



# Achieving Passivhaus at Scale

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**NORWICH**  
City Council

**MIKHAIL  
RICHES**



# Achieving Passivhaus at Scale

## What we are doing today:

1. Passivhaus in Norwich
2. Case Study Project : Goldsmith St
3. Lessons Learnt – Achieving Passivhaus at Scale
4. Q & A

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**MIKHAIL  
RICHES**

# Achieving Passivhaus at Scale

## Norwich Context:

One of the fastest growing cities in the UK

Young population

“Tale of two cities”

Housing need & demand outstripping supply

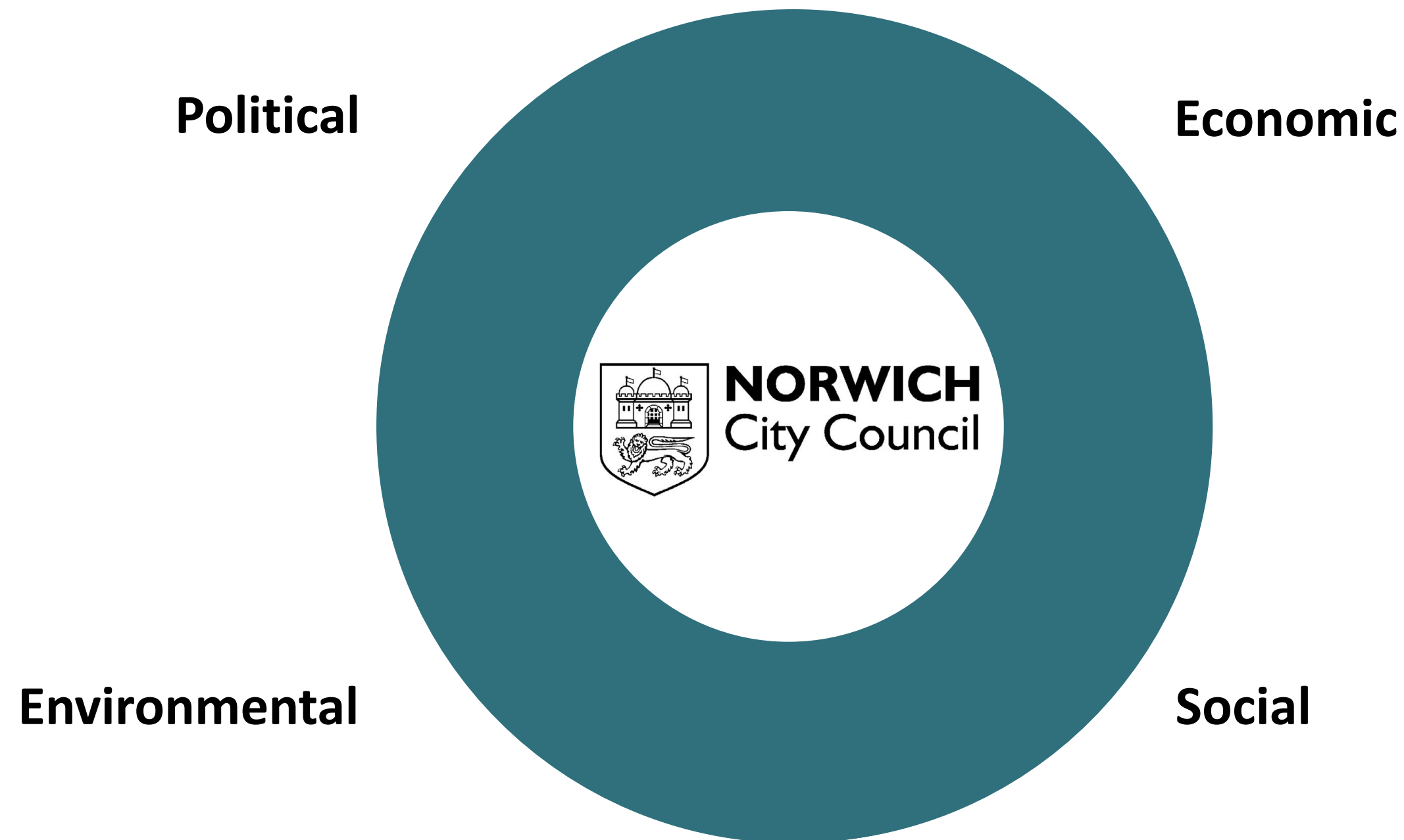
Major housebuilding programme

Norwich Regeneration Ltd



# Achieving Passivhaus at Scale

## Why Passivhaus – Council Drivers:





# Achieving Passivhaus at Scale

## Norwich City Council - Hansard Close

First Passivhaus scheme by Council

