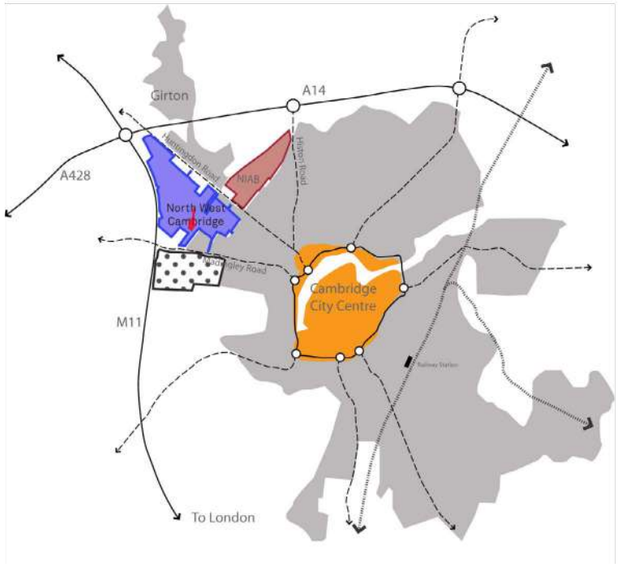
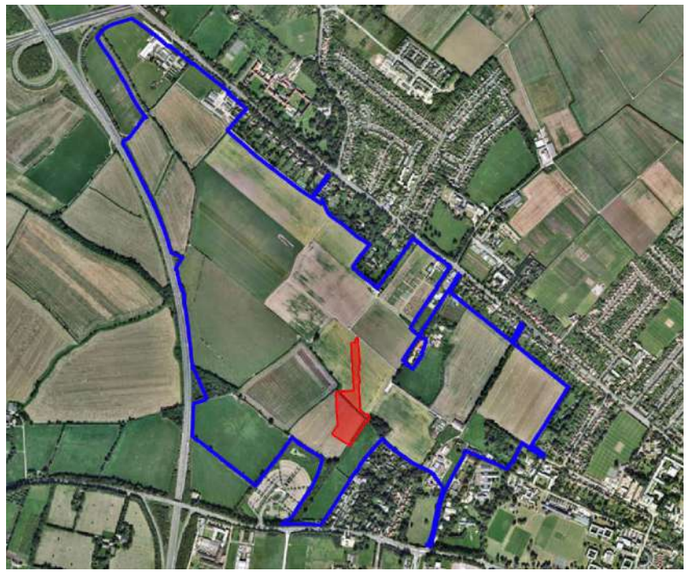
MASTERPLAN OVERVIEW





- 5000 New Dwellings
- 40,000 m2 Commercial floor space
- 60,000m2 Academic floor space
- Over 5000m2 Retail floor space
- Community facilities
- Largest CfSH level 5 Development

The Ridgeway

The Western Edge

M11

Huntingdon Road

Parkland - Storey's Field

Family housing

Student housing

Local centre

LOT 1

Storey's Way

University housing

Primary School

Academic and commercial research

Low density housing

Lot 1:

Wilkinson Eyre and Mole Architects

Lot 2:

Stanton Williams Architects

Lot 3:

Mecanoo

Lot 4:

Cottrell Vermeulen Architects

Sarah Wigglesworth Architects

The AOC

Lot 5:

RH Partnership

Lot 6:

Marks Barfield Architects

Lot 7:

MUMA

Lot 8

Maccreanor Lavington +

Witherford Watson Mann

Lot 9

Alison Brooks Architects

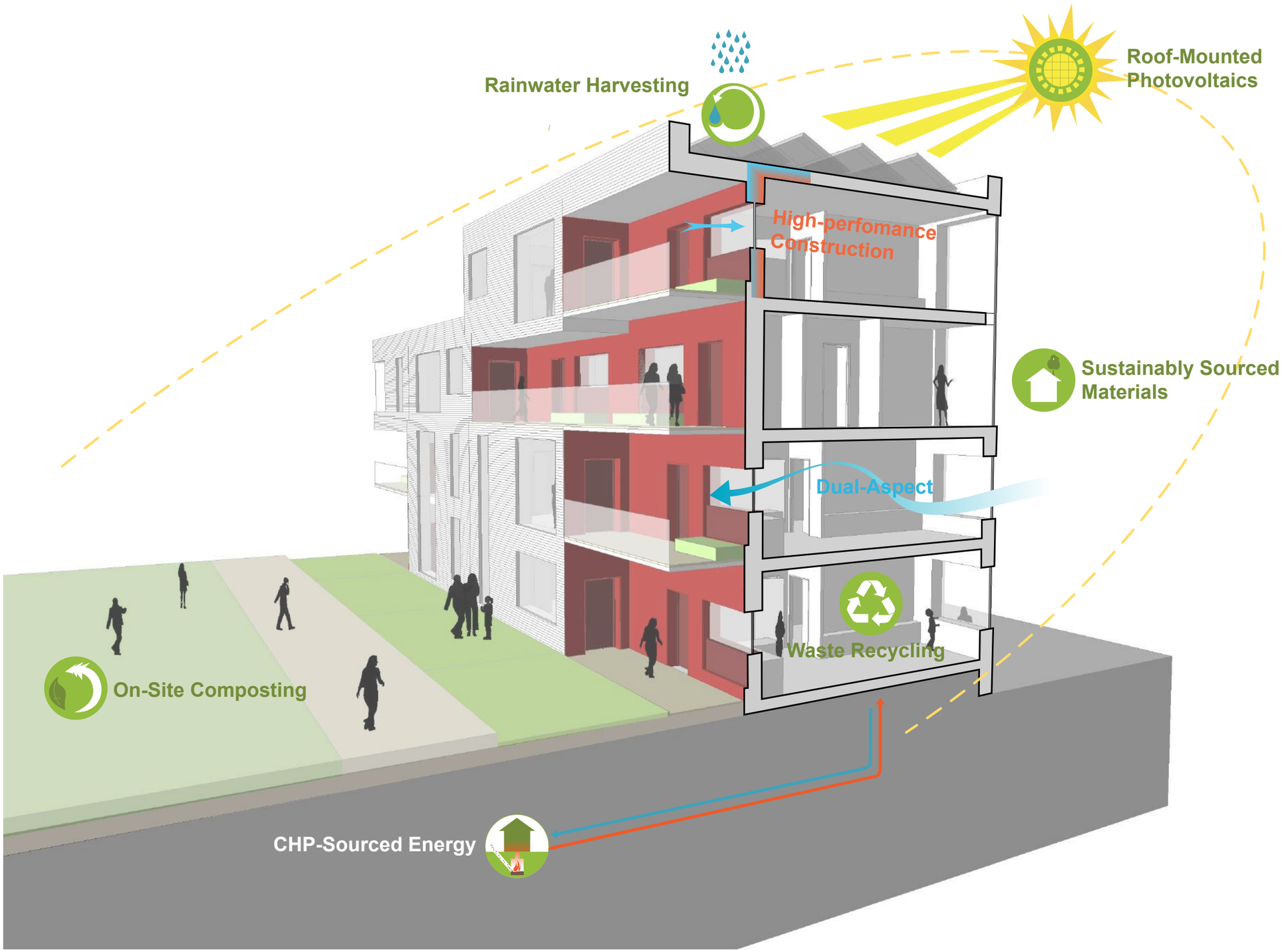
Lot A

Aecom Landscape

Lot B

Townsend Landscape

Architects

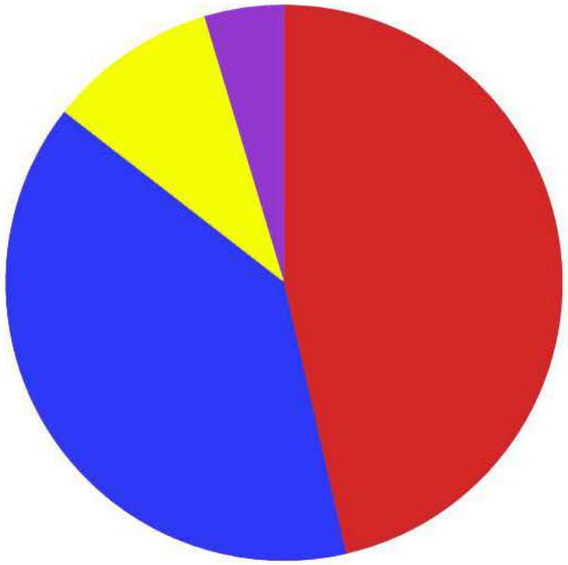


INITIAL FABRIC VALUES:

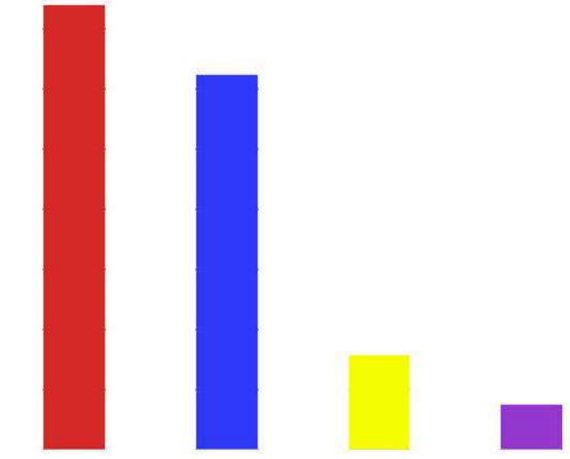
Walls:	0.13 W/m2K
Roof:	0.13 W/m2K
Floor:	0.12 W/m2K
Windows:	1.3 W/m2K
Doors:	1.0 W/m2K
Air Tightness:	5 m3/m2h
Y Value:	0.06 W/m2K

