NEW NATURALISM

Cristian Rancati | 4926641

Global Housing Graduation Studio | Addis Ababa Living Lab

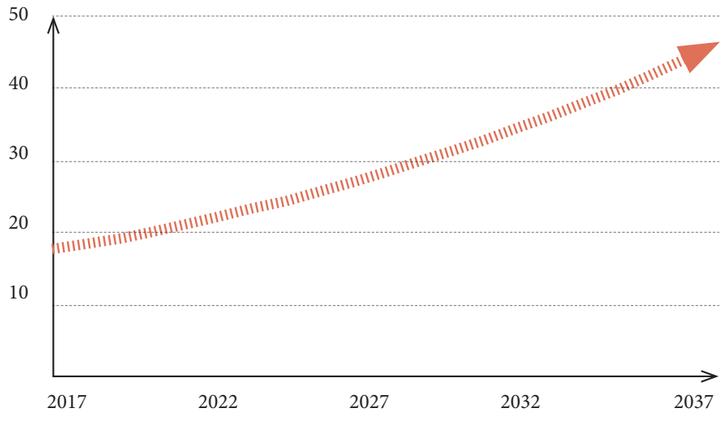
TU Delft | faculty of Architecture and the Built Environment

How can we reconcile the **spirit of the place**, the genius loci, with the **spirit of the time**, the genius saeculi, preserving the values of history and integrating it in the current time, according to a sustainable approach that takes into account the challenges of a continuously expanding city?

THE SPIRIT OF THE TIME

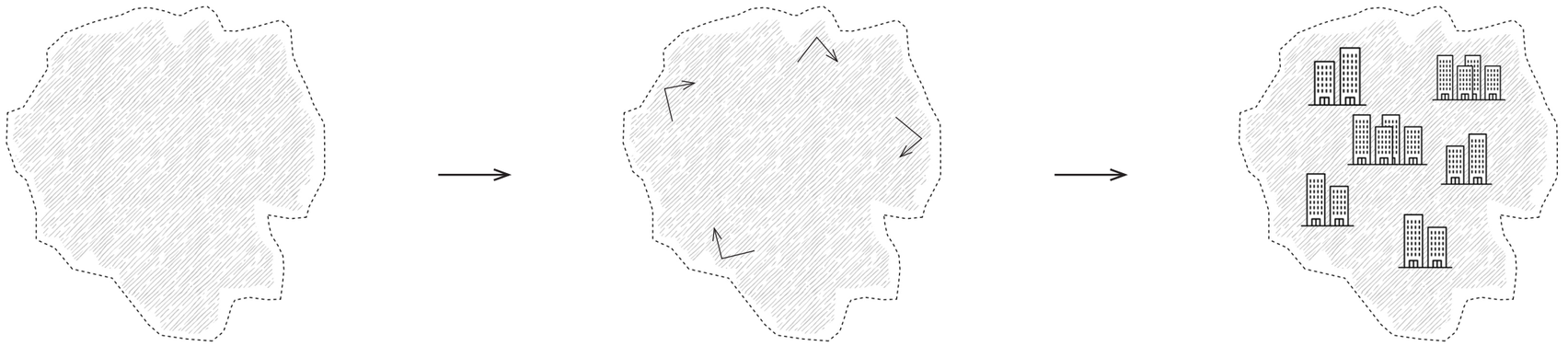
PROBLEM OF URBANIZATION

The rate of urbanization in Ethiopia is expected to increase 5% annually



17 million in 2017 → 50 million in 2037

PROBLEM OF EXPANSION



Addis Ababa's territory

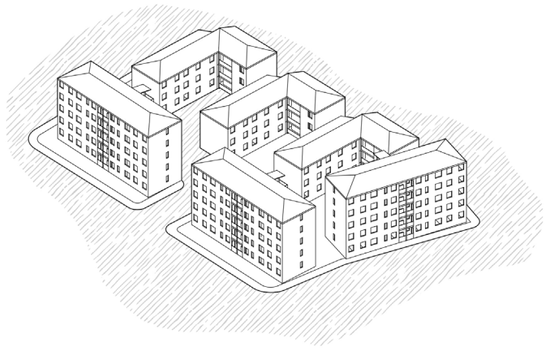
Limited capcity of the borders

As an independent city-state Addis has borderdes that cannot be overcame. Therefore the city is facing with the impossibility of expand horizontally anymore.

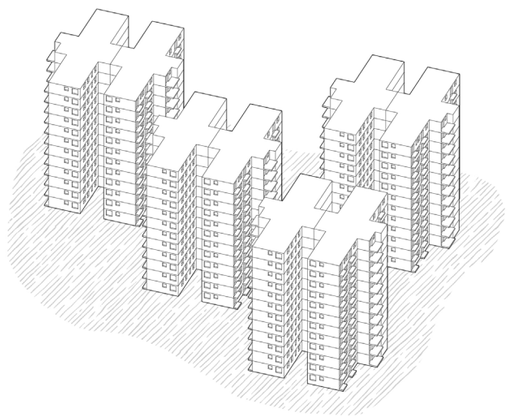
Need for vertical growth

A vertical growth become the only possible solution in order to tackle the unregulated increase of the urban population

INTEGRATED HOUSING DEVELOPMENT PROGRAM



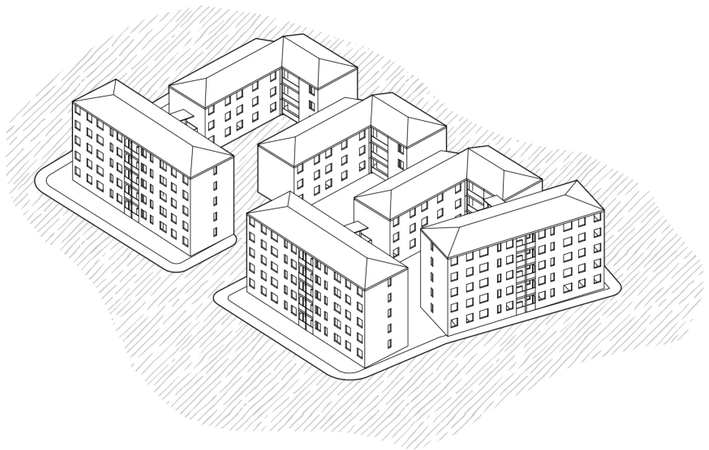
condominium blocks for
mid-low income people



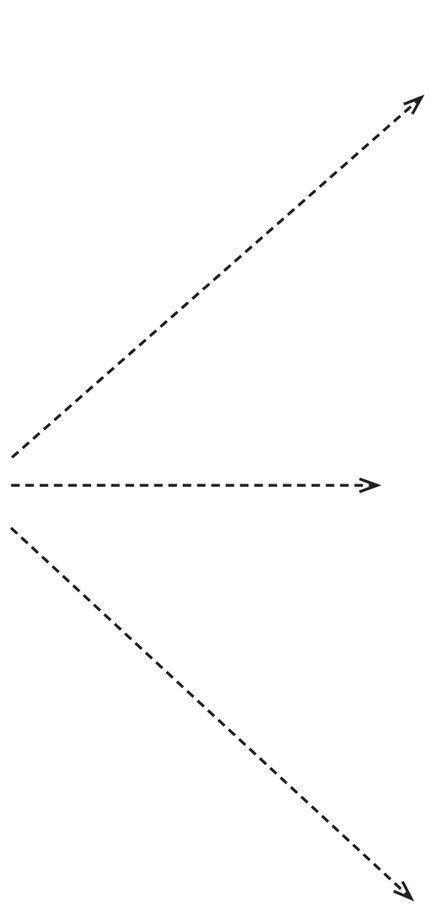
condominium blocks for
mid-high income people

In order to tackle the problem related with the fast rate of urbanization and with the horizontal expansion of the city, the Governament introduced the IHDP. This model consist in the realization of condominium blocks divided in three categories related to different social classes.

The condominium model | **PROS**



The condominium model has shown to be able to improve the quality of life of thousands of people.

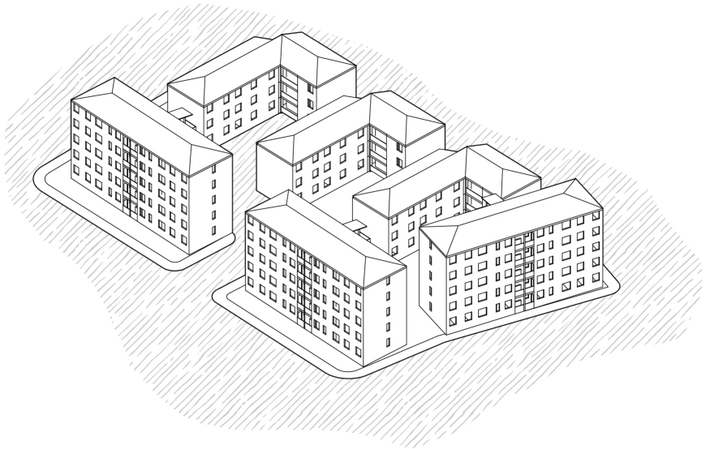


greater density

better sanitation

improved security

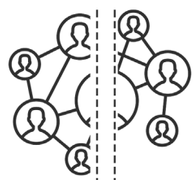
The condominium model | **CONS**



Despite its success the condominium model has shown also some problems, mainly related with the fact that is a model imported from abroad and therefore presents critical issues in the relation with the context and with inhabitants life style.

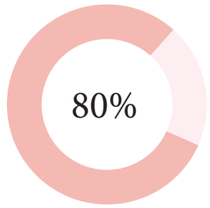
eviction

not affordable for everybody

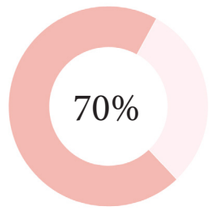


disruption of
socio-economical network

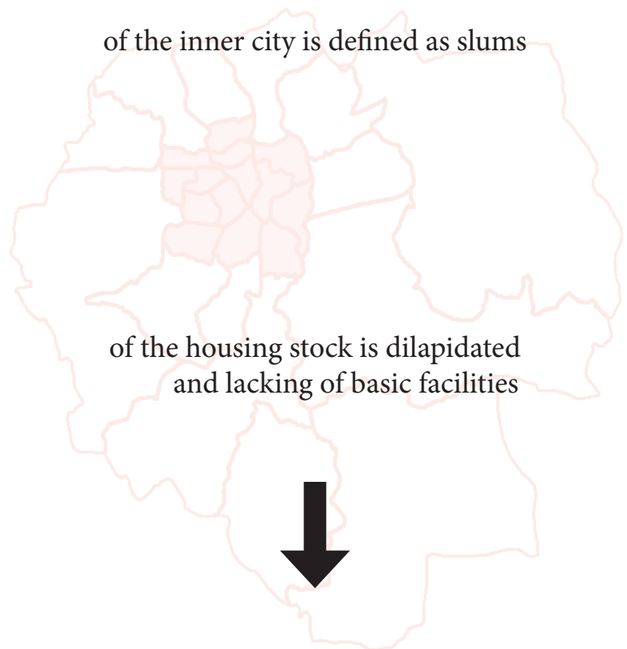
THE SITUATION IN THE OLD SEFERS



of the inner city is defined as slums

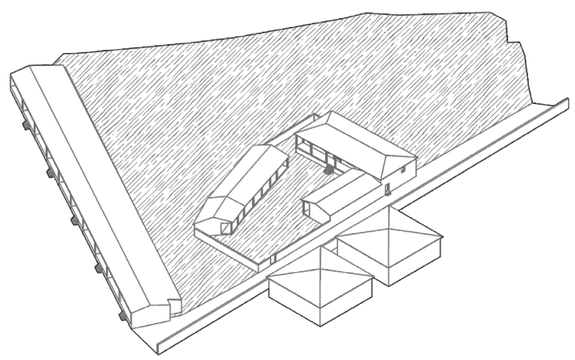


of the housing stock is dilapidated
and lacking of basic facilities

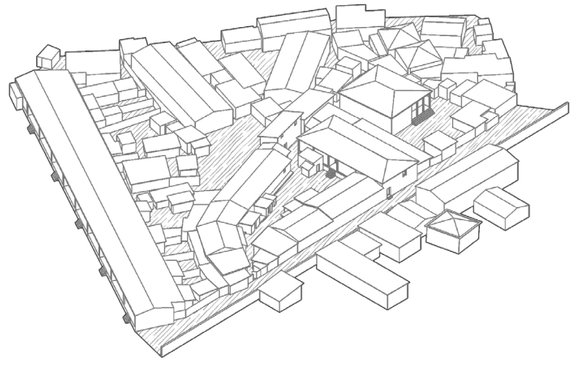


In the last decades the City Administration has exproprated 392he of inner-city land, demolishing a total of 23.151 houses

THE SITUATION IN THE OLD SEFERS

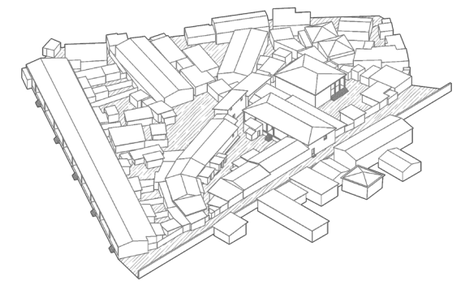


original configuration

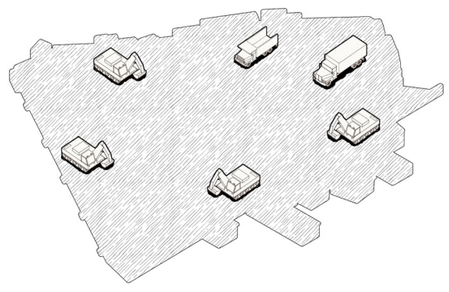


today's configuration

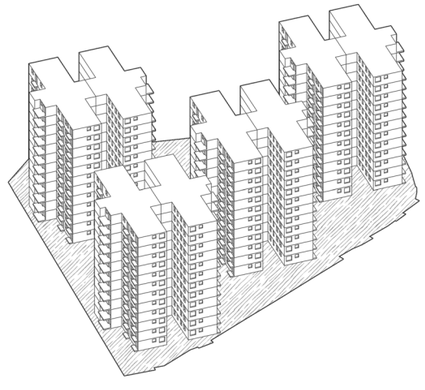
THE SITUATION IN THE OLD SEFERS



current situation



tabula rasa approach



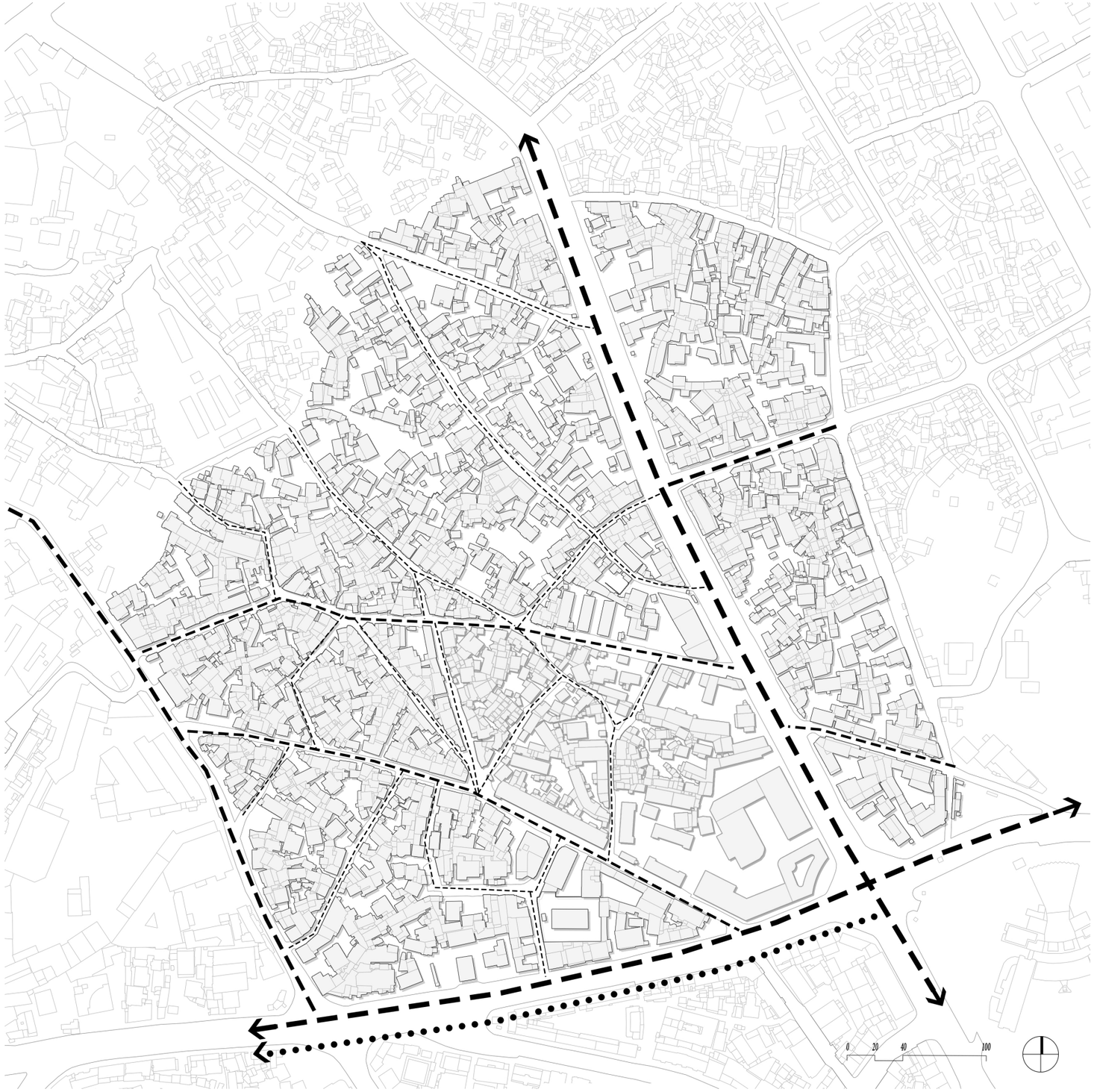
construction of comndominium blocks

This approach despite is succesfull in improving security and sanitation, brings to the loss of identity of the place, to the loss of the tangible and intable heritage.

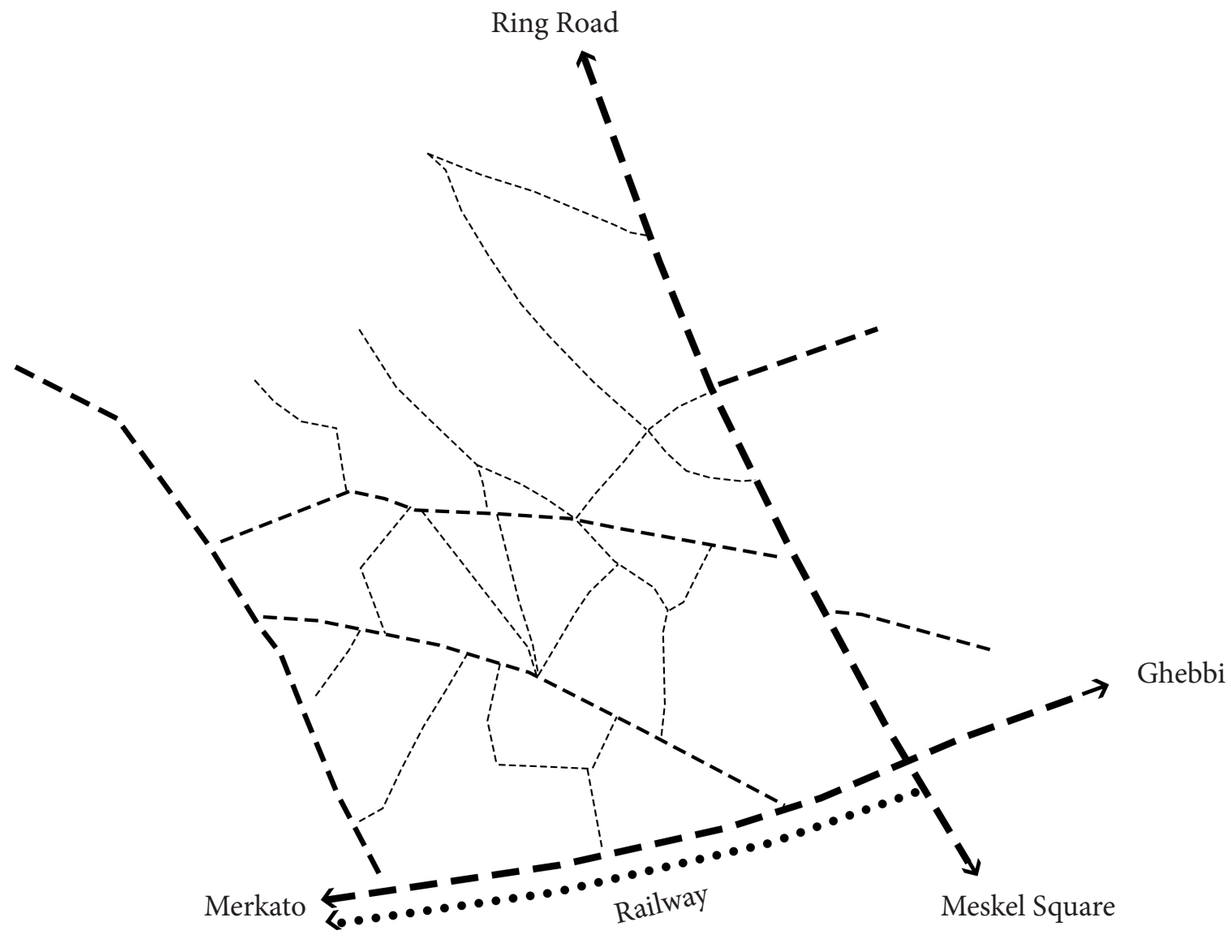
But what is the identity of Taliyan Sefer?

THE SPIRIT OF THE PLACE


Talyian / Piassa
Merkato
Ghebbi
Meskel Square
Ring Road
Bole Airport
Light Railway
Lideta Airport

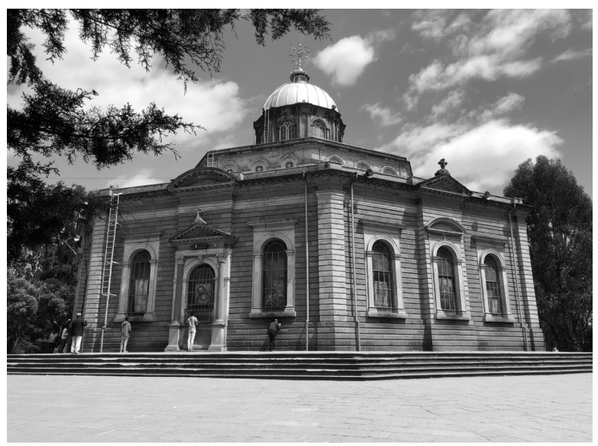

0
20
40
100

Urban framework & connection



Historical buildings

Public buildings



The choice of the site

DATA

Surface | 4 ha (university 0,9 ha)

FAR | 0,5

Coverage | 50%

n° inhabitants (Atlas) | 990

Inhabitants/ha | 319

n° dwelling units (Atlas) | 248

Units/ha | 80

Buildings height | 1-2 storeys

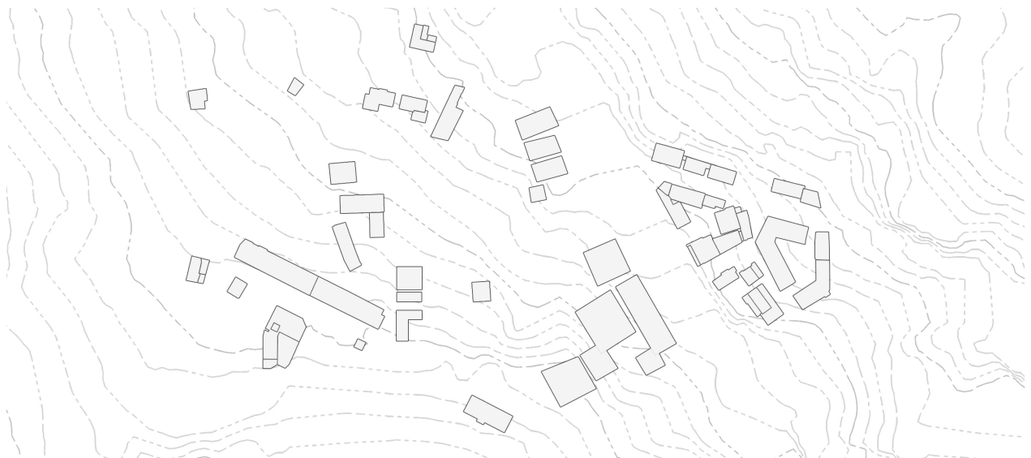
TOPOGRAPHY

section a-a

section b-b

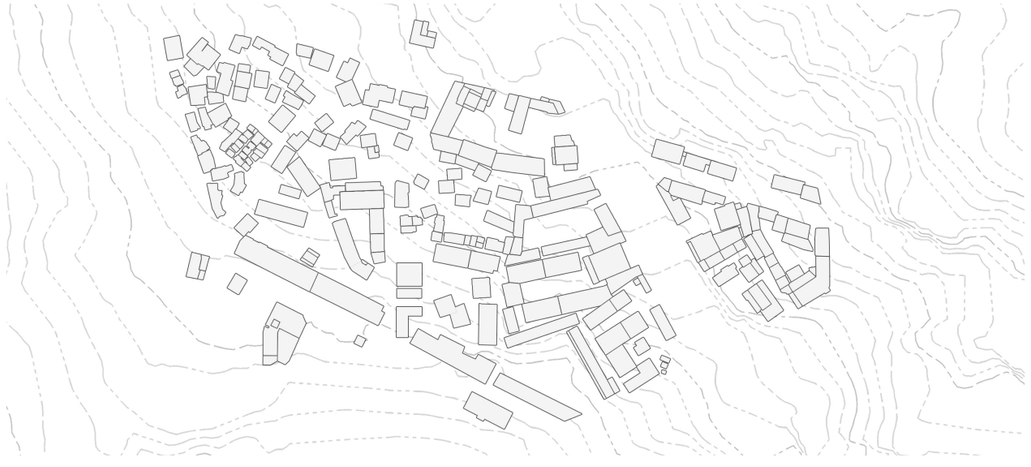
section c-c

HISTORICAL STRATIFICATION



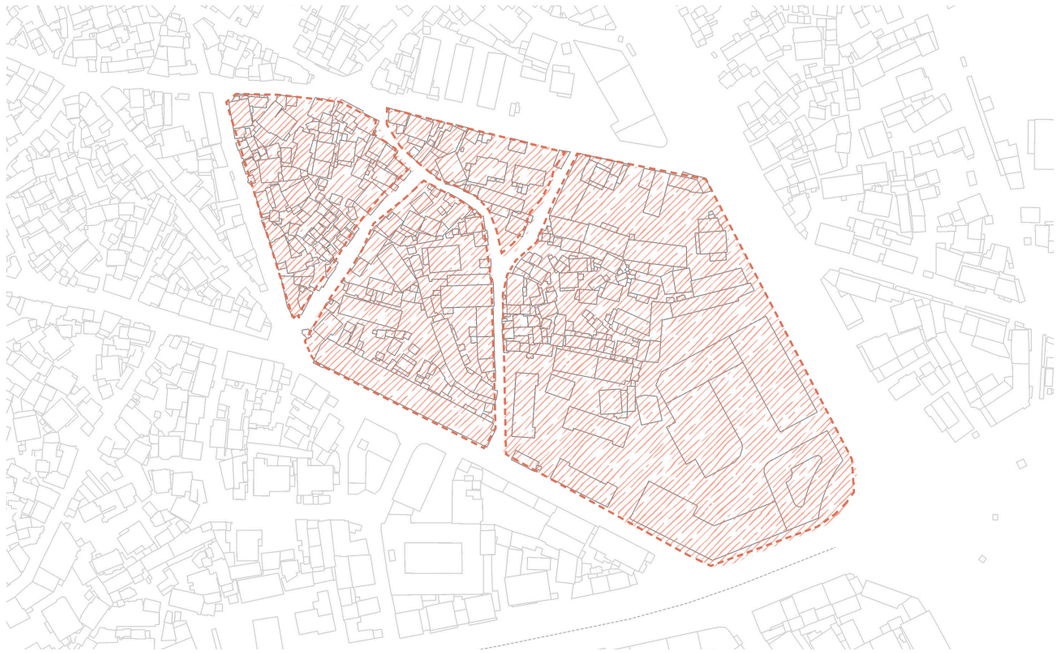
1930 - Italian period

2000 - The informal city



1980 - Derg regime period

2020 - Last developments



high traffic street

low traffic street

pedestrian street

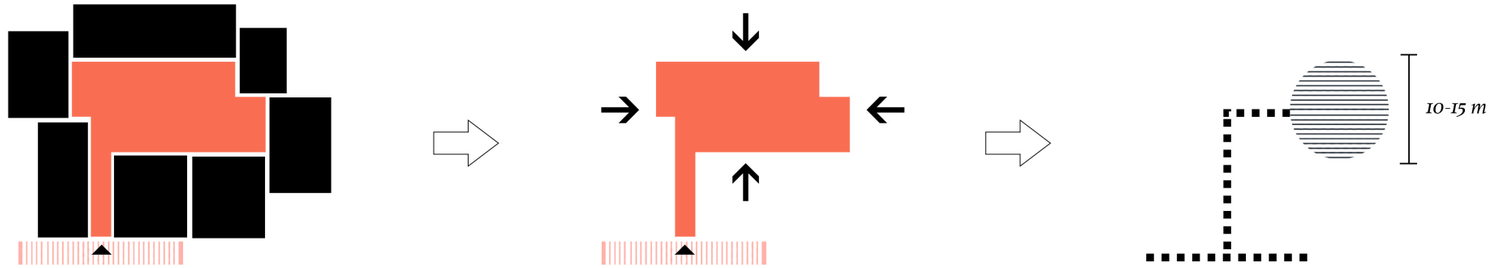
COMPOUNDS' HETEROGENEITY

courtyard compounds

pocket compounds

patio compounds

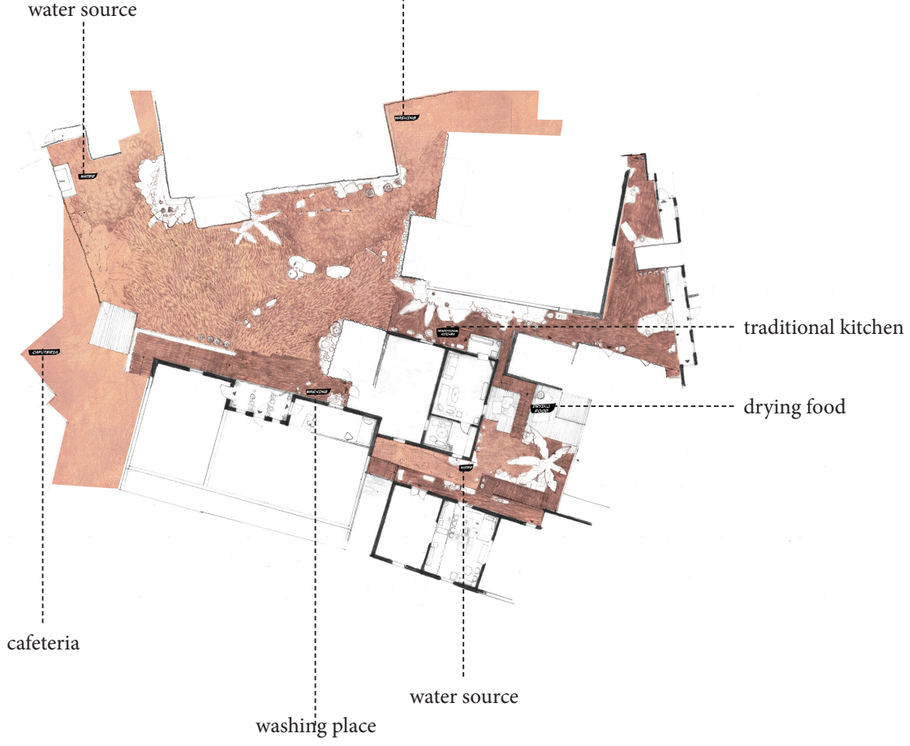
Courtyard compound



schematic representation

Open space

collective space



DATA

Total surface | 1580 sqm

Built surface | 1058 sqm

Collective area | 522 sqm

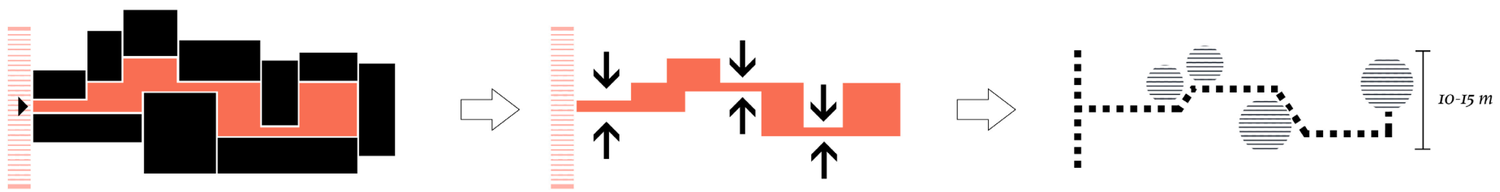
n° inhabitants | ?

n° families | ?