10 Flats for Social Rent

Completed June 2017





# Achieving Passivhaus at Scale

## Norwich City Council – Rayne Park

172 units of which 112 are Passivhaus

Largest UK mixed tenure Passivhaus scheme

2/3 for Sale or Private Rent – 1/3 Social Rent

Developed by Norwich Regeneration Ltd

Sales showing 5% premium for Passivhaus





# Achieving Passivhaus at Scale

## Norwich City Council – Goldsmith St

**100% Passivhaus Certified – 100% Social**

UK's Largest Passivhaus Social Housing Scheme

**Year project started/ended**

2014 – 2019

**Number of units/ tenure mix**

105 units for social rent - 45 Houses 60 Flats

**Contract Type / value**

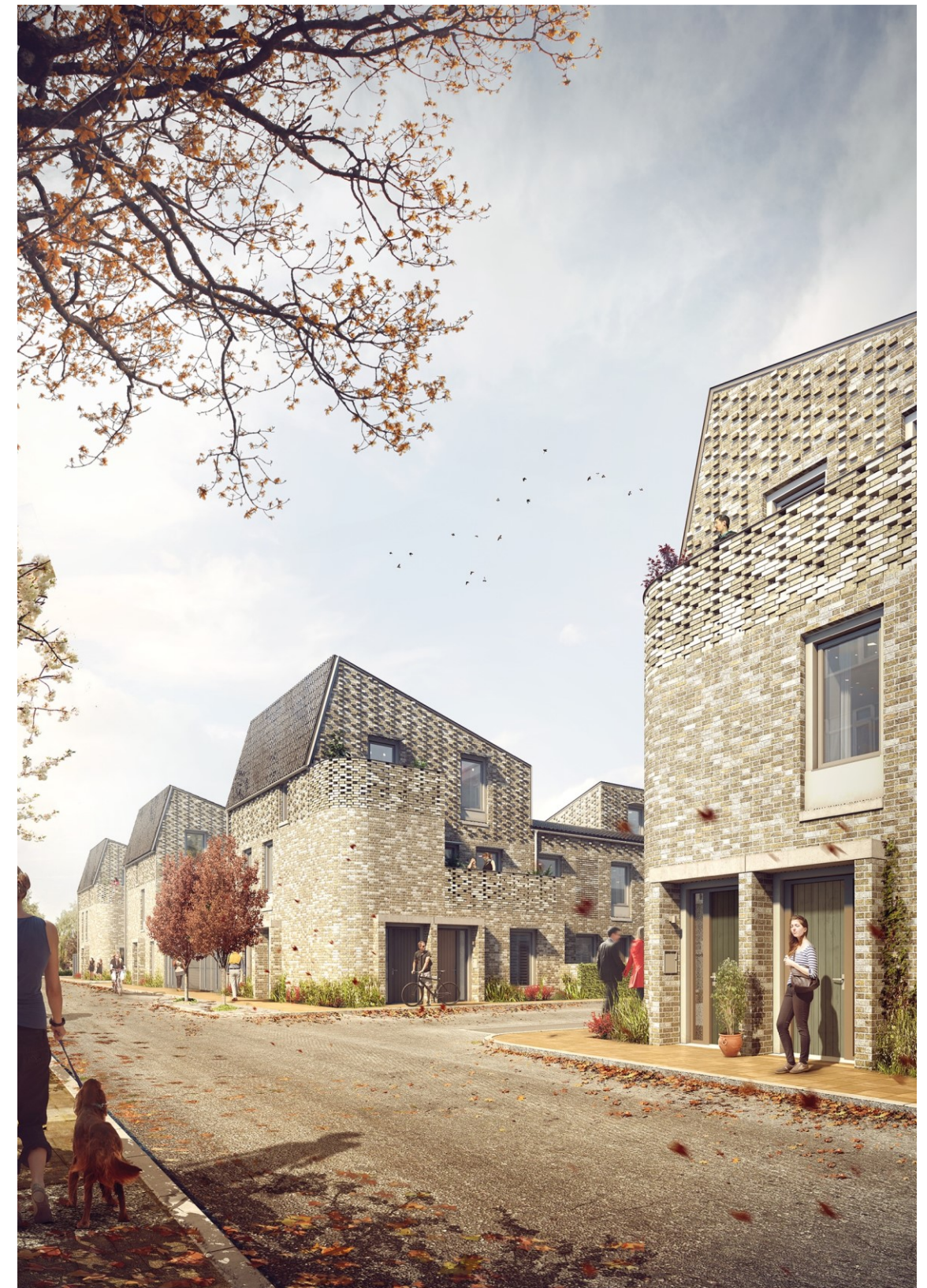
JCT Standard - Traditional Contract £15M

**Construction Cost / sqm**

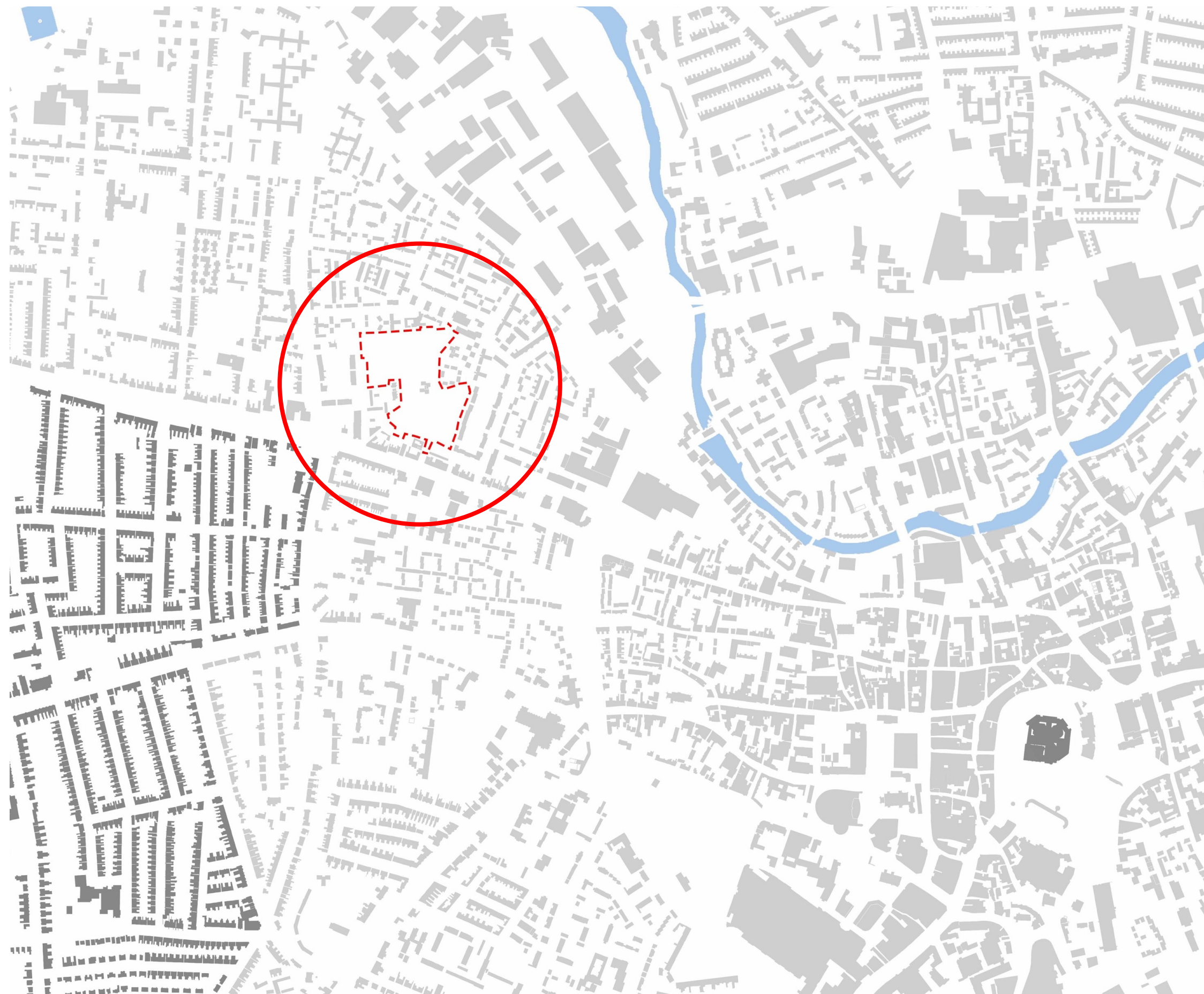
£1875/sqm (2016)