Sample Flat: Part L TER

CO2 emissions (Tonnes CO2/year)

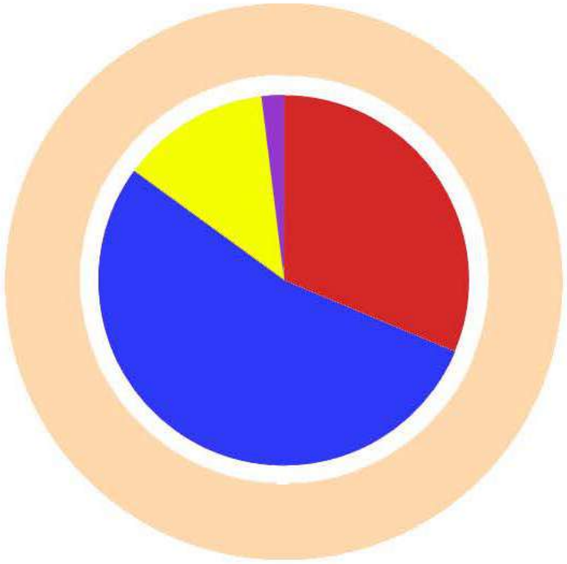


Total: 1594

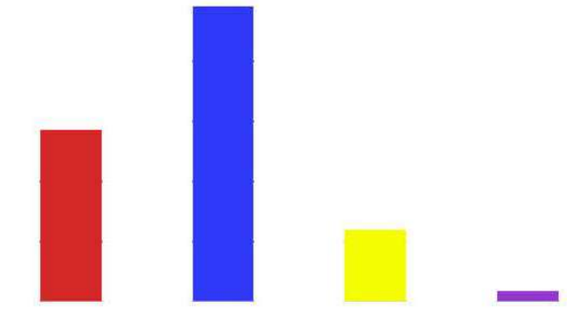


Reduction due to Energy Efficiency

CO2 emissions (Tonnes CO2/year)

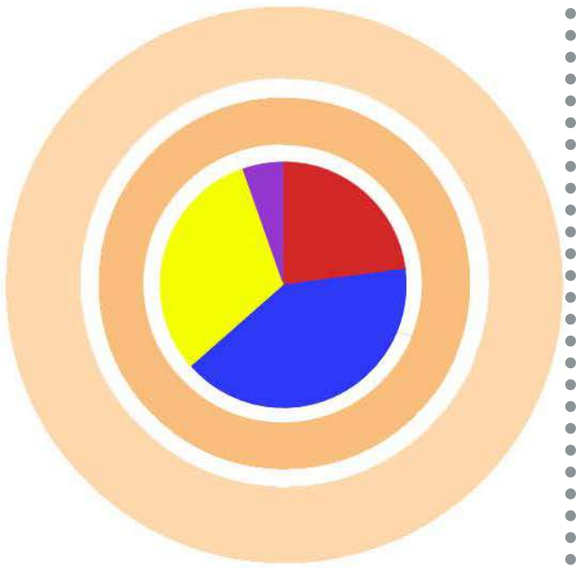


Total: 914

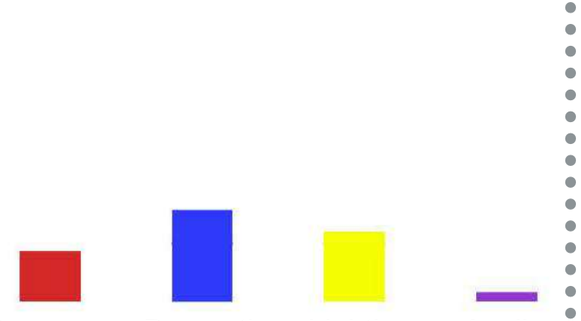


Reduction due to District Heating CHP

CO2 emissions (Tonnes CO2/year)

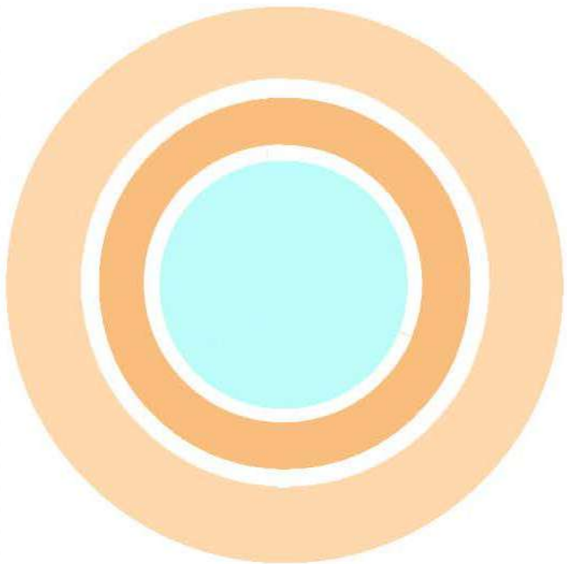


Total: 383

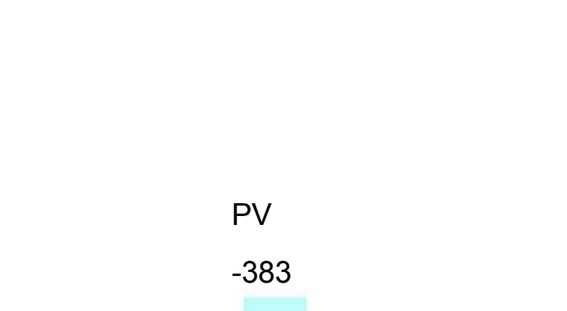


Photovoltaic offset

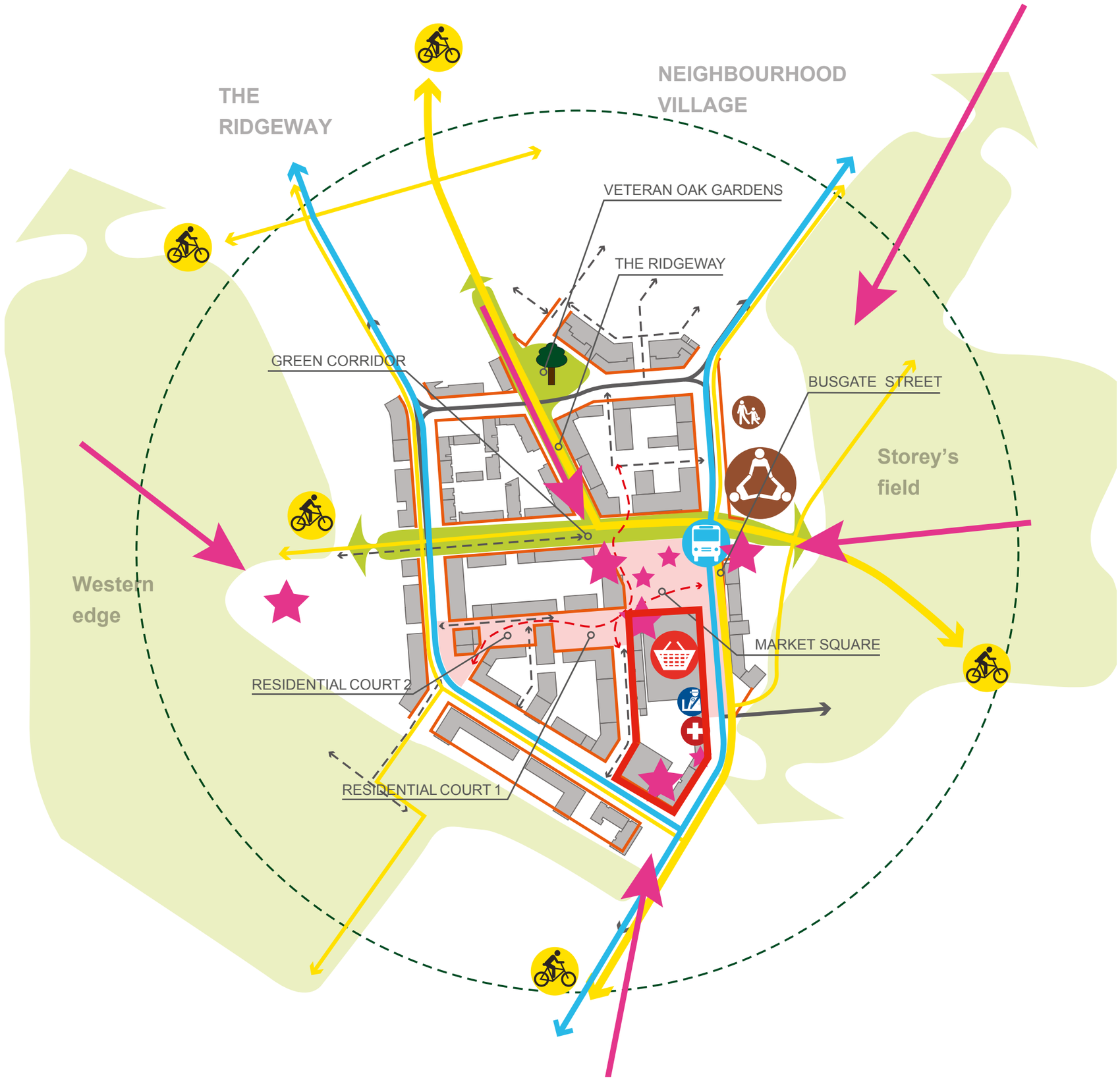
CO2 emissions (Tonnes CO2/year)



