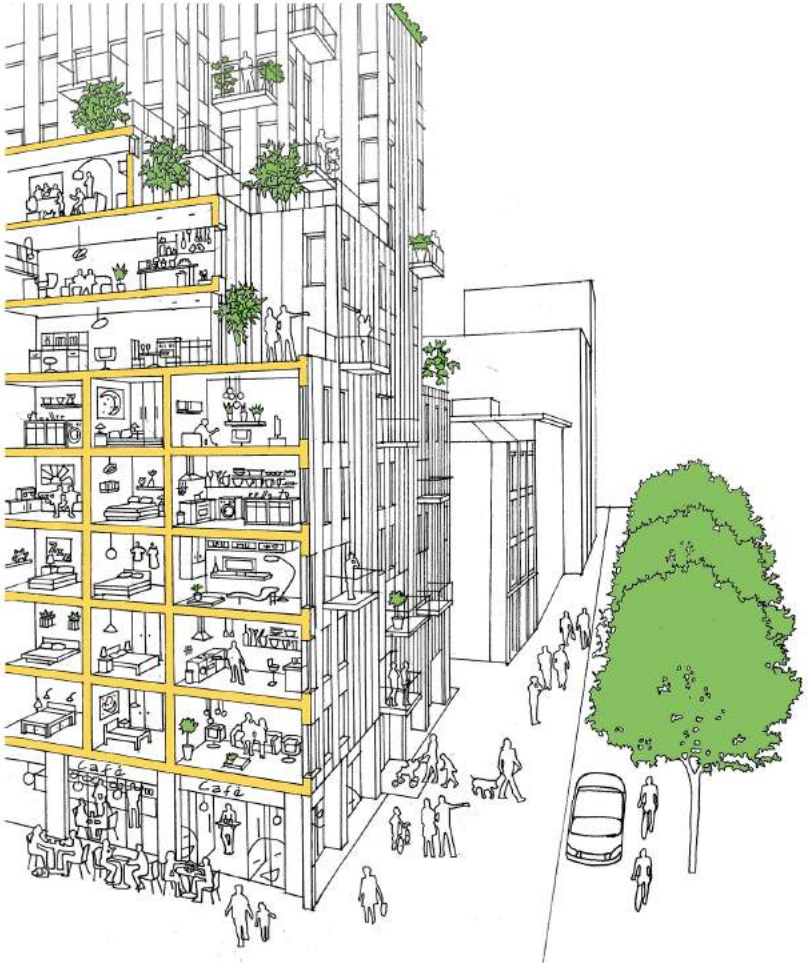


TIMBER IN THE CITY

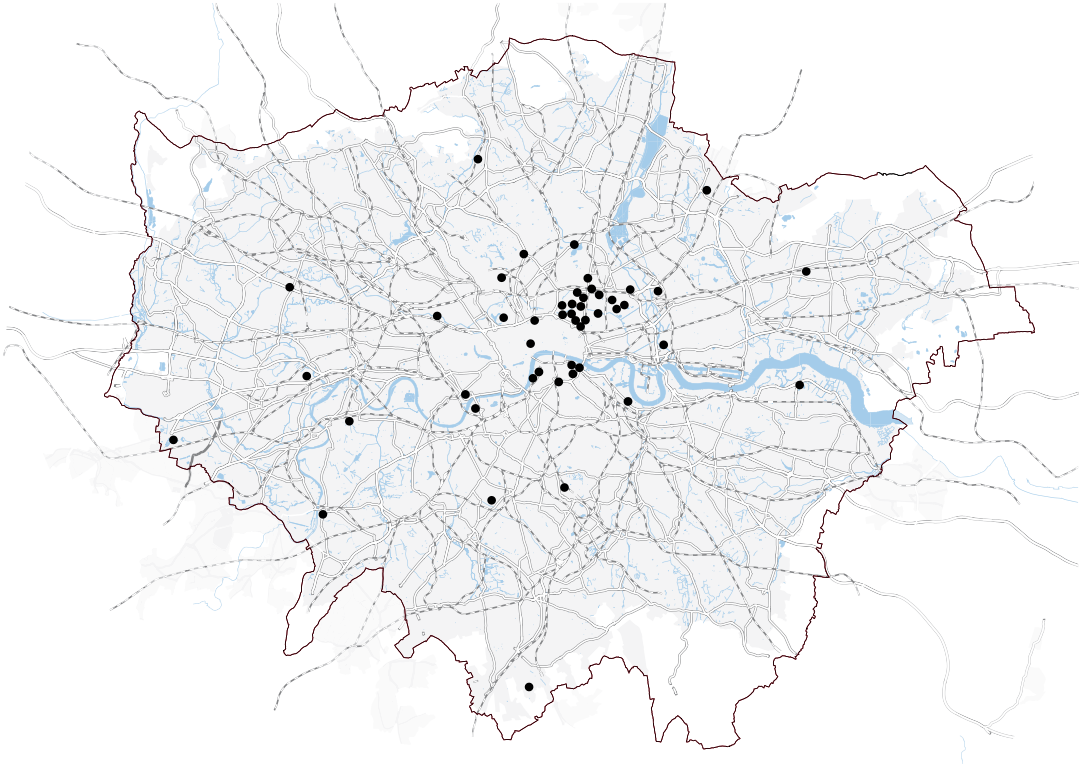
PLP_Oakwood Tower

Nikken Sekkei_ transforming cities into forests

RECENTLY

LONDON 2003

WAUGH THISTLETON ARCHITECTS



LONDON 2017

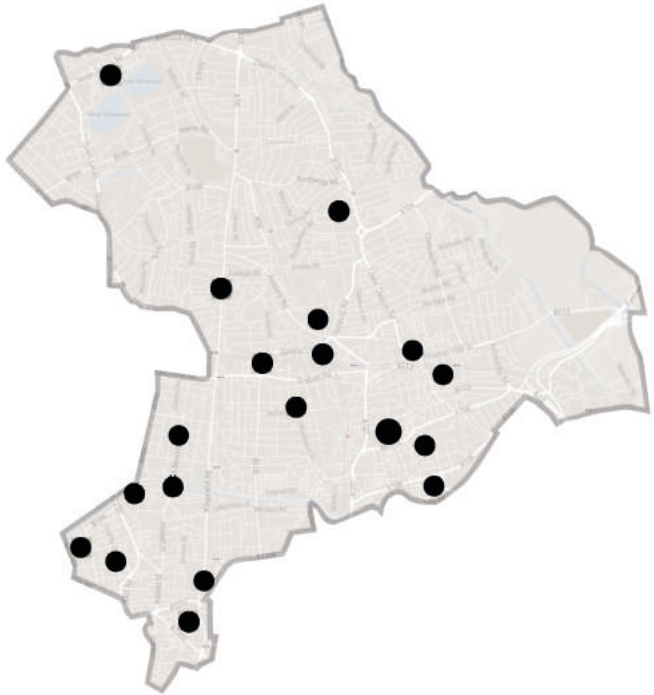
50 major timber buildings – 450 nationwide

