



Off-site Construction
Research Centre



Building
Transformations

Transforming Construction 2024

Data driven insights into offsite project performance from the UK

17 October 2024



Cast 

Today we will cover:

- **Introduction to Cast**
- **UK perspectives on offsite construction**
- **Our approach to measuring performance and impact**
- **Case study – Brent Cross Town, London**
- **Case study – East Village, London**
- **Q&A**

A brief introduction to Cast



Cast Consultancy



Keith Brooks



Mark Farmer



Neil Brearley



Joe Thornton



Lilly Gallafent

Delivering Industry Change,
Delivering Better Outcomes,
Creating Future Places

Cast is at the forefront of driving sustainable change in the development and construction industry. Our market leadership and unique insights enable us to help our clients deliver better results.

We were established in January 2016 by Keith Brooks, Mark Farmer, Neil Brearley, Joe Thornton and Lilly Gallafent, all ex-Partners of EC Harris and experts in residential and mixed-use.

Cast is a specialist construction consultancy providing solutions for developers, investors, policymakers and the supply chain.

We are the only specialist residential and mixed-use cost and project management consultant in London and the UK.

We are currently 100 people strong with 50 cost managers, 45 project managers, five strategy consultants plus support.

We work with a select number of clients in the private sale, private rental sector (PRS), student accommodation, later living, affordable housing, local authority and hotel markets.

The directors of Cast have a long pedigree in residential led mixed use development and understand the critical success factors for projects of this kind.

We provide director level oversight on all projects and believe that small but focussed teams providing a dedicated service are the best way to achieve success for our clients.

100 TEAM MEMBERS

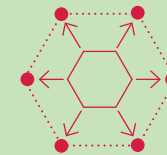
50 COST MANAGERS

45 PROJECT MANAGERS

5 STRATEGY CONSULTANTS



The only specialist residential & mixed use cost and project management consultant in London and the UK.



We understand the critical success factors for projects of all scales and levels of complexity.

We have significant experience across the project lifecycle from acquisition through planning, design, procurement construction and handover – always with an operational focus in mind.

Cast Consultancy

Services across the UK

Some of the key locations we are or have provided services in are:

Purpose built student accommodation (PBSA)

London boroughs:

Lambeth, Southwark, Islington, Wandsworth, Camden, Lewisham, Westminster, Hackney, City of London, Kingston, Croydon, Greenwich

Regional:

Aberdeen, Bath, Bournemouth, Coventry, Edinburgh, Glasgow, Guildford, Leeds, Liverpool, Manchester, Newcastle, Nottingham, Norwich, Oxford, Sheffield, Southampton

Co-living

London boroughs:

Croydon, Hammersmith & Fulham, Southwark, Brent, Kingston, Ealing



Build to rent

London boroughs:

Brent, Merton, Hammersmith & Fulham, Tower Hamlets, Southwark, Stratford, Wandsworth, Islington, Greenwich, Lewisham, Waltham Forest

Regional:

Brighton, Hove, Bristol, Maidenhead, Birmingham, Liverpool, Newcastle, Manchester, Southampton, Edinburgh, Reading, Croydon, Woking, Portsmouth, Chatham, Cambridge

Later living

London Boroughs:

RBKC, Hammersmith & Fulham, Harrow, Hillingdon, Westminster, Brent, Barnet, Camden

Regional:

Berkhamsted, Epsom, Chigwell, Sevenoaks, Walton-On-Thames, Purley, Rye, Tunbridge Wells

Our chosen focus markets

Cast has rapidly emerged as a market leader in the residential real estate and construction sector. Our comprehensive range of consultancy services includes:

- Cost management
- Project management
- Employer's agent
- Strategic advisory
- Technical due diligence
- Modern Methods of Construction (MMC)
- Masterplanning

Cast has a strong presence across the diverse residential sub-sectors, including:

- Build-to-rent (BtR)
- Market for sale (MfS)
- Purpose built student accommodation (PBSA)
- Co-living/Purpose built shared living (PBSL)
- Later living (LL)
- Affordable housing
- Hotel
- Masterplanning
- Mixed-use regeneration

Around
80%

of our clients are looking to own and operate their assets.

Our clients

We work with a select number of clients who align with our mission and core values. Our client base includes developers, investors, policymakers and members of the supply chain.



Governmental bodies



We have a unique range of perspectives on a modernising market

Influence

Industry leadership

We work with Government and industry bodies to shape the future of our sector:

- **Authored** UK Government MMC definition framework
- **Established** PMV as solution-agnostic success measure
- **Shaped** Homes England & GLA funding strategies for MMC
- **Partnered** WMCA to create industry-leading Homes of the Future Standard

International reach

Our work outside of the UK enables us to stay at the forefront of international trends and issues



Modernisation advisory to leading housebuilder



Sharing lessons learned and shaping future strategy



Collaborative DfMA and procurement advisory for new schools



Industrialised construction insight for residential design guide

Insight

MMC Market

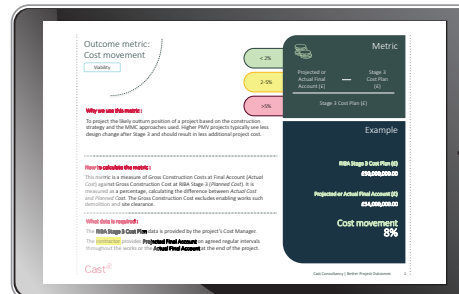
325+

Direct supplier relationships mapped against capability and experience



Supplier and project benchmarking

Industry leading performance benchmarking using established metrics and data capture methods



Impact

Convening partnerships

Advisory, facilitation and implementation for leading aggregators of demand



Delivering at scale

Procurement, commercial, project and contract management on major high-PMV projects



Smith's Garden Birmingham

- Europe's largest BtR project to use Category 1 MMC
- 550 homes, 30% embodied carbon reduction



College Road, Croydon

- World's tallest Category 1 MMC tower
- 817 co-living apartments 40% embodied carbon reduction

UK perspectives on offsite construction



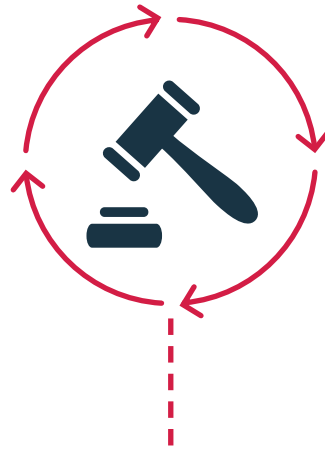
Why change?