**Project Cost incl. Professional Fees / sqm**

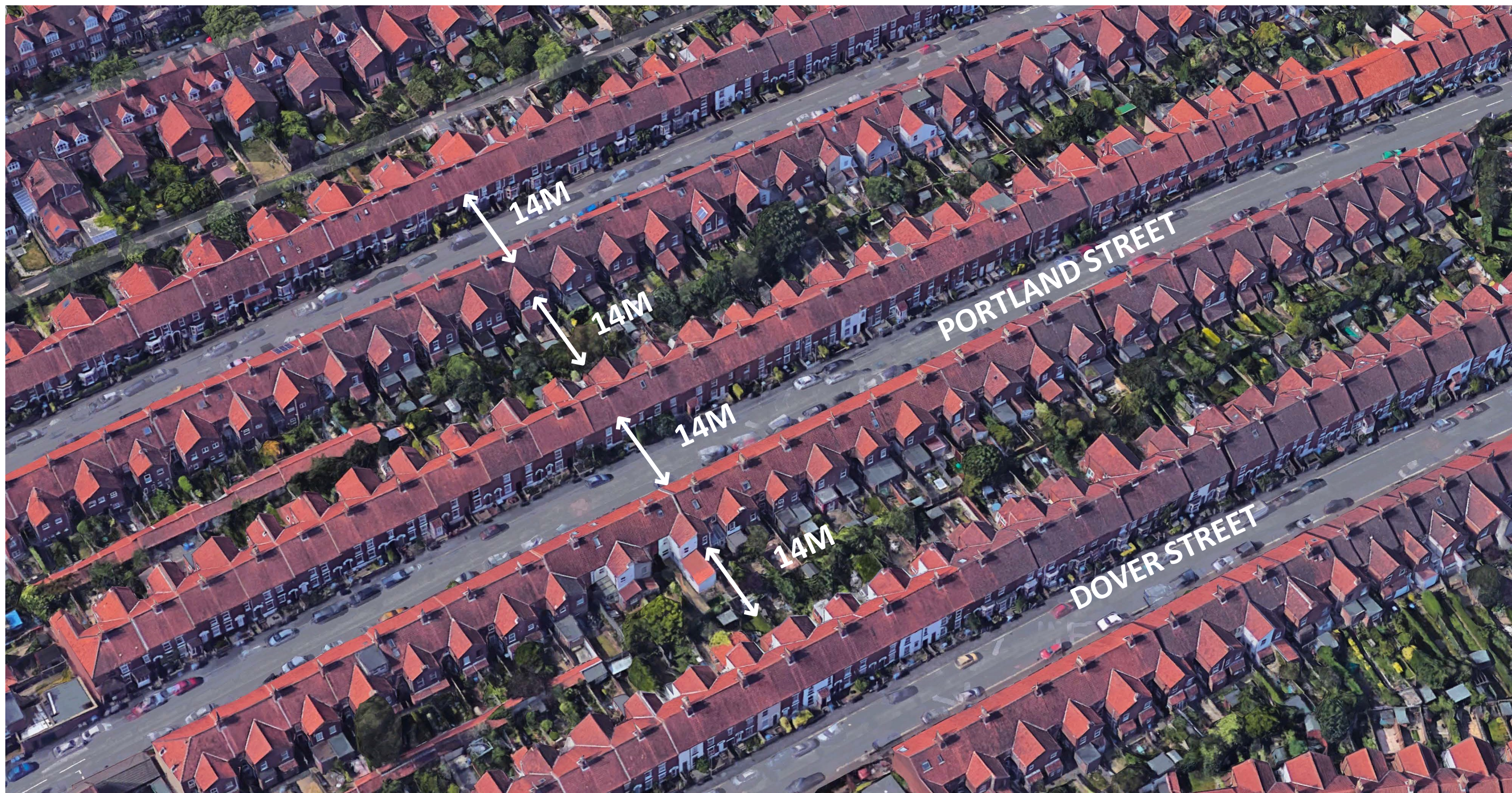
£2200/sqm (2016)