WAUGH THISTLETON ARCHITECTS

LONDON 2017

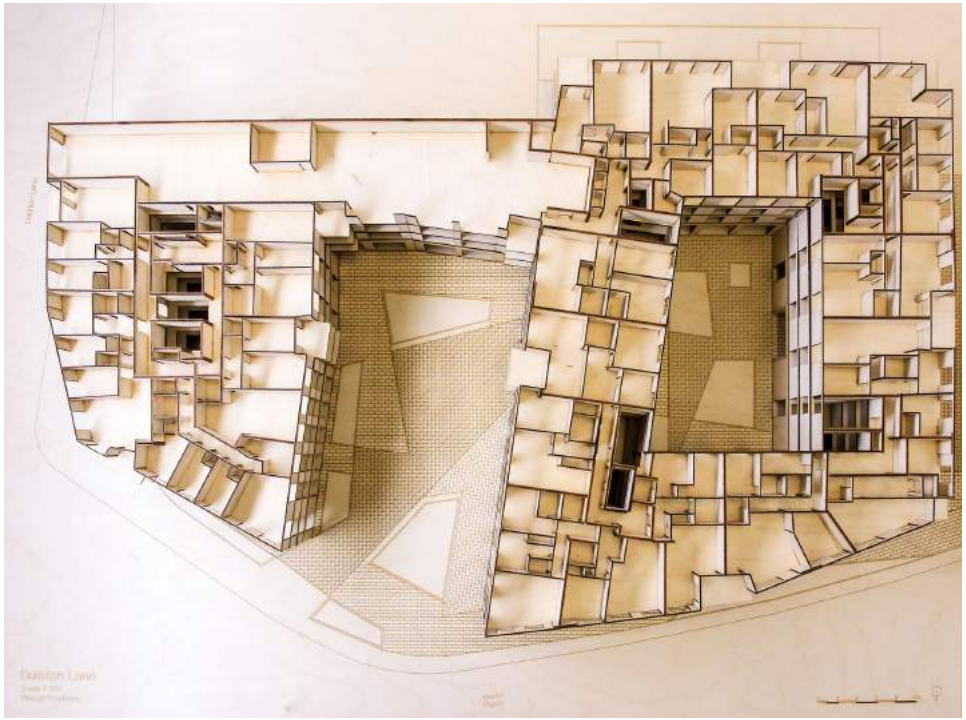
50 major timber buildings – 450 nationwide

WAUGH THISTLETON ARCHITECTS



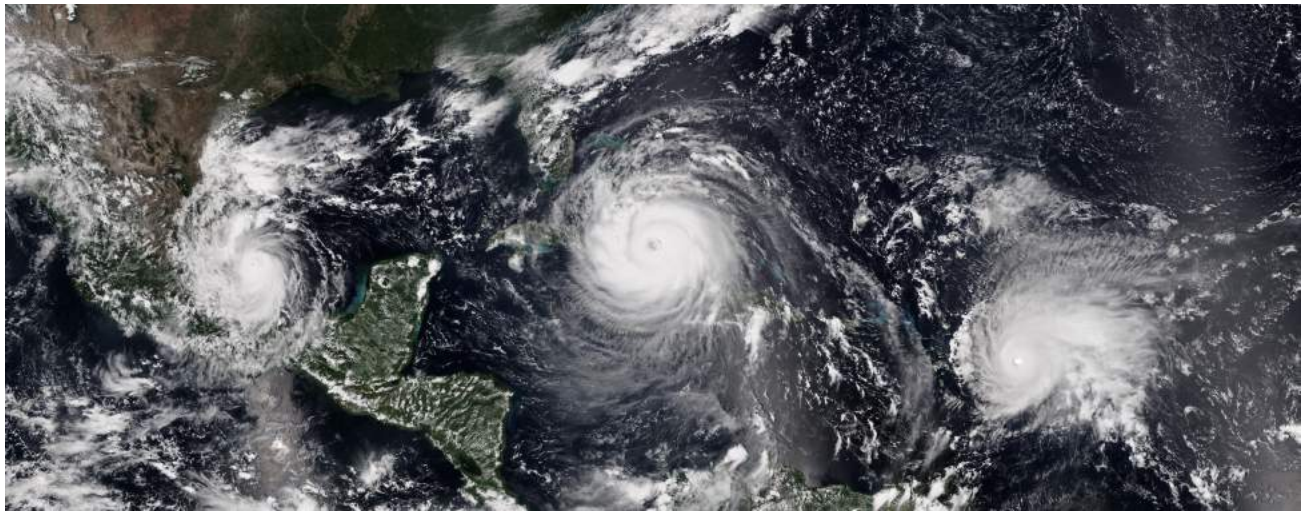
HACKNEY: TIMBER FIRST

Hackney: 25 of the UK's major 450 CLT buildings concentrated in 19 Km²



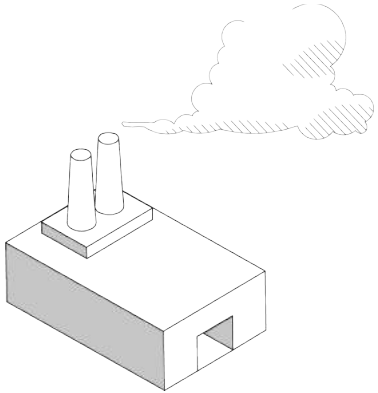
DALSTON LANE

WAUGH THISTLETON ARCHITECTS

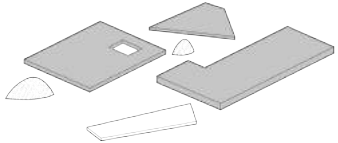


CONTEXT: MULTIPLE ECOLOGICAL CRISIS

Climate change, environmental pollution, lack of resources and urbanisation



38% of greenhouse gas emissions



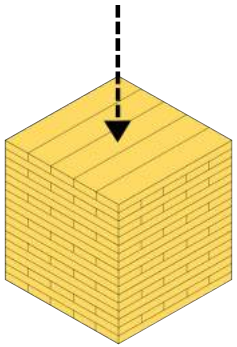
40% of solid waste generation
Source: UNEP

