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Capacity constraints in construction: rethinking the business environment

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About us

We are the Chartered Institute of Building (CIOB), and we stand for the science, ethics and practice of built environments across the world. Everything we do is to improve the quality of life for those using and creating the built environment.

We have a role in the management, leadership, education and development of our industry, guiding and educating our members as they embark on their careers.

Using both the cutting edge of technology and the foundation of hard-earned experience, we train the construction experts of the future. From tools and data for the day-to-day, to degree qualifications for investing in a career. We train and shape workers and organisations who make our industry what it is.

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We would like to thank the many industry experts who provided useful advice, insight, and feedback during the production of this report. Notable among them were Professor Noble Francis of the Construction Products Association (CPA), the academic and author Dr Stephen Gruneberg, Lee Bryer of CITB, Simon Rawlinson of Arcadis, Rachel Seymour of Skanska, and Tom Hall of Aqua Consultants.

Foreword

The aim of this report is to help policymakers and industry leaders form a coherent response to the multiple capacity challenges that lie ahead for construction. The aim is not to present detailed answers but analysis and pointers to policy options that should lower the likelihood of capacity constraints that repeatedly dog the industry.

The huge uncertainty, both on the demand and supply side together with the lack of good data, means that any attempt to quantify capacity gaps within construction can only be speculative. But the risk the industry will become overstretched during the next few years must be taken seriously.

The Labour government is rightly keen to rapidly reshape the built environment to meet the demands of tomorrow. There are powerful arguments for urgency. The nation's population is expanding rapidly, climate change is a growing threat, and technology is fundamentally altering how we work and live our lives.

In past construction booms, the industry has muddled through. It is adept at finding quick fixes and new ways to build. These have tended to solve short-term capacity constraints. However, they have too often led to undesirable longer term side effects, which have damaged the construction sector and tainted its reputation.

The aim here is to look beyond short-term fixes. Taking a wider brief this report explores how longer-term solutions can be put in place to alleviate the immediate challenges, while shifting the sector towards being more resilient, more progressive, and more productive in the future.

There are no magical solutions. But a better understanding of how the industry operates under stress and what can be done to encourage improvements would direct the industry on a more sustainable path.

Central to this report is the belief that much of the construction sector's dysfunction is down to the environment within which it operates, one of high volatility and uncertainty. This has led to excessive fragmentation and too often a destructive allocation of risk. If we are serious about encouraging long-term positive change, we need to appreciate this. Changing the business environment inevitably changes how firms behave. The task is to work out what changes to the business environment will encourage positive change.

This does not deny the need for short-term fixes. But the eyes of the industry and policy makers should be on the long-term. It should seek to seize the opportunities a boom in output might offer to build a better future for construction. All too often the opportunities from previous booms have been squandered or lost.

Paul Gandy
President of the
Chartered Institute of Building

Introduction

The UK's built environment is undergoing a massive revamp to cope with an expanding and ageing population, climate change, and the social and economic effects created by digital technologies. Significant advances have been made, but the pace of progress looks set to accelerate.

The scale and speed of transformation in the built environment in coming years could exceed that seen in post-war Britain or during the transition from an industrial to a services-based economy in the 1980s. Both generated building booms.

Already in the pipeline there is Labour's ambitious 1.5 million house building target and plans to decarbonise the building stock and energy system. On top of this there is a backlog of much-needed construction work to be delivered.

Weak economic growth and high public sector debt may temper demand. But assuming finance is found to fund a revamp of the built environment, the construction industry will need to step up with the capacity to deliver.

Construction output may need to expand by up to 40% to meet the Government's stated ambitions. This, potentially, could mean construction needing to attract more than one million new recruits. And, in the absence of investing heavily in UK construction products manufacturing, it would mean spending billions of pounds more on imported materials.

Looking at the capacity challenges, skills and labour are the prime concern. In addition to its persistent skills shortages, the industry now must fill big gaps being left by the retirement of huge numbers of construction workers recruited in the late 1980s and early 1990s. The industry is losing both large numbers of workers and valuable skills and knowledge.

Labour shortages will likely increase calls for more construction to be shifted off site and into factories. This trend has a long history and has reaped huge benefits. But in developing and embedding modern methods of construction, overeagerness and misunderstanding have led to well-publicised failures, which have repeatedly undermined prefabrication and tarnished its image.

This report suggests there should be more focus on how to embed new patterns of working and technologies within construction, rather than pinning hopes on "silver bullet" solutions aimed at revolutionising the industry.

This demands a better appreciation of the business environment which shapes the business models adopted by firms that create and maintain our buildings and structures.

The following pages suggest the behaviour of firms in the construction sector is heavily defined by volatility, uncertainty, complexity, and fragmentation. There is a bewildering number and range of differing connections that link firms, clients, authorities, and multiple governmental and non-governmental organisations.

These characteristics are inevitably found in all industrial sectors. However, in construction, they are demonstrably more extreme and dominant in shaping business models and relationships within the supply chain and with clients. Furthermore, it should be more widely recognised that it is a sector that constantly morphs in time and place as the demands placed on it change.

It is an industry that is often misunderstood, not least by policy makers and the general public. It is frequently maligned and often unwisely compared with other industries such as manufacturing. This is despite manufacturing making large volumes of similar products in a fixed place. Conversely, construction is bespoke, operates at multiple sites and, with the exception of speculative house building, is an intermediary in the process of delivering its final products, not in full control of the process.

Furthermore, given its complexity, it is an industry where the data is sparse. What is available tends to provide clues rather than answers. The lack of structured and connected data both inside and outside the industry is likely to be a major factor holding back progress. That said, within construction, data is increasingly being used to enhance programming and productivity, for instance with growing use of Building Information Modelling (BIM), which uses digital processes to run projects more efficiently and with fewer errors.

This report seeks to shift the policy debate, not only towards better use of data, but also towards seeking long-term solutions and a better understanding of the incentives that shape the behaviour of construction firms.

Broadly, the argument presented suggests four key characteristics of the sector need to be given greater recognition, taken into consideration, and addressed. The uncertainty, volatility, complexity, and fragmentation that define construction are major factors in determining how the industry is structured, how it reacts, how its firms shape their business models, and how it performs.

Building a greater understanding of the complexity and interconnectedness, created by its fragmentation, and finding ways to lessen uncertainty and volatility offer the prospect of shepherding the construction sector onto a more fruitful path.

The aim of the report is to encourage the policy debate to place greater weight on the contextual factors that influence the construction sector and its performance. It suggests five policy objectives that might be considered:

- Reduced volatility
- More transparent, accessible, usable, and coordinated knowledge
- Improved policy effectiveness
- Better coordination of policy with clearer signals
- Improved adoption of innovation

These may seem basic or mundane. But addressing these are fundamental to creating a better environment in which the sector can flourish, and investors can invest.

It would also greatly enhance the chances of construction businesses throughout the supply chain maturing into more stable, durable, and productive firms over the long term.

The wider benefits of improving the performance of construction are huge given it delivers our built environment which is fundamental to economic growth, social wellbeing, and environmental sustainability.

The public sector would gain from the changes outlined through improved delivery, better quality, lower costs and better outcomes. The improvements flowing from improved infrastructure would also help private sector businesses to thrive. Better homes, better workplace, and a better environment generally would boost the health and wellbeing of society.

Defining the construction sector

Official statistics define the construction industry differently from what most people think of as 'construction'.

This presents a problem, because policy makers use these statistics as data to shape their views, the views of others, and their policies. Any difference between what the data are describing and what people think they are describing can be misleading and often is. It can also lead to poor policy choices.

For most people, even within the industry, when they visualise construction they see architects, surveyors, engineers, plant hire firms, building materials producers such as brickmakers, and builders' merchants, as well as the construction managers, bricklayers, carpenters, plumbers and other trades. They might even include developers and building control in the picture.

Yet official data for construction only includes firms that primarily undertake work on-site. Broadly that is contracting firms. The professionals and suppliers of materials and non-operated machinery fall into different industrial sectors (which is defined by the Standard Industrial Classification (SIC) codes), as do most developers.

This mismatch between definition and common belief may seem unimportant but it creates false impressions. For example, official data are released on construction industry employment numbers, gender splits, insolvencies, productivity, or construction's share of the economy, they are for the contractors' activity only and can easily be, and often are, misinterpreted.

The matter is made more confusing by there being two measures of construction activity – construction output for Great Britain, and gross value added (GVA) for the UK.

The latter is used to measure the sector's contribution to gross domestic product, which in turn is used to estimate other measures such as productivity. Construction output includes building materials, GVA does not. The difference varies, with construction output being between 28% and 52% more than annual gross value added since 1997.

Currently the construction industry represents about 6% to 7% of the UK economy, according to GVA. The wider construction industry, including all the people and businesses engaged in the development and maintenance of the built environment, would be roughly double this, placing it above manufacturing as a contributor to the UK economy.

There is a strong argument that the direct impact construction has on the economy is undervalued. More importantly, it is likely to be undervalued in its ability to make the rest of the economy run more effectively.

The purpose, context, and limitations of the construction sector

The primary purpose of the wider construction sector is to deliver both economic and social value through creating and improving buildings and structures. How it creates value and how this value is distributed is often misunderstood. This too often leads to poor decisions and poor policymaking.

A perceived need to create more homes, better hospitals, better roads, schools, bridges, or football stadia may be a prompt for construction activity. But demand in the economy does not simply start with the needs or desires of the population or businesses, although needs clearly inform their choices.

Economic demand for construction starts with a person, business, investor, or public sector organisation willing and able to pay for a building, a structure, or improvement works. A large amount of work that many might consider is needed, such as new roads, hospitals, airports, or schools, is never realised.

Before construction begins the client needs to decide what it is they want and what is feasible, technically and financially within the regulatory system. To do this they engage advisors and professionals to determine a plan and designs, secure a site if needs be, and seek planning permission. This can be a lengthy and risky business.

Although some clients today engage a main contractor and key specialists early in the process, their influence on design will vary greatly as will the contractual terms under which they are engaged. Therefore, the ability of construction firms to contribute to innovative solutions is limited as they are engaged after key decisions have already been made.

Throughout the construction process the work is checked at various points. If it is non-compliant with the regulations and requirements, problems will need to be put right. At each point on this journey there are risks and uncertainty. These create competing interests and agendas among the multiple firms that work on most construction projects. This in part explains high levels of litigation within the sector.

The whole process of construction works within an agreed institutional framework (laws, regulations, industrial bodies, etc.) and the accepted customs and practices of the day. This is true of all industries, but it is far reaching for firms engaged in construction, given the sector's impact on economic and social prosperity.

This institutional framework has a major influence over who gains economically and socially from the process of construction. In turn, this influences the organisational structure of the sector, how it operates, and the business models employed.

In practical terms, construction adds value to land (see observations on land and value creation through construction on page 47). The landowner or leaseholder has monopoly power over the land and therefore huge power over the process. Most contracting firms are commercially subservient to the client so are limited in how much they can shape the construction process.

With the exception of house builders who own landbanks, most firms in the defined construction sector, operate in a highly competitive environment with low profit margins. These vary widely with activity in the industry, so firms have evolved to survive through famine and feast, adopting practices and behaviours that are as necessary as they are problematic.

Critically, and not surprisingly, the institutional framework within which construction works tends to be in constant flux. Changes occur for multiple reasons reflecting shifts in economic, social, technical, and political circumstances and aspirations. For instance, over decades there have been pressure to reduce high levels of death and injury associated with construction. While the levels of death and injury in UK construction remain higher than would be accepted in most working environments, they are low by international standards.

More recently there has been increased emphasis within governmental and commercial organisations to improve environmental social and governance (ESG) performance. This has big implications for construction and development firms. A recurrent issue is how to raise the productivity of construction. This is currently high on the agenda with growing concern over whether the industry has sufficient skilled labour to meet expected future demand.

These constantly changing pressures exerted by the institutional framework result in a construction industry that is permanently morphing. This means while its core purpose remains the same, what is expected of it constantly changes.

The institutional framework governing construction and the built environment

What gets built and where in the UK is primarily decided by the market. However, developers and firms in the wider construction sector are not free to act as they choose. They operate within an institutional framework designed to restrict undesirable behaviour and promote good behaviour.

This consists of rules and regulation, social norms, various public and private organisations, and accepted ways of doing things. Inevitably, it influences more than just how firms operate and behave, it shapes the way they and whole sectors of the economy are structured. Importantly, what is and what is not seen as desirable alters over time.

Within the institutional framework that shapes the built environment, the government, directly or through agencies, is a key player with broadly three roles. Firstly, it is construction's largest client, funding public works such as infrastructure. Estimates by the Construction Products Association (CPA) suggest that over recent years the public sector has funded about a quarter of all construction. Before the global financial crisis, it accounted for approximately a third. Secondly, it provides incentives, such as grants or investment, to steer positive outcomes, such as energy efficiency. Thirdly, it sets the overall policy framework and creates rules and regulations.

The aim within our political system, is to provide enough flexibility to meet the nation's construction needs within a market-based structure that has planning rules and other regulations to protect the public and businesses against harms.

But, judged by multiple statements from successive governments, numerous think tanks, interest groups, and academics, the

current institutional framework that guides construction appears to be broken. For instance, the government and many others believe too few homes are being built and much needed improvements to the nation's infrastructure are not being delivered. While some dissent from this view, the consensus is that changes need to be made to accelerate construction activity. The current government certainly holds this view.

Inevitably the desire to fix these problems varies across the population. Many existing homeowners gain from the shortage of homes, as it drives up house prices. This may increase reticence towards building new homes. Meanwhile, other homeowners near proposed infrastructure schemes may have concerns over the environmental impact or the impact on the price of their homes. This could lead them to object to the proposals.

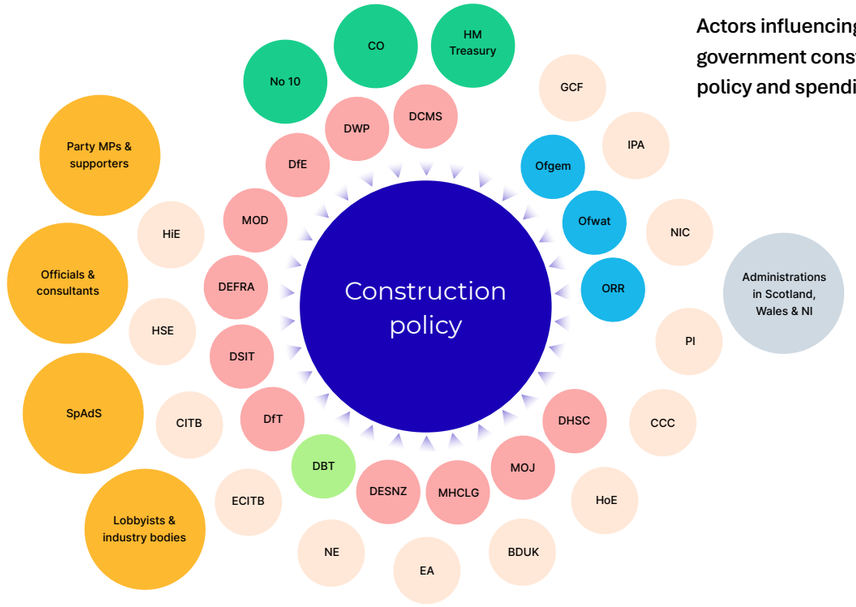
These are tricky challenges for a political system operating within a "homeowning democracy" where most of the population has both a financial and emotional stake in the land surrounding them. There is a growing sense that the political system is failing to tackle this challenge. Furthermore, the debate has become increasingly polarised, illustrated by the language of the current government portraying the challenge as "builders" versus "blockers".

The government, many of its predecessors, and many interest groups blame the planning system. This raises the question: if it is a planning system, where is the plan? The answer is that the UK does not currently have a single, overarching strategic plan for the entire built environment.

