THE WALLS

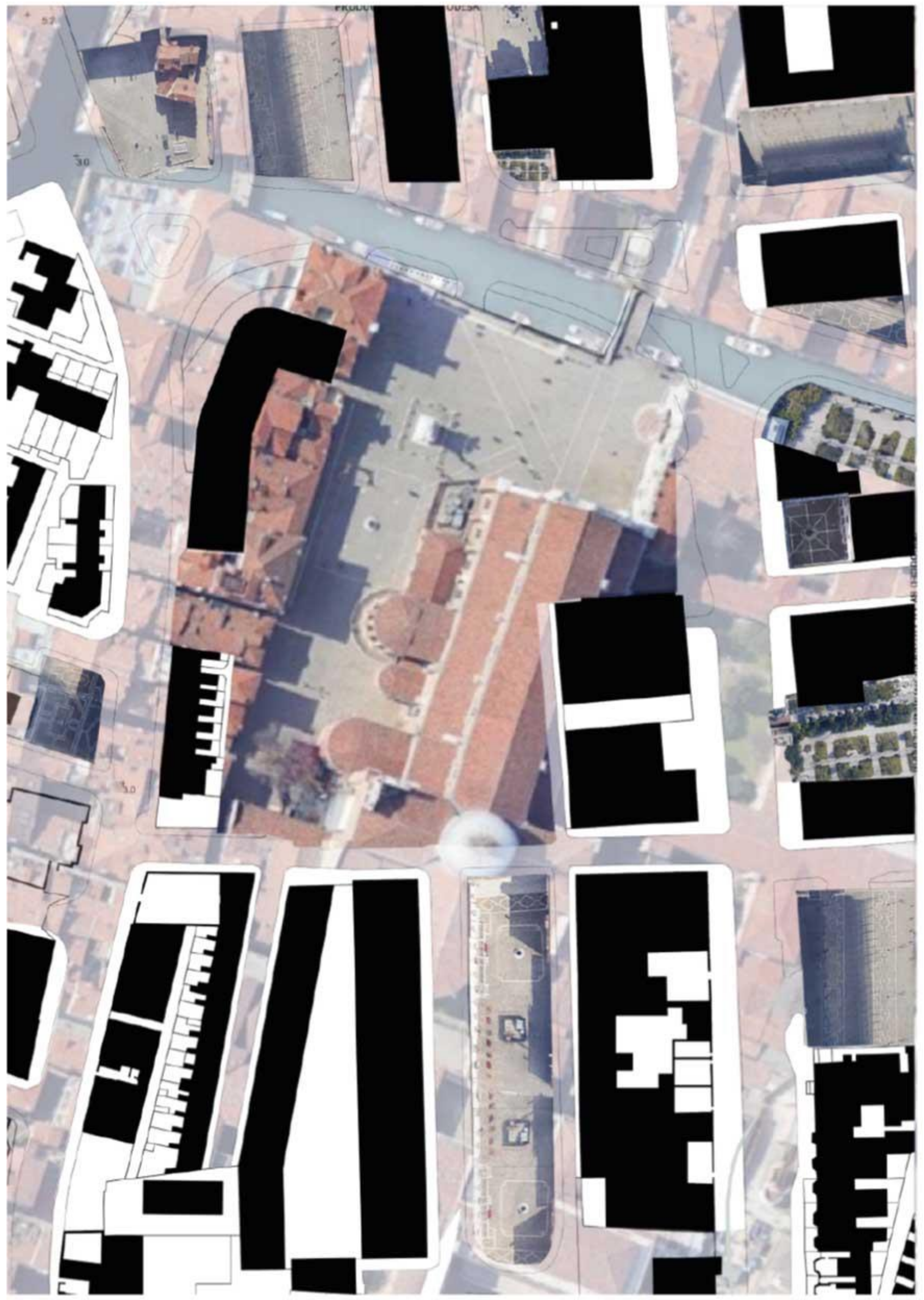
Time out of Time is a vertical studio that views the city as a theatre and architecture as a public set that informs how people behave in and around it. It also interrogates the meaning of temporary architecture beyond its ‘entertaining’ character and generates provocative conversations where temporality is challenged.

By understanding the urban configuration of what is a politically and physically a complicated site, I have proposed a typology of temporary architecture that is less likely to become a trojan horse for gentrification. A collection of 10 ‘inhabited’ brick walls have been placed along the north-eastern corner of the site to provide a permeable enclosure to a potential local market on the other side. The aim is to introduce a first façade that allows for temporary exhibitions, informal retail spaces, and leisure areas to welcome the user and serve as a preamble to a vibrant market.

The historic context of Sandy Row as well as an imminent necessity to celebrate the diversity of Belfast, have informed the final proposal of this intervention. Furthermore, the conception of temporality is challenged, and this is exposed in the juxtaposition between the permanent brick walls and the temporary floorplates that can be easily removed or altered to generate different spaces based on the temporary activity to be carried out. This design proposal conceives Sandy Row community as a valuable piece in the configuration of the City Centre of Belfast and aims to act as a civic magnet for people’s curiosity about what the cultural richness of Belfast has to offer.

The civic character of Venetian Piazzas in addition to the façade treatment of Spitalfields Market in London set the tone for the intervention's atmosphere and seek for public engagement.

Hope Street Site + Spitalfields Market



Hope Street Site + Piazza dei Santi Giovanni e Paolo

Collages plans into 1:500 Nolli Plan

02 Site Strategy

Sandy Row

Bringing Sandy Row back to the thriving shopping district that it used to be, is the desire of the people of Belfast. Sandy Row community asks for investors that want to revitalize the area while retaining its essence.

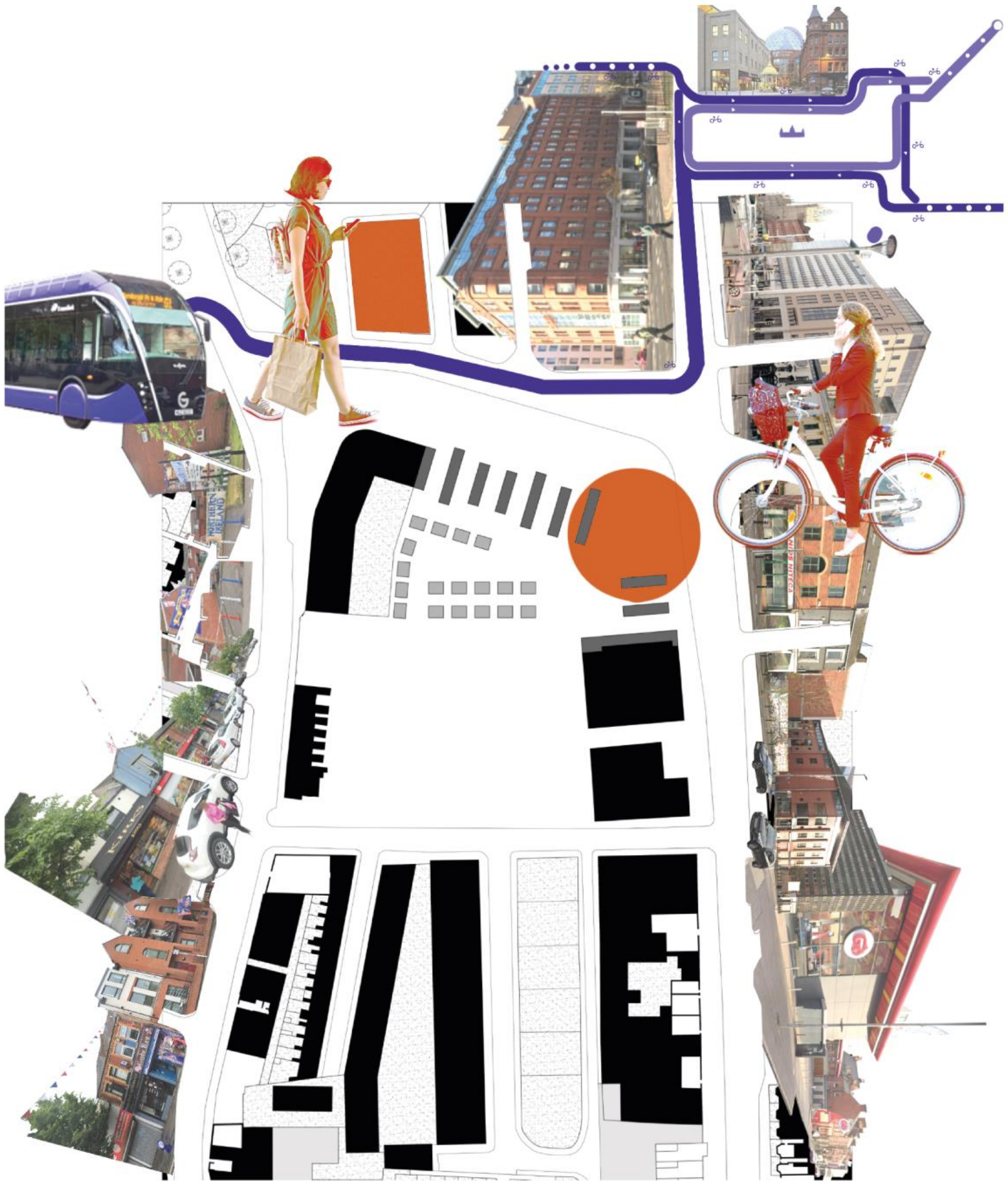
Potential Site

The site is located in what can be seen as a mid-point between Sandy Row and Great Victoria Street. It can act as a joining force between those areas and lead people to Sandy Row and the commercial activity it can offer.

Great Victoria Street

Great Victoria Street has a very different building typology than Sandy Row, nevertheless, this contrast in the city could be enhanced -through temporary architecture- instead of neglected

Diagrammatic Elevation through the Site collaged with Spitalfields Market

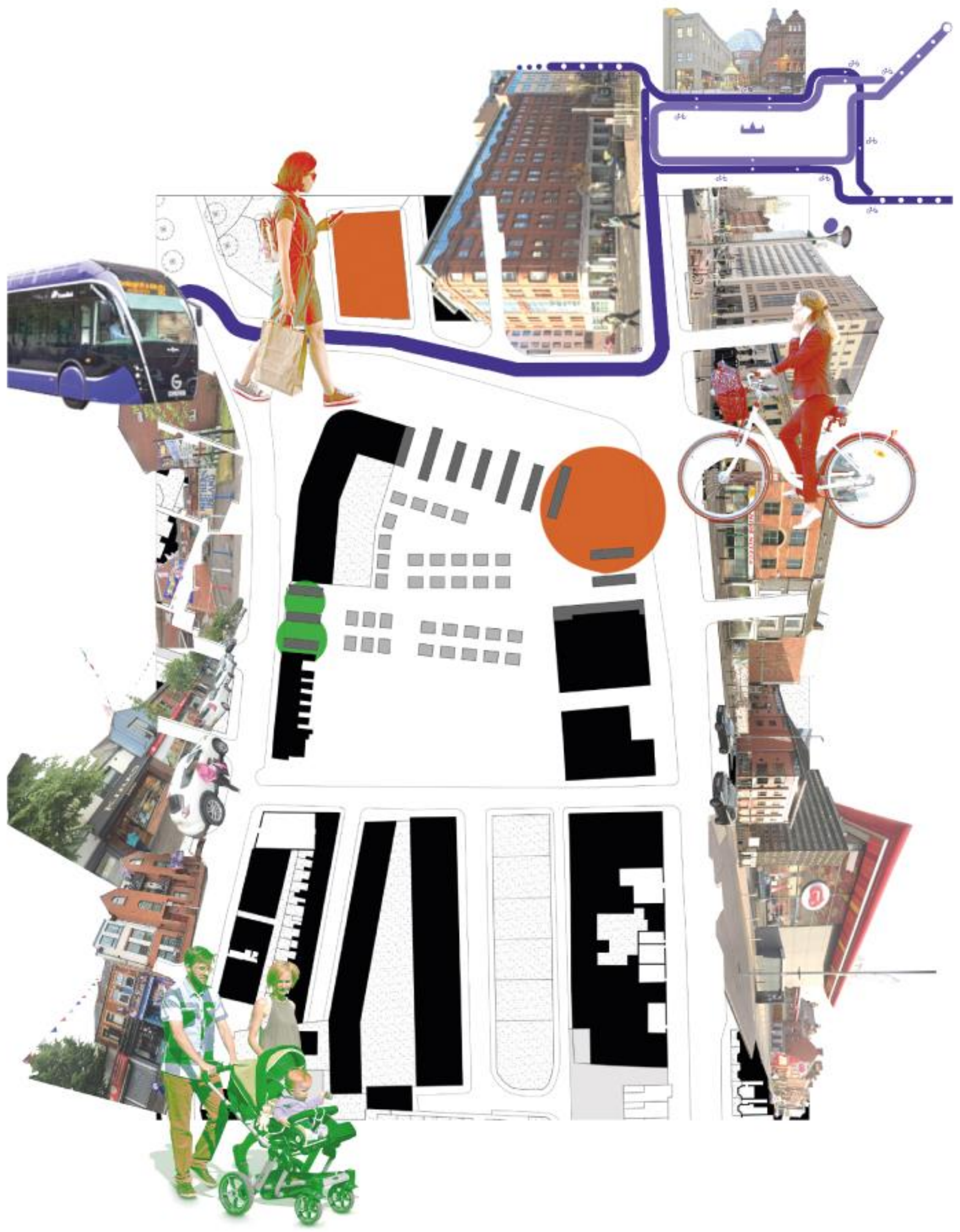


PHASE 1:

The first phase intervenes in the north-eastern corner of the site, proposing a dynamic facade that serves as a preamble for the local market. Considering that the Glider line might be extended through Hope Street and the numerous hotels around the area, this intervention would welcome visitors to the city by displaying Belfast's cultural richness. Also, the amount of office buildings is constantly increasing in the area, the proposed design might offer an alternative leisure venue for people working there.

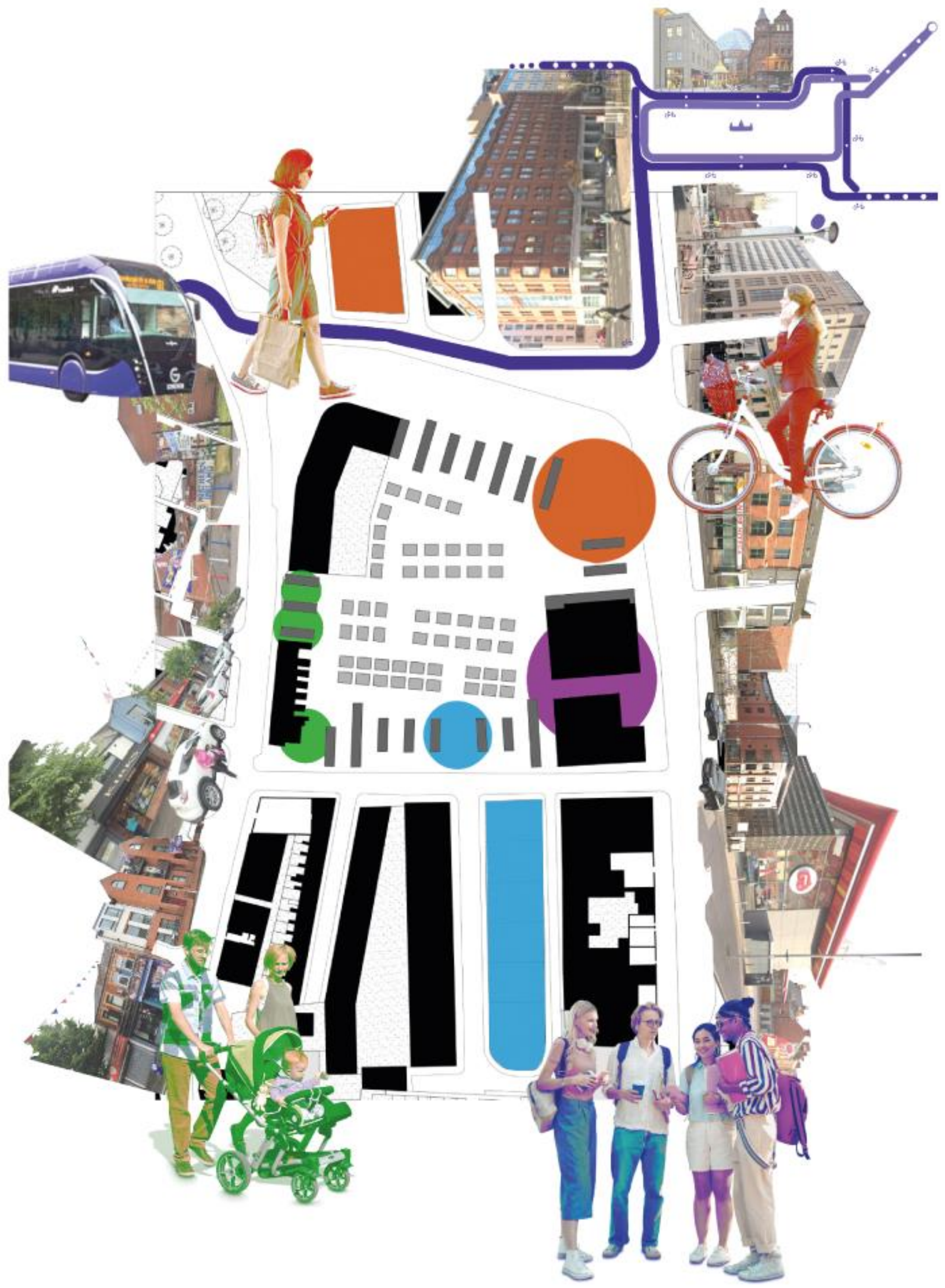
During this semester, this phase only has been carefully designed.

Phases of Construction - Diagram



PHASE 2:

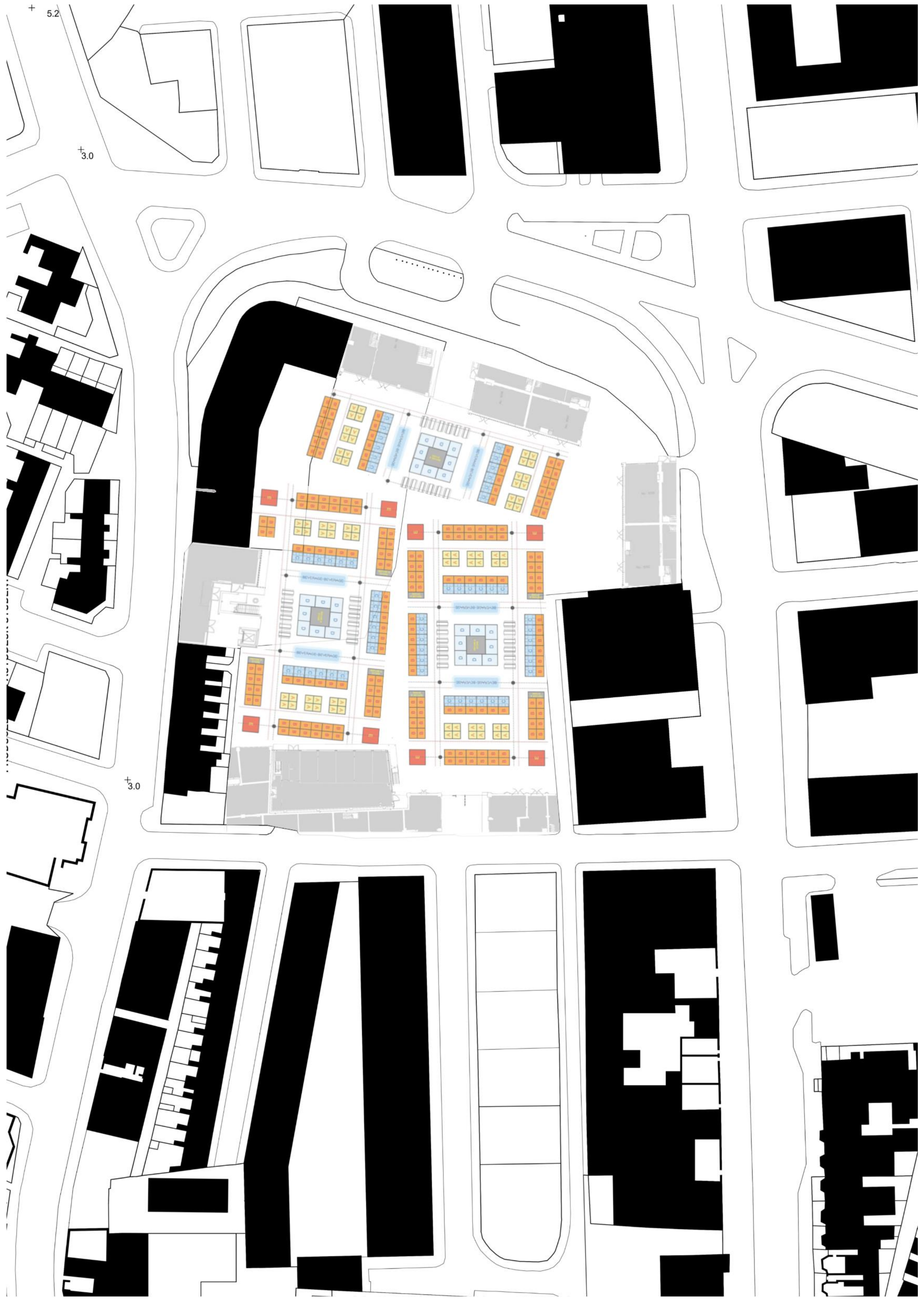
The response of Sandy Row community and other visitors toward phase 1 will inform the further development of the upcoming phases. Community members will be constantly consulted and involved in the design of phase 2 as it would be the most direct access point they have to the market. Adding a secondary entrance/exit further encourages users to visit Sandy Row as it follows a natural circulation path and subsequently, promoting a potential revitalization of Sandy Row's commercial activity.



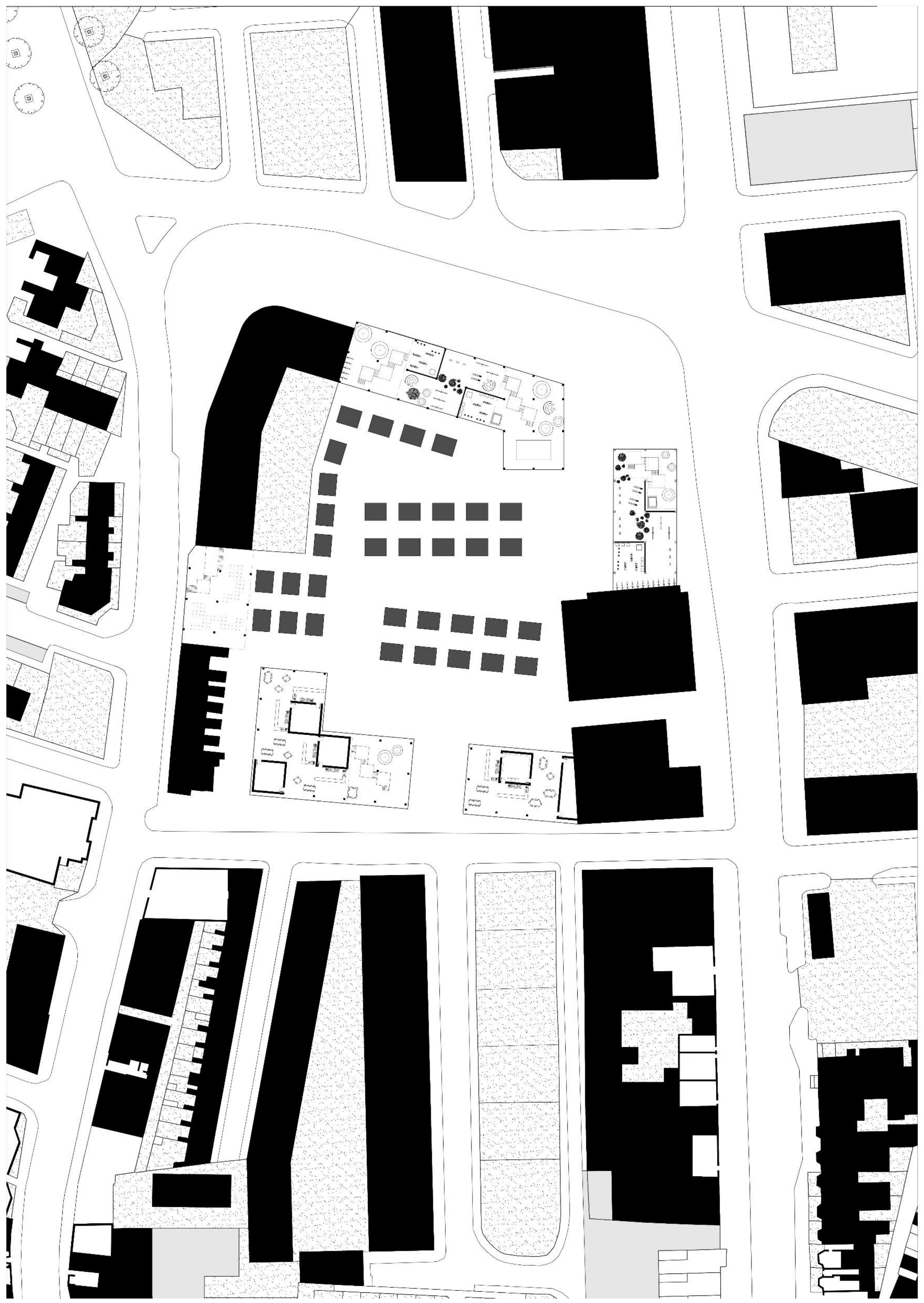
PHASE 3:

The language developed in phases 1 and 2 will be carried out to phase 3, and it could encourage further civic development on vacant sites in the surroundings. Moreover, the design takes ownership over the alleyways between the buildings on the eastern side of the site and adds a subsequent access point. The numerous amounts of entrances offer distinct experiences for the user depending on from which side the interior market is approached.

