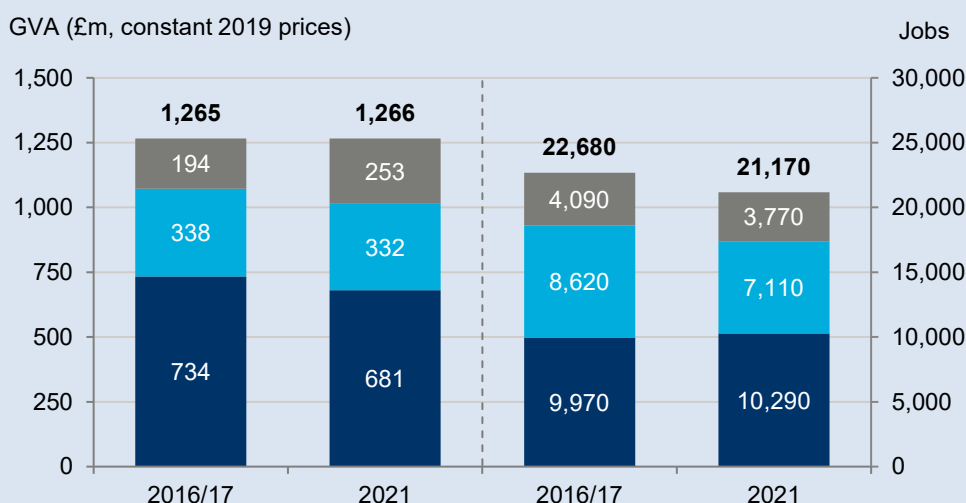
¹¹ See Appendix 2 for a more detailed assessment of Sellafield's economic contribution in 2021.

¹² The difference can also be partly assigned to methodological changes, including the changing composition of purchases by firms across the economy, captured in the input-output framework which underpins these results. See Appendix 3 for our method.

We observe little overall change to the overall GVA contribution to the West Cumbria economy, which has increased slightly from £1.26 billion in 2016/17 to £1.27 billion in 2021. However, the composition of the total GVA contribution differs by channel of impact: as across the UK, the direct contribution to West Cumbria’s GVA has fallen slightly, from £734 million to £681 million. GVA generated along the supply chain has also slightly fallen, from £338 million in 2016/17 to £332 million in 2021. However, this is offset by additional induced GVA, which has risen from £194 million in 2016/17 to £253 million in 2021.

A comparison of the contribution to employment across West Cumbria is similar to the pattern across the UK. Although direct employment has risen, from 9,970 jobs in 2016/17 to 10,290 jobs in 2021, both indirect and induced employment are estimated to be lower than in 2016/17. Overall, in 2021 we estimate that Sellafield supports 1,510 fewer jobs across West Cumbria than in 2016/17.

Fig. 15. Total GVA and jobs comparison to the 2017 study, Sellafield, West Cumbria



Source: Sellafield Ltd, Oxford Economics. Note: may not sum due to rounding.

2.6 FISCAL IMPACT

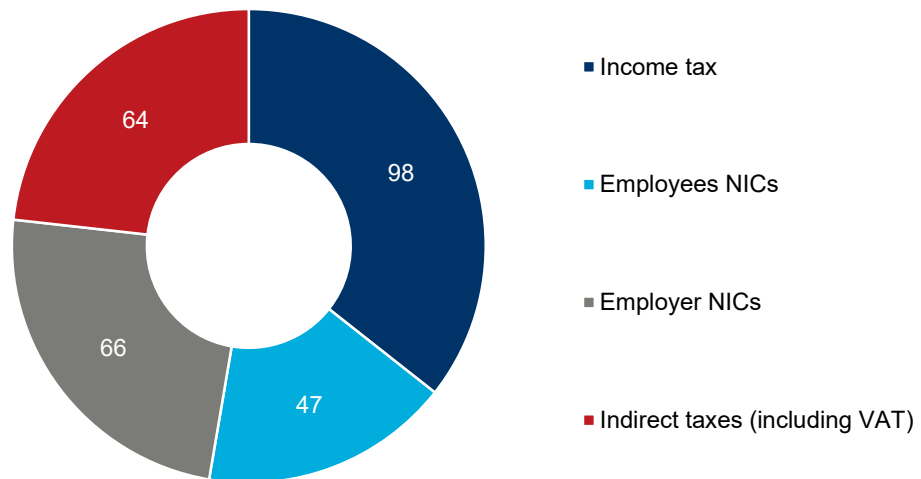
Alongside the GVA, jobs and wages stimulated by Sellafield and LLWR, both organisations also make a positive contribution to tax revenues.

In 2021, Sellafield and LLWR’s direct activity contributed £211 million in labour tax revenues. This consists of £66 million of National Insurance Contributions (NICs) paid by both organisations themselves, alongside £98 million of income tax and £47 million of employee NICs contributed by employees. Sellafield alone contributed £205 million in labour tax revenues, alongside approximately £6 million from LLWR.

In addition, the purchases of goods and services through wages paid to the direct workforce will generate further indirect taxes, including VAT. We estimate a further £66 million may be directly generated through indirect taxes, of which £64 million was generated by the Sellafield workforce, and £2 million by the LLWR workforce. In total, Sellafield and LLWR’s direct activity therefore contributed £275 million in tax revenues in 2021.

Fig. 16. Direct tax contributions, Sellafield and LLWR, UK, 2021

£m, constant 2019 prices



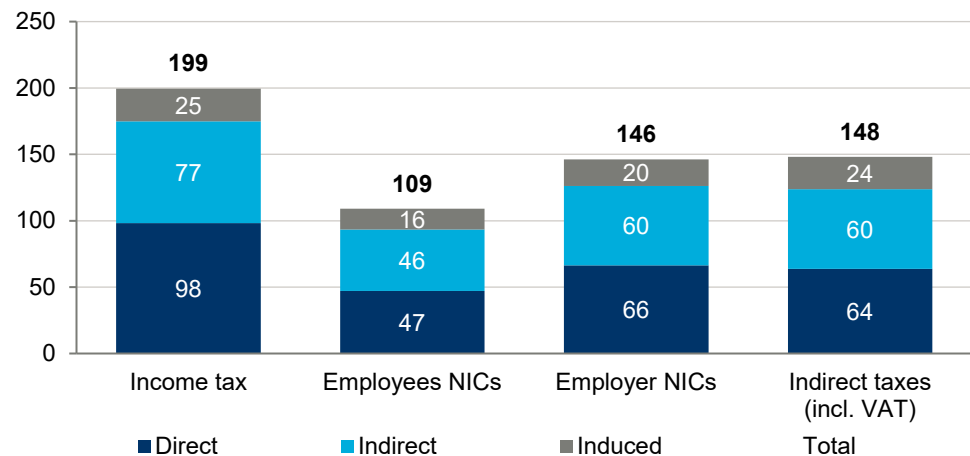
Source: Sellafield Ltd, LLWR Ltd, Oxford Economics

Additional economic activity arising through the indirect and induced channels will also result in a range of fiscal benefits. Wages generated through employment along the supply chain and through wage consumption are subject to income tax and NICs, and generate further indirect taxes (including VAT). In modelling the tax revenues that could be collected by the Treasury, we use the latest income tax and NIC rates, thresholds, and personal allowance information.

In total, **Sellafield and LLWR's total economic footprint generated £603 million in fiscal revenues in 2021**. We estimate that £199 million was generated through income tax revenues, alongside a further £255 million in employer and employee NICs, and £148 million in indirect taxes via the purchases of goods and services (including VAT). Approximately £583 million was generated by the activities of Sellafield, alongside £20 million from the activities of LLWR.

Fig. 17. Total tax contributions, Sellafield and LLWR, UK, 2021

£m, constant 2019 prices



Source: Sellafield Ltd, LLWR Ltd, Oxford Economics. Note: may not sum due to rounding.

£275 million
Direct contribution to UK tax revenues in 2021.

£603 million
Total contribution to UK tax revenues in 2021.

3. WIDER ECONOMIC BENEFITS AND SOCIO-ECONOMIC CONTEXT

3.1 INTRODUCTION

The activities of Sellafield and LLWR make a substantial contribution to the West Cumbria economy. In this section, we provide a brief overview of the importance of the Sellafield and LLWR to the local economy and the wider economic benefits of the economic activity it supports, before framing these impacts in the context of recent and likely future socio-economic performance.¹³

Much work has been done considering the economic strengths and weaknesses of the local economy. To avoid too much duplication, we provide only a summary of some of these issues, exploring for instance the sectoral structure of the local economy, alongside factors such as demographics, the labour market, deprivation, the business environment, and infrastructure & connectivity.

The Covid-19 pandemic represents a significant economic shock, causing a sharp decline in economic activity as lockdowns and other social distancing measures hindered the activities of businesses and consumers. We explore the extent to which the pandemic has impacted West Cumbria, and provide the latest economic outlook for the local economy.

3.2 WIDER ECONOMIC BENEFITS

Sellafield and LLWR make a substantial contribution to the West Cumbria economy. In 2021, we estimate that Sellafield and LLWR generated £1.30 billion of GVA, supporting 21,650 jobs, across West Cumbria. This equates to approximately 40% of GVA generated across the local economy, and 28% of jobs, are reliant on Sellafield and LLWR, either directly or through the indirect and induced spending stimulated by businesses and households. The reliance is even greater in Copeland, equivalent to 81% of GVA, and 57% of employment.

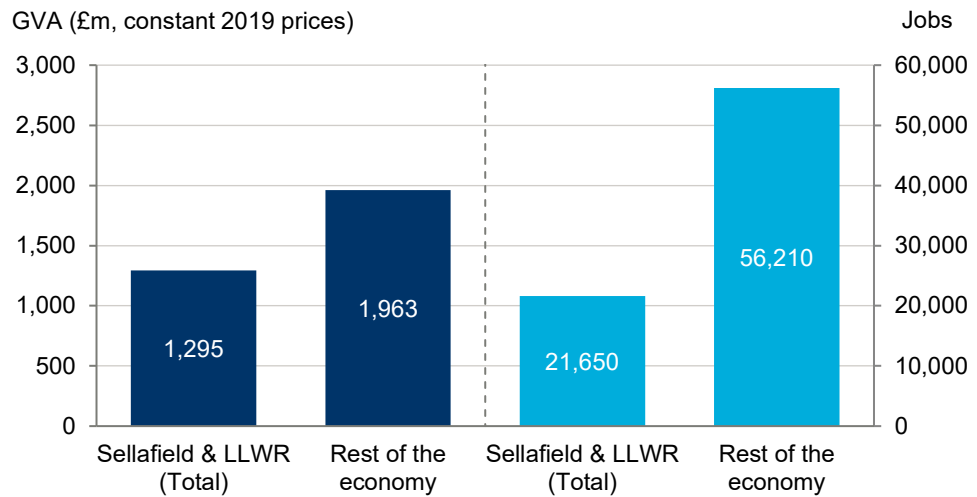
¹³ Further analysis of the West Cumbria economy is presented in Appendix 1.

Fig. 18. Sellafield and LLWR’s contribution to GVA and jobs, West Cumbria, 2021

£1.30 billion

Sellafield and LLWR supported an estimated 40% of West Cumbria’s total GVA in 2021.

Supporting 21,650 jobs, 28% of the total workforce.



Source: Sellafield Ltd, LLWR Ltd, Oxford Economics


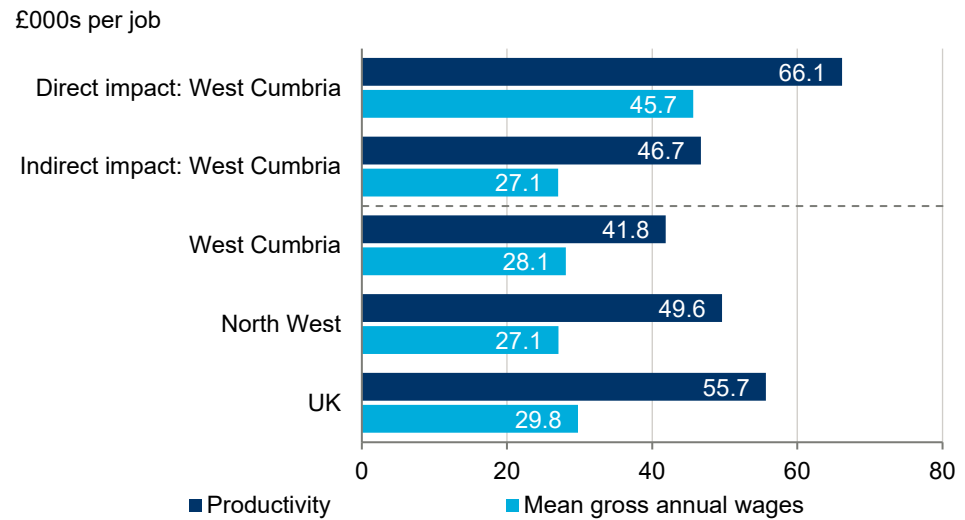
Sellafield and LLWR make a positive contribution to the prosperity of West Cumbria, supporting highly productive and well remunerated employment. Combining the direct GVA contribution of Sellafield and LLWR to UK GDP with its workforce allows for the measurement of labour productivity—the average value added to the UK economy on a per job basis.

Overall, we estimate productivity of £66,100 per job across Sellafield and LLWR’s operations. Each worker is therefore on average £24,300 or 37% more productive than the average across the West Cumbria, and higher than the national average (£55,700 per job). Given that Sellafield and LLWR employ a substantial proportion of the workforce, this indicates that both organisations make a sizeable contribution to boosting West Cumbria’s average productivity. Indeed, the indirect impact also demonstrates a relatively high average productivity, of £46,700 per job, as Sellafield and LLWR’s purchases and activity further along the supply chain tends to occur in comparatively more productive sectors.

Sellafield and LLWR also support a well-remunerated workforce. Workers employed in West Cumbria are paid £45,700 per year on average, equivalent to 38% higher than the mean wage across West Cumbria (£28,100), and 35% higher than the mean wage nationally (£29,800).

Fig. 19. Productivity and wages, Sellafield and LLWR, West Cumbria, North West, and the UK, 2021

£66,100
Sellafield and LLWR supports highly productive and well-remunerated employment across West Cumbria.

Source: ONS, Sellafield Ltd, LLWR Ltd, Oxford Economics

The provision of well-paid employment across the Sellafield and LLWR workforces benefits local residents. As demonstrated in Fig. 7, Sellafield and LLWR’s West Cumbria workforce draws heavily on the local population, employing 9,860 residents of West Cumbria, equivalent to 84% of the entire direct workforce. Comparing this to our estimate of resident employment in 2021 indicates that Sellafield and LLWR directly employ around 13% of all residents in employment.

Sellafield and LLWR also stimulate additional workforce jobs through the indirect and induced channels, which create additional employment opportunities for local residents. While the exact proportion of workers who also live in West Cumbria is not known, data suggests that West Cumbria demonstrates a high degree of self-containment within its labour market, with approximately 91% of jobs being taken up by residents.¹⁴ Assuming this rate to apply to further jobs supported across the local economy, and adjusting for the propensity for some workers to have more than one job, we estimate that this could amount to a further 6,550 indirect and 3,500 induced resident workers.

In total, we estimate that Sellafield and LLWR support approximately 19,770 resident jobs across West Cumbria, supporting the employment of equivalent to 26% of all residents in work. We estimate that Sellafield alone may support the employment of approximately 19,350 residents, or a quarter of all residents in work.

¹⁴ Oxford Economics analysis of the Census 2011.

19,770

Estimated residents of West Cumbria employed as a result of Sellafield and LLWR, equivalent to 26% of all residents in work.


