



LHC

Adopting Modern Methods of Construction (MMC) Through Collaboration

We were founded by London boroughs in 1966

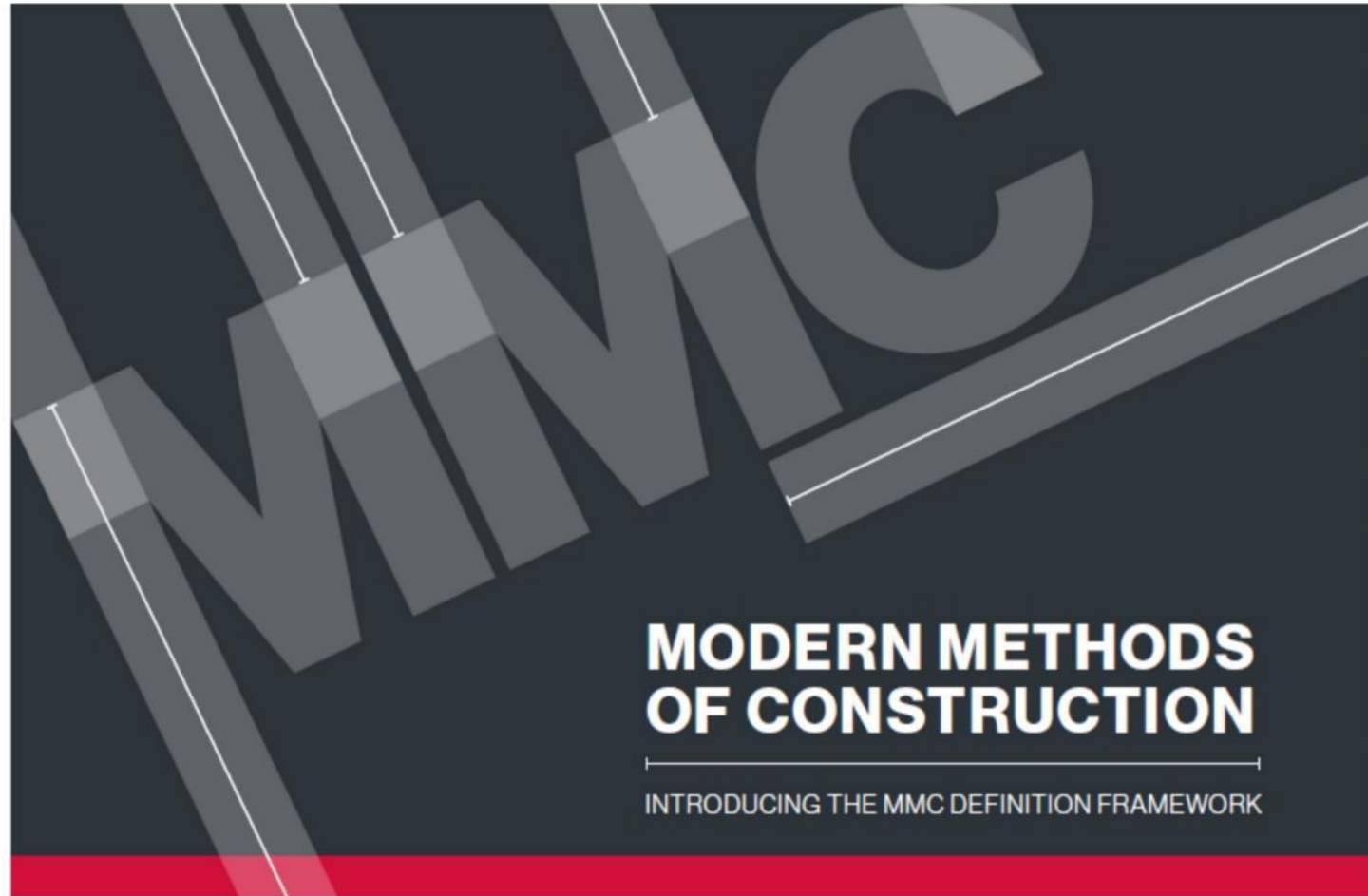
MEMBERSHIP, AIMS AND TERMS OF REFERENCE

Resolved - That the broad aims of the Group which is a voluntary association of the London Boroughs of Barnet, Brent, Camden, Ealing, Hammersmith, Harrow, Hillingdon, Hounslow, Islington, Richmond upon Thames, the Royal Borough of Kensington & Chelsea, the Corporation of London and the City of Westminster, be:-

