

Barratt Developments and MMC: The journey so far

Oliver Novakovic, Barratt Developments

March 2019

Barratt Developments – FY 2018

We have three housebuilding brands – Barratt Homes, David Wilson Homes and Barratt London. Commercial developments are delivered by Wilson Bowden Developments.



We are committed to building high quality homes and have been awarded 83 NHBC Pride in the Job Awards on our sites in 2018, more than any other housebuilder for 14 consecutive years.



Completions by unit type	2018	2017
1 and 2 bedroom houses	11%	12%
3 bedroom houses	33%	32%
4 bedroom houses	33%	32%
5 and 6 bedroom houses	4%	4%
Flats London	5%	6%
Flats non-London	14%	14%

Total completions¹

17,579

2017: 17,395



Average active outlets

368

2017: 366



Housebuilding divisions

27

2017: 27



Owned and controlled land bank plots

79,432

2017: 75,043



Employees²

6,330

2017: 6,193



¹ Total completions, including joint ventures, were 17,579 (2017: 17,395) for the year. Private completions for the year were 13,439 (2017: 13,303). Affordable completions for the year were 3,241 (2017: 3,342) and JV completions in which the Group had an interest were 899 (2017: 750).

² Employee numbers, excluding sub-contractors, taken as at 30 June.

Barratt Developments



1. The Barratt Offsite Journey



BARRATT
DEVELOPMENTS PLC

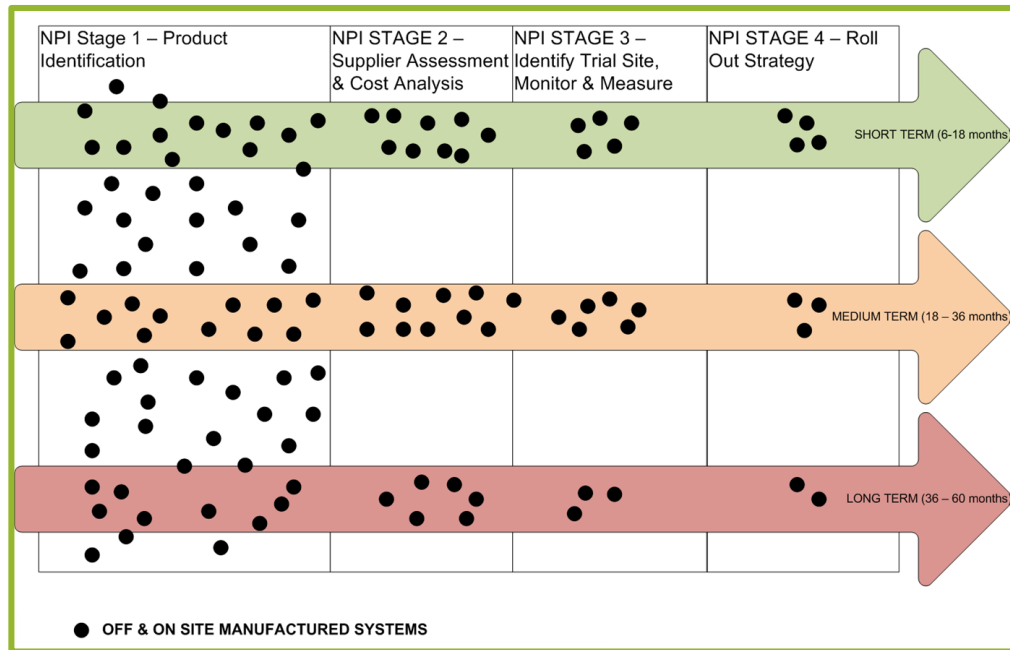




BARRATT
DEVELOPMENTS PLC

The Barratt Offsite Journey

The Barratt Offsite Journey



New Product Introduction Process (NPI) implemented



Over 150 systems / products assessed

The Barratt Offsite Journey

MMC Systems in Focus

MMC		Systems
Standard	1.Masonry build + Offsite Components Housing	<ul style="list-style-type: none"> • Pre-insulated Precast Concrete Ground Floors • Panellised Roofs
Offsite	2.Offsite Panellised (with above components) Housing	<ul style="list-style-type: none"> • Large Format Block • Timber Frame
Offsite +	3.Offsite Panellised Combined (inc. Step 2) Housing	<ul style="list-style-type: none"> • Large Format Block Combined With Offsite Precast Concrete Garages • Timber Frame Semi Closed Panel With Offsite Precast Concrete Garages
Advanced Offsite	4.Offsite Panellised Advanced Combined (inc. Step 3) Housing	<ul style="list-style-type: none"> • Timber Frame Closed Panel With Insulation, Windows, Services & Internal Lining
	5.Offsite Panellised Advanced Apartments	<ul style="list-style-type: none"> • Silka Large Elements • Closed Panel Timber Frame