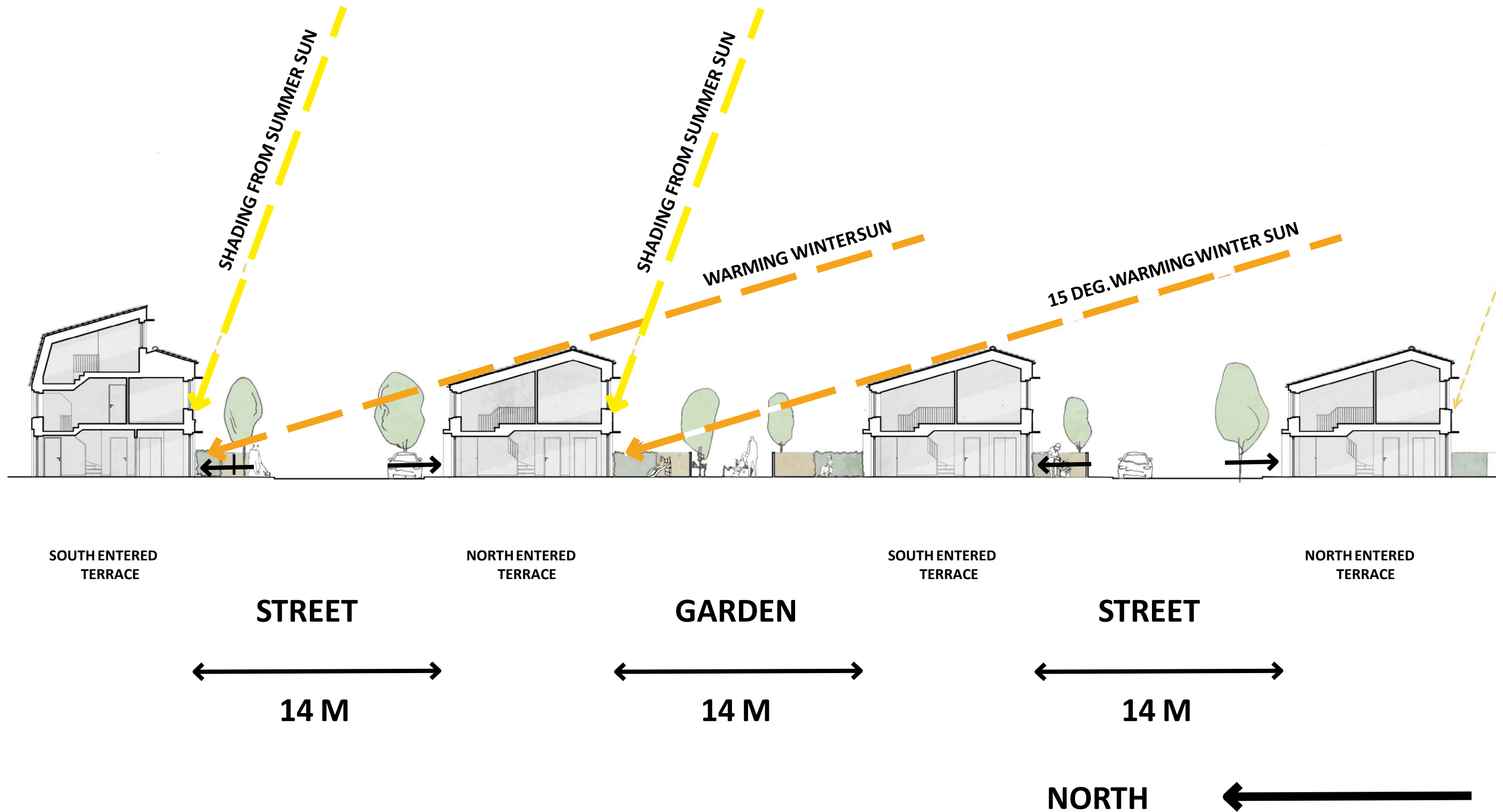






# Site Section

## Solar Scheme, Streets & Gardens



# Site Plan




## Unit Mix

### 45 Houses

40	2 bed houses
5	4 bed houses

### 60 Flats

57	1 bed flats
3	2 bed flats
1	3 bed flat

