



[RE] CONNECTING M U M B A I

A response to the increasing spatial and social polarization within the city of Mumbai

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EWS	Economically Weaker Section
LIG	Low Income Group
MIG	Middle Income Group
HIG	High Income Group
FSI	Floor Space Index

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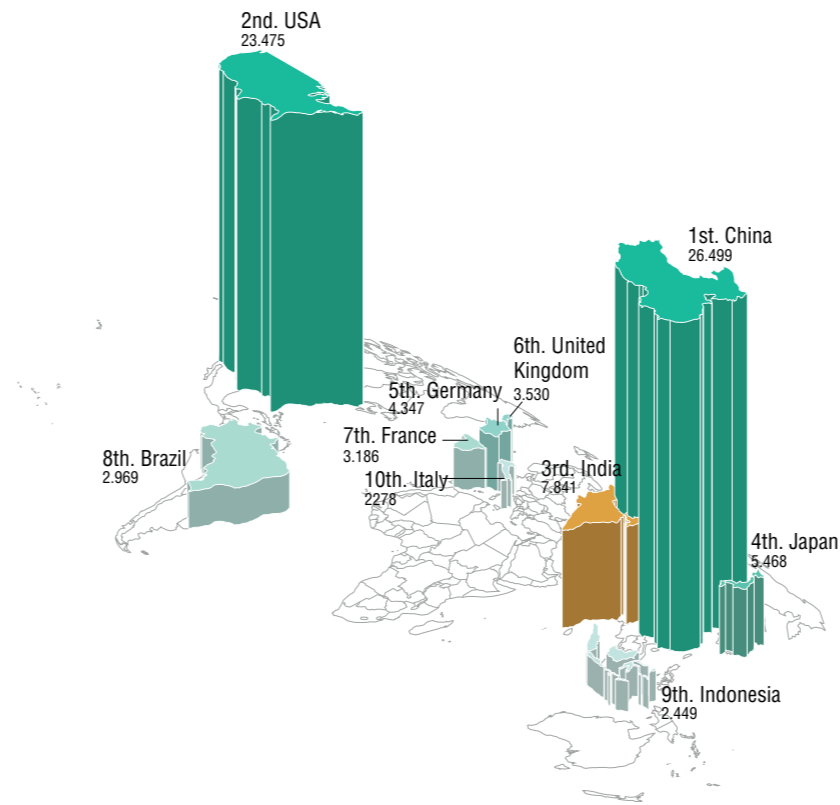
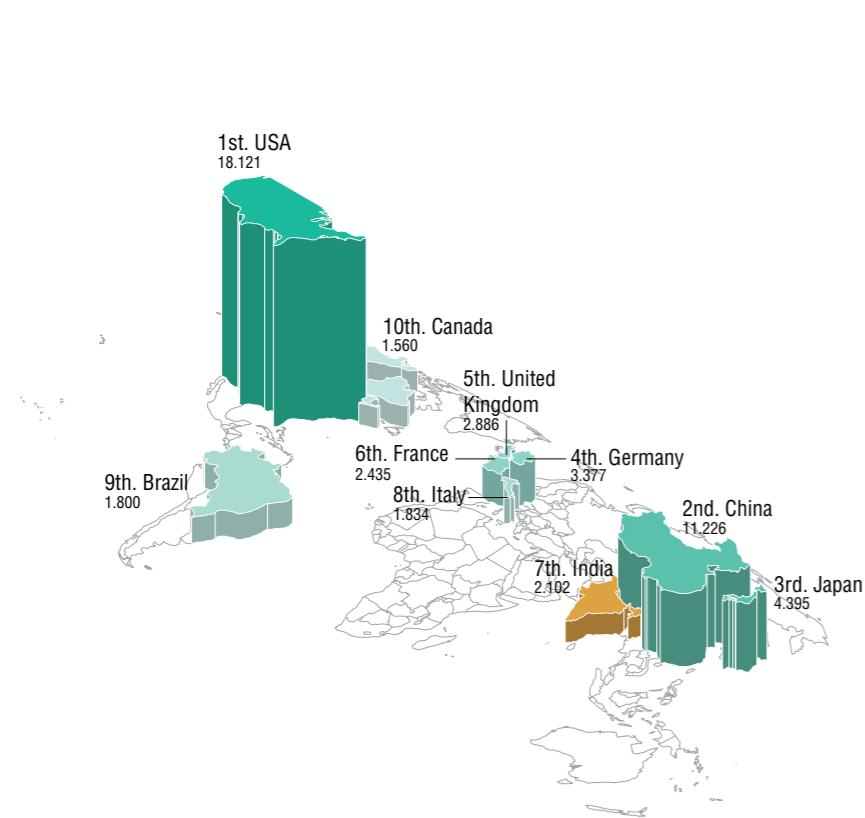
Atmospheric
Impressions

BACKGROUND

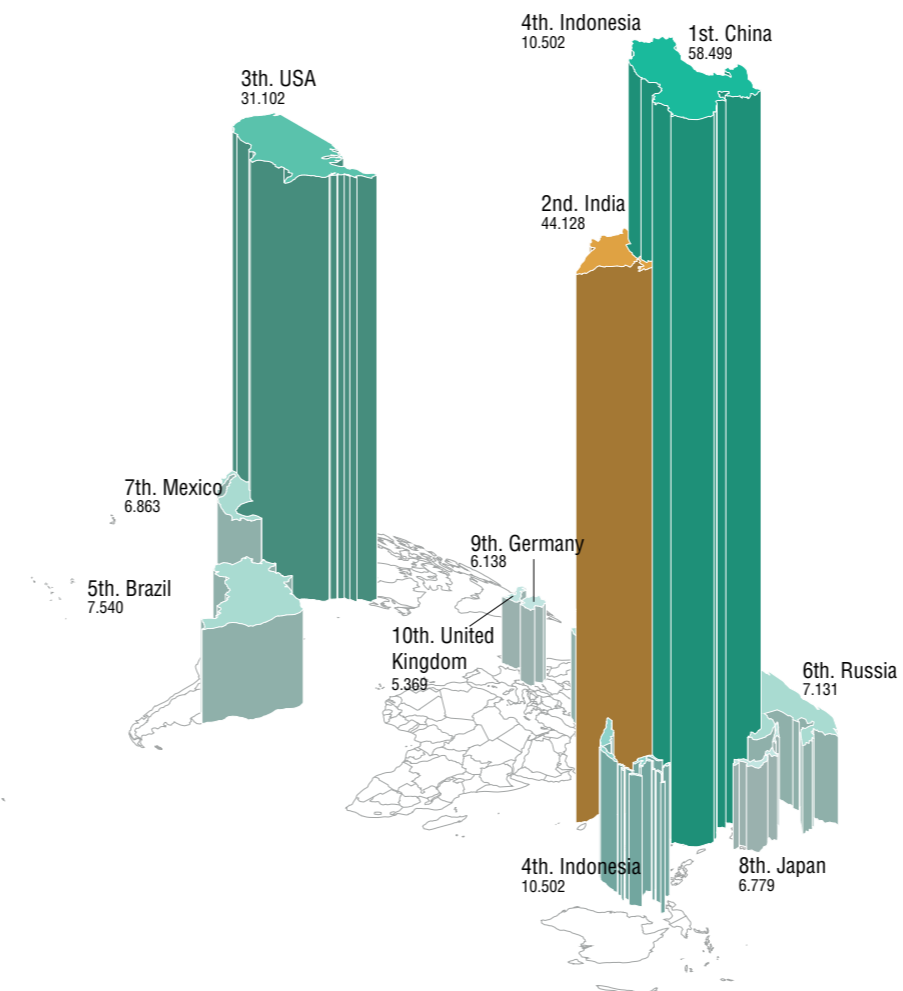
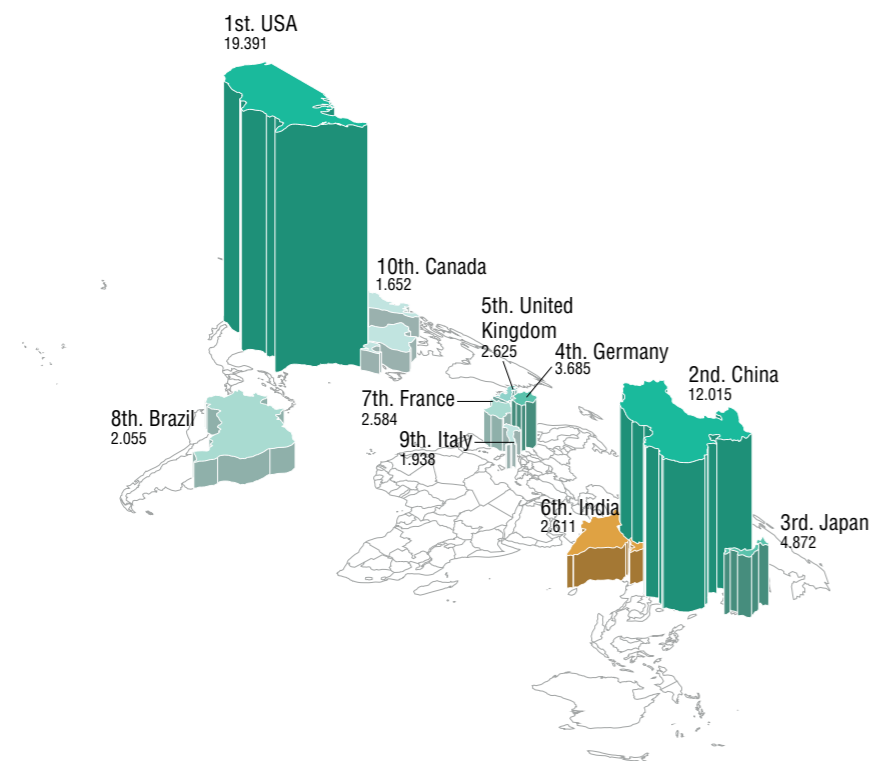