UK policy on the built environment is fragmented. Indeed, the patchwork of policies governing construction-related firms is generated by multiple government departments with often conflicting and competing objectives. Meanwhile an array of governmental and non-governmental bodies with sway over aspects of the built environment add further complexity and opportunities for conflicts to the policy mix.

Diagram 1 highlights the numerous actors that have influence or seek influence over the policies relating to the wider construction sector and the built environment. Others could be added.

Diagram 1: An illustration of both governmental and non-governmental organisations and interested parties that in 2024 had influence over or were part of the institutional framework within which the construction sector operates.



Agency/Public Body	Ministerial Department	Role/Remit	Abbreviation
Committee on Climate Change (CCC)	**Department for Energy Security and Net Zero (DESNZ)**	**Non-Departmental Public Body (NDPB)**	CCC
Construction Leadership Council (CLC)	**Department for Business and Trade (DBT)**	**Joint government industry body**	CLC
Construction Industry Training Board (CITB)	**Department for Education (DfE)**	**NDPB**	CITB
Engineering Construction Industry Training Board (ECITB)	**Department for Education (DfE)**	**NDPB**	ECITB
Government Commercial Function (GCF)	**Cabinet Office (CO)**	**Cross Government Network**	GCF
Health and Safety Executive (HSE)	**Department for Work and Pensions (DWP)**	**NDPB**	HSE
Historic England (HiE)	**Department for Culture, Media & Sport (DCMS)**	**NDPB**	HiE
Homes England (HE)	**Ministry for Housing, Communities & Local Government (MHCLG)**	**NDPB**	HoE
Infrastructure Projects Authority (IPA)	**Cabinet Office & Her Majesty's Treasury (HM Treasury)**	**Centre of expertise**	IPA
Natural England (NE)	**Department for Environment, Food and Rural Affairs (DEFRA)**	**NDPB**	NE
National Infrastructure Commission (NIC)	**Her Majesty's Treasury (HM Treasury)**	**Executive Agency**	NIC
Office for Environmental Protection (OEP)_	**Department for Environment, Food and Rural Affairs (DEFRA)**	**Executive NDPB**	OEP
Office of Gas and Electricity Markets (Ofgem)		**Non-ministerial department**	Ofgem
The Water Services Regulation Authority (Ofwat)		**Non-ministerial department**	Ofwat
Office of Rail and Road (ORR)		**Non-ministerial department**	ORR
Planning Inspectorate (PI)	**Ministry for Housing, Communities & Local Government (MHCLG)**	**Executive Agency**	PI

*NBPB is non-departmental public body

At the time of writing (quarter 2 2025), the minister responsible for construction was Sarah Jones MP (although as of 5 September 2025 moved to the Home Office). This role straddled two departments, the Department for Energy Security & Net Zero (DESNZ) and the Department for Business & Trade (DBT). Planning and housing policy falls under Matthew Pennycook MP at the Ministry of Housing, Communities & Local Government (MHCLG). It is worth noting the average span in office of the housing ministerial brief in recent years has typically been less than one year.

Road and rail investment fell within the Department for Transport (DfT) and the Department for Environment, Food & Rural Affairs (DEFRA) covers water and flooding as well as the environment more widely. And this is without including the Ministry of Justice (MoJ), and Department of Health & Social Care (DHSC) which control significant capital investment, or the Department for Culture, Media & Sport (DCMS), which oversees heritage and the creative industries sector which includes architecture.

> there is no overarching body that can coordinate and arbitrate between competing pressures within governments or the wider institutional framework.

Within this, the one body that might be regarded as providing some connection between the fragmented elements of oversight and policymaking is the Construction Leadership Council (CLC). However, while it provides high-level strategic advice, it has limited resources given the scale of the task. Importantly, it is not an impartial body regularly scrutinised for its effectiveness, and its influence is limited in terms of shaping policy.

The planning system is a critical part of the institutional framework for firms involved with creating and maintaining the built environment. In reality the planning system, particularly in England, is more development control than planning, being highly market led with applications decided case-by-case by local planning authorities. This contrasts with systems in other countries where earlier public consultation leads to local plans that are far more detailed and prescriptive. The effect is that in the UK many contentious decisions are left later in the process, increasing uncertainty in the early phases.

One consequence of the case-by-case approach taken in England is that conflict between pro and anti-development voices are more likely to flare up. This creates uncertainty and delay, particularly in the key areas of housing and infrastructure. Furthermore, major planning disputes can force the government of the day to take a side. Its decisions inevitably tend to be influenced by short-term political priorities, rather than being informed by any long-term accepted plan for the built environment. The effect is ad hoc decision making, vacillation, and confusion.

Taking an overall view of the existing policy levers and bodies that form the institutional framework and guide development of the UK's built and natural environment, they do have a level of democratic legitimacy. But, looked at pragmatically, the system has a major drawback. There is no single overarching plan that constitutes a long-term vision to direct the development of the built environment.

Importantly too, there is no overarching body that can coordinate and arbitrate between competing pressures within governments or the wider institutional framework. Simply from observing the briefs of government department, which might be seen as at the top of this institutional framework, it is clear there is inbuilt conflict, lack of coordination, and a bewildering level of complexity.

Successive governments of all persuasions have recognised this problem and made small steps to improve the coordination of policy relating to construction.

The Labour government before losing office in 2010 set up Infrastructure UK. This was then merged with the Major Projects Authority (set up by the Conservative-led Coalition government in 2011) to form the Infrastructure and Projects Authority (IPA). Now the IPA will combine functions with the National Infrastructure Commission (NIC) (established in 2015) under a new organisation called National Infrastructure and Service Transformation Authority (NISTA).

However, NISTA covers just a slice of the built environment. Although in its infancy, consideration should be given to expanding and deepening the role intended for NISTA in the long term. It will need to be regularly reviewed and work in tandem with any future construction regulatory model that is set to be introduced.

The current institutional framework in which construction operates clearly lacks coordination. This almost inevitably leads to conflicting policy decisions across the built and natural environment.

Furthermore, there is a need to apply our limited resources as efficiently and effectively as possible. This demands a greater alignment of purpose than is currently delivered within the current institutional framework.

The information guiding construction and development of the built environment

Decision making is reliant on good information and reliable data. The construction industry is rapidly improving its capacity to collect, process, and exploit. For instance, at a production level, the industry is increasingly using Building Information Modelling (BIM) which uses digital processes to run projects more efficiently and with fewer errors.

However, available data covering the construction market in all its aspects is patchy. Key data on output, orders, and prices provided by government and the Office for National Statistics (ONS), other than going digital, there has been little progress since they were provided on paper. Multiple private businesses deliver construction data, information, and research, but relative to many other industries these services are of variable quality and coverage. However, this is understandable given construction boasts the highest number of SMEs compared to any other industry sector in the UK and therefore many lack the budgets, knowledge and experience to utilise market information.

The complexity of construction and the built environment make collection, collation, and comparisons of data harder than for most industries. So, we should expect that it lags in terms of sophistication. But the shortage of high-quality construction market information means that major decisions often rest on precarious data points.

Furthermore, the confusion between the definition of construction in official statistics and what people perceive it to be hampers the interpretation of much of the available data. The official data on 'construction' does not include many businesses critical to the creation and maintenance of the built environment, such as construction-related professions, materials manufacturers and specialised plant and machinery hirers.

The CIOB and others have called for the establishment of 'satellite accounts' for the wider construction sector. These are accounts that cover a group of activities within the economy, such as tourism or the creative industries, that are not normally combined within the core UK national accounts outputs. For construction these could show the combined impact of this wider sector, which would include the professions, materials suppliers, and other groups that work to create and maintain the built environment. Satellite accounts would be a powerful tool towards building a better understanding of the progress and impact of construction.

The Office for National Statistics (ONS) produce satellite accounts for tourism, and the Department of Culture, Media, and Sport (DCMS) produce simple satellite accounts

Satellite accounts explained

Satellite accounts cover activities linked to the economy but not part of the core UK national accounts including environmental accounts, tourism satellite account, and household satellite accounts.[1] The accounts pull together important data elements to better understand industries in a more holistic form.

to track the creative industries. Indeed, the economic activity of architects is better tracked statistically by the DCMS Sector Economic Estimates than the Department for Business and Trade (DBT), which is the sponsoring department of construction.

The lack of sufficient, high quality, and well-coordinated data and agreed taxonomies is a concern. Not only does it limit the effectiveness and productivity of firms delivering the built environment, but it also inevitably inhibits policymaking.

Demand for construction and how it is changing

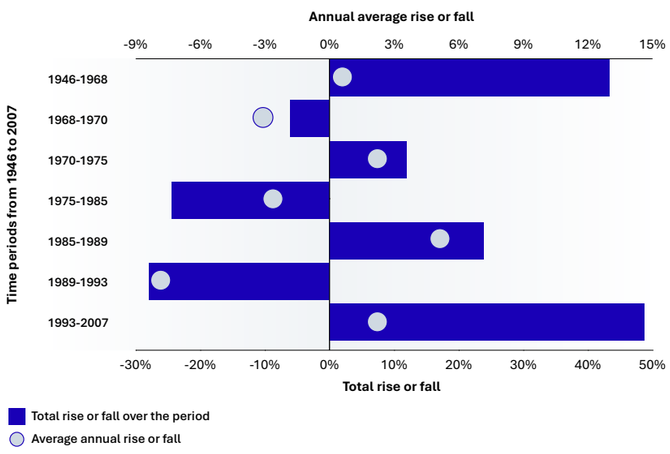
There is a broad political consensus that we need to invest heavily in the built environment. We need more homes if we are going to meet the demands of a growing population. We need to meet our legally binding climate change targets. We also need to repair and upgrade public infrastructure, from schools, hospitals and prisons to roads and sewerage. The list goes on.

Major societal and technical changes provide other incentives to invest more in constructing and refurbishing buildings and structures. Digitalising the economy alters the way we use the built environment – changing how we shop, where we live, and how we work. It also creates demand for new facilities, such as data centres. Meanwhile, the population is ageing so we need more homes suitable for the elderly and frail.

Furthermore, at the heart of the government's growth agenda is improving productivity. Construction enables both productivity and economic growth. It also improves social conditions. Pull this all together and there is ample reason to suspect a huge wave of work is about to hit the construction sector.

In assessing the implications of this potential demand, it is vital to take a long view and learn lessons from history. History highlights the need to build in a sustainable way, given the built environment exists within the wider natural environment. Adjusting one impacts the other. It also tells us that the urgency and complexity of changing the built environment varies hugely over time.

CHART 1



Periods of expansion and contraction on construction's share of UK economic output

Source: ONS, Economic Statistics Centre of Excellence (ESCoE)

This has resulted in periods of rapid expansion and deep declines in construction activity, with its share of the economy rising and falling as a result of the pro-cyclical nature of the industry's activity. Chart 1 shows how construction's share of the economy has expanded and contracted over the years 1946 to 2007. It illustrates the total growth over the selected periods and the average annual growth rate over the period. The key point is that construction share of GDP tends to rise faster in periods of economic growth and fall faster when the economy slows.

During the post-war period there was an urgency to repair from the destruction wrought by conflict. The pressure to build eased in the late 1960s, but resumed in the early 1970s, partly resulting from a boom in 1972. A Sterling crisis in 1976, oil price shocks in 1973-74 and 1979, and the high interest rates saw the economy fall, with construction falling faster.

By the mid-1980s, as the economy picked up, the economic shift from production to services created the need for a very different built environment. The need for offices and retail space saw a massive rise in commercial building, while rising levels of homeownership saw a surge in private house building. But rising inflation and high interest rates in 1989 and 1990 saw a further recession and a plunge in construction activity.

By the mid-1990s, globalisation and growth in the financial markets combined with growing prosperity encouraged huge investment in construction, particularly in key cities, such as London and more recently Manchester. This set the industry on a long growth path that ended with the global financial crisis of 2007-2008.

Looking to the future, the amount of expansion and reconstruction needed to meet our current challenges appears greater than the demand that led to previous construction booms.

Over the past decade or so, despite austerity, construction activity has expanded. While commercial activity has waned, there have been big increases in housing, infrastructure,

> there is a widely held view that investment in the built environment over recent years has failed to match the urgency and scale required to address the fundamental challenges we face.

and the industrial sectors. This, in part, reflects the efforts to accommodate both climate and demographic change and the effects of digitalisation. However, there is a widely held view that investment in the built environment over recent years has failed to match the urgency and scale required to address the fundamental challenges we face.

Decarbonising the economy is high on the list. This requires a complete refresh of the energy system, both production and distribution. It also means accelerating the retrofitting of homes, both to reduce energy consumption and adapt them to a changed climate in the UK. Meanwhile, pollution in the waterways is a growing concern. This will mean hefty investment in water and sewerage systems. At the same time the lack of capacity of the electricity grid to account for a greater reliance on electric vehicles and additional demand from alternative energy systems will need to be addressed.

While the housing stock did expand faster over the past 10 years than the previous, there is pressure to expand it much faster. Recent high levels of net migration reinforce this view, as well as the changing shape of UK households, with fewer large families. Meanwhile, much existing infrastructure, such as schools, hospitals, roads, and rail, needs repairing and improving.

These are aspirations not market demand. Some may be left unmet or delayed until growing pressure from both political and market forces triggers action.

While we cannot be certain about future demand, useful estimates of potential demand can be made which are critical in seeking to avoid capacity constraints.

Estimating how much construction activity might expand

It will take huge investment to transform the built environment to meet the multiple pressing social, economic, and environmental targets being set. Putting uncertainty aside, if these are to be realised within the suggested time frames, a construction boom lies ahead.

The key priority for the current government is to expand house building. This is mainly aimed at England, as UK housing is devolved. But it will impact across the UK. The target is to boost the housing stock in England by 1.5 million homes within the five years of the current parliament.*

***Observations on the target of 1.5 million homes are provided in the appendix ▸**

On average, it requires between one and two worker years on-site to build one home. Most of the major house builders have raised their productivity closer to one on-site worker for each home built annually. The numbers vary by builder, type of build, and location. So, hitting the target could mean adding anything up to 300,000 people to the current workforce, perhaps more. But, with retirements from construction running high, even more recruits would be needed to both expand the workforce and replace those leaving.

> The Home Builders Federation (HBF) estimate that for every 10,000 new homes the sector needs 30,000 new recruits.

The Home Builders Federation (HBF) estimate that for every 10,000 new homes the sector needs 30,000 new recruits.[2] On that basis the target could require closer to half a million new recruits, although many would be employed outside the defined construction sector.

These are huge numbers set against the total construction workforce in England of around 2 million and illustrate the scale of the challenge. In terms of output, new house building contributes close to £50 billion to annual construction. The hoped-for rise in production would see overall construction output rise by between £15 billion to £30 billion by the end of the parliament.

In addition, the imperative to meet net zero targets will require widespread improvements to existing homes. Here, the Greening Our Existing Homes, a national retrofit strategy produced by the Construction Leadership Council (CLC) in May 2021, suggested a price tag of more than £500 billion to retrofit homes in the UK over two decades.