Skills challenge



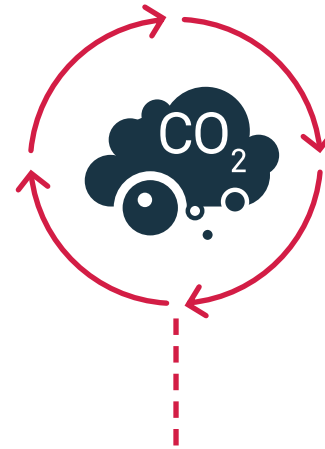
- Workforce down 11% since 2019
- 40,000 vacancies
- 225,000 extra workers required by 2027

Regulatory change



- Future homes standard
- Building safety reform
- Regional government pushing harder
- Recent change of government will only accelerate this further

Whole life carbon



- UK on a trajectory to net zero by 2050
- 40% of all carbon is from built environment
- Key areas of focus are driving out waste and using lower carbon materials

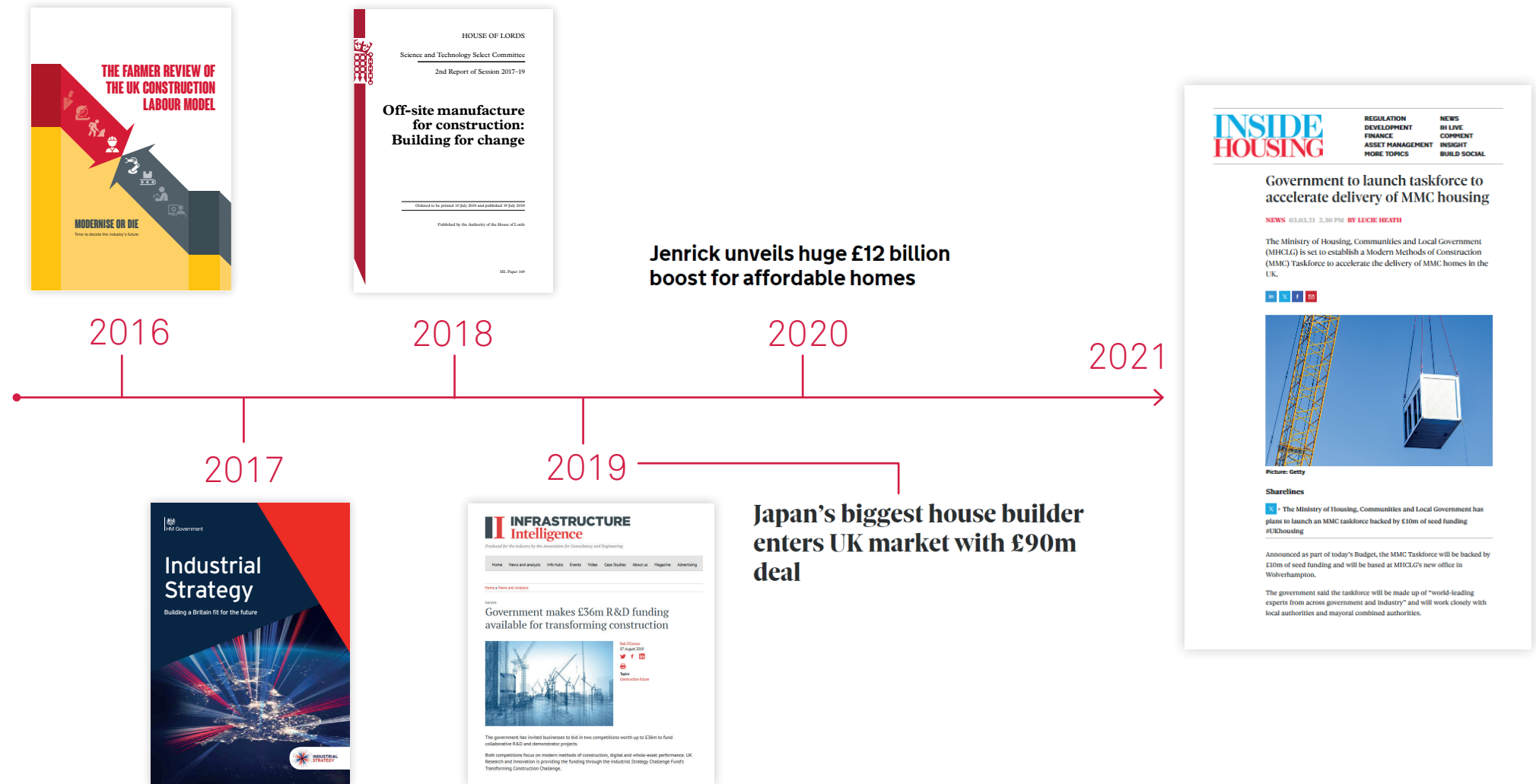
Better project delivery



- 32% of UK construction projects over budget
- 39% of UK construction budgets exceed initial programme
- Key issue is how to maintain quality and output, on time and to budget, with fewer people

UK Government drive for MMC

8 years of reports and initiatives but few practical interventions



Cast

And we have to acknowledge
the on-going market challenges



However the drivers for change are not going away, and we are seeing a shift towards **incremental, not disruptive change**

Vistry Group LSE 1,114.00GBP -13.00

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Vistry Relaunches Timber Frame Factory in East Midlands

Jul 10 2023

Mace unveils 'next generation' construction method

December 5, 2019

News

Robots to ramp up Sisk margins in productivity push

Aaron Morby 1 year ago

Share

John Sisk & Son is on a major productivity drive with plans to buy an offsite manufacturing business and deploy block and bricklaying robots.

Housebuilder Hill snaps up collapsed offsite firm

By Joey Gardiner | 20 July 2022

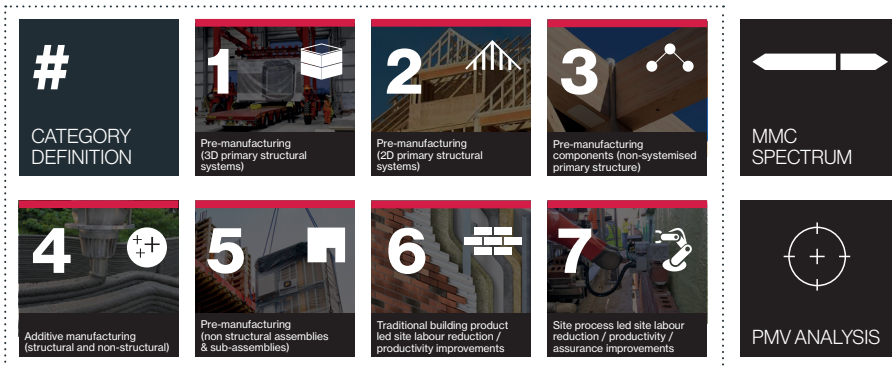
JRL snaps up stricken modular housing firm

BAM acquires stake in Irish modular homes specialist MHI

MMC vs traditional is not a binary choice, it is subtle, incremental, and about optimised PMV

Category **DEFINITIONS**

The term 'pre-manufacturing' encompasses processes executed away from final workforce, including in remote factories, near site or on-site 'pop up' factories. The pass test is the application of a manufactured led fabrication or consolidation process in controlled conditions prior to final assembly / install. On-site 'workface factories' are included in Category 7).



