Creating a Productive environment for UK Construction

CLC proposals to close the productivity gap



Construction Leadership Council



About the Construction Leadership Council

The Construction Leadership Council (CLC) works in partnership with Government and organisations of all sizes across the industry to ensure the construction sector has the voice, support and resilience needed to grow, improve productivity, attract and retain talent, and successfully transition to Net Zero.

Our vision is to lead a new era of delivery in the built environment. We are doing this through four areas where we believe there is the most opportunity for change and the most need for collective effort:

Building safety: Champion and support delivery of safe & high-quality buildings.

Net zero and biodiversity: Accelerate the sector's transition to Net Zero and mitigate the impacts of climate change.

People and skills: Energise our people, attract talent and enhance their skills for the future.

Next generation delivery: Boost productivity through digital adoption and industrialisation.

Forward

The construction industry is a key enabler to economic growth across the UK's economy, providing the infrastructure and buildings required by all industries from the manufacturing sector to cultural facilities. It is marked by its considerable size and scope and can be categorised into four distinct sub-sectors: Infrastructure, Buildings, Housing and Domestic Repairs, Maintenance and Improvement (RMI).

These sectors, albeit different in size and makeup, collectively contribute to the industry's influence on the wider economy.

We have set ourselves the challenge of closing the productivity gap between construction output per worker and economy average by 2035, recognising that improving productivity will drive benefits across all four sectors and all four CLC priorities. Over the last 5 years the construction sector has collectively invested £2bn in research and development, a tenfold increase on the previous 10 years. This investment and the learning we have adopted from Covid ways of working has seen our productivity increase since 2021.

The graph below demonstrates this through comparing productivity output with R&D investment. These increases in investment can be attributed to commitments from Government, a notable example of this has been the Construction Sector deal that set out a strategy for transforming industry and driving the use of new technology and techniques including Modern Methods of Construction (MMC).



Productivity output per worker (% Improvement) vs R&D Investment

However, confidence in our pipeline is at its lowest point since 2008, through a combination of planning constraints and inertia in leadership decision making and nervousness in both homeowners and the private sector asset owners, undermining our confidence to invest. In addition, the volatility of material inflation in recent months has added further uncertainty.

This report takes a quantitative look at what will shift the dial on our productivity between now and 2035 such that we can close the productivity gap between construction and the wider economy. This paper recommends a series of actions for industry leaders and government decision-makers. The recommendations will allow us to build our confidence, in turn attracting investment in new partnerships, skills and innovation to deliver enhanced productivity and, if we get it right, an exportable formula to unlocking productive construction activity across the world.



Mark Reynolds

Group Chairman and Chief Executive





Richard Robinson

Deputy Co-Chair Chief Executive Officer







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Executive Summary

Build our confidence, in turn attracting investment in new partnerships, skills and innovation to deliver enhanced productivity and growth.

Our plan to boost productivity by 25%

The UK construction industry offers one of the biggest and most easily deliverable opportunities to grow the UK economy.

The construction sector is worth 9% of GDP to the UK economy each year¹ and employs in total just over 2.63m people (not including independent consultants and construction product manufacture and distribution)

Output per worker stands at £35.69 per worker hour, some 13.5% behind the economy average, however it has seen an improvement over the last few years following 10 years of sustained growth in Research & Development investment totalling £2bn over 10 years.

Transforming the productivity of the construction industry in the UK must begin by building business confidence in our project pipeline, ranging from major infrastructure to home renovations.

That, in turn, will unlock investment in new partnerships, skills and innovation to deliver enhanced productivity and growth. If we achieve this, we can close the productivity gap between construction and the wider economy, which could generate £45bn of additional added value each year for the UK. This is equivalent to 2% of UK GDP and enough to build more than 220,000 houses a year or pay for two thirds of the UK's ten-year infrastructure pipeline, including covering the cost of both HS2 and the new nuclear programme.

It would also provide us an exportable formula for more productive construction around the world.

The actions required to deliver this transformation rest with industry, government and project leaders working together across three headline areas:-

- **Better preparation:** creating a productive environment to develop and deliver the right projects.
- **Better building:** delivering construction more productively.
- Better business: supporting our industry to do business more efficiently.





BETTER PREPARATION

Creating A Productive Environment 17%	Headline Commitment from CLC	£bn to be saved
Leadership and planning Resolving the challenges in planning system that impede the delivery of new home and commercial buildings. Demonstrating leadership on infrastructure projects through the pipeline and Development Consent Order process.	Target planning rates back to 2010 levels in infrastructure & housing.	£11.3
Early Integrated Teams Structuring programmes to bring together all parties at the start to collaboratively develop and agree the design, minimising change and managing risk.	Target 12.5% cost saving across all projects within infrastructure & buildings by 2035.	£8.1
Programmatic Delivery Establishing long term programmes and commercial relationships that develop the supply chain.	Target 5% cost saving across all projects within infrastructure & buildings by 2035.	£7.3
Design for Usability and Operations Collaborating through the design process to deliver assets which are simpler to maintain and higher value to the users.	10% efficiency in maintenance/operations costs in buildings and infrastructure.	£3.4



BETTER BUILDING

Delivering Construction Productively 7%	Headline Commitment from CLC	£bn to be saved
Onsite Efficiency Optimise the use of Modern Methods of Construction and improved onsite logistics, in doing so, reducing waste and transport to sites.	Presumption in favour of offsite on Social Infrastructure projects (26% of construction investment pipeline) enabled through product platforms alongside championing industrialisation across all CLC subsectors.	£2.8
Reshaping our workforce Managing the shape of the workforce, focusing on multiskilling and retraining to enable careers to start earlier and last longer.	Better managing our workforce across the 4 sub sectors to deliver a 5% cost saving in average in RMI and 2.5% across other sectors from reduced recruitment costs and managing wage inflation.	£5.4
Enhanced Quality and assurance Reducing mistakes and demonstrating the standards and competence we work to.	Average 2.5% cost saving across all projects by 2035 from a focus on quality and avoiding rework underpinned by and enhanced regulatory and competence regime.	£4.5



BETTER BUSINESS

Delivering Construction Productively 2%	Headline Commitment from CLC	£bn to be saved
Ease of doing business for SMEs Expanding the rollout of Digital tools for SMEs to reduce administration time and streamline the processes around them such as procurement, tax, apprenticeships and building control.	CLC to work with Government to deliver a campaign to improve workforce efficiency in SMES across the Construction sector by 5% through reducing the admin burden.	£2.2
Capital Utilisation Effective utilisation of plant, machinery and factories/sites.	Achieve an average 5% increase in capital utilisation across all businesses by 2035.	£0.6
Enhanced capability and better use of Productivity data Being better able to quantify, understand and act on the drivers of productivity at a sector, project and business level.	CLC will develop industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry. Businesses in construction will be expected to report on Productivity metrics to their Executive Board.	

8 interesting things the data tells us...

- If you look at UK construction industry, productivity per person is ahead of the economic average, however, the sector is significantly behind others in terms of per hour. Resolving this issue would help our people have happier and healthier careers.
- Infrastructure stands as the most productive of our 4 sub-sectors, in part due to the scale of the projects and also because it has a higher % of capital inputs (plant) compared to labour.
- Housing is the most materials heavy sector. Shifting towards increased capital (factories for offsite) would improve productivity but it requires regulatory stability to ensure consistent pipeline of work.
- Over the next 10-15 years, more than 500,000 UK born construction workers are expected to retire. This would result in a significant loss in terms of capacity and experience to the construction sector, particularly in RMI.

- Although infrastructure is the most productive, it often incurs higher project level costs than in many other countries. This is due to the scoping and decisions made early on as well as the higher standards we work to in terms of public consultation, environmental, health and safety and quality.
- Nearly half of the output from the Commercial Buildings sector is on maintenance of existing buildings, accounting for £22.3Bn per year.
- RMI is very labour intensive (60% of inputs).To improve productivity, we must focus on innovation, improved skills and competence and ease of doing business for SMEs, particularly through digital tools.
- If we want to increase economic growth of the whole economy, it is recognised by the Institution of Civil Engineers (ICE)that for every £1 invested in infrastructure generates £2.84 economic return to the economy.



Output per worker (£/hr)

Recommendations for Government and Industry

6 HEADLINE ACTIONS FOR GOVERNMENT

Showing leadership in infrastructure planning

Adopt the National Infrastructure Commission report recommendations around accelerating the Nationally Significant Infrastructure Projects (NSIP) process.

Reforming town planning

Government and industry to jointly develop a policy which allows increased planning fees in return for a guaranteed standard of performance, to create and champion a new data framework than enables digitalisation of the planning.

Giving confidence in pipeline

Exercise the provisions in the Procurement Bills Part 8.93 that public bodies with external spending of more than $\pounds100$ million per year must publish all planned procurements valued at over $\pounds2$ million.

Developing a flexible skills system

Reform the Apprentice Levy to support employers with wider expense criteria. Embrace the 2023 Industry Training Board review recommendation.

Working together on Net Zero

Work with industry to set out a clear policy and regulatory roadmap to accelerate domestic retrofit. Accel erate hydrogen production plans to support zero diesel sites.

Incentivising innovation

Review R & D draft legislation on single merged R & D Tax credit scheme. The proposed changes to the R&D tax regime which would penalise the Construction sector which has delivered over £2Bn in R&D over the last 5 years. Implement the information management mandate within Government procurements to drive consistency and efficiency.

6 HEADLINE ACTIONS FOR INDUSTRY

Early Integrated Teams

CLC to pilot a knowledge sharing programme on digital tools to support early integrated teams and data capture in order to facilitate learning.

Programmatic delivery & supply chain development

CLC to take a leading role in fair and balanced commercial terms: ensuring the application of the private sector Playbook, action on onerous or non-standard contract terms, fair payment practices and adoption of common assessment standards.

Onsite efficiency

CLC to champion more productive, manufacturing-led approaches to delivery through increased industrialisation across the sub-sectors within CLC. Starting with an assessment of industrialisation across subsectors.

Reshaping our workforce

Continue to work with through the CLC to establish a life learning system that supports attracting, skilling and reskilling the workforce with an industry accredited competency system to provide future skills across all occupations.

Enhanced quality and assurance

Enhanced quality and assurance, both culturally on large programmes and to understand the link between enhanced competence of domestic builders to improve quality and productivity and if sufficient, introduce licensing.

Enhanced capability and better use of productivity data

CLC to partner with Professional Institutions to develop an industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry.

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LEAD AUTHOR

Hannah Vickers Mace

SPONSORS

Mark Reynolds Mace

Richard Robinson AtkinsRéalis

CONTRIBUTORS

Ian Woodcroft Construction Industry Training Board

Marcus Bennet Construction Industry Training Board

Mark Crosby Construction Industry Training Board

Lucie Wright Construction Industry Training Board

Claire Saini Construction Industry Training Board

Anna Scothern National Home Improvement Council

Katy Dowding Skanska

Tim Beaumont Health and Safety Executive

Sue Brandrick Health and Safety Executive



AUTHOR Isobel Drever AtkinsRéalis

Laura Florez Perez University College London

Ed McCann Expedition

Martin Quinn GPE

Helen Hare

John Newcomb Builders Merchants Federation

Thomas Lowe Builders Merchants Federation

Brian Morrisroe Morrisroe

Alasdair Reisner Civil Engineering Contractors Association

Mark Worrall BBI Services

Ged Simmonds Mace

Andy Mitchell Tideway

Brian Berry Federation of Master Builders

John Sartin Department for Transport

Mila Duncheva Stora Enso Rachel Cooper Skanska

James Robinson Skanska

Rob Jones Skanska

Andrew Briggs Skanska

Helen Stangoe Skanska

Steve Hails Thames Tideway

James Smith Thames Tideway

Noble Frances Construction Products Association

Dominic Clark AtkinsRéalis

CLC BOARD

Karl Whiteman Berkeley Group

Matt Palmer Lower Thames Crossing

Isabel Coman Transport for London

Nick Roberts Travis Perkins

Fergus Harradence Department for Business and Trade



Recommendations for Government and Industry

Improving productivity is a joint venture and requires collaboration between Government and Industry. These recommendations span across the 4 sub-sectors, and further sector analysis can be found later in this paper.