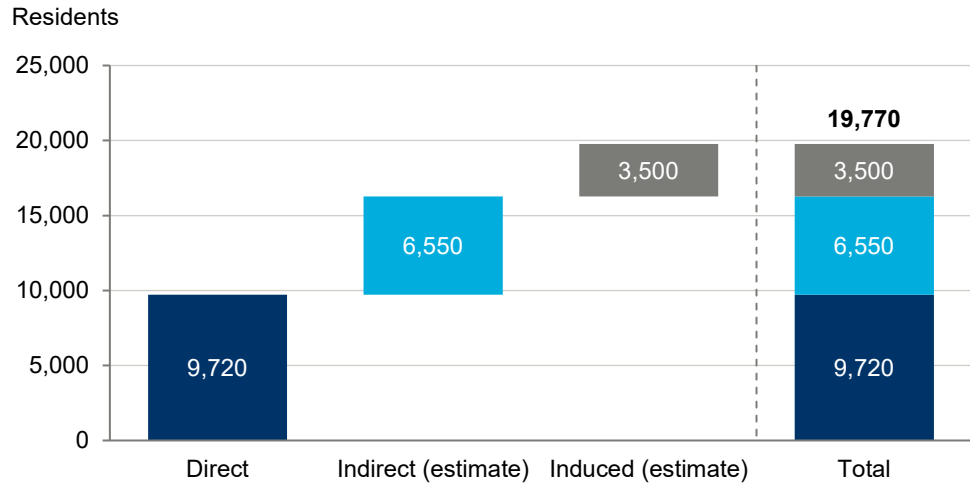


Fig. 20. Resident employment, Sellafield and LLWR, West Cumbria, 2021



Source: Sellafield Ltd, LLWR Ltd, Oxford Economics

3.3 SOCIO-ECONOMIC CONTEXT


3.3.1 Below average productivity and an unfavourable sectoral structure

The West Cumbria economy generated £3.26 billion of GVA in 2021, supporting 78,000 jobs. In general, it underperforms both the North West and UK economies across headline measures of economic performance. At £19,700 per resident, GVA per capita lags both the North West (£25,600 per head) and UK (£29,000 per head). The West Cumbria economy also suffers from a productivity gap: at £41,800 per job, West Cumbria is about 25% less productive than the national economy (£55,700 per job), and 16% less productive than across the North West (£49,600 per job). This is despite the highly productive jobs supported directly at Sellafield and LLWR.

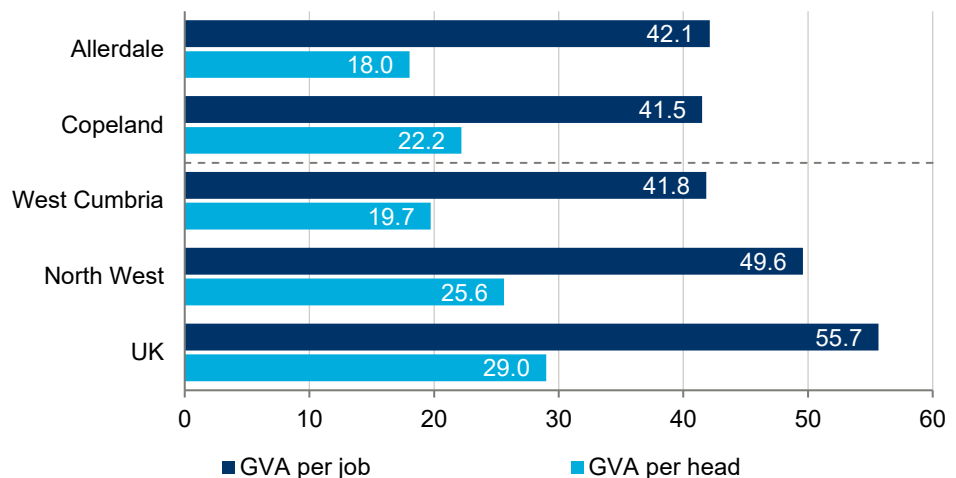
Fig. 21. Headline indicators of economic performance, West Cumbria, North West, and the UK, 2021

£41,800

Average GVA per job across West Cumbria in 2021, £13,900 less than the UK average (£55,700 per job).



£000s, constant 2019 prices



Source: ONS, Oxford Economics

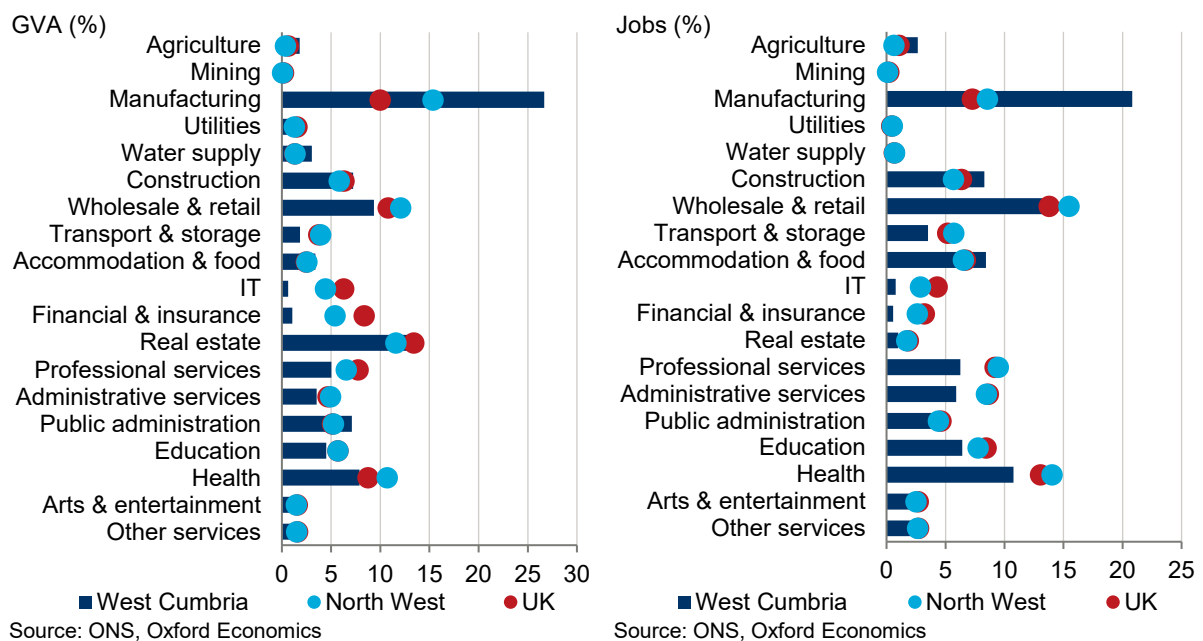
West Cumbria’s productivity gap to the UK economy results from a combination of factors. Overall, West Cumbria tends to underperform the UK economy *within* sectors: in general, firms tend to produce less per job than their counterparts elsewhere in the UK operating in the same sectors. There are a variety of factors that may contribute to this underperformance, including weaker business investment, poorer infrastructure than other parts of the UK economy that fails to overcome West Cumbria’s peripheral location, and other characteristics of the workforce.

The sectoral composition of the West Cumbria economy also contributes to this productivity gap. When compared to the UK economy, West Cumbria is characterised by a typically higher share of generally less productive sectors, and vice versa. We estimate that around three-quarters of the productivity gap can be explained by West Cumbria’s sectoral mix.

The sectoral structure of the local economy indicates a reliance on the activities of Sellafield and LLWR. Manufacturing is West Cumbria’s largest sector, supporting over a quarter of GVA—more than twice as prevalent as across the national economy—and a fifth of jobs. Given the concentration of activity in manufacturing, West Cumbria’s economic performance, both historically and into the future, is heavily influenced by the fortunes of this sector.

Wholesale & retail trade is the next-largest employer, and alongside human health & social work is among the larger other contributors to overall GVA. Real estate also makes a sizeable contribution to GVA, although this is largely a reflection of rental incomes and imputed rents rather than a prevalence of employment in this sector. Importantly, West Cumbria is underrepresented among business services sectors, such as professional services, administrative services, information & communication, and finance & insurance.

Fig. 22. GVA and jobs by broad sector, West Cumbria, North West, and the UK, 2021



3.3.2 An ageing population impacts on the labour market

The characteristics of West Cumbria's **labour market** are closely linked to its demographic structure. A relatively high proportion of older residents, aged 65 and above, contributes to a lower resident employment rate than observed across the North West and UK workforces.

Residents are also typically less well-qualified than their counterparts regionally or nationally, and with the economy becoming increasingly skills-hungry, the stock of below average skills will impact on future sectoral growth. However, the range of employment opportunities supported by the activities of Sellafield and LLWR contribute to relatively high earnings across the workforce. In addition, although the Sellafield workforce and many in its supply chain may not have degree-level qualifications, they are highly skilled in the nuclear sector which could offer opportunities for growth in other energy-related sectors.¹⁵

3.3.3 Persistent localised deprivation

Despite Sellafield and LLWR providing thousands of well-paid jobs both directly and indirectly, West Cumbria suffers from pockets of **deprivation**.

Neighbourhoods across West Cumbria are generally more deprived than elsewhere across England, with pockets of more acute deprivation among the top-10% most deprived nationally. Across all neighbourhoods, while measures of income deprivation and employment deprivation are broadly in line with the England average, a disproportionately high share of neighbourhoods suffer from deprivation relating to education, skills & training and health deprivation & disability in particular.

3.3.4 Small firms and issues with connectivity

The performance of the West Cumbria economy is linked to the characteristics of its **businesses**. Bar Sellafield and LLWR, West Cumbria supports comparatively few larger businesses (employing 250 or more workers), and has a low level of 'churn', with the rate of new businesses formation lagging both the North West and UK.

The underperformance of the West Cumbria economy may be linked to poor **connectivity**. Firms operating in well-connected areas are typically able to draw on a wider pool of labour and better access to markets, generating operational advantages. However, West Cumbria tends to lag other local authority areas for measures of transport connectivity, linked to its relatively peripheral location. West Cumbria also tends to underperform across a range of measures of digital connectivity.

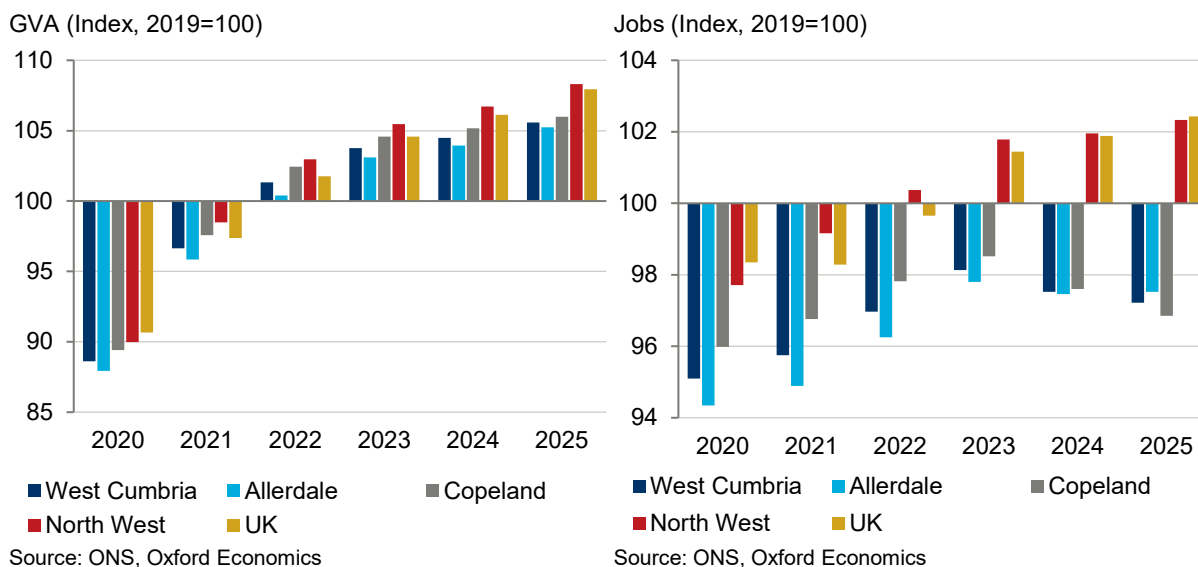
3.4 THE ECONOMIC IMPACT OF THE COVID-19 PANDEMIC

The West Cumbria economy has been relatively exposed to the Covid-19 pandemic. Owing to the effects of lockdowns and other social distancing measures, we estimate that GVA contracted by 11.4% in 2020 alone—effectively offsetting all growth achieved across the local economy since the mid-2000s. This represents a sharper fall in GVA than across the North West,

¹⁵ This opportunity was highlighted a number of times by stakeholders at our workshops for this project.

where GVA contract by 10.0% in 2020, and the UK as a whole (9.3%). The West Cumbria workforce similarly shed 4,000 jobs in 2020, or around 4.0% of its pre-pandemic workforce—a fall somewhat above both the North West (2.3%) and the national average (1.6%).

Fig. 23. GVA and jobs, West Cumbria, North West, and the UK, 2019 to 2025



West Cumbria’s relative exposure to the crisis is in part a reflection of the sectoral structure of its economy, which is generally overrepresented among sectors more exposed to the crisis, and conversely supports fewer sectors which tend to support desk-based occupations, that have more easily transitioned towards home working, leading to less overall disruption.

An easing of restrictions through 2021 has enabled a partial recovery: we estimate that West Cumbria’s economy grew by 9.1% in 2021, and will return to its pre-pandemic level of GVA in 2022. However, GVA growth will lag both the North West and UK economies thereafter, with employment not expected to fully recover to its pre-pandemic level over the forecast period (see below).

3.5 BASELINE FORECAST

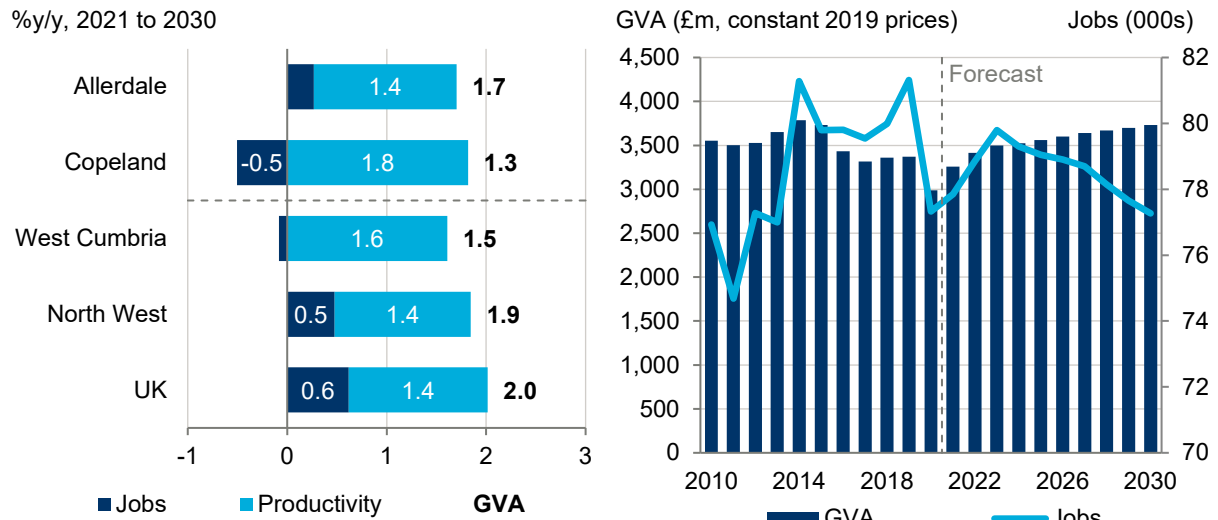
Our baseline forecast indicates that the West Cumbria economy is expected to continue to underperform both the North West and UK. Over the period 2021 to 2030, GVA will grow by an average of 1.5% per year, compared to 1.9% per year across the North West, and 2.0% per year nationally.