12% of water consumption

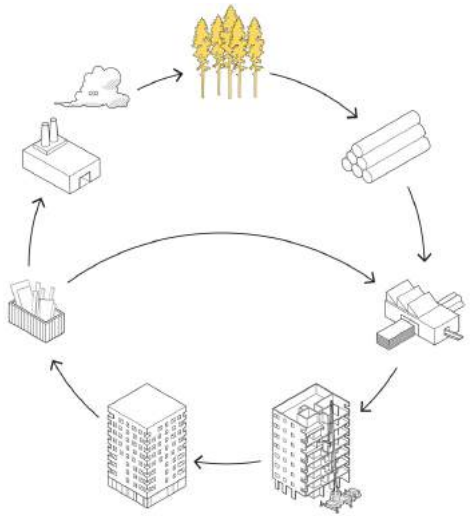
ENVIRONMENTAL IMPACT OF BUILDINGS

0.6 of CO_2

Cradle to gate



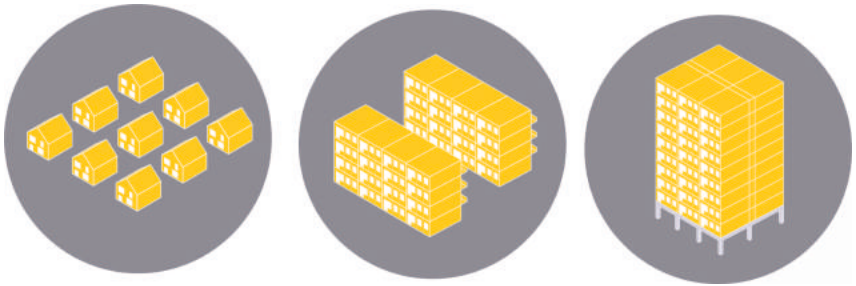
1 m^3 of CLT



Timber provides benefits at every stage of of its life

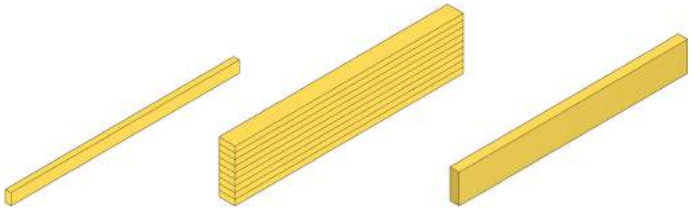
SUSTAINABILITY

It is all about embodied carbon and circular economy

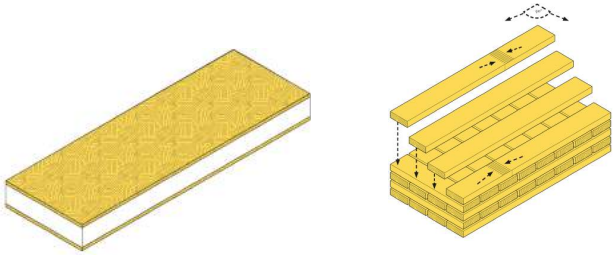


CONTEXT:HOUSING CRISIS

300000 new homes/year needed UK wide – London alone needs 60000 new homes/year



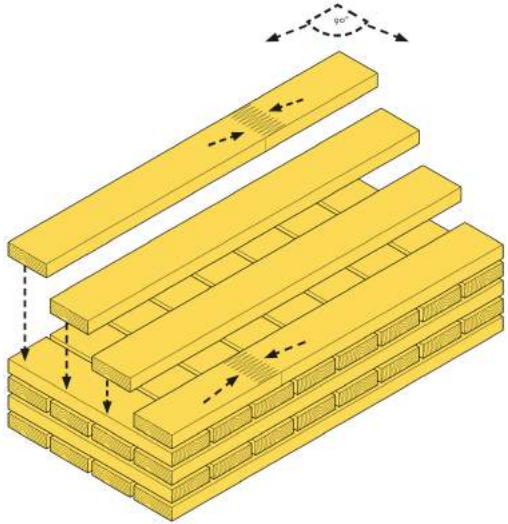
Glulam LVL



SIPS CLT

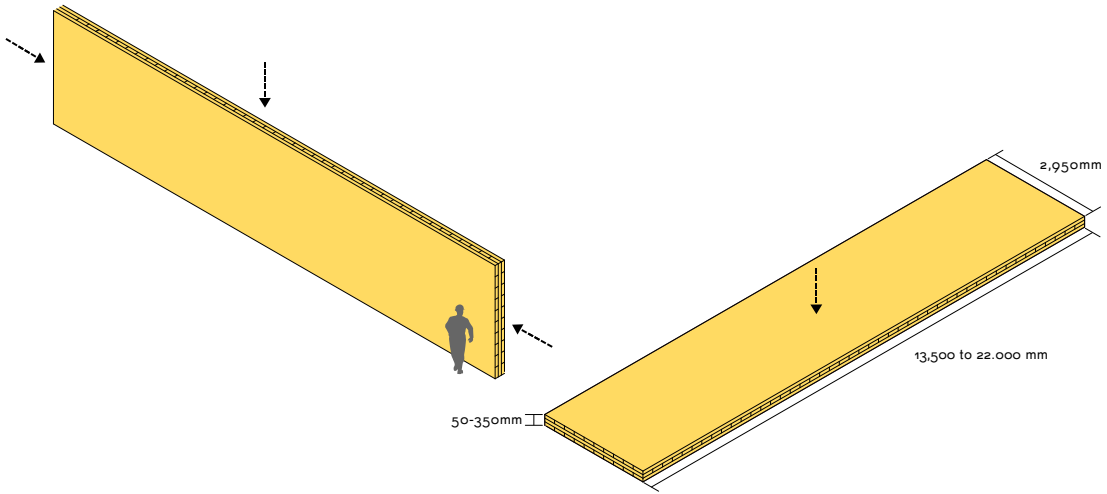
USE OF TIMBER

From a beam to a panel shaped constriction material



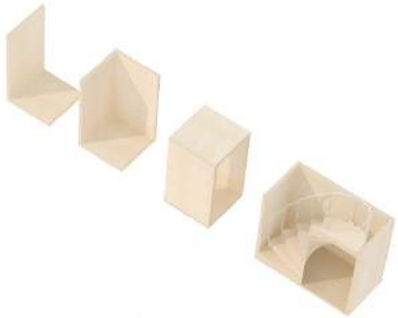
WHAT IS CLT?