It's important to note that some of these recommendations are already being progressed as part of the CLC's existing work plans and initiatives, giving further impetus for them to be progressed. Some of our other recommendations may require new initiatives to be set up and following this paper, we will look to produce an implementation plan.

6 headline actions for Government

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Work with industry to set out a clear policy and regulatory roadmap to accelerate domestic retrofit. Accelerate hydrogen production plans to support zero diesel sites.

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6 headline actions for Industry

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Enhanced quality and assurance, both culturally on large programmes and to understand the link between enhanced competence of domestic builders to improve quality and productivity and if sufficient, introduce licensing.

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Continue to work with through the CLC to establish a life learning system that supports attracting, skilling and re-skilling the workforce with an industry accredited competency system to provide future skills across all occupations.

Enhanced capability and better use of productivity data

CLC to partner with Professional Institutions to develop an industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry.

CLC PRODUCTIVITY PAPER

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Full Policy recommendations for Government

Policy Area	Policy Recommendation	Leadership and planning	Early integrated teams	Programmatic delivery	Design for usability and operations	Onsite Efficiency	Reshaping our workforce	Enhanced quality and assurance	Ease of doing business for SMEs	Capital Utilisation	Enhanced capability and better use of Productivity data
Infrastructure planning	Adopt the National Infrastructure Commission report recommendations around accelerating the NSIP process:- Make it a legal requirement to update NPS for National Policy Statements for Energy, Water Resources and National Networks every 5 years, introduce a system of modular updates to National Policy Statements linked to primary or secondary legislation to ensure clarity on how future legislative change relates to National Policy Statements, introduce performance indicators for statutory consultees as part of compulsory service level agreements with developers, with budget implications for failure to meet agreed service levels.	~									
	Digitisalitaion of NSIP process (building upon the most recent consultation) to improve accessibility and transparency for stakeholders. Documents are to be readable and searchable, both by users and machines, potentially unlocking further benefits. While some information will be confidential and will need to be protected, there should be a general presumption in favour of transparency with open databases in areas such as environmental monitoring. This can then transcend to a 'digital by default' standard across the system - with smart data structuring to allow for the aggregation of data to inform strategic planning assumptions.	~									
Town planning	Collaborate with the Royal Town Planning Institute (RTPI) and CLC to identify how to increase capacity in Local Authority planning functions across the UK.	\checkmark									
	Government and industry to jointly develop a policy which allows increased planning fees in return for a guaranteed standard of performance.	\checkmark									
	Through the implementation of the Future Homes & Buildings standards streamline the planning process to focus on planning policy and put all technical standards aspects into Building Control under the new regulatory regime.	\checkmark									
Regulation	Urgently provide clarity across all aspects of the Building Safety Regulations (noting recent announcements on staircases) and work with the industry to develop technical guidance in a timely manner ahead of implementation.							\checkmark			
	Ensure the Building Safety Regulator is adequately funded and resourced for the scale of challenge it faces.							\checkmark			
	Keep to timescales on Future Homes and Future Building Standards to be published in 2025.							\checkmark			
Skills	Reform the Apprentice Levy to support employers with wider expense criteria. Embrace the 2023 ITB review recommendation.						\checkmark				
Innovation	R&D tax credit changes - urgently review the proposed changes to the R&D tax regime which would penalise the Construction sector which has delivered over £2Bn in R&D over the last 5 years.			\checkmark							
	Revise Information Management Mandate to become data-driven, enabling whole life management of data and information and therefore better understanding and decision-making across an integrated built environment sector. This Mandate should also aim to provide the platform and motivation for continual transformation of our sector.				~						
	Reinforce the presumption in favour of offsite on Government projects and programmes through Spending Review settlement conditions.					\checkmark					
Net Zero	Work with industry to set out a clear policy and regulatory roadmap to accelerate retrofit, as recommended by the Committee on Climate Change (CCC).				\checkmark						
	Review the VAT regime for commercial and other retrofit projects to understand how it prejudices retrofit over new build.				\checkmark						
	The Construction sector will need a UK supply of green hydrogen to meet our 79% of diesel free sites by 2035 commitment. Government to accelerate Hydrogen supply plans in order to achieve this.									\checkmark	

Full Project recommendations for Government

Project Area	Project Recommendation	Leadership and planning	Early integrated teams	Programmatic delivery	Design for usability and operations	Onsite Efficiency	Reshaping our workforce	Enhanced quality and assurance	Ease of doing business for SMEs	Capital Utilisation	Enhanced capability and better use of Productivity data
Town Planning	Establish local development forums consistency across the Country to bring together local developers and Local Planning authorities in order to join up regional plans with a particular focus on small and medium sized sites to inform local plans.	\checkmark									
Net Zero	Set a date for adoption of Zero Diesel sites on all Government Clients projects. (DfT, MOD, MoJ, DWP, Defra, DfE)									\checkmark	
Playbook	Cabinet Office to audit the adoption of the Construction Playbook on all public sector projects and share performance with the industry.		\checkmark								
	Infrastructure Projects Authority (IPA) to work across Government to implement and share the Project 13 enterprise approach across the public sector.		\checkmark								
Pipeline	Formally commit to an annual publication of the National Infrastructure and Construction Pipeline.	\checkmark									
	Exercise the provisions in the Procurement Bills Part 8.93 that public bodies with external spending of more than £100 million per year must publish all planned procurements valued at over £2 million.	\checkmark									
	Commit to undertaking a specific cost of delay assessment prior to any project being delayed.	\checkmark									
Innovation	Government to audit departments acting on the presumption in favour of offsite and publish the results to incentivise industry to start adopting new approaches					\checkmark					
	CLC to work with Government Departments to explore setting targets that consider each project/programme/client/asset type.					\checkmark					
	Infrastructure Projects Authority (IPA) and Government Departments to utilise industry provided benchmarking in setting budgets and assuring projects.										\checkmark
Commercial terms	On Government projects shift the commercial incentives for the designers to reward delivery of outcomes including whole life cost and operational energy.				\checkmark						
	Expand the use of the Common assessment standard across all Government Client organisations.							\checkmark			
	Through Government Commercial Function bring consistency to the approach taken in Government procurement following the implementation of the procurement regulations later this year.								\checkmark		

Full actions for Industry

Industry Area	Industry Recommendation	Leadership and planning	Early integrated teams	Programmatic delivery	Design for usability and operations	Onsite Efficiency	Reshaping our workforce	Enhanced quality and assurance	Ease of doing business for SMEs	Capital Utilisation	Enhanced capability and better use of Productivity data
Builders Merchants Federation (BMF)	Merchants to consider offering product masterclasses which demonstrate innovative products rather than relying on manufacturer training and promotion.					\checkmark					
Building Safety workstream	Royal Institute of British Architects (RIBA) to review stages in order to accurately reflect the changing roles and earlier integration of teams required under the Building Safety Act.		\checkmark								
Buildings & Places Group	Utilise industry guidance: apply the principles of the Construction Playbook and Private Sector Playbook to inform construction strategy and planning.					\checkmark					
Buildings & Places/ Platforms Group	Private sector clients to include requirements and categories for MMC at the beginning of a project.					\checkmark					\checkmark
	The Construction Productivity Taskforce will deliver their phase 2 pilot projects and share/cascade the learning across the industry.										\checkmark
	CLC to work with the Construction Data Trust to develop a single industry data source on productivity data.							\checkmark			
Business Models	Expand the use of the Common assessment standard across all Contractors and implement a similar scheme across the Builders Merchants.		\checkmark								
	Royal Institute for Chartered Surveyors (RICS) and Chartered Institute of Procurement & Supply (CIPS) to lead a campaign to explain commercial options for inviting contractors into projects earlier.			\checkmark							
	Utilise industry guidance: Leveraging the Construction Playbook and Private Sector Playbook to develop guidance on contact terms.			\checkmark							
	CLC to convene industry and develop position on retentions and gather commitments to better payment practices.			\checkmark							
	Host industry summit on commercial relationships and terms in order to share best practice across all 4 sub sectors and drive consistency of approach.				\checkmark						
	On Private sector projects shift the commercial incentives for the designers to reward delivery of outcomes including whole life cost and operational energy.							\checkmark			
	Business and Project Leaders to treat quality in the same way as Health & Safety in terms of culture, assurance reporting and targets.									\checkmark	
CECA	Civil Engineering Contractors Association (CECA) to undertake a research project on future robotics and AI to report back to the industry on the opportunities and roadmap to get there.									\checkmark	
CLC Council	Relevant Trade association benchmarking to include capital utilisation in order to establish a baseline and learn from it.	\checkmark						\checkmark			
CLC Task and finish group	Government and industry to jointly develop a policy which allows increased planning fees in return for a guaranteed standard of performance.								\checkmark		

Industry Area	Industry Recommendation	Leadership and planning	Early integrated teams	Programmatic delivery	Design for usability and operations	Onsite Efficiency	Reshaping our workforce	Enhanced quality and assurance	Ease of doing business for SMEs	Capital Utilisation	Enhanced capability and better use of Productivity data
Construct Zero	Establish operational energy efficiency and carbon benchmarks for all asset types for use in contracts and design specifications through the Whole Life Carbon Standards project.				~						
	CLC will partner with Professional Institutions to develop an industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry, led by the Quantity Surveyors.										~
	Industry fuel-saving 'tournament' to award outstanding performance.			\checkmark							
New group/ review	CLC to lead a review of the link between licensing of domestic builders and enhancements in productivity and quality, taking learning from other Countries to understand if there's a productivity benefit.						~				
New group/ review	CLC Council to survey SME members to understand largest constraints on productivity from an administration perspective, in order to inform where to focus effort in the campaign.						\checkmark				
New group/ review	Engage Government and work with Small Business Minister on the findings from the survey.								~		
New group/ review	CLC topartner with Royal Institute for Chartered Surveyors (RICS) to develop an industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry, lead by the Quantity Surveyors.		~								
People & skills	Enhance levels of apprentice levy pledging from large organisations to their supply chain.			\checkmark							
	Introduce a Construction Industry Training Board (CITB) broker system on apprentices and also business mentors.						~				
	Launch the new competence framework for all construction and built environment occupations to ensure there is an accepted, accredited definition of competence for individuals.						~				
Industrialised Construction	Support the use of all 7 categories of modern methods of construction (MMC) as defined by Ministry of Housing, Communities and Local Government (MHCLG) in 2019, reviewing what is applicable in each business and promoting knowledge share through the Next Generation priority.					\checkmark					
	CLC to pilot a knowledge sharing programme on digital tools to support early integrated teams and data capture in order to facilitate learning.		\checkmark								
Digital	Outline requirements for a revised Information Management Mandate.				✓						
	Gather industry Development and support of charters for each relevant sector involved in the built environment using the CLC digital charter as a template.				✓						
RMI Group	National Retrofit Hub (NRH) to set clear standards and guidance to the industry on retrofit.				✓			\checkmark			
	RMI working group to lead a strand of work to facilitate and share digital learning/tools for SME admin.								\checkmark		
RMI/Digital	CLC RMI Group to a strand of work to facilitate and share digital learning/tools for SME admin as part of a wider 'Digitising my construction business campaign and training course'.								✓		



Defining & Measuring Productivity

This chapter aims to lay out the foundations for the rest of the paper by establishing the definition of productivity. The definition of productivity that guides this paper is based on the efficient use of inputs and effectiveness of outputs. Agreeing on a unified definition, measurement and monitoring of productivity is crucial for industry to achieve the economic growth and performance it needs. Productivity is an economic measure of the goods and services (output) that a nation produces using its available people, natural and fiscal resources (inputs). It has been used to define the economic growth of a nation where a more productive society will create more with less. This reflects a traditional approach to productivity measurement, where inputs are measured as labour, capital & others like building materials and energy, whereas the output is measured as either gross output or value-added. In this paper, we highlight how productivity can be defined in two parts:-

- 1. Efficient use of resources (capital, labour and materials)
- 2. **Effectiveness of outputs** (value created during the construction process and as a result of the final asset).

You could deliver the same outcome with less resources or you could use the same resources to deliver a better outcome.

Both would result in increased productivity. In our analysis, we have identified the key focus areas that will enhance the efficiency of our inputs and increase the effectiveness of what we deliver.



