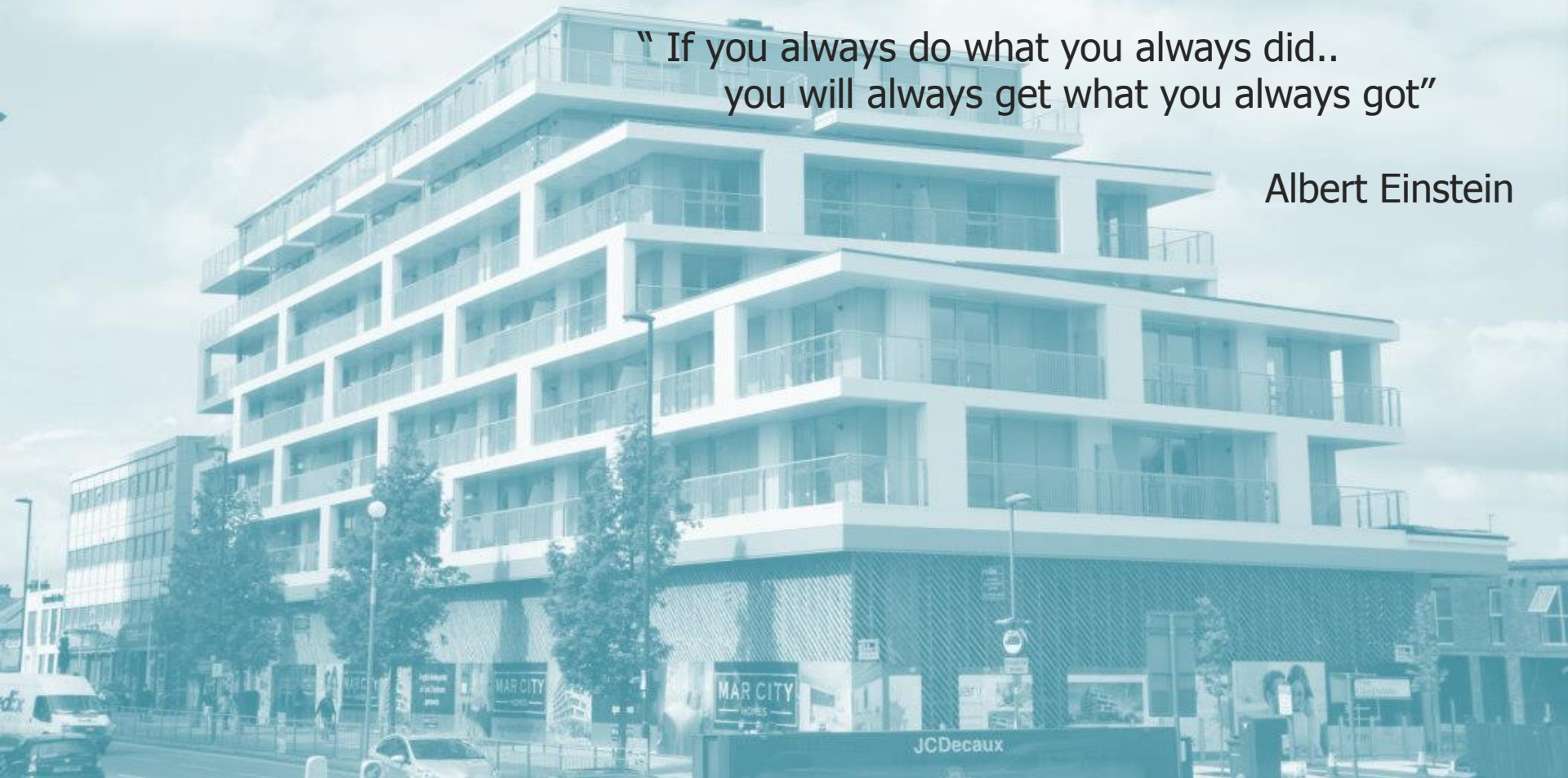


“CHALLENGES IN DELIVERING RESIDENTIAL DEVELOPMENTS WITH MODULAR CONSTRUCTION”

“ If you always do what you always did..
you will always get what you always got”

Albert Einstein



About us

- Turnover £56m (2017), 250+ staff
- 40 acre site - 330,000 ft² of production space
- Largest capacity for building permanent offsite structures in the UK
- Deliver projects across multiple sectors: (50 years experience)
 - Residential, Student Accommodation
 - Education, Military, Custodial
 - Commercial & Retail, Hotels
- Principal Contractor and specialist sub-contractor experience
- Hot rolled steel frame system – flexible & bespoke
- In-house design – BIM level 2