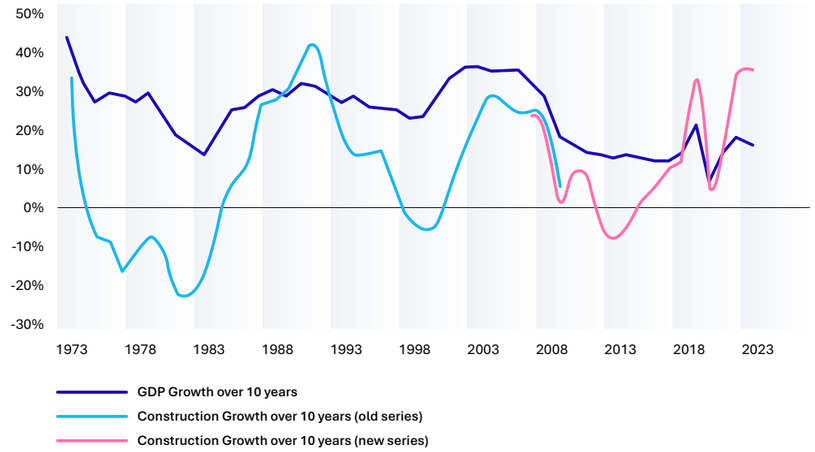
Some retrofit work will displace housing repair and maintenance work that would have been done anyway. However, the estimated cost of between £12 billion and £23 billion of work needed to fix buildings over 18 metres in height, or at least 7 storeys, in the wake of the Grenfell Tower fire will add to demand. This produces a rough estimate that housing repair and maintenance work could rise by £10 billion to £20 billion annually.

Turning to infrastructure, NatWest's Energy Transition Report 2023 estimates that more than £900 billion of capital expenditure is needed in the next three decades to support the UK transition of the energy supply and power generation sectors within the energy system.[3]

We can also look to estimates for upgrading commercial buildings to meet impending energy standards and avoid them becoming stranded assets. For instance, the majority of UK offices are currently rated below EPC B by the proposed 2030 Minimum Energy Efficiency Standards (MEES) regulations. There are significant unknowns but estimates for upgrading range from about £8 billion a year to £15 billion annually over the next five years.

In addition, there is a need to accelerate construction to fix the UK water and sewerage

CHART 2



10-year growth in construction output and GDP over the past 50 years

Source: ONS, Economic Statistics Centre of Excellence (ESCoE)

infrastructure. Spending on road and rail projects is not expected to rise greatly, but it is running at historically high levels and in the eyes of many still struggling to meet growing needs.

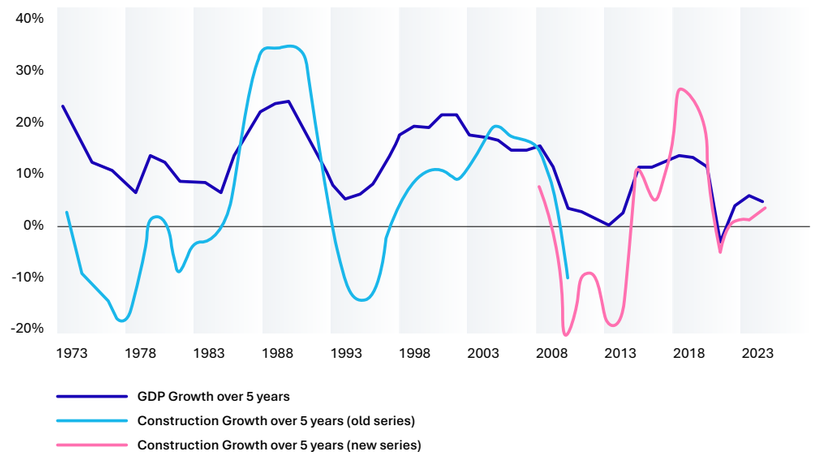
Based on the above, a relatively conservative estimate of the potential boost to annual construction output over the next five to ten years would lie between £40 billion to £80 billion. If that scale of growth were realised construction output would grow between 20% to 40%, if not more, from its current level.

This would be a significant uplift in construction activity. But growth rates of this scale do occur in construction, as can be seen in Charts 2 and 3. In 1991, the sector was 41% bigger, according to historic figures, than it was a decade earlier. Even over a relatively short period of say five years, rapid expansion can occur. There was a 32% increase in construction output in the five years to 1989. The industry coped, but it put significant stress on the UK supply base leading to workers and materials being sucked in from abroad to support the lack of existing skills and capacity.

While 2024 saw a decline in workload, current forecasts suggest that after that dip growth will return. This will take construction output to a new high by 2026, as construction activity is still riding high against historical comparisons. This high level of work reflects how some of the growing pressure to upgrade the built environment is already driving construction activity.

Despite the high level of activity, it is interesting that construction company failures are running

CHART 3



Five-year growth in construction output and GDP over the past 50 years

Source: ONS, Economic Statistics Centre of Excellence (ESCoE)

high. This is clearly not simply a result of collapsing demand overall in the industry. In some sectors where workloads have fallen, such as house building, it will be a key factor. But the current fragility of many construction firms will stem from the rising cost of delivering existing projects priced before the inflationary spike. This pushed some contractors into severe debt and some out of businesses. In turn, other businesses in the supply chain have been left unpaid, putting them under financial stress, many severely.

The collapse of ISG provides a recent example of the vulnerabilities in the pyramid of construction firms. Economic shocks and subsequent poor decision making often lead to failures among large construction firms. This is problematic not just in the direct redundancies and unpaid debts this leaves. There are usually multiple long tail effects that spread throughout the sector toppling other firms. ISG failed in September 2024, but the full impact is yet to be realised, particularly among its subcontractors.

The UK Government is currently attempting to address part of the problem, through the introduction of the Fair Payment Code (FPC)[4] that replaced the Prompt Payment Code to encourage businesses to adopt better payment practices and pay their suppliers on time. The Government is set to go further and is consulting on legislative measures which address late, long and disputed business-to-business payments, and the use of retention clauses in construction contracts.[5]

Why it is important to understand the details of demand pressures

The above estimates suggest that the construction sector needs to be ready to raise its output by between 20% and 40% over the next five to ten years. This will not be easily achieved.

However, if the industry fails, the nation's social and economic prospects will be held back, and the reputation of construction would suffer. Therefore, it is important that the industry expresses a clear view on what is and what is not possible, explaining why, and suggesting how progress can best be made to meet the nation's aspirations.

Many factors will inhibit expansion of the construction sector. Currently, it is at or close to its peak, so the level of unemployed construction workers ready to call on is negligible compared to slack periods in the past. Periods of rapid growth in the past have tended to start from a low base following recession with unemployed resources reemployed.

Also, a high proportion of existing workers are at or reaching retirement age and options for recruiting from abroad are more limited. While higher wages might entice more recruits a lack of readily available skills will constrain growth in construction activity.

The strain is clear. In its latest Skills and Training in the Construction Industry report, the training body CITB asked about capacity within the workforce over the past year. It found 83% of firms saying they were operating at full capacity in 2023. This compares with 71% in 2021 and 64% in 2018.

This highlights the struggle faced by the industry, particularly if it must ramp up production. These broad figures only explain part of the story. To understand how readily the industry might respond to increased levels of construction requires more detailed analysis. It needs to account for how future demand will split by types of work, their locations, and time frames.

From the outside construction may be viewed as relatively homogeneous. But the range of work undertaken is highly varied spatially, by type, by time, and by duration. Each project draws unevenly from a wide variety of resources, generally from pools of resources as local as possible to the construction site.

Without detailed understanding of what, where, and when projects will be taking place, it is hard to gauge the full extent of stress within the sector. What makes construction different from most production industries is that it creates its products at the location where its products will be used, rather than in a factory, or at a mine, mill, or farm.

It therefore needs to bring its workers and all the materials to that site. This can create stress if there is a spike in work at one location, particularly if it is not foreseen and planned for. Currently much of the potential work is largely undefined in terms of its location, type, and timing.

Any resource planning in construction, even when seeking to take a national view, needs to examine stresses locally as well at the national level. The days of mobile armies of workers moving site-to-site and living in informal living quarters are largely a thing of the past.

Long commutes remain a reality for many in the sector, but the distances construction workers are making to site are still shrinking. CITB's Workforce Mobility and Skills in the UK Construction Sector 2022 report released in May 2023, found that the average (mean) distance from workers' current residence (account for temporary residences) to their current site is 17 miles. This is a continuation of a downward trend. In 2012 the distance was 28 miles.[6]

Given the obvious advantages of sourcing locally, attention needs to be paid to potential local stresses. With suitable foresight of the potential problems many can be addressed through engagement and training within local communities. Not addressing potential constraints on local resources will almost inevitably lead to unforeseen inflation in prices and reductions in the quality of what is available.

With a potential surge in work on the horizon, this work needs to be addressed thoroughly, either by industry or government or both.

How patterns of demand shape the construction sector

The purpose of all firms, which are mainly limited liability companies, is two-fold: to create value and, in turn, capture some of that value for their efforts. In doing so they profit from their ventures. To do this effectively firms operate to business models shaped by the commercial and institutional environment within which they operate.

While all this may seem obvious, it is often overlooked or underappreciated by policy makers when they examine why businesses do things in a particular way and what incentivises them to do so.

This is true in construction. Myths and misconceptions are commonplace. This is partly because the ecosystem that delivers buildings and structures is complex and spans multiple industrial sectors. Also, the views of many people of what construction is differ from what the official data measure, which clouds understanding.

Examining the total value chain that delivers the built environment can bring some clarity. This reveals that construction is just one element within a multiplicity of businesses across a range of industrial sectors – mining, manufacturing, wholesale, and professional services being the most obvious – adopting different business models to create and extract value from the process of delivering additions and improvements to the built environment.

Critically, most of the value of constructing a building or structure tends eventually to lie in the land beneath or nearby. A quick way to appreciate this is to consider how even a permission for construction raises land values by many multiples. *

***Observations on land and value creation through construction can be found in the appendix ▸**

With the clear exception of speculative house builders, most construction firms seldom share in the uplift they create in land values. Rather they are paid for their work at a rate determined through competition with their rivals. It is instructive to see how much the business models operated by house builders, which own land, differ from contracting firms which do not.

Most of the value is captured by the landowner, which may be a real estate company, a public body, a business, or a homeowner. This, in part, contributes to the much higher level of labour productivity we see in real estate firms than is seen in either construction companies or the professionals that design buildings and structures.*

***Observations on labour productivity can be found in the appendix ▸**

The client commissioning the work may be experienced or not with construction. Either way, they will generally take on specialist advisers and professionals from surveying, engineering, or architectural businesses. Also, they will likely have specialist lawyers working within the team.

From the outset, a primary concern will be to limit or manage risk.

> construction firms have accounted for approximately 18% of total insolvencies, whilst accounting for less than 15% of companies.

Risk is a fundamental challenge in construction. There are multiple areas of uncertainty with potentially huge financial consequences. There may be issues with the ground on which the building or structure is being built. There may be key materials or components that become unavailable during the construction phase that force design changes or substitution. The economic circumstances may shift during a long build period. There may be falls in the value of the building that prompt a halt to work or redesign (value engineering as it tends to be called). There may be price hikes in materials or labour that squeeze the profit margin. Substandard work may need to be rectified. Key specialist firms may go bust. The list of risks and uncertainties is long.

The tendency is for the client to push as much of this risk as they can down to the contractor. The contractor then seeks to push that risk down to subcontractors and specialists, which are smaller firms and less able to deal with the risk. This is one reason for the high level of construction failures.

A strong cash flow is key to the fortunes of contracting firms. Most main contractors tend to have very high turnover for their capital employed. And, in the main they owe more than they are owed in terms of trade debt and credit. This reflects a tendency to hold onto the cash as long as possible before passing it down from the client to those further along the chain.

This model of devolving work through tiers of businesses rather than handling most in-house has evolved in part as a response to the high levels of risk. It is also widely adopted because the work required by most clients varies so much in time, space, and type that for most firms it would be uneconomic or impractical to have an in-house construction arm. Simply put, vertical integration is rare in the construction sector.

The downside is that this model creates a highly fragmented industry structure with intrinsic tension and financial fragility built in. This tension, and to an extent the fragmentation, is increased by extreme volatility in demand. This amplifies the intrinsic risks associated with delivering complex one-off projects.

The high volatility in activity, which is evident in the historical data as seen in charts in earlier pages. Taking standard deviation in growth over a five-year period as a quick guide, construction emerges among the most volatile industries. Mining, quarrying and extraction is more volatile, unsurprisingly given the erratic nature of global commodity prices, such as oil.

However, these figures are at a national level. The variation in activity spatially means that in any part of the nation volatility can be extreme. Not only is construction more volatile at a national level than, say, manufacturing with which it is often compared, but it is even more volatile at a local level. Unlike manufacturing, which takes place at a given location often for long periods of time, the level of construction activity at any given location is highly variable.

This provides a further incentive for many large companies to buy-in skills, trades, and some materials from firms based within a local market where activity is taking place, rather than employing people directly and having them stay in informal living quarters or commute long distances daily.

This high degree of fragmentation, as well as increasing transaction costs, inevitably creates multiple agendas and the potential for friction. There are multiple firms active at any point in time on most major construction sites, each with their own interest and each seeking to maximise their opportunity and minimise their risk. This in itself can accentuate risk, as conflict often leads to disputes.

Taking a simplistic view, the incentives for many if not most clients, particularly one-off clients, are weighted towards engaging contractors through competition to seek the best value at lowest price. This results in variable outcomes depending on the state of the market. Contractors will tend to bid lower when they are eager for work and higher when they have plenty on their books.

When workloads fall sharply, contractors can be tempted to bid below cost to win work and ensure cash flow. This process, dubbed "suicidal bidding", in turn applies to specialists and subcontractors engaged to work for main or management contractors.

When there is a drought in the work available to contractors and subcontractors a downward spiralling in prices tends to occur. This increases the likelihood of tensions such as battles over late payment to subcontractors. Ultimately it raises the number of business failures.

Insolvencies in construction tend to be much higher than in other sectors. Given the cyclical boom-bust nature of construction, this process, despite its dysfunction and the long-term damage it creates, has become a relatively predictable feature within the industry. Specifically in England and Wales, over the past decade, construction firms have accounted for approximately 18% of total insolvencies, whilst accounting for less than 15% of companies. Furthermore, the number of GB construction firm insolvencies in 2024 topped 4,200, this compares to 2,600 in 2015.

The high level of fragmentation, the way risk tends to be pushed down the supply chain, and often wafer-thin profit margins do not provide much scope or incentive for many contracting firms to invest heavily in their business. It also lowers the incentives to train workers and increases the case for using subcontracted labour even when in-house labour might be more appropriate and efficient.

In brief this structure, which many might regard as dysfunctional, is driven by a context where risk and reward are allocated unevenly in what is a highly cyclical industry. The high level of volatility, which is a characteristic of demand for construction, elevates the risk of failure and, in turn, disincentivises investment. It also exaggerates the intrinsic need for flexibility to satisfy the variable demand for different types of work at any given location.

Understanding the wider supply chain and how it is shaped by demand

Construction demand is highly volatile. It produces capital goods that have a very long lifespan which are constructed at different places at different times.

This contrasts with manufactured capital goods and fast-moving consumer goods. These are produced by firms on a more continuous basis to meet more stable demand. They are produced at sites fixed in locations for significant periods, often decades. Furthermore, much of their supply chain is often clustered close to their location.

The volatility and ever-changing location of construction activity, along with high levels of uncertainty and risk, shapes its structure. It encourages high levels of fragmentation and

a complex network of firms that interconnect sporadically.

Inevitably this fragmentation and volatility have significant implications for the supply chain more widely. As demand swings aggressively from boom to bust, suppliers need to adjust more rapidly than they might find comfortable. This is particularly the case for construction product manufacturers, as many have large amounts of capital tied up in plants and factories that operate more optimally with smoother demand.

The spread of construction firms across the country also means that the supply base has a widely distributed wide range of customers with greatly varying needs. This is one reason for the existence of builders' merchants, who act as distributors. It is worth noting they also provide much needed credit to smaller firms.

Another characteristic of construction supply chains that makes them different from most other production industries is the erratic flow of one-off projects. This means that new supply chains are formed for the start of each project and dismantled at the end.