Growing Economy

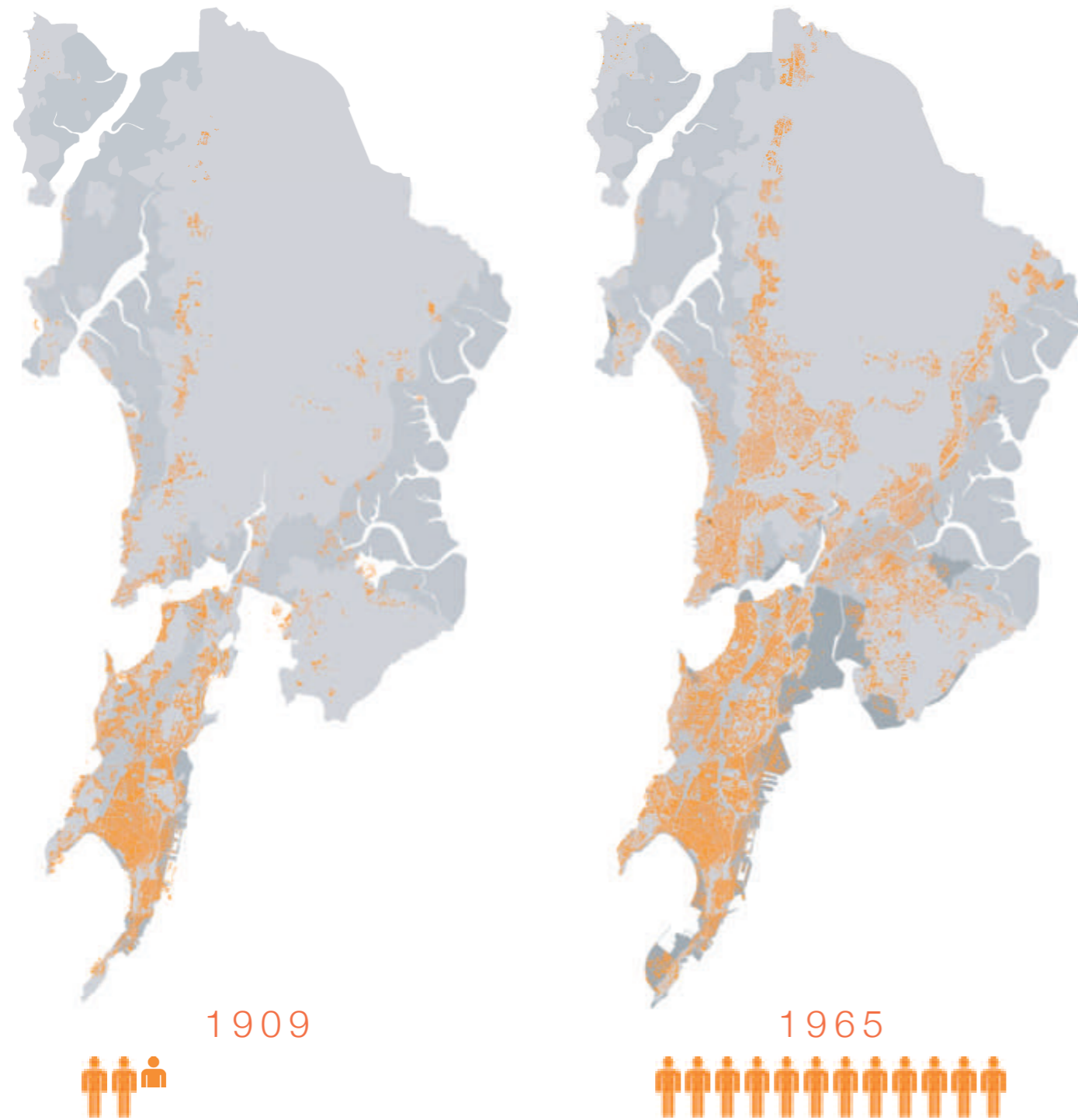


India is projected to be the second largest economy in the world by 2050





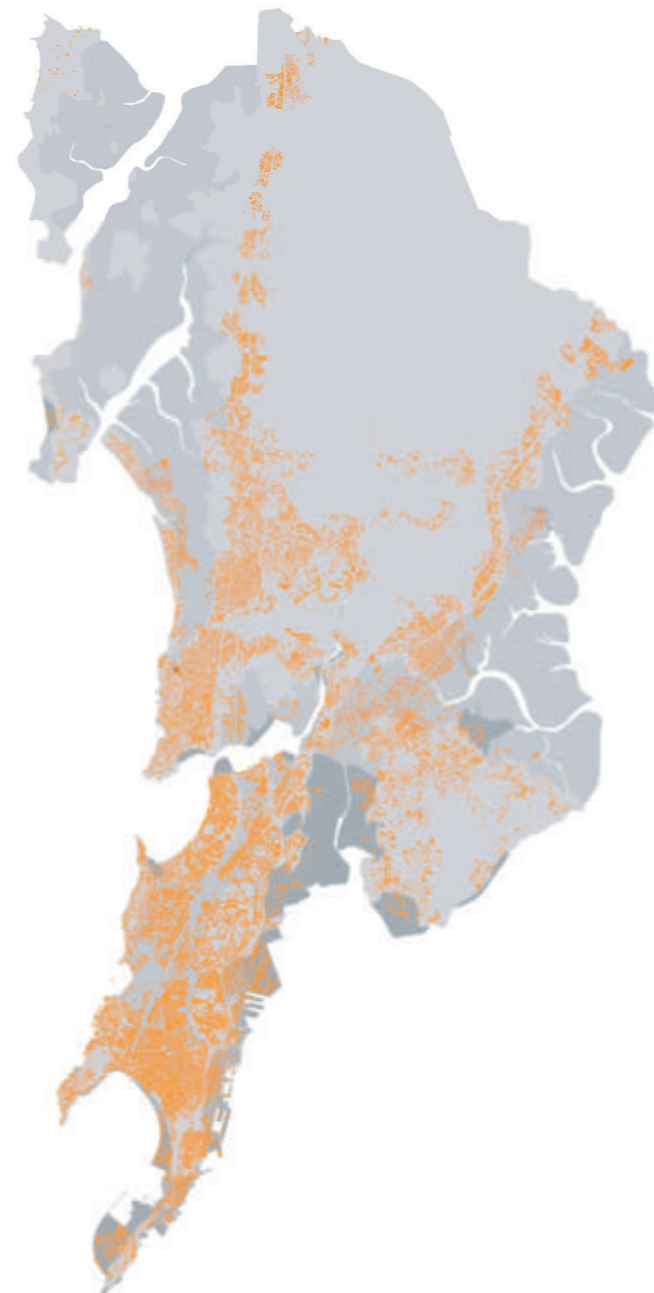
“The growth process in India since the 1990s has been associated with an increase in polarization”



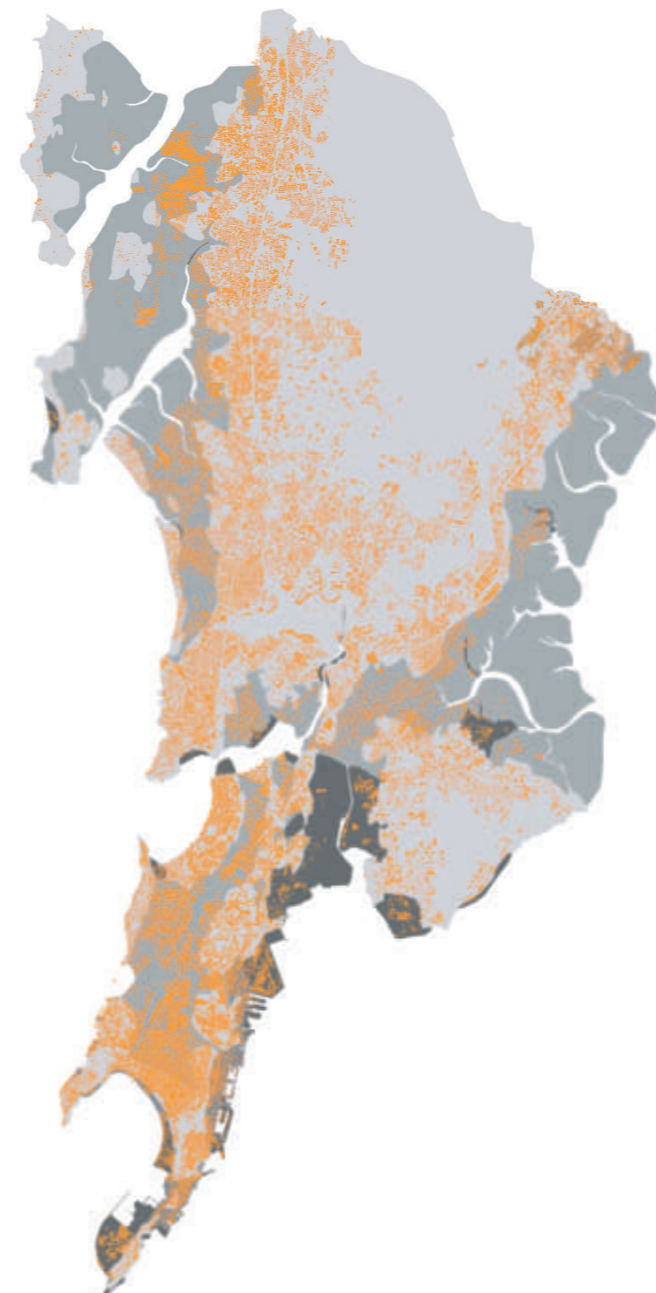
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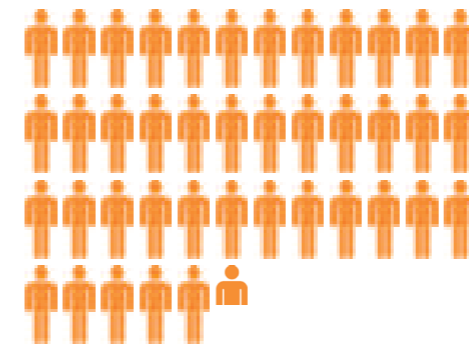
1909