Growth across the West Cumbria economy will be wholly driven by productivity growth—partly driven by improving technology and automation within sectors, alongside changes to the sectoral structure of the economy.

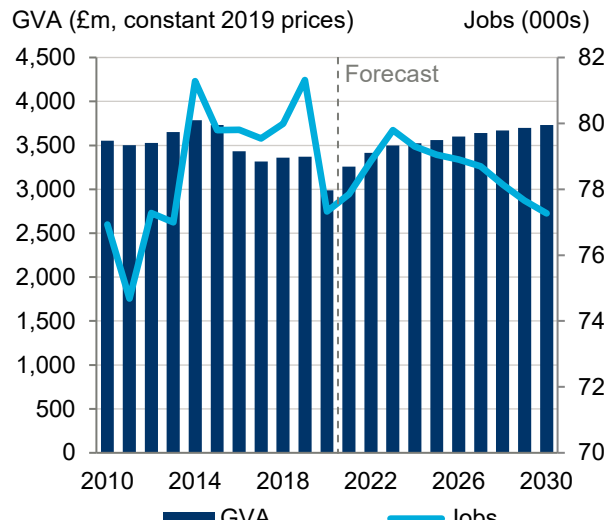
Although employment will initially benefit from the economic recovery from the Covid-19 pandemic, it will peak at around 79,800 jobs in 2023, and gradually decline thereafter. The overall size of the workforce will see little overall change. This contrasts to the decade preceding the Covid-19 pandemic, where employment growth was the key driver of overall GVA growth across

West Cumbria, and to the continued growth in employment across both the North West (0.5% per year) and nationally (0.6% per year).

Fig. 24. GVA and jobs, West Cumbria, 2010 to 2030



Source: ONS, Oxford Economics



Source: ONS, Oxford Economics

West Cumbria’s underperformance is linked to its **sectoral structure**. In general, the West Cumbria economy is less exposed to the types of sectors, such as business services, which are forecast to make a sizeable contribution to growth across the regional and national economies.

Indeed, much of the difference on overall GVA growth anticipated between West Cumbria and its regional and national comparator areas can be explained by the underrepresentation in and underperformance of these sectors: business services will collectively add 0.5 and 0.7 percentage points to overall GVA growth across the North West and UK economies, compared to just 0.2 percentage points in West Cumbria.

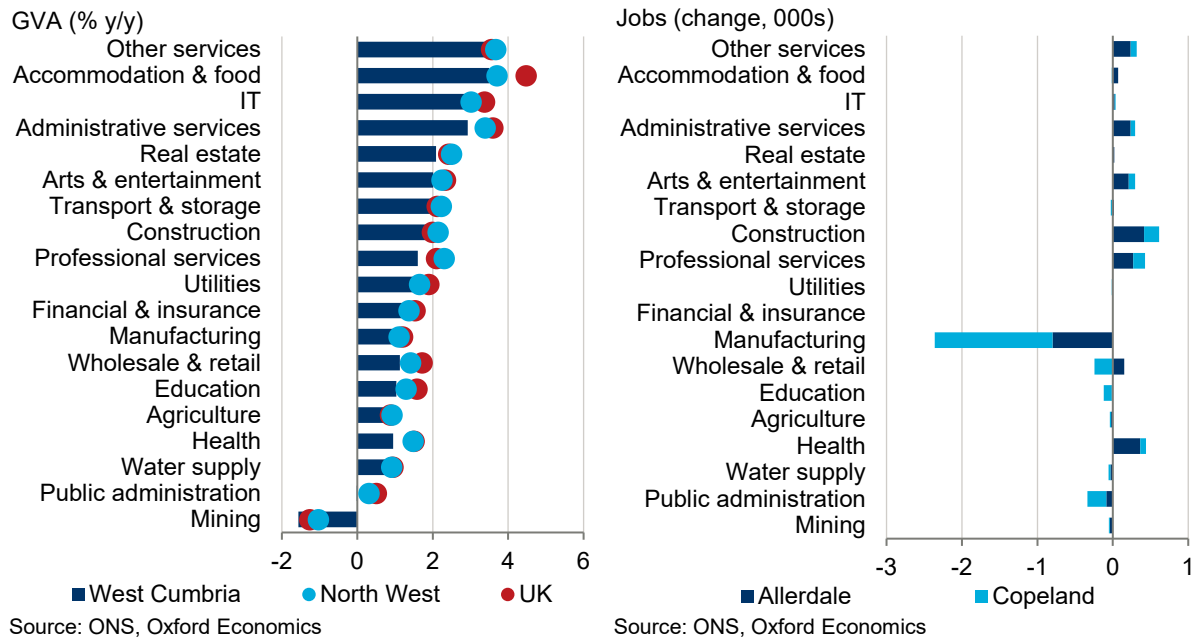
Owing to its relative size, the outlook for **manufacturing** has a strong bearing on West Cumbria’s overall performance. Despite contracting over the preceding decade, manufacturing GVA is forecast to grow by an average of 1.1% per year, broadly in line with the regional and national averages. However, manufacturing is expected to shed 2,400 jobs over the rest of the decade—the most of any sector. This reflects a wider shift towards more capital-intensive modes of production, and the increased automation of processes.

Construction, another sector closely related to the activities of Sellafield and LLWR, will be among West Cumbria’s better-performing sectors. GVA is forecast to grow by an average of 2.0% per year, outperforming the local economy as a whole, while creating 600 additional jobs—the most of any sector.

The outlook for services typically provided by the **public sector** is mixed. Human health & social work will also be a source of job creation, adding 400 jobs over the rest of the decade. GVA growth will average 0.9% per year, underperforming the local economy as a whole, in part a reflection of the more

limited opportunities for automation in this sector. However, job creation in this sector will be offset by a continued contraction of the public administration & defence (300 jobs) and education (100 jobs) sectors. The weaker outlook for these services is partly linked to West Cumbria’s demographic outlook: the population is expected to contract over the rest of the decade, as modest net in-migration is insufficient to offset the fall in population arising through natural change, as deaths outpace births among the resident population.

Fig. 25. GVA and jobs by broad sector, West Cumbria, 2021 to 2030



APPENDIX 1: SOCIO-ECONOMIC CONTEXT

INTRODUCTION

In this section, we explore the socio-economic characteristics of West Cumbria. We consider factors including the composition and performance of the local economy, demographics, the labour market, the business environment, and infrastructure & connectivity. For the purposes of this report, West Cumbria comprises the local authority areas of Allerdale and Copeland.

THE WEST CUMBRIA ECONOMY

Structure of the West Cumbria economy

The West Cumbria economy generated £3.26 billion of GVA in 2021, supporting 78,000 jobs.

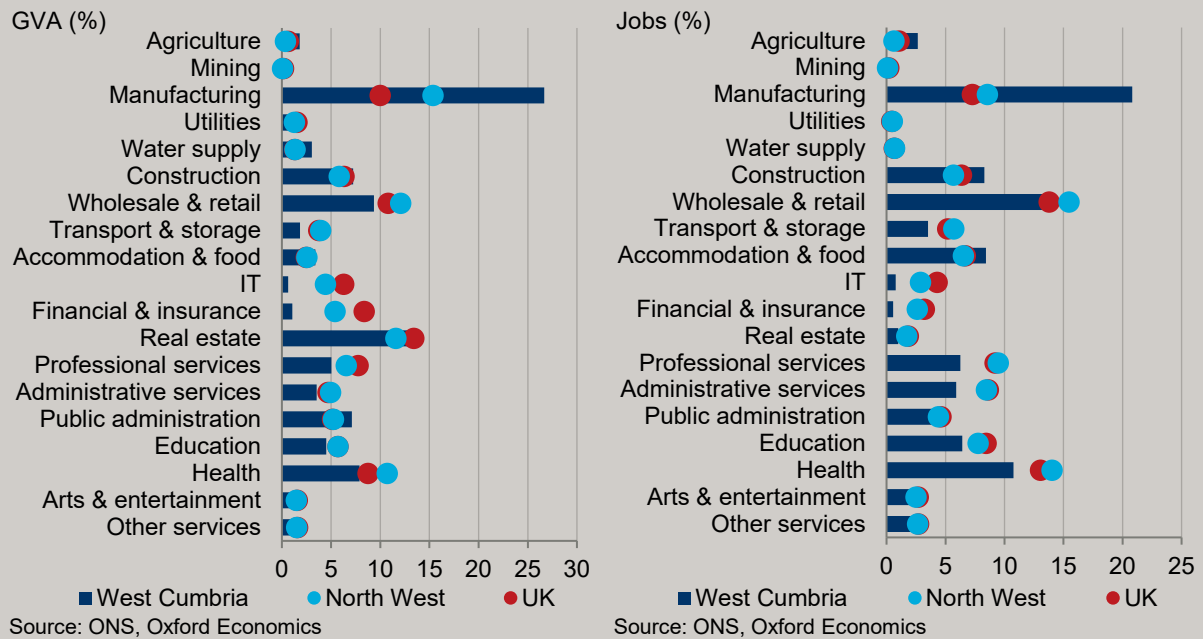
Manufacturing is West Cumbria's largest sector, generating £869 million of GVA in 2021, and 16,200 jobs. West Cumbria is therefore two-and-a-half times more reliant on its manufacturing sector, which forms 26% of GVA, than across the national economy (10%).

Real estate is West Cumbria's second-largest sector in GVA terms, although this includes rental income and imputed rents—the dominance of this sector locally, and indeed elsewhere in the North West and nationally, is largely a reflection of high housing costs. Indeed, despite this sizeable contribution to overall GVA, real estate supports a relatively small workforce.

Wholesale & retail trade and **human health & social work** are also among West Cumbria's larger sectors, both in GVA and jobs terms. The prevalence of these sectors is typically linked to servicing the economic needs of local residents, and in the case of human health & social work, is also a reflection of local demography. Wholesale & retail trade is also West Cumbria's second-largest employer, supporting 10,700 jobs.

However, **business service** sectors tend to be less prevalent across West Cumbria. Both information & communication and financial & insurance activities collectively are particularly underrepresented when compared to the North West or national economies, collectively supporting just 2% of total GVA, and 1,000 jobs. Similarly, professional, scientific & technical activities and administrative & support services also form a comparatively modest share of overall GVA. The relative absence of business service sectors may be linked to much of West Cumbria's peripheral location and issues relating to connectivity.

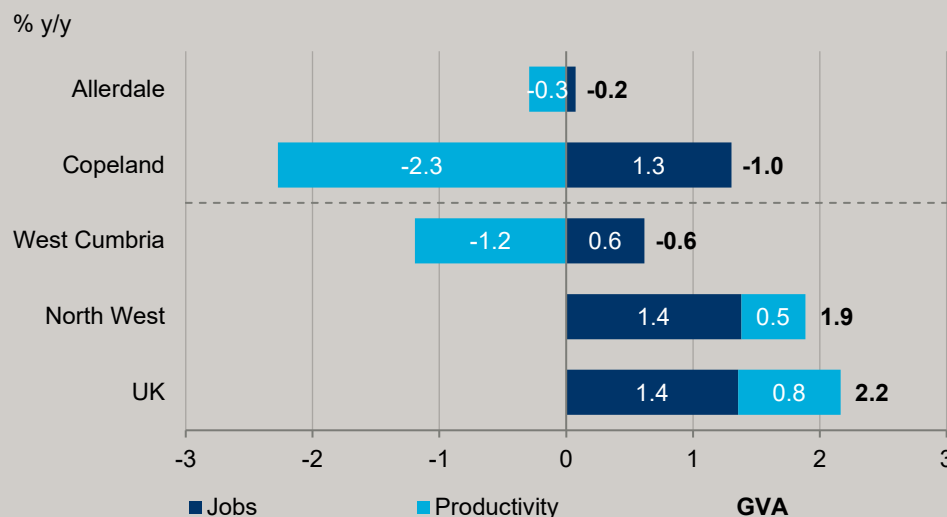
Fig. 26. GVA and jobs by broad sector, West Cumbria, North West, and the UK, 2021



Recent performance

The West Cumbria economy has experienced an overall contraction in GVA over the preceding decade. The workforce added 4,400 jobs over the period through 2010 to 2019,¹⁶ at an average of 0.6% per year—less than half the rate of job growth across the North West or nationally (both 1.4% per year). However, the expansion of the workforce has been more than offset by decreasing average productivity (see p.29). This has led to GVA contracting by an average of 0.6% per year. Both Allerdale (0.2% per year) and Copeland (1.0% per year) experienced a fall in GVA over this period.

Fig. 27. Jobs, productivity and GVA, West Cumbria, North West, and the UK, 2010 to 2019



¹⁶ We consider the historical performance of the West Cumbria economy to 2019, to ensure that our analysis of recent trends is not distorted by the effects of the Covid-19 pandemic.

THE PRODUCTIVITY GAP

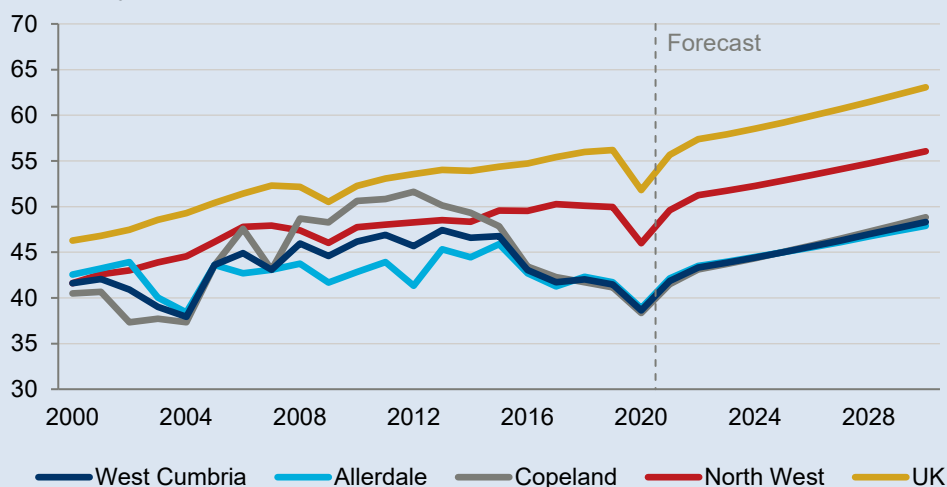
The West Cumbria economy suffers from a productivity gap to the UK economy. Productivity is an important measure of economic performance, allowing businesses to grow more profitable and boost investment, while increasing the pay and living standards of workers.

In 2021, the West Cumbria economy generated £41,800 of GVA per job, £7,800 per job or 16% lower than the average across the North West (£49,600 per job), and a productivity gap of £13,800 per job or 25% to the UK economy (£55,700 per job). Both Allerdale (£42,100 per job) and Copeland (£41,500 per job) suffer from below-average productivity.

The West Cumbria economy has suffered from persistently low average productivity, although both in absolute and relative terms, its performance has suffered over the more recent decade. Average productivity has seen a substantial decline in recent years, and even prior to the Covid-19 pandemic, remained below its peak in the early-2010s, in real terms. While both the North West and the UK economies have areas similarly struggled from sluggish productivity growth through the last decade, in each case overall productivity has improved. The productivity gap to the UK economy is expected to increase in absolute terms into the future.