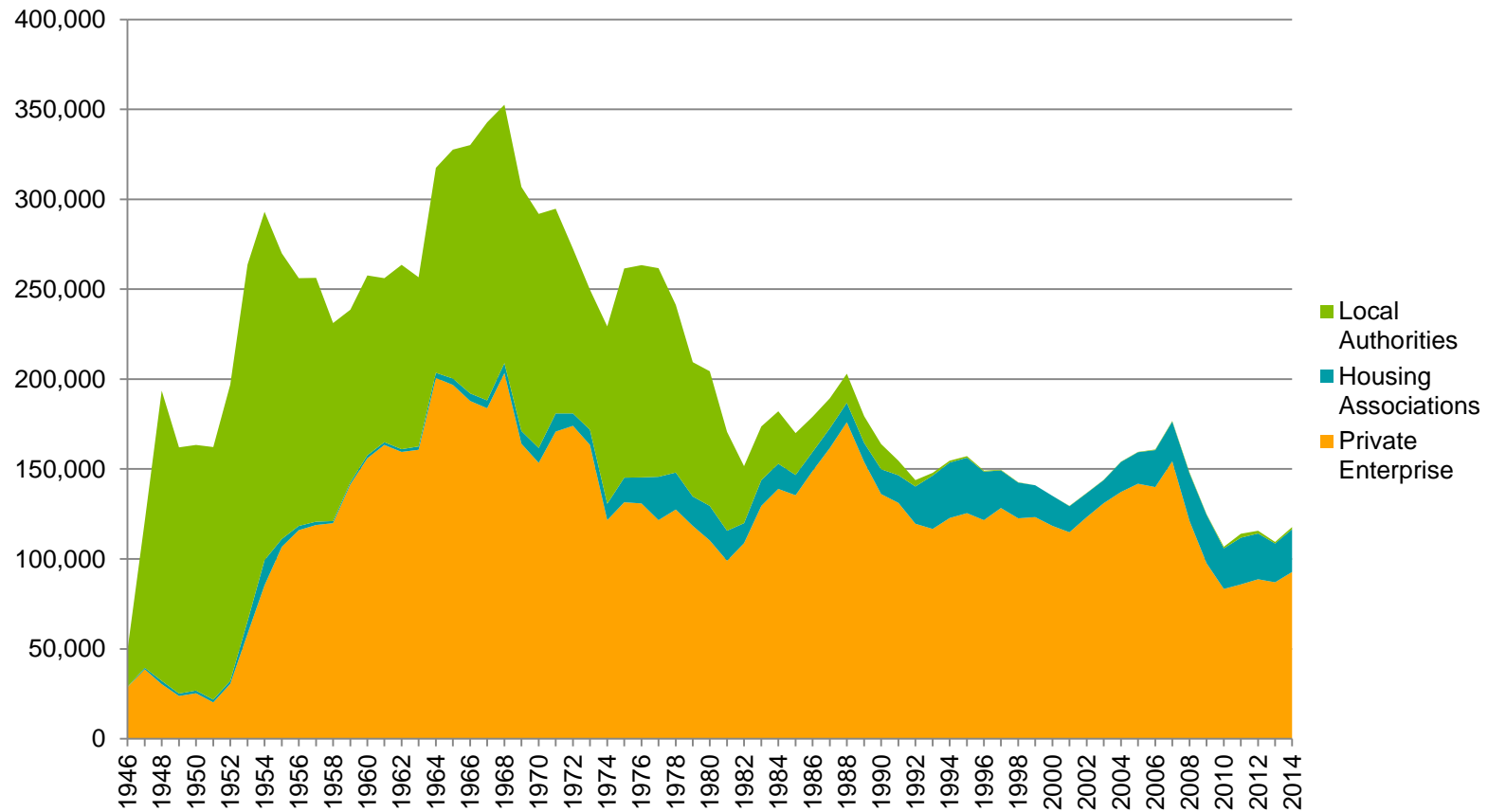
- (a) the co-ordination of industrialised building programmes
- (b) the establishment of common social and technical standards
- (c) the organisation of serial contracts for industrialised and rationalised traditional building systems, including the bulk purchase of components
- (d) to carry out studies and projects with the object of achieving industrialised building methods to meet agreed standards by, for example,
 - (i) negotiating long term improvements in existing systems
 - (ii) applying industrialised building methods through a process of dimensional co-ordination and standardisation of components to traditional building, and
 - (iii) developing new systems where necessary.

Extract from
the minutes from
LHC Meeting
No. 1, Thursday
9 June 1966

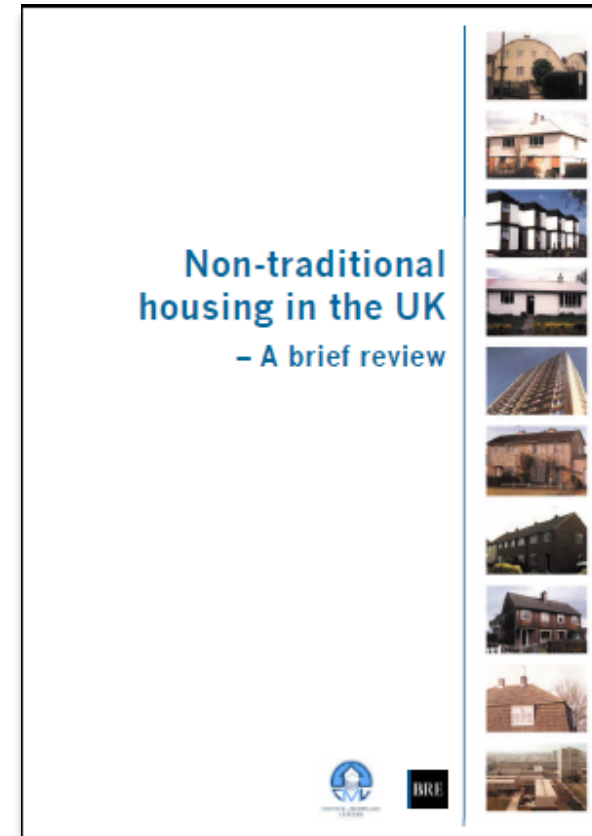
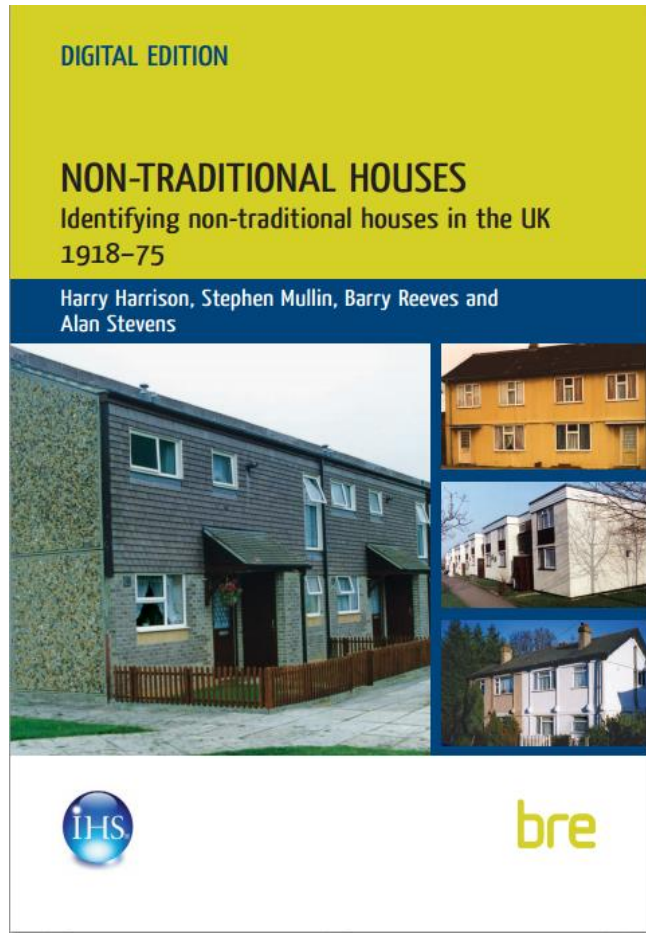
NH2 – Modern Methods of Construction (MMC)