1965

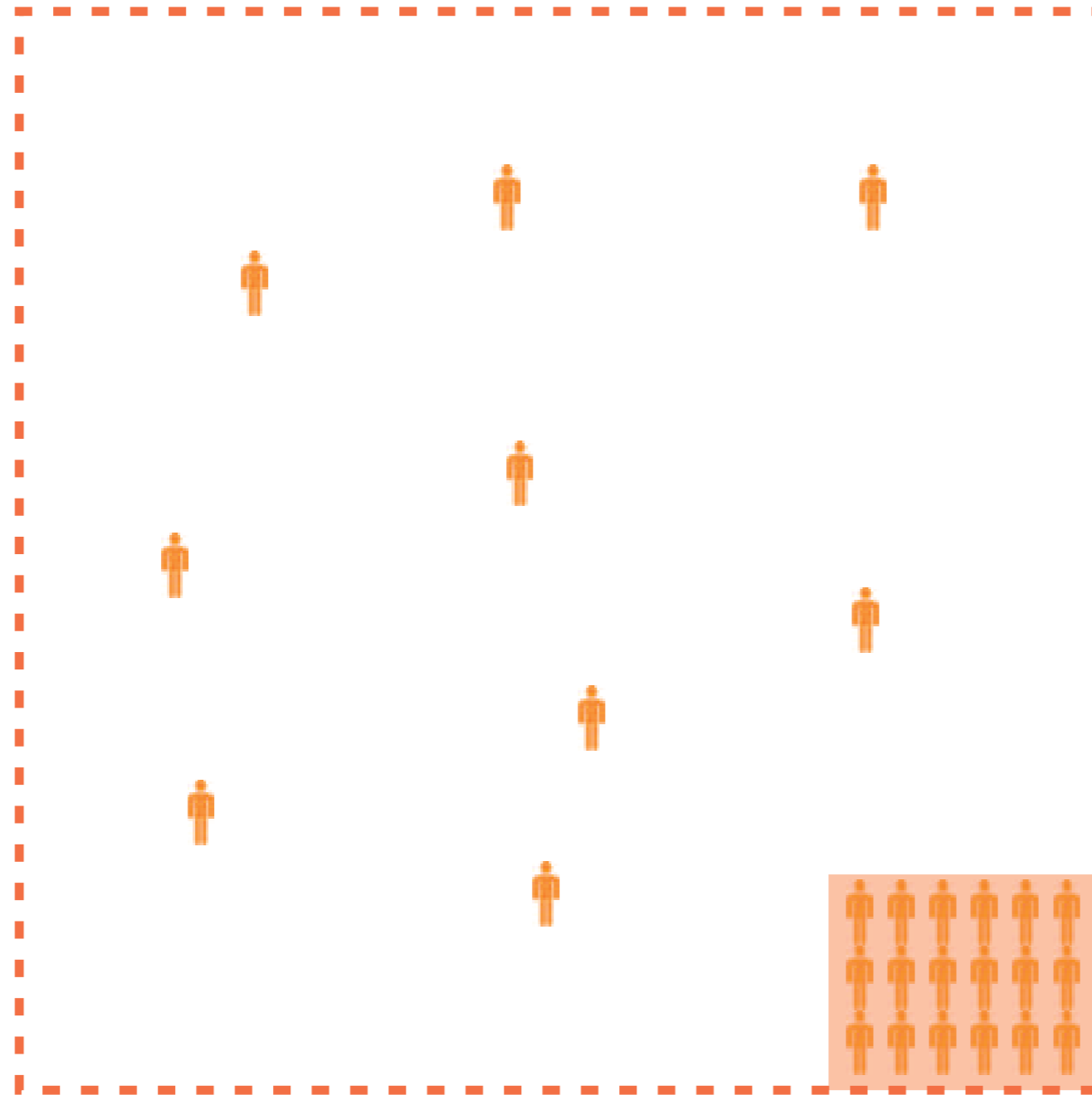


2012



“The growth process in India since the 1990s has been associated with an increase in polarization”

Population Density Mumbai



Almost half of the world's wealth is owned by 1% of the population, the spatial and physical effects of this inequality are becoming more pronounced. In Mumbai two thirds of the population live on 5% of the land.

Social Polarization Mumbai



Social and spatial
polarization in Mumbai

World Wide Problem



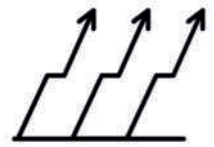
Social Polarization is a world wide phenomena and growing problem

City of Walls



If the current trend continues these cities will only be a city of walls.

