Royal Academy of Engineering

Engineering Economy & Place

Understanding the engineering economy in places across the UK

Contents

Engineering Economy and Place is a collaborative project between the Royal Academy of Engineering and Metro Dynamics, drawing on the Academy's deep understanding of engineering and Metro Dynamics' knowledge of local economies across the UK. This second edition looks at change in the UK's engineering economy between 2019 and 2023.

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A NOTE ON DATA COVERAGE

Engineering Economy and Place is a UK-wide study of the engineering economy. The first section of the report, describing the engineering economy in 2023 covers the entirety of the UK. However the engineering typology chapters cover only England, Wales and Scotland, because of delays in data availability over the reporting period. The full analysis of the engineering economy in Northern Ireland, including the typology (which is unchanged between 2019 and 2023) is available in the dashboard of the underlying data.

Glossary of terms

Engineering Economy: Economic activity of engineering businesses and engineering roles in non-engineering businesses.

Volume: Total number of employees in the engineering economy.

Value: GVA (Gross Value Added) per engineering economy job.

Local Significance: % of total employment represented by engineering.

Industrial Specialisation: Concentration of engineering business.

Foreword

Engineering is central to economic opportunity, social progress, and technological advancement across the UK. Yet, the ways in which engineering shapes local economies are as varied as the places themselves. Because engineering roles tend to offer higher wages and productivity, their presence can be a significant asset to local economies. However, the UK's persistent regional inequalities mean that the benefits of engineering are not evenly distributed. To better understand how different places can develop and thrive, it is essential to explore the current contribution of engineering to local economies across the country.

Engineering Economy and Place provides a framework for understanding the structure and value of engineering in places across the UK. It enables us to see not just how much engineering is happening but also what type, where and in what context, at the level of local authorities.

When the framework was launched it gave a snapshot of engineering in the UK in 2019. We committed to review and refine the methodology and resulting typology as economic conditions and outcomes change. This report and the accompanying dashboard do just that, setting out the state of engineering across the UK in 2023.

Between 2019 and 2023, the UK experienced profound change: the UK officially left the European Union, four different Prime Ministers governed the nation, we experienced a global pandemic, and the rapid rise of AI. Despite this turbulence, engineering has remained a central part of the national economy, with the overall structure and distribution of engineering activity broadly stable and the Engineering Economy and Place typology resilient and relevant.

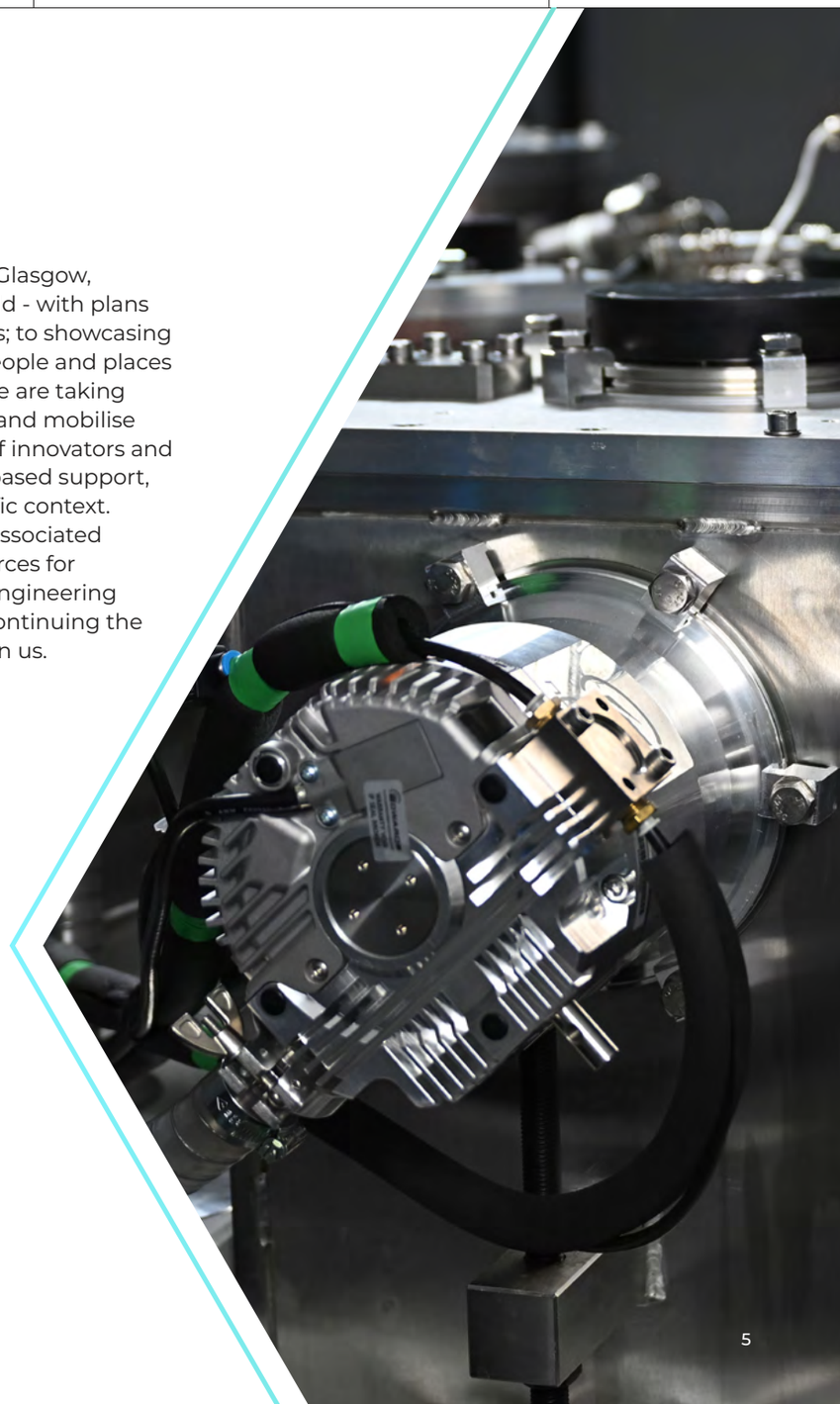
Against this backdrop, our latest analysis shows that while the majority of local authorities (77%) remain in the same typology group as in 2019, important shifts are evident across the UK in 2023. Some places are seeing their local engineering economies strengthen, while others face new challenges and signs of contraction. Understanding these patterns is essential, not only to appreciate the diversity of engineering's contribution, but to inform how places can harness their strengths and respond to change.

Engineering is deeply embedded in the fabric of local economies, shaping opportunities for people and communities in ways that are as varied as the places themselves. The experiences of city regions, with their dense networks and innovation assets, often differ markedly from those of coastal or rural areas, where engineering can be both a vital employer and a source of resilience in the face of economic headwinds. By examining where and how the sector is evolving, we can better support inclusive growth and adaptability. The West Midlands, for example, stands out for its robust growth in engineering employment and innovation, while parts of the Ox–Cam Arc are experiencing a diminishing role for engineering.

We also practice what we preach. Place underpins the Academy's 2030 Strategy, shaping how we deliver our goals. We are committed to strengthening our place-based approach, ensuring that our flagship products and activities respond to national, regional, and global needs. From the expansion of our Regional Enterprise Hub network - Belfast, Swansea, Glasgow, Liverpool, Newcastle, and Sheffield - with plans for two additional English regions; to showcasing how AI can deliver benefits for people and places in our Practical AI programme, we are taking action. We will continue to build and mobilise regional and national networks of innovators and pilot novel approaches to place-based support, responding to each place's specific context.

We hope this report and the associated dashboard will be valuable resources for policymakers, local leaders and engineering businesses. We look forward to continuing the conversation and invite you to join us.

SIR JOHN LAZAR CBE FRENG
PRESIDENT, ROYAL ACADEMY OF ENGINEERING



Summary Insights

Engineering continues to be a cornerstone of the UK economy, underpinning both direct employment and broader innovation across sectors. The latest analysis confirms that, while the overall structure and distribution of engineering activity has remained broadly stable from 2019 to 2023, there have been shifts in the geography and dynamics of the sector.

Across most of the UK, the engineering economy has not undergone dramatic change. The majority of local authorities (77%) remain in the same typology group as in the previous report (Engineering Economy & Place 2023, which uses the 2019 data), indicating a high degree of continuity in local engineering characteristics and roles. This stability reinforces the value of the typology as a tool for understanding engineering's place-based impact. However, beneath this headline stability, some regions stand out for their evolving engineering profiles, in particular:

- **West Midlands:** The region has emerged as a key centre for engineering growth, with the Combined Authority area showing robust increases in engineering employment, high value activity, and R&D intensity.
- **Scotland (Central Belt):** Edinburgh and neighbouring West Lothian have strengthened their position as hubs for innovation-intensive, high value engineering, while Glasgow and its surroundings have seen growth in engineering employment and value of engineering, suggesting a strong and growing role for engineering in Scotland's economic engine.
- **London and the South East:** While these regions remain dominant in terms of value of engineering and R&D activity, the update reveals emerging challenges. Many localities in and around London and the South East have experienced stagnation or decline in engineering employment and enterprise performance, suggesting the sector is not immune to wider economic headwinds surrounding the capital. Particularly notable in the South East are challenges in the middle of the Oxford Cambridge corridor, where a number of local authorities are seeing a falling gross value added (GVA) share from engineering and a fall in business counts; the exception to this being Milton Keynes, which remains a high performing and R&D intensive engineering economy.

Other notable trends we can see in the data include:

- The continued expansion of engineering employment in core cities such as Manchester and Bristol, and the emergence of more High Value, Hidden Gem localities outside major urban centres such as Wrexham, Tewkesbury and Rugby.
- Some rural and coastal areas with strong engineering specialisation continue to face challenges in translating that focus into higher economic output or R&D intensive activity. The relationship between specialisation, local significance, and value remains complex, with outcomes shaped by a combination of local assets, industrial mix, and connectivity to wider innovation ecosystems.
- Nationwide enterprise performance has been mixed, with a general decline in the number of engineering businesses since 2019. However, R&D intensity has increased in many core cities and regions, suggesting a shift towards more innovation-driven growth, particularly in places with strong links to universities and research institutions.

Overall, the findings reaffirm that engineering's contribution to local economies is diverse and place-specific. While the sector's national footprint remains strong, future growth will depend on recognising and responding to local strengths and challenges, particularly in regions where engineering is evolving most rapidly or facing new pressures. Engineering is everywhere, and while no place is truly the same, the typology continues to offer a framework for understanding how similar engineering activities play out differently in distinctive local contexts.

CHAPTER 01

Introduction

This report highlights the significance of engineering to the UK economy, and enables better place-based understanding of the role engineering plays in local economies.

Introduction

This study provides a detailed, place-based understanding of engineering across the UK, looking beyond traditional sector analysis to describe how much, what type, where, and in what context engineering is happening. It is an update of the first Engineering Economy and Place report (EEP UK 2023) which used data from 2019 to develop a new framework for understanding the role of engineering in local economies.

This report (EEP UK 2026) describes the engineering economy in 2023 and where there have been changes since 2019. As well as providing up to date data and insights on the engineering economy nationally and locally, the report uses the engineering typology to explore changes in local engineering economies, and what these changes might mean for the national context.

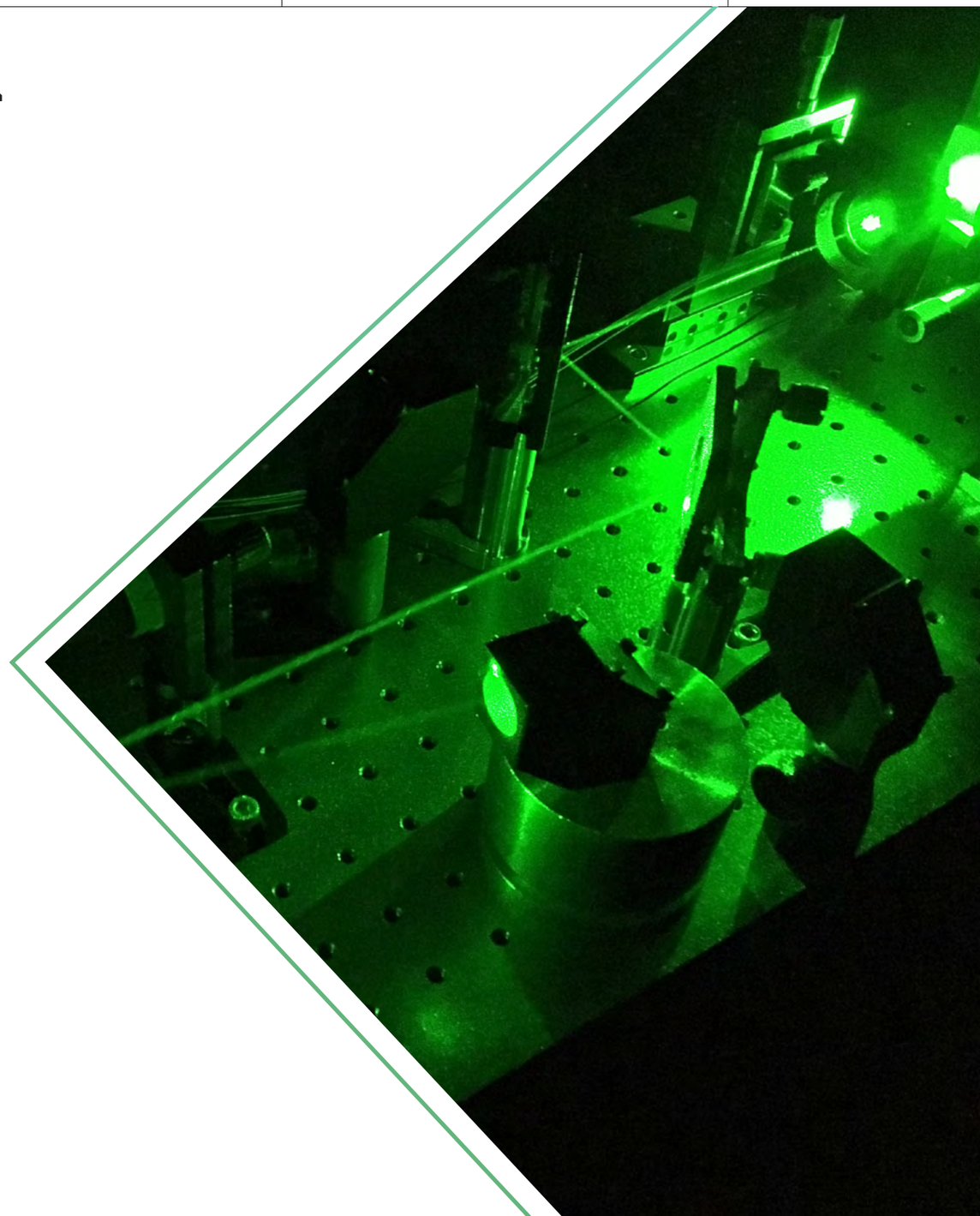
Report structure

The report is divided into three main sections:

- **Engineering economy:** describing the analysis of the national engineering economy and its distribution across places.
- **The engineering typology:** describing the engineering typology, a tool to understand the role of engineering in place.
- **Changing engineering places:** using the engineering typology data to explore changes in local engineering economies from 2019 to 2023.

As noted in the report cover, because of delays in data availability over the reporting period the first section, describing the engineering economy in 2023 covers the entirety of the UK, the two following typology focused sections cover England, Wales and Scotland.

A dashboard enabling in depth exploration of the data on engineering economies and changes since 2019 at local authority and other geographic levels for the whole of the UK is published alongside the report, and a map of Northern Ireland showing typology categorisations is available in the annex to this report.



The approach

"The aim of this study is to work with the existing Engineering Footprint definition and produce the best of what is possible with open data that is widely available and frequently updated. It is acknowledged that SIC codes are limited in describing economic sectors, but they do provide sufficient insight into the UK economy and contain official employment statistics to make them a trusted source."

Engineering Economy & Place, 2023

This study uses national data sources to update the analysis of the engineering economy, continuing the principle of making the best use of publicly available national statistics to understand the sector.

In 2018, EngineeringUK, the Engineering Council, and the Royal Academy of Engineering jointly agreed on a binary definition of engineering, termed the 'Engineering Footprint', which comprises Standard Industrial Classification (SIC) codes with Standard Occupational Classification (SOC) codes.

In 2023, the Royal Academy of Engineering, with analysis provided by Metro Dynamics, published Engineering Economy & Place. This report was the first of its kind to develop a more nuanced understanding of engineering at the local level by utilising the Engineering Footprint definition developed by the Royal Academy of Engineering and EngineeringUK to examine the engineering economy across the UK, using 2019 data. This report updates the Engineering Economy and Place analysis and typology using 2023 data.[1] This report uses the same approach, adopted and outlined in EEP UK 2023, which has three broad steps:

1. Grouping the SIC and SOC codes in the Engineering Footprint definition to delineate engineering within and beyond engineering businesses – thereby identifying the 'engineering economy'. The structure is based on the total number of engineers working in engineering businesses, engineers working in non-engineering businesses, and non-engineers working in engineering businesses.

2. Reviewing occupational activities in SOC descriptions to group different types of jobs in the engineering economy and creating a 'spectrum' of activity, distinguishing where R&D is an explicit part of the role.

3. Analysing the characteristics of local engineering economies and blending with wider measures of local economic performance to create a typology of engineering economies across the UK. The range of indicators assessed are highlighted in Table 1 below.

A more detailed explanation of each of these three steps, plus changes to the method in 2025 and the approach to updating is provided in the Methodology annex to this document. The full approach to the Engineering Economy and Place research is provided in EEP UK 2023, available on the Royal Academy of Engineering website.

[5] The Methodology annex describes the approach to the update and changes required.

TABLE 1
Indicators used to develop the typology.

