

# INTERLACED.

- A 1970s mass social housing transformation interlaced with a new built social housing complex -

P5 presentation

Magdalena Klimczak

Urban Architecture  
2019/2020

THE SITE



Source: Google maps



# THE NEIGHBOURHOOD





THE NEIGHBOURHOOD





THE NEIGHBOURHOOD

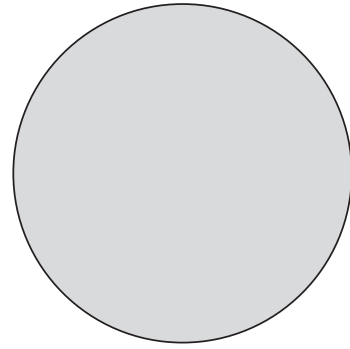




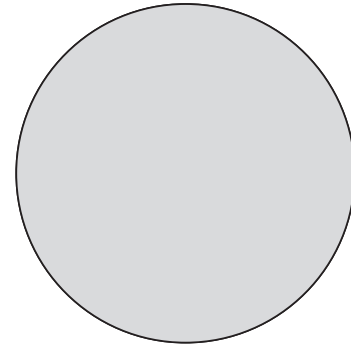
P1 / P2 RESEARCH



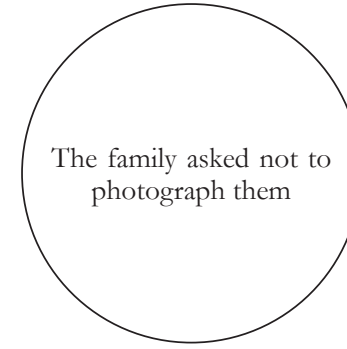
RESEARCH  
P1 RESEARCH - WAYS OF LIVING



\*



\*



The family asked not to photograph them



**Manzar & Mumfred  
inhabiting  
L'Ecole Vétérinaire**



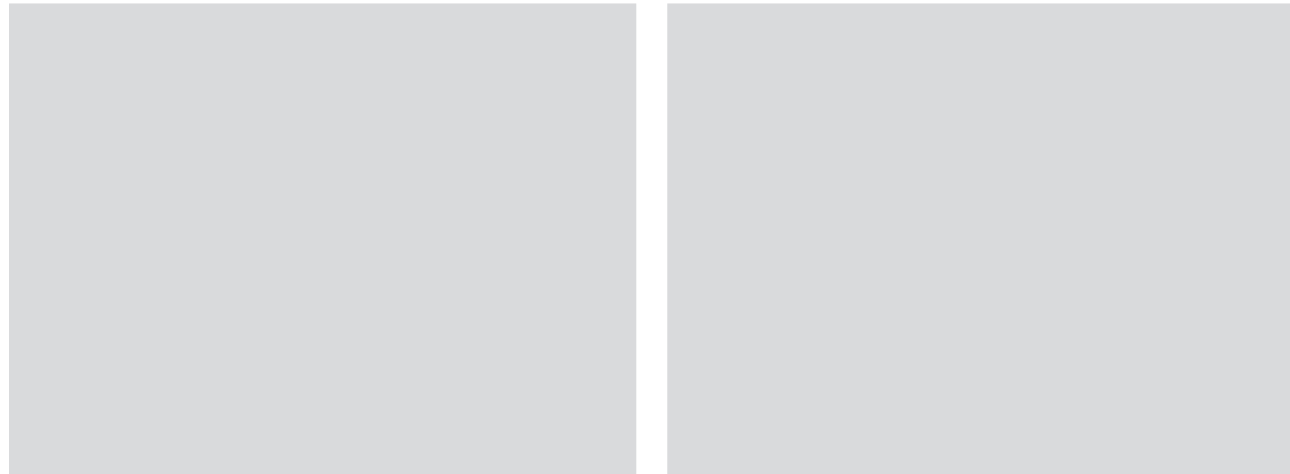
**Tom  
inhabiting tenement house  
at Rue de Georges Moreau 182**



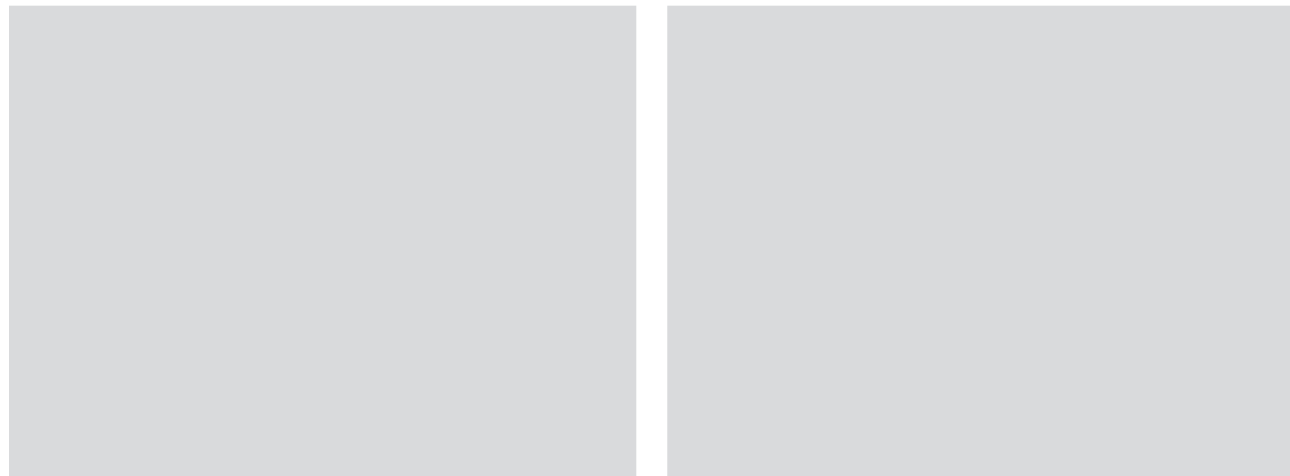
**Salma, Karima, Youssef, Yass-  
ine,  
Mohamed & Mohamed  
inhabiting Les Goujons**

\* Photos were retracted in published version to protect the privacy of the interviewees

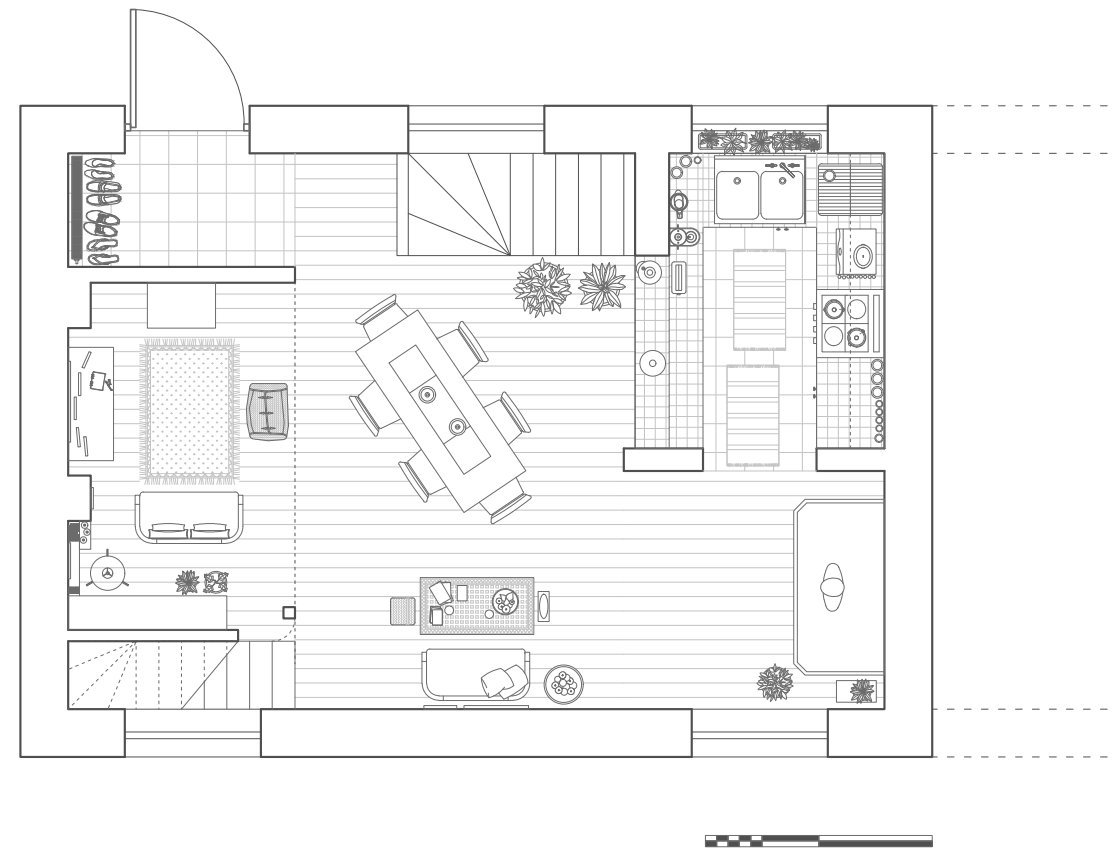
RESEARCH  
P1 RESEARCH - WAYS OF LIVING



- Exterior \* -



- Interior \* -



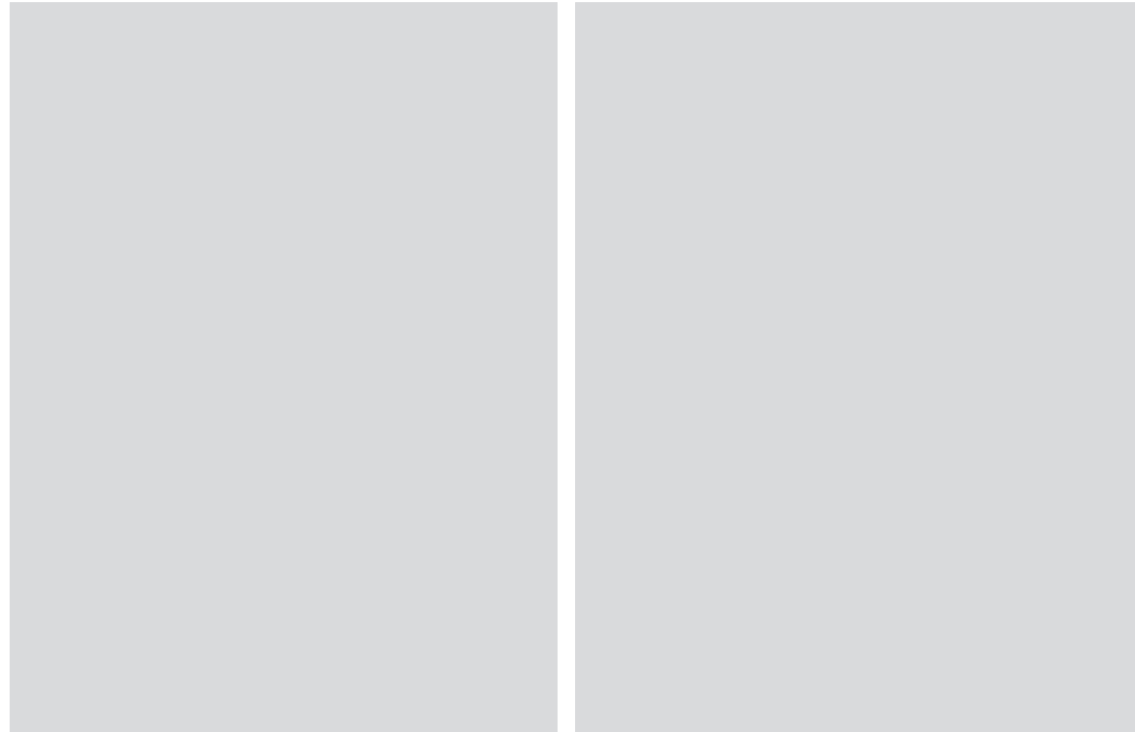
*P1 Research outcome - detailed plan drawing of an apartment in L'Ecole Vétérinaire complex*

*P1 Research outcome - photo documentation of an apartment in L'Ecole Vétérinaire complex*

\* Photos were retracted in published version to protect the privacy of the interviewees



RESEARCH  
P1 RESEARCH - WAYS OF LIVING



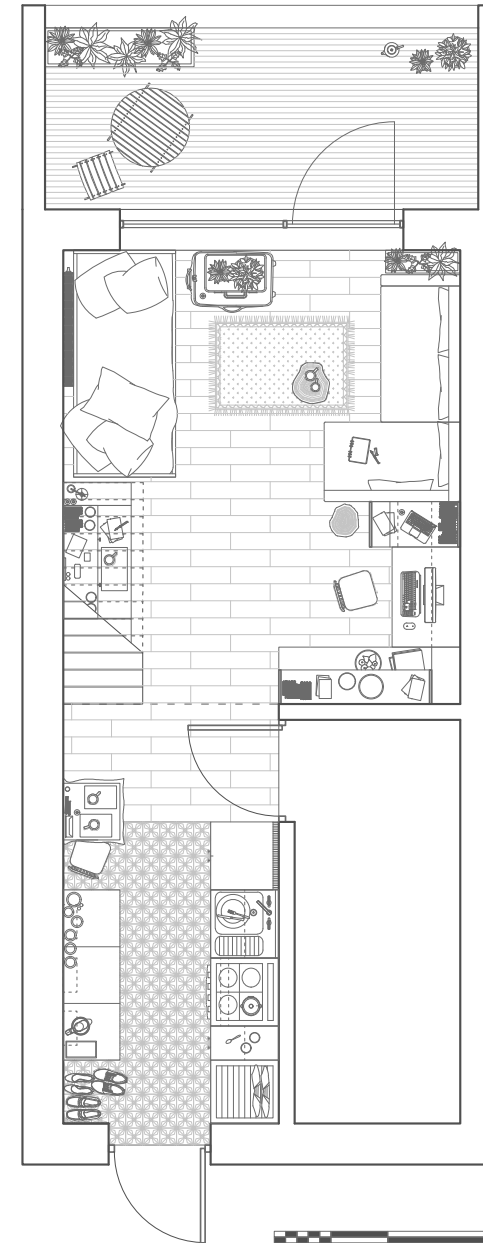
- Exterior -



- Interior -

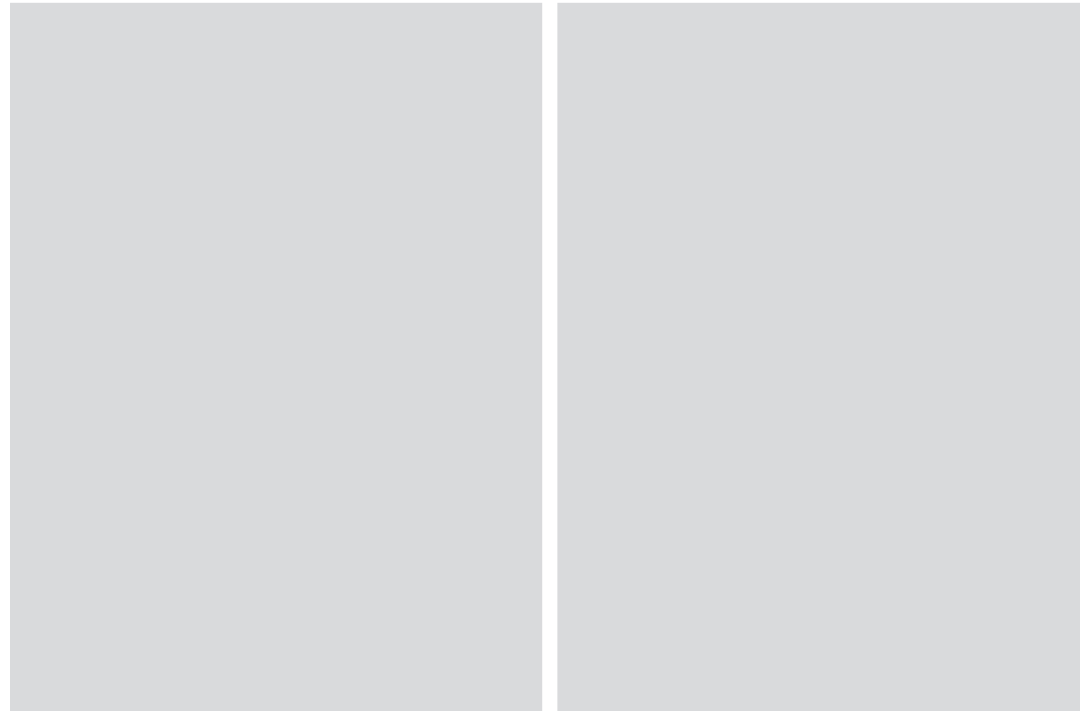
\* Photos were retracted in published version to protect the privacy of the interviewees

*P1 Research outcome - photo documentation of an apartment in Rue de Georges Moreau tenement building*

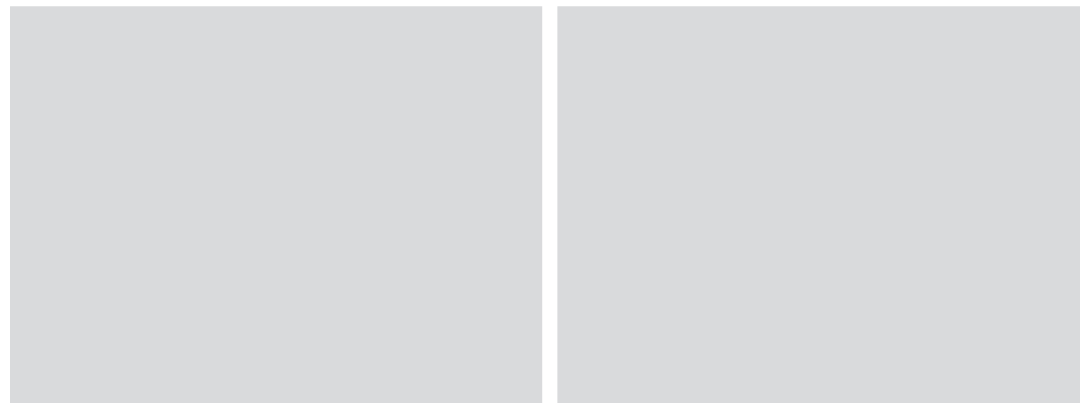


*P1 Research outcome - detailed plan drawing of an apartment in Rue de Georges Moreau tenement building*

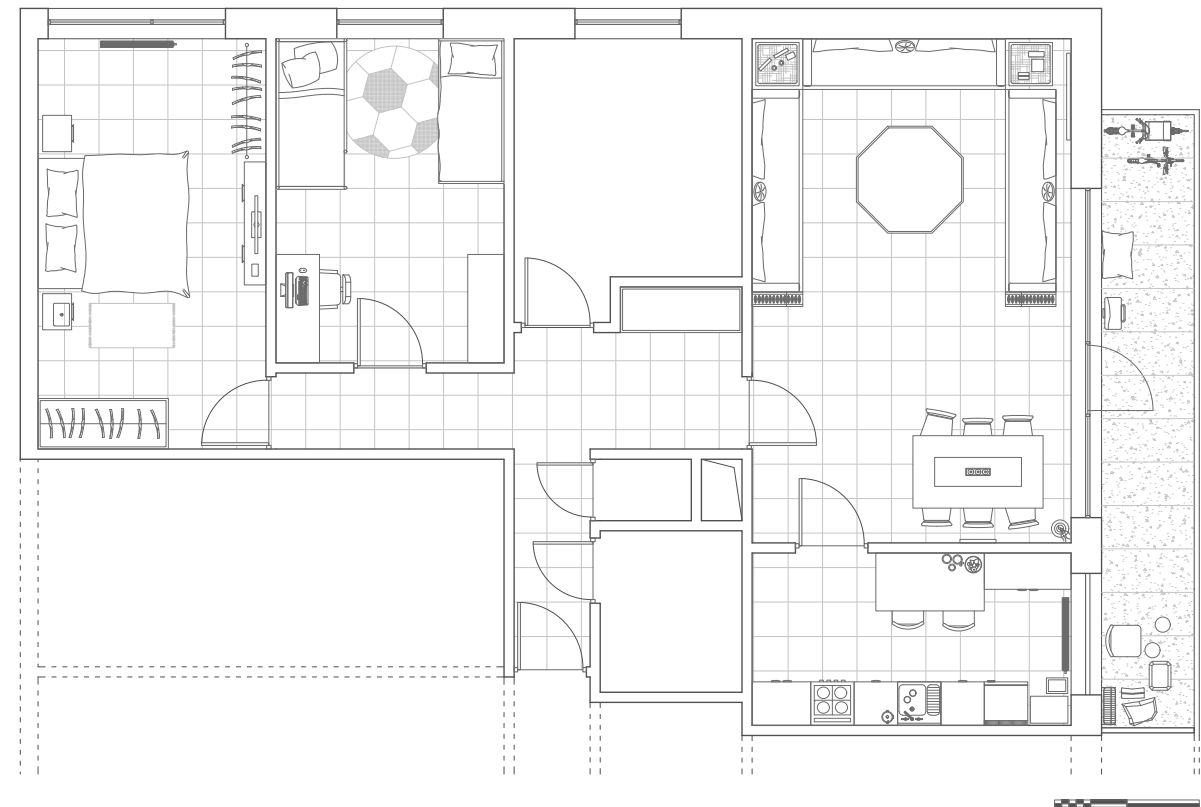
RESEARCH  
P1 RESEARCH - WAYS OF LIVING



- Exterior \* -



- Interior \* -



*P1 Research outcome - detailed plan drawing of an apartment in Les Goujons mass social housing*

*P1 Research outcome - photo documentation of an apartment in Les Goujons mass social housing*  
\* Photos were retracted in published version to protect the privacy of the interviewees



## LES GOUJONS



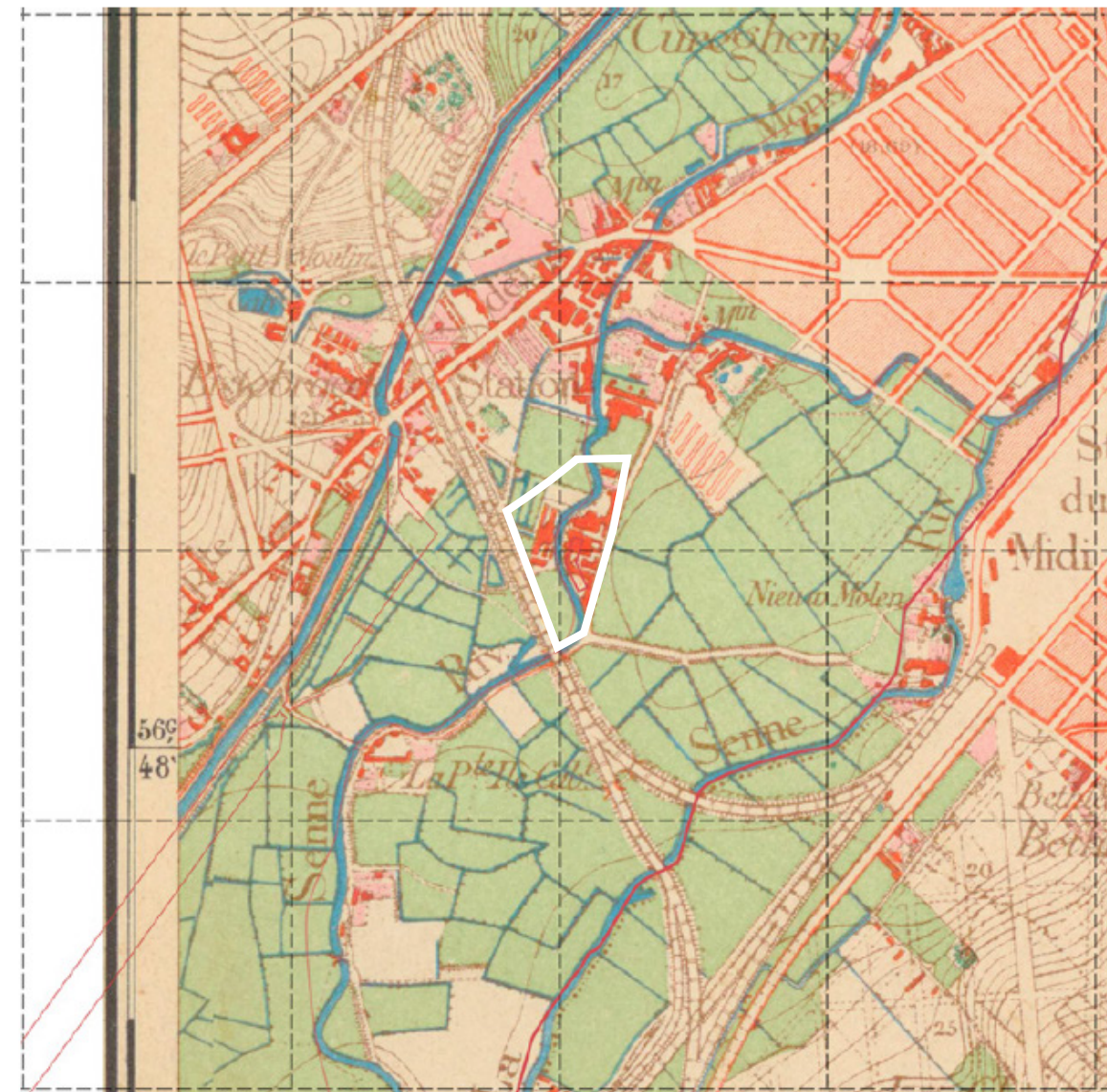
*Source: Google maps*



## SHAPE EVOLUTION



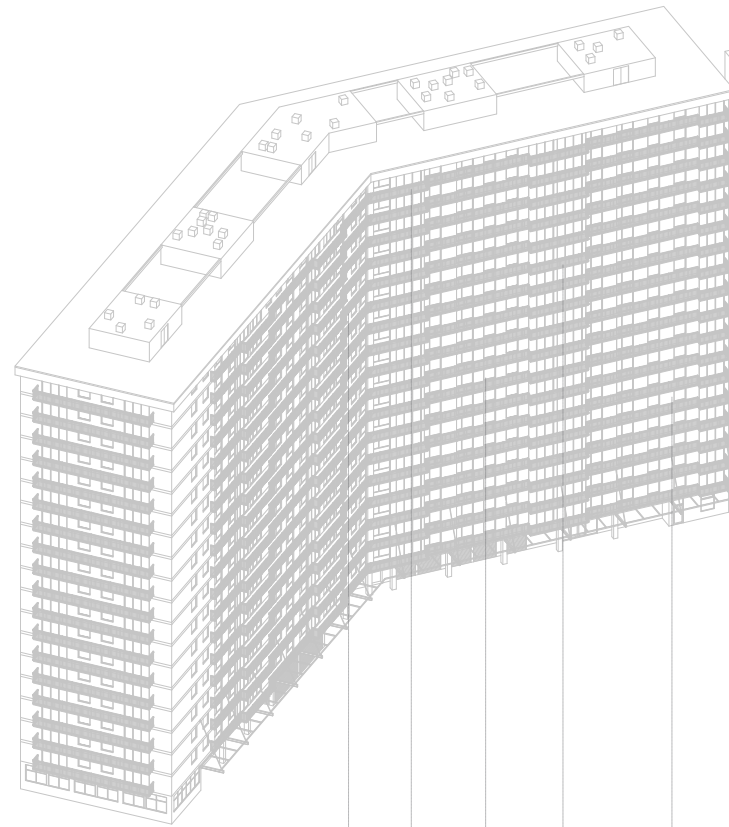
Scenario -1 / PPAS Studs 1969



Topographic map of Belgium, Brussels 1888

*“Request for an urban planning permit for the renovation - Rue des Goujons 59-61-63 in 1070 Anderlecht”*, raport by Karbon Architecture and Urban Planning, p. 7

## LG PROBLEMS



### Height

Massively exceeding average context building heights



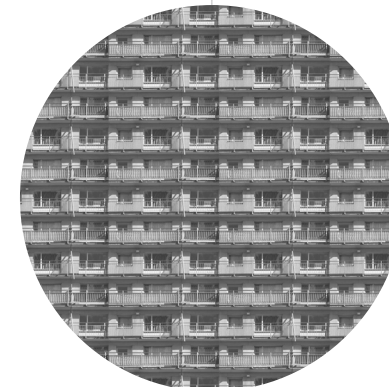
### Windows

Currently single glazed, needs to be exchanged for triple-glazed



### Balconies

Unstable balconies, an actual safety issue for the residents, need to be removed



### Walls

Reinforced concrete structure, poorly isolated, need to be thermally & acoustically isolated



### Systems

Ventilation system and radiators need to be exchanged

*“Request for an urban planning permit for the renovation - Rue des Goujons 59-61-63 in 1070 Anderlecht”, report by Karbon Architecture and Urban Planning, p. 7*



SOCIAL HOUSING ISSUES IN LG





SOCIAL HOUSING ISSUES IN LG





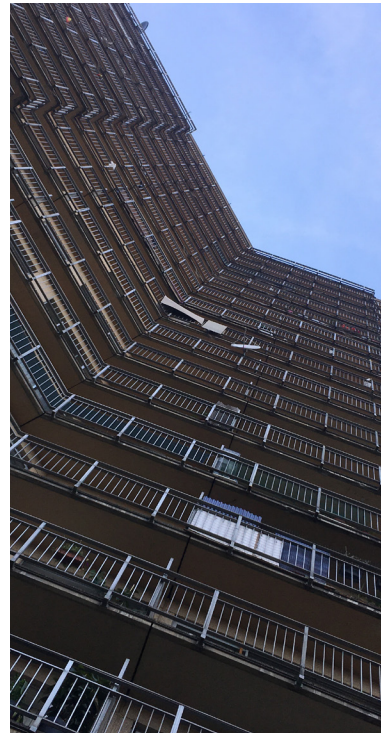
MASS SOCIAL HOUSING  
ISSUES



Pruitt-Igoe, St. Louis, USA  
<https://www.archdaily.com/153704/the-pruitt-igoe-myth-an-urban-history#>



## P2 - LEARNING FROM SIGNIFICANT MASS SOCIAL HOUSING CASE STUDIES



**Les Goujons**

- Density issue - need of de-concentration (less people, more spacious apartments)



