

# Legal & General

## Modular Homes





# Our Vision

Making the housing market fairer for all

We make high-quality modular homes at speed and at scale by taking a fresh approach to design, using modern manufacturing techniques and nurturing multi-talented teams.

We buy and develop land, or partner with local authorities, councils and housing associations, building long-term relationships to make the housing market fairer for all.

Our homes are comfortable to live in and energy efficient. The repeatability and precision of automotive and manufacturing techniques helps us lead the way in setting a new standard for the housebuilding industry.

 **550,000**  
sqft factory

 **3,500**  
homes per year



# Our Full Delivery Capability



Plan



Design



Produce



Install



Sales

Developing

Master  
Planning

3D Design  
In-house design team who  
can work in collaboration  
with your chosen  
consultants

Precision  
manufacturing

Building in  
controlled  
conditions

Groundworks &  
Infrastructure

Installing on-  
site

Sales & After  
care





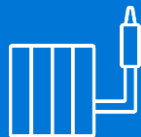
### Space Standards

Our current design standards exceed National Space Standards, thus providing a good level of occupant density and comfort



### Acoustics

We ensure a good level of acoustic performance within the building and between party walls



### Thermal Comfort

We assess all of our schemes to ensure that a comfortable thermal environment will be achieved



### Indoor Air Quality

Our specification minimises the use of materials that will impact on indoor air quality



### Daylighting

Our homes have been designed to promote daylighting

## EPC A

Our homes can achieve an EPC Rating of A – and provide improvement over the performance levels set out in Part L of the Building Regulations



## The Malden

- Two-bedroom, terraced or semi-detached house
- Two spacious double bedrooms
- Large, modern family bathroom and downstairs WC
- Total - Sq MTR / Sq FT 81m2 | 880ft2



## The Enfield

- Three-bedroom, terraced or semi-detached house
- Two spacious double bedrooms and third single bedroom
- Large, modern family bathroom and downstairs WC
- Total - Sq MTR / Sq FT 105m2 | 1132ft2











# Apartments

- Flexible apartments suitable for up to four occupants.
- Available in one- and two-bedroom layouts
- Option of a master en-suite in the alternative two-bedroom layout.
- 1 bed: Total - Sq MTR / Sq FT 54m<sup>2</sup> | 591ft<sup>2</sup>
- 2 bed: Total - Sq MTR / Sq FT 73m<sup>2</sup> | 795ft<sup>2</sup>







# Production



# Production

We assemble our homes in controlled conditions

Our factory can produce around 3,500 per year at its peak. We have quality checkpoints at every stage of the process to make sure our homes conform to our design and building controls.

Once our structure is finished, we then insulate it and fit:

- internal walls and floor coverings
- surface finishes
- plumbing and sanitary ware
- electrical circuits and sockets
- kitchen and bathroom units and fittings.



# Quality Management System

L&G Modular Homes comply with the requirements of ISO9001:2015 & BOPAS as inputs into the QMS. In order to maintain these standards, periodic 3<sup>rd</sup> Party Audits are conducted by BSI (for ISO9001) & Lloyds Register (BOPAS).