Pre-manufactured value (PMV)

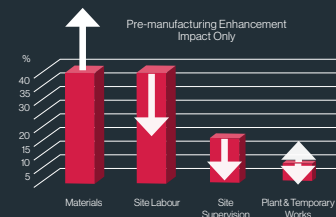
Analysis of projects using MMC and their proportion of pre-manufactured value (PMV)



1
2
3
4
5
6
7

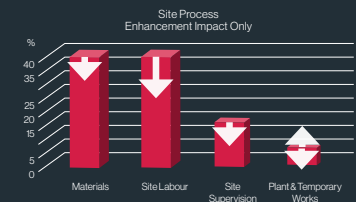
MMC SPECTRUM
PMV ANALYSIS

CATEGORIES 1-5 PRE-MANUFACTURING LED APPROACHES



- General shift of site labour to controlled manufacturing processes
- Speed reduces site preliminaries including supervision
- Possible upward pressure on logistics / craneage

CATEGORIES 6-7 SITE PROCESS LED APPROACHES

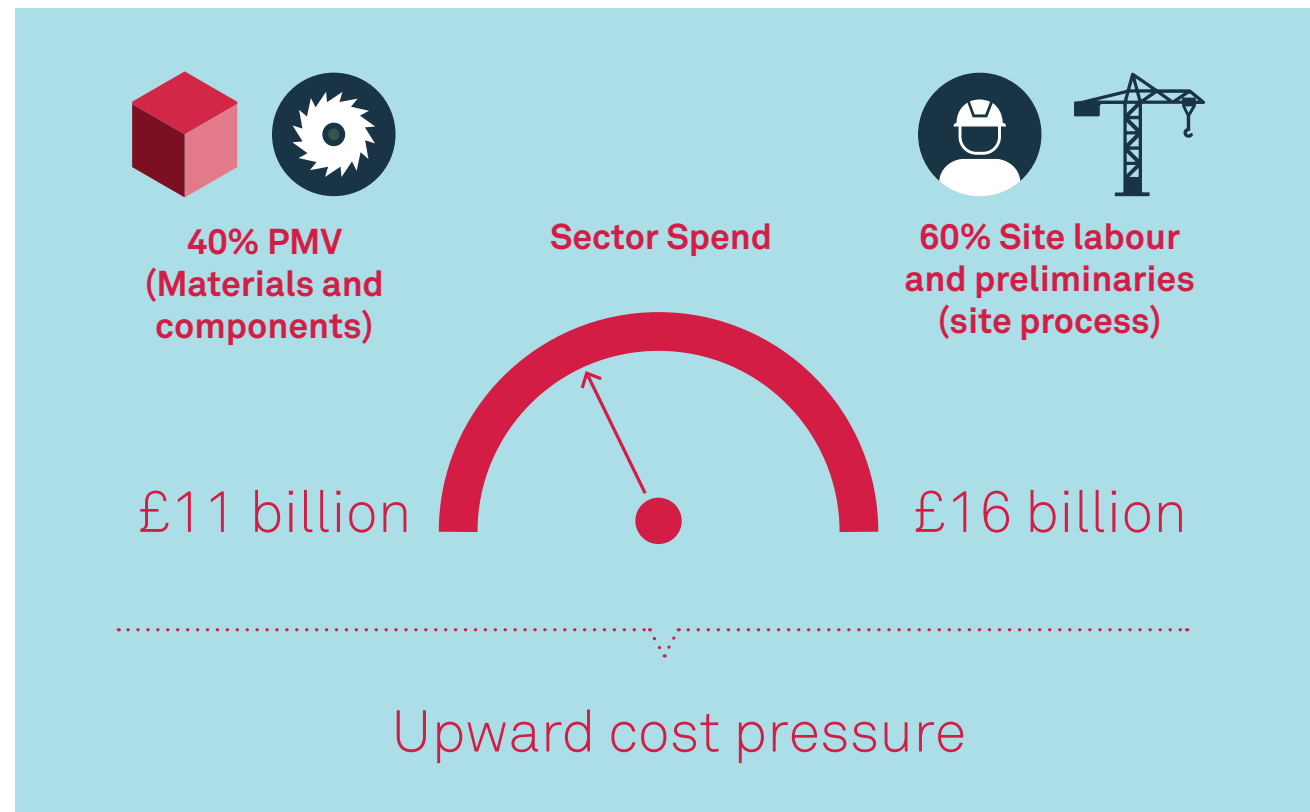


- Low wastage reduces total manufactured material content
- Productivity improvements on-site reduces labour requirements
- Better planning & digital augmentation reduces supervisory needs
- Possible use of autonomous equipment and robotics could increase plant
- Can be used in conjunction with Categories 1-5 pre-manufacturing

Rebalancing resources at an industry level

Potential impact on residential construction cost and efficiency

- Increasing waste
- Increased delivery risk
- Exposure to wage inflation
- On-going quality challenge
- Lack of certainty and control