An engineered timber product with good structural properties and low environmental impact (BRE definition)



THE PLATE

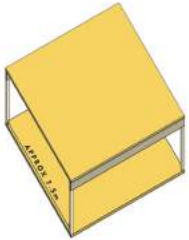
CLT plates have changed the perception of timber and the scale of what we can do with it



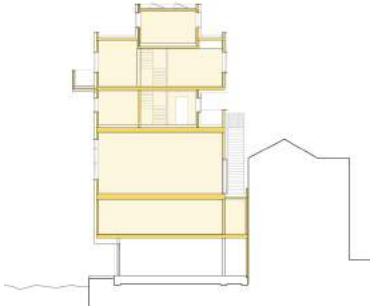
PLATES GENERATING FORMS

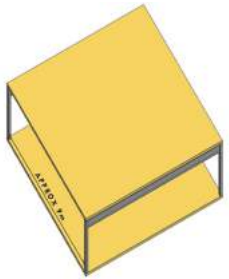
Continuity, simplicity and precision / from enclosed boxes to floating structures

Pure CLT

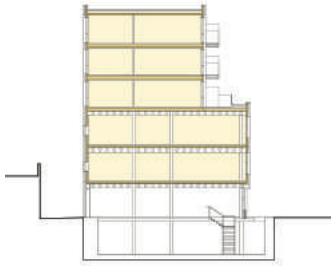


Hybrid (Glulam)

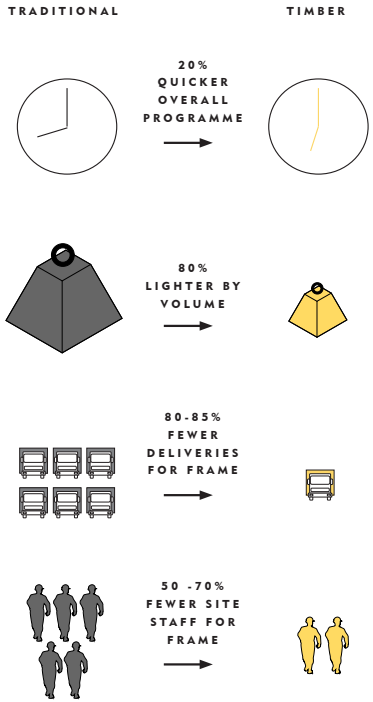




Hybrid (Steel)



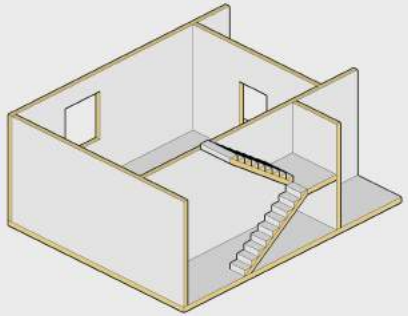
SPANS / TYPOLOGY



BOTTOM LINE BENEFITS

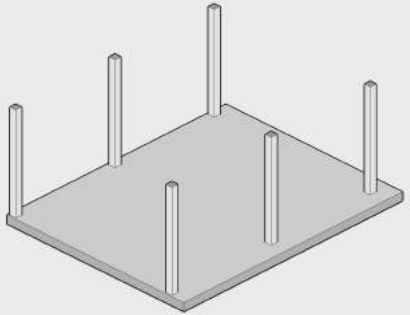
£250/ m^2 GIA

Week 01



£170/ m^2 GIA

Week01

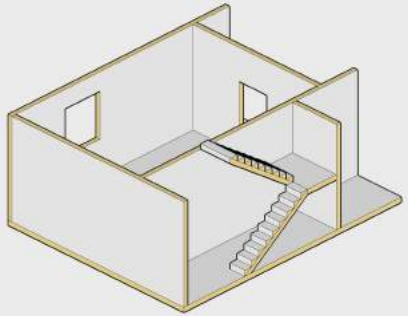


MULTI FUNCTIONAL ELEMENTS

Less material and less labour

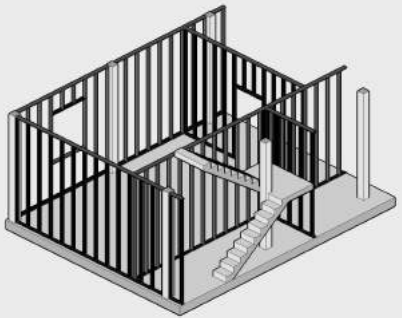
£250/ m^2 GIA

Week 01



£270/ m^2 GIA

Week03

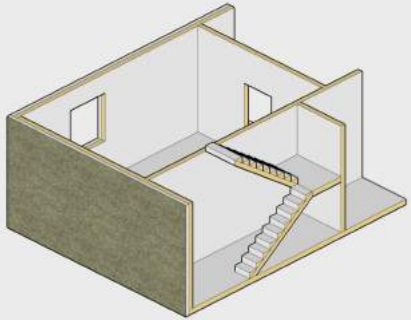


MULTI FUNCTIONAL ELEMENTS

Less material and less labour

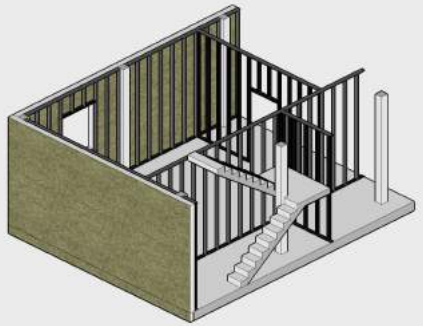
£265/ m^2 GIA

Week 02



£290/ m^2 GIA

Week04



MULTI FUNCTIONAL ELEMENTS

Less material and less labour

KEY WORKS SO FAR

WAUGH THISTLETON ARCHITECTS

EXTON STREET: CLT COMES TO LONDON

Completed: 2003 – Client: J. Hattori – Budget: undisclosed

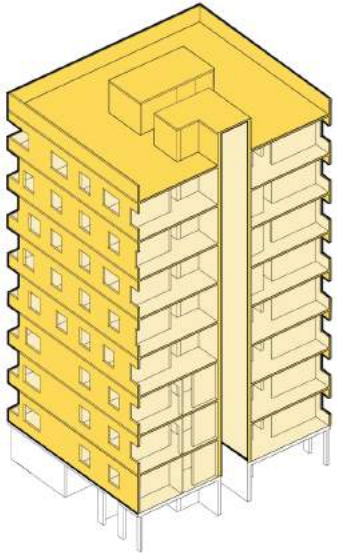
WAUGH THISTLETON ARCHITECTS

3 STOREY (45 m²) – 4 PEOPLE ON SITE (6 hours)

MURRAY GROVE: A LANDMARK PROJECT

Completed: 2009 – Client: Telford Homes – Budget: 3.86 m

WAUGH THISTLETON ARCHITECTS



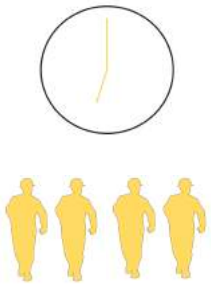
Honeycomb CLT structure

Load –bearing walls, cores and floors

145 mm CLT slabs(300 mm floor thickness)