# 5 Stages of Built in Quality



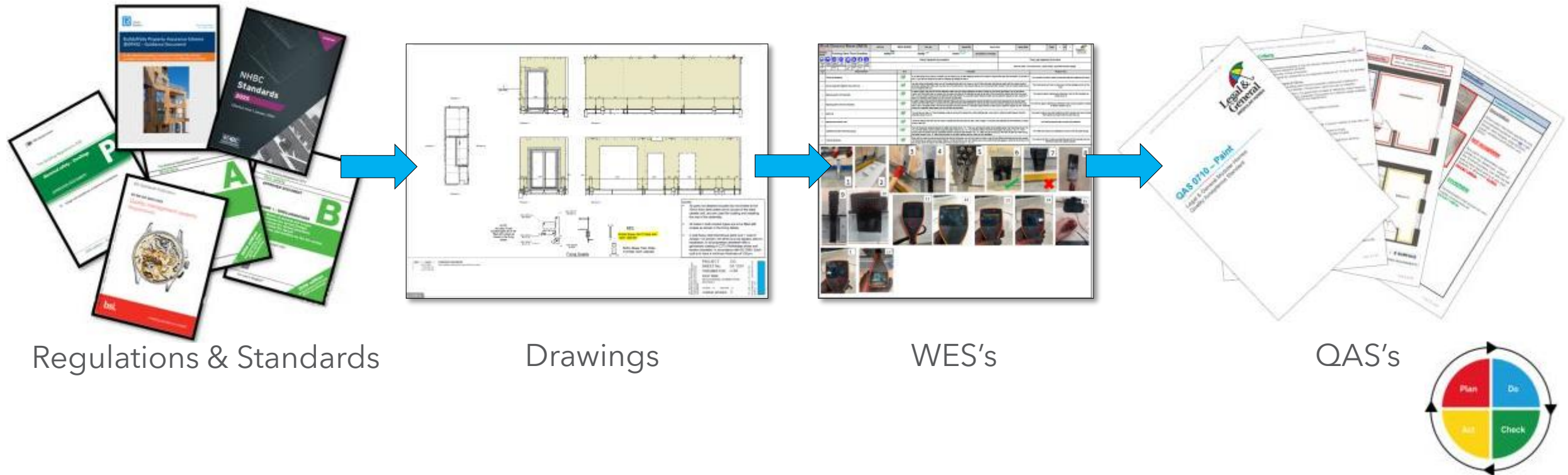
1. Design FMEA identifies all potential risks and failure modes
2. Design characteristics and specifications formally approved and flowed down
3. Critical to Quality requirements (CTQ's) define and shape clear acceptance standards as the flow down of the design requirements
4. Process FMEA ensures that the build process is adequately defined with identification of all potential process failure modes
5. Control plans through build books define build process validation methods that ensure the design specifications and characteristics are met, closing the loop on DFMEA



# Design Characteristics

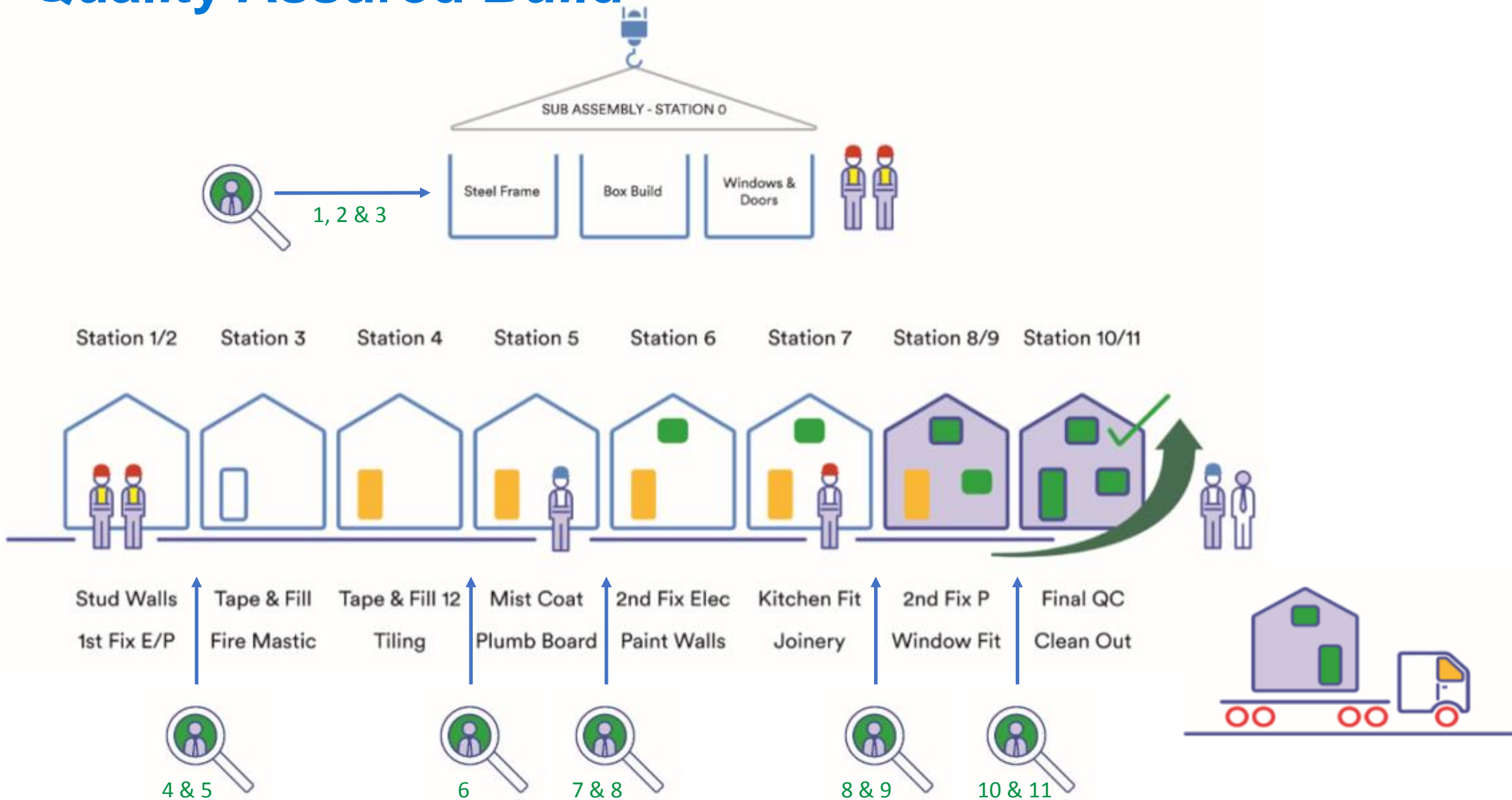
LGMH ensure that design characteristics and specifications derived from the Building Regulations, NHBC Standards, BOPAS & ISO Standards are documented and flowed down through the use of:

- Drawings
- Work Instructions (WES's)
- Quality Acceptance Standards (QAS)





# Quality Assured Build



# Build Book & Inspection Records

In process inspections occur at various stages of product manufacture by an independent team of Quality Inspectors.

As the build progresses, records of these inspections are maintained at every stage in Module Inspection Record books.

Legal & General Modular Homes  
Standard Industrial Estate  
S23 8PT

Legal & General  
MODULAR HOMES

Form

Module Type

Production

Quality

Moulding Used Equipment

Calibrated? No

Date Calibrated

Module Type

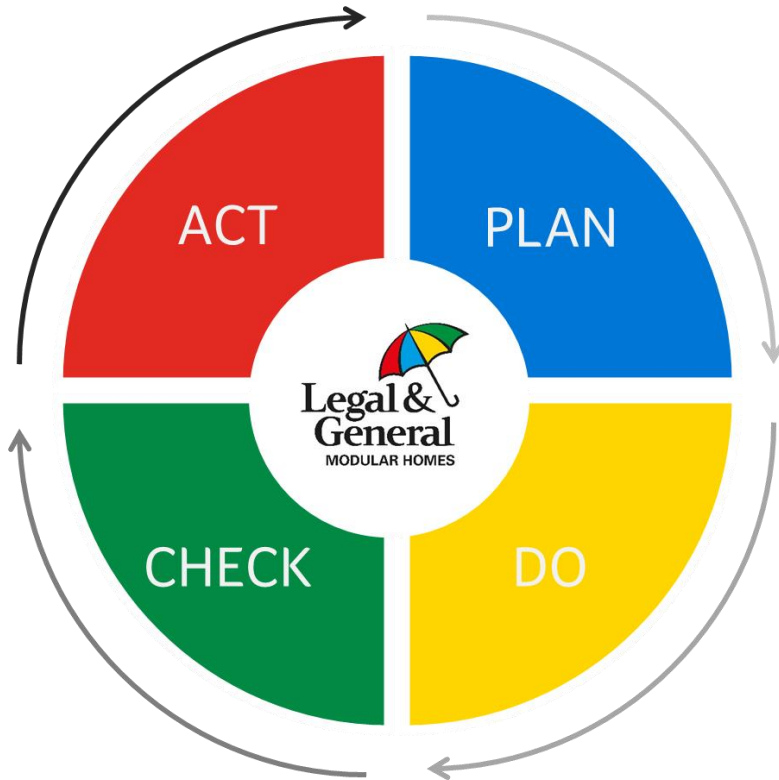
GFA GPB CP Option Pack Enfield IFA Malden

THIS INSPECTION RECORD MUST STAY WITH THE MODULE AT ALL TIMES



# Structured Approach to Problem solving

## Level One: Frontline Ops - 4 step



All Frontline Production staff will use the above PDCA model to identify and correct defects in 'real-time'.