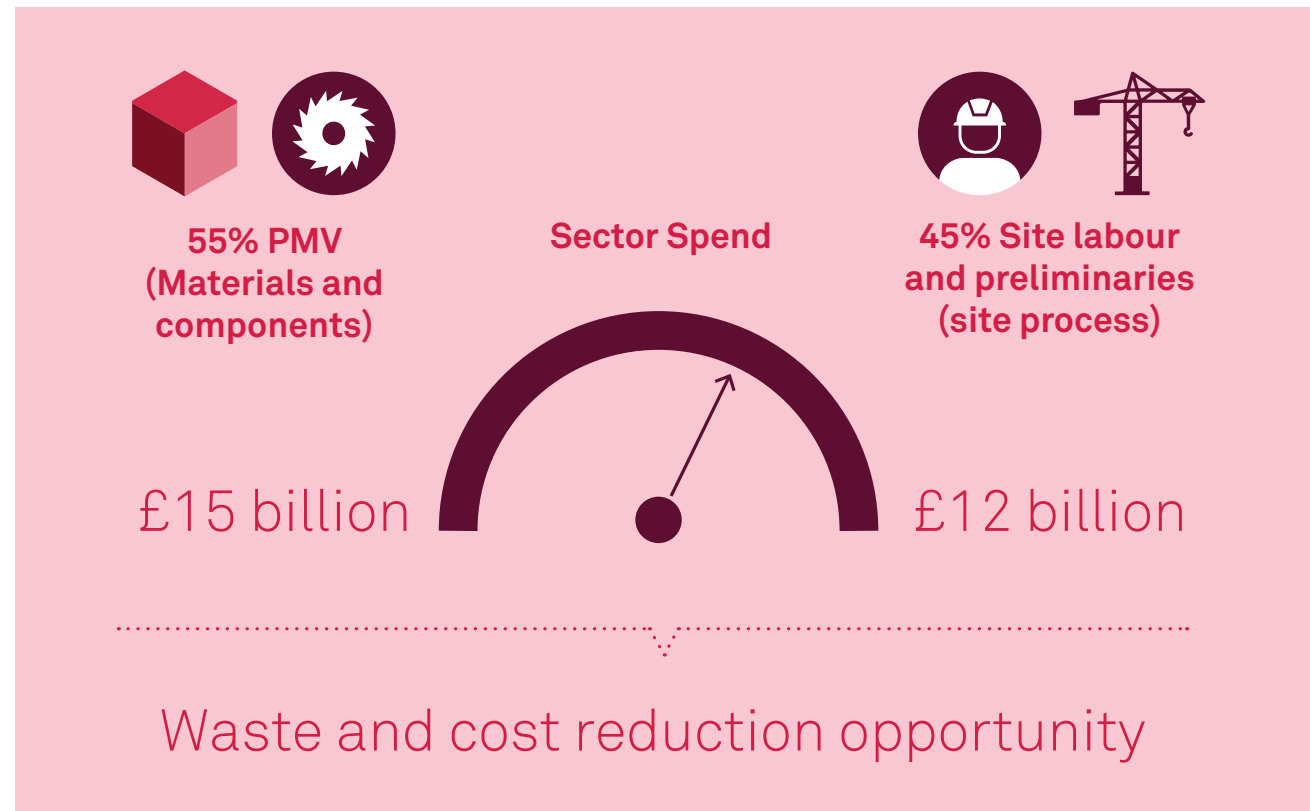


Rebalancing resources at an industry level

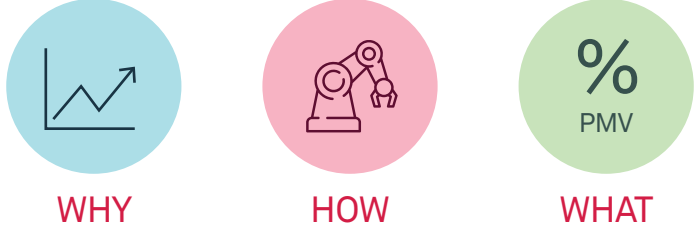
Potential impact on residential construction cost and efficiency

- Improved labour resource efficiency
- Improved resilience
- Greater control and certainty