Theme	Tier 1: Engineering Economy	Tier 2: Engineering Enterprise	Tier 3: Place Economics
Purpose	The core indicators used to assess the different types of engineering economies.	Indicators used to describe engineering enterprise associated with the different engineering economies.	Indicators to describe the types of economies and places in which engineering is present.
Indicators	**Volume:** Total number of employees in the engineering economy. **Value:** GVA per engineer. **Industry Specialisation:** Concentration of engineering business. **Local significance:** % of total employment represented by engineering. **R&D:** Proportion of engineering jobs in R&D.	**Size of engineering business:** Average number of employees per engineering business. **Engineering businesses growth:** Increase in the number of engineering businesses (2019-23). **Enterprise performance/output:** Increase in the proportion of GVA delivered by engineering businesses (2019-23).	**Wages:** Median wage and % change over time (2019-23). **Productivity:** Productivity and % change over time (2019-23). **Economic output:** Total GVA and % change over time (2019-23**).** **Size of place:** Population density.

CHAPTER 02

Engineering and the Economy

In 2023, the UK engineering economy employed 8.5 million people, more than a quarter of the UK workforce. Around 685,000 engineering businesses (26% of UK business base) contributed 33% of the UK's total economic output.

Engineering economy in the UK

The analysis described in the following pages emphasises the continued importance of engineering to the national economy and its prospects. In 2023 the UK's engineering economy contributed an estimated £747 billion direct GVA to the economy, representing 33.3% of total economic output.

The engineering economy provides high value, highly productive jobs, where the average value of an individual engineering job (GVA per individual in engineering employment), £87,800, is worth over a quarter more in GVA than the average UK job.

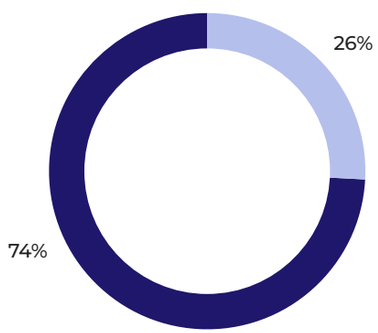
The engineering economy in 2023 employed 8.5 million people, a combination of those in engineering jobs, individuals working in non-engineering roles within engineering businesses, and engineers employed in non-engineering businesses. Of the 6.3 million people working in engineering businesses, 3.7 million (59%) are engineers, while 2.6 million (41%) occupy non-engineering roles. These non-engineering roles are essential to the effective operation of engineering firms, encompassing functions such as management, finance, marketing, human resources, logistics, and customer support.

FIGURE 1

The contribution of engineering to the UK economy, 2023

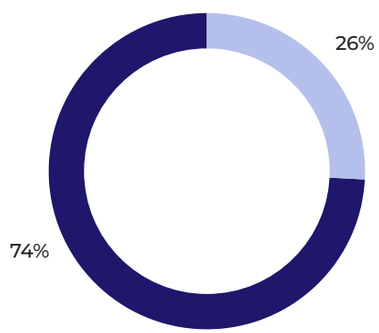
ENGINEERING FOOTPRINT NON-ENGINEERING

8.5M ENGINEERING EMPLOYMENT



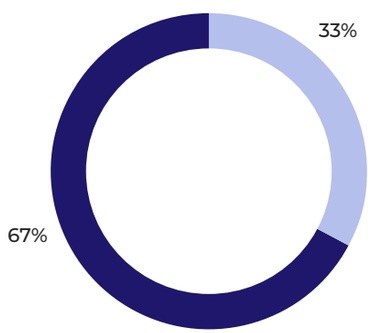
↑ 2.1% CHANGE SINCE 2019

685K ENGINEERING BUSINESSES



↓ 5.5% CHANGE SINCE 2019

£747B GVA OUTPUT



↑ 5.0% CHANGE SINCE 2019

Change in the engineering economy between 2019 and 2023

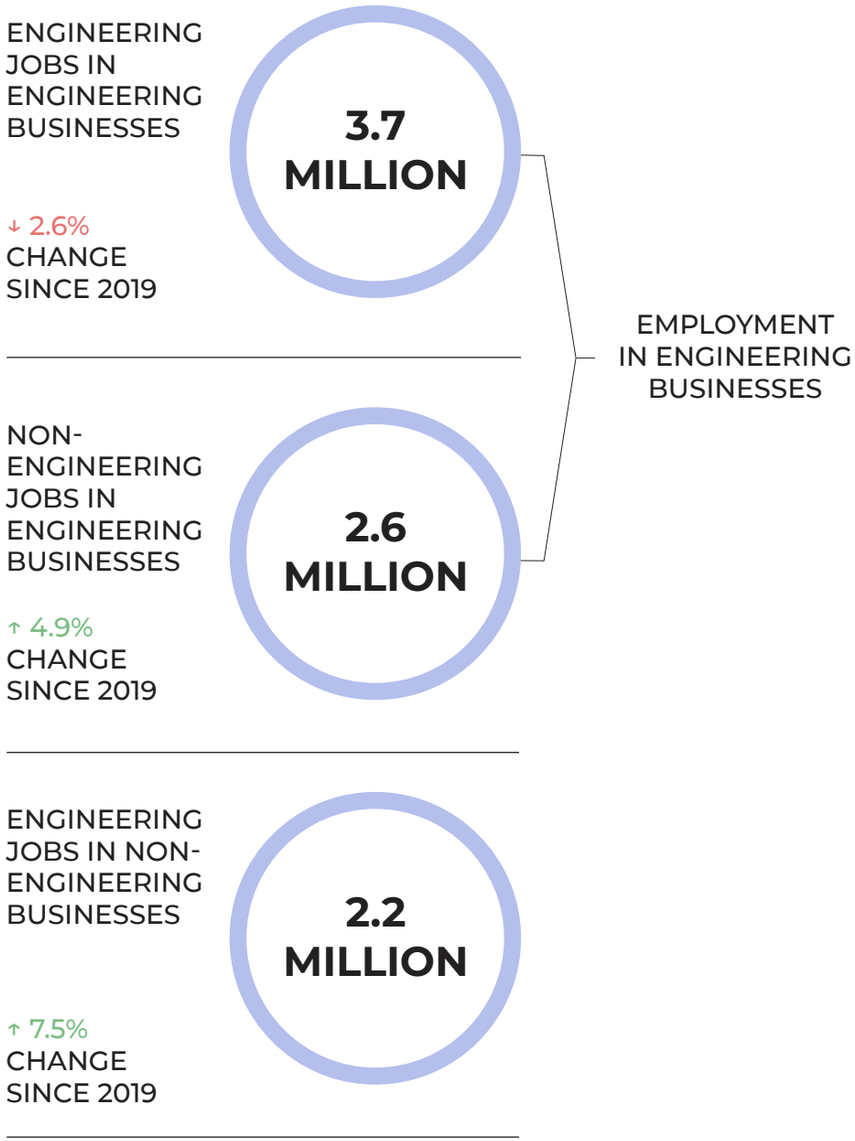
Between 2019 and 2023 GVA[2] in the engineering economy increased by 5.0% from £712 billion to £747 billion and the average value of an engineering job increased by 2.8% from £85,300 to £87,800, faster than overall national GVA per job growth of 2.4%.

Employment in engineering has increased by 2.1% from 8.3 million to 8.5 million, a slower rate of expansion then employment nationally, which grew by 3.7%-though this is a divergence which has not yet led to a significant change in the engineering share of total employment. The number of engineering businesses has declined by 5.5% from 725,000 to 685,000, compared to 0.3% change in total businesses in UK.[3]

[2] Rebased estimates of GVA for 2019 using most recently released data are 8% higher than the estimates in the previous report due to a combination of data revisions and methodological adjustments explained in more detail in the annex. All comparisons between 2019 and 2023 are made using these rebased figures for 2019.

[3] A full interrogation of the changes to business counts data was beyond the scope of this work, however analysis by the House of Commons Library shows that most of the fall in business counts was businesses with no employees, the part of business statistics covering self-employment, a trend which would be consistent with the pattern we see in headline engineering indicators, with employment growing while business counts fall.

FIGURE 2
Employment in the engineering economy, 2023



Change in engineering economy between 2019 and 2023

Engineering economy employment grew by 0.2 million, from 8.3 million in 2019 to 8.5 million in 2023, driven by a 7.5% increase in engineering jobs in non-engineering businesses, a 4.9% increase in non-engineering jobs in engineering businesses, offsetting a 2.6% decrease in engineering jobs in engineering businesses. This shift points to a diversification of roles within the engineering economy, with increasing integration of engineering expertise into non-engineering businesses, while traditional engineering roles in engineering businesses faced a modest decline.

TABLE 2
Occupations in the engineering economy

Research & Development				**Practical Application**		**Support**	**Other**
	Research	**Develop**	**Evaluate**	**Deploy**	**Deliver**		
Examples of occupations	Research & development managers, chemical scientists, physical scientists.	Civil engineers, mechanical engineers, electrical engineers, software developers.	Quality assurance technicians, engineering technicians, IT and telecommunications professionals.	Electricians and electrical fitters, IT engineers, vehicle technicians, mechanics and electricians.	Process operatives, machine operatives.	Human resources professionals, sales managers, finance professionals.	Caretakers, cleaning services, security guards, storage occupations.

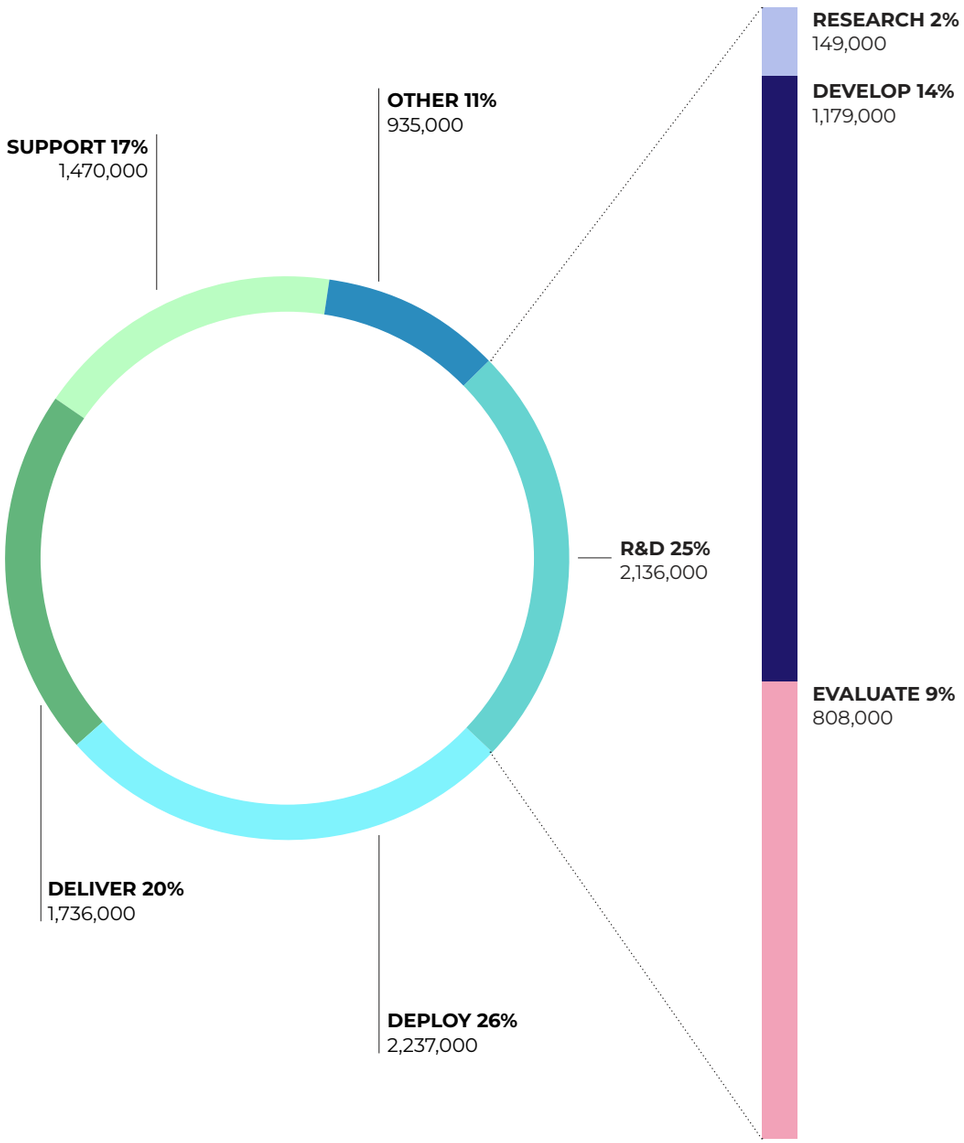
There are 5.9 million people employed in an engineering occupation, with engineers working in non-engineering businesses accounting for 2.2 million of these, highlighting the contribution of engineering skills and expertise across the wider UK economy.

Using the analysis of occupational codes and engineering occupational categories developed in Engineering Economy and Place UK 2023, the overall engineering economy employment figures can be broken down across the seven occupational groups.

R&D is a combination of ‘Research’, ‘Develop’ and ‘Evaluate’, as each of these contain R&D related activity, while ‘Deploy’ and ‘Deliver’ represent applied engineering, covering occupations focused on engineering practice.

The two largest occupational groups in the engineering economy are Deploy, with 2.2 million jobs and R&D, with 2.1 million jobs. However, when the two engineering practice categories (Deploy and Deliver) are combined, the ratio of practice to R&D is 2:1, unchanged from the 2019 ratio.

FIGURE 3
Occupations in the engineering economy



Change in engineering employment between 2019 and 2023

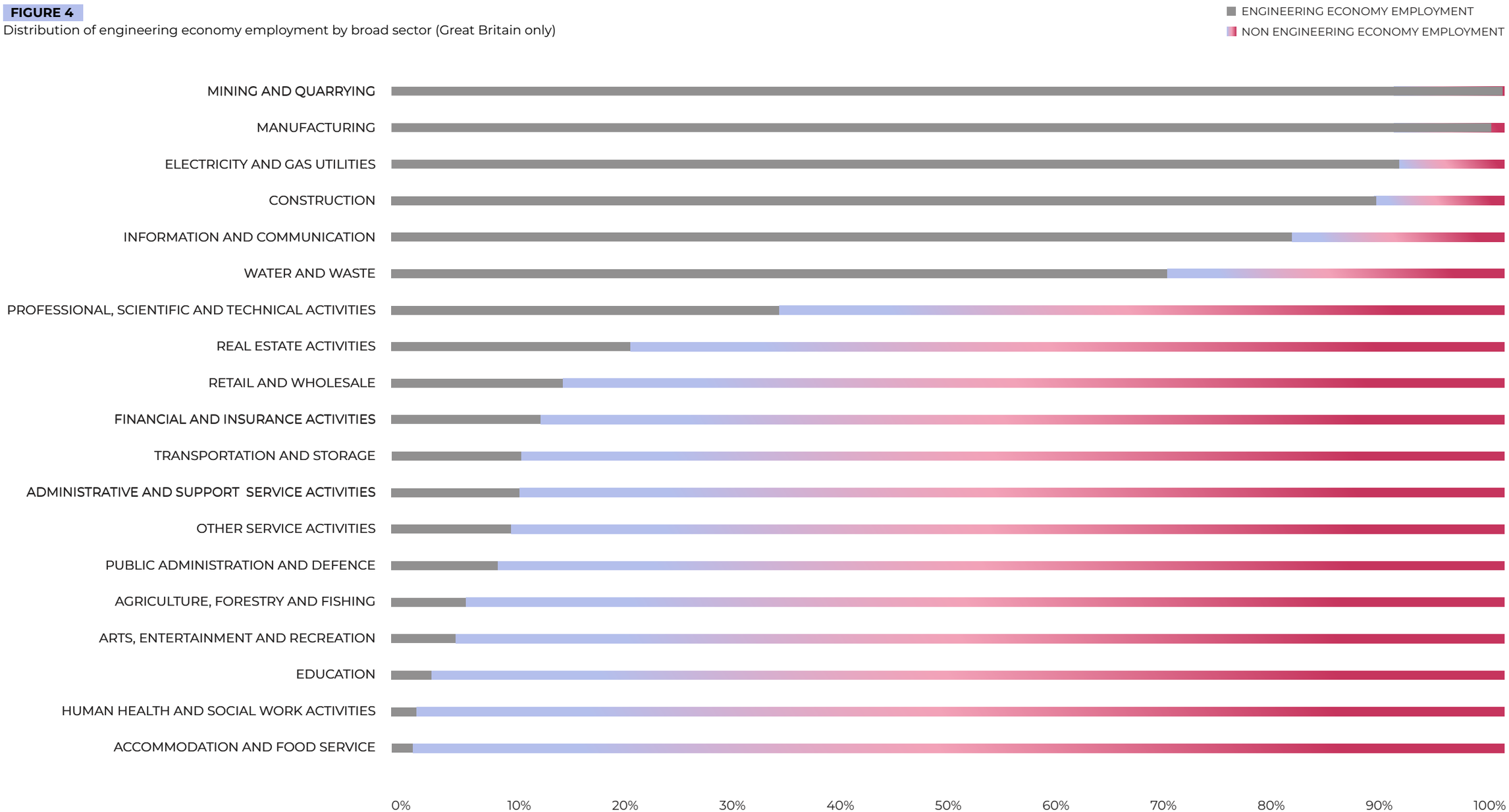
Between 2019 and 2023, the proportion of employment across the occupation groups has been stable. Applied engineering occupations (Deliver and Deploy) continue to account for approximately 46% of the engineering economy while R&D makes up 25%.

Using the Engineering Footprint SIC and SOC definitions, Figure 4 shows how engineering employment is distributed across the UK's broad sectors. The size and diversity of engineering means that its employment falls across many different sectors of the UK economy.

Engineering continues to play a pivotal role in Construction, Manufacturing, Metals and Mining, and Utilities, representing over 70% of employment in each broad sector. It also accounts for over 80% of the UK information and communication sector, encompassing roles such as software programming and web design, as well as over a third of professional, scientific, and technical activities, including mechanical and electrical engineers and research and development managers.

FIGURE 4

Distribution of engineering economy employment by broad sector (Great Britain only)



Distribution of engineering across UK

Across a turbulent period nationally and globally engineering has remained a central part of the national economy, and local economies across the whole of the UK. While there has been a larger contraction in business counts this appears to be a change in the structure of the engineering economy, with fewer micro-businesses and sole traders, rather than a contraction of its overall role. Employment in the engineering economy has grown, albeit at a slightly slower rate than employment as a whole, while the value of output has grown at a faster rate than the overall economy.