-  2 Bed House
-  4 Bed House
-  1 Bed / 2 Bed Flats





# Proposed Site Layout

## Streets & Gardens







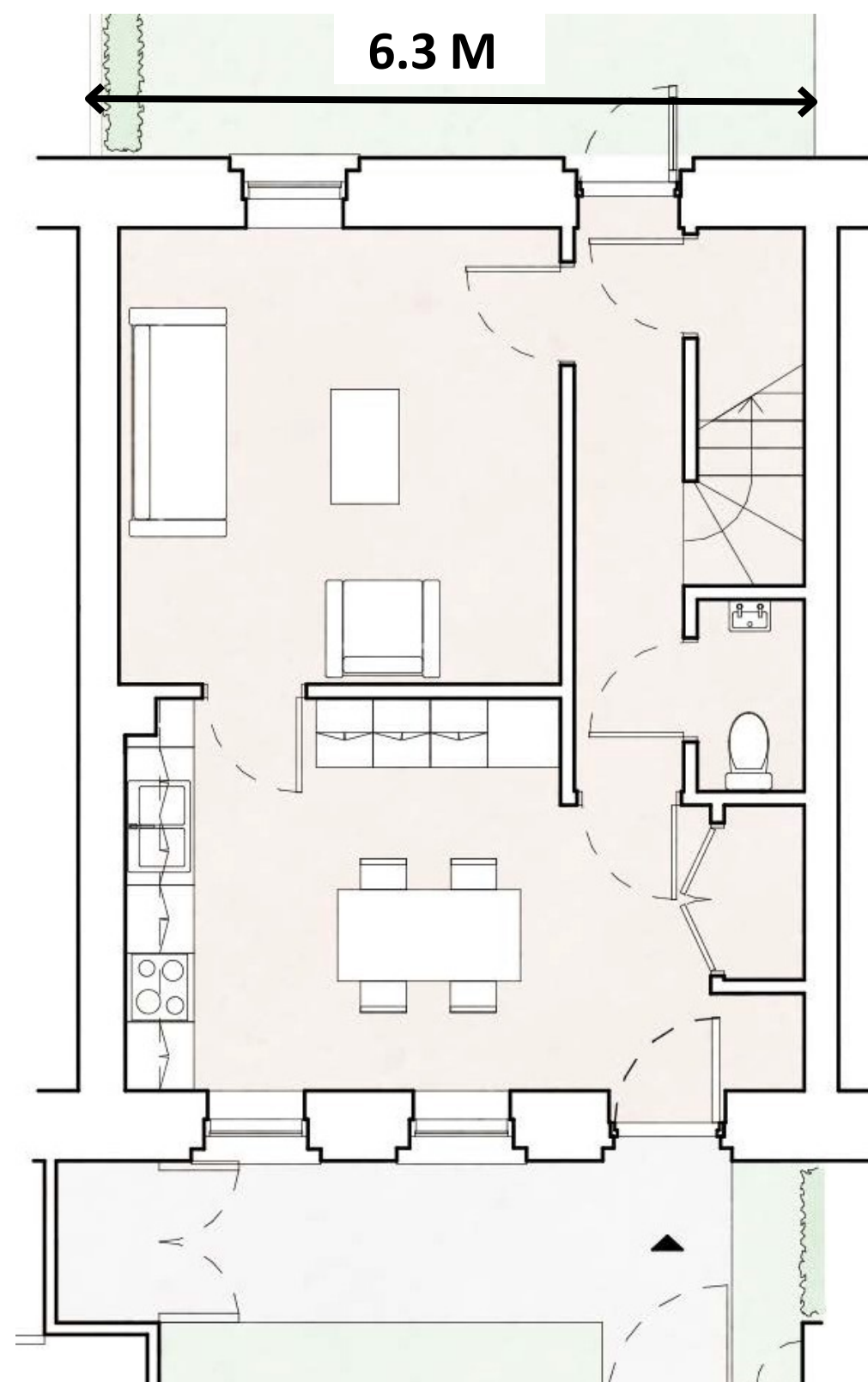






# 2 Bed House Type (South Entered)

## Ground & First Floor Plan



PRIVATE  