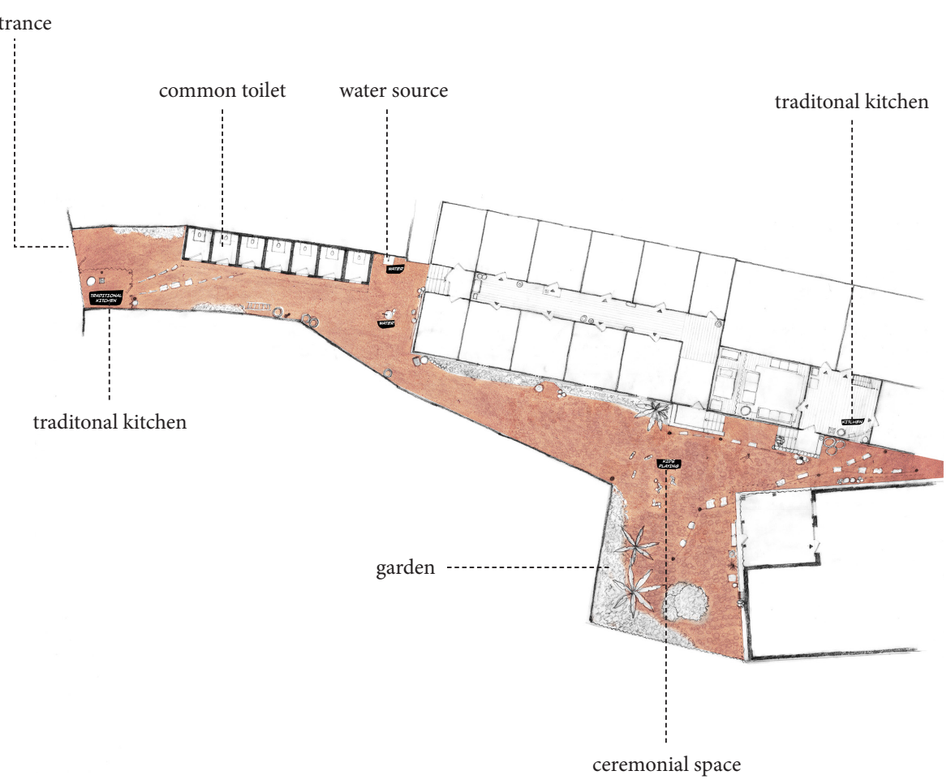
Collective area/person | ?

Floor area/person | ?

Pocket compound



schematic representation | compressione & decompression | fragmented collective space



DATA

Total surface | 1120 sqm

Built surface | 599 sqm

Collective area | 521 sqm

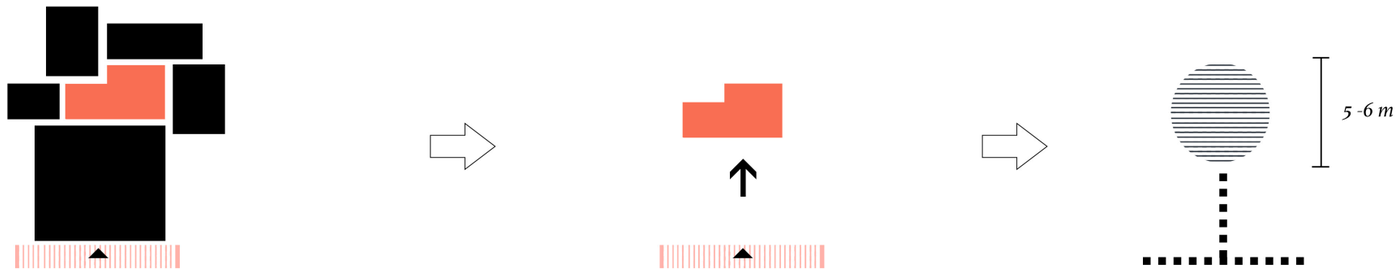
n° inhabitants | 60/80

n° families | 16

Collective area/person | 7,3 sqm

House area/person | 4-5 sqm

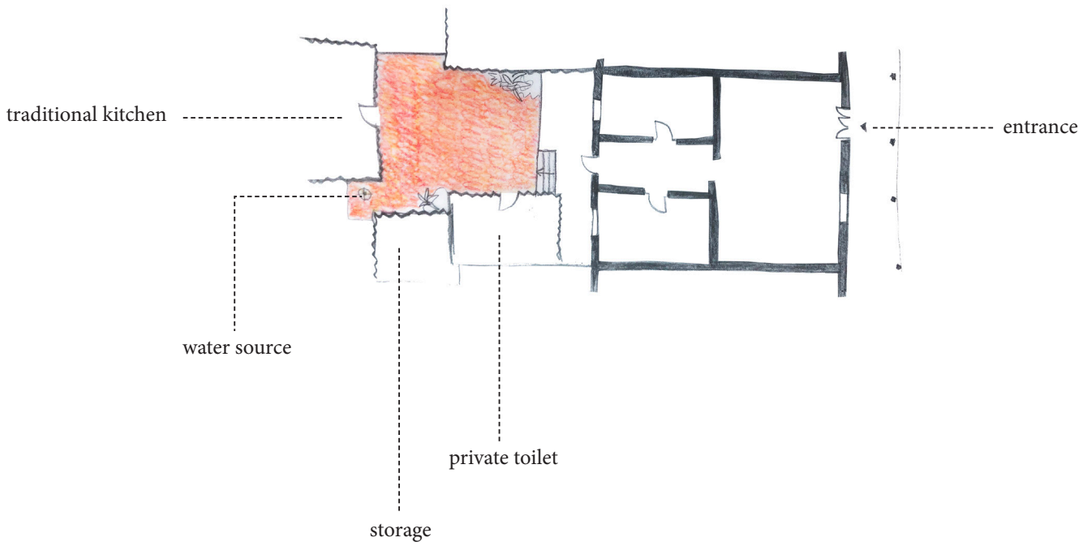
Patio compound



schematic representation

compressione & decompression

fragmented collective space



DATA

Total surface | 223 sqm

Built surface | 177 sqm

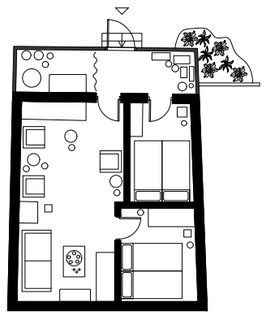
Collective area | 46 sqm

n° inhabitants | 5

n° families | 1

Outdoor area/person | 9,2 sqm

House area/person | 35 sqm



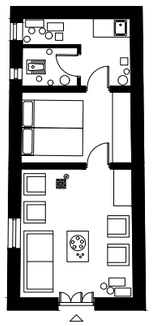
DATA

n° of people | 7

floor surface | 44 sqm

floor surface/person | 6,3 sqm

rent | 63 birr/month



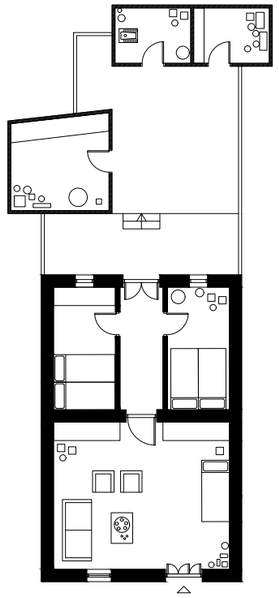
DATA

n° of people | 5

floor surface | 33 sqm

floor surface/person | 6,6 sqm

rent | 123 birr/month



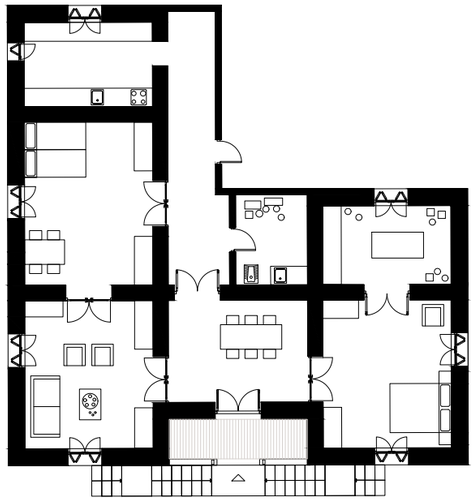
DATA

n° of people | 7

floor surface | 69 sqm

floor surface/person | 9,8 sqm

rent | 230 birr/month



DATA

n° of people | 2

floor surface | 140 sqm

floor surface/person | 70 sqm

private owner

SOCIAL DIVERSITY

Condominium blocks 20/80

minimum rent

3500 birr/month

median rent

5000 birr/month

maximum rent

8000 birr/month

+230%

Taliyan Sefer

minimum rent

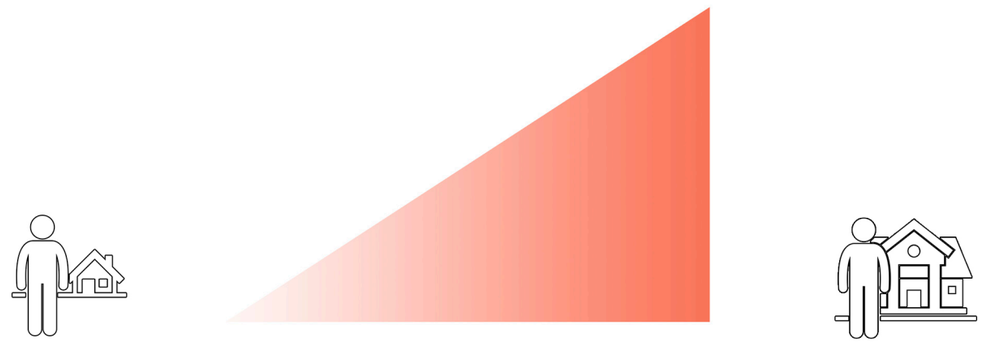
16 birr/month

median rent

70 birr/month

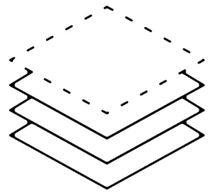
maximum rent

520 birr/month

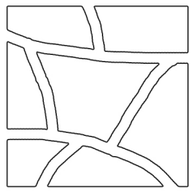


+3200%

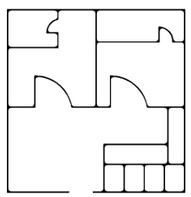
TOPOGRAPHY



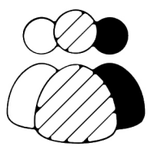
HISTORICAL STRATIFICATION



HETEROGENEUS URBAN BLOCKS & COMPOUNDS



DIVERSITY IN DWELLING UNITS

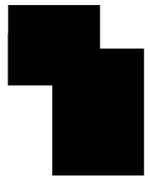


SOCIAL DIVERSITY

How to recreate the hetereogeneity that characterizes Taliyan Sefer only by using few basic components, able to adapt to the existing context but at the same time providing a flexible system, replicable in other similar situations?

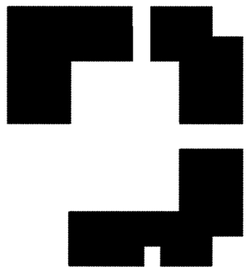
Basic components

"**T shaped**" components

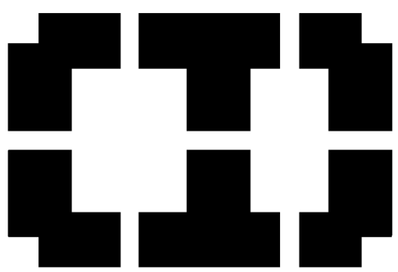


"**L shaped**" components 1

"**L shaped**" components 2

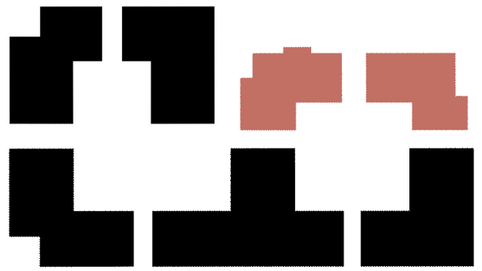


Open courtyard

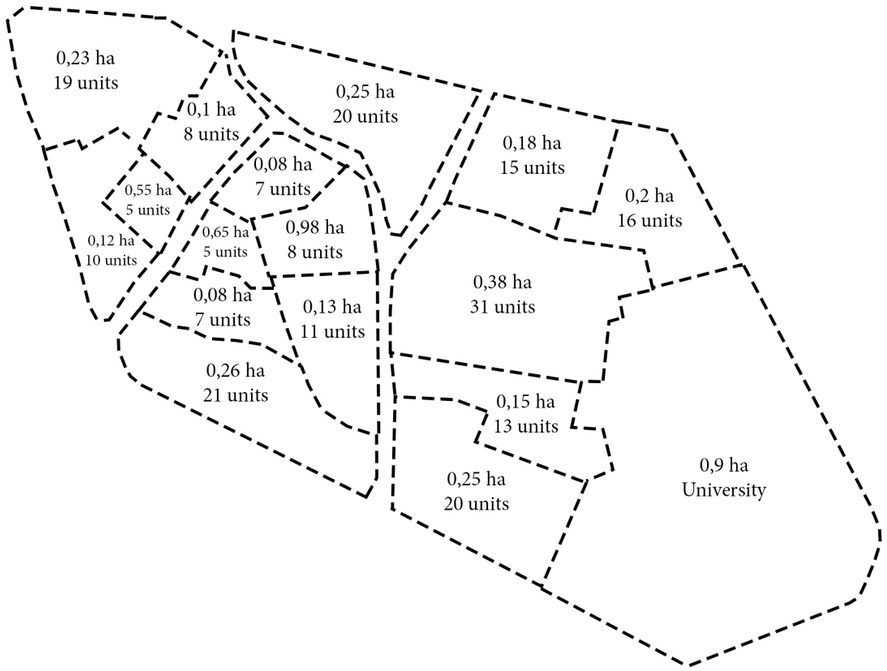


Enclosed courtyard

Relation with existing building



Relation with two existing buildings



CONSTRUCTION PHASING

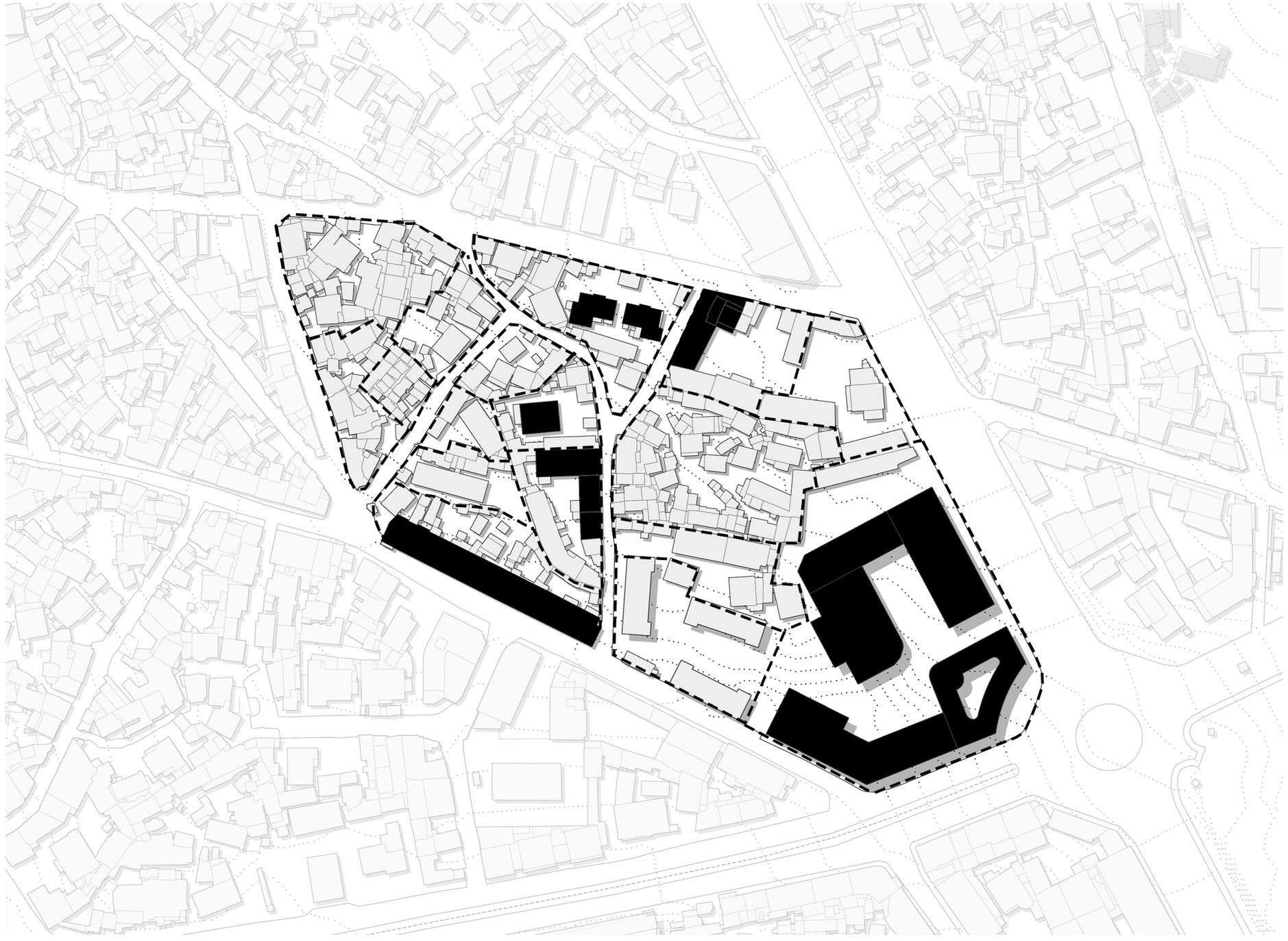
In order to avoid a tabula rasa approach and the consequent eviction of thousands of people from the area, like for instance happens with the construction of condominium blocks, the project needs to be developed through time in well defined phases.

The striking feature of this approach is that each part of project needs to be independent from the others. In this way, in the worst case scenario in which only one or two parts of the project will be developed, they will be functioning without any kind of problem or lacks.

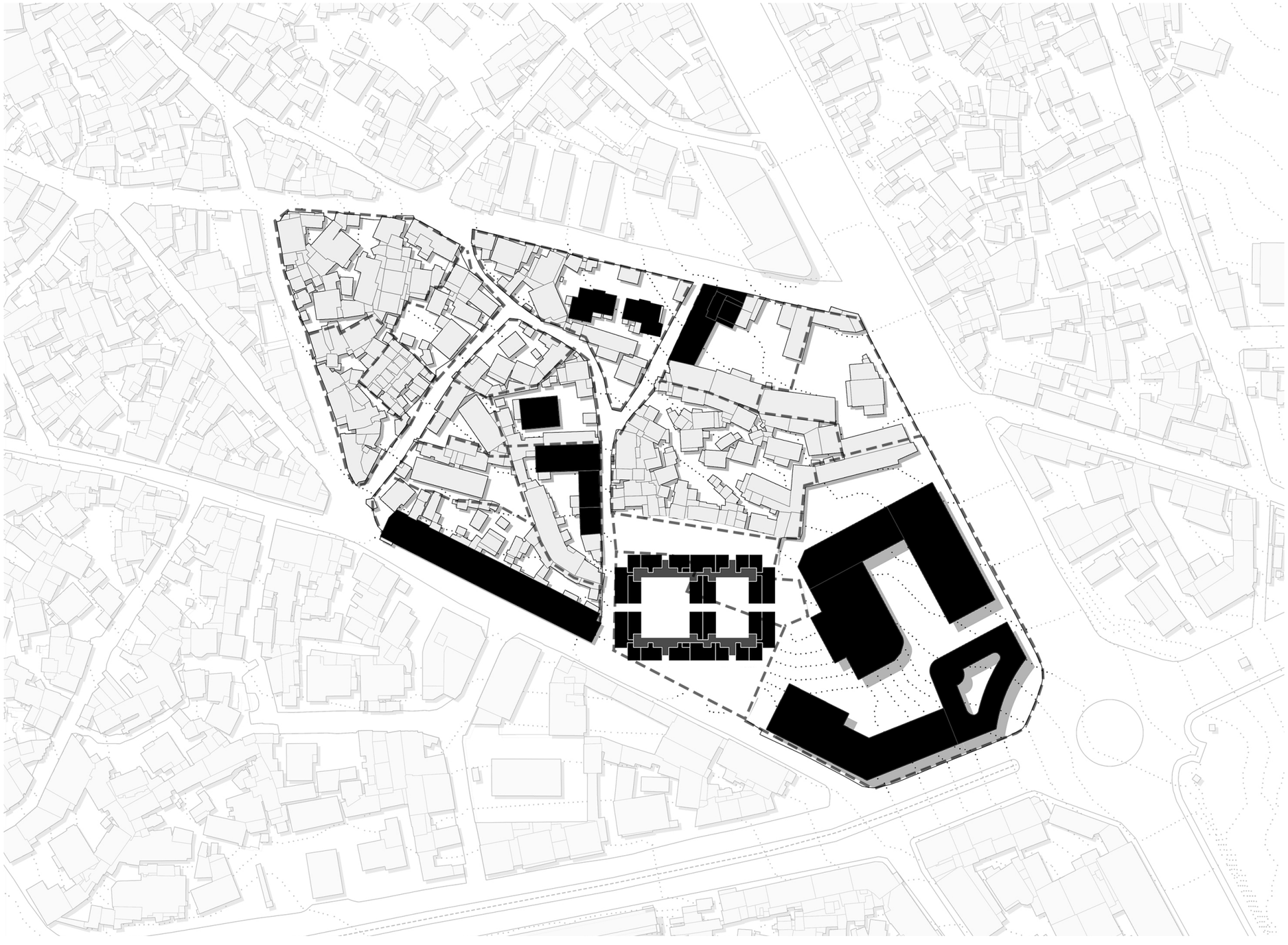
The phasing for the demolition and the construction will start from the lower part of the site, along the commercial street, in order to give a first image of renewed historical center to the people that cross the area, but also because commercial activities placed at the ground floor are the first source of revenues for the development of the project.

The second reason to start with the construction from that specific place is because even the parking, which will be place underneath the buildings, will be realized though time, following the same phases, and in that point we have the only access possible to enter in such space.