The following maps show how the 8.5 million jobs, 685,000 businesses and £747 billion GVA are distributed in local authorities across the UK. As in EEP UK 2023, there are four primary 'Tier 1' metrics used to analyse the engineering economy:

- **Volume:** The total number of jobs in the engineering economy.
- **Value (£):** GVA per engineering job.
- **Local Significance:** The proportion of total local employment that is within the engineering economy.
- **Industry Specialisation:** The concentration of engineering businesses within a place relative to the Great Britain average (using location quotient analysis.)

The maps show the spatial variation of each indicator followed by a further map, which presents the proportion of engineering jobs in R&D by local authority.

The places with large volumes of engineering employment tend to have a much higher population density: cities, urban centres and their surrounding areas are more often the places with the highest absolute volume of workers. However, large volume in cities does not always translate into high local significance, as the prominence of engineering is diluted by similarly large volumes of other activity.

We see examples of places where engineering is highly significant to the local labour market in more sparsely populated places, such as Breckland, Mid Suffolk and Cumberland, where engineering provides large numbers of jobs which tend to be concentrated on larger sites and generate above average value per job. However, rurality is not always a consistent indicator for significance, and lower local significance of engineering is seen around Kent, East Sussex and large parts of Wales, areas with limited industrial bases.

In terms of engineering value, there is not an engineering North-South divide to the same

The largest changes in engineering employment across places

- Urban centres such as Manchester, Glasgow, and Bristol have seen substantial growth in engineering employment. Darlington and Manchester recorded some of the largest increases outside London, with growth of 30% and 25% respectively and engineering becoming increasingly significant in overall employment.
- Significant expansion has also occurred beyond major cities, particularly across the South West of England, Wales, and the East of England, indicating that engineering employment is still, and becoming even more, geographically dispersed.
- In contrast, several localities in and around London and the South East have experienced marked declines in engineering employment, with 70% of local authorities in South East and London experiencing no growth or declining engineering employment between 2018-2023. While the City of London itself recorded an increase in engineering employment, the wider pattern of engineering employment points to challenges for the sector across London and the South East.

extent as there is in national GVA performance, with hotspots of high value engineering activity across the UK. While it remains the case that many of the strongest places for value are in the South East, there are also several places across the Midlands, North West and Scotland which are above average: we see high value engineering economies include South Derbyshire, Cheshire East, South Ribble, and Stratford on-Avon.

Industry specialisation, referring to the concentration of engineering businesses, shows that the places where engineering businesses make up the largest share of the local business base tend to be near cities, such as South Gloucestershire-Bristol, South Cambridgeshire-Cambridge, Fareham, Portsmouth, and a clear loop around London, all reflect the pull of city regions rather than city centres specifically.

The largest changes in engineering value across places

- Engineering value,[4] measured through growth in GVA per engineering job, presents a mixed picture. Between 2019 and 2023, most high value engineering economies, typically concentrated around South East, London and East of England, saw growth in engineering GVA, strengthening their position, while lower-value engineering economies, particularly in the North of England, have seen further decline.
- Notable increases in engineering value have been recorded in localities within the economic influence of major urban centres. For example, Stockport, South Gloucestershire, County Durham, and Knowsley have each experienced some of the highest levels of GVA growth, exceeding that of their respective neighbouring cities of Manchester, Bristol, Newcastle, and Liverpool.

[4] As described in the accompanying technical annex the most recent 2019 GVA data differ from those used in EEP UK 2023 due to revisions in the data and improvements in methodology. Some variations in the measured GVA value of engineering across UK places may reflect changes in data rather than actual economic change.

The largest changes in industrial specialism across places

- Industrial specialisation has shown limited growth across the UK. Between 2019 and 2023, about half of all localities experienced either no change or a decline in their level of specialisation.
- Notable increases have been observed in parts of the South West, Wales, and the Central Belt of Scotland, while declines have occurred across the Midlands, North West, and outer areas of London and the South East.

FIGURE 5

The engineering economy core metrics, 2023

Maps showing the estimates of Tier 1 indicators by local authority district

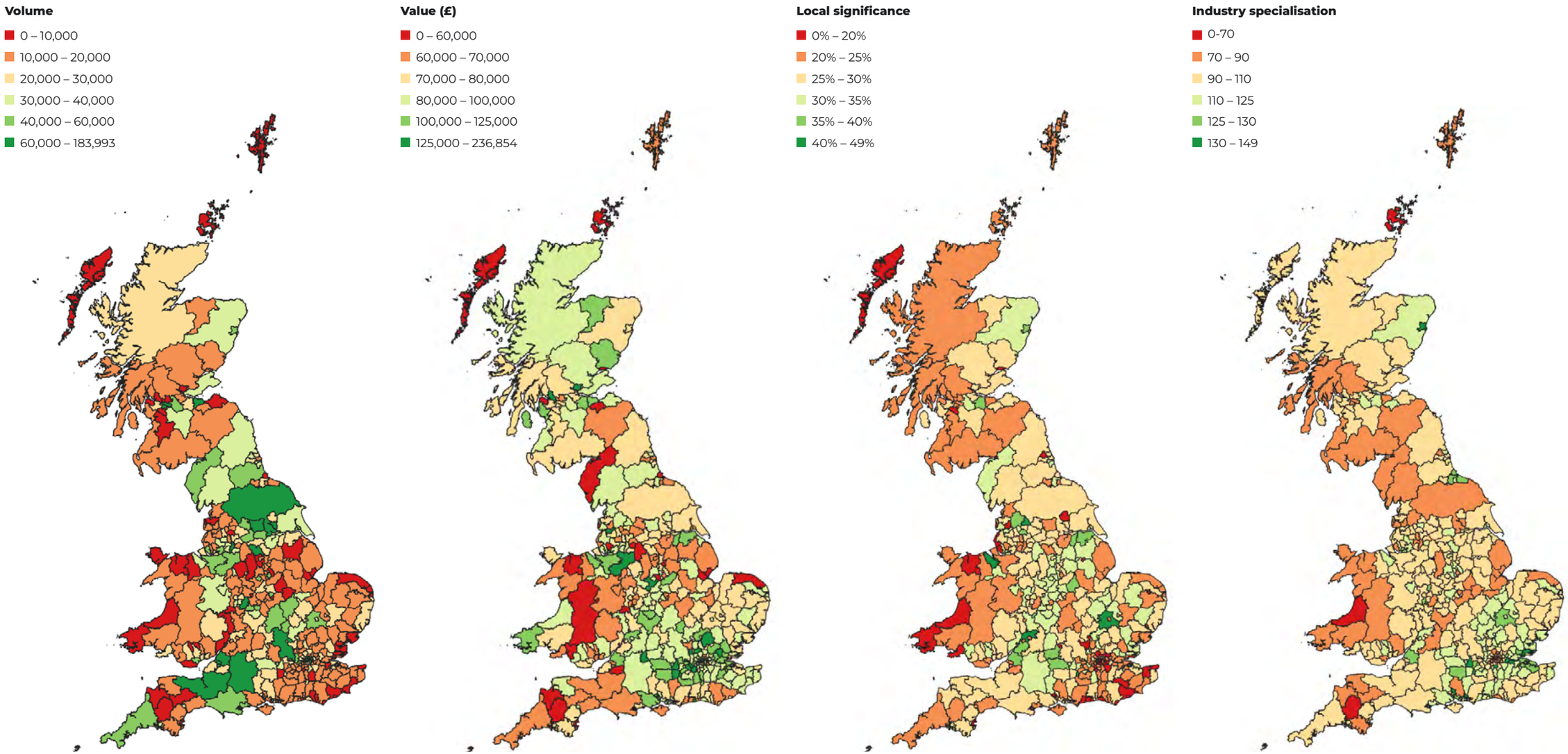
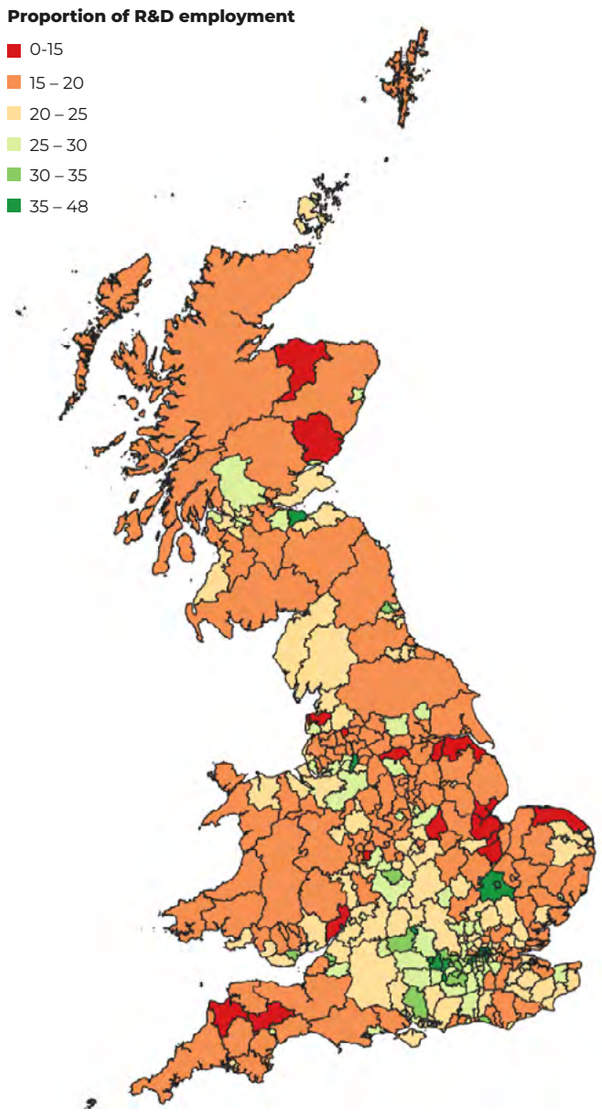


FIGURE 6
R&D employment in the engineering economy, 2023



This map presents the R&D intensity of engineering employment across places. Generally, there are high concentrations of R&D employment across London, the South East and the Oxford-Cambridge arc. Outside of these geographies, concentrations are found largely in UK cities, including Edinburgh, Belfast, Manchester, and Brighton, and some smaller concentrations in the East Midlands, Cheshire and the South West. There are some examples of rural places having high proportions of R&D employment, such as South Derbyshire, but these instances are much less frequent.

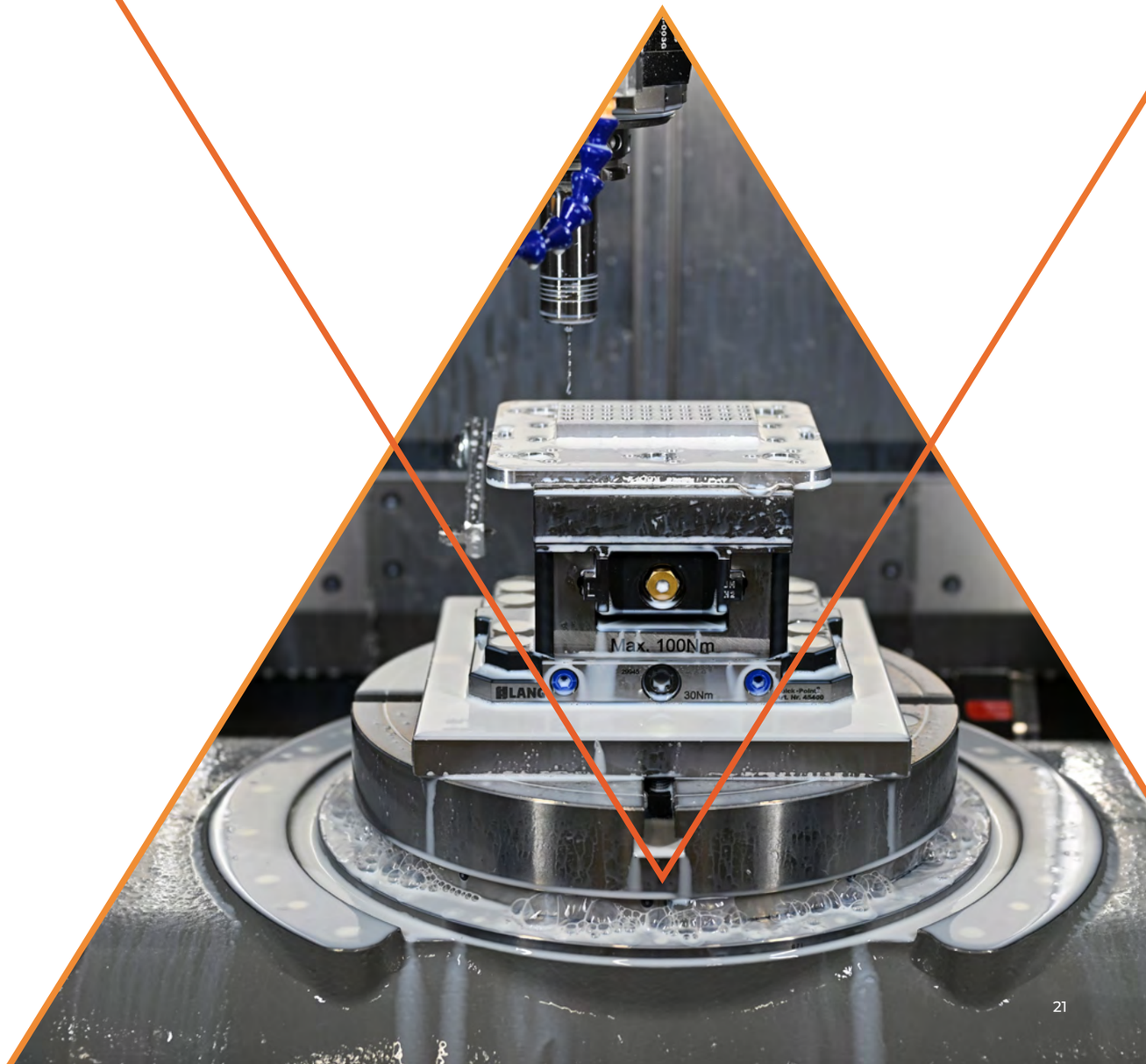
The largest changes in R&D intensity across places

- The overall pattern of R&D intensity has remained broadly stable, with large cities and the South East of England continuing to show the highest concentration of R&D activity within their engineering economies.
- All core cities have experienced an increase in R&D intensity over this period, meaning that R&D occupations grew by a faster rate than other engineering occupations. This trend is particularly evident in Birmingham, Cardiff, Bristol, and Sheffield, where the R&D intensity of engineering employment is increasing at a faster rate than total engineering employment. A similar pattern is seen in the North West and South West, where places have recorded both growth in engineering employment and rising R&D intensity.
- A clear pattern of increasing R&D intensity is visible across the West of England and Wales, particularly in South Gloucestershire; and the West Midlands, in Birmingham, Stratford-on-Avon, and Warwick; and towards London and the South East, with Guildford demonstrating rapid expansion. This suggests a strengthening innovation ecosystem across the south and west of England.
- In contrast, there is less of a geographical pattern among areas experiencing a decline in R&D intensity, with the steepest decreases much more dispersed, such as Moray, Scotland, and Kensington and Chelsea, suggesting it is driven by local factors rather than broad trends in performance of key sectors.

CHAPTER 03

The Engineering Typology

The typology groups offer a way to understand the geography of engineering and its role in different parts of the country.



Note

As noted at the start of the report, the timing of data availability for Northern Ireland means that the typology analysis in the following sections covers England, Scotland and Wales. Typology groups for Northern Ireland were updated after the production of the report, and a map showing the groups, unchanged since 2019, is included in the annex.

Analysis of the engineering economy and its characteristics at the local level clearly demonstrate, as was emphasised in the first study, that places have different distinctive engineering features.

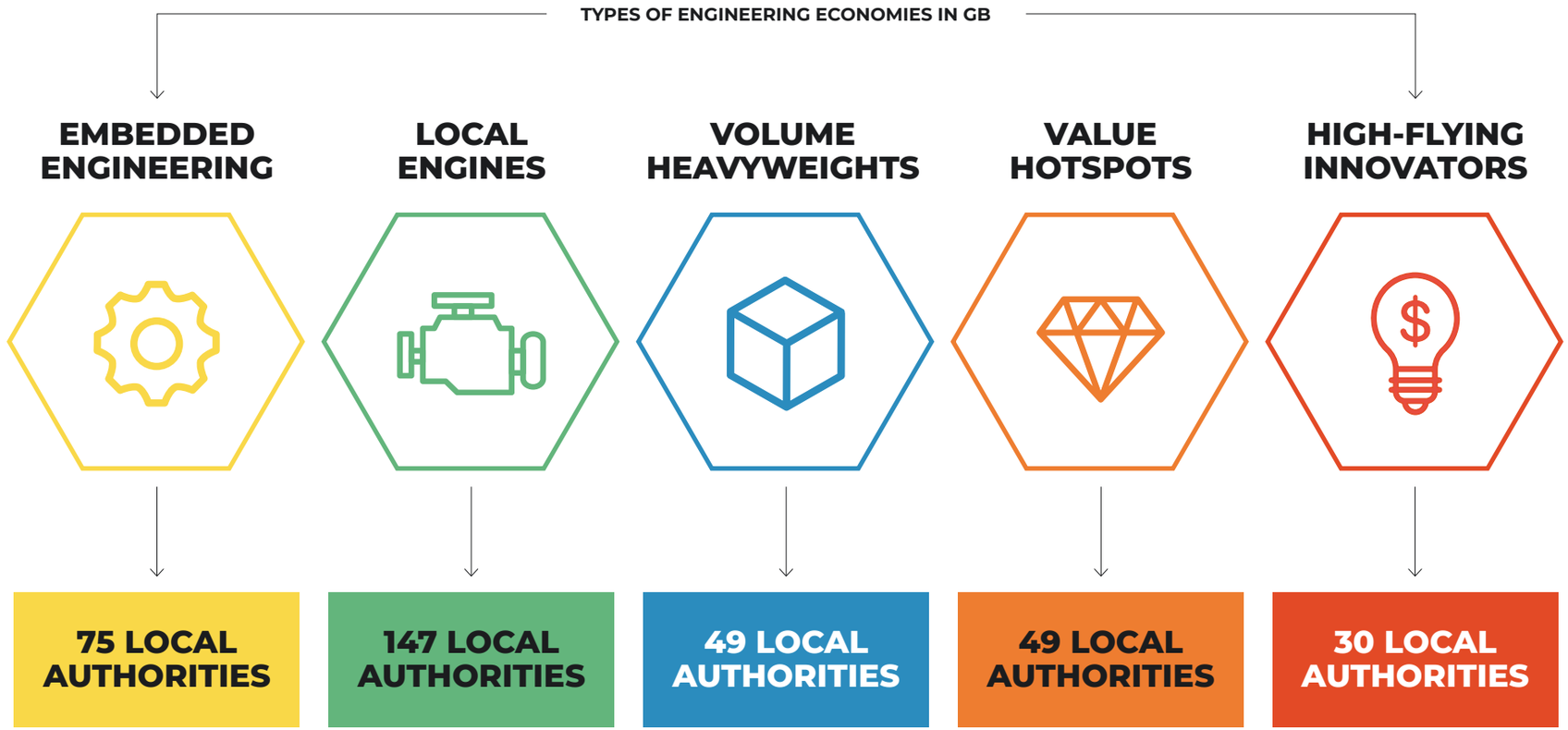
'Engineering is everywhere but nowhere the same – places have different distinctive engineering traits that are further moulded by their place characteristics. This scale and diversity means that developing a typology that is both sophisticated enough to capture nuance but succinct enough to be useful is extremely challenging.'