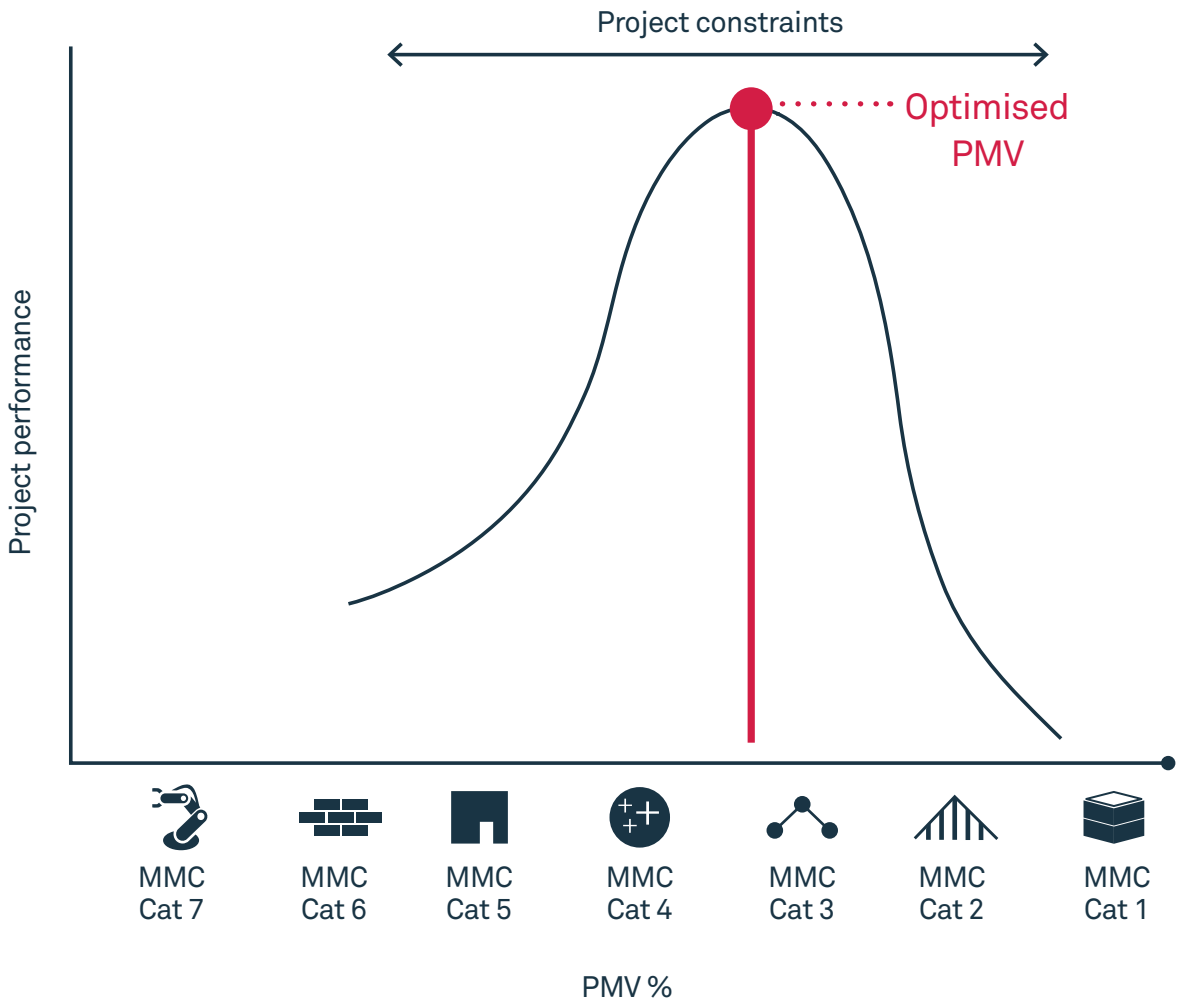
More output for
the same cost



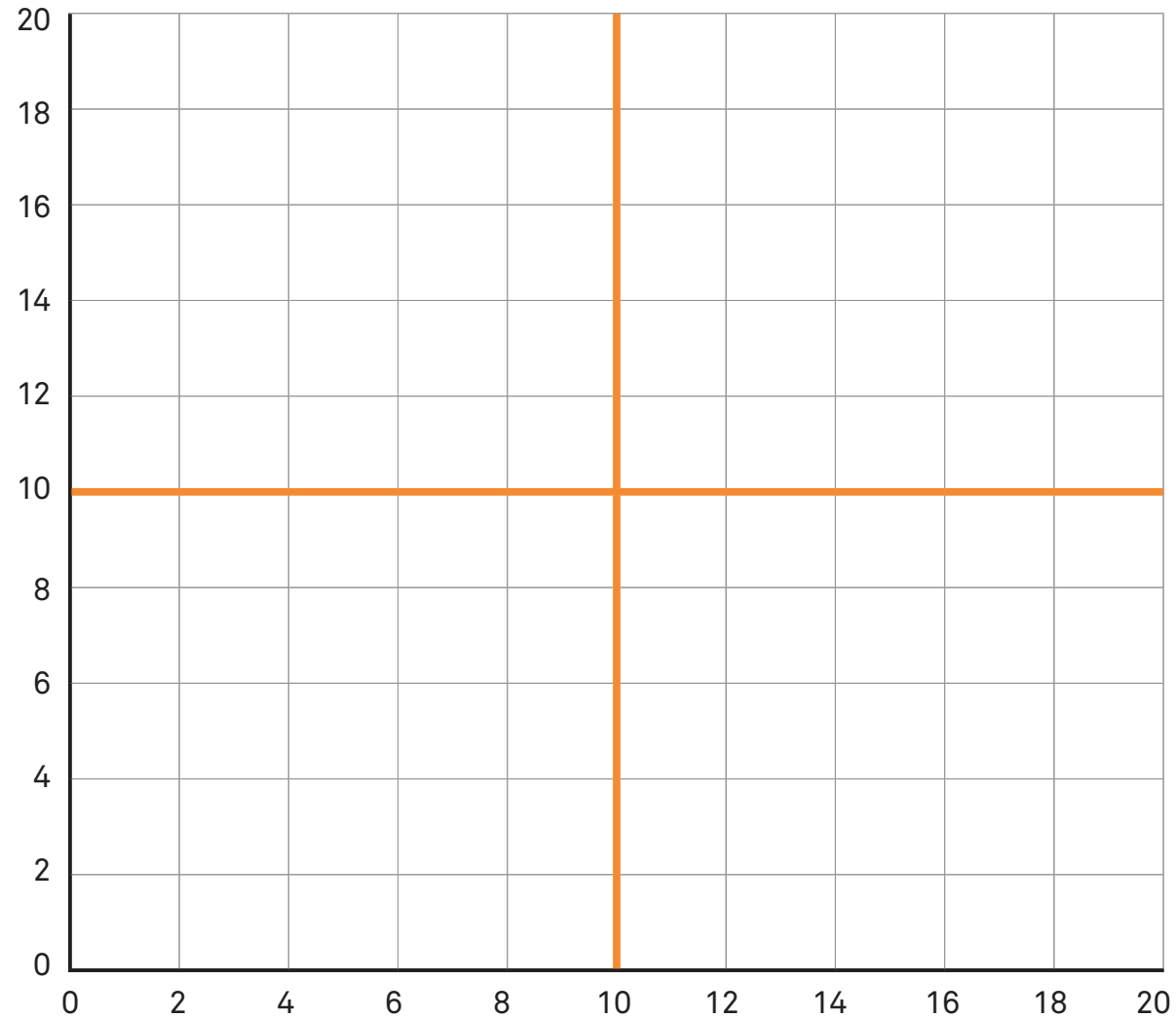
Optimising PMV at a project level



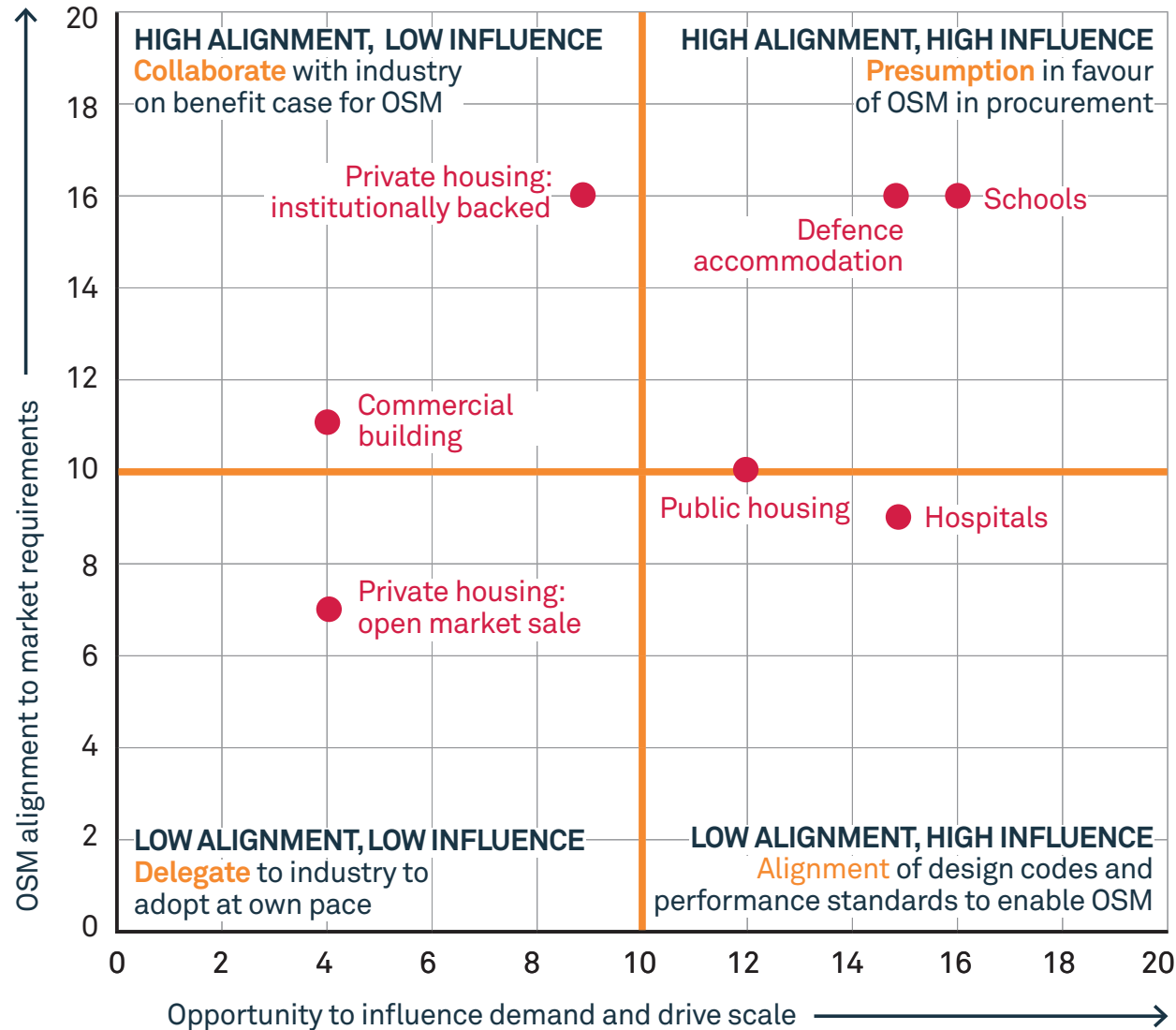
Testing and refining the appropriate MMC categories given specific client drivers and the context of the project will ensure an optimised PMV score.