Problems Generated by Social Polarization



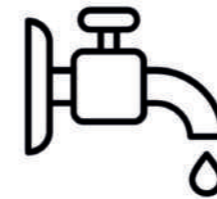
Limited Upward
Mobility



Education



Segmentation of Labour
market



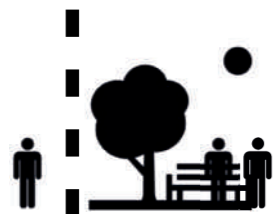
Water supply



Limitation of Political &
Social participation



City Connections



Isolation of Public
Space

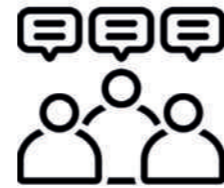


Security

Problems Generated by Social Polarization



Psychological disorders



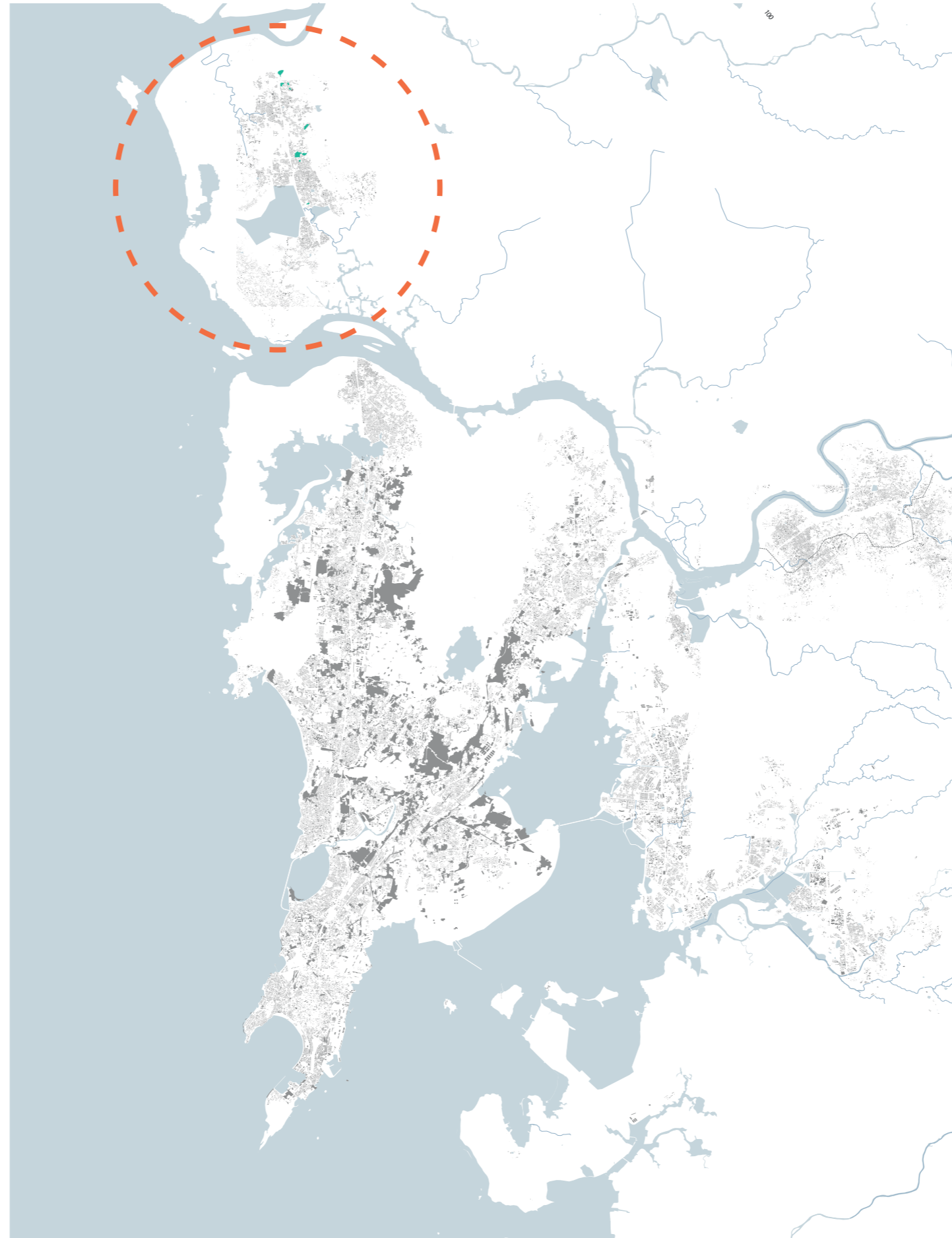
Social Disparities



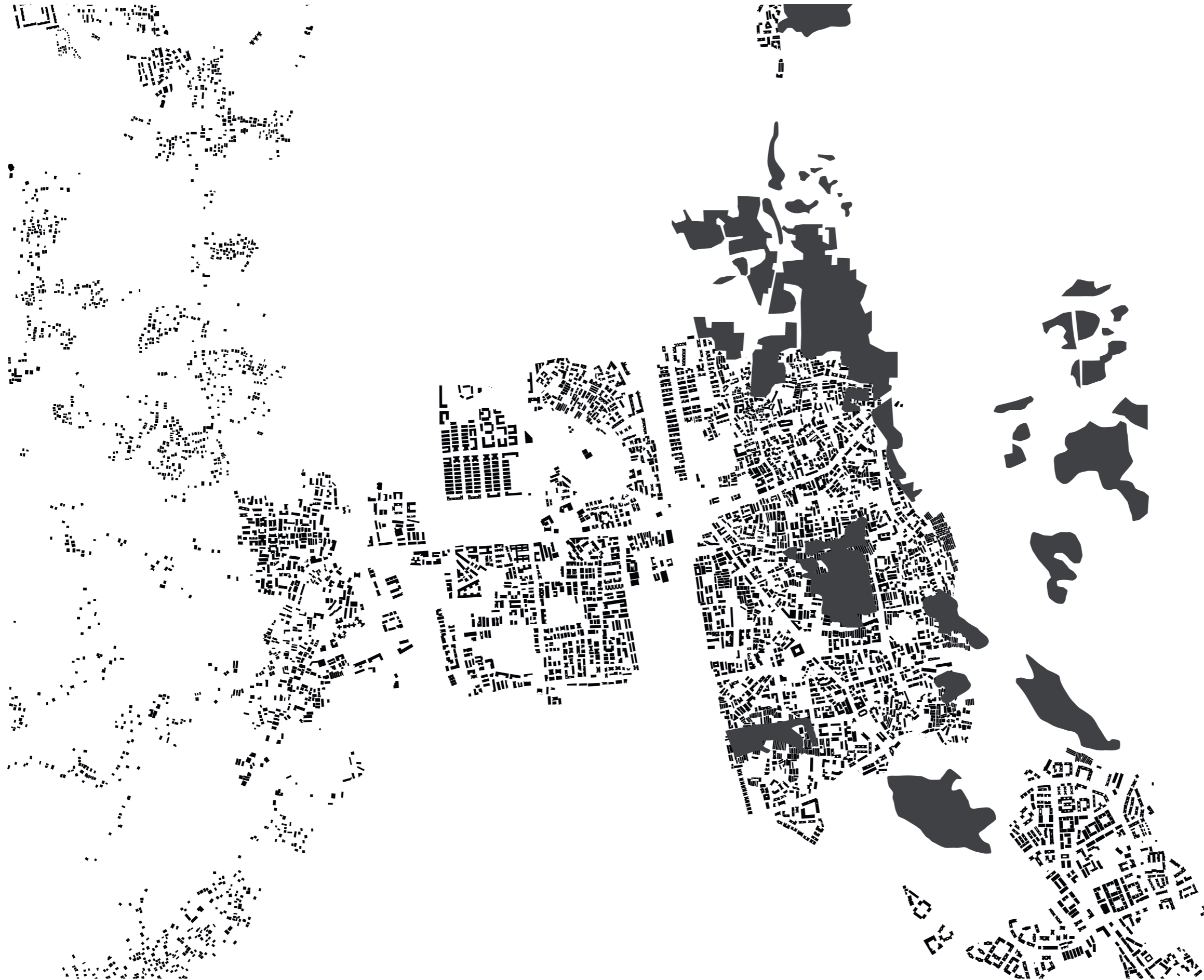
Health Disparities



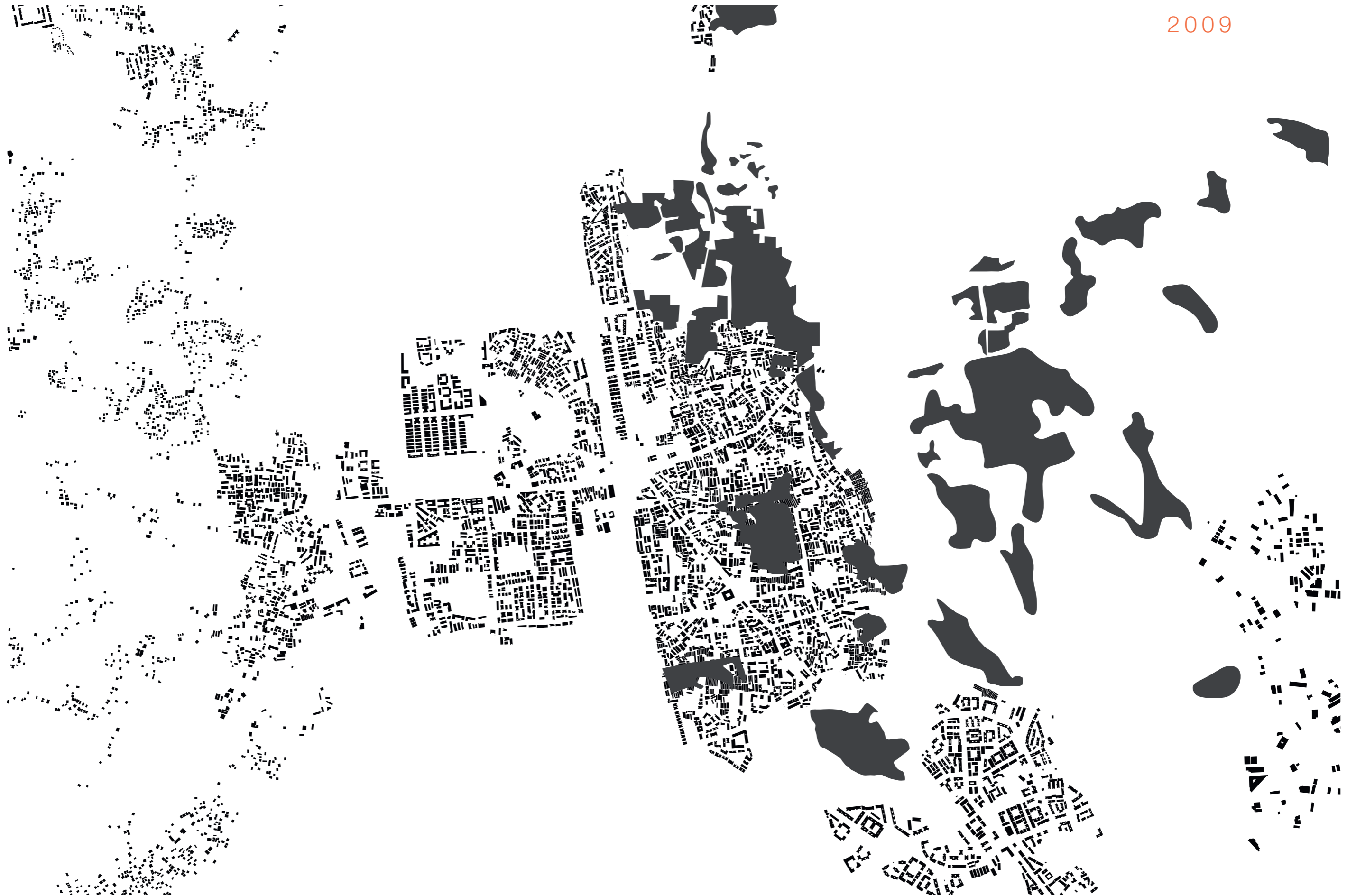
Violence



2002



2009





2015









The increasing **social polarization** and **widening income gap** leads to **spatial and social inequality** in Nalasopara and Mumbai.

This contributes to unfairness between the rich and poor, unfairness in **upward mobility**, **harsh borders** between high and low income groups, **different accessibility to public place**, **ghettoization** of lower income groups.

Which as a result in a disconnect between the **City** and its **Inhabitants**

The project aims to design and create a framework where all income groups have access to **accessible urban spaces & affordable housing.**

While also soften the boundaries between the income groups but maintaining the **qualities, individuality and opportunities** for each income group.

Which in turn all encourage diversity within this framework to **Re-connect** the people with the city and each other.

How can a mixed-use, mixed-income housing development in Nalasopara stimulate the development of socially depolarized sustainable urban settlements?