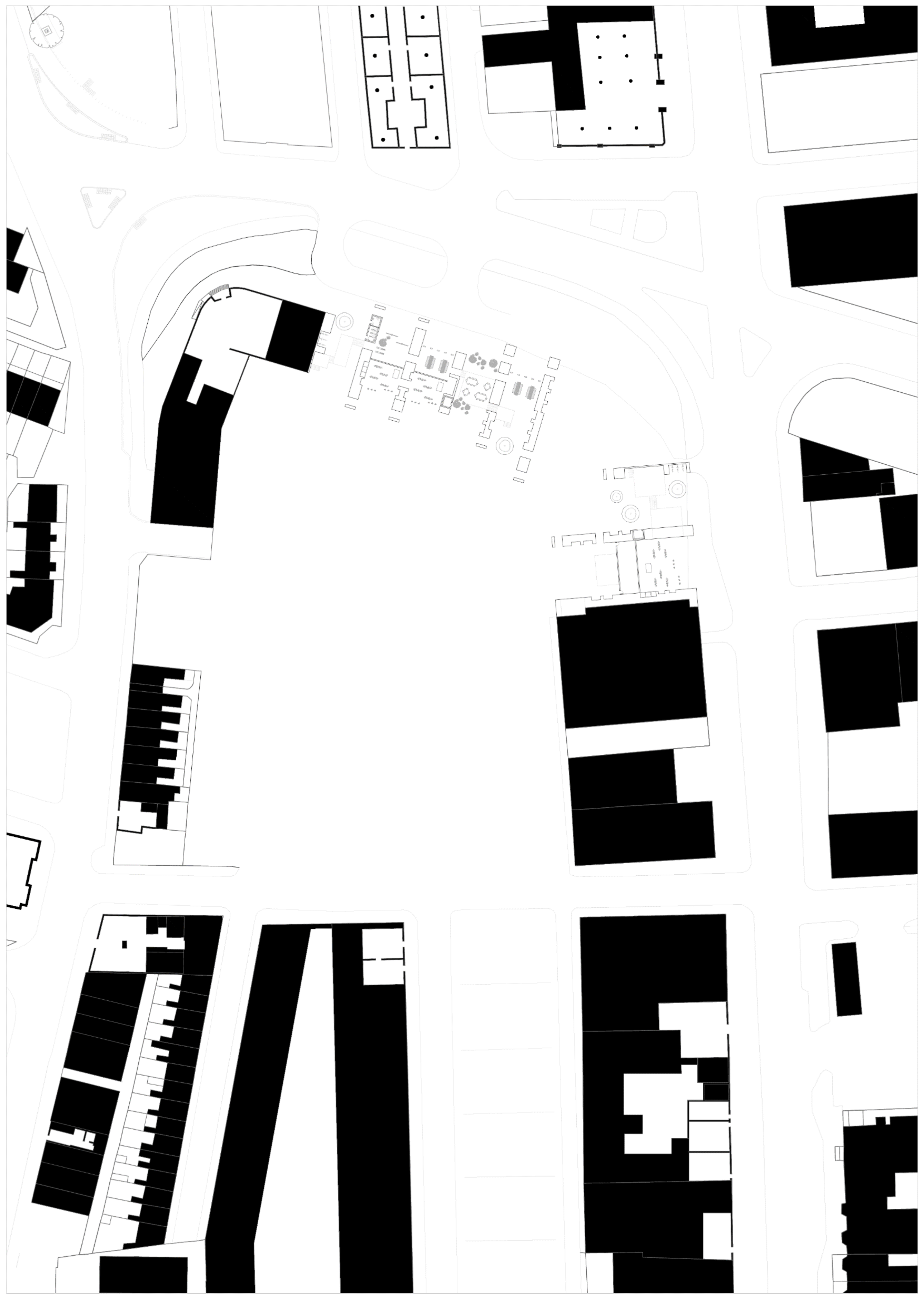
Phases of Construction - Diagram



Nolli Plan with Collaged Spitalfields Market
Week 4

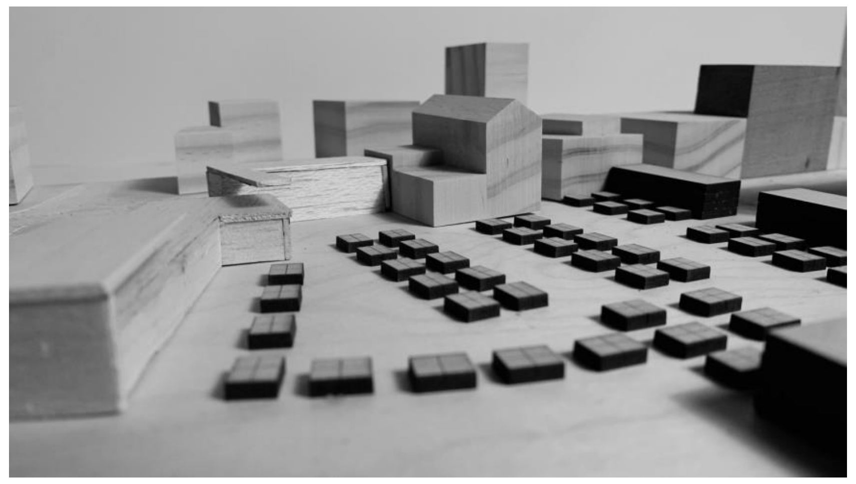


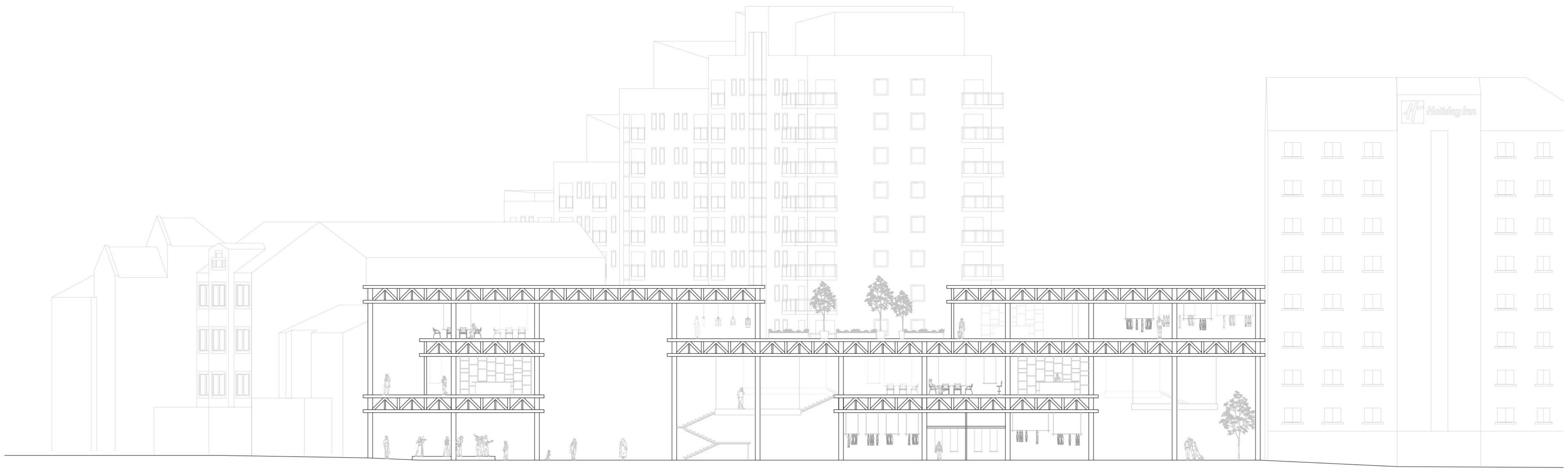
Nolli Plan with Design Proposal
Week 8



Nolli Plan with Design Proposal
Week 9

WEEK 7

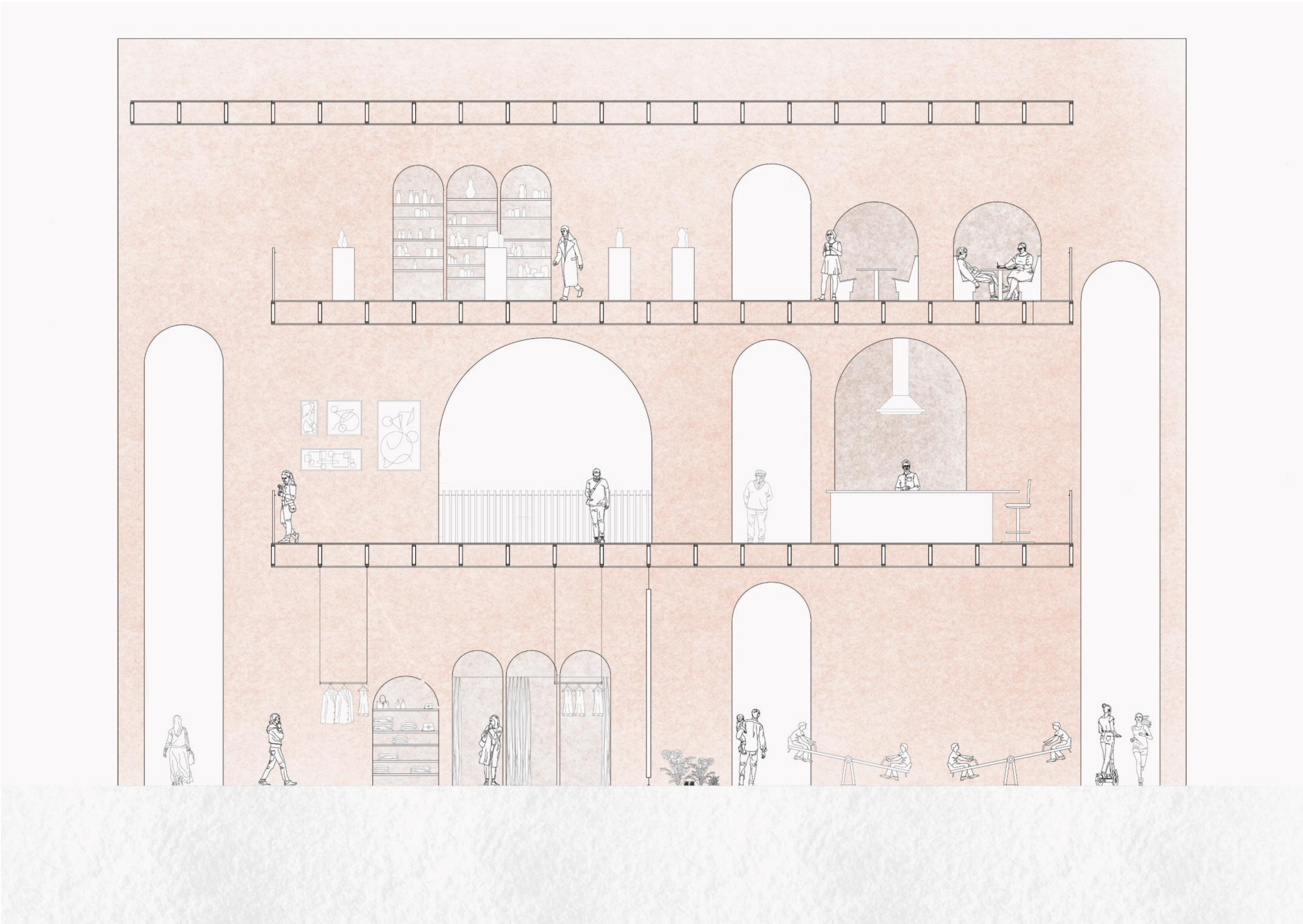




Placement Configurations - 1:500 Massing Mode

Elevation on Site - 1:200

WEEK 9



One Wall Section - 1:50
Model on Site - 1:200

04 Final Design Proposal

Produced after Final Review

External View

04 Final Design Proposal

Produced after Final Review

Engaging with a community with a dense socio-political background includes respecting their history and cultural practices. Sandy Row is a protestant community that has adopted the practice of erecting ‘Orange Arches’ as a vital expression of loyalist culture through traditional craftsmanship. This practice dates from over 150 years ago and even though tough arches are rarely erected in Belfast, they can be seen in market squares in rural areas of Ulster. For Sandy row protestants, the arches were a demonstration of local solidarity and celebration of their heritage as well as an assertation of local power (Jarman, 2001).
The intervention aims to reinvent the politically tense symbolism of an arch and translate it into an architectural typology for gathering and social interchange.

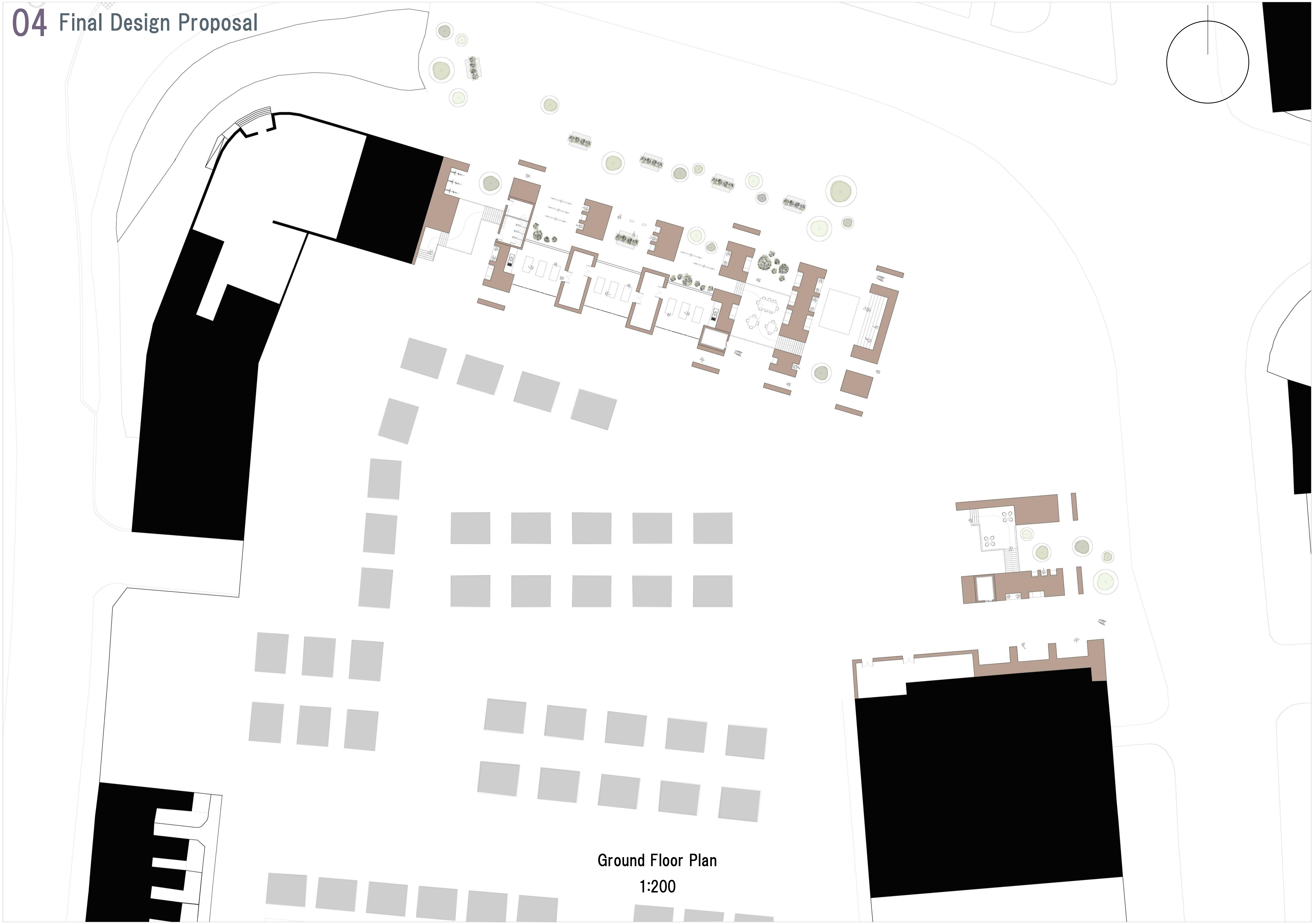
Source: The Orange Arch: Creating Tradition in Ulster by Neil Jarman
Available at: https://www.jstor.org/stable/1260862

04 Final Design Proposal

Produced after Final Review

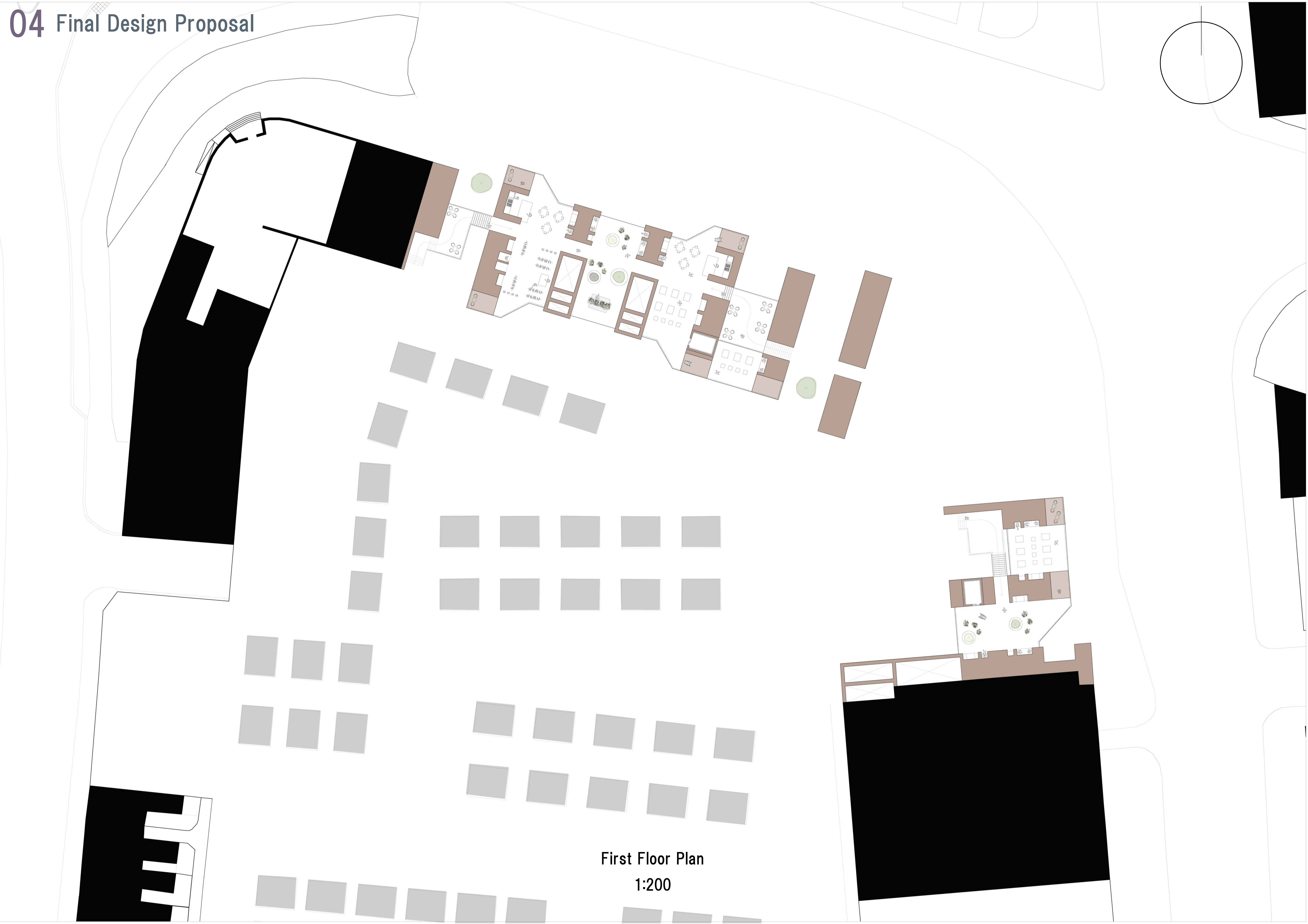
Considering the prominent display of political murals in Sandy Row and other forms of street art around the City Centre, the brick walls of this intervention can serve as a canvas for muralists and artists to showcase their work. The murals can be periodically changed, providing a dynamic and artistic atmosphere that reinforces the temporality of the design's narrative.