Different contexts need different policy responses...



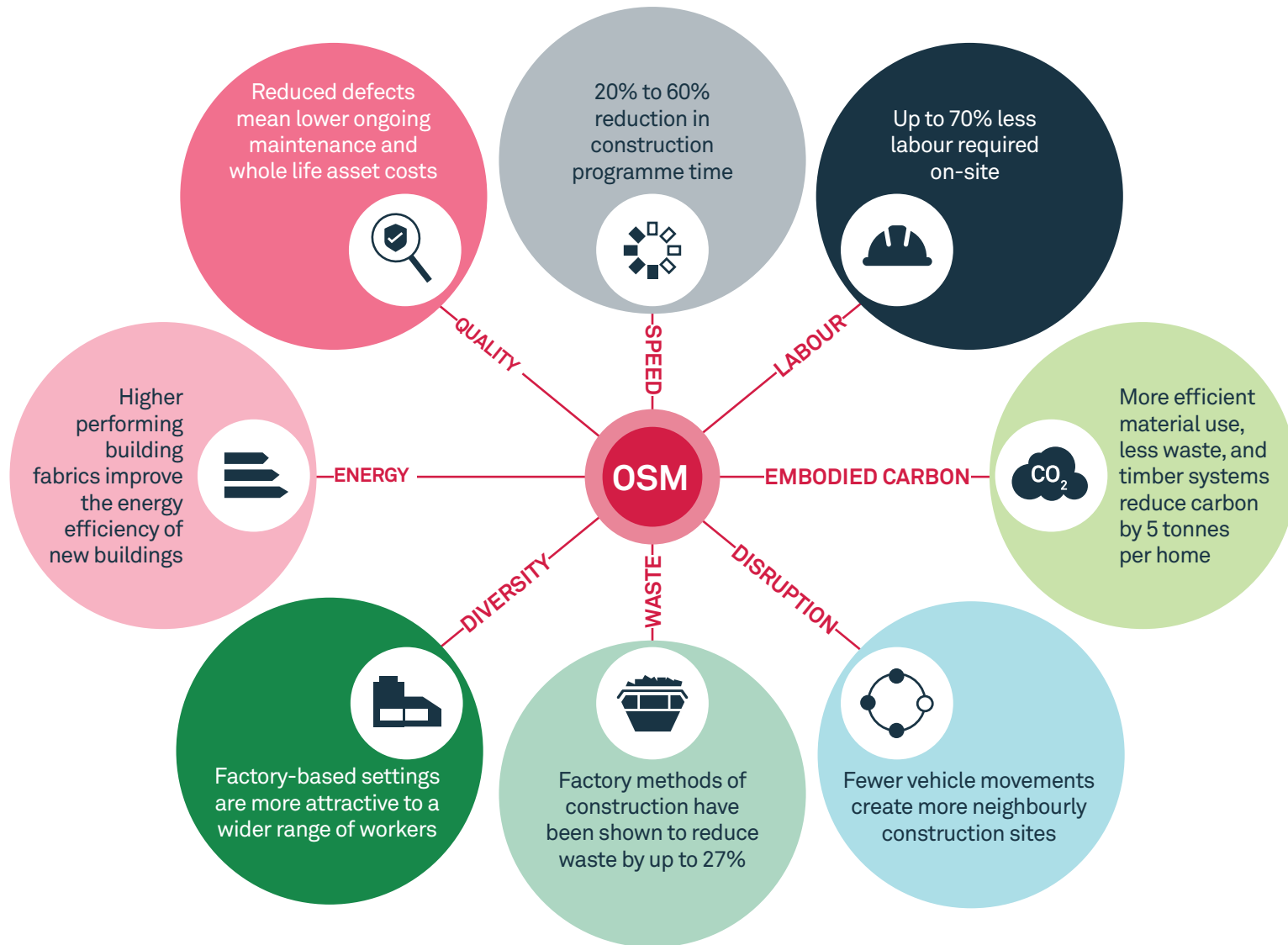
Different contexts need different policy responses... and align to different market sectors