As defined earlier, "effectiveness" refers to the quality or value or scale of the outputs. This particularly key to construction projects, as the output requirements can have a significant impact on the productivity of the construction process.

For instance, in the case of HS2, the cost per km of track is widely understood to be higher than many other European Railways. However, what often goes unnoticed is that the HS2 track requirements outline that 80% of the construction needs to take place underground through tunnelling or above ground level on embankments or viaducts, rather than at ground level.

This variation in the requirements has a significant impact on the cost and ultimately the productivity of the construction phase. This can impact all 4 of the CLC sectors, not just infrastructure. Therefore a recognition for both productivity of the construction process as well as the effectiveness of the asset being created is important when optimising construction productivity.



Focus Areas Breakdown

This chapter brings further detail to the focus areas which have emerged through existing research, interviews with various experts across government and industry and data analysis. Our focus areas are categorised into three groups: creating a productive environment, delivering construction productively and managing productive businesses. This chapter outlines the productivity opportunity at an industrywide level, noting sub-sectors of particular relevance.

Each focus area also outlines a headline commitment as a goal for industry to reach in order to achieve the productivity opportunity as well as key measures to track progress. This chapter also contains case studies to demonstrate best practice or further guidance.

Planning and Leadership

Resolving the challenges in planning system that impede the delivery of new home and commercial buildings. Demonstrating leadership on infrastructure projects through the pipeline and Development Consent Order process.

Effective leadership and planning represents the largest opportunity to improve productivity across the industry and currently posing an annual a drag of £11.3Bn, hampering the delivery of new homes, commercial buildings and infrastructure.

Since 2012, consenting times for Nationally Significant Infrastructure Projects have increased by 65%, extending from 2.6 to 4.2 years. Given the complexity of major infrastructure projects and the significant upfront capital costs, strong leadership is crucial through the DCO process to avoid project delays. Such uncertainty causes additional costs and delays to businesses and projects, proving too risky for further investments and hinders the economic growth they initially set out to deliver. Utilising data-driven digital solutions in the planning stage can facilitate better modelling of the potential impacts, reducing challenges and delays. Streamlined digital processes and approaches can standardise the Development Consent Order process, leading to more efficient infrastructure project oversight and management.

Digitisation can also support Environmental impact assessments, with a wealth of data readily available, projects can enable work to be completed at early stages and in less time than has been the case traditionally. The NICS Planning report also recommends the establishment of a data sharing platform for environmental data with clear data standards, sharing relevant developer and local nature recovery strategy data.

In the Housing sector, a mere 3,037, housing projects were granted planning permission in Q1 2023, 20% lower than a year ago. The Home Builders Federation also notes that housing supply could drop by up to 122,000 homes per year due to capacity and legislative challenges. From a financial standpoint, this could result in 370,000 fewer jobs being supported, including 4,000 graduate and apprenticeship positions and over £20bn less economic activity being generated. The recent announcements around Nutrient Neutrality have gone some way to relieve this pressure however there are still significant challenges to resolve.

Notably, for SME's, the planning system is becoming a large deterrent. The Home Builders Federation found that 48% of SME housebuilders feel that the planning system is constraining their output. Town planning is currently highly inefficient due to limited resources and the added layer of complexity of changing regulations, policies and technical requirements. This disproportionately affects SME House Builders who are less equipped to absorb the additional time, cost and risk associated with the planning process.



N.B. Includes residential projects of all sizes, residential units on non-residential schemes and conversions. Source: Glenigan



Buildings

Productivity opportunity

£11.3bn

Headline Commitment

Target planning approval rates and timescales back to 2010 levels in infrastructure & housing.

Metrics for measurement

Gateways on Government projects

Homes consented

DCO back to 2.6 years

GOVERNMENT ACTIONS – POLICY

Infrastructure Planning

- Adopt the National Infrastructure Commission report recommendations around accelerating the NSIP process:-Make it a legal requirement to update NPS for National Policy Statements for Energy, Water Resources and National Networks every 5 years, introduce a system of modular updates to National Policy Statements linked to primary or secondary legislation to ensure clarity on how future legislative change relates to National Policy Statements, introduce performance indicators for statutory consultees as part of compulsory service level agreements with developers, with budget implications for failure to meet agreed service levels.
- Digitisalitaion of NSIP process (building upon the most recent consultation) to improve accessibility and transparency for stakeholders. Documents are to be readable and searchable, both by users and machines, potentially unlocking further benefits. While some information will be confidential and will need to be protected, there should be a general presumption in favour of transparency with open databases in areas such as environmental monitoring. This can then transcend to a 'digital by default' standard across the system - with smart data structuring to allow for the aggregation of data to inform strategic planning assumptions.

Town Planning

- Collaborate with Royal Town Planning Institute (RTPI) (and CLC) to identify how to increase capacity in Local Authority planning functions across the UK.
- Government and industry to jointly develop a policy which allows increased planning fees in return for a guaranteed standard of performance, to create and champion a new data framework than enables digitalisation of the planning.
- Through the implementation of the Future Homes & Buildings standards streamline the planning process to focus on planning policy and put all technical standards aspects into Building Control under the new regulatory regime.

GOVERNMENT ACTIONS – PROJECT

Pipeline

- Formally commit to an annual publication of the National Infrastructure and Construction Pipeline
- Exercise the provisions in the Procurement Bills Part 8.93 that public bodies with external spending of more than £100 million per year must publish all planned procurements valued at over £2 million.
- Commit to undertaking a specific cost of delay assessment prior to any project being delayed.

Town Planning

• Establish local development forums consistency across the Country to bring together local developers and Local Planning authorities in order to join up regional plans with a particular focus on small and medium sized sites to inform local plans.
CASE STUDY

Improving nationally significant planning - National Infrastructure Commission

In February 2023, the government asked the Commission to undertake a study on the infrastructure planning system and the role of National Policy Statements. The full terms of reference for the study can be found on gov.uk. This report sets out the Commission's recommendations on how to improve the consenting process for Nationally Significant Infrastructure Projects (NSIPs).

Over the course of the study the Commission has sought input from a range of stakeholders and this report provides an independent, expert assessment of what could be done to strengthen and improve the current system both in the short and longer term. The recommendations set out in this report are designed to ensure the system meets four tests:

Faster: The system must deliver more infrastructure more quickly, at a minimum rapidly returning to two and a half year consenting timetables achieved in the early 2010s. Longer term, this could be reduced further to around two years due to efficiencies derived from strategic environmental mitigation.

More flexible: The system needs to be able to respond to rapid changes in technology, and to changes in legislation which have implications for planning policy.

Increased certainty: Scheme promoters, investors and communities must have more confidence about the outcome of planning decisions and the time they will take.

Better quality: The system must ensure that environmental outcomes are measurably improved and communities that host nationally important infrastructure receive direct benefits. It must also recognise the importance of good design, as set out in the National Infrastructure Design Principles.

Delivering net zero, climate resilience and growth Improving nationally significant

Constitution of the second second

infrastructure planning

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Early Integrated teams

Structuring programmes to bring together all parties at the start to collaboratively develop and agree the design, minimising change.

Evidence from 20,000 projects in the database of 'Independent Project Analysis' revealed that projects with the best quality early-stage planning and front-end loading had 20% lower costs and were delivered 10%-15% faster than average. Early engagement can help create the right environment as stakeholders work together and take collective decisions on what is in the best interests of the project, rather than for individual companies. To maximise the benefits of early engagement, it is essential to establish appropriate contractual and governance arrangements that support a more cooperative framework. This concept resonates with initiatives such as Project 13, emphasising productivityfocused design, minimised changes and proactive contractor involvement.

The cost of errors is estimated to be seven times the total annual profit of the UK Construction Industry. When factoring in unrecorded process waste, latent defects, and indirect expenses error-related costs can be estimated between 10% and 25% of project expenses, equating to £10–25 billion annually across the sector. GIRI notes that such errors are often 'rooted in deficiencies of design'. A potential solution to avoid cost incurred due to errors is further integration upstream with clients and downstream with contractors to improve the buildability of a project.

Integrated design and appropriate construction planning enabled by digital tools present an opportunity to test plans and designs in a virtual environment before real-life deployment. This allows for safer, quicker and more cost-effective delivery. Early collaboration facilitated by digital platforms can pre-empt design changes, leading to cost and resource efficiencies and as projects grow in complexity, these platforms can adapt, ensuring seamless team integrations.

GOVERNMENT ACTIONS – PROJECT:

Playbook

- Cabinet Office to audit the adoption of the Construction Playbook on all public sector projects and share performance with the industry.
- Infrastructure Projects Authority (IPA) to work across Government to implement and share the Project 13 enterprise approach across the public sector.

INDUSTRY ACTIONS

Business Models

• Utilise industry guidance: apply the principles of the Construction Playbook and Private Sector Playbook to inform construction strategy and planning.

New Group / Review

 CLC will partner with Royal Institution of Chartered Surveyors (RICs) to develop an industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry, lead by the Quantity Surveyors.

Digital and Data

• CLC to pilot a knowledge sharing programme on digital tools to support early integrated teams and data capture in order to facilitate learning.



Productivity opportunity

£12.4Bn

Headline Commitment

Target 12.5% cost saving across all projects within infrastructure & buildings by 2035.

Metrics for measurement

Quality

Waste generated on site

Error

Assurance

2 Aldermanbury Square project - GPE

In order to mitigate risk in contracts where there are unknowns, flexible contractual arrangements were introduced for GPE's 2 Aldermanbury Square project (2AS). 2AS is a 12-storey 320,000 sq ft (NIA) new build development in the City of London. The demolition and enabling works (by Keltbray) and the main works (by Lendlease) commenced on site in August 2022, with both the demolition and enabling works and the main contract works procured within the same tailored, contractual framework.

The principles of this process were evolved from a similar successful framework with GPE (client), Mace (main contractor) and Erith (demolition and enabling works contractor) on the Hanover project, a complex major development in London, above and around the new Cross rail Bond Street station.

This arrangement works well when coupled with an early engagement approach, where main contractors and principal supply chain members are appointed for specific and limited services while completing the Stage 3 and 4 design. This approach utilises supply chain expertise early in the process to contribute to design efficiency and co-ordination while also reducing risk and carbon and maximising opportunities for programme, off-site manufacture and innovation.

What this means, in practical terms, is that a contract is agreed at the outset, based on full terms and conditions for an entire scope of contract works. This would include clearly defined and stepped commitment stages with a clear strategy for how the design and construction considerations for the project will be worked through to minimise risk and cost for all parties, while working through the completion of design (with contractor input) based on final site survey and investigation results. The approach on 2AS includes an agreed mechanism for working through the risk for the entire scope of works with the contractor at the point of contract execution; progression to the next stepped commitment stage is subject to successful resolution of deliverables and agreement by all the parties.



Project Capability – Ingenuity House

'Beginning the right way: early end user engagement Virtual reality proved invaluable for connecting with our end users and incorporating them into the project. Virtual tours generated interest in the works and showcased what to expect from Ingenuity House, rich insights that would facilitate the transition into the offices. An interactive online orientation further boosted stakeholder interest and supported our end users' preparations for the move. Delivering ingenuity through BIM Building Information Modelling (BIM) played a central role throughout our ambitious works. It drove collaboration throughout project stakeholders, and its ability to provide information at the point of need maximised efficiencies throughout the project.

Modelling for safety and timely delivery Our teams wielded BIM's capabilities to maximise safety throughout the works as well. We were able to manage risk by conducting CDM designer safety tours through 3D representations of the project. Used in conjunction with BIMcollab, the models enabled automatic clash detection and allowed designers to identify and mitigate risks.

Additionally, our delivery team ran 4D digital rehearsals to improve certainty of outcomes and consistently mitigate risk in the programme. By visualising the project schedule in a 3D space, our planners were able to flag issues that they could have missed in a Gantt chart. For example, the steel work sequence of a main structure and podium installation unearthed a clash in the subsequent cladding installation. As such, the digital rehearsal prompted early problem solving before the activity on site. This saved time, money and potentially avoided a health and safety incident.'



Programmatic Delivery

Establishing long term programmes and commercial relationships which develop the supply chain.

