

Facilitating Offsite Construction through a “Platform Approach”

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hta.co.uk | [@HTADesignLLP](https://twitter.com/HTADesignLLP) | [in](https://www.instagram.com/HTADesignLLP)



We are...

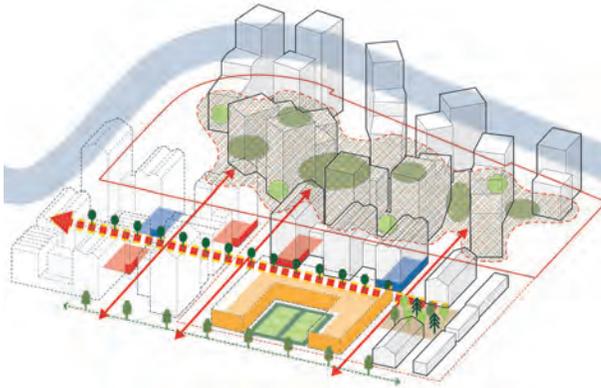


Our services

Architects & Designers



Masterplanners & Urban Designers



Landscape Architects



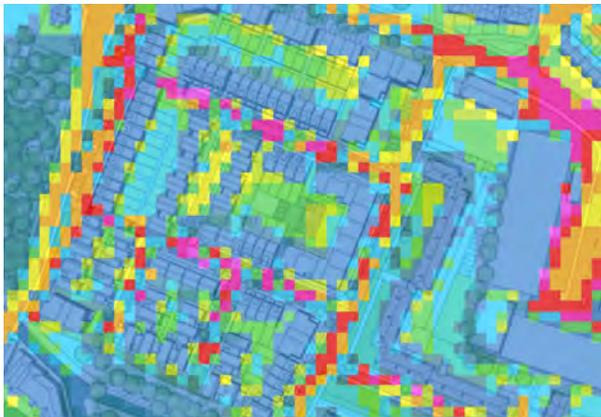
Planners & Researchers



Graphic Designers & Visualisers



Sustainability Consultants



Engagement Specialists



Interior Designers



Our stages

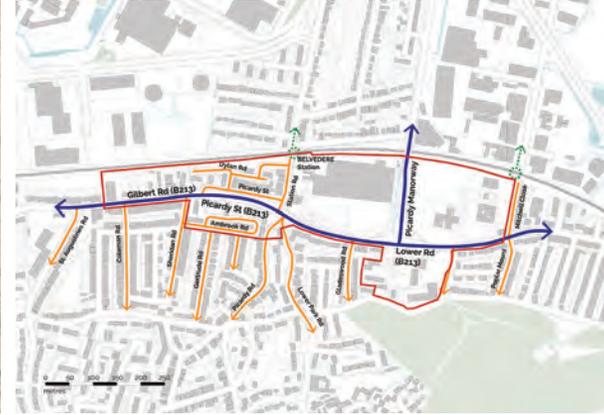
Client Relationships



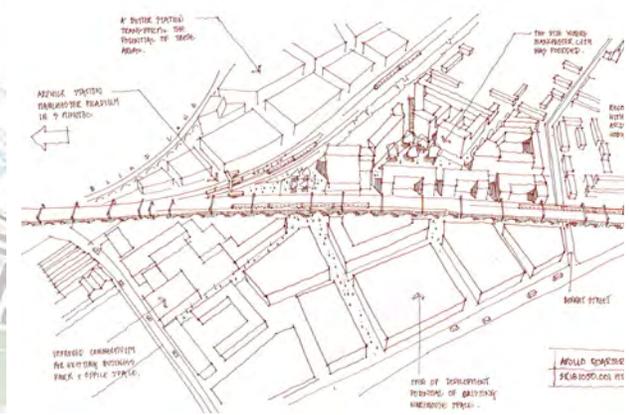
Policy Influence



Research



Concept



Approval (Planning)



Technical



Construction



Feedback (PoE)



Our housing

Rural/Masterplan



Suburban



Urban



High Rise



Build to Rent



Estate Regeneration



Sustainable/Zero Carbon



Multi-generational Living



Our awards



BD AYA

Public Realm Architects of the Year
(2019)



Offsite Awards

Architect of the Year
(2019)



Sunday Times

British Homes Reader's Choice
(2018)



AJ Architecture Award

Architecture Awards - Masterplanning
(2018)



Housebuilder

Best Regeneration Initiative
(2018)



AJ100

Client's Choice
(2019)



AJ100

Employer of the Year
(2018)



Offsite Awards

Best use of Volumetric
(2018)



Building Awards

Offsite of the Year
(2018)



Housing Design

Housing Design Award
(2018)

Why Hong Kong? Why HTA?

Why Hong Kong?

Opportunity to make a difference



- Genuine demand for high quality housing at super-density
- Existing resi sector is unproductive & failing to meet demand
- Acknowledgement that innovative design, procurement & construction methods are needed

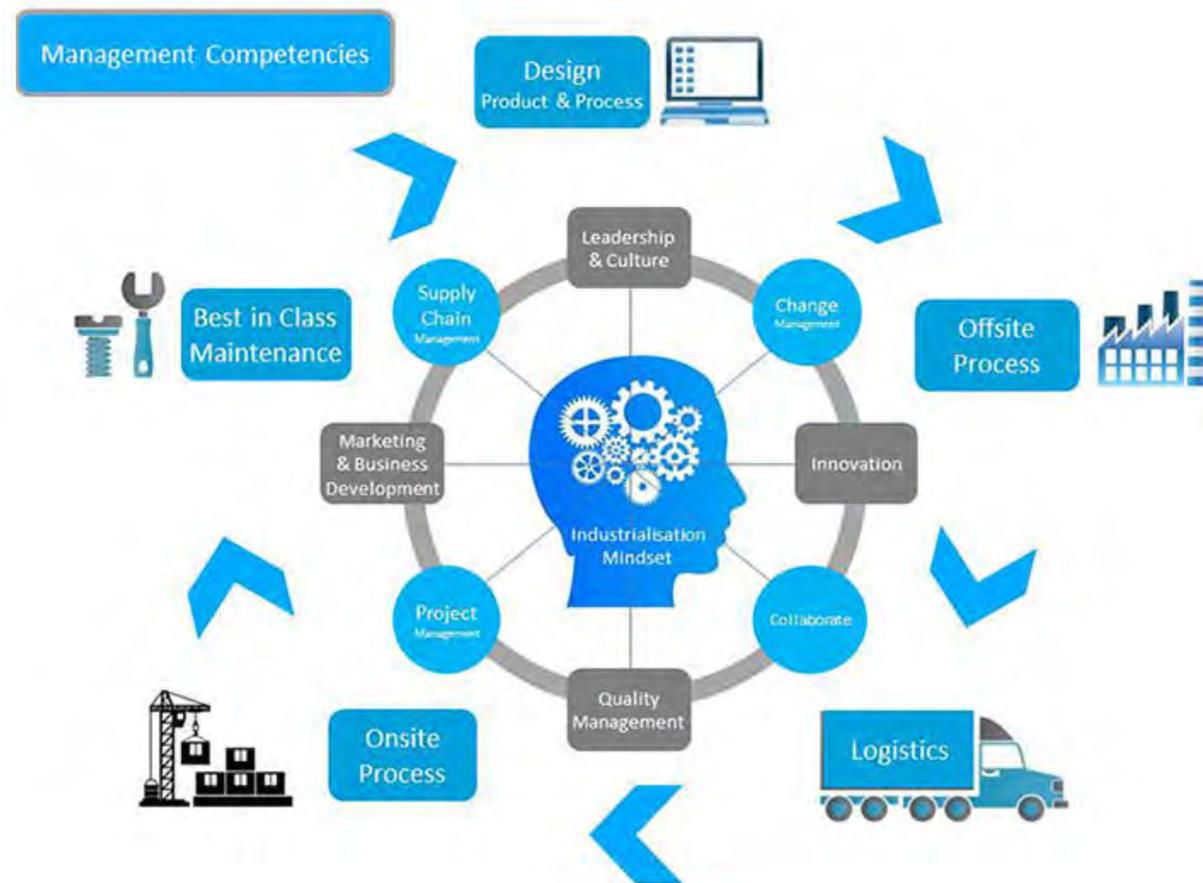
Why HTA?