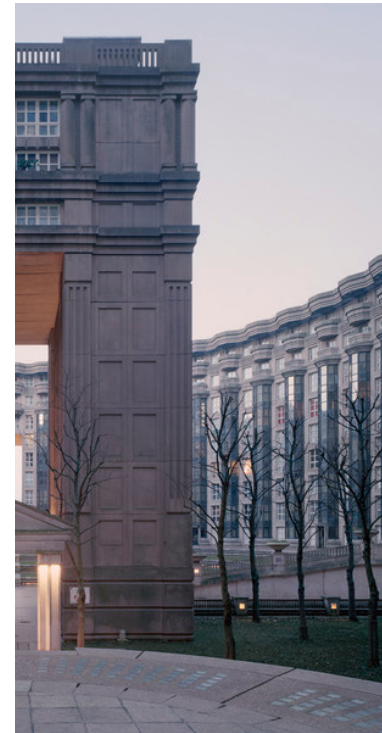
**Rotterdam, Ommoord**

- [before and after renovation]  
Importance of active grounds



**Robin Hood Gardens**

- Open galleries, full circle circulation



**L'espace de Abraxas**

- The theatrical form and details



**The Barbican Estate**

- Importance of connection to the outside



**Justus van Effencomplex**

- Pleasant scale, semi-closed spaces, circular walkways



MASSIVE VOLUME VS SUBDIVIDED VOLUME

-

-

-

-

+/-

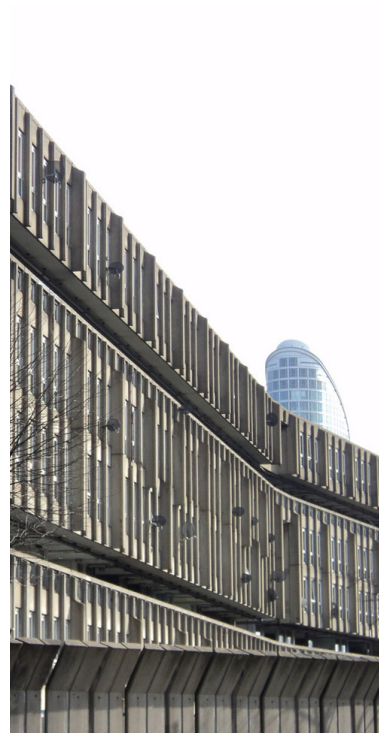
+



Les Goujons



Rotterdam,  
Ommoord



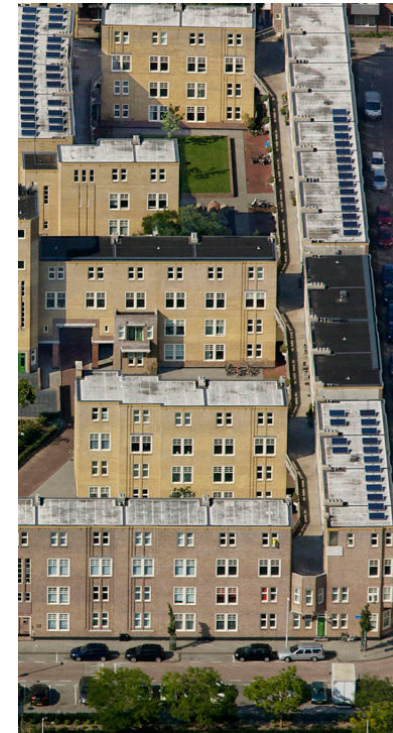
Robin Hood Gardens



L'espace de Abraxas



The Barbican Estate



Justus van Effencom-  
plex



OPEN, CIRCULAR WALKWAYS PROVIDE MORE SAFETY



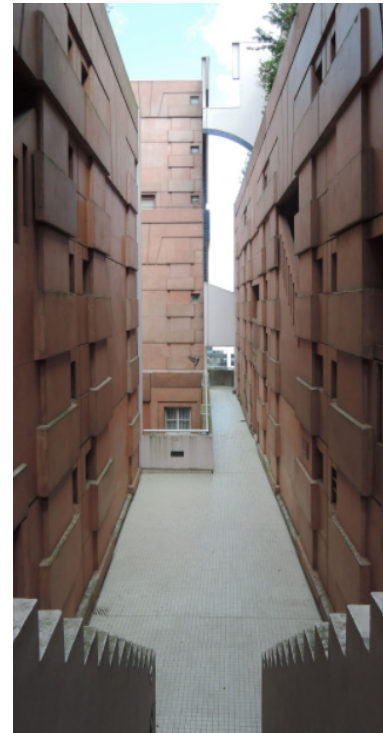
Les Goujons



Rotterdam,  
Ommoord



Robin Hood Gardens



L'espace de Abraxas



The Barbican Estate



Justus van Effencom-  
plex

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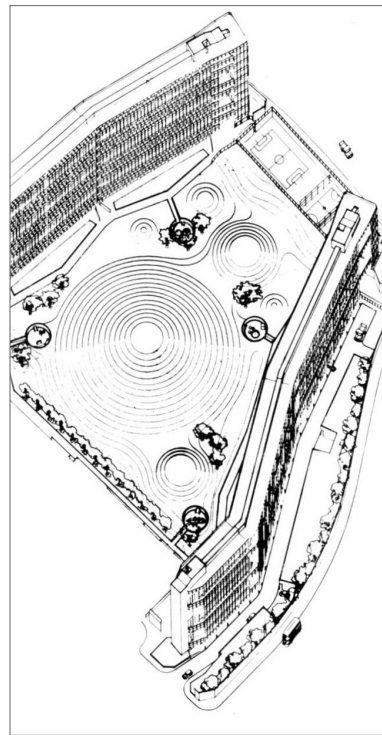
COMPLEX WRAPED AROUND HUMAN-SCALED INTERIORS



Les Goujons



Rotterdam,  
Ommoord



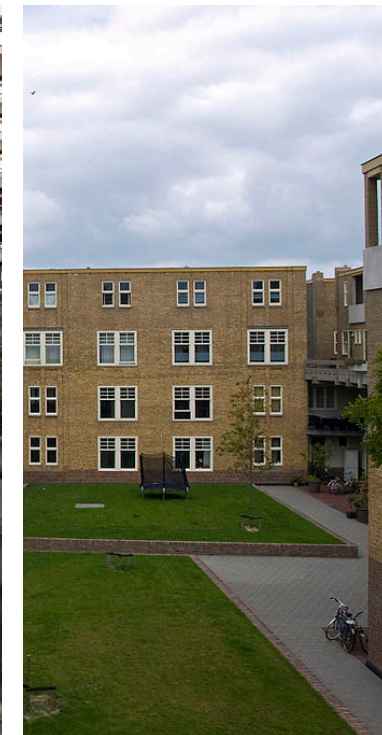
Robin Hood Gardens



L'espace de Abraxas



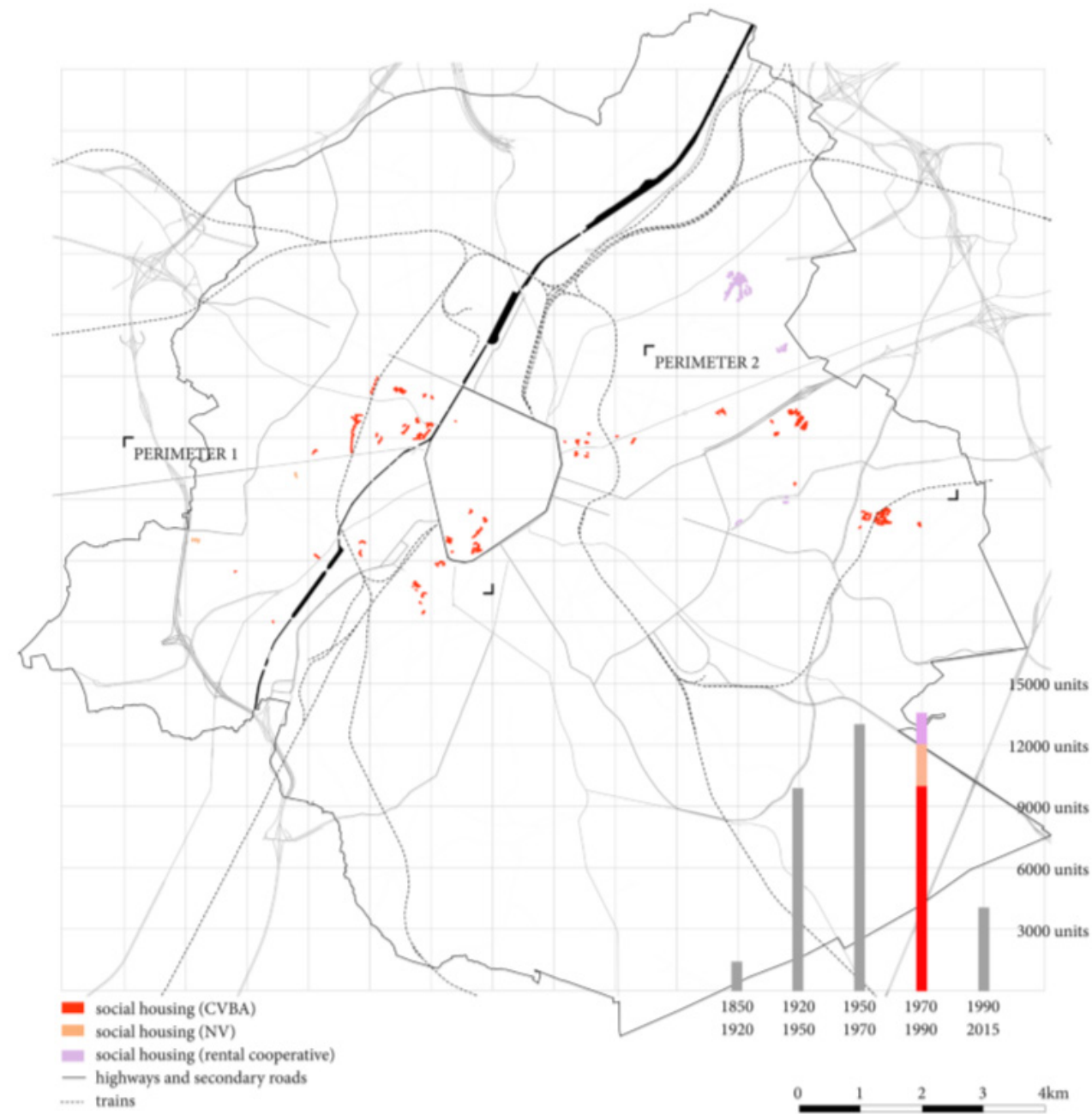
The Barbican Estate



Justus van Effencom-  
plex



## SOCIAL HOUSING BUILT IN BRUSSELS, ONLY BETWEEN 1970-1980



*Social housing construction in the BCR (1971-1990)*

*Aernouts, N., Maranghi, E. & Ryckevaert, M. (Eds.) (2020). The regeneration of large-scale Social Housing estates. Spatial, territorial, institutional and planning dimensions, Brussels: Sobolab*



SOCIAL HOUSING  
OTHER MASS-HOUSING TOWERS



- Marius Renardlaan -



- Noordresidentie -



- Résidence La Palmeraie-L'Edelweiss-La  
Roseraie -



SOCIAL HOUSING  
ISSUE IMPORTANCE

HOUSING OFFERS NOT ONLY ACCOMODATION



CURRENT SOCIAL SYSTEM DOES NOT ALWAYS FOSTER THE  
SITUATION OF THOSE WHO ARE IN NEED.

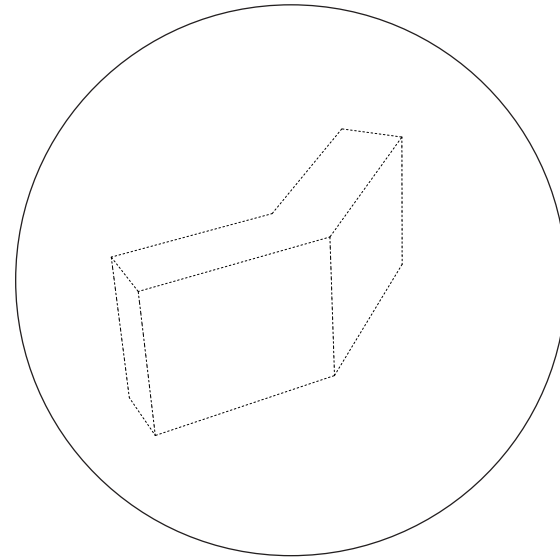


COULD SOCIAL HOUSING BE DESIGNED IN A  
BETTER WAY?

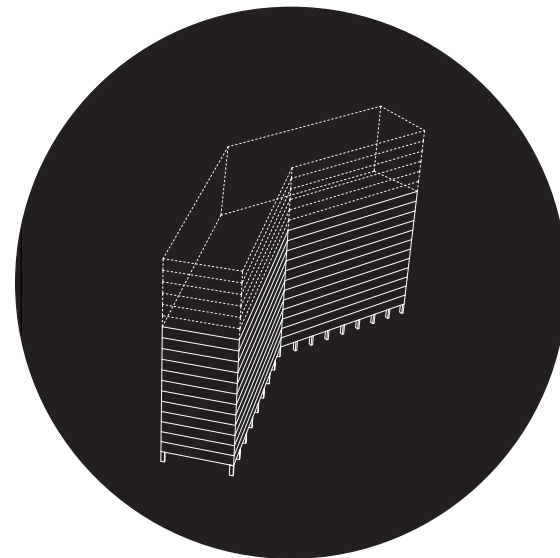


PROJECT IDEA

CREATING NEW SOCIAL HOUSING



+



SUGGESTING SOLUTIONS FOR  
TRANSFORMING LG



NEW MASTERPLAN



## SUCCESSFUL VS PROBLEMATIC AREAS



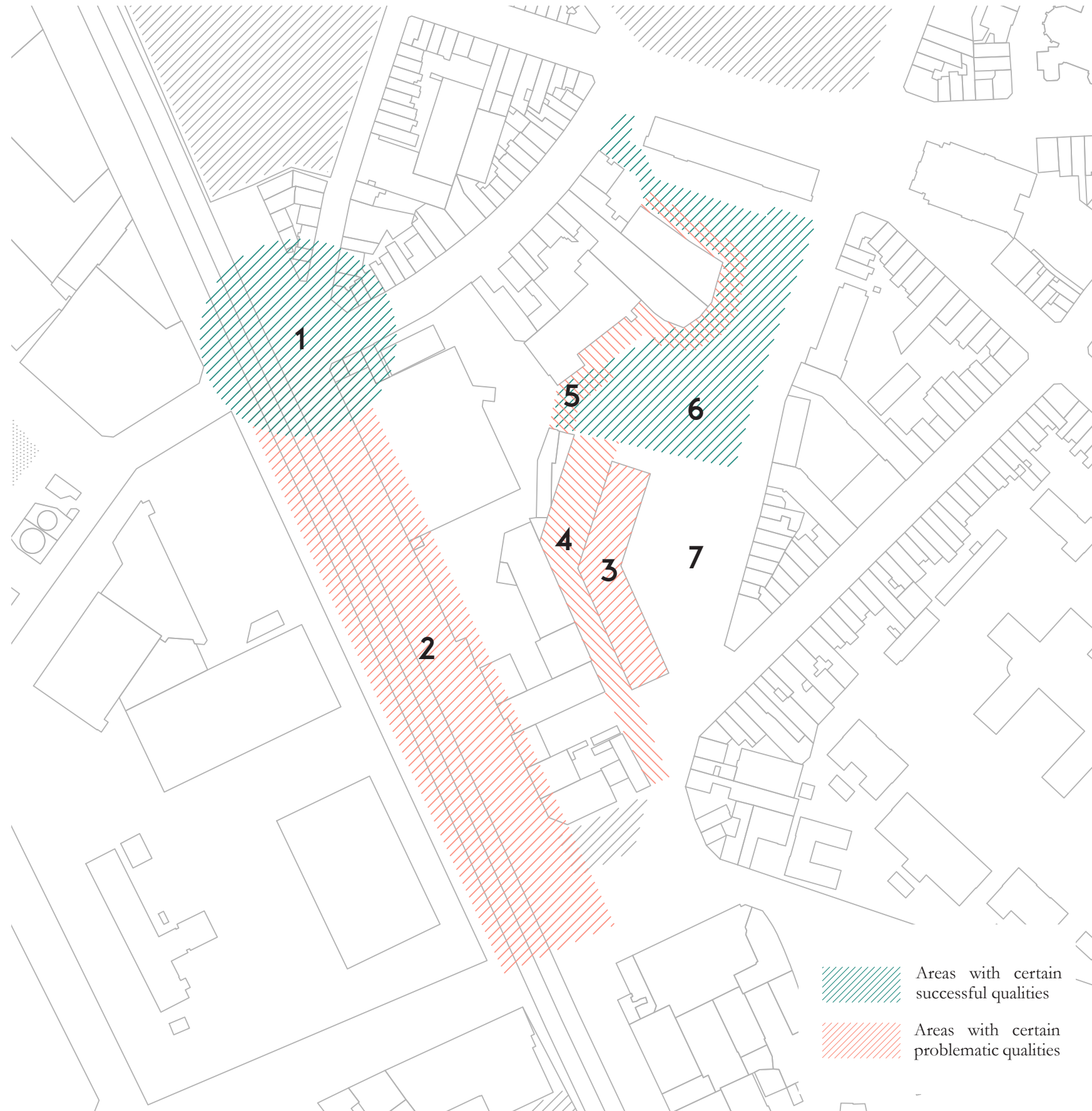
01. The gathering corner - place of socialization in warm days





02. The isolated street - a corridor space separated by train rail wall and inactive grounds



03. Les Goujons - a social building falling apart in every aspect



 Areas with certain successful qualities  
 Areas with certain problematic qualities



04. Walled overground parking



05. Backside wall of the buildings - no function



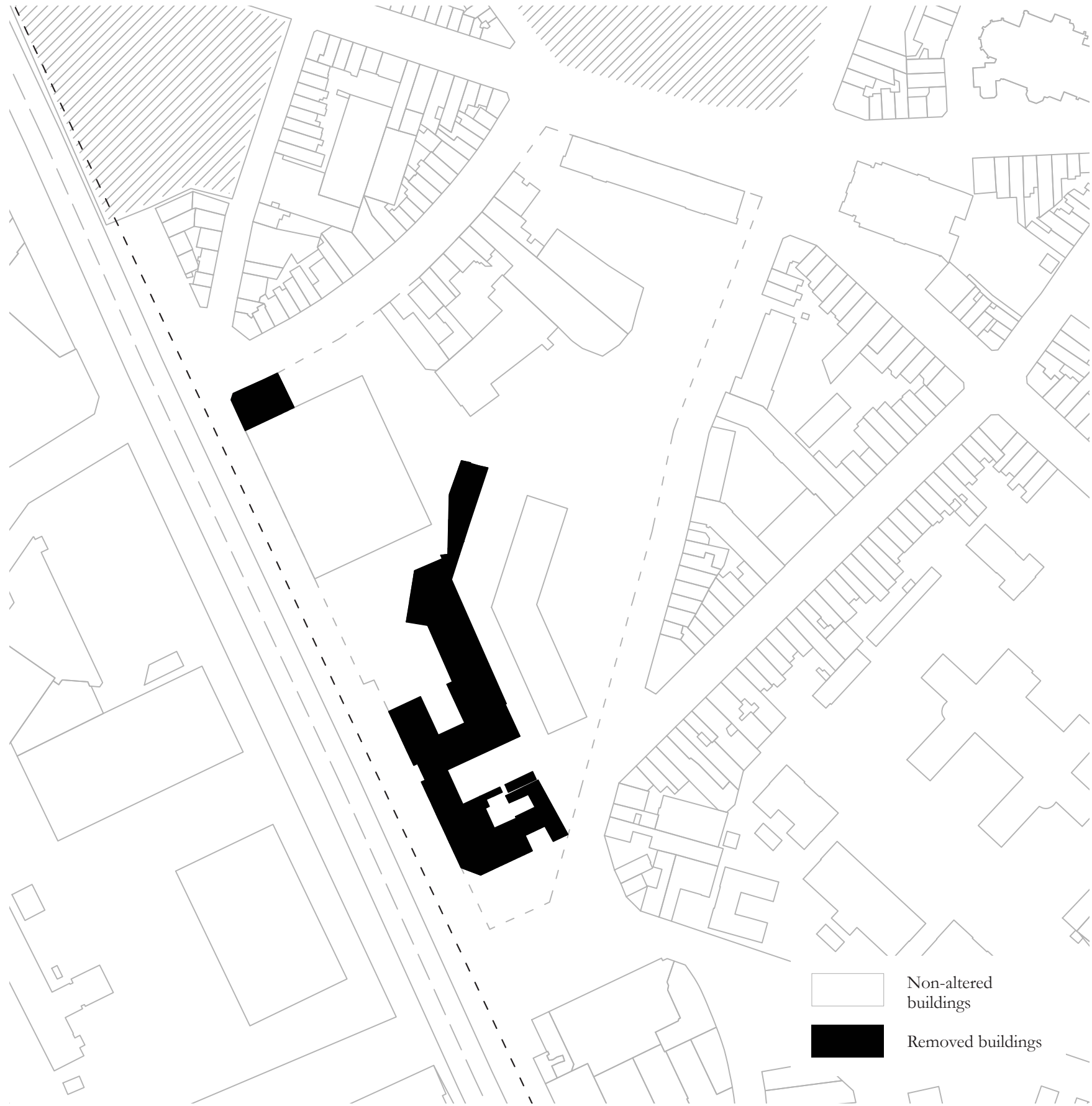
06. Leisure function of the park



07. Accidentality of the whole urban block - leftover, contextless design

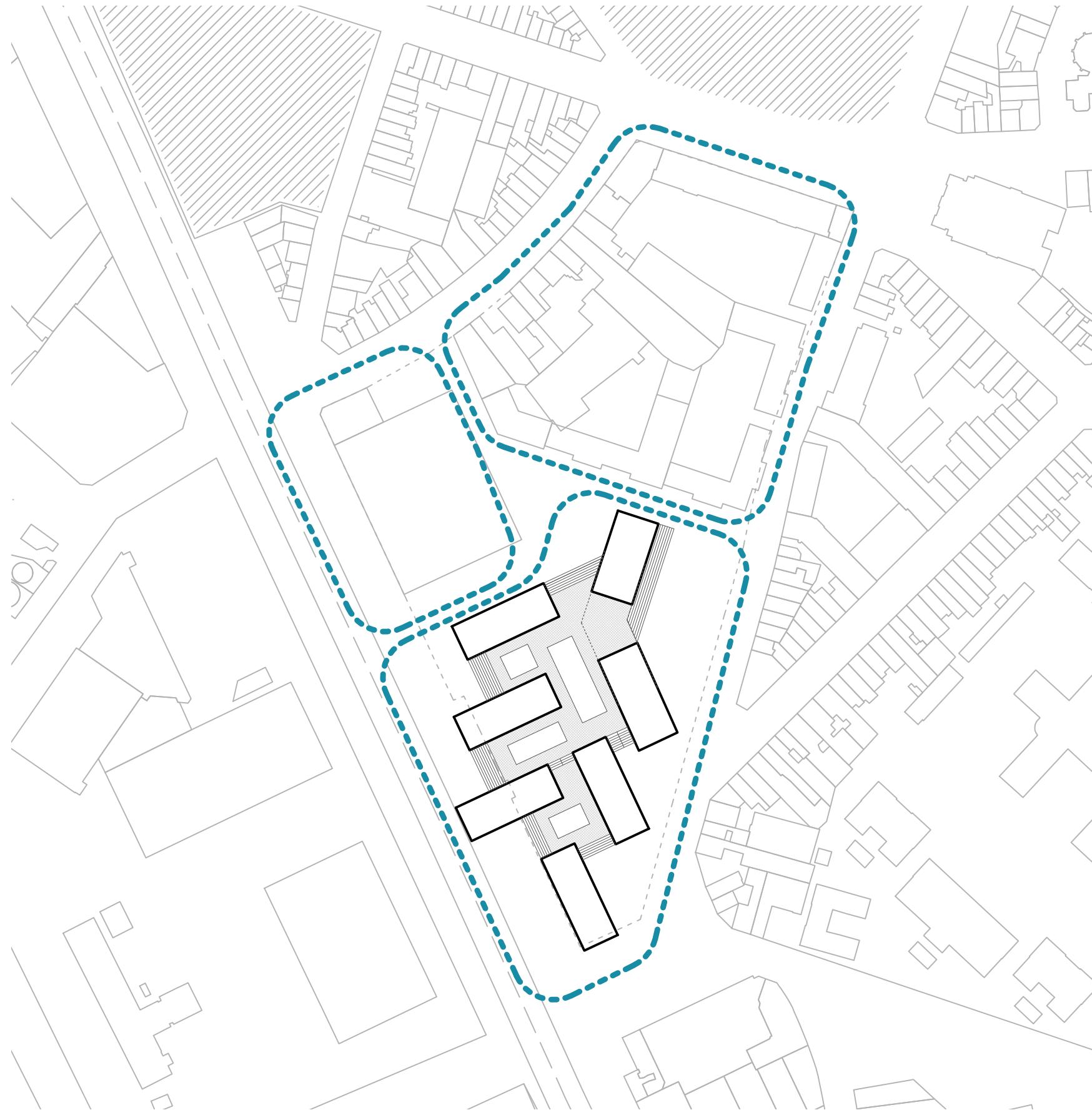


MASTER PLAN  
BUILDINGS REMOVED



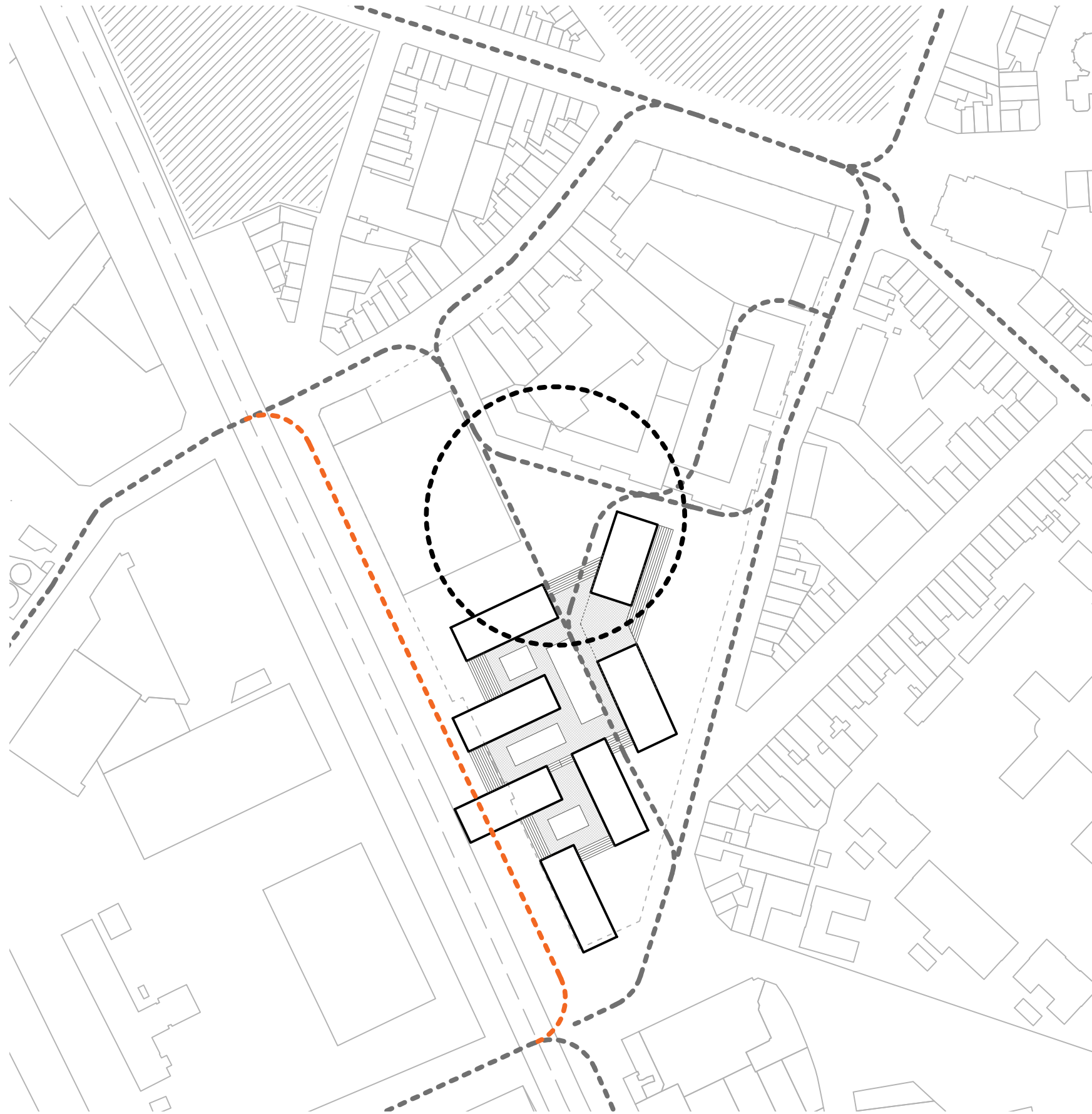


MASTER PLAN  
URBAN BLOCK SUBDIVISION



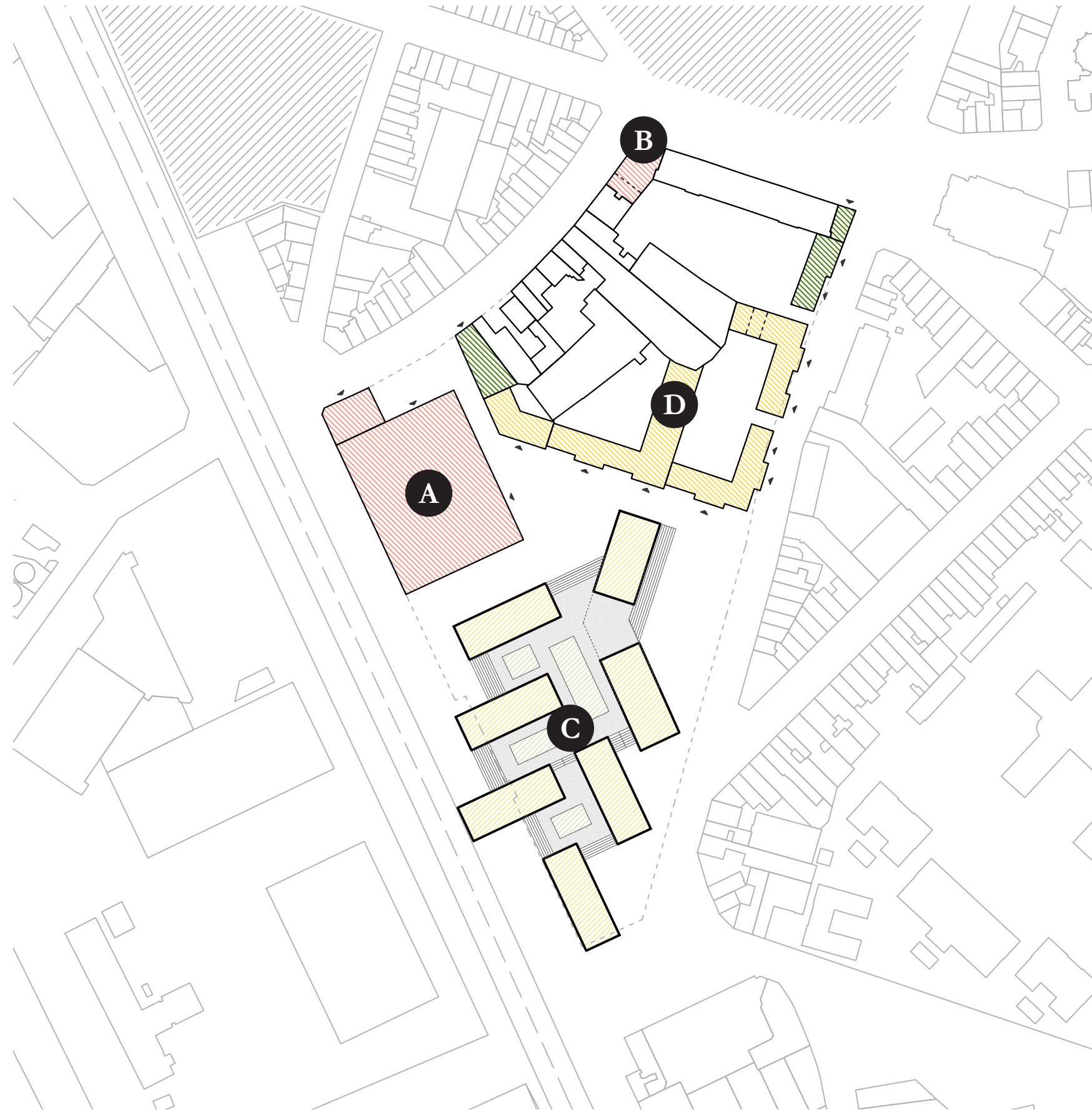





MASTER PLAN  
ROUTING





# MASTER PLAN FUNCTIONS



-  Predominantly residential function with active grounds.
-  Offices
-  Public buildings
- A** Craft school in altered Rotor building
- B** Public library
- C** New complex, social housing, supplemented with commerce, workshops and social functions
- D** New residential complex consisting of social and regular housing