## Level Two: RCA Teams - 6 step

### 1. DEFINE THE PROBLEM

Clearly define the problem: the context, background and symptoms of the issue.  
Effective Problem Statements.  
Success Criteria.

### 6. STANDARDISE & CLOSE

Measure and assess the effectiveness of our implemented solution.  
Control Plan.  
SPC.

### 5. IMPLEMENT SOLUTIONS

Design and select possible solution or solutions.  
Solution Selection.  
Force Field Analysis.  
Poka Yoke.



### 2. CONTAINMENT

Assess risk.  
Form Effective Teams.  
Create Communication Plan.

### 3. INVESTIGATE CAUSES

Investigate and uncover causes that contribute to the problem: "Why is this happening?"  
Data collection.  
Process Mapping.

### 4. ROOT CAUSE ANALYSIS

Establish the Root Cause that lies at the heart of the problem.  
Brainstorm.  
Cause and Effect Diagrams.  
5 Whys.

Representatives from Quality, Production and ME will use the above six stage approach to Root Cause Problem Solving to eliminate repeat issues.

# Construction

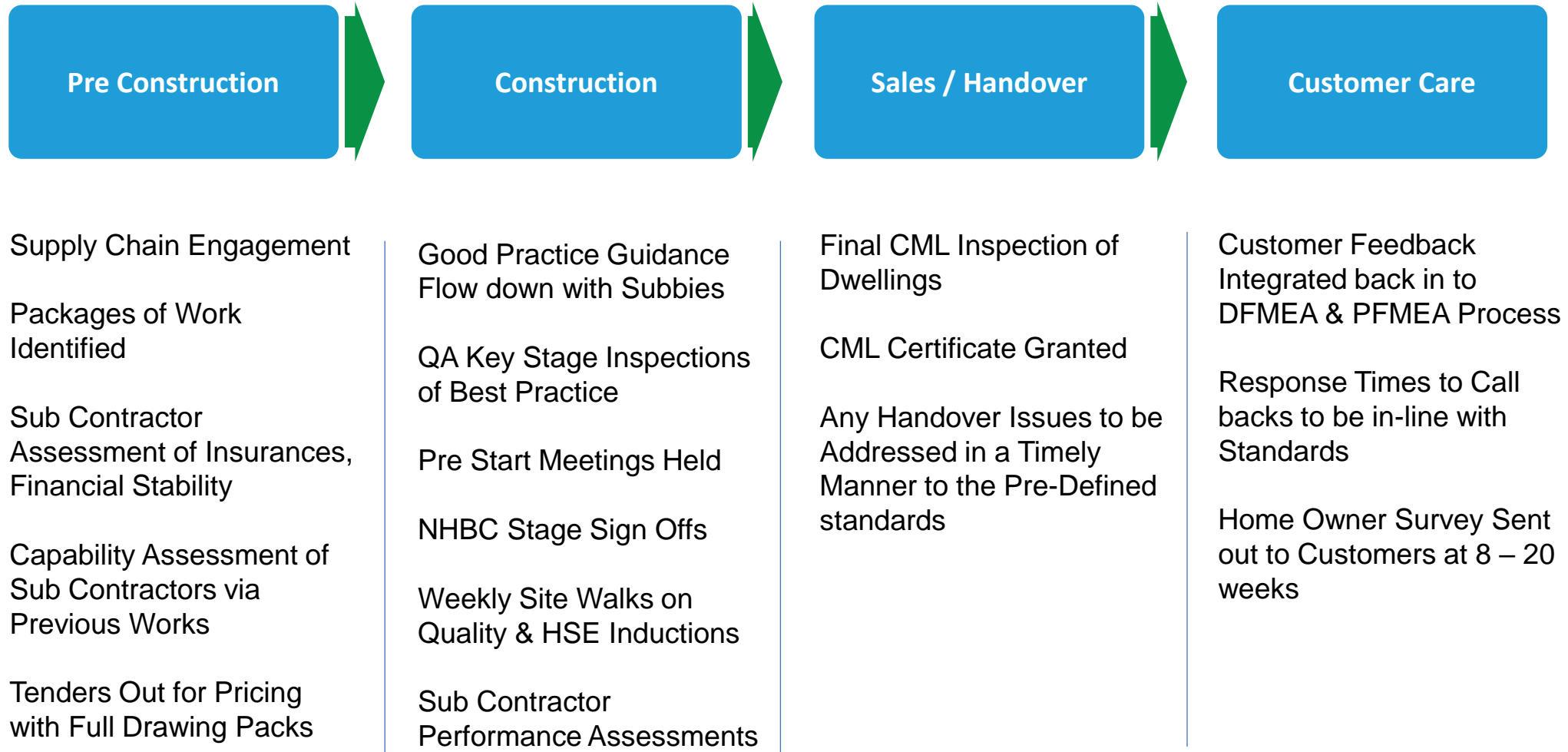


# Construction Delivery

1. Foundations
2. Install Connections
3. Facade Treatment
4. Insulation / Tie to Modules