Reasons for our interest in the Hong Kong scene



- HTA's MiC experience highly relevant to HK market
- HTA are housing people (50 years in residential place-making & creating successful neighbourhoods)
- HTA enthusiastic to promote cross fertilisation between UK & HK MiC markets

DfMA Approach



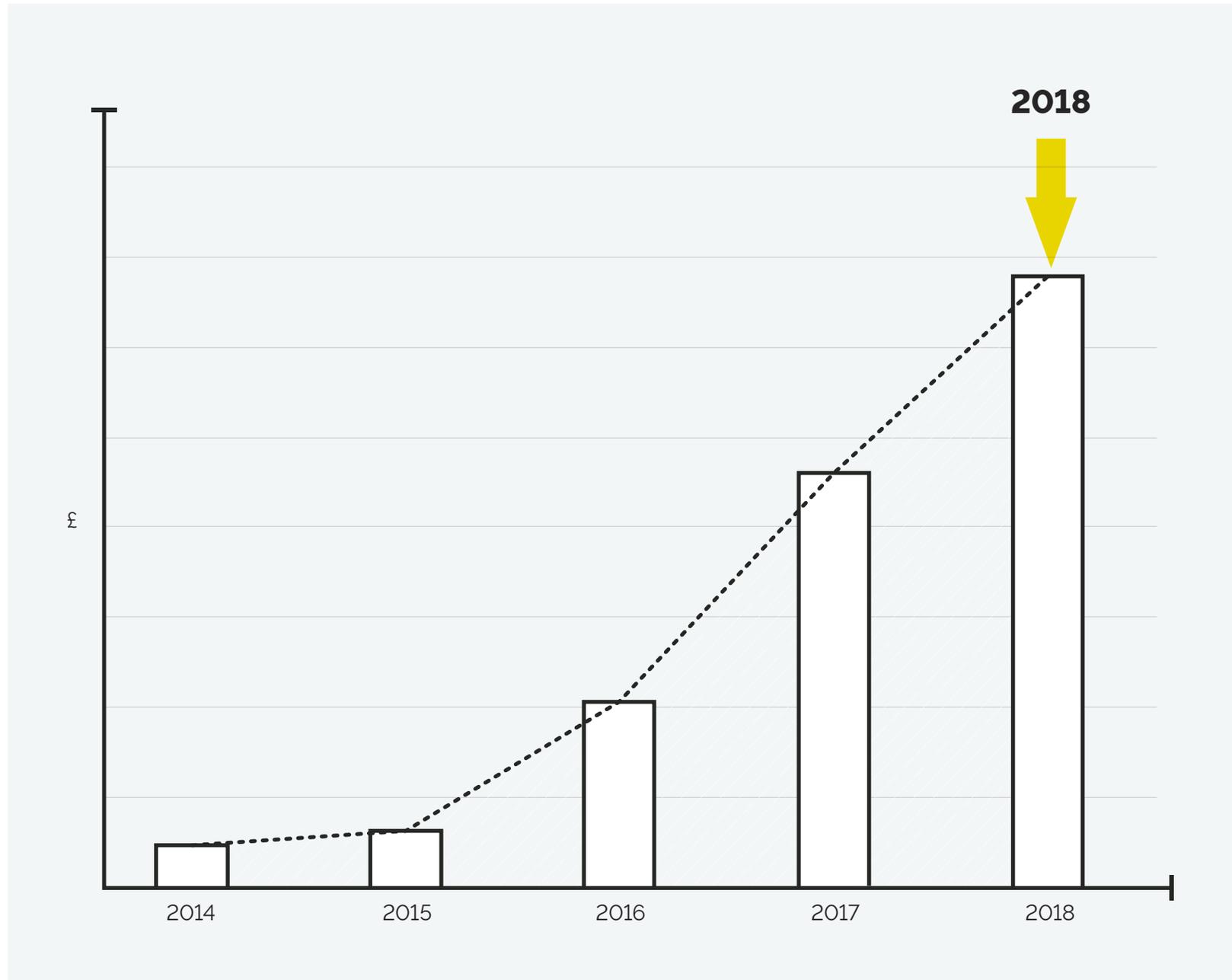
Building the business

HTA Case Study

Annual Offsite Projects

(2014-2018 actual)

- HTA fee income related to offsite has grown by more than **2000%** in the last 5 years
- Offsite now accounts for approximately **one third** of our workload



Understanding the Benefits

Traditional vs offsite design

1

Increased safety



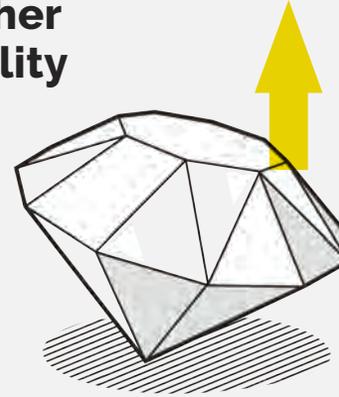
2

Inspiring careers



3

Higher quality



4

Commercial partnerships



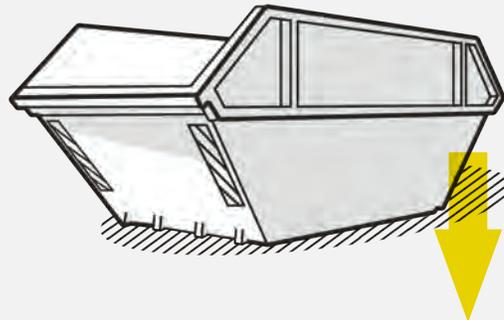
5

Speed & efficiency



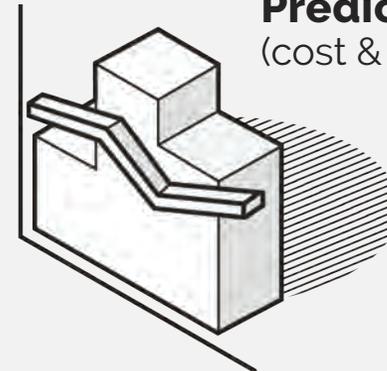
6

Reduced waste



7

Predictability
(cost & performance)



Innovation & Risks

The Advantages

- Quicker construction
- Quicker return on investment
- Less disruption
- Higher quality, fewer defects

The Considerations

- Needs early engagement with manufacturer
- Designer needs to understand the discipline of DfMA
- Needs timely decision-making from client

Programme Benefits

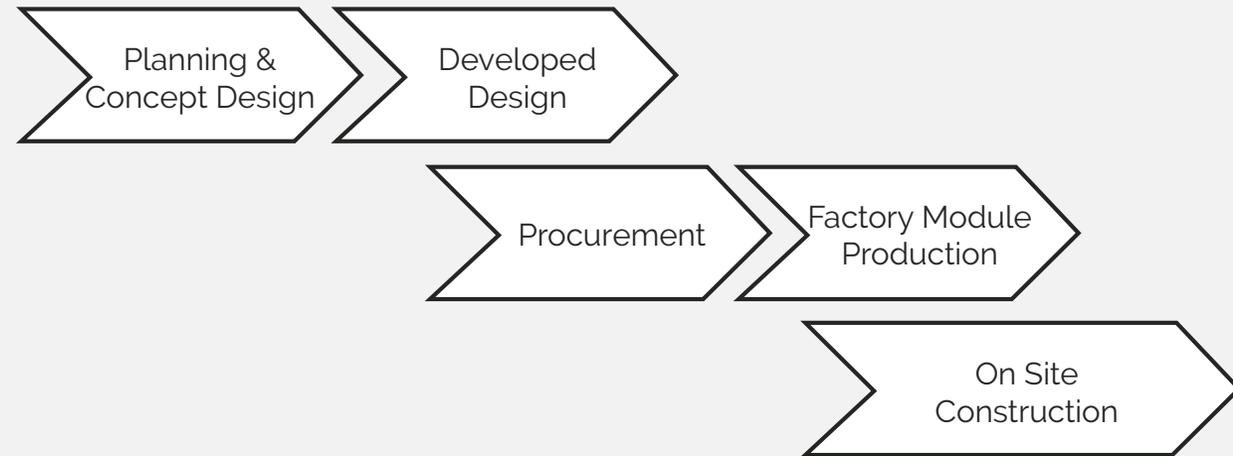
Potential savings of up to 50% on construction programme

- Decision to proceed with Modular needs to be made early to fix design for manufacture and book factory slot
- Subsequent design changes can have significant cost & programme impacts