Engineering Economy & Place, 2023

The engineering typology was developed as a way to navigate this complexity and succinctly articulate the different types of engineering economies by grouping places which share characteristics and trends. The typology groups offer a way to understand the geography of engineering and its role in different parts of the country. This brings together engineering economy and place features across three themes:

1. The Engineering Economy
2. Engineering Enterprise
3. Place Economics

FIGURE 7
Engineering Economy and Place main typology categories



The categorisation has two levels, first all local authorities are sorted into five broad typology groups described below, three of which then have subcategories, which are described in more detail on the following pages.

Table 3 describes the 2023 engineering typology for Great Britain and what it tells us about the distribution of the engineering economy and types of activity. With analysis of national trends showing that there have not been major changes to the engineering economy, we see that 77% of local authority districts in 2023 belong to the same typology group they were assigned to in 2019. The final chapter of this report focuses on the places that have changed groups, and what the movements by typology group tell us about trends in the sector, and in the economy.

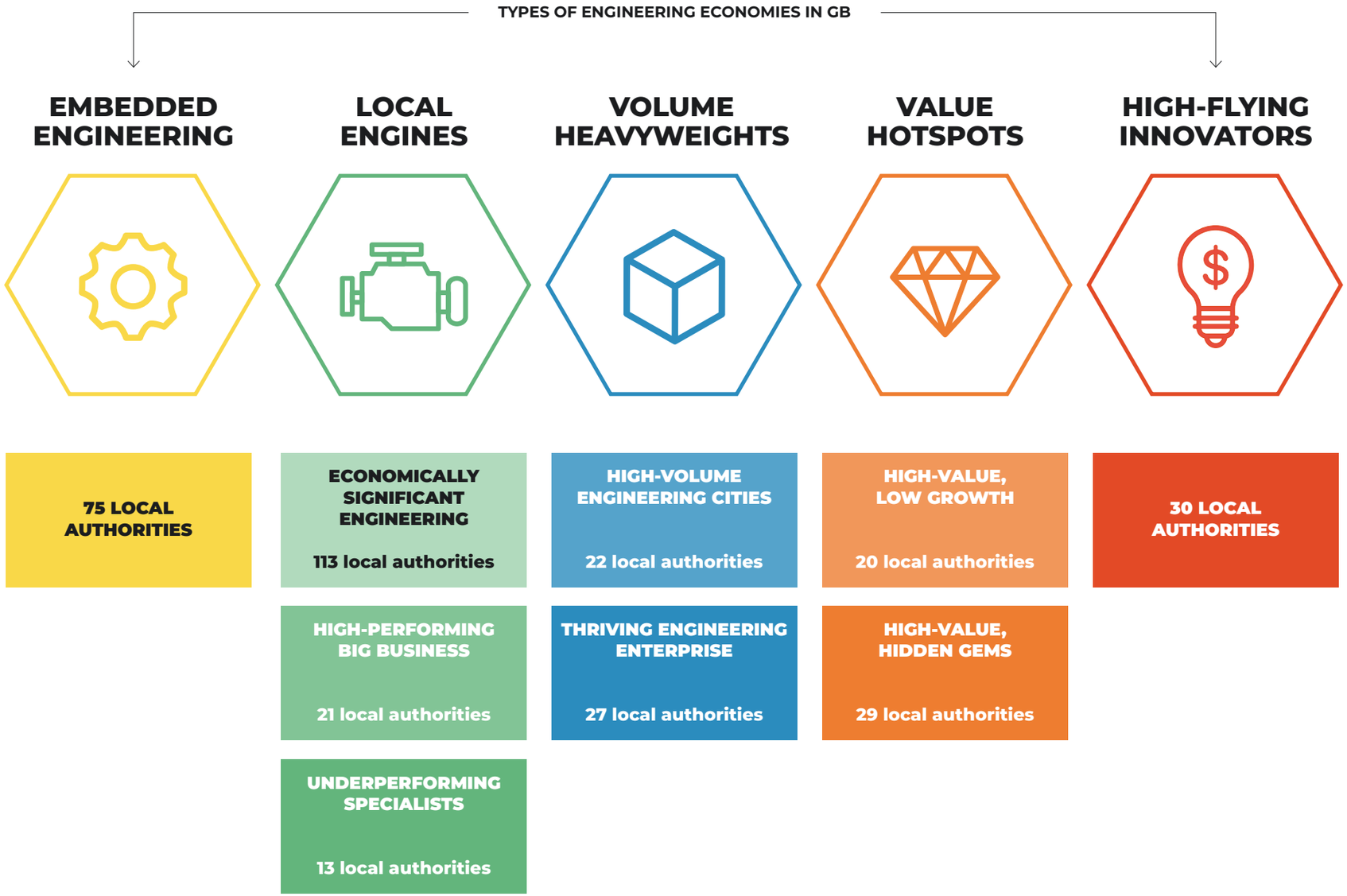
TABLE 3
Broad typology categories explained

	EMBEDDED ENGINEERING			LOCAL ENGINES			VOLUME HEAVYWEIGHTS			VALUE HOTSPOTS			HIGH FLYING INNOVATORS		
ENGINEERING ECONOMY	**962,000** Employment	**104,700** Businesses	**£74,000** GVA per job	**2,813,000** Employment	**241,500** Businesses	**£75,000** GVA per job	**2,279,000** Employment	**144,300** Businesses	**£80,000** GVA per job	**786,000** Employment	**82,300** Businesses	**£113,000** GVA per job	**1,454,000** Employment	**95,300** Businesses	**£120,000** GVA per job
GROUP TRAITS	These are economies where engineering is not necessarily dominant but because of the widespread nature and relative high value of engineering, is likely to still have an important role locally as an employment provider and a driver of growth.			A diverse group where engineering plays a very significant role in the local economy, providing at least 25% of overall employment. Some of these places have large engineering businesses which are major employers and have high GVA output, while others have concentrations of engineering businesses but have not been able to transfer this into more significant economic benefit.			The places which contain some of the largest engineering employment footprints in the UK. These combine high-density, high-volume engineering cities with more rural areas where large, high performing firms are located. Combined, they provide a large volume of jobs, equivalent to 27% of the national engineering economy, but the value per job is relatively lower than in Value Hotspots or High Flying Innovator places.			The high value engineering economies, where jobs are on average worth at least £95,000 in GVA per engineer, £7,000 higher than the engineering economy average. These places are lower in volume and despite their high value, are not seeing widespread growth in their engineering business base. This is instead limited to specific concentrations, many of which are located either around or in key and core cities.			The innovation dominant engineering economies specialising in R&D related activity. These places are collectively high in value and volume and have a high proportion of their engineering jobs in R&D related occupations. They are based in highly populated areas, which are generally more prosperous. These areas also have a growing number of engineering businesses.		
CORE ENGINEERING INDICATORS	LS	Vol	Val	LQ	R&D	LS	Vol	Val	LQ	R&D	LS	Vol	Val	LQ	R&D	LS	Vol	Val	LQ	R&D	LS	Vol	Val	LQ	R&D

Key:
Local significance (LS): percentage of total employment represented by the engineering economy.
Volume (Vol): total number of jobs from the engineering economy.
Value (Val): estimated average engineering wage.
Industry specialisation (LQ): the concentration of engineering business.
R&D: the proportion of engineering economy jobs in research and development related roles.

To identify engineering patterns in places using this set of indicators, a national average was calculated for each metric alongside the numerical range. These values were used as a baseline for assessing and categorising places, informing the development of a 'high to low' threshold for each indicator, displayed by colours as follows:
Red: Low performance relative to average.
Amber: Mid performance relative to average.
Green: High performance relative to average.

FIGURE 8
Typology subcategories



The broad typology categories act as a useful mechanism for understanding the types of engineering economies present across the UK and a helpful starting point for those looking to understand their own engineering economy. Our ability to describe the role of engineering is enhanced by the development of subcategories where we see more variation, particularly in enterprise and place indicators.

Table 4 presents the overall averages for all places within each subcategory, across all indicators.

While there has been movement in and out of the typology groups since the 2019 typology was developed, the characteristics of the subgroups relative to each other are broadly unchanged. The exception to this is within the Tier 2 indicators, which focus on enterprise performance. Here, the overall changes to the national business base have led to some changes in the average patterns across the typology groups. The most notable change being a decline in business growth experienced by High-Flying Innovators, a group that previously experienced above average business growth but between 2019-2023 saw the largest contraction on average.

TABLE 4

Engineering typology data indicators – values are averages of all local authorities in each category.

			TIER 1 INDICATORS					TIER 2 INDICATORS				TIER 3 INDICATORS						
Typology category	Typology sub-category	Number of local authorities	Local Significance	Volume (Vol)	Value (Val)	Industry Specialisation	Average proportion engineering jobs in R&D	Number of employees per engineering business	Engineering business growth	Proportion of GVA delivered by engineering business	Increasing proportion of GVA delivered by engineering business	Median weekly wage	Median wage % change	GVA per job	GVA per job (% change)	GVA (millions)	GVA % change	Population density
High-Flying Innovators		30	28%	48,500	£119,200	1.09	31%	15.11	-11%	28%	4%	£653	18%	£89,000	-1%	£18,600	3%	39.73
Volume Heavyweights	Thriving Engineering Enterprise	27	32%	38,600	£80,600	1.10	22%	16.95	-3%	35%	4%	£557	21%	£60,000	1%	£7,200	2%	14.85
	High-Volume Engineering Cities	22	23%	56,200	£81,400	0.93	30%	16.11	-5%	19%	0%	£584	20%	£65,000	0%	£16,000	8%	50.09
High-value engineering	High-value, low growth	20	21%	17,000	£110,800	1.00	26%	8.68	-8%	22%	0%	£652	18%	£74,000	-3%	£6,000	-2%	29.08
	High-Value, Hidden Gems	29	30%	15,400	£118,600	1.08	23%	12.76	-10%	36%	7%	£620	19%	£80,000	5%	£4,100	4%	7.01
Local Engines	High-performing big business	21	32%	18,200	£74,300	1.05	20%	19.24	-5%	33%	-1%	£553	23%	£57,000	-2%	£3,300	2%	8.99
	Economically significant engineering	113	29%	20,200	£74,500	1.04	20%	11.49	-3%	27%	1%	£569	23%	£58,000	0%	£4,300	2%	6.27
	Underperforming Specialists	13	27%	11,200	£75,600	1.30	21%	9.83	-8%	25%	-3%	£562	21%	£61,000	4%	£2,600	4%	19.31
Embedded Engineering		75	21%	12,800	£73,100	0.96	22%	10.33	-2%	18%	-1%	£570	20%	£55,000	-3%	£3,400	0%	17.83

Key:
The table shows the average value of key indicators by typology group. The colour grading highlights which typology category has the highest, or lowest, average value. Cells which are greener indicate that a typology category has the highest, or one of the highest averages.

Low performance — High performance

Typology & Sector

Table 5 shows the share of engineering economy employment by broad sector area in each of the nine typology subgroups.

This analysis shows higher value economies have greater concentrations of engineering employment in ICT and Professional, Scientific & Technical (Sci-Tech) activities and lower proportions in Manufacturing. In ICT, engineering employment is in activities such as computer programming and data-driven processes, while in Sci-Tech, much of the engineering employment is concentrated in research and development, as well as technical and experimental subsectors. These activities are strongly present in many of the typology groups with a higher proportion of R&D, particularly High Flying Innovators and High Volume Engineering Cities.

Thriving Engineering Enterprise and High Value, Hidden Gems, the categories which demonstrate strong enterprise environments, are the only two which contain a substantive fusion of 'traditional' practice-centric industry (Manufacturing and Construction) and the more innovation-centric sectors (ICT and Sci-Tech).

TABLE 5

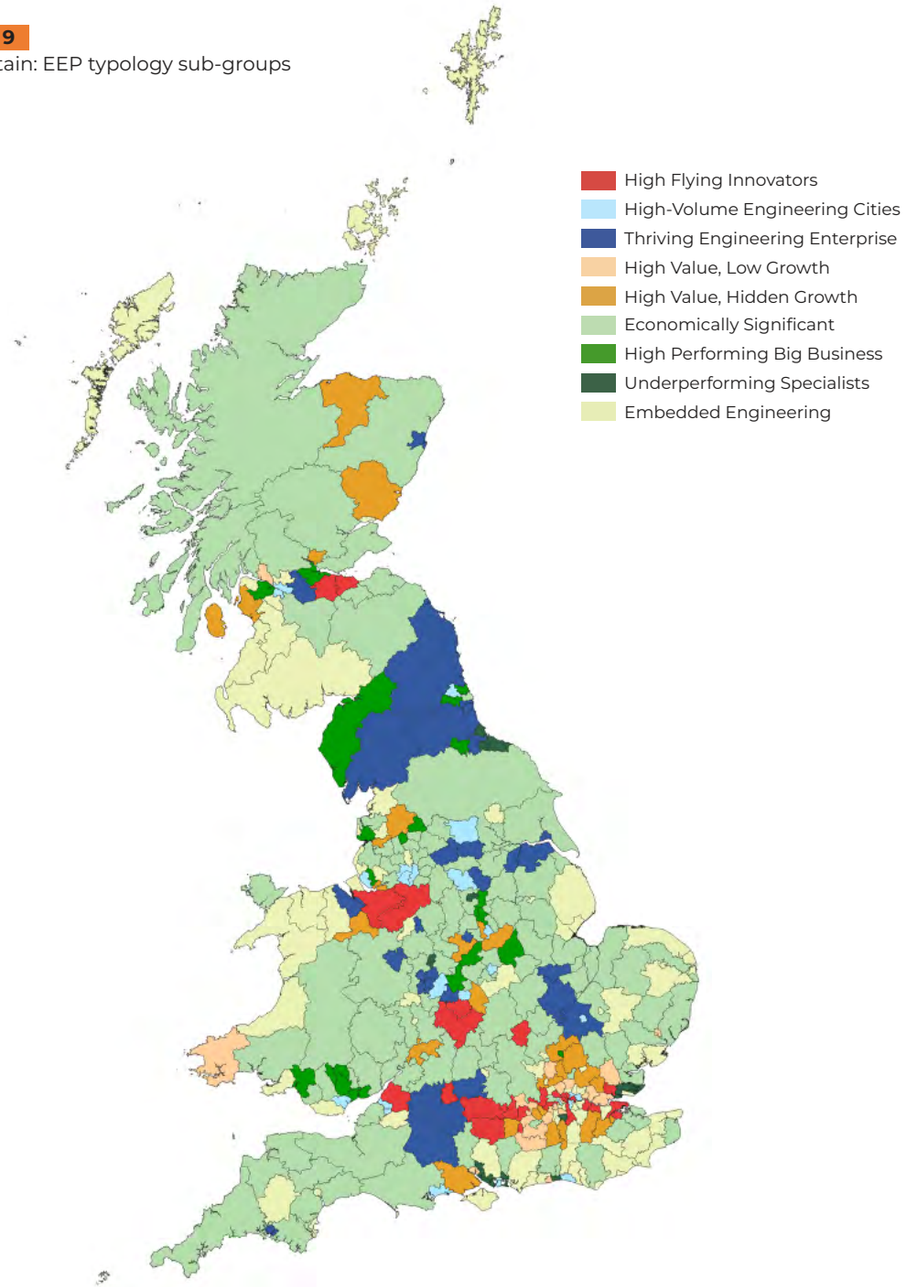
Proportion of engineering economy employment by typology group and broad sector.