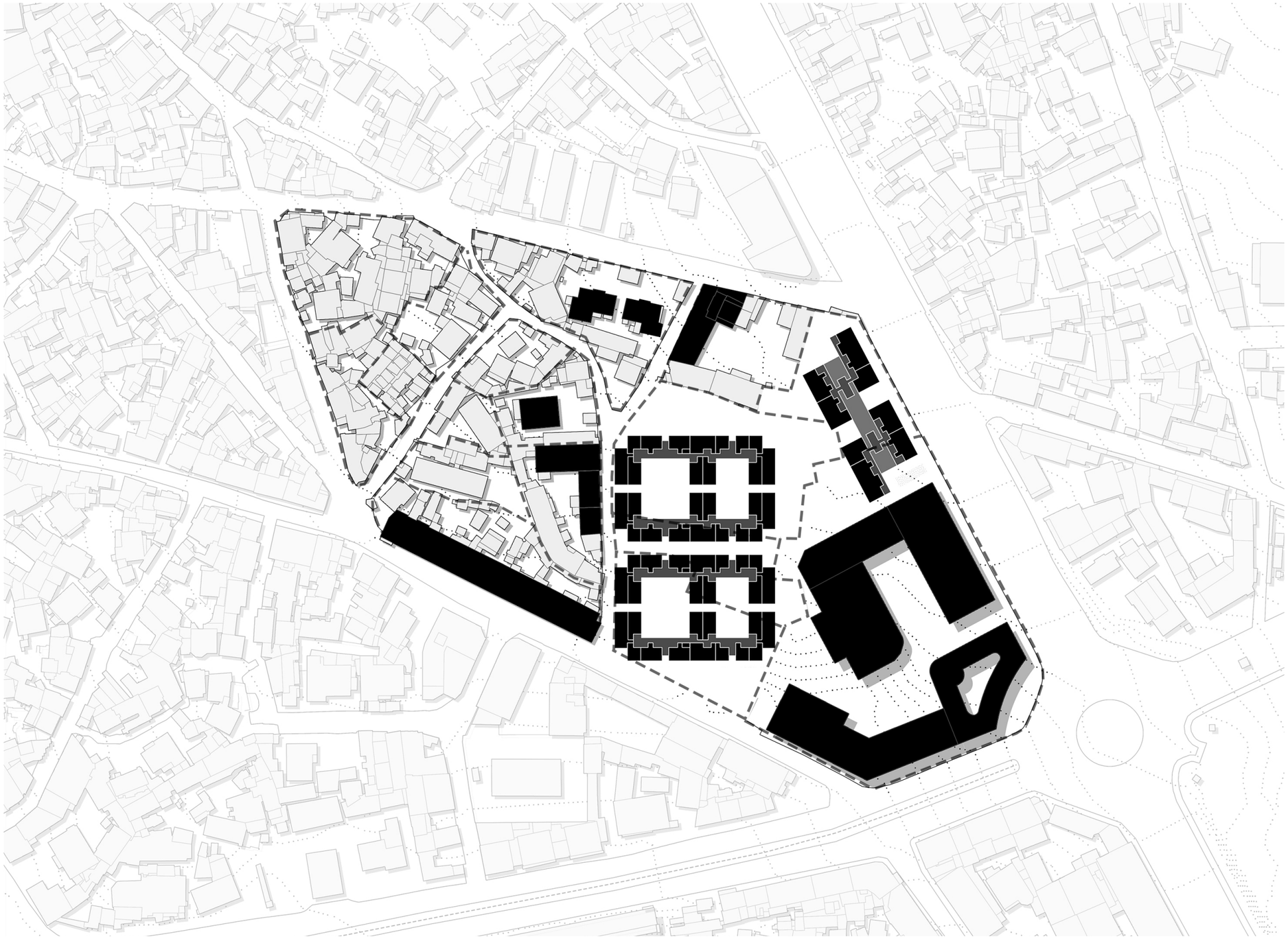
Defining the parcels



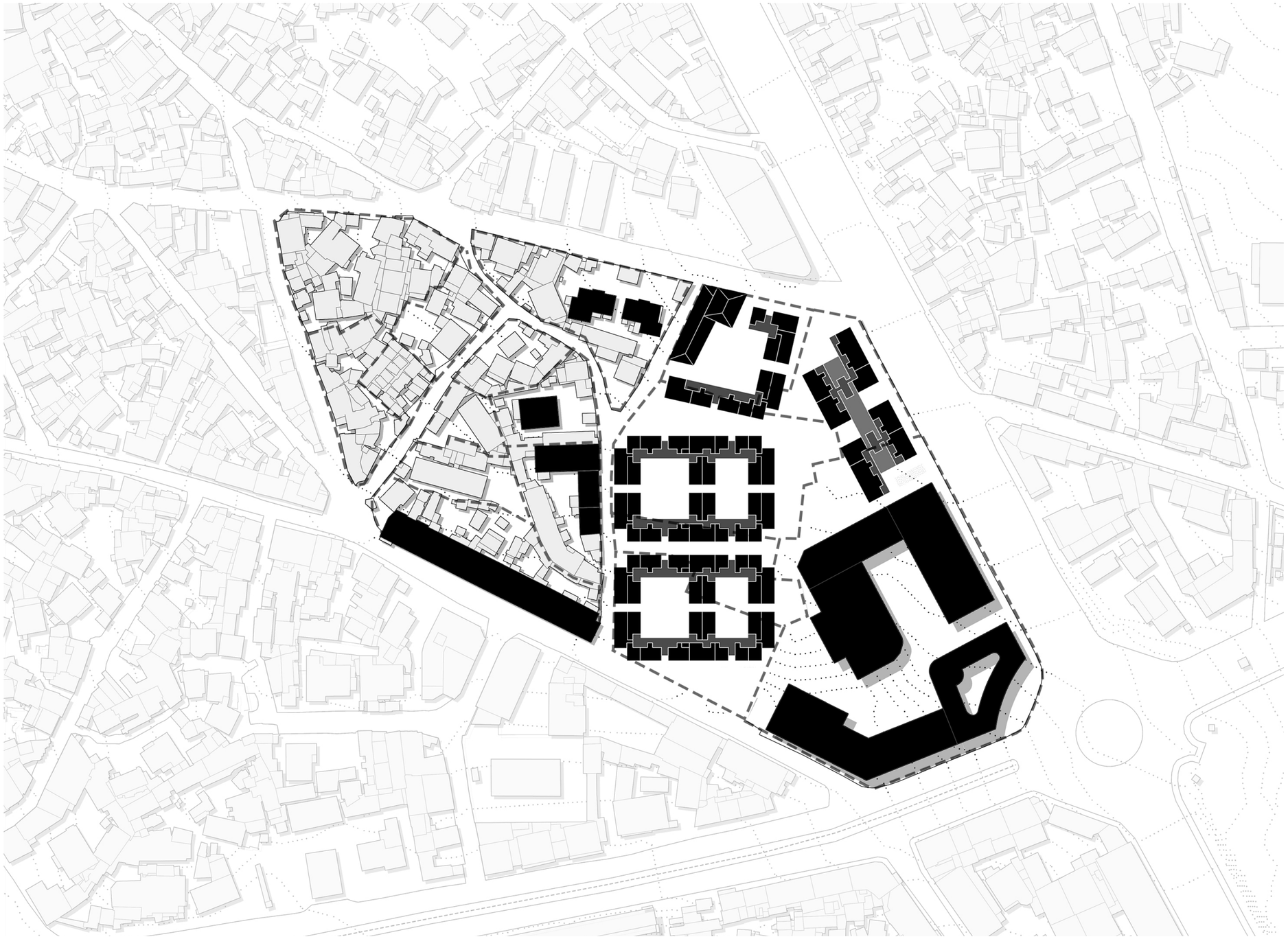
Existing building to preserve



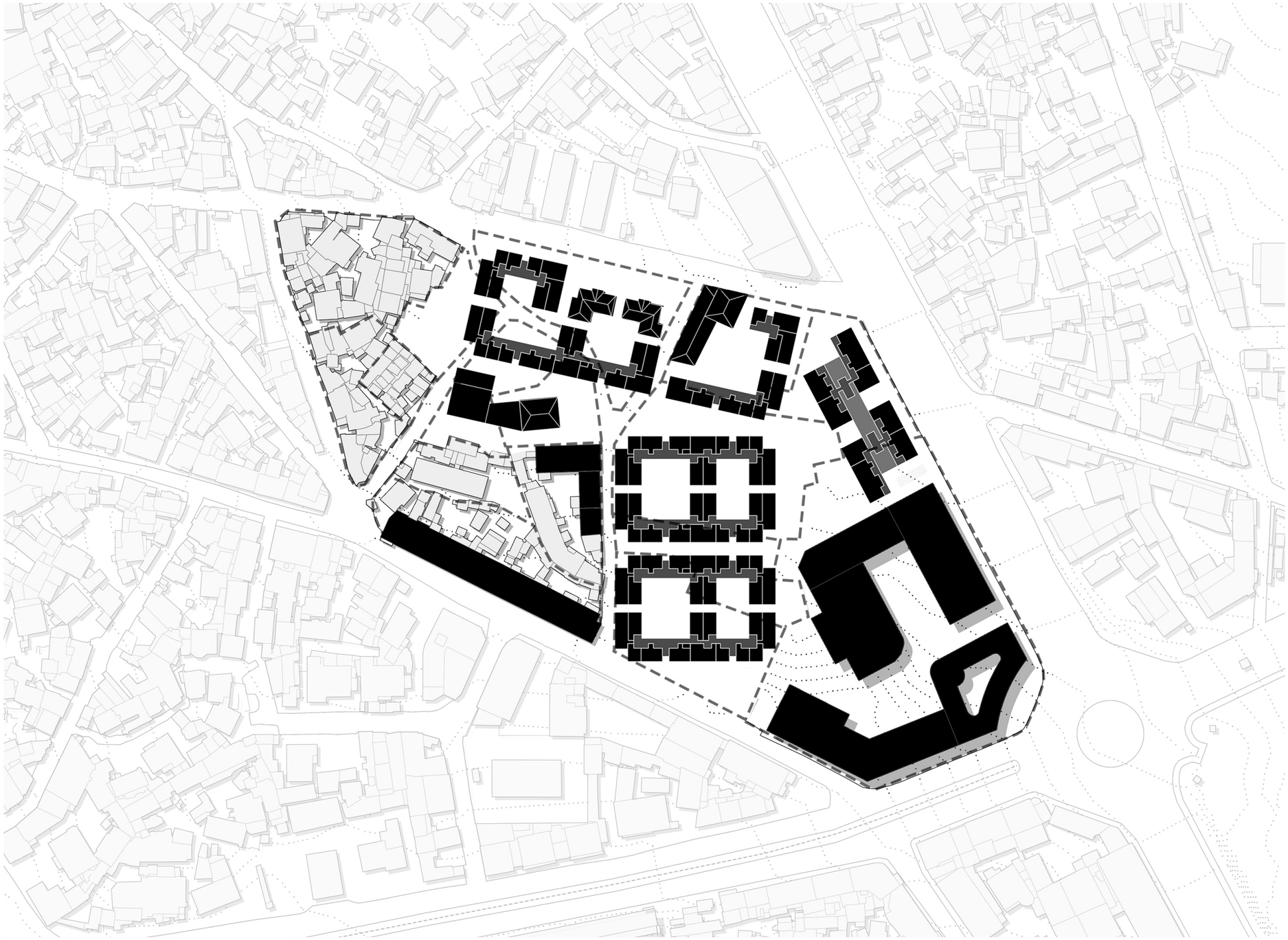
PHASE 1 | Demolition 13 units - construction 96 units



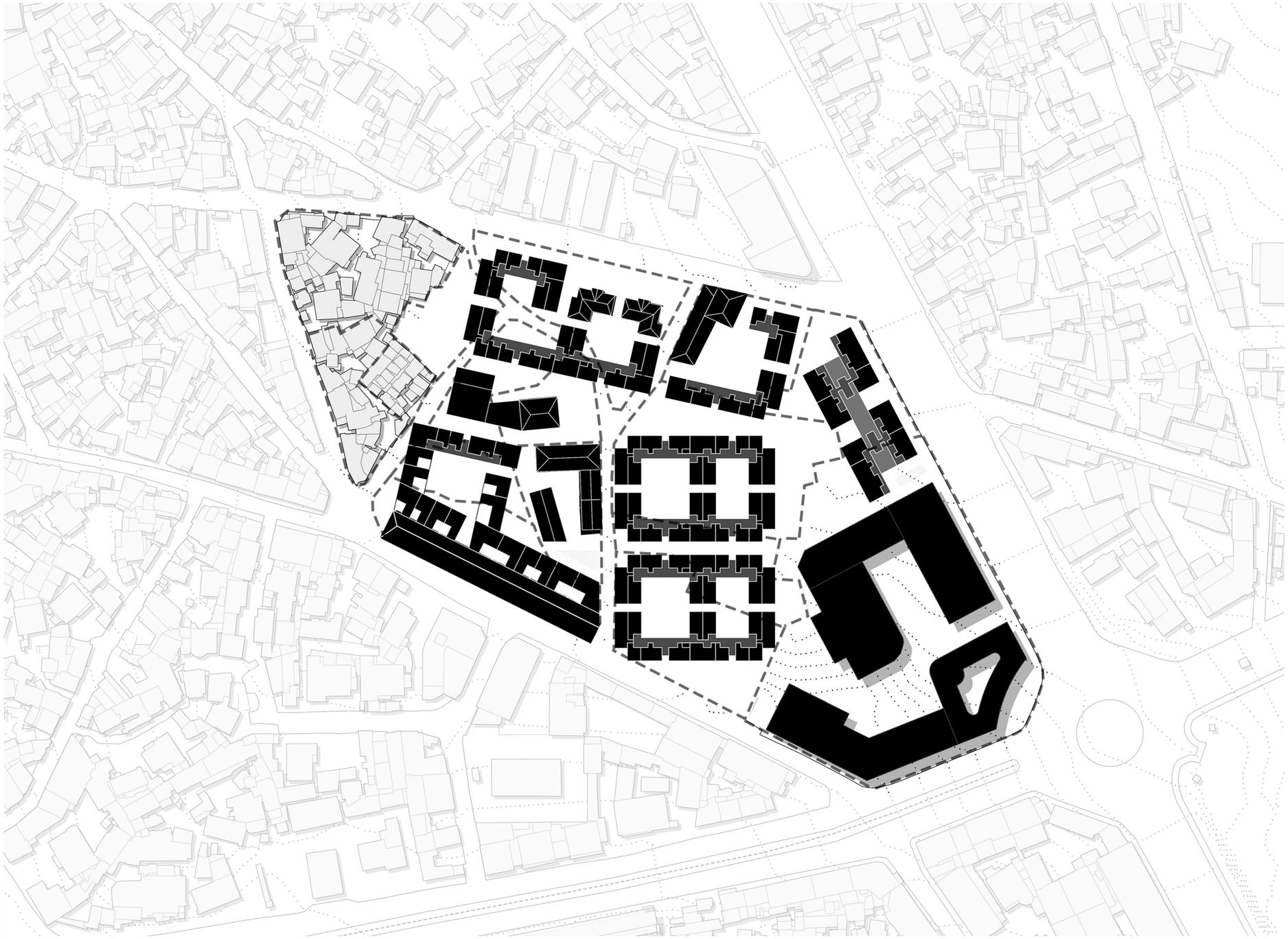
PHASE 2 | Demolition 47 units - construction 140 units



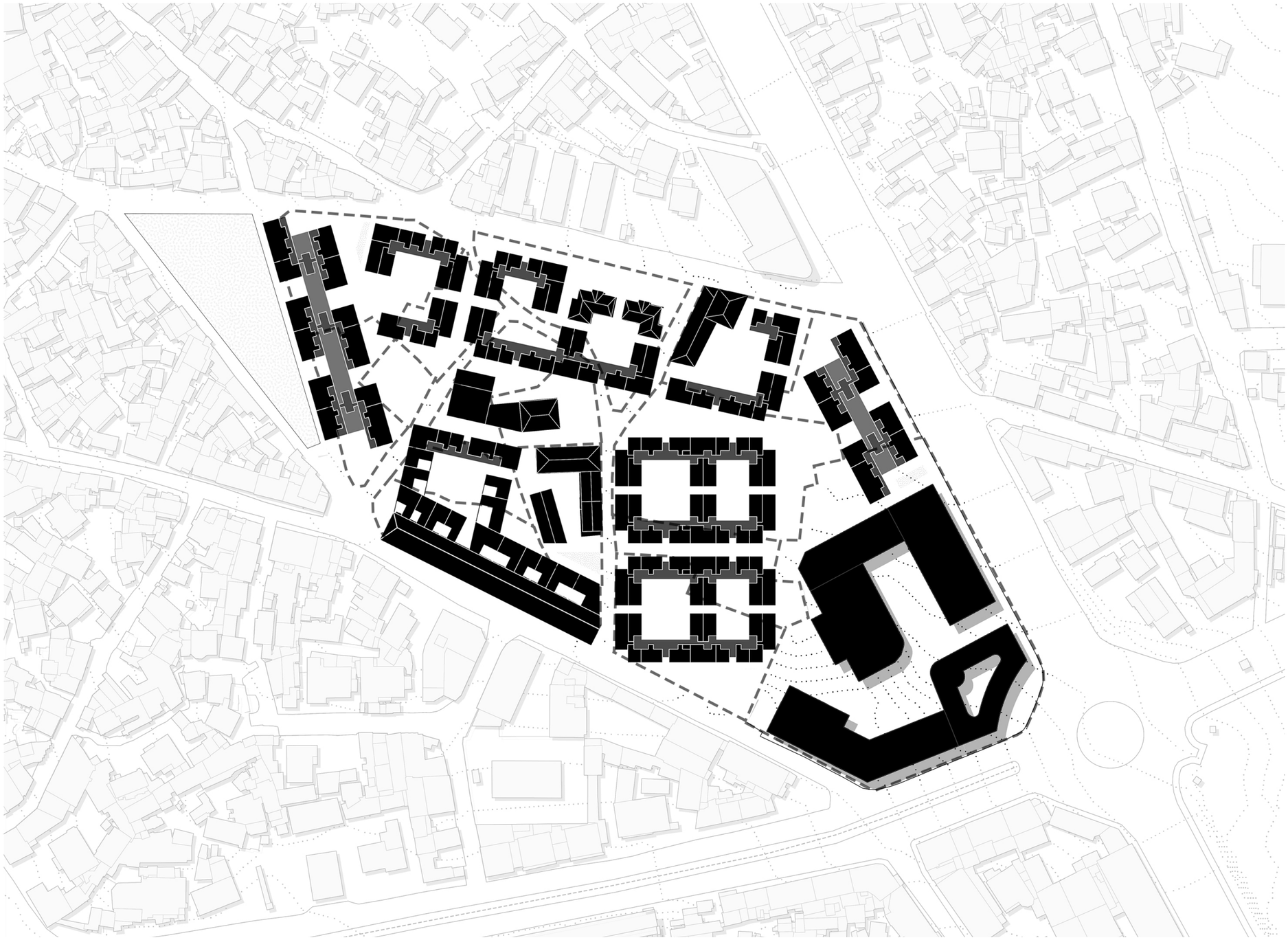
PHASE 3 | Demolition 15 units - construction 42 units



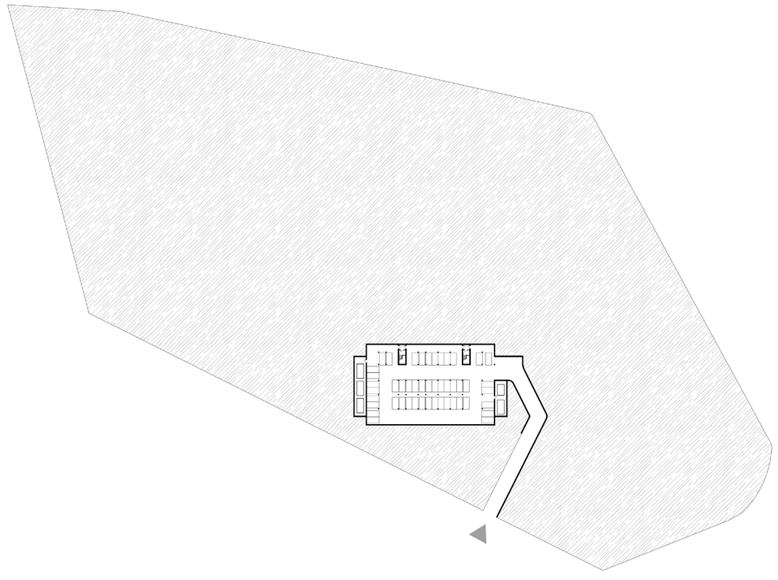
PHASE 4 | Demolition 48 units - construction 86 units



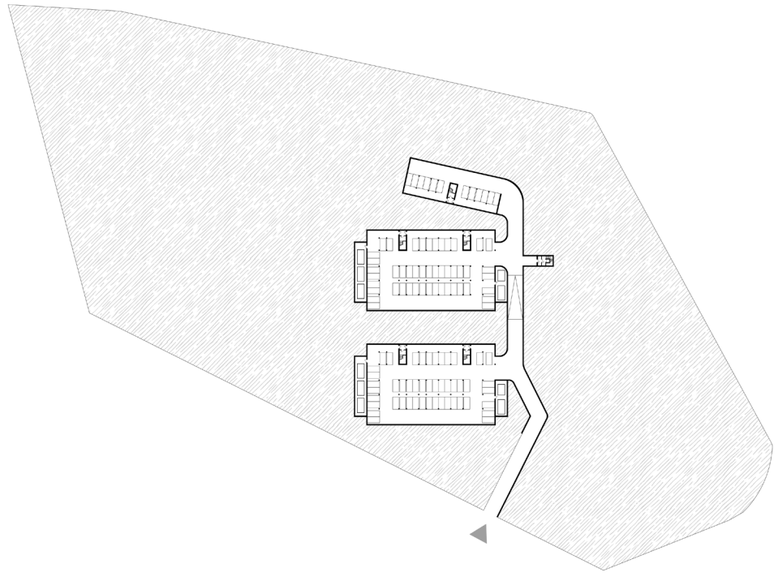
PHASE 5 | Demolition 39 units - construction 24 units



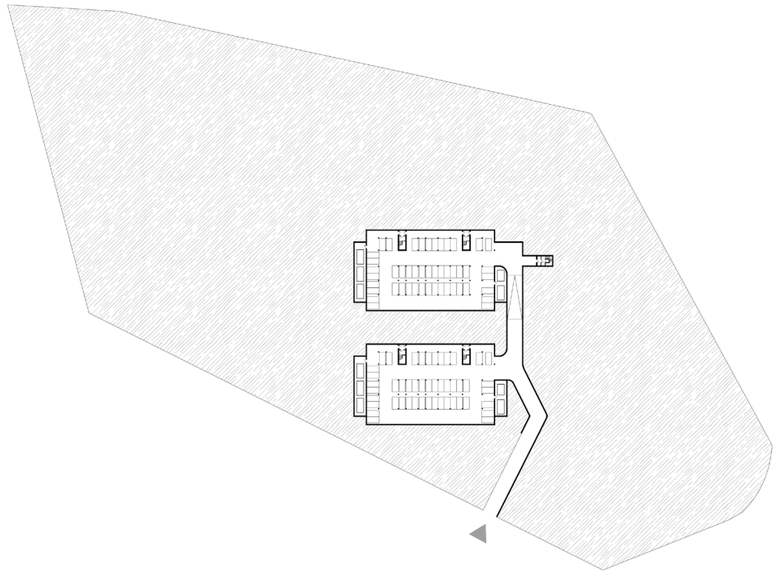
PHASE 6 | Demolition 42 units - construction 131 units



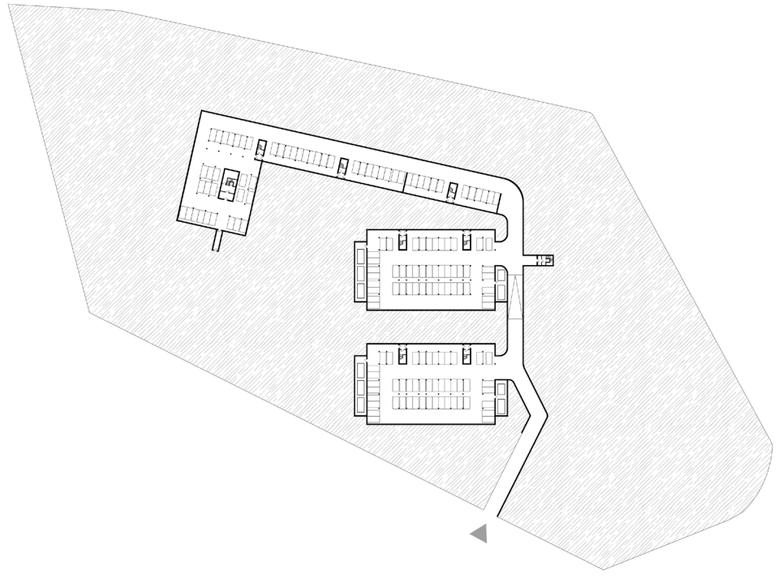
PHASE 1 | + 48 parking lots



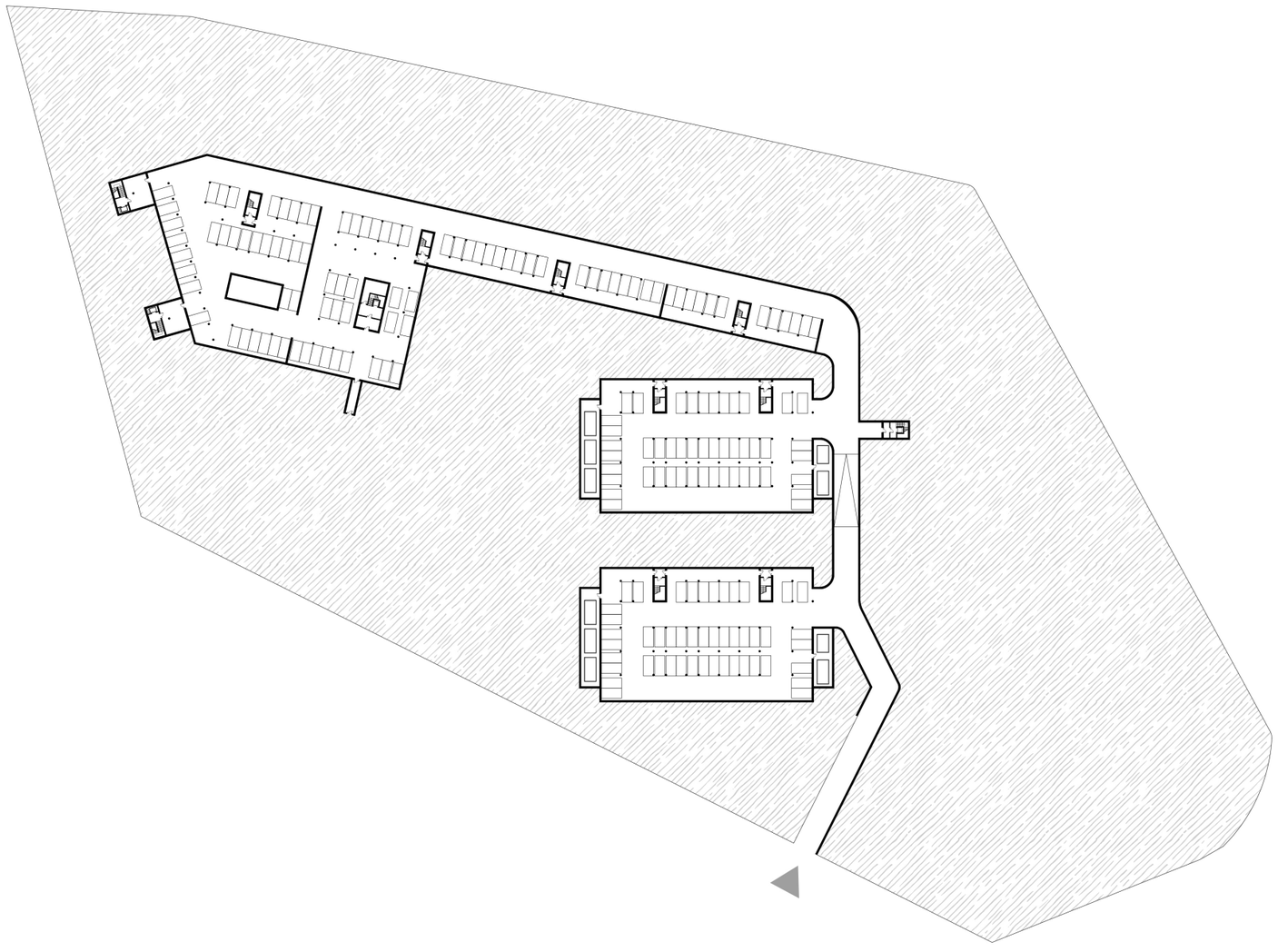
PHASE 3 | + 12 parking lots



PHASE 2 | + 48 parking lots



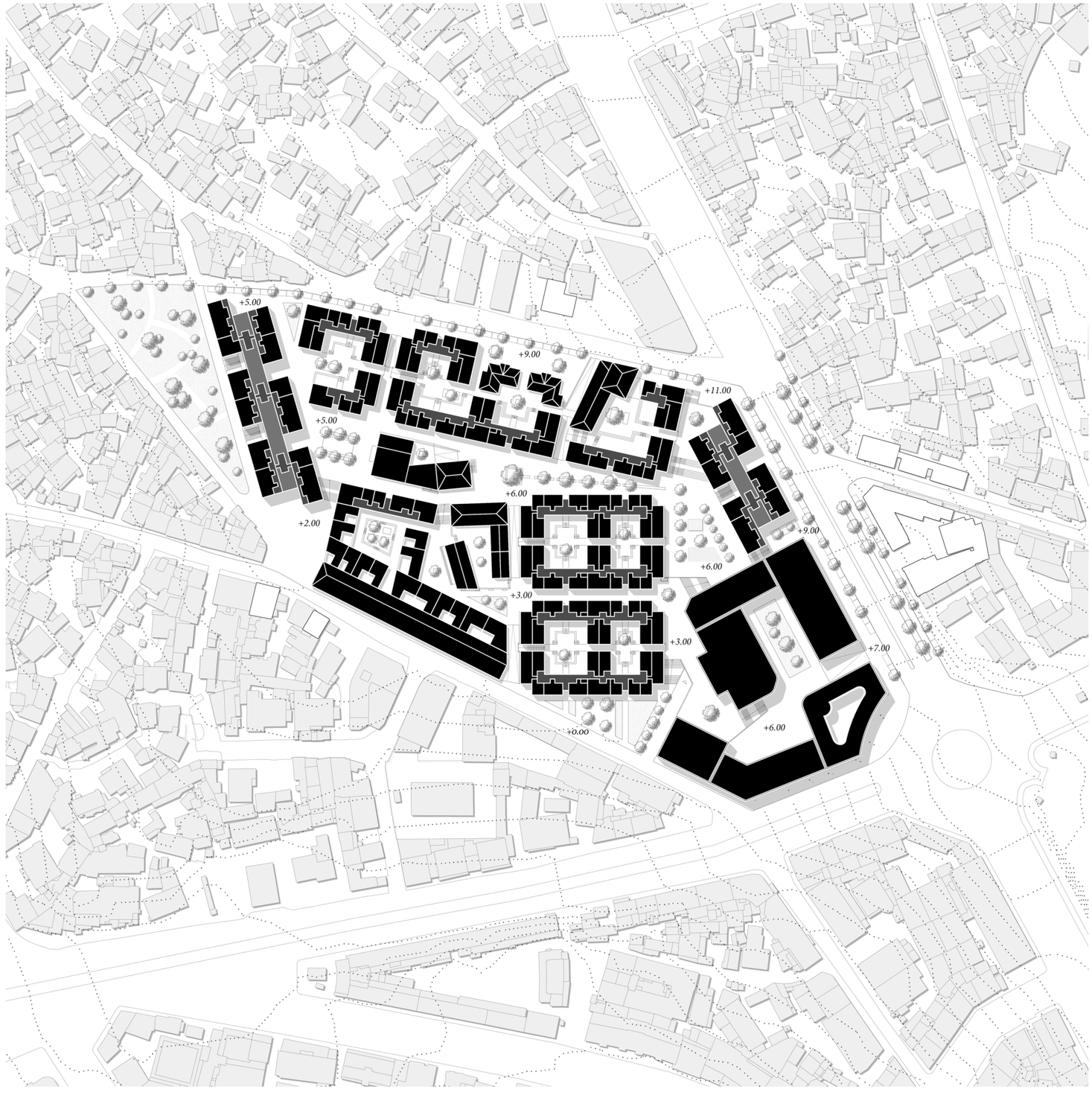
PHASE 4 | + 26 parking lots



PHASE 5 | + 34 parking lots

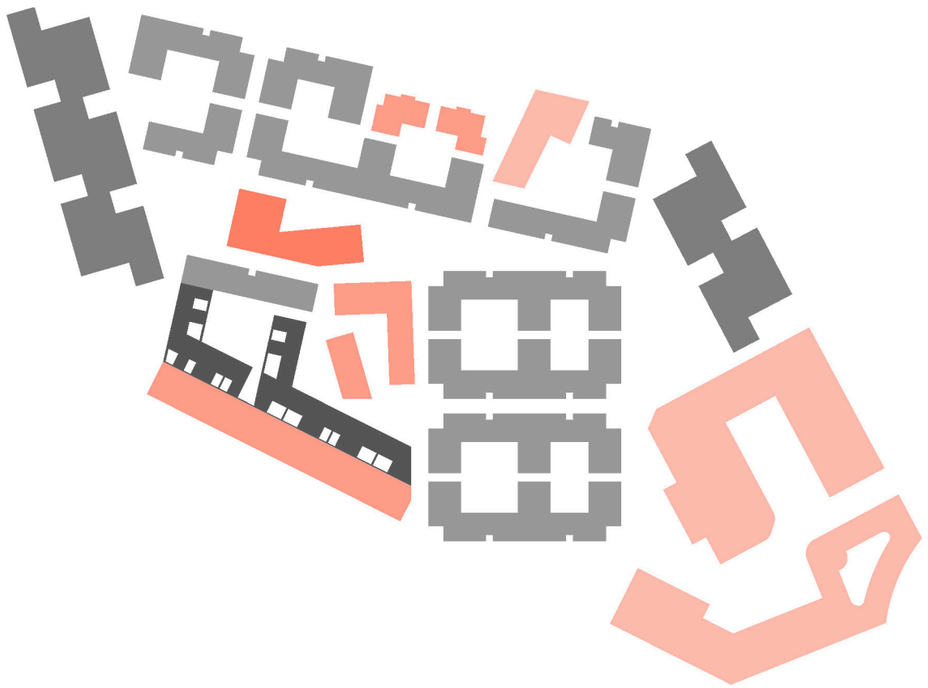
TOTAL | 186 PARKING LOTS

URBAN STRATEGY

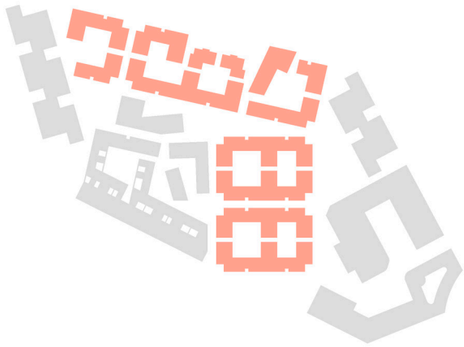


scala 1:2000

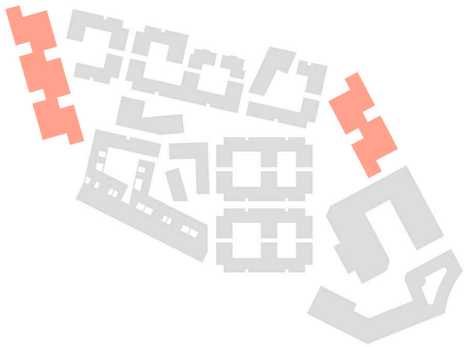
Typologies & functions



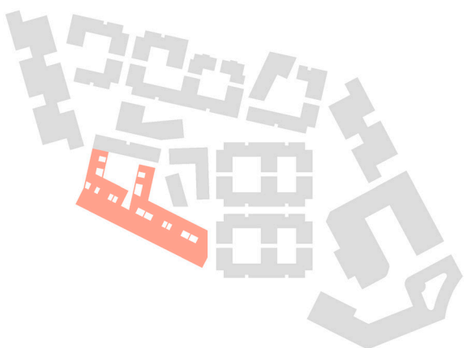
Low income
Middle income
High income
Educational
Commercial
Public amenities