Long-term arrangements and relationships within construction do form, rarely, but suppliers are constantly faced with different teams specifying different materials and services for each project. And it is not uncommon for significant changes to be made within supply chains from what is initially planned. This occurs for a range of reasons, such as design changes, substitution of products, changes in specialist firms, and a whole host of other changes that can occur over the period of construction.

Inevitably any long-term deals are still subject to uncertainty. And, while there may be some continuity, the component elements and relationships within each supply chain will not only differ one from another but potentially during the construction period.

This uncertainty informs the types of relationships formed and how firms within the supply chain engage with each other. Trust is a key factor, given the high levels of uncertainty and time pressures.

Simply put, managing supply chains in construction is significantly different from that experienced by car manufacturers who produce thousands of similar vehicles from one fixed site. That said, lessons from manufacturing are embraced by construction.

A rough outline of the supply chain for construction can be gleaned from the ONS' supply-use tables, which illustrate the financial relationships between the different industries of the UK economy. These show that construction firms buy-in goods and services that amount to about two thirds of the value they deliver. About half of what they buy-in is from other construction firms. This is not surprising given the level of subcontracting.

Within the goods and services bought in by the construction sector, the manufacturing sector accounts for the biggest share. In 2022, it was estimated to be £77 billion, which is about two-thirds of the goods and services consumed by the construction sector. Most of the goods supplied by manufactures are construction materials. There were other goods such as machines and computers. Construction also buys in more than £3 billion worth of goods from the mining industry such as aggregates.

The Construction Products Association estimates that about £63 billion of products and materials are used in the construction process. This includes goods from the mining and minerals sector. But not all these materials will be sold into the defined construction sector. Other businesses that undertake construction work in-house and households engaging in DIY or home repairs will also buy building materials directly, on top of those bought by construction firms.

Construction firms also buy-in professional services such as architectural, engineering, financial, and legal. The 2022 supply-use tables suggest these amounted to about £10 billion. On top of this, many construction-related professional services businesses work directly for clients and households, which are critical to the supply chain that delivers the built environment but not classified or recorded within the defined construction sector.

Construction firms spent about £11 billion in 2022 within the support services sector, mainly on plant and labour. The supply-use tables suggest that in 2022 they spent about £6 billion on rental services and close to £3 billion on employment services.

The construction sector is also heavily dependent on financial and insurance services, which accounts for about £7 billion of its purchases. Meanwhile it spends increasingly large sums on information and communications services, close to £4 billion in 2022. This represents about 3.2% of its purchases from firms outside the construction sector, up from 2.2% in 1997.

> having a strong home-based supply chain where possible has big advantages economically, socially, and environmentally.

Most of the materials and services will come from UK-based sources, not surprisingly given the bulkiness of much of it. And there are other advantages in buying from nearby suppliers. It is easier to form symbiotic business relationships closer to home, which can help in fostering improvement and innovations in the products or services. Importantly too, it reduces the risks associated with currency fluctuations and changes in trade tariffs.

Clearly, in any thriving economy imports are important, especially imports of specialist goods and services which might be in limited supply or uneconomical to produce locally. Hence timber and building stone are heavily imported for the construction sector. But having a strong home-based supply chain where possible has big advantages economically, socially, and environmentally. Policy needs to factor in the supply chain. Mass importing materials crucial to construction may also become more complex in the wake of changes at a government level, in this instance, the new product regulations introduced in the proposed Construction Products Reform Green Paper 2025.[7]

The construction supply chain has become significantly more international over recent decades. Economies of scale, agglomeration, and the ability to produce in low-cost nations are all factors in the trend to globalisation of the construction supply chain. Moreover, looked at from the perspective of suppliers, having a global customer base with multiple markets helps to smooth demand, given that at a national level construction can be highly volatile.

But the choice of where firms supplying the construction sector locate in a global market will vary for multiple reasons and be in constant flux. Over recent decades, globalisation has seen increasing amounts of products shipped into developed nations from countries that are increasingly emergent, such as China and India, where labour costs are much lower. Meanwhile, there has been some balance occurring with more developed nations exporting high-value services to emergent nations and others. This has been helped by the expansion of the internet, which has increased opportunities to provide both high-value and low-value services remotely from anywhere in the world.

Immigration policies also have an impact. The acceptance of free movement of labour in the EU radically shifted the UK construction industry labour market. Skilled construction workers, mainly from newer and economically poorer, nations in the EU helped to fill gaps in the labour market. This was a repeat of past experiences, when Ireland provided large numbers of migrant workers to feed the demand for construction labour.

These economic developments and regulatory frameworks facilitated the use of imports to fill

gaps in the local supply of labour and materials during periods of expansion. But existing and emergent changes in regulations around trade are creating a new landscape which threatens the easy access to imports to ease supply constraints when the industry expands. Brexit is already reshaping recruitment into the pool of UK construction skills and influencing the materials supply market. Meanwhile, growing tensions around global trade and talk of punitive tariffs, are creating further uncertainty.

Volatility of demand is one factor that has shaped the way construction materials and labour are sourced. With its supply chain needing to cope with huge swings over relatively short time frames, construction firms inevitably look further afield in times of feast when local supplies are stretched. Meanwhile global suppliers, aware that famine often follows feast in construction, naturally look to importing and exporting as a means to manage supply and demand across multiple nations to smooth production. This influences where they locate their production and shapes their investment strategy.

Looking at global trends in the UK construction supply chain, a familiar picture emerges, with growth in the trade surplus in services and a growing trade deficit in goods, as can be seen in Chart 4. However, the UK does retain a trade surplus in construction plant and equipment manufacturing.

But it is not just plant and materials that are subject to globalisation. Looking at the construction labour market, the UK has been increasingly importing labour to meet its need. That said, many UK construction professionals and workers work overseas. Assessing the balance between "imported" and "exported" labour is far from straightforward.

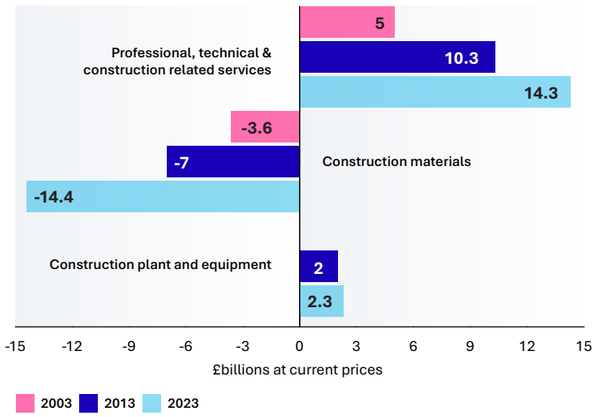
The 2001 Census suggested that non-UK-born workers accounted for about 5% of employment in the construction sector. The 2011 Census suggested about 10.6% of construction workers in England and Wales were born outside the UK. While the figure for 2021 suggests the share has risen further to 16.7%. A pattern that indicates the UK industry has grown increasingly dependent on migration.

Labour and skills

Finding labour and skills is the primary concern for the industry as it looks to deliver the promise of huge future workloads. Construction firms face two critical and related challenges, how to boost its workforce and how to raise productivity.

Even with ambitious views on productivity gains the wider construction sector workforce needs to expand by anywhere from 500,000 to one million over the next few years. That is if the sector is to meet both the underlying market demand and the Government's aspirations for house building, moving towards net zero, and upgrading tattered infrastructure.

CHART 4



UK trade balance in construction-related services, materials & equipment

Source: ONS (Pink Book), Department of Business & Trade (Building materials and components: monthly statistics), Construction Equipment Association (UK Imports and Exports report)

Even with ambitious views on productivity gains the wider construction sector workforce needs to expand by anywhere from 500,000 to one million over the next few years.

The official figures put employment within the defined construction sector at about 2.1 million, down by about 150,000 over the past five years. The CITB takes a wider count including building professional services and about 300,000 office-based non-construction professionals. It produces a total figure for total employment in 2023 close to 2.7 million.

Whichever figure you use, the numbers suggest the construction workforce may need to expand by about a third. With the rate of losses to retirement high, this means the number of new recruits needed could easily top one million.

Looking back at construction employment since the 1950s, there were three periods of major expansion in the workforce. In the five years to 1964 the workforce grew by just over 17%. In the five years to both 1990 and 2007, the rise was 16%. In those periods there was a ready supply of migrant workers, initially from Ireland, but latterly from the EU. And, during the rise in the workforce to its peak in 1990, construction could draw on a huge pool of unemployed adults, which in 1987 topped 3 million.

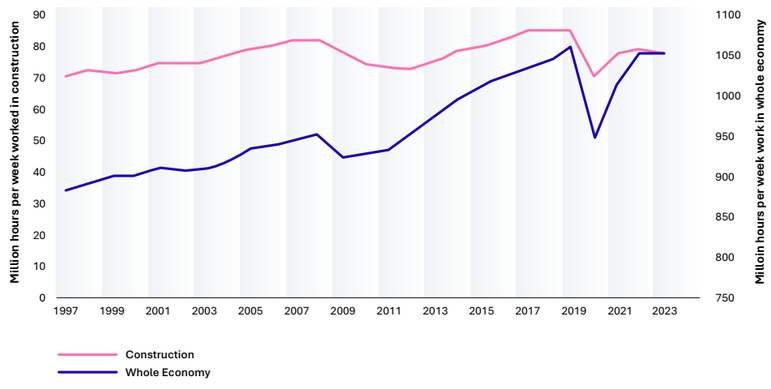
None of these options are as readily available today. This clearly puts labour and skills at the top of the agenda when considering how to build capacity in the sector for what lies ahead.

Attracting enough people into construction has been tough for decades. As Chart 5 shows, since 1997 the total hours worked in the UK economy increased more than 19%, but for construction the rise was 11%. Construction is attracting a diminishing share of the workforce as people engage ever more in service-based activities.

Furthermore, hours worked in manufacturing fell by 42%, highlighting a drift from skilled manual labour. In 1961, 43% of the workforce was employed in the production and construction sectors. Today that figure is closer to 15%. This is concerning for construction. It now has less scope to entice manual skills from other production sectors.

Labour and skills crises are not new to construction. The sector has struggled for decades to attract new entrants. But this time is different. Not only do the figures suggest the sector needs to boost the workforce far more than it has managed in the past, but it also faces big losses of skills to retirement.

CHART 5



Total hours worked per week in construction compared with the whole economy

Source: ONS

Given finding enough labour will be a major struggle, there are three basic options on offer to the sector: increase the workforce; increase its productivity; or schedule work far more effectively and efficiently to better match the available workforce. An ideal, some might say only, solution would probably embrace all three.

Although there is evidence to suggest that young people are starting to hold positive views on careers in the construction industry,[8] there are still numerous reasons for reluctance. One longstanding issue is its poor security of employment. From a potential employee's perspective, the time spent training and establishing a career, may seem a high price to pay for a job with limited security. It may seem more precarious now as there are fewer opportunities for manual skills in the wider economy, which makes a construction job seem even more precarious.

From an employer's perspective, investing in training may also seem risky. Work may dry up and the employee made redundant, when workloads fall. And of equal concern to employers is that their trained employees may easily be poached with higher wages when construction work rises. Indeed, this was covered by a literature review undertaken by the University of Birmingham and the Warwick Institute for Employment Research which stated in skilled construction and building trades "poaching from other firms was by far the most common strategy for addressing skills shortages."[9]

The long-term demographic trend of falling birth rates also works against construction, as it does against all sectors. But construction is further hampered by its pro-cyclical growth rate. Because it rises and falls faster than the overall economy, it tends to recruit when the economy is buoyant and competition for recruits is fierce. And, when it does recruit, it is normally looking for a disproportionate share of those available.

Increased regulation and specialisation in the modern construction industry may be another factor influencing recruitment. Those who recall construction in the 1970s and 1980s, will know how unregulated, dangerous, and haphazard it was compared with today. This will have had contradictory impacts on recruitment.

Greater regulation has raised welfare standards and made working in construction more attractive. But greater regulation will have reduced the flow into construction of 'casual labour' which in the past was a big feature of the industry. Today, firms must invest more in training employees to ensure both their effectiveness and welfare, raising the immediate cost of employing someone.

But volatility is likely to be among the biggest factors shaping the construction workforce. This it does in multiple ways. Taking just two aspects of the construction labour market, pay and workforce demographics, the impact of volatility is clear.

Chart 6 shows how high or rising levels of housing activity ramped up the pay rates for bricklayers in the early 1970 and late 1980s. Meanwhile, Chart 7 looks at the number of people employed in construction by age in 2021 (line) and the total growth in construction activity over the five years before they were 18 years old (bars), a point when many young adults will be looking for work.

Both peaks in the line in Chart 7 correspond with high five-year growth rates in construction activity when that age group was 18 years old. The likelihood is the allure will come from a mix of higher earnings (as suggested by Chart 6) along with more opportunities and greater confidence in remaining in work.

The spike in earnings for bricklayers in 1988 and 1989 coincided with a period when activity in London was particularly hot, as the commercial sector flourished in the wake of Big Bang, and young adults flocked to the capital in search of higher paid work. This led to a huge spike in housing demand and housing conversions and repairs. So, part of the rampant wage growth in 1988 and 1989 may have been down to the regional shift in construction work to London and the South East, where pay rates were higher.

Charts 8 and 9 further underline the powerful impact of a volatile workload on the labour market, if only in the creation of an uneven demographic spread within the construction workforce. This uneven spread of age groups across the sector has inherent dangers.

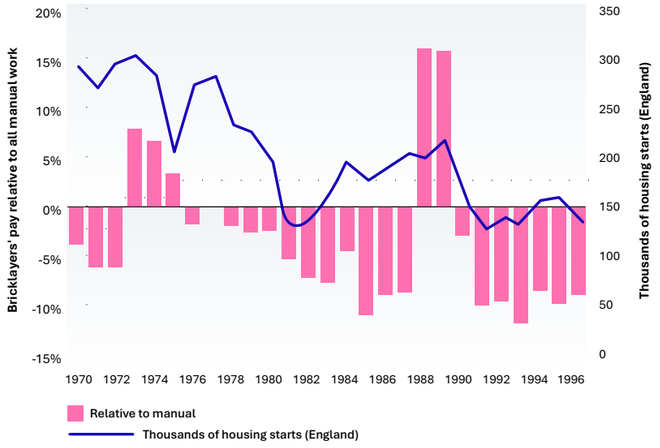
Looking at the UK data for 2016 (Chart 8) we see a huge spike in the UK-born construction workforce which is closing in on retirement. The picture in 2023 (Chart 9) illustrates how this played out, with large numbers of older workers leaving the industry. In many cases their exit from construction will have been accelerated by the Covid-19 pandemic.

The charts also show how migration has played a huge role in supporting the workforce in recent years. In the run up to Brexit, it provided a valuable quick fix to many construction firms looking for skilled workers. In 2016, non-UK born workers accounted for around a quarter of the workforce aged 35 to 39.

Post Brexit, the flow of skilled workers from the EU decreased. Some of the gap has been eased by recruits from outside the EU. This tempered the fall, but firms should expect to find it far tougher to recruit from abroad in the future.