Sub-questions:

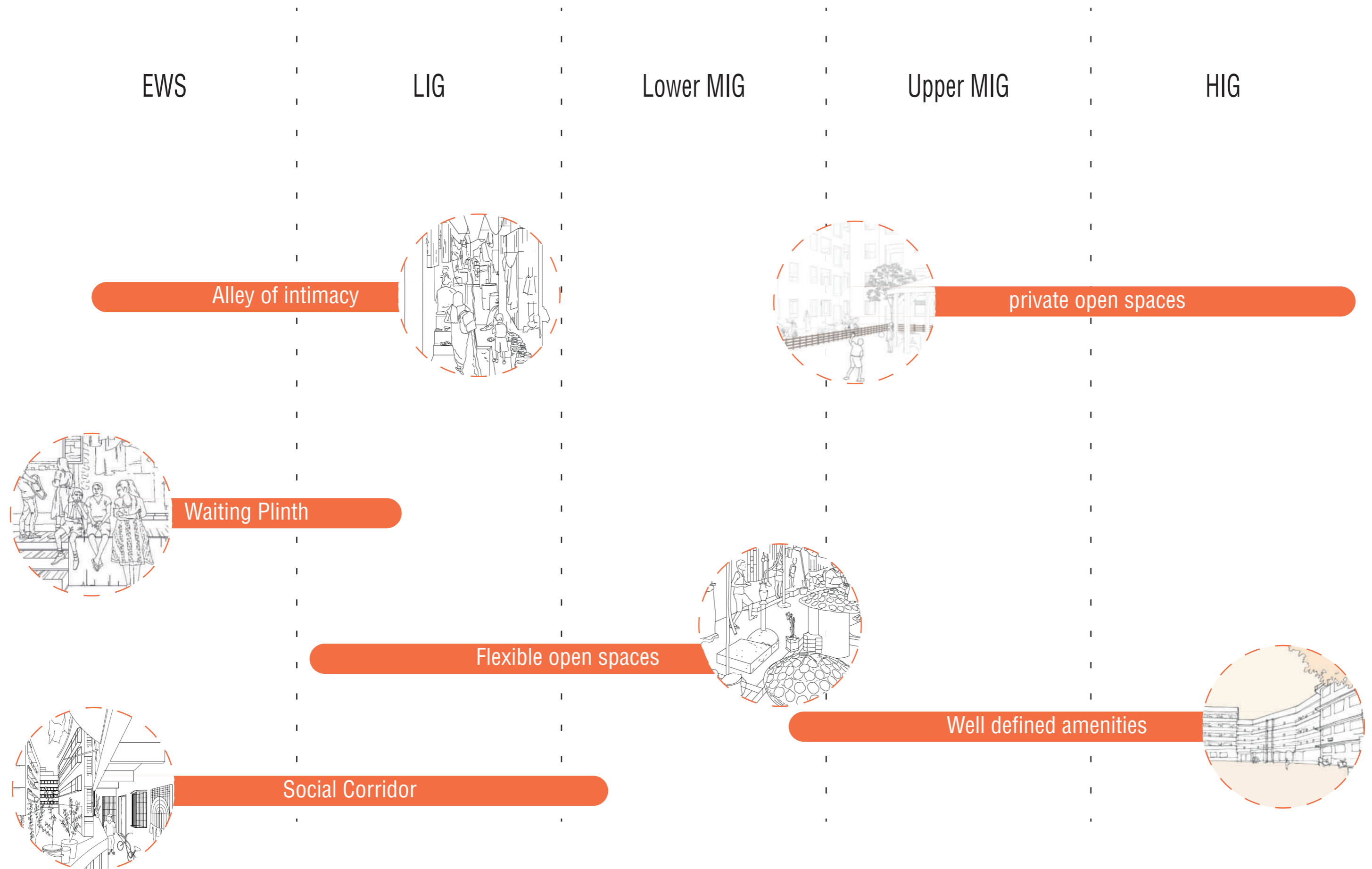
What are the needs and aspirations of each income group?

Which urban & housing configurations are suitable to create a sustainable social connection & interaction between different income groups.

How can a mixed-income housing project connect different income groups?