128 mm external walls (275 mm wall buildup)

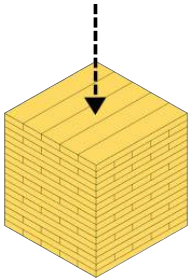
9 STOREY (2450 m^2 GIA) – 29 FLATS



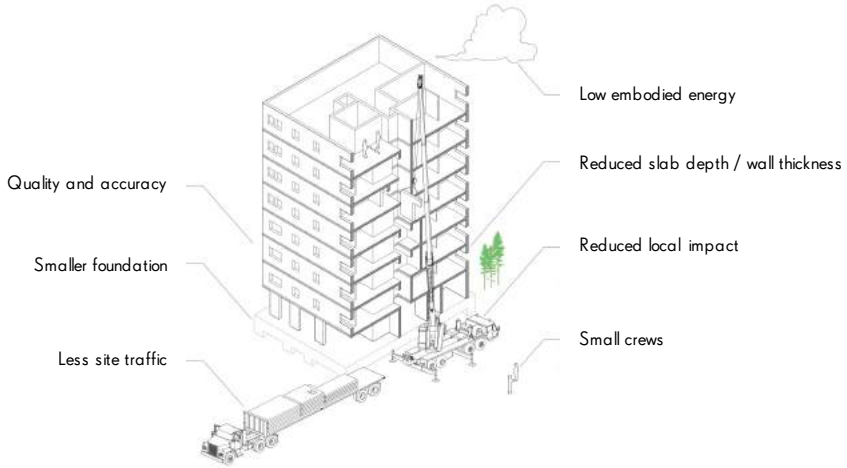
Timber assembly:
4 people x 5 weeks

540 t of CO_2

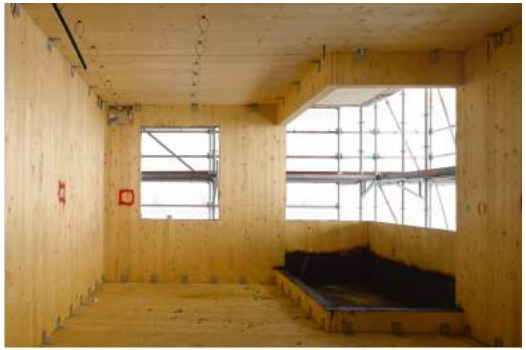
Cradle to gate



901 m^3 of CLT (1945 trees)



FACTS AND FIGURES

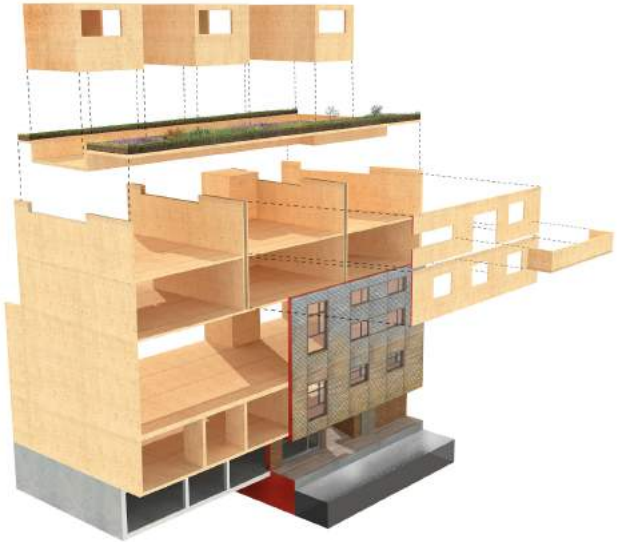


A CLEAN, SAFE SITE

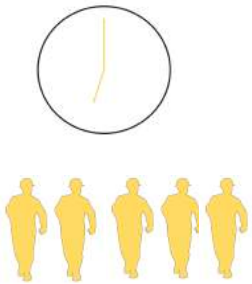
WHITMORE ROAD: MIXITÉ

Completed: 2013 – Client: A. Waugh– Budget: 2 m

WAUGH THISTLETON ARCHITECTS



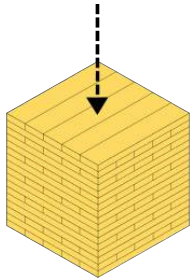
MIXED USE - HYBRID STRUCTURE



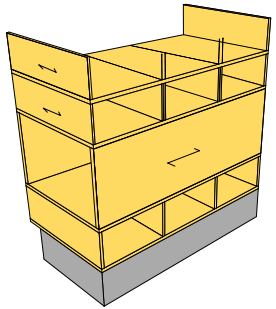
Timber assembly:
5 people x 5 weeks

300 t of CO_2

Cradle to gate



499 m^3 of CLT (1080 trees)



Working around a void (23x5x9 m)