		High Volume Heavyweights		Value Hotspots		Local Engines			
Broad sector	**High Flying Innovators**	**Thriving Engineering Enterprise**	**High Volume Engineering Cities**	**High Value, Low Growth**	**High Value, Hidden Gems**	**High Performing Big Business**	**Economically Significant Engineering**	**Underperforming Specialist Clusters**	**Embedded Engineering**
Information and communication	28.6%	7.7%	20.1%	15.4%	11.0%	7.7%	7.4%	9.2%	10.6%
Professional, scientific and technical activities	17.4%	11.4%	15.8%	14.2%	10.9%	8.3%	9.8%	10.4%	11.5%
Manufacturing	14.1%	39.7%	20.1%	16.1%	29.2%	44.9%	36.4%	30.1%	24.9%
Construction	11.0%	15.6%	12.8%	21.8%	22.4%	16.2%	19.5%	22.1%	20.3%
Retail and wholesale	5.9%	7.8%	7.2%	10.3%	8.5%	6.7%	9.6%	10.3%	9.9%
Financial and insurance activities	4.8%	0.6%	2.5%	1.5%	1.0%	0.6%	0.8%	0.8%	1.1%
Administrative and support service activities	3.9%	3.3%	4.7%	4.4%	3.5%	3.4%	3.2%	3.2%	4.8%
Transportation and storage	2.8%	2.1%	2.4%	2.9%	2.6%	2.9%	1.9%	2.5%	2.2%
Real estate activities	2.5%	1.5%	1.7%	1.7%	1.3%	0.8%	1.6%	1.5%	1.6%
Public administration and defence	1.7%	1.5%	2.8%	2.0%	1.0%	1.7%	1.4%	1.5%	2.4%
Electricity and gas utilities	1.4%	0.9%	1.9%	0.8%	1.6%	1.0%	1.1%	2.0%	1.1%
Water and waste	1.3%	2.1%	1.7%	2.5%	2.1%	1.5%	2.1%	1.9%	2.1%
Education	1.1%	0.9%	2.1%	1.5%	0.8%	0.7%	0.9%	1.1%	1.9%
Other service activities	1.1%	0.5%	1.0%	0.9%	1.3%	0.6%	0.7%	0.5%	0.9%
Human health and social work activities	1.0%	1.1%	1.7%	1.7%	0.9%	1.2%	1.1%	1.5%	2.0%
Accommodation and food service	0.7%	0.5%	0.7%	0.9%	0.5%	0.5%	0.7%	0.5%	1.0%
Arts, entertainment and recreation	0.5%	0.5%	0.6%	0.9%	0.5%	0.4%	0.6%	0.5%	0.8%
Mining and Quarrying	0.2%	2.2%	0.1%	0.2%	0.5%	0.7%	0.5%	0.5%	0.2%
Agriculture, Forestry and Fishing	0.1%	0.2%	0.0%	0.1%	0.4%	0.3%	0.8%	0.1%	0.6%

Key:
The table should be read from left to right. The colour grading highlights which typology category has the largest, or lowest, employment proportion of each broad sector. Cells which are greener indicate that a typology category has the highest, or one of the highest, proportions within a specific sector. For example, High Flying Innovators has the highest proportion of employment in both the Information and Communication and the Professional, Scientific and Technical Activities sector

Mapping the engineering place typology

FIGURE 9
Great Britain: EEP typology sub-groups



The map in Figure 9 shows the complete typology for Great Britain.

The pattern of the typology groups emphasises that London and the South East are the dominant forces in the UK's engineering economy in terms of economic value and R&D intensity, with a high prevalence of High Flying Innovators and the High Value subgroups. These regions house much of the highest-value engineering activity, with strong links to financial services, software, aerospace, and high-tech manufacturing. The density and diversity of the economy in these areas, combined with strong research institutions and infrastructure, support complex innovation ecosystems where engineering plays a critical enabling role.

Looking across Great Britain, rural areas are less likely to have high value, R&D intensive engineering but there are notable exceptions to this, including Cumbria and parts of the North East, where large, predominantly rural, authorities are home to Thriving Engineering Enterprises and High Performing Big Business. This is likely driven by strengths across sectors including defence and nuclear in Cumbria and pharmaceutical manufacturing and renewable energy (particularly offshore wind and supply chains) in the North East. These cases highlight that geography does not predetermine engineering outcomes, and that with the right industrial base and assets, rural areas can support (and be supported by) large and thriving engineering sectors.

Across the country, we continue to see a complex interplay between engineering specialisation, economic performance, and innovation potential. High value and R&D intensive engineering is often found in places where engineering may not be dominant in the local economy, but is embedded in a broader, high-performing industrial mix. Conversely, areas with a deep specialisation in engineering, especially smaller towns or rural areas can struggle to translate that specialisation into higher GVA or innovation output without the supporting ecosystem.

There are visible patterns of interdependence between city-centre R&D hubs and surrounding city regions and towns. We can see Liverpool City Region, where Liverpool, a High Volume Engineering City, is bordered by Knowsley and Halton, High Performing Big Business and High Value, Hidden Gem respectively. We also see a pattern of this in South Yorkshire, with Sheffield a High Volume Engineering City, and neighbouring Rotherham in the Thriving Engineering Enterprise group.

The variation across neighbouring places and within city regions emphasises the value of a localised understanding of engineering in place, as a way to begin to understand how to reinforce engineering-led growth at the regional level and the variety of types of engineering places within city regions.

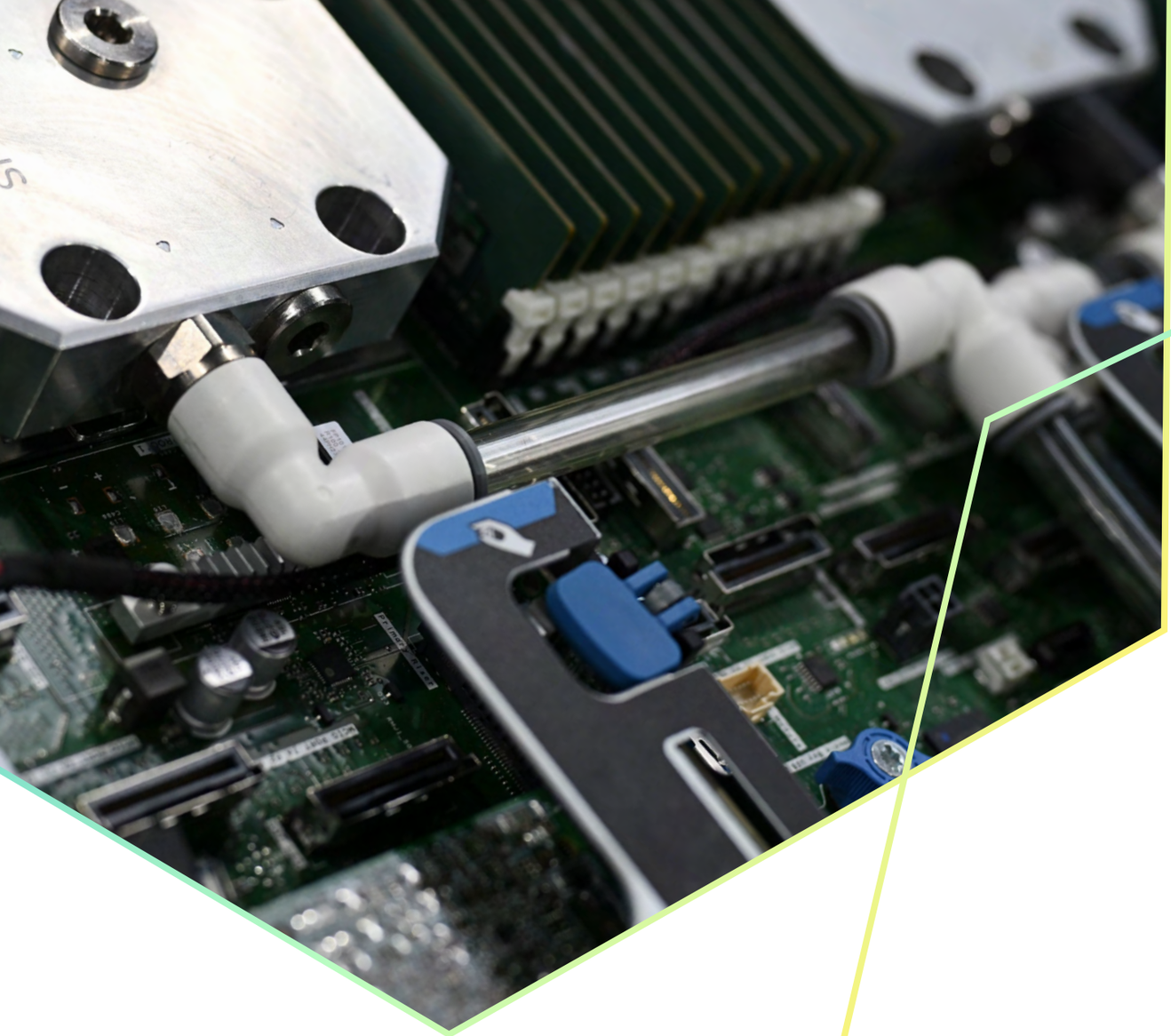
The engineering typology is a powerful tool to understand the geography of the engineering economy, and the way it differs by place. The updated data allows us to explore not only the role of engineering in place but also where that role is changing, and in what way. This question is the focus of the remainder of the report.

How has this changed?

Overall the geography of the engineering typology is similar to the national map in 2019, with the majority of local authorities remaining in the same group. However there are some notable changes, explored through the remainder of this report, that appear to be signalling real changes to the characteristics of the sector in different parts of the country.

While London and the South East remain dominant, changes in the typology show the engineering economy is not immune to the wider stagnation of the capital's economy. The update shows signs of strengthening engineering economies beyond the South East, with the emergence of a strong engineering cluster in the West Midlands where the Combined Authority area has seen strong growth across engineering employment, as well as high value engineering and R&D intensive activity.

Edinburgh and its surroundings are emerging as a leading centre of innovation-intensive, high value engineering activity. Changes in typology groups across Edinburgh and the Central Belt towards Glasgow show a stronger role being taken by engineering in these places, and by this area in the UK's engineering economy.



CHAPTER 04

Changing Engineering Places

Understanding the typology and where there have been changes to the make-up of the groups should inform how we think about the engineering economy and place.

Changing engineering places

FIGURE 10
Summary of changing engineering places

269	81	68
Places staying in the same typology category	Places changing typology category overall	Places with distinctive changes to their local engineering economy

As highlighted in EEP UK 2023, engineering plays a major role everywhere, but it takes very different forms in different places. The updated analysis and typology, which allow us to look at trends and identify where there has been changes, reaffirms that message. It also underscores that there has been variation in the structure, composition, and performance of local engineering sectors, even among places that were similar in 2019.

Of the 350 local authority districts in Great Britain in 2023,[5] 77% (or 269) districts have been assigned to the same typology subgroup that they belonged to in 2019, meaning 81 places switched typology subgroup from the previous report.

The approach to updating the typology included steps to ensure that places changing typology group were doing so due to meaningful changes in the features of local engineering economies, rather than small variations in underlying data. Of the 81 places, 13 local authorities, (listed in the annex) changed group as a result of improved estimates of GVA that was made possible by more granular data. I.e. Had the data been available previously, they would have been in a different typology subgroup in 2019.

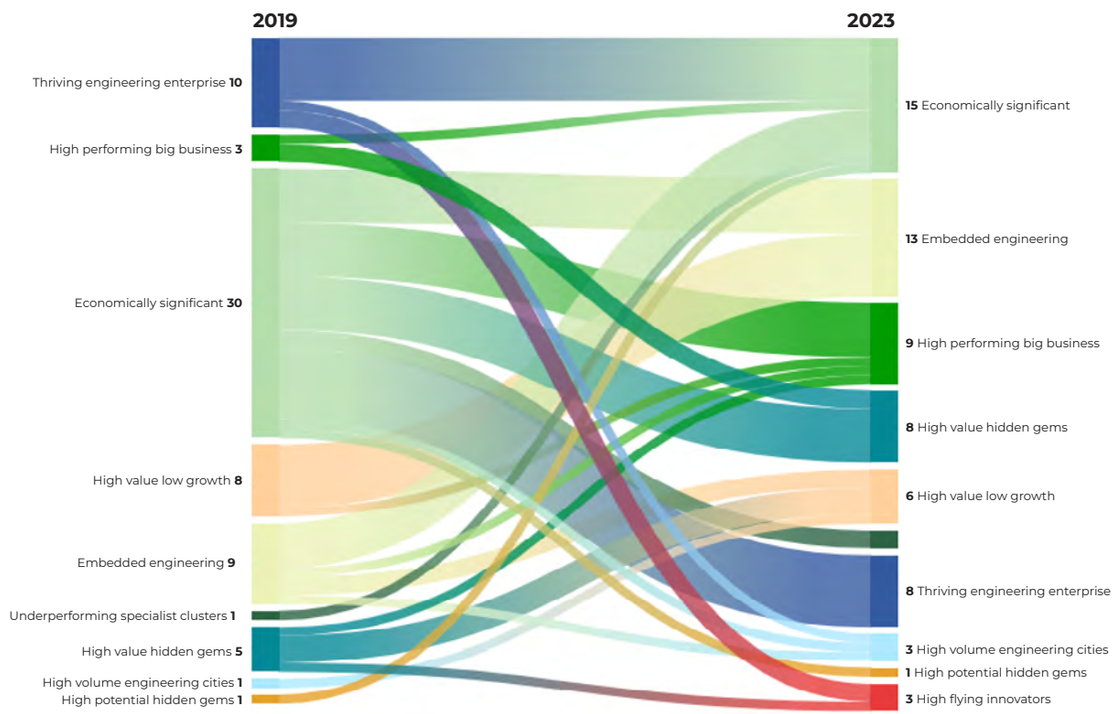
This means there are 68 local authorities which have changed subgroup because of changes to the features of their local engineering economies between 2019 and 2023.

The Sankey chart in Figure 11 shows the flows of change for these 68 places, showing the patterns of change, and the frequency of the different types.

The largest number of changes was from the Economically Significant group, where 30 places moved to a different subcategory. While some of these changes were within the broad Local Engines group, most were outward and related to increases in either volume or value, with a small number showing contraction. Several places in the Embedded Engineering category also showed increases in volume and value sufficient to move outward into a typology group.

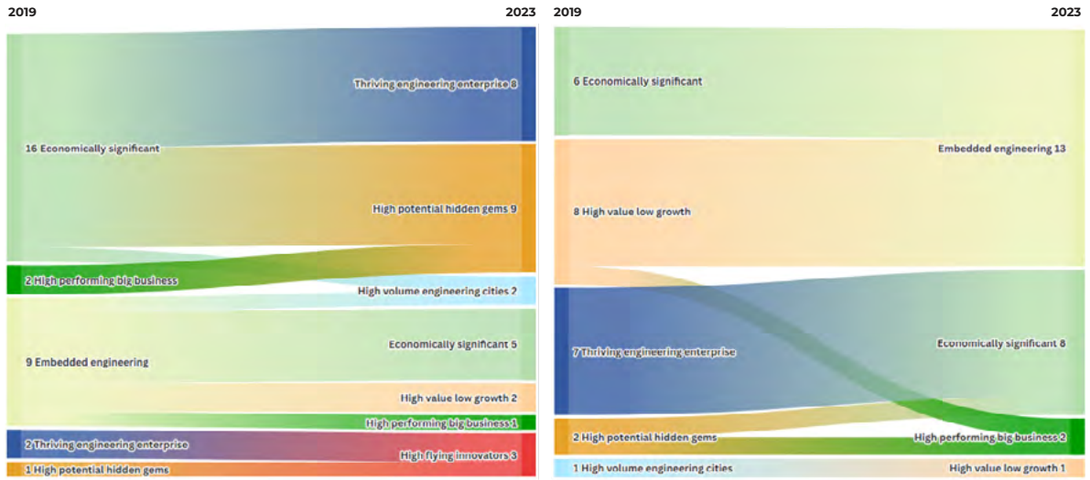
These increases were balanced by contraction elsewhere in the Volume Heavyweight and Value

FIGURE 11
Changes by typology subgroup



[5] There are also four local authorities which are new authorities which formed by merging smaller districts between 2019 and 2023: North Yorkshire, Cumberland, Westmorland and Furness, Somerset.

FIGURE 12
Great Britain: EEP typology sub-groups



Hotspot categories, where numerous places experienced decreases in either volume or value sufficient to change categories.

As might be anticipated, places moving into the High Flying Innovator group have built on existing strength, coming from either an existing Thriving Engineering Enterprise or High Value, Hidden Gem.

Where changes have occurred, they are most likely to be places moving outward into a different typology group; only 14 out of the 68 were changes to a different subgroup within the same broad category. We would consider this a 'marginal' change, while it has been sufficient to switch subcategory, it has not been sufficiently distinctive to change category entirely.

When we look at movement to a new category:

- 30 places have moved due to increases in volume or value – a positive forward momentum demonstrating strengthening in the local engineering economy.
- 24 places have moved due to decreases in volume or value – suggesting the engineering economy in these places is losing ground.

The maps show the 68 places with distinctive changes to their local engineering economy, with the map on the left showing typology subcategories in 2019 and the right showing the new category in 2023.

The remainder of this section describes the nine typology groups individually and highlights where there have been notable changes to the make-up of the groups which should inform how we think about the engineering economy and place.

FIGURE 13
The 2019 typology categories of changing engineering places

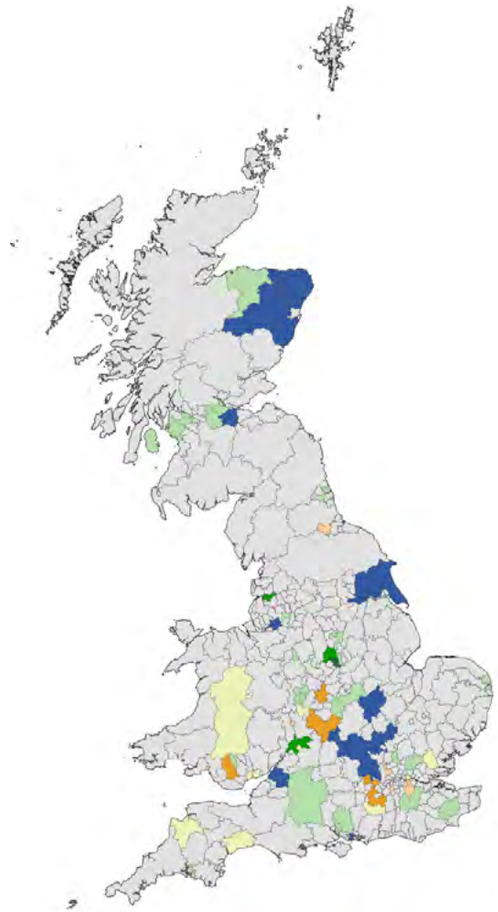
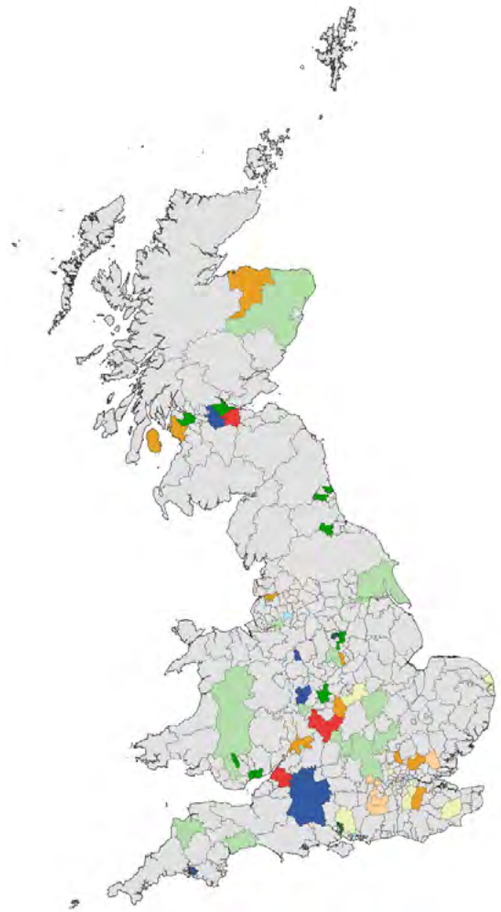
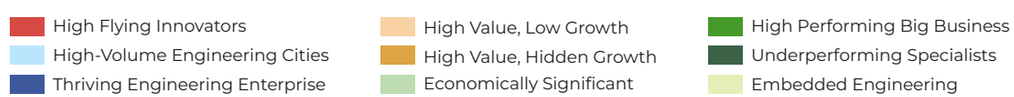


FIGURE 14
The 2023 typology categories of changing engineering places





High Flying Innovators

30 Local Authorities

This category represents a group of places which are collectively high in both value and volume, and also characterised by a high proportion of engineering employment in R&D related occupations. These are economies anchored by major businesses and institutions, with embedded technological strengths that generate talent and deliver significant value. Engineering firms in these places tend to be smaller on average but increasing in number, benefiting from a strong enterprise environment within generally highly productive economies. While engineering is often one of several strengths within these diverse economies, the level of R&D related activity makes it a critical component both locally and nationally.