GARDEN

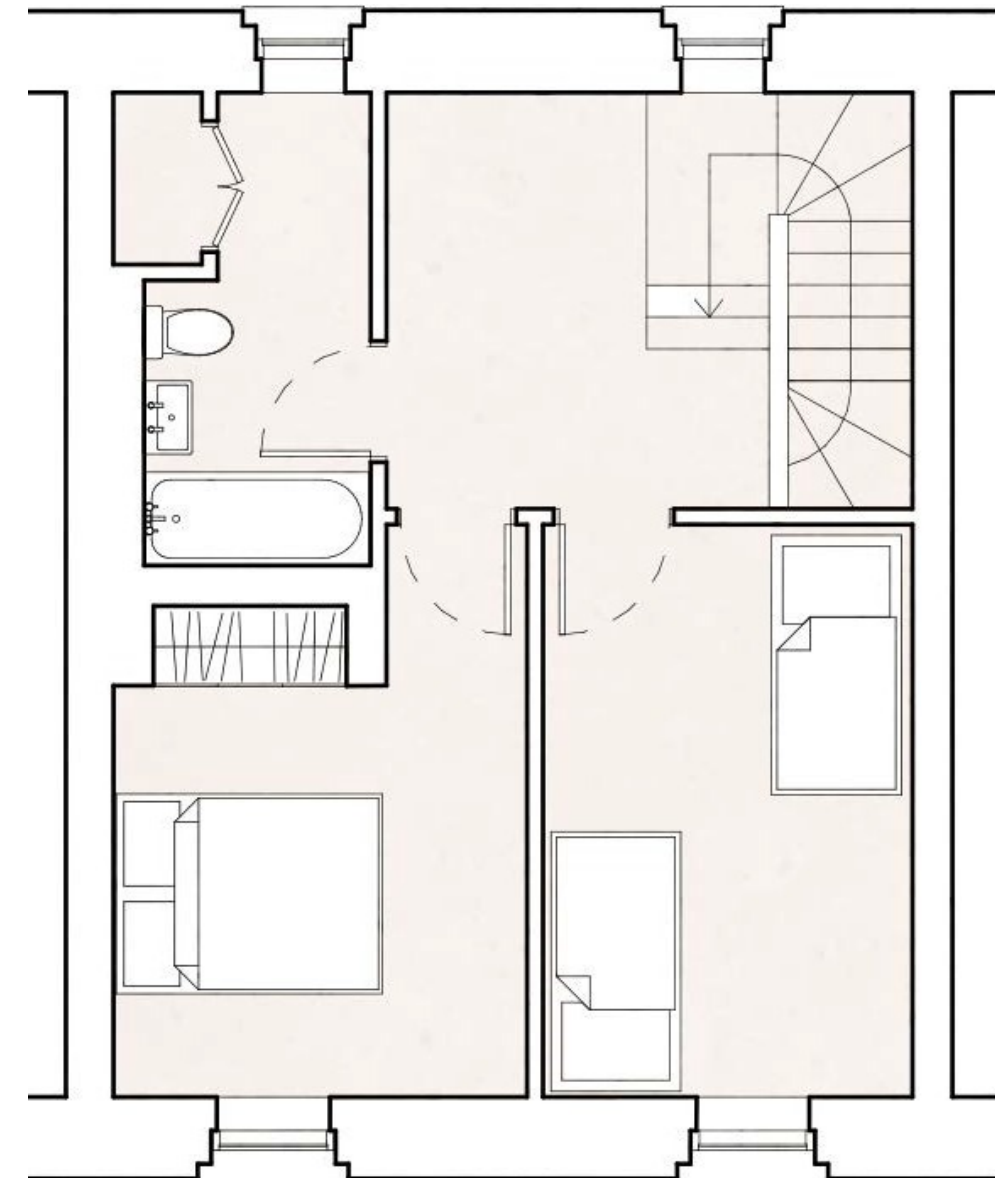
NORTH FACING

LIVING ROOM BATHROOM  
/ LANDING

SOUTH FACING

KITCHEN / DINING  
BEDROOMS

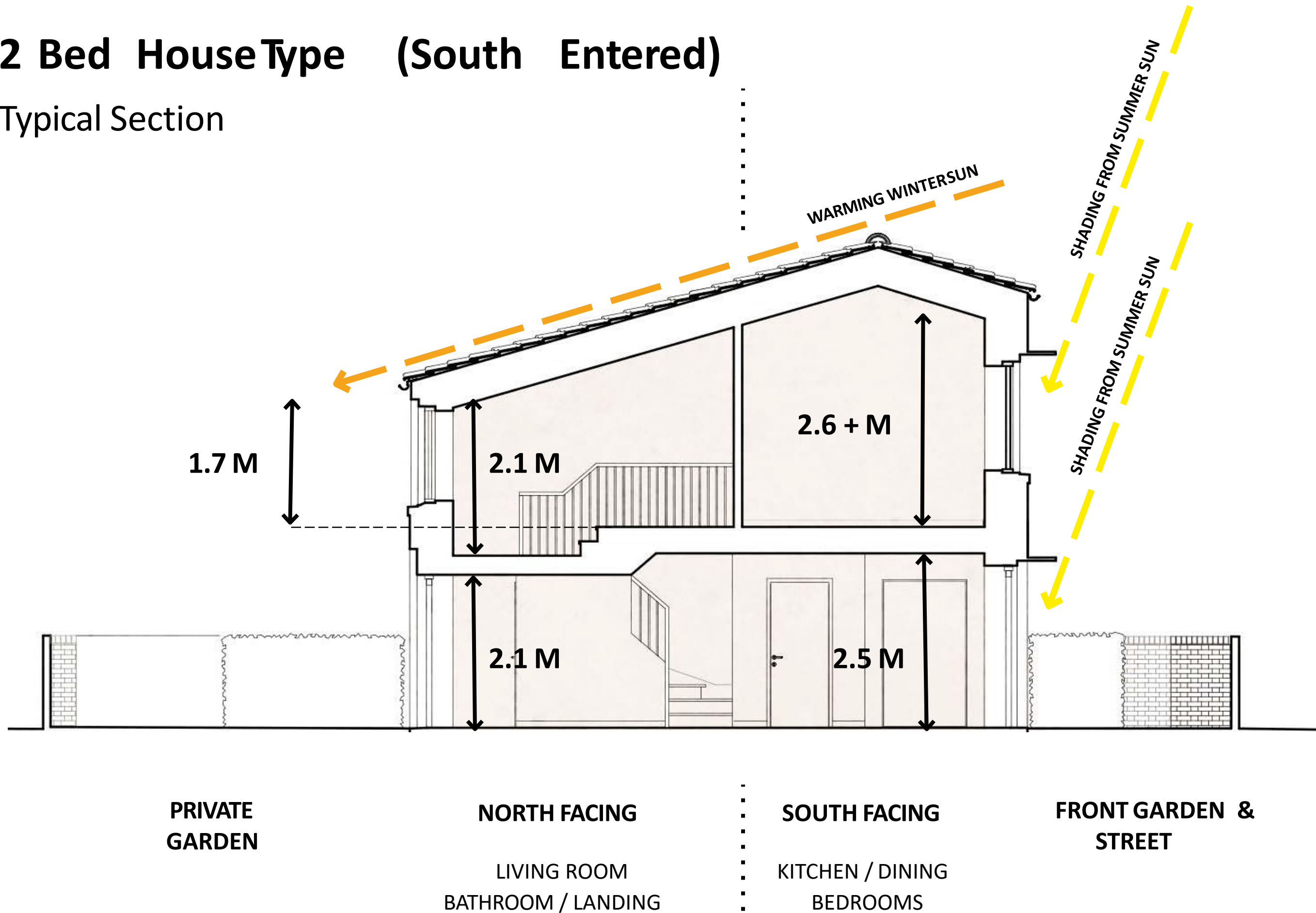
FRONT GARDEN &  
STREET