Mid-rise | Courtyard

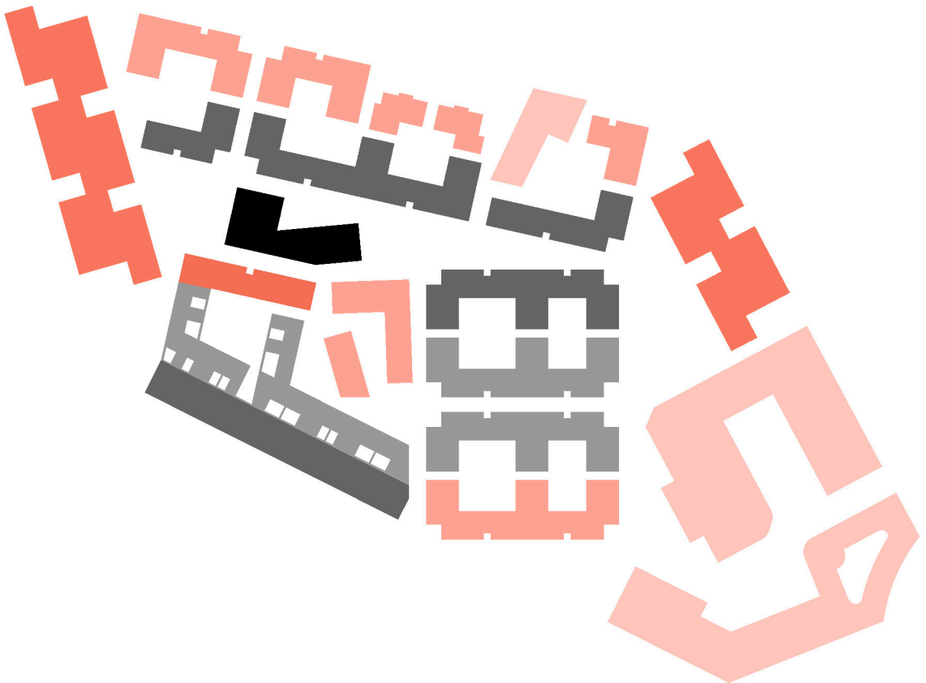


High-rise | Tower



Low-rise | Patio

Relation with the ground floor

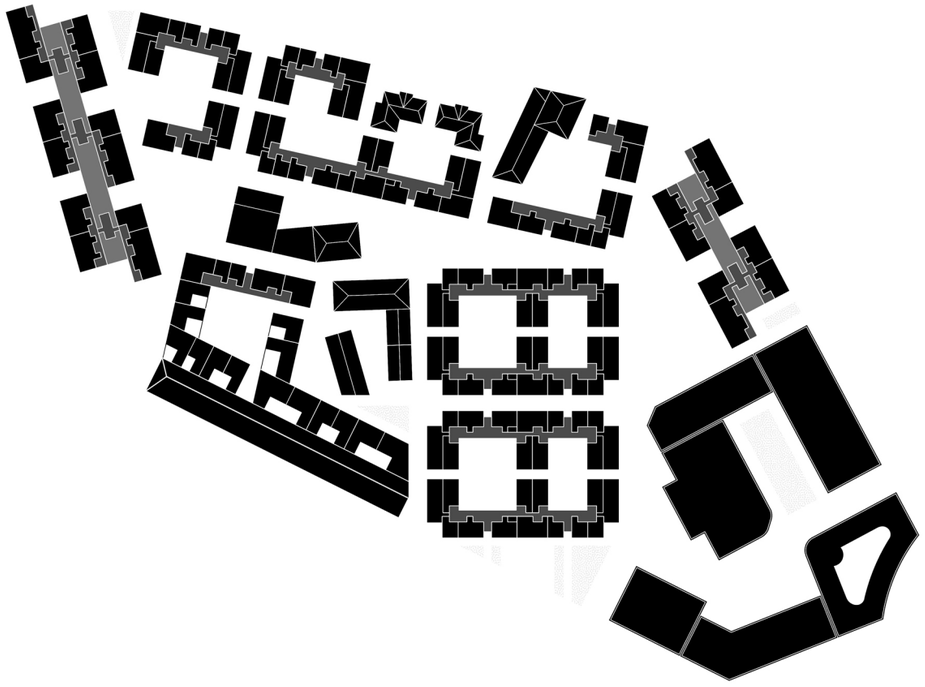


Residential
Commercial + residential
Public amenities
Educational
Commercial
Office + commercial

Relation with the ground floor

low income dwellers | mid high income dwellers | tourists | entrepreneurs | merchants | workers | students

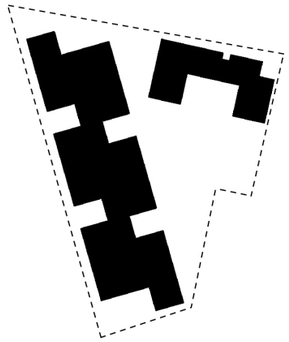
Density



DATA

Average inhabitants/ha | 1150

Average units/ha | 230



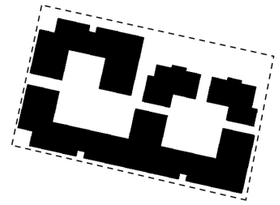
DATA

Surface | 0,5 ha

FAR | 3,3

Inhabitants/ha | 1017

Units/ha | 226



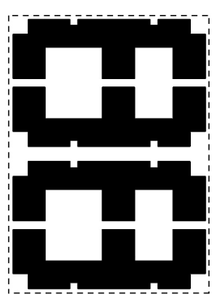
DATA

Surface | 0,4 ha

FAR | 1,6

Inhabitants/ha | 945

Units/ha | 210



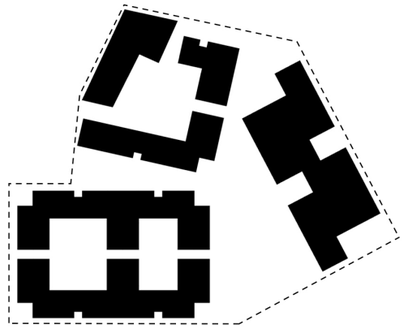
DATA

Surface | 0,67 ha

FAR | 2,2

Inhabitants/ha | 1305

Units/ha | 290



DATA

Surface | 0,9 ha

FAR | 2,1

Inhabitants/ha | 886

Units/ha | 197

Comparison

Taliyan Sefer

DATA

Surface | 27,2 ha

FAR | 0,6

Coverage | 60%

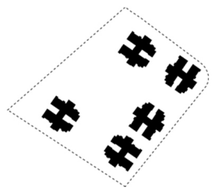
n° inhabitants (Atlas) | 8676

Inhabitants/ha | 319

n° dwelling units (Atlas) | 2176

Units/ha | 80

Buildings height | 1-2 storeys



condominium 40/60 Sengatera

DATA

Surface | 2,6 ha

FAR | 1,85

Coverage | 14%

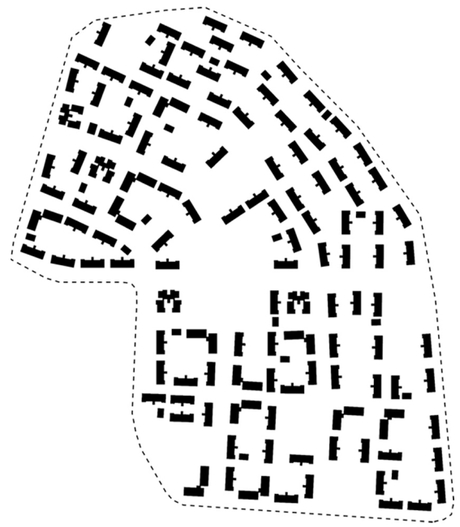
n° inhabitants (estimated) | 1595

Inhabitants/ha | 613

n° dwelling units (estimated) | 330

Units/ha | 127

Buildings height | 13 storeys



Condominium 20/80 Mickeyleland

DATA

Surface | 21 ha

FAR | 1

Coverage | 20%

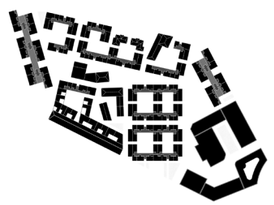
n° inhabitants (estimated) | 7744

Inhabitants/ha | 369

n° dwelling units (estimated) | 2970

Units/ha | 142

Buildings height | 5 storeys



Design proposal

DATA

Surface | 3,1 ha (University area 0,9 ha)

FAR | 1,8

Coverage | 45%

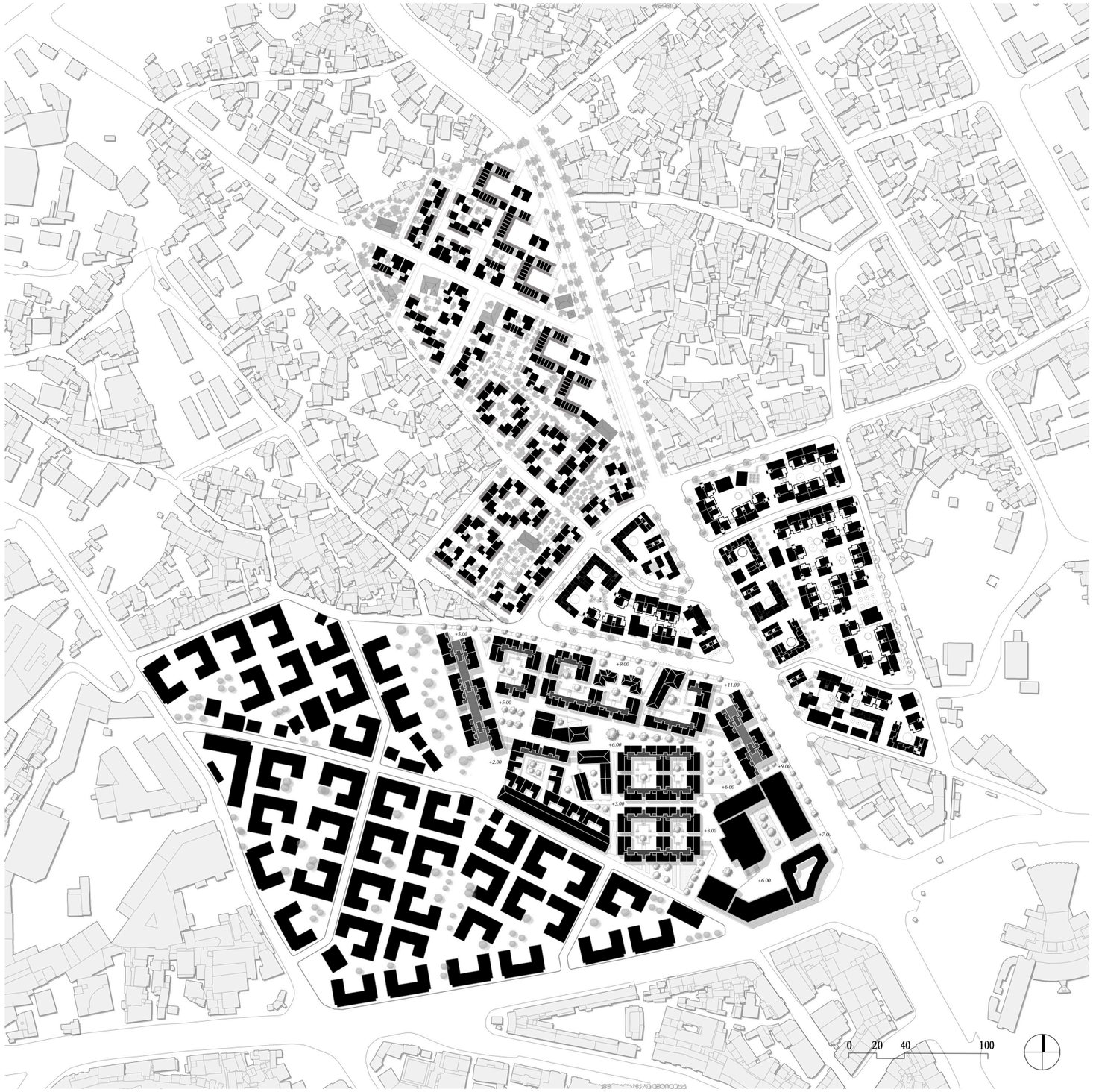
n° inhabitants | 2335

Inhabitants/ha | 753

n° dwelling units | 519

Units/ha | 167

Buildings height | 4-7 storeys



Part of a wider plan

The project, although self-sufficient and not dependent on the surrounding context, can also be seen as part of a broader vision for the development of the whole Taliyan area. The development of this plan for the renewal of the image of the historic center of Addis Ababa was addressed with my colleagues Antonio Paoletti, Fabio Buondonno and Ludovica Cassina.

Managerial plan

renewal of the image
of the historical center

↓

culture &
tourism

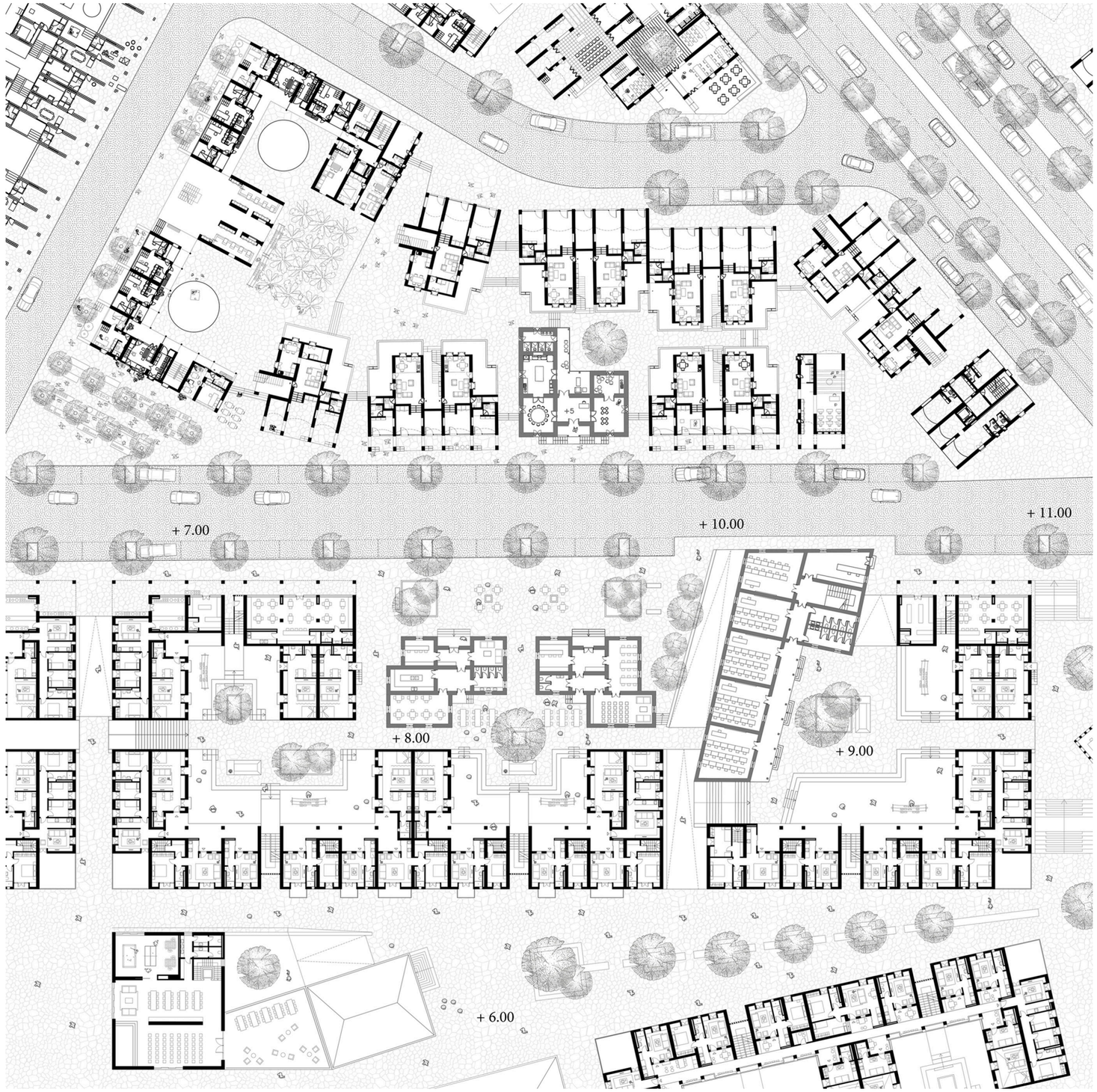
↓

commercial
activities

↓

return of the investments
for low income housing

CLUSTER PROPOSAL

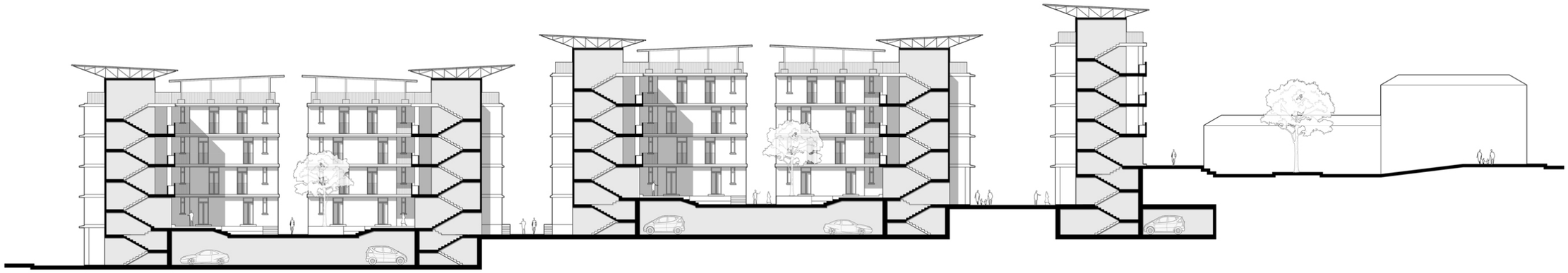


1. Courtyard blocks | horizontal section +8.00

3. Towers | horizontal section +9.00

0 5 10 25

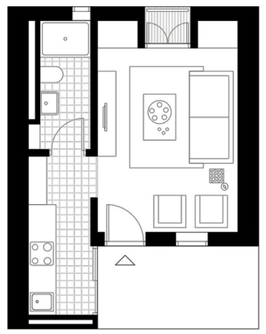
4. Patio house | horizontal section +3.00



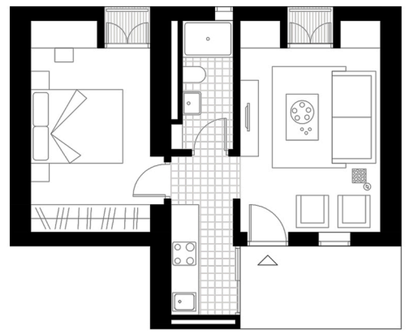
Cross section

DWELLING PROPOSAL

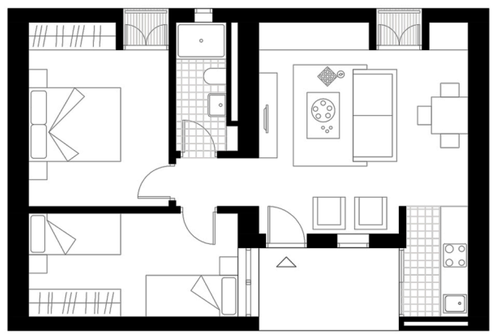
Basic units



studio apt.
21.4 sqm



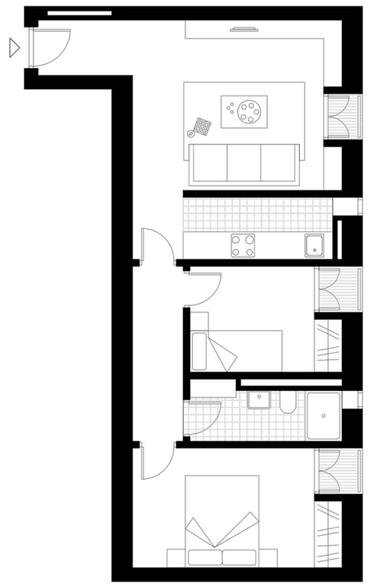
one bedroom apt.
33.1 sqm



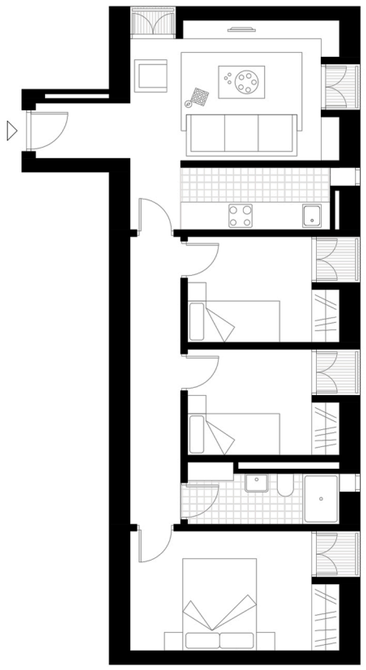
two bedrooms apt.
49.6 sqm

0 1 2 5

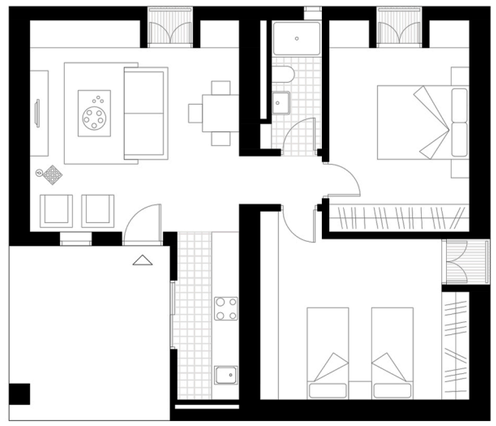
Corner units



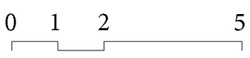
two bedrooms apt.
50.6 sqm



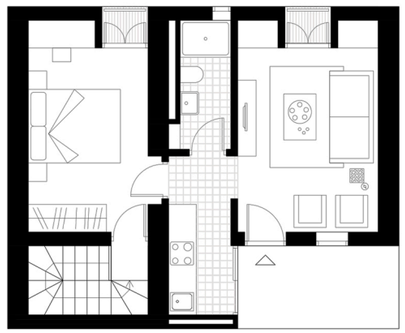
three bedrooms apt.
55.6 sqm

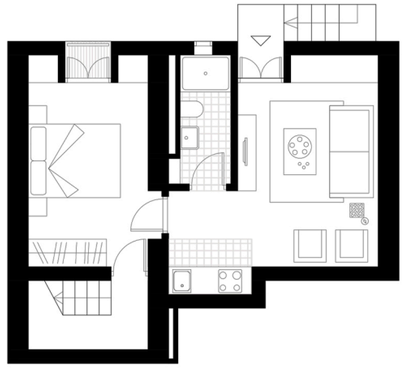


two bedrooms apt.
60.1 sqm

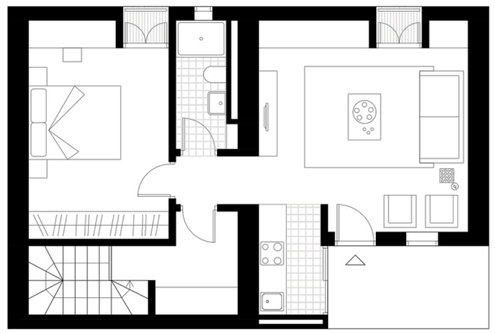


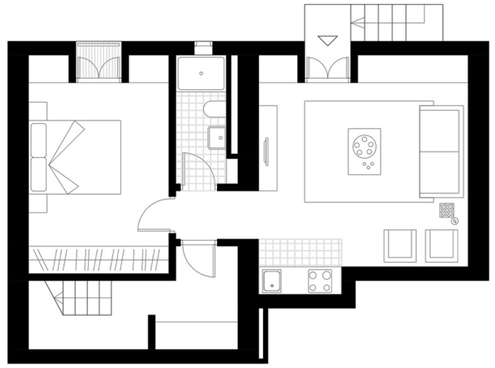
Duplex (renting)