Within this group, about 30% of engineering employment is concentrated in ICT and Sci- Tech, the highest proportion among all typology groups and increasing in proportion of engineering employment since 2019. Comparatively, the High Flying Innovators group has the lowest proportion of engineering employment in manufacturing and construction.

The High Flying Innovators are an intentionally distinctive category combining high performance across all measures. They have been the most stable of typology groups, with only three assigned to this category in EEP UK 2023 moving to another group: Hammersmith and Fulham, Southwark and Ealing, partly because of improved estimates of value. Given the high performance of these places it is encouraging to see this group expand with new places moving into it, but understandable that there have not been a large number of new places.

While London and the South East continue to dominate this category, the updated typology shows strengthening centres in the West Midlands and in Scotland. In 2019, most High Flying Innovator localities were either within, or in the pull of, London, with Cheshire East and West as the exception. Improved value estimates have changed this picture slightly, with Edinburgh and Warick both moving to this group based on a better accounting of the value of engineering in these places. Changes in local economies in West Lothian and South Gloucestershire, where there has been high growth in the value of engineering, and Stratford-on-Avon, where the volume of engineering has grown by 15%, have added further geographic spread to this group.

Volume	**Value**	**Local Significance**	**Industry specialisation**	**R&D Intensity**
48,500	£119 ,200	28%	1.09	31%

FIGURE 15
The 2019 High Flying Innovators, showing the categories of the places which have joined in 2023

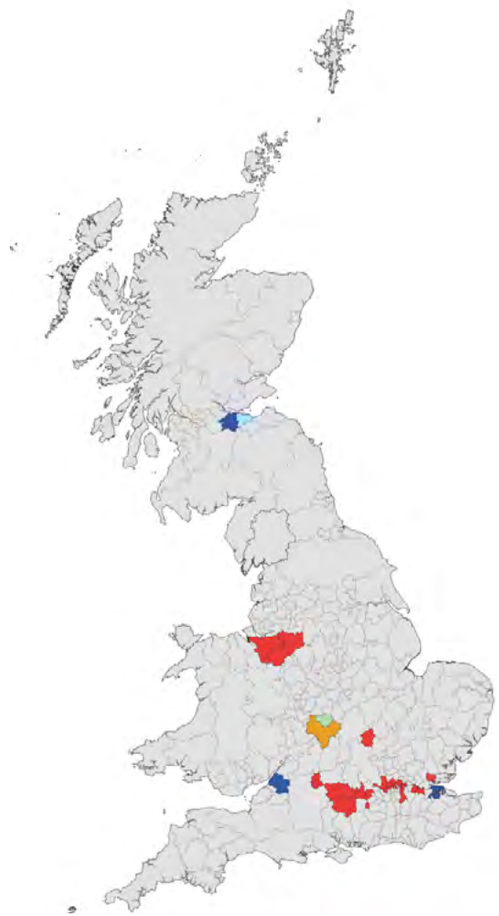
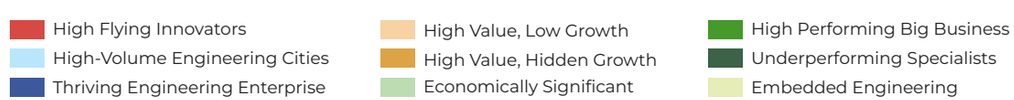


FIGURE 16
The 2019 High Flying Innovators, showing the categories of the places which have moved out in 2023



Thriving Engineering Enterprise

27 Local Authorities

One of the subgroups of Volume Heavyweights,where the performance of the enterprise indicators is a key feature which distinguishes these places from other groups. These places tend to be located in the catchments of cities, accommodating larger businesses which value proximity to urban centres but require more physical space.

This group saw the largest degree of change as a proportion of the whole from 2019 to 2023, mainly driven by turbulence in the engineering enterprise indicators. This is one of only three groups where there has been an increased proportion of GVA delivered by engineering businesses and a less dramatic decline in business counts than other groups have seen on average.

In 2019, these areas of strong enterprise close to urban centres were seen particularly in the North East of England, Yorkshire, and across the Oxford-Cambridge area. Most of North East of England and Yorkshire has remained within Thriving Engineering Enterprise, joined by new local authority Westmorland and Furness. Among the places that have moved into the Thriving Engineering Enterprise group is Dumfries and Galloway, establishing the central belt of Scotland as a key Thriving Engineering Enterprise location.

A cluster of localities in the West Midlands, including Wolverhampton, Dudley, Sandwell, and Walsall, have moved from Economically Significant to Thriving Engineering Enterprise. This is the result of more resilient performance on the enterprise indicators (Tier 2) compared to other places, suggesting the West Midlands' established strengths in advanced manufacturing, automotive production, and supply chain industries, as well as the continued prioritisation of engineering-related sectors within regional industrial strategies are enabling the sector to remain strong.

Comparatively, where there used to be a spread of Thriving Engineering Enterprise localities across Oxford-Cambridge we no longer see this as strongly, with localities such as Cherwell, Central Bedfordshire, and Buckinghamshire, moving to Economically Significant, reflecting a decrease in GVA delivered by engineering businesses.

Volume	Value	Local Significance	Industry specialisation	R&D Intensity
38,600	£80,600	32%	1.1	22%

FIGURE 17
The 2019 Thriving Engineering Enterprise places, showing the categories of the places which have joined in 2023

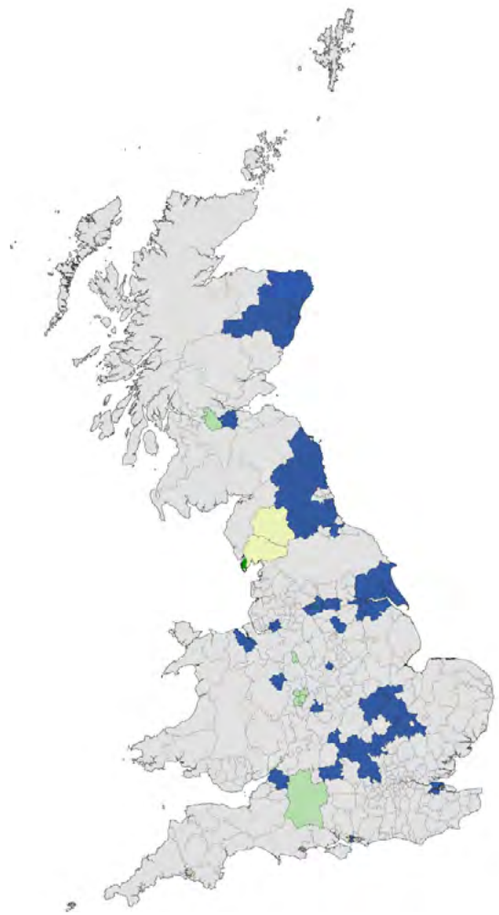
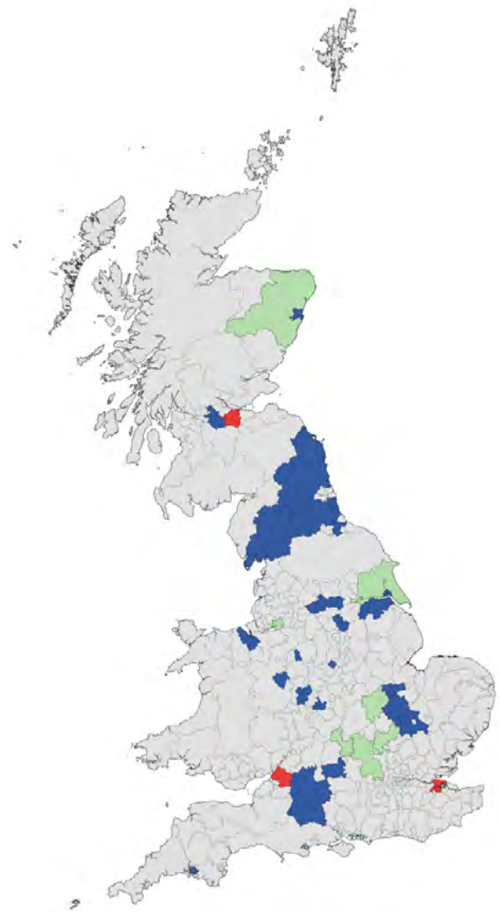
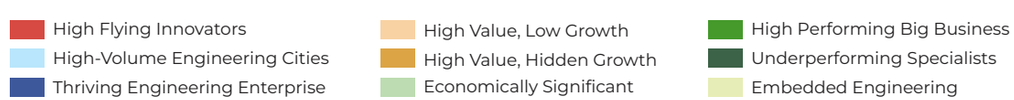


FIGURE 18
The 2023 Thriving Engineering Enterprise places, showing the categories of places which have moved out in 2023





High Volume Engineering Cities

22 Local Authorities

This group of places has a primary characteristic of high volume, with significantly larger numbers of engineering employment compared to other places. Typically, these localities are in, or are near, major UK cities. They tend to have lower value per engineering job and lower wages overall. This is potentially a factor of the size of the labour markets in densely populated areas, which have a more diverse and wider ranging array of occupations. These cities are a strong source of innovation, containing a similar level of R&D employment to High Flying Innovators, usually supported by universities, research assets and business networks.

Within this group, there has been minimal change, with core cities of Manchester, Birmingham, Glasgow, Cambridge and Bristol, all remaining as High Volume Engineering Cities. Additions to this group include Hammersmith and Fulham, Southwark, and notably Salford, which was previously within the Economically Significant Engineering subgroup.

Coupled with Manchester and Stockport, the shift of Salford to a High Volume Engineering City indicates a consolidation of Greater Manchester's position as a nationally significant hub for engineering activity, reflecting the deepening integration of advanced manufacturing, digital innovation, and research capabilities across the city region.

Volume	Value	Local Significance	Industry specialisation	R&D Intensity
56,200	£81,400	23%	0.93	30%

FIGURE 17
The 2019 High Volume Engineering Cities, showing the categories of the places which have joined in 2023

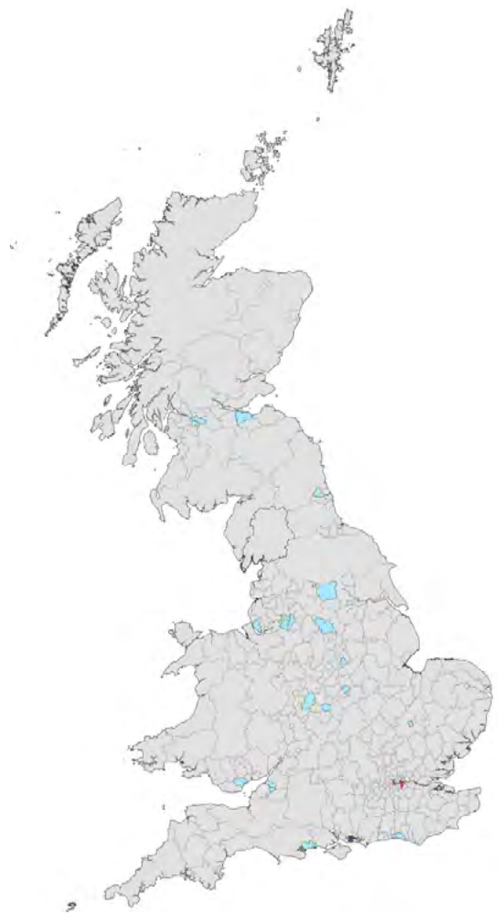
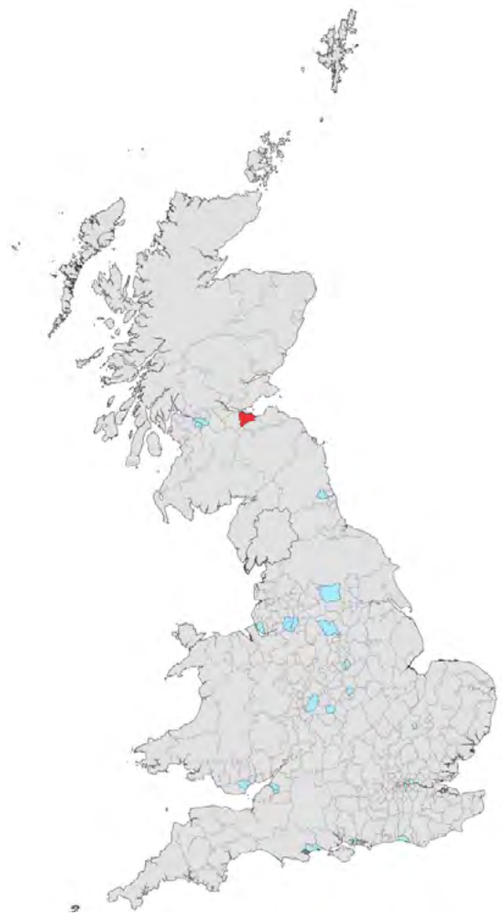
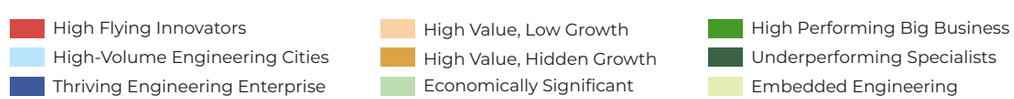


FIGURE 18
The 2023 High Volume Engineering Cities, showing the categories of places which have moved out in 2023





High Value, Low Growth

20 Local Authorities

This group is characterised by places that have engineering jobs that are high in value but are less locally significant, and where there have not been significant levels of enterprise growth in recent years. However, despite low growth, these places contain a significant number of R&D related jobs in their engineering economies and still represent high value engineering.

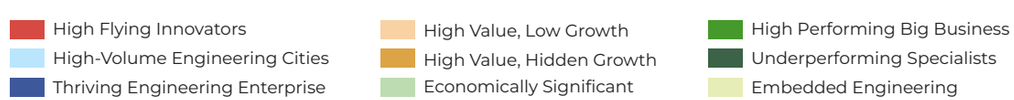
As in 2019, this group is predominantly composed of localities in and around London, with most located in Hertfordshire, Surrey, and now Essex and Suffolk where high value growth in Chelmsford and a combination of revised estimates and strong growth in Ipswich has seen these towns, important centres locally, shift into this group.

There are only two local authorities from outside the Greater South East in this group, Pembrokeshire and West Dunbartonshire, which have both joined this group since 2019 following improvements in data available and therefore higher value estimates, better capturing Pembrokeshire's chemicals sector and manufacturing in West Dunbartonshire.

Volume	Value	Local Significance	Industry specialisation	R&D Intensity
17,000	£110,800	21%	1.00	26%

FIGURE 21
The 2019 High Value, Low Growth, showing the categories of the places which have joined in 2023

FIGURE 22
The 2023 High Value, Low Growth, showing the categories of places which have moved out in 2023



High Value, Hidden Gems

29 Local Authorities

The High Value, Hidden Gems are outside of London, often in rural locations with a strong industrial heritage and tend to be less prominent in the mainstream innovation narrative, which often focuses on cities. This group of places is characterised by high value where engineering has a high local significance and is making a strong contribution to productivity, with the highest proportion of GVA being delivered by engineering businesses. Since 2019, the concentration of High Value, Hidden Gems located to the east of London has increased, now including Epping Forest, Welwyn Hatfield, and Sevenoaks, driven by a rising value of engineering while volume has decreased.

Comparatively, there has been a reduction in localities in this group to the west of London, with Guildford, Bracknell Forest, and Surrey Heath, no longer categorised as High Value, Hidden Gems but now High Value, Low Growth due to challenging trends in engineering enterprise metrics, particularly business counts and the share of GVA delivered by engineering businesses.

Other new inclusions in High Value, Hidden Gems are more geographically dispersed including Wrexham, Stroud, Rugby, and South Ribble. Previously highlighted as a case study for High Performing Big Business, South Ribble has changed typology group following an increase in engineering value (as well as a decrease in volume and local significance).