RESEARCH

Needs|Aspirations per Income Group



Needs|Aspirations per Income Group

EWS

LIG

Lower MIG

Upper MIG

HIG

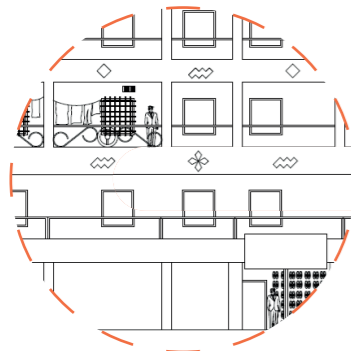
Domestic Servant for HIG



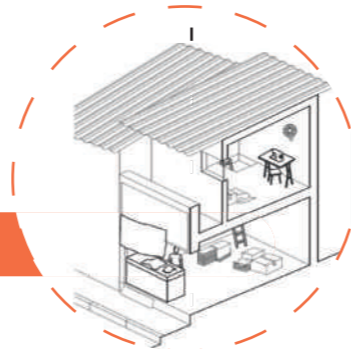
Office Job



Home Production



Work from home



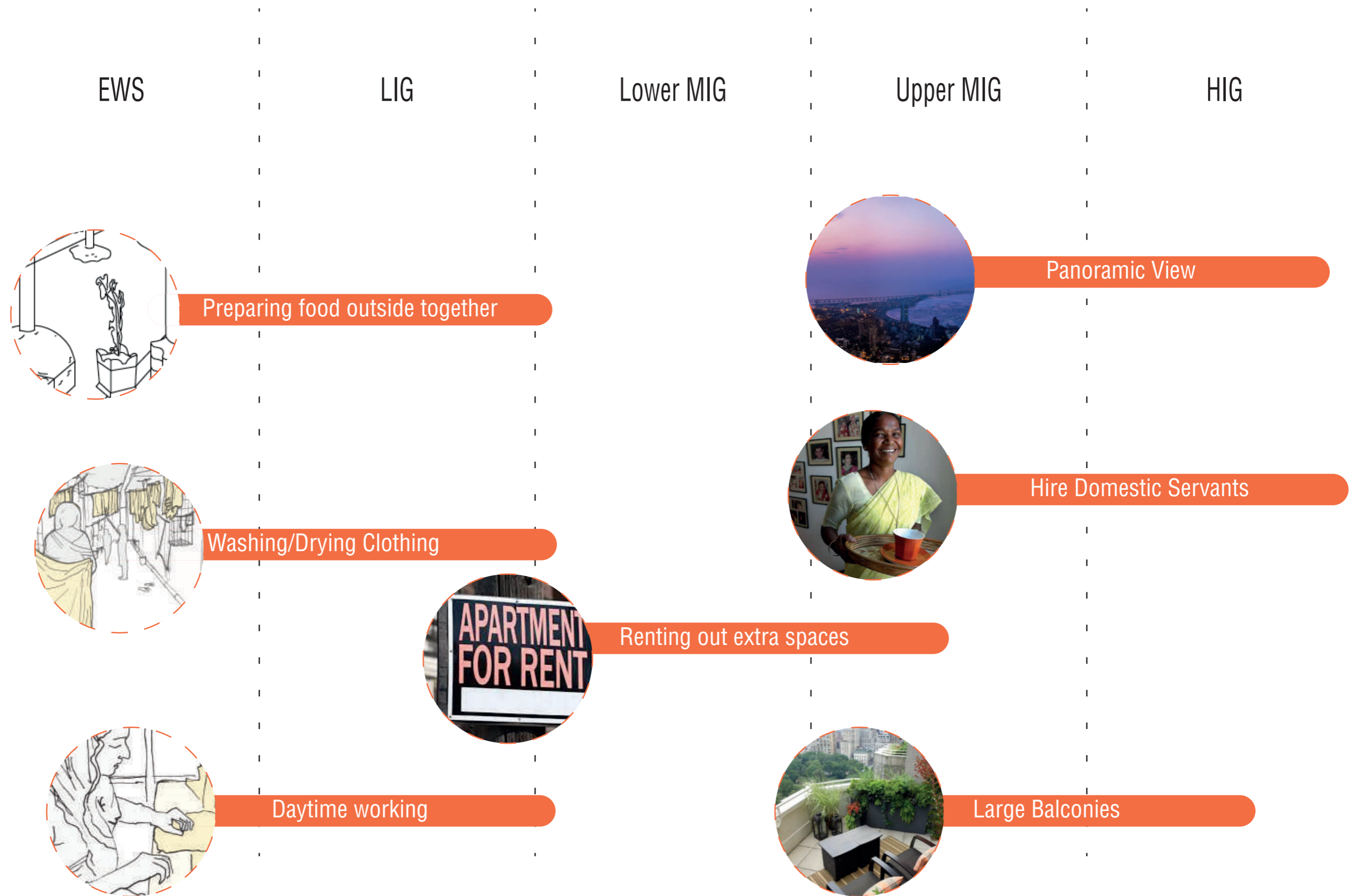
Work/live units



Informal Street Corner



Needs|Aspirations per Income Group



Needs|Aspirations per Income Group

EWS

LIG

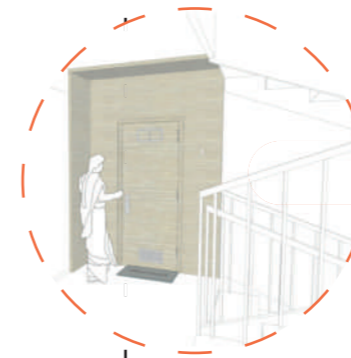
Lower MIG

Upper MIG

HIG



Plinth, objects, facade materials to identify unit

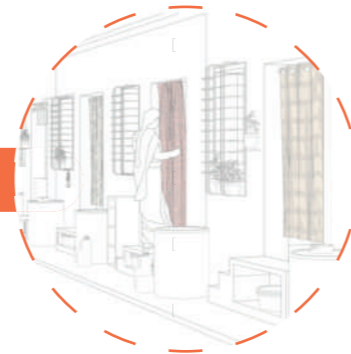


Decorating entrances

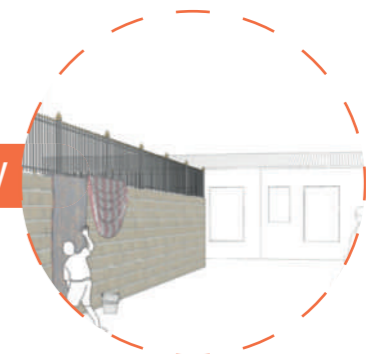
Window Grill



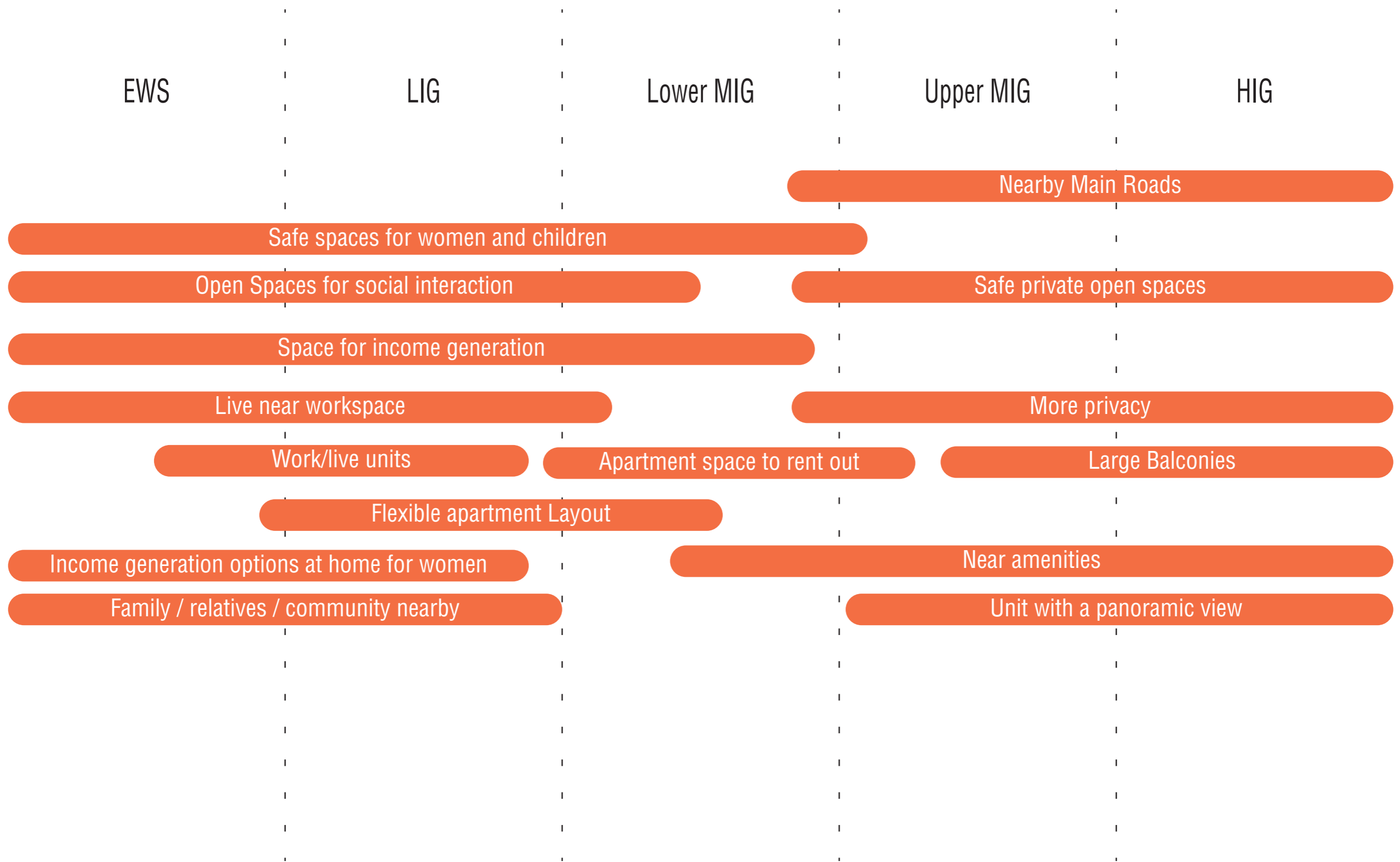
Curtains in front of main entrance



Walled compound for extra privacy



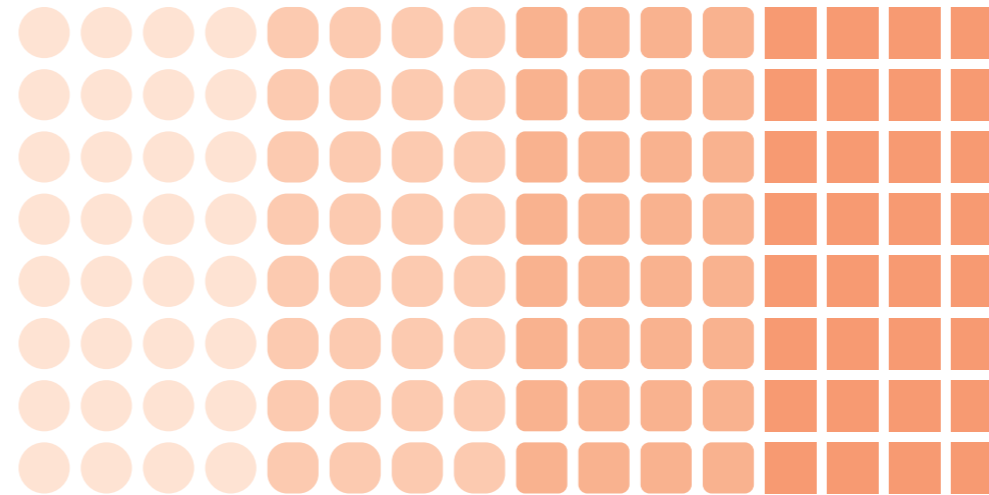
Needs|Aspirations per Income Group



Fully Segregated

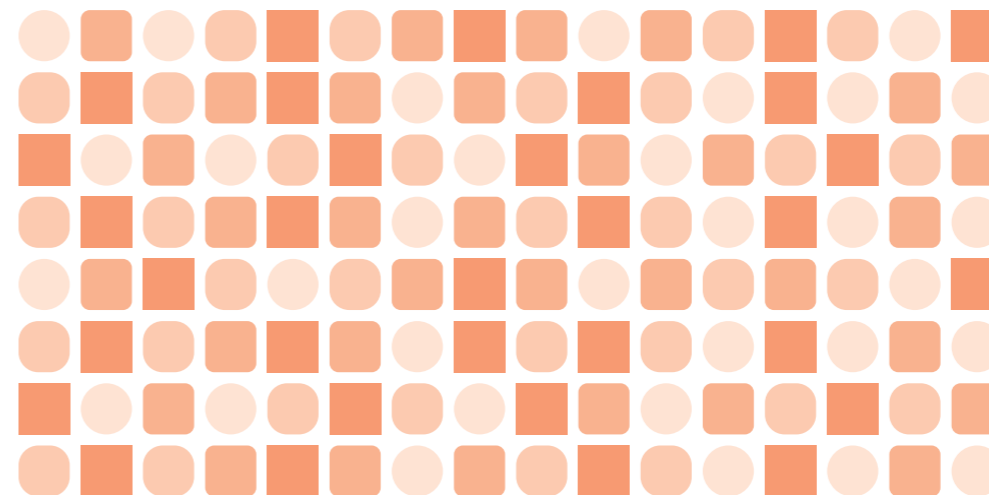
Clear Separation

No social Connections



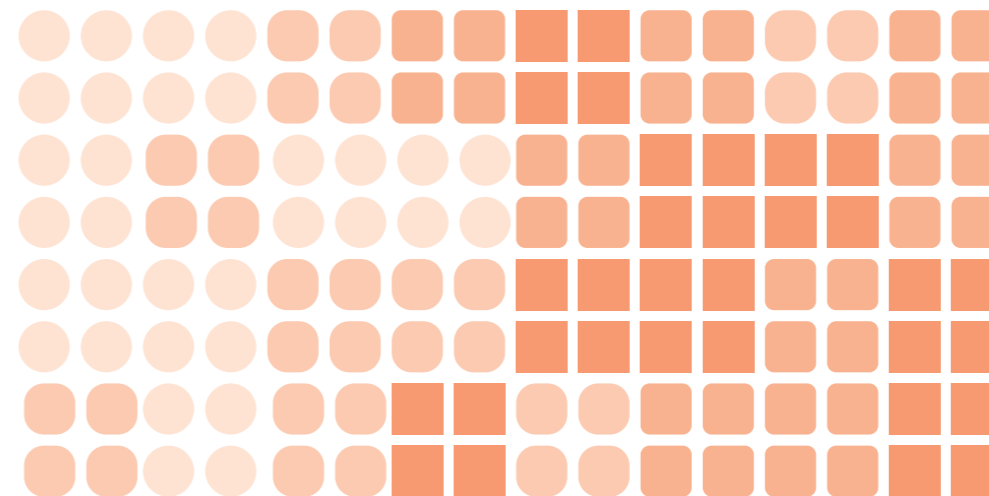
Fully Mixed

Hard to attract MIG/HIG
Income groups rather live
near people of the same
group



Clustered

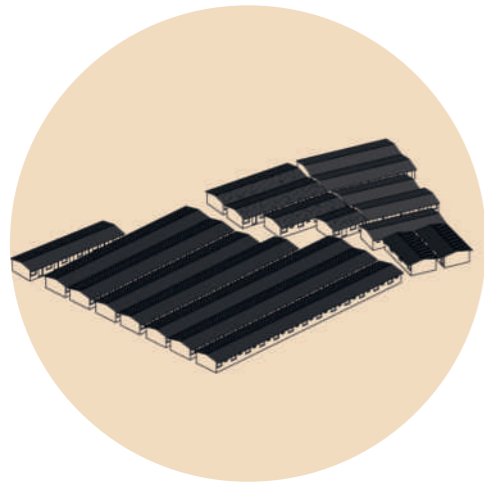
Clustering of groups.
Zones of exchange between
groups