04 Final Design Proposal

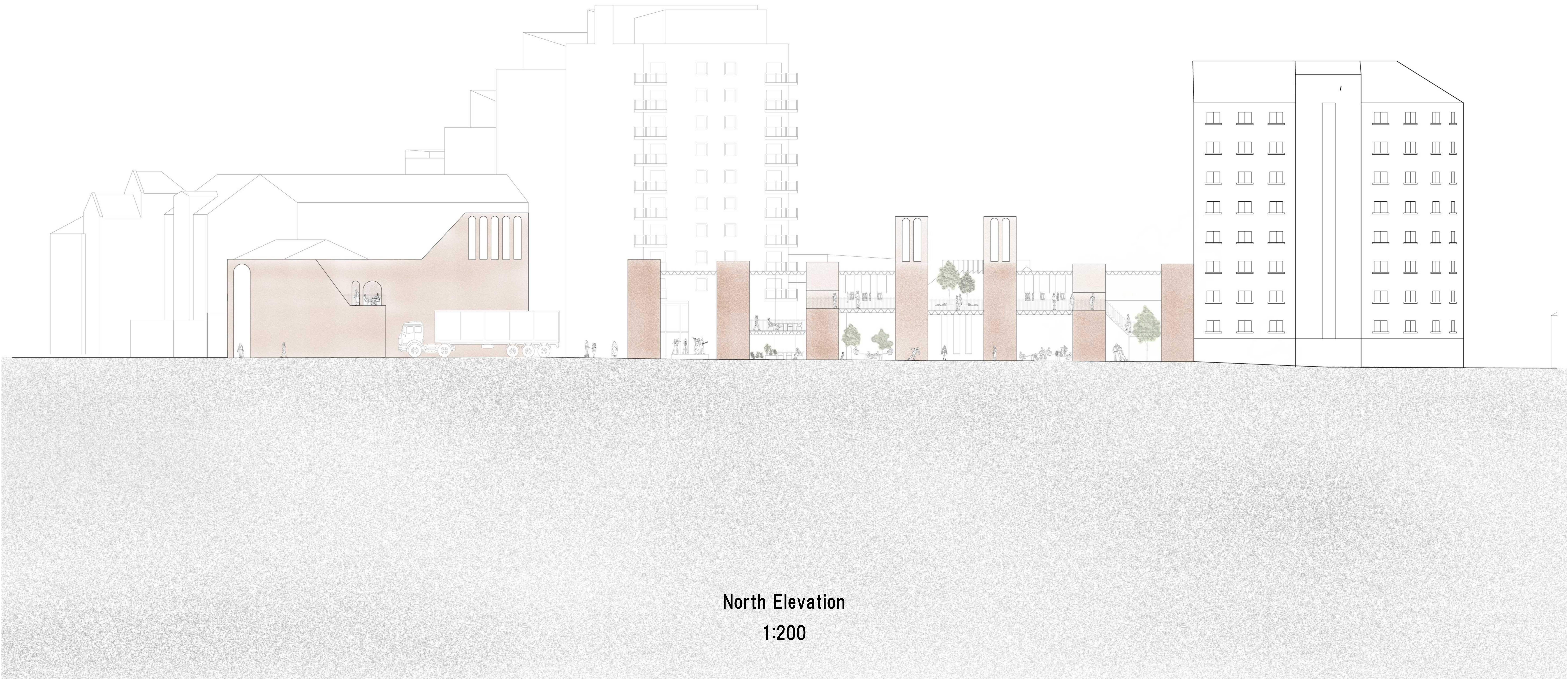


Ground Floor Plan

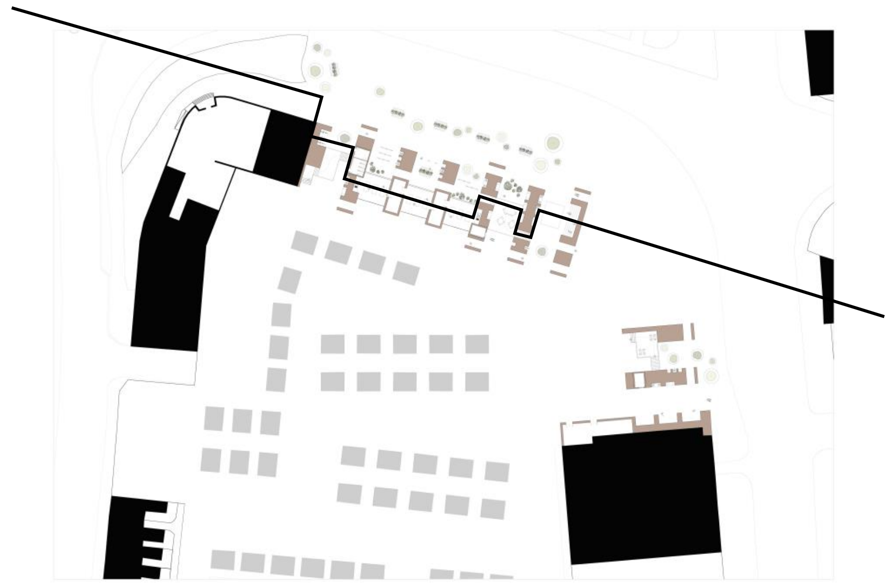
1:200



First Floor Plan
1:200

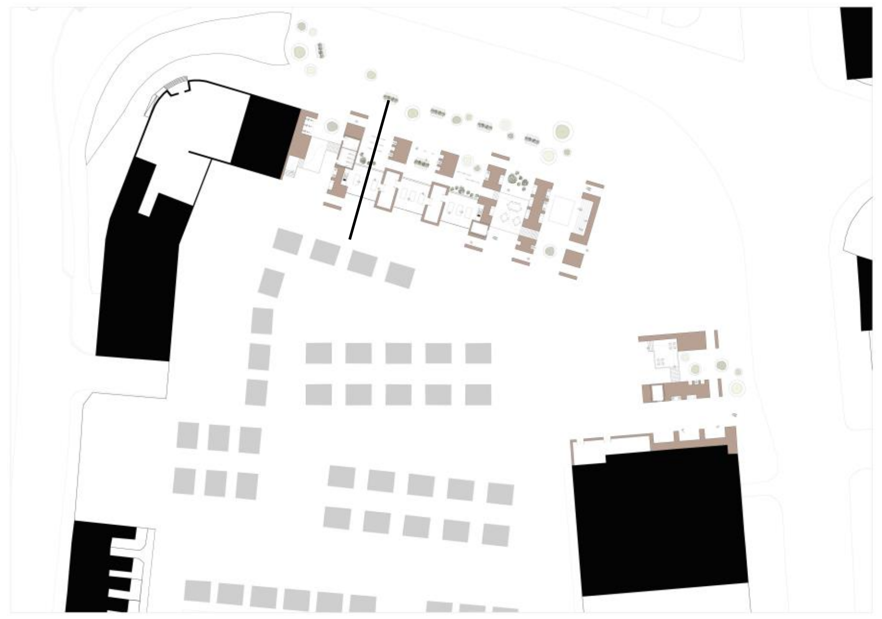


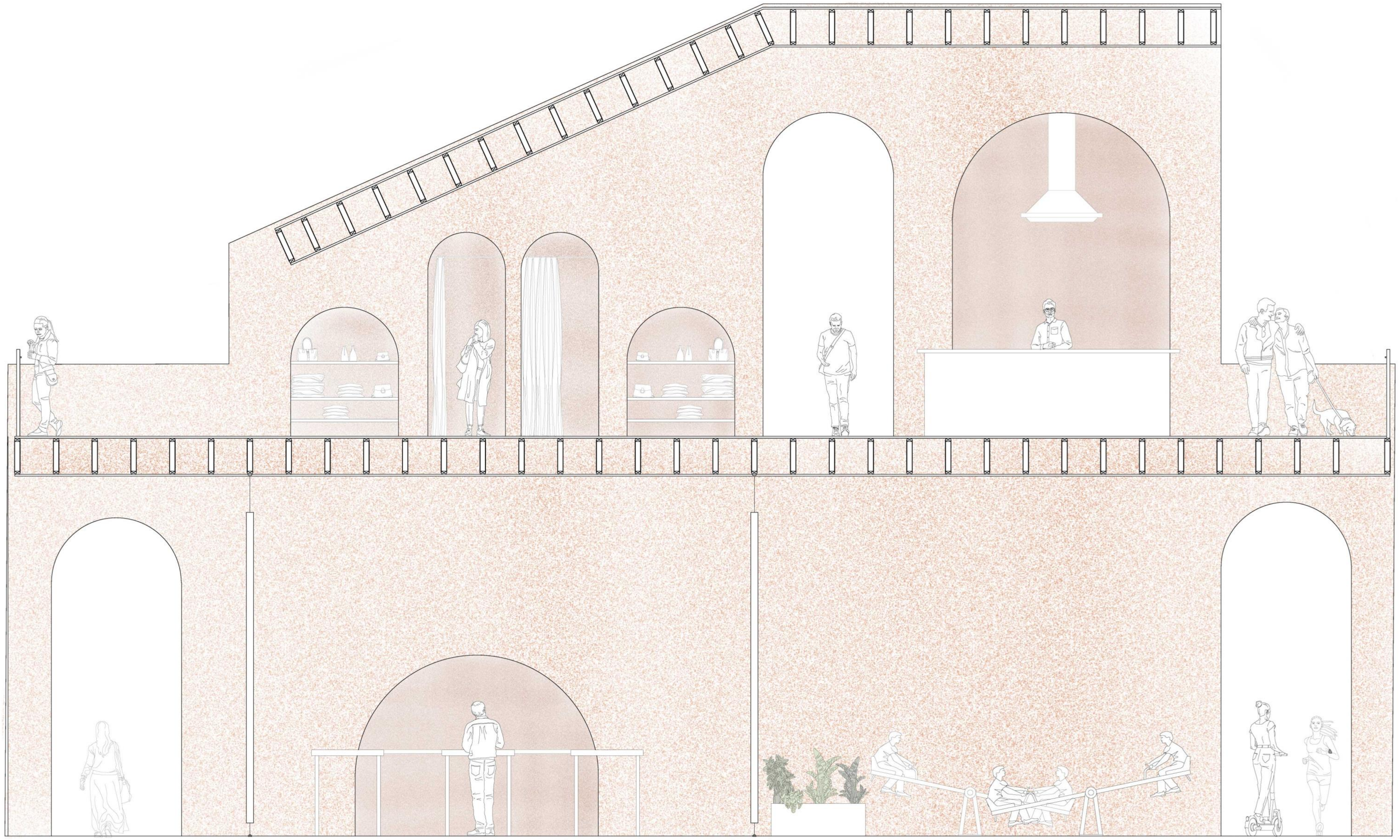
North Elevation
1:200



North Section

1:200

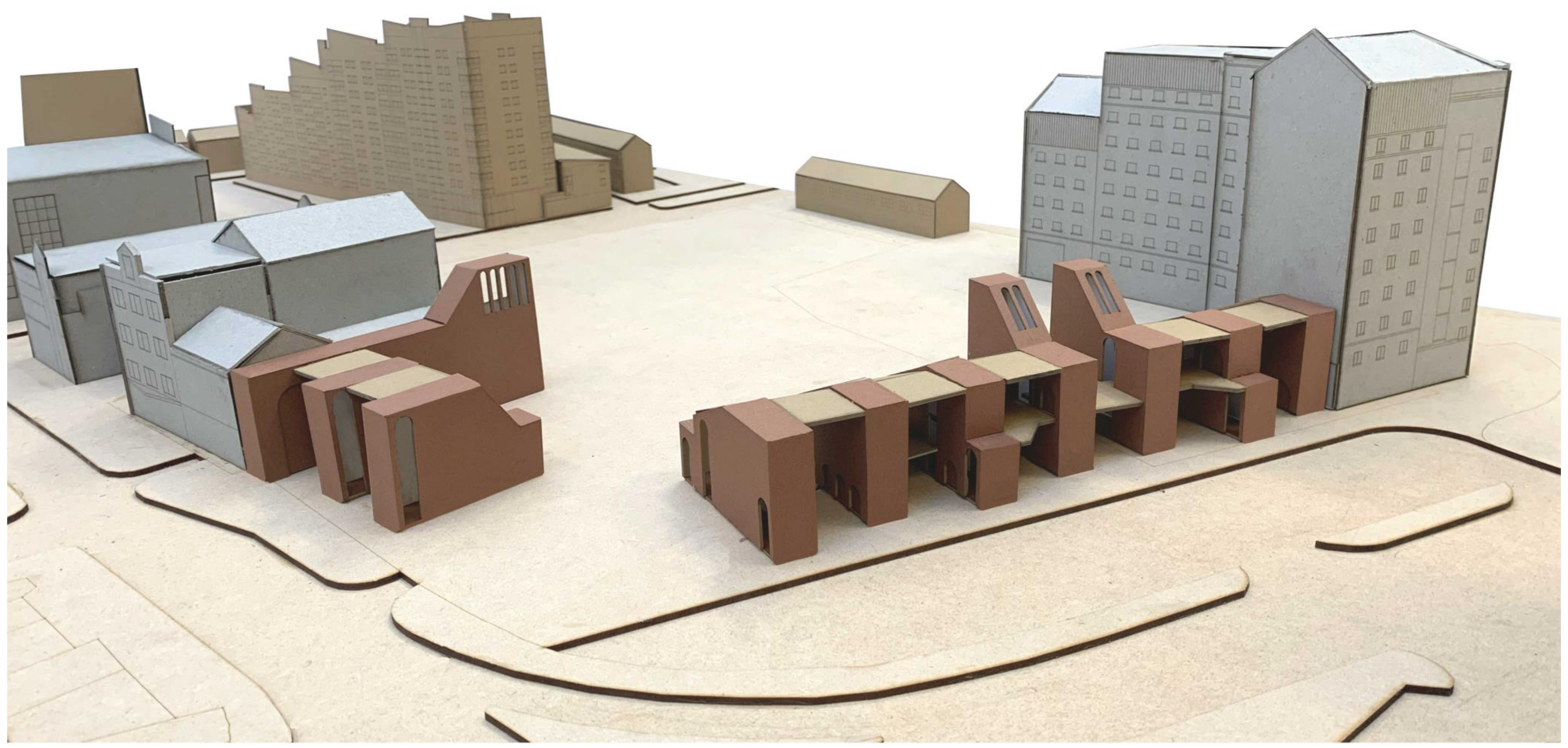


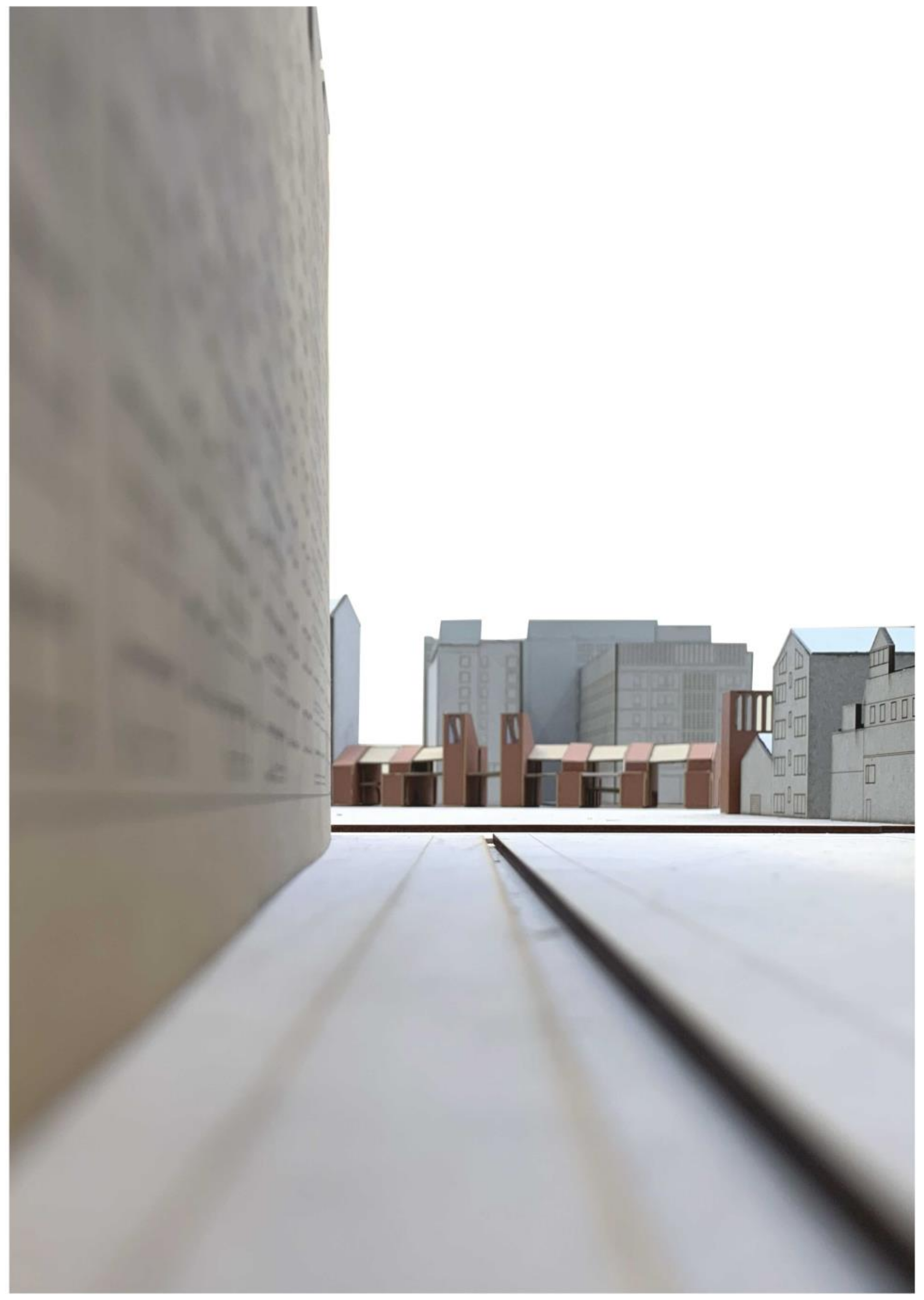


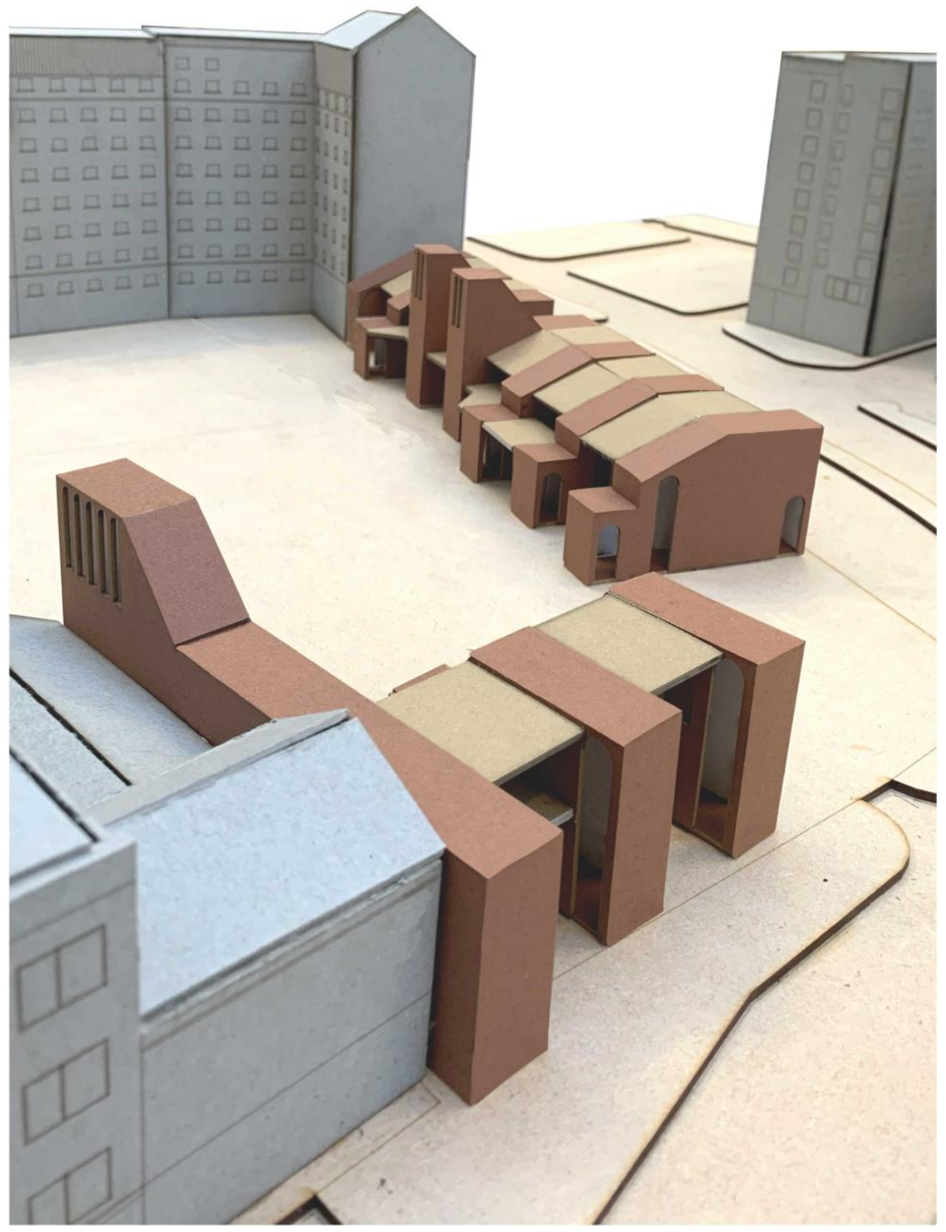
One Wall Section

1;50

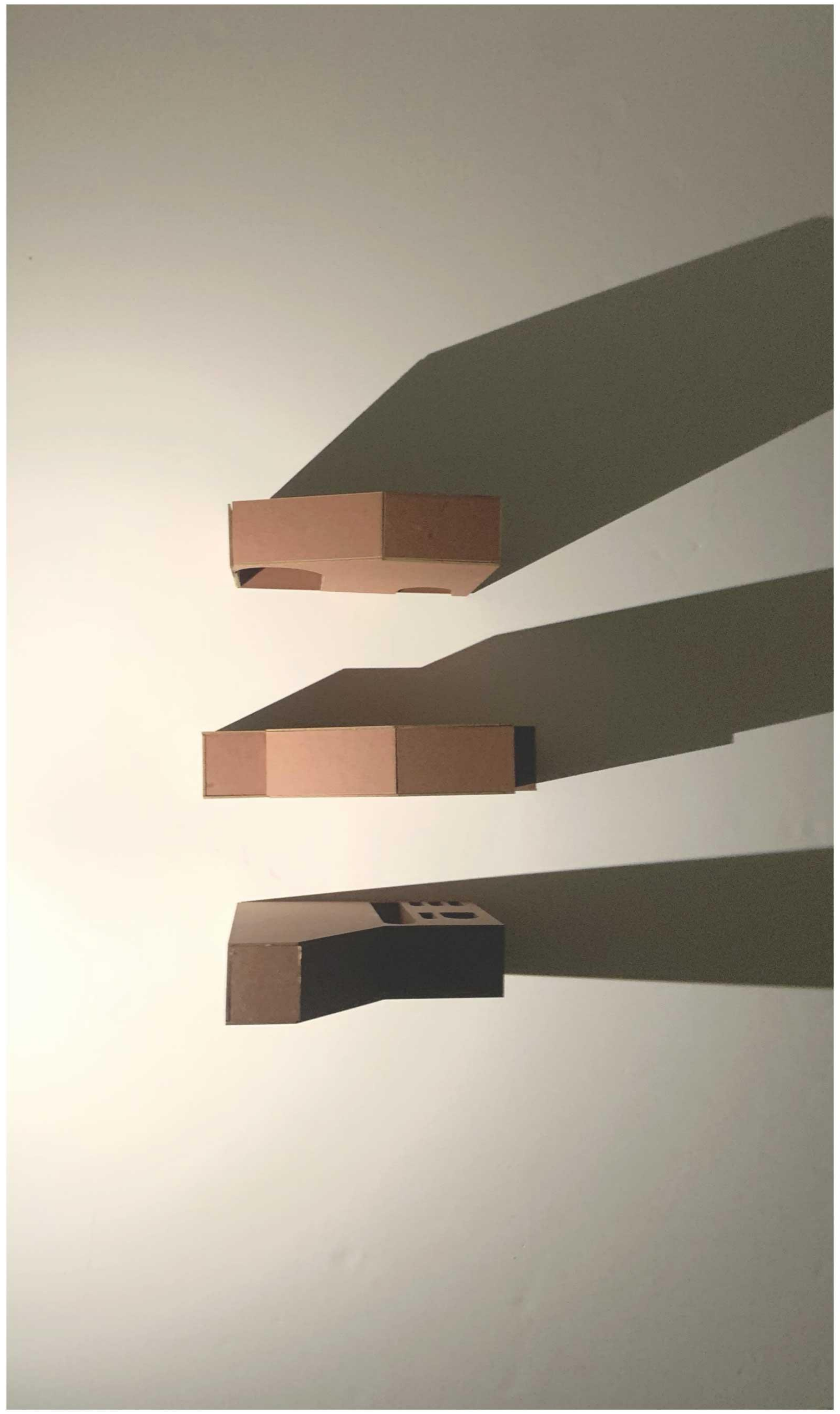
04 Final Design Proposal







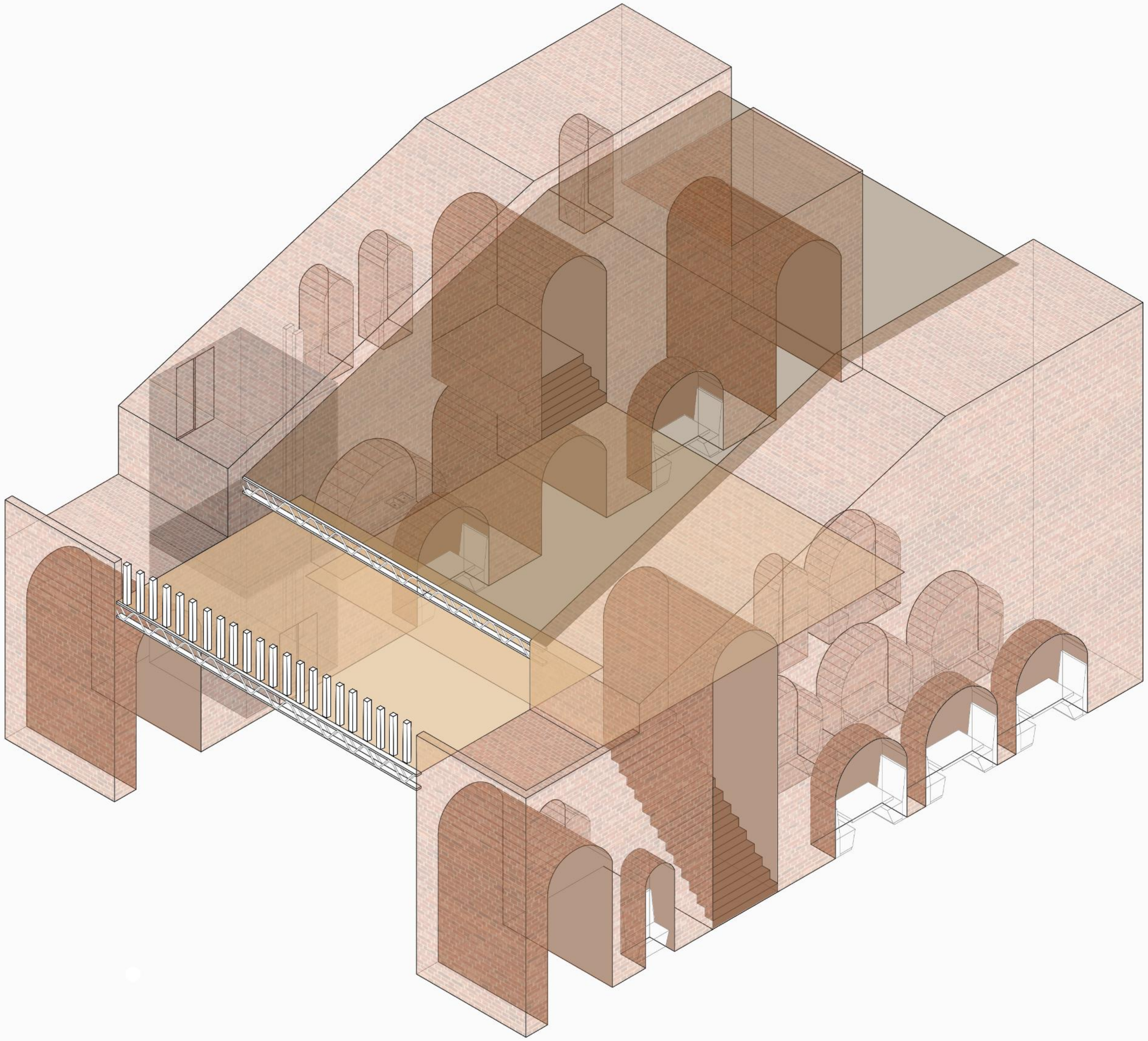
Model on Site
1:200



Model of three Walls

1:100

Collection of Rituals



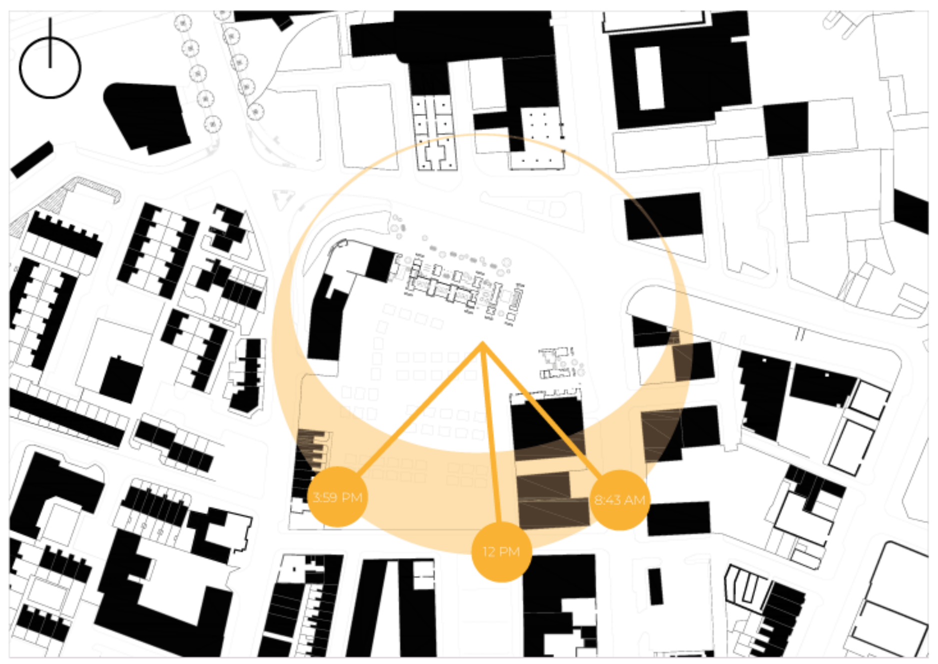
Isometric Drawing of two Walls

1:100

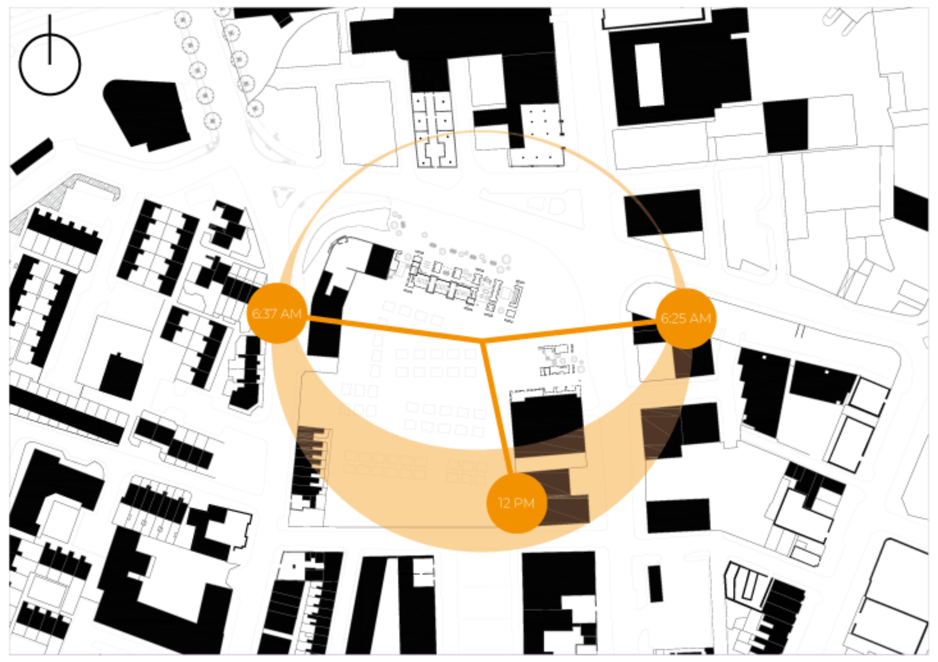
DAYLIGHT STRATEGY DIAGRAM

SUNPATHS:

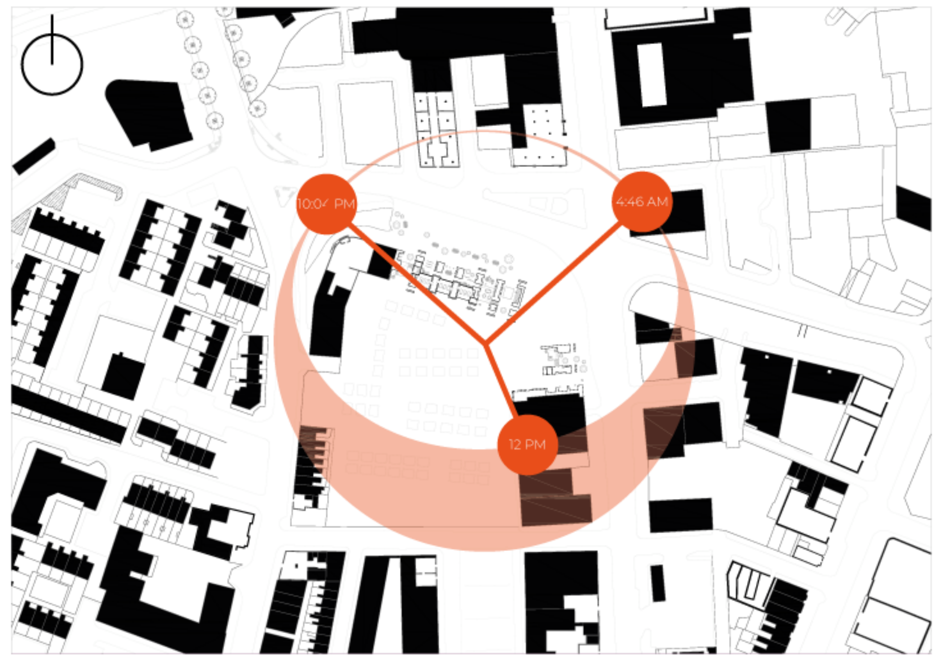
The Intervention is placed following the site's geometry, meaning that sunlight will pierce through the Hope Steet-facing portion of the intervention from end to end around midday while the Victoria street-facing portion will meet direct sunlight mostly in the mornings and late afternoons. Even though the majority of the surrounding building are not of great height, the adjacent Holliday Inn Hotel and the residential building on the south can project significant shadows on the site.