Traditional Construction

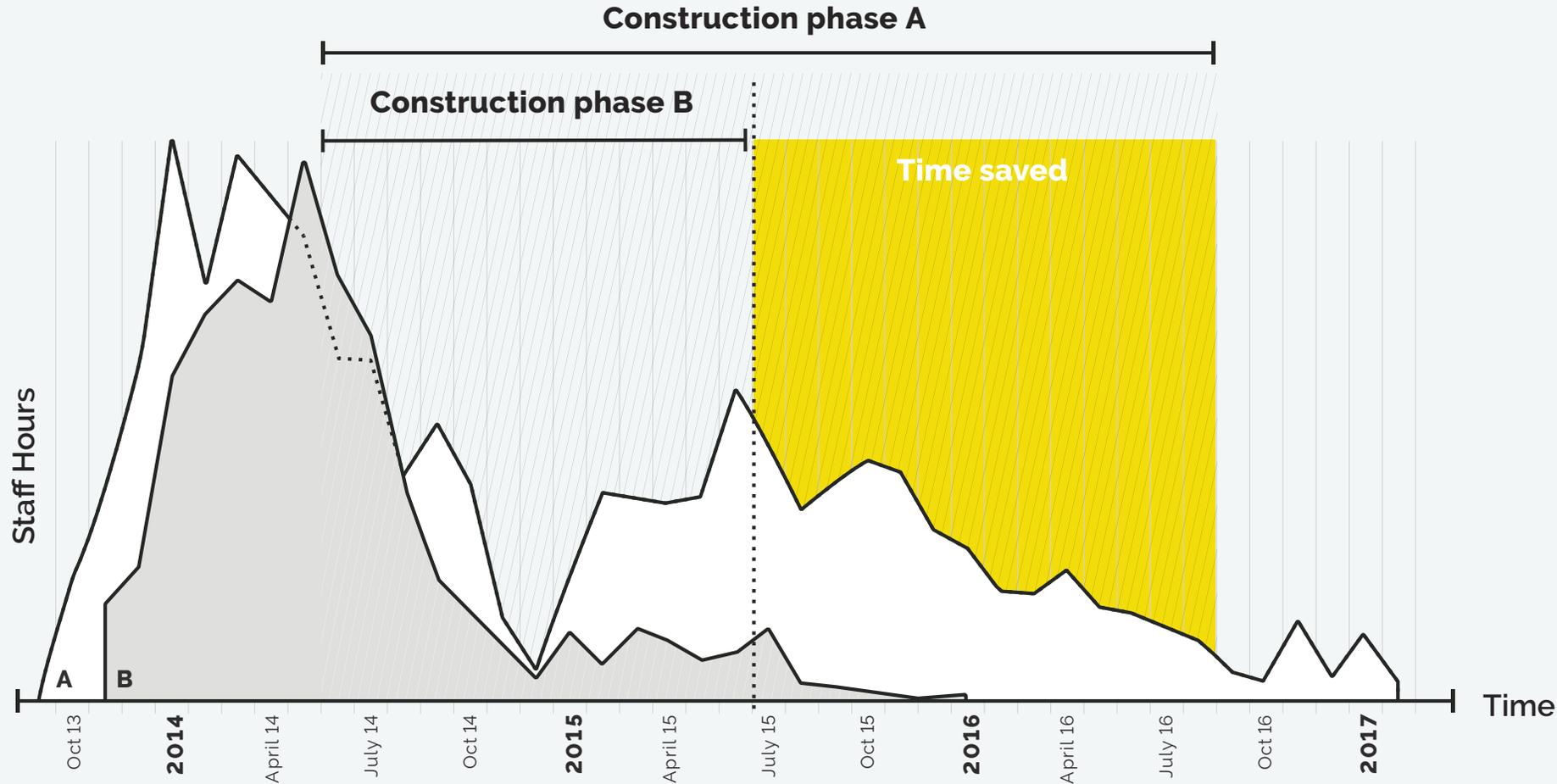


Modular Construction



Measurable Benefits

Traditional vs offsite design



	A	B
	Traditional project	Felda House Wembley
	A	B
Hours	14,187	6,903
Homes	188	450
M ²	20,282	14,678
M ² /Hours Ratio	0.97	1.66

10 Structural Barriers to MMC

1



Our basic language and terminology is unclear

2



Lack of demand and supplyside collaboration & aggregation

3



Political ideology restricting tenure diversity and programmatic delivery

4



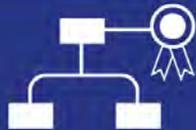
Vested interests, delivery & procurement models fail to promote process integration