Volume	Value	Local Significance	Industry specialisation	R&D Intensity
15,400	£118,600	30%	1.08	23%

FIGURE 23
The 2019 High value, Hidden Gems, showing the categories of the places which have joined in 2023

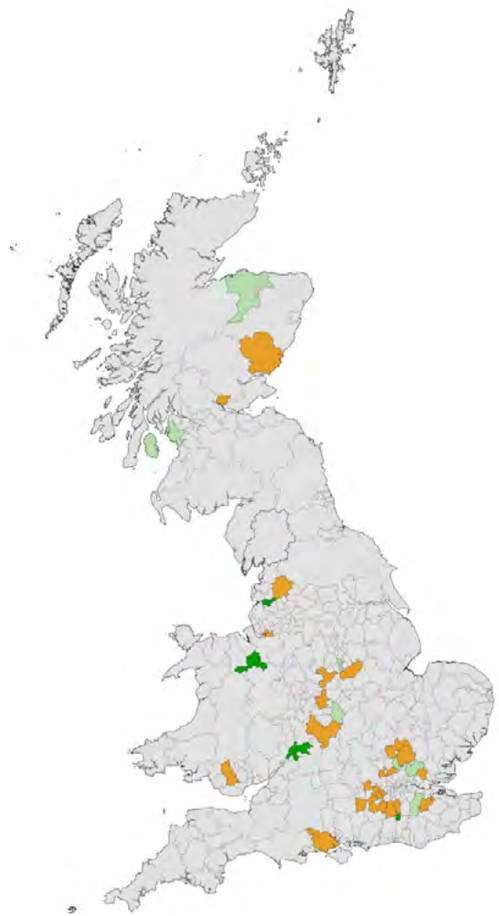
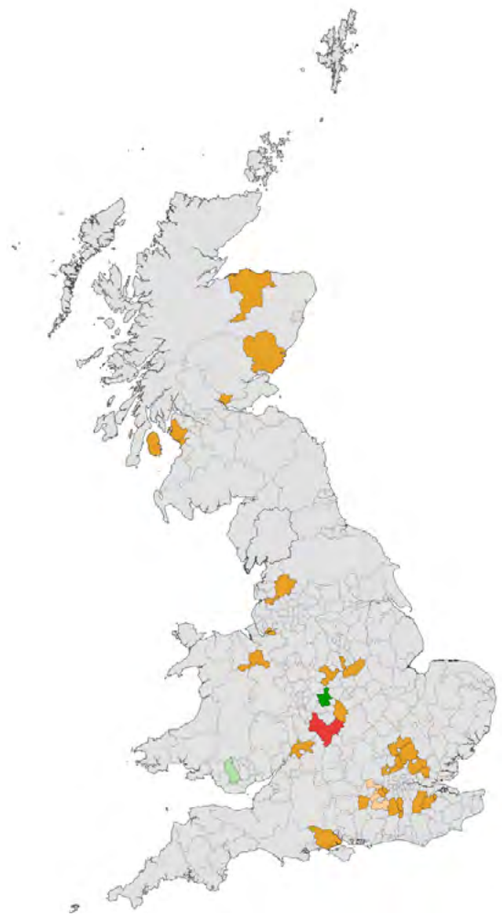
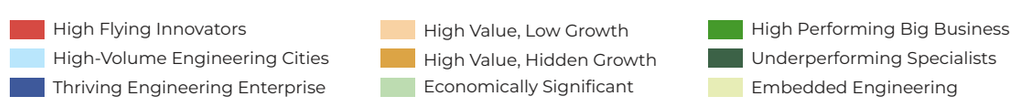


FIGURE 24
The 2023 High value, Hidden Gems, showing the categories of places which have moved out in 2023





High Performing Big Business

21 Local Authorities

This group is characterised by places where engineering dominates a large proportion of overall employment, which is provided by a smaller number of bigger businesses. These businesses are based in much more rural or town-based economies, where there is more space available for companies with typically larger operations. Therefore, while the volume of engineering economy employment is lower, it represents a significant proportion of total employment in the local economy.

Home to major companies but often further from large urban centres, these places, and the businesses they are home to, are strategically important engineering places and the large firms characterising the engineering sector are strategically important nationally, and key anchors locally.

The North of England continues to be strong, with Darlington, Gateshead and South Tyneside remaining in this group. The new unitary authority of Cumberland is categorised as High Performing Big Business, reflecting the presence of large employers.

Volume	Value	Local Significance	Industry specialisation	R&D Intensity
18,200	£74,300	32%	1.05	20%

FIGURE 25
The 2019 High-Performing, Big Business, showing the categories of the places which have joined in 2023

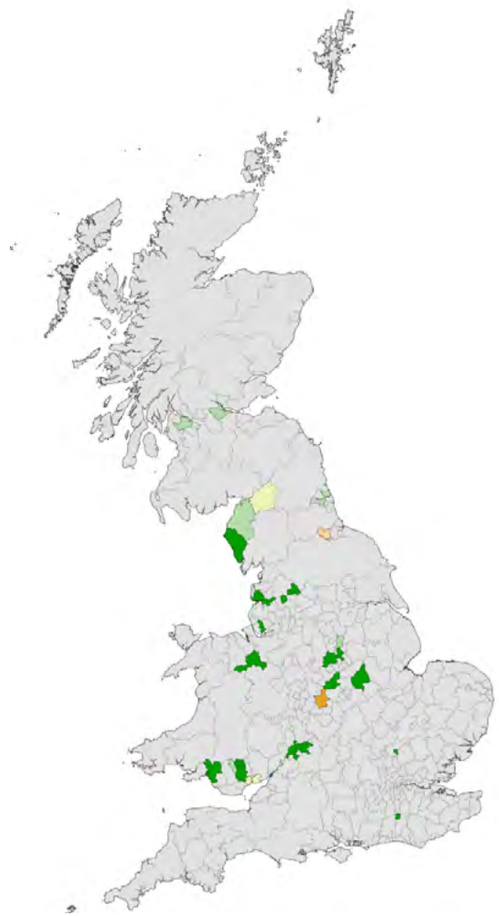
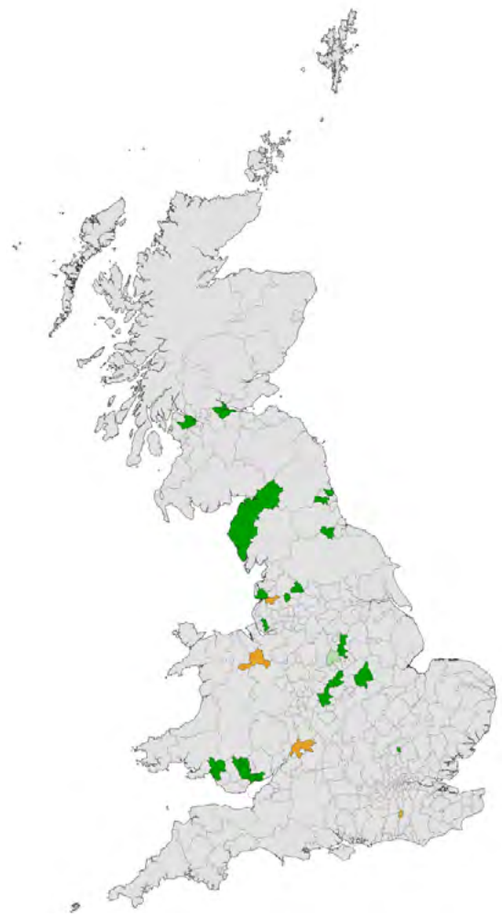
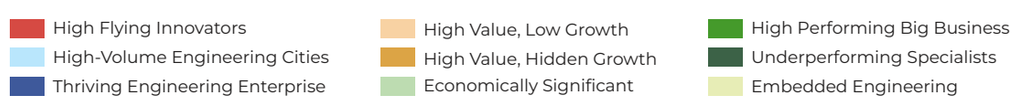


FIGURE 26
The 2023 High-Performing, Big Business, showing the categories of places which have moved out in 2023





Economically Significant Engineering

113 Local Authorities

This group consists of areas where engineering plays a particularly important role in the local economy, as reflected by the high share of employment in the sector. These are not necessarily the most research-intensive or high value engineering hubs, but they stand out because of the sector's economic importance in their local labour markets.

This is the largest group in terms of the number of local authorities and includes a diverse mix of geographies, from expansive rural counties to semi-urban zones on the fringes of major cities. While engineering is locally significant, making up a high share of local employment, many of these places are characterised by small-scale, lower-value engineering activity, with the lowest proportion of engineering jobs in research and development (R&D) roles. This suggests a focus on production or traditional engineering practice.

A cluster of authorities in Buckinghamshire, Cherwell and North Northamptonshire have shifted into this group. These areas, which surround the High Flying Innovator of Milton Keynes, have seen weakening business conditions and a declining share of GVA generated by engineering businesses, prompting their reclassification from Thriving Engineering Enterprise.

Many of the new entrants to this group are places where enterprise performance has struggled across this period, there have been large contractions in the engineering business base in places including Aberdeenshire, Warrington, Bromsgrove, and Cheltenham, with engineering businesses declining at a faster rate than the total business base. For other places, such as East Riding and Somerset, there has been a declining share of GVA delivered by engineering businesses.

Volume	**Value**	**Local Significance**	**Industry specialisation**	**R&D Intensity**
20,200	£74,500	29%	1.04	20%

FIGURE 27
The 2019 Economically Significant Engineering, showing the categories of the places which have joined in 2023

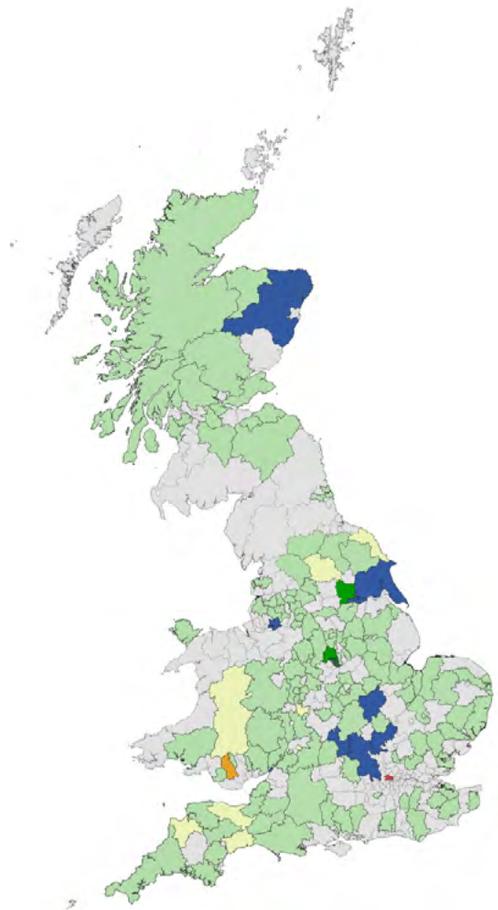
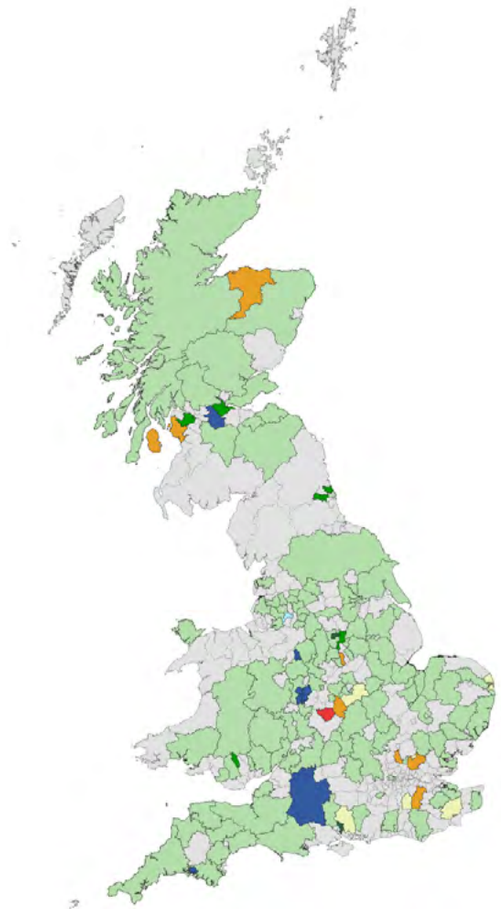
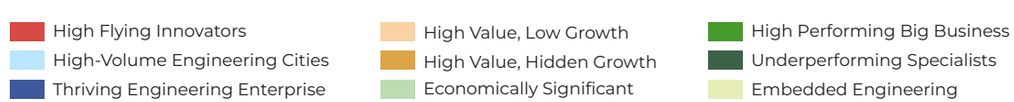


FIGURE 28
The 2023 Economically Significant Engineering, showing the categories of places which have moved out in 2023





Underperforming Specialists

13 Local Authorities

This group of places is defined by a high degree of industry specialisation in engineering, which is not translating into strong economic performance. Engineering businesses make up a larger share of the local business base than in other groups, indicating a clear sectoral focus. However, this specialisation is not mirrored in employment or economic output: the concentration of engineering employment is relatively low, and the sector's local economic significance is, on average, weaker than in other Local Engines subgroups.

Underperforming Specialists are the most densely populated subgroup within the Local Engines category. They are typically urban but not major metropolitan centres and include several struggling coastal towns, highlighting a pattern of strong specialism which has not resulted in high value activity in smaller urban economies.

These indicators suggest that these are areas with a large number of small engineering firms, though business counts have declined. In fact, this group has experienced one of the sharpest contractions in engineering business numbers since 2019. Challenges in the business base is also reflected in GVA estimates, with engineering firms contributing a smaller share of overall economic output compared to other areas.

There has been limited movement in and out of this group since the last report. The new entrants include Chesterfield and Eastleigh, where there has been an increase in the share of engineering businesses within the business base while Erewash in Derbyshire has exited the group following a decline in industrial specialisation.

Volume	Value	Local Significance	Industry specialisation	R&D Intensity
11,200	£75,600	27%	1.3	21%

FIGURE 29
The 2019 Underperforming Specialist Clusters, showing the categories of the places which have joined in 2023

FIGURE 30
The 2023 Underperforming Specialist Clusters, showing the categories of places which have moved out in 2023

High Flying Innovators
High-Volume Engineering Cities
Thriving Engineering Enterprise
High Value, Low Growth
High Value, Hidden Growth
Economically Significant
High Performing Big Business
Underperforming Specialists
Embedded Engineering

Embedded Engineering

75 Local Authorities

The second largest group by the number of authorities belonging to it, Embedded Engineering places are the engineering economies which do not stand out on the core engineering metrics, with smaller scale and lower value activity taking place.

Enterprise performance in these places is slightly mixed, with less of a contraction in the size of the business base, although this business base is less important to local economies than other typology groups, accounting for a lower share of total GVA. Manufacturing and construction account for a higher share of employment in Embedded Engineering places, with a smaller proportion employed in ICT and professional, scientific and technical activities.

We see Embedded Engineering places spread across the country, tending to be more rural (and sparsely populated) or located on or near the coast. Worcester, previously a case study as a 'typical' example of the High Value, Low Growth group has moved category following a decrease in value between 2019 and 2023.

Other new Embedded Engineering places are all located in the South of England (with the sole exception of Harborough in the East Midlands). They have all seen a decline in employment in the engineering economy and the local significance of engineering has fallen, indicating engineering employment is declining faster than overall employment.

Volume	**Value**	**Local Significance**	**Industry specialisation**	**R&D Intensity**
12,800	£73,100	21%	0.96	22%

FIGURE 31
The 2019 Embedded Engineering, showing the categories of the places which have joined in 2023

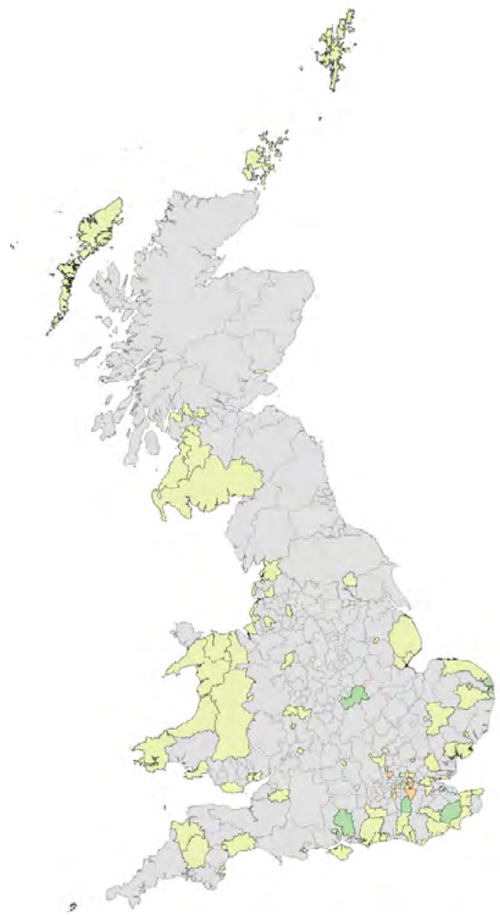
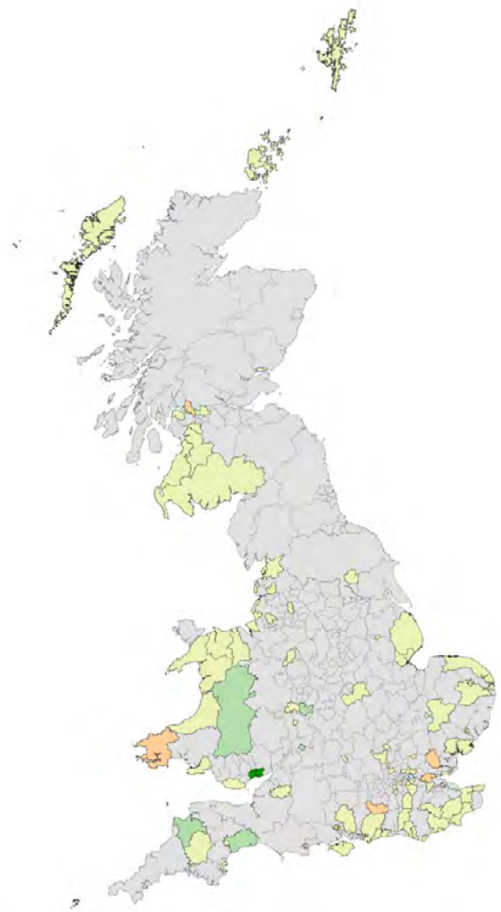


FIGURE 32
The 2023 Embedded Engineering, showing the categories of places which have moved out in 2023



High Flying Innovators
High-Volume Engineering Cities
Thriving Engineering Enterprise
High Value, Low Growth
High Value, Hidden Growth
Economically Significant
High Performing Big Business
Underperforming Specialists
Embedded Engineering