WINTER SOLSTICE
21st of December 2021



SPRING EQUINOX
20th of March 2022



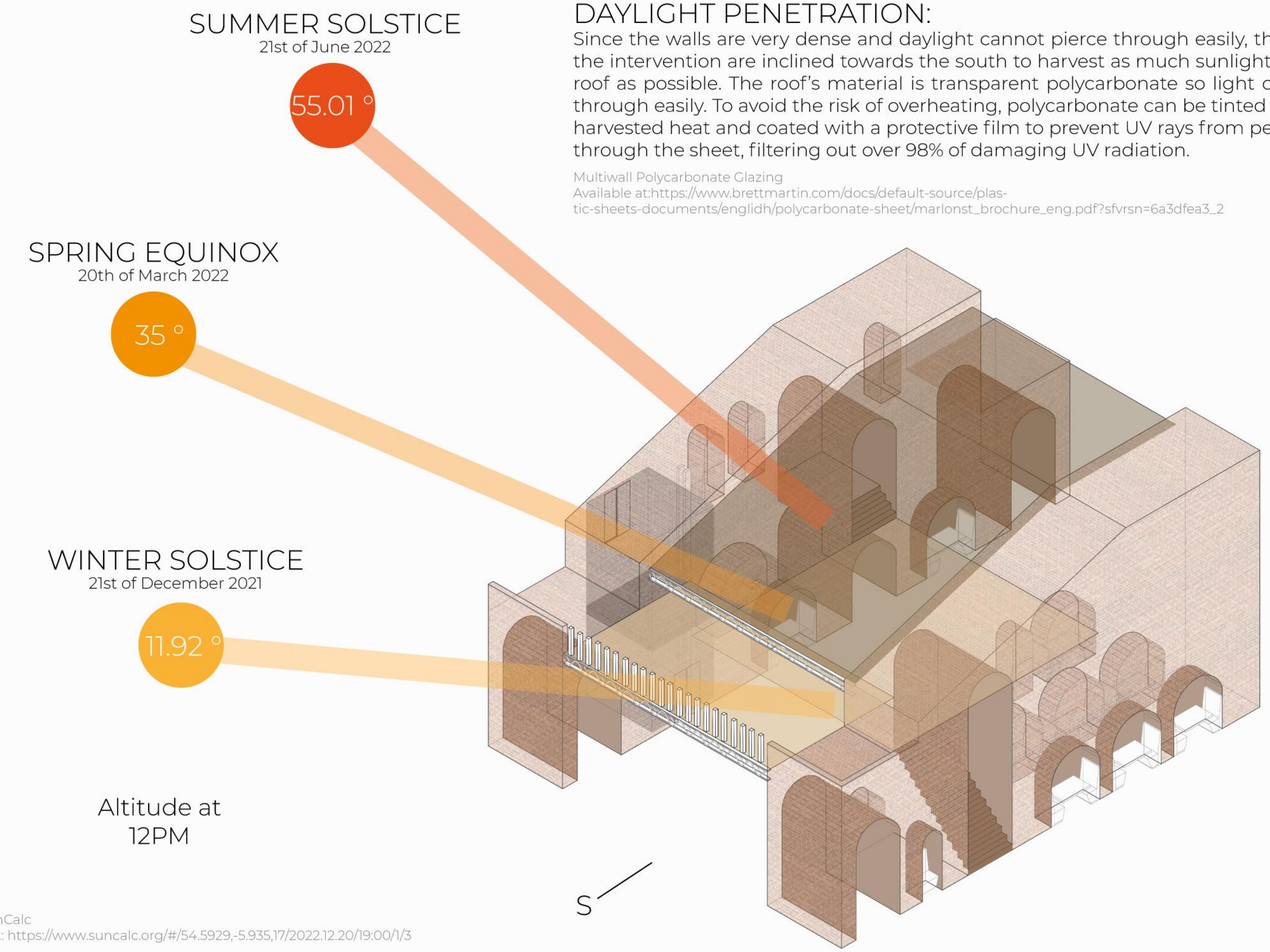
SUMMER SOLSTICE
21st of June 2022

DAYLIGHT STRATEGY DIAGRAM

DAYLIGHT PENETRATION:

Since the walls are very dense and daylight cannot pierce through easily, the roofs of the intervention are inclined towards the south to harvest as much sunlight from the roof as possible. The roof's material is transparent polycarbonate so light can pierce through easily. To avoid the risk of overheating, polycarbonate can be tinted to reduce harvested heat and coated with a protective film to prevent UV rays from penetrating through the sheet, filtering out over 98% of damaging UV radiation.

Multiwall Polycarbonate Glazing
Available at:https://www.brettmartin.com/docs/default-source/plastic-sheets-documents/englidh/polycarbonate-sheet/marlonst_brochure_eng.pdf?sfvrsn=6a3dfea3_2



Source: SunCalc
Available at: https://www.suncalc.org/#/54.5929,-5.935,17/2022.12.20/19:00/1/3

THERMAL STRATEGY DIAGRAM

	Low Emission Scenario	High Emission Scenario
SUMMER	No change to 2.8 °C warmer	0.8 °C to 4.9 °C warmer
WINTER	0.1 °C to 2.2 °C warmer	0.6 °C to 3.9 °C warmer

TEMPERATURE CHANGES BY THE 2070's:

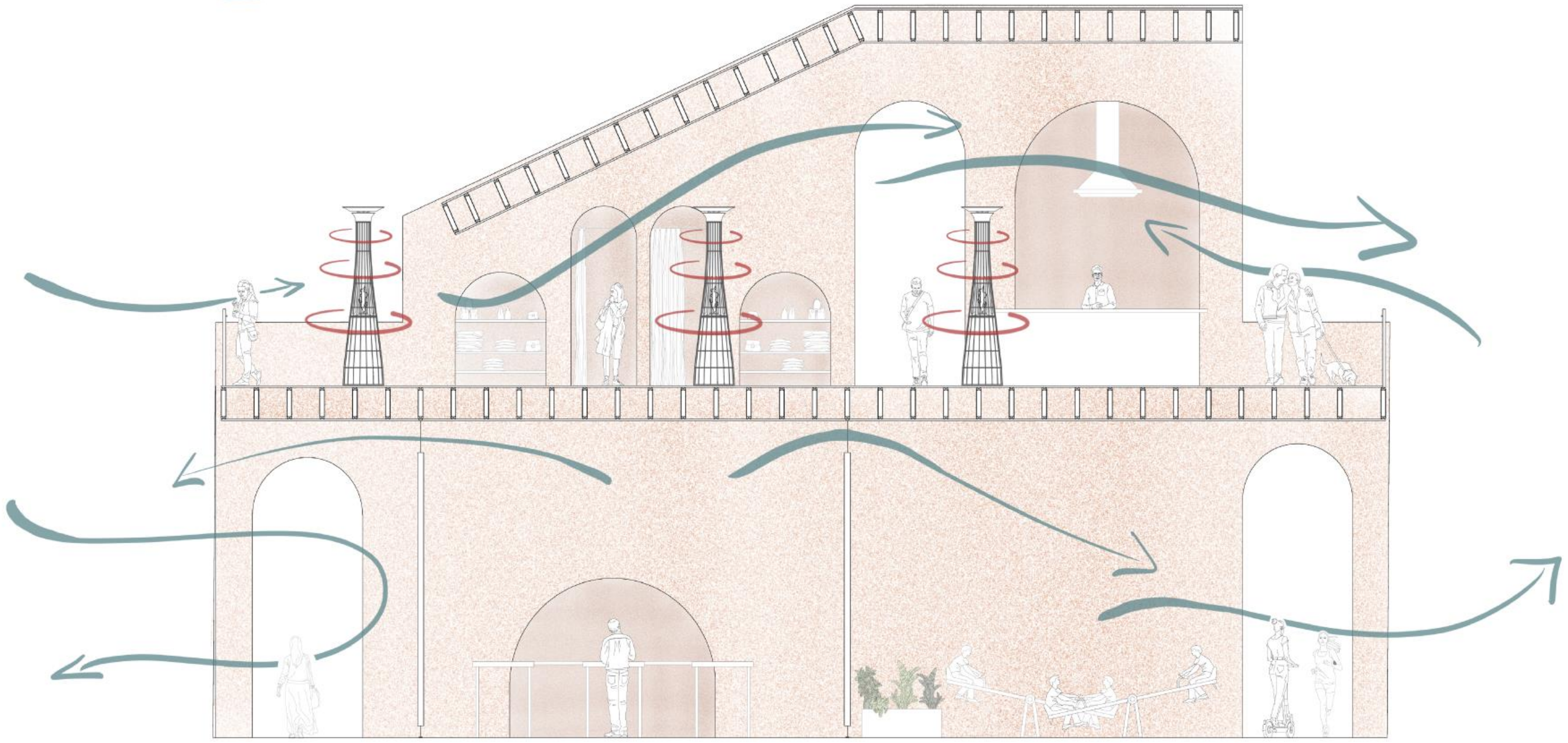
Low Emission Scenario

High Emission Scenario

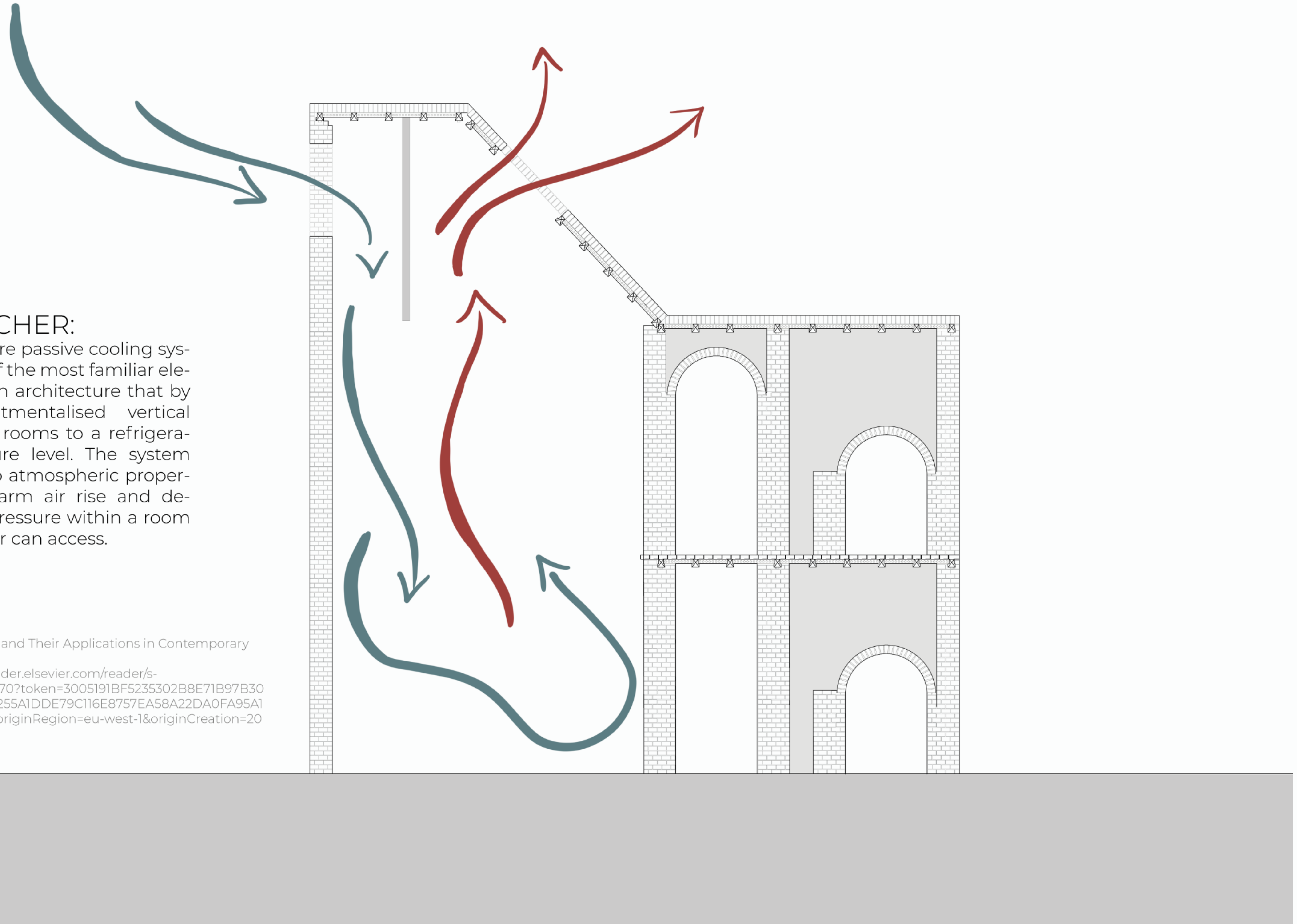
Source: UKCP18 projects greater chance of hotter,drier summers and warmer, wetter winters Available at: https://www.metoffice.gov.uk/binaries/content/assets/metof-ficegovuk/pdf/research/ukcp/ukcp18-infographic-headline-findings-land.pdf

The imminent need for outdoor spaces in compact cities was highlighted during the Covid-19 Pandemic. Moreover, the temperature rise that is expected due to global warming, anticipates a greater need of opened-air leisure areas.

The unenclosed layout of the intervention calls for additional electric heaters during the winter months. It is clearly not the most efficient option for efficient energy consumption, nonetheless, is an alternative that can make users' experience more comfortable.



VENTILATION STRATEGY DIAGRAM



WINDCATCHER:

Windcatchers are passive cooling systems and one of the most familiar elements in Iranian architecture that by using compartmentalised vertical vents, can cool rooms to a refrigeration temperature level. The system works thanks to atmospheric properties that let warm air rise and decrease the air pressure within a room so that cooler air can access.

Source: Windcatchers and Their Applications in Contemporary Architecture
Available at: https://reader.elsevier.com/reader/sd/pii/S2666123320301070?token=3005191BF5235302B8E71B97B30F6180DA1F9633C33E3255A1DDE79C116E8757EA58A22DA0FA95A1A7A274A550A720BC&originRegion=eu-west-1&originCreation=20220430210106

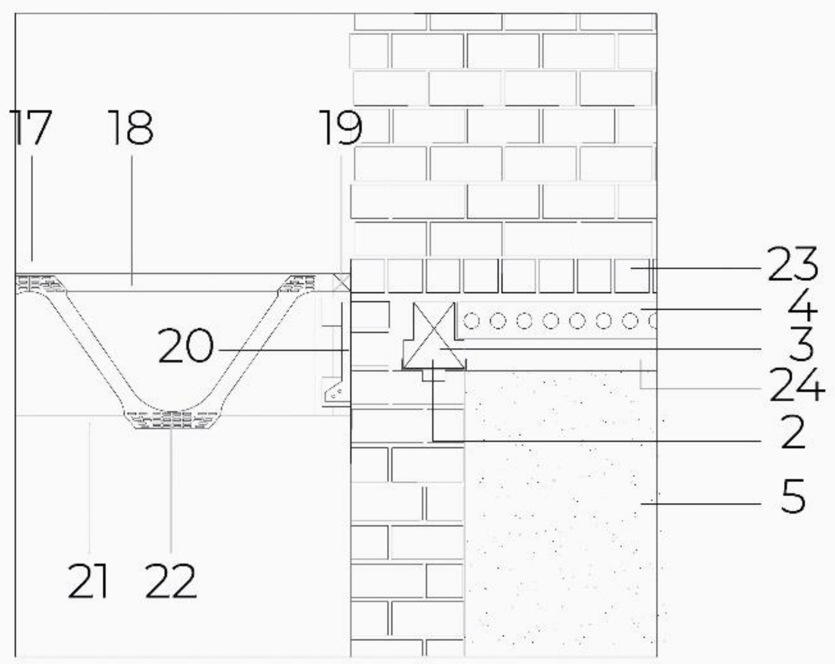
KEY AND JUNCTION DETAILS
for sections

1.- Posi Joist
2.- Butt Bearinng Plate - Steel
3.- Inverted T-Beams - Concrete
4- Hollowcore Blocks - Concrete
5.- Backfill - Recycled
6.- Red Brick
7.- Balustrade - Pine or available soft wood
8.- Supporting frame for staircase - Steel
9.- Step - Pine or available soft wood
10.- Supporting beam - Pine or available soft wood
11.- Footing - Concrete
12.- Voussoir Bricks
13.- Sitting - Pine or available soft wood
14.- Table - Pine or available soft wood
15.- Footing - Brick
16.- Foundation - Concrete

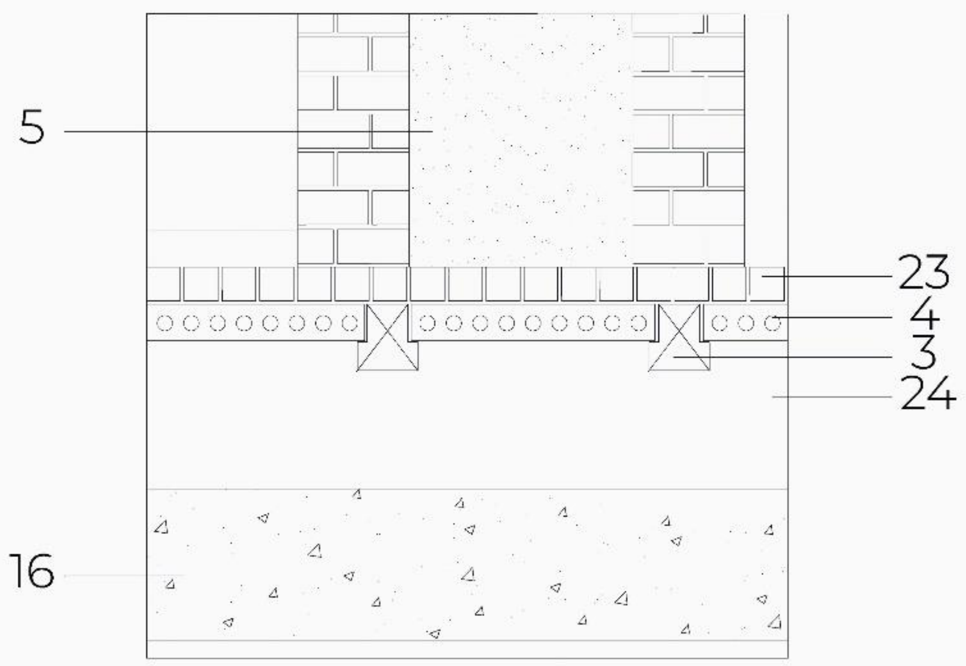
17.- Floor Finishing - Plywood
18.- Top Beam - Engineered Timber
19.- Fixed Top Restraint Noggins - Engineered Timber
20.- Masonery Joist Hnager
21.- Bottom Beam - Engineered Timber
22.- Web Unit - Pressed Metal
23.- Floor Finishing - Red Brick
24.- Ventilated Void