5



Lack of latest MMC product evidence & data

6



Skills training & qualification regimes still hard wired to business as usual

7



Current building regulations & warranty market not aligned to the future

8



Development & asset finance market reticent to securitise

9



Lack of system interoperability & generic commonality

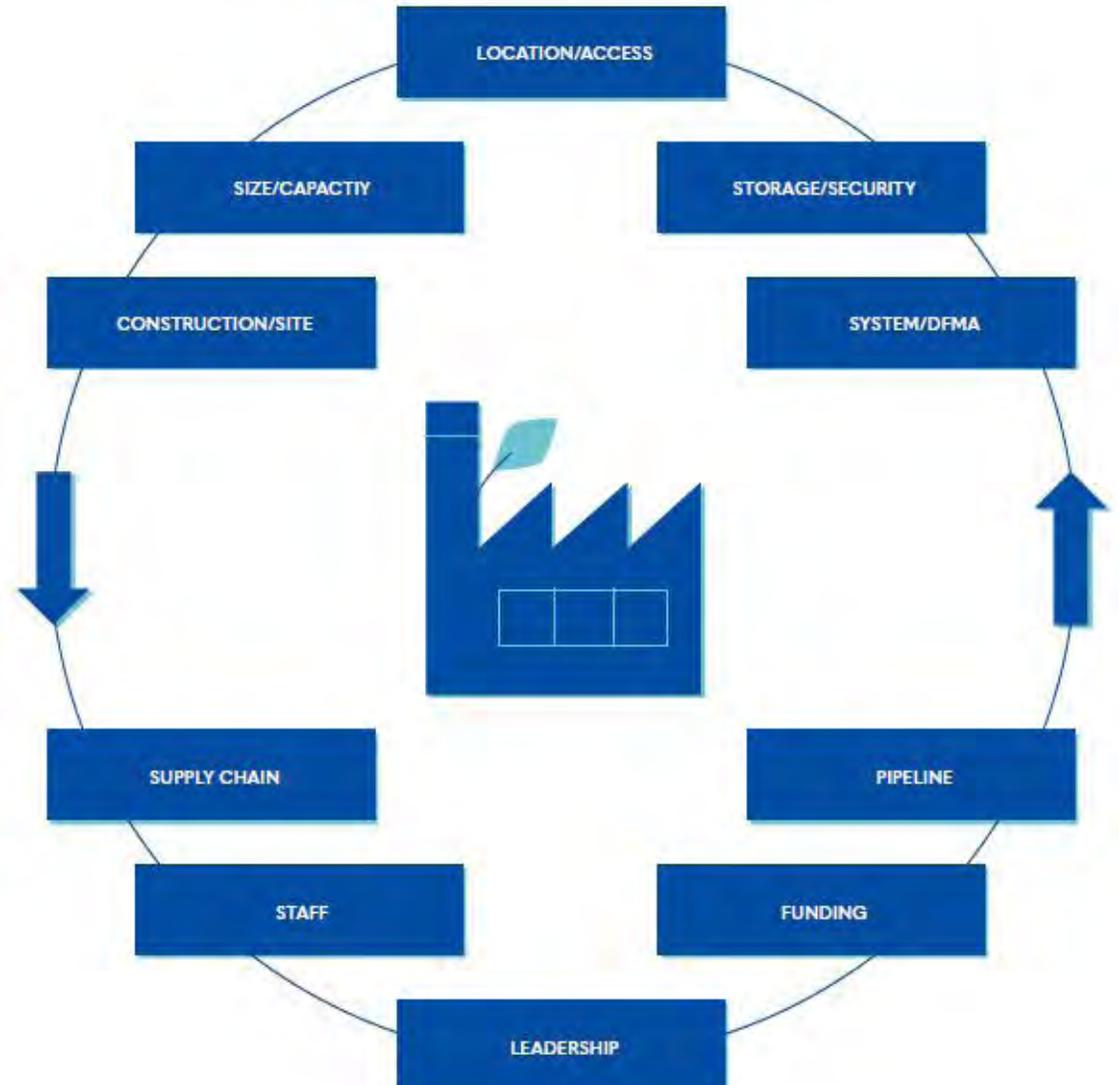
10



Planners & planning system not aligned to accelerated delivery opportunity

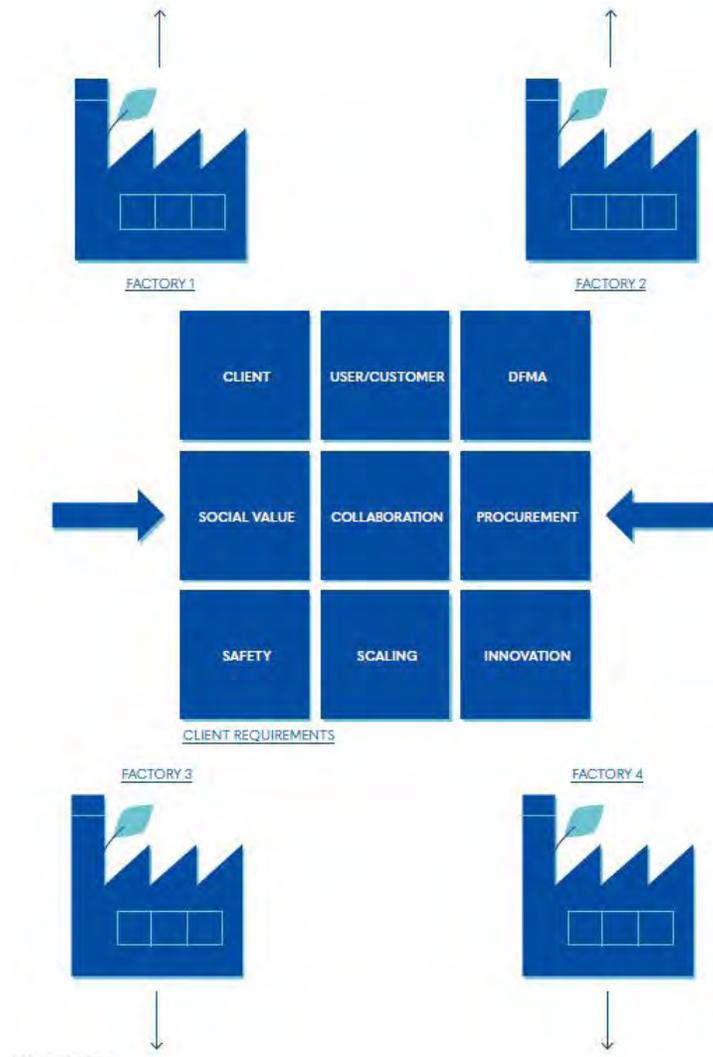
Factory Capacity

- Most manufactures quoted 250-500 units per annum needed to justify a factory
- Large factories can produce 1500-2000 units
- Multiple clients aggregating pipeline using common typologies (not appearance) is the way forward