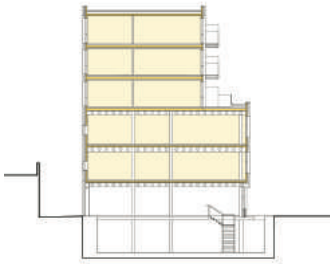
FACTS AND FIGURES

MATERIAL PRESENCE

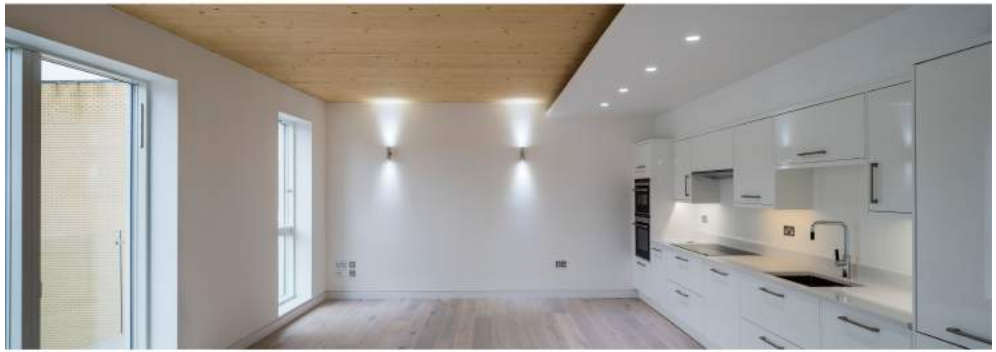
MATERIAL PRESENCE

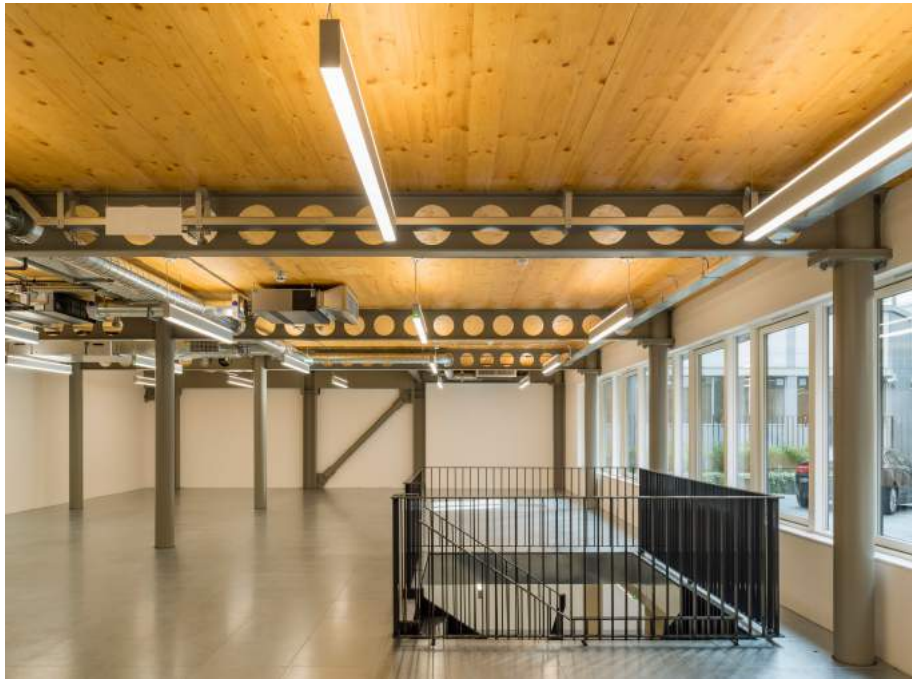
CURTAIN ROAD: A DIFFERENT LOOK AND FEEL

Completed: 2013 – Client: Gold Section Homes– Budget: 4.1 M



6 STOREY (2600 m² GIA) – 3 WEEKS OF TIMBER ASSEMBLY (65 WEEKS OVERALL)





MATERIAL AND MATERIALITY

MATERIAL AND MATERIALITY

DALSTON LANE: SIZE MATTERS

Completed: 2017 – Client: Regal Homes– Budget: 24 m

WAUGH THISTLETON ARCHITECTS

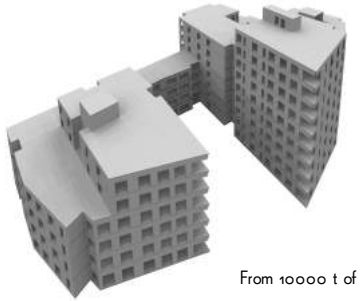
16000 m² total:

121 flats

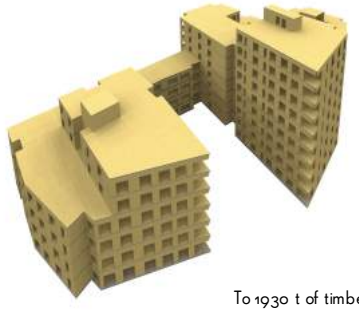
3500 m of commercial space

THE SIZE

Tunnels and reserved zones



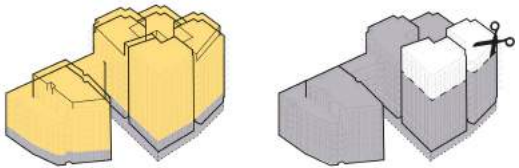
From 10000 t of concrete



To 1930 t of timber

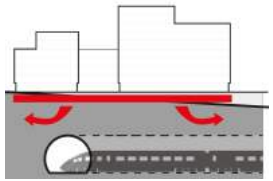
WORKING WITH CONSTRAINTS

78% less site deliveries



25% more homes (had a comparable scheme be erected in concrete)