Total: 0



LOT 1 OVERVIEW



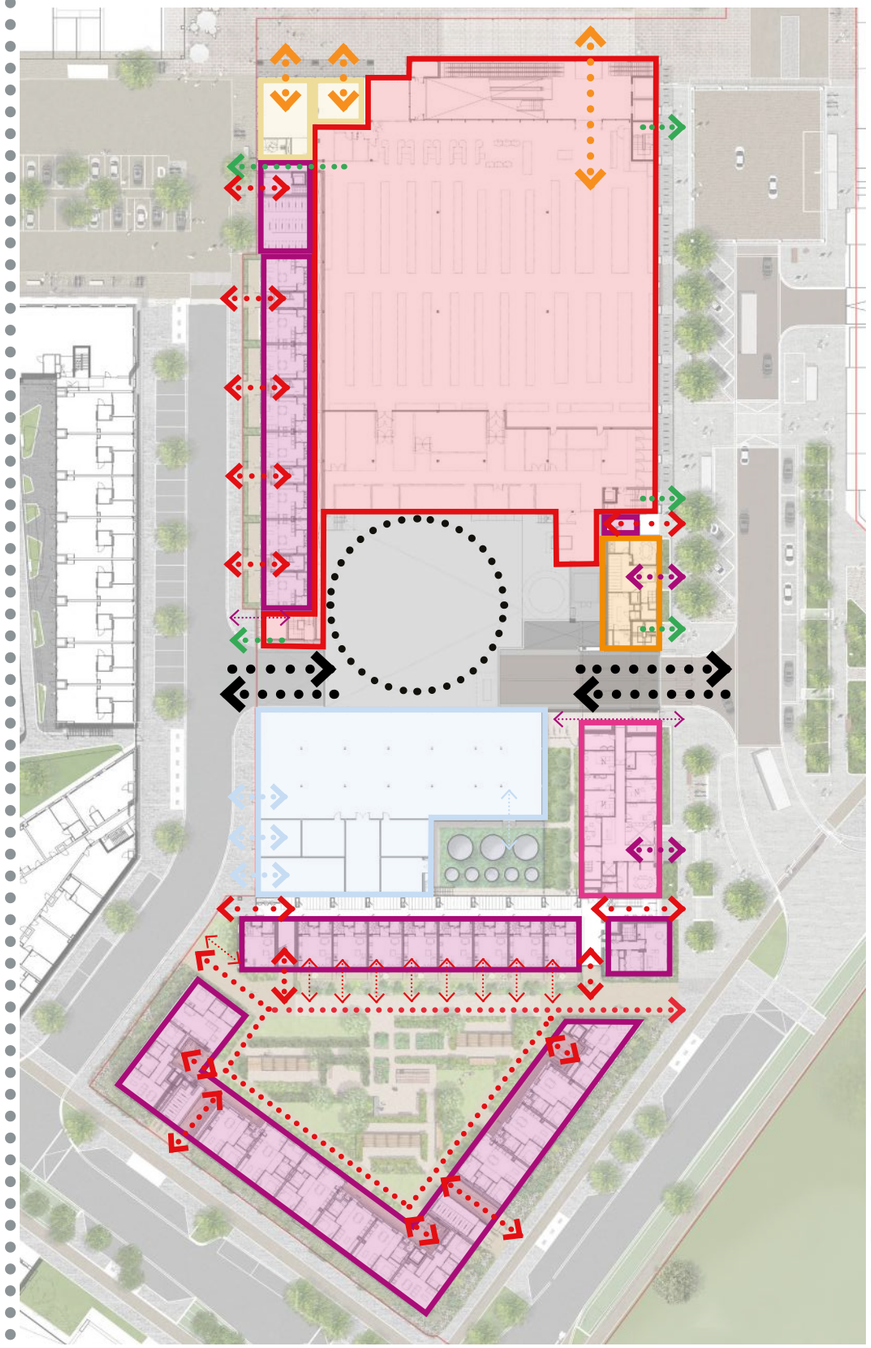
Lot 1 at Heart of development

Mixed use scheme;

- Foodstore
- District Heating Energy Centre
- Health Centre
- Police Office
- 117 Residential Units

- Indicative Buildings
- Frontages
- Local Landmarks
- Important vistas
- Proposed Squares
- Play Areas
- Community Facilities
- School
- Supermarket
- Existing Building to be Retained
- Existing Trees to be Retained
- Existing vehicular routes
- Primary and Secondary Streets
- Potential Tertiary Streets Alignment
- Potential Block Permeablility
- Pedestrian and Cycle Network
- Cycle Routes Connections
- Proposed Bus Routes
- Proposed Bus Stops
- The Ridgeway
- Green Space Network
- Srrounding Green Spaces
- Police Station
- Health Centre

Lot 1 Proposed Uses and Active Frontages



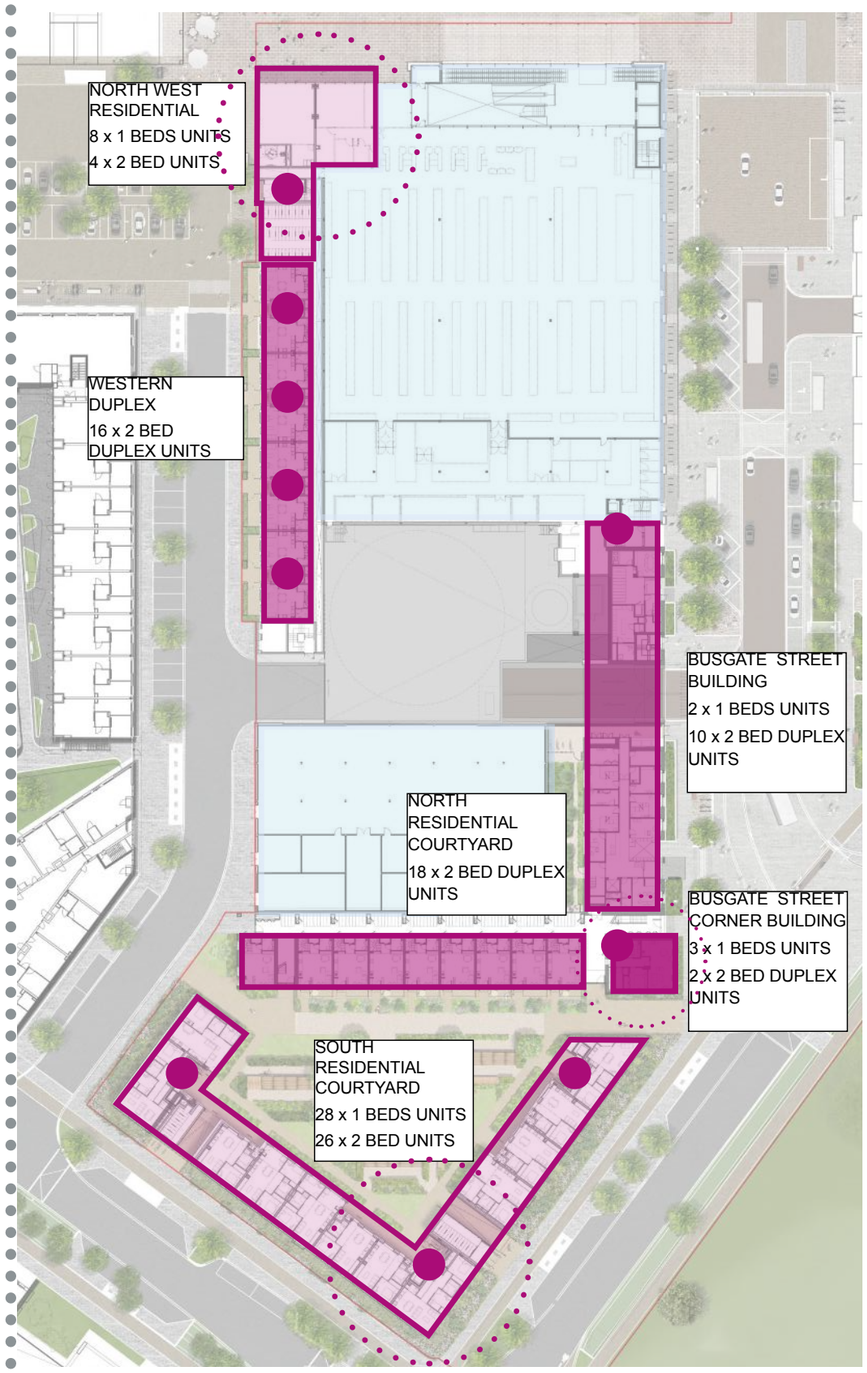
Key

- Residential
- Health Care Centre
- Police Office
- Energy Centre
- Retail
- Foodstore

Entrances

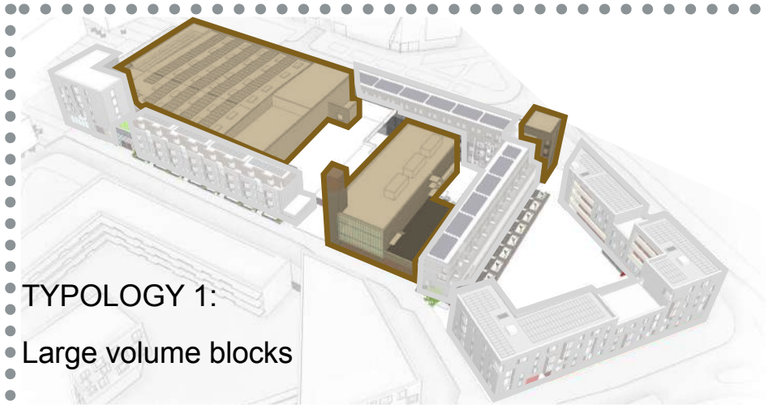
- Residential Entrance
- Health / Police Entrance
- Energy Centre Access
- Retail Entrance
- Fire Escape
- Vehicle Route