Major infrastructure programmes offer opportunities for growth by embracing technological advancements and demonstrate a commitment to sustainability and supporting Net Zero ambitions and leading the way for the rest of the industry. The industry has collectively invested £2.67bn in research and development over the last five years, a five-fold increase on the previous 10 years as a result of stable programme delivery. Such programmes also offer workforce development opportunities skills to meet evolving project demands. According to the 'Case for Collaboration in the Home Builder Sector' only 20% of supply chain companies reported ever being supported with their workforce or training needs, outlining the scale of opportunity. Examples to demonstrate upskilling in practice include Hinkley Point C 30,00 training places, representing a £24m investment in training and apprenticeships.

Within major infrastructure projects, there is an opportunity for information management to improve productivity by ensuring a project has the right systems, standards and interoperable data. This is easier with new major projects as this can be established in the projects outset and planning stages. Long existing projects require an organisational led approach to align the right systems and standards. The Private Sector Playbook outlines 10 drivers to success, many applicable to also improving productivity. For instance, adopting collaborative and long-term contracting practices, when executed effectively, can deliver value and innovation whilst improving quality and reducing risk. A longer-term pipeline of future projects supports a more resilient supply chain and provides greater confidence to develop innovative solutions and workforce capacity. This can also involve providing more incentives for improvement, shifting from risk transfer to positive incentivisation such as value creation to deliver more productively. Adopting an outcome-based approach, bridging design and performance can drive the improvement of whole-life value, sustainability and cost certainty. The overarching aim is to move away from a transactional relationship to a long term performance reward based relationship. The first step towards this is addressing the foundational basics in regard to contract terms and payment practices.

There is a digital opportunity regarding the establishment of systems and technology solutions that are suited for a programmatic and longer-term relationship that will allow teams to work more efficiently and also directly compare activities from one project to the next. Every new project set up independently by teams is often created as a bespoke solution each time, which can be inefficient and misses opportunity to take learnings from successful project starts.

GOVERNMENT ACTIONS – POLICY:

Innovation

 R&D tax credit changes - urgently review the proposed changes to the R&D tax regime which would penalise the Construction sector which has delivered over £2Bn in R&D over the last 5 years.

INDUSTRY ACTIONS:

Business Models Workstream

- Royal Institute for Chartered Surveyors (RICS) and Chartered Institute of Procurement & Supply (CIPS) to lead a campaign to explain commercial options for inviting contractors into projects earlier.
- Utilise industry guidance: Leveraging the Construction Playbook and Private Sector Playbook to develop guidance on contact terms.
- CLC to convene industry and develop position on retentions and gather commitments to better payment practices.

People and Skills Workstream

• Enhance levels of apprentice levy pledging from large organisations to their supply chain.

Construct Zero

• Industry fuel-saving 'tournament' to award outstanding performance.



Productivity opportunity

£7.3bn

Headline Commitment

Target 5% cost saving across all projects within infrastructure & buildings by 2035.

Metrics for measurement

R&D

Levy pledging

Payment practices

Retentions

Long-term relationships bring rewards – Lendlease

Lendlease successfully delivered construction for the whole of the Chiswick Park office development in west London over a 19-year period to 2019. As contractor, Lendlease consistently used lessons learned from previous phases and maintained the same supply chain to create programme savings. The client was keen to see standardisation on the development of the office buildings, with a product that evolved as the site progressed. To achieve this, Lendlease delivered all buildings based on a standardised model and kit of parts. An integrated supply chain and collaboration were critical factors, along with continuity of organisations and personnel. Lendlease developed rigorous lessons-learned processes, feeding into continuous improvement and incremental savings.

This resulted in 7% cost savings across the scheme, a reduction in construction programme and an increase in rental income through improved net to gross floorplate efficiencies. Snagging was also reduced by 75% when compared with comparable buildings delivered without standardisation. Lendlease delivered an award-winning business park that has achieved a consistently high return on investment for client Stanhope, and latterly Blackstone. Lendlease set targets and standards that required an innovative and collaborative approach to delivery, based on building long-term relationships and maximising the expertise and input of the supply chain.

This approach provided challenges for the supply chain but also offered opportunities. By delivering well and efficiently, there was the reward of repeat business to the supply chain providing certainty early in the project. The upshot was greater supply chain engagement and innovation, focused on improving the performance of the buildings and reducing cost. Costs were reduced by: eliminating the costs incurred by repeat bidding, which were passed back to the project; economies of scale; and economies through product efficiencies and innovation (for example, services costs for the buildings decreased by 14% across the project).



Project 13 Commercial handbook

Alongside Project 13's offering of an innovative new enterprise business model and Blueprint for the Future, is this, our practical Commercial Handbook. It outlines the six key commercial principles which are critical to creating the right commercial environment for the model – including:

- Alignment where commercial performance measures are aligned to delivery of outcomes to the customer/end user.
- Reward where reward mechanisms in the enterprise structure are based on value added in exceeding the outcomes, not competed lowest cost for a component.
- Risk where risks that the infrastructure owner or investor are accountable for are not transferred to the supply chain.
- Engagement where the enterprise comes together at a much earlier stage in the asset enhancement/creation lifecycle.
- Scale where the enterprise model yields the greatest benefits when applied across asset systems/portfolios.
- Time where the relationships between organisations last over a longer time period.

Once commitment to these six core principles is agreed, a four-step commercial strategy can then be devised. This handbook demonstrates the detailed processes to follow and desired outcomes that will be achieved through adherence to these four steps:

- Establishing a performance baseline;
- Selecting the right enterprise partners;
- Linking the risk profile to reward mechanisms; and
- Contracting to support the enterprise.

P13 COMMERCIAL HANDBOOK

Design for Usability and Operations

Collaborating through the design process to deliver assets which are simpler to maintain and higher value to the users.

A significant proportion of the GVA in both the infrastructure 30% and buildings 37% along with the entire RMI sector is focused on the operational phase of assets, it is also typically far more labour intensive than new construction.

To improve productivity in this area, industry should be targeting better design for operations in the capital phase and the development of innovative products that reduce labour intensity. The operational phase of our asset base is where the majority of the 43% of UK CO2 emissions from the Built Environment arise. Most notably through the heating of domestic homes, this will form a focus for the Construction sector with our Net Zero commitments in order to scale our standards and capability to deliver this programme across the UK housing stock.

There is a significant opportunity for digital approaches, particularly through Building Information Modelling (BIM). BIM serves as a digital representation of the physical and function characteristics of an asset, this provides vital information of the physical components and functional attributes enabling real-time sharing of construction data to reduce errors or rework during the construction phase. 'An early study on the benefits of BIM by Stanford University's Centre for Integrated Facilities Engineering (CIFE), which analysed data gathered from 32 major projects, found that the use of BIM generated: -A reduction in unbudgeted change by up to 40%; and up to an 80% reduction in time taken to generate a cost estimate.'

To take this further, open data and standardisation also holds a significant opportunity here to enhance the decisionmaking process. Open data standards can provide a structured and standardised format for sharing information across the construction ecosystem allowing designers to access information around similar projects, performance data, policies and regulation that will optimise designs for improved usability and efficiency. This will also enable sharing lessons learned around the causes of delays, additional costs or greater emissions and allow industry to share this openly to avoid such features being included in future projects.

GOVERNMENT ACTIONS – POLICY: Innovation

 Revise Information Management Mandate to become data-driven, enabling whole life management of data and information and therefore better understanding and decision-making across an integrated built environment sector. This Mandate should also aim to provide the platform and motivation for continual transformation of our sector.

Net Zero

- Work with industry to set out a clear policy and regulatory roadmap to accelerate retrofit, as recommended by the Committee on Climate Change (CCC)
- Review the VAT regime for commercial and other retrofit projects to understand how it prejudices retrofit over new build.

GOVERNMENT ACTIONS – PROJECT:

Commercial Terms

 On Government projects, shift the commercial incentives for the designers to reward delivery of outcomes including whole life cost and operational energy.

INDUSTRY ACTIONS

Construct Zero

 Establish operational energy efficiency and carbon benchmarks for all asset types for use in contracts and design specifications through the Whole Life Carbon Standards project.

RMI Group

 National Retrofit Hub to set clear standards and guidance to the industry on retrofit.

Business Models Workstream

- Host industry summit on commercial relationships and terms in order to share best practice across all 4 sub sectors and drive consistency of approach.
- Private sector projects shift the commercial incentives for the designers to reward delivery of outcomes including whole life cost and operational energy.

Digital Workstream

- Outline requirements for a revised Information Management Mandate.
- Gather industry development and support of charters for each relevant sector involved in the built environment using the CLC digital charter as a template.



Productivity opportunity

£3.4bn

Headline Commitment

10% efficiency in maintenance/operations costs in building and infrastructure

Metrics for measurement

Heat demand in buildings needs to fall by over 25% from 2019 to 2035

Annual reduction in average energy requirements for new dwellings and existing (EPC based), increased % of EPC C to 100% by 2035

10% Reduction in operational energy efficiency and maintenance costs per square meter by asset type out to 2035

SAS13 bridge rail over rail replacement, Birmingham - Skanska

The team built a mock railway and used digital rehearsals throughout the project, as well as physical rehearsals, to make sure that the project was delivered right first time, to cost, to a very tight schedule and risk was managed effectively. The rehearsals included interface between contractors, communication between teams and working room. If the project did not deliver on time access to the rail would have taken another year; all the checks pre-blockade were to ensure successful delivery on the day. It was vital for Network Rail that the railway remained operational as much as possible while the works were completed.

Digital Rehearsal: The team measured multiple as-built elements and fitted them together digitally to ensure the design and programme worked; the pre-cast elements, the in-situ abutments and the adjacent pre-fabricated bridge. The large 20t Precast ballast retaining wall units were being manufactured in Ireland. Due to their size and complexity it was critical to rehearse the blockade and bridge installation sequence. If the units did not fit the bridge could not be installed. The team took a 3D scan of the units which was fed into the BIM model so that they could rehearse the fit and adjust the position if necessary. A heat map was created to show the tolerances so that the team had all the knowledge they needed. A bespoke lifting accessory was designed to lift the units which has an offset Centre of Gravity (CoG). Trial lifts of the units provided the team with assurance on the CoG so that they could pre-hook the lifting arrangement onto the units prior to delivery.

Digital Rehearsal: The team rehearsed the self-propelled modular transporter (SPMT) use digitally and physically as they were concerned about the time constraints meaning no room for error.

Not only were the team able to provide digital and physical setting out of the swept path for the SPMT move that allowed a physical route to be marked out on site as another check, but through the use of Trimble SiteVision Augmented Reality they were able to visually see the build-up of temporary works (imported stone layer) and make assessments of where the swept path platform could be reduced. This would have been difficult to visually assess if only seen in 2D and resulted in a circa 30-40% decrease in the amount of imported stone required on the project prior to the bridge installation.

One of the elements involved was the trackway which was needed to provide a continuous running surface to prevent potential rutting between the SPMT wheels and the imported fill protection layer. The original design proposed two layers of trackway. The rehearsal showed that there was no difference between one or two layers – meaning the team could decrease time spent on the temporary works and the cost. It led to a time saving of 40%, which was significant as the time available was limited, and a cost saving of 55%.

The team delivered to time and cost and tolerance through this approach.

Clifford's Tower - Simpson (York) for English Heritage

While heritage and traditional building work is often seen as some of the least productive in terms of construction processes, due to the often labourintensive nature of restoration work, the reality is that the value it delivers in terms of income, education and culture to the UK economy is significant.

The Heritage Alliance (2023) claim that England's heritage industry produces a GVA impact of £36.6bn and provide over 564,000 job. They say that tourists spend over £18bn on heritage trips each year, and 7 of the 10 most visited attractions in England are heritage sites and museums. One such example of the benefit that heritage and traditional building work can have to the heritage sector is the renovation and restoration works of Grade I* listed Clifford's Tower in York by NFB member and contractor Simpson (York). Following the restoration and renovation works, which included the installation of a glulam tower to improve visitor access, English Heritage reported in 2022 that the C13th Tower had seen its best year yet for visitors, with a 31% increase in numbers and visitor time increasing from a typical 15-20 minute visit to over an hour.