Systems being
utilised by
Barratt
Developments

Systems being
considered by
Barratt
Developments

2. MMC systems being utilised by Barratt Developments

MMC systems being utilised

Components

Pre-insulated Precast Concrete Ground Floors

Homes England Classification	Component
Supplier	Nu Span and Spantherm
BDW legal completions Target July 18 to June 19	410
Speed improvement v traditional construction [#]	5%*



Panellised Roofs

Homes England Classification	Component
Supplier	SIG Roofspace
BDW legal completions Target July 18 to June 19	1405
Speed improvement v traditional construction [#]	5%*



* Completion speed based on delivery of overall unit not just the component

[#] Average improvement in build stages 2-9 (slab to complete)

MMC systems being utilised

The I-House System (Large Format Block)

- Work package includes internal leaf blockwork, floor cassettes, roof trusses, cavity wall insulation
- Three operatives and a crane operator
- Crane lifts each Celcon Element into place where it is secured using thin joint mortar
- Provides speed of offsite construction with the familiarity of a traditional build

Large Format Block

Homes England Classification	Panellised
Supplier	Roofspace I-House
BDW legal completions (July 17 – June 18)	113
Speed improvement v traditional construction [#]	20%



MMC systems being utilised

Timber Frame Construction - Open Panel

- Open 140mm stud walls
- I beam floor and roof cassettes
- Trussed roofs built on the wall plate
- 3 operatives carrying out work
- Crane erect process with safety decking



Timber Frame Construction

Homes England Classification	Panellised
Supplier	Stewart Milne
BDW legal completions (July 17 – June 18)	1683*
Speed improvement v traditional construction [#]	30%

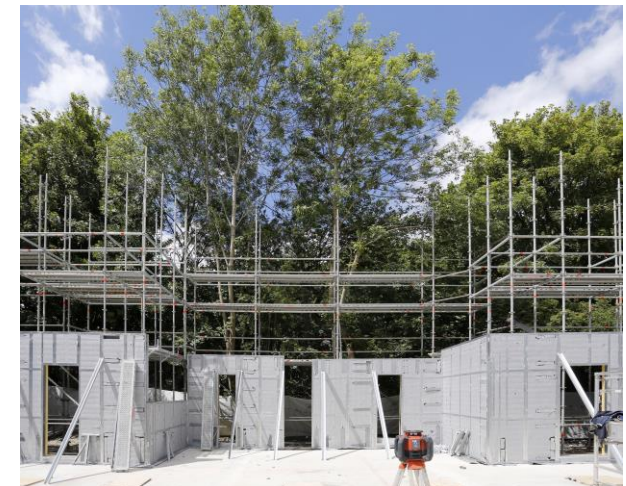
* England and Wales 264, Scotland 1419

[#] Average improvement in build stages 2-9 (slab to complete)

MMC systems being utilised

LGSF

- C section with insulation integrated
- Floor, wall and roof
- Similar attributes to timber frame



Precast Concrete Garages

Homes England Classification	Panelised
Supplier	Fusion
BDW legal completions (July 17 – June 18)	Over 200
Speed improvement v traditional construction [#]	30%

* Completion speed based on delivery of overall unit not just the garage

[#] Average improvement in build stages 2-9 (slab to complete)