Lot 1 Building Block Typologies



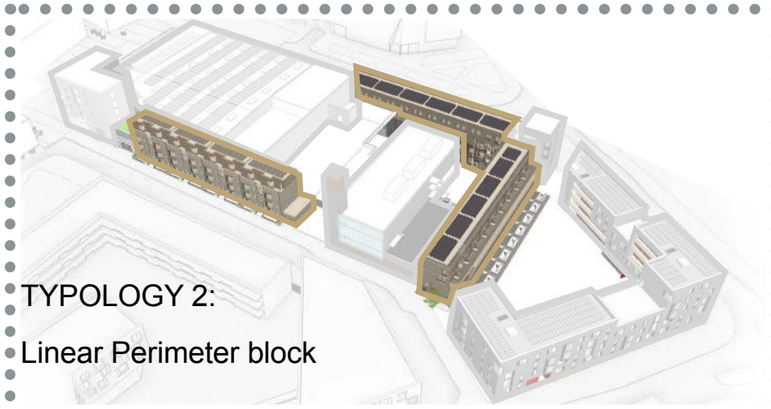
Key

- Foodstore / Energy centre
- Single Level Residential Typology to Busgate Street accent
- Duplex Residential Typology to wrap large volume uses
- Single level Residential Typology to accent corner
- Access Core
- Accent Area



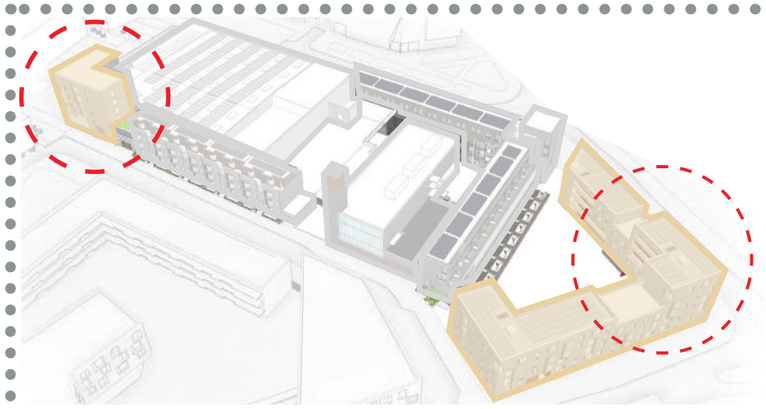
TYPOLOGY 1:

Large volume blocks

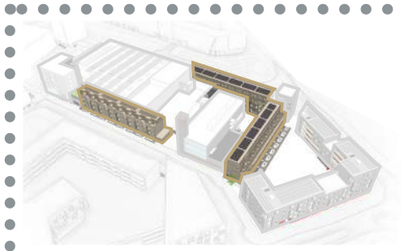


TYPOLOGY 2:

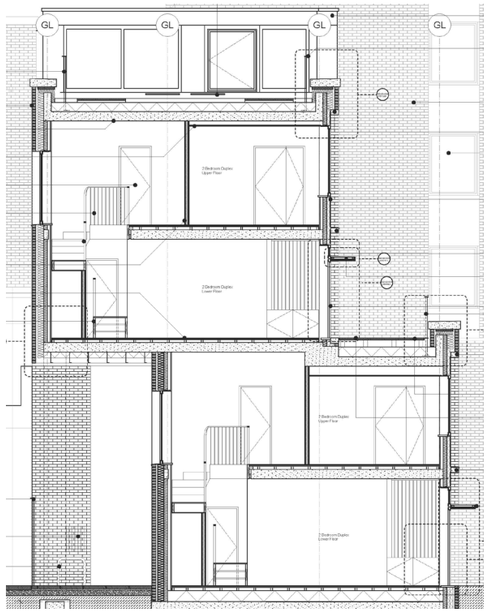
Linear Perimeter block

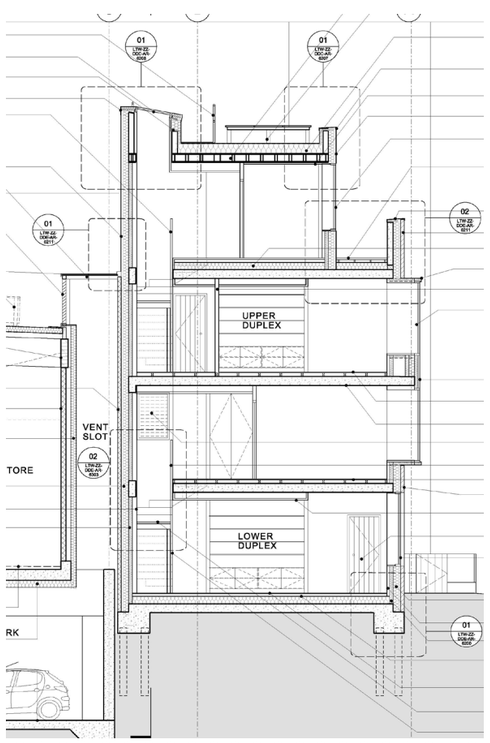


DESIGN CONSTRAINTS

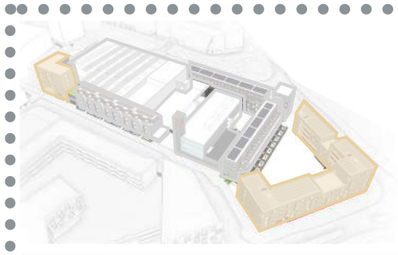


- Large external wall surface area
- Predominantly Single Aspect
- Acoustic Issues

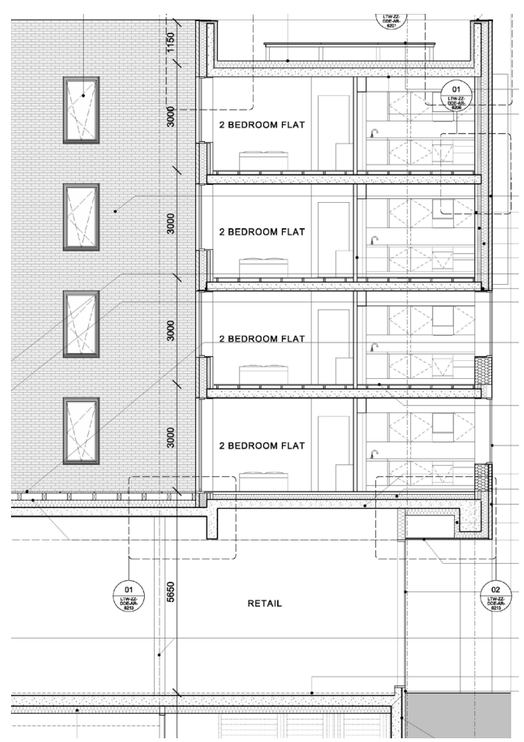


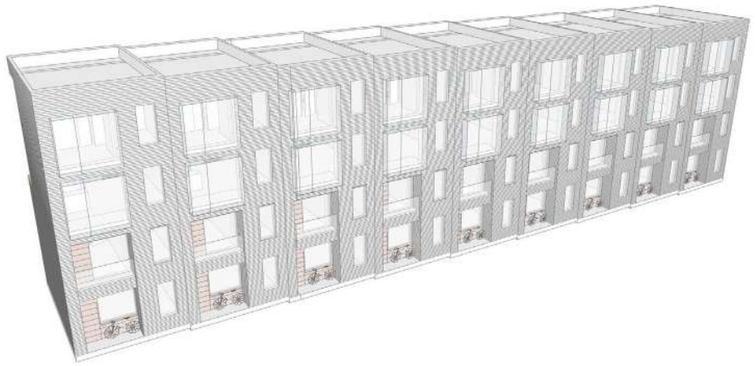


01 PROPOSED RESIDENTIAL WEST ELEVATION
DETAILED ELEVATION / SCALE @A1 _ 1:25

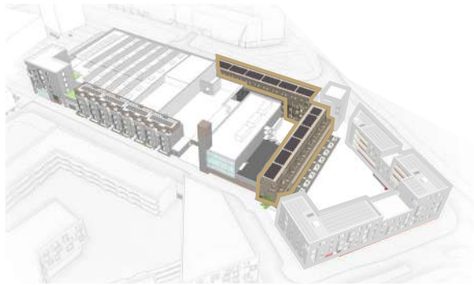


- Building Cantilevers / walkways
- Varied fenestration
- Retail uses below
- External areas below