# 2 Bed House Type (South Entered)

## Typical Section





# Street Elevation (South Entered)

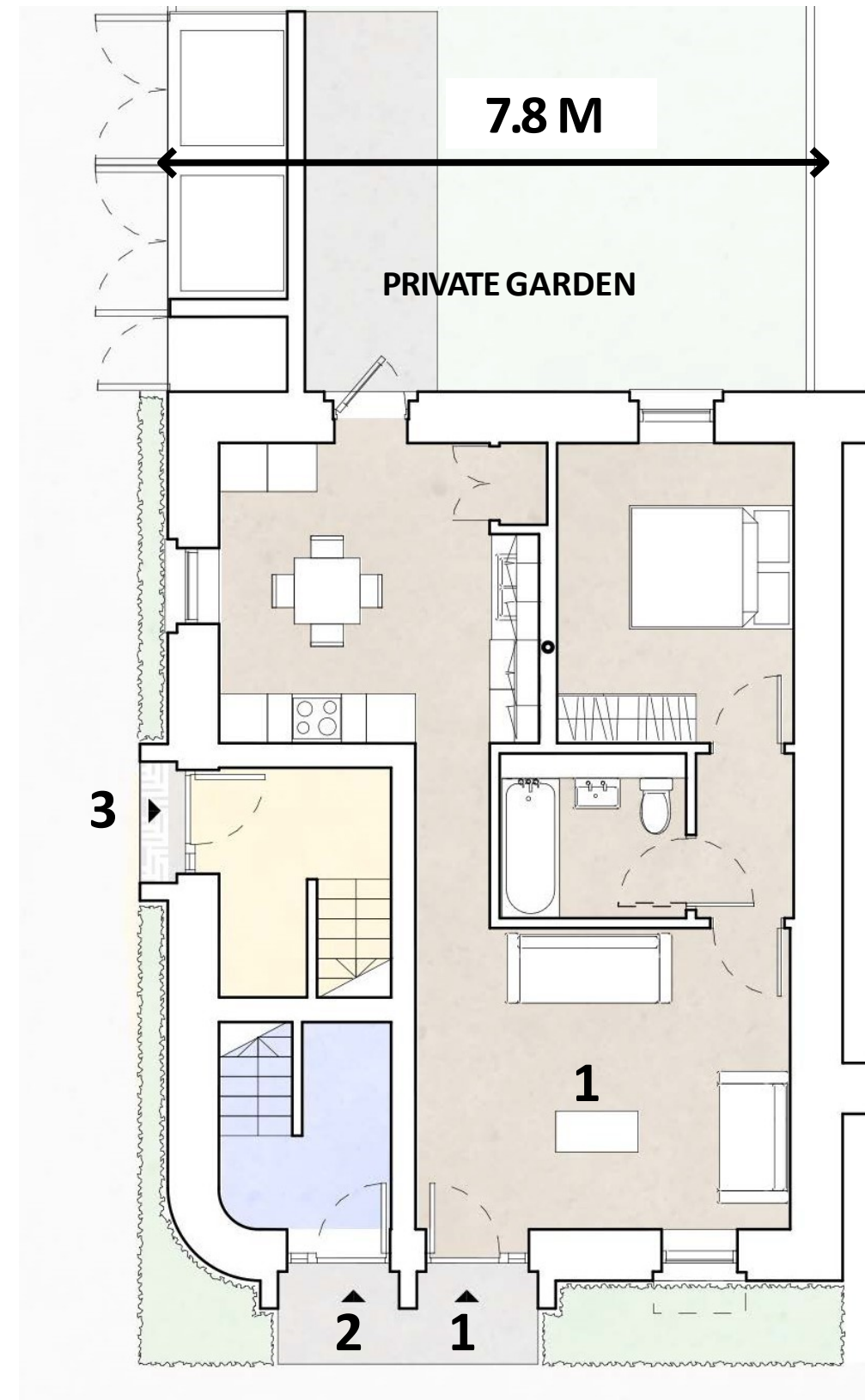
2B Houses, 4B Houses



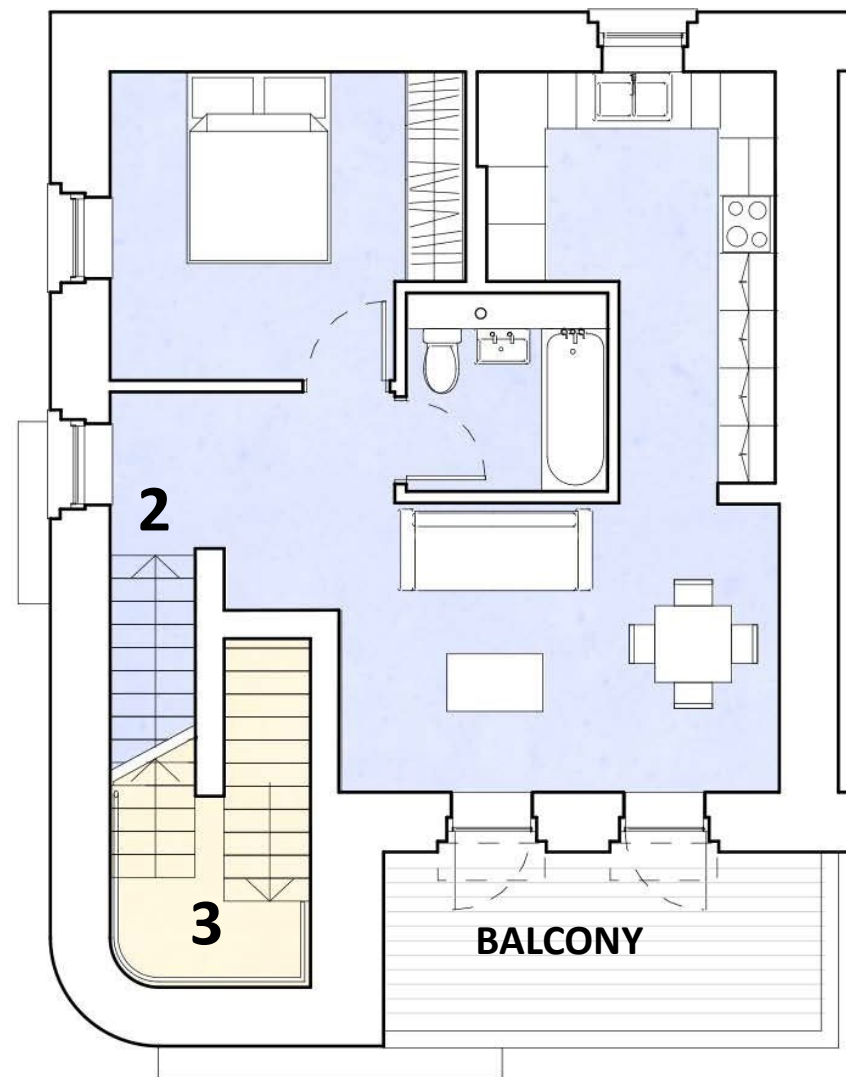
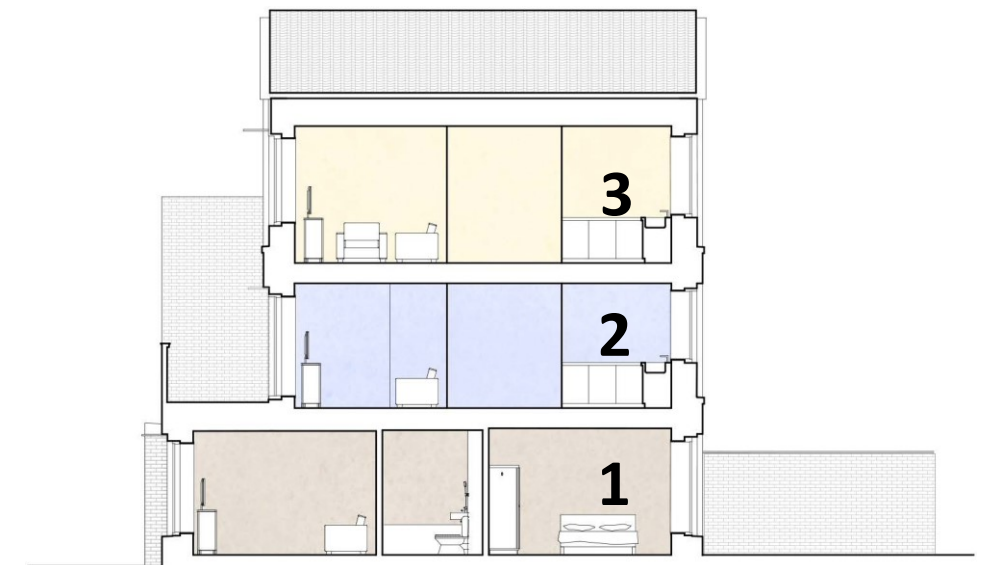