The combination of a rapid loss of older workers, with more losses to come, in tandem with less scope to recruit from abroad will increase the struggle to maintain the levels

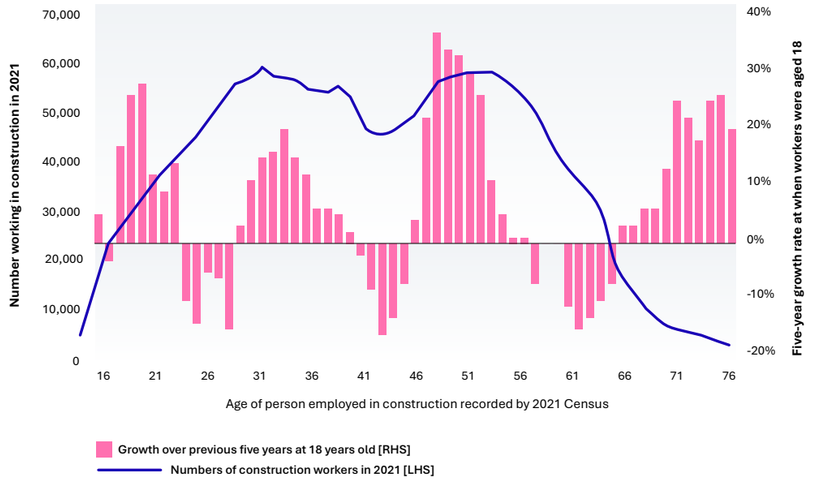
CHART 6



How fluctuations in housing activity impact on bricklayers pay relative to all manual work

Source: New Earning Survey 1970 to 1996, MHCLG discontinued table 208 (data for financial year ending)

CHART 7



What was the five-year growth rate for contruction when 2021 workforce were aged 18

Source: ONS Census England and Wales 2021, ONS GDP output approach low level aggregates, Economic Statistics Centre of Excellence (ESCoE)

of its current workforce. That is before considering the challenge of rapidly expanding the workforce to cope with a potential flood of work. How big a challenge that might be will rest on the level of work, type of work, where it takes place, and how it is scheduled.

Many of the avenues that filled construction workforce gaps in the past are no longer as readily available. Unemployment is low by historical standards and immigration is far more limited. However, since the signing of a Memorandum of Understanding on a migration and mobility partnership between India and the United Kingdom in May 2021, there has been a sharp rise in the numbers of visas issued to Indian construction workers, along with Indian workers in other sectors. This will have likely eased skills shortages to some extent.

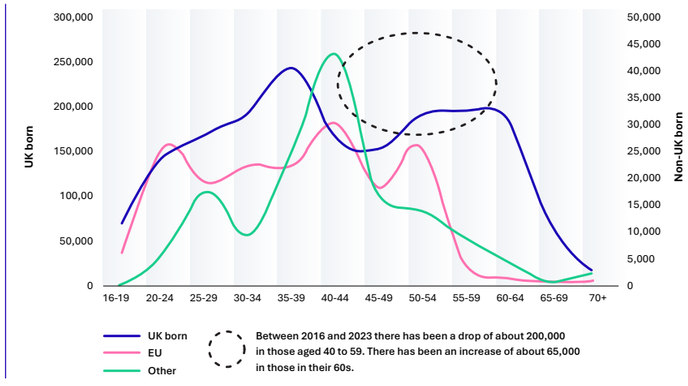
This new reality, where finding more workers is a huge challenge, has led many to pin their hopes on innovation and productivity gains. In theory, this makes good sense. But the industry has made a habit of being over optimistic and over ambitious in its approach to innovation. This has not been helped by poor interpretation of the data that measures the sector's productivity which has promoted already lingering misperceptions that the UK construction sector is inherently resistant to change.*

CHART 8

Comparing age profiles by country of birthfor UK construction workforce

Source: Labour Force Survey data provided by Construction Products Association

CHART 9



Comparing age profiles by country of birthfor UK construction workforce

Source: Labour Force Survey data provided by Construction Products Association

***Observations on labour productivity can be found in the appendix ▸**

As with other nations, construction productivity has failed to improve in line with other economic sectors. A 2021 report by the ONS suggested a small increase in productivity on the output-per-hour measure with a significant decline in multifactor productivity in construction over 50 years from 1970. Data for the US suggests that construction productivity is currently well below where it was decades ago. This suggests that improving productivity in construction is not as straightforward as some might wish. It also raises a big question over what the data actually mean.[10]

However, if the industry is to meet the ambitions of the current government, it is likely that strenuous efforts must be made to reduce the need for such a large site-based workforce. And there are some signs that efforts in this direction are bearing fruit.

The third option is to schedule the workload more effectively to make better use of the available skills. The advantages are clear, if it is well executed. It would help to contain inflation in the sector and reduce crowding out of private investment. It would reduce stress in the labour market for other industrial sectors, especially if construction sought to entice workers with much higher wages. It would result in a smoother flow of work and reduce the debilitating effects on construction of deep recessions. This would, in theory, help raise the performance and productivity in the sector.

In reality, such a strategy would need to be articulated by the Government scheduling the work it funds or supports, although it could weight incentive schemes to encourage private sector investment to where the market is less strained. Politically this strategy might be regarded as unattractive. Pragmatically it could be highly attractive, although not without significant challenges.

However, to be effective it would require a far greater understanding of the pattern of construction across the nation than is currently available. It would require the Government to find more flexibility in the way it allocates funding to capital projects. And importantly, it would require working to a clearer overarching plan than is currently in place.

Construction materials

One strong message emerges when looking at data for the materials side of the construction supply chain over past decades. The relative capacity of the home-based construction products sector has not kept pace with growth in construction activity.

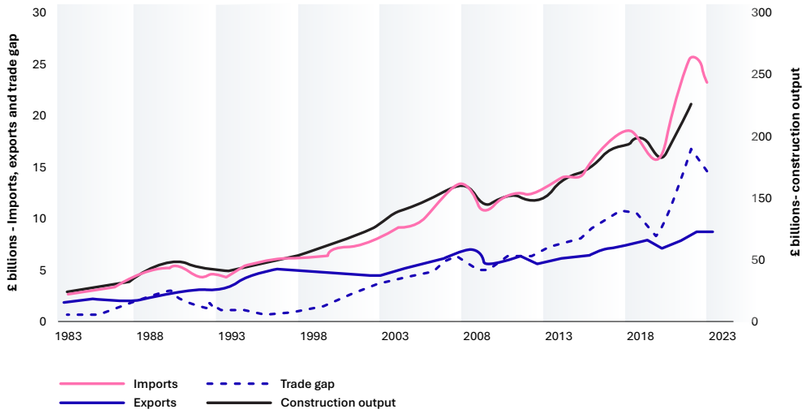
The scale of the gap is not easy to define. But using the ONS Annual Business Survey data we can roughly compare how turnover has increased for building materials producers in comparison with turnover growth by comparison with construction firms.

Estimates produced by the Construction Products Association suggest average turnover of construction materials producers for 2011 and 2012 was £46 billion, compared with £190 billion for the construction sector. The average figures for 2021 and 2022 were respectively £65 billion and £328 billion. This suggests growth in cash terms of 42% for materials producers compared with 72% for construction firms.

Data comparing construction output with building materials imports show a strong correlation. For every £10 of construction output, £1 worth of building materials is imported (Chart 10). This has been the case since the 1970s. But the data also shows that exports have not kept pace. This suggests that UK-based manufacturers have not scaled up their production in line with either construction growth or building materials imports. The UK trade deficit in 2022 hit almost £16 billion.

Chart 11 shows that when adjusted for inflation export growth stalled in the early 1990s and has fallen since. This implies with each surge in construction output the industry becomes ever more reliant on imported materials.

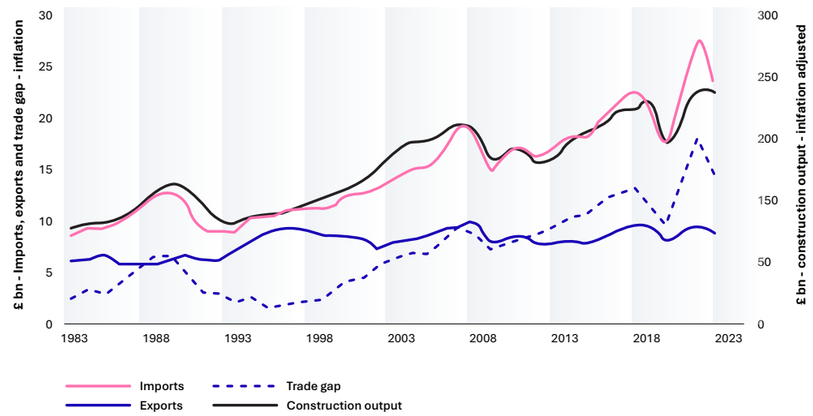
CHART 10



Construction output and building materials imports & exports 1983 to 2023

Source: ONS Construction Output, Department of Business & Trade (Building materials and components: monthly statistics)

CHART 11



Construction output and building materials imports & exports 1983 to 2023

Source: ONS Construction Output, Department of Business & Trade (Building materials and components: monthly statistics), HM Treasury deflators

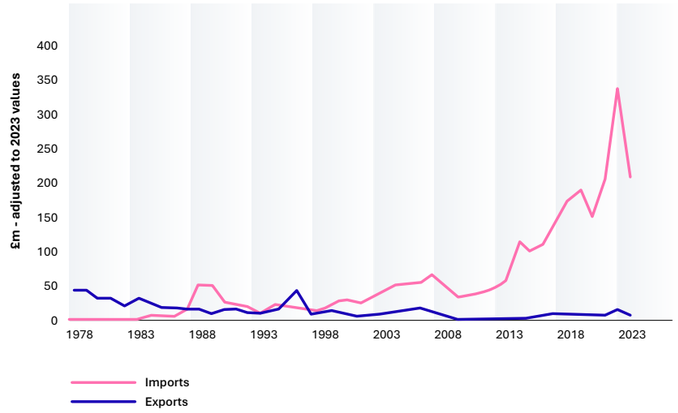
The building materials producers have become increasingly global and consolidated their locations for production. This makes business and economic sense. Some of the results may favour the UK, with increased production in the UK serving many nations. Some results may be detrimental to the UK, with materials once manufactured at home, now imported.

The message from the data is that the UK has on balance lost out from the point of view of home-based production. This is broadly consistent with trends across the economy that show exports of goods in relative decline while exports of services grow. This has resulted from political and economic choices that have led to a more services-based economy, with UK manufacturing tending to become more specialist than in the past.

For instance, before 1987, the UK was a net exporter of clay bricks and tiles. Since 1988, when house building was booming, the nation has run a trade deficit in clay bricks and tiles in each year except 1996 and 1997, with imports growing rapidly as can be seen in Chart 12.

The sharp rise in imports corresponds with the decline in home manufacturing of bricks, as can be seen in Chart 13. It shows the deliveries from brickworks in Great Britain. Following the sharp decline after the Global Financial Crisis, which would have corresponded to the reduction in house building, production failed to return to past levels. To meet rising demand, imports have increased.

CHART 12



Value of clay imports and exports of clay bricks and tiles

Source: Department of Business & Trade (Building materials and components: monthly statistics)

Again, this shift in the supply chain is not necessarily a major problem. All nations balance what to specialise in and manufacture at home and what to import. But it is important to understand the reasons, the possible consequences, and any missed opportunities that might have led to a detrimental level of imports.

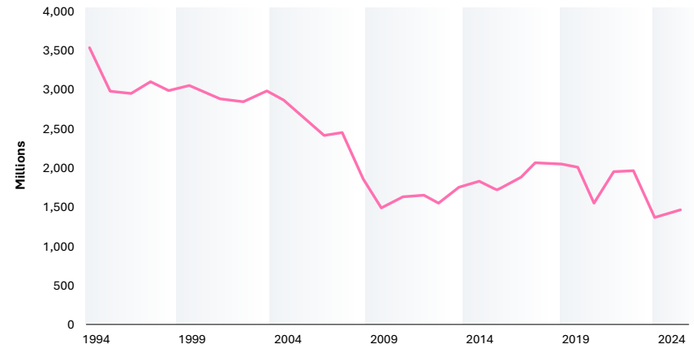
A key reason behind where firms produce will be how they view the investments they make. Unlike contracting firms, brickmakers need to make hefty investments to open and operate any new plant. Investment will be based on the likely income stream which has to cover not just running costs but also a rate of return on the investment. This will compete with other possible investments.

Market confidence will be one of the determining factors in any investment decision. Here the volatility of construction will weigh against investment, because the more stable the market the more likelihood there will be local production to serve that market, all other things being equal.

Looking at the consequences, both for construction and the nation, having to import bricks or other materials adds risk and uncertainty. These risks include fluctuations in currency, the possible imposition of trade tariffs, along with other risks and inconveniences associated with cross-border trade.

It is worth noting that in 2016, Persimmon Homes announced it was building a new brick factory because, against a backdrop of increasing house building, it found sourcing clay bricks problematic and was eager to secure supply. In 2017, it announced it would also be producing tiles. More than half of its brick supplies come from its own factory (54% in 2023), which has the capacity to produce more.

CHART 13



Brick deliveries from works in Great Britain

Source: Department of Business & Trade (Building materials and components: monthly statistics)a

There are other benefits of having a locally based supply chain. Firms in the supply chain have historically tended to cluster near to their key customers. This tends to increase innovation and allows more easy movement of labour and expertise between different companies within the same or related sector. This enriches knowledge within the labour force.

Professional construction-related services

The UK has for more than a century exported its expertise in construction and related activities. This has continued, with engineers, architects, quantity surveyors, construction managers, and others trading abroad, either in person or from the UK.

In contrast to the capacity in the construction materials sector, where there is a trade deficit, the level of UK professionals operating primarily in the UK was sufficient in 2023 to produce a trade surplus of £10.7 billion (Chart 14). What is of late perhaps more interesting is the surge in exports in architectural services (Chart 15).

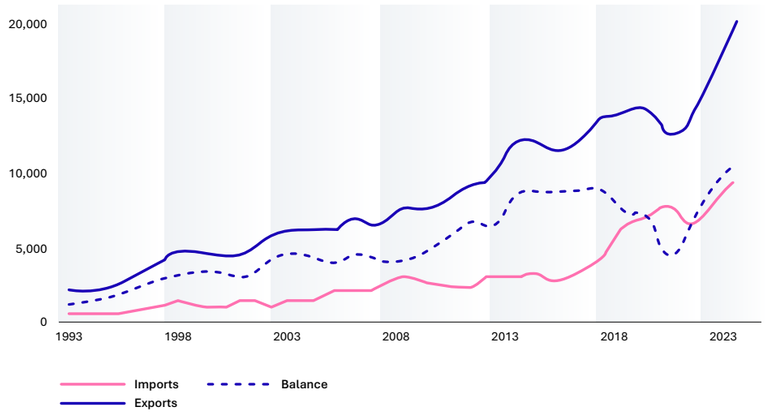
In many ways the contrasting paths in international trade of construction professionals and construction materials producers illustrates the economic direction of the UK over recent decades. Since the 1970s the UK has seen the share of the service sector expand while for manufacturing its share within the economy, its employment, and external trade have all been in relative decline.

As for construction-related professional services, two big factors will have helped drive this upward trend in exports. The rapid consolidation of construction-related consultancies and practices has created major multidisciplinary global players in the market. Many of these have head offices, or a substantial presence in London, which is regarded worldwide as a global hub not just for construction-related services, but a wider range of related services from law to economic consultancy.

Meanwhile, the growing influence of digital communication since the birth of the internet has made it easier to work collaboratively across vast distances. The upward trend in remote collaboration that has built over two decades or so, is also likely to have been boosted by the Covid-19 pandemic. This saw increased investment in technologies that facilitate remote working and will have led to a leap in familiarisation and acceptance among professionals.

In terms of capacity, the UK-based supply of construction professionals seems well placed to service even rapid growth in UK construction. The fact that so many of these firms have experience overseas is a bonus, as they will be able to apply cutting-edge thinking to the challenges ahead. Not only that, but many UK-based professional will have built a wealth of experience abroad, particularly some infrastructure sub-sectors, that in the UK have been relatively absent of investment.