National Retrofit Hub

The National Retrofit Hub is a nonprofit organisation that brings together all those involved in the retrofit sector to share their expertise and work together to enable a National Retrofit Strategy to be delivered.

Retrofitting homes is vital for the UK to achieve its energy security, fuel poverty and climate change goals.

In 2021, the Construction Leadership Council (CLC) published the National Retrofit Strategy, a twenty-year blueprint for how the construction industry can work with Government to retrofit the UK's 28 million existing homes. The strategy identifies the urgent need for greater collaboration across the sector and coordinated leadership to achieve this goal.



Baxall - Improving productivity through relationships and data

Main contractor Baxall, based in Kent, has been investing in long-term relationships to help drive its productivity gains, and is realising the results. Baxall positions itself as a built-environment solution provider, priding itself on a truly collaborative approach that focuses on the whole life value of its projects. To do this, Baxall offer whole life support, facilities management and building optimisation to ensure the client maximises the utility of their asset after the building becomes operational.

It's commitment to early engagement, through use of pre-construction service agreements, and its constituency of delivery through frameworks has allowed it to develop a considerably high project conversion rate as well as sufficient predictability of work pipeline that allows it to make long-term business decisions. The company, which embraces HMG's Construction Playbook, has even gone to the extent of creating it's own 'Baxall Playbook', covering 'Early Engagement; Innovative solutions; Purpose driven approach; ESG; Managed risk; Fair payment and fair returns for all stakeholders'. This collaborative approach has meant that Baxall has not had a single dispute with its clients or supply chain in over ten years.

By utilising data and the insights it yields, Baxall has, over the past decade, been able to significantly improve it's product offering to clients. For example, Baxall claim that their current school developments for the Department for Education will be all Net Zero in operation – meaning greater whole life value for the client and wider societal benefits. Baxall's commitment has seen them enter into a knowledge transfer partnership with the University of Kent to develop a data analytics framework for intelligent building performance modelling to improve occupancy performance in buildings even further.

Onsite Efficiency

Optimise the use of Modern Methods of Construction and improved onsite logistics, in doing so reducing waste and transport to sites.

Approaches to improving onsite efficiency differ across construction and opportunity lies with some sectors at a greater scale than others. Notably, the Private Sector Playbook highlights that 'individual projects should maximise the use of offsite construction. However, it is unlikely to constitute 100% of any programme or project design when site-specific demands are taken into consideration' meaning consideration should be made to account for the impact offsite construction approaches may have.

The most transformational area lies within social infrastructure where the Construction Innovation Hub estimates 'wide-spread adoption of Product Platforms across social infrastructure will reduce project costs by up to 30%, or £1.8bn per year through economies of repetition'. Offsite and MMC can drive additional value through improved demand forecasting to gather insights around waste processing, task efficiency, energy use and carbon emissions. Product platforms can reduce waste from overordering in construction by 5-10% points. Offsite can also improve building safety by offering better accuracy and safer working conditions.

To fully harness the offsite construction, project teams should integrate these considerations into their procurement decisions from the outset. This allows project designs to fully embrace such techniques. Traditional transactional contracts can hinder the implementation of offsite construction approaches, especially when there are specific client requirements that act as trade barriers. Establishing project teams early in the process has the potential to overcome these challenges and facilitate the seamless integration of offsite construction into the project's design and execution.

Within housing, the approach offsite and MMC needs to be taken differently and further support to industry needs to be provided to incentivise and build capacity. Such incentives can be demonstrated by the West Midlands Combined Authority mandating minimum levels of modular home delivery on certain of its sites as part of a broader Local Industrial Strategy.

Within the RMI market this focus is on planning for the construction process, scheduling and logistics as well as practicalities of deploying staff and tools effectively. There is also a role here for the product manufacturers and merchants in developing solutions which reduce unproductive site time. Learnings from COVID-19 demonstrate how offsite planning has improved efficiency where tasks were rescheduled or carried out differently, a study by Loughborough University noted that 'Significant changes occurred in site layouts and working practices, which were well received and had positive effects on worker effectiveness and productivity, as well as safety and health'

GOVERNMENT ACTIONS – POLICY:

Innovation

• Reinforce the presumption in favour of manufacturing on Government projects to deliver more product platforms and standardisation.

GOVERNMENT ACTIONS – PROJECT:

Innovation

- Government to audit departments acting on the presumption in favour of offsite and publish the results to incentivise industry to start adopting new approaches
- CLC to work with Government Departments to explore setting targets that consider each project/programme/client/asset type.

INDUSTRY ACTIONS:

Builders Merchants Federation (BMF)

 Merchants to consider offering product masterclasses which demonstrate innovative products rather than relying on manufacturer training and promotion.

Buildings and Places Group

• Private sector clients to set targets for offsite manufacture and agree approaches at the beginning of a project.

Industrialised Construction

 CLC to champion more productive, manufacturing-led approaches to delivery through increased industrialisation across the sub-sectors within CLC. Starting with an assessment of industrialisation across subsectors.



Productivity opportunity

£2.3bn

Headline Commitment

Presumption in favour of manufacturing on Social Infrastructure projects (26% of construction investment pipeline) to deliver more product platforms and standardisation.

Metrics for measurement

Category of MMC adopted within a project

COVID-19 and Construction – Loughborough University

The response to COVID-19 on the six projects we studied was swift and effective. Significant changes occurred in site layouts and working practices, which were well received and had positive effects on worker effectiveness and productivity, as well as safety and health. Workers now spend more time planning tasks, work in smaller groups, and follow sequential trades, leading to increased effectiveness, productivity, and better housekeeping. These changes helped mitigate challenges caused by COVID-19, such as a reduced workforce and material supply issues, potentially offering long-term benefits. Improved induction processes and hygiene arrangements have the potential to enhance workforce safety, wellbeing, and motivation if maintained.

However, the demands on site managers and planners have been high, impacting their wellbeing, and it's crucial to allow them time to recover. The supply chain, particularly black hat supervisors, has seen increased responsibilities for worker engagement and communication to ensure safe working. Supporting and developing these individuals is essential for the long term. Remote work has shown significant benefits in terms of cost, productivity, and flexibility. However, it requires careful management to avoid issues like social isolation and overworking. Occasional working from home for site-based staff is also important. The increased use of technology for remote meetings and virtual site visits has been successful, offering potential cost savings, improved productivity, and enhanced engagement in the long term.'

Tunnel secondary lining systems for Tideway East Contract

The Thames Tideway Tunnel is an environmental mega-project under construction below the centre of London. Its aim is to improve water quality in the River Thames by diverting flows from an overloaded Victorian sewerage system which can discharge up to 56 million tonnes of untreated sewage into the Thames each year. The Tideway project has always planned to have a secondary lining installation phase, to support the 120-year design life of the tunnel, and a great deal of energy has been focussed on the development of an optimum method for efficient installation by both the client and their contractors. CVB (Costain, Vinci Construction Grands Projets & Bachy Soletanche) Joint Venture in the East of the project has had the benefit of learning from the two neighbouring contract areas, Central (FLO) and West (BMB).

This was valuable when in the East, CVB needed to concurrently line two tunnels of different sizes and geometries. The Greenwich Connection Tunnel required 4600 linear metres of 5.5 m diameter tunnel to have a 250 mm concentric lining applied, whereas the Main Tunnel required 5600 linear meters and 7.8m diameter to have 300 mm of lining. The environmental focus of this project is further supported, throughout delivery, with extensive use of the river to support site construction activities. With this in mind, concrete for the Greenwich tunnel was batched on site with bulk materials delivered by river, and the Main Tunnel utilised rail and river to deliver bulk materials to the batching plant on site.

Mixes were developed with the CVB supply chain partner Hanson. In a drive to optimise the design to a more sustainable level, the planned thickness was reduced saving 11000m3 of concrete with no detriment to design performance.

The benefits of this yielded a 4500-tonne reduction of embodied carbon and an increase to the tunnel storage volume. Output rates were benchmarked at providing a production cycle time of 30 hours and 37 hours, for the respective tunnels, with shutter dimensions and logistics based around this. It was realised that having common activities happening at similar times would be beneficial, in that resources would become familiar and perform safer and more proficiently, increasing efficiency. Outline plans for shutters and schemes went to tender and a selection made based upon performance and experience from outside the project. With partner, Kern Tunneltechnik, the design of the shutter went ahead.

Other equipment required for the operation of the secondary lining system was also developed in parallel. Where a number of the large diameter systems had been operated extensively on other Tideway projects and the Lee Tunnel, the smaller Greenwich tunnel presented fresh challenges. The development of a Logistics Crossing to facilitate smooth handling of 135 m3 of concrete per cycle was essential and became a critical component in the subsequent success. This also had to provide access to all the services from the tunnel lining, navigate a 250m radius curve and provide the area for welfare, enabling the workforce to take all their breaks to ensure compliance with fatigue guidelines. Again, a bespoke design was developed with a specialist supply partner, Tunnel Engineering Services. Extensive coordination ensured that these systems were integrated and there was a seamless operation between the shutter and logistics crossing. The result was a 200m long 'moving factory' that advanced in front of the shutters, preparing the tunnel for the lining.

CVB wanted a system that would be resilient, safe and efficient. It needed to be operated by a minimum of operatives who would become proficient quickly; this repetitive system would be operating at or above its intended rate of output, it needed to be at that rate fast. Further examples of efficiencies developed with the supply chain included the development of a bespoke guidance system for the positioning of the shutters. Cameras and software provide operators with information to be able to place the shutters with millimetre accuracy without the need for surveyor attendance. An additional simulator was developed to allow operators to become familiar with the functionality of this complex equipment prior to delivery to further enhance the learning curve and give experienced operators on previously unseen apparatus.

MMC Categories

The MMC definition framework defines 7 categories that enables a full and futureproofed range of 'Modern Methods of Construction' used in homebuilding. The definition framework spans all types of pre-manufacturing, including factory produced products and systems, sitebased materials and process innovation.

This framework was established by a specialist sub-group led by Mark Farmer of Cast Consultancy, the chair of the wider MMC working group, supported by representatives of Buildoffsite, Homes England, National Home Building Council (NHBC) and Royal Institute of Chartered Surveyors (RICS).

The definition framework identifies the following 7 MMC categories:

- Category 1 Pre-Manufacturing
 3D primary structural systems
- Category 2 Pre-Manufacturing
 2D primary structural systems
- **Category 3** Pre-Manufacturing Non systemised structural components
- **Category 4** Pre-Manufacturing - Additive Manufacturing
- Category 5 Pre-Manufacturing Nonstructural assemblies and sub-assemblies
- Category 6 Traditional building product led site labour reduction/productivity improvements
- Category 7 Site process led labour reduction/productivity improvements

The intention is for this framework to regularise and refine the term 'MMC' by defining the broad spectrum of innovative construction techniques being applied in the residential market, both now and in the future. The framework also offers the opportunity to create more structured datasets capturing use of MMC and its performance, so enabling clients, advisors, lenders and investors, warranty providers, building insurers and valuers to all build a common understanding of the different forms of MMC use.

In turn this should enable confidence building through a better evidence base using the categorisation framework as a data taxonomy including the identification of building height typologies and primary structural materials used.





Pre-manufacturing (3D primary structural systems)



Pre-manufacturing (2D primary structural systems)







Traditional building product led site labour reduction / productivity improvements



Pre-manufacturing components (non-systemised primary structure)



Pre-manufacturing (non structural assemblies & sub-assemblies)



Site process led site labour reduction / productivity / assurance improvements

Reshaping our workforce

Managing the shape of the workforce focusing on multiskilling and retraining to enable careers to start earlier and last longer.

Over 500,000 UK born construction workers are expected to retire in the next 10 – 15 years, this would be a significant loss in terms of capacity and experience to the Construction sector. On the other end of the scale, we are targeting 30,000 apprentices into construction annually to those earlier in their career the chance to learn and earn. Therefore, we need to focus on managing the shape of the workforce ensuring that there are roles for those nearing typical retirement age that enable them to play an active role in a productive construction industry through lecturing or mentoring our next generation. For new entrants, we need to recognise the skills they bring as digital natives and fresh perspectives on our sector, giving them the chance to influence and not simply learn.