Fig. 28. Productivity, West Cumbria, North West, and the UK, 2000 to 2030

£000s per job, constant 2019 prices



Source: ONS, Oxford Economics

The productivity gap is partly a reflection of industrial composition: the West Cumbria economy is characterised by a typically higher share of generally less productive sectors, and vice versa. We estimate that the sectoral structure of the economy accounts for £11,200 per job. In other words, were the West Cumbria sectoral structure reflective of the UK economy, it would eliminate five-sixths of the productivity gap.

However, even controlling for sectoral mix, the productivity gap can also be explained by an underperformance within sectors. The West Cumbria workforce tends to produce less than firms in the same sectors elsewhere. Even were West Cumbria to match the UK's sectoral structure, the productivity gap would remain at around £2,600 per job. There are a variety of factors that may contribute to this underperformance, including weaker business investment, poorer infrastructure than other parts of the UK economy that fails to overcome West Cumbria's peripheral location, and other characteristics of the workforce. (We explore some of these themes in further detail below.)

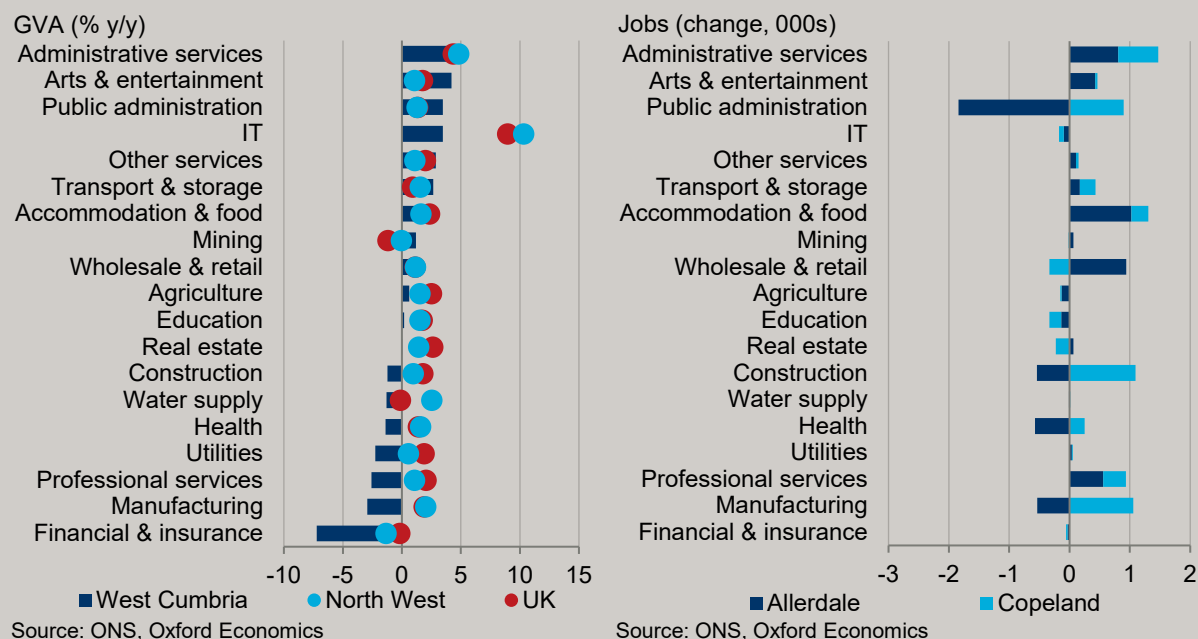
The recent underperformance of the West Cumbria economy demonstrates its reliance on **manufacturing**. Although the manufacturing workforce expanded over the period between 2010 to 2019, overcoming broader trends in this sector to add 600 jobs, it has seen a significant fall in GVA, averaging 2.9% per year—equivalent to the loss of almost a fifth of GVA in this sector. Productivity across the manufacturing sector therefore fell by around a quarter, from £68,500 per job in 2010 to £50,800 per job in 2019.

Overall, West Cumbria’s **business service** sectors have been a drag on growth. Although administrative & support services has been one of West Cumbria’s best performing sectors, with GVA growth averaging 4.5% per year and adding 1,500 jobs, information & communication (3.5% per year) has underperformed the North West and national economies. Meanwhile, both financial & insurance activities and professional, scientific & technical activities have seen a contraction in GVA, averaging 7.2% per year and 2.6% per year, respectively.

West Cumbria has also suffered a loss of employment in activities typically provided by the **public sector**. Public administration & defence (900 jobs), education, and human health & social work (both 300 jobs) all saw a net loss of employment over this period, with only public administration & defence (3.5% per year) experiencing notable GVA growth.

Elsewhere, **hospitality**-related sectors have performed well. Accommodation & food services added 1,300 jobs over this period, the second-most of any sector, while arts, entertainment & recreation also saw the second-fastest GVA growth, averaging 4.2% per year and adding 500 jobs. Increasing demand may reflect a growing tourism industry—according to VisitBritain, total spending of holiday visitors totalled an average of £209 million each year through 2017 to 2019, up from an average of £154 million through 2010 to 2012 (both in nominal prices).¹⁷

Fig. 29. GVA and jobs by broad sector, West Cumbria, 2010 to 2019



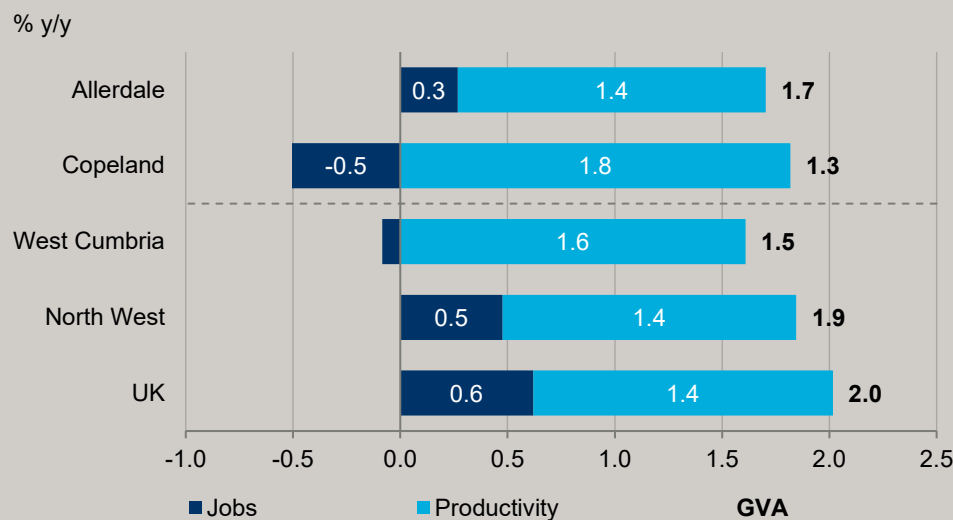
¹⁷ VisitBritain, (2021); *Destination-specific research*. <https://www.visitbritain.org/destination-specific-research>

Growth outlook

Our baseline forecast indicates that the West Cumbria economy is expected to grow over the coming decade. Over the period 2021 to 2030, GVA is forecast to grow by an average of 1.5% per year, representing a substantial improvement in performance compared to recent years. However, as observed historically, West Cumbria will continue to underperform both the North West (1.9% per year) and national (2.0% per year) economies.

In contrast to the preceding decade, growth across the West Cumbria economy will be wholly driven by the improving productivity—partly driven by improving technology and automation within sectors, alongside changes to the sectoral structure of the West Cumbria economy. Indeed, West Cumbria will experience a modest overall loss of employment over this period, driven by a loss of jobs in Copeland, in contrast to increasing employment both regionally and nationally.

Fig. 30. Jobs, productivity and GVA, West Cumbria, North West, and the UK, 2021 to 2030



Source: ONS, Oxford Economics. Note: may not sum due to rounding.

As observed historically, the performance of the **manufacturing** sector will be a key determinant of West Cumbria’s overall economic performance. Despite contracting over the preceding decade, manufacturing GVA is forecast to grow by an average of 1.3% per year, broadly in line with the regional and national averages. However, manufacturing is expected to shed 2,400 jobs over the rest of the decade—the most of any sector. This reflects a wider shift towards more capital-intensive modes of production, and the increased automation of processes.¹⁸

Construction, another sector closely related to the activities of Sellafield and LLWR, will be among West Cumbria’s better-performing sectors. GVA is forecast to grow by an average of 2.0% per year, outperforming the local economy as a whole. Construction will add 600 jobs, the most of any sector.

The outlook for services typically provided by the **public sector** is mixed. Human health & social work will also be a source of job creation, adding 400 jobs over the rest of the decade. GVA growth will average 0.9% per year, underperforming the local economy as a whole, in part a reflection of the more limited opportunities for automation in this sector. However, job creation in this sector will be

¹⁸ Note that our baseline forecast does not necessarily make specific adjustments for the plans of Sellafield Ltd or LLWR Ltd. See Appendix 3 for further detail on our method.

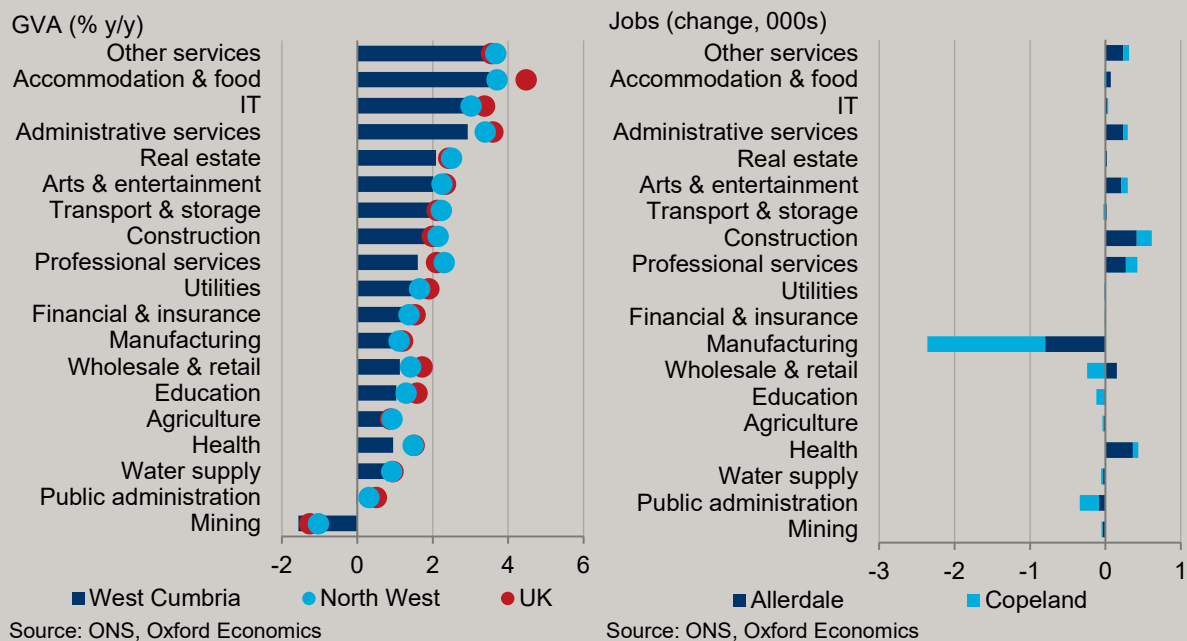
offset by a continued contraction of the public administration & defence (300 jobs) and education (100 jobs) sectors.

The outlook for West Cumbria’s **hospitality**-related sectors is also positive. Sectors such as accommodation & food services and arts, entertainment & recreation have been particularly affected by restrictions implemented as a consequence of the pandemic, but our growth forecast indicates that both will be among West Cumbria’s faster-growing sectors over the rest of the decade.

Business services will also see an overall increase in employment. Professional, scientific & technical activities and administrative & support services will continue to see an increase in employment, adding 400 and 300 jobs by the end of the decade, respectively. Meanwhile, GVA growth prospects are generally improved on recent historical trends: all business service sectors are forecast to grow in GVA terms, with information & communication and administrative & support services ranking among the best performing sectors. However, West Cumbria is expected to continue to lag the performance of the wider regional and national economies across all business services.

Indeed, much of the difference on overall GVA growth anticipated between West Cumbria and its regional and national comparator areas can be explained by the underrepresentation in and underperformance of these sectors: business services will collectively add 0.5 and 0.7 percentage points to overall GVA growth across the North West and UK economies, compared to just 0.2 percentage points in West Cumbria.

Fig. 31. GVA and jobs by broad sector, West Cumbria, 2021 to 2030



DEMOGRAPHICS

In 2021, West Cumbria was home to 165,000 residents. West Cumbria has a relatively old population: 98,000 residents, or slightly less than three-fifths, were aged 16 to 64 (typically defined as those of working age). Almost a quarter of the population are aged 65 or above.

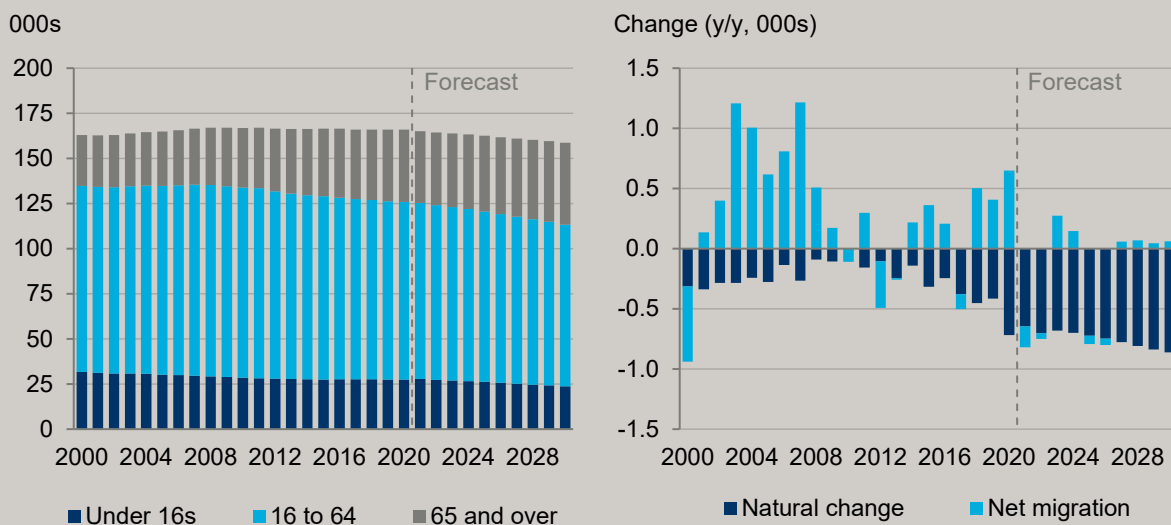
West Cumbria has experienced significant demographic change in recent years. At its peak in the mid-2000s, the population aged 16 to 64 equated to around 64% of the population, broadly in line with the equivalent proportions across both the North West and UK. However, West Cumbria has recently experienced a decline both the number and share of residents in this age group, a trend expected to continue into the future.

The forecast decline in population is a consequence of natural change, with the number of deaths expected to exceed births each year—linked to the ageing of the overall population. This will be only partly offset by a modest net inflow of migrants, insufficient to offset the decline in population arising from natural change.