Configurations | Housing

Low income

Middle/High income



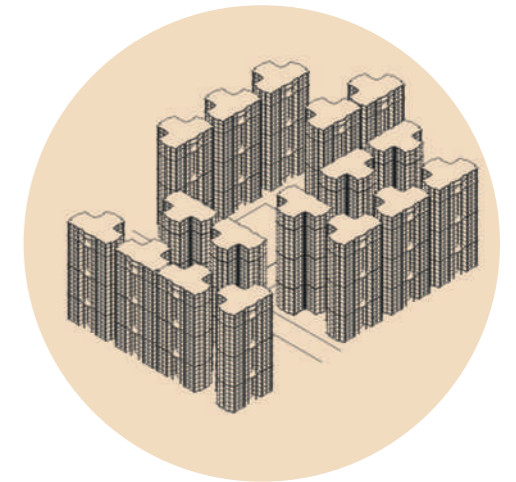
Baithi Chawls



Handshake Chawls



Sri Prastha



Mhada

Inward Facing

Outward Facing

Communal Space

Privacy

Unused leftover spaces

Security

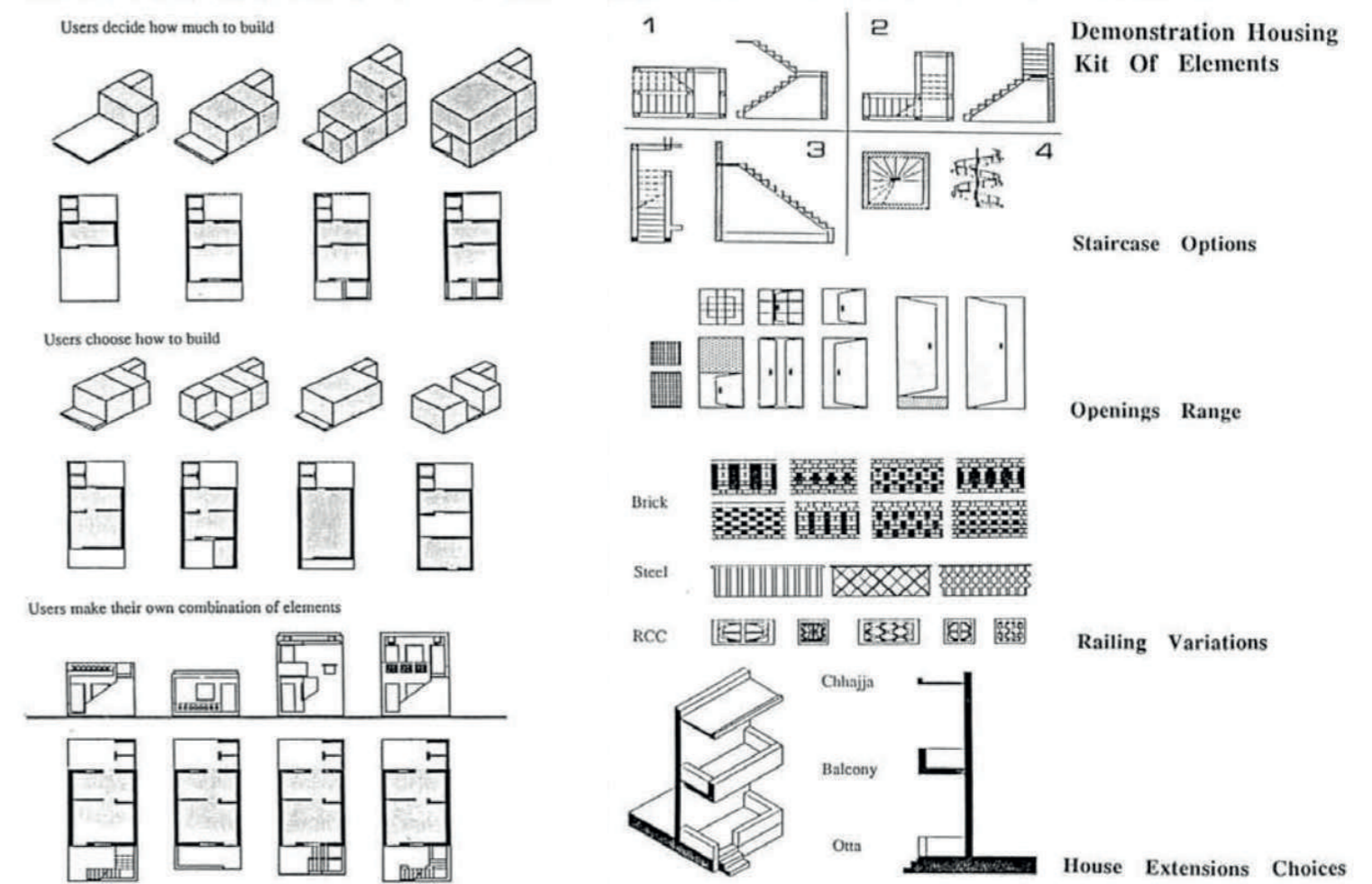
Hierarchy of Open Spaces

Central Amenity spine



Zoning of income groups

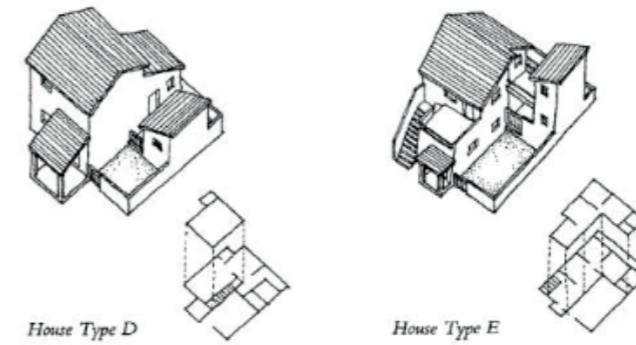
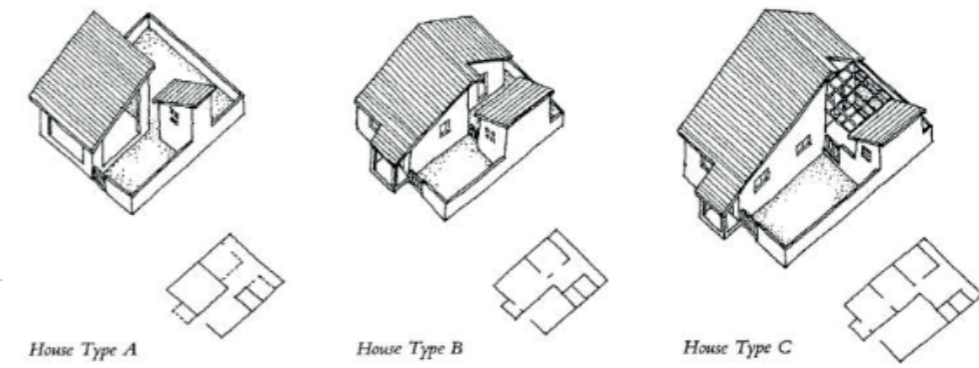
Individuality in chosen parts of dwelling