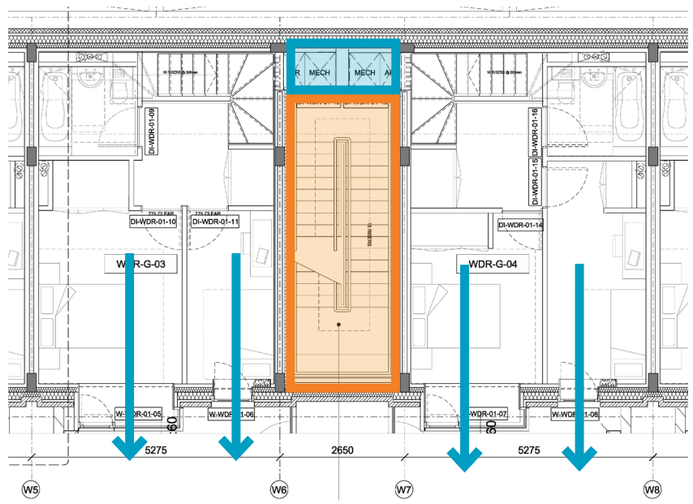


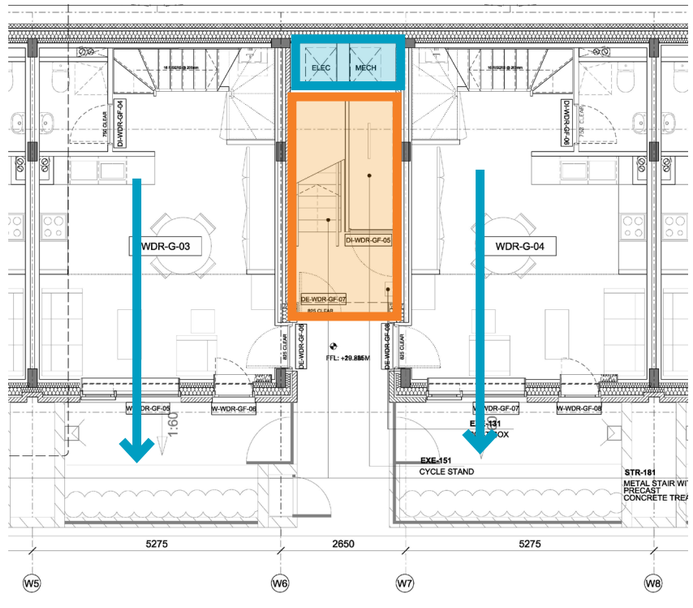


- Early design implications
- Overhangs omitted
- Balconies removed
- Core arrangement revised

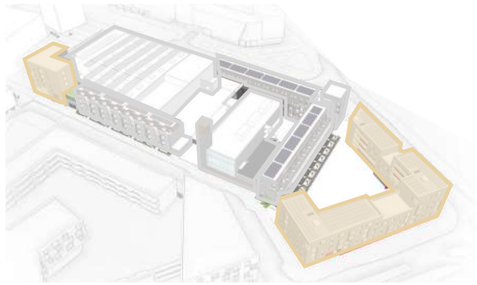


- Daylight difficulties
- Ventilation difficulties
- Heated Cores introduced

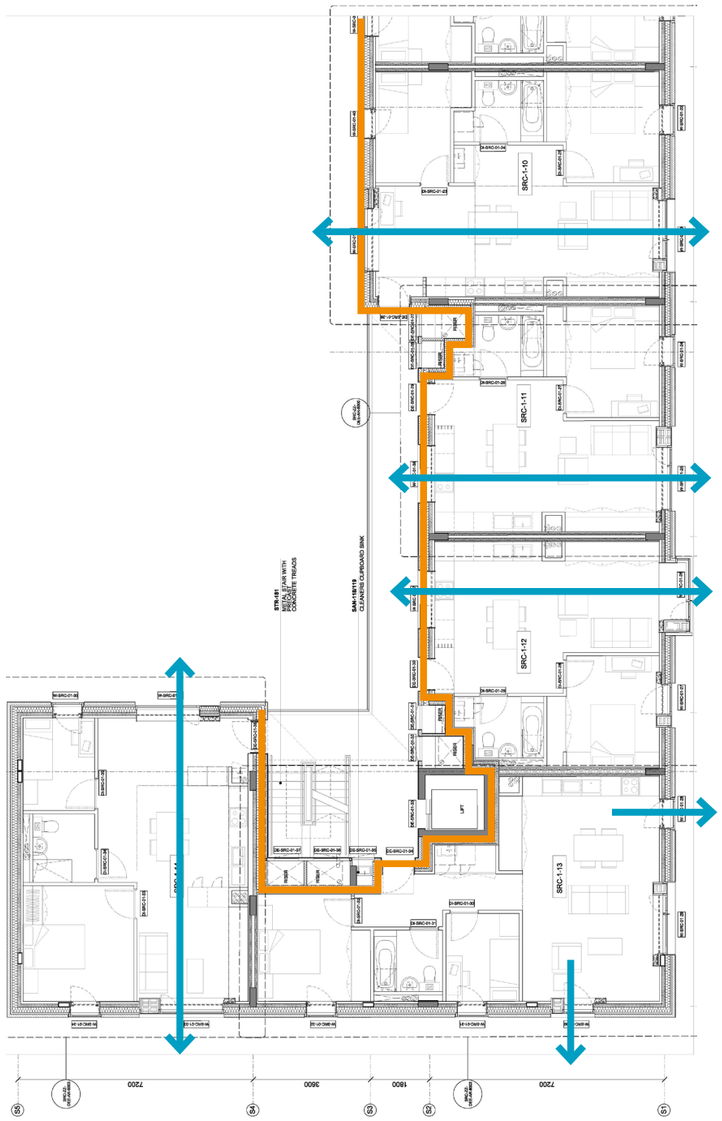




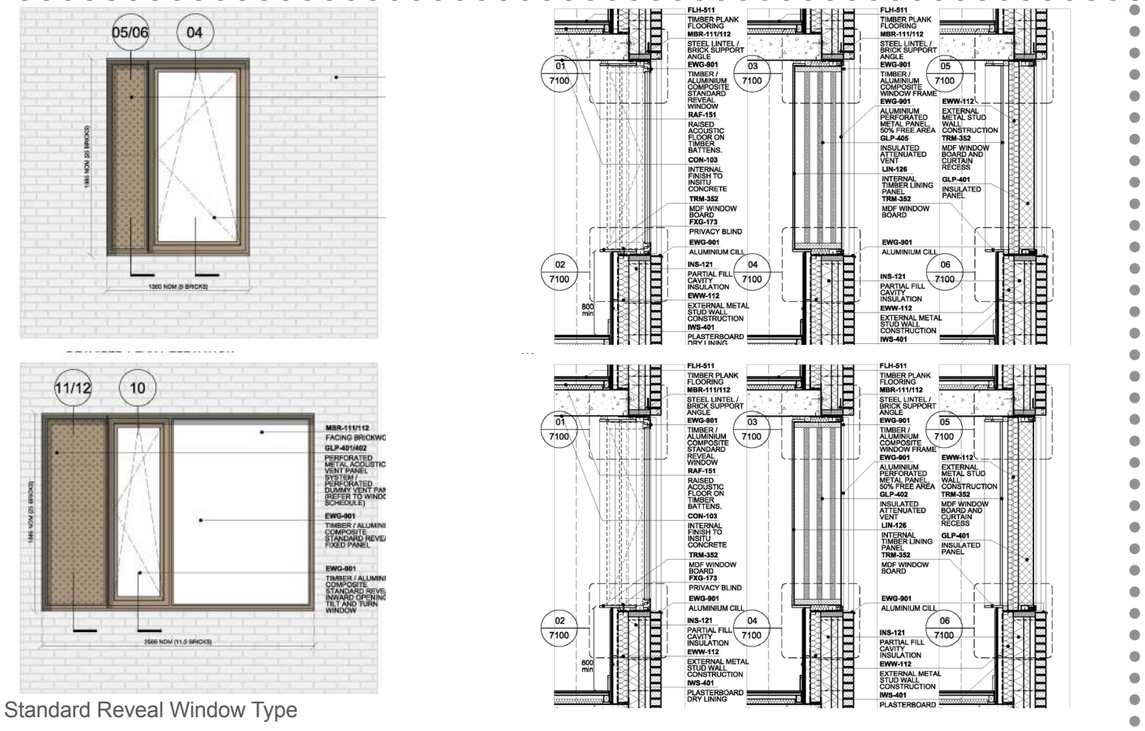
- Window areas revised
- Planning implications



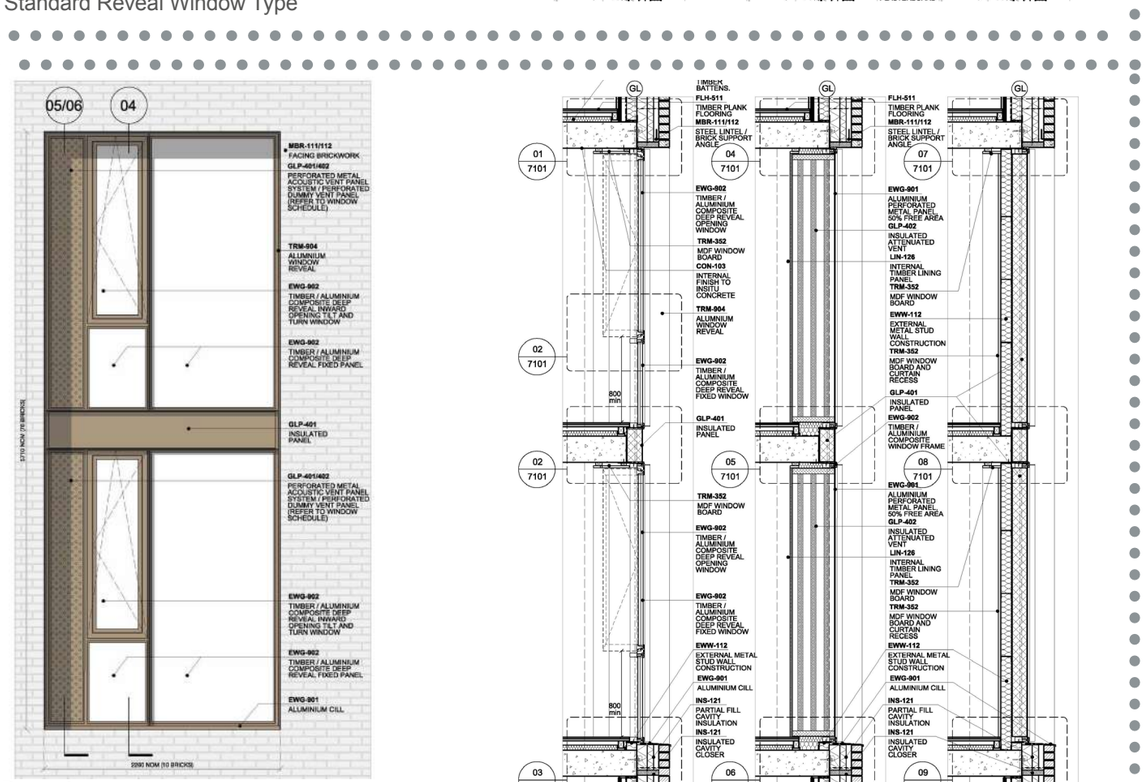
- Triple glazing introduced
- Cross ventilation provided
- Open plan through living spaces
- External cores and walkways
- Thermal line around risers