2 bedrooms apt. + rent
65.2 sqm

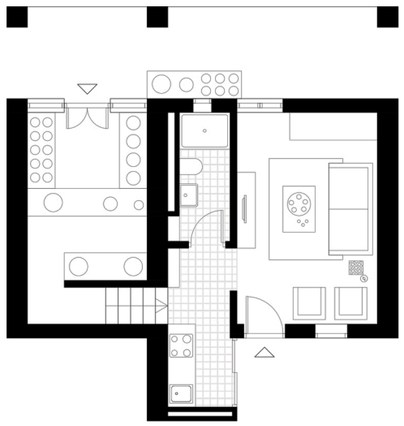




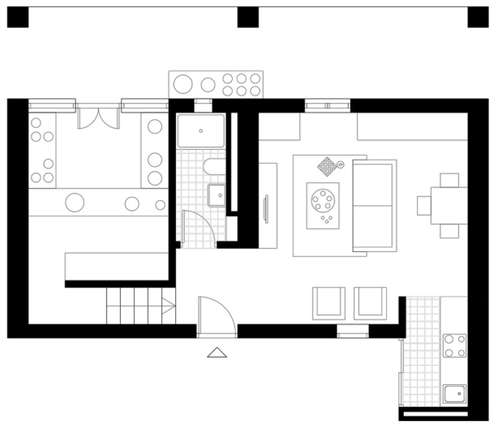
2 bedrooms apt. + rent
83.5 sqm

0 1 2 5

Simplex + shop



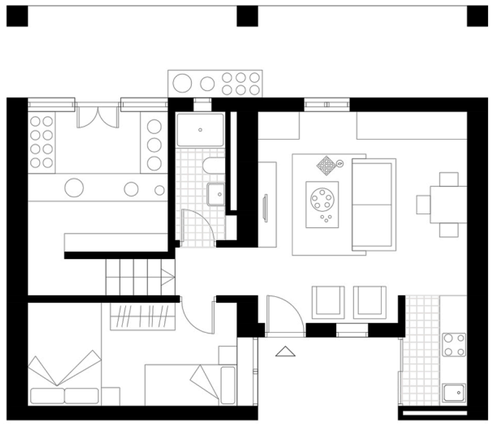
studio apt. + shop
33.1 sqm



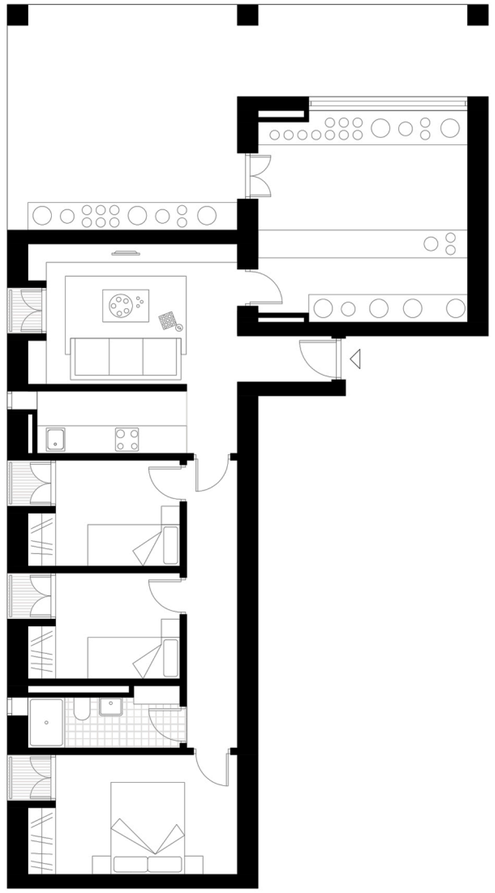
studio apt. + shop
42.6 sqm

0 1 2 5

Simplex + shop



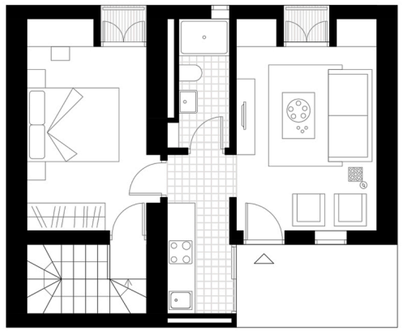
one bedroom apt. + shop
49.6 sqm

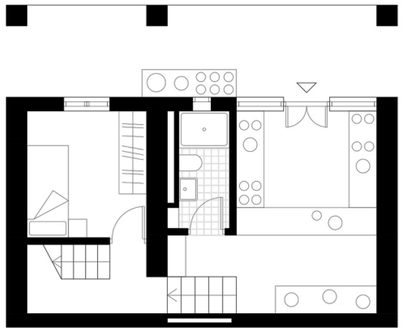


three bedroom apt. + shop
72.2 sqm

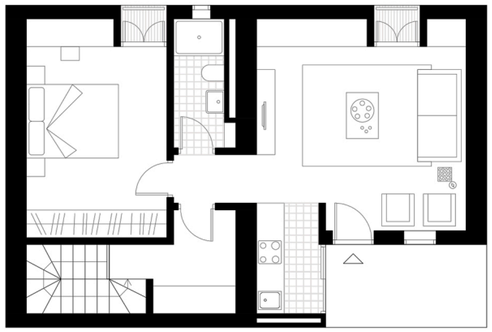
0 1 2 5

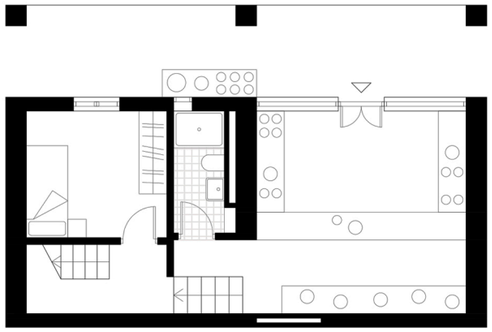
Duplex + shop



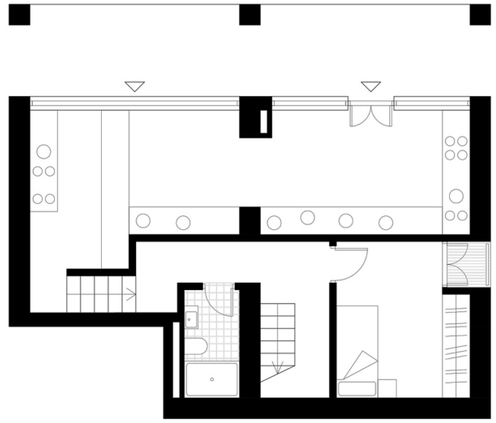


two bedrooms + shop
59.2 sqm



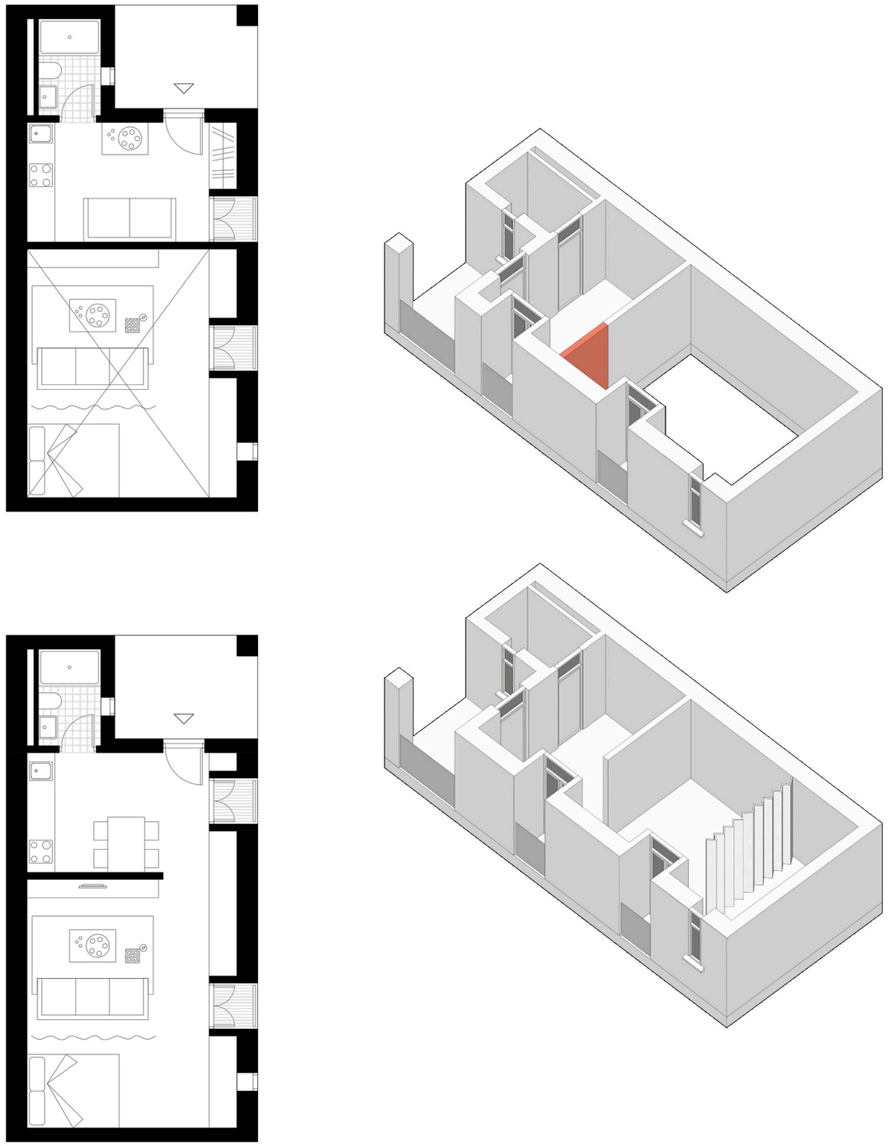


two bedrooms + shop
78.2 sqm

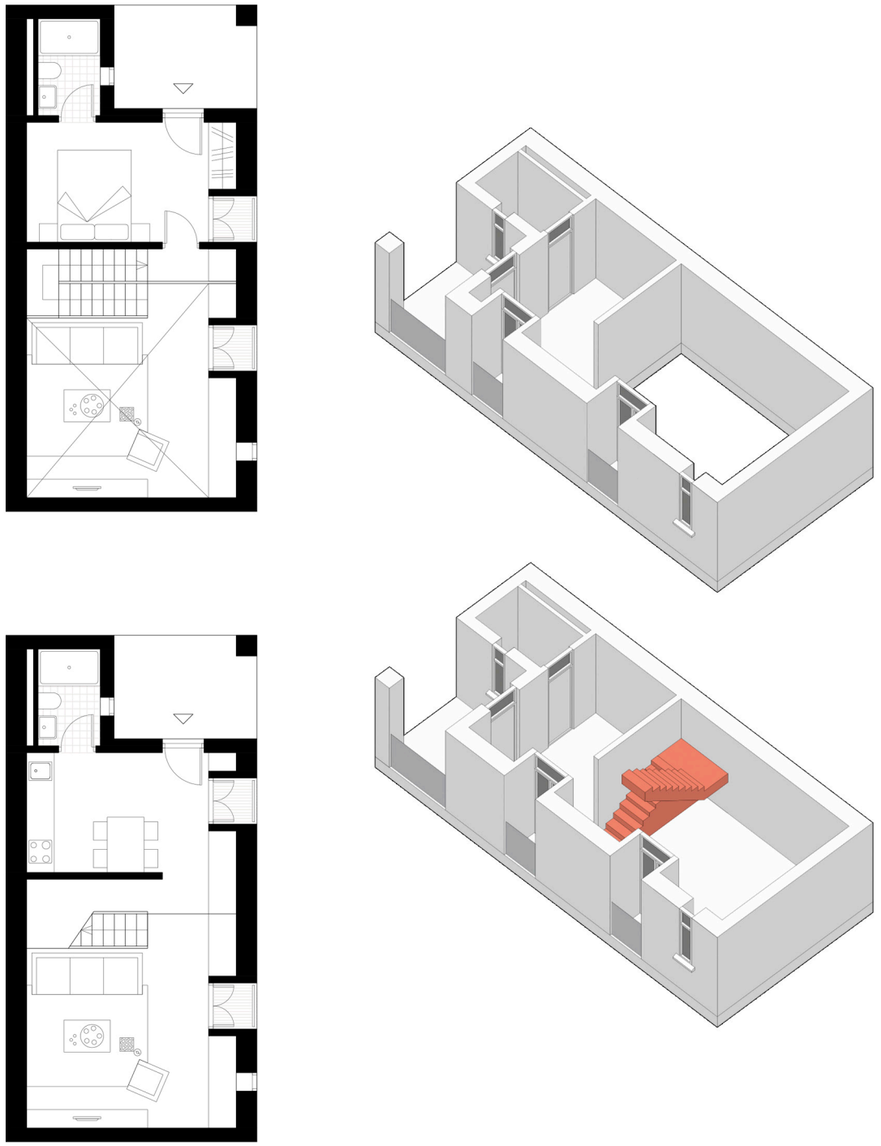


three bedrooms + shop
99.4 sqm

Incremental units

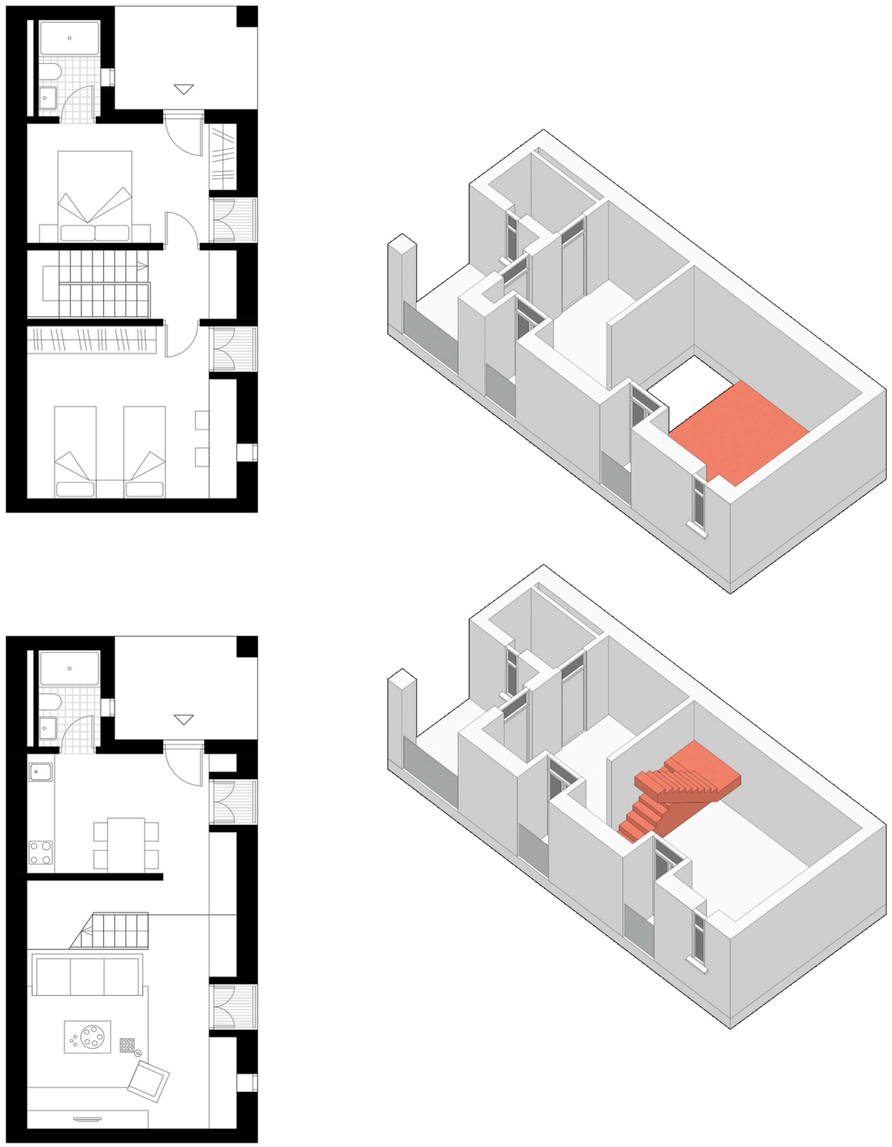


option A
one bedroom apt. + rent studio
39 + 14 sqm

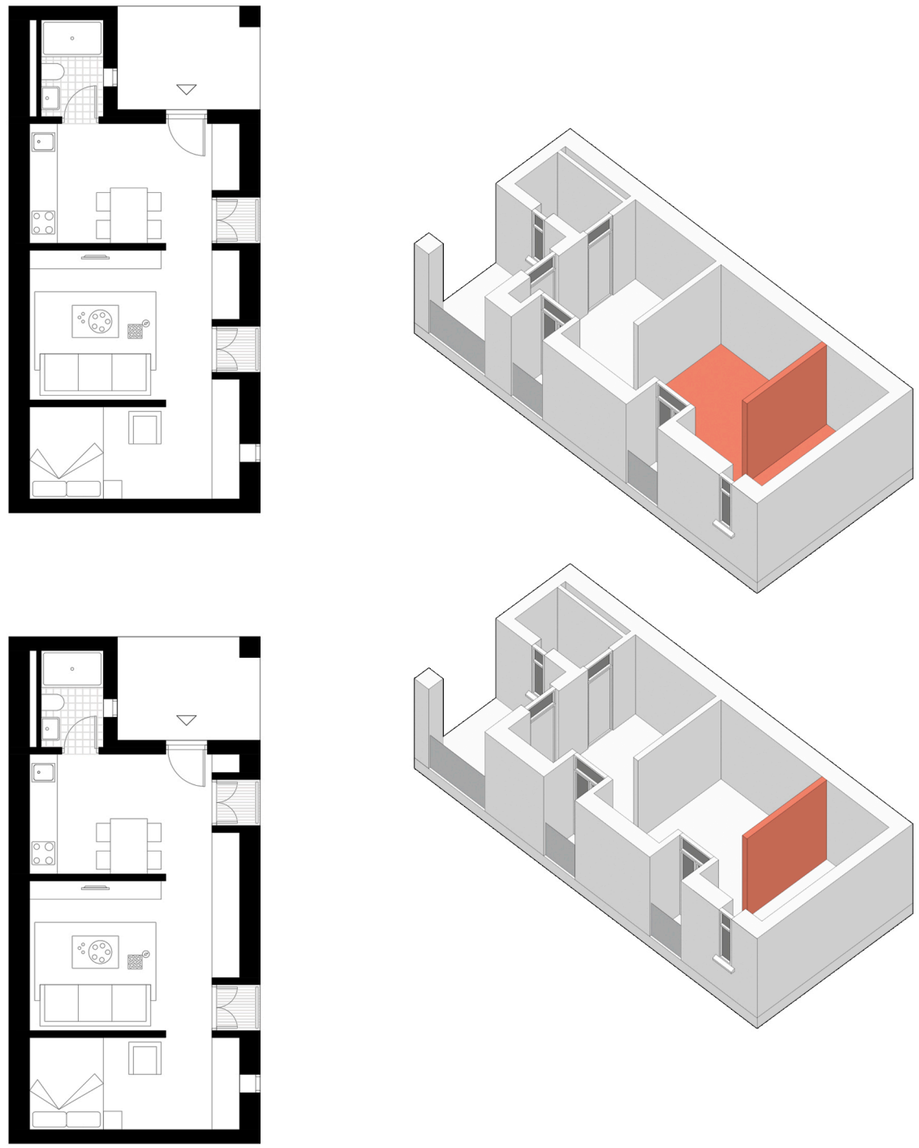


option B
one bedroom apt (mezzanine)
49 sqm

Incremental units

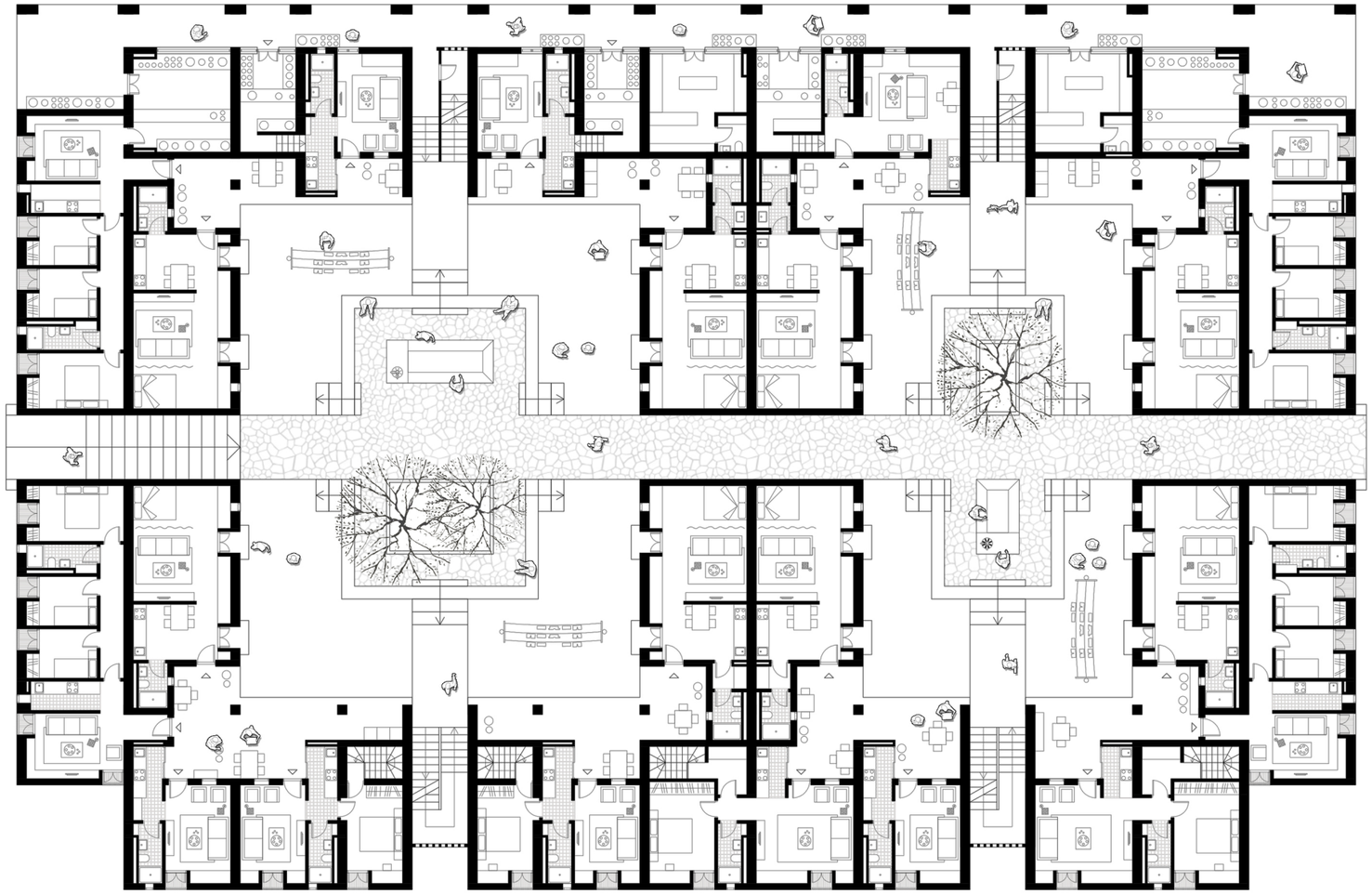


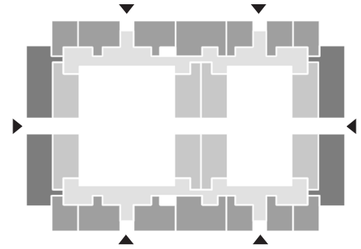
option C
two bedroom apt.
78 sqm



option D
one bedroom apt + rent one bedroom apt.
39 + 39 sqm

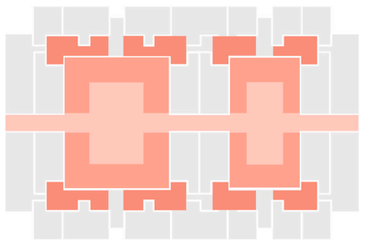
Typical granoud floor





Typologies

- corner unit
- basic unit
- incremental unitit

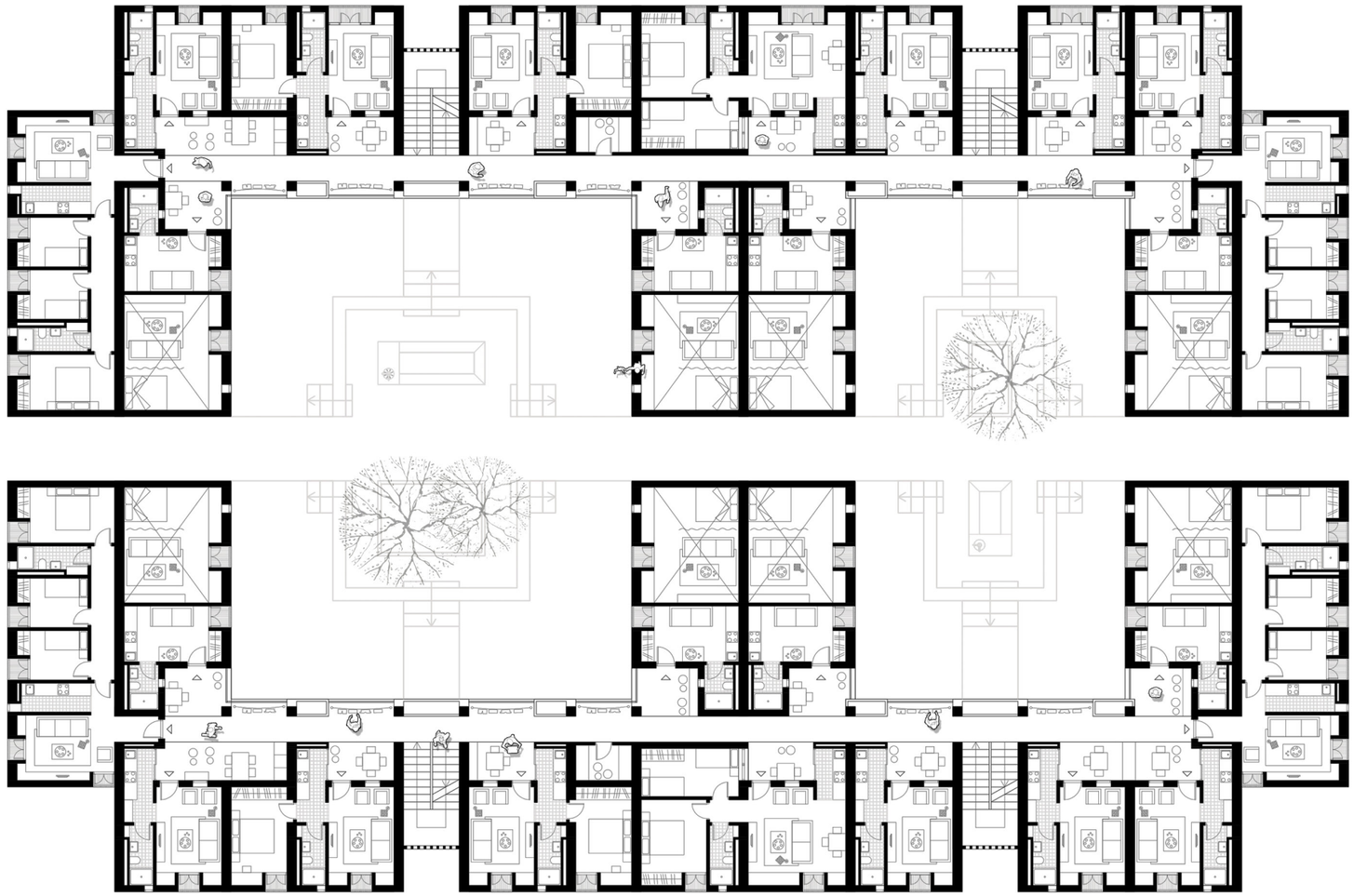


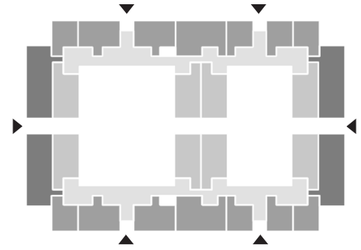
Collective & private space

- collective space
- shared space
- private space

0 2 4 10

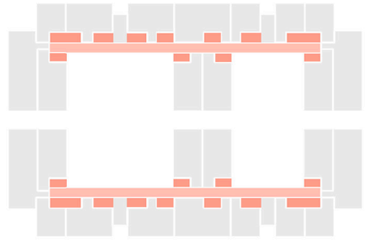
Typical upper floor





Typologies

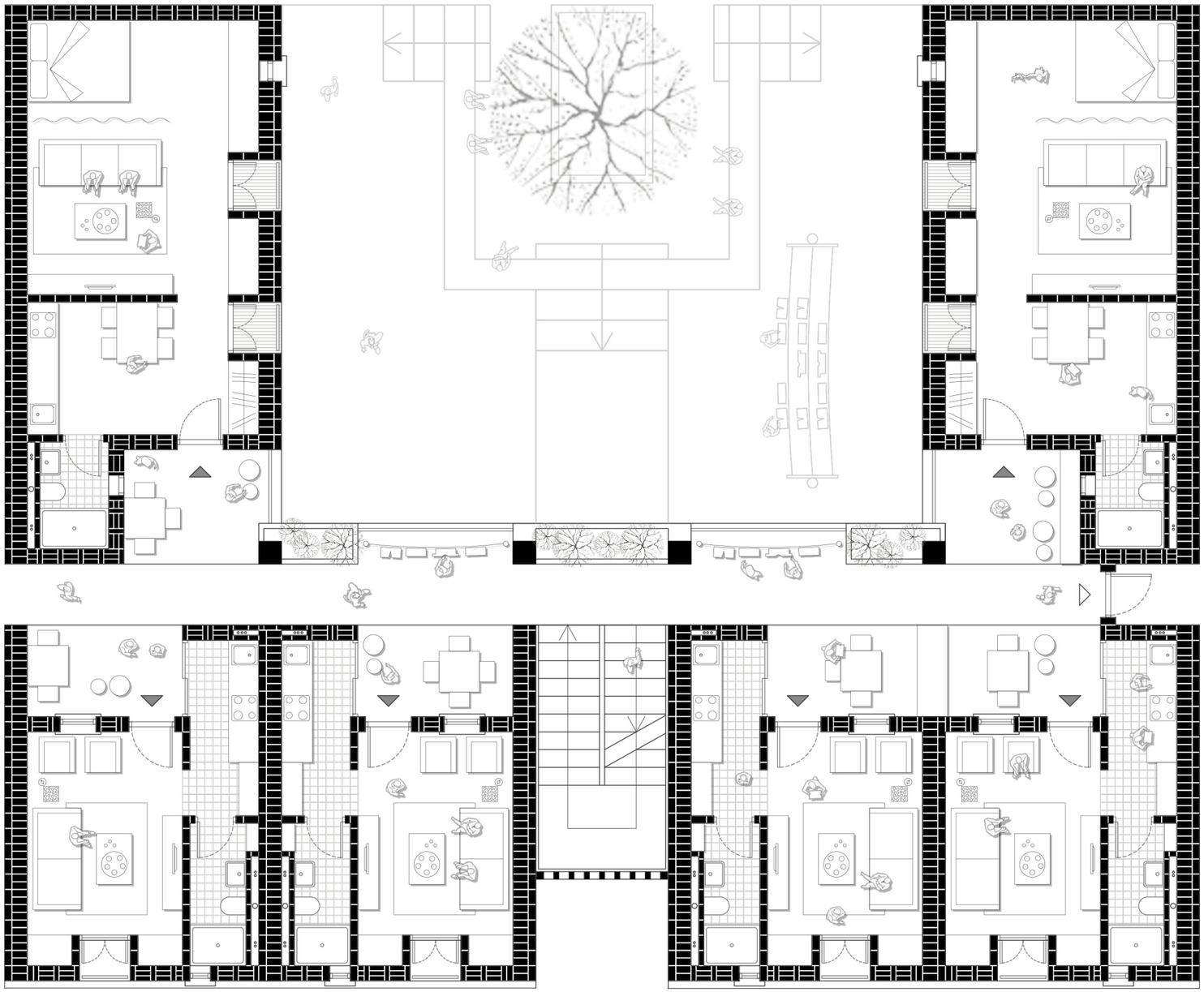
- corner unit
- basic unit
- incremental unitit