Aggregation of Demand

Standardisation



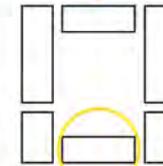
Masterplan

1:5000



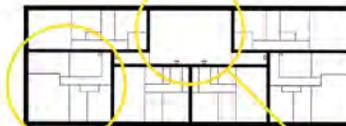
Block Typology

1:1000



Block Layout

1:500



Core and Flat Types

1:500



Components

1:100



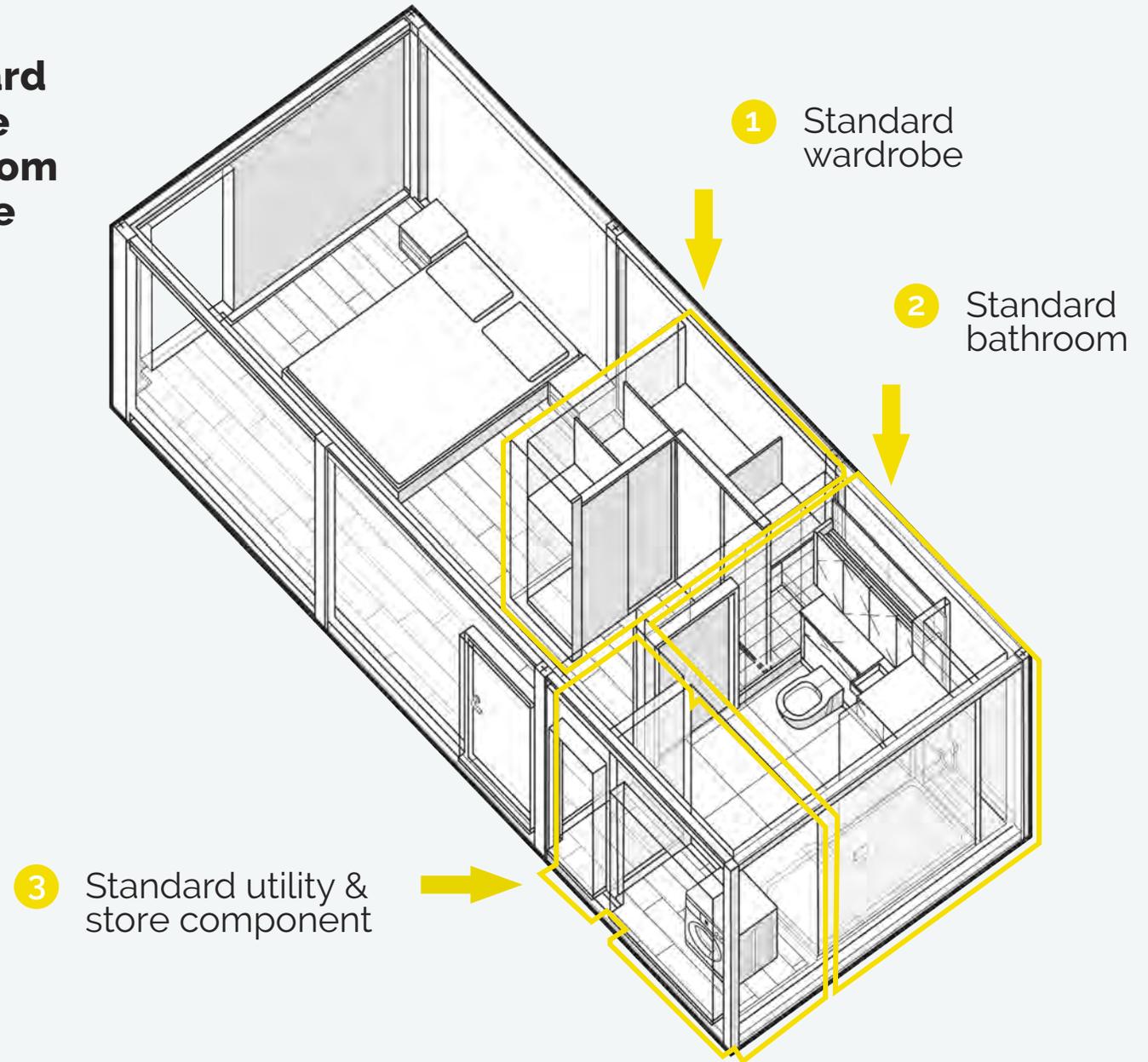
Module Components

Scaling up Manufacturing

Manufacturers can outsource components to scale up their production

- Bathrooms
- Kitchens
- Utility & Service Cupboards
- Built-in furniture

Standard ensuite bathroom module

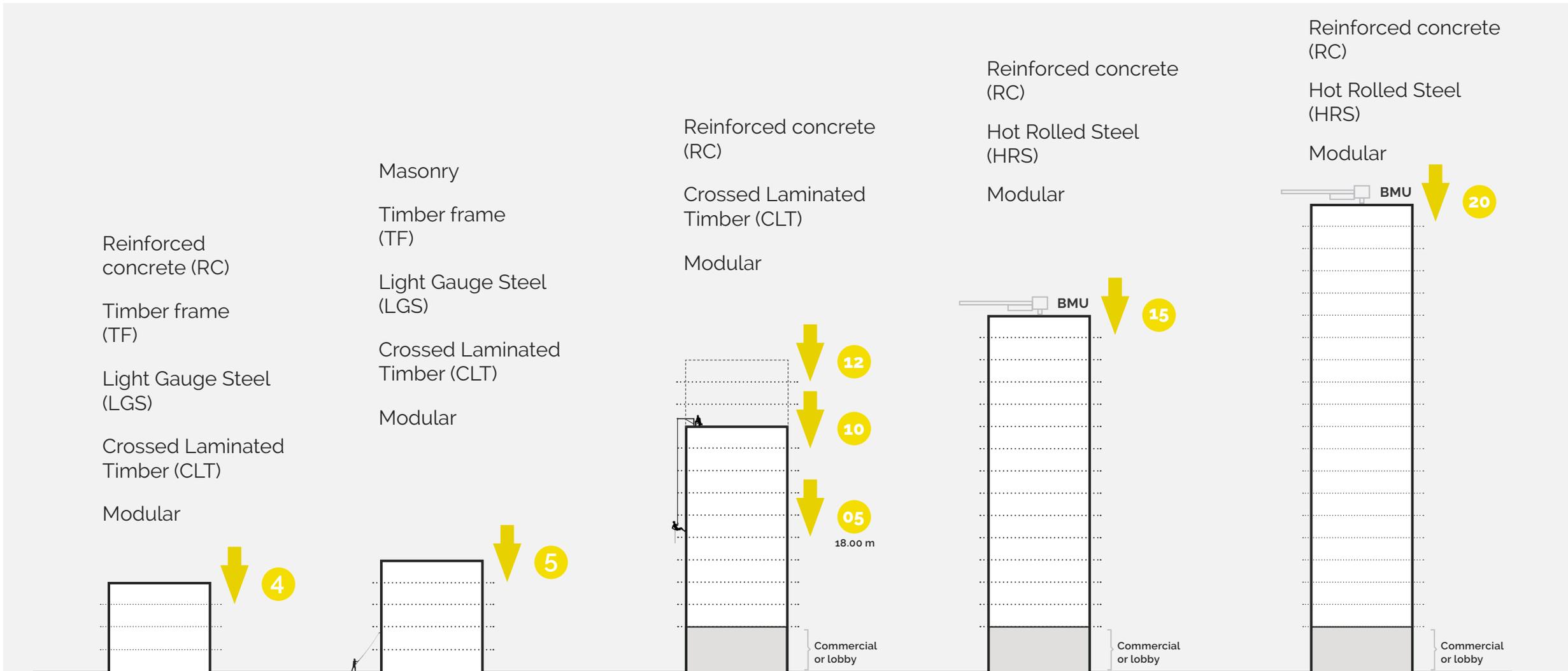


Selecting a Partner

	Now	2-3 Years	3-5 Years
	On Site Construction		Off Site Construction
	Traditional	Partial Off Site	Maximum Off Site
Structural System	Reinforced Concrete Frame	Precast Concrete Kingspan Panel Systems (SIPs) Fusion CLT Lightweight Metal Framing	Modularised Frame (LFS) Stick Frame with Modules (HRS) Modular Volumetric
M&E System	On Site Installation	Precast Concrete Kingspan Panel Systems (SIPs) Fusion	Prefabricated Risers Prefabricated Utility Cupboard Prefabricated Plant Rooms
Cladding System	Traditional Brick Facade	Traditional Brick Facade Rain Screen Facades	Prefabricated Walling Systems Rain Screen Facades Brick Slip Systems
Balconies	Assembled On Site	Reinforced Concrete Frame	Plug-in Balconies

Selecting a System

Systems by storey height



Apex House

Wembley

679
Indv. Modules

558 homes
0.18 ha
3100 dw/ha

Tide Construction
& Vision Modular



Embodied CO²

Greenford Quay Study

The embodied CO² savings that were made through the use of modular construction at Greenford Quay would be equivalent to...

26,000 tonnes of CO² =

3,562

Zero-energy homes being run for an entire 12 months

7,030

Vehicles taken off the road for a whole year

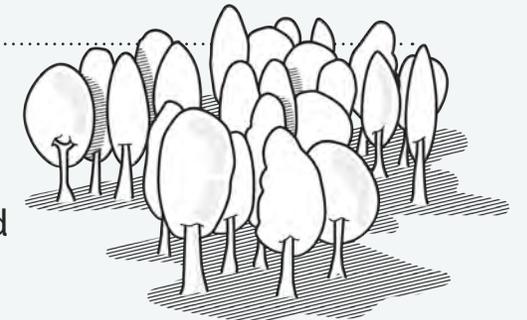
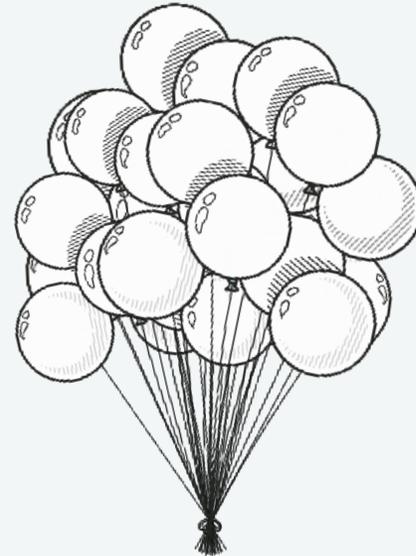
810,000,000