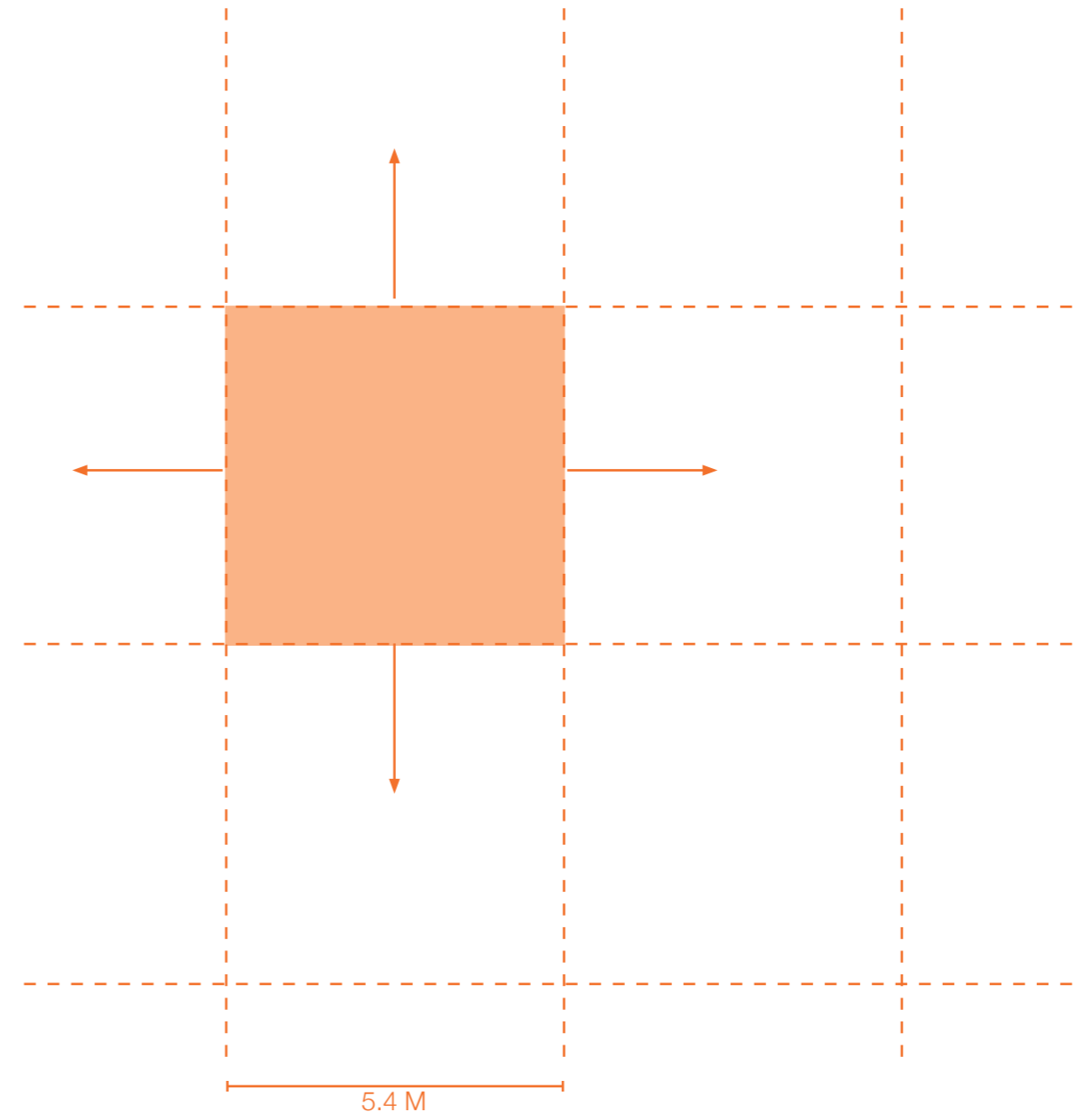
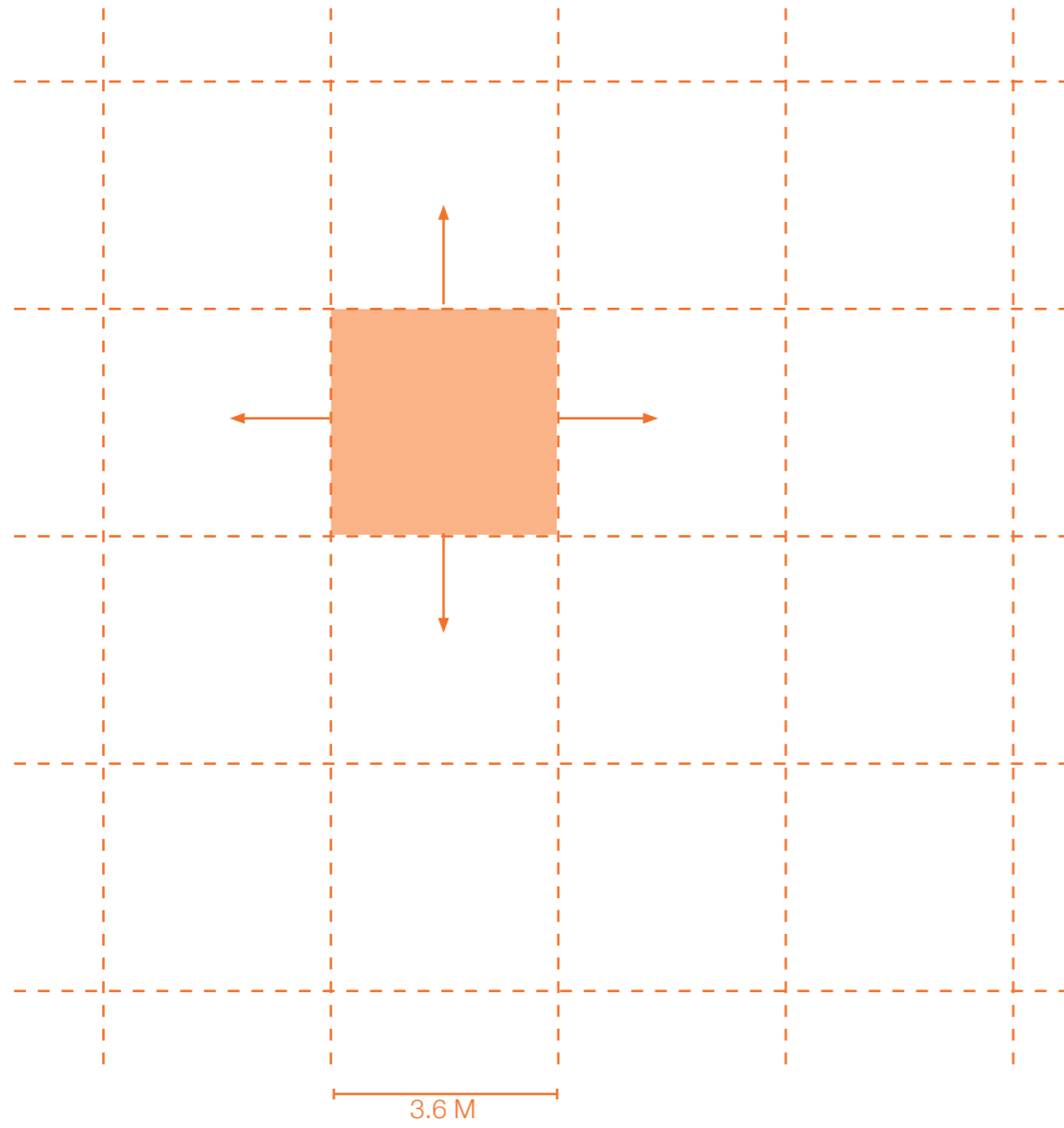
Difference in Grid-size

Incrementality

Diversity within a system

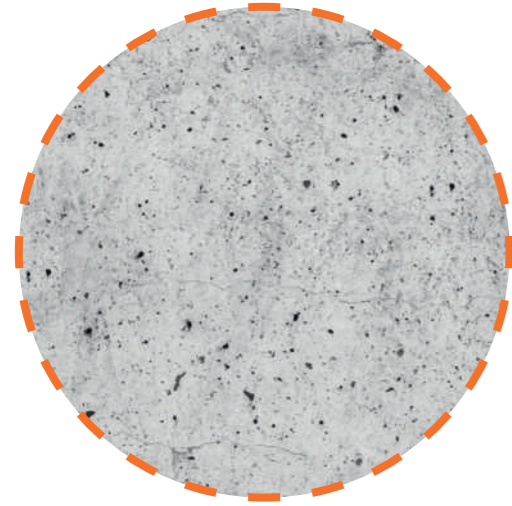


Design Hypothesis



Design Hypothesis

Local Materials

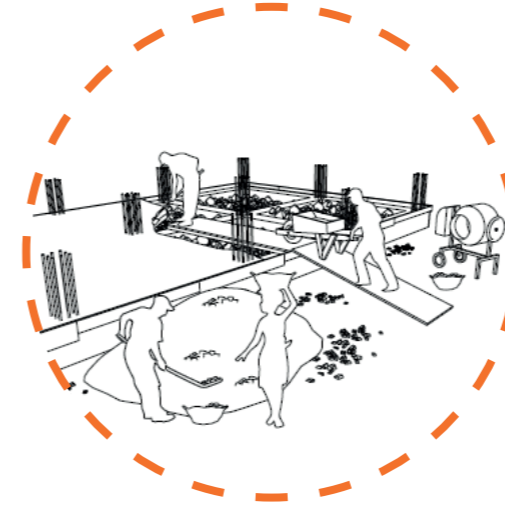


Concrete

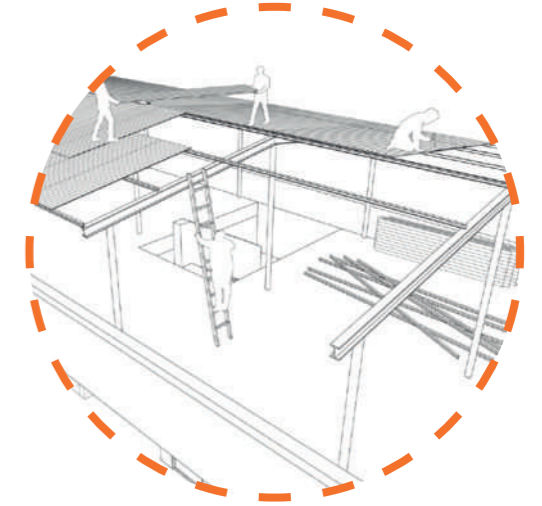


Fly ash Bricks