As we evolve how the construction sector is delivering, our mix of skills and the types of roles we will need is changing. There will be entirely new skillsets around digital and Net Zero which will enhance our productivity with new ways of thinking. There is also a challenge in overcoming the apprehension about transitioning from traditional methods to using digital design models. This shift necessitates a different approach to quality assurance and checking procedures.

Furthermore, we have an opportunity to enhance efficiency by better understanding the data needs of contractors and subcontractors on-site, as they transition from interpreting our drawings to working directly from digital models. This transition can streamline manufacturing processes and on-site operations. However, it requires education and support for all stakeholders to make this digital transformation a success

Elsewhere we will see the construction environment changing with a greater demand on installers as multiskilled trades across all sectors who work with more sectors manufactured products in a closely planned way. To support this we have focused on establishing competence frameworks to make it easier and clearer for individuals to find a career path or demonstrate they are truly multiskilled. Ultimately the outcome will be a workforce who are healthier, happier and able to deliver more productivity.

GOVERNMENT ACTIONS – POLICY:

Skills

- Reform the Apprentice Levy to support employers with wider experience criteria.
- Embrace the 2023 ITB review.

INDUSTRY ACTIONS

People and Skills Workstream

- Introduce a CITB broker system on apprentices and also business mentors.
- Launch the new competence framework for all construction and built environment occupations to ensure there is an accepted, accredited definition of competence for individuals.



Productivity opportunity

£5.4bn

Headline Commitment

Better managing our workforce across the 4 sub sectors to deliver a 5% cost saving in average in RMI and 2.5% across other sectors from reduced recruitment costs and managing wage inflation

Metrics for measurement

Apprentices

Average retirement age

Median average workforce age

5% increase in direct employment by 2025

FE vacancy rate reduced by 5% by 2025

5% increase in apprenticeship starts in 2024/25

Reduction in unspent CITB and Apprenticeship levy by the sector

Rethinking Recruitment – CITB

CITB is making it easier to find out about construction - how to get into it, to gain experience and access apprenticeships and jobs.

Measuring progress CITB is helping to tackle the barriers to getting into construction, targeting a KPI to assess 'how easy or difficult was it to find relevant careers material, work experience and job opportunities in construction?' CITB is addressing gaps in the provision of information, advice and guidance and feeding this into careers information products. By measuring against benchmarks, successful examples can be identified and shared throughout industry. As part of our strategy to attract, inform, inspire, help join, and retain, CITB is already supporting or has developed initiatives to help industry, including:

- Construction Tasters
- Go Construct
- Talent view Construction •
- The Fairness, Inclusion and **Respect Programme**
- **Timewise Flexible Working Pilot**
- Traineeships.

CITB initiatives How the Levy helps attract people to join the construction industry Go Construct The research highlighted the need for accessible, digestible careers information and clear career progression routes. Go Construct does this by emphasising what a career in construction offers, as well as how to join, train and progress through the industry. Go Construct and the associated social media channels will continue to be developed by CITB. Go Construct STEM Ambassador Programme Representing the diverse backgrounds of their communities, Go Construct STEM Ambassadors are visible, vocal role models who promote construction face-to-face with young people. The ambassador programme taps into a deep pool of industry champions. Now aligned with STEM Learning, the programme can access every school in Great Britain. The number of ambassadors is constantly growing, and is particularly targeting under-represented groups, which are so vital to future growth.

citb

INDUSTRY ANALYSIS AND FORECASTING

Rethinking Recruitn

re Attractive Industry



Loss in UK construction workers by age demographic (2019 Q1 -2023 Q2)



Source: ONS/ Construction Products Association

Enhanced Quality and Assurance

Reducing mistakes and demonstrating the standards and competence we work to.

The cost of errors is estimated to be seven times the total annual profit of the UK Construction Industry. When factoring in unrecorded process waste, latent defects, and indirect expenses errorrelated costs can be estimated between 10% and 25% of project expenses.

Unlocking this productivity opportunity relies on a consistent framework of high standards we work to which reflects Net Zero and the changing regulatory environment and cultural shift in how we focus on quality. The sector has a strong track record in delivering reduced health and safety risk through cultural shift and the same is required here.

There is also an opportunity to utilise data- driven digital solutions to enhance decision- making capabilities, effectively addressing inherent challenges in our construction planning systems. This is best evidenced with the Building Safety Act to identify the data that should be requested at planning stage to assist better knowledge of the buildings affected and how that data can extend through whole life.

GOVERNMENT ACTIONS – POLICY:

Regulation

- Urgently provide clarity across all aspects of the Building Safety Regulations (noting recent announcements on staircases) and work with the industry. to develop technical guidance in a timely manner ahead of implementation.
- Ensure the Building Safety Regulator is adequately funded and resourced for the scale of challenge it faces.
- Keep to timescales on Future Homes and Future Building Standards to be published in 2025.

GOVERNMENT ACTIONS – PROJECT:

Commercial Terms

• Expand the use of the Common assessment standard across all Government Client organisations.

INDUSTRY ACTIONS

- Expand the use of the Common assessment standard across all Contractors and implement a similar scheme across the Builders Merchants.
- Business and Project Leaders to treat quality in the same way as H&S in terms of culture, assurance reporting and targets.
- CLC to work with the Construction Data Trust to develop a single industry data source on productivity data.

New Group

 CLC to lead a review of the link between licensing of domestic builders and enhancements in productivity and quality, taking learning from other Countries to understand if there's a productivity benefit.



Productivity opportunity

£4.5bn

Headline Commitment

Average 2.5% cost saving across all projects by 2035 from a focus on quality and avoiding rework underpinned by and enhanced regulatory and competence regime.

Metrics for measurement

Competence

Get it Right initiative (GIRI)

Initial GIRI research revealed that a large proportion of construction errors, costing the UK industry billions a year, are rooted in deficiencies or changes in design. These research findings motivated GIRI Members, led by the GIRI Design Working group and from across all disciplines, to unite, share knowledge and collaborate to create a Design Guide to address the causes of these avoidable errors from design deficiencies.

Guide to Improving Value by Reducing Design Error comprises twelve principal recommendations that can be applied to any project, particularly at the start and during early design stages. The guide aims to share knowledge across the industry as a useful tool, rather than presenting itself as a ground-breaking report, and serves as a reminder of the best practice techniques to follow when approaching projects.

A key philosophy of the Get It Right Initiative is that we should all learn from our mistakes by sharing those mistakes and the appropriate solutions across the industry.

Competence Workstream – CLC People and Skills

The Competence workstream aims to improve competence by developing frameworks that provide clarity and consistency and link into accreditation systems across industry.

Over the past year, CLC representatives have continued working with Working Group 2, Installers and six pilot disciplines to conclude a mapping exercise of current competence arrangements and develop sector-specific competence frameworks for each. Work is also underway to launch free online fire safety in buildings awareness training, funded by CITB. Once the pilots are completed, the next challenge will be to scale up this development process to encompass every remaining installer discipline. CLC will work closely with employers, sector trade bodies and other stakeholders to put appropriate super-sectoral structures in place to drive progress, not only in developing further installer frameworks but also to strengthen links with other built environment participants and stakeholders. This work will link into the development of construction and built environment standards that align with personnel certification systems across industry. Get It Right Initiative

⁶⁴A Guide to Improving Va

Approach to Quality – Thames Tideway

Tideway Quality Policy embeds principles that enable and support an overall assurance framework. These principles include placing Quality at the forefront of everything we do, in line with our organisational visions and values, with the understanding that by working smarter and better it well help ensure we work safer. An open and collaborative team culture drives continuous improvement and encourages all parties to identify, and act on, opportunities to reduce the wastage of time and minimise variation. In doing so, it elevates Quality to an equal standing with safety, cost and programme.

Tideway has three lines of defence for assurance and compliance. The selfcertifying Contractors deploy their internal controls, built on parent company expertise, with clearly assigned responsibilities engendering confidence and encouraging innovation. A regular Quality Focus Meeting is held by each Contractor, at which quality performance, learning and assurance are reviewed against relevant Works Information (WI) requirements, as well as compliance with the governing management system. The Programme Manager, Jacobs, assures the quality of the final asset, and discharges the role of NEC Supervisor. The PM conducts surveillances and inspections in each Delivery Area, ensuring integration, co-ordination and consistency of the work execution through interlinked Quality forums, such as the Alliance Quality Group. In this forum, quality issues are discussed openly by the Quality Leads of the Client, Programme Manager and Contractors. This ensures learning is shared, allows advice to be sought and offered, and champions continuous improvement. Tideway representation at these Quality forums ensures the Client is at all times appraised of current quality issues.

At Client level, the Compliance and Assurance Review Group monitor the robustness of the assurance framework and assures stakeholders that Tideway external obligations as a regulated water company are complied with. Furthermore, Tideway ensures that learning is captured in a database accessible to all Contractors.

When deficiencies in Quality are identified, Tideway Contractors typically publish a Quality Alert or a Lessons Learned report. For more serious incidents, Tideway has established the Quality Serious Incident Event Review (QSIER) procedure. Taking its cue from the investigation of serious safety incidents, this procedure gives the Contractors a framework for conducting a comprehensive and focussed investigation into a Quality incident. This provides assurance to all interested parties that the investigation has been conducted to a high standard, in good time and with an appropriate focus on establishing the root cause. The findings of a QSIER are shared across the project so that the circumstances which led to the incident can be avoided and overall Quality on the project is improved. The QSIER procedure is used voluntarily by Tideway's Contractors and learnings from the investigations have informed better ways of working across the project. The three lines of defence enable quality issues to be addressed at the appropriate level of responsibility and competence, whilst mechanisms such as the QSIER Procedure facilitate learning and continuous improvement. Ultimately, recognising when it is essential to hold the line and when to be pragmatic and proportionate has been key to Tideway achieving its quality objectives.



Ease of doing Business for SMEs

Focus on expanding the rollout of digital tools for SMEs to operate businesses more efficiently and streamline the processes around them such as procurement, tax, apprenticeships and building control.

There are just under 1 million SME businesses across the 4 sub sectors of the Construction sector. The majority of these have no access to formal support or training for free as they fall below the CITB levy threshold. Combined with traditional paper based systems (such as planning) operating around them there is a significant opportunity to enhance their workforce efficiency. Both in terms of the types of technology they use within their businesses and through reviewing what can be done to streamline their interactions with wider systems.

The CLC will tackle this with a campaign focused on digitising my construction business which will seek to:-

- Raise awareness of digital tools available such as digital logistics, CRM, accounting systems.
- Capability development to increase the uptake of existing offers such as Making Tax Digital
- Influence the systems within which SMEs operate in order to secure changes which reduce admin requirements such as planning, apprenticeships, tax and procurement

GOVERNMENT ACTIONS – PROJECT:

Commercial Terms

 Through Government Commercial Function bring consistency to the approach taken in Government procurement following the implementation of the procurement regulations later this year.

INDUSTRY ACTIONS:

CLC Task and Finish Group

• Government and industry to jointly develop a policy which allows increased planning fees in return for a guaranteed standard of performance.

New Group within CLC

- CLC Council to collate survey information SME members to understand largest constraints on productivity from an administration perspective, in order to inform where to focus effort in the campaign.
- Engage Government and work with Small Business Minister on the findings from the survey

RMI Group

- RMI working group to lead a strand of work to facilitate and share digital learning/tools for SME admin.
- CLC RMI Group to a strand of work to facilitate and share digital learning/ tools for SME admin as part of a wider 'Digitising my construction business campaign and training course'.



Productivity opportunity £

£2.2bn

Headline Commitment

CLC to work with Government to deliver a campaign to improve workforce efficiency in SMES across the Construction sector by 5% through reducing the admin burden.

Metrics for measurement

ТВС

SNAP IT

SNAP-IT delivers materials to tradespeople on-demand, allowing them to complete more jobs and increase annual earnings, whilst generating incremental revenue for partnered retailers. Most importantly, the end customers have their repairs fixed there and then! Everyone benefits from the SNAP-IT ecosystem.

From valves, to pumps and even boilers; SNAP IT's mobile app allows the user to instantly purchase over 60,000 plumbing and heating parts from 50+ retailers including Gas World, Embassy Plumbing, Pimlico Plumbers, E15, Jacobs Plumbing and WMI. By partnering with wholesalers and specialist independent stores; the fastgrowing digital marketplace has a higher probability than any bricks and mortar retailer of successfully fulfilling an order.