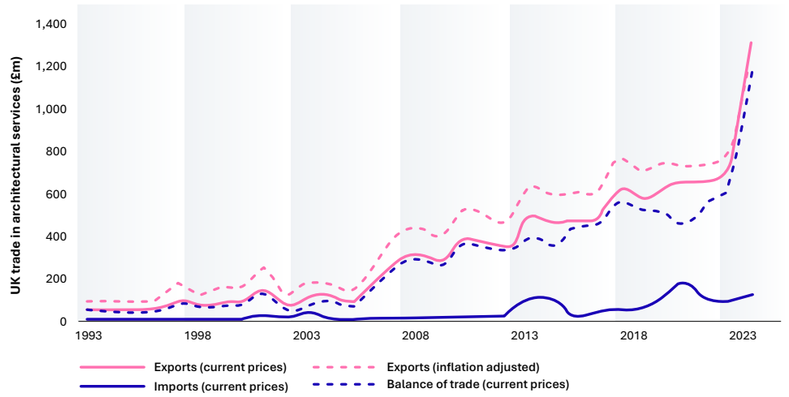
CHART 14



UK trade in architectural, engineering and construction related services (£m)

Source: ONS (Pink Book)

CHART 15



The growth of architectural services exports

Source: ONS UK Balance of Payments (Pink Book). Note: The HM Treasury deflator is used for the inflation adjustment shown in the chart

There will be specialisms, particularly in tackling the job of meeting net zero, where highly specialist professional knowledge will be needed that may not be well resourced in the UK. The global network of professional firms based in the UK will be as well placed as any to tap into these and form collaborations.

But there are, as always, areas for detailed consideration. For instance, attention should be paid to the rate of growth in UK activity in some areas of work, and whether rapid growth at home might distract home-based consultancies and practices from maintaining and growing their international business.

Furthermore, the sector relies on attracting the best talent from around the world. While education and training in the UK should be providing home-grown talent as necessary, welcoming talent from abroad brings fresh and valuable knowledge and understanding vital to maintaining overseas business. In a time of concern over immigration, the nation's messaging on migration and overseas participation in UK jobs should not be seen as so negative that it deters top talent from abroad.

Not unrelated is the challenge facing the higher education sector, with courses closing and staff being laid off, as universities and colleges struggle with their finances. Certainly, these struggles would intensify if the numbers of overseas students fall, as they in effect subsidise the education of UK domiciled graduates. How this might impact on the flow of both UK and overseas graduates from UK-based construction related courses is uncertain but should not be overlooked.

Finding a path to a more fruitful future for the construction sector

There are broadly three ways to lower the likelihood of capacity gaps emerging in the construction sector. The first is to engage more resources. The second is to improve the efficiency of our current resources. The third is to balance demand and supply better over time.

These are not mutually exclusive. But economically, environmentally, and socially the less resource we pump in to get the outcomes we want the better. Whatever blend of the three options we choose, it is wise to consider the outcomes we want. What would make the industry better and more aligned to meeting the nation's desired social and economic objectives in the long term?

Some short-term fixes are necessary, but they tend to dominate policy in construction, crowding out longer-term solutions and lead to unintended and undesirable outcomes. This has reinforced negative attitudes towards construction.

There are common themes within this report that provide guides to key issues and how policy might best be shaped. These include uncertainty, volatility, complexity, and fragmentation. These four characteristics oblige

firms to operate in a highly flexible manner. This flexibility has practical upsides, but also major downsides in how the industry is structured, how it operates, and the business models it adopts. These inevitably influence the productivity and quality of work that construction firms deliver.

The positive side to flexibility is that firms, while retaining core specialisms, can flip from subsector to subsector, from project type to project type, from client to client, from location to location. They reassign resources to other projects rapidly if, for instance, inclement weather or other hold-ups are delaying work on a given site. When products or other resources are in short supply, they are adept at finding substitutes.

But this flexibility, while helpful, often comes at a cost to efficiency and effectiveness, which is similarly impacted by the high degree of complexity and uncertainty inherent in the sector. Reducing the need for so much flexibility and providing greater clarity, visibility, and certainty would increase productivity and lower costs.

Moreover, a more stable business environment would likely lead to a more ordered, less complex, and less fragmented industry structure. It would enable more consolidation of the multiplicity of activities involved in construction, with more connections made between activities within rather than between separate firms. This should lead to fewer disputes, lower transaction costs, less administrative waste, and, hopefully, greater trust.

Stability would likely encourage more direct employment, with firms more confident of their future workflows. In line with this, some of the barriers to training would be lowered and, with greater job security, the industry would likely become more attractive to potential recruits. Firms with a more secure outlook are also likely to be more willing to invest in equipment and technologies that would support higher productivity and, potentially, higher wages, making the industry more attractive.

Critically, this report suggests much more attention needs to be paid to the business environment and the institutional framework within which construction firms operate. This opens a pathway to foster far greater longer lasting and more significant improvements in construction.

It inevitably presents key questions.

- How might changes in the business environment and the institutional framework within which construction firms operate prompt improvements?
- More pertinently, how might this approach ease capacity constraints and provide longer term value to both the nation and the construction industry?

The view of this report is that altering the environment within which construction firms operate will encourage change in how they operate and shape themselves. And it will likely be more effective than seeking to promote change more directly. Certainly, this approach provides fresh and fertile ground for policymakers which to date has been neglected.

Five key policy objectives

From the above discussion, there are multiple aspects of the construction sector that could be changed to improve performance. We have selected five objectives that if met could reduce capacity constraints. These are not policies but guides to where policy might be directed.

- Reduced volatility
- More transparent, accessible, usable, and coordinated knowledge
- Improved policy effectiveness
- Better coordination of policy with clearer signals
- Improved diffusion and adoption of innovation

Construction activity is exceptionally volatile. This is partly due to the pro-cyclic nature of investment – when economic prospects are good firms invest more in the built environment. Typically, this pro-cyclicality is exaggerated by public investment.

This increases inflationary pressures during growth periods, which crowd out potential private sector investment. It also deepens the recessions. Firms adapt to this, but at a cost, not least because the booms and busts have a detrimental effect on the workforce over the long term, and firms are less likely to make long-term investments in skills and technology.

While some volatility is practically unavoidable, smarter targeted and timed investment by the public sector, either directly or through incentives for the private sector, could help to smooth volatility, encourage more private investment, provide better value for the public sector, and retain capacity within the wider construction sector.

Providing more transparent, accessible, usable, and coordinated knowledge

Information and knowledge have been the beating heart of human progress for millennia. For the complex and fragmented network of businesses that work to deliver the built environment they represent underexploited potential.

There are clear examples of where the sector taps into this potential, such as increasingly adopting Building Information Modelling (BIM) which uses digital processes to run projects more efficiently and with fewer errors. But market knowledge is very patchy and of poor quality.

The need for consistent and detailed market data is paramount given the complex, often bewildering and erratic nature of the construction sector. Yet even the Government, which constantly promotes the better use of data, relies on a paucity of market information to underpin its policymaking.

This needs to be addressed. Not least because the plethora of government departments and public bodies frequently commission research into construction from private consultancies at high cost. This often provides little more insight than should be readily available to them.

The total spend across the public sector on management consultancies in the financial year to 2024 was put at £3.4 billion, by market intelligence firm Tussell.[11] Furthermore, the Chancellor of the Exchequer, Rachel Reeves MP, has told government departments to cut annual spending on external consultancies by £500 million.[12]

The case for government building openly available current, compatible, comprehensive, and well collated data sources is exceptionally strong. It would benefit itself and the construction sector more widely.

The rising tide of freely available information and data this would create would lift the knowledge available to all firms active in construction. It need not disadvantage consultancies who currently service the sector. Indeed, it would free them to add greater value to the enhanced pool of understanding and knowledge placed in the public domain to their reputational advantage and to the construction sector more widely.

Raising policy effectiveness to improve outcomes

Policy in construction too often addresses the symptoms not the causes. Wearing a hard hat to stop damage from falling objects is wise, but reducing the likelihood of falling objects is even better. The two are not mutually exclusive.

Understandably, it is the symptoms of a problem that are likely to prompt policy changes. But treating them and not the causes is short-term and can be counterproductive. The complexity of the construction sector can disguise the underlying causes. But emphasis should be given to improving knowledge and a higher level of research than is currently afforded.

One area of policy in construction that has been successful over recent decades is health and safety. The toll of death and injury in the sector is among the lowest internationally and has fallen markedly. The likelihood of being killed on a construction site is roughly a quarter of what it was four decades ago.

This has come about through the creation of overarching health and safety legislation (e.g. Health and Safety at Work Act 1974; Management of Health and Safety at Work Regulations 1999 & Corporate Manslaughter and Corporate Homicide Act 2007), more industry specific legislation (Personal Protective Equipment at Work Regulations 1992 & Construction (Design and Management) Regulations (CDM) 1994), and a system of oversight (HSE & Reporting of Injuries, Diseases, and Dangerous Occurrences Regulations (RIDDOR) 2013)).

The approach has increasingly become less prescriptive, and more outcome based, certainly with the introduction of corporate manslaughter and the 2015 iteration of Construction (Design and Management) Regulations. This shift in the institution framework encourages firms to become more engaged in embedding good practice, such as training, rather than simply following rules.

Too much of policy and too many programmes emerge as knee jerk reactions to address immediate problems, often to defuse political pressure. Even if the intention is well meaning, if poorly thought through and poorly supported policy may solve one problem in the short term, but it often shifts problems elsewhere. Certainly, policies are too often introduced without sufficient attention to enforcement or assessment of their effectiveness. CIOB has previously highlighted 'stop-start' government support schemes which undermine business and consumer confidence. The now defunct Green Homes Grant (GHG)[13] is one such example, where assumptions were made about the capacity within the industry to deliver the energy efficiency improvements on offer.

One challenge with policymaking as it currently stands is that it is often built from the desires and perspective of separate departments. Construction and the other related industries that create the built environment straddle multiple departments. This suggests that within the government orbit there needs to be significant attention paid to the potential policy conflicts that will arise. This in turn suggests a function within government that has a clear and deep understanding of how the built environment is created and managed.

Better coordination of policy with clearer signals

There is a need for greater coordination in the delivery of construction projects with greater clarity and consistency in government policy and spending plans. This problem has been increasingly recognised across political divides in recent years, and positive moves have been made to improve coordination.

A Labour government set up Infrastructure UK before losing office in 2010, which then merged with the Major Projects Authority (set up by the Conservative-led Coalition government in 2011) to form the Infrastructure and Projects Authority (IPA). Now the IPA has combined functions with the National Infrastructure Commission (established in 2015) under a new organisation called the National Infrastructure and Service Transformation Authority (NISTA).

The common prompt for establishing each of these bodies is the recognised need to improve oversight and guidance in how to deliver infrastructure. With each iteration the remit has widened as the need for better coordination across the development of the built environment has become more apparent.

This is largely because it is tough to provide a coordinated and consistent government position on any issue relating to the construction sector. Each government department or agency is unlikely to fully appreciate the complexity and interconnectedness of those organisation and firms active in delivering change to the built and natural environment. Moreover, there will be conflicting interests.

Bringing balance, order, and effectiveness to decision making in a sphere as impactful as the built environment presents political challenges. Not doing so increases the risk of leaving knowledge gaps in the thinking, poor oversight, and broken chains of responsibility. This leads to suboptimal if not counterproductive policy choices and poor delivery.

Therefore, the case is strong to move towards an organisation that has a wider brief covering the built environment in its entirety, with close links to organisations with remits in the natural environment, such as the Climate Change Committee.

Improving the dispersion and adoption of innovation

The construction sector is regarded as having a poor record on innovation. There is a counter argument that suggests it is highly innovative out of necessity, constantly addressing new problems by virtue of it producing one-off rather than mass-produced products.

However, its inability to embed and scale up innovation is recognised as poor. The way the industry captures innovative ideas will generally be ad hoc at best better given that teams are created and dismantled for each project and any innovative ideas used in one project may be scattered across multiple firms.

This raises many questions, some of these are examined in the appendix.* A key observation is that the ability of the construction sector, as defined, to introduce innovation is often limited. It is often engaged relatively late in the overall process. So, there is a case for reframing "modern methods of construction" as "modern methods of development". The argument is that innovation is more likely to become embedded within the sector if all organisations tasked with creating the built environment are engaged in the process.

***Observations on innovation can be found in the appendix ▸**

There is also a strong case for government to enhance its support and incentivise innovation. Both as a client and as a promoter of economic efficiency, the returns of improving innovation in the construction process would be significant. The funding of demonstration projects and the creation of a permanent open-access store of knowledge would help the dissemination of innovation throughout the industry. This would also provide an opportunity to foster better relationships between business and higher education.

Potential policy

The policy suggestions covered here aim to provide ideas from which more fully formed policy might emerge to meet the objectives described in the previous section.

Creating policies to deliver these objectives is far from straightforward. Given the complexities inherent in the sector, as described in the main text, there are multiple possible routes that would lead to meeting these objectives.

It is worth noting that the approach taken here departs from the more prescriptive policies often applied to construction in the past. This is in keeping with a trend that has seen policymaking more widely shift from being prescriptive (focused on specific rules and processes) to being more outcome based.

Here the focus is on changes to the business environment and institutional framework of the construction sector. The premise is that suitable and smart changes to the environment in which construction firms operate will alter their behaviour positively.

The clear advantage of this approach, all other things being equal, is the changes firms make to adapt to an altered business environment will be driven by their choices, rather than being imposed. They take ownership. This should improve the chance of success and sustainability of the policy over the long run. This approach also taps into a key quality of construction firms, their highly refined ability to adapt.

This report suggests that an oversight body for the whole built environment is highly desirable. Furthermore, such a body should have strong and positive relationships with those providing oversight of the natural environment. However, creating such a body in one attempt may be imprudent. The view of this report is that the direction of policy should see an independent wide-reaching oversight body for the built environment as a goal, with well-considered steps made towards it over time.

Coordination, direction, impact, and balance

A wider remit for a NISTA-type body with enhanced independence

The government's announced the formation of the National Infrastructure and Service Transformation Authority (NISTA) to bring oversight of strategy and delivery under one roof. This is a step in a positive direction. There is a strong case for more consistency and coordination in shaping the nation's infrastructure. This is particularly important as a long-term approach to reshaping the built environment can be frustrated by conflicting objectives emerging from different government departments.

However, this report believes that when it comes to the oversight of infrastructure delivery or the delivery of the wider built environment, more consideration should be given to greater independence from government. Given the time frames of developing strategic elements of the built environment, the guidance given and the primary objectives set for such a body as NISTA should be consistent between parliaments as well as within them. The HS2 rail project stands as a testament to changes in leadership and lack of consistent oversight. Its development has been hampered by inconsistent political interventions.

While there is much merit in the formation of NISTA, the need for an oversight body distanced from and able to be critical of government is essential. Furthermore, this report believes that the remit of oversight should be expanded to cover the entire built environment and, by implication, be highly engaged in the debate over improving the natural environment.

The creation of an oversight body independent of government for the built and natural environment would increase its legitimacy. This is of particular importance when its recommendations might result in political discord. Too regularly there has been political obfuscation over major decisions relating to critical infrastructure or major development. They have been either "kicked into the long grass" or decided on the basis of satisfying immediate political concerns. It is the nature of development of the built environment that there will be perceived winners and losers. It is unavoidable given the role land, location, and neighbourhoods play in our value systems, as discussed earlier. A body independent of day-to-day politics with a sound remit to balance interests is better positioned to make long-term decisions.

With a wider remit, better information, and a clear scope to improve the built environment for future generations, an oversight body, such as described, would be better positioned to make judgements and suggest encouragement to improve the industry's record on innovation.

Armed with better information and able to call on well-informed experts, it would be less inclined to the over optimism that has dogged innovation in the sector. And as an oversight body institutionally programmed to balanced and long-term thinking, it should be less inclined and less easily coaxed into flirting with fashionable ideas than other more narrowly focused public bodies.

Central to its remit would be to build public trust and confidence and to be seen as non-politically partisan with the interests of the nation put above those of the incumbent government. Such a body would need the status of other independent bodies such as the Office for Budget Responsibility. It would also need to be subject to close parliamentary scrutiny.