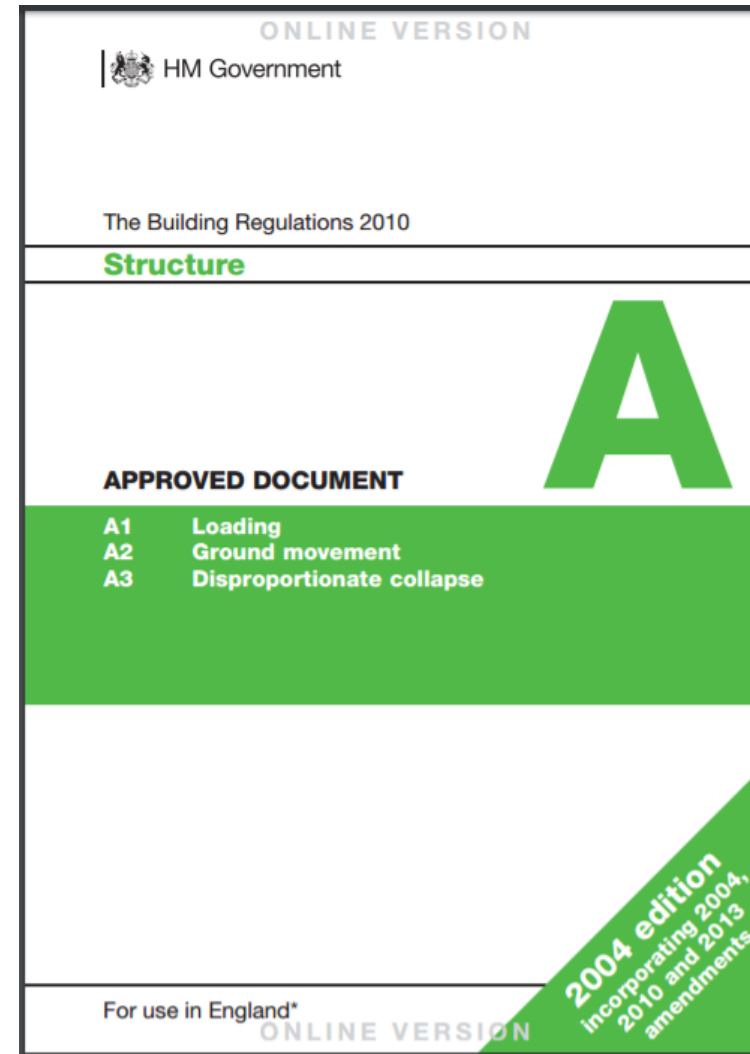
House Building Figures



Non - Traditional Housing



1968 - History of Offsite



1980 Right to Buy

Housing Act 1980

CHAPTER 51

ARRANGEMENT OF SECTIONS

PART I

PUBLIC SECTOR TENANTS

CHAPTER I

THE RIGHT TO BUY

Section	
1.	Right to acquire freehold or long lease.
2.	Exceptions to right to buy.
3.	Meaning of "house", "flat", "dwelling-house" and "relevant time".
4.	Joint tenants and members of family occupying dwelling-house otherwise than as joint tenants.
5.	Notice claiming exercise of right to buy.
6.	Purchase price.
7.	Discount.
8.	Repayment of discount on early disposal of freehold or lease.
9.	Right to a mortgage—amount to be secured.
10.	Notice of purchase price and right to a mortgage.
11.	Right of tenant to have value determined by district valuer.
12.	Claim to a mortgage.
13.	Change of secure tenant after notice claiming right to buy.
14.	Change of landlord after notice claiming right to buy or right to a mortgage.
15.	Children succeeding parents.
16.	Completion.
17.	Conveyance of freehold and grant of lease.
18.	Right to a mortgage—terms of mortgage deed.
19.	Dwelling-houses in National Parks and areas of outstanding natural beauty, etc.
20.	Registration of title.
21.	Costs.
22.	Notices.
23.	Secretary of State's power to intervene.
24.	Vesting orders.
25.	Statutory declarations.