SNAP IT can save tradespeople an average of 2+ billable hours per day with potential increased earnings of up to £47,000* per year!

During his 15 years as a plumber, SNAP IT Founder Viktor Muhhin (35) realised multiple challenges for tradespeople and customers. His team wasted hours every week locating or waiting for spare parts; resulting in lost revenue and ultimately longer job completion times. SNAP IT has changed that by providing an innovative tech solution.

SNAP IT helps tradespeople improve efficiency and increase productivity, resulting in a higher rate of completed jobs and increased annual earnings. An average of 2+ billable hours per day can be saved by eliminating time wasted driving to source parts, finding parking or getting stuck in the city's heavily congested traffic and of course queuing at stores. With deliveries made within 30 - 40 minutes, SNAP IT's technology results in quicker repairs, improved customer service, reduced costs, and happy customers, who don't need to wait a week for their hot water to be back in action! SNAP IT currently operates within the M25 with plans to expand to other key cities across the UK in 2021.



Capital Utilisation

Improved utilisation of plant, machinery and factories/sites achieved through embracing technology and managing the transition to Net Zero.

The capital inputs in construction are lower than in many other sectors of economy: 12% in Infrastructure, 5.7% in Buildings, 5.5% in housing and 3.6% in RMI. Whilst other focus areas (such as onsite efficiency and Modern Methods of Construction) seek to improve productivity by increasing this share, this focus area is about better utilisation of the capital assets we already have – be that plant, machinery, tools, factories or sites.

Over the next 10 years our capital assets will also need to evolve to adapt to new technology offerings with Artificial Intelligence and Robotics and meet the Net Zero expectations of our clients and funders. Fortunately, the actions we would take to meet Net Zero are similar to those to enhance our capital utilisation; reducing plant idling on site or improving the energy efficiency of our factories or yards which enhance their value as capital assets in the eyes of funders.

The CLC recently published the Zero Diesel Roadmap setting out how the sector will make the transition to Net Zero plant and tools on site in turn also delivering better utilisation of capital assets on site. In addition, we will work through the Trade Associations to encourage businesses to consider and benchmark the utilisation of their capital assets in business types which are owning them, such as merchants and specialist contractors.

This work will not only deliver our Net Zero commitments, but it will also enhance our productivity and delivery better business margins.

GOVERNMENT ACTIONS – POLICY:

Net Zero

 The Construction sector will need a UK supply of green hydrogen to meet our 79% of diesel free sites by 2035 commitment. Government needs to accelerate Hydrogen supply plans in order to achieve this.

GOVERNMENT ACTIONS – PROJECT:

Net Zero

 Set a date for adoption of Zero Diesel sites on all Government Clients projects. (DfT, MOD, MoJ, DWP, Defra, DfE)

INDUSTRY ACTIONS

Civil Engineering And Contractors Association (CECA)

 CECA to undertake a research project on future robotics and AI to report back to the industry on the opportunities and roadmap to get there.

CLC Council

 Relevant Trade association benchmarking to include capital utilisation in order to establish a baseline and learn from it.

Construct Zero

- CLC to develop industry wide guidance on the measurement and use of telematics data including benchmarking.
- Industry fuel-saving 'tournament' to award outstanding performance.



Productivity opportunity £

£0.6bn

Headline Commitment

Achieve an average 5% increase in capital utilisation across all businesses by 2035.

Metrics for measurement

15% idling reduction in 2023 based on 45% industry average

Improved capital utilisation rate reported by Trade Associations which benchmark it

Zero Diesel Site Report - CLC

Over the last year, representatives from across the industry have collaborated on the development of Zero Diesel Sites Route Map, a key element of the Construction Leadership Council's CO2nstruct Zero programme to decarbonise the industry. The launch took place on HS2's Old Oak Common Station construction site, which is progressing towards cleaner construction as part of HS2's target for all its sites to be diesel-free by 2029. Following consultation on a draft plan late last year, today's Route Map confirms the industry will:

- Put in place support to roll out hydrogen, electricity and other cleaner power sources;
- Promote early wins by boosting efficiency and cutting diesel use by existing plant, and asking companies to reduce the use of diesel generators;
- Helping businesses to develop their own company's diesel reduction plans;
- Engaging with clients to secure commitments that ban diesel use and
- Tracking data on industry diesel consumption to confirm progress over time.

There are currently an estimated 300,000 items of Non-Road Mobile Machinery (NRMM) used by the UK construction sector. Typically, such plant is powered by diesel consuming 2.5 million tonnes of oil equivalent (Mtoe), generating significant carbon emissions. The Zero Diesel Sites Route Map sets out practical measures to reduce this volume by 78 per cent by 2035, in line with the UK's Sixth Carbon Budget published in 2021.

AI and Robotics - CECA

CECA is setting up a short life working group to consider what activities currently carried out in the sector may present opportunities for automation using AI and robotics in civil engineering. It will also look at the risks of AI automation and how can these best be managed, as well as who key suppliers and stakeholders are. The group will seek to report its findings in 2024, and may work with others to expend its scope to the wider construction and built environment sector.
Enhanced capability and better use of Productivity data

Being better able to quantify, understand and act on the drivers of productivity at a sector, project and business level.

Consistency across the sector and alignment between what productivity means at a project and business level would significantly enhance our ability to understand and target improvements. It would help us in evidencing business cases to our own boards and ultimately to our clients for changing our approach. In, a sector with typically low margins, this can give us more confidence to make those investments in skills and innovation.

Putting in place a framework and capability development programme for the sector around a defined standard would not only give us the tools but also the understanding in order to action them.

GOVERNMENT ACTIONS – PROJECT: Innovation

• Infrastructure Projects Authority and Government Departments to utilise industry provided benchmarking in setting budgets and assuring projects.

INDUSTRY ACTIONS:

Buildings and Places / Platforms Group

- The Construction Productivity Taskforce will deliver their phase
 2 pilot projects and share/cascade the learning across the industry
- CLC to work with the Construction Data Trust to develop a single industry data source on productivity data

New group

 CLC will partner with Professional Institutions to develop an industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry, led by the Quantity Surveyors.



Productivity opportunity

ТВС

Headline Commitment

CLC will develop and industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry.

Businesses in construction will be expected to report on Productivity metrics to their Executive Board

Metrics for measurement

TBC

CASE STUDIES

Measuring Construction Site Productivity – be the business

Measuring Construction Site

Productivity: A seven-step framework for success, published today on the Be the Business website, has been produced to help businesses within the sector collect the relevant data and measure productivity, in order to increase efficiency and improve performance on sites. This framework has been designed to support the work of all major contributors to the construction industry, including clients, contractors, designers and those within the supply chain.

This framework represents the first in a series of publications expected from the Construction Productivity Taskforce, and represents just one portion of the work that the Taskforce has committed to undertaking. Its initial ambitious scope of work focusses on three mutually reinforcing areas designed to improve performance: data and metrics; collaborative contracting; and pilot projects. The outputs of the latter are detailed in this framework.

The methodology behind the framework draws on the learnings and good practice gained from two live UK pilot project sites: Landsec's The Forge in Southwark and Norton Folgate, British Land's Blossom Street development. The document offers two highly detailed and practical case studies per site, clearly demonstrating how the seven-step framework proposed by the Taskforce can be implemented.



Right the First Time – BBI

CECA is setting up a short life working group to consider what activities currently carried out in the sector may present opportunities for automation using AI and robotics in civil engineering. It will also look at the risks of AI automation and how can these best be managed, as well as who key suppliers and stakeholders are. The group will seek to report its findings in 2024, and may work with others to expend its scope to the wider construction and built environment sector.



Embedding approaches and capabilities that deliver Right First Time

Mark Worrall BBI Services August 2023



Building Business Improvement



Sub-Sector Breakdown

This chapter provides a breakdown of the construction sub-sectors, outlining the size of the sector in terms of workforce, capital as well as other key characteristics. Each sub-sector also has a productivity opportunity breakdown, noting the focus areas that hold the most economic gains, this will provide business leaders with further direction on where they can make the most impact in improving productivity. This chapter also outlines sub-sector specific recommendations, taken from recommendation outlined at the beginning of the paper.

Infrastructure

Infrastructure encompasses a range of critical services including transportation networks, energy systems, water supply and digital infrastructure all combined to facilitate the movement of goods and people, powering homes and industries.

As illustrated in the diagram on the right, infrastructure is made up of larger labour force, containing over 300,000 employees in fields ranging from construction, civil engineering, surveying, transportation and urban planners. Comparatively to other sub-sectors within construction, infrastructure involved a greater capital investment, mainly due to the sheer size and complexity of some projects. The size of other inputs including materials and energy is not dissimilar from other sub-sectors but has a slightly higher amount of material and energy usage.

In regard to productivity, Infrastructure is a lot more productive than other construction sectors down to it's scalable nature and size of plant increasing efficiencies. It therefore, poses a great opportunity to drive further economic growth and share lessons learnt in its natural programmatic approach to delivery. The graph below highlights that the largest productivity opportunity lies within creating a productive environment. Due to the major challenges and uncertainty of the planning process, the more significant opportunity to improve productivity is through overcoming these issues.





Infrastructure annual productivity opportunity/ £BN by 2035

GOVERNMENT

POLICY

Infrastructure Planning

 Adopt the National Infrastructure Commission report recommendations around accelerating the NSIP process:-Make it a legal requirement to update NPS for National Policy Statements for Energy, Water Resources and National Networks every 5 years, introduce a system of modular updates to National Policy Statements linked to primary or secondary legislation to ensure clarity on how future legislative change relates to National Policy Statements, introduce performance indicators for statutory consultees as part of compulsory service level agreements with developers, with budget implications for failure to meet agreed service levels

Innovation

- R&D tax credit changes urgently review the proposed changes to the R&D tax regime which would penalise the Construction sector which has delivered over £2Bn in R&D over the last 5 years.
- Reinforce the presumption in favour of manufacturing on Government projects to deliver more product platforms and standardisation through Spending Review settlement conditions.

Net Zero

 The Construction sector will need a UK supply of green hydrogen to meet our 79% of diesel free sites by 2035 commitment. Government to accelerate Hydrogen supply plans in order to achieve this.

PROJECT

Net Zero

 Set a date for adoption of Zero Diesel sites on all Government Clients projects. (DfT, MOD, MoJ, DWP, Defra, DfE)

Playbook

- Cabinet Office to audit the adoption of the Construction Playbook on all public sector projects and share performance with the industry.
- IPA to work across Government to implement and share the Project 13 enterprise approach across the public sector

Pipeline

- Formally commit to an annual publication of the National Infrastructure and Construction Pipeline
- Exercise the provisions in the Procurement Bills Part 8.93 that public bodies with external spending of more than £100 million per year must publish all planned procurements valued at over £2 million
- Commit to undertaking a specific cost of delay
- assessment prior to any project being delayed Innovation
- Government to audit departments using MMC and publish the results to incentivise industry to start adopting new approaches.
- Government to adopt 7 categories of MMC and consider specifying % in each category through the project funding and contracting arrangements.
- IPA and Government Deportments to utilise industry provided benchmarking in setting budgets and assuring projects.

Commercial Terms

- On Government projects shift the commercial incentives for the designers to reward delivery of outcomes including whole life cost and operational energy.
- Expand the use of the Common assessment standard across all Government Client organisations
- Through Government Commercial Function bring consistency to the approach taken in Government procurement following the implementation of the procurement regulations later this year.

INDUSTRY

Building Safety Workstream

• RIBA to review stages in order to accurately reflect the changing roles and earlier integration of teams required under the Building Safety Act.

Building & Places Group

- Utilise industry guidance: apply the principles of the Construction Playbook and Private Sector Playbook to inform construction strategy and planning.
- Building & Places Group / Platforms Workstream
- CLC to work with the Construction Data Trust to develop a single industry data source on productivity data

Business Models Workstream

- RICs and CIPS to lead a campaign to explain commercial options for inviting contractors into projects earlier
- Utilise industry guidance: Leveraging the Construction Playbook and Private Sector Playbook to develop guidance on contact terms.
- CLC to convene industry and develop position on retentions and gather commitments to better payment practices.
- Host industry summit on commercial relationships and terms in order to share best practice across all 4 sub sectors and drive consistency of approach
- On Private sector projects shift the commercial incentives for the designers to reward delivery of outcomes including whole life cost and operational energy.
- Business and Project Leaders to treat quality in the same way as H&S in terms of culture, assurance reporting and targets.