Balloons of CO² gas being removed from the atmosphere

160,287

Trees being planted

Source: Heriot Watt University



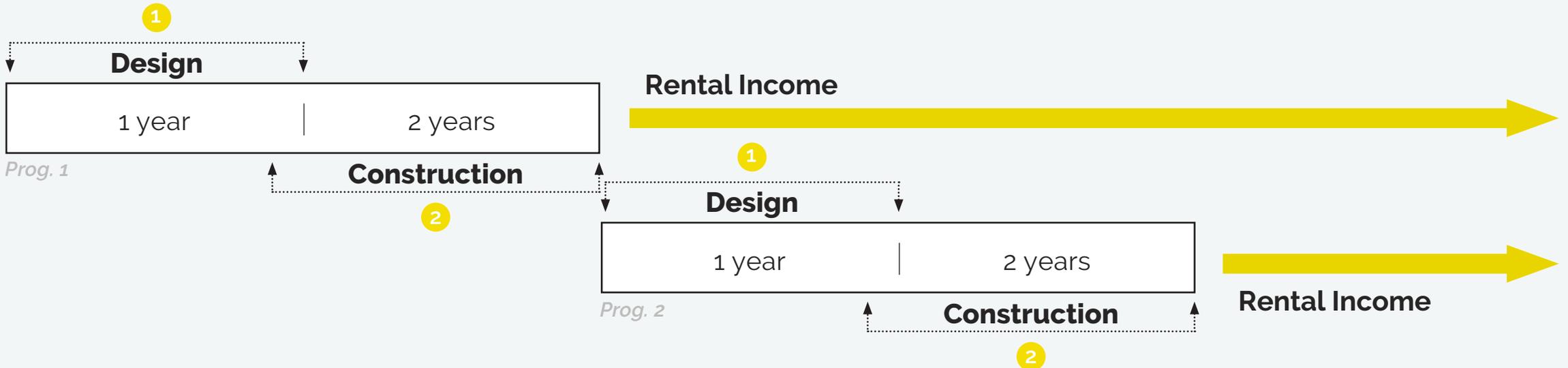
Business Strategy

Procurement Comparison

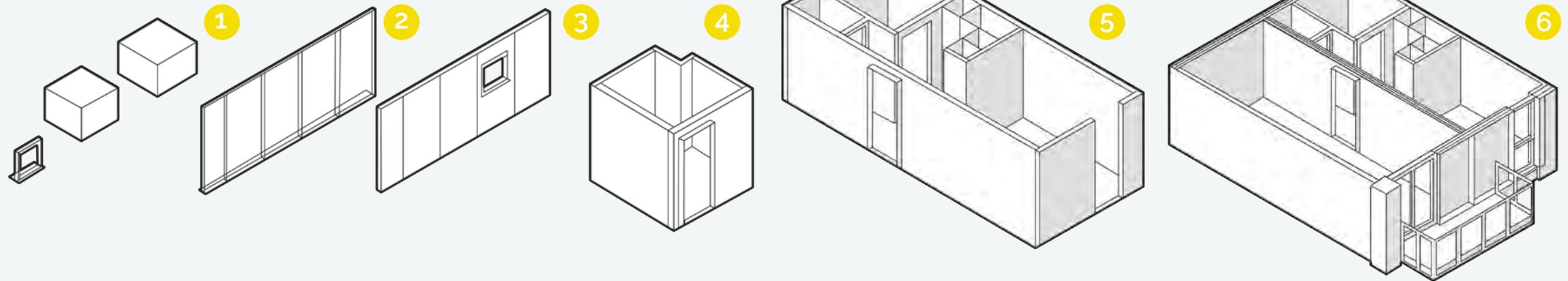
Typical Traditional Project



Typical Offsite Project



Defining the System



Manufactured Components

Frame Systems

Panel Systems

Pods

~ Bathroom
~ Kitchen

Volumetric Modular

Volumetric Modular + Prefab Facade, Foundations & Roof

40% ————— Pre-manufactured Value (PMV) ————— 75-80%

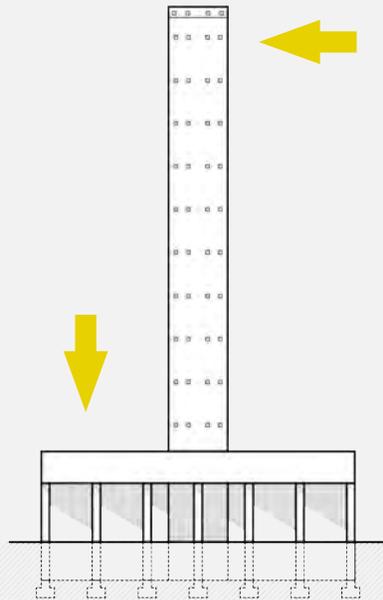
Example Process

Modular Construction

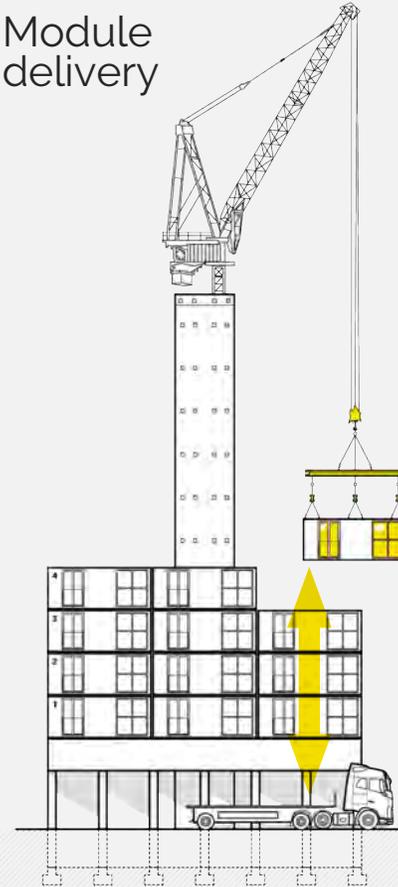
1.
Factory
manufacture



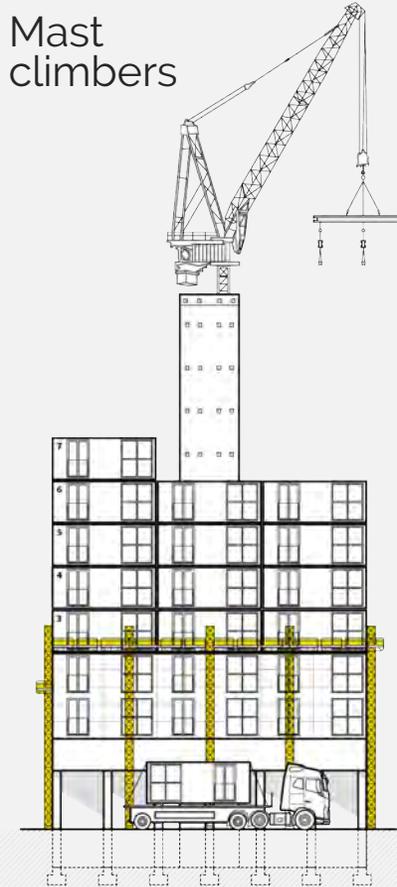
2.
Slipform core &
Podium structure



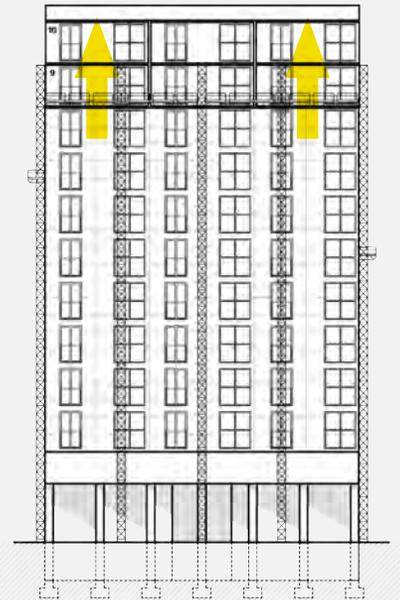
3.
Module
delivery



4.
Mast
climbers



5.
Facade
completion



Apex House

Wembley



Apex House

Stages timeline

Concept
April
2015



Design
June
2015



Planning
August
2015



Consented
March
2016



Apex House

Modules over 5 months

2nd
February
2017



21st
February
2017



2nd
March
2017



6th
April
2017



6th
August
2017



Recent Offsite Experience



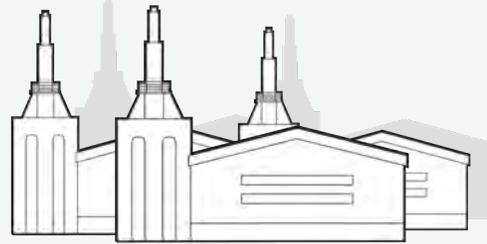
Our Offsite Experience

HTA's unique modular record

6,000
modular dwellings
built to date



and counting...

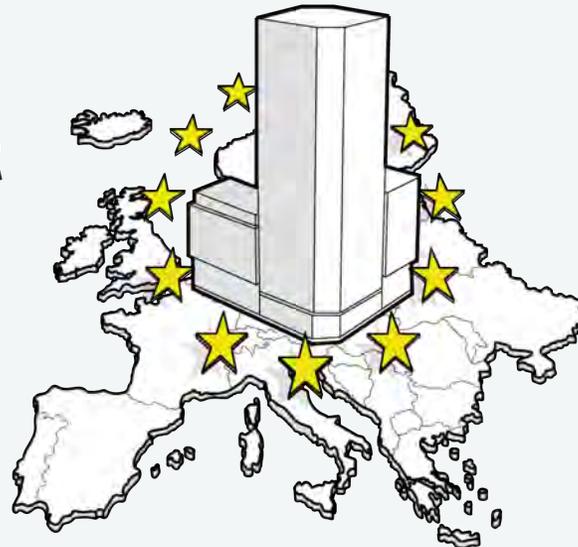


Only UK Architectural practice to have worked with **multiple modular manufacturers**

Designers
of...

**the tallest
modular
building
in Europe**

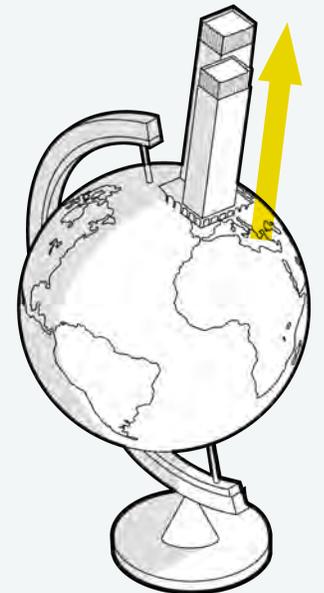
(Complete 2017)



Designers
of...

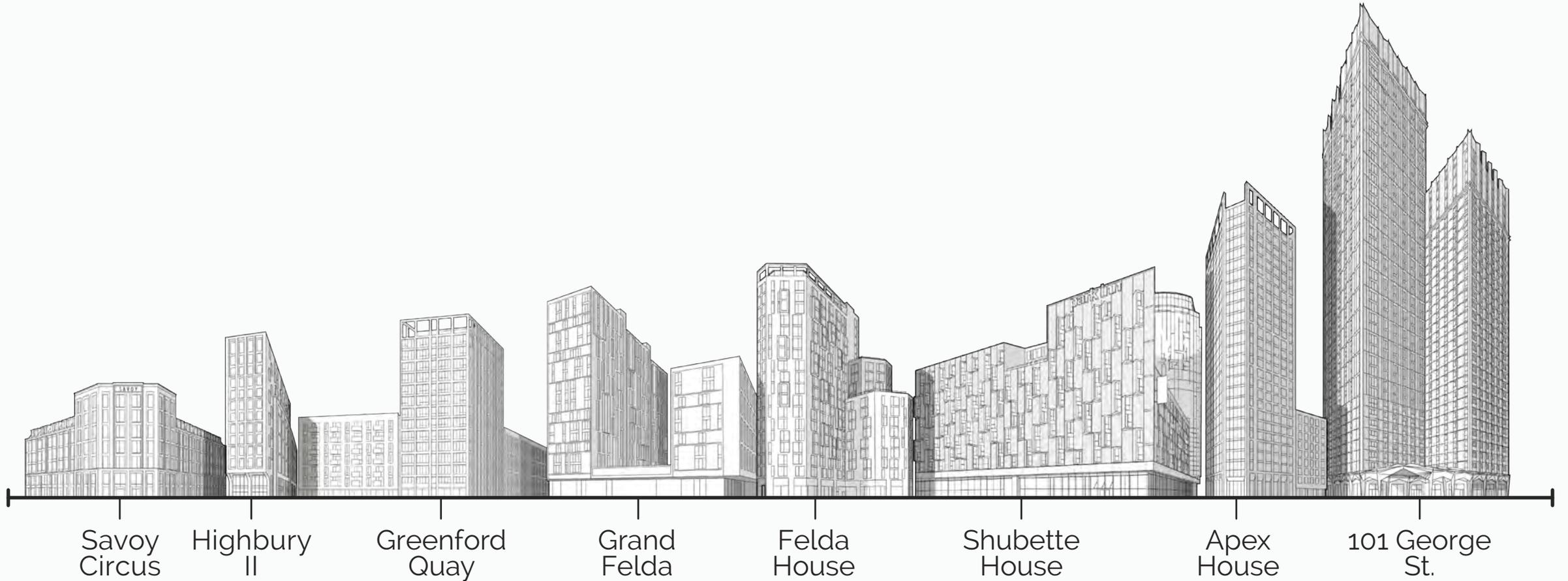
**the tallest
modular
building in
the World**