Historically, West Cumbria has benefitted from a net inflow of migrants, who typically tend to be younger in age. This was most apparent through the early-to-mid 2000s, where net migration led to a substantial increase in the population. However, weaker employment prospects may result in the area becoming a less attractive destination for potential migrants into the future, while conversely, some residents may choose to relocate to areas with better job prospects.

This will be compounded by an expectation that overall migration into the UK will fall. Oxford Economics expects UK net in-migration to average 90,000 per year in the long run, compared to 190,000 per year across the UK in the official projections. In the short term, Oxford Economics expects net in-migration levels to bounce-back after the pandemic, peaking in 2023 at 250,000, then declining over time, reflecting the UK policy of ending free movement of labour and actively reducing levels of immigration. So overall, West Cumbria is expected to attract a smaller share of a lesser number of potential migrants into the future.

Fig. 32. Population by age band and components of population change, West Cumbria, 2000 to 2030



Source: ONS, Oxford Economics

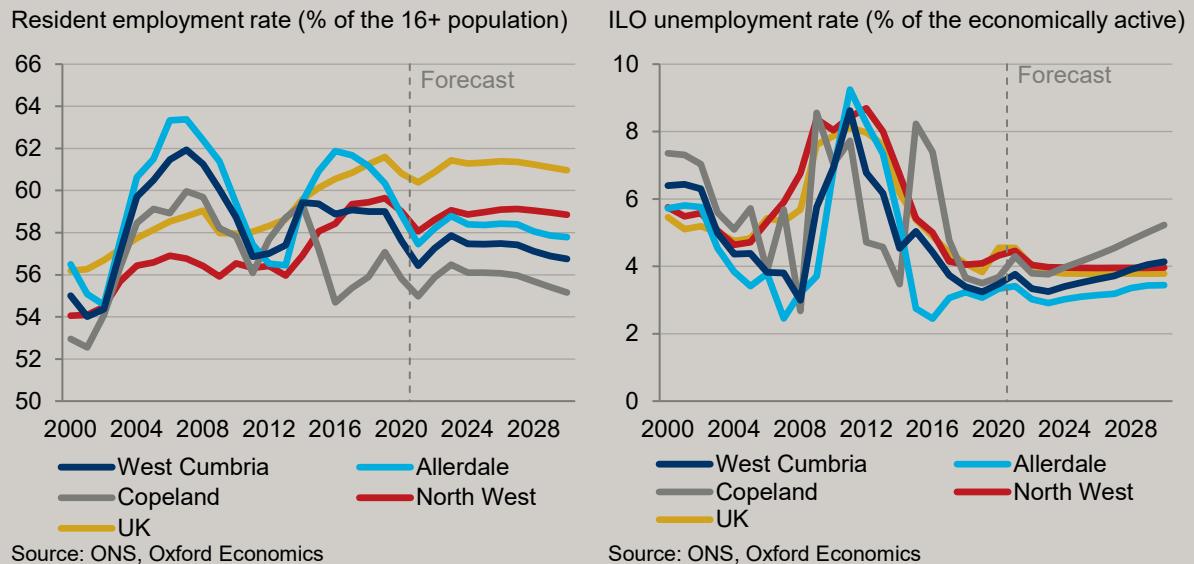
Source: ONS, Oxford Economics

LABOUR MARKET

Worsening job prospects within the West Cumbria workforce will lead to a decline in resident employment. This will lead to a fall in the resident employment rate.¹⁹ The resident employment rate within West Cumbria continues to gradually decline after recovering from the Covid-19 pandemic, in contrast to gradual increases across the North West and UK. Weaker employment opportunities will see the unemployment rate increase to around 4% by the end of the decade, although in-line with the North West and UK, and remaining low by historical standards.

¹⁹ Measured as the share of the 16+ population. Alternative measures of the resident employment rate consider only those aged 16 to 64.

Fig. 33. Resident employment and ILO unemployment rates, West Cumbria, North West, and the UK, 2000 to 2030



Source: ONS, Oxford Economics

Source: ONS, Oxford Economics

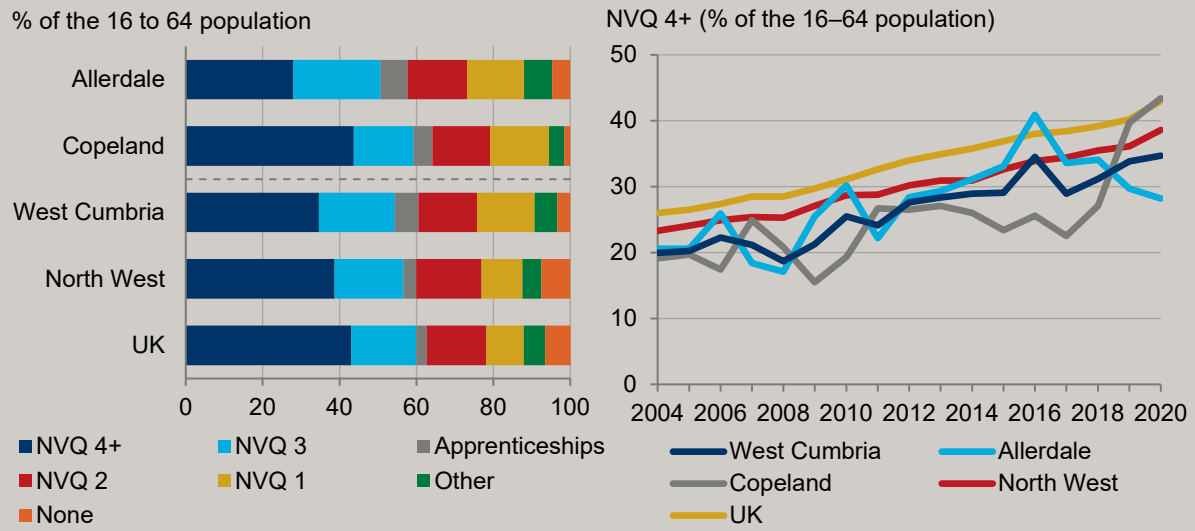
Residents of West Cumbria are generally less well-qualified than elsewhere. In 2020, 35% of residents were qualified to NVQ level 4+ (e.g. degree level or higher).²⁰ While this share has increased over time, it has remained consistently below both the regional and national rates. Copeland’s share of residents qualified to this level is broadly in line with the national average (44%), in part due to the highly skilled workers attracted to the area to work at Sellafield and LLWR, although the equivalent rate across Allerdale is somewhat lower (28%). Issues around education, skills & training are particularly apparent among many of West Cumbria’s neighbourhoods, associated with broader issues of social deprivation (see box on p.36).

Similarly, West Cumbria has a higher proportion of residents failing to achieve NVQ level 2 qualifications, equivalent to almost a quarter of the working age population, exceeding the North West and UK averages. Although of this group, a comparatively low proportion have no qualifications altogether.

However, West Cumbria demonstrates a relatively high proportion of residents with trade apprenticeship qualifications. More than 6% of residents are qualified to this level, around twice the equivalent rate both regionally and nationally. The take-up of apprenticeships is a reflection of the opportunities offered by businesses, as well as the willingness of residents to take them up, and hence demonstrates the contribution that employers such as Sellafield and LLWR make in improving the skills of the local population.

²⁰ ONS, (2021); *Annual Population Survey 2020*. <https://www.nomisweb.co.uk/datasets/apsnew>

Fig. 34. Resident qualifications, West Cumbria, North West, and the UK, 2004 to 2020

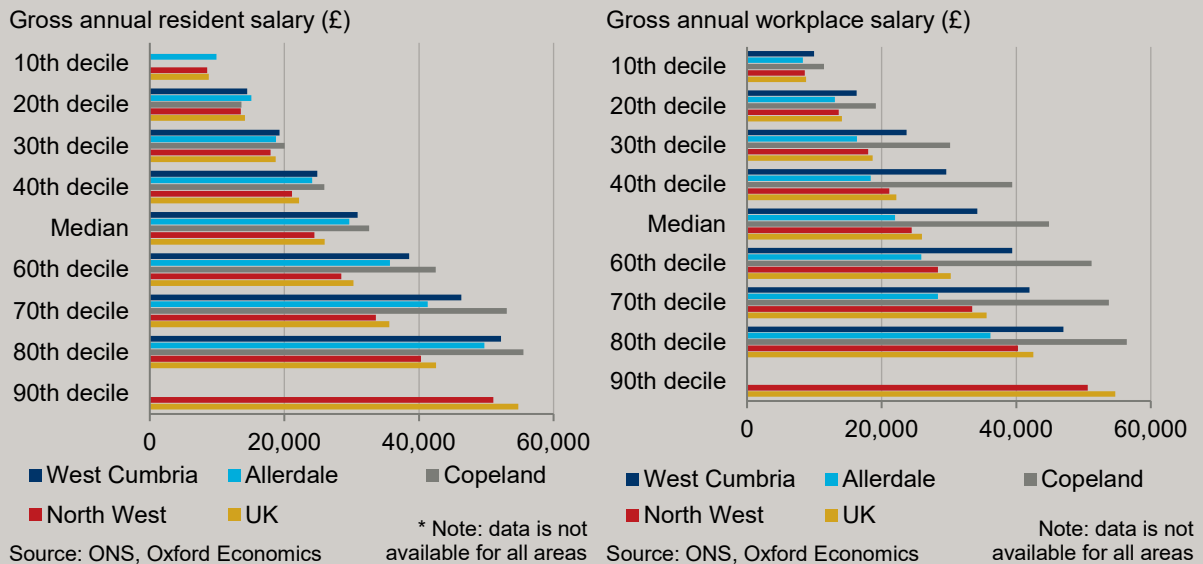


Source: ONS, Oxford Economics

Source: ONS, Oxford Economics

Despite the skills profile of the resident population, both residents and workers in West Cumbria are comparatively well paid. Both resident and workforce salaries are above the regional and national averages across all income ranges, where information is available. This is partly a reflection of the above-average wages paid to employees of Sellafield and LLWR.

Fig. 35. Resident and workplace earnings by decile, West Cumbria, North West, and the UK, 2021



Source: ONS, Oxford Economics

Source: ONS, Oxford Economics

Note: data is not available for all areas

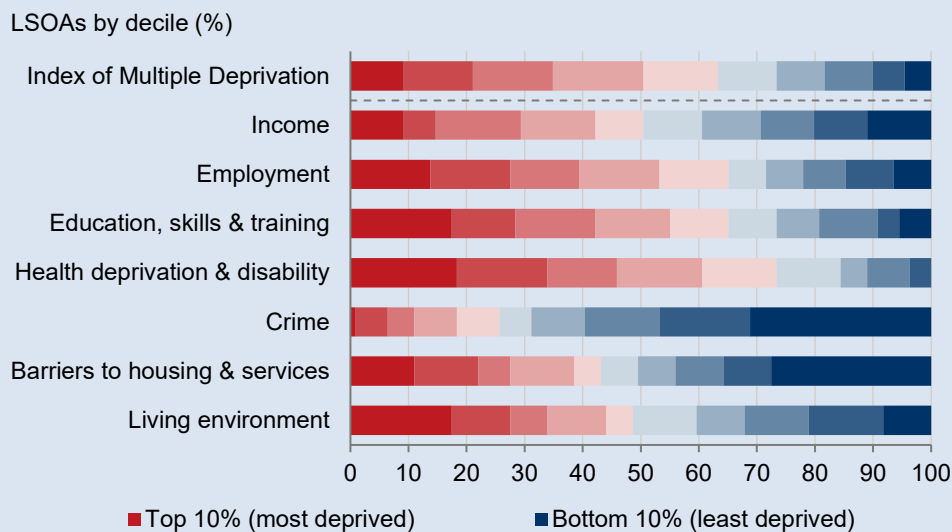
DEPRIVATION

Aggregate measures of the performance of the economy can mask variations at a more local level. To explore issues relating to quality of life and social inclusion across West Cumbria, we consider the English Indices of Deprivation,²¹ which explores the extent of relative deprivation across all neighbourhoods in England.²²

West Cumbria suffers from pockets of acute relative deprivation. Across West Cumbria, seven of its neighbourhoods are among the top-10% most deprived nationally. The most acutely deprived areas are typically within its urban areas. However, across West Cumbria as a whole, 55% of neighbourhoods are more deprived than the average across England.

The overall Index of Multiple Deprivation is a compositive measure that aggregates seven individual domains. West Cumbria’s neighbourhoods tend to suffer from a greater degree of relative deprivation within the health deprivation & disability and education, skills & training domains. And despite the highly-paid employment opportunities supported by Sellafield and LLWR’s operations, both income and employment deprivation is more prevalent than the average across England.

Fig. 36. Index of multiple deprivation by domain, West Cumbria, 2019²³



Source: MHCLG, Oxford Economics

²¹ Ministry of Housing, Communities and Local Government (MHCLG), (2019); *The English Indices of Deprivation 2019*. <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

²² It covers 32,844 small areas or neighbourhoods, drawing on the Lower-layer Super Output Areas as defined in the 2011 Census, of which 177 are located in West Cumbria.

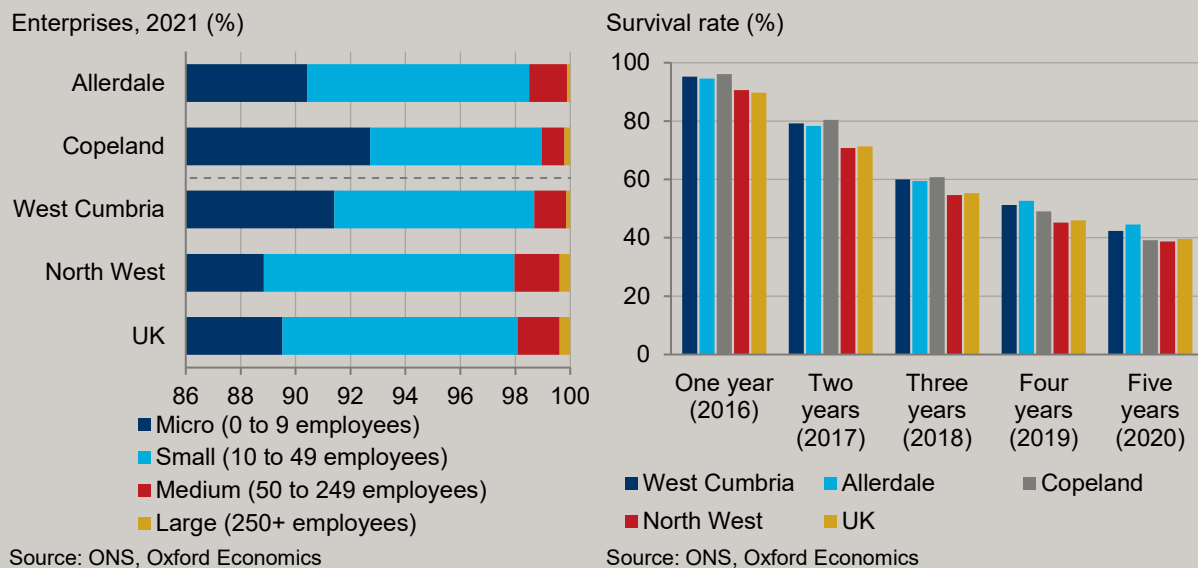
²³ Each colour represents a decile across England, ranging from the top 10% most deprived (dark red) to the bottom 10% least deprived (dark blue).

BUSINESS ENVIRONMENT

In 2021, West Cumbria was home to 6,600 businesses.²⁴ West Cumbria’s business base is characterised by relatively few large employers. ONS data suggests that more than 91% of firms in West Cumbria are defined as micro-sized, employing fewer than 10 workers—a share higher than either the North West or UK. At the other end of the scale, just 10 firms or 0.1% of the total supported more than 250 employees.