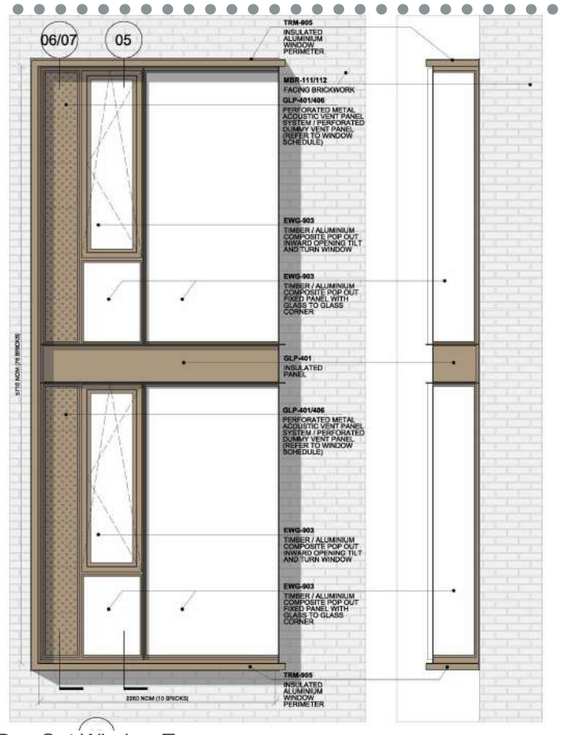
DETAIL DESIGN COMPLEXITY



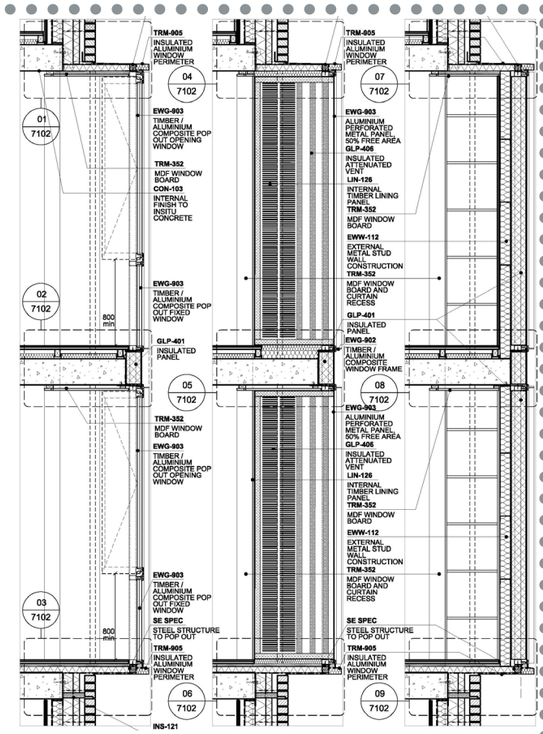
Standard Reveal Window Type

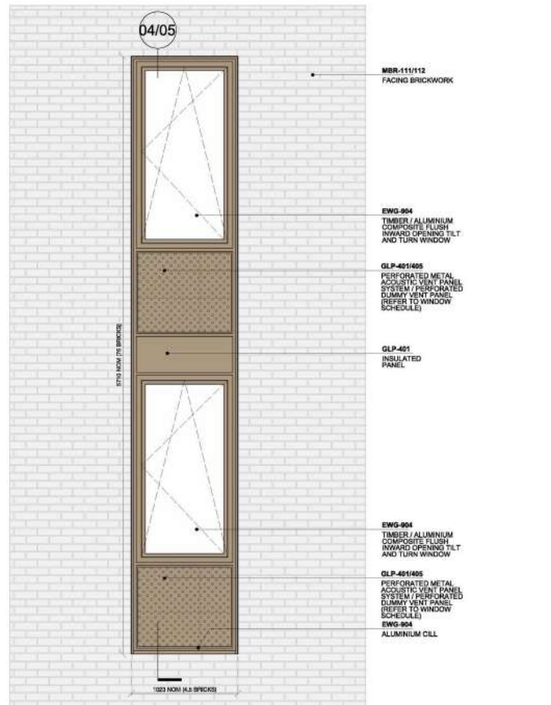


Deep Reveal Window Type

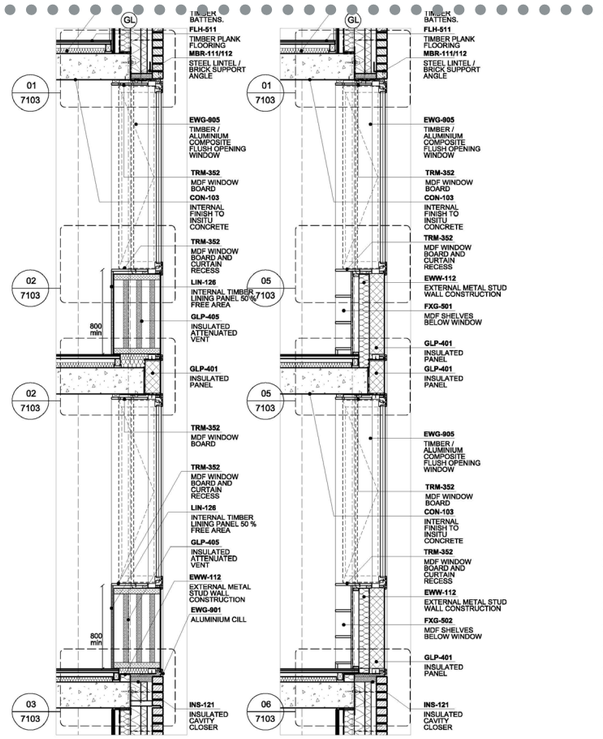


Pop Out Window Type



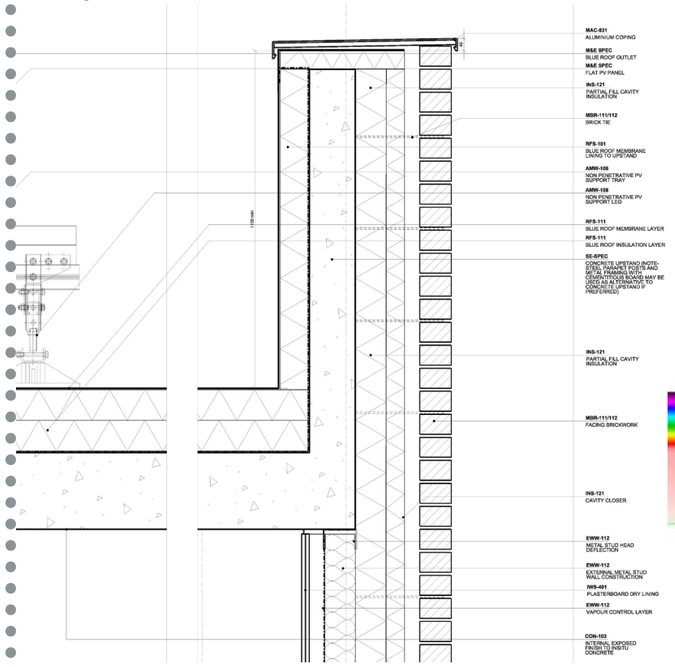


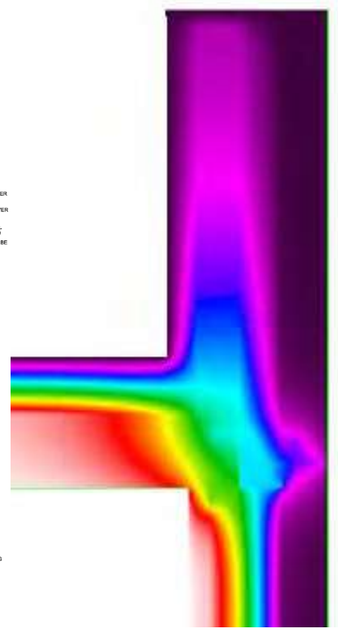
Flush Window Type

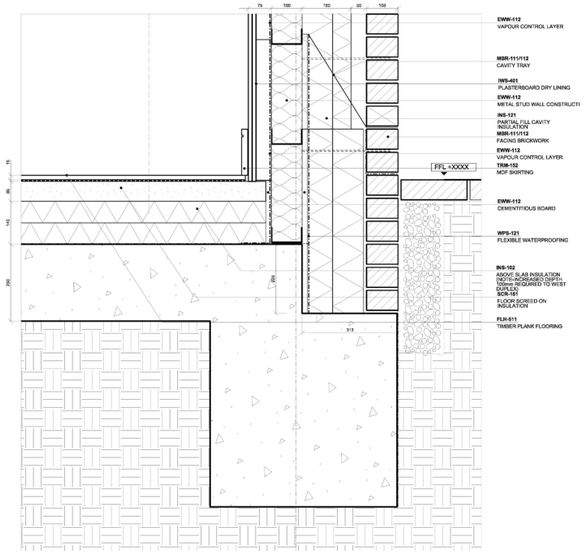


- All Bespoke details

- Key details to be reviewed



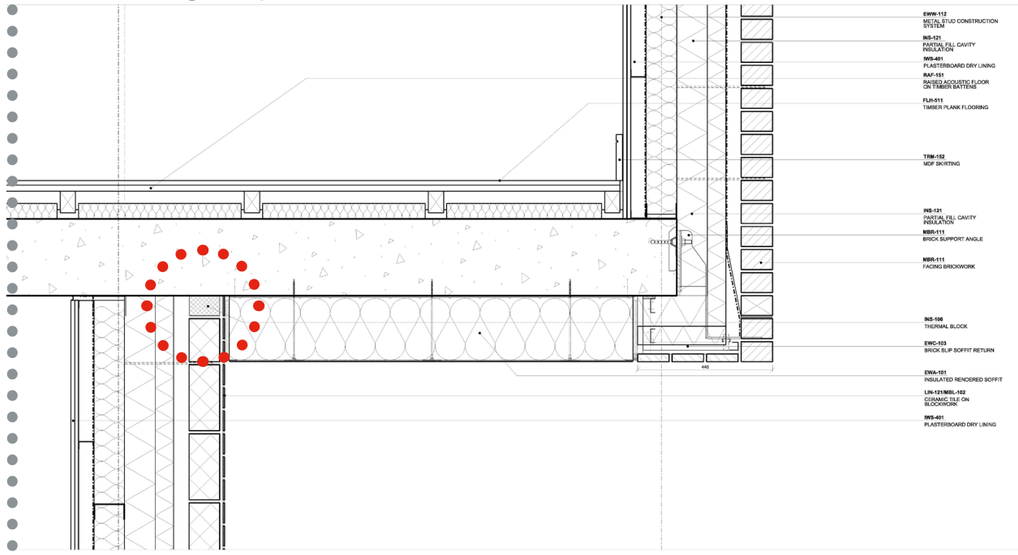