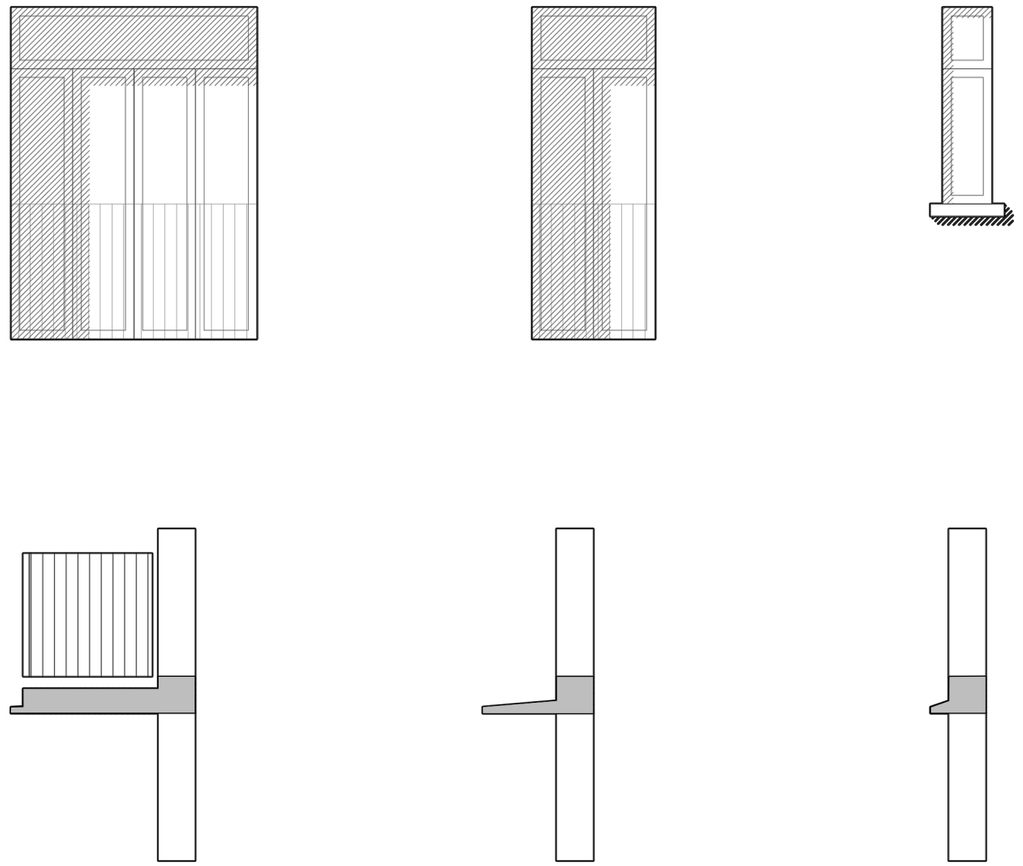
Collective & private space

- collective space
- private space

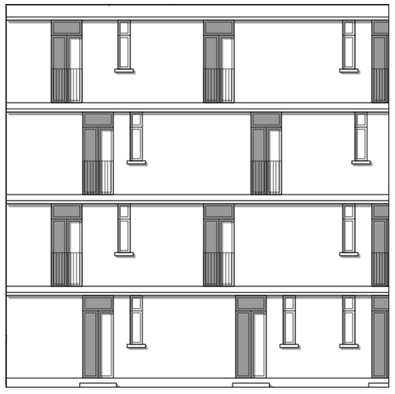
Plan fragment

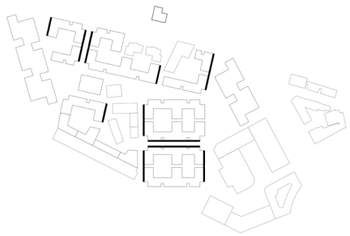


Facade composition



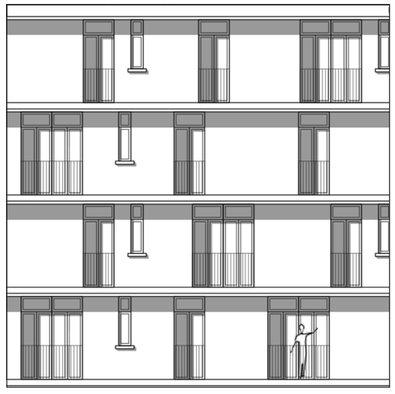
Facade typologies

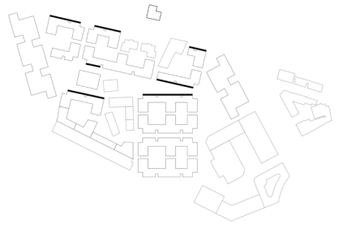




Type A

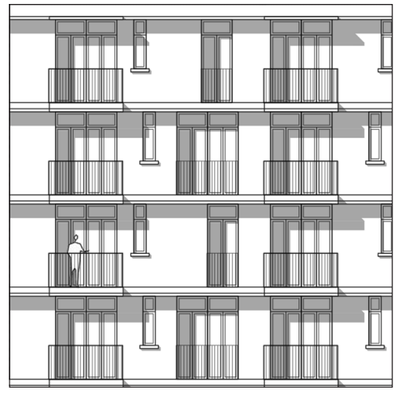
small openings
small stringcourse cornice