25.- Balustrade - Red Brick

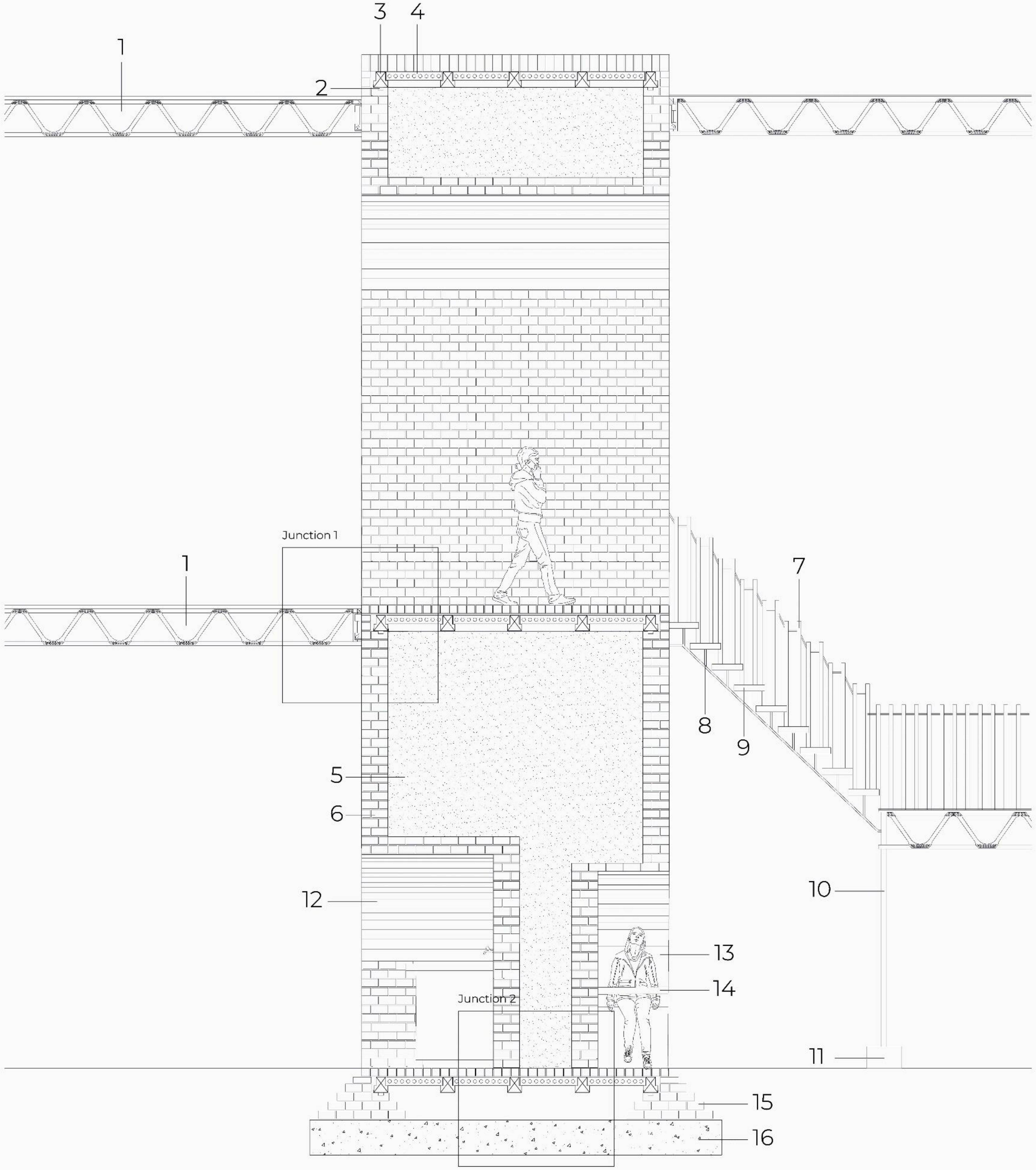
Junction 1



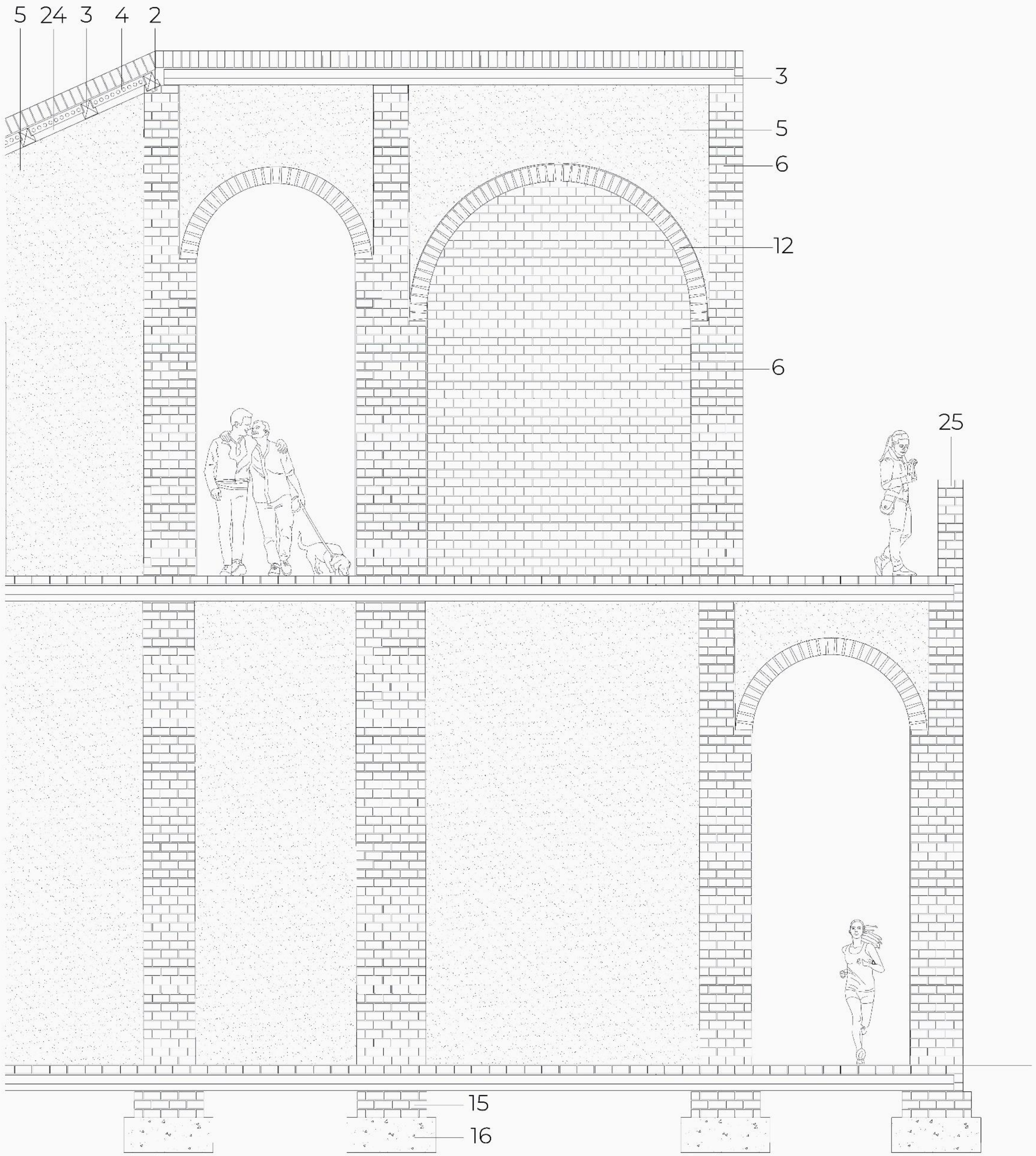
Junction 2



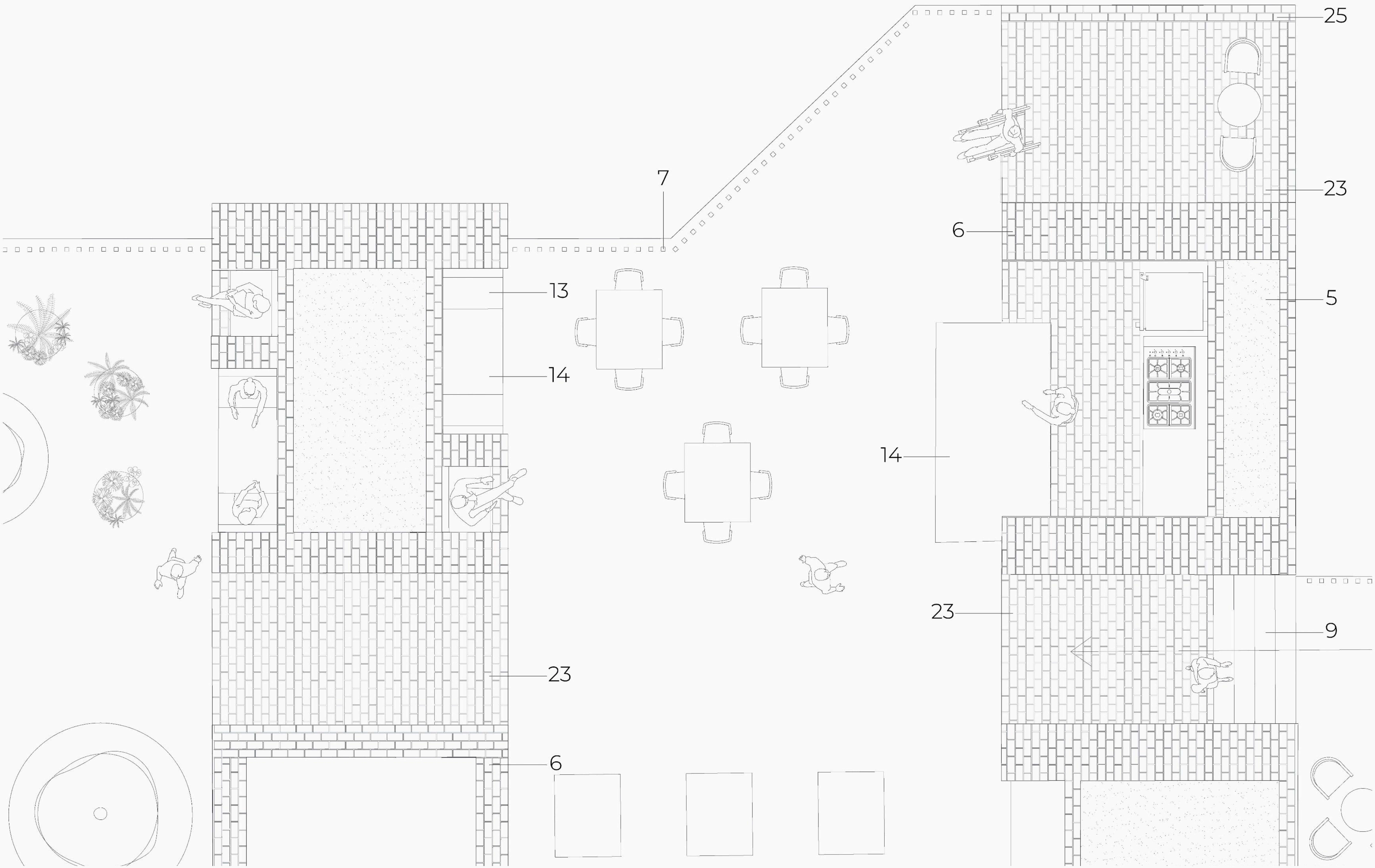
1.20 SHORT DETAILED SECTION



1.20 LONG DETAILLED SECTION



1.20 DETAILED FIRST FLOORPLAN



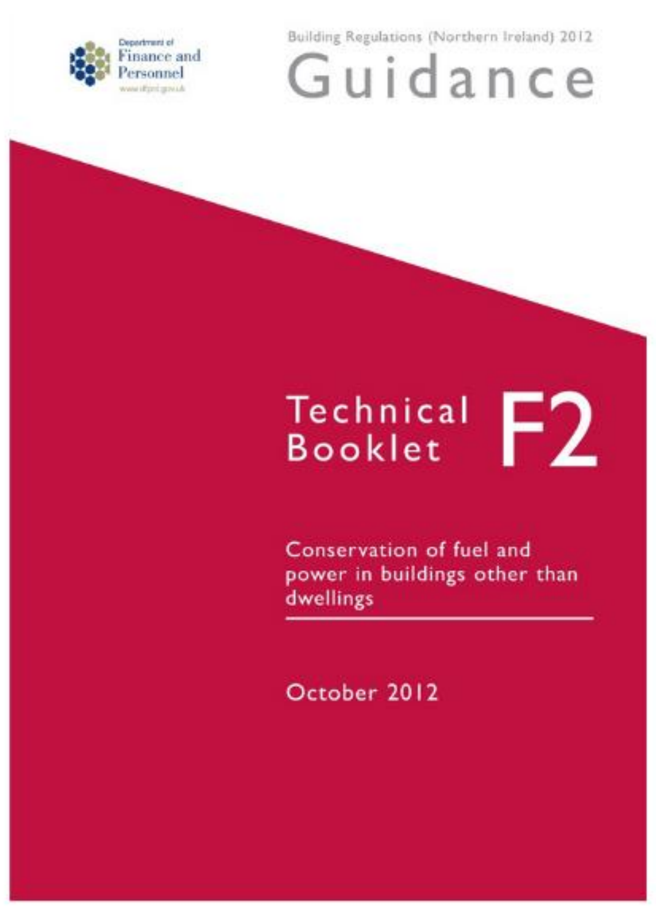
FINAL SUBMISSION
MATERIALITY

Beam on Block

This suspended flooring system does not rely on support from the ground below but instead is supported by the external walls. Off site manufacture of beams and blocks make these construction method affordable, furthermore, their dimensions are customizable. Between the Inverted T beams, hollowcore blocks are placed and a sand cement grout is often brushed over the surface, filling any gaps providing a good load distribution and avoiding movement of the blocks. The grout also keeps insects and vermin out. Environmentally speaking, concrete is not the most efficient materials, nevertheless the amount of concrete used is minimal and the lifespan that the intervention aims to have justifies the use of this system. Beam on Block construction also has excellent acoustic performance and fire resistance properties.

Source: Introduction to Beam on Block Flooring
Available at: https://www.firstinarchitecture.co.uk/introduction-to-beam-and-block-floors/

2.- CLIMATE AND ECOLOGICAL CONSIDERATIONS



This section includes information of regulations relating fuel and power conservation and waste reduction strategies and how these have informed the design.

TECHNICAL BOOKLET F2

APLICABLE ELEMENTS

CRITERION 1

Low or zero carbon energy sources (LZC)

2.39 Provided that the building satisfies the limits on design flexibility as given in Criterion 2, the compliance procedure allows the designer full flexibility to achieve the TER utilising fabric and system measures and the integration of LZC technologies in whatever mix is appropriate to the scheme. The approved compliance tools include appropriate algorithms that enable the designer to assess the role LZC technologies can play in achieving the TER.

2.40 To facilitate incorporation of improvements in system efficiencies and the integration with LZC technologies, the designer should consider –

(a) adopting heating and cooling systems that use distribution temperatures as close to ambient temperatures as practicable; and

(b) where multiple systems serve the same end use, organising the control strategies such that priority is given to the least carbon intensive option (e.g. where a solar hot water system is available), the controls should be arranged so that the best use is made of the available solar energy.

2.41 The designer should consider making the building easily adaptable by facilitating the integration of additional LZC technologies at a later date. Providing appropriate facilities at the construction stage can make subsequent enhancements much easier and cheaper (e.g. providing capped off connections that can link into a planned community heating scheme).

Similarly, the designer should consider the potential impact of future climate change on the performance of the building. This might include giving consideration to how a cooling system might be provided at some time in the future.

Considering the opened-air characteristic of the intervention, many elements highlighted on the booklets do not apply. Nevertheless, the scheme is flexible, contemplating the idea of changing the internal layout of the intervention and making it a more permanent intervention. The incorporation of Posi Joists facilitates the installation of LZC systems in a possible future construction.

TECHNICAL BOOKLET F2

APLICABLE ELEMENTS

CRITERION 2

Controls

2.49 The following provisions should be made for heating, ventilation and air conditioning system controls –

(a) the fixed building services system(s) should be subdivided into separate control zones to correspond to each area of the building that has a significantly different solar exposure, or occupancy period or type of use;

(b) each separate control zone should be capable of independent timing and temperature control and, where appropriate, ventilation and air circulation rate;

(c) the service should respond to the requirements of the space it serves. Where both heating and cooling are provided, they should be controlled so as not to operate simultaneously; and

(d) central plant should operate only as and when the zone systems require it. The default condition should be "off".

Centralised switching of appliances

2.51 Consideration should be given to the provision of centralised switches to allow the facilities manager to switch off appliances when they are not needed (e.g. overnight and at weekends). Where appropriate, these should be automated (with manual override) so that energy savings are maximised.

A centralised switch would be more effective than depending on each individual occupant to switch off their own (e.g. computer).

The light switches for artificial illumination, all electronics on the kitchen such as the extractor fans, kitchens, microwaves,etc as well as the outdoor heaters and all other facilities will have separate controle zones so they are functioning just the needed amount. Other appliances like the fridges might have to be functioning indefinitely.

TECHNICAL BOOKLET F2

APLICABLE ELEMENTS

CRITERION 3

General

2.52 The following guidance applies to all buildings, irrespective of whether they are air-conditioned or not. The intention is to limit solar gains during the summer period to –

(a) avoid the need for air conditioning;

(b) reduce the need for air conditioning; or

(c) reduce the installed capacity of any air conditioning system that is to be installed.

2.54 (c) for every space that is defined in the NCM database as being top lit and whose average zone height is greater than 6 m, the reference case is a horizontal roof of the same total area that is 20% glazed as viewed from the inside and having rooflights that have a framing factor of 15% and a normal solar energy transmittance (g-value) of 0.46.

The design is an opened air intervention, therefore mechanical ventilation is not needed.The roofs of the intervention will have a Posi Joist structural system with polycarbonate sheets . Polycarbonate has a solar energy transmittance of 0.83, but by tinting it it can be reduced to 0.58, which is still not sufficient to fulfil this requirements. Nevertheless, by adding a UV protective layer, the penetration of damaging rays is rediced by 98%.

Source: Multiwall Polycarbonate Glazing
Available at: https://www.brettmartin.com/docs/default-source/plastic-sheets-documents/englidh/polycarbonate-sheet/marlonst_brochure_eng.pdf?sfvrsn=6a3dfea3_2

TECHNICAL BOOKLET F2

APLICABLE ELEMENTS

CRITERION 4

2.55 Every building should be constructed such that the thermal and air permeability properties of the building envelope and the fixed building services and controls achieve a calculated Building carbon dioxide Emission Rate (BER) no greater than the Target carbon dioxide Emission Rate (TER).

Usually, a DPM membrane is not required for a Beam on Block construction that follows similar parameters as this, specially considering that brick in a excellent material to prevent moist filtrations, nonetheless a DPM membrane has been placed between the beam on block construction and the brick floor finishing as suggested by the tutor Guido Vericat.

APLICABLE ELEMENTS

7. The Waste Hierarchy

The concept of the waste hierarchy, as shown in Figure 2 has been embedded within the working interpretation of *zero avoidable waste in construction*, in line with the government's Resources and Waste Strategy and the legislation following (currently) the EU Waste Framework Directive. The government is preparing the national Waste Prevention Programme which will include the construction sector as one of the key sectors.

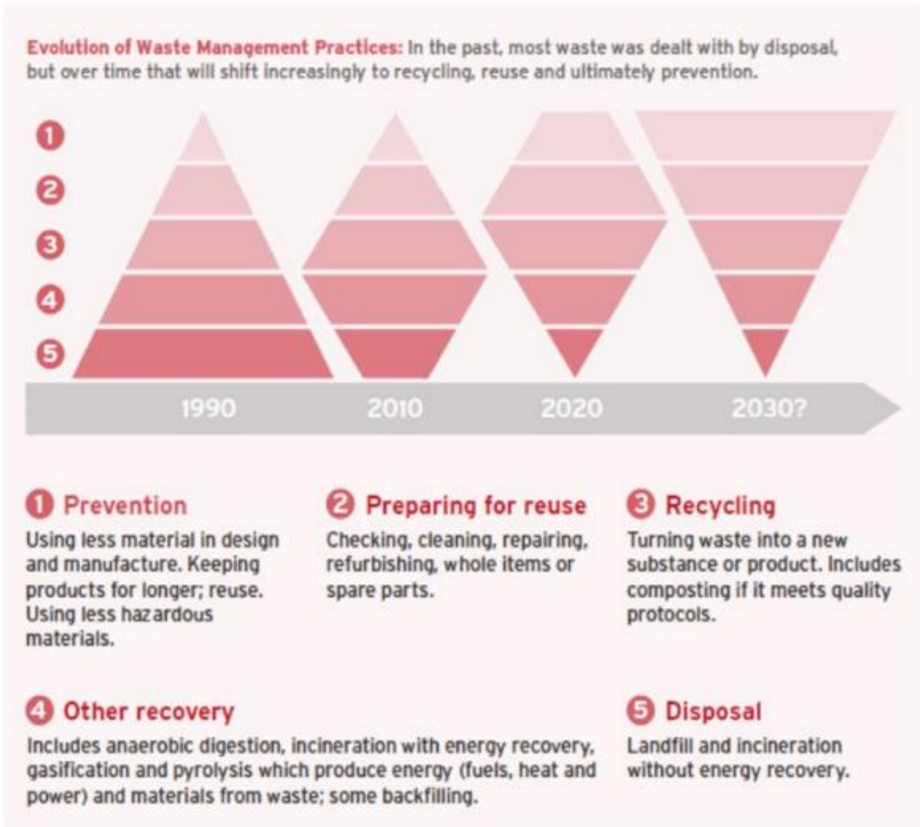


Figure 2: The waste hierarchy and its evolution[18]

[17] BEIS Monthly Statistics of Building Materials and Components - Commentary, June 2019. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/813407/19-cs7_-_Construction_Building_Materials_-_Commentary_June_2019.pdf

[18] Sourced from Defra (2018) Resources and Waste Strategy, HM Government London. Available at https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england

Prevention and Recycling

Reducing the amount of materials used was a priority in this project as the thickness of the walls is significant. In between the brick facade, the residue of the floor after digging to place the foundations, sand and other recycled materials will be used as filler to reduce the amount of bricks needed. In addition, Posi Joists, beams and blocks are manufactured off-site, meaning that their dimensions can be customized, hence reducing waste. Lastly, reclaimed brick is mean to be used for the full construction.

Brick has little degradation with the course of time and when demolished, it can be easily cleaned and treated to be reused as reclaimed brick or as aggregate. Also, Posi Joists can be easily demounted and the layout can be altered depending on the future use of the intervention using the same Joists.

ZERO AVOIDABLE WASTE IN CONSTRUCTION

APLICABLE ELEMENTS

- ***Excavation waste***: This is largely soils, coming from the groundworks of construction projects or from infrastructure projects such as roads and railways such as Crossrail and from utilities maintenance. Whilst there can be opportunities to reduce from cut and fill, this is not the case for activities such as tunneling. Large projects can impact on the waste figures and can produce a large amount of excavation waste. Excavation waste (largely soils and stones) was around 53 million tonnes of waste in 2014. Excavation waste is defined as waste by the EU Waste Framework Directive, though as soil and stones are largely inert, it is not clear what priority to assign it.

The Housing Executive has made aware that the soil on the site is contaminated. In general, sending excavation waste to the landfill is polluting, even more if it has toxins that are hazardous for the environment. Reusing the excavation waste in the filling for the walls might be a good use of this type of waste.

ZERO AVOIDABLE WASTE IN CONSTRUCTION

APLICABLE ELEMENTS

- Recycled content or recycling may be a more energy intensive option with greater environmental impact. For example, through the transportation of waste in circumstances where there are no local recycling plants or where a chemical process of melting and reforming uses lots of energy. Similarly, downcycling of materials may be a better option if it is replacing the use of primary materials. It is essential that life cycle assessment underpins choices.

Reclaimed brick in this case is a feasible alternative as Belfast Red Brick is a key component of Belfast's identity and has been manufactured for centuries. Specialist in reclaimed materials such as Wilsons Yard have an extensive storage and variety of bricks in adequate conditions to be used as structural components. It is a local solution where transportation will not mean significant amounts of CO2. Prolonging the lifespan of old bricks by incorporating them in a new construction equals a significant reduction in the construction's carbon footprint.

Source: Reclaimed Brick by Wilsons Yard
Available at: https://www.wilsonsyard.com/products/brick-reclaimed-old-antique-brick.html

LETI DESIGN GUIDE

APLICABLE ELEMENTS

Commercial offices

Operational energy

Implement the following indicative design measures:

Fabric U-values (W/m².K)

Walls	0.12 - 0.15
Floor	0.10 - 0.12
Roof	0.10 - 0.12
Windows	1.0 (triple glazing) - 1.2 (double glazing)
Doors	1.2

Fabric efficiency measures

Air tightness	<1 (m³/h. m²@50Pa)
Thermal bridging	0.04 (y-value)
G-value of glass	0.4 - 0.3

Power efficiency measures

Lighting power density	4.5 (W/m² peak NIA)
Lighting out of hours	0.5 (W/m² peak NIA)
Tenant power density	8 (W/m² peak NIA)
ICT loads	0.5 (W/m² peak NIA)
Small power out of hours	2 (W/m² peak NIA)

System efficiency measures

MVHR	90% (efficiency)
Heat pump SCoP	≥ 2.8
Chiller SEER	≥ 5.5
Central AHU SFP	1.5 - 1.2 W/l.s
A/C set points	20-26°C

Window areas guide (% of wall area)

North	25-40%
East	25-40%
South	25-40%
West	25-40%

Balance daylight and overheating

Include external shading

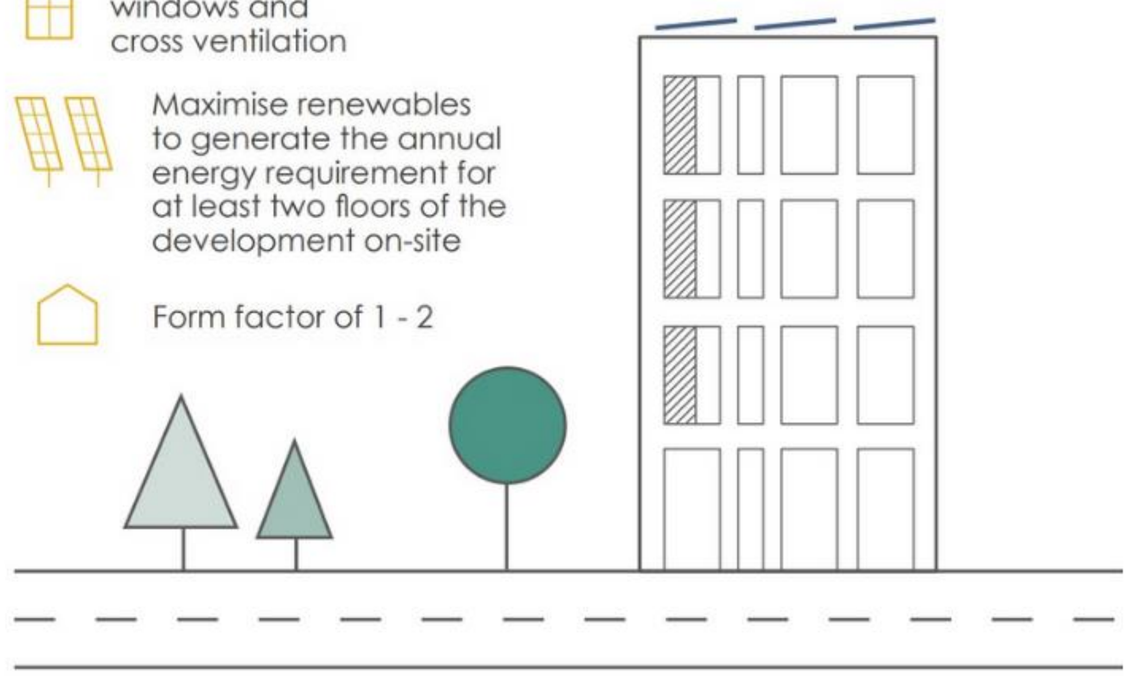
Include openable windows and cross ventilation

Maximise renewables to generate the annual energy requirement for at least two floors of the development on-site

Form factor of 1 - 2

Reduce energy consumption to: 55 kWh/m².yr *Energy Use Intensity (EUI) in GIA, excluding renewable energy contribution*

Reduce space heating demand to: 15 kWh/m².yr



The LETI Design Guide does not contemplate a category where the proposed intervention can be incorporated, but anticipating that the more permanent strategy for the design is commercial spaces, these guidelines should be followed.