(on site, anticipated
completion 2020)



Offsite Experience

HTA's urban modular projects



George St.

Croydon

1,400
Indv. Modules

546 homes
0.22 ha
2,482 dw/ha

Tide Construction
/Vision Modular



George St. Croydon



George St. Croydon

Image credit: Forbes Massey



George St. Croydon

Image credit: Forbes Massey



George St.

Site photos



George St.

Site photos



George St.

Site photos



George St.

Site photos



George St.

Low level elevational views

Tower A



Tower B



George Street

Offsite process: core erection



George Street

Offsite process: module delivery



George Street

Offsite process: module installation



George Street

Offsite process: facade installation



Shubette House

Wembley

Off site
Hotel

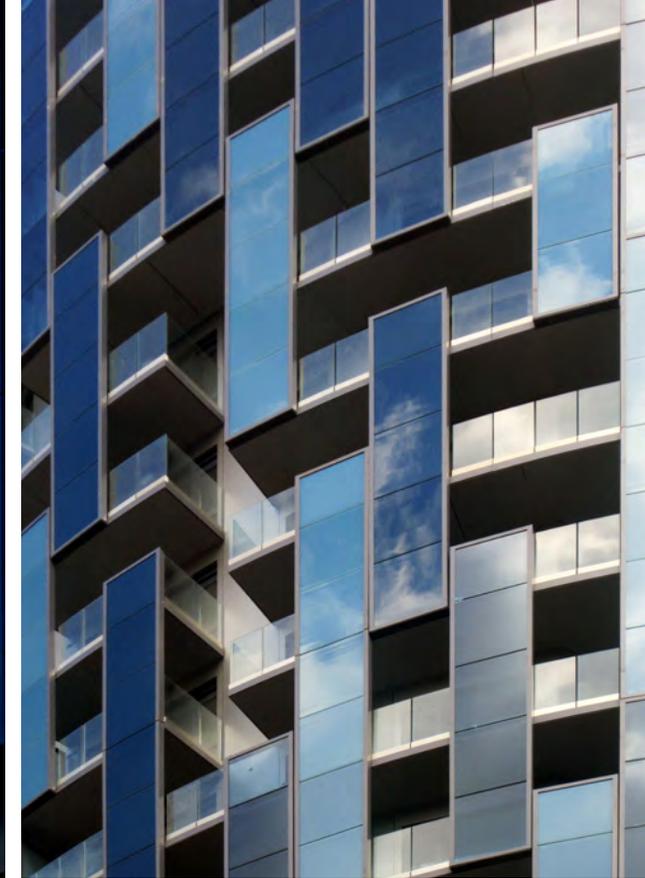
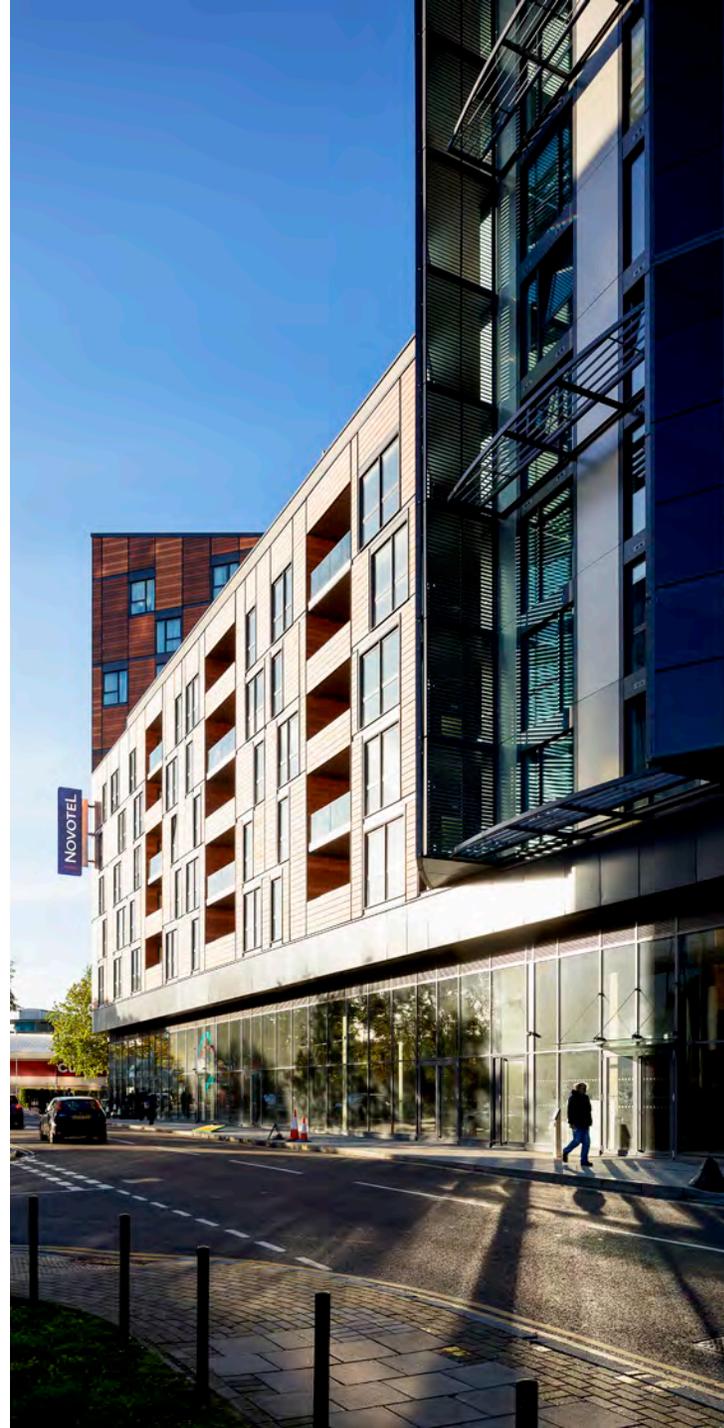
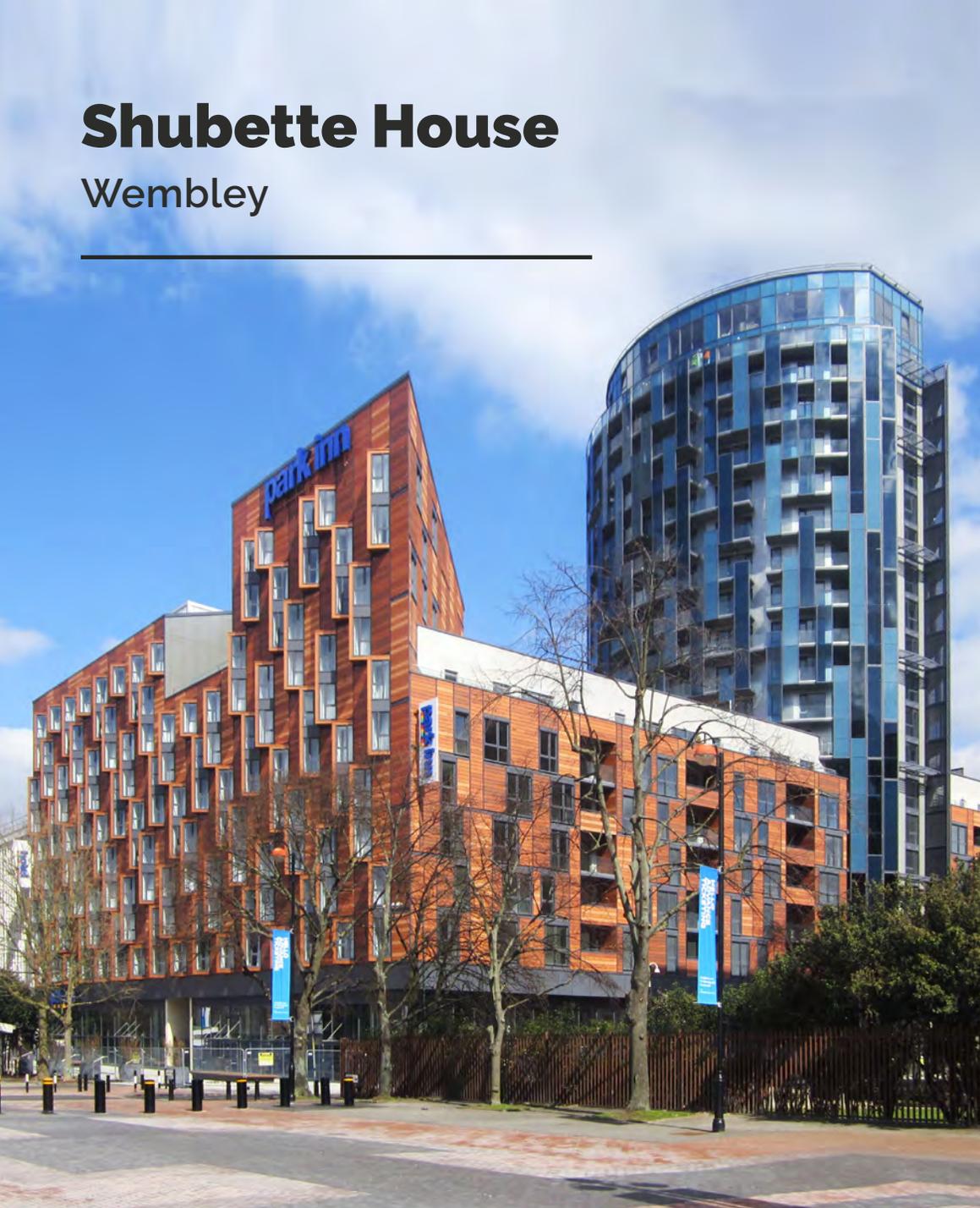
158 homes
0.54 ha
293 dw/ha