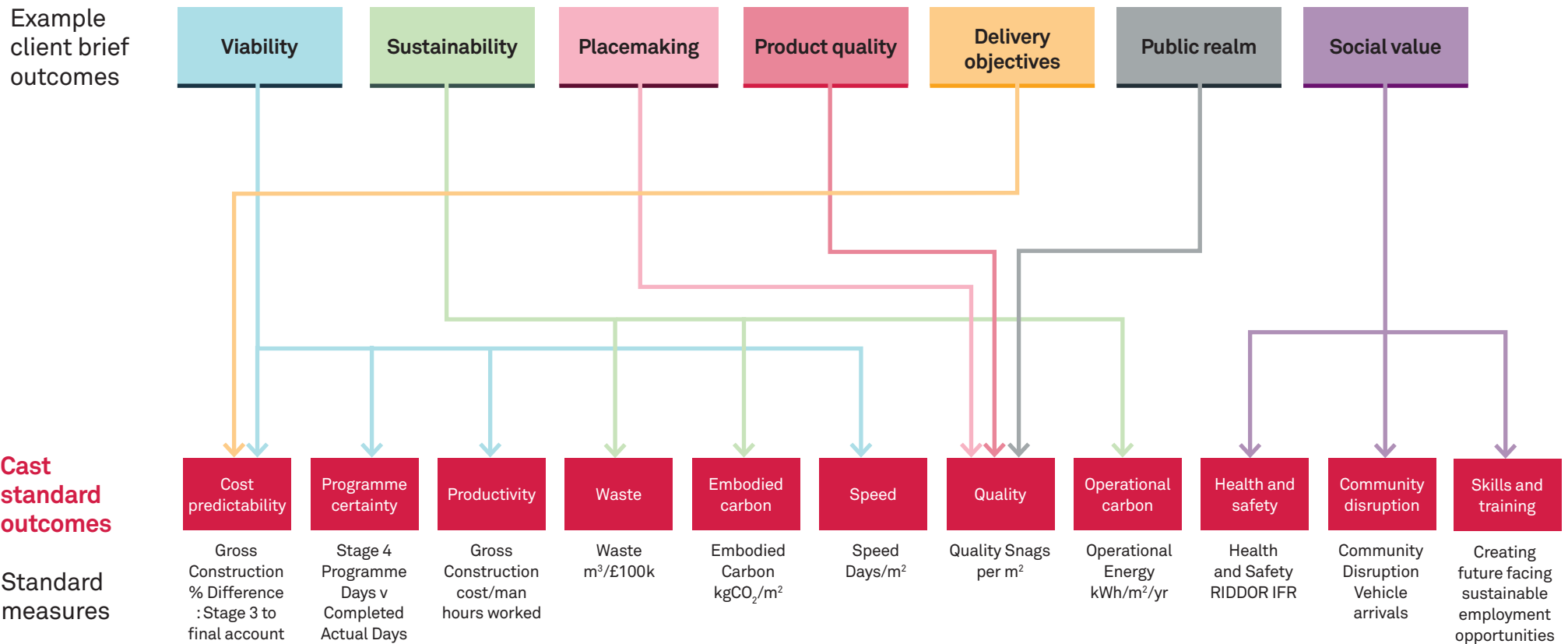
Our approach to measuring performance and impact



In the UK, industry-wide studies have quantified the potential benefits of MMC

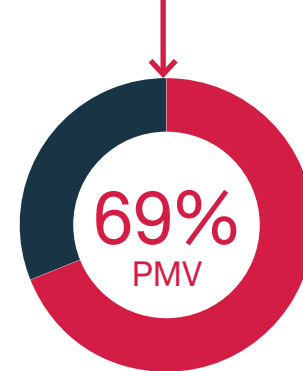
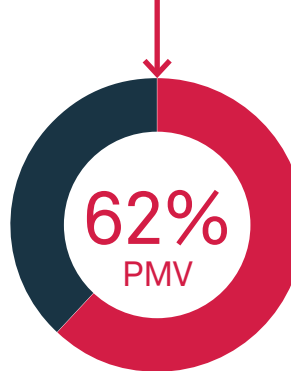
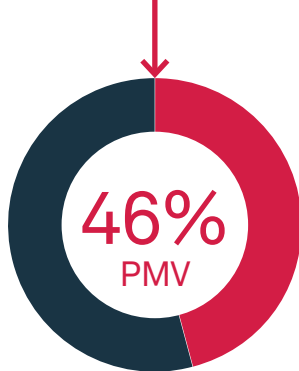


And at Cast we have developed a suite of outcome measures that enable us to quantify world benefits

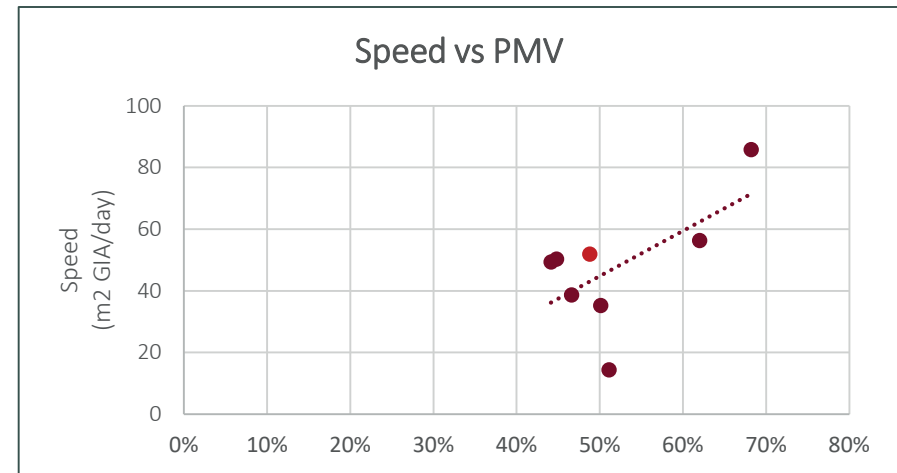
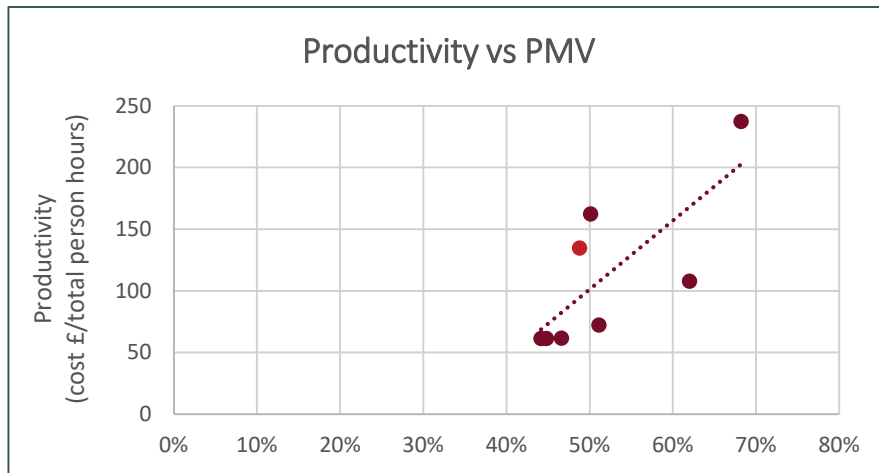
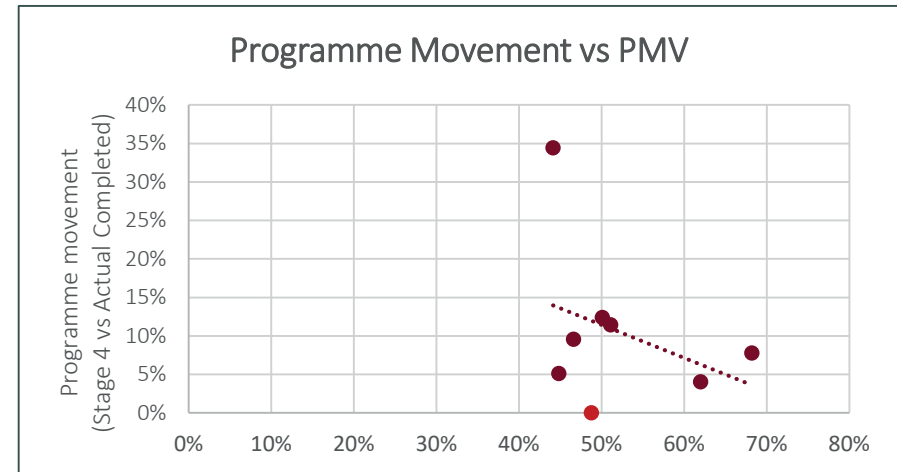
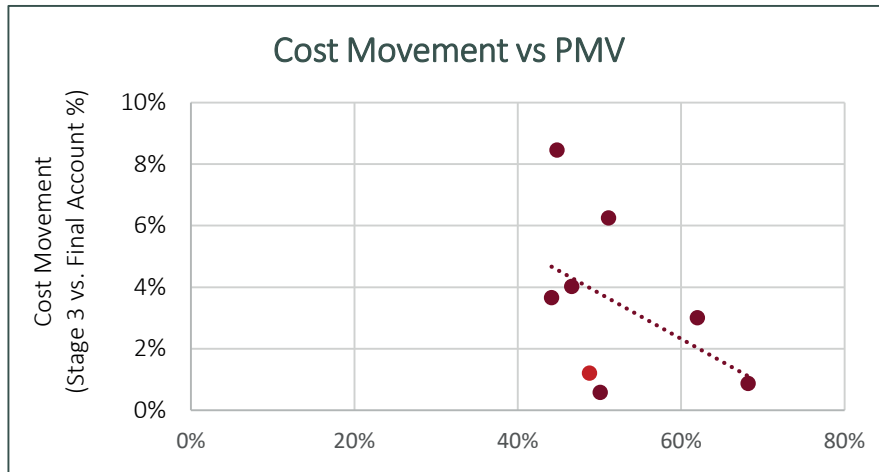