MMC systems being utilised

Precast Concrete Garages

- Replaced brickwork with TruFinish precast concrete panels
- Concrete panels are virtually waterproof C60 design strength giving it an advantage over traditionally built garages
- Incorporates factory made modular roof
- Eliminates the need for scaffolding and surrounding hardcore



Precast Concrete Garages

Homes England Classification	TBC
Supplier	Tarmac
BDW legal completions (July 17 – June 18)	7
Speed improvement v traditional construction [#]	5%*

* Completion speed based on delivery of overall unit not just the garage

[#] Average improvement in build stages 2-9 (slab to complete)

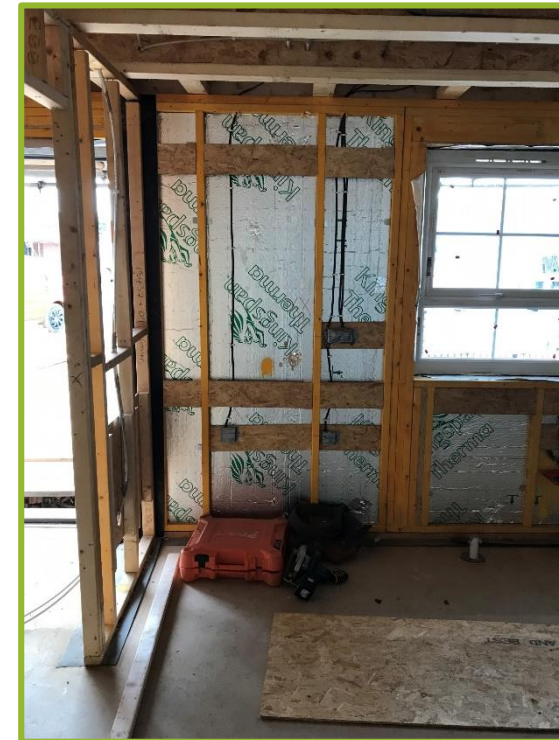
MMC systems being utilised

Timber Frame Construction – Semi-Closed Panel

- Adding extra value off site by pre-fitting windows and doors in factory
- Pre-insulated walls
- Currently being trialled in Wales

Semi Closed Panel

Homes England Classification	Advanced Panellised
Supplier	Stewart Milne
Completion speed improvement estimation	40%
Cost increase percentage v traditional construction	30%

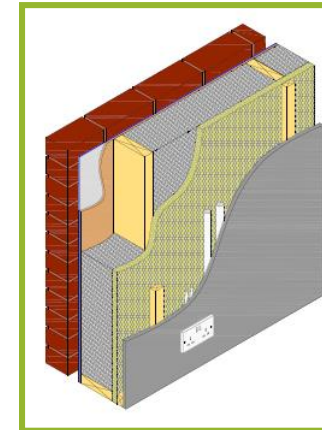


3. MMC systems being considered by Barratt Developments

MMC systems being considered

Timber Frame Construction Closed Panel: Housing & Apartments

- Pre-fitted windows and doors
- Pre-insulated walls
- Roofs built on slab and lifted up
- Pre-serviced and internally finished for houses
- Factory installed service for apartments
- Drylined



Closed Panel

Homes England Classification	Advanced Panellised
Supplier	Stewart Milne
Completion speed improvement estimation	60%
Cost increase percentage v traditional construction	Circa 60%*

* Estimated assumption based on previous data

MMC systems being considered

Apartments - Silka Large Elements

- Large elements (900x600mm) calcium silicate blocks
- Hollow core floor panels used
- High compressive strength (optimum for apartments)
- No waste produced as cut to size in the factory
- Highly efficient system using 2 operatives and mini crane 2 installers day making the system high efficient

Silka Large Elements

(Apartments)

Homes England Classification	Panellised
Supplier	Xella
Completion speed improvement estimation	40%
Cost increase percentage v traditional construction	Circa 20%*



MMC systems being considered

Apartments – Bathroom pods

- Fully modular bathroom pods
- Units will include electric, plumbing services and tiling
- Reduce build time and can improve quality whilst taking pressure off traditional M&E workpackages

Bathroom Pods	
Homes England Classification	Hybrid?
Supplier	n/a
Completion speed improvement estimation	10%*
Cost increase percentage v traditional construction	Circa 30%#



- Completion speed based on delivery of overall unit not just the bathroom pod
- # Assumption based on previous data

4. Measuring the success of MMC systems

Measuring the success of MMC systems

AIMCH – Application Industrialised Methods to Construct Homes

To deliver high quality Modern Methods of Construction (MMC) & Off Site Manufacture (OSM), more cost effectively, faster, safer, robust & more productive than conventional methods of construction.