5. Roof
6. External Works

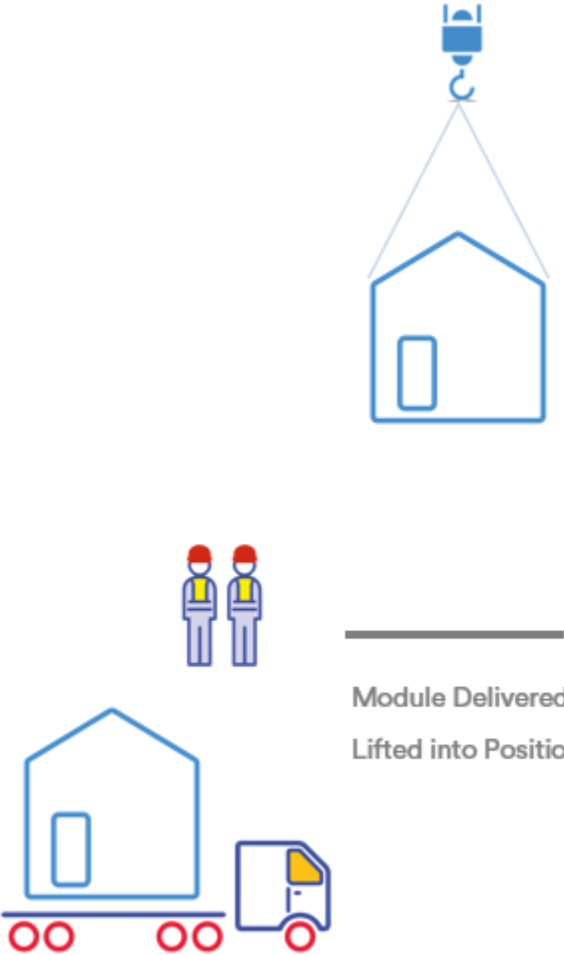
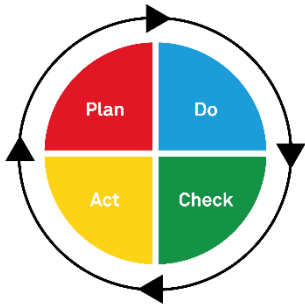


# MMC Construction Phases





# NHBC Stage Sign Off



Module Delivered to Site  
Lifted into Position

## Stage 1 Foundations



Ground Prep  
Excavation  
Piling  
Form work  
Concrete

## Stage 2 Substructure & Drainage



Walls/Columns  
Water proofing  
Ventilation  
Services  
Ground Floor  
Visual Drainage  
Gas

## Stage 3 Superstructure



Structural Frame  
Loadbearing Walls  
Cavities / Insulation  
Soundproofing  
Cavity Trays  
Floor Structure  
Lintels / Beams  
Fire Stopping

## Stage 4 Roofs



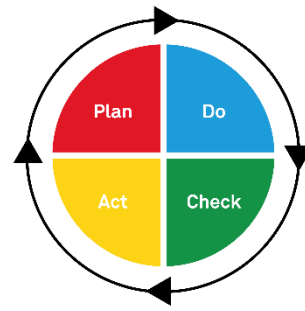
Framing  
Pitched Roof  
Flat Roof  
Underfelt /Insulation  
Flashings  
Gutters & Downpipes  
Fire Stopping

## CML Inspection



External Works  
Brickworks  
Building Regulations  
Gas Certification  
Electrical Certification  
Boiler Test  
Drainage Test

# MMC Key Stage Inspections



After a stage of works has been completed the subcontractor supervisor has to inspect to the quality acceptance standards and that the work area has been cleaned.