Structure is 20% more efficient than Murray Grove



Raft foundation: min. use of concrete

FACTS AND FIGURES

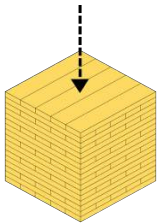
10044 trees

4650 m³ of timber

3 hours growth of the Austrian forests

2790 t of CO_2

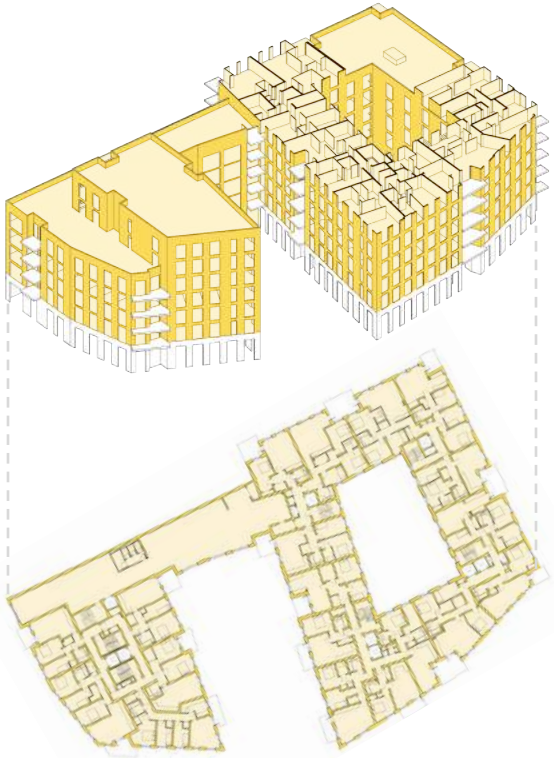
Cradle to gate



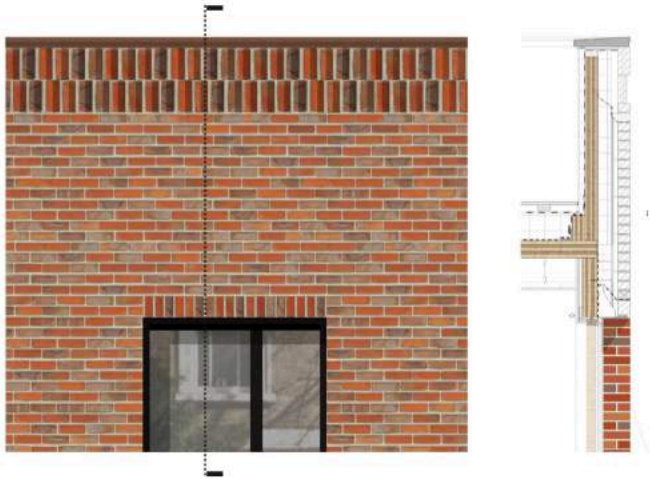
4649 m³ of CLT

FACTS AND FIGURES

A building plan that stacks



A normal building



KEY DESIGN PRINCIPLES

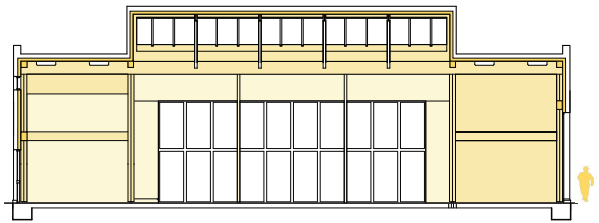
© Vitsoe

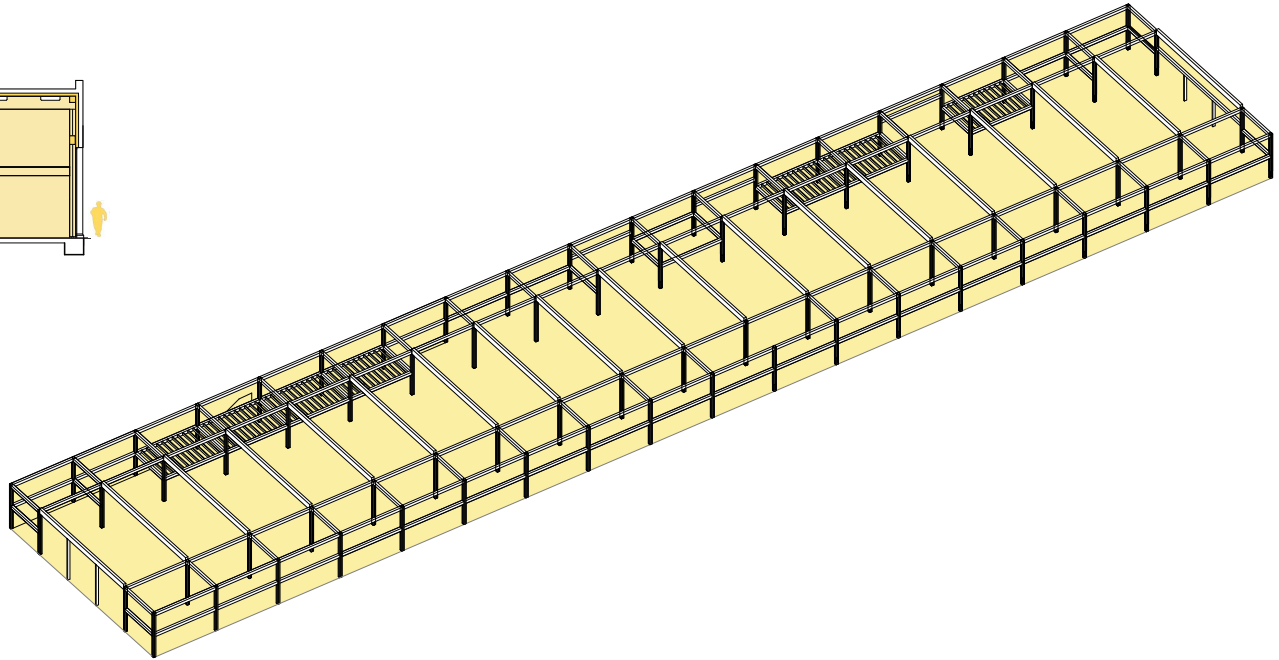
© Vitsoe