The changing stock of businesses over time also provides an indication of the entrepreneurial characteristics of the West Cumbria economy. In its *Business Demography* series, the ONS provides an indication the survival rate of new businesses.²⁵ West Cumbria supports a relatively high business survival rate. Of the cohort of firms that commenced operations in 2015, three-fifths were no longer operating in 2020. However, the survival rate (42.4%) is higher than either the North West (38.7%) or UK (39.6%) economies. Indeed, a similar pattern is apparent across all years of operations.

Fig. 37. Businesses by size and survival rate, West Cumbria, North West, and the UK, 2016 to 2021

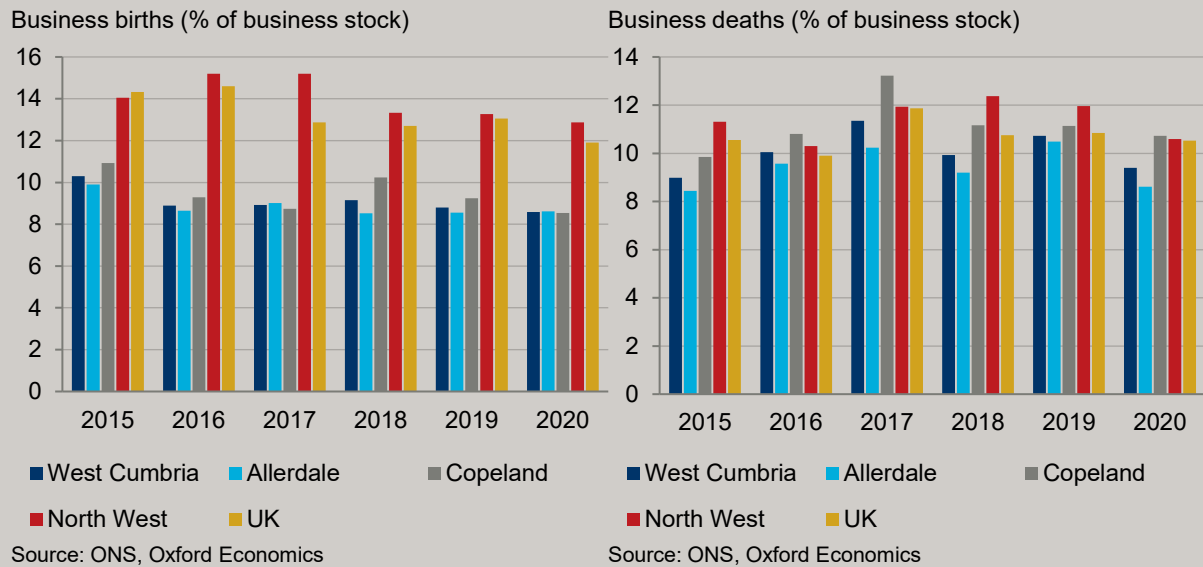


ONS data also provides an indication of business ‘churn’—the extent to which business ‘births’ (new businesses) and ‘deaths’ (closures) contribute to the changing stock of firms each year. West Cumbria tends to have a lower churn of businesses: while the relatively high business survival rate may lead to fewer closures, new firms also tend to make up a lower share of the business base than observed across either the North West or nationally.

²⁴ ONS, (2021); *UK Business Counts 2021*. <https://www.nomisweb.co.uk/sources/ukbc>

²⁵ ONS, (2021); *Business Demography 2020*. <https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/bulletins/businessdemography/2020>

Fig. 38. Business births and deaths, West Cumbria, North West, and the UK, 2015 to 2020



INFRASTRUCTURE AND CONNECTIVITY

Firms operating in well-connected areas are typically able to draw on a wider pool of labour and better access to markets, generating operational advantages. Poor connectivity is therefore a key factor in understanding both the local business base and productivity underperformance of the West Cumbria economy. Indeed, both improving public transport and digital connectivity form two of the 12 ‘Missions’ identified in the *Levelling Up White Paper*.²⁶

The Department for Transport’s (DfT) Journey Time Statistics demonstrate that West Cumbria tends to underperform other areas on measures of physical connectivity.²⁷ Fig. 39 compares Allerdale and Copeland to all local authority areas in England across six measures of connectivity.²⁸ West Cumbria tends to suffer from relatively poor access to employment centres: both Allerdale and Copeland rank among the bottom-20% of local authority areas for the share of population within 45 minutes of either a large or medium employment centres.²⁹ West Cumbria also suffers from more limited access to key services: both Allerdale and Copeland rank in the bottom quarter for access to either further education (FE) colleges or town centres within 45 minutes by public transport.

West Cumbria also has comparatively poor access to key transport nodes. The Lake District acts as a natural barrier to east-west movements, contributing to both Allerdale and Copeland ranking within the bottom-10% of local authority areas for access to major railway hubs by public transport.^{30 31}

²⁶ <https://www.gov.uk/government/news/government-unveils-levelling-up-plan-that-will-transform-uk>

²⁷ Department for Transport, (2021); *Journey Time Statistics 2019*.

<https://www.gov.uk/government/collections/journey-time-statistics>

²⁸ These charts reflect the distribution of all local authorities: the Y-axis reflects the count of local authority areas while the X-axis reflects a particular degree of connectivity.

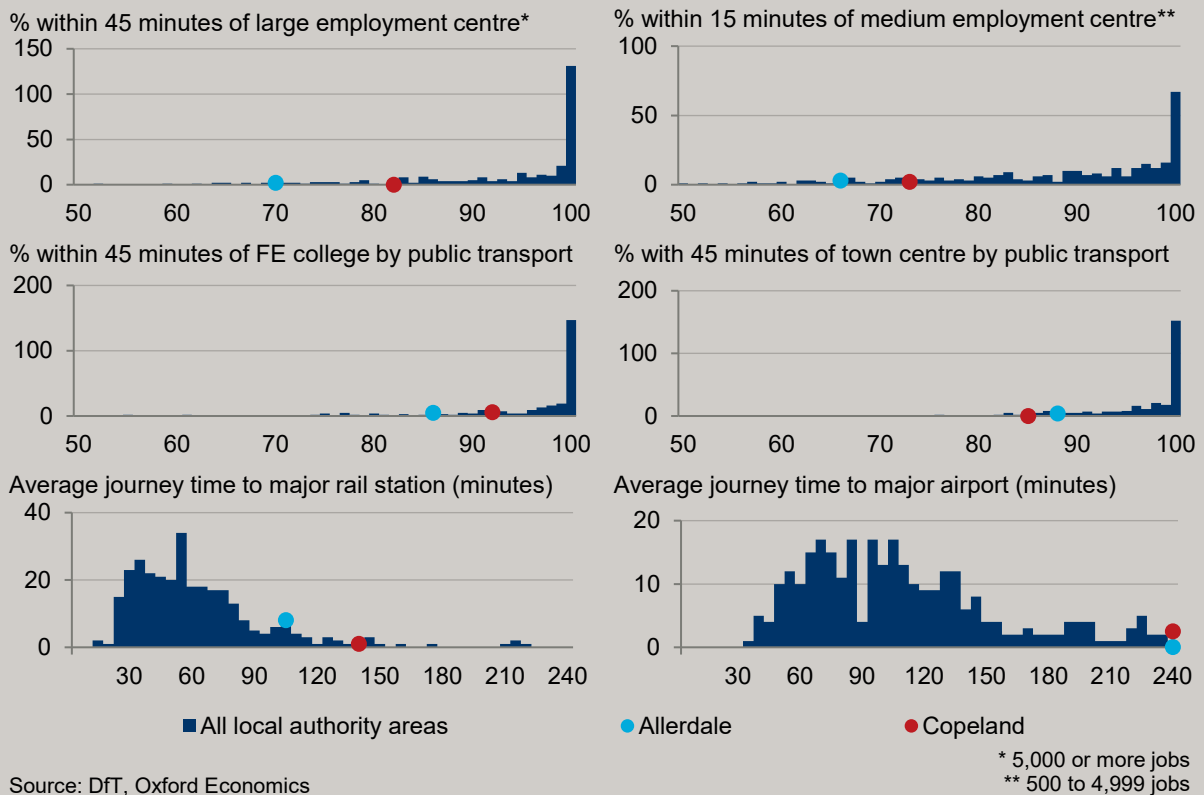
²⁹ Defined as a Lower-layer Super Output Area (LSOA) supporting at least 5,000 jobs, or 500 jobs, respectively.

³⁰ Defined as the 79 ‘national’ or ‘regional’ hubs in England, measured during the same morning peak period.

³¹ The average journey times to both major rail stations and airports are estimated through aggregating LSOAs on a population-weighted basis.

Access to major airports is similarly poor: no neighbourhoods within either Allerdale or Copeland are within four hours of a major airport by public transport.³²

Fig. 39. Physical connectivity indicators, West Cumbria and all local authority areas in England, 2019



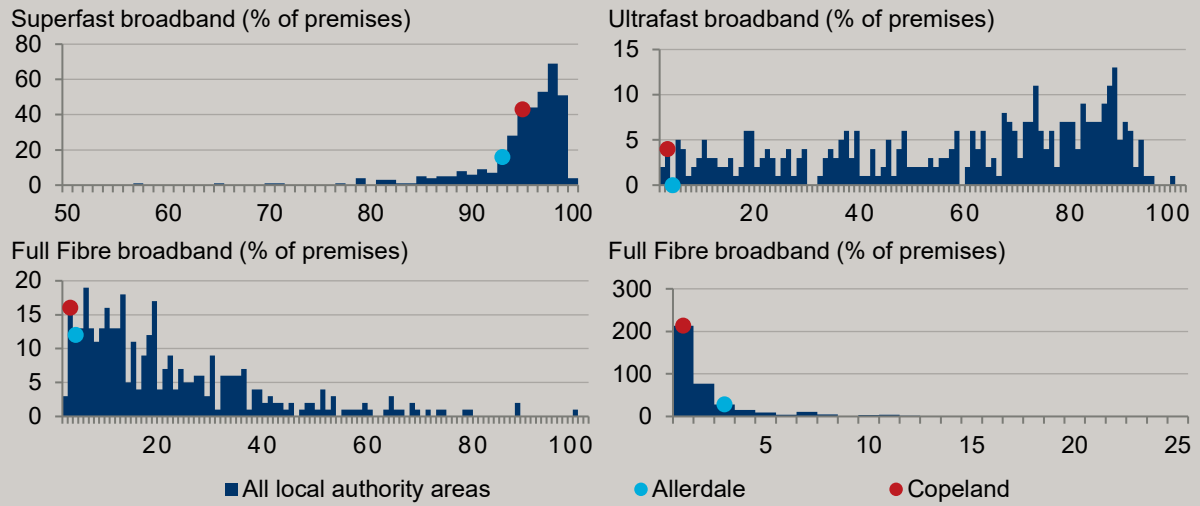
Digital connectivity is an increasingly important factor in enabling economic prosperity, as work, commerce and leisure are increasingly reliant on sufficient digital access. In *Connected Nations 2021*, OFCOM assesses the relative connectivity of local authority areas across the UK.³³ Fig. 40 presents the relative performance of West Cumbria’s three constituent areas across four headline indicators of digital connectivity, relative to all local authority areas across the UK.²⁸

In general, West Cumbria suffers from weaker digital connectivity than other parts of the UK. Both Allerdale and Copeland rank among the worst connected areas across the UK for measures of average superfast, ultrafast and Full Fibre broadband connection.

³² Defined as those that supported at least 1% of total UK passengers in 2015, with multiple terminals at Gatwick, Heathrow and Manchester calculated separately. Measured during the morning peak period, which covers 7am to 10am.

³³ OFCOM, (2021); *Connected Nations 2021*. <https://www.ofcom.org.uk/research-and-data/multi-sector-research/infrastructure-research>

Fig. 40. Digital connectivity indicators, West Cumbria and all local authority areas in the UK, 2021



Source: OFCOM, Oxford Economics

APPENDIX 2: THE ECONOMIC CONTRIBUTION OF SELLAFIELD

INTRODUCTION

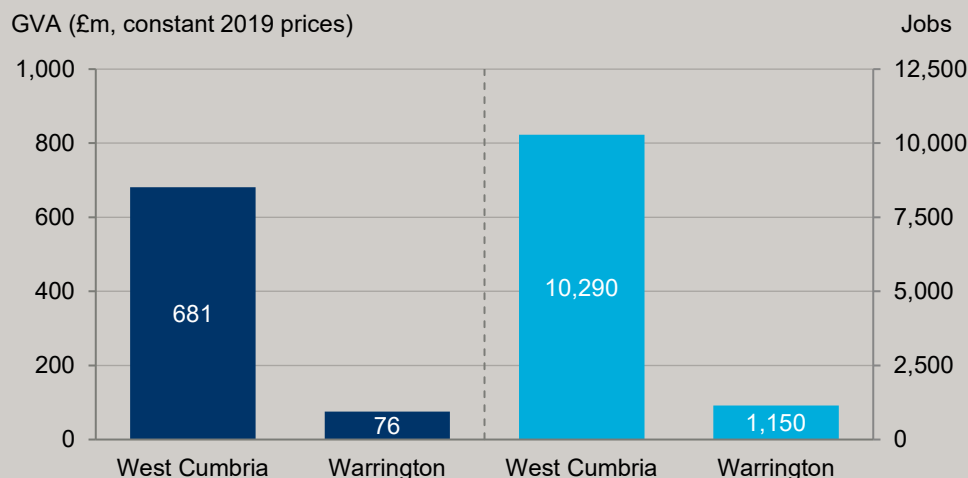
In this section, we present the economic contribution that Sellafield made to the West Cumbria and UK economies in 2021.

DIRECT ECONOMIC IMPACT

Sellafield makes a substantial contribution to the UK economy. **We estimate that Sellafield made a £757 million direct GVA contribution to UK GDP in 2021.** As Sellafield does not generate a gross operating surplus (profit), its contribution to GDP equates to the value of compensation of employees—the wages and salaries paid to the workforce (£581 million), and other labour costs, including social security and pension contributions (£176 million).

Sellafield also employed 11,430 workers, mostly in West Cumbria (10,290 workers). Sellafield draws heavily on the local labour market: 9,580 workers (84%) live in West Cumbria, while 11,180 workers (98%) reside across the North West.

Fig. 41. Direct GVA and employment, Sellafield, UK, 2021



Source: Sellafield Ltd, Oxford Economics

INDIRECT ECONOMIC IMPACT

The positive contribution that Sellafield makes to the economy extends beyond its direct GVA contribution and workforce. The purchases of inputs of goods and services stimulates additional activity along the UK supply chain, as Sellafield’s suppliers generate GVA and support employment, and in turn purchase goods and services from other firms, and so on. This is referred to as the *indirect* impact.