Once this has been completed, the Site Manager shall carry out a joint formal inspection to laid down quality acceptance criteria. When all works meet the acceptance standards set out by LGMH the works are signed off for payment.

Key Stage Inspections;

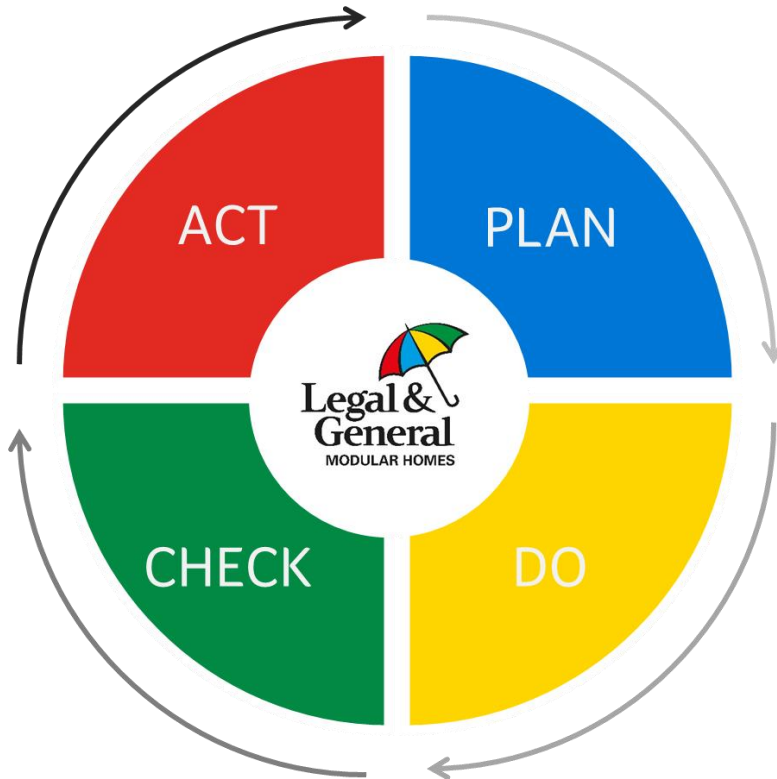
- ✓ **Foundations**
- ✓ **Brickwork DPC**
- ✓ **Chamber Joist Check**
- ✓ **Main Roof Tiling**
- ✓ **Plumbers External Works**
- ✓ **Cavity Wall Insulation**
- ✓ **Drainage Test**
- ✓ **Wall / Floor Tiling**





# Structured Approach to Problem solving

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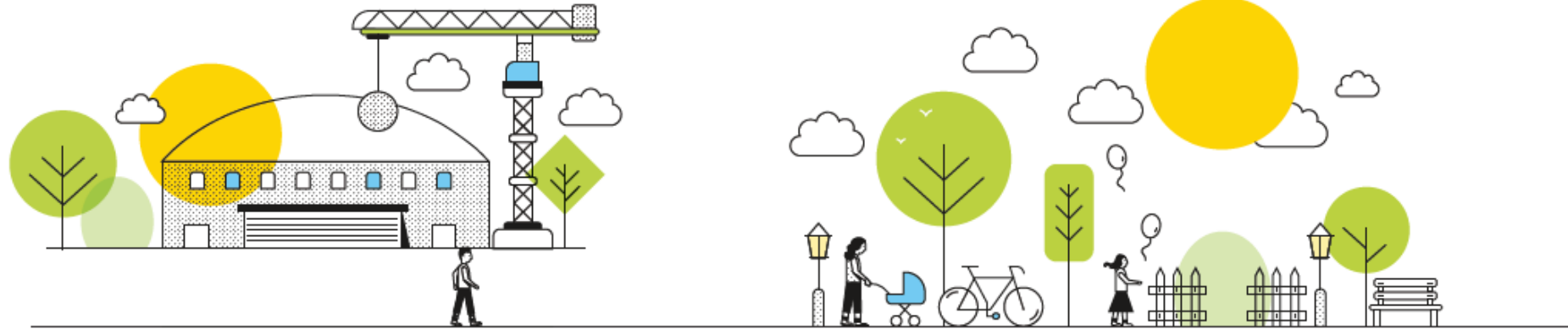
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# Sustainability