A

- Selling of council stock
- Money ring fenced
- No funding for councils

1980's Mortgage Lenders – Risk



1984 - Housing Defects Act



- 35 Different Building Systems
- 4 of the top 14 Systems
- Represents 14% of houses
- Precast concrete systems

Canada Vancouver: 1985 - 2000

- 160,000 units 45% of all apartments
- “A 1998 provincial commission of inquiry *design features inappropriate for our climate;*
- *a reliance on face-sealed wall systems;*
- *a fundamental lack of awareness regarding the principles of enclosure design suitable for our climate;*
- *meaningful inspection at critical stages of construction;*
- *and a regulatory system which was unable to understand that failures were occurring and to redress them.*
- **New Zealand** 1994 to 2004 42,000 to 89,0000 Homes

1997 - Re Thinking Construction – The Egan report

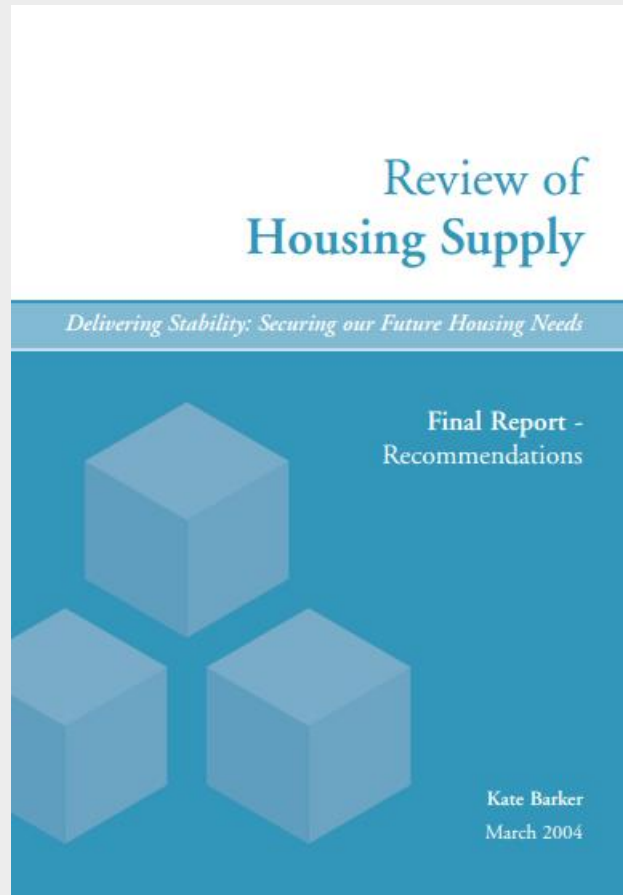


- The need to improve
- Ambitions in the UK
- Improving project process
- Improve House Building
- They way forward

1997 London



2004 - Barker Review



Housing demand and need (England)

Standard Note: SN06921
Last updated: 23 June 2014
Author: Sarah Heath
Section: Social Policy Section

This note provides information on estimates of housing need and demand in England. It includes information on some of the main factors which influence demand and need for housing.

Although there is no set definition of housing 'need' and 'demand' they can broadly be described as follows. Housing 'demand' is a market driven concept and relates to the type and number of houses that households will choose to occupy based on preference and ability to pay. Housing 'need' is an indicator of existing deficit: the number of households that do not have access to accommodation that meets certain normative standards. This measure mainly refers to the level of need for more or improved social housing. The term 'housing requirement' is sometimes used to combine these two measures to generate an overall picture of the housing market.

The number of households in England is projected to grow and more housing will need to be constructed in order to accommodate this growth. It can take time for policies and investment to translate into housing starts; as a result of this the Government uses medium to long term projections of population and household growth to produce estimates of the number of new homes that will be needed. The Government has not published any house building targets, preferring to leave it to local authorities to work to meet local housing need. The Labour Party has announced a commitment, if elected, to build 200,000 a year by the end of the next Parliament.

The most recent estimate of housing need and demand in England was published by the Town and Country Planning Association in September 2013 and covers the period 2011 to 2031. The report represents unofficial estimates but is based on the Government's official household interim projections for 2011-2021 published in April 2013.

The report estimated that 240,000 to 245,000 additional homes would be required each year to 2031 in order to meet newly arising demand and need in England.

A total of 107,820 permanent dwellings were completed in England in 2012/13. For the UK as a whole the figure was 135,400.

[Live tables on house building](#) are available on the Gov.uk website. The Library also provides [economic indicators for housing](#) which are updated every month.

This information is provided to Members of Parliament in support of their parliamentary duties and is not intended to address the specific circumstances of any particular individual. It should not be relied upon as being up to date; the law or policies may have changed since it was last updated; and it should not be relied upon as legal or professional advice or as a substitute for it. A suitably qualified professional should be consulted if specific advice or information is required.

This information is provided subject to [our general terms and conditions](#) which are available online or may be provided on request in hard copy. Authors are available to discuss the content of this briefing with Members and their staff, but not with the general public.

The Size of the Problem

- Kate Barker 2004
- Target 250,000 per year for next 25 years

Average per year	Private	Social	LA	Total
69-79	147,000	14,800	103,000	264,800
95-06	138,000	20,000	217	158,217
05-15	107,000	22,600	1000	130,600
2014-15	112,270	23,560	1,890	137,720

- For UK 750,000 short in last 10 years
- Requirement of 300,000 per year for next 15 years

2005 - £60k Competition

- Deputy Prime Minister
- £60,000 house
- £5million law suit 2014



Pilot Projects 2006



106 units
2006
Timber
Light gauge steel frame
Insulated concrete formwork
Brick and Block

2015 UK budget

- “First I am doubling the housing budget to £2bn a year and will deliver 400,000 new homes by the end of the decade. That is the biggest house building programme since the 70’s.”



- 80,000 additional home per year
- £20,000 per home

Building the Homes we need - Shelter & KPMG, April 2014

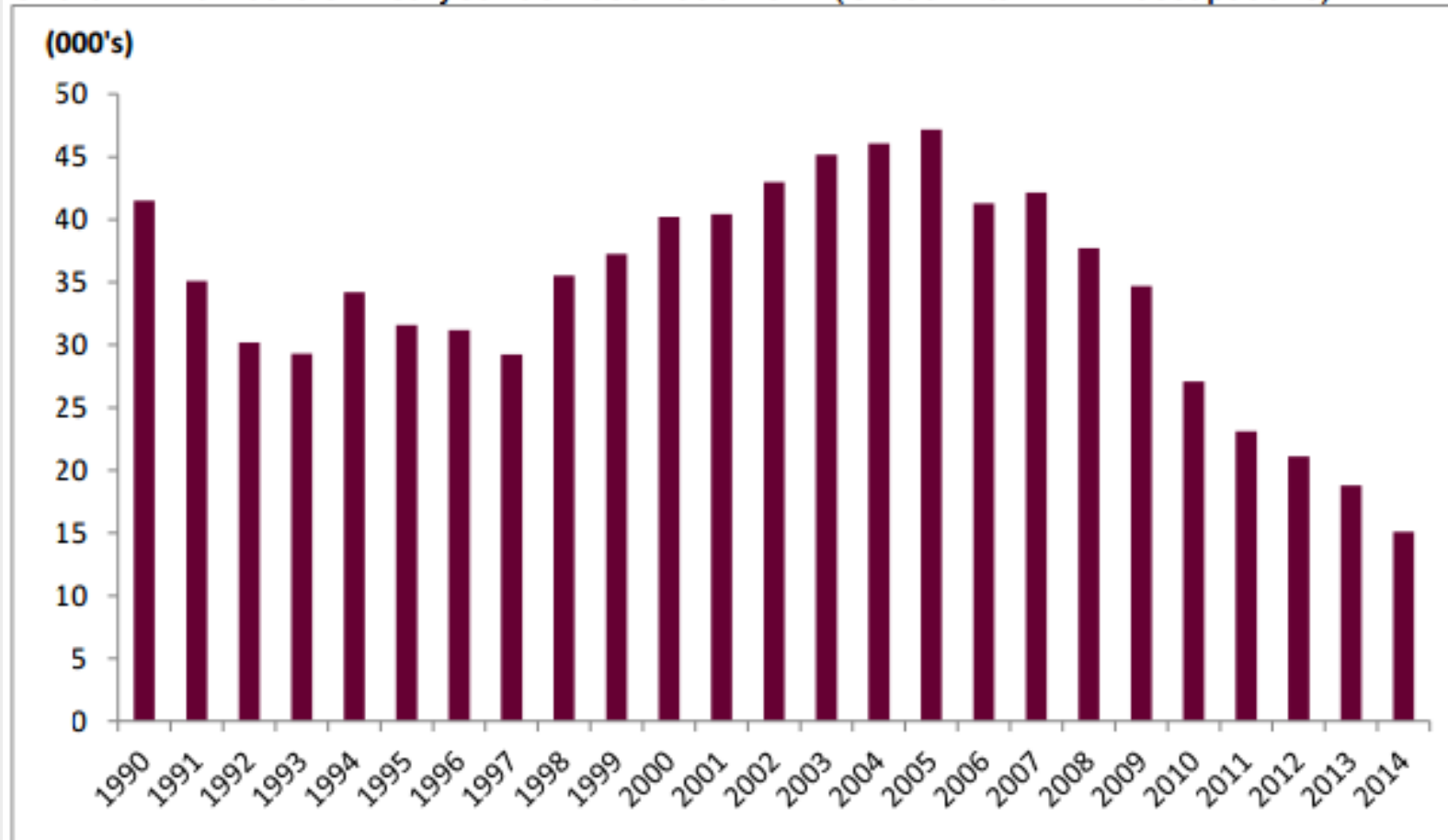


70%

Of homes in England were built by large house building firms operating on a similar business model (in 2012)

CITB Report 2015

Chart 1 – Numbers of first- year trainees 1990-2014 (Great Britain – All occupations)



Skills Shortage

- Based on 1.5 permanent staff per unit
- 2015 completed 152,400 units = 228,660 people
- 25% efficiency increase 190,500 units

- 400,000 to retire next 10 years
- 40% increase in labour to delivery Traditional

2016 - Framer Review



SYMPTOMS

The critical symptoms of failure and poor performance have been identified in this review as:



2016 L&G Factory

Legal & General Capital has today launched its modular housing business which seeks to modernise the industry with factory assembled homes.

- Set up February 2016
- £55,000,000
- 3000 units per year
- First units 2019



Up to 500 staff will work in the 550,000 sq ft warehouse in Sherburn-in-Elmet

Chinese Investment

January 2017

- HA 1000 units per year
- Procurement route ?

A giant Chinese construction firm is teaming up with a UK housing association to deliver 25,000 pre-fabricated homes over the next five years.



Chinese financial power teams up with Spanish offsite design to tackle UK housing shortage

The Government has helped to broker the £2.5bn deal that will see the China National Building Material Company build six offsite factories around the UK.

Offsite Housing Frameworks in the UK



- LHC Framework - 16 organisations
- 70-5% Quality, 25% Price



- Chic Framework - 2 Organisations (2)
- 70% Price, 30% Quality



- Hyde Framework - 4 Organisations (3)
- 75% Quality 25% price



- Re:Allies - 3 Organisations (2)

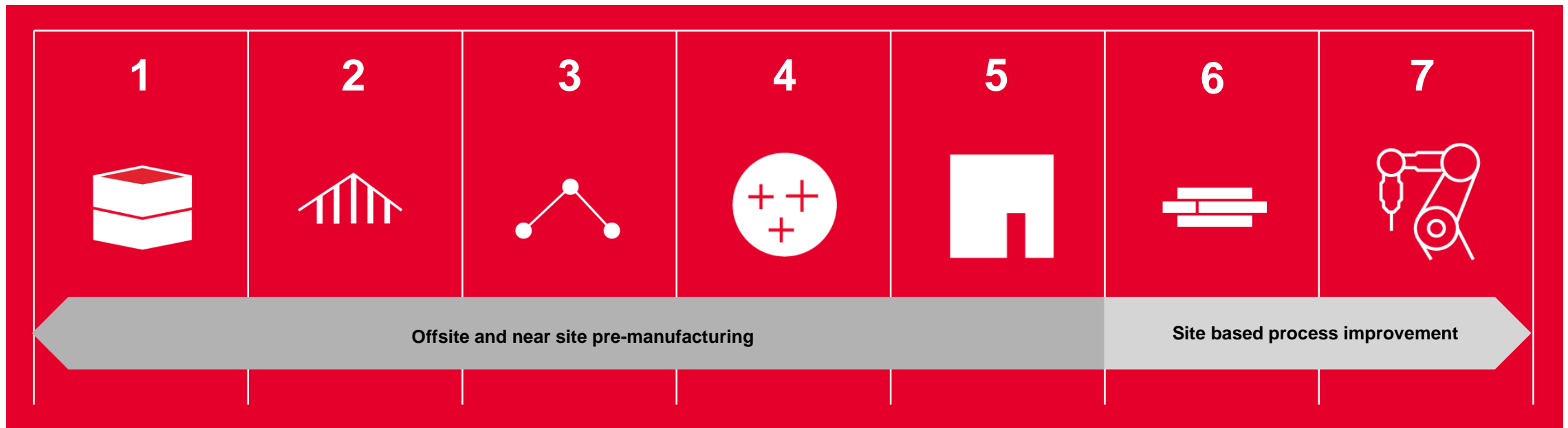
Table 2 – Comparison of trainee numbers in the top ten occupational groups (by volume) 2012/2013 to 2014/2015 (Great Britain)

Occupations	2014/15	2013/14	2012/13
Wood trades and interior fit-out	4,536	5,893	6,725
Bricklayers	2,364	3,313	3,982
Painters and decorators	1,331	2,082	1,959
Specialist building operatives nec*	838	849	569
Plasterers and dry liners	833	1,389	1,964
Other construction professionals and technical staff	713	1,193	1,101
Civil engineering operatives nec*	706	1,454	1,583
Plant operatives	485	834	1,167
Construction Project Managers	422	181	181
Scaffolders	379	210	503

NH2 - MMC Definition Framework - 2019

MMC Spectrum

A range of approaches which spans off-site, near site and on-site pre-manufacturing, process improvements and technology applications.



What frustrates you most about the uptake of Modern Methods of Construction in the UK?

TOO SLOW

ILL-INFORMED

**THEY DON'T
UNDERSTAND
THE PROCESS**

**MODULAR HAS A
POOR – OUT OF DATE –
REPUTATION**

**UNWILLING
TO CHANGE**

**ARCHITECTS FEEL
THREATENED**

**SEEN AS TOO
BIG A RISK**

**PEOPLE AREN'T
AWARE OF THE TIME
AND COST BENEFITS**

**THEY DON'T REALISE
HOW IT CAN HELP THEM
HIT THEIR TARGETS**

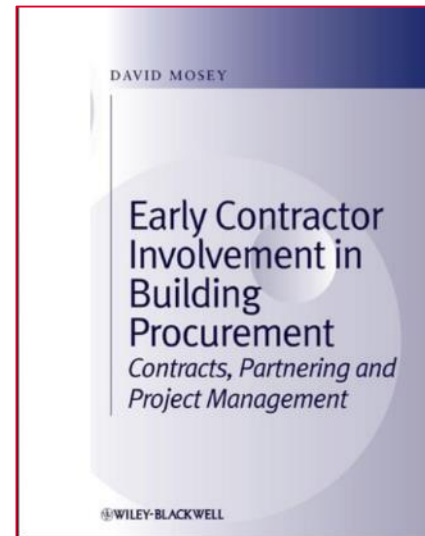
Early Engagement – Working Together

“Designers, contractors and suppliers must all have early involvement in a project for off-site manufacture to be successful.”

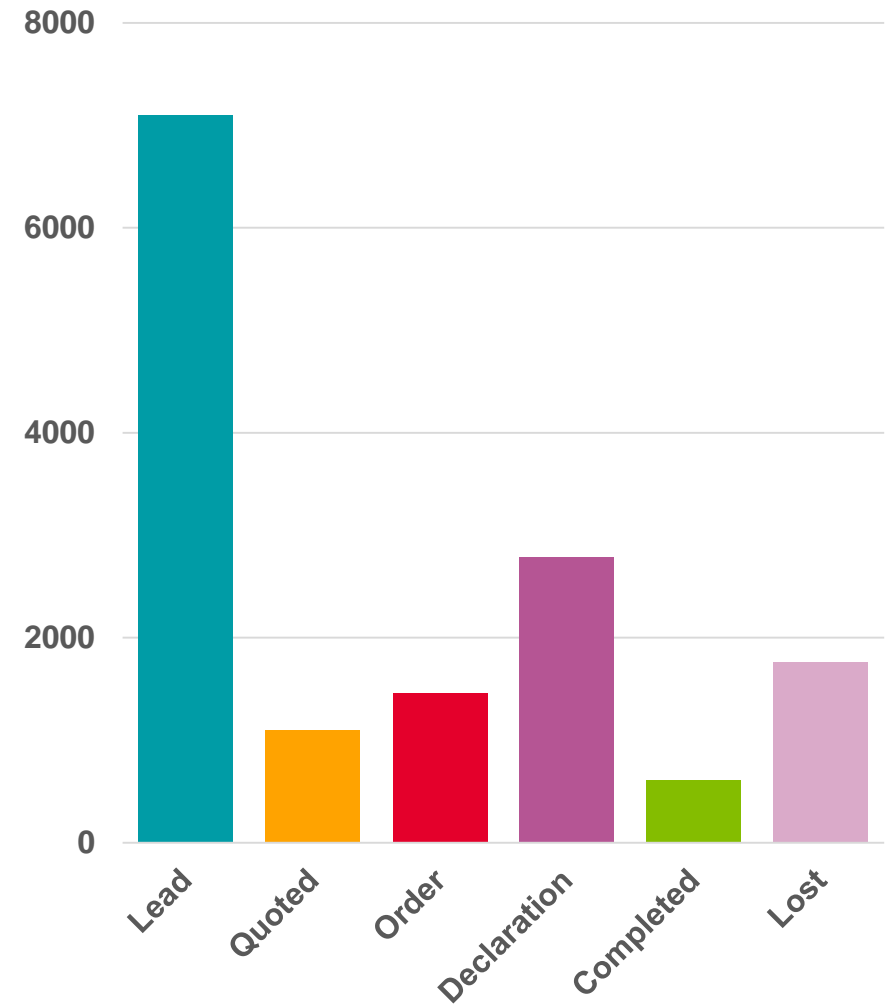


House of Lords, Science and Technology Select Committee Report

“Off-site manufacture for construction: Building for change” 19 July 2018



LHC - A tried and tested Framework 2014 - 2019



Working Together

- **Early Engagement**
 - Appoint supply chain at start of project
 - Involve in feasibility of project
 - Work on designs with architect
 - Consider two stage – Pre Service Contract Agreement (PSCA)
- **Infill/Garage sites**
- **FAC-1**
 - Aggregated Demand**
 - Design
 - Employers requirements
 - Contract
- **Working Group on Standard House Design**



Working Together - Pilot Projects

- Pilot Project On Garage Site
- 2 Bungalows
- 3 Houses
- 4 Flats
- 18 Month project

- Expensive and Slow

Two Stage Tender - Working Together

Single Stage

- Client and Consultant Assumptions
 - Design
 - Cost
 - Risk
 - Programme
- Assumptions are theoretical

Two Stage

- Client can review and test
 - Design
 - Cost
 - Risk
 - Programme
- Working in conjunction With Tier 1 and tier 2/3 Subcontractors

Two Stage Open Book Tendering - Cost Competition



PROJECT PROCUREMENT AND DELIVERY GUIDANCE

Using Two Stage Open Book
and Supply Chain Collaboration

- Selection of Tier 1 Contractor Pre Start
 - Evaluation fees
 - Fees
 - Overhead
 - Profit
 - Other elements appropriate to test costing s to site
- Quality
 - Specific project management
 - Previous experience
- Cost Consultant
 - Work at part of design team
 - Under stand supplier costs
 - Monitor with in Client budget
 - Contribute to ideas for cost saving

 - Fixed or Target Price
 - Target price share of pain or gain for over runs or savings

JCT PSCA - Working Together

The agreement covers the period from the submission of first stage tenders up to the submission of a definitive second stage tender and entry into a main contract for the construction phase.



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PCSA 2016 Page i

Partner issues

Design

Employers requirements

Contract

'WHY IS THE TIME NOW RIGHT FOR OFFSITE' in an increasingly challenging housing market?

CASE STUDY



ABSTRACT

Despite evidence of success in other countries with similar challenges and characteristics to the UK, the last 10 years has seen only a moderate increase in factory-built homes. One reason for this is scepticism about whether they provide good value for money. So, is there a business case for factory-built homes from the perspective of a landlord owning and maintaining homes in the UK? A business case that would provide proof these homes offer:

- > Lower whole life cycle costs benefit for customers and the landlord, with lower build as well as ownership and management costs.
- > Improvements in standards and build quality, compared to traditional methods of construction.
- > An alternative solution to existing shortages in skilled labour and house builders in some areas.
- > Reduced build times, with efficiencies in processes, adopting modern digital technologies, as well as a viable, scalable and sustainable production lines.
- > Improved levels of environmental sustainability in regard to lowering energy use, waste and CO2 and better use of sustainable materials.
- > Socially sustainable housing and neighbourhoods not just 'thrown up' to meet immediate needs.

Steps to Aggregation - Working Together



LHC FAC1
Framework Alliance Contract
 between
 LHC as the central purchasing body
 and
 the suppliers appointed to LHC Frameworks
 and
 the contracting authorities calling off projects

This document should be read in conjunction with the FAC1 in published form* for cross reference.
 *Copies of the FAC1 in published form can be purchased at a discount from ACA, by emailing office@acanh3cts.co.uk and quoting discount code reference **LHCFAC2516102017**

Key Terminology		
Party	Term in FAC-1 amendments (pp2-5)	Term in Schedules (pp6-32)
LHC / Central Purchasing Body	The Client & Alliance Manager	LHC
Buyer / Contracting Authority	The Additional Client	LHC Client
Supplier / Economic Operator	The Alliance Member	Appointed Company

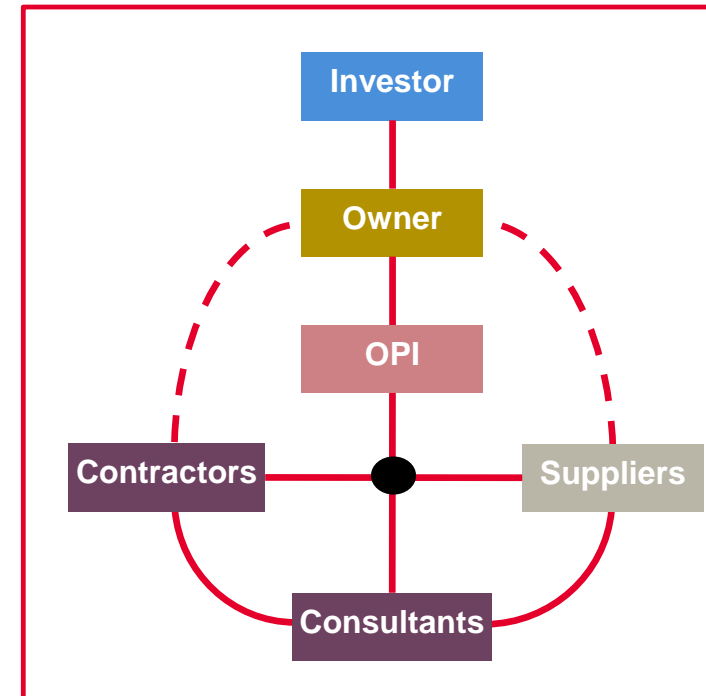
Key sections		
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Page 22	Schedule 5 Part 6	Template Project Contracts & Conditions
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Page 29	Schedule 5 Part 8	Service Level Requirements (for Appointed Companies)

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Delivering MMC the CPC Way - Working Together

Collaborate
Innovate
Integrate

Off-Site Project Integrator (OPI)



NH1 - History

- NH1 Started 2014
- 4,000 units across UK

NH1 Framework 2014



Workstream 1
Volumetric



Workstream 2
Panellized

Our onsite offering 2015



Workstream 1
Volumetric

Workstream 2
Panellized

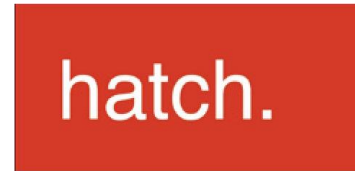


Workstream 3
Construction services (Launched Nov 2015)

13 firms met our stringent assessment



NH2 - Appointed Companies 2019



NH2 - Framework Details Scope

1

Covers any type of residential building

- House
- Care homes
- Flats/apartments
- Student accommodation
- Adaptive pods/room on the roof



2

Land Purchase



3

Any local authority, housing association or other public body can use framework

LHC.gov.uk/24



4

Types of works

New build



5

Contracts

- FAC-1 For framework management
- Any form of contract can be used



NH2 - Off Site Housing - MMC

Workstream 1

Volumetric Cat 1

Workstream 2

Panelised Systems CAT 2

Workstream 3

High Rise Systems – CAT 1 or CAT 2

Workstream 4

Low rise – CAT 1 or CAT 2

NH2 Workstream 1 - Volumetric CAT 1



Option 1 – Housing



Option 2 – Apartments



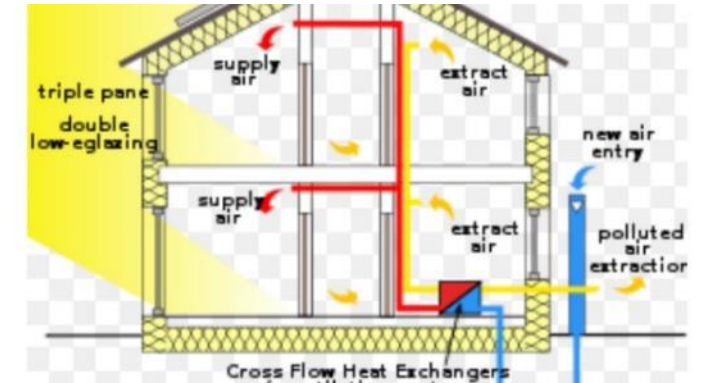
Option 3 – Adaptive Pods



Option 4 – Room on Roof



Option 5 – Temporary



Option 6 – Low energy

NH2 Workstream 2 - Panelised CAT 2



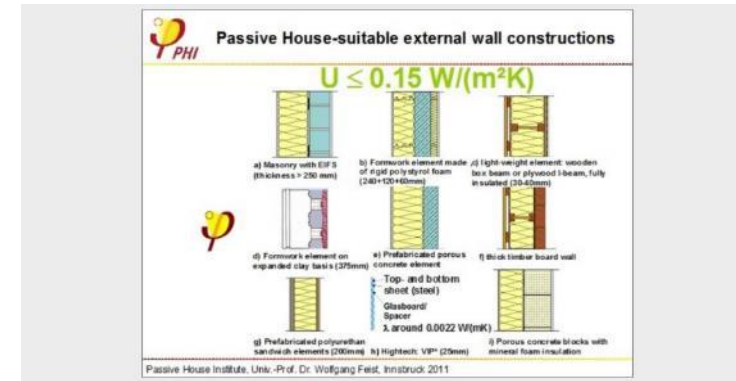
Option 1 – Open Panel (OP) Cat 2a



Option 2 – Insulated Panels(IP) Cat 2b



Option 3 – Closed Panel(CP) Cat 2c



Option 4 – Low Energy (LE) Cat 2c

NH2 Workstream 3 - Hi-Rise CAT 1/2

Option 1

- Low rise Housing 25+ Units (LR)

Option 2

- 5 to 18m Apartments England (5-18)

Option 3

- 18m to 30m England (18-30)



NH2 Covers CAT 1/2



Option 1 – Housing /Apartments (H/A)



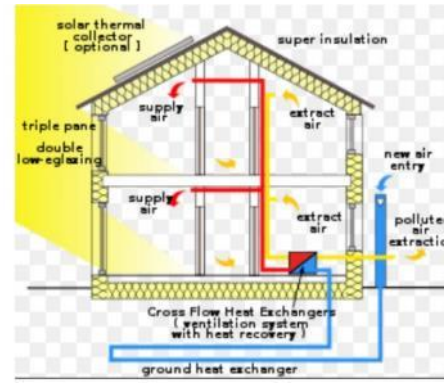
Option 2 – Adaptive Pods (AP)



Option 3 – Room on Roof (RoR)



Option 4 – Mixed development (MD)



Option 5 – Low Energy (LE)

Summary

Drivers for MMC

Skills Shortage

Performance Gap

Building regulations 2020

Future Homes Standard 2025

Zero Carbon 2050



MMC Durability / Adaptability / Maintenance





LHC

Thank You!