The functions of such a body should also include the collation, generation, and dissemination of high-quality data, information, and analysis pertinent to the UK construction sector. A step change in the data used to map activity within the built environment would support not just higher efficiency and effectiveness in delivering buildings and structures but also in how resources are deployed. It would enhance the industry's ability to anticipate shortages and hot spots and relieve pressure in advance. It would also be better placed to anticipate challenges ahead, from local disputes over planning to skills and materials shortages.

The exact constitution and functions of such a body as outlined above would require consideration. But given the fundamental changes in the built environment underway with fractious public discourse hampering progress, the need for a respected independent arbiter with a long-term perspective freed from short-term political expediency has never been more needed.

Collection, collation, dissemination, and analysis

Improving information and knowledge

The paucity and patchiness of construction and development market data not only disadvantage all businesses, but it also leads to suboptimal policy decisions and counter-productive policy. There is a huge opportunity for government in boosting-built environment knowledge. This would improve its policymaking and the impact of its spending, while potentially lifting the efficiency of every business operating in the sector.

The construction and development sectors work very much in the four dimensions of space and time. Its products tend to be bespoke adding further complexity. Collecting and collating data to improve our understanding of what level and type of construction has happened, is happening, or is about to happen and where in the UK would provide vital information to support the efficient and effective use of resources. Furthermore, it would provide a much firmer and less selective factual basis to assist in resolving disputes within the planning process.

Given many of the basic elements of this information are collected for regulatory purposes, it might seem remarkable that there has been little concerted effort to gather it together in a coordinated way to improve both knowledge and analysis. Government clearly recognised the potential of gathering information to improve understanding when it established the National Infrastructure and Construction Pipeline.

There is huge potential benefit in creating a dynamic spatial database of project progress covering current, future, and past projects. This would provide a hugely valuable resource for the government at all levels and across all sectors of industry connected to the built and natural environment. The savings in terms of reduced consultancy spending would cover much, perhaps all, of the likely running costs. This ignores the savings that would flow from more effective planning and delivery of buildings and structures.

Technology is not holding us back from having at our fingertips the ability to, for instance, select a given area of the nation and quickly find out how many houses there are in the area and how many are planned for and who is building them. The issue is a failure to value the power of information and information systems. Changing this mindset is an imperative.

The steady development of AI is making it ever more cost effective and efficient to interrogate multiple large datasets for more than just answers to simple questions. These will become essential tools in optimising strategies, to elicit potential strategies in the pursuit of potential strategies. The quality of the strategies will however rest on the quality and quantity of the data. Collecting, collating, and cleaning data relating to the built environment should be high on the priority list for the government if it wants to make best use of the skills, materials, and finance available to transform our buildings, structures, and public spaces.

Looking beyond establishing a comprehensive project database, the government should look to enhancing data on the performance of the wider construction sector. Currently the data on the construction sector excludes related industries. There should be a set of satellite accounts (see page 13) to provide a clearer guide to the performance of the wider sector of businesses and institutions engaged in the creation and maintenance of the built environment. The partial view provided by construction output and construction gross value added can create false narratives. These mislead policy makers.

Importantly too, there is a need for a permanent open-access knowledge bank for innovations. This would provide a valuable asset to government and the industry by capturing innovative ideas which frequently are lost within the industry.

In line with the expansion of the remit of a NISTA-type body, as recommended earlier, there is a powerful case for such a body to embrace a knowledge hub that would include a dynamic spatial database of projects, a comprehensive set of market data, and a knowledge hub for innovations.

More financial support should be tied to demonstration projects that make publicly available the detailed information gathered through the process. It would be assumed that any key intellectual property would be covered by patents or copyright. But detailed recording of the successes and failures associated with innovation projects would provide a platform of knowledge that would inform future innovation.

Anticipating, balancing, and complementing

Smoothing volatility, avoiding crowding out, and encouraging crowding in

Construction is highly volatile nationally and more volatile at a regional or local level. This creates multiple challenges and engenders disfunction in the structure and performance of the industry.

The pro-cyclical nature of investment in the built environment is to be expected. As the economy surges, investors are more confident to spend on new buildings and improving their existing stock. Households are more likely to invest in homes, so more are built and more improved. The government is also more likely to spend as tax revenues rise. This adds fuel to the fire and sees the industry race ahead of the economy at large.

As construction firms seek to rapidly expand their workforces, they must compete in a hot, if not, overheated jobs market. This means they struggle when workloads are buoyant. But the high level of volatility also means they have to shed huge numbers of skilled construction workers when the economy slows. This can create huge peaks and troughs in the demographic of the workforce, which means 40 years or so after a boom, a high proportion of the workforce retires. We are witnessing this now.

Furthermore, higher spending by government during a boom adds to rising prices for construction work. Not only does the public sector get less value for money than if it were buying in quieter time, but it likely crowds out some private investment. And when the industry sinks, the fall is far greater, more workers are made redundant and the cost to the government of unemployment rises.

More measured and prudent spending by government would help ease the pain caused by boom and bust. Investing during a slack period for construction would provide far better value for the taxpayer. It would support jobs, reduce unemployment benefits and support income tax revenues. And if targeted wisely it could use its spending to “crowd in” otherwise reluctant investors when the industry was more subdued.

This is all well known. And there are examples where government has made ad hoc interventions to relieve some of the pain from a rapid decline in private sector.

In 2008 it set up the National Clearing House scheme to purchase unsold private homes from house builders to add to the stock of affordable homes. This relieved downward pressure on the construction sector after the market collapsed during the global financial crisis.

However, countercyclical investment in the construction sector is not always easy for government to deliver. Therefore, a culture should be engrained within the public sector that creates a presumption in favour of countercyclical investment, greater coordination in the overall investment strategy, and more flexibility built into budgets to enable swift and pragmatic decisions when prudent. The government should also look to weight its funding for innovation towards less busy periods for the construction sector.

All this should be supported by a deeper understanding of market trends garnered by high quality spatial market data (see above). Furthermore, the existence of an independent oversight body for the built environment would be well placed to highlight this issue and hold government to account.

This more targeted approach to direct public sector investment in the built environment would help smooth some volatility. It could also be enhanced by government’s approach to the incentives to encourage private sector investment.

Appendix

Observations on labour productivity

The measures we use to estimate productivity in the process of creating and maintaining the built environment can often lead to misunderstanding. In turn this leads to poor policy.

Most productivity data is based on a measure of the value that a person, firm, industrial sector, or nation adds to the goods and services they buy and then sell on. This value is determined through transactions in the market.

Therefore, it fluctuates with market conditions, as well as with the efficiency and effectiveness with which workers operate. It also means that those people or firms that can capture more of the market value will be regarded as the more productive. Business models, market segments, market power, and relationships all come into play.

Importantly, too, if we are comparing different industries, we need to recognise shifts in the mix of work they do will inevitably influence their recorded productivity. For instance, civil engineering is generally regarded as more productive than building works, particularly repair and maintenance, which will increasingly include retrofit. So, if civil engineering expands its share of construction we should expect to see productivity for construction overall rise, even without any fundamental productivity improvements.

So, it is clear how misinterpretations can occur, and false assumptions are made, if care is not taken when analysing headline data.

To illustrate a point about the perception and reality of economic productivity (that is "exchange" value rather than "use" or "intrinsic" value) it is illuminating to compare the economic productivity of Premier League footballers with those of the past.

When putting the question "in economic terms how much more productive is Harry Kane than Bobby Charlton?" to ChatGPT, its concluding paragraph read: "In purely economic terms, Harry Kane's productivity dwarfs Bobby Charlton's due to structural changes in the football economy, but Charlton's era-specific contributions remain immeasurable in historical and foundational significance."

For reference it compared an adjusted economic impact for Bobby Charton of £50 million to £100 million with Harry Kane's figure of more than £1 billion. The point here is that the effectiveness and efficiency of the workforce or worker is just one factor influencing the measured productivity of a sector or individual.

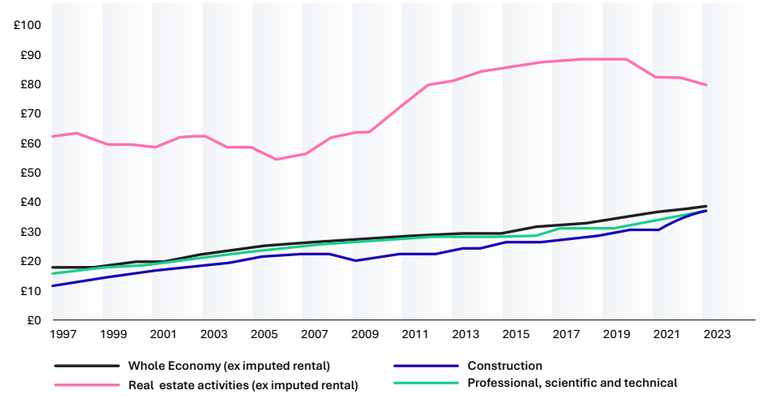
Furthermore, the way in which we divide our industry sectors influences our perception of productivity. Chart 16 compares the simple labour productivity measure of output per hour for the whole economy, construction, professionals (which covers many of the architects, engineers, and other professionals employed in the built environment sector), and real estate.

Each of these sectors operates in delivering the built environment, but the most productive (at least in terms of the statistics) is clearly real estate. This reflects the greater ability of those in the real estate sector to capture value from the process of creating and improving buildings and structures.

It is instructive to note the sharp rise in productivity within the real estate sector in late 2009. This, interestingly, corresponds with the introduction of quantitative easing in March 2009. This pushed down interest rates and pushed up the value of assets such as property.

The data suggest if we reframed our industrial sectors and pulled all elements of providing

CHART 16



Comparing productivity in the construction, real estate, and professional sectors

Source: ONS, Output per hour worked, UK

the built environment into a single group, the productivity of the combined group would have a higher output per hour than the overall economy.

How we arrange our industrial sectors influences the statistics we produce and the perceptions of each industry. Agriculture has seen extraordinary increases in labour efficiency over decades. We produce more with a fraction of the labour we once needed. Yet its measured productivity remains well below the average across the whole economy and below construction.

The gains from higher efficiency have led to ever lower food prices rather than in higher wages and profits for those who farm our land. This, farmers will say, is due to the market power of the retail industry.

It should be noted that the measure of productivity in construction creates other conundrums for policy makers. The value of construction tends not to be felt immediately, often it is a catalyst or enabler for higher productivity and value gain elsewhere in the economy.

In general, construction tends to boost land values over time as communities mature and infrastructure enhances the amenities in and around the location. But this value is not captured within the construction industry, rather the gains tend to be felt far more within the real estate sector or in household wealth, as the price of homes rise as new communities mature.

It is also easy to overlook the possibility that improving the efficiency and raising the productivity within the process of delivering buildings and structures, for instance through greater factory production, could lead to value added once created within the construction sector being reclassified as manufacturing. In theory, this could result in a reduction in both the measured productivity of both manufacturing and construction despite raising productivity overall.

For all the caveats over interpretation, increasing efficiency and productivity of each sector, including construction, is critical to improving economic prosperity across the nation. It is critical to raising earnings. It is also likely to generate less waste and so help improve the nation's environmental performance.

However, history suggests increasing productivity in construction will take more than simply introducing more and better technology and modern methods of construction or boosting the training of those that work in the sector. Though all play an important role.

What is missing is a fuller appreciation of how construction embeds innovation and how the balance between market pull and technology

push best plays out in different circumstances. Meanwhile to boost the skills base, there needs to be a structural and cultural shift that leads to better incentives for firms to train and retain workers on their books as a matter of doing business. This in many ways points to reducing the volatility within the industry.

Importantly we need to learn lessons from the past. For instance, the recent, and some might argue predictable, collapse of multiple volumetric modular housing companies highlights a common fault line in the construction sector and policy makers promoting change, an overeagerness to get things done harnessed to an underappreciation of the task ahead.

If construction has a problem with innovation, it is more that it seeks to innovate too much than too little, most likely innovating in some shape or form on every project. The deeper problem is that it fails to learn from its mistakes, fails to capture the knowledge that led its successes, and fails to spread and embed the knowledge from success within the industry more widely. One might expect the latter is not helped by firms seeking to retain competitive advantage in a relatively hostile market with low margins.

Observations on innovation

The construction industry has a reputation for being resistant to change and poor at innovating. There is an alternative view.

Unlike many sectors construction produces one-off projects. Even when there are significant similarities in the design and components, the context will be different because each construction project is uniquely located. This forces the industry to be highly innovative. It often must find new solutions to deal with unique circumstances or overcome the unexpected challenges that are common when making a prototype.

However, where construction does fall is its ability to capture innovations and embed them in a way that would lead to constant improvement. Some innovations are captured and lead to process improvements. But, for many contractors, the effort of diligently tracking and evaluating the new processes and products they use will come at a cost many will be unwilling to countenance in the cut and thrust of getting a job done.

Risk and uncertainty will inevitably lead construction companies to favour tried and tested methods. This might lead to some culturally embedded resistance to trying out new ideas. But given the risks and wafer-thin margins on which contractors and specialists most often operate. This might be more appropriately regarded as prudence.

This prudence may play some part in why construction is regarded as slow to innovate. Certainly, common criticisms suggest that there is some quasi-psychological resistance to change ingrained in those working in construction seem unreasonable. A more rational business analysis might suggest that the incentives to change do not outweigh the risks.

Furthermore, the prudence among firms within the sector will be reinforced by the history of failure when it comes to innovation. Certainly, attempts to move more construction activity off-site has a long history peppered with failure. It also has a less well recognised history of successes.

The latest spate of failures that followed moves to create a modular volumetric housing industry will not have reassured the sector. Hundreds of millions of pounds, including public sector funding, was invested. The result was a series of high-profile company collapses.

This episode points to a lack of appreciation of the risks and incentives, and indeed a poor understanding of its complexity. This is particularly the case with efforts that fall into the technology push arena, which are often accompanied by words, language, and attitudes imported from the tech sector.

"Disruption" has its place. But the generally accepted definition of a "disruptive innovation", as coined by Clayton M. Christensen, is the process of making a product, service, or offering more accessible, affordable, and simpler for a wider audience. It is not clear that this is what the modular housing factories were seeking to do.

The need to be flexible to deal with volatility and uncertainties is a dominant feature of the construction process as it is currently cast. This in turn encourages fragmentation and influences the business models adopted by its firms. The fragmentation of the industry, the complexity of construction projects, and the high levels of risks associated with innovation suggest that any prompt to try something different should come from the client. It also suggests the client should bear the risk, not the firms operating on tight profit margins that are engaged to assemble the parts on site.

The process of innovation needs to run and be seen to run through the whole of the development process, from land assembly to end-of-life of the building and structure. Expecting one cog in the overall machine to lead on innovation seems curious. The term "modern methods of construction" (MMC) is often used to encapsulate innovation within the sector. Adopting "modern methods of development" would appear to be more appropriate. This certainly is the suggestion from Dr Sarah Payne and Dr Bilge Serin in a report from the UK Collaborative Centre for Housing Evidence in 2023.[14]

The importance of engaging all parties active in creating buildings and structures is clear in the minds of most people seeking to promote innovation and greater efficiency within the built environment. This is evident from the work of the Construction Innovation Hub.

However, a small shift in language might do much to encourage the whole process thinking needed to support a more collaborative approach to innovation within the wider sector. This does not discount the need for iterative improvements in products and processes. But it does reinforce the reality that innovation in how we create buildings and structures rests on collaborative effort from a wide range of actors.

The late Chris Freeman, one of the founders of the post-war school of innovation studies, in his book The Economics of Industrial Innovation (third edition) wrote: "… technological change, if it is to have beneficial effects on society, will need to be 'embedded', integrated in society.