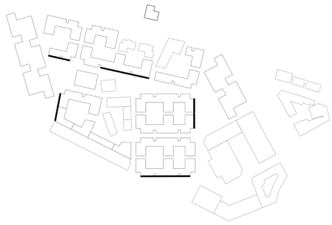




Type B

huge openings
protruding stringcourse cornice

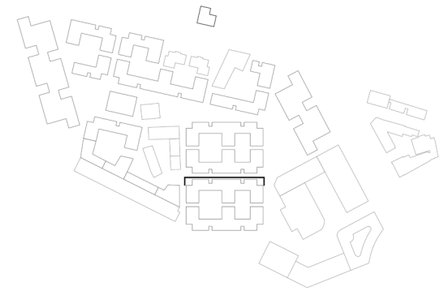




Type C

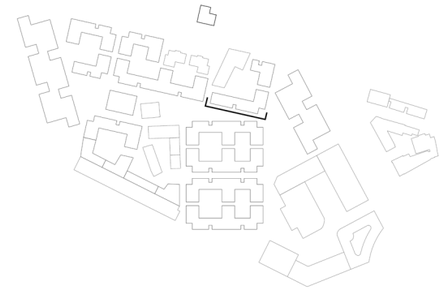
huge openings
balconies

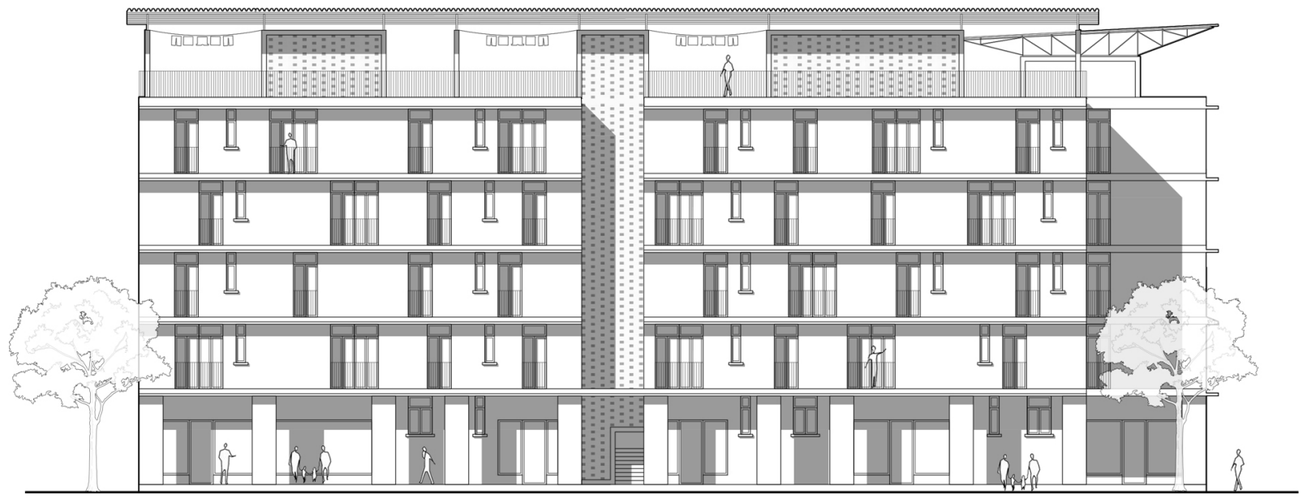
Facade proposal - option A



0 5 10

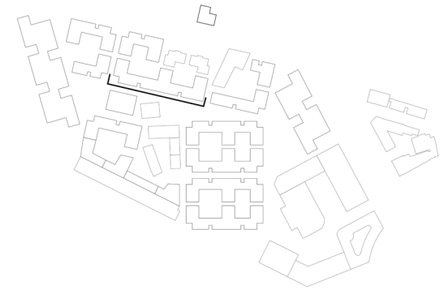
Facade proposal - option B

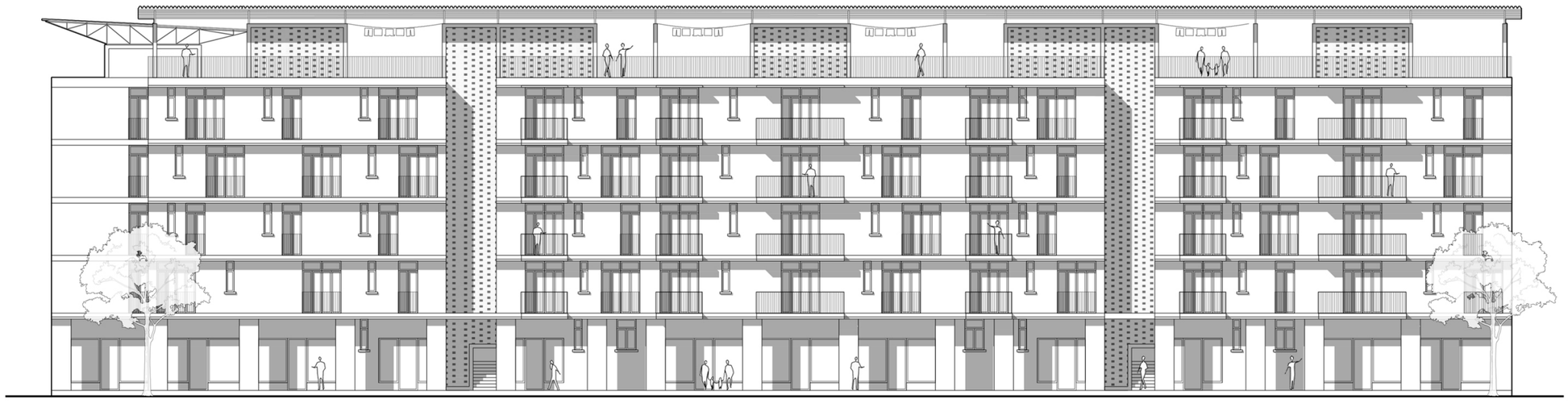




0 5 10

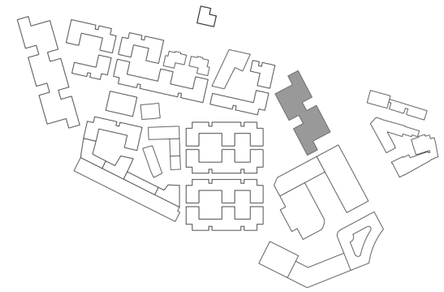
Facade proposal - option c

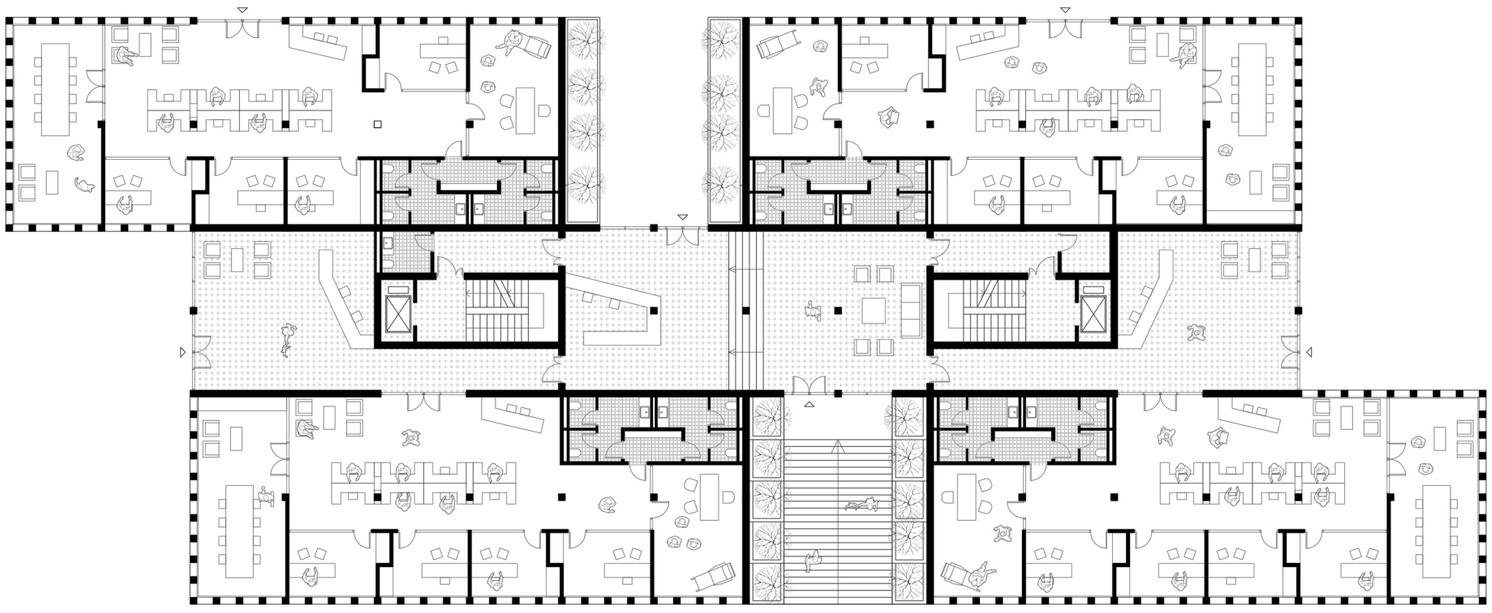




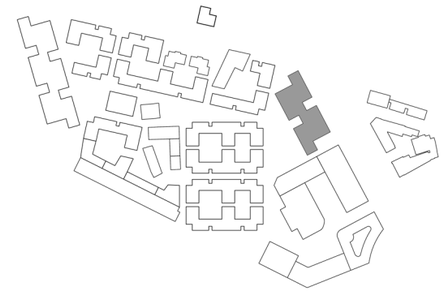
0 5 10

MIDDLE INCOME HOUSING : THE HIGH-RISE



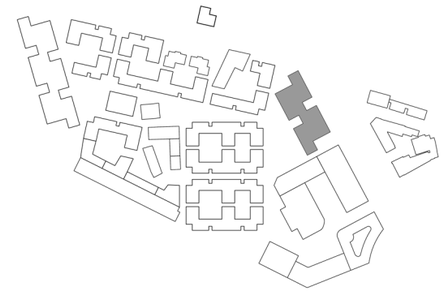


0 2 4 10



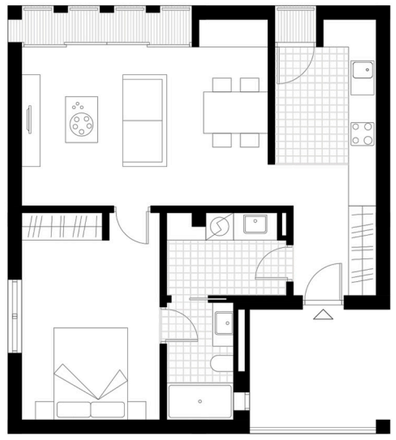
0 2 4 10

Typical floor G+3



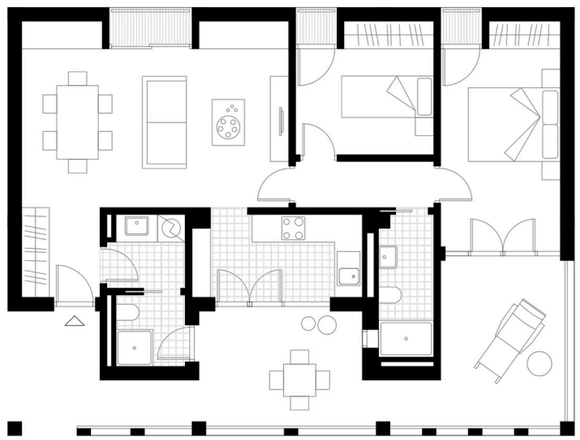
0 2 4 10

Dwelling units



one bedroom apt.
53 sqm

three bedroom apt.
72 sqm

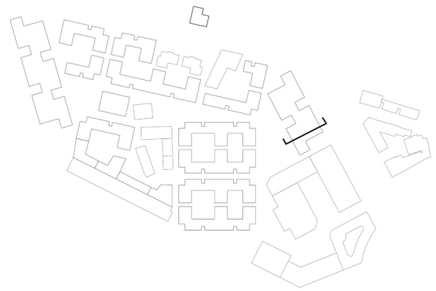


two bedroom apt.
63 sqm

four bedroom apt.
92 sqm

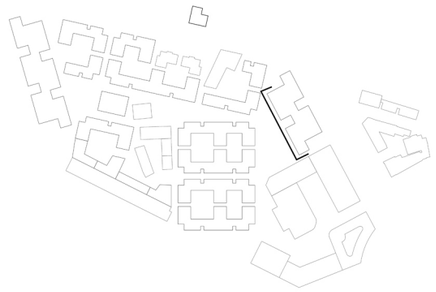
0 1 2 5

Cross section



0 2 4 10

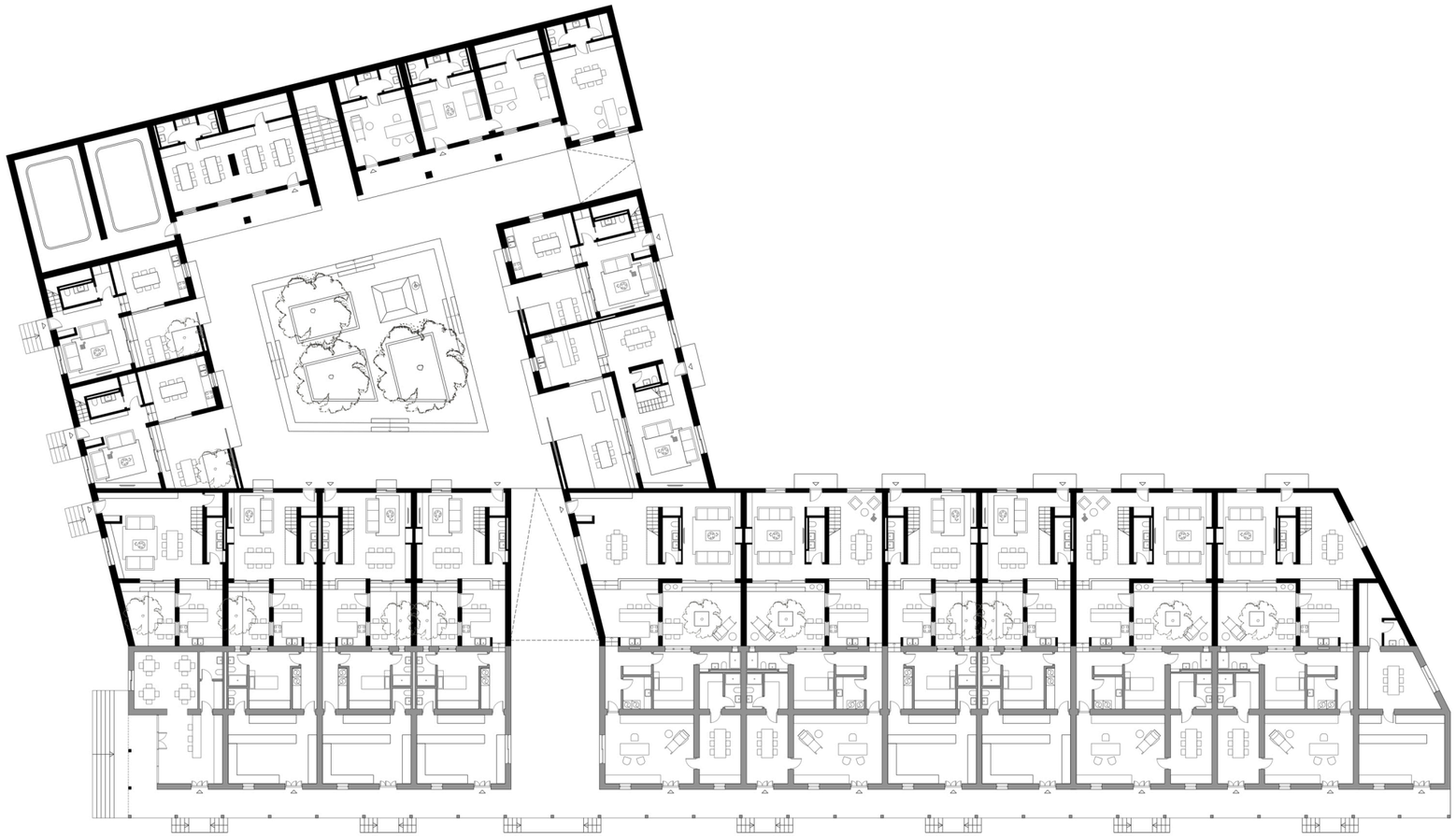
External elevation



0 5 10 25

HIGH INCOME HOUSING : THE PATIO HOUSE

Ground floor



0 4 8 20


TOYOTA
ISUZU
ايسوزو

Dwelling units

three bedroom apt.
94 sqm

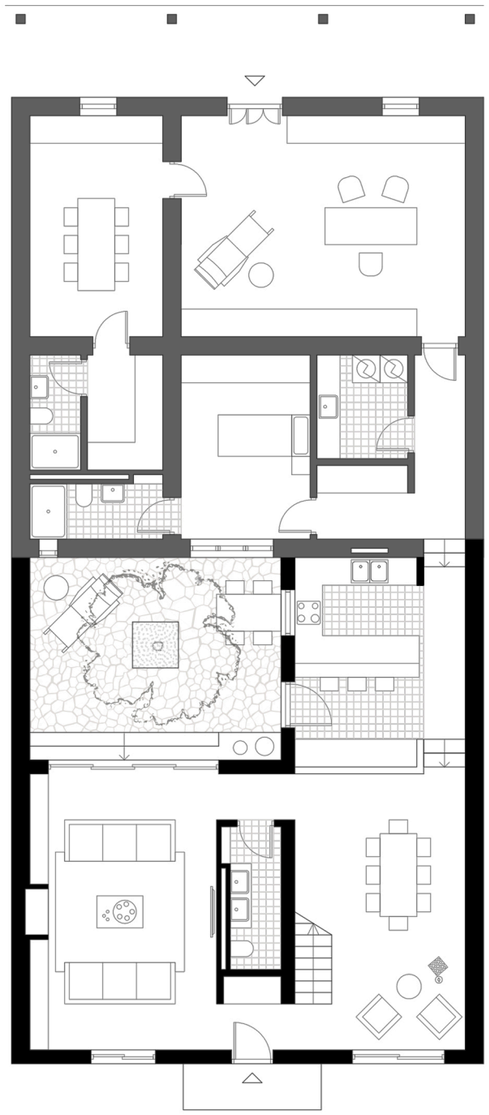
0 1 2 5

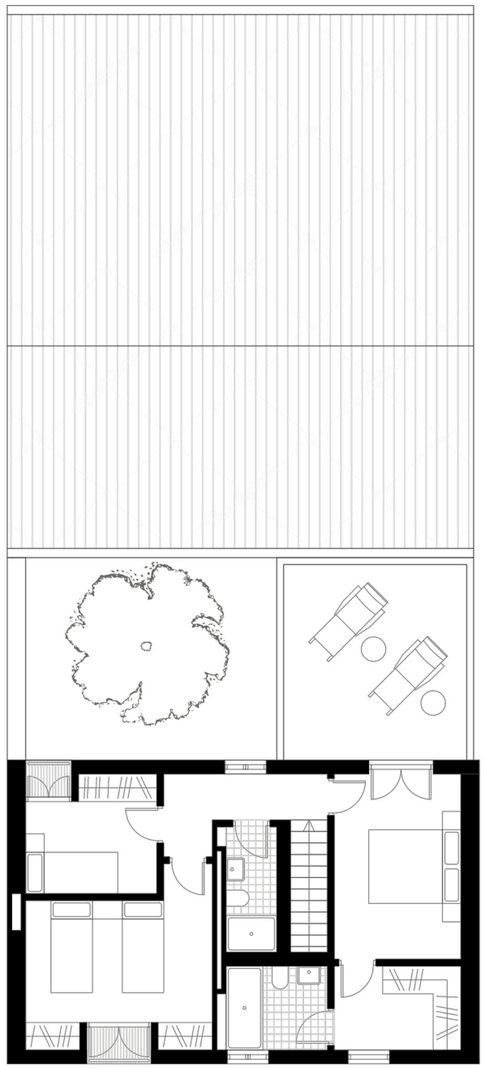
Dwelling units

two bedroom apt.
75 sqm house + 54 sqm extra
129 sqm

0 1 2 5

Dwelling units

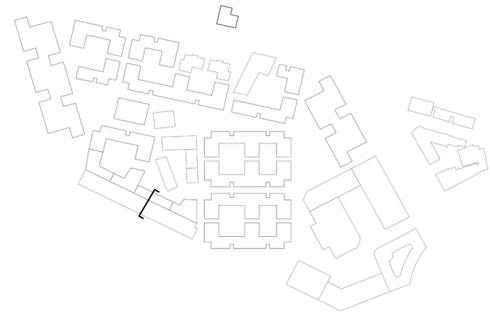


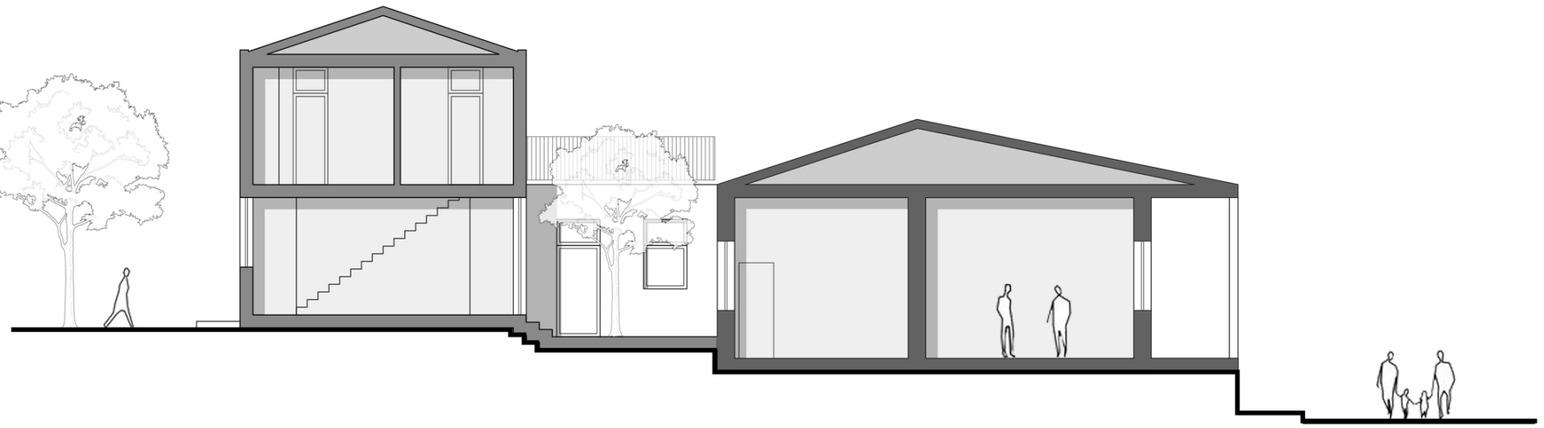


three bedroom apt.
121 sqm house + 80 sqm extra
201 sqm

0 1 2 5

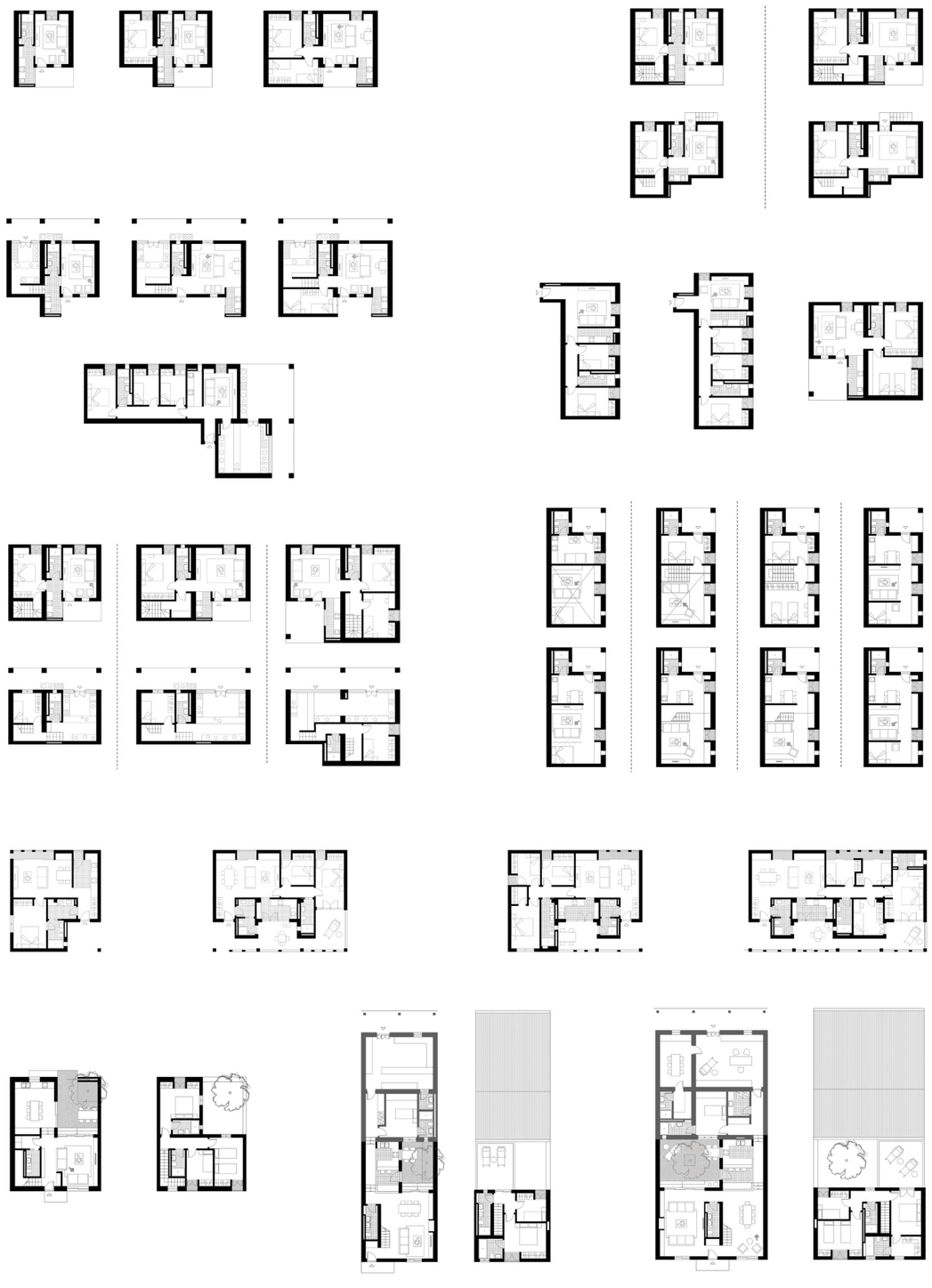
Cross section





0 2 4

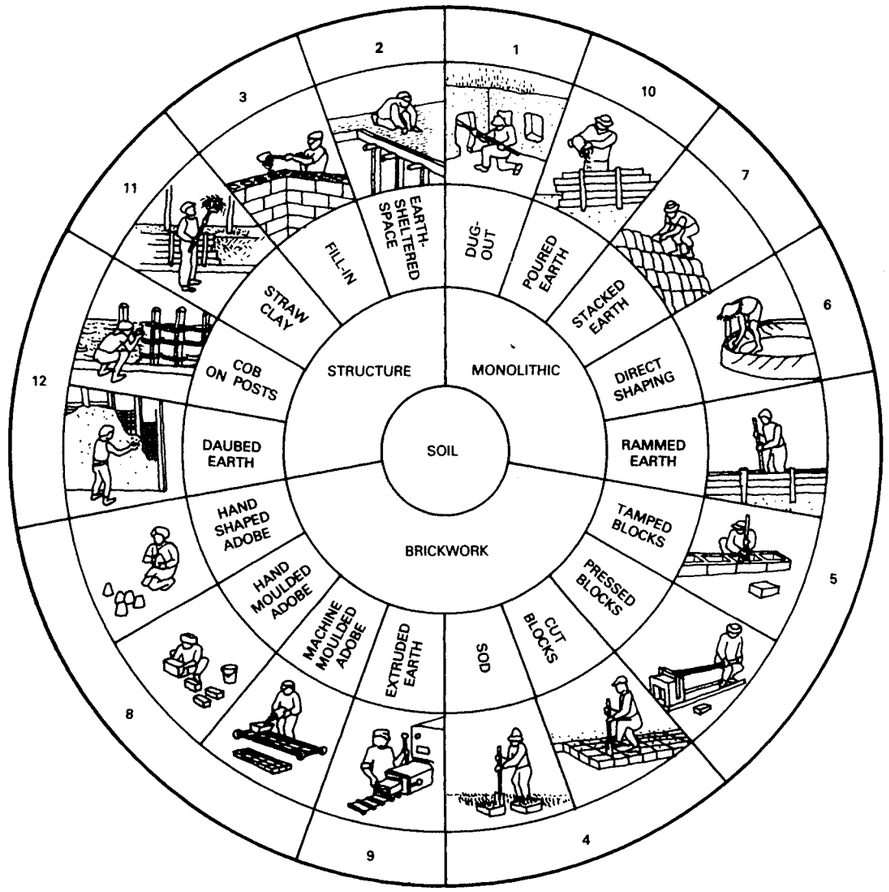
Northern elevation



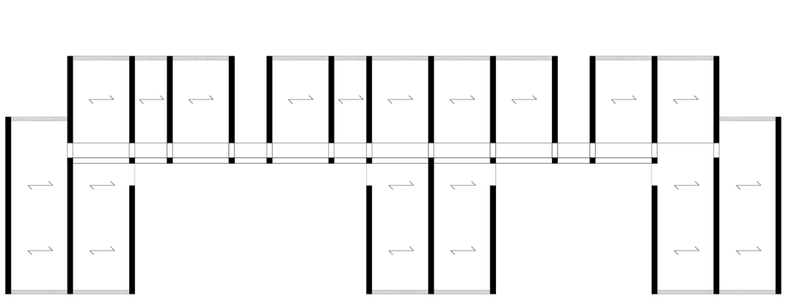
Abacus

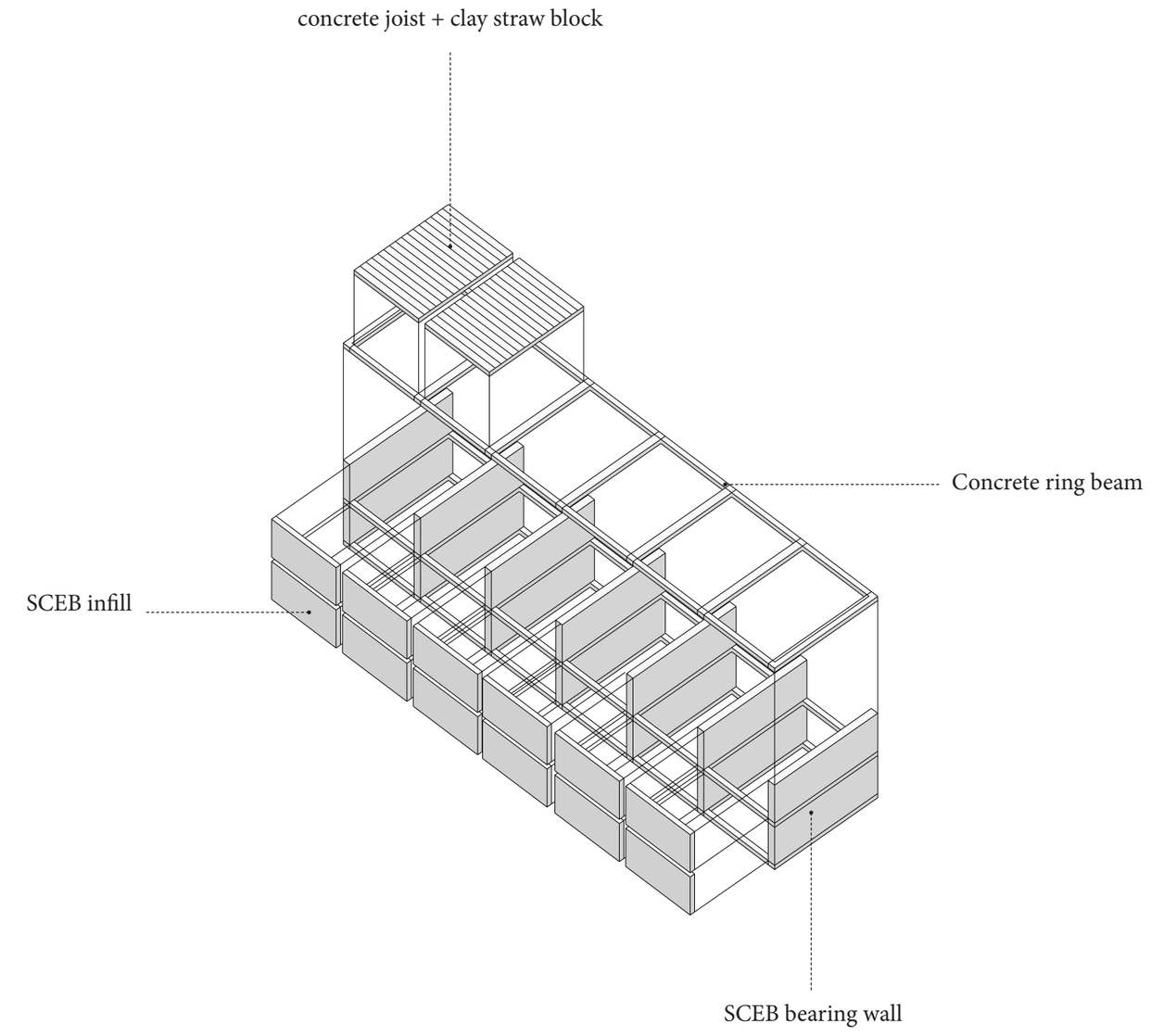
14
21
33
39
42
49
50
53
55
59
60
63
65
75
78
83
92
94
99
129
201

BUILDING TECHNOLOGY

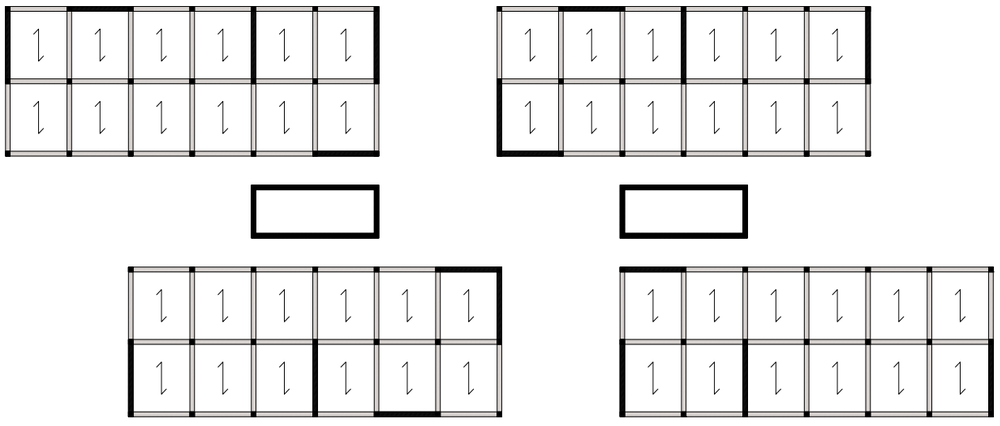


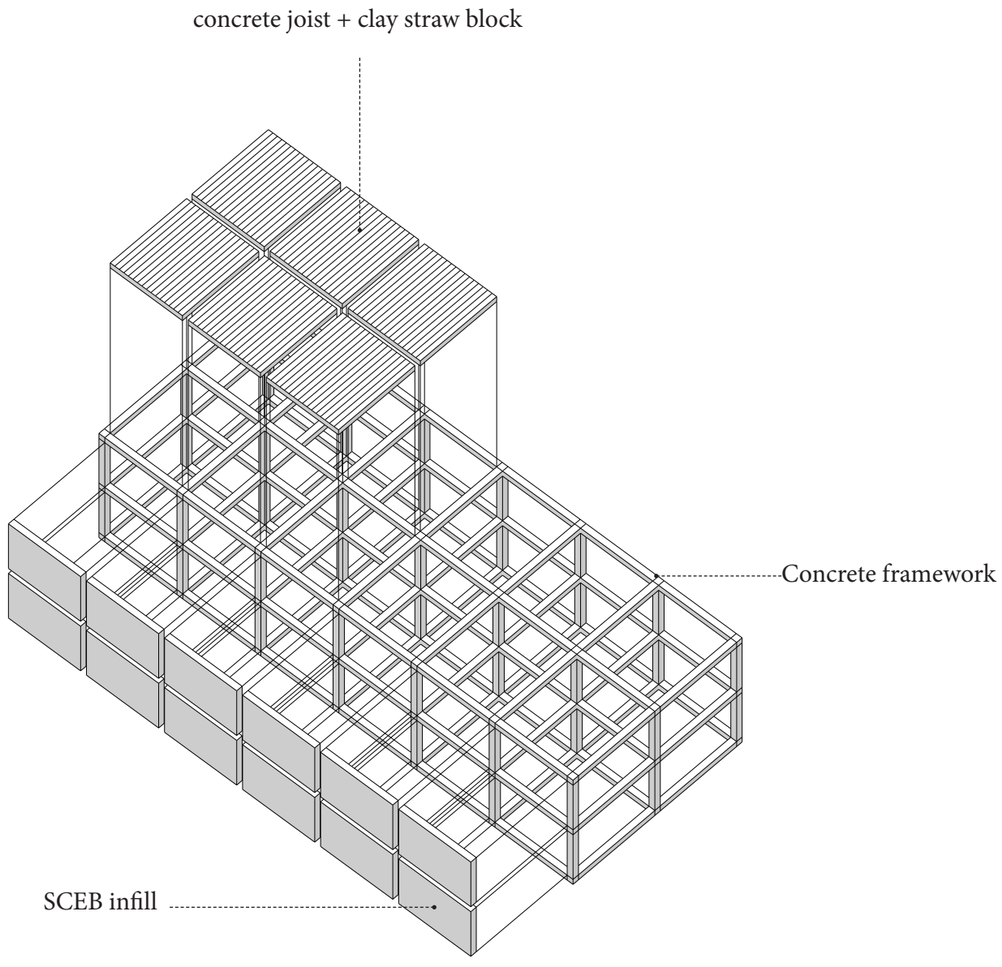
Structural system | courtyard

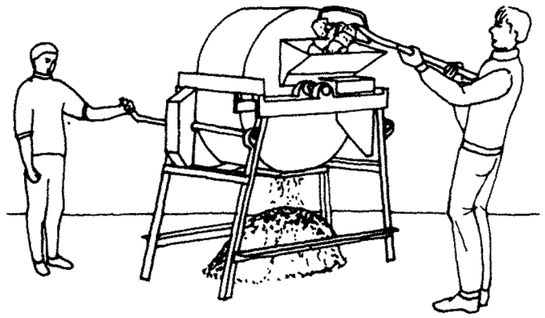


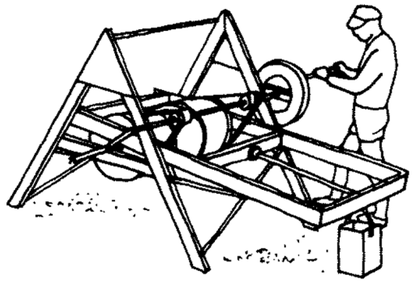


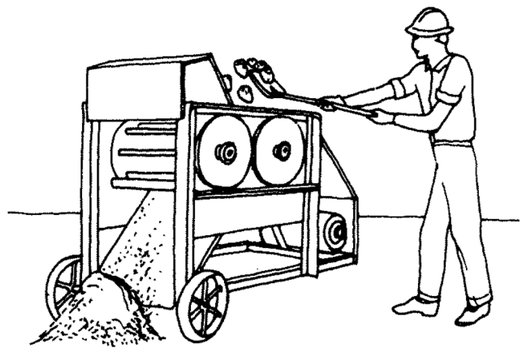
Structural system | tower

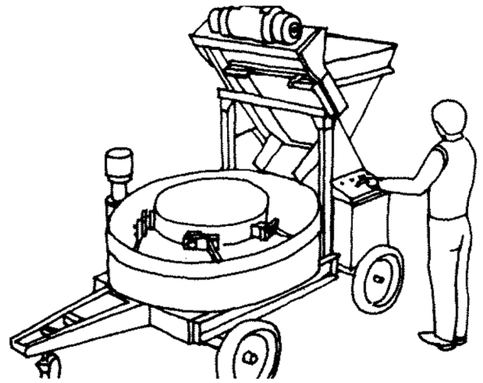










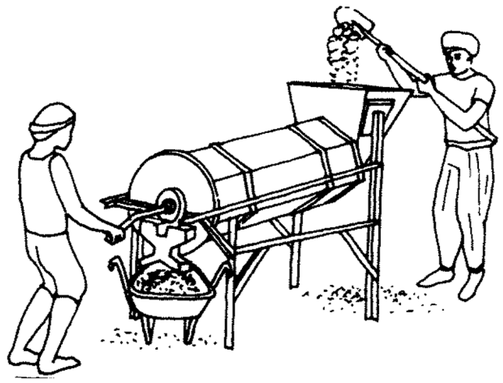


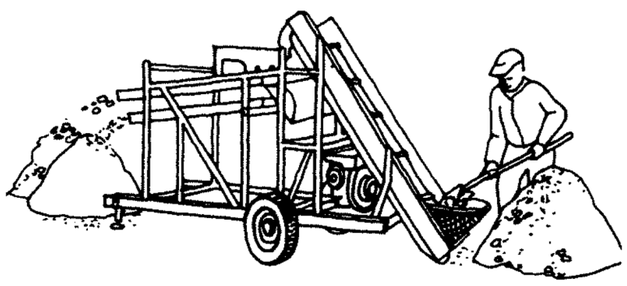
PULVERIZATION

This operations is necessary in order to obtain an uniform mixing of the soil. Lumps have to be broken up to a smaller elements in way to obtain an omogeneus mixture for the next phases. The process can be manual or mechanical.

MIXING

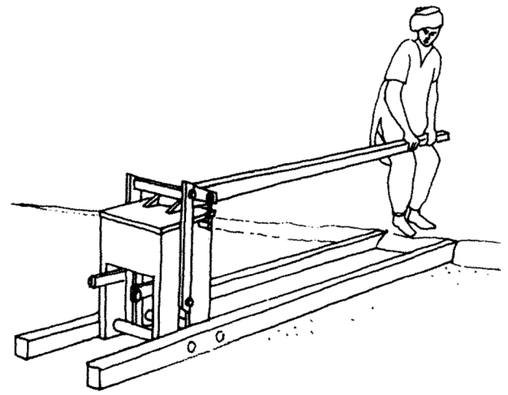
This operations is essential for a good final products. Soil is mixed with water and cement and other lightweight material in order to obtain a uniform mixture. This process can be manual or mechanical.

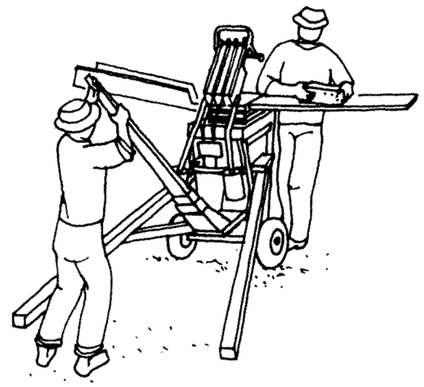




SCREENING

This operations is essential to remove excessively large elements in the soil after the pulverization, in order to obtain a thinner and omogeneus mixture.

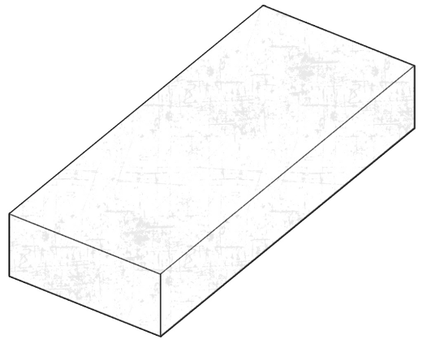




PRESSING

This operations is essential in order to create standard elements with the same dimensions and moreover to increase the streght of the material. In fact differently from adobe bricks, compressed blocks present a minor amount of water and this make s the process of drying faster and the final products more resistant.

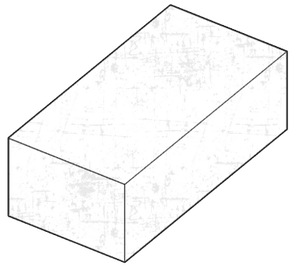
Construction blocks



Clay-straw block

15x36x8

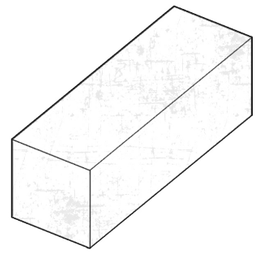
weight 5 kg



SCEB

15x30x10

weight 7 kg

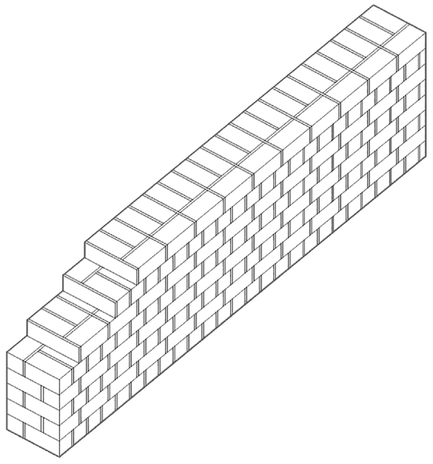


SCEB

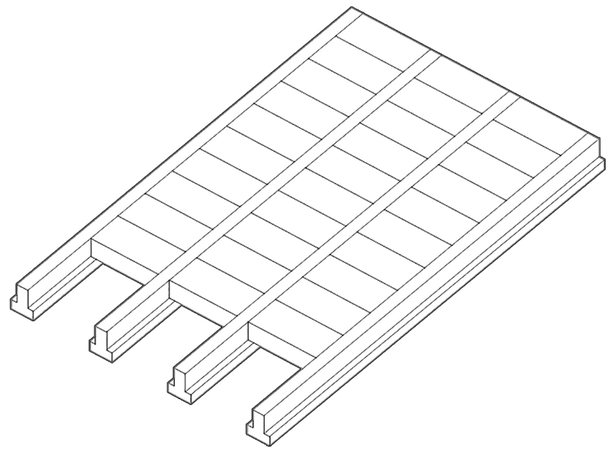
10x30x10

weight 6 kg

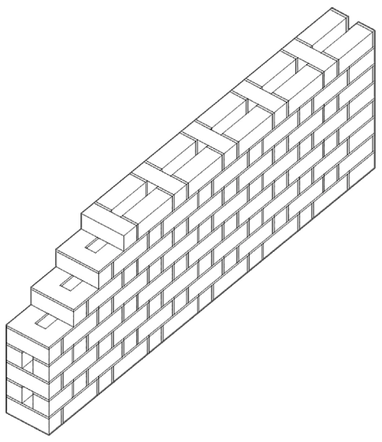
Construction components



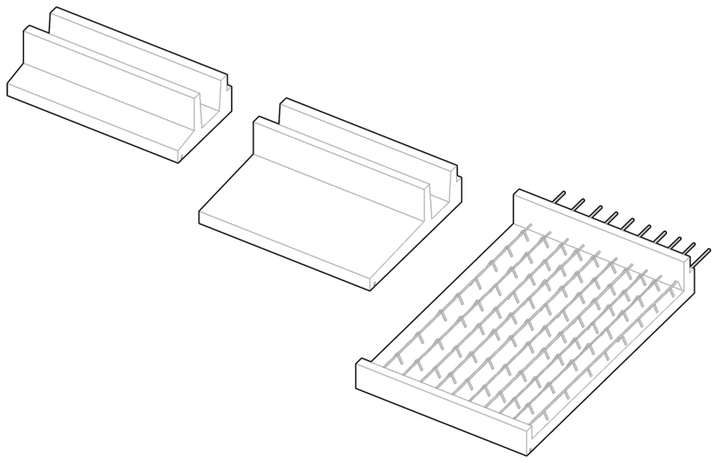
Bearing walls | English bond



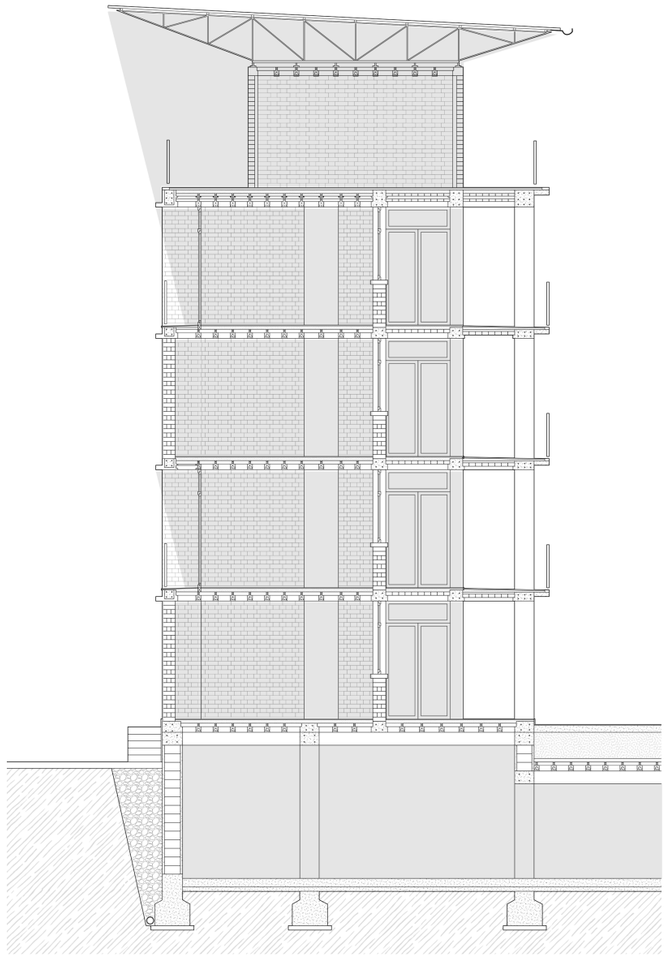
Floor structure | Concrete beam + clay-straw tiles