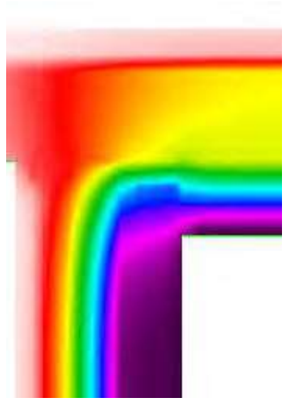


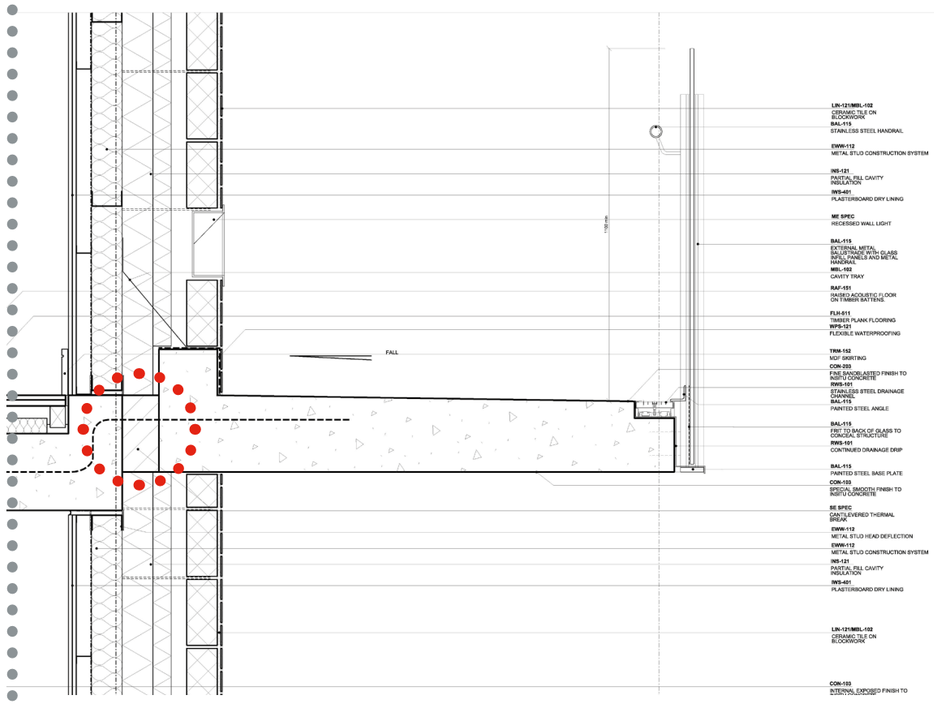
Typical External Wall Base and Parapet Detail

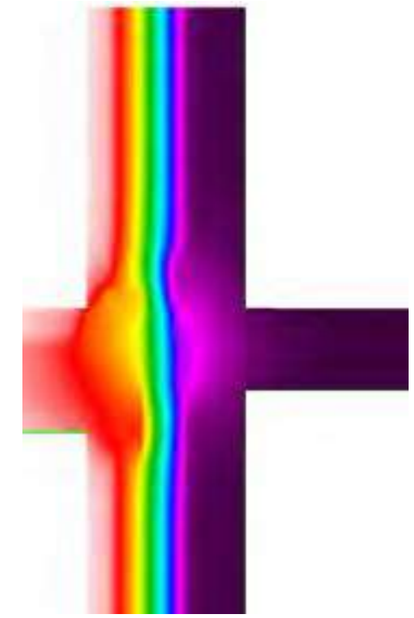
- Iterative process required for more complex details

- Reliant on good products



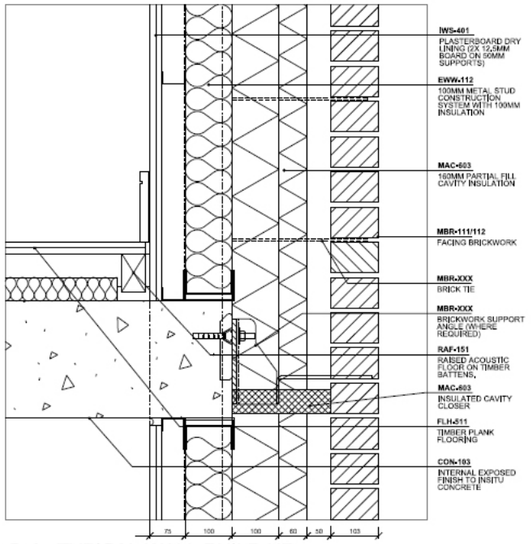






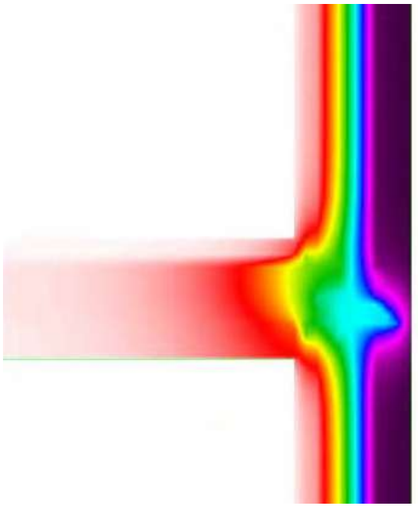
Typical External Wall Walkway and Cantilever Detail

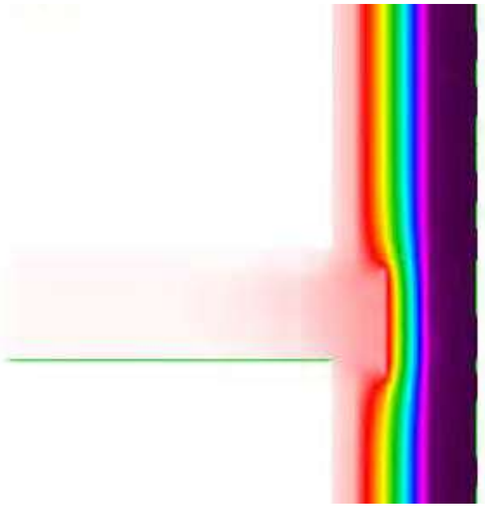
MORE THERMAL BRIDGING CALCULATIONS...