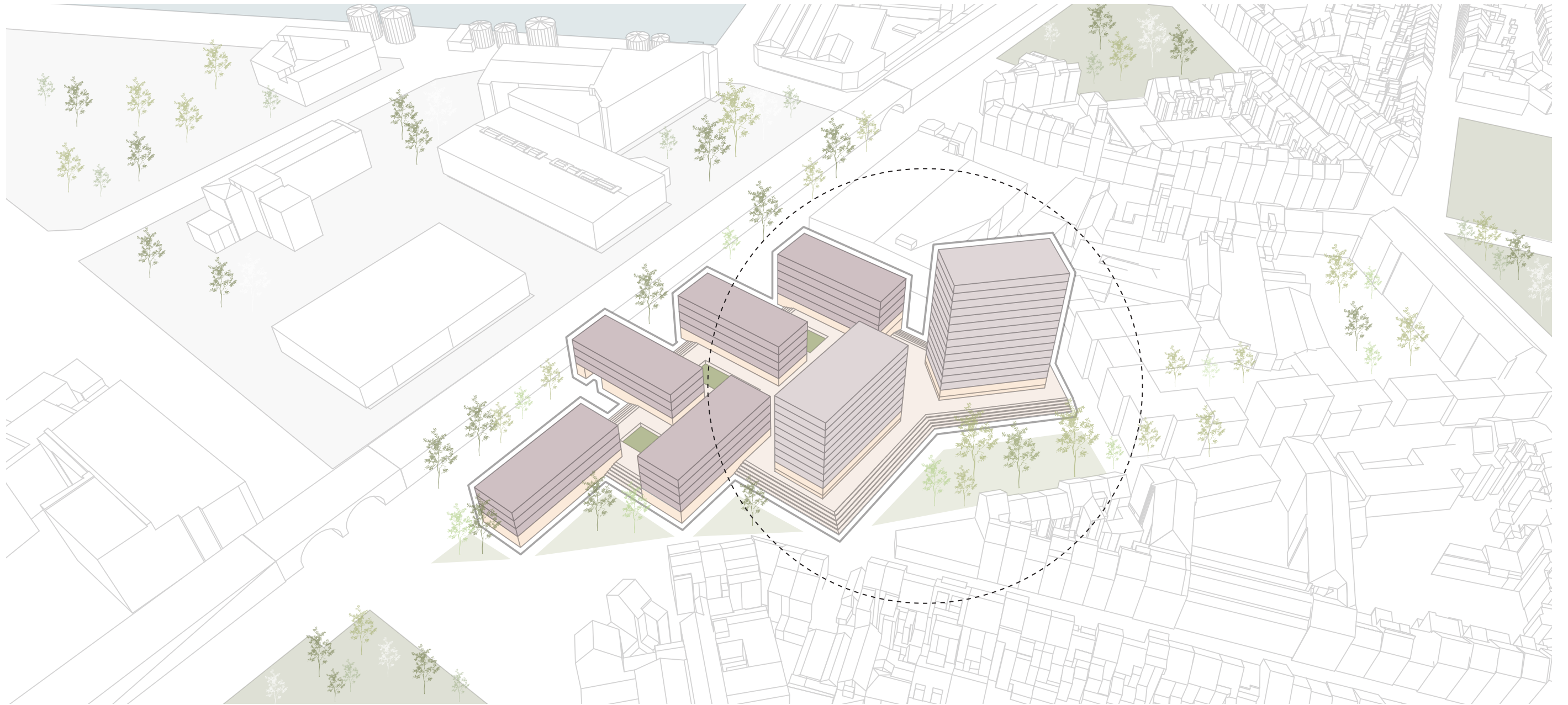


# MASTER PLAN PUBLIC SPACES



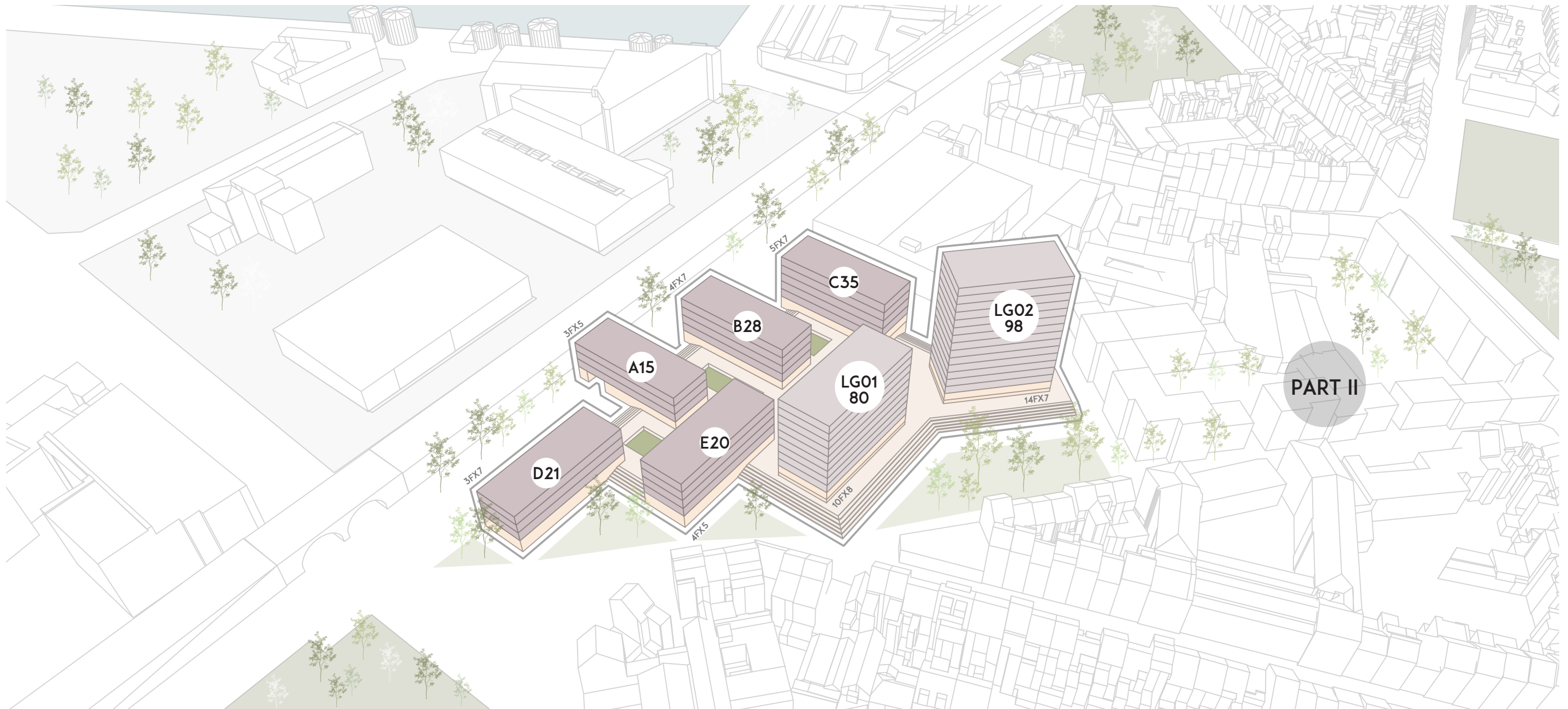


# MASTER PLAN UNDENSIFICATION





# MASTER PLAN PROGRAMME



**TOTAL APARTMENTS: 297**  
**ORIGINALLY AT LG: 382 ON 18 FLOORS**

**REMAINING 85 APARTMENTS -**  
**DESIGNED IN 2ND PART OF THE**  
**QUARTER DEVELOPMENT**

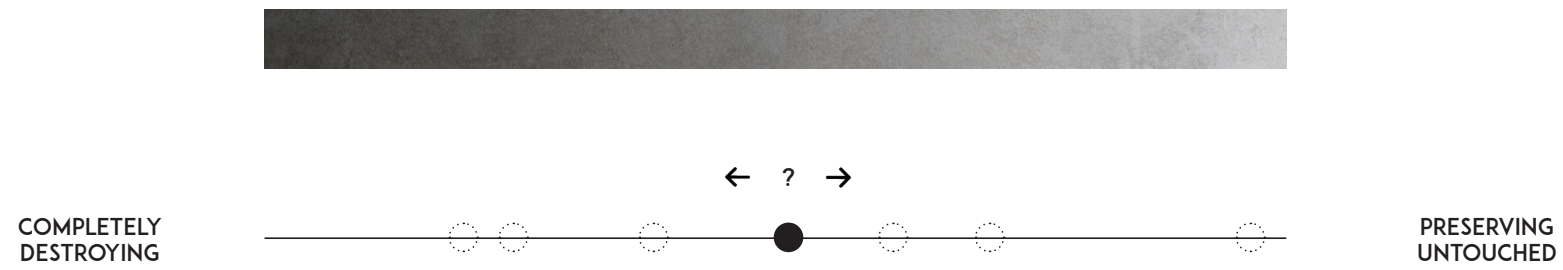


**DESIGN**

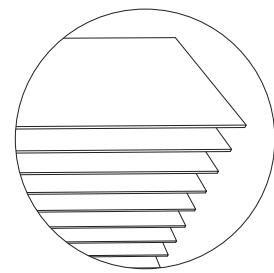


# SPOLIA WHAT TO KEEP?

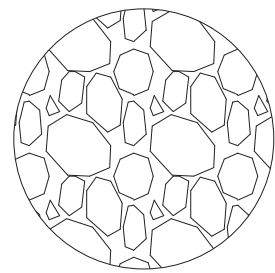
## What to keep?



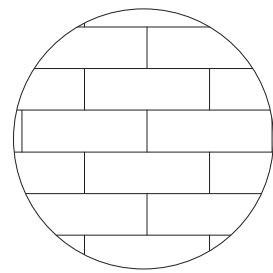
## What to keep?



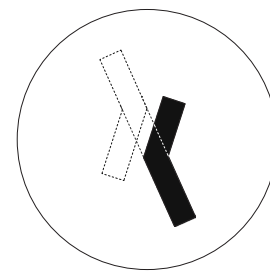
- LG main structure



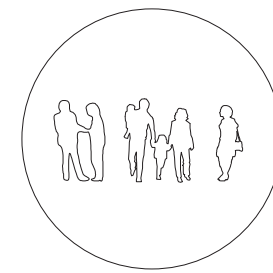
- Re-use of the materials  
from altered LG



- Recycled materials  
coming from the  
neighbourhood

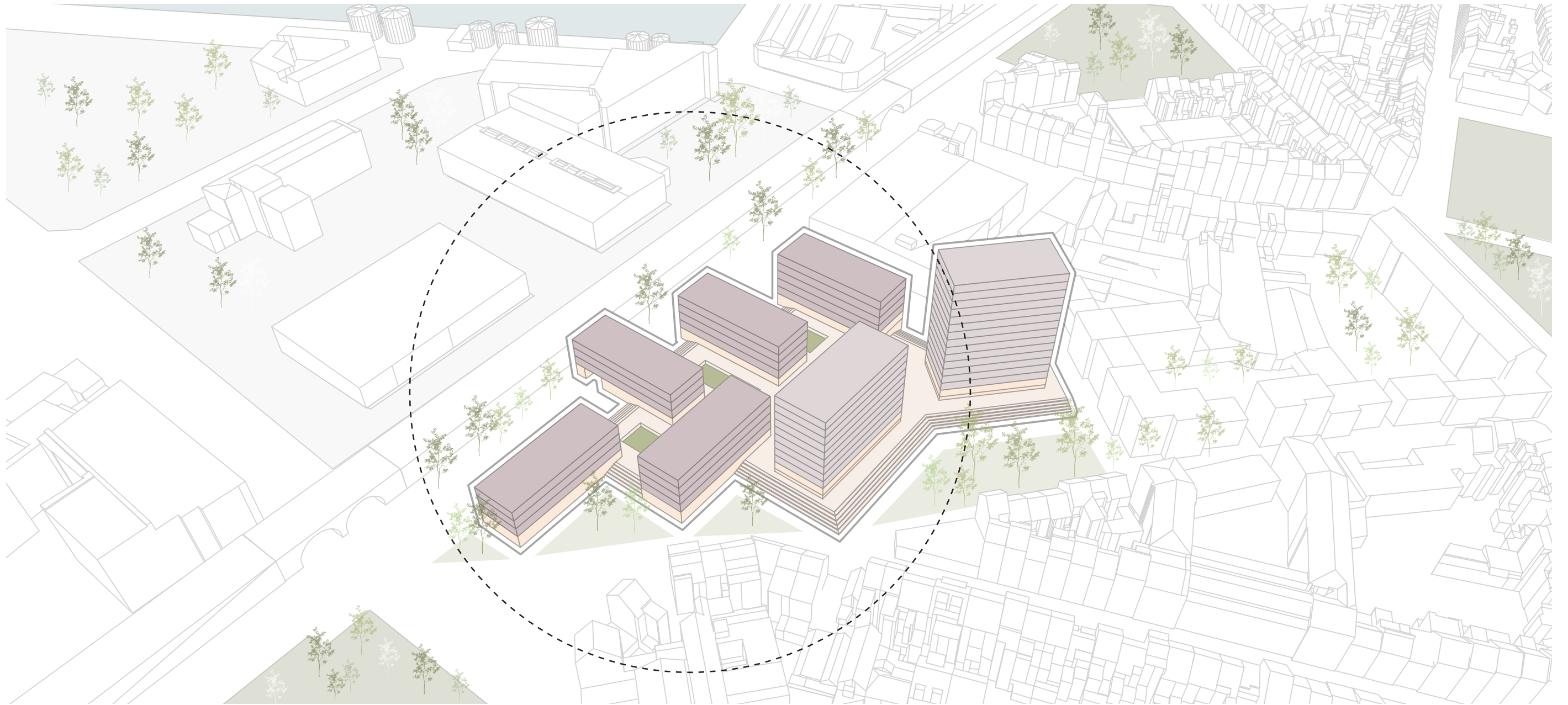


- Keeping the form,  
repeating it in the new  
structure



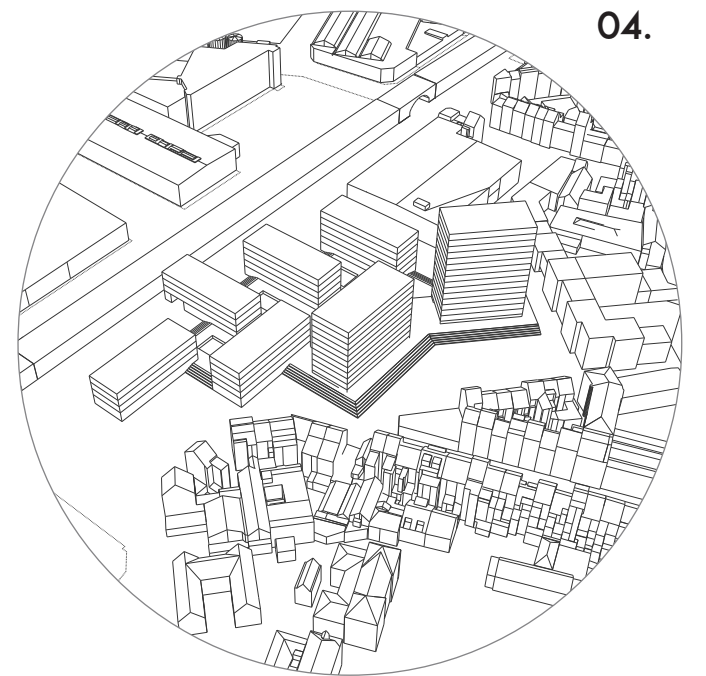
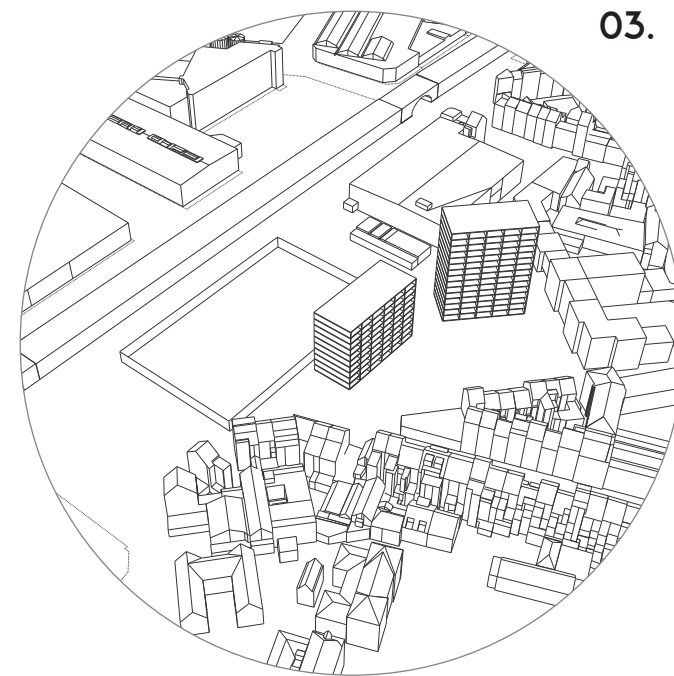
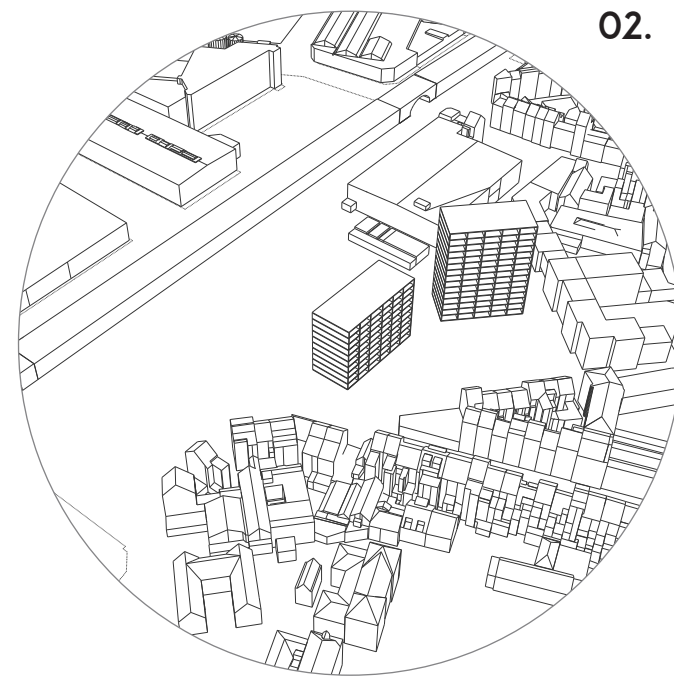
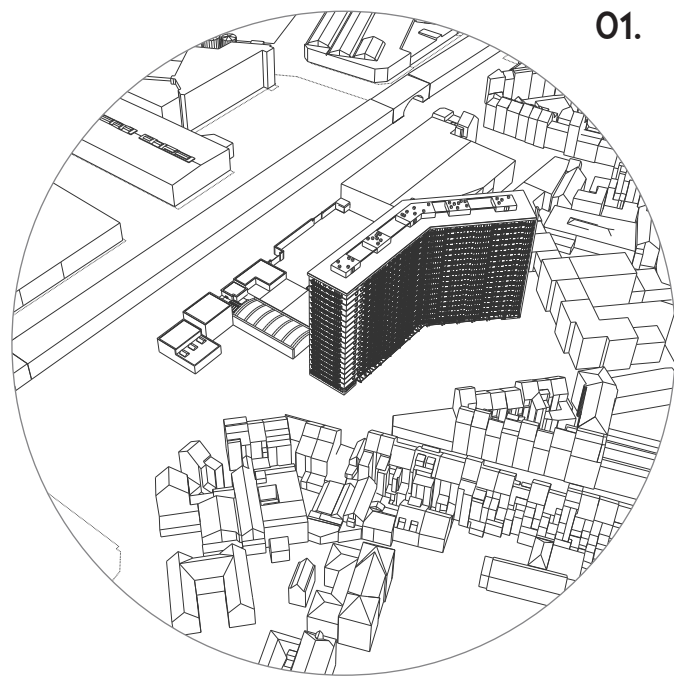
- Providing new  
apartments for the people  
already living within LG  
and preserving their social  
initiatives

# NEW BUILD COMPLEX

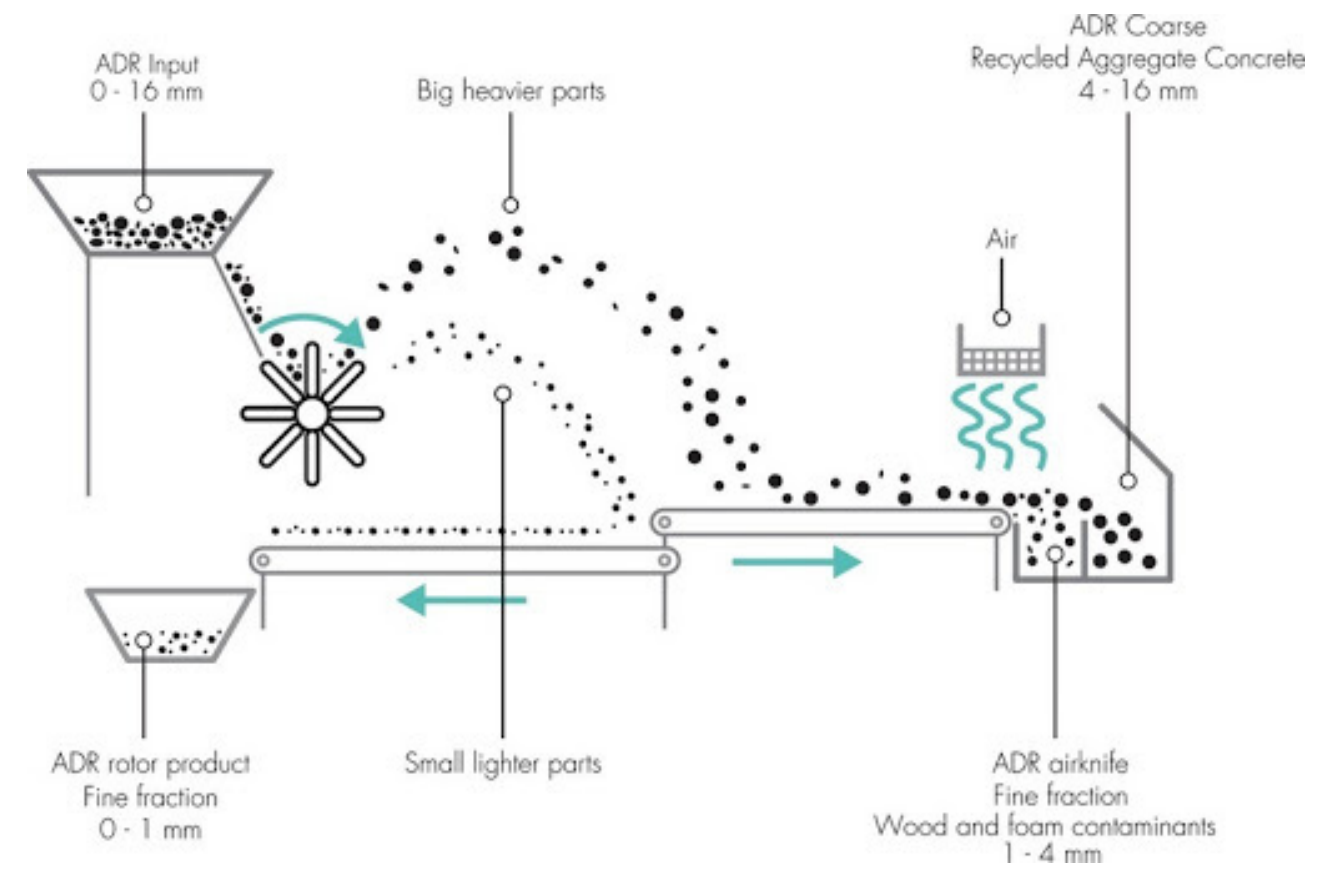
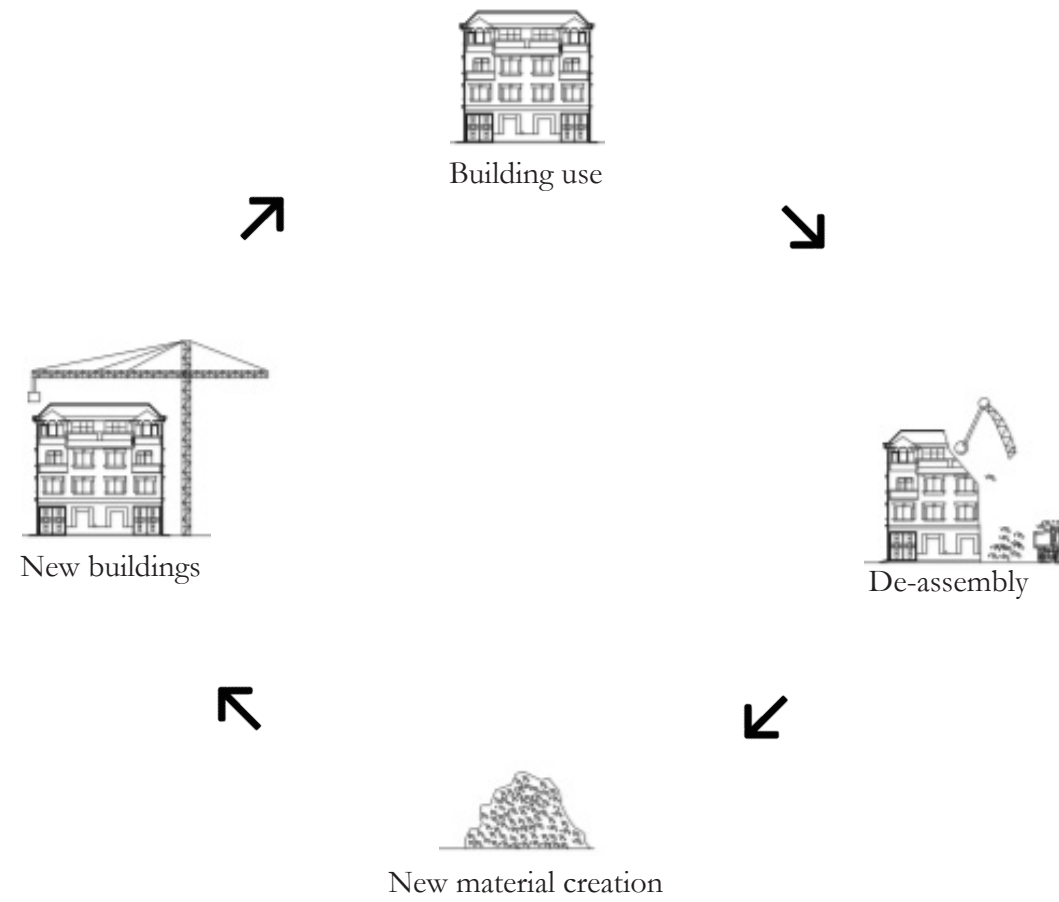




# RE-USE OF THE MATERIALS FROM LG



# CONCRETE RECYCLING RESEARCH



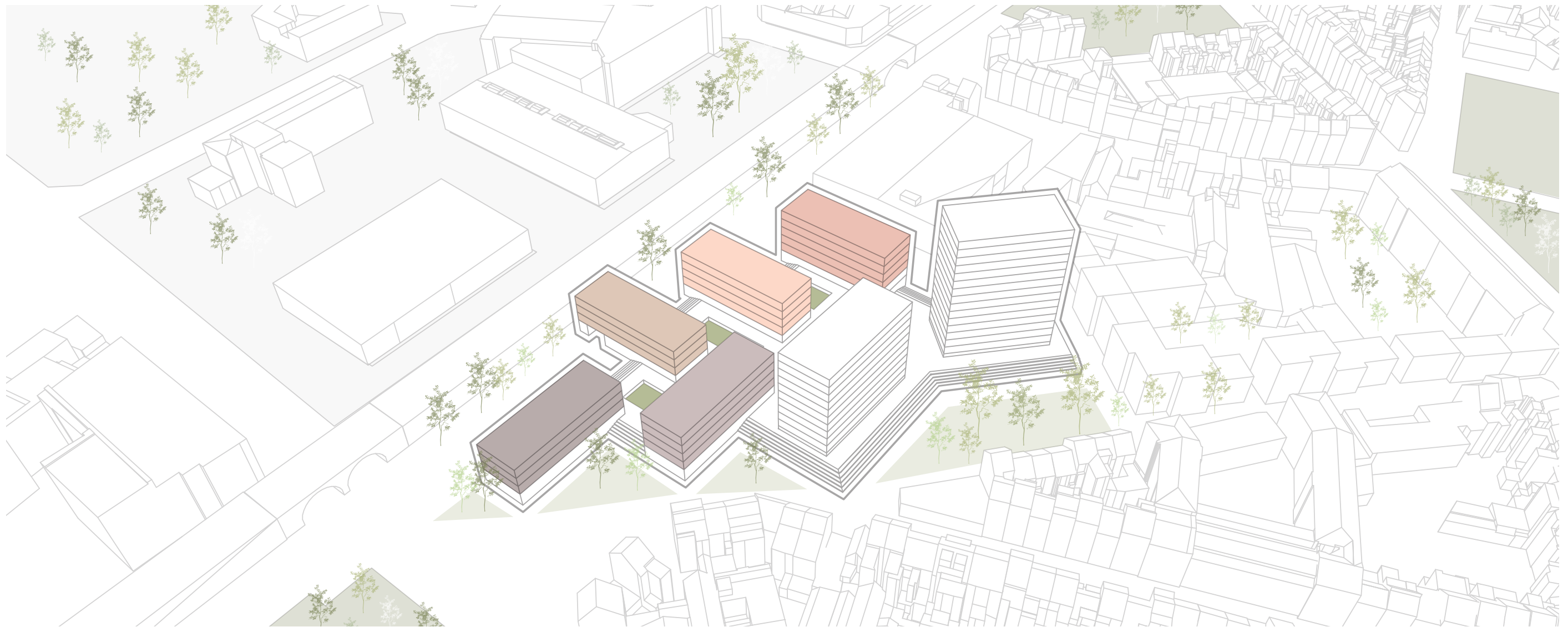
## MATERIAL CIRCULARITY

## IN-PLACE RECYCLING

concrete batching plant for the on-site concrete production.