Donban
Contracting



Shubette House

Wembley



Union Wharf

Greenwich

249
Indv. Modules

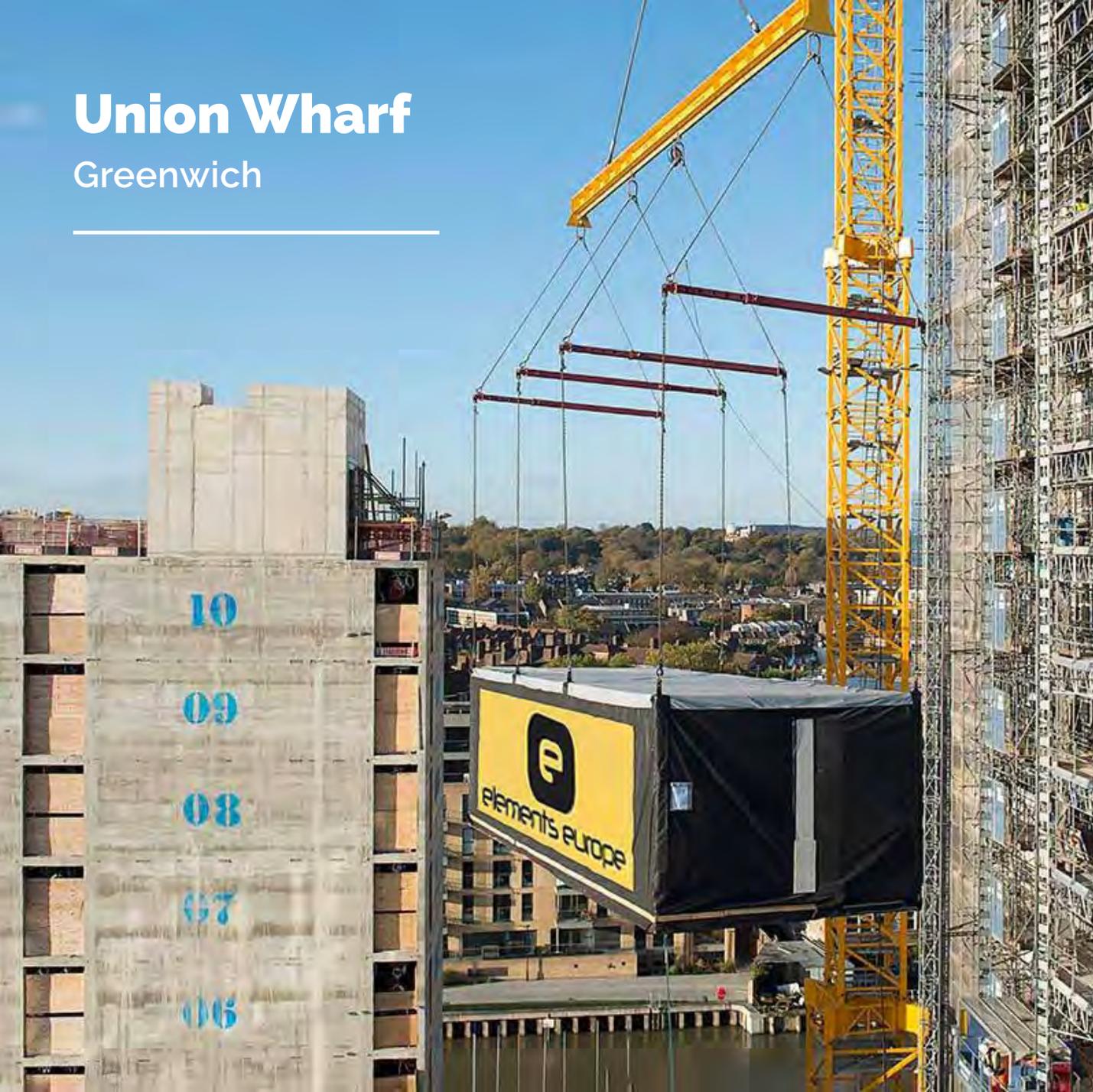
249 homes
0.47 ha
530 dw/ha

Essential Living
Design: Assael



Union Wharf

Greenwich



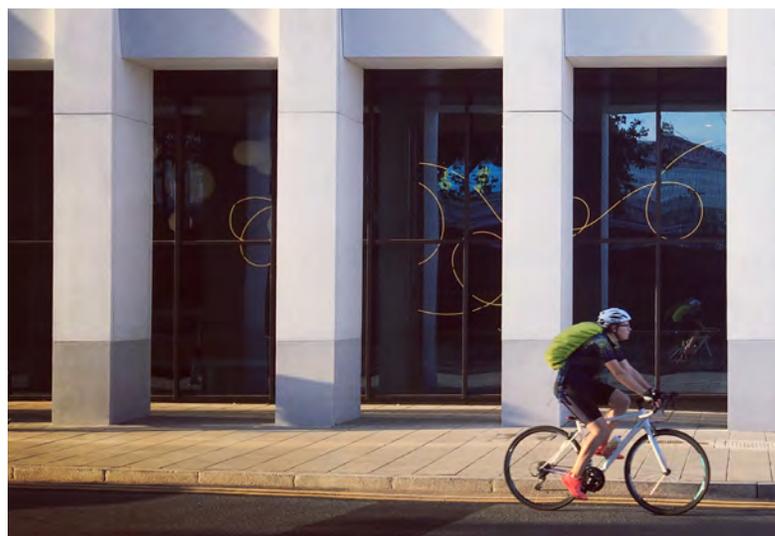
Apex House

Wembley



Apex House

Wembley



Grand Felda

Wembley

896
Indv. Modules

802 units
0.38 ha
2100 dw/ha

Tide Construction
/Vision Modular



Grand Felda

Wembley



Greenford Quay

Ealing

Largest BTR
Scheme in UK

1,965 homes
8.64 ha
227 dw/ha

Greystar



Highbury II

Islington



Savoy Circus

Hammersmith



Wood Wharf B2

Canary Wharf

22 Storeys
Tall

17 Storeys
Modular

279 Serviced
Apartments





Thank you

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