Key Challenges: Residential Projects



13 Townhouses – Kidbrooke



Mixed tenure - Brentford



Student Accommodation - RCM



98 apartments - Colindale



75 apartments - Croydon

Project: Green Point, Colindale

Project

- 6 storey apartment block
- Value: £5.7m

Challenge

- Traditional design with planning consent

Solution

- Translation to modular design – part successful

Challenge

- Avoid the use of scaffolding on a tight site

Solution

- Balcony design allowed built in edge protection



Project: Kidbrooke Townhouses

Project

- 13, three storey townhouses.
- Value: £2.6m
- Berkeley Homes
- Modular design
- Offsite Awards – Housing Project of the Year 2018

Challenge

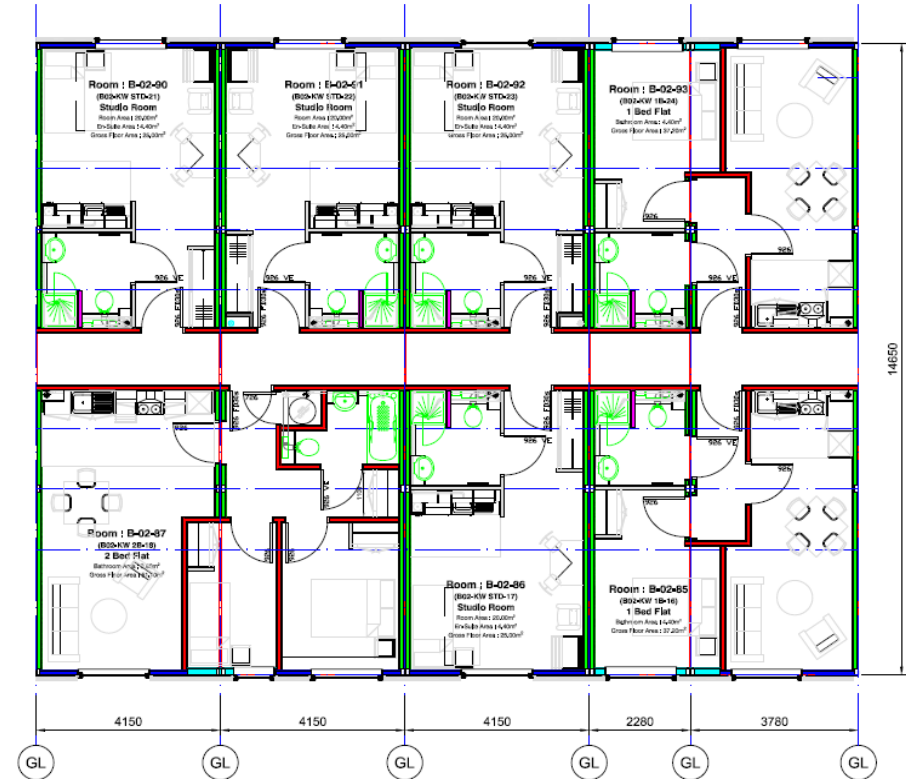
- 4.5m wide modules – wide load restrictions (access/road network)

Solution

- 3 modules (1 house) transported each night to minimise disruption



Typical modular apartment layout



Simplicity + Repetition = efficiency

Case Study: Hinkley Point Key Worker Accommodation



Largest hotel-style development in Europe for 25 years

1,496 en-suite bedrooms across 44 individual buildings
at the two locations – HPC & Bridgewater

Case Study: Hinkley Point Key Worker Accommodation

Why is this such a successful modular project?

Design

- Early involvement of modular providers
- Designed specifically for modular solution
- 926 modules – only 2 different sizes
- Long format – 2 en-suite rooms per module
- Hotel layout – rooms contained within module width
- Very efficient design = very cost effective

Procurement

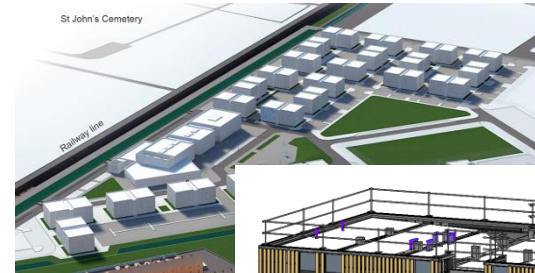
- Early decision to use modular solution
- Like for like competition
- 2 stage procurement process suited modular approach

Production

- Modular design allowed for maximised factory completion
- Roof and cladding installed in factory
- Comprehensive VE exercise involving all stakeholders

Delivery

- Open, easily accessible site
- Hands on approach from EDF (client)
- Good understanding of offsite process from main contractor
- Clear scope of works for both main contractor and modular provider – clean interface



Key challenge: External Features

Balconies

- Part of the module structure or bolted on before it is lifted into position.
- Large balconies produced in factory or using in-situ steel frame.