## BRICK AS A FACADE MATERIAL



- Beerse steen -



- Ijzelstenen gele -



- Klampsteen -



- Paepsteen -



- Veldovensteen -



# NEW FACADE



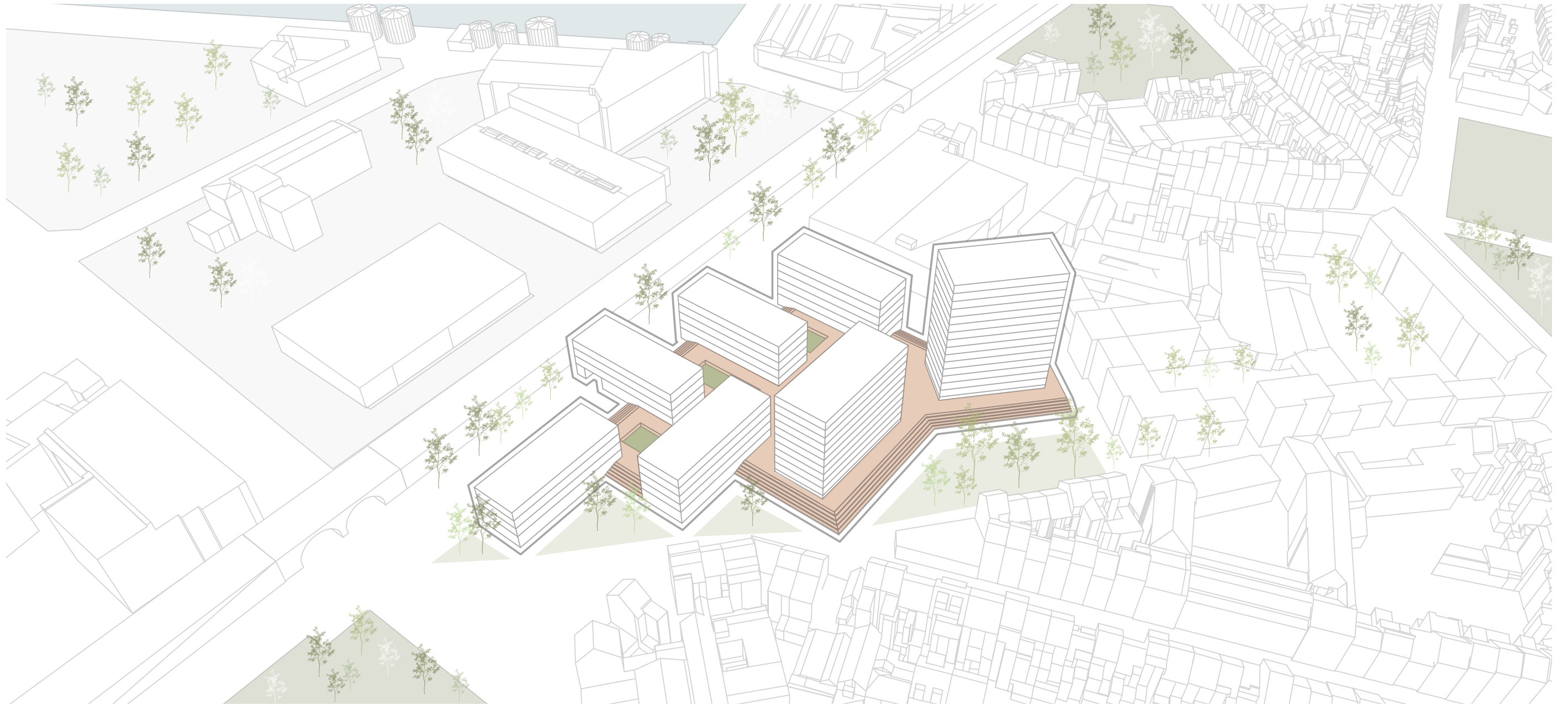


CONCRETE PLINTH  
EXTISTING STATE



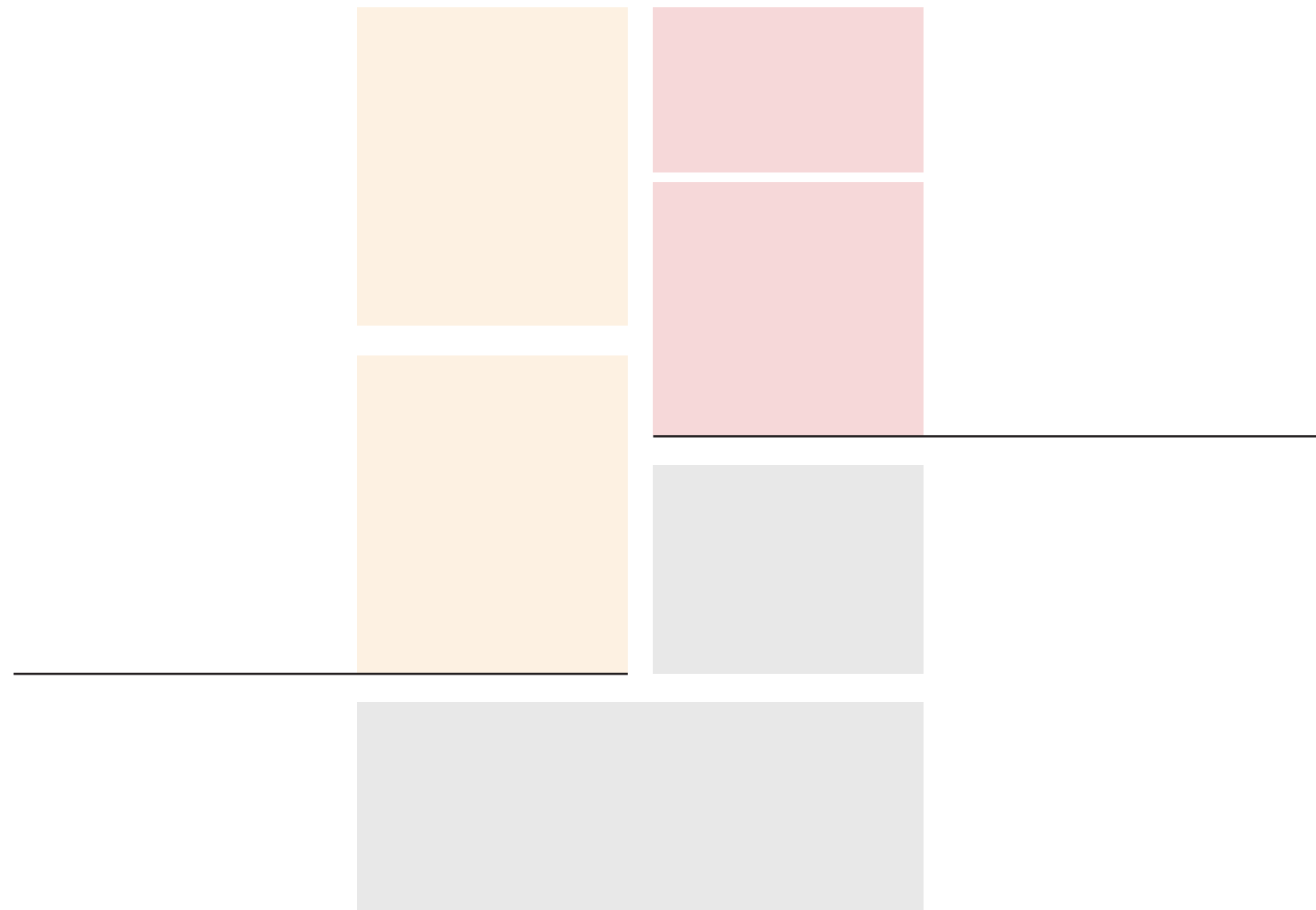


# CONCRETE PLINTH





CONCRETE PLINTH  
SPLIT LEVEL COMMERCE



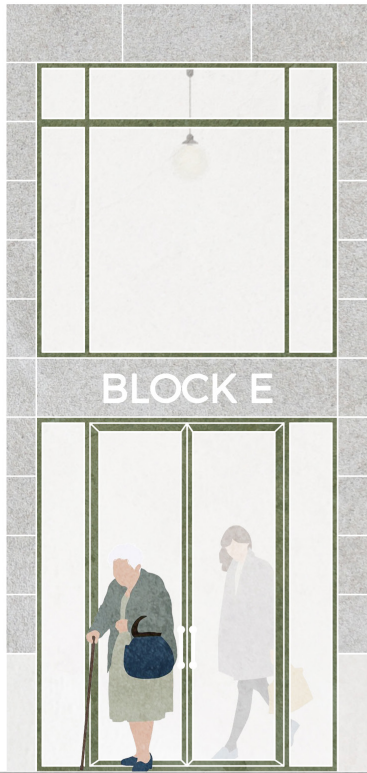
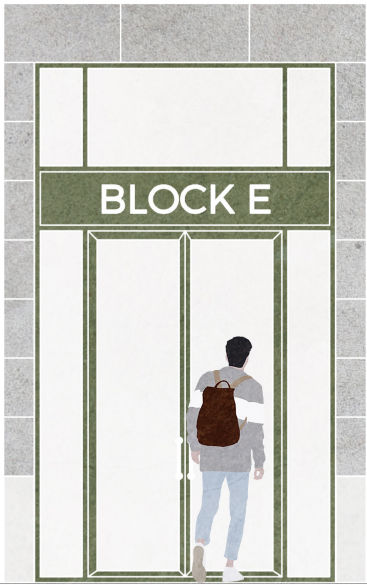


CONCRETE PLINTH AND THE COURTYARD



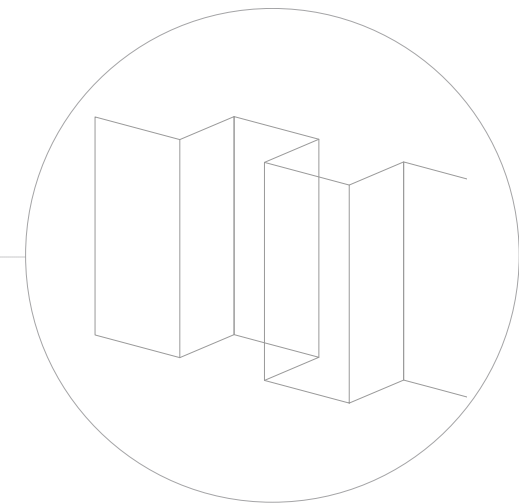


ENTRANCES VARIANTS EXAMPLES





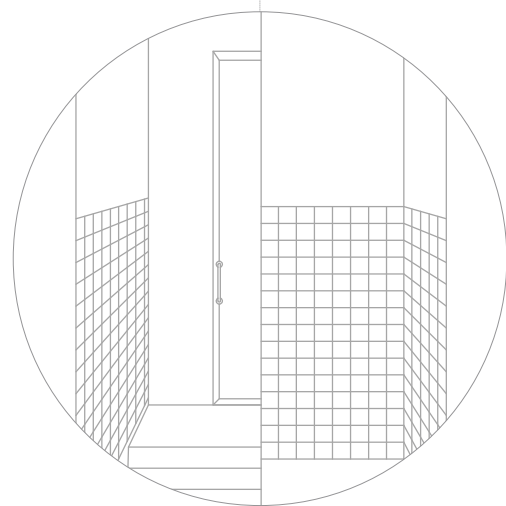
CREATING A LINK BETWEEN LES GOUJONS AND TENAMENT BUILDING



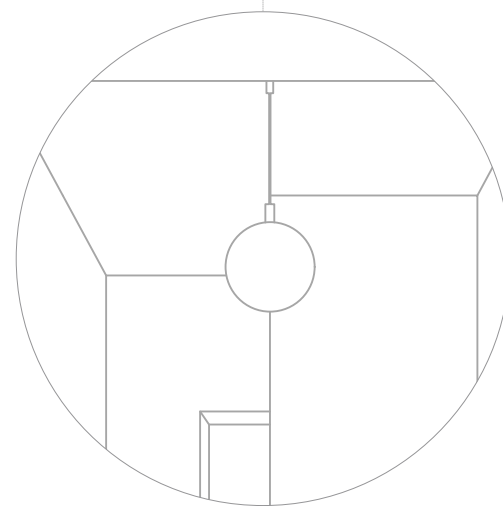
**Inset facade**



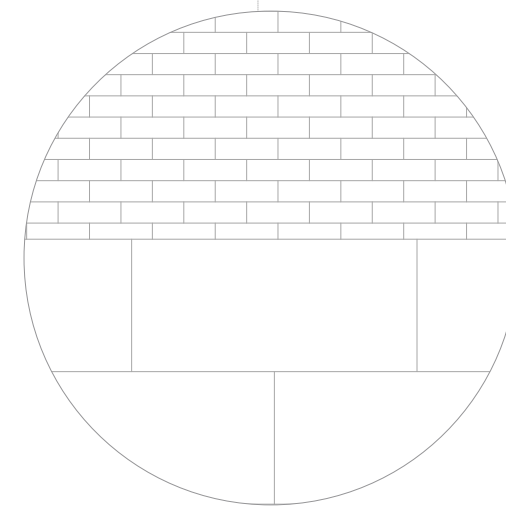
**Window lintels**



**Corridor tiles**



**Specific finishes**

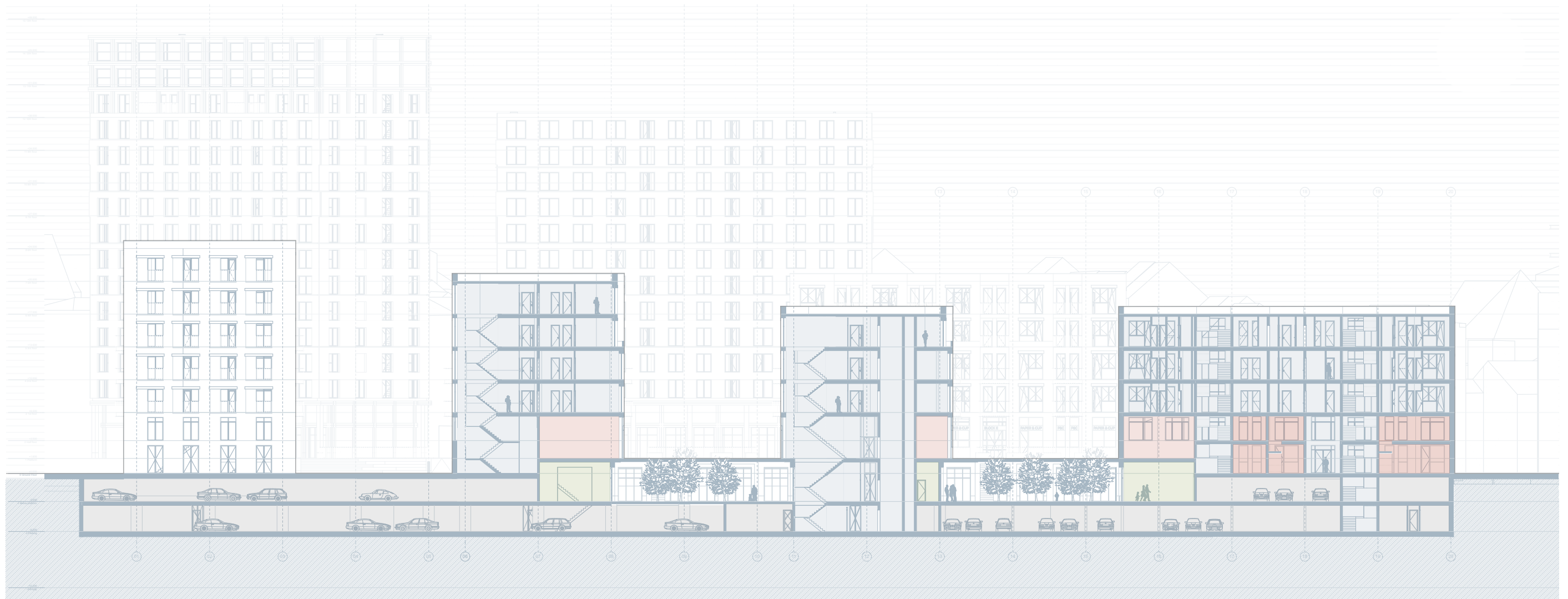
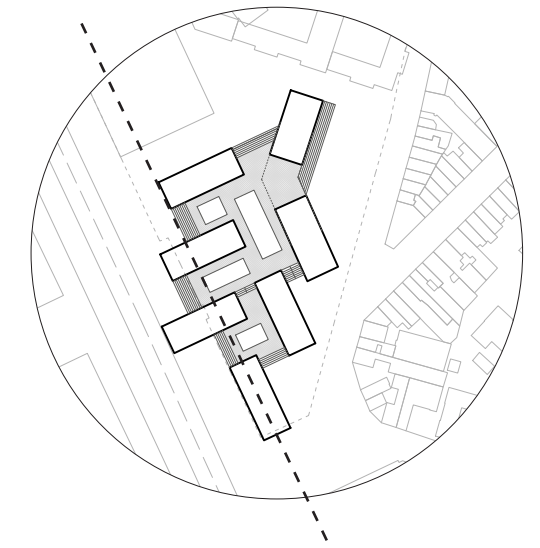


**Limestone cladded lower facade part and brick finished upper**



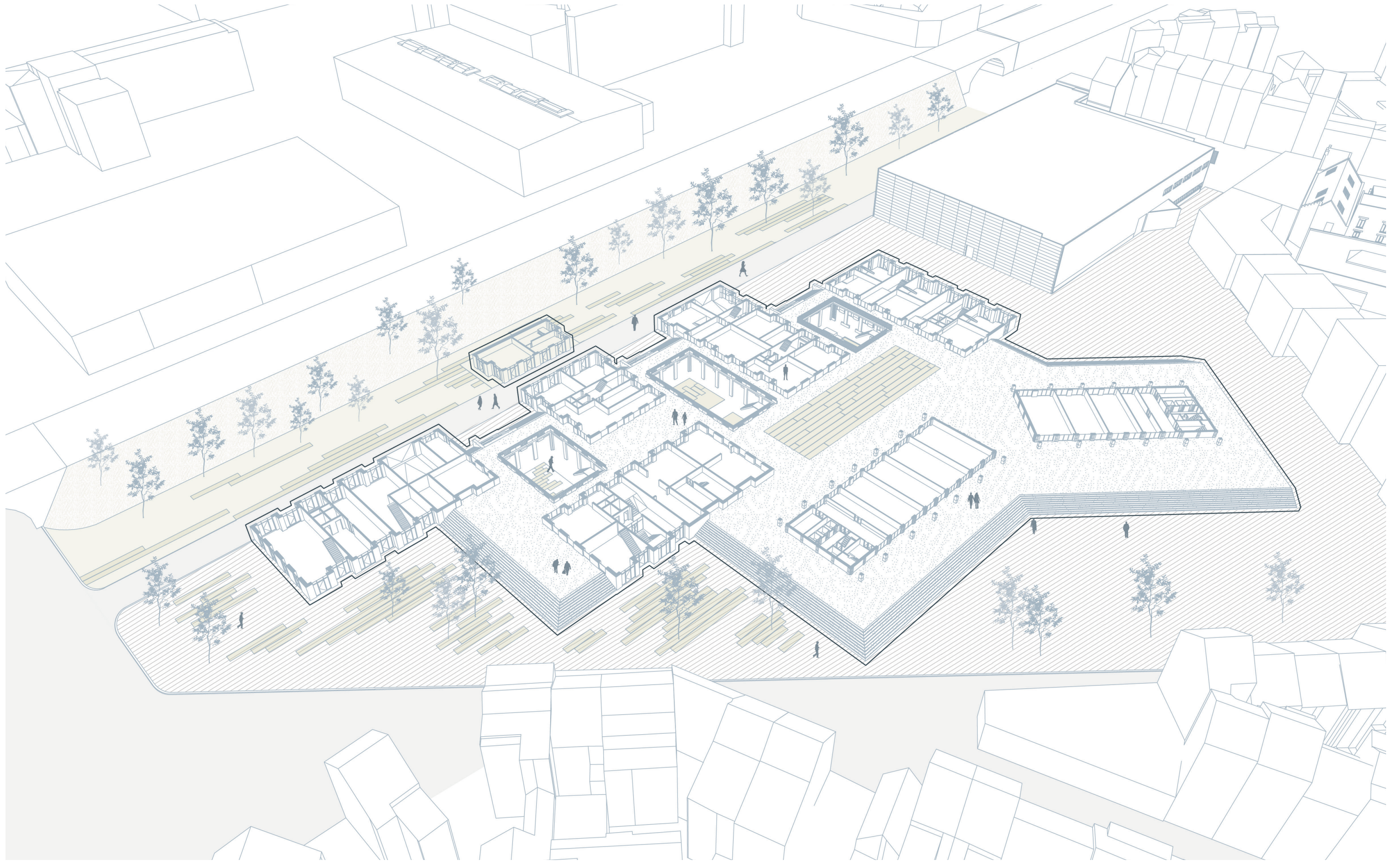
# SECTION D-D

- Residential function
- Commerce
- Social functions
- Parking / technical function