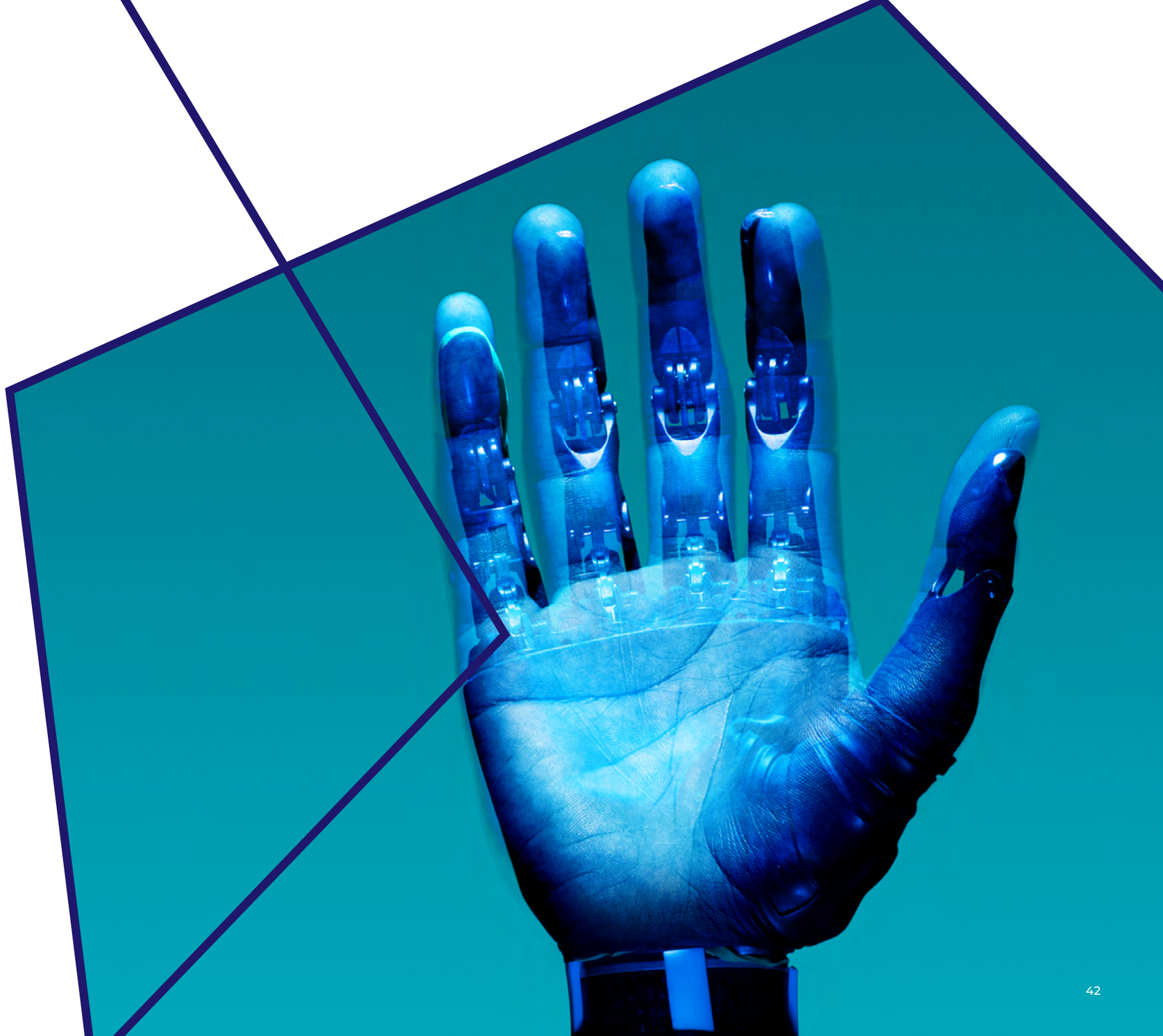
Conclusion

Place rightly remains a priority of the UK government in 2025, with the Industrial Strategy being 'unashamedly place-based, recognising that stronger growth is critical for the competitiveness of the Industrial Strategy's eight growth driving sectors and the resilience of the national economy'. But no one programme or policy solution can be a silver bullet. Places' contexts matter. Our analysis, through the Engineering Economy and Place framework provides a nuanced, data-driven picture of how engineering contributes to local economies, revealing both strengths and challenges that may not be visible in broader, cluster-focused approaches.

By combining national ambition with local insight, we can all better understand where targeted support, investment, and policy intervention will have the greatest impact. The Engineering Economy and Place typology is one of a number of initiatives to better understand the interplay between engineering and place. We will continue to deepen these place-based insights as new data, methodologies, and policy priorities emerge

We hope this report will support policymakers, local leaders, and businesses as they navigate the opportunities and challenges ahead. By working together, and by recognising both the strengths and the unique needs of every place, we can help ensure that engineering continues to drive innovation, opportunity, and prosperity across the whole of the UK.

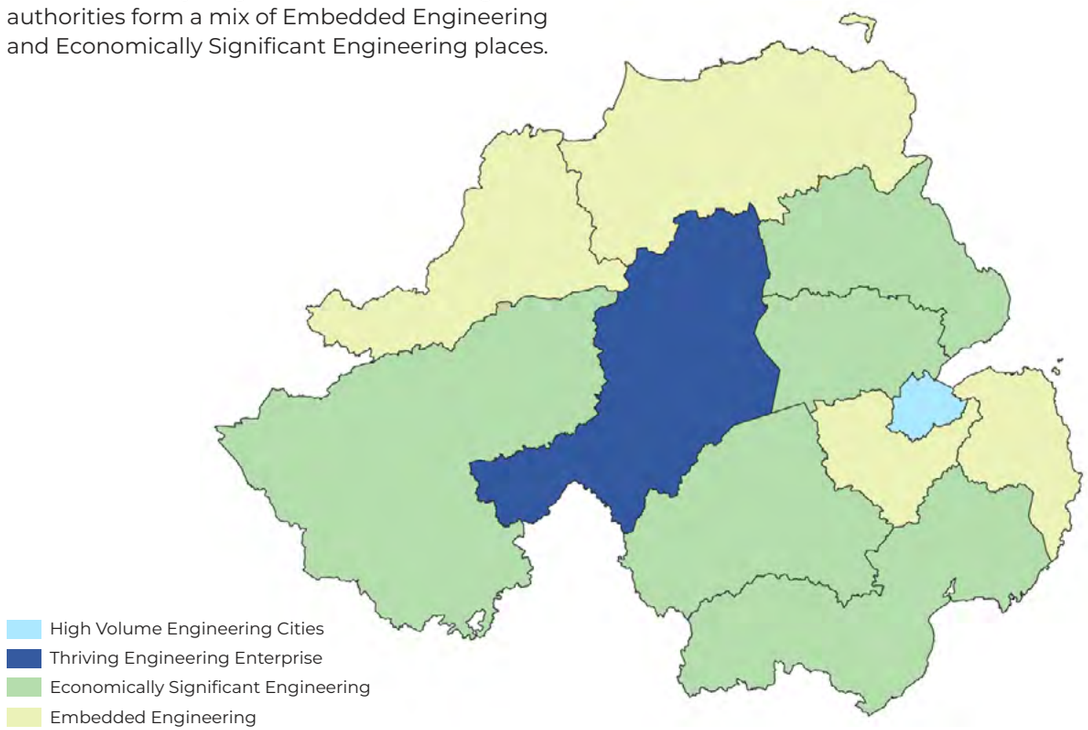
Annex



Northern Ireland typology

The map below shows the typology groups of the local authorities in Northern Ireland, once the analysis was completed. Since EEP UK 2023, there have been no changes to the typology groupings: Belfast and Mid Ulster have remained as Volume Heavyweights and the remaining local authorities form a mix of Embedded Engineering and Economically Significant Engineering places.

FIGURE 33
Northern Ireland typology map



Methodology: updating the analysis

Revised estimates of GVA for 2019, released in the years since EEP UK 2023, result in an estimate of engineering GVA in 2019 being 1% lower than previously.

REVISIONS TO GROSS VALUE ADDED (GVA)

The footprint value is measured by calculating GVA per job. Historical GVA data are typically revised in annual releases because of revised national accounts data, the availability of more robust estimates, and some methodological changes. As a result, the most recent GVA data from 2019 differ from those used in EEP UK 2023. Overall, the latest release shows GVA in 2019 was 1% lower than the release used for EEP UK 2023. However, the proportional change in GVA differs across geography and industry. For most local authorities, GVA has changed by less than 10%, with exceptions for Southampton and West Oxfordshire. In Southampton, GVA increased by 15%, driven by improvements in data for the manufacture of food, drink, and tobacco. In West Oxfordshire, GVA grew by 12%, driven by an enhancement to armed forces data, boosting the public administration output. By industry, motor trades saw GVA revised downwards, decreasing by 16%, while services to buildings and landscapes saw GVA revised upwards by 11%.

For local authorities, GVA data is not reported at the same sectoral detail as employment; therefore, there is an element of modelling to estimate GVA in the engineering economy using the proportion of jobs in each broad sector. Since the previous report, ONS now releases more granular data, which enables us to more accurately model the proportion of GVA in the

engineering economy. The table below describes the changes, including one case where the reverse is true and two sectors have been merged.

This has allowed for more accurate estimates of value, and has a significant impact in cases where divided industries have substantial differences in their engineering economy shares.

In Hammersmith and Fulham, TV and film represent 89% of the combined sector total employment; therefore, engineering GVA is 36% lower than previously calculated, as the proportional share of GVA in engineering is lower. In contrast, ICT accounts for 99% of the combined sectors' total employment in Reading, resulting in an estimated 38% higher GVA.

AN AMENDED APPROACH TO ESTIMATING VALUE OF OCCUPATIONS

In updating the report, there is an opportunity to improve the value estimation of engineering. Therefore, this approach also utilises earnings by occupation data to more accurately estimate the GVA contribution of engineering jobs in non-engineering industries. This method calculates the proportion of the total wage bill (earnings multiplied by employment) that is accounted for by engineers in non-engineering industries and applies that proportion to GVA per industry. Because of engineering occupations earning more on average than non-engineering occupations, total GVA increases by 8% in 2019, with all local authority districts experiencing a higher value than in the previous calculation, ranging from 3% to more than 15% in 12 geographies, particularly those with a high share of employment in sectors where engineers earn significantly higher wages than other occupations.

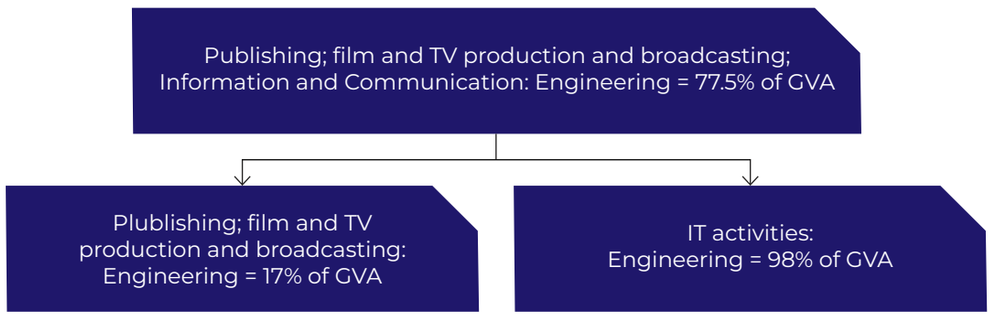
TABLE 6

GVA sector classification changes

More granular sectors		
Code	**Name**	**Change**
AB (1-9)	Agriculture, forestry and fishing; mining and quarrying	Previously joined with DE: Agriculture, mining, electricity, gas, water and waste
CC (16-18)	Manufacture of wood and paper products and printing	Previously joined with CD-CG: Manufacture of wood, petroleum, chemicals and minerals
CD-CG (19-23)	Manufacture of petroleum, chemicals and other minerals	Previously joined with CC: Manufacture of wood, petroleum, chemicals and minerals
CH (24-25)	Manufacture of basic and fabricated metal products	Previously joined with CI-CL: Manufacture of metals, electrical products and machinery
CI-CL (26-30)	Manufacture of electrical products and machinery	Previously joined with CH: Manufacture of metals, electrical products and machinery
DE (35-39)	Electricity, gas, water; sewerage and waste management	Previously joined with AB: Agriculture, mining, electricity, gas, water and waste
58-60	Publishing; film and TV production and broadcasting	Previously joined with 61-63: Information and communication
61-63	Telecommunications; information technology	Previously joined with 58-60: Information and communication
Less granular sectors		
Code	**Name**	**Change**
86-87	Human health & residential care activities	Now merged as Q (86-88): Human health and social work activities
88	Social work activities	

FIGURE 34

Great Britain's employment shares in film, TV and ICT



An adjustment to the method has allowed for a better estimate of the earnings of engineering occupations in non-engineering firms, leading to estimated total GVA in 2019 increasing by 8%.

CLASSIFICATION AND BOUNDARY CHANGES
This report aims to build upon EEP UK 2023, highlighting where there have been changes in the typology of places. Since the previous report, there have been multiple revisions to the data used for the EEP methodology, including changes to occupational classifications, boundary changes and revisions to GVA by industry data.

Changes to Standard Occupational Codes (SOCs): This study carries forward the same underpinning SOC definition used in EEP UK 2023, making equivalent amendments to the agreed Engineering definition. There were some changes in codes due to the SOC2020 revision, meaning that some of the occupational codes initially identified as engineering roles are now defined differently, and some occupations now grouped or split across multiple SOC codes. This was addressed by EngineeringUK, the Engineering Council and the Royal Academy of Engineering when they published an updated Engineering Footprint SOC definition, which has served as the basis for this research.

There were a small number of instances where multiple codes, forming separate occupational categories, were grouped into a single occupation. The table below illustrates how they were handled.

Local Authority District boundary changes: Since EEP UK 2023, there have been some changes to local authority boundaries. In 2023, the counties of Cumbria, North Yorkshire, and Somerset were divided, and districts merged to form four new unitary authorities: Cumberland, Westmorland and Furness, North Yorkshire, and Somerset. This impacted the typology as these geographies merged areas that were previously in different categories, and increased both the volume and base of activity, potentially shifting areas into another typology grouping despite the engineering landscape itself remaining unchanged.

IDENTIFYING CHANGE
To establish a typology of mutually exclusive categories, it is necessary to use thresholds that can be used to allocate places to a specific category, as previously employed. Since the previous report, both volume and value have increased across the footprint, therefore it is necessary to adjust the thresholds by matching

TABLE 7
Changes in SOC codes impacting occupational categories

SOC2010 occupation	Previous category	SOC2020 occupation	New category
1131: Financial managers and directors	Support	1131: Financial managers and directors	Support
1150: Financial Institution Managers and Directors	Other		
2432: Town planning officers	Other	2452: Chartered architectural technologists, planning officers and consultants	Deploy
2435: Chartered architectural technologists	Deploy		
3121: Architectural and town planning technicians	Deploy		
3121: Architectural and town planning technicians	Deploy	3120: CAD, drawing and architectural technicians	Develop
3122: Draughtspersons	Develop		
8212: Van Drivers	Support	8214: Delivery drivers and couriers	Other
8214: Taxi and cab drivers and chauffeurs	Other		
9211: Postal workers, mail sorters, messengers and couriers	Other		

the percentage increase above the national average of the 2019 threshold as reported in the first study.

This report aims to understand the nature of change from EEP UK 2023. However, basing change purely on the comparison between whether a location is above or below a threshold compared to its previous position can result in places changing typology groups because of marginal changes. This includes places such as Newcastle-under-Lyme, which saw a 0.7% increase in local significance, Lambeth, which experienced a 2.2% decrease in employment (approximately 600 jobs), and Harrow, which saw a 0.34% decrease in value, all of which would result in changes to the typology group. Therefore, a framework has been developed to identify substantial change, based on the scale of change between data from 2019 and 2023.

In this report, for a local authority to change typology group, it must satisfy two conditions:

- The value of the Tier 1 indicator must exceed the threshold.
- **And:** The change in this indicator must exceed a percentage change threshold to reflect a meaningful change.

Table 8 below lists the 13 local authorities which have changed typology group as a result of the availability of more granular data on value by sector. As such, their changed category reflects a revision in the data improving our understanding of the engineering economy of the places, rather than a change in the engineering economy.

TABLE 8
Typology group revisions

Local Authorities	Previous group	Revised group	Reason
City of Edinburgh	High Volume Engineering Cities	High Flying Innovator	Value revised upwards because of more accurate data since the previous report to comfortably above the threshold, despite little change since 2019 in the updated data.
Crawley	High Performing Big Business	High Value, Hidden Gem	Larger upward revision of value compared to other places, combined with an increase to significantly above the threshold.
Wrexham	High Performing Big Business	High Value Hidden Gem	Larger upward revision of value compared to other places, combined with an increase to significantly above the threshold.
Warwick	Economically Significant Engineering	High Flying Innovator	Value revised upwards significantly. Volume and local significance remains high. Also a high performance in R&D and all-round indicators.
Ipswich	Embedded Engineering	High Value, Low Growth	Value was revised upwards more than other places, and increased by more than 12% since 2019, pushing it significantly above the threshold.
Pembrokeshire	Embedded Engineering	High Value, Low Growth	Value was revised upwards significantly more than most, putting Pembrokeshire 12% above the threshold, despite lower growth.
Southampton	Embedded Engineering	High Value, Low Growth	Following a revision of food manufacturing data in the city, value has been revised upwards significantly more than anywhere else, pushing it much higher than the threshold, despite seeing a large decline.
Thurrock	Embedded Engineering	High Value, Low Growth	Value was revised upwards significantly more than most, putting it above the threshold, despite only a slight increase since 2019.
Medway	Thriving Engineering Enterprise	High Flying Innovators	Value revised upwards with significant growth since 2019, volume drop was insignificant enough to fall below threshold, while local significance and industrial specialisation were strong.
West Dunbartonshire	Embedded Engineering	High Value, Low Growth	Value was revised upwards more than other places, and increased by 12% since 2019, pushing it significantly above the threshold.
Harrow	High Value, Low Growth	Embedded Engineering	Value was revised downwards, with minimal growth, making Harrow place significantly below the value threshold.
Kingston upon Thames	High Value, Low Growth	Embedded Engineering	Value was revised downwards, with minimal growth, making Kingston upon Thames place significantly below the value threshold.
Ealing	High Flying Innovators	Economically Significant Engineering	Value was revised downwards, with minimal growth, making Ealing place below the value threshold. A weak performance in enterprise indicators keeps Ealing out of the Thriving Engineering Enterprise category.

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