Windows

- Large format windows – full height glazing giving impression of curtain walling.
- Protruding window “boxes” bolted to module structure.

Modules

- Cantilevered modules creating unique building facades.
- “Special” shaped modules.



Key Challenge: Capacity – Not just production

■ Preconstruction

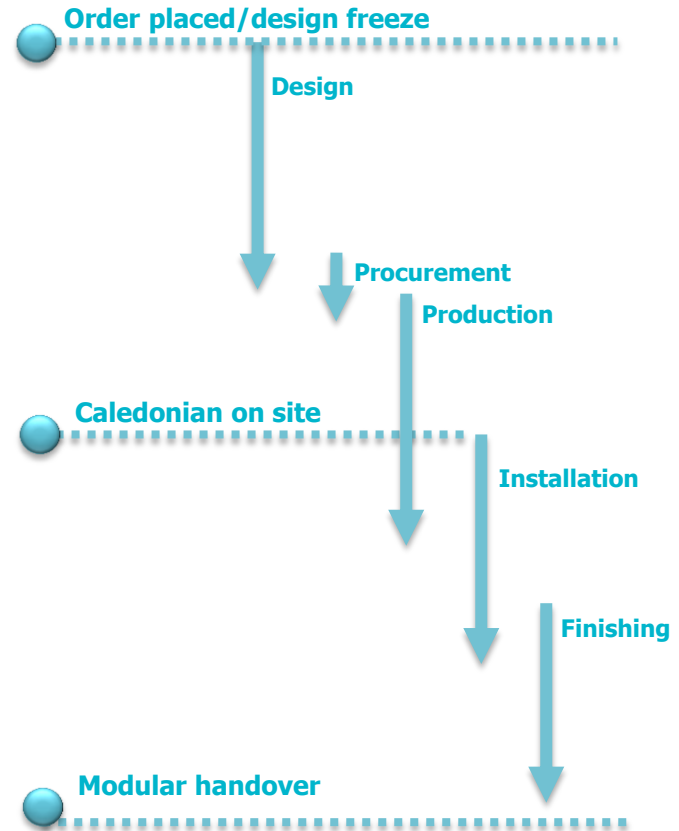
- Business Development
- Planning
- Design/technical
- Estimating
- Supply chain - Pricing
- Commercial/contractual

■ Manufacturing

- Design/technical
- Factory capacity
- Direct labour
- Supply chain – materials
- Supply chain - factory installation

■ Installation

- Transport
- Site team
- Supply chain – installation/finishing works
- After care



The way forward...

■ Education

- Early client/consultant engagement
- Principles of good modular design
- Offsite manufacturer as a “partner”
- Capital spend v Modular benefits (programme, quality etc)

■ Industry wide actions

- Awareness – Build offsite and other active organisations
- Standardisation – Without removing competition/USP
- Capacity – Share the workload / Understanding of resource limitations
- British standards for modular construction – currently being formulated

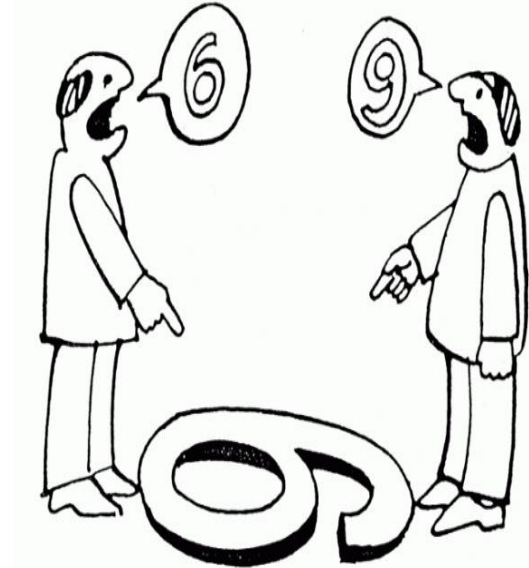
■ Competitive process

- Viability – Confirm use of offsite before formal procurement begins
- Selection of offsite delivery partner as early as possible
- PQQ – Utilise government approved accreditations, such as Constructionline, to simplify process
- ITT – “Like for like” competition – Not just a price check against traditional construction
- Emphasis on “Value” and “Quality”

Let's act now

■ OSM

- O – openness (collaboration/partnership)
- S – standardisation (simple design)
- M – major (large scale) projects



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