# 1 Bed Flats (South Entered)

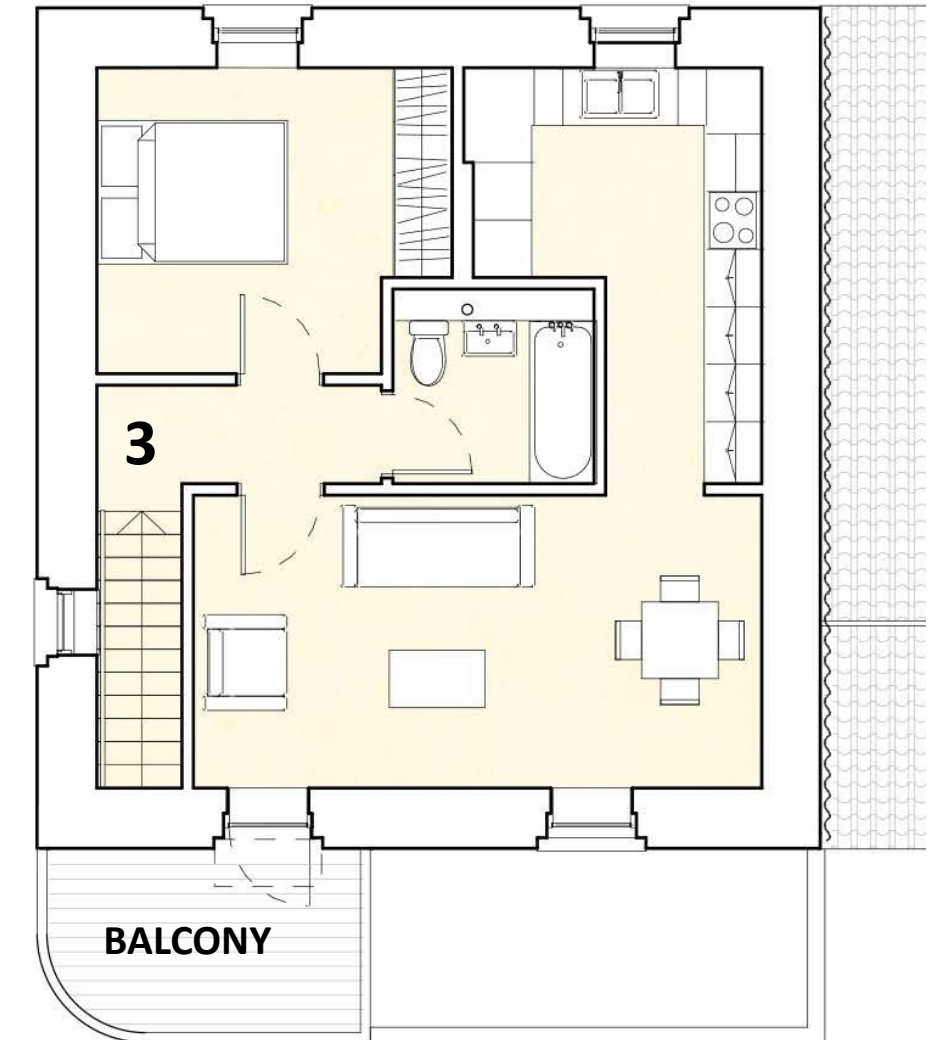
Ground, First & Second Floor Plan



NORTH FACING  
KITCHEN & BEDROOM



SOUTH FACING





# Typical Flat Block (South Entered)

1B Flat - Individual Entrances













## Materiality & Detail

## Robust, Quality, Detail





# Materiality & Detail

## Wall Construction & Roofing













# Lessons Learnt with Q & A

## Achieving Passivhaus at Scale

1. **Aspiration & commitment** to achieve Passivhaus from the outset
2. Manage **solar gains & overshadowing** carefully
3. Early **service co-ordination** essential to integrate into design
4. Careful selection of **construction method – to ensure repeatability**
5. **Don't let Passivhaus dominate the design – its not the only driver**
6. Q & A





# Thankyou

## Norwich City Council & Mikhail Riches

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# Thankyou

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