In 2021, Sellafield spent a total of £1.31 billion on the procurement of goods and services, almost entirely with UK suppliers (£1.30 billion).⁹

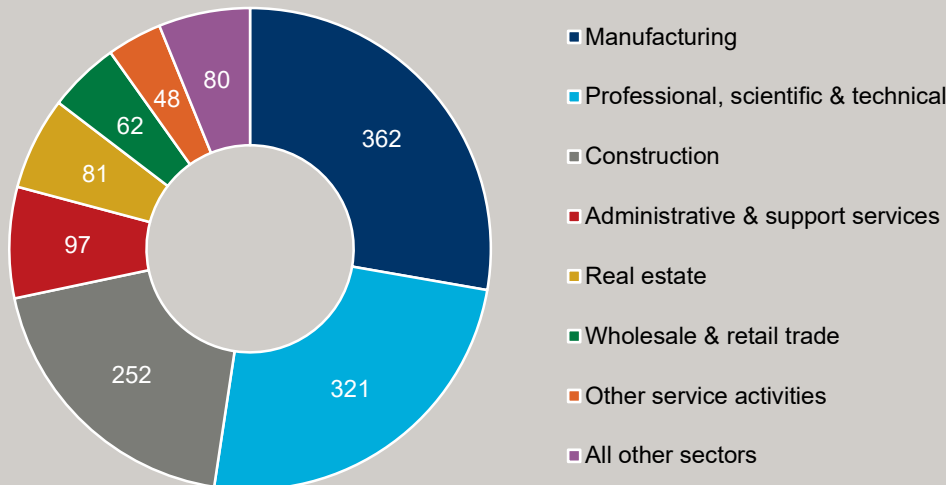
Sellafield’s procurement spending is relatively concentrated among a few firms: collectively, purchases made from the ten-largest suppliers amounted to £486 million, or 37% of all procurement spending.

Procurement spending also tends to benefit local firms. We estimate that approximately £650 million is spent with suppliers in West Cumbria, equivalent to half of all domestic spending, with a further £14 million spent elsewhere in Cumbria, £131 million in Warrington, and £17 million elsewhere in the North West. Around 38% of purchases (£526 million) are made outside of the North West. The South East is the second-largest recipient of procurement spending (£140 million), followed by the West Midlands (£123 million) and East Midlands (£87 million).

Purchases were made across suppliers operating in a variety of sectors. Manufacturing (£362 million) is the largest recipient of procurement spending. Alongside professional, scientific & technical (£321 million), these two sectors account for more than half of all procurement spending. A further 19% of spending is in the construction sector (£252 million).

Fig. 42. Procurement spending by sector, Sellafield, UK, 2021

£m, constant 2019 prices

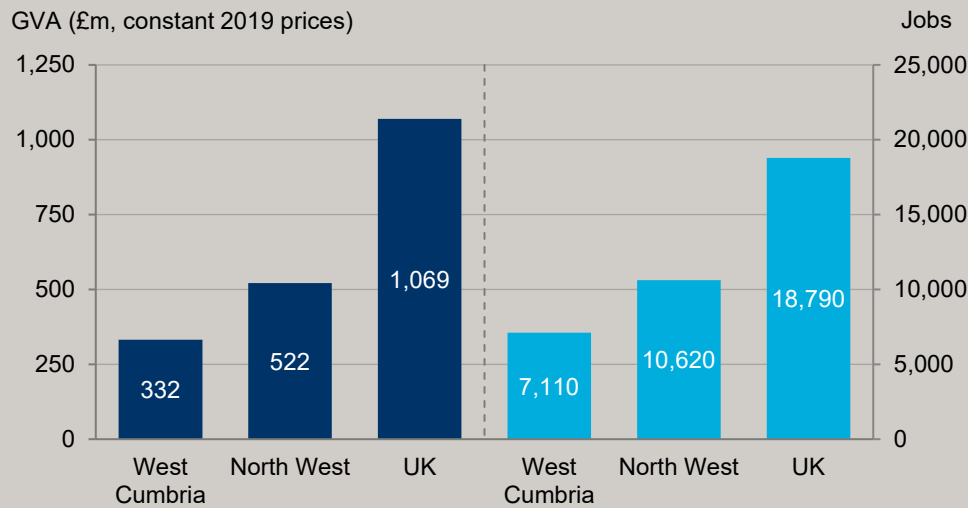


Source: Sellafield Ltd, Oxford Economics

Overall, **we estimate that Sellafield’s procurement spending stimulated a £1.07 billion GVA contribution to UK GDP along its supply chain, supporting 18,790 jobs across the UK workforce.** The indirect GVA contribution is less than Sellafield’s total domestic procurement spending (£1.30 billion), as firms along the supply chain will draw on imported goods and services, the value associated with which will be realised abroad.

Approximately £332 million (or 31%) of GVA was retained within West Cumbria, supporting 7,110 jobs across the local workforce. While West Cumbria is home to almost half of all domestic procurement spending, suppliers will purchase goods and services from elsewhere, resulting in a ‘leakage’ of spending and the value associated with it to elsewhere in the UK. In total, almost half of all indirect GVA will be generated across the North West (£522 million), supporting 10,620 jobs.

Fig. 43. Indirect GVA and jobs, Sellafield, West Cumbria, North West, and the UK, 2021



Source: Sellafield Ltd, Oxford Economics

INDUCED ECONOMIC IMPACT

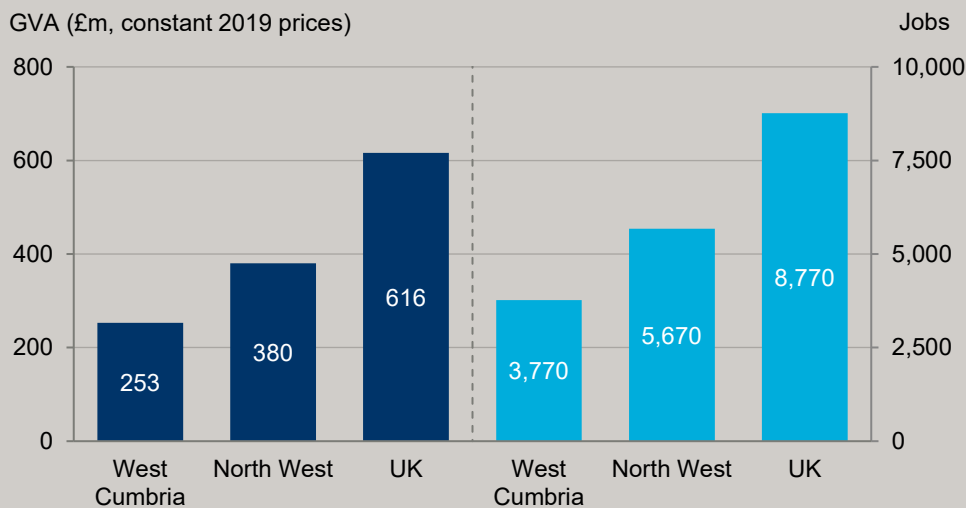
The households of Sellafield employees, and those supported by its supply chain spending, spend a proportion of their wages on household expenses and at retail, leisure, and other outlets. This stimulates economic activity at these firms, and also along their supply chains. This is referred to as the *induced* impact.

We estimate that Sellafield paid its employees £581 million in gross wages & salaries. This equates to an average of £50,800 per job—more than twice the median gross wage across the UK workforce (£24,600 per worker), and 41% higher than the mean gross wage (£29,800 per worker).¹⁰

We estimate that a further £540 million is earned by the employees of suppliers and other firms along the supply chain.

In total, **the household consumption of wages supported by Sellafield is estimated to generate a further £616 million GVA contribution to UK GDP, supporting 8,770 jobs across the UK workforce.** West Cumbria supports around two-fifths of all induced GVA generated across the UK, equating to £253 million, and supporting 3,770 jobs. The relatively high proportion of induced effects occurring in West Cumbria is partly a reflection of the reliance on the local workforce: 81% of direct wages are paid to workers living locally. The North West similarly supports more than half of GVA generated by the induced effect, £380 million, and 5,670 jobs.

Fig. 44. Induced GVA and jobs, Sellafield, West Cumbria, North West, and the UK, 2021



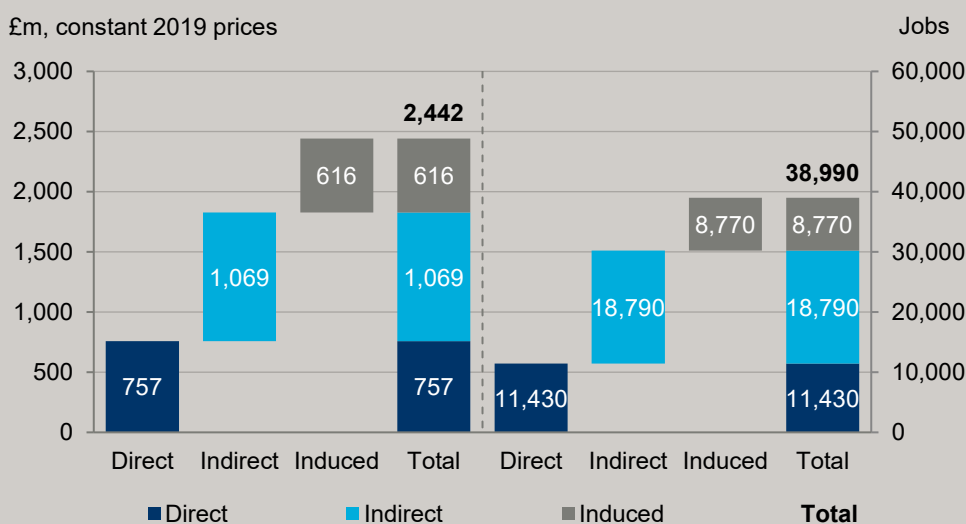
Source: Sellafield Ltd, Oxford Economics. Note: may not sum due to rounding.

TOTAL ECONOMIC IMPACT

Combining the three channels—direct, indirect, and induced—we find that **Sellafield contributed £2.44 billion to UK GDP in 2021**. In addition to the £757 million directly generated in West Cumbria and Warrington, supply chain (indirect) impacts added £1.07 billion of GVA and 18,790 jobs, while wage consumption (induced) impacts added a further £616 million of GVA and 8,770 jobs.

This equates to a (Type II) GVA multiplier of 3.22, or £141 of indirect (supply chain) and £81 of induced (wage consumption) GVA stimulated across the UK economy for every £100 of GVA directly generated by Sellafield’s operations in West Cumbria and Warrington.

Fig. 45. Total GVA and jobs, Sellafield, UK, 2021

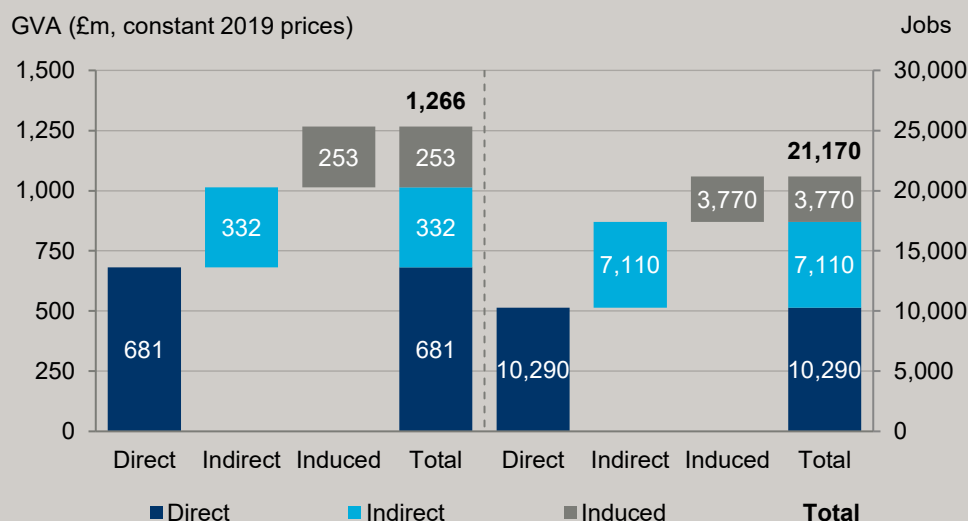


Source: Sellafield Ltd, Oxford Economics. Note: may not sum due to rounding.

Sellafield’s operations generated a £1.27 billion contribution to West Cumbria’s GVA in 2021, supporting 21,170 jobs. West Cumbria therefore benefits from a (Type II) GVA multiplier of 1.86: every £100 of GVA directly generated by Sellafield in West Cumbria supports a further £49 of GVA along the supply chain, and £37 of GVA through household wage consumption. Similarly, every 100 jobs directly employed by Sellafield supports a further 69 jobs across the supply chain, and 37 jobs due to wage consumption, elsewhere in West Cumbria.

A majority of the economic impact across West Cumbria occurs in Copeland—£1.19 billion of GVA and 20,080 jobs—alongside a further £75 million of GVA and 1,090 jobs supported across Allerdale.

Fig. 46. Total GVA and jobs, Sellafield, West Cumbria, 2021



Source: Sellafield Ltd, Oxford Economics. Note: may not sum due to rounding.

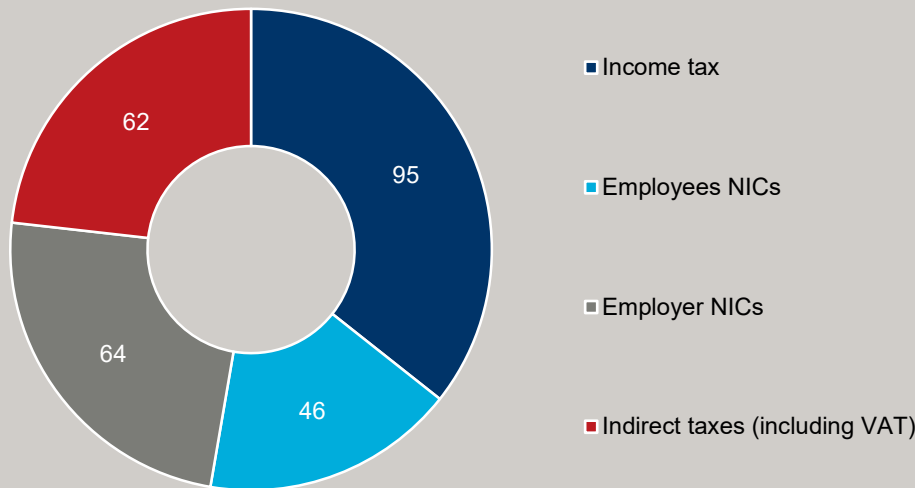
FISCAL IMPACT

In 2021, Sellafield’s direct activity contributed £205 million in labour tax revenues. This consists of £64 million of National Insurance Contributions (NICs) paid by both organisations themselves, alongside £95 million of income tax and £46 million of employee NICs contributed by employees.

In addition, the purchases of goods and services through wages paid to the direct workforce will generate further indirect taxes, including VAT. We estimate a further £62 million may be directly generated through indirect taxes. In total, Sellafield’s direct activity therefore contributed £268 million in tax revenues in 2021.

Fig. 47. Direct tax contributions, Sellafield, UK, 2021

£m, constant 2019 prices



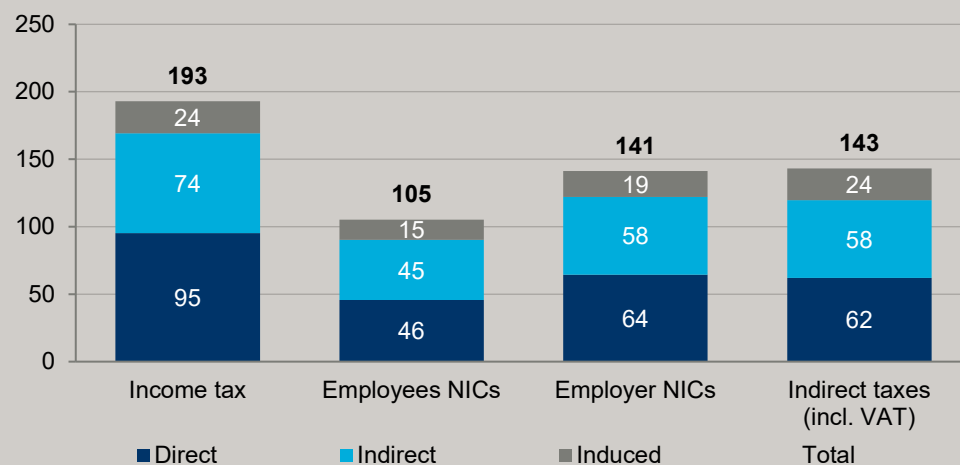
Source: Sellafield Ltd, Oxford Economics

Additional economic activity arising through the indirect and induced channels will also result in a range of fiscal benefits. Wages generated through employment along the supply chain and through wage consumption are subject to income tax and NICs, and generate further indirect taxes (including VAT). In modelling the tax revenues that could be collected by the Treasury, we use the latest income tax and NIC rates, thresholds, and personal allowance information.