"From such a perspective technological change is of course much less an exogenous 'manna from heaven' factor, superimposed from the outside through the activities of scientists and technologists, but rather an endogenous process whereby it will be continuously adapted and selected to the broad needs and requirements of society."

If innovation is to become more embedded within the creation and maintenance of the built environment, there appears to be a strong case for policy makers widening their frame of reference for innovation from construction to development. Furthermore, there would also appear to be a case for tailoring and testing appropriate incentives to promote both innovation and the dissemination of innovative ideas throughout the sector.

Observations on the 1.5 million homes target

When, on 11 October 2023, Kier Starmer said that Labour would build 1.5 million homes over five years to "save the dream of homeownership"[15] it was hard to find any expert that would put their reputation on the line and say it was a realistic target. A year or so later and the target looks, if anything, less realistic.

There has been a fixation with housing targets in recent political debate, with former Conservative Prime Minister, Boris Johnson's 2019 manifesto pledging to create 300,000 homes a year by the mid-2020s, Rishi Sunak's 2024 manifesto pledge to "deliver 1.6 million well-designed homes in the right places while protecting our countryside", and Labour's promise of 1.5 million.

The root of these targets seems to stretch to the Interim report from the Barker Review of 2004. It is ironic that, under the heading "HOW MANY HOUSES SHOULD WE BUILD?",

Kate Barker wrote: “There are no obvious right answers as to how many more houses should be built.”[16]

This remains both true and wise. True because the number is determined by politics and economics which vary significantly over time. Wise because setting a numerical target for homes, particularly when it is unachievable can build false expectations and lead to unintended consequences.

Firstly, it can lead firms in the supply chain to waste time and money setting plans based on a target that eventually will not be realised. Secondly, it damages confidence and makes those who recognise that the target is unrealistic ever more dismissive of future government messaging. Thirdly, the eagerness to meet a set target can lead to projects rushed through with less care and attention than is appropriate.

Even the most cursory research suggests recent housing targets have been overambitious. From where we stand now the annual rate of build would have to rise to at least 350,000, if not more. Taking net additions for England in the year to March 2024, that would mean a rise of about 60% in the annual rate of delivery. Although it would likely mean an even bigger rise for the major private house builders who are on track to deliver the fewest new houses in a decade, according to the Financial Times in late 2024.[17]

The reality is that there are three primary routes through which demand for house building is realised today. The demand for homes built for purchase by first-time buyers or existing homeowners looking to move. The demand for homes built to rent privately. The demand for homes built for social or affordable rent.

The demand for private new-home purchases tends to closely track the number of residential transactions. And the level of residential transactions has been in long term decline since peaking in the late 1980s. Currently they are running historically low, compared with the average over the past 50 years. And there is negligible expectation of returning to the heights reached in the 1980s for two main reasons. Firstly, first-time buyers struggle to buy mainly because house prices relative to income are much higher than in the past and raising a deposit is a struggle. Secondly, current homeowners are on average much older than in the past and older homeowners move less frequently than younger homeowners.

Looking at homes sold for private rent; the traditional new homes market does see some open-market purchases made by individuals looking to rent. But the numbers are relatively small. However, particularly in urban areas, there is growing interest from private institutional investors in building homes for rent.

Savills estimates the number of homes currently owned by “Institutional PRS” businesses amount to 100,000, compared with the 5.7 million owned by individuals, which tend to be older homes. But its analysis suggests that a rising share of apartment schemes in the pipeline are destined for the private rental sector. [18] So, the demand from homes built to rent privately is growing. But this is from a low base.

The finance available for housing associations to fund social and affordable and social housing is tight. They currently have a huge amount of the future funding tied up in improving their existing housing stock. This suggest their new-build programmes will be smaller than in the past. Richard Jones, a partner at consultancy Arcadis and an expert in affordable housing, did some rough calculations for Housebuilder magazine in November 2024 on the affordable homes sector and the implications of the target of 300,000. His figures showed substantial extra funding for grants and subsidies would be needed for Homes England to boost affordable housing sufficiently.[19]

The picture suggests, and most experts agree, that the 1.5 million is highly unlikely to be met. One often discussed option to create a step change in housebuilding is to reinvigorate council house building. A powerful argument, put by many including the Local Government Association, is that council are expected to bear the cost and social burden of homelessness. Building new homes would in the long run relieve pressure and save councils money. In the year to March 2024, councils spent about £2.3 billion on temporary accommodation.[20] This is money that may be better channelled into creating and maintaining homes that provide less precarious accommodation for vulnerable people.

A further significant benefit is that local councils would have a clear incentive to train local people to build a skills base.

Observations on land and value creation through construction.

How to treat land has represented a challenge for economics for centuries. From Ricado’s theory of rent to Henry George’s single tax theory, to Mark Twain’s quip: “Buy land, they’re not making it anymore”, to Winston Churchill’s 1909 speech saying that land was “the mother of all other forms of monopoly”, it remains a contentious issue.[21]

Ownership of land presents economic problems as it is immobile and therefore provides a monopoly over its location. Furthermore, whatever landowners do with their land has implications for neighbours and anyone wishing to pass through it.

Frictions between neighbours are very evident in the planning arena. When one landowner seeks to increase the value of his or her land, often through construction, it frequently creates opposition from neighbours who feel they will lose value, intrinsically or monetarily, in their land.

Within the construction sphere, land and how it is treated economically creates other challenges. These greatly influence the structure of the industry. Its monopoly aspect opens potentially huge gains for owners if they secure permissions to build. Meanwhile, the land’s immobility means that any development must be created at a specific location, so all the labour needed to build must be brought to the site along with materials, either as raw materials or prefabricated elements.

Some of the huge gains made by construction may be realised on completion. But much is realised over a long period as the location attracts ever more economic activity. The difference is evident in the higher prices paid for land in thriving built-up areas. Understandably, developers when looking to build tend to focus more on the near-term value gain than the longer term, particularly when they weigh up the risk that they may lose money on their venture. This means the significant risk associated with the construction phase is of primary concern (see Note A).

Within the market system, investors, landowners, or developers have an incentive to devise means to maximise the value they capture, while sheltering themselves from as many risks as possible. We see this in how developers set up limited liability companies to isolate the financial risk. They also contain risk within their contracts with contractors.

Because they have the power of being in a monopoly position, they can set the contractual terms to shelter themselves by loading risk down the line to the contractor, so long as the contract is legal, and someone is prepared to accept it. The main contractor then passes risk down the line to the specialists and subcontractors.

Turning to the longer-term view, the bulk of the value from constructing a building or structure tends eventually to lie less in the building or

Note A: There are numerous points of potential failure when developing property or, indeed, infrastructure. The economic climate might shift from favourable to bleak during the process. Planning permission for a viable development may not be granted. Site surveys might show historic remains delaying the project. There may be unforeseen ground conditions. The building contractor may collapse. The cost of materials may spike. Labour issues might occur increasing costs. There may be faults in the design. There may be substandard work that is not picked up at inspection. These may be discovered at any stage from during construction to late in the life of the building or structure.

structure itself than in the land, perhaps better described as the location, on which it sits. This value inevitably spills over into adjacent land, often positively with the value of the area being uplifted. Sometimes the value that spills over to neighbouring land is negative – perhaps resulting from building a factory, prison, or incinerator.

The important point, often overlooked, is that the gains in the value of the land derived from construction tend to be captured more by the real estate sector, or by the owners of the land and adjacent land, than by firms undertaking the construction work. The chart within the appendix on productivity in many ways supports this view. It shows the value added per hour of work in real estate (that is the transaction value captured in earnings and profits) is far higher than that in construction and indeed within the economy as a whole.

To illustrate how the value of land rises over time, we can look at the relative value of land for new homes compared with the value of land of an existing home. For major house builders the cost of land within the selling price of a home may be well below 20%. It may be higher for urban developers and small house builders. So, it is not unreasonable to suggest that on average land might account for 25% of the cost of a new home, with construction cost and profit accounting for about 75%. Meanwhile, figures from the national accounts suggest that land accounts for about 75% of the value of the existing housing stock, with the building accounting for about 25%.

This comparison is crude but supports the view that the initial construction of a home produces a long tail of added value, as the development and surrounding area matures. It is worth noting in the 1950s the land value associated with homes was about 25% of the total asset value compared with the 75% today, as mentioned above.

Transport-related construction also ramps up the value of the locations and land it serves. Its impact can be extreme. For instance, a new rail link, say London's Elizabeth Line, has a huge impact on house prices near its stations. This value is clearly captured by homeowners in that location rather than those funding or building the rail link.

It is therefore unsurprising that land and its ownership create multiple issues for the wider construction sector, not least in seeking planning permissions. Here landowners that are looking to develop frequently come into conflict with landowners (often homeowners) who lobby against permissions.

Ownership of land also influences who derives the greatest value from the construction of a building or structure. Except for the likes of speculative housebuilders, most firms in the construction sector have little or no direct financial interest in the land on which they build.

The model for value capture use by most construction firms is to pitch for contracts that will pay them for the work they have to fulfil. These contracts are won competitively in an aggressive market where profit margins are low, and risks are high.

Those businesses that operate within the value chain that do have interest in land, often the real estate sector, also face high risks in the creation of buildings and structures. But their profit margins are significantly higher. This is evident when comparing the profit margins of house builders with those of general contractors.

Observations on policymaking within the wider construction sector

Good policy that seeks to influence the behaviour of complex communities, be they industrial, social, economic, or political, needs to take account of the community as a whole. Less obviously it needs to appreciate how the fragments and associated interconnections, that are evident in all communities, shape how they operate. Policy that treats communities as homogenous risks failing to meet its objectives and can cause more harm than good.

For some policies and some parts of the economy this may be less of a concern.

For construction it is crucial. Not only is there a high degree of interconnectedness and interdependency within the community that makes up the supply chain, but also within those using or purchasing the final products, and the raft of organisations and institutions that guide and regulate the sector. This creates numerous possibilities for unintended consequences, be they positive or negative.

Grenfell Tower has stood wrapped with the message "Forever in our hearts" not just as a memorial to those who died or were devasted by the tragedy, but as a stark reminder of the impact of poor policymaking. For many who work or have worked in the construction industry, the knowledge, sense even, that this was potentially always on the cards will haunt them, as will their anxiety over their sense of powerlessness to stop such a tragedy occurring.

The impacts of poorly crafted policy in construction are not always as obvious as Grenfell. There are multiple interconnections and interdependencies that lie within the process of constructing buildings and structures that create potential points of failure. Many are ignored or dismissed, seemingly without a full appreciation of how the construction sector creates and reshapes the built environment which impacts on every aspect of peoples' lives.

Failure in the construction process can result in a multiplicity of unexpected consequences and huge spillover effects. Not all will be bad. Not all will be physical disasters. But many have destructive and long-lasting effects.

There has been a history of failure in construction-related policymaking to properly explore the wider impacts of policy and to leave assumptions unchallenged. It would appear too often decisions are made on hunches rather than detailed understanding.

Recent examples of this are evident in the letter sent to government by the House of Lords Built Environment Committee following its brief inquiry into modern methods of construction. The inquiry was established following the collapse and closure of several Category 1 MMC (volumetric modern methods of construction) companies during 2022 and 2023.

Two quotes illustrate the point. Firstly: "… we came away from our inquiry with the impression that the Government had too easily accepted that undirected and nonstrategic investment of public money was the obvious way of providing this assistance."[22]

This highlights the need for both greater oversight and a much more clearly articulated strategic approach to encouraging innovation within construction. Although the lack of oversight and strategy is evident across policymaking relating to construction and the built and natural environment.

Sadly, short-term expedient decision-making trumps long-term strategic approaches to creating and maintaining the built environment. This in part may be down to expediency within political systems that today are acutely focused on the media cycle.

Secondly: "We note that undertaking this inquiry has been challenging owing to a lack of a comprehensive dataset on MMC usage."[23]

This highlights the need to markedly improve how the industry encourages and facilitates better information collection, collation, and interpretation. This does not simply apply to the here and now, but to history, as it has much to tell us about failure and success.

Many of the issues highlighted in this report will be repeating findings of reports into construction produced over many decades. The prescriptions suggested in many of these reports often closely resemble those made previously. That repeatedly highlighted issues have not been resolved tells us much. It also suggests that there is a lack of attention paid to how earlier iterations of similar policies or actions fared in the past.

The ability of policy makers, which includes many construction professions, to make similar misjudgements so repeatedly is one of the more worrying failings within the sector. This is particularly true of prefabrication. Despite its steadily increasing use within construction over centuries, it has become something of a holy grail within the sector. This has led to overambitious and ill-advised decision making.

Worryingly, the blame for the persistent failures made when introducing prefabricated systems is most often deflected from the policies and approaches made to introduce it. The whipping boy tends to be the industry itself, blamed for being resistant to change and culturally, anti-innovation.

The failure of policy makers to take account of the complexity of the business environment within which construction operates and the popularised characterisation of the industry as resistant to change is a major stumbling block to good policy.

If wise policy is to be formulated, it is essential that the starting point is a clear appreciation of the relationships, power, and incentives that influence the actors within the wider sector. It is also essential that effort is made to understand how these influences shape the behaviour and structure within not just the construction sector, but all the other sectors that combine to create the built environment.

This report argues that the business environment within which construction firms operated needs to be better understood when policy is formulated. Too little weight is given to how changing their environment might steer construction firms towards more productive ways of working. Key positive changes would include reducing the volatility in workloads, to improve the market information available to construction firms, advisers, and policy makers, and to provide a much clearer vision of how the built environment is likely to change in the future within greatly improved oversight.

These changes would provide more confidence and encourage more forward thinking within the sector. This in turn would encourage greater investment both in people and processes to increase efficiency to would improve outcomes. Importantly, this approach taps into a key characteristic of construction firms, their ability to adapt.

References

1 Office for National Statistics (ONS), Satellite accounts

2 Home Builders Federation (HBF), State of Play 2024-25, December 2024

3 NatWest, Energy Transition Report 2023, December 2023

4 Small Business Commissioner, Fair Payment Code (FPC)

5 Department for Business and Trade, Late payments: tackling poor payment practices, 30 July 2025

6 CITB, Workforce Mobility and Skills in the UK Construction Sector 2022, May 2023

7 Ministry of Housing, Communities & Local Government (MHCLG), Construction Products Reform Green Paper, February 2025

8 CIOB, Attitudes Towards Construction Careers, March 2025

9 University of Birmingham & Warwick Institute for Employment Research, Employer decision-making around skill shortages, employee shortages and migration: Literature Review, September 2020

10 ONS, Productivity in the construction industry, UK: 2021, 19 October 2021

11 Tussell, Public Sector Management Consultation Market Snapshot 2024,

12 Financial Times, Rachel Reeves orders crackdown on government use of consultants, 18 September 2024

13 Energy Saving Trust, Green Homes Grant scheme

14 UK Collaborative Centre for Housing Evidence, The potential role of Modern Methods of Construction in addressing systemic supply issues, April 2023

15 Labour, Labour will build 1.5 million homes to save the dream of homeownership, 11 October 2023

16 Kate Barker, Review of Housing Supply: Securing our Future Housing Needs – Interim Report, December 2003

17 FT, UK's listed builders on track to build fewest new houses in a decade, 24 December 2024

18 Savills, Investment in UK Operational BTR – The Next Phase of Evolution, July 2024

19 Housebuilder Magazine, The magnitude of government support required to deliver much-needed affordable homes, November 2024

20 MHCLG, Local authority revenue expenditure and financing England: 2023 to 2024 individual local authority data – outturn, 29 August 2024

21 The Churchill Project, Liberty and Taxation: Churchill, George and The People's Rights, Part 2, 21 March 2019

22 House of Lords, Letter to Secretary of State for Levelling Up, Housing and Communities on Modern methods of construction in housing, 26 January 2024

23 Ibid

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