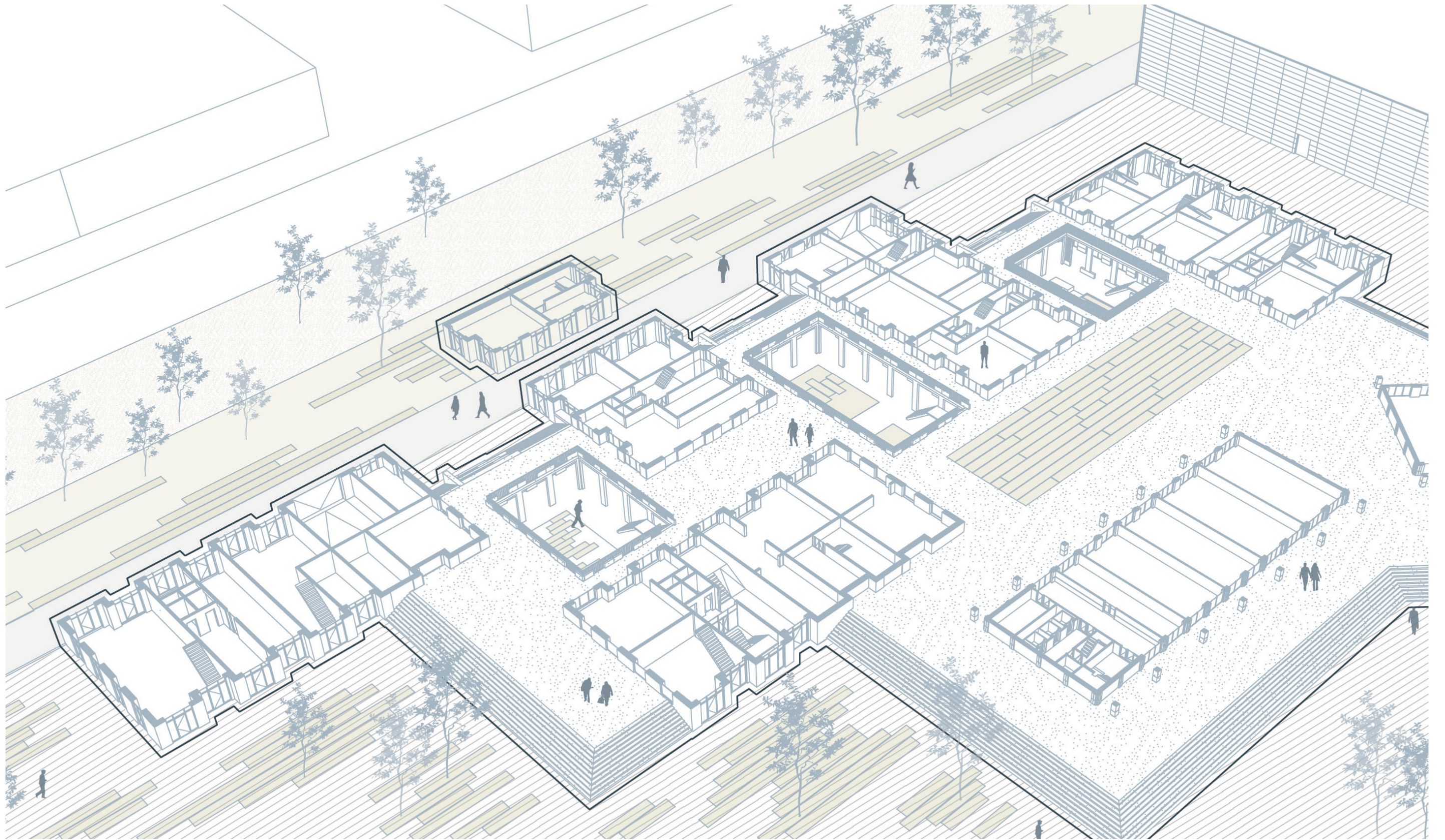


CUT THROUGH THE RETAIL SPLIT-LEVEL



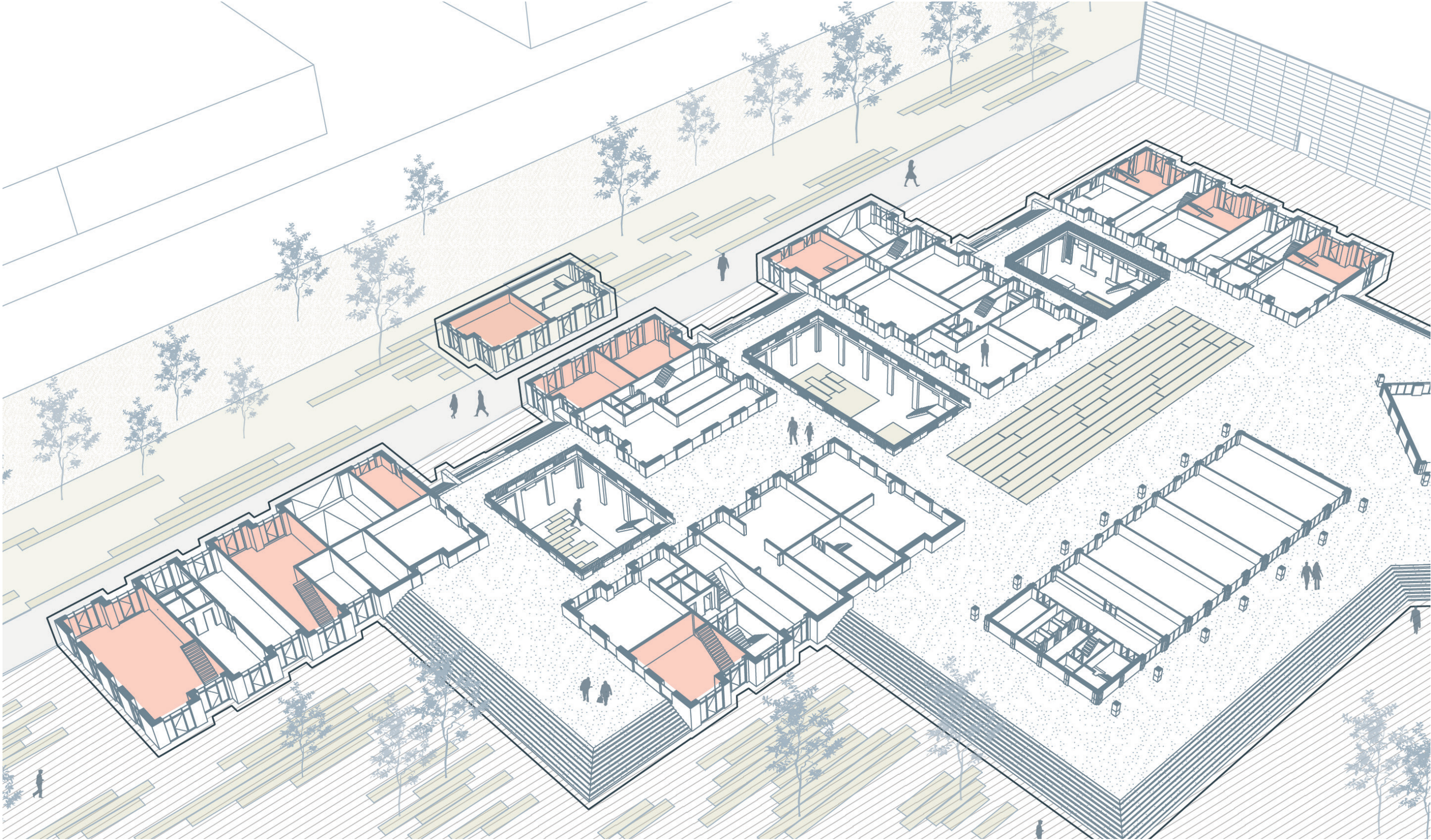


CLOSE UP





GROUND FLOOR ACCESSED COMMERCE - RUE PRÉVINAIRE & RUE DES  
GOUJONS



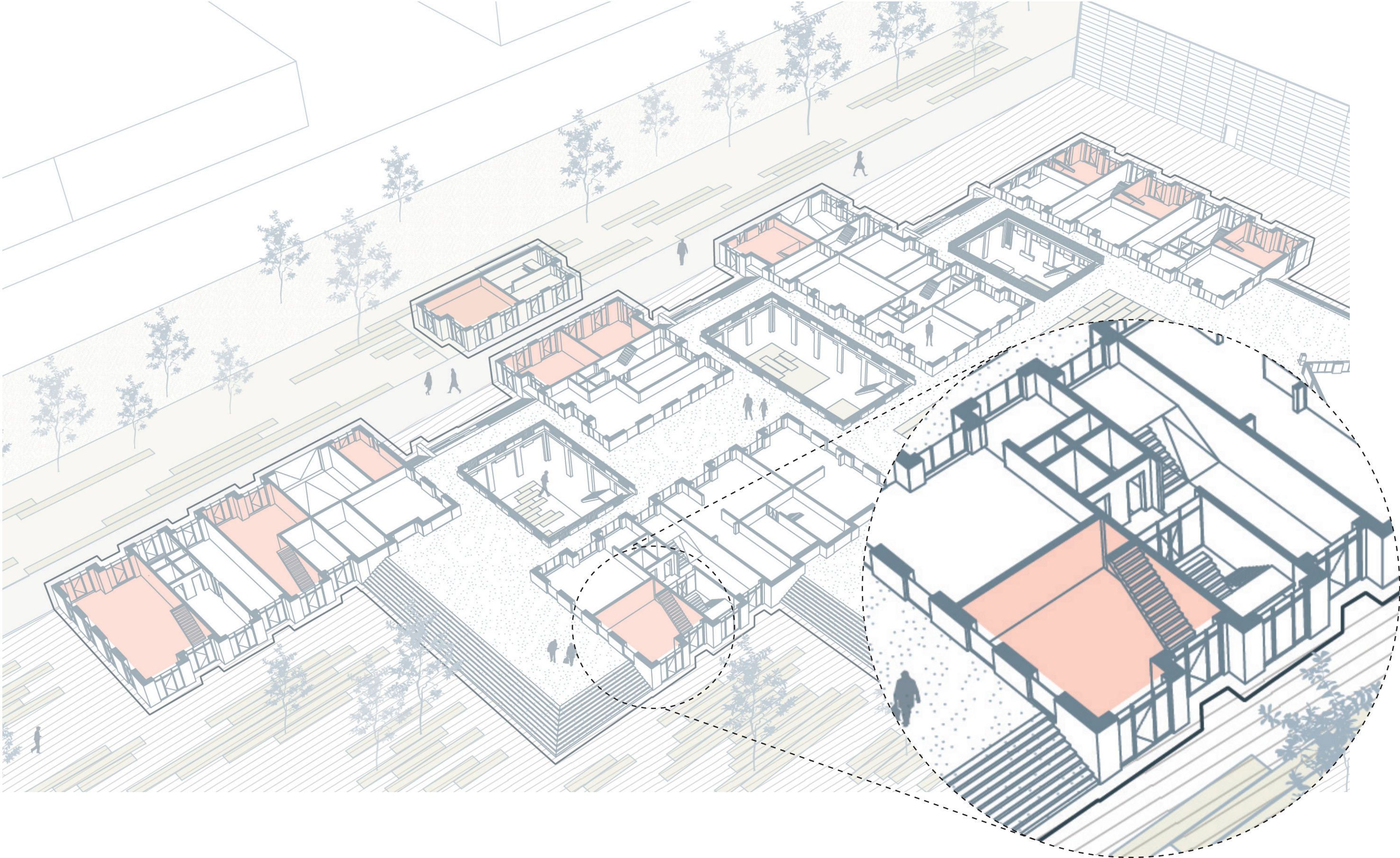


GROUND FLOOR ACCESSED COMMERCE - RUE PRÉVINAIRE VIEW



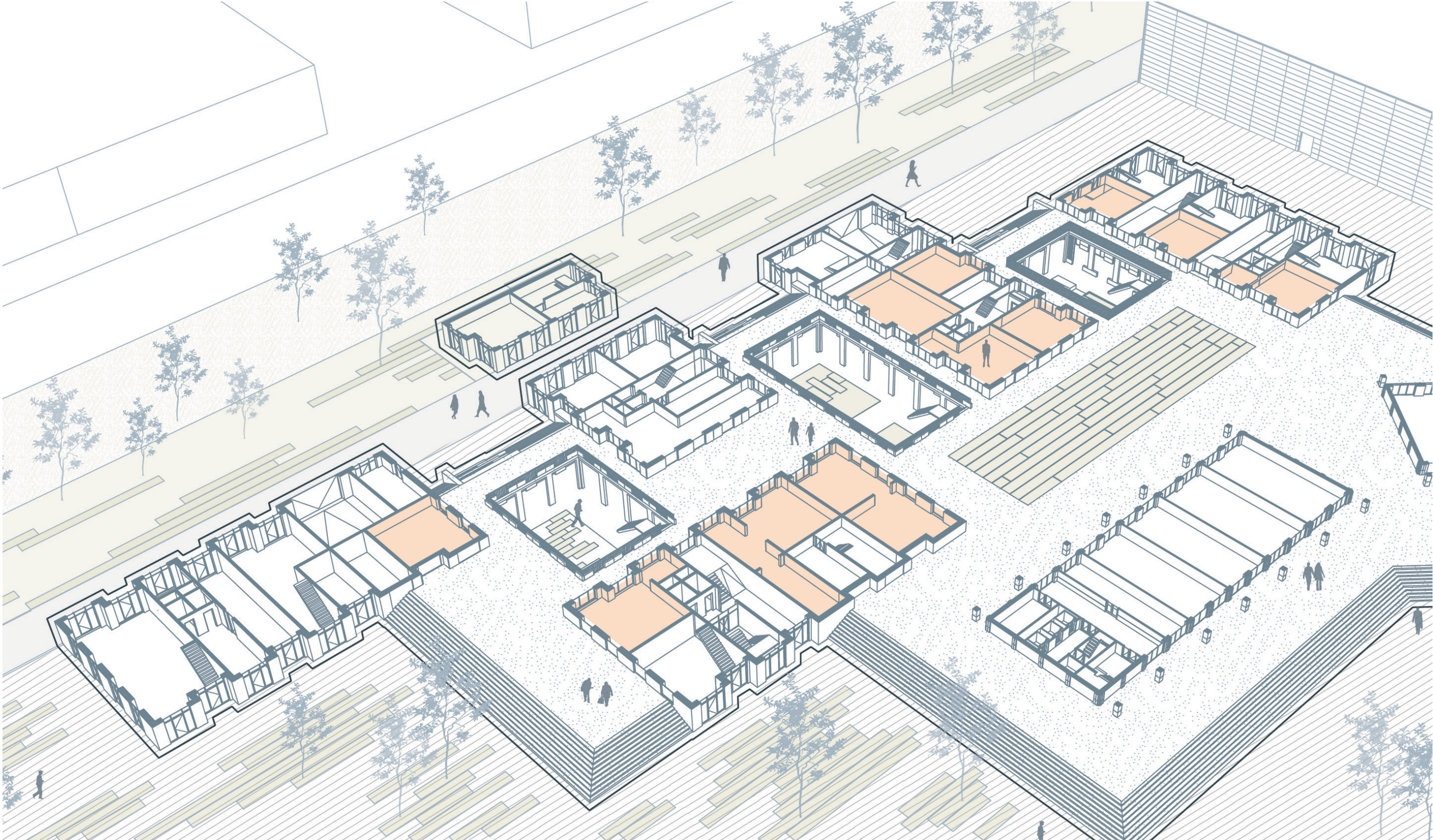


GROUND FLOOR ACCESSED COMMERCE - RUE PRÉVINAIRE & RUE DES  
GOUJONS



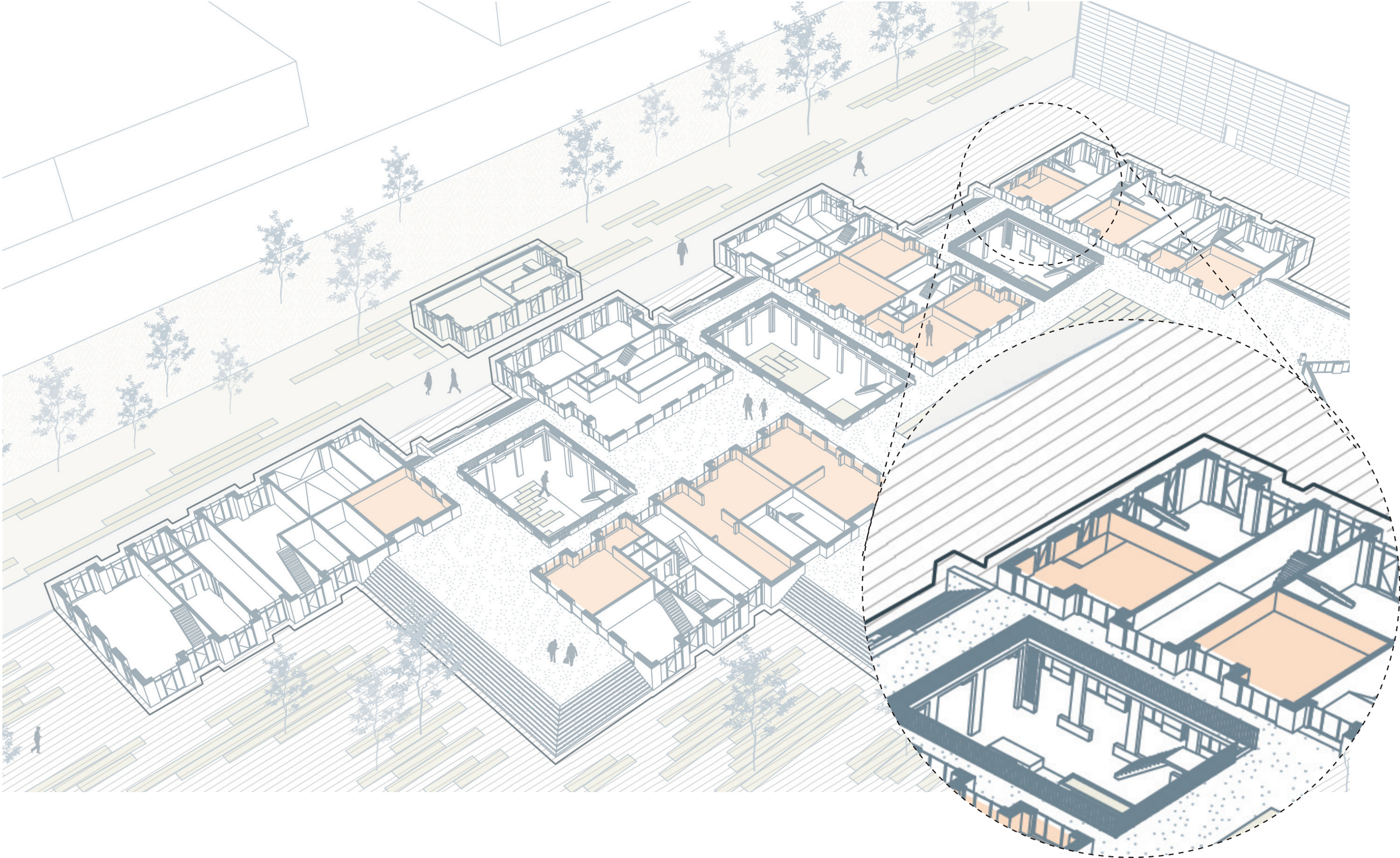


GROUND FLOOR ACCESSED COMMERCE - RUE PRÉVINAIRE & RUE DES  
GOUJONS



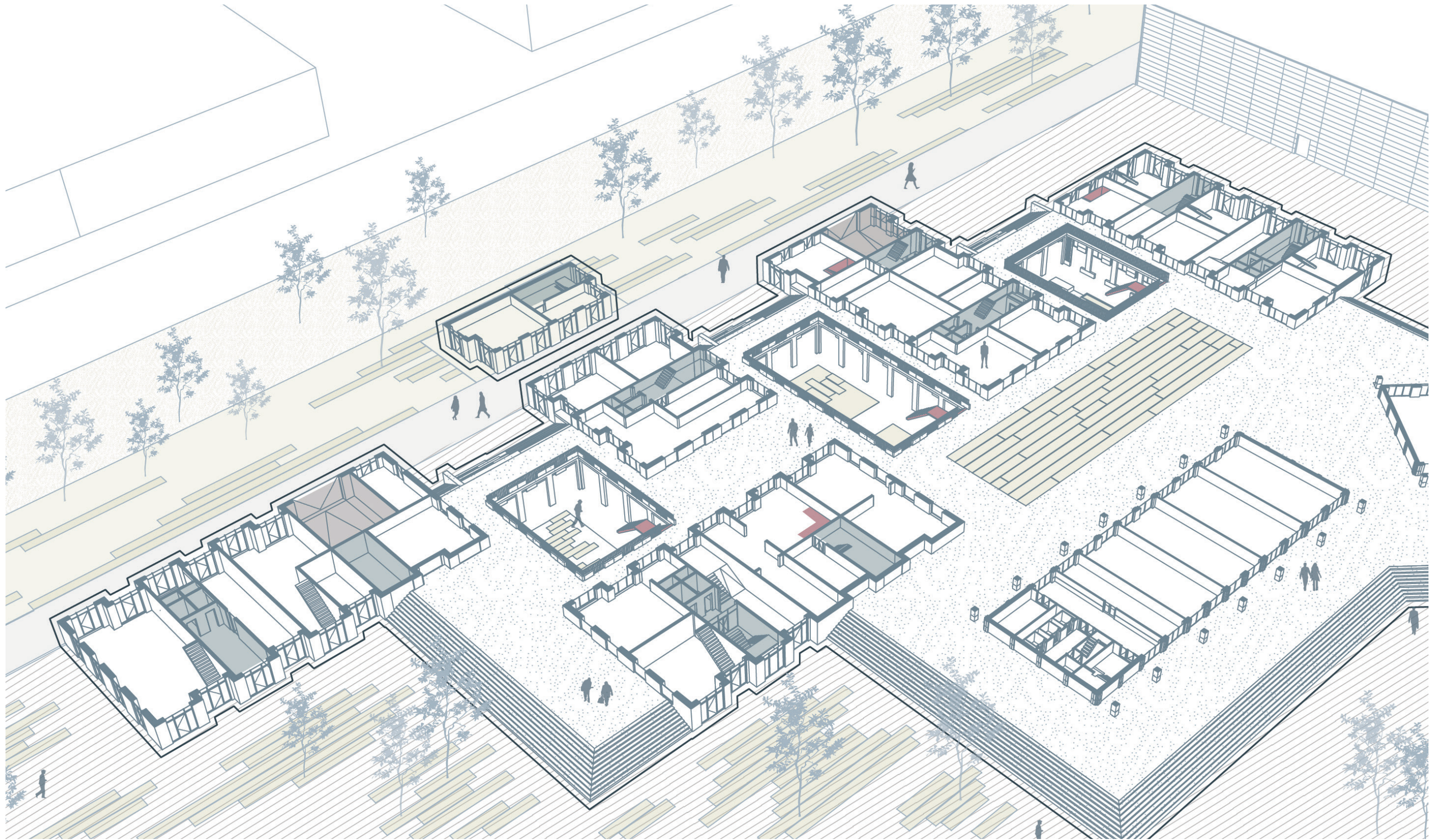


GROUND FLOOR ACCESSED COMMERCE - RUE PRÉVINAIRE & RUE DES  
GOUJONS



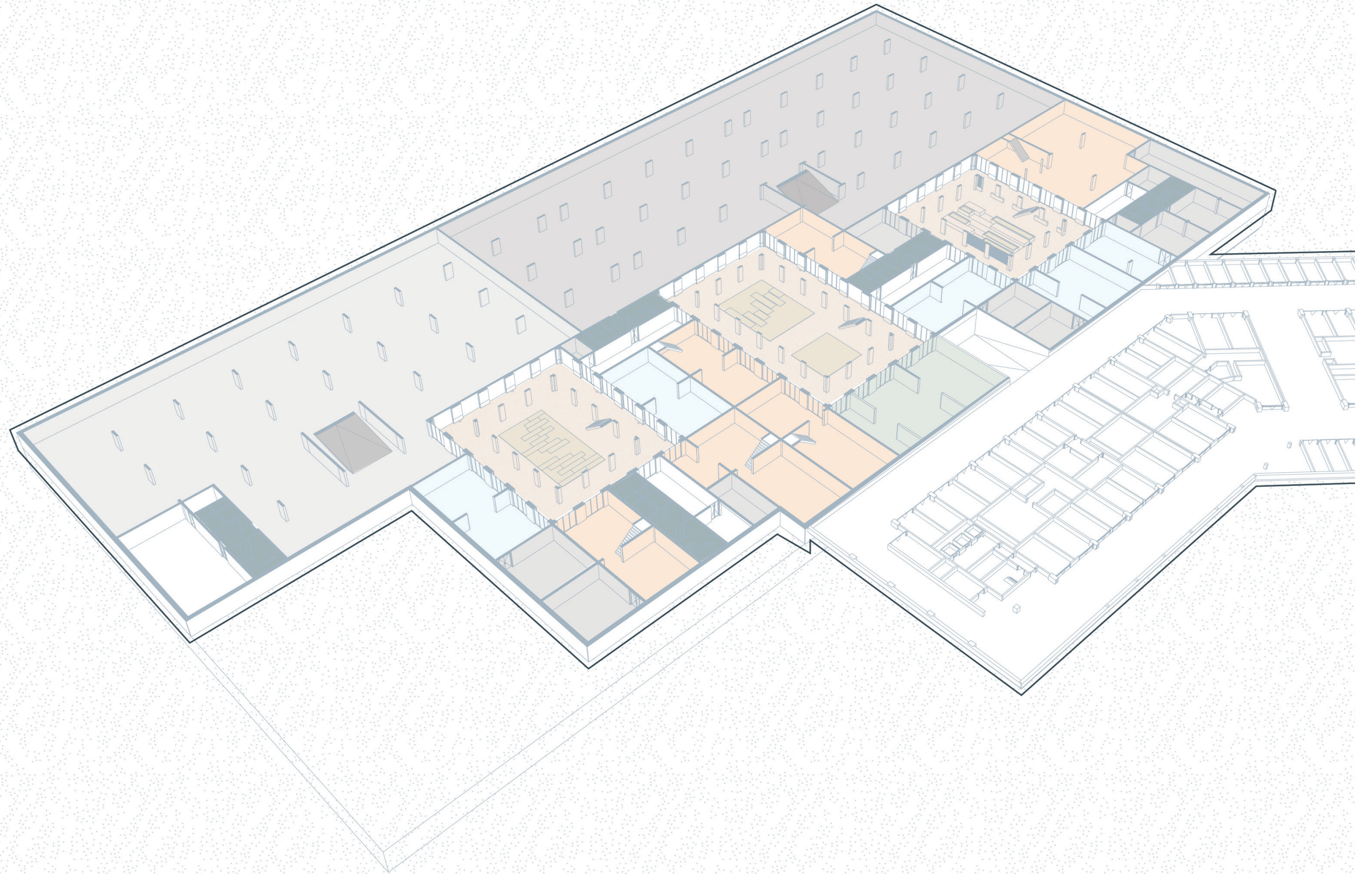


# ACCESS TO THE LOWER LEVEL





# LOWER LEVEL



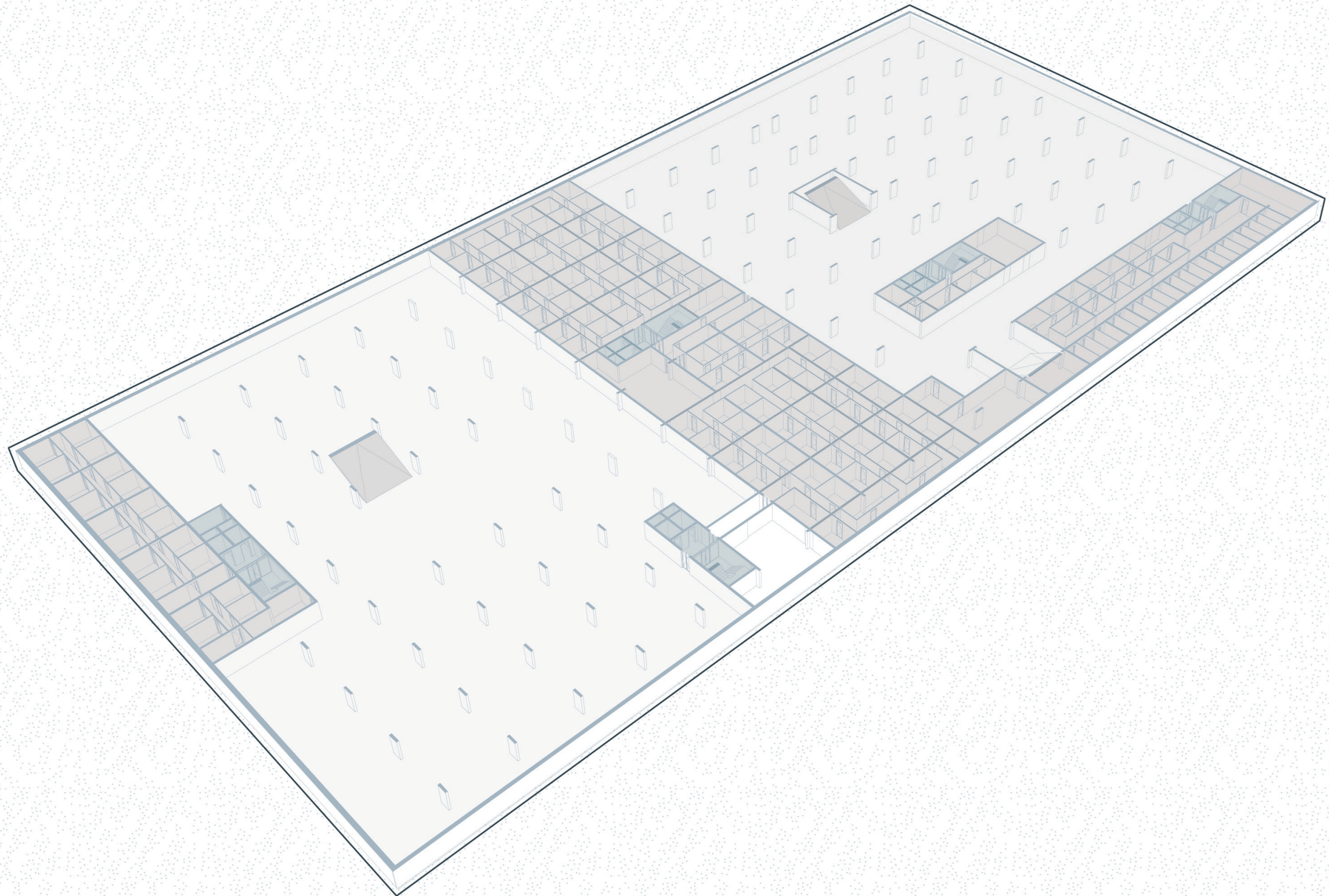


# COURTYARDS



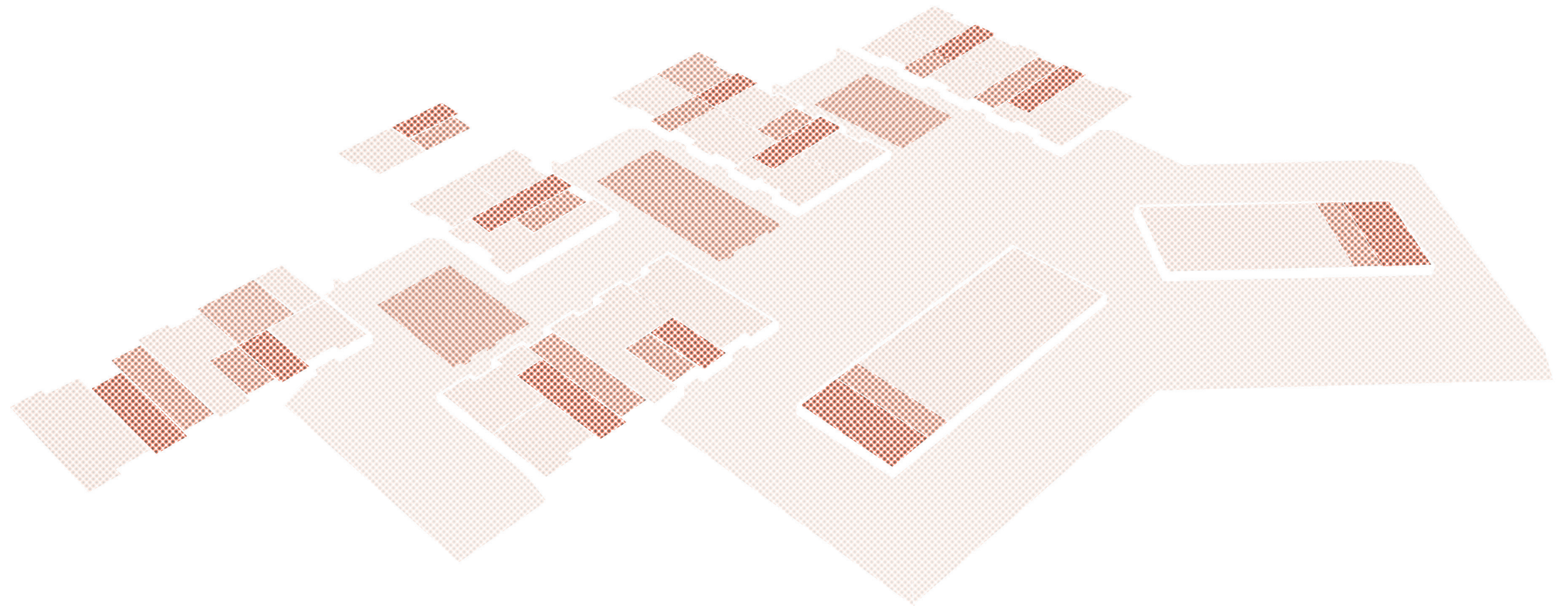


# UNDERGROUND PARKING



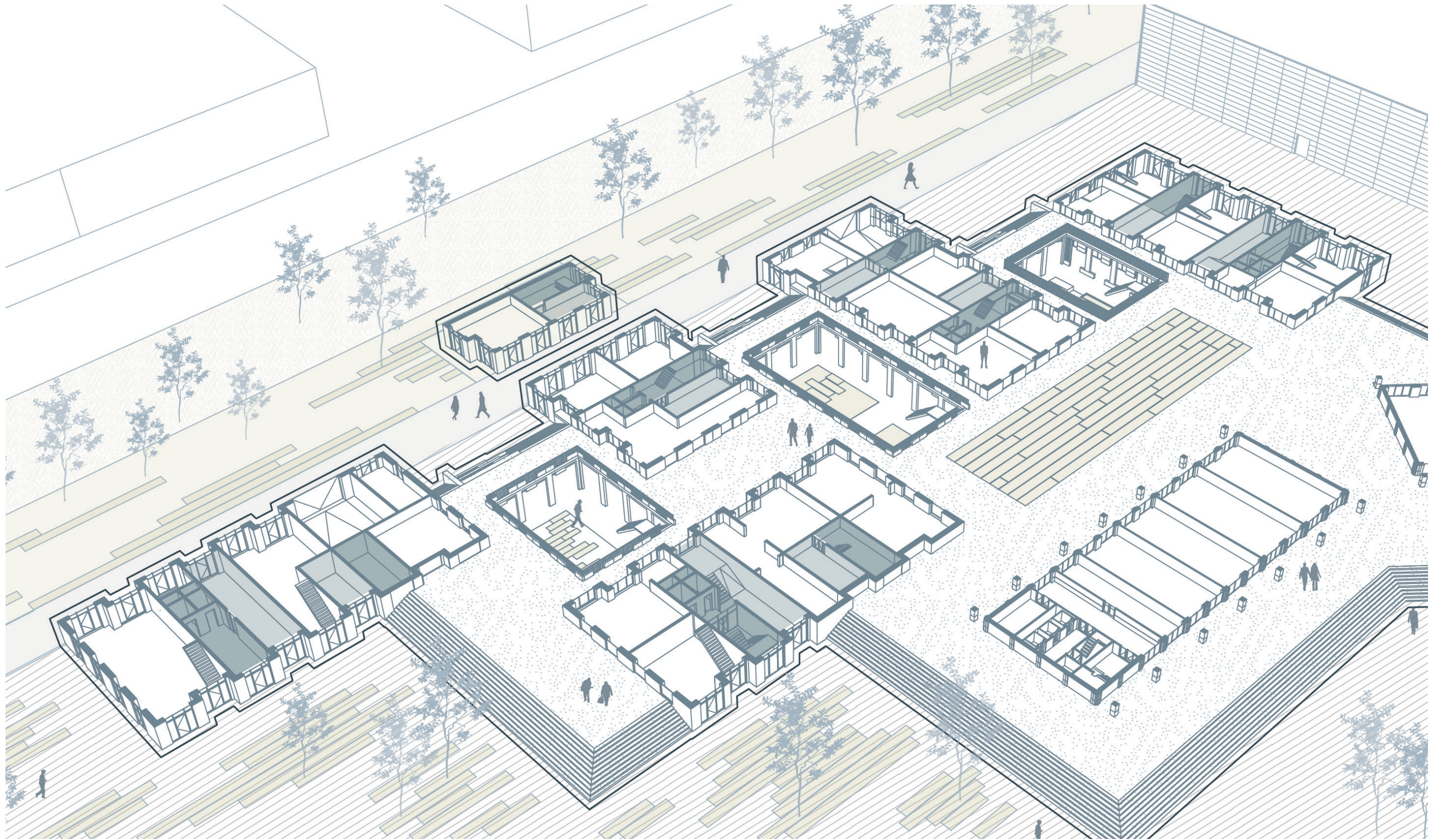


# GRADIENT OF PRIVACY





RESIDENTIAL PART - MULTIPLE POINTS OF ENTRANCE





STAIRCASES - UPPER FLOORS OF RESIDENTIAL PART





LES GOUJONS - CURRENT STATE





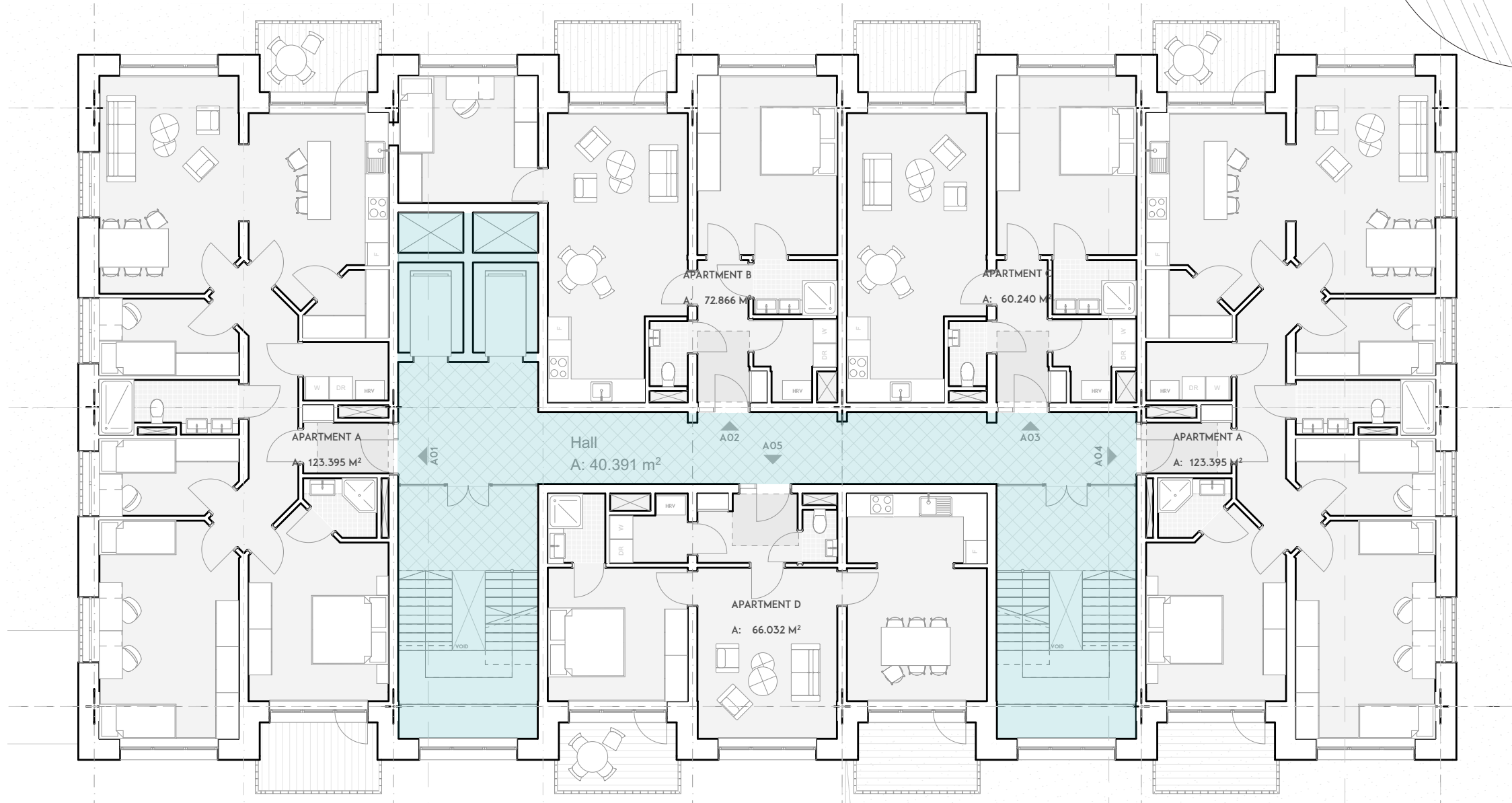
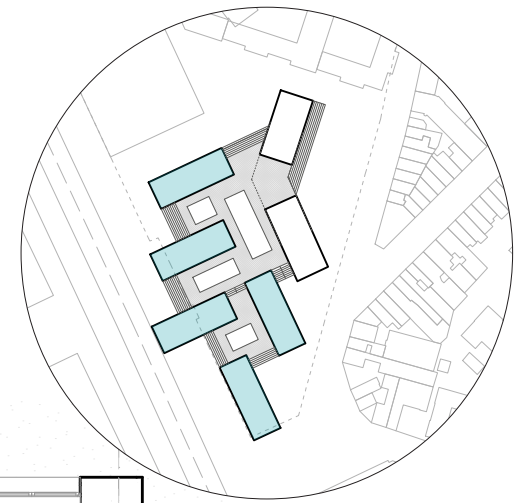
## THE QUEST FOR THE MINIMAL DWELLING

“The legacy of modernism is the quest for the minimal dwelling and that lies in the heart of the public housing and sustainable development. [...] But what it often mean is that we have bigger and bigger buildings comprising smaller and smaller rooms. Equally, spaces for access are too easily ascribed as functional, working to the rule of minimal with the consequence that this important representational spaces of possible, varied use are mean and held little opportunity.”