In total, **Sellafield’s total economic footprint generated £583 million in fiscal revenues in 2021.** We estimate that £193 million was generated through income tax revenues, alongside a further £247 million in employer and employee NICs, and £143 million in indirect taxes via the purchases of goods and services (including VAT).

Fig. 48. Total tax contributions, Sellafield, UK, 2021

£m, constant 2019 prices



Source: Sellafield Ltd, Oxford Economics. Note: may not sum due to rounding.

SUMMARY

A summary of the total economic and fiscal contributions of Sellafield to West Cumbria and the UK is presented below.

Fig. 49. Summary of economic and fiscal impacts, Sellafield, West Cumbria and the UK, 2021



Source: Sellafield Ltd, Oxford Economics

APPENDIX 3: METHOD

UNDERSTANDING ECONOMIC IMPACT ASSESSMENTS

Introduction

Economic impact modelling is a standard tool used to quantify the economic contribution of an investment or series of investments in a local economy. As set out in the Introduction, our economic impact analysis estimates Sellafield and LLWR's economic contribution through three channels:

- **Direct impact:** relates to the activities of Sellafield and LLWR;
- **Indirect impact:** captures the economic activity and employment within the supply chains that support these activities, through the procurement of goods and services from third-party suppliers; and
- **Induced impact:** comprises the wider economic benefits that arise when workers employed at Sellafield and LLWR, and also by companies in their supply chain, spend their earnings.

Direct impacts

Data on the compensation of employees (including wages & salaries), location of residence of the workforce, and procurement spend by supplier has been provided by Sellafield and LLWR.

Sellafield Ltd provided anonymised workforce data by postcode district. Using postcode-level data, we have allocated these workers to local authority areas.³⁴ LLWR Ltd provided anonymised workforce data by postcode, which can be mapped directly to local authority areas. Both organisations also provide basic salary information for each worker. Both organisations' direct GVA contributions to GDP include not only the salaries paid to workers, but also social security payments (employer National Insurance Contributions, or NICs), and pension contributions. To ensure we do not underestimate this contribution, we aggregate the employee-level wages data to the latest estimates of overall compensation of employees, provided by Sellafield Ltd and taken from the 2020/21 accounts for LLWR (see Fig. 50 below).

Fig. 50. Compensation of employees, Sellafield and LLWR, 2020/21

£m, constant 2019 prices (£m, current 2021 prices)	Sellafield	LLWR ³⁵
Wages & salaries	581.2 (613.6)	16.4 (17.3)
Social security	108.5 (114.5)	1.8 (1.9)
Pension contributions	59.7 (63.0)	2.6 (2.8)
Other employee costs	7.6 (8.0)	-
Total	756.9 (799.1)	20.8 (22.0)

Source: Sellafield Ltd, LLWR Ltd, Oxford Economics. Note: may not sum due to rounding.

³⁴ For instance, around 95% of individual postcodes in the CA14 postcode district are in Allerdale, with the remaining approximately 5% in Copeland. For each worker residing in CA14, we therefore assume that there is a 95% chance they live in Allerdale. Note that four of the workers could not be allocated to a local authority area.

³⁵ LLW Repository Limited, *Annual report and financial statements for the year ended 31 March 2021*, Cumbria, 2021. <https://find-and-update.company-information.service.gov.uk/company/05608448/filing-history/MzMxODI5MTA1NWFKaXF6a2N4/document?format=pdf>

Indirect and induced impacts

Indirect and induced impacts were estimated using an input-output model. An input-output model gives a snapshot of an economy at any point in time. The model shows the major spending flows from: final demand (i.e. consumer spending, government spending, investment, and exports to the rest of the world); intermediate spending patterns (i.e. what each sector buys from every other sector—the supply chain in other words); how much of that spending stays within the economy; and the distribution of income between employment and other forms such as corporate profits. Fig. 51 provides an illustrative guide to a stylised input-output model.

In building our impact model we have adopted the latest UK input-output tables published by the Office for National Statistics (ONS).³⁶ To calculate local and regional economic impacts, we adjust the national input-output tables to account for the characteristics of each economy—namely the overall size and degree of specialism within each sector. This reflects academic guidelines set out in papers such as Flegg & Tohmo (2013).³⁷ It also considers the geographical location and proximity between different local areas and regions, reflecting a greater likelihood that firms will prefer to source inputs locally, while accounting for the leakage of economic impacts outside of the local area.

The indirect impact draws on data provided by Sellafield Ltd and LLWR Ltd. Both organisations provided information on procurement spending, the purchases of goods and services from other companies. LLWR provided a full database of all purchases made, while Sellafield provided this data for the top-100 suppliers, and a total spend figure. Through mapping the location of this activity, through postcodes, and sector in which each business operates, we map this spending both locations and sector of the economy.

Where possible, we match these businesses to the 2017 study, where adjustments were made to reflect activity that occurs locally, but invoices are paid to another location. We adjust the location of procurement spending accordingly. We then apply the input-output framework to estimate the associated ‘upstream’ activity (e.g. the purchases made by suppliers, and so on). Procurement data provided by Sellafield does not allocate spending between different locations, meaning that we cannot undertake a site-based economic impact assessment.

Taxes

Wages paid to the workforce of Sellafield and LLWR are subject to income tax and national insurance contributions (NICs). Data on tax contributions has been provided by Sellafield Ltd. For LLWR, we model the tax revenues that could be collected by the Treasury, we use the latest income tax and NIC rates, thresholds and personal allowance information, and apply these to employee-level wage data.

Tax benefits will arise as a consequence of direct activity, and employment supported through the supply chain (indirect) and wage consumption (induced) effects. The wages paid to workers employed will also generate additional indirect tax revenues, via the purchases of goods and services (including VAT). The indirect fiscal benefit estimates are derived using tax and benefits statistics on household

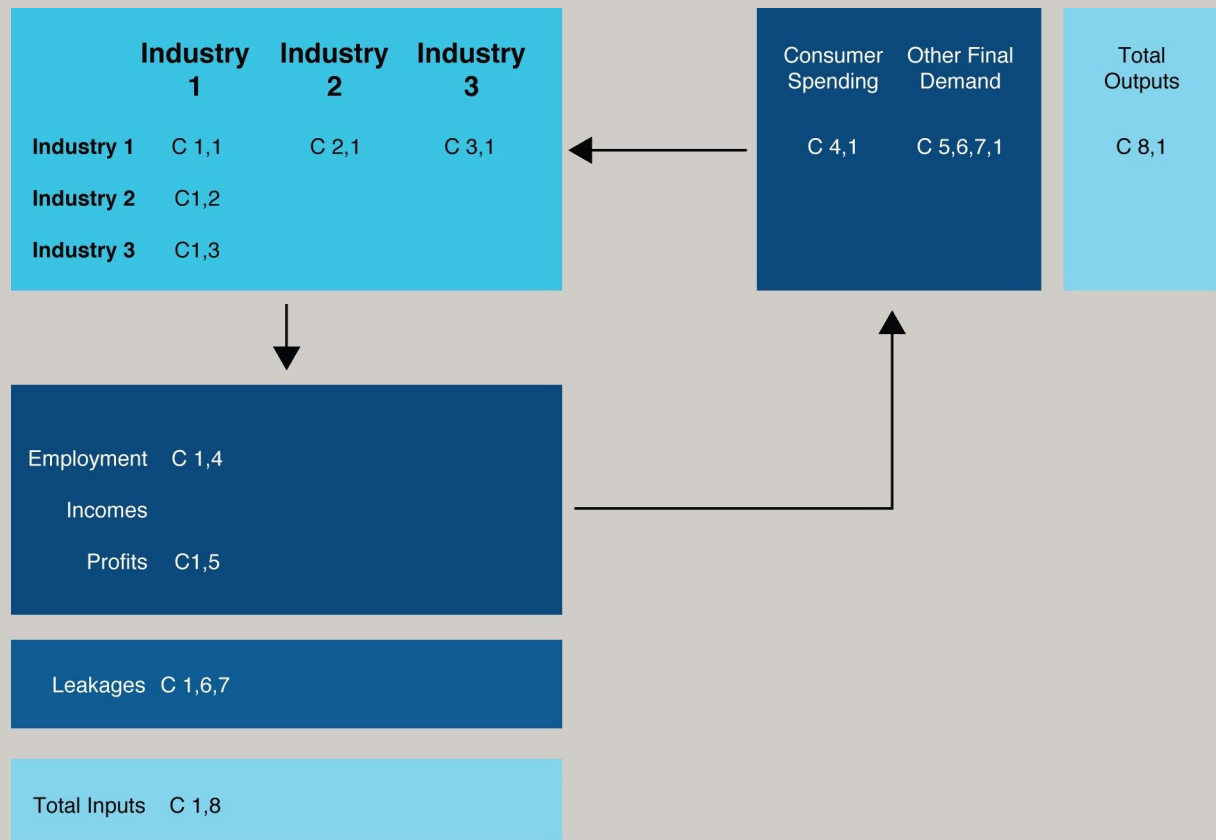
³⁶ ONS, *UK input-output analytical tables—industry by industry*, Newport, 2021.

<https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/ukinputoutputanalyticaltablesindustrybyindustry>

³⁷ Flegg, A. T. and Tohmo, T., *Regional input-output tables and the FLQ formula: A case study of Finland*, *Regional Studies* (47 (5)). pp. 703–721, 2013.

income, published by the ONS. According to the publication, approximately 10.7% of household income is spent on indirect taxes on final goods and services (Table 17).³⁸

Fig. 51. A stylised input-output model



Source: Oxford Economics

OXFORD ECONOMICS' BASELINE FORECASTS

Our analysis and modelling assumptions draw on our baseline forecast for the local (West Cumbria), regional (North West) and national economies.

Our baseline forecasts are drawn from Oxford Economics' Local Authority District Forecasting Model, which sits within Oxford Economics' suite of global and national macroeconomic and industry forecasting models. This structure ensures that global and national factors (such as developments in the Eurozone and the UK Government fiscal policy) have an appropriate impact on the forecasts at a local authority level. This empirical framework (or set of 'controls') is critical in ensuring that the forecasts are much more than just an extrapolation of historical trends. Rather, the trends in our global, national and sectoral forecasts have an impact on the local area forecasts. In the current economic climate this means most, if not all, local areas will face challenges in the short-term, irrespective of how they have performed over the past 15 years.

The Local Authority District Forecasting Model produces baseline forecasts, which can be compared with other published forecasts (though care should be taken over data definition issues), and as a guide to aid commentary or analysis of local authority economies. These forecasts can in one sense

38

<https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/theeffectsoftaxesandbenefitsonhouseholdincome/financialyearending2020>

be considered to provide baseline 'policy-off' projections with which the actual outturn under policy initiatives could be compared. However, there are inherent difficulties in using the forecasts as a 'policy-off' baseline. In particular the base projections are 'unconstrained' in the sense that they make no allowance for constraints on development which may be greater than in the past.

Our local forecasting model depends essentially upon three factors:

- **National/regional outlooks:** all the forecasting models we operate are fully consistent with the broader global and national forecasts which are updated on a monthly basis.
- **Historical trends** in an area which implicitly factor in supply side factors (impinging on demand), augmented where appropriate by local knowledge and understanding of patterns of economic development built up over decades of expertise, and
- **Fundamental economic relationships** which interlink the various elements of the outlook.

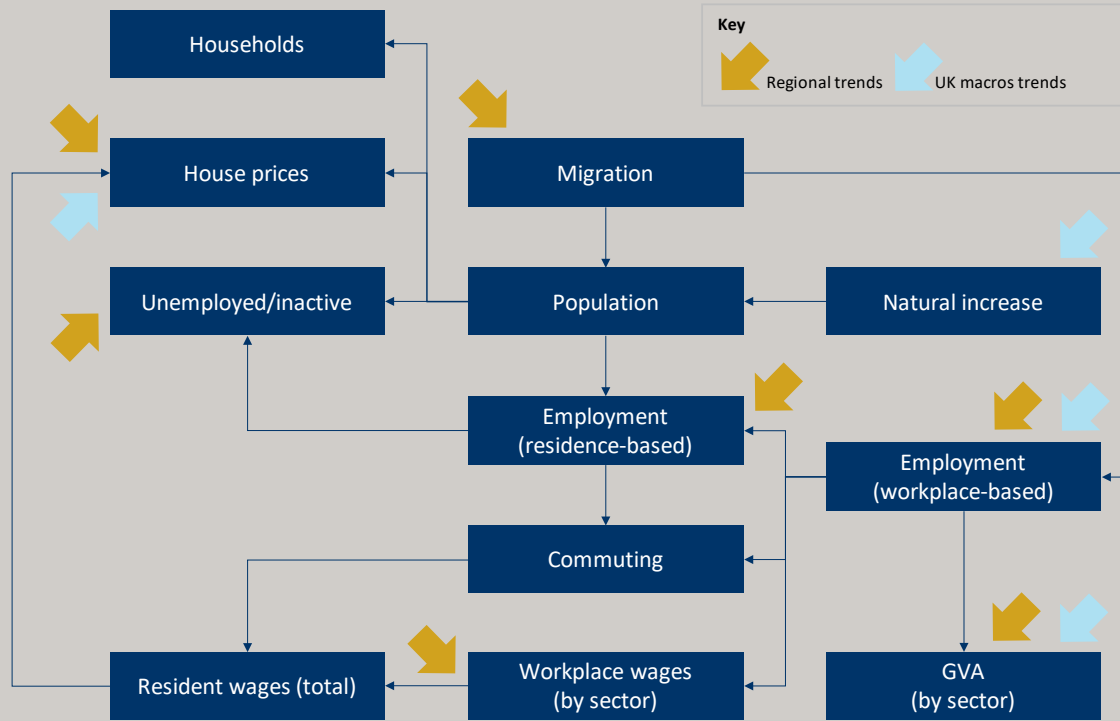
The main internal relationships between variables are summarised in Fig. 52. Each variable is related to others within the models. Key variables are also related to variables in the other Oxford Economics models.

Oxford Economics' forecasting models produce population forecasts, derived from an economically-driven model. This population outlook differs from ONS projections, which are formulated by applying a trend-based approach that does not consider how demand in the economy (and the likely impact on employment rates) affects migration.

While official births and deaths projections are taken from the latest, 2020-based population projections, Oxford Economics forms its own view on migration. Oxford Economics expects UK net in-migration to average 90,000 per year in the long run, compared to 190,000 per year across the UK in the official projections. In the short term, Oxford Economics expects net in-migration levels to bounce-back after the pandemic, peaking in 2023 at 250,000, then declining over time, reflecting the UK policy of ending free movement of labour and actively reducing levels of immigration.

At a local level, migration is linked to the employment rate forecast: if the employment rate within an area is falling too fast, net in-migration slows as the model assumes fewer people would be attracted into this area to live, given its weak employment prospects. This ensures a sensible relationship between the labour market outlook and demographic forecast.

Fig. 52. Main relationships between variables in the Local Authority District Forecasting Model



Source: Oxford Economics



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