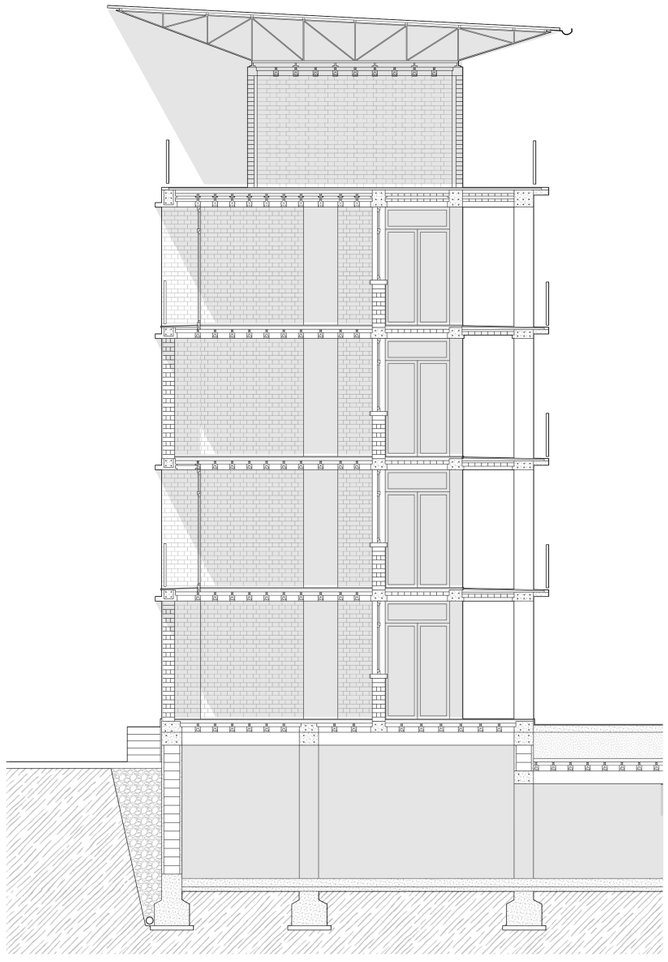
Infill walls | Rat trap bond



Eaves | Prefab concrete formwork



Shading summer



Shading winter

Eaves/Ring beam | detail 1:5

1 - Plaster 2cm

2- Metal parapet

3 - Waterproof layer

4 - Concrete screed

5 - Light weight concrete

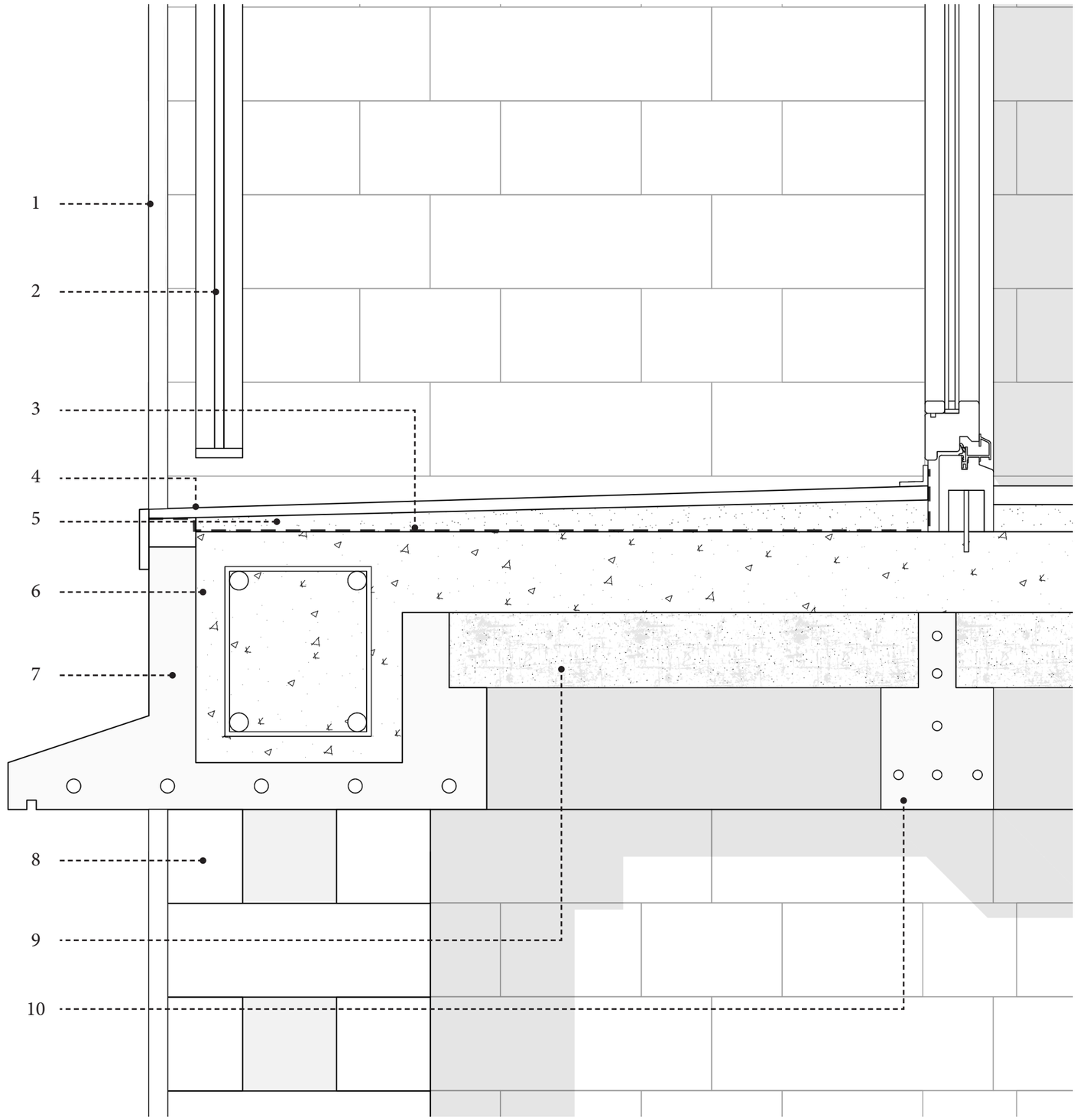
6 - Concrete beam cast in situ

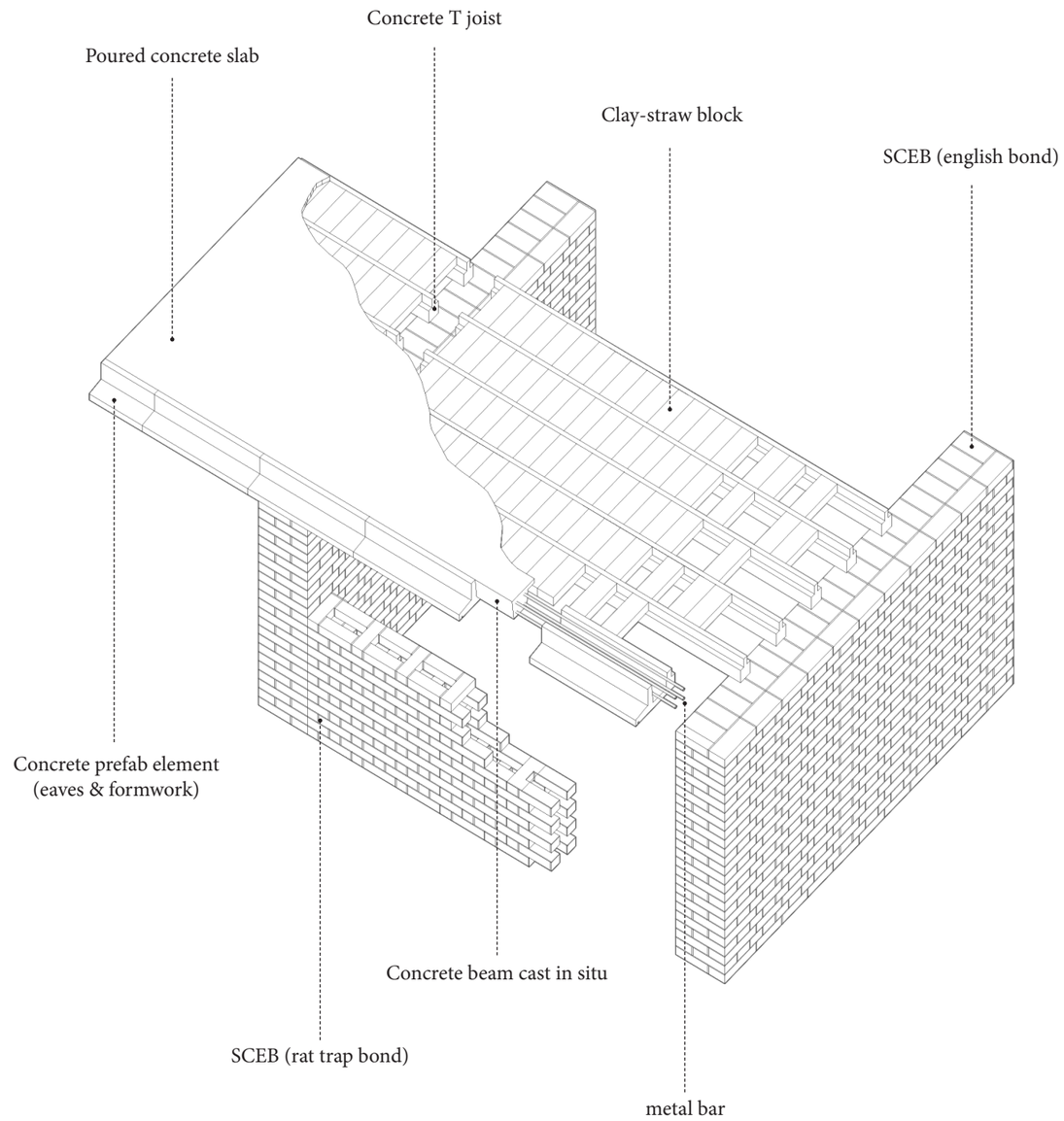
7 - Prefabricated concrete element

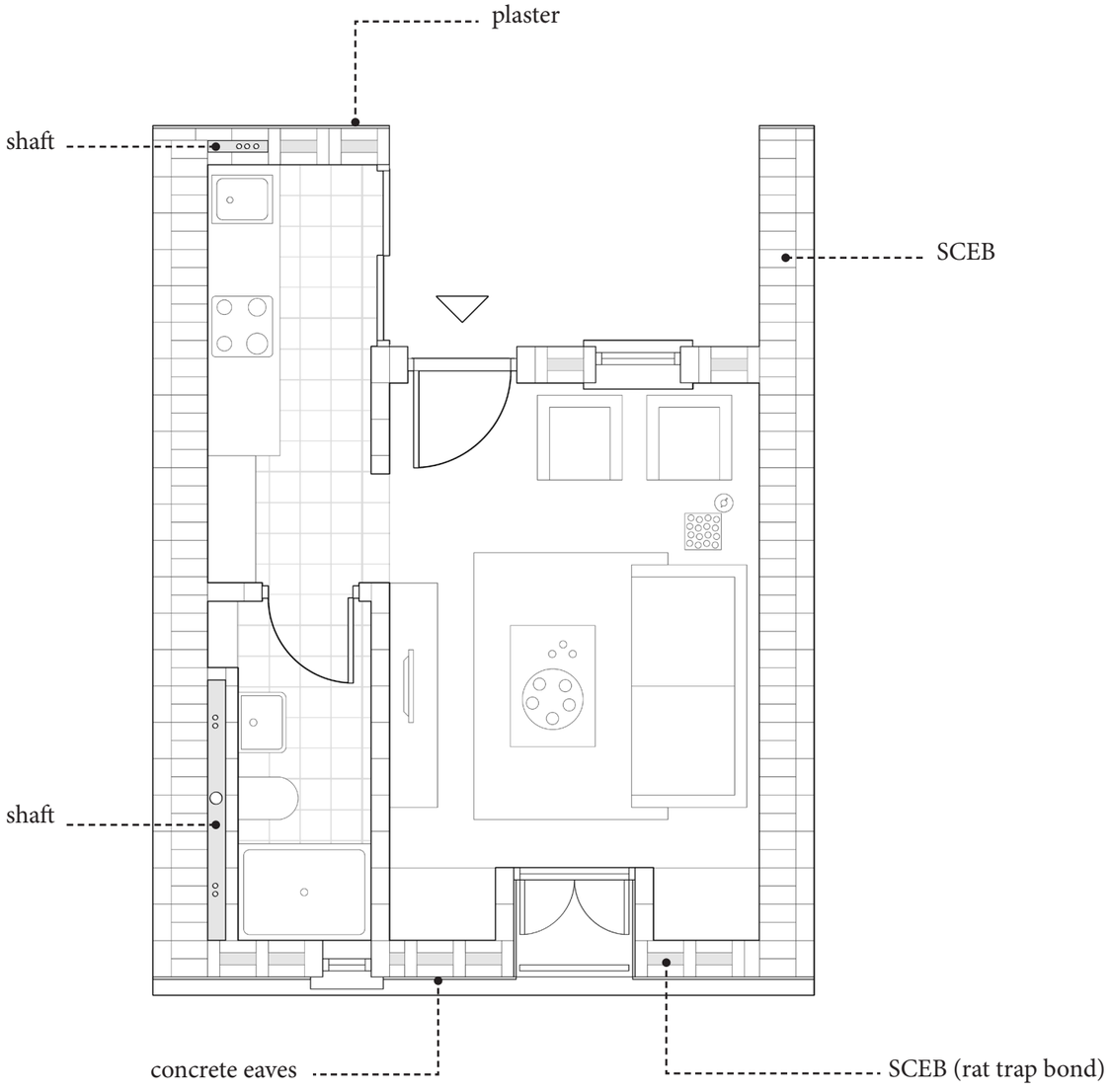
8 - SCEB (rat trap bond)

9 - Clay-straw block

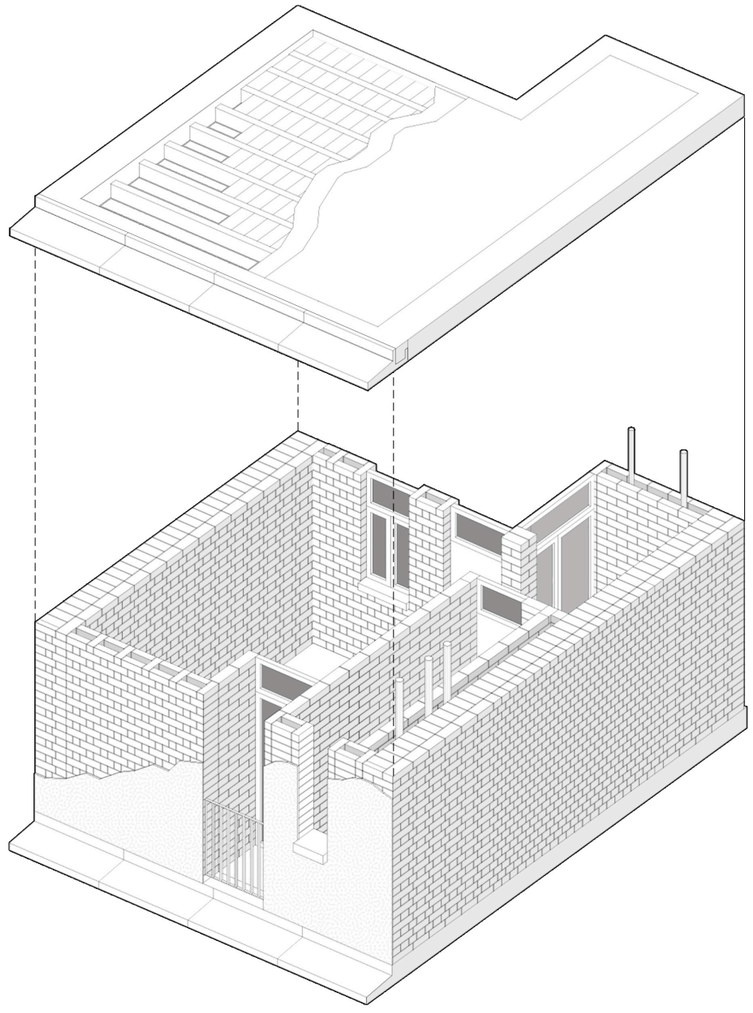
10 - concrete T joist



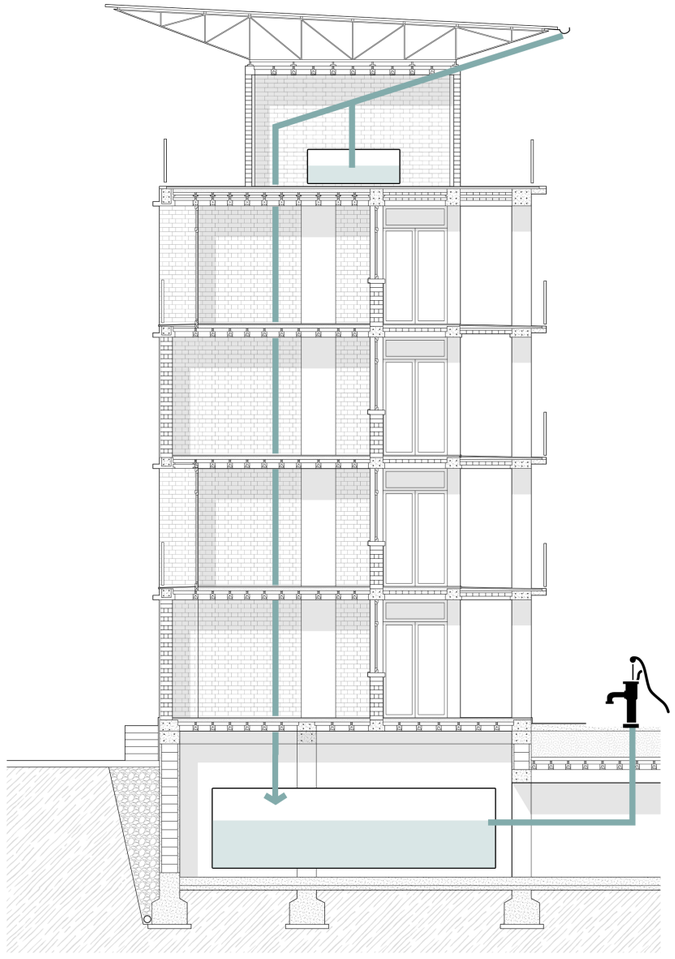

Concrete T joist
Poured concrete slab
Clay-straw block
SCEB (english bond)
Concrete prefab element
(eaves & formwork)
Concrete beam cast in situ
SCEB (rat trap bond)
metal bar



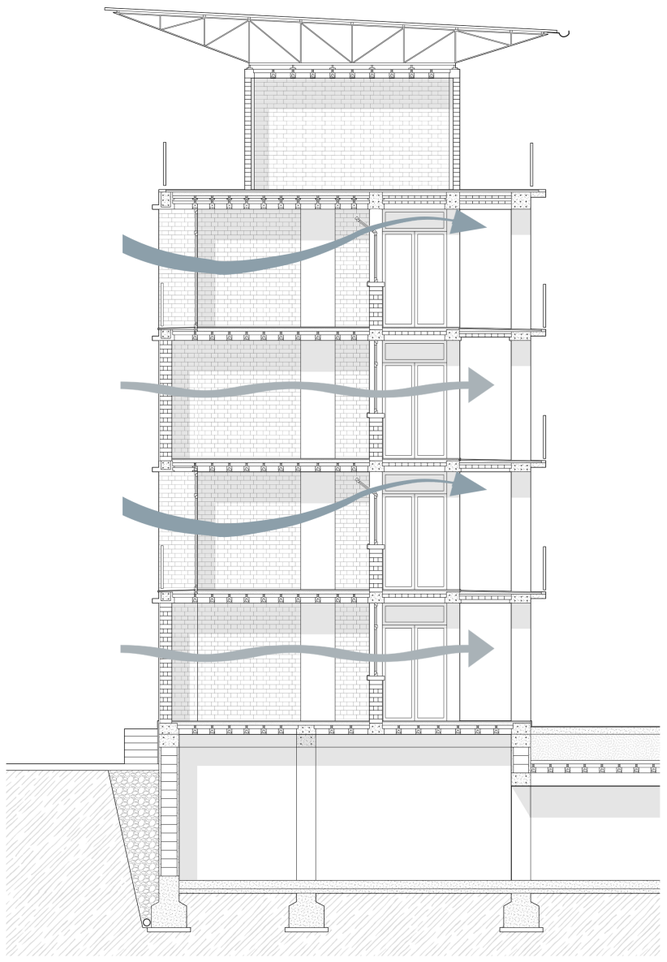
Detail plan | scale 1:50



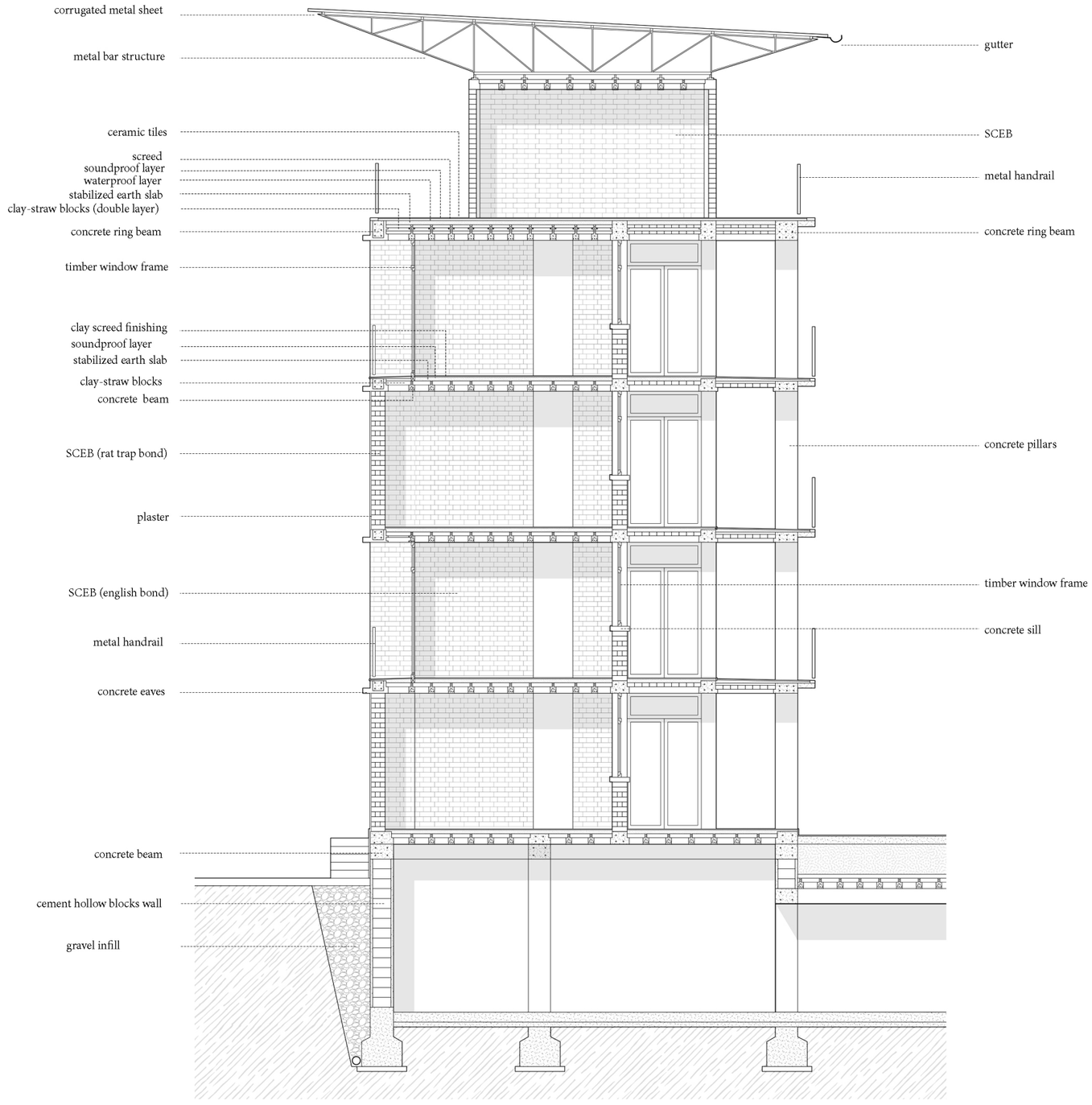
Detail axo | scale 1:50



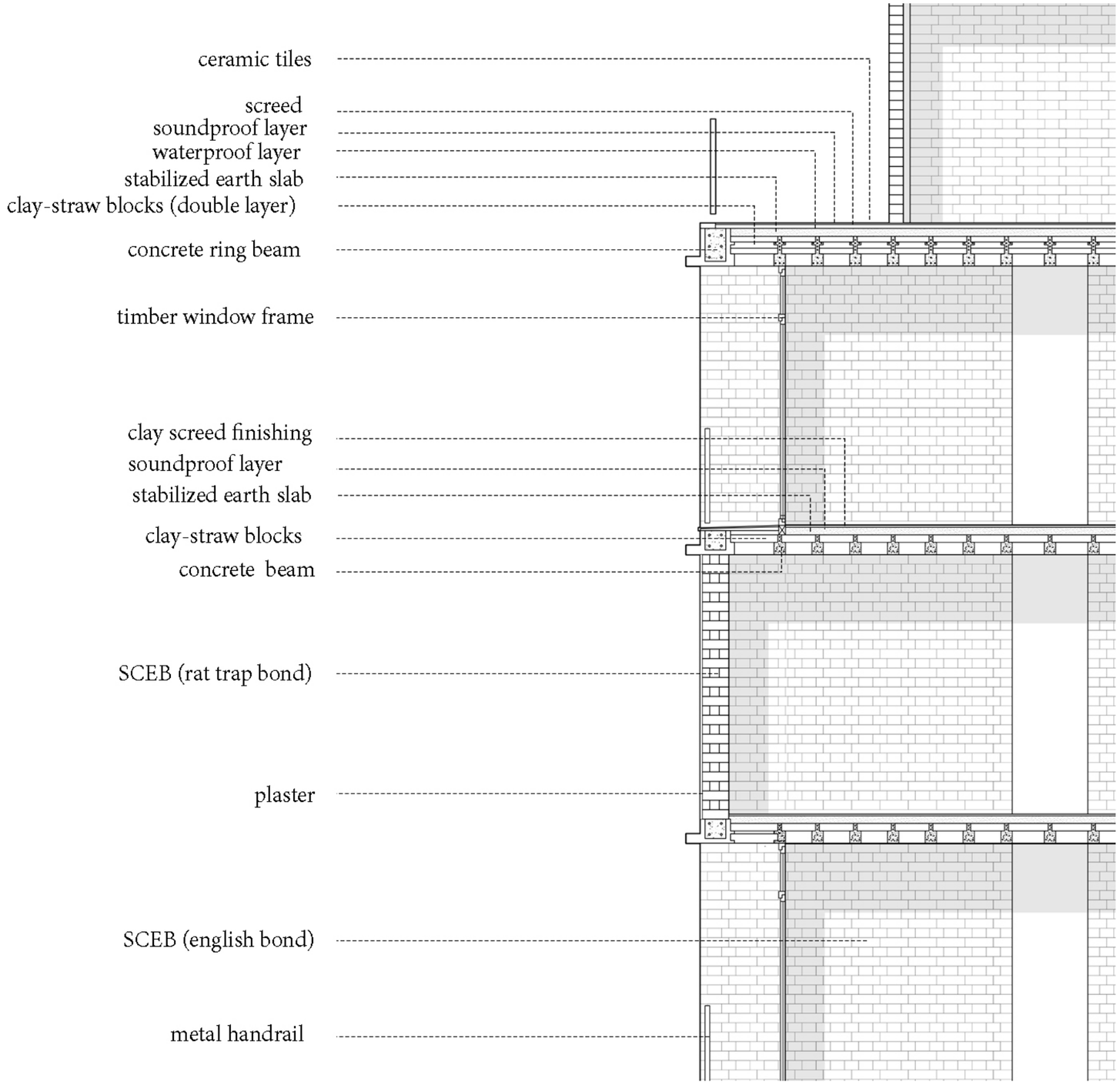
Water management



Cross ventilation

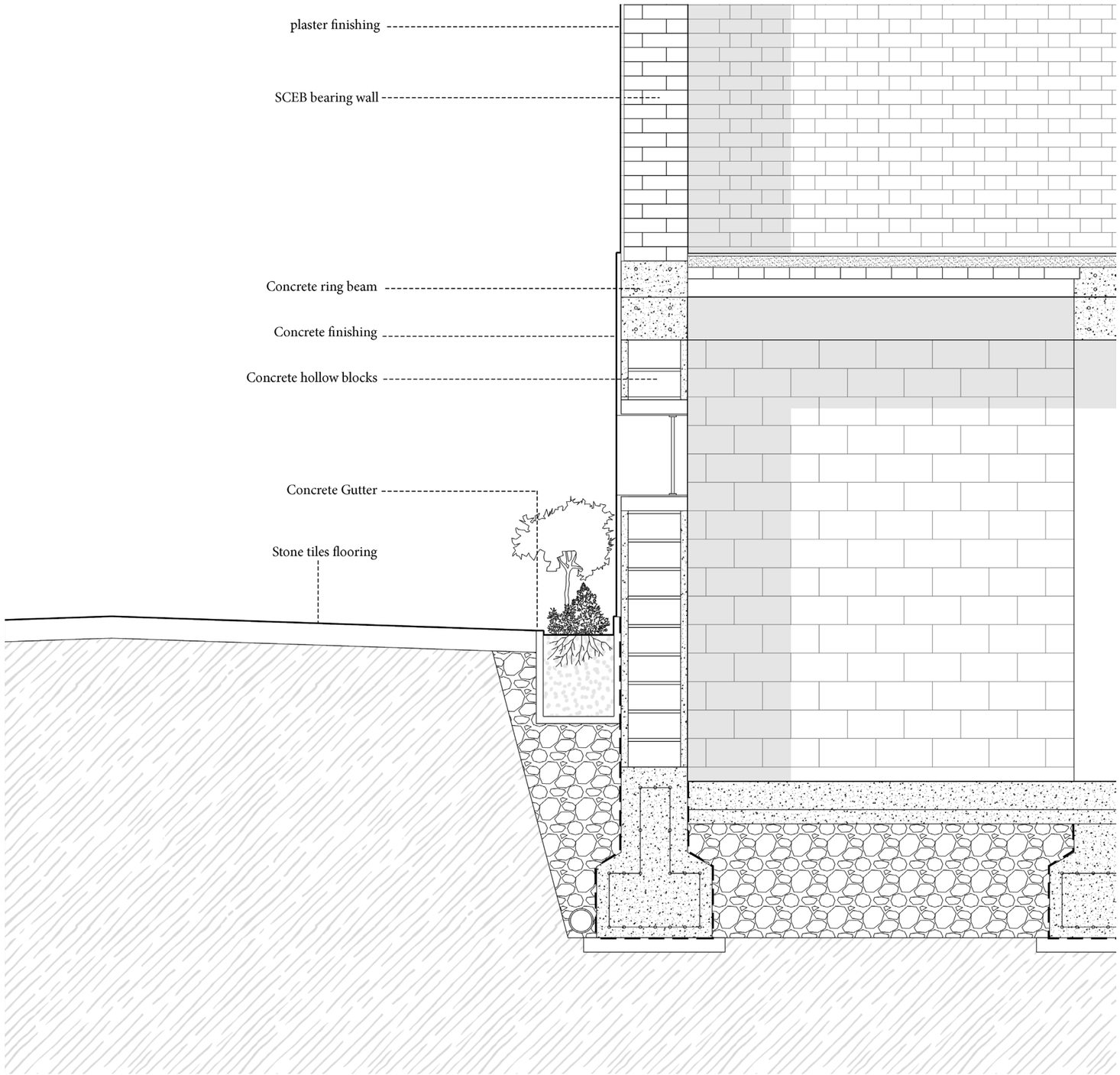


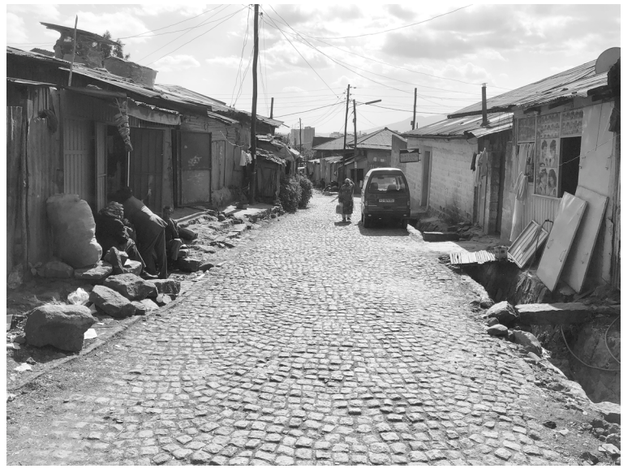
Detail section | scale 1:100



Detail section | scale 1:50

Water management





Water management

Detail elevation

VISUALIZATION