- Stephen Bates,  
Sergison Bates architects



# NEW RESIDENTIAL PART CLOSE-UP CORRIDOR



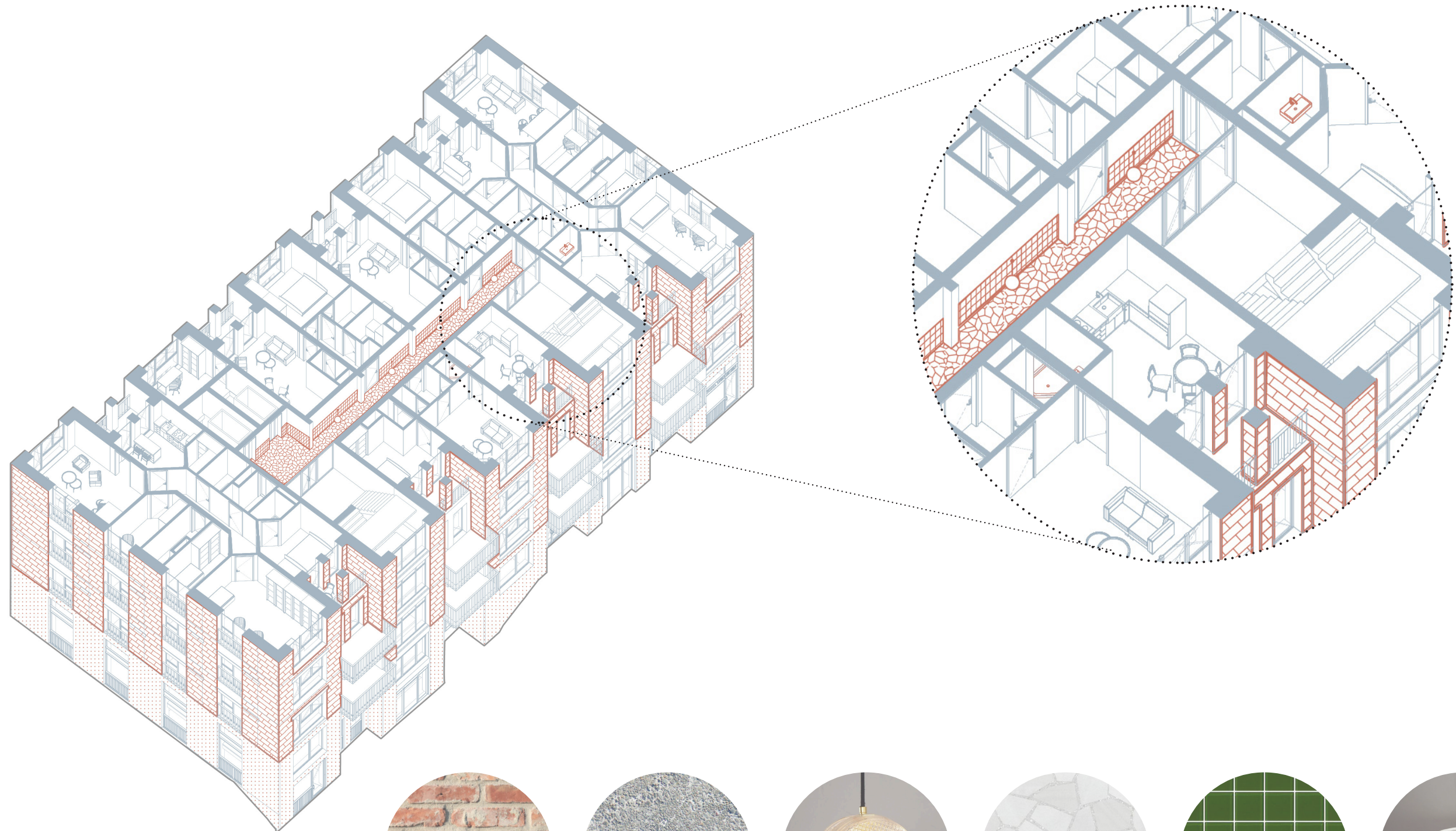


GLAZED PART OF THE DOOR OVERLOOKING THE CORRIDOR





NEW RESIDENTIAL PART CLOSE-UP  
RECYCLED ELEMENTS



Brick



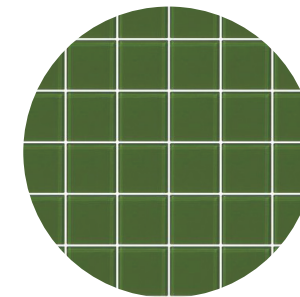
Concrete



Concrete



Opus incertum tiles for flooring



Wall tiles



Sanitary elements

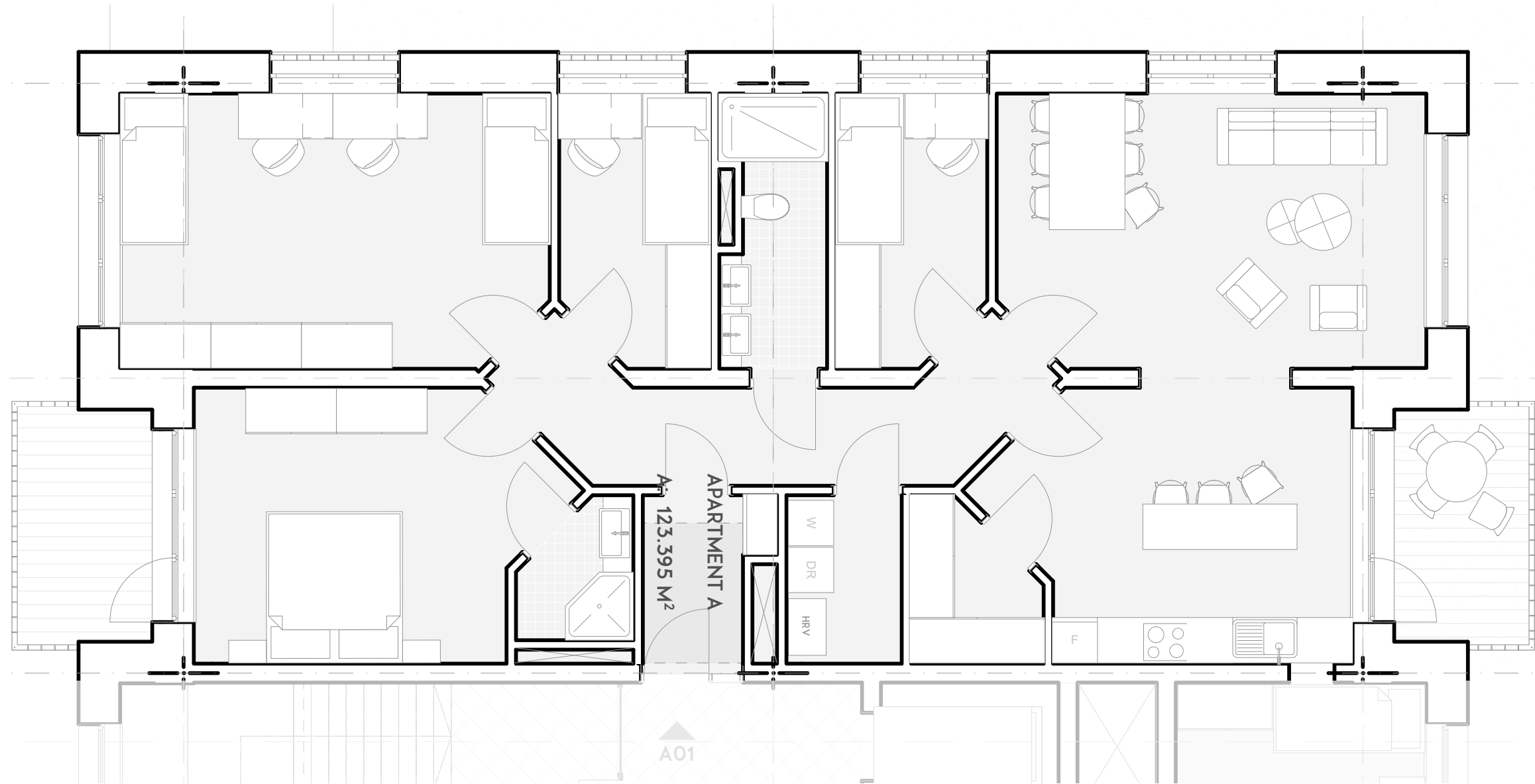


NEW RESIDENTIAL PART CLOSE-UP  
APARTMENT 02



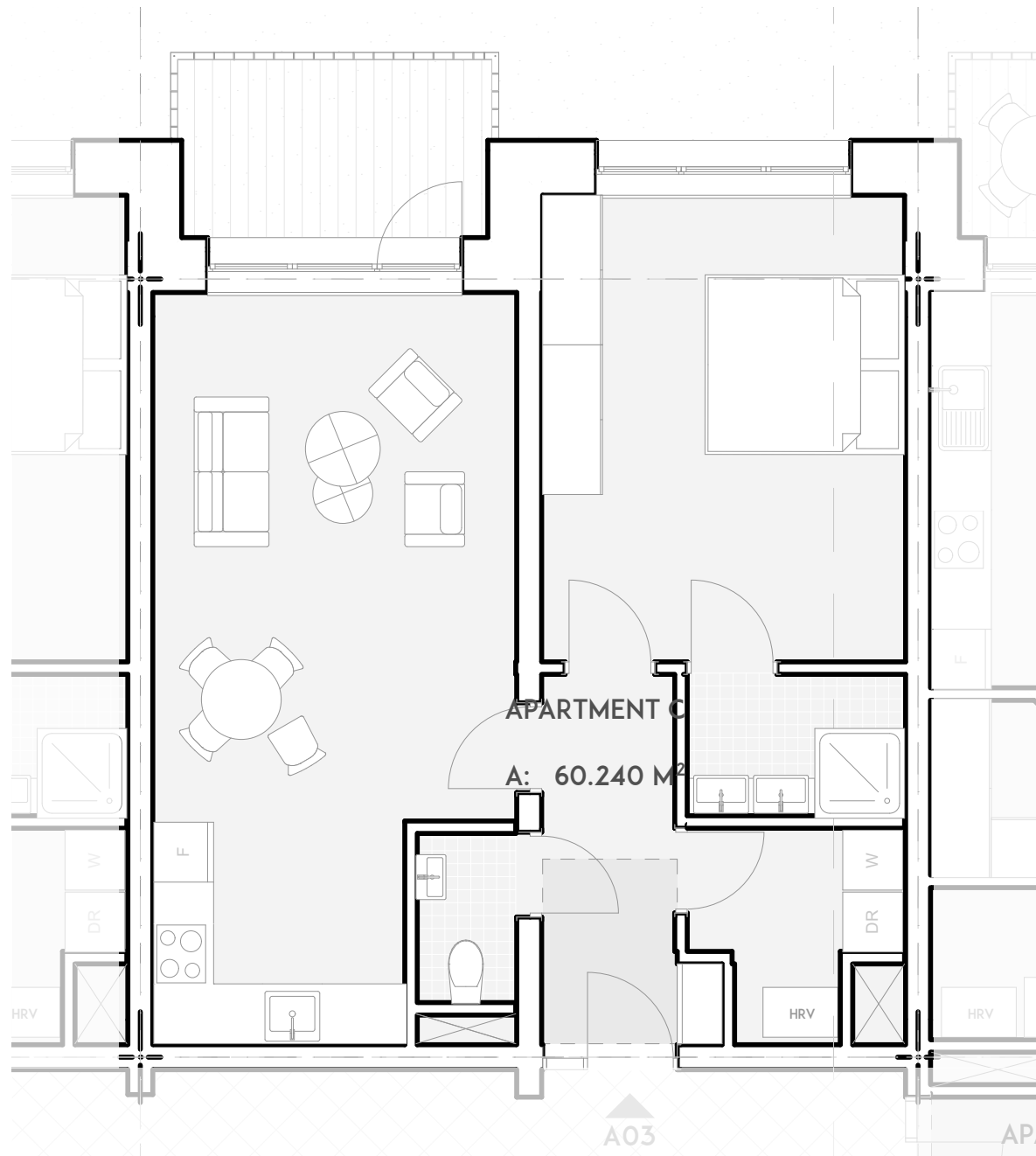


NEW RESIDENTIAL PART CLOSE-UP  
APARTMENT 01





NEW RESIDENTIAL PART CLOSE-UP  
APARTMENT 02

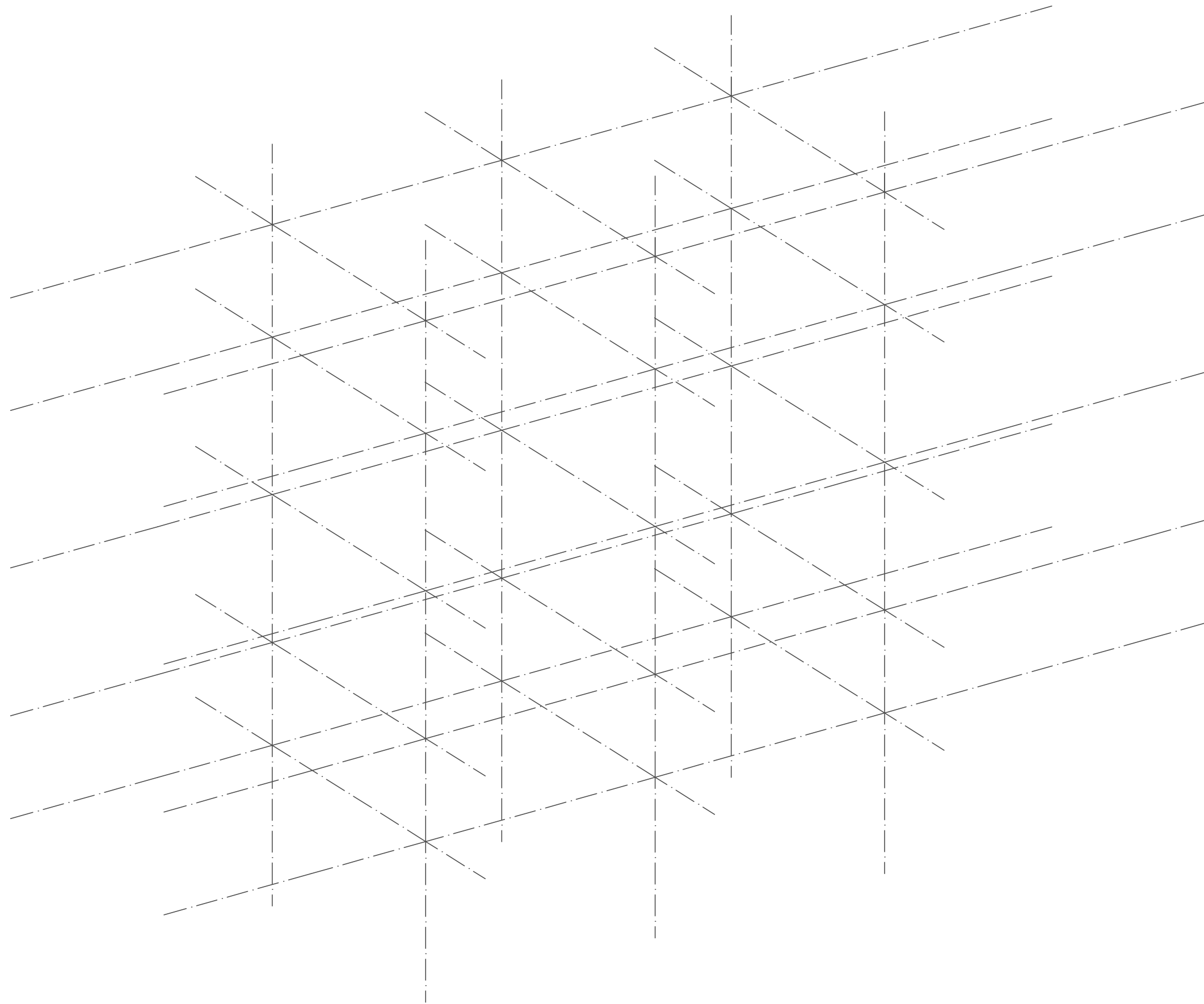




# BUILDING TECHNOLOGY

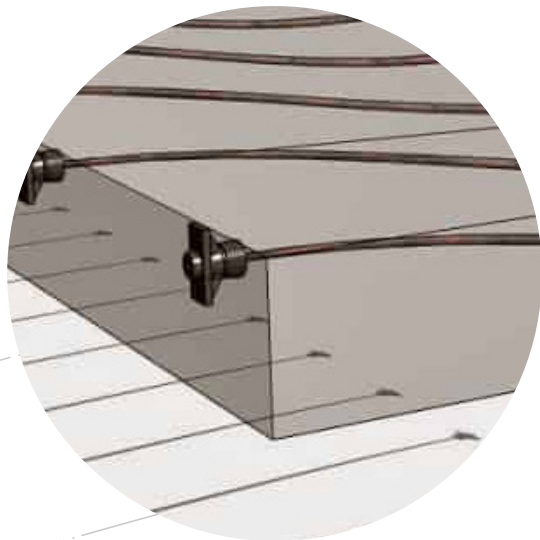
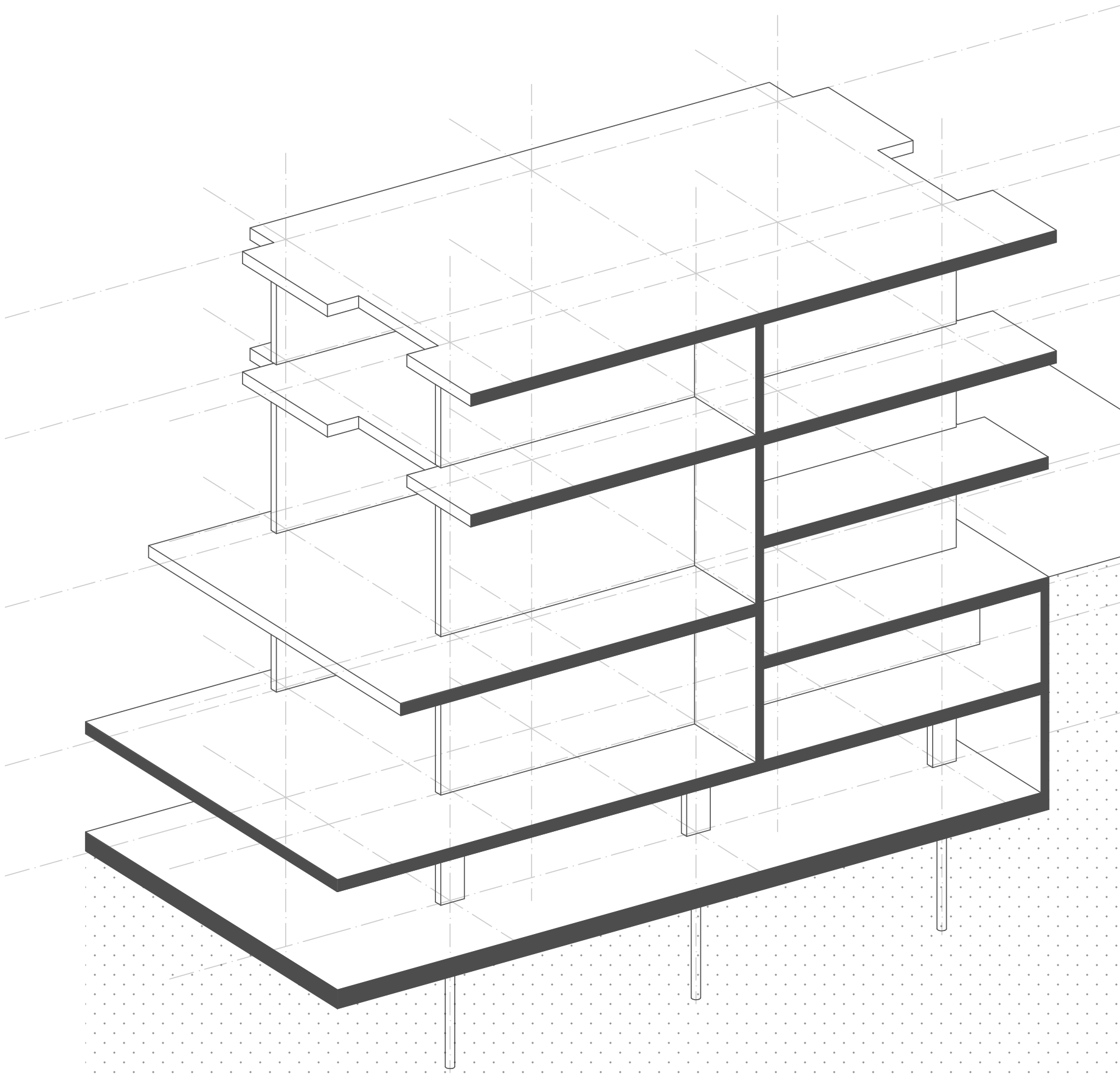


THE MAIN GRID  
7.8 M X 7.8 M





STRUCTURAL WALLS, COLUMNS AND SLABS  
POST-TENSION CONCRETE

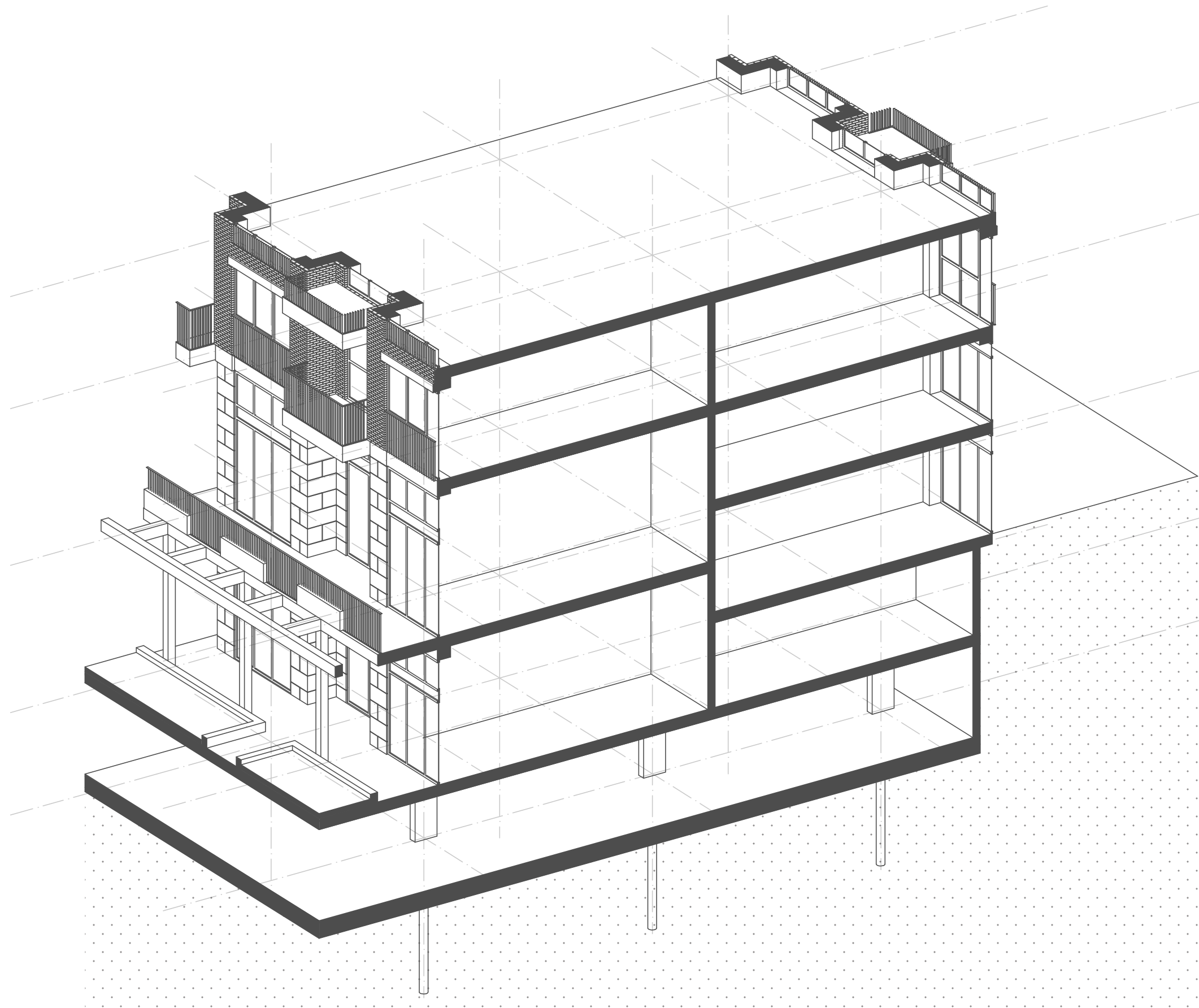


3d illustration (above) depicting tendons in post-tensioned slab was taken from: <https://constructionor.com/post-tension-slab/> [Accessed 26.06.2020]