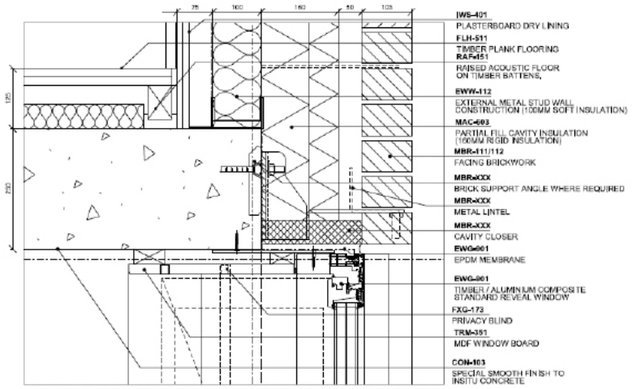


01 TYPICAL WALL BUILD UP

U VALUE 0.11 W/M2K

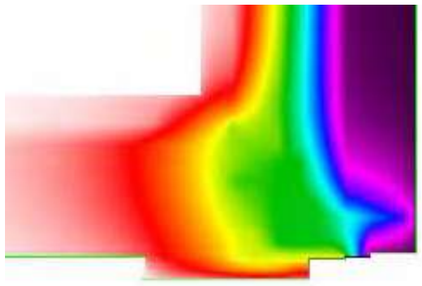


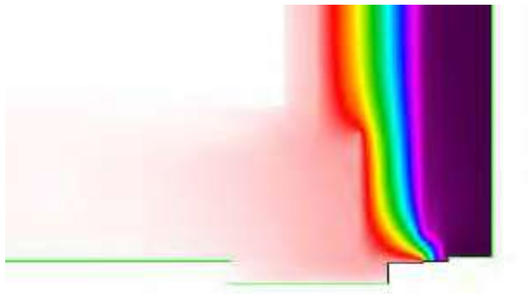


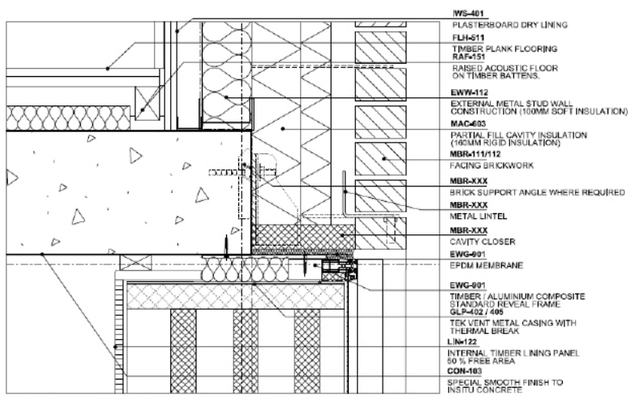


01 STANDARD REVEAL WINDOW HEAD

SECTION

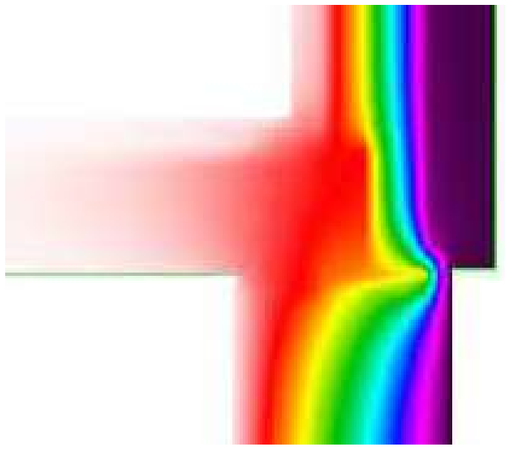






03 STANDARD REVEAL VENT PANEL HEAD

SECTION



FINAL FABRIC VALUES:

Walls:	0.13 W/m2K
	0.10 / 0.11 W/m2K
Roof:	0.13 W/m2K
	0.10 / 0.13 W/m2K
Floor:	0.12 W/m2K
	0.10 / 0.12 W/m2K
Windows:	1.3 W/m2K
	0.9 W/m2K
Doors:	1.0 W/m2K
	1.0 W/m2K
Air Tightness:	**5 m3/m2h**
	3 m3/m2h
Y Value:	0.06 W/m2K
	Average 0.1W/m2K

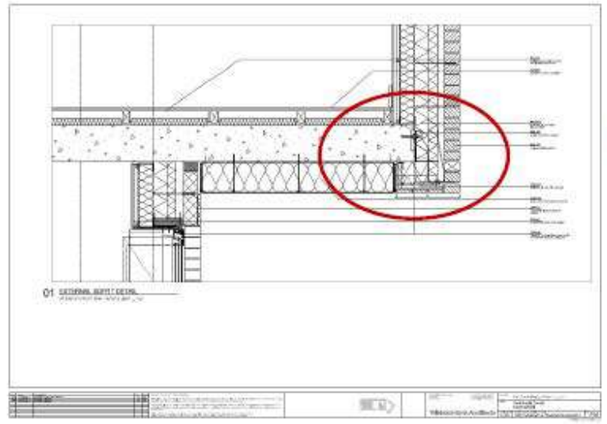
Y values had to be calculated.

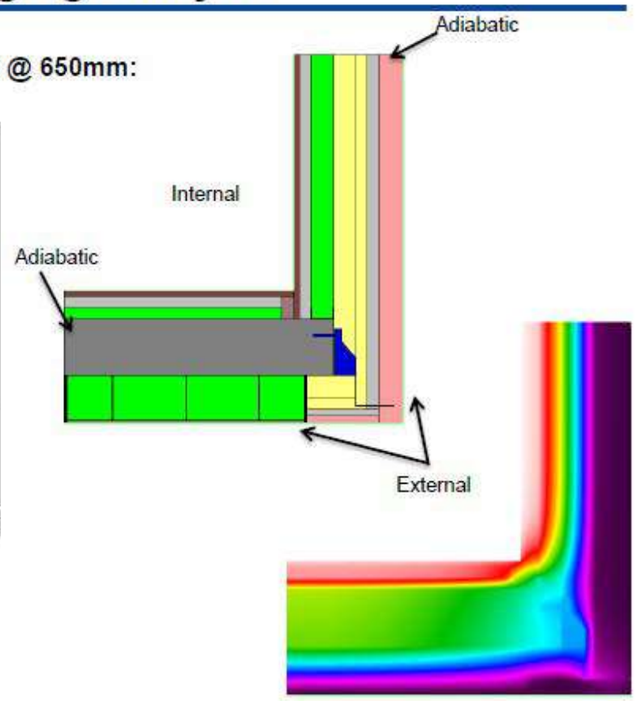
The most difficult parameter for achieving the FEE targets.

The default (0.15 W/m2K) Thermal bridging, y-value, is not an option!

Model Inputs – Thermal Bridging Analysis

13b. Detail 6203 (P06) – exposed floor with ancon @ 650mm:





psi-value (Total U value * length of 2D model)	Notes
W/m.K	Value halved per flat
0.0745*	n/a

*Note: the calculated values, reflect the above drawing only. Any changes to the thickness and the properties of the fabrics, will in line change the calculated values.

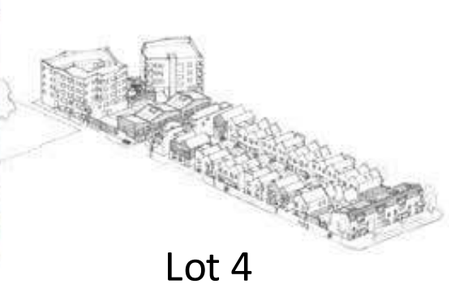
LOT NUMBER	NUMBER OF DWELLINGS	AVERAGE FEE VALUE (kWh/m2)	AVERAGE Y-VALUE (W/m2K)	AVERAGE PV Required (kWp/Dwelling)
LOT 1	117	37.0	0.1	1.11
LOT 2	264	36.7	0.08	1.07
LOT 3	232	35.0	0.08	1.11
LOT 4	70	37-43.5	0.06-0.1	1.43
LOT 8	73	36.5	0.06-0.15	1.11

Y Value calculated for over 750 Details for all lots


Lot 1


Lot 2


Lot 3


Lot 4


Lot 8

Checklist nature of code could sometimes lead to sub optimal design:

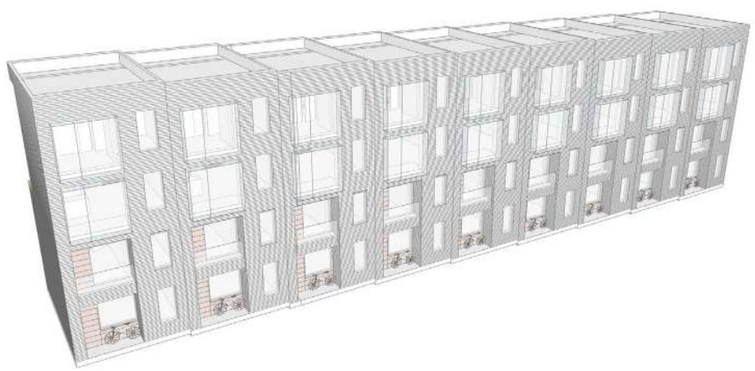
Heating corridors to achieve FEE;

Using high g-values to meet FEE as overheating has no credit in Code;

Reducing master bedrooms glazing in favour of study as main bedroom is not counted in daylight credits;

Fully filled party walls with little external faces. Acoustics conflict.

Removing balconies to achieve daylight.



Code engages the design team on issues that are cross cutting.

It helps integrated design.

Daylight?

Acoustics?

Waste/Recycling?

Transport/Bikes?

Materials?

Either way we need a new way of working.

Achieving FEE and Zero Carbon, but also daylight, and comfort, aesthetic and cost constraints needs:

Integrated Design.

More analysis earlier.

More time and money for concept stage.

Client Brief must evolve during concept design:

Flexibility/limit of usage, green lease, cost, maintenance issues.

Planning process de-risked.