LETI DESIGN GUIDE

APLICABLE ELEMENTS

Figure 2.1 - Life cycle assessment (LCA)
Diagram adapted from Hawkins\Brown using illustrations from Open Systems Lab 2018 licensed under Creative Commons CC-BY-ND

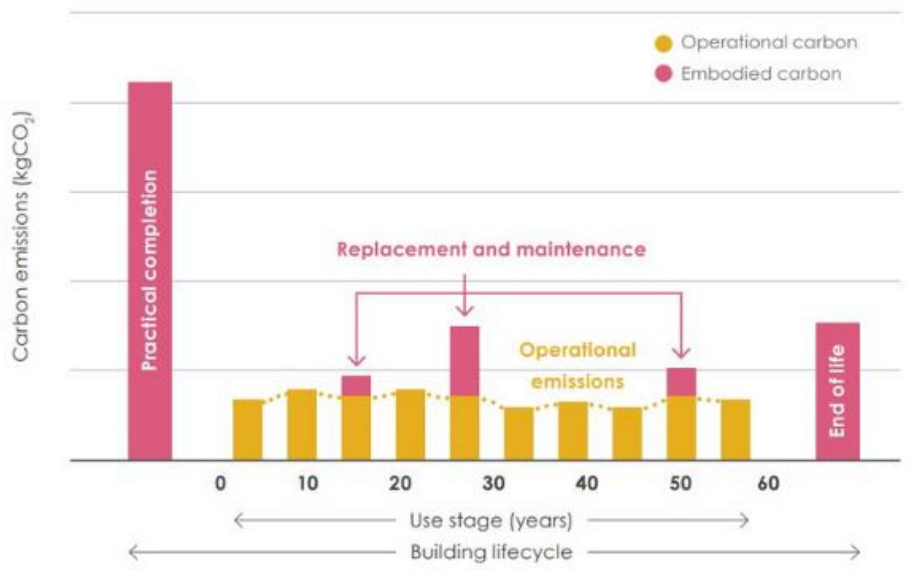
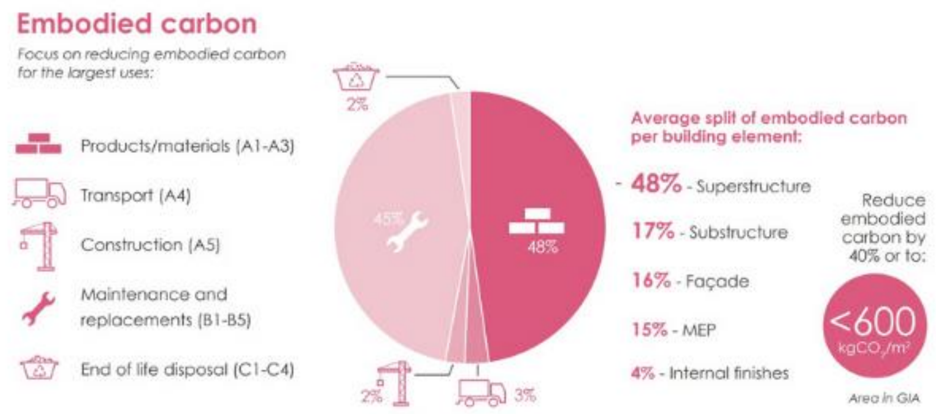


Figure 2.2 - Graph showing interaction between operational and embodied carbon throughout the lifetime of a building



All materials can be locally sourced, meaning that the transportation rates can be reduced. Moreover, brick is a material that requires little to none maintenance and their end of life disposal can be efficiently managed. This project can potentially have an embodied carbon rate that fulfills the proposed standards.

LETI DESIGN GUIDE

APLICABLE ELEMENTS

Space heating peak
10 W/m^2

Equiv. to 6 kWh/m^2.yr renewable electricity from the grid

Domestic hot water peak
6 W/m^2

Equiv. to 9 kWh/m^2.yr renewable electricity from the grid

Plant capacity
16 W/m^2

By regulating the maximum temperatures for heaters and hot running water, a more efficient energy consumption can be achieved. It is also important to implement systems that not rely on fossil fuels but rather use alternative energy sources like solar panels, which could be installed on the roofs of the intervention.

2.- CLIMATE AND ECOLOGICAL CONSIDERATIONS

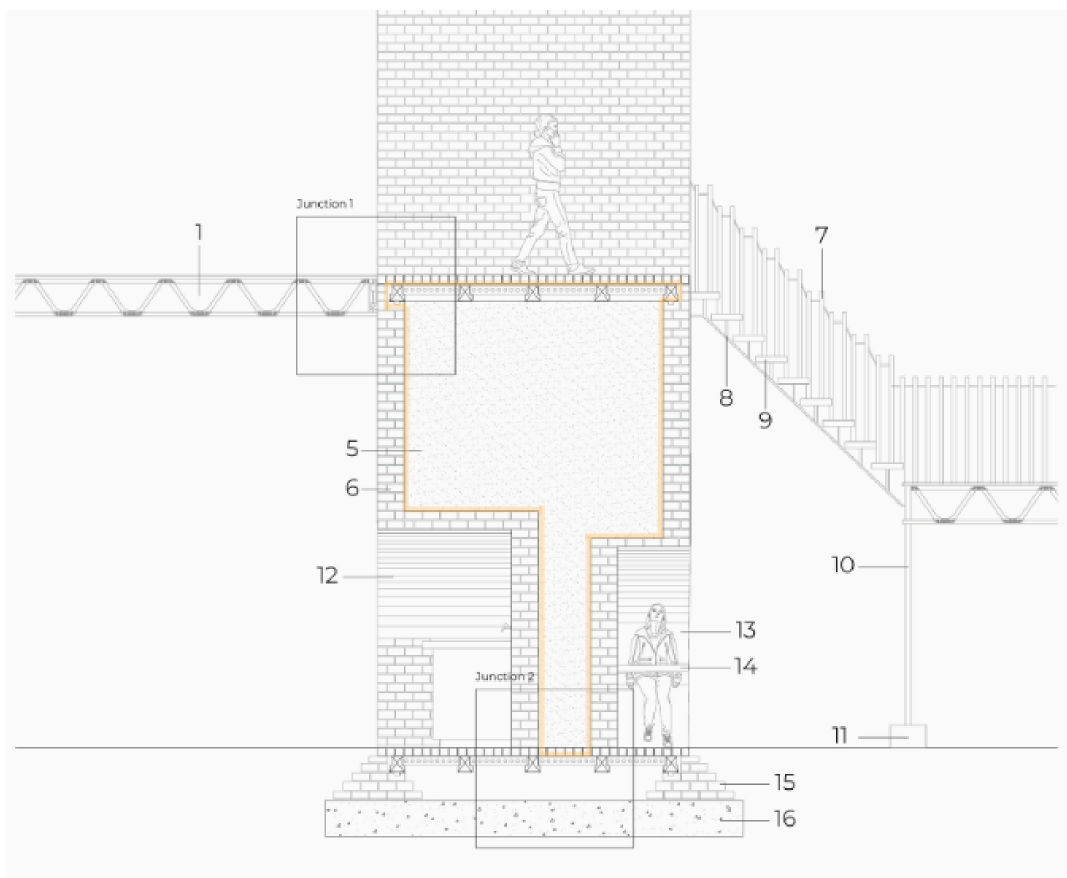
FINAL CONCLUSSIONS

This design proposal falls into a grey area in terms of compliances and regulations. The openness of the layout is difficult to regulate and to classify. No insulation has been placed in the wall buildup, as it would be pointless to have spaces without enclosure with insulated walls. Nevertheless, considering that in the future the walls might serve as a base to a more permanent project, insulation may be pertinent.

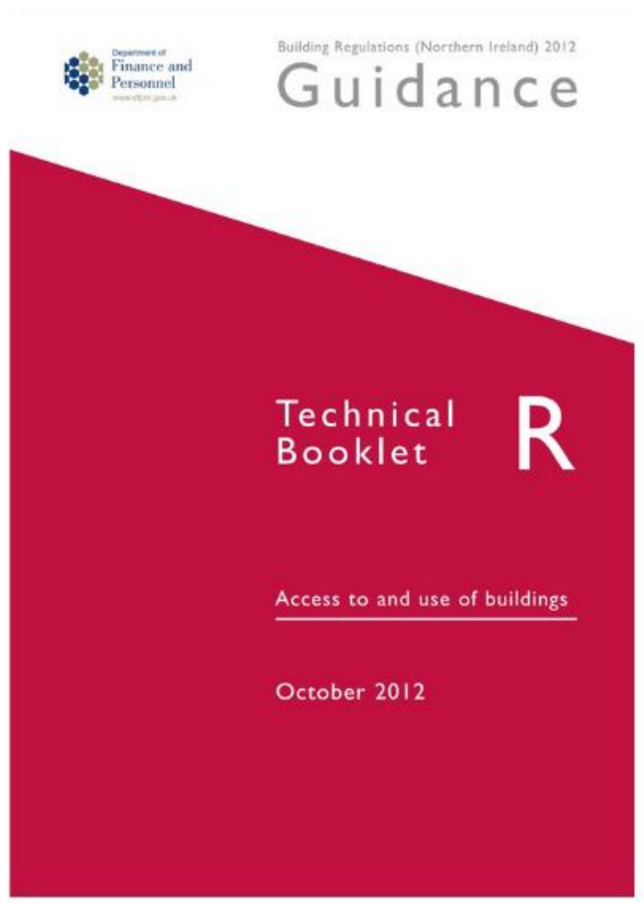
Having an adequate waste management and material choice is vital to achieve ecological strategies, The specification of materials, where and how they are sourced is imminent to achieve a low environmental impact, especially in this project since the guidelines provided for an adequate conservation of fuel and power are not always applicable. The construction industry is accountable for for 49% of annual carbon emissions in the UK (LETI Design Guide) . In the upcoming 40 years, 230 billion square meters are expected to be built (LETI Design Guide), it is necessary to have adequate environmental practices in every construction phase.

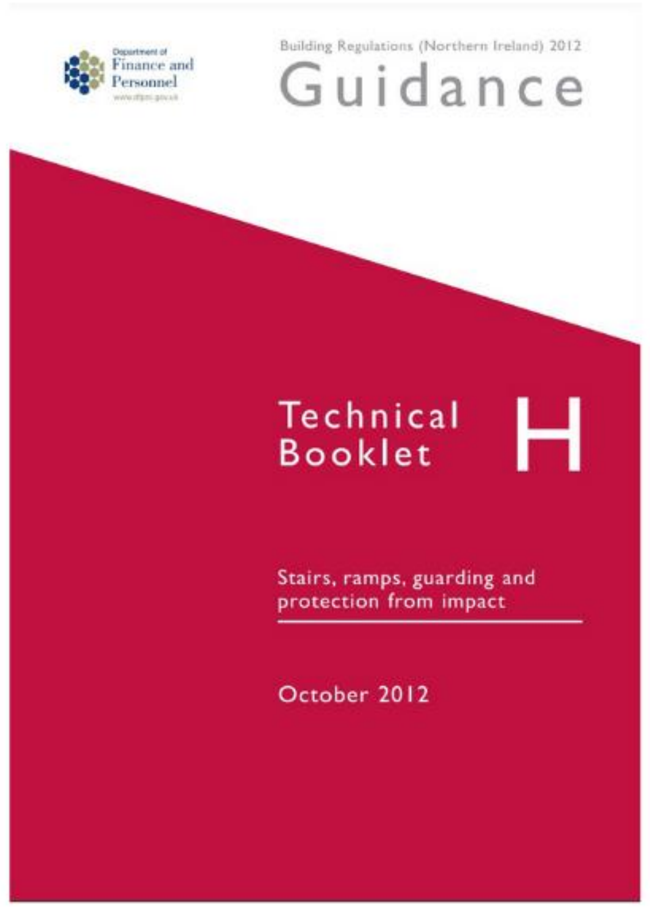
Source: LETI Climate Emergency Design Guide
Available at: https://www.leti.london/_files/ugd/252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf

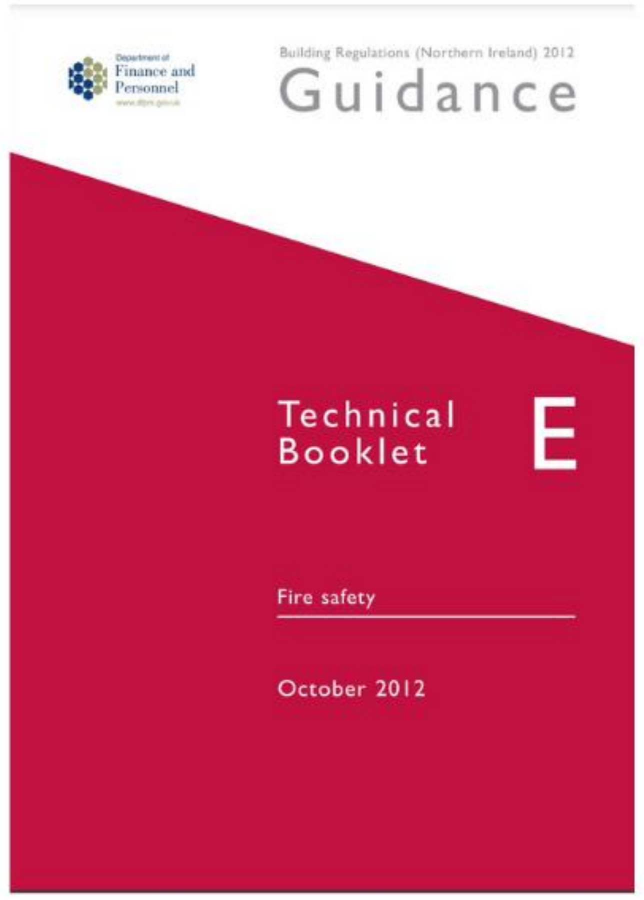
Possible thermal line where insulation is to be placed



3.- CDM/HEALTH AND SAFETY







This section includes a reflection on the responsibility of an architect as well as how the design proposal complies or not with Inclusivity and Fire Safety Regulations in accordance UK regulations.

THE RESPONSABILITY OF AN ARCHITECT

REFLECTION

Architects and all people involved in altering and designing the urban fabric have a great responsibility not only with the future users of the intervention, but also with all other stakeholders like residents of the neighbouring buildings, the land owners, etc. Furthermore, it is part of the designer's duties to overlook the project in all the construction phases to assure that it is being carried out as stipulated and any amendments that safeguard human safety are taken in place if needed. It is also important to control that contractors and other collaborators are providing sufficient equipement to assure the safety of the builders.

An architect must behave ethically in all phases of the design, construction and maintenance of a design and must prioritize the short and long term impact of their actions. According to Alan Jones, the immediate safety considerations include the wellbeing of the builders and all staff involved in the construction process as well as people who inhabit the spaces that surround the construction site. The long term safety considerations include good environmental practices and technological systems that enable an efficient building accompanied by the thorough study of the social and cultural repercussions of the design.

The ARB protects the public by ensuring that all registered architects have acquired sufficient skills, experience and knowledge to deliver a project that comply with all stipulated regulations regardless of the scale of typology of the project. A register architects also conducts itself with an ethical code of practice and is capable of utilizing the acquired experience to safeguard the community and end users' safety and health.

Source: Semester 2 Week 9 Lecture The Architect, Health and Safety and CDM by Prof. Alan Jones
(Lecture Notes)
Available at: https://web.microsoftstream.com/video/3010a5e9-cff4-41ec-aa6c-ff6d8599ec67

SECTION 2 ACCESS TO BUILDINGS OTHER THAN DWEILLINGS

2.1 As far as possible, the means of access from the point of entrance at the boundary and from car parking designated for people with a disability which is provided within the boundary, to the principal entrance(s) and, where provided, a staff entrance, should be level. However where a difference in level is unavoidable due to site constraints, the approach may have a gentle gradient over a long distance (for all or part/s of the approach), or it may incorporate a number of shorter parts at a steeper gradient, with level areas at intervals as rest points. Generally, gradients within the approach should be as gentle as possible. An approach that contains one or all of these features is called a level approach.

All access routes to principal, or alternative accessible, entrances should be surfaced so that people are able to travel along them easily, without excessive effort and without the risk of tripping or falling.

Potential hazards e.g. from open windows, on or over access routes should also be avoided.

All areas of the intervention have capacious access points and a very opened layout. The ground floor of the intervention is at street level and the treatment of the floor (on the ground floor only) is the same pavement materials as the sidewalk. On the first floor, the timber finishing of the floor surface is clearly distinct from the brick tiles. The brick finishing has been kept to a minimum as its texture might difficult the acces of wheelchair users or visually impaired people who rely on a cane for mobilization. (Refer to 1.20 Detailed First Floorplan)

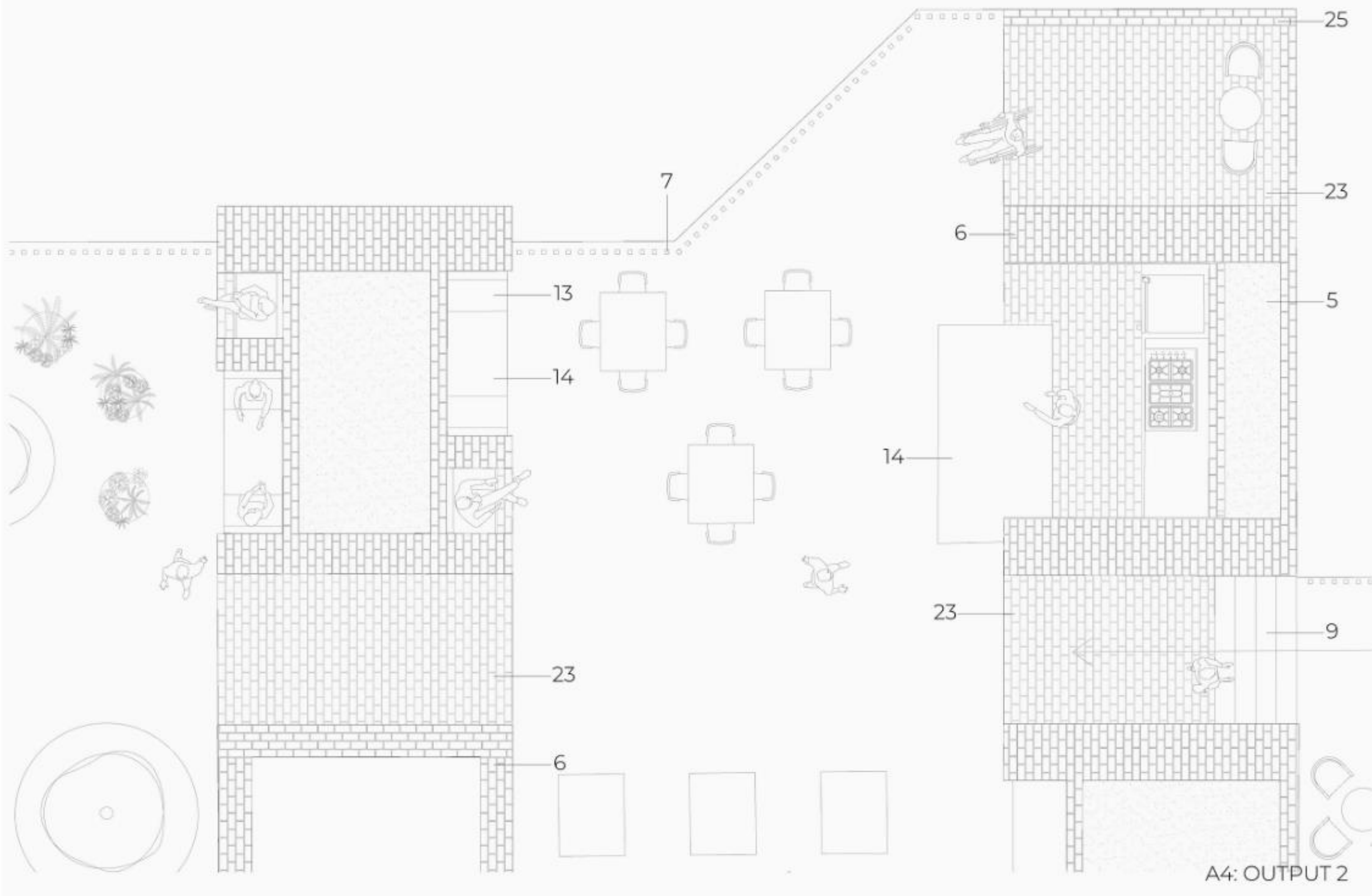
TECHNICAL BOOKLET R
APLICABLE ELEMENTS

KEY AND JUNCTION DETAILS
for sections

1.- Posi Joist
2.- Butt Bearinng Plate - Steel
3.- Inverted T-Beams - Concrete
4- Hollowcore Blocks - Concrete
5.- Backfill - Recycled
6.- Red Brick
7.- Balustrade - Pine or available soft wood
8.- Supporting frame for staircase - Steel
9.- Step - Pine or available soft wood
10.- Supporting beam - Pine or available soft wood
11.- Footing - Concrete
12.- Voussoir Bricks
13.- Sitting - Pine or available soft wood
14.- Table - Pine or available soft wood
15.- Footing - Brick
16.- Foundation - Concrete
17.- Floor Finishing - Plywood
18.- Top Beam - Engineered Timber
19.- Fixed Top Restraint Noggins - Engineered Timber
20.- Masonery Joist Hnager
21.- Bottom Beam - Engineered Timber
22.- Web Unit - Pressed Metal
23.- Floor Finishing - Red Brick
24.- Ventilated Void

25.- Balustrade - Red Brick

1.20 DETAILED FIRST FLOORPLAN



TECHNICAL BOOKLET R

APLICABLE ELEMENTS

SECTION 2 ACCESS TO BUILDINGS OTHER THAN DWEILLINGS

4.4 A corridor or passageway should have an unobstructed width of not less than 1200 mm. Minor projections (e.g. skirtings, architraves, etc.) may be ignored. However, where a projection into the corridor or passageway is unavoidable (e.g. at an archway in an existing building) and is more than 100 mm, that projection should have a suitable means of directing people around it.

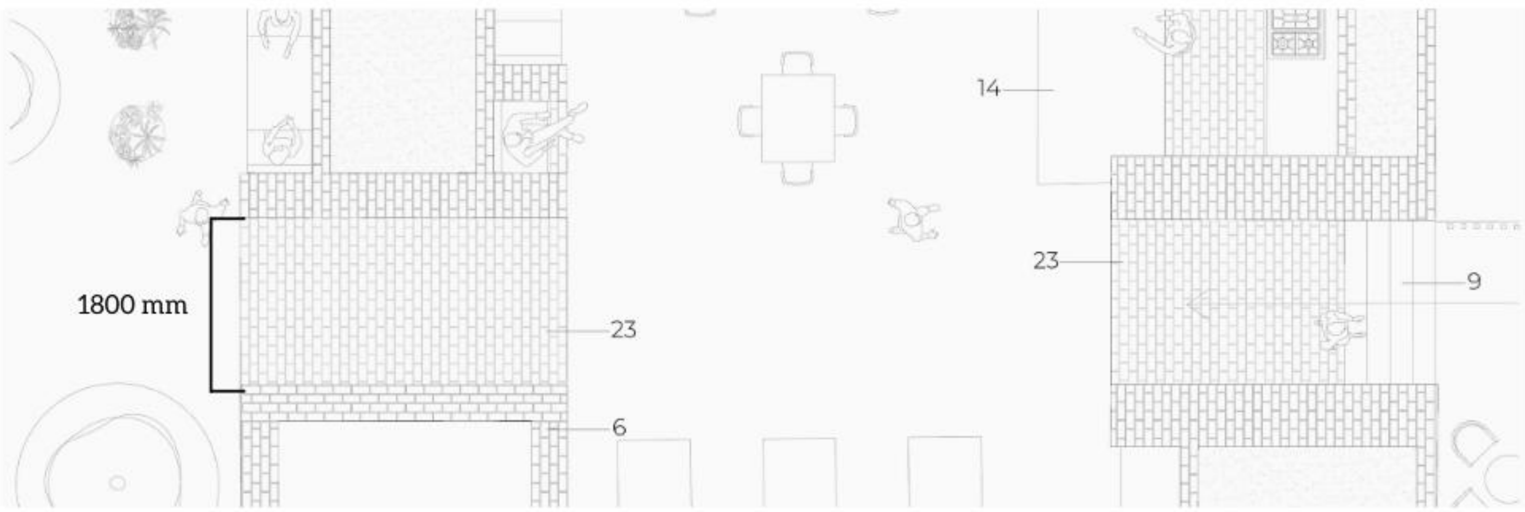
4.5 Where a corridor or passageway is more than 50 m in length and has an unobstructed width of less than 1800 mm, it should have passing places spaced at not more than 50 m. Every passing place should be not less than 1800 mm wide and not less than 1800 mm long. The width of the passing place may include the width of the corridor or passageway and may be incorporated into corridor junctions.

4.6 The floor of a corridor or passageway should –

(a) have a surface that has a suitable slip resistance; and

(b) be level, or contain a gradient in the direction of travel less steep than 1 in 20. However, where the floor has a gradient of 1 in 20 or steeper, a ramp or ramps and landings, should be provided.

The narrowest passageway has an unobstructed width of 1800mm and its surface material is brick tiles, which due its texture have a suitable slip resistance. None of the floor surfaces have a gradient.



TECHNICAL BOOKLET R

APLICABLE ELEMENTS

SECTION 2 ACCESS TO BUILDINGS OTHER THAN DWEILLINGS

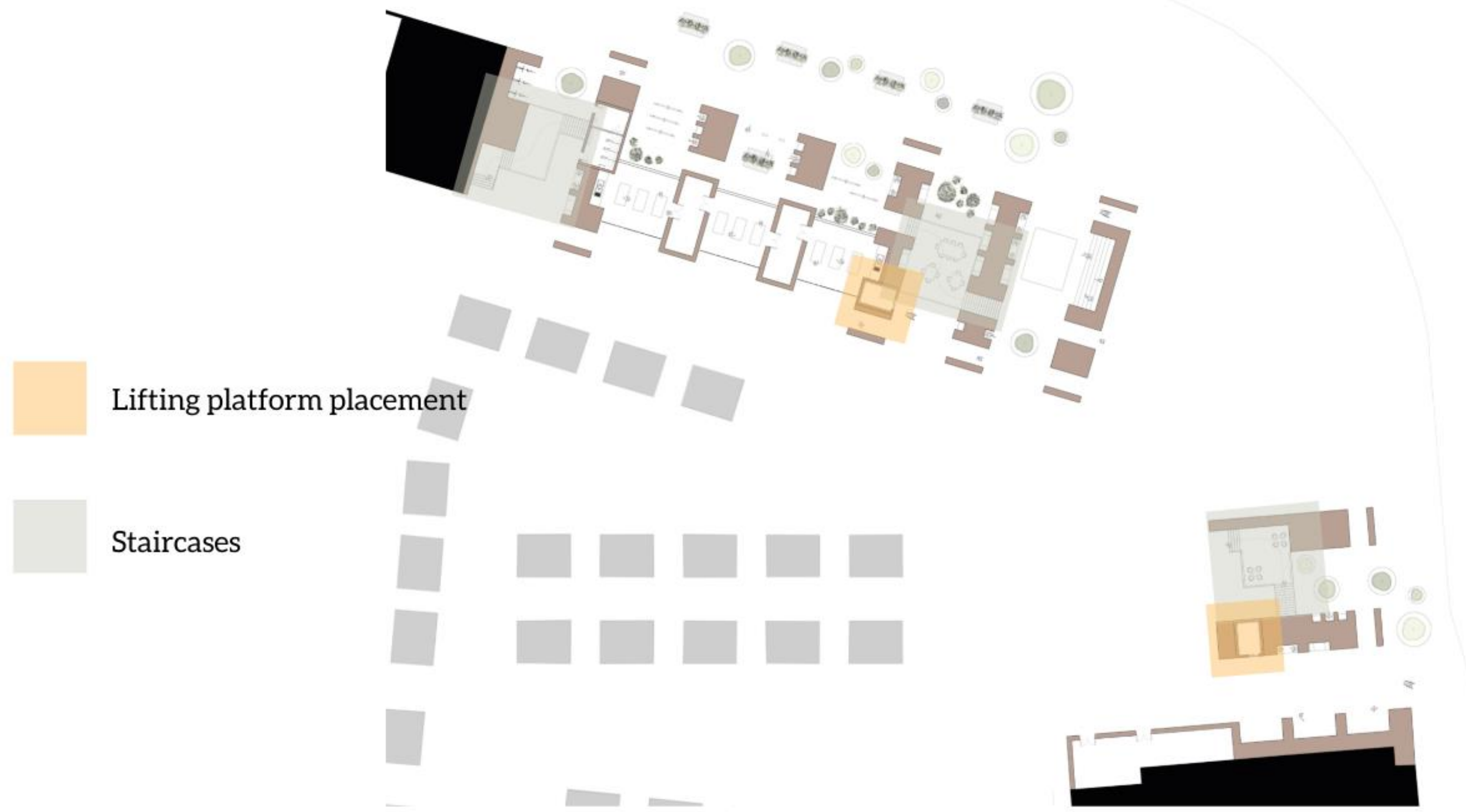
Vertical access between storeys

4.22 To facilitate all people, a passenger lift is the most suitable means of vertical access and should be provided wherever possible. However, given the space constraints in some buildings, it may not always be possible to install the type and size of passenger lift that would be suitable for use by all, and other options need to be considered to provide for users with mobility impairments.