VITSOE: REDUCTION TO ESSENTIALS

Completed: 2017 – Client: M. Adams– Budget: 5.75 m

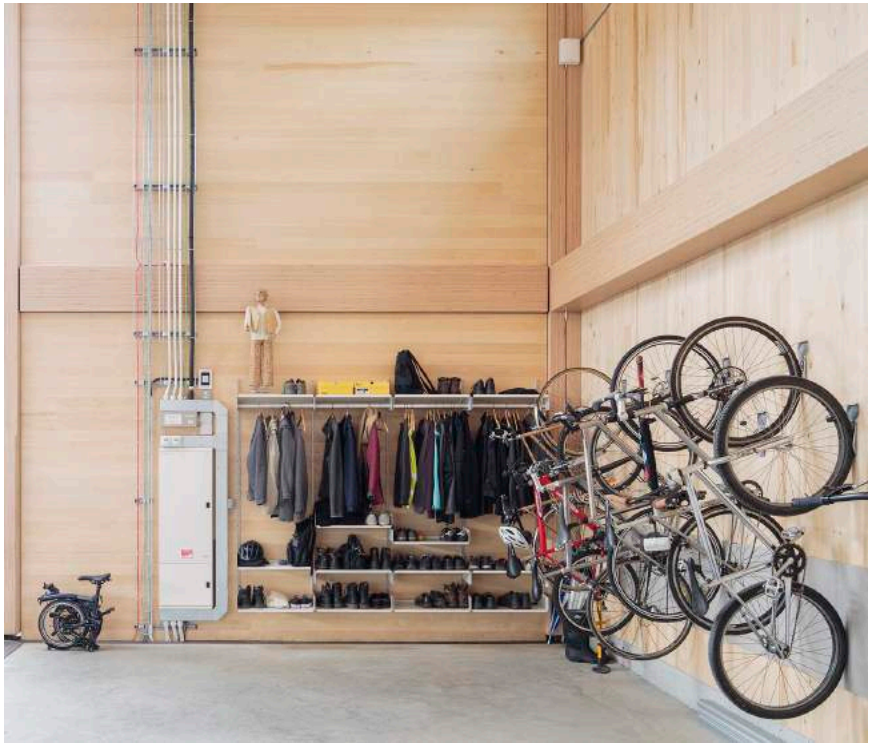
© Dirk Lindner





LONGEVITY AND FLEXIBILITY

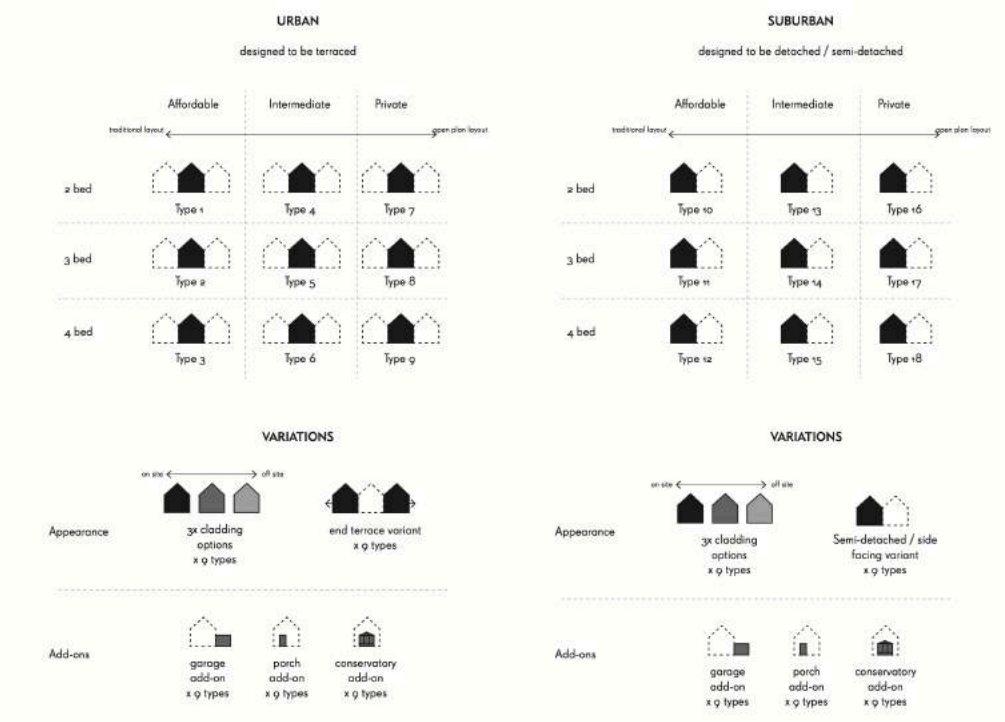
135 x 25 x 6m – 7.5 m structural grid



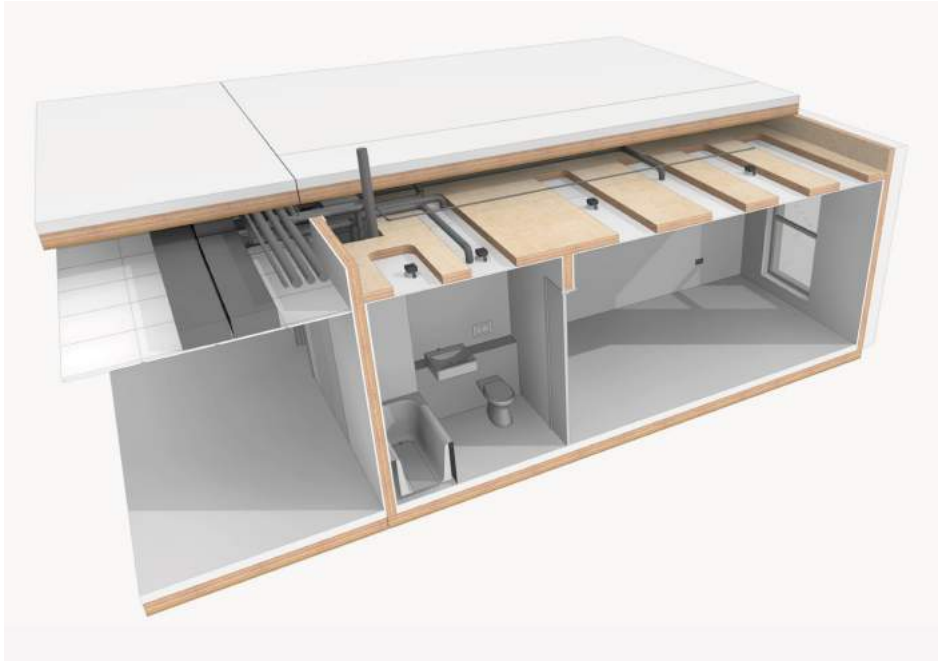
© Dirk Lindner

PREFAB. MODEL HOUSES: REPEATABLE PROCESS

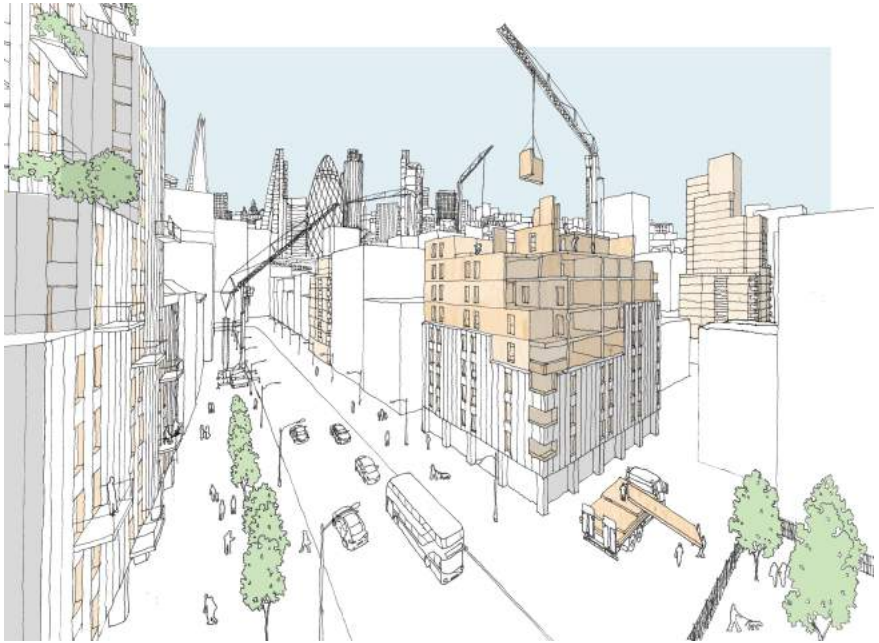
Ongoing – Client: Mayor investor in volumetric prefab.– Budget: Undisclosed



SYSTEMATIC APPROACH



SYSTEMATIC APPROACH



THANK YOU

WAUGH THISTLETON ARCHITECTS