We use PMV as a solution-agnostic approach to quantifying the extent of offsite construction

$$\text{PMV \%} = \frac{\text{Pre-manufactured value (£)}}{\text{Gross construction cost (£)}} \times 100$$



And to correlate against the performance outcomes we measure on every project



MMC applied: Case study Brent Cross, London



Brent Cross P14, London

Key part of £8bn Brent Cross Town development between Related Argent and Barnet Council.

- Client – Related Argent
- 286 BtR homes across three buildings along with amenity provision and public realm
- Hybrid MMC strategy, contract signed with 99% cost fixity at signing stage

Cast services:

- Employer's agent
- Project management
- Cost management



Brent Cross, Related Argent and Plot 14: the opportunity to innovate

A client eager to innovate and challenge the norm.

The fifth residential building within the masterplan.

The procurement route was outside the norm.

Early engagement with the supply chain was critical.

It provides a test case for the next building and the next.



Construction statistics

COMMERCIAL

PROGRAMME



22 weeks benefit on frame and façade
Overall programme benefit of 14 weeks, for a larger and denser building

COST



£6/ft² premium, excluding programme and prelim benefits

COST CERTAINTY



Cost movement from Stage 3:
Plot 13 – 11.61%
Plot 14 – 3.23%



QUALITY

WASTE ON SITE



16% reduction in waste on site at Month 8

VEHICLE MOVEMENTS



75% reduction in vehicle movements to site

HEALTH AND SAFETY



Zero reportable incidents on site

MMC applied:
Case study
East Village,
London



Portlands Place, Stratford

Get Living's flagship BtR development in the East Village, the former Athletes Village from the 2012 Olympics.

Cast guided the design for homes and amenities to deliver exceptional residential quality, while optimising the scheme based on Get Living's learnings from managing their first-generation BTR buildings.

Cast developed an early contractor procurement and engagement strategy focussed on pre-manufacture. This ultimately helped deliver a three-month programme saving, which unlocked the Client's appraisal viability.

- Client – Get Living (with Delancey & APG)
- 524 BtR homes
- BREEAM “Excellent”
- Completed December 2021
- #1 Development in Stratford on HomeViews



Mace – traditional vs MaceTech at East Village



Cast

Macetech – project specific kit of parts



Pre-cast concrete floor slabs



Pre-cast concrete columns



Pre-cast concrete shear / core walls



Pre-cast concrete stairs



Unitised façade



Bathroom pods

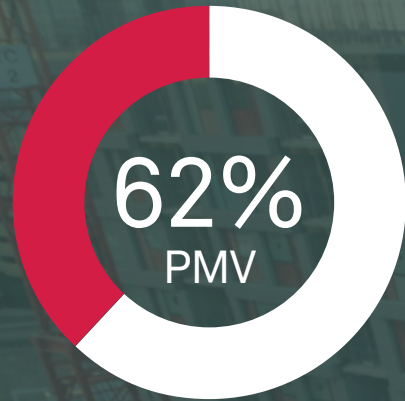


Utility pods



Riser and service

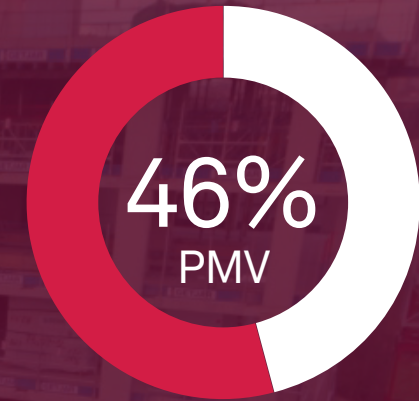
Comparing **high** and **low** PMV methodology



10 floors:

Structure	Complete
Façade	Complete
Service Distribution	Complete
Bathroom Pods	All installed
Utility Cupboards	All installed

52 operatives



10 floors:

Structure	Complete
Façade	To level 1
Service Distribution	None
Bathroom Pods	To level 6
Utility Cupboards	To level 6

120 operatives

Construction statistics

COMMERCIAL

PROGRAMME



30% faster to start fit-out
18 weeks benefit

PRODUCTIVITY – GVA



£170/hour – Mace Tech
£60/hour – Trad frame

RESOURCES/FLOOR



52 – Mace Tech
120 – Trad frame



QUALITY

WASTE ON SITE



75% reduction for
offsite activities

VEHICLE MOVEMENTS



40% reduction in HGV
80% reduction in LCV

EMBODIED ENERGY



15% reduction through
concrete mix design

Any questions?



Contact us

Cast is a specialist construction consultancy providing solutions for developers, investors, policymakers and the supply chain. We are focused on helping deliver great homes and places viably whilst also addressing bigger economic, societal and environmental challenges.



Cast

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