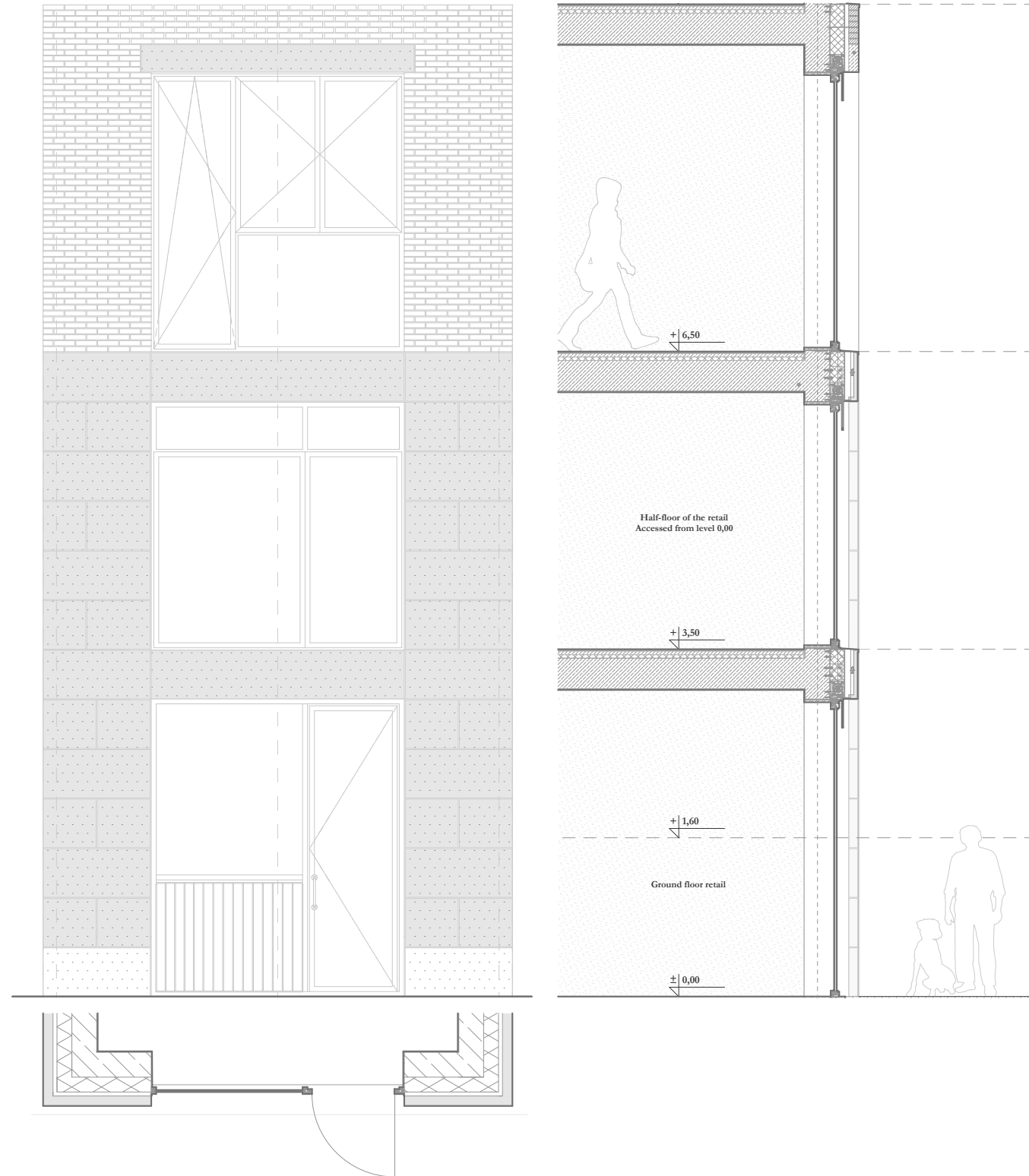


# FACADES



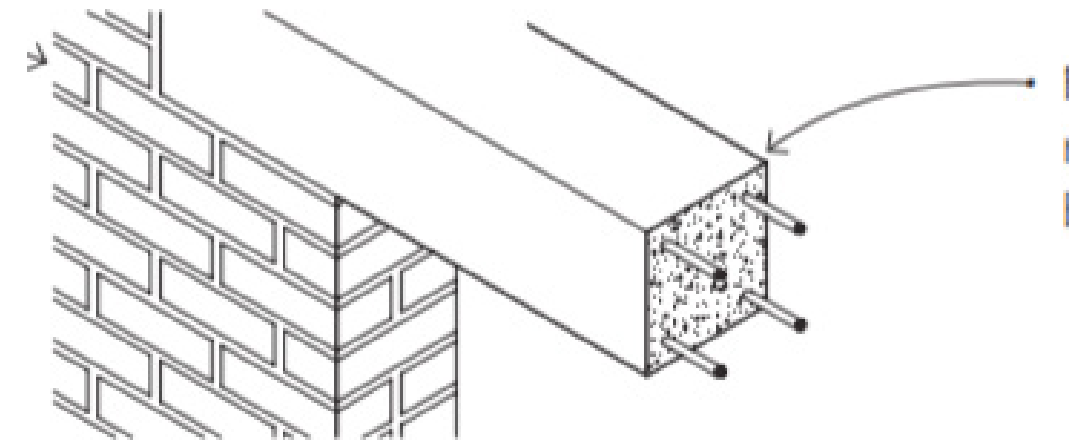
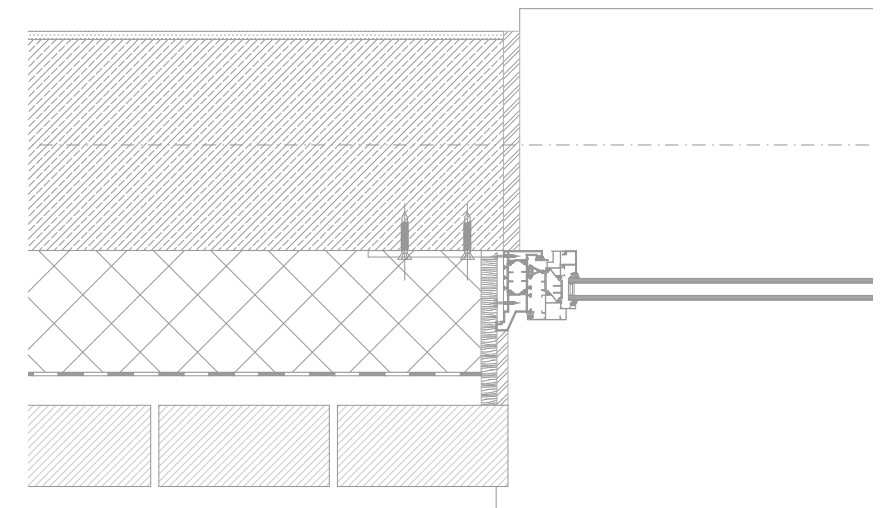
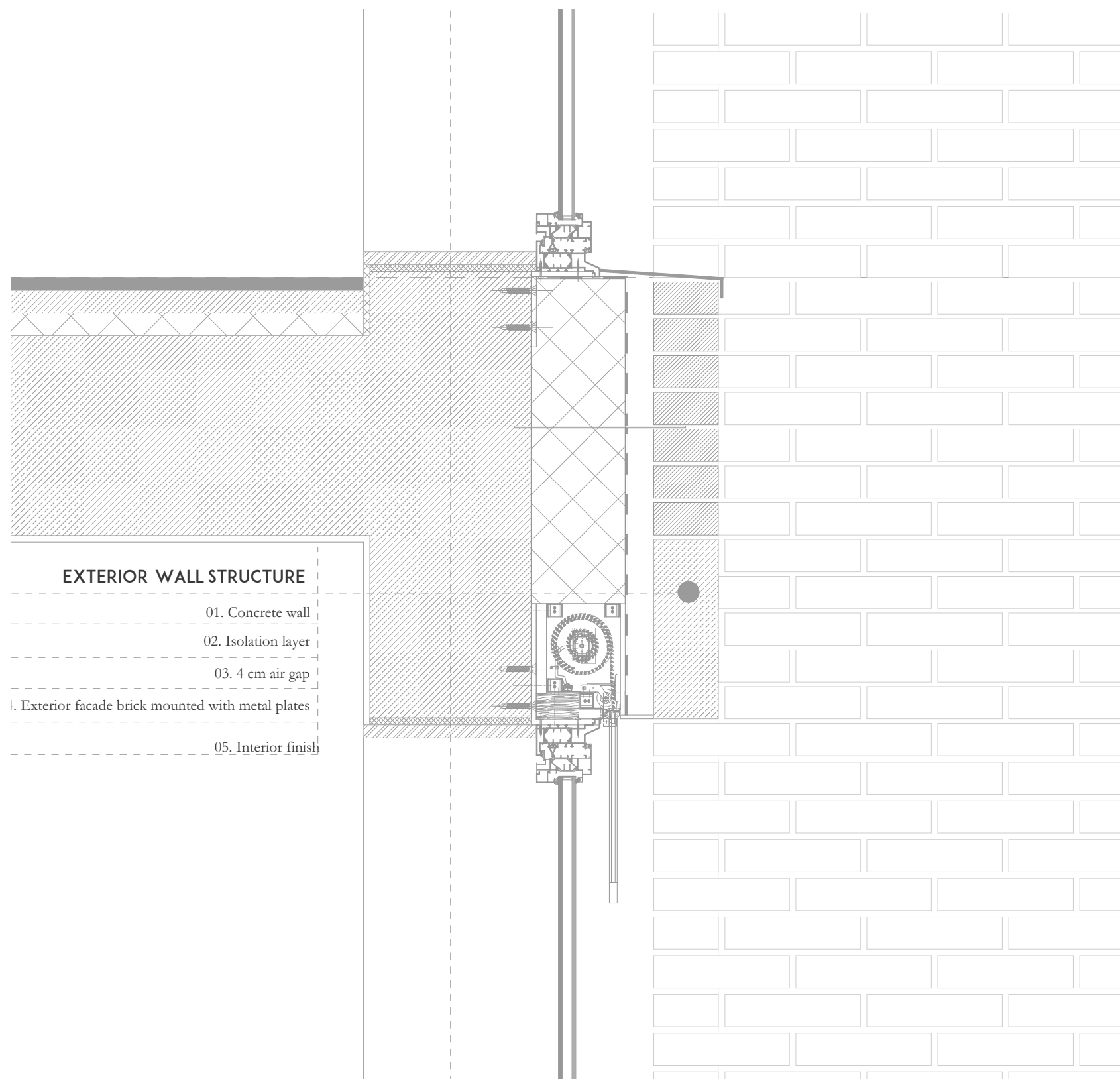


# FACADE REPETEABLE LAYOUT

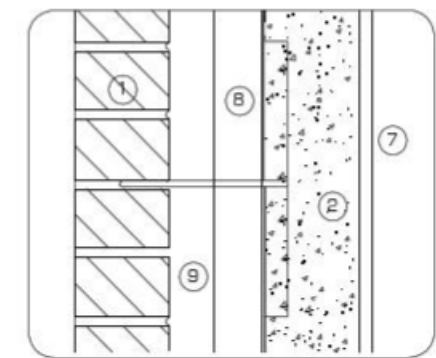
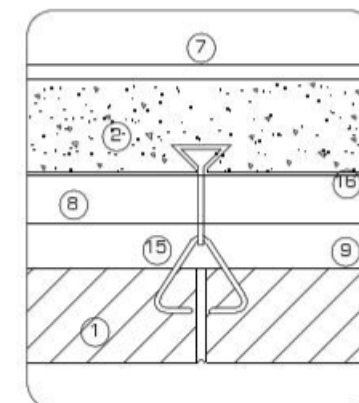




DETAIL A&B:  
BRICK ATTACHEMENT / WINDOW DETAIL



**Precast-Concrete Lintels**



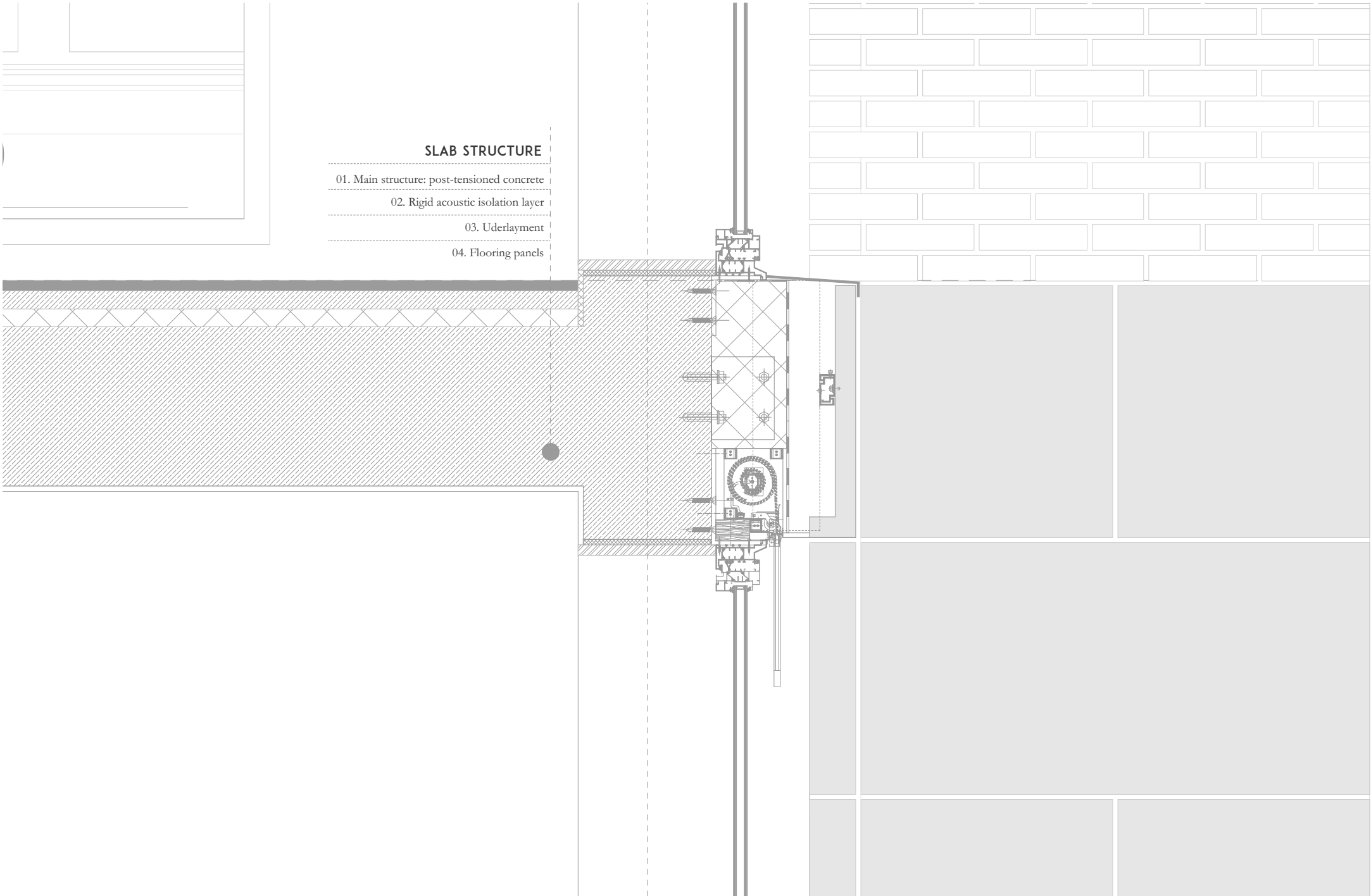
Horizontal and vertical section 1:10. Typical connection or restraint to primary structure

MCH\_169

3d illustrations depicting lintel and brick attachment (above) from:  
Watts, A., *Modern Construction Handbook*.

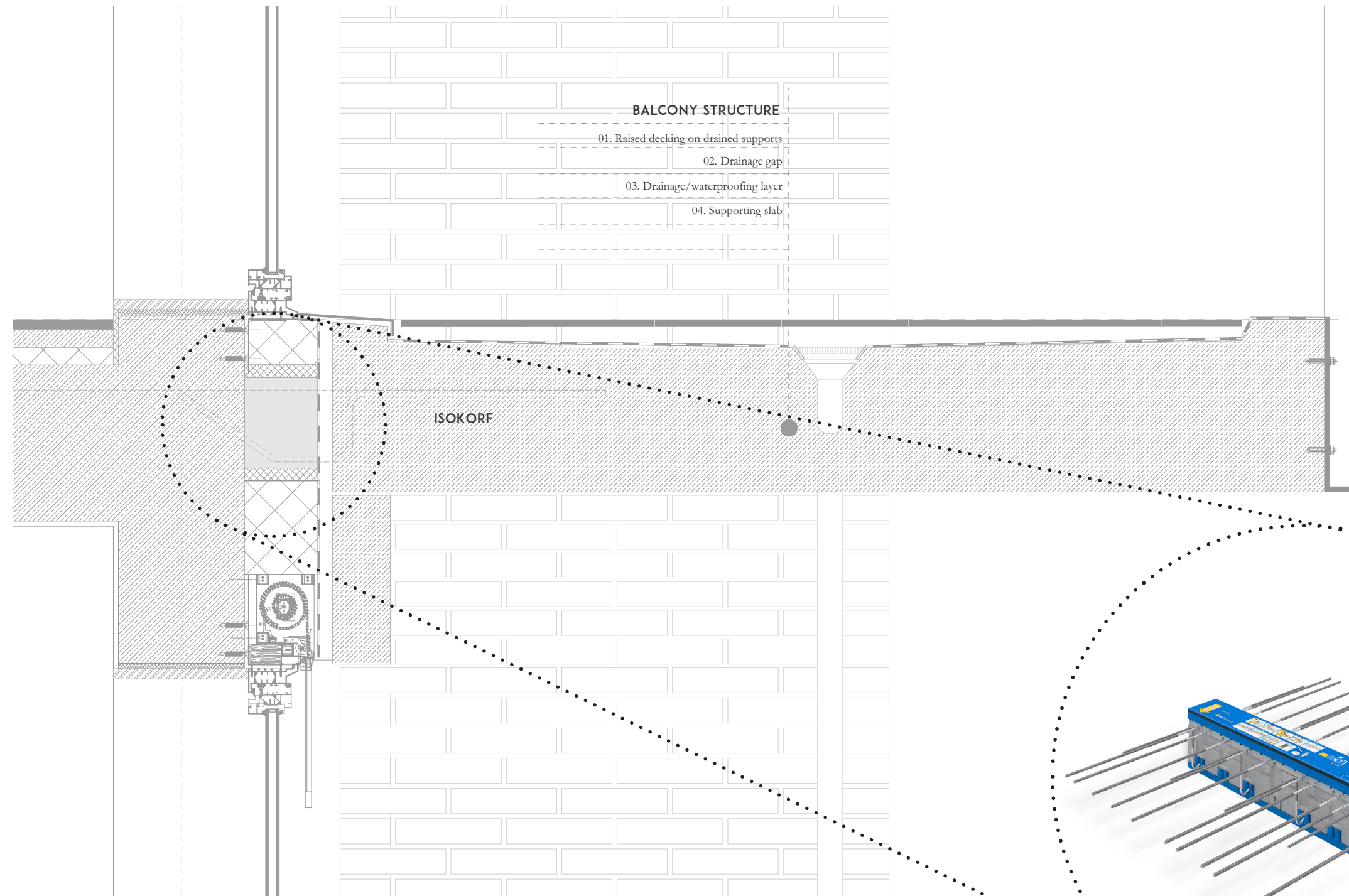


**DETAIL B:  
CONCRETE PANEL MOUNTING**





## DETAIL C: BALCONY DETAIL

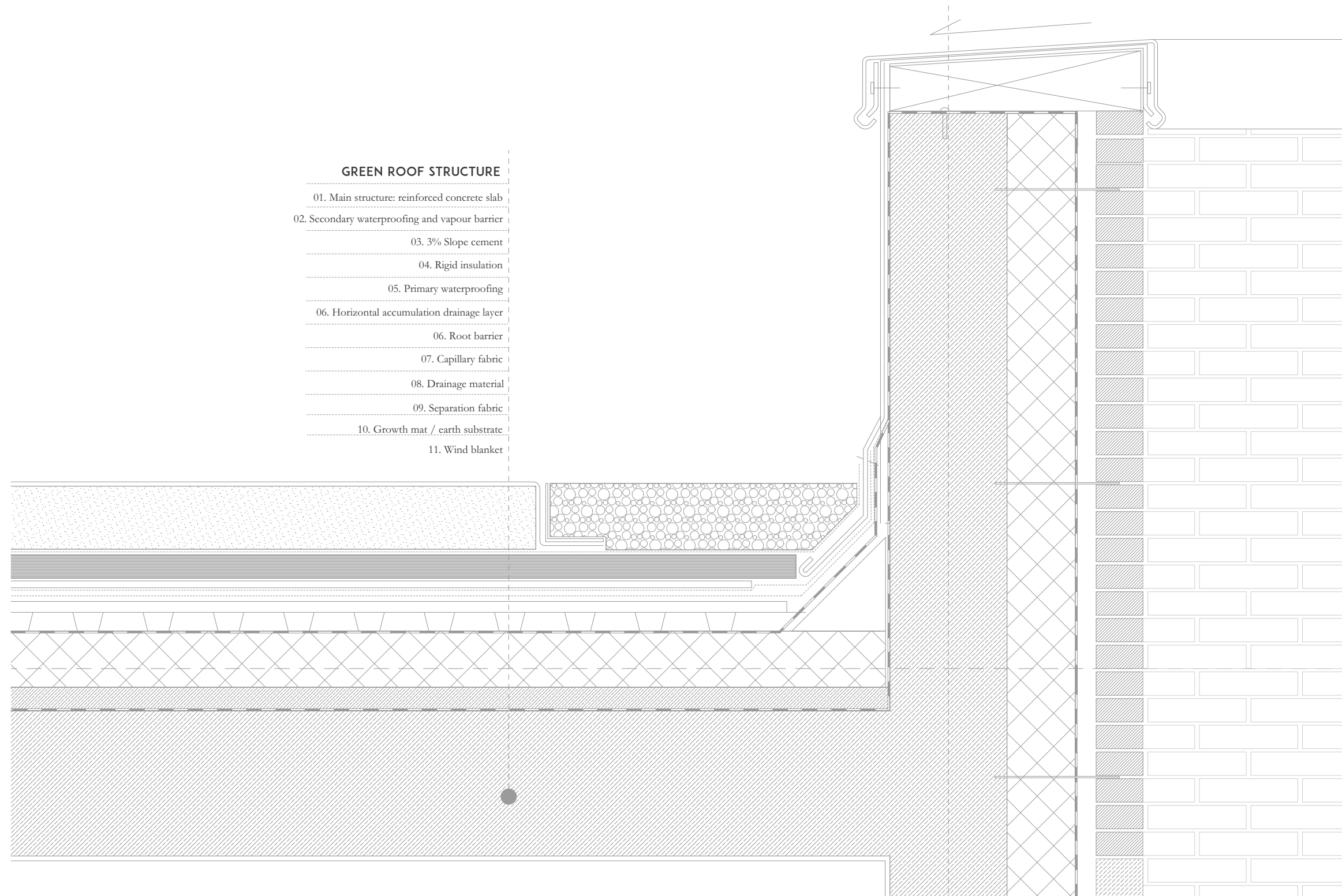


3d illustration depicting isokorf (below)  
from:  
<https://www.schock.nl/nl/isokorf-t-type-k>  
[Accessed 26.06.20]

Schöck Isokorf® XT type K is a structural anchoring system for interrupting thermal bridges at balconies and galleries. The element is KOMO certified and available in fire resistant version (REI120). Schöck Isokorf® XT type K absorbs moments and transverse forces with cantilevered concrete elements.

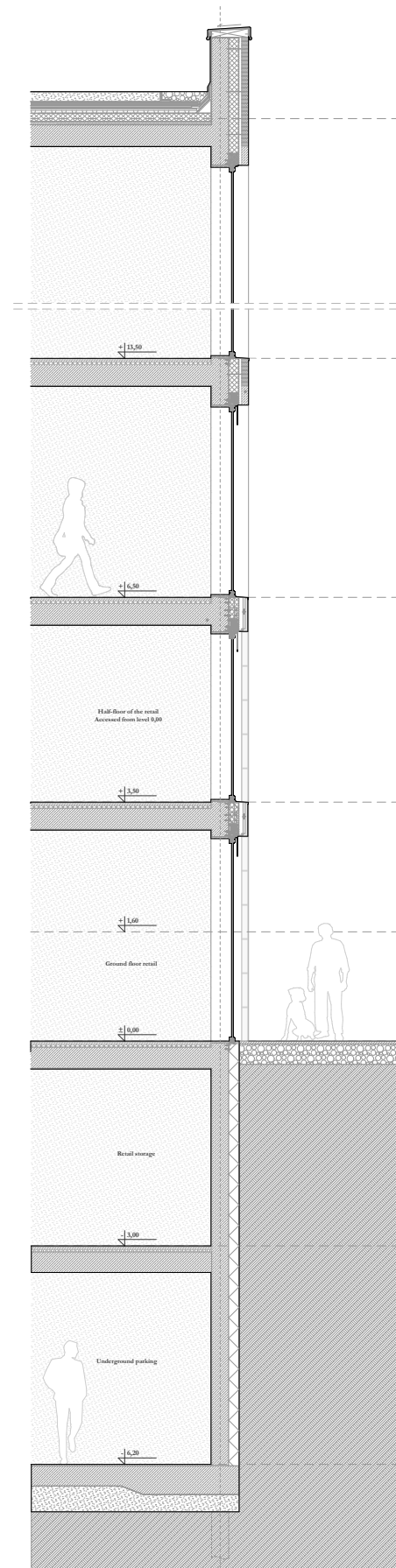


## DETAIL D: GREEN ROOF



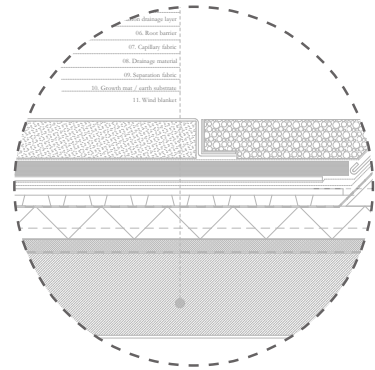


# SECTION B-B CLOSE-UP



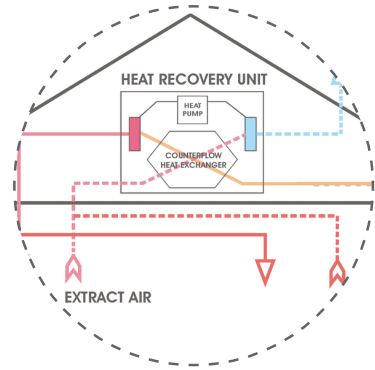


# CLIMATE SCHEME



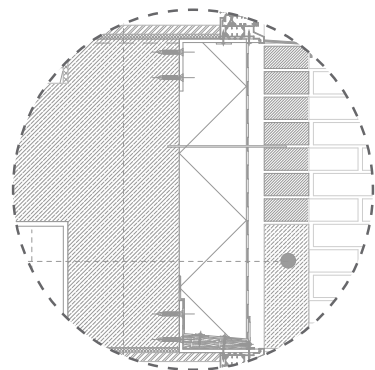
## 01. Green roof

Green roof reducing urban heat island with rain water collection system



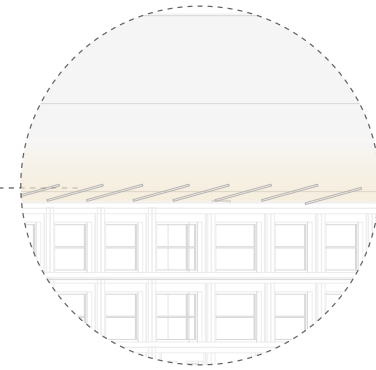
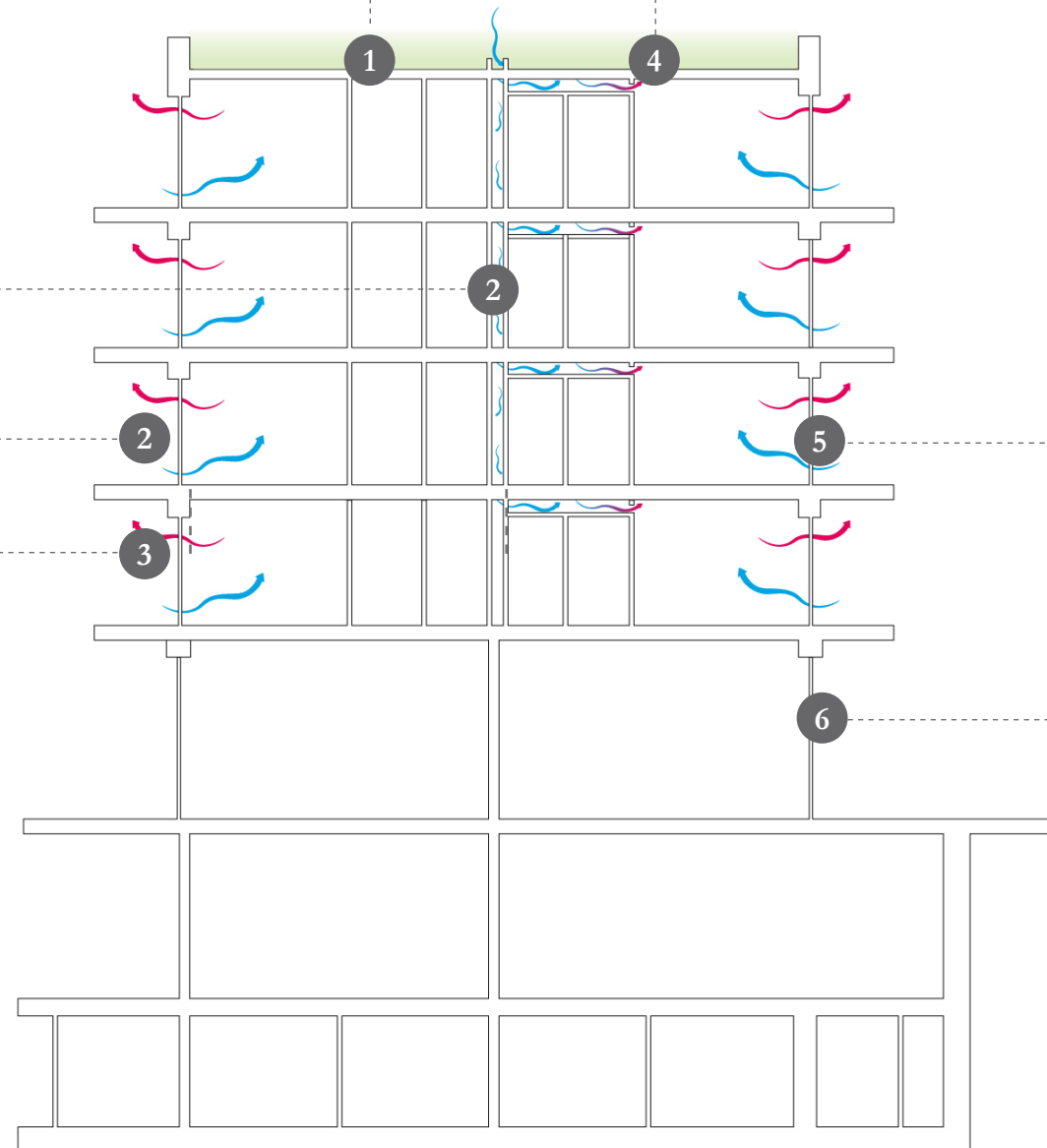
## 02. Hybrid ventilation

Natural ventilation as deominant system, supported with mechanical heat recovery ventilation