The following provisions for a passenger lift or lifting platform relate to the provision of sufficient space and design features that will make such lifting devices accessible.

4.23 Whatever lifting device is chosen, internal stairs should also be provided as an alternative means of vertical access.

Accessibility to all floors has been a key consideration from the beginning of the design process. There are two lifting platforms, one on each segment of the intervention. These platforms will not only facilitate access to all users but also goods for the clothing store and the temporary restaurants will be transported to the first level using the lifting platforms.



TECHNICAL BOOKLET R

APLICABLE ELEMENTS

SECTION 2 ACCESS TO BUILDINGS OTHER THAN DWEILLINGS

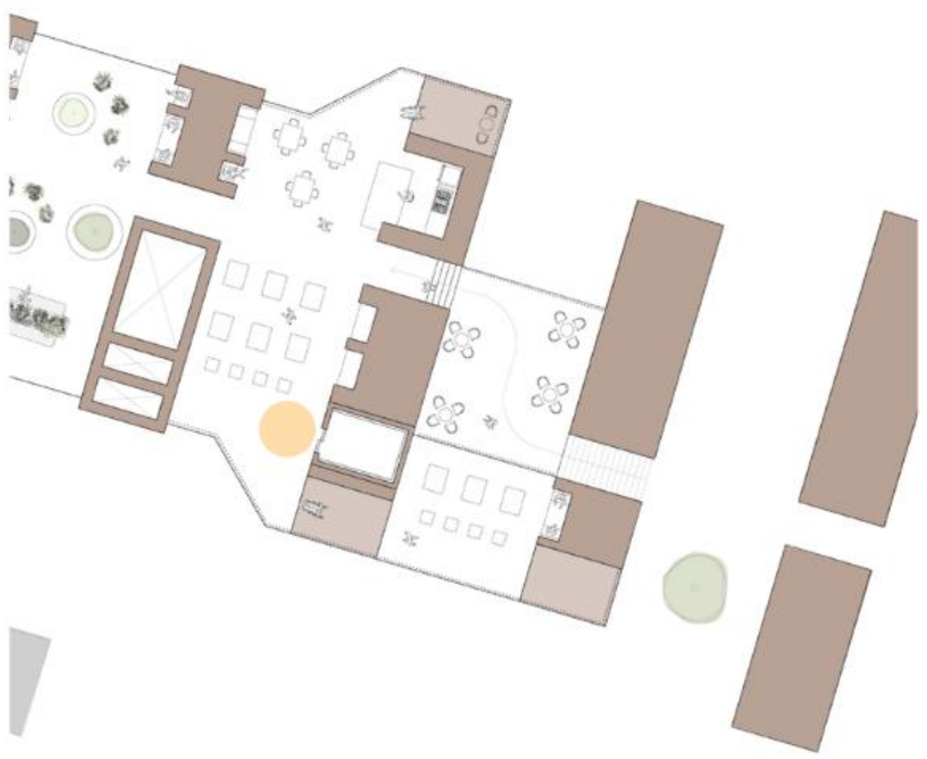
4.25 All users including wheelchair users should be able to reach and use the controls that summon and direct the lifting device.

4.26 A manoeuvring space in front of the door to the lifting device should be provided on each storey. This space should have an unobstructed width and depth of not less than 1500 mm.

The access to the lifting platform facing Hope Street is approached from the east on the ground floor and from the west on the first floor. This design decision allows for an adequate maneuvering space in both levels.

Ground Floor

First Floor



Maneuvering circle of 1500mm of diameter

TECHNICAL BOOKLET R

APLICABLE ELEMENTS

SECTION 2 ACCESS TO BUILDINGS OTHER THAN DWEILLINGS

4.39 A lifting platform should only be provided to transfer wheelchair users, people with reduced mobility and their companions vertically between levels or storeys.

All users, including wheelchair users, should be able to reach and use the controls that summon and direct the lifting platform.

People using a lifting platform need audible and visual information to tell them that the platform has arrived, and which floor it has reached.

4.40 A lifting platform should be contained within a liftway enclosure where –

(a) the vertical travel distance is more than 2000 mm; or

(b) the lifting platform travels through a floor penetration.

4.41 A lifting platform should have a platform size of –

(a) not less than 800 mm wide and not less than 1250 mm deep, where the lifting platform is not contained within a liftway enclosure;

(b) not less than 900 mm wide and not less than 1400 mm deep, where the lifting platform is contained within a liftway enclosure;

(c) not less than 1100 mm wide and not less than 1400 mm deep, where there are two lift doors located at 90º relative to each other; or

(d) not less than 1100 mm wide and not less than 1400 mm deep, where the lifting platform is designed and constructed to accommodate an accompanied wheelchair user.

4.42 A lifting platform should have a door or doors which provide an effective clear width of not less than –

(a) 900 mm, where the size of the lifting platform is not less than 1100 mm wide and not less than 1400 mm deep; or

(b) 800 mm in any other case.

A door or doors to a lifting platform should be distinguishable, through suitable visual contrast, from that of the adjacent wall surfaces.

4.43 The platform controls for a lifting platform should be –

(a) of the continuous pressure type; and

(b) positioned not less than 800 mm and not more than 1100 mm above the floor of the lifting platform and not less than 400 mm horizontally from the front face of the lifting platform.

4.44 Visual indication and audible indication of the lifting platform arrival and the floor reached, should be provided within the lifting platform.

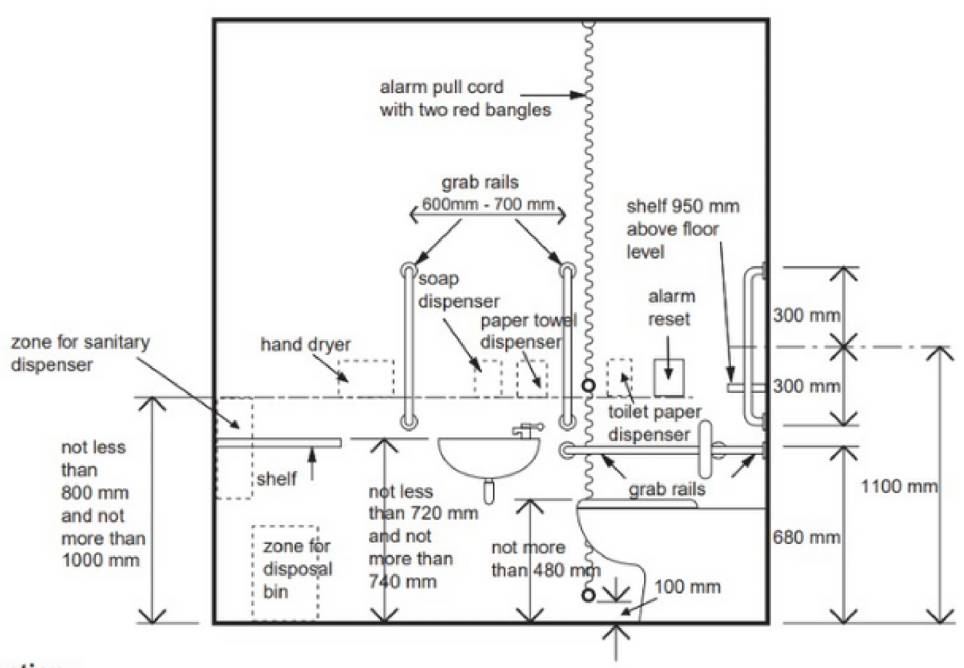
4.45 Clear permanent operating instructions should be provided either in, or adjacent to, the lifting platform.

The provided lifting platforms do exceed the dimensions stipulated, specially because goods must be transported in them. The entrance has an unobstructed width of 1000mm. The platform is 1500 x 2500 mm and the lift call buttons will have to be placed as signposted on the guide.

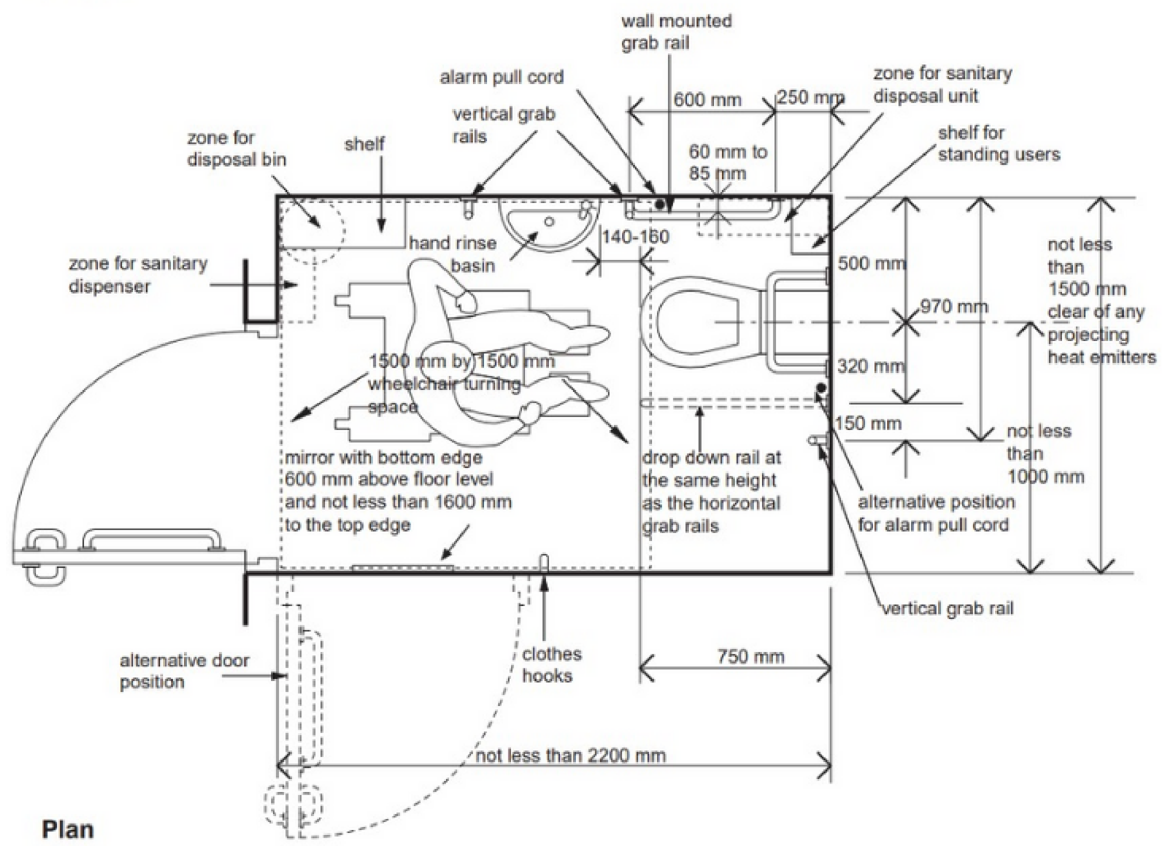
TECHNICAL BOOKLET R

APLICABLE ELEMENTS

SECTION 2 ACCESS TO BUILDINGS OTHER THAN DWEILLINGS

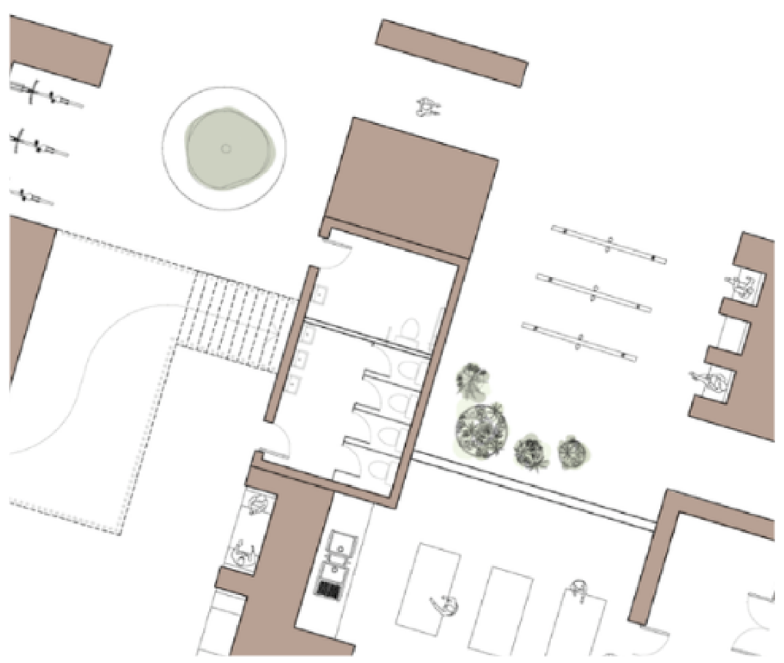


Section



Plan

There is an accessible bathroom that surpasses the minimum requirements, Its access point is detached from the other sanitary units to facilitate access and mobility.
Dimensions: 3140mm x 2200mm



TECHNICAL BOOKLET H

APLICABLE ELEMENTS

SECTION 3 STAIRS

3.5 Subject to paragraph 3.12 the relationship between the dimensions of the rise and going is that twice the rise (R) plus the going (G) i.e. (2R + G) should be between 550 mm and 700 mm. The rise and the going are given in Table 3.1.

Table 3.1 Rise and going

Category	Rise		Going
	minimum (mm)	maximum (mm)	minimum (mm)
Private stair	75	220*	220*
A common stair in a block of dwellings	75	170	250
A stair in any building (other than a private stair or a common stair in a block of dwellings)	150	170	250

Note:
A stair within more than one category should be constructed to the more onerous standard.
* see also paragraph 3.12.

3.6 In a flight, the steps should all have the same rise and they should all have the same going.

All steps in all staircases have the same rise and going dimensions: R= 200mm G= 350mm. Nonetheless, the rise of the steps is only adequate in private stairs, which these are not. This means that while the 'going' dimensions comply, the 'rises' are inadequate, bringing the relationship between dimensions to 750mm. The rises would need to be reduced in order to have comfortable stair dimensions for all users.

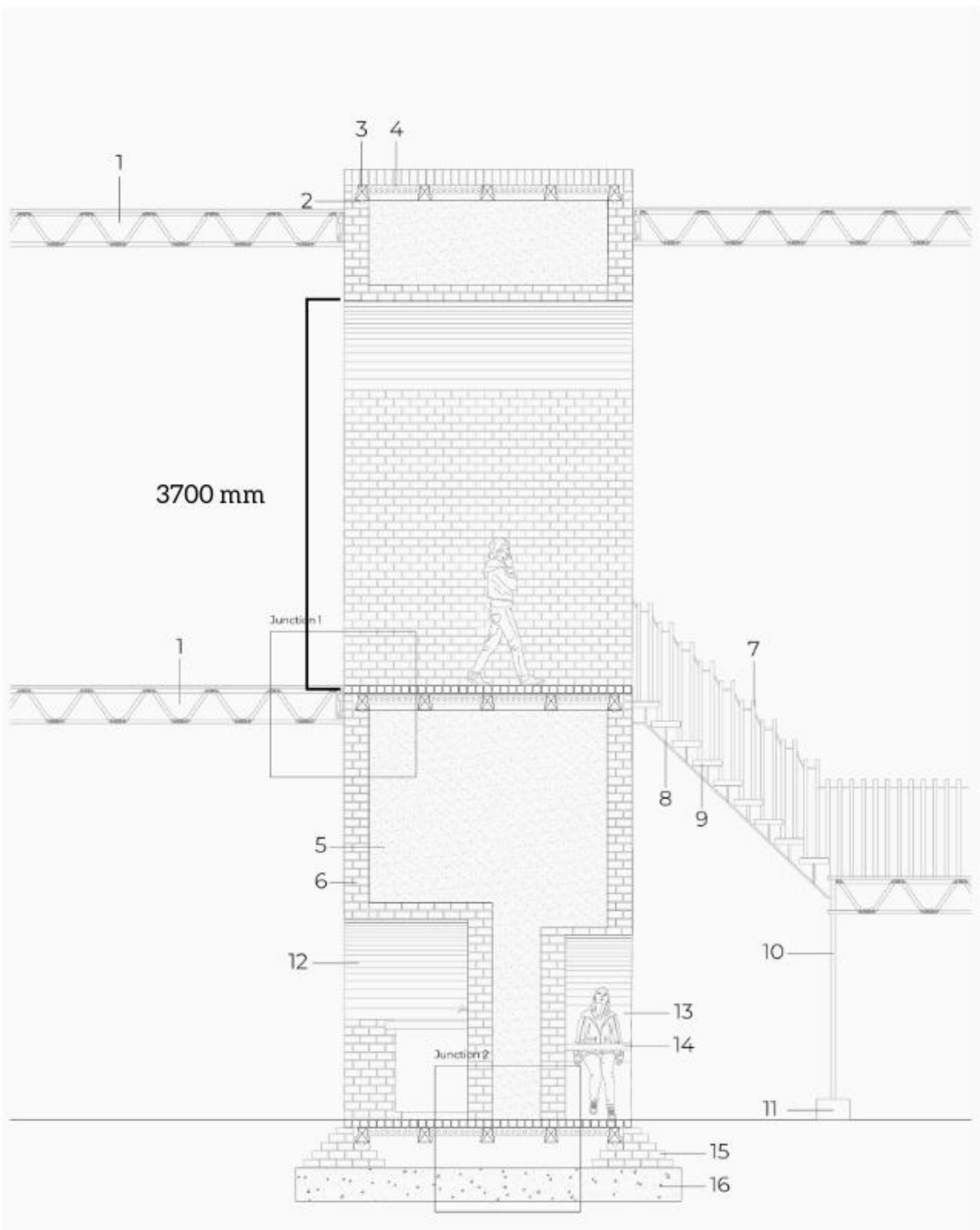
TECHNICAL BOOKLET H
APLICABLE ELEMENTS

SECTION 3 STAIRS

3.9 A stair should have a clear headroom of not less than 2000 mm over its full length and width.

Headroom is measured vertically from the pitch line of the flight and the level of the landing. See Diagram 3.2(a).

All staircases are located in double height spaces, meaning that the headroom is always greater than 2000mm. The only moment where the headroom is reduced is when the staircase gives access to the archway, where the headroom is of 3700mm.



TECHNICAL BOOKLET H
APLICABLE ELEMENTS

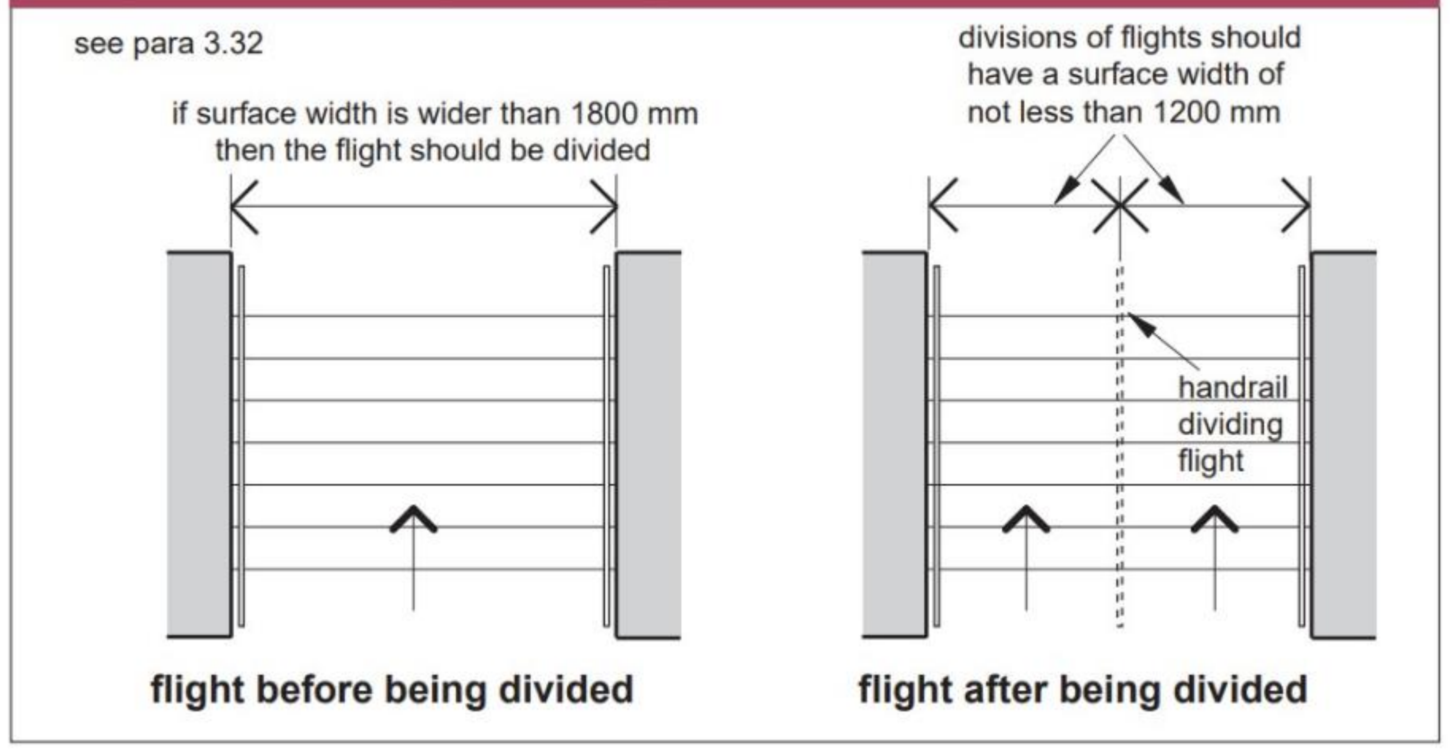
SECTION 3 STAIRS

3.32 A flight should have a surface width of not less than 1200 mm.

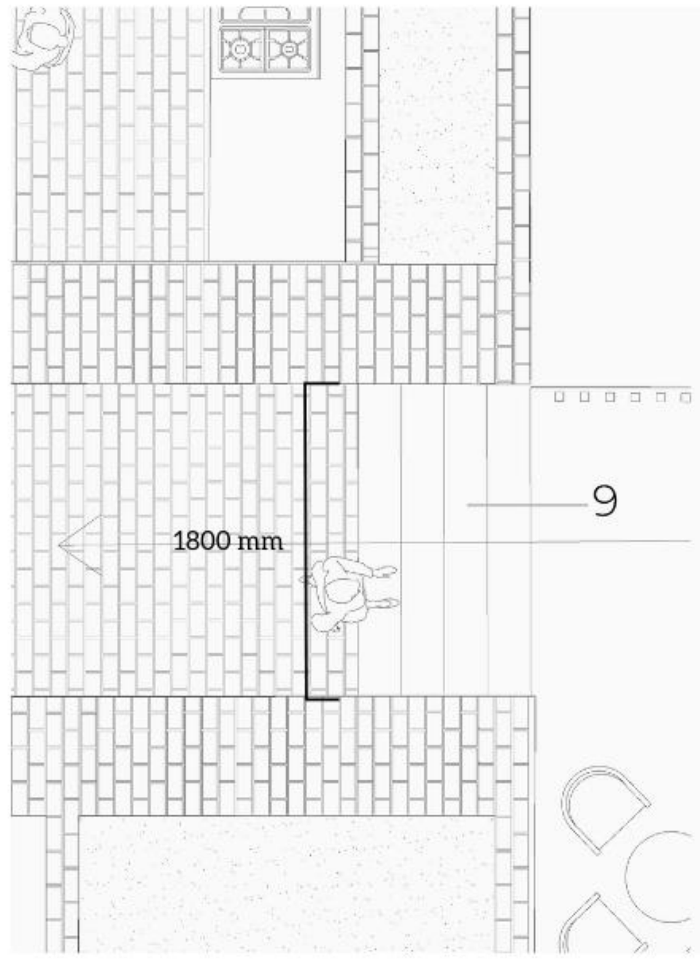
Where a handrail protrudes into the surface width of a flight by more than 100 mm, the surface width should be increased accordingly. In any case, the maximum protrusion of a handrail into the surface width of a flight should be 110 mm.

A flight of steps which has a surface width wider than 1800 mm, should be divided into flights which are not wider than 1800 mm. The minimum surface width of 1200 mm then applies to each flight. See Diagram 3.8.

Diagram 3.8 Dividing wide flights



All flights have a surface of 1800mm, a comfortable width for one or more simultaneous users. The distance between the internal edge of the handrail and the external edge of the landing is of 110mm.