Key Facts

- £6.05m R&D project
- Partners – L&Q, Stewart Milne, Tarmac, Manufacturing Technology Centre (MTC) & Forsters Roofing (SME)
- Barratt project value

Key Objectives

- Deliver current MMC systems cost neutral
- Trial more advanced MMC with Government Support
- Monitor and measure to understand true benefits

Key Deliverables

- Monitor 20 units using Brick & Block ,Timber Frame and Large Format Block (current sites to be decided)
- Deliver and monitor 4 units using closed panel timber and concrete frame technologies



Tarmac Closed Panel Trial at Tallington Factory

Measuring the success of MMC systems

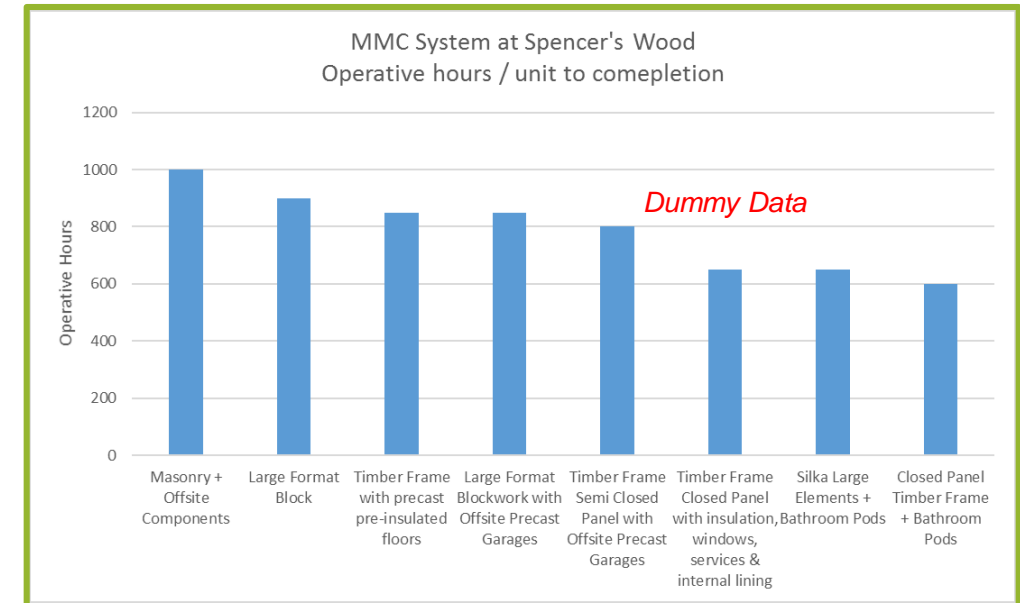
1. Internal data gathering, this will include:

- I. Quarterly review of the site build programme database (efficiency) breaking down each stage of construction assessed against traditional Barratt Group average
- II. Review of site KPIs including NHBC Reportable Items (quality), Waste, Non productive costs and Customer Satisfaction scores*



2. Two further options will include

- I. Third Party Research Organisation / Consultancy reviewing site and MMC system efficiency (Productivity toolkits using smart phones/ tablets to collect data)
- II. Barratt to project manage labour and resource including man-hours and material waste created
 - a) Construction monitoring tool to measure labour via a dedicated data gatherer on site
 - b) Quarterly reports reviewing data gathered on operative hours
 - c) Obtain hard evidence and benchmarks for different MMC efficiencies



* Info will be given in Percentage increase/decrease against traditional averages.

Thank You