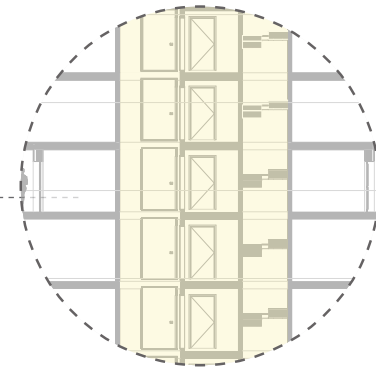
## 03. Exterior wall structure

Well isolated exterior walls, lowering the space heating/cooling energy demand



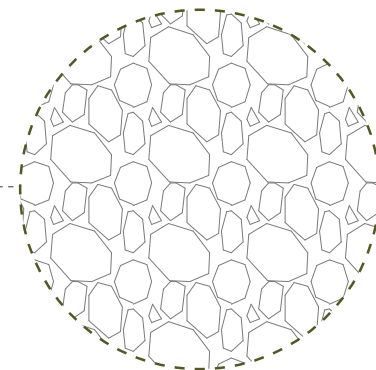
## 06. Solar panels

Providing renewable source of energy



## 05. Natural light

Well lit apartments, with public corridors with access to daylight, decreasing amount of artificial light needed, rolling sunshades

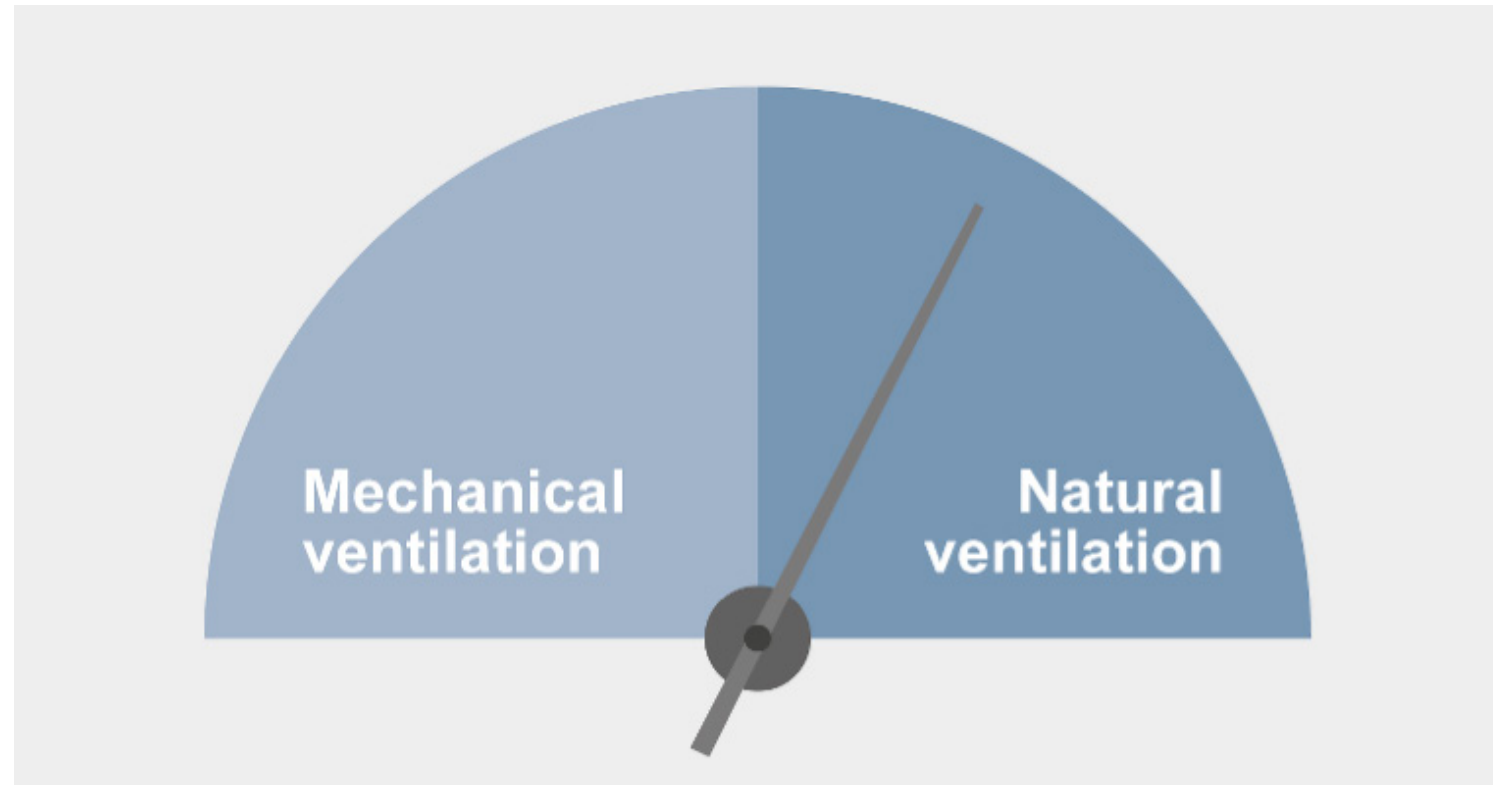


## 06. Exterior wall structure

Re-used materials - brick and concrete



VENTILATION  
HYBRID VENTILATION WITH HEAT RECOVERY

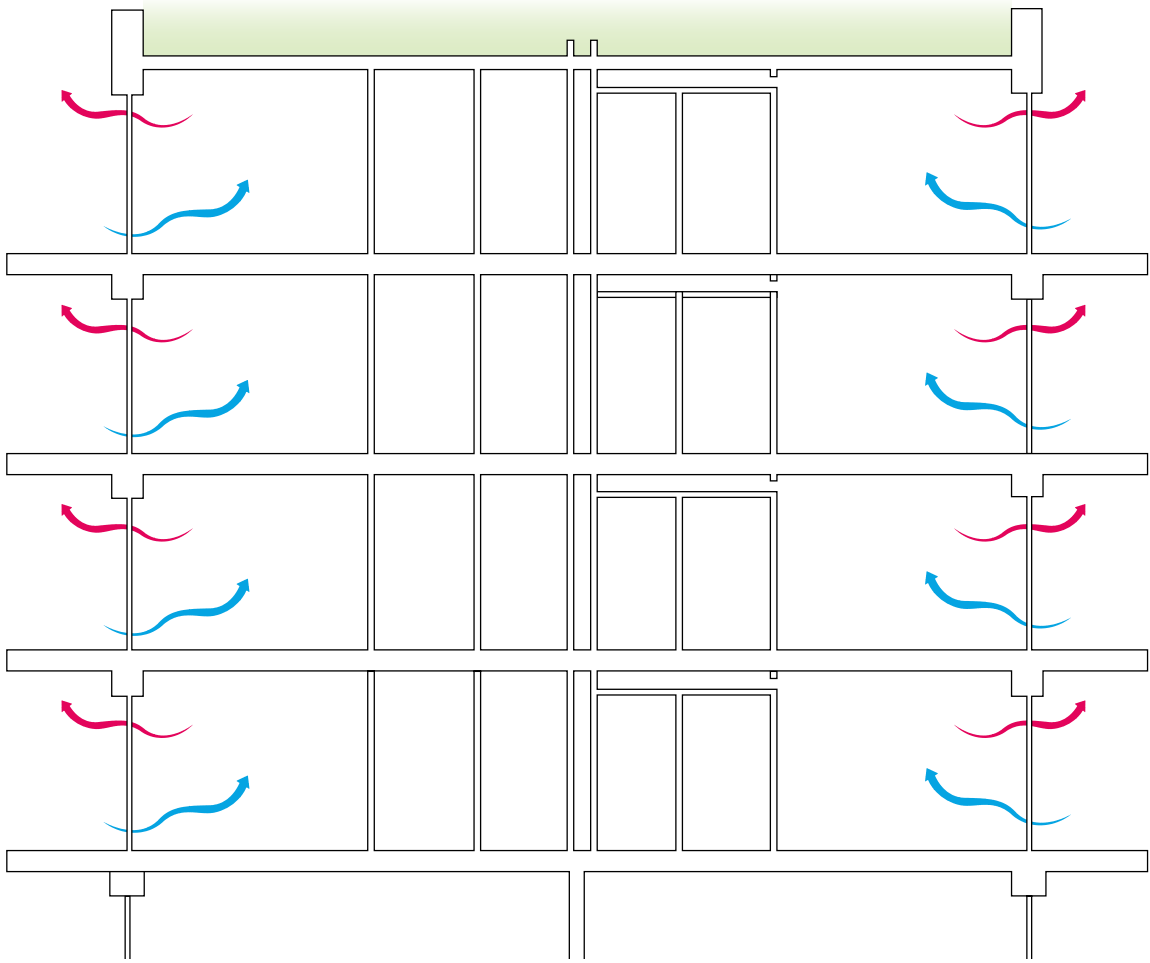
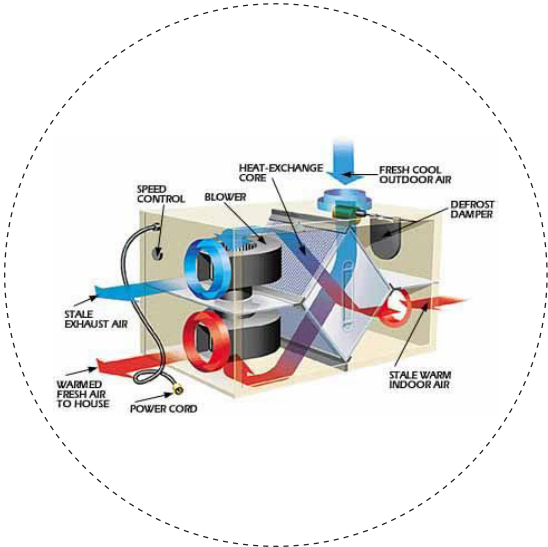


**Hybrid ventilation** - combination of natural ventilation with mechanical one.

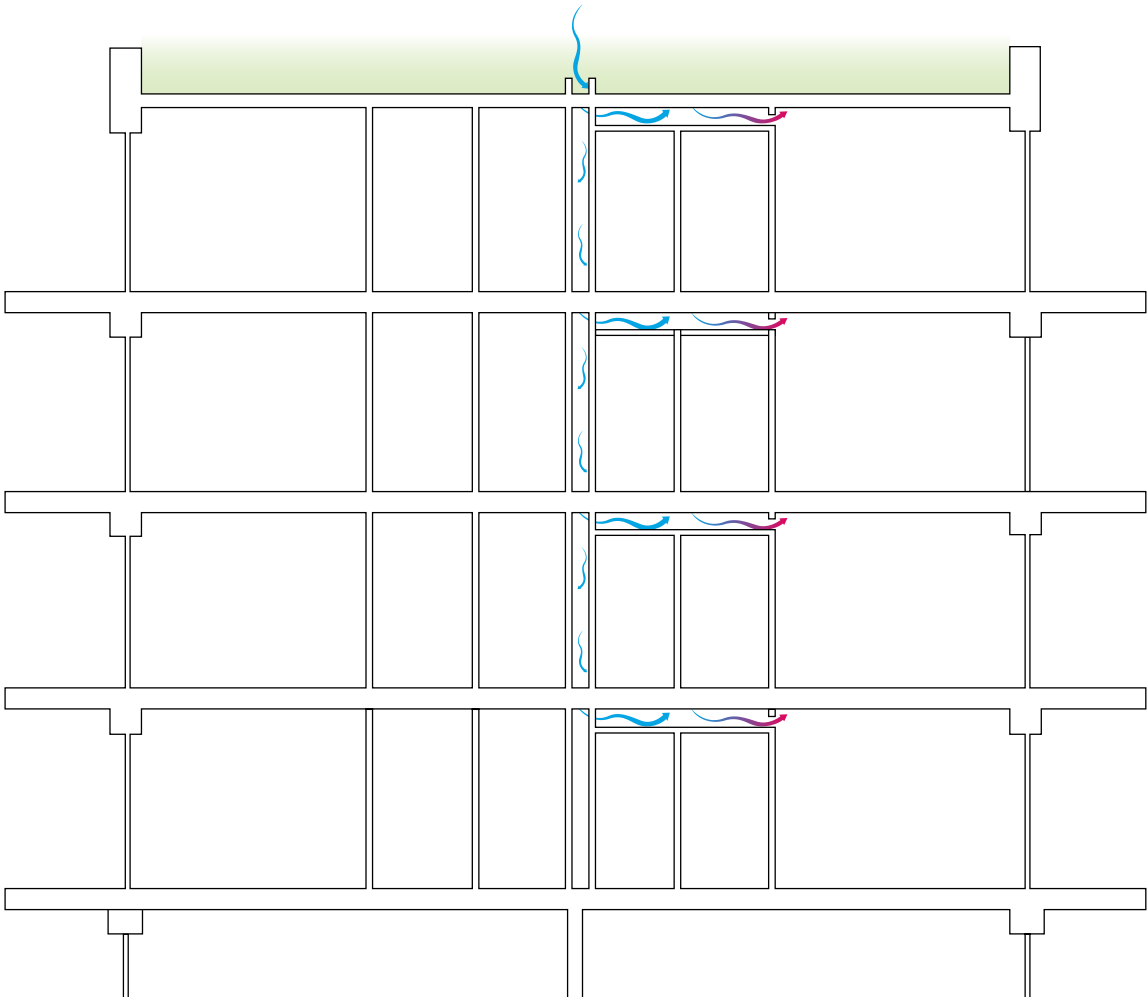
**Heat recovery** can be achieved by placing a heat exchanger between the exhaust air stream and supply air stream. A heat exchanger transfers the heat of the extract air to the (cold) supply air. This causes the supply air to heat, resulting in a higher room temperature and reduced heat loss.



# MECHANICAL VENTILATION WITH HEAT EXCHANGE RECOVERY



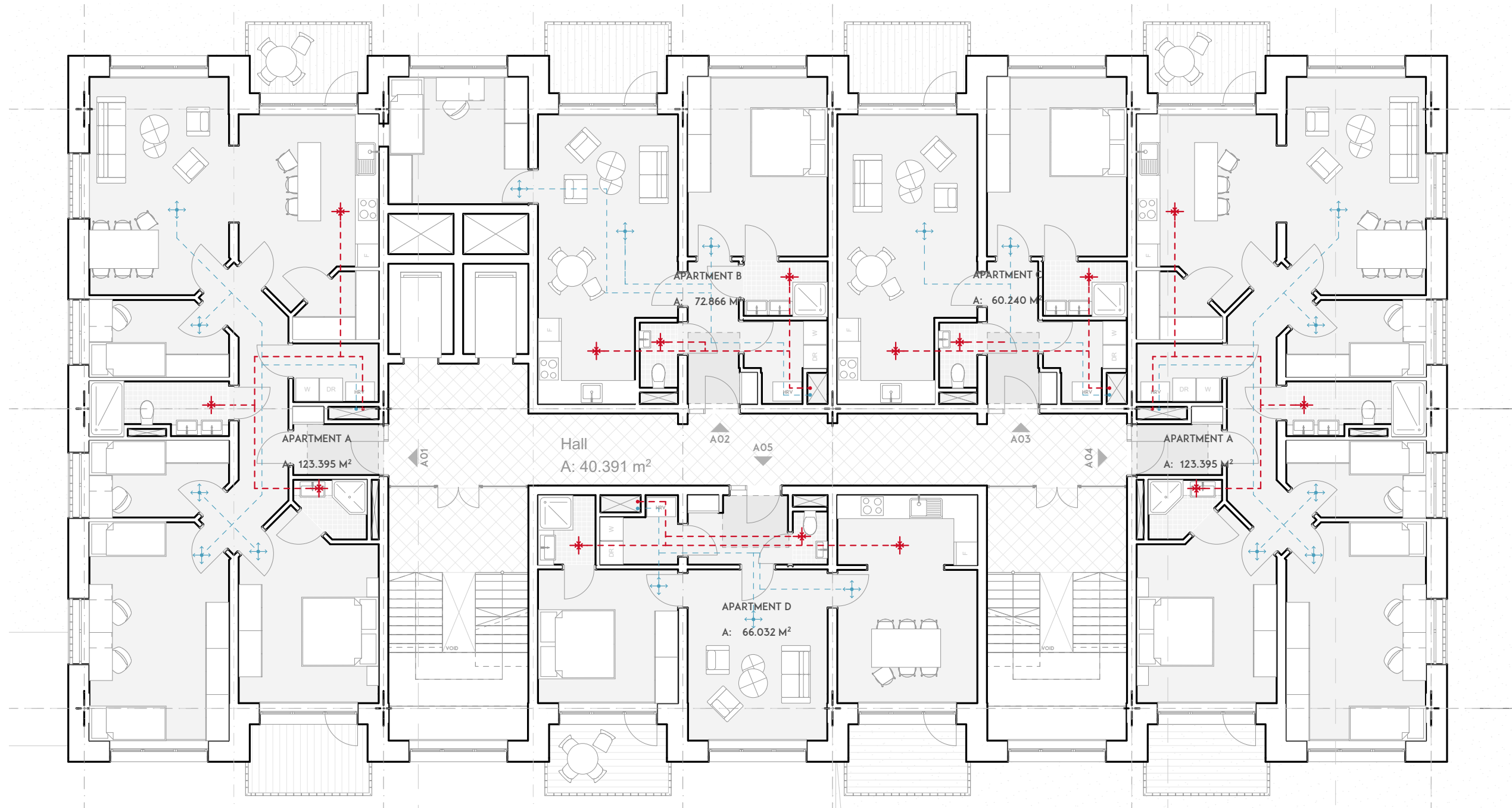
Summer - windows open more often, natural ventilation possible



Winter, windows closed more often, ventilation achieved with mechanical system with heat exchange recovery - cold, new air supplied mechanically will be warmed against warm, exhaust air

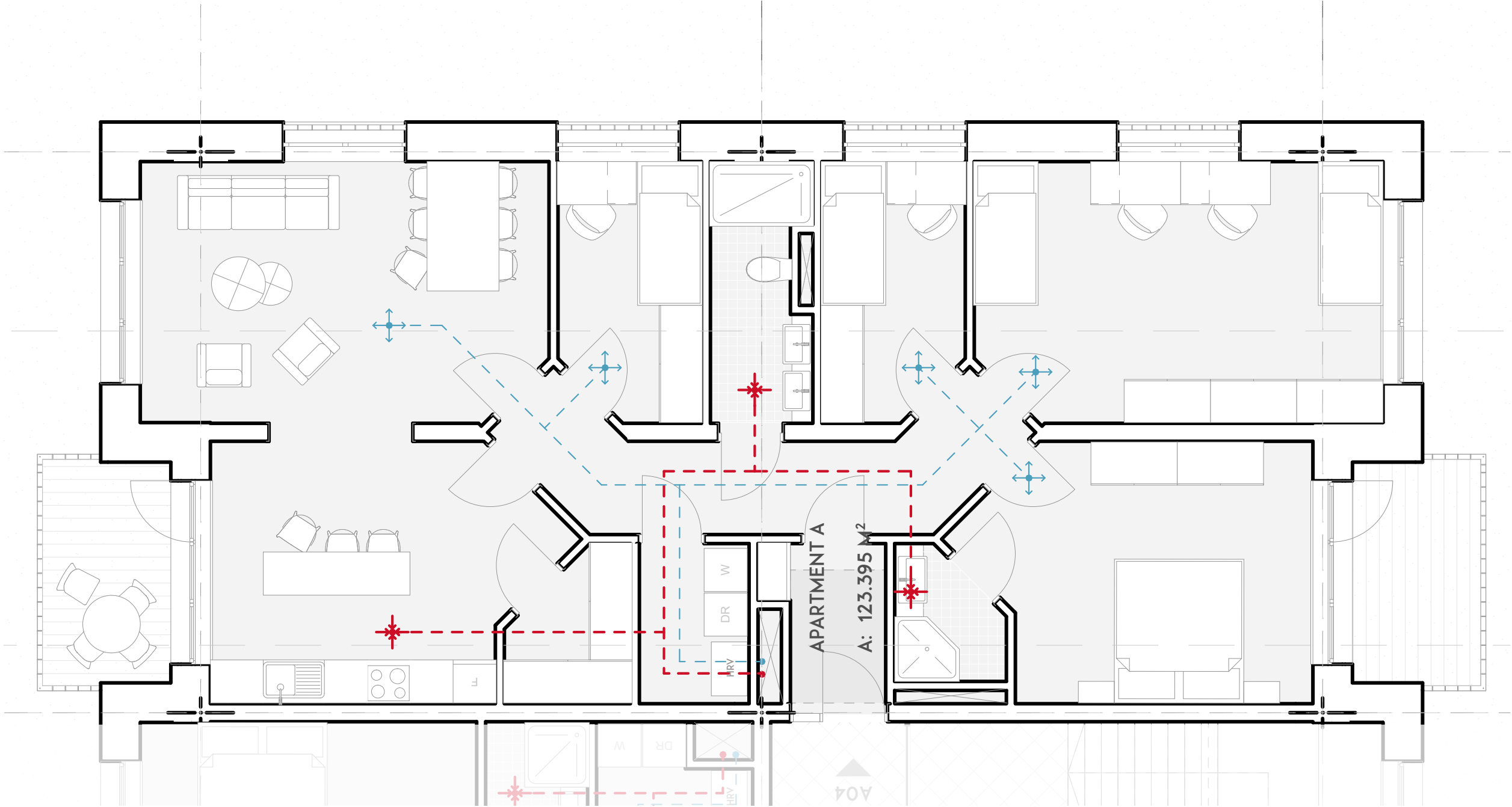


# MECHANICAL VENTILATION AS PART OF HYBRID VENTILATION



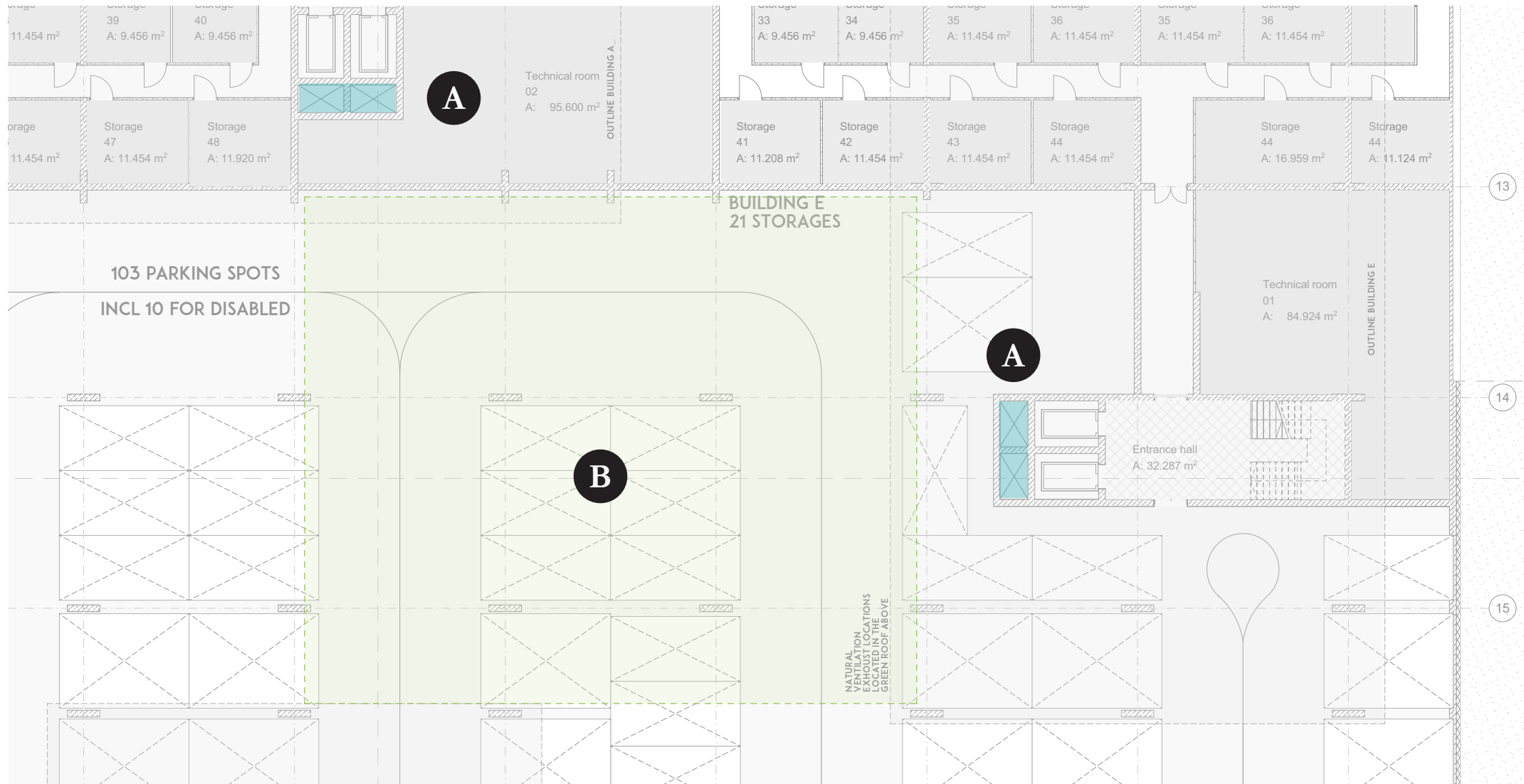


MECHANICAL VENTILATION AS PART OF HYBRID VENTILATION





## UNDERGROUND PARKING VENTILATION



**A** Natural ventilation through shafts leading through the building up to the roof outside

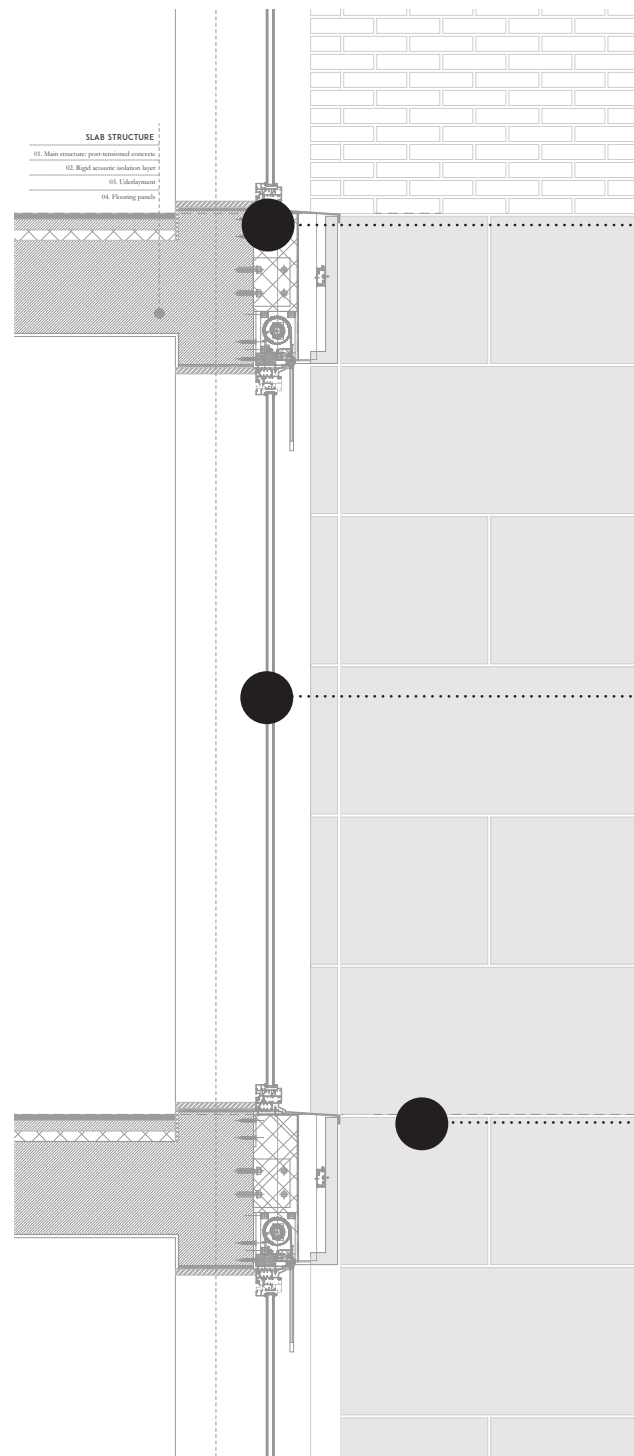
**B** Natural ventilation through special inlets leading through the green roofs of the building courtyard





## NOISE MANAGEMENT

### 01. NOISE ISOLATING PROPERTIES OF CHOSEN MATERIALS AND ELEMENTS



01. **Stone wool** has proven acoustic capabilities that allow it to isolate and control vibrations, thus efficiently absorbing sound and reducing noise.

02. **Triple glazed windows**, with varied glazing thickness, a laminated middle glazing and proper weather-stripping; window blinds.

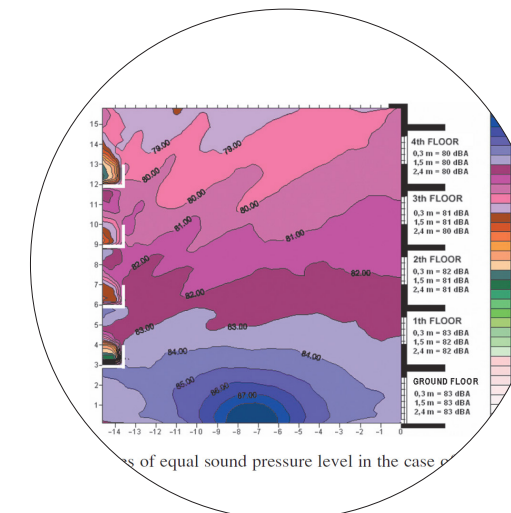
03. - Porous lightweight **concrete façade panels** offer good sound absorption properties, however their sound isolation properties are low. This can be mitigated with proper stone wool isolation

### 02. GREENERY AS A NOISE BARRIER



(A properly designed buffer of trees and shrubs can reduce noise by about five to ten decibels — or about 50 percent as perceived by the human ear, according to the USDA National Agroforestry Center) dense layers of plants to provide optimum noise protection, with use of broadleaf evergreens providing all-year noise reduction.

### 03. FACADE DESIGN



- Staggered façades with full window sills, produce a great positive effect on level difference; with staggers of at least 3 m, the level difference may be greater than 10 dB, but this effect is partially due to the increased distance between the façade plane and the traffic line.
- Balconies shielding the windows from noise source



IMPROVEMENTS

01. MIX OF FUNCTIONS

02. PLACE FOR SOCIAL INITIATIVES

03. LESS DENSITY



04. MORE SPATIOUS APARTMENTS

05. BETTER QUALITY = MORE DURABILITY

06. DIVERSE COMMUNITY



MODEL 1:50





MODEL 1:500





**THANK YOU.**

Magdalena Klimczak

Urban Architecture  
2019/2020