CLC Council

 Relevant Trade association benchmarking to include capital utilisation in order to establish a baseline and learn from it.

Construct Zero

- CLC to develop industry wide guidance on the measurement and use of telematics data including benchmarking.
- Industry fuel-saving `tournament' to

award outstanding performance

New Group

 CLC will partner with RICs to develop an industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry, lead by the Quantity Surveyors

People and Skills Workstream

- Enhance levels of apprentice levy pledging from large organisations to their supply chain.
- Introduce a CITB broker system on apprentices and also business mentors.
- Launch the new competence framework for all construction and built environment occupations to ensure there is an accepted, accredited definition of competence for individuals.

Platforms Workstream

 Support the use of all 7 categories of modern methods of construction (MMC) as defined by MHCLG in 2019, reviewing what is applicable in each business and promoting knowledge share through the Next Generation priority.

Buildings and Places

Buildings and places refers to commercial development that supports places, spanning across social and economic infrastructure, private sector investment in buildings and regeneration of towns and cities.

The diagram on the right demonstrates the split of inputs within the subsector. Notably, the sector contains the second largest workforce within the construction industry, consisting of 765,000 employees. It also holds the second highest amount of capital input due to the size of delivering larger projects such as schools or commercial buildings. Buildings and Places has the second highest productivity within construction. The graph below highlights where the largest opportunities to drive productivity, these predominantly sit within the early stages of a project and creating a productive environment. Due to several factors including the short-term nature of the sector, contractual barriers and specialisms working in silos, early integrated teams holds a significant opportunity to improve productivity.





Buildings And Places Annual Productivity Opportunity/ £BN By 2035

GOVERNMENT

POLICY

Innovation

- R&D tax credit changes urgently review the proposed changes to the R&D tax regime which would penalise the Construction sector which has delivered over £2Bn in R&D over the last 5 years.
- Reinforce the presumption in favour of manufacturing on Government projects to deliver more product platforms and standardisation through Spending Review settlement conditions.

Net Zero

 The Construction sector will need a UK supply of green hydrogen to meet our 79% of diesel free sites by 2035 commitment. Government to accelerate Hydrogen supply plans in order to achieve this.

Regulation

- Urgently provide clarity across all aspects of the Building Safety Regulations (noting recent announcements on staircases) and work with the industry to develop technical guidance in a timely manner ahead of implementation.
- Ensure the Building Safety Regulator is adequately funded and resourced for the scale of challenge it faces.
- Keep to timescales on Future Homes and Future Building Standards to be published in 2025.

PROJECT

Net Zero

 Set a date for adoption of Zero Diesel sites on all Government Clients projects. (DfT, MOD, MoJ, DWP, Defra, DfE)

Playbook

- Cabinet Office to audit the adoption of the Construction Playbook on all public sector projects and share performance with the industry.
- IPA to work across Government to implement and share the Project 13 enterprise approach across the public sector

Innovation

- Government to audit departments using MMC and publish the results to incentivise industry to start adopting new approaches.
- Government to adopt 7 categories of MMC and consider specifying % in each category through the project funding and contracting arrangements.
- IPA and Government Departments to utilise industry provided benchmarking in setting budgets and assuring projects.

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- Expand the use of the Common assessment standard across all Government Client organisations
- Through Government Commercial Function bring consistency to the approach taken in Government procurement following the implementation of the procurement regulations later this year.

INDUSTRY

Building Safety Workstream

• RIBA to review stages in order to accurately reflect the changing roles and earlier integration of teams required under the Building Safety Act.

Building & Places Group

• Utilise industry guidance: apply the principles of the Construction Playbook and Private Sector Playbook to inform construction strategy and planning.

Building & Places Group / Platforms Workstream

 CLC to work with the Construction Data Trust to develop a single industry data source on productivity data

Business Models Workstream

- RICs and CIPS to lead a campaign to explain commercial options for inviting contractors into projects earlier
- Utilise industry guidance: Leveraging the Construction Playbook and Private Sector Playbook to develop guidance on contact terms.
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- Business and Project Leaders to treat quality in the same way as H&S in terms of culture, assurance reporting and targets.

CLC Council

- Relevant Trade association benchmarking to include capital utilisation in order to establish a baseline and learn from it.
- Construct Zero
- CLC to develop industry wide guidance on the measurement and use of telematics data including benchmarking.
- Industry fuel-saving `tournament' to

award outstanding performance

New Group

• CLC will partner with RICs to develop an industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry, lead by the Quantity Surveyors

People and Skills Workstream

- Enhance levels of apprentice levy pledging from large organisations to their supply chain.
- Introduce a CITB broker system on apprentices and also business mentors.
- Launch the new competence framework for all construction and built environment occupations to ensure there is an accepted, accredited definition of competence for individuals.

Platforms Workstream

• Support the use of all 7 categories of modern methods of construction (MMC) as defined by MHCLG in 2019, reviewing what is applicable in each business and promoting knowledge share through the Next Generation priority.

Housing

The Housing sector focusses on the planning, design, construction and delivery of new housing developments across all tenures, together with representatives of government and housing agencies. It plays a crucial role in providing homes for our population whether that be affordable, social or private housing.

Housing consists of 600,000 employees in fields including construction, homebuilding, designers, real estate developers and builders merchants. The sub-sector is the most material and energy intensive through the process of building and powering housing structures as well as preparing sites for use. Housing has the lowest labour productivity at 34, leaving an opportunity to improve productivity through supporting the workforce and more efficient use of resources. The graph below depicts the greatest productivity opportunities, these opportunities vary across creating a productive environment and delivering construction productively. The largest opportunity lies with overcoming the issues with the planning system, where legislative and capacity challenges are slowing delivery.





6.00 5.00 4.00 3.00 2.31 2.00 1.15 1.15 1.00 0.13 0.00 Capital Utilisation Leadership & Planning Extending careers Quality and assurance Programmatic Delivery

10.00

9.00 8.00 7.00

GOVERNMENT

POLICY

Town Planning

- Collaborate with RTPI (and CLC) to identify how to increase capacity in Local Authority planning functions across the UK.
- Government and industry to jointly develop a policy which allows increased planning fees in return for a guaranteed standard of performance.
- Through the implementation of the Future Homes & Buildings standards streamline the planning process to focus on planning policy and put all technical standards aspects into Building Control under the new regulatory regime.

Innovation

- R&D tax credit changes urgently review the proposed changes to the R&D tax regime which would penalise the Construction sector which has delivered over £2Bn in R&D over the last 5 years.
- Reinforce the presumption in favour of manufacturing on Government projects to deliver more product platforms and standardisation through Spending Review settlement conditions.

Net Zero

- The Construction sector will need a UK supply of green hydrogen to meet our 79% of diesel free sites by 2035 commitment. Government to accelerate Hydrogen supply plans in order to achieve this.
- Regulation
- Ensure the Building Safety Regulator is adequately funded and resourced for the scale of challenge it faces.
- Keep to timescales on Future Homes and Future
- Building Standards to be published in 2025.

PROJECT

Net Zero

• Set a date for adoption of Zero Diesel sites on all Government Clients projects. (DfT, MOD, MoJ, DWP, Defra, DfE)

Innovation

- Government to audit departments using MMC and publish the results to incentivise industry to start adopting new approaches.
- Government to adopt 7 categories of MMC and consider specifying % in each category through the project funding and contracting arrangements.

Commercial Terms

- On Government projects shift the commercial incentives for the designers to reward delivery of outcomes including whole life cost and operational energy.
- Expand the use of the Common assessment standard across all Government Client organisations
- Through Government Commercial Function bring consistency to the approach taken in Government procurement following the implementation of the procurement regulations later this year.

INDUSTRY

Building Safety Workstream

• Utilise industry guidance: apply the principles of the Construction Playbook and Private Sector Playbook to inform construction strategy and planning.

Building & Places Group / Platforms Workstream

 CLC to work with the Construction Data Trust to develop a single industry data source on productivity data

Business Models Workstream

- CLC to convene industry and develop position on retentions and gather commitments to better payment practices.
- Host industry summit on commercial relationships and terms in order to share best practice across all 4 sub sectors and drive consistency of approach
- Business and Project Leaders to treat quality in the same way as H&S in terms of culture, assurance reporting and targets.

CLC Council

 Relevant Trade association benchmarking to include capital utilisation in order to establish a baseline and learn from it.

Construct Zero

- CLC to develop industry wide guidance on the measurement and use of telematics data including benchmarking.
- Industry fuel-saving `tournament' to award outstanding performance

New Group

- CLC will partner with RICs to develop an industry standard on measuring productivity at a sector, project and business level followed by a capability development programme for the industry, lead by the Quantity Surveyors
- CLC to lead a review of the link between licensing of domestic builders and enhancements in productivity and quality, taking learning from other Countries to understand if there's a productivity benefit.
- CLC Council to survey SME members to understand largest constraints on productivity from an administration perspective, in order to inform where to focus effort in the campaign
- Engage Government and work with Small Business Minister on the findings from the survey

People and Skills Workstream

- Introduce a CITB broker system on apprentices and also business mentors.
- Launch the new competence framework for all construction and built environment occupations to ensure there is an accepted, accredited definition of competence for individuals.

Platforms Workstream

 Support the use of all 7 categories of modern methods of construction (MMC) as defined by MHCLG in 2019, reviewing what is applicable in each business and promoting knowledge share through the Next Generation priority

RMI Workstream

- RMI working group to lead a strand of work to facilitate and share digital learning/tools for SME admin.
- CLC RMI Group to a strand of work to facilitate and share digital learning/tools for SME admin as part of a wider 'Digitising my construction business campaign and training course.

Domestic RMI

The Domestic Repairs, Maintenance and Improvements places a vital role the upkeep, renovation and enhancement of existing properties ensuring homes remain, safe, functional, energy efficient and a nice place to live.

The sector has the largest workforce standing at 465,000 due to the diverse requirement of skills, high demand for repairs and maintenance and localised nature of domestic projects. Domestic RMI encompasses a large number of small the medium-sized enterprises with employees working as tradespeople, contractors and service providers. The sector also holds the least capital investment due to the smaller size of projects. As the graph below states, the productivity opportunity within the Domestic RMI sector is held mostly within its workforce, through delivering construction productively and managing productive businesses. In particular, there is a large focus around supporting the SME's who make up a large proportion of the sector and supporting the emerging and aging workforce.





Domestic RMI Annual Productivity Opportunity/ £BN By 2035

GOVERNMENT

POLICY

Innovation

- R&D tax credit changes urgently review the proposed changes to the R&D tax regime which would penalise the Construction sector which has delivered over £2Bn in R&D over the last 5 years.
- Reinforce the presumption in favour of manufacturing on Government projects to deliver more product platforms and standardisation through Spending Review settlement conditions.

Regulation

- Keep to timescales on Future Homes and Future Building Standards to be published in 2025.
- Net Zero
- Work with industry to set out a clear policy and regulatory roadmap to accelerate retrofit, as recommended by the CCC.
- Review the VAT regime for commercial and other retrofit projects to understand how it prejudices retrofit over new build.

INDUSTRY

Building Safety Workstream

- CLC to work with the Construction Data Trust to develop a single industry data source on productivity data
 Business Models Workstream
- CLC to convene industry and develop position on retentions and gather commitments to better payment practices.
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- Engage Government and work with Small Business Minister on the findings from the survey

People and Skills Workstream

- Introduce a CITB broker system on apprentices and also business mentors.
- Launch the new competence framework for all construction and built environment occupations to ensure there is an accepted, accredited definition of competence for individuals.

RMI Workstream

- NRH to set clear standards and guidance to the industry on retrofit.
- RMI working group to lead a strand of work to facilitate and share digital learning/tools for SME admin.
- CLC RMI Group to a strand of work to facilitate and share digital learning/tools for SME admin as part of a wider 'Digitising my construction business campaign and training course.