TECHNICAL BOOKLET H

APLICABLE ELEMENTS

SECTION 3 STAIRS

3.31 There should be not less than 2 rises and not more than 12 rises in each flight.

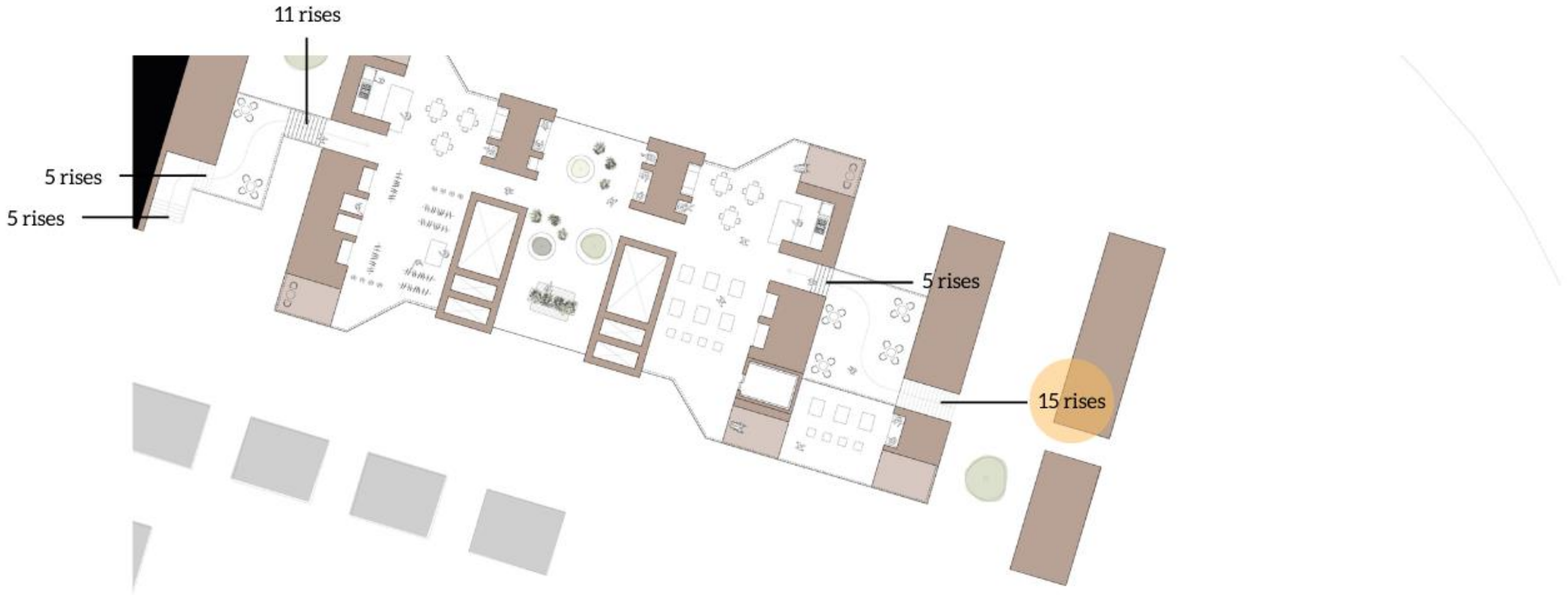
There may be exceptional circumstances where a different rise or greater number of rises in a flight is more appropriate e.g. where there are dimensional constraints imposed by an existing building.

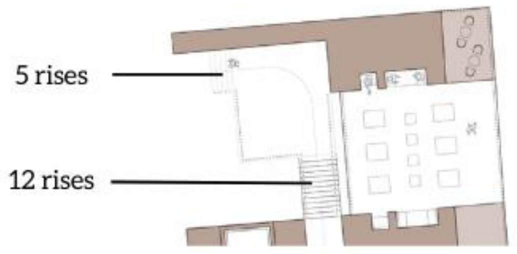
3.36 A landing should be provided at the top and bottom of every flight.

The width of the landing should be not less than the width of the stair.

To afford safe passage, the unobstructed length of each landing should be not less than 1200 mm clear of any door swing onto it.

Part of a floor may be considered as a landing.





Only in one occasion there are more than the adequate rises before a landing, but since this guide contemplates exceptional circumstances, the lack of compliance can be justified. In this case, the amount of rises has surpassed the recommended amount because by doing so the staircase occupies the whole depth of the brick wall.
No landing is narrower than the 1800mm width of the flight.

TECHNICAL BOOKLET E

APLICABLE ELEMENTS

SECTION 2 MEANS OF ESCAPE

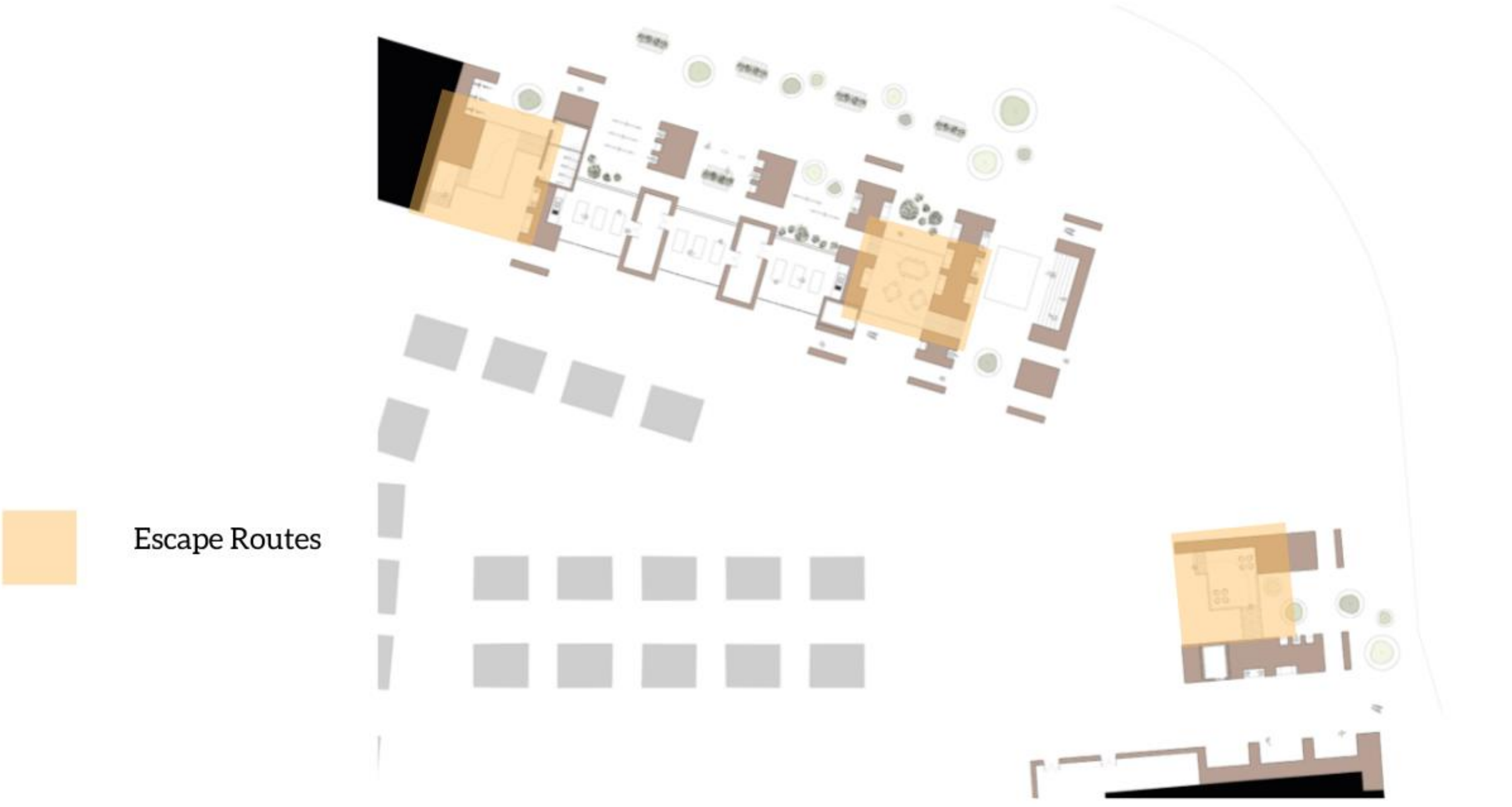
Number of escape routes and exits

2.43 The number of escape routes and exits should be not less than the number given in Table 2.1 for the relevant occupant capacity of the room or storey as appropriate. The escape routes and exits should be arranged such that the travel distances given in Table 2.3 are not exceeded.

Table 2.1 Minimum number of escape routes and exits from a room or storey

Maximum occupant capacity	Minimum number of escape routes/exits
60	1(1)
600	2
1000	3
2000	4
4000	5
7000	6
11000	7
16000	8
More than 16000	8(2)

The Intervention would be able to accommodate around 600-800 people maximum, meaning that 2-3 escape routes are needed.



TECHNICAL BOOKLET E

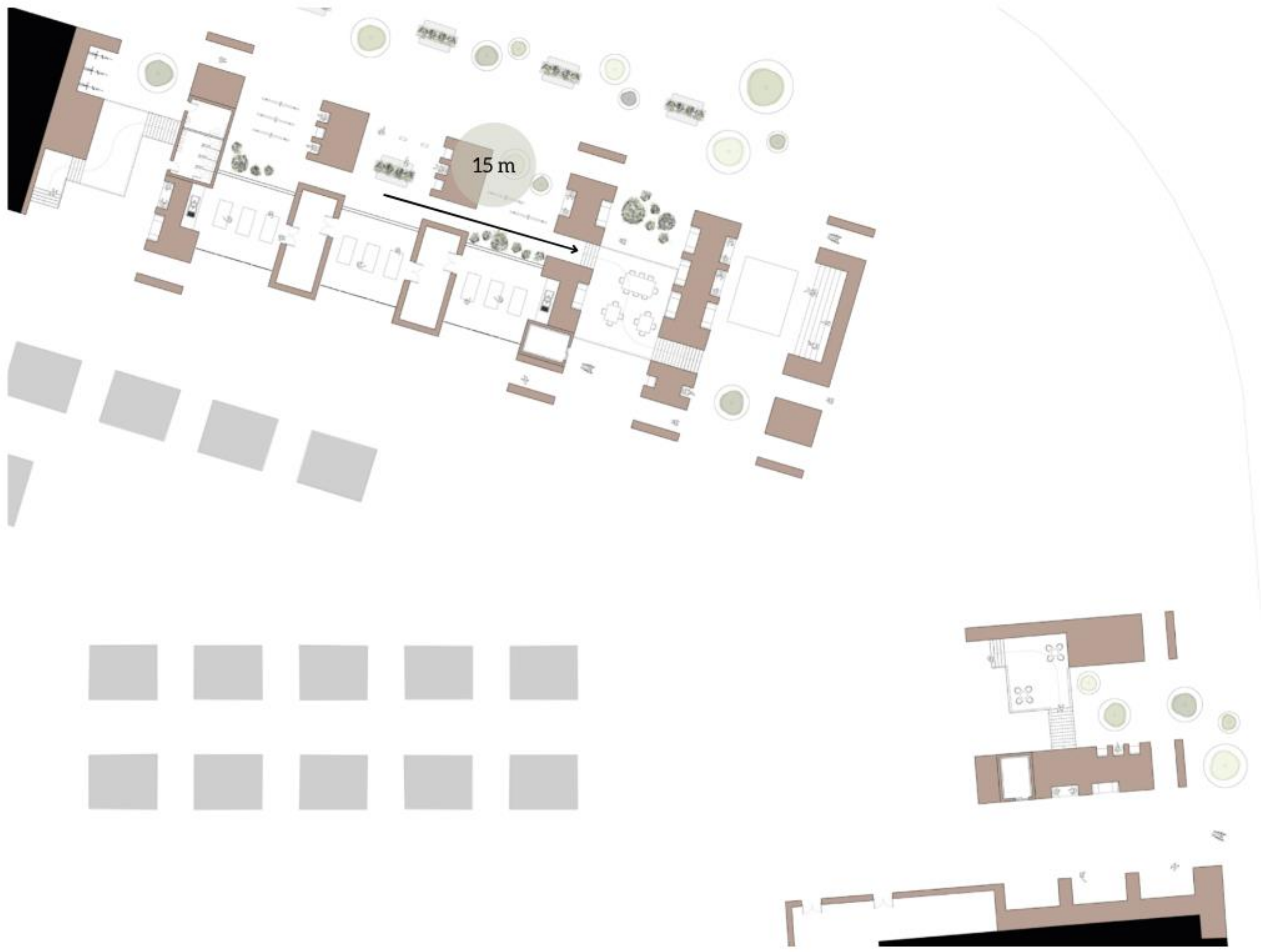
APLICABLE ELEMENTS

SECTION 2 MEANS OF ESCAPE

Table 2.3 Limitations on travel distances

Purpose group	Use of the building or part of the building	Maximum travel distance[1] where travel is possible in – One direction only (m)	More than one direction (m)
2(a)	Institutional	9	18
2(b)	Other residential –		
	(a) in bedrooms	9[2]	18[2]
	(b) in bedroom corridors	9	35
	(c) elsewhere	18	35
3	Office	18[3]	45
4	Shop and commercial[4]	18[3]	45

The longest travel distance to the escape routes is of 15m. Considering that this intervention's typology can be catalogued as Shop and Commercial, the travel distance is compliant.



TECHNICAL BOOKLET E

APLICABLE ELEMENTS

SECTION 2 MEANS OF ESCAPE

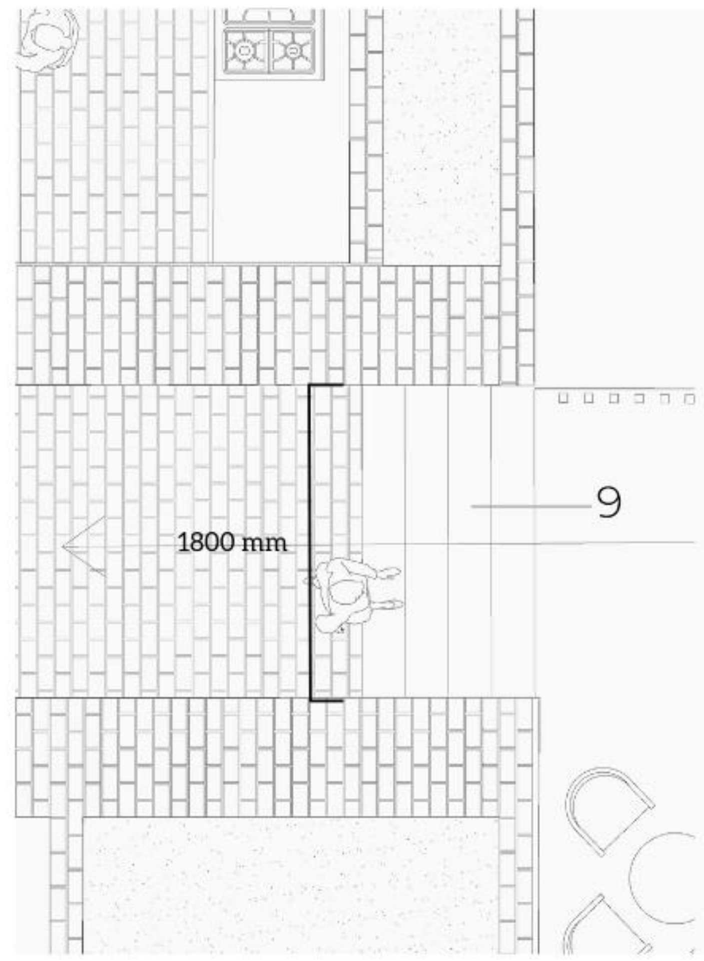
2.52 The width of an escape route or storey exit should be not less than the minimum width given in Table 2.4, for the appropriate number of people assessed as being likely to use it. There should be no projections into escape routes other than handrails with a projection of less than 100 mm and stringers, skirtings and architraves of less than 30 mm, on either or both sides. (Note – for the purposes of Part H stair widths are measured between handrails.) The width of a storey exit should be measured in accordance with B1(g) of Appendix B.

Table 2.4 Widths of escape routes and storey exits

Maximum number of people[1]	Minimum width[2][3] mm
50	750[4]
110	850
220	1100
More than 220	5 per person[5]

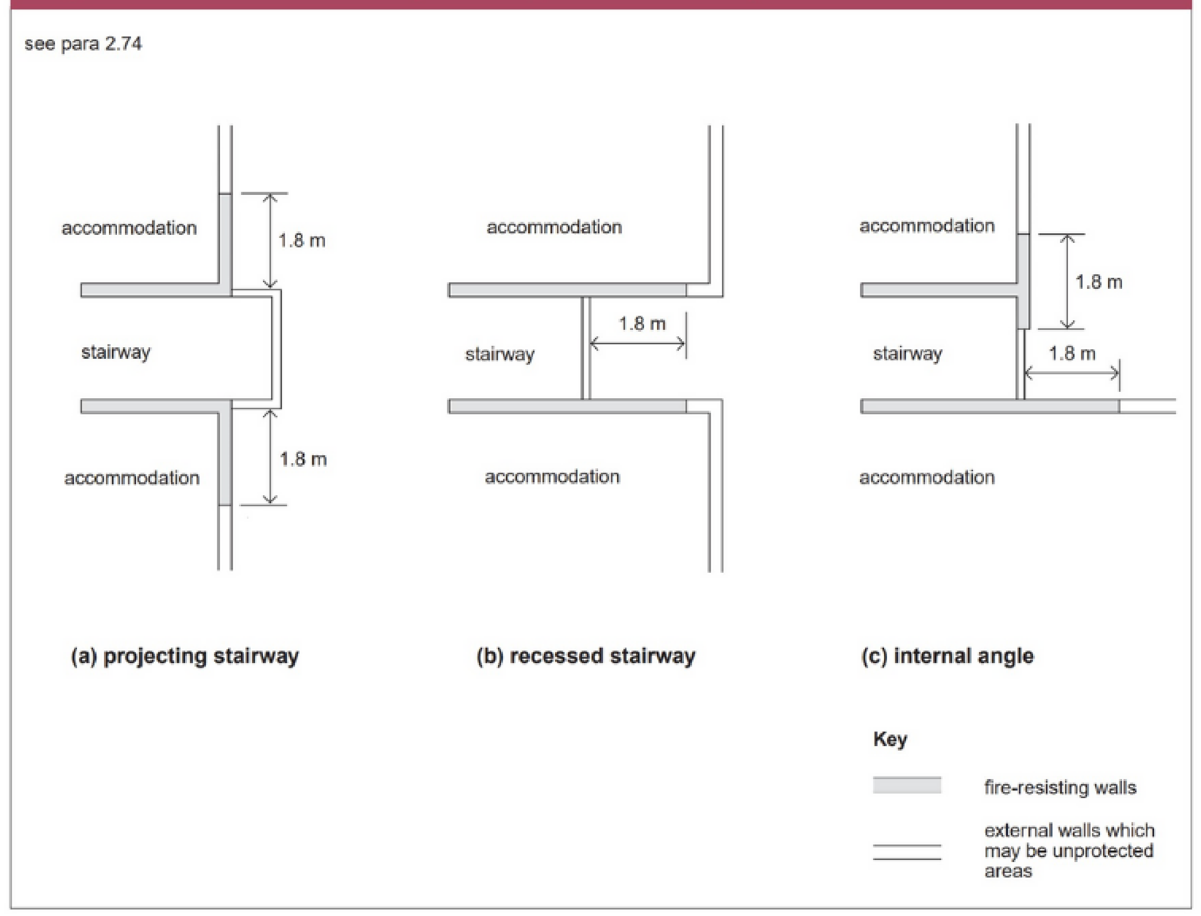
Notes:
(1) Assessed as being likely to use the escape route or storey exit.

The maximum amount of people that would use a escape route is around 100. Meaning that the minimum width of the scape route shouldn't be less than 850mm. The escape routes are accessible through the arches, meaning that the access points have an interrupted width of 1800mm.



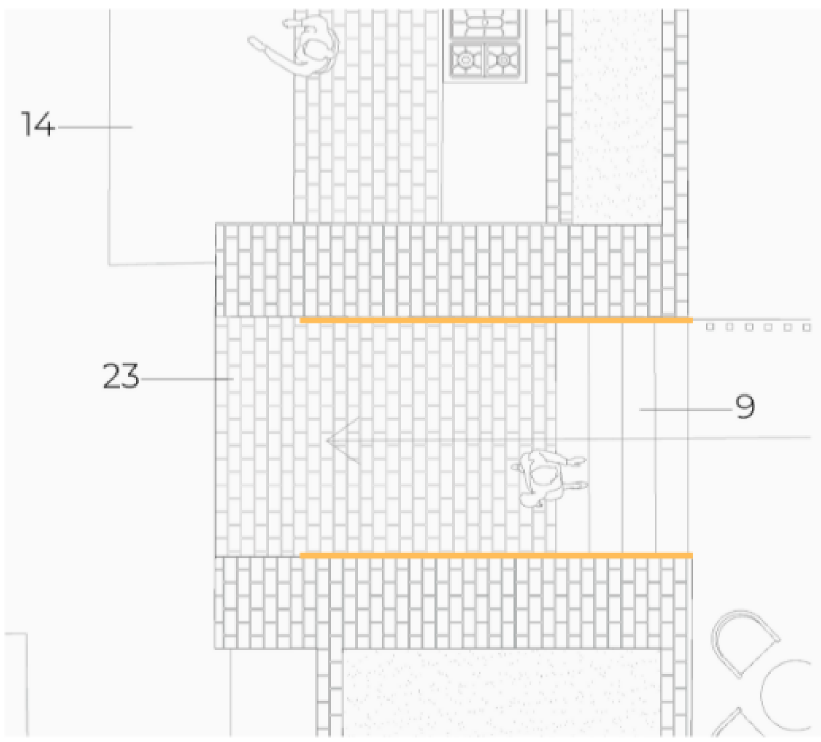
SECTION 2 MEANS OF ESCAPE

Diagram 2.10 External walls adjacent to protected stairways



The walls of the archways that grant access to the stairwell would have to be fire protected. Nevertheless, brick is one of the most fire resistant materials for construction, withstanding up to 1200°C. However mortar is a less fire resistant material and a drastic increase in temperature can cause mortar to crack and expand. The need of additional protection might have to be revised.

Source: Understanding the fire-resistance of building materials by CLM Fireproofing
Available at: https://clmfireproofing.com/best-fire-resistant-building-materials/



TECHNICAL BOOKLET E
APLICABLE ELEMENTS

SECTION 2 MEANS OF ESCAPE

2.93 Other than in a dwellinghouse every escape stair and its associated landings should be constructed of materials of limited combustibility where –

Combustible materials may be added to the upper surface of these stairs except in the case of firefighting stairways.

Since the staircase is meant to be easily demounted, It is made of softwood timber panels and steel. The openness of the layout might offer the opportunity to catalogue the staircase as a external escape route, nonetheless, the addition of surface chemicals such as ammonium phosphate, sulphate, and zinc chloride to the timber can make the material fire-retardant. Steel on the other hand can not resist temperatures above 600°C as these can induce the stress of mild steel, and at 1400°C, steel will melt completely. Intumescent paint is frequently used to increase the fire resistance of steel.

Source: Understanding the fire-resistance of building materials by CLM Fireproofing
Available at: https://clmfireproofing.com/best-fire-resistant-building-materials/

TECHNICAL BOOKLET E

APLICABLE ELEMENTS

SECTION 2 MEANS OF ESCAPE

2.99 As lifts penetrate floors and are usually sited within or adjacent to circulation routes they may prejudice the means of escape from the building. To safeguard against this a lift and its associated machine room should comply with the following provisions.

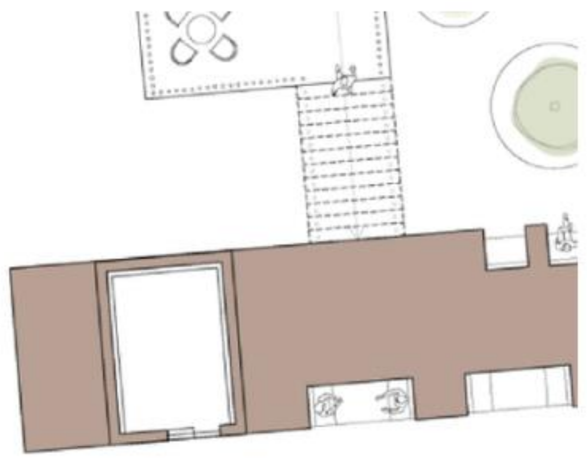
A lift should be –

(a) in a protected shaft where it penetrates a compartment floor (see paragraph 4.25);

(b) within the enclosure of a protected stairway where permitted by paragraph 2.72; or

(c) enclosed with fire-resisting construction where its siting prejudices the means of escape.

Considerent the excellent performance of brick as a fire protective material, one could say that the lifting platforms are enclosed with fire-resisting construction.



CDM/HEALTH AND SAFETY

FINAL CONCLUSSIONS

This design proposal falls into a grey area in terms of compliances and regulations. The openness of the layout is difficult to regulate and to classify, nevertheless there still are improvement possibilities for specific aspects regarding safety and accessibility. Even though the design is compliant in most applicable accessibility regulations, a miscalculation in the rise of staircases makes the circulation harder for some users.

Regarding fire safety brick is a very compliant material on its own, but posi joists and the staircases' structure would need to be fireproofed. Since the design has a non-enclosed layout, fires are less likely to occur and if they do, the source can be identified and attended more easily than in an completely enclosed building.

The material's choice does not show evidence of being particularly hazardous for construction workers. Posi Joists and concrete beams and blocks are manufactured off site in a controlled environment and brick or mortar does not generate dangerous gases during construction.

The temporality in phe project relies on the activity and the demountable floor plates enable a dynamic schedule of use. The brick walls are permanent elements, meaning that this project is not meant to be disposed or relocated after a short period of time, hence the generated carbon footprint will be embodied on the elements for longer. Additionally, the civic impact that the intervention has aims to revitalize Sandy Row, offering a space for local businesses to coexist with a market and public areas of leisure.

04 Final Design Proposal

Internal View