# Our Sustainability Framework



## Be Economically Useful

-  Add value to the UK Economy
-  Provide Employment
-  Invest in Skills and Knowledge
-  Integrate and Innovate
-  Supply Chain

## Reduce our Environmental Load

-  Manage our Impacts
-  Sustainable Resource Management
-  Enhance Biodiversity
-  Sustainable Transport
-  Managing Climate Change

## Deliver Social Value

-  Sustainable Communities
-  Health and Wellbeing
-  Measure Social Value
-  Great Place to Work
-  Quality Homes



# Sustainability & Net Zero

- All dwellings energy A rated
- Highly insulated
- Air source heat pump for heating and hot water
- Photo – voltaic panels
- Heat recovery ventilation with apartments
- Low energy lighting
- Reduced running costs for residents
- Reduced carbon emissions



Energy Efficiency Rating	
	Current
Very energy efficient - lower running costs	
(92 plus) <b>A</b>	▲
(81-91) <b>B</b>	
(69-80) <b>C</b>	
(55-68) <b>D</b>	
(39-54) <b>E</b>	
(21-38) <b>F</b>	
(1-20) <b>G</b>	
Not energy efficient - higher running costs	
England & Wales	
EU Directive 2002/91/EC	



# Our People



# Our People

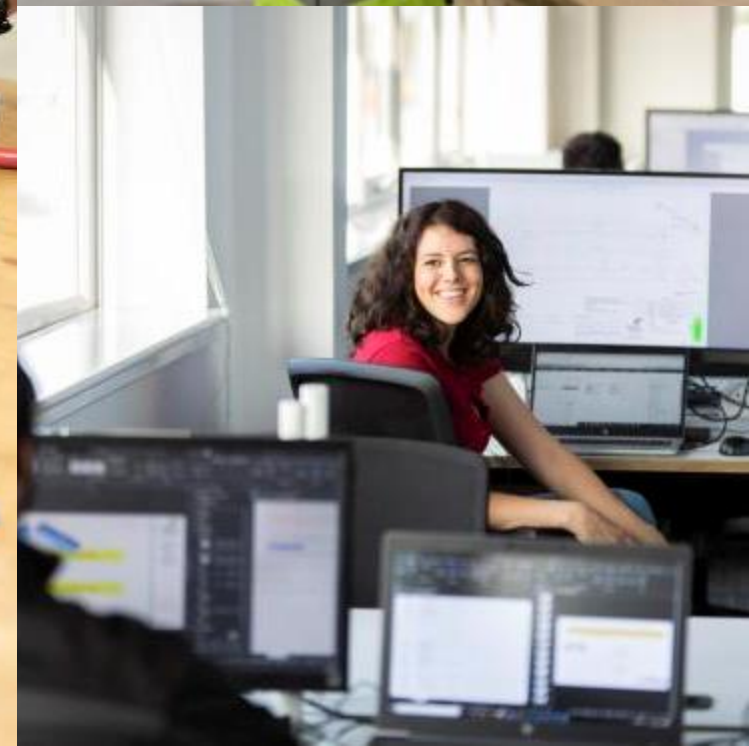
A key pillar of our disruptive approach to Modern Methods of Construction involves the development of our people, creating new capacity in an industry which has under invested in skills for some considerable time.

**401**

Team members

**8**

Apprentices





# modular **ACADEMY**



Making the housing  
market fairer for all



# Developments



# Selby

## Portholme Road



**102**  
HOMES

**323**  
MODULES







# Bristol

## Bonnington Walk



**185**  
HOMES

**560**  
MODULES









# Broadstairs



153  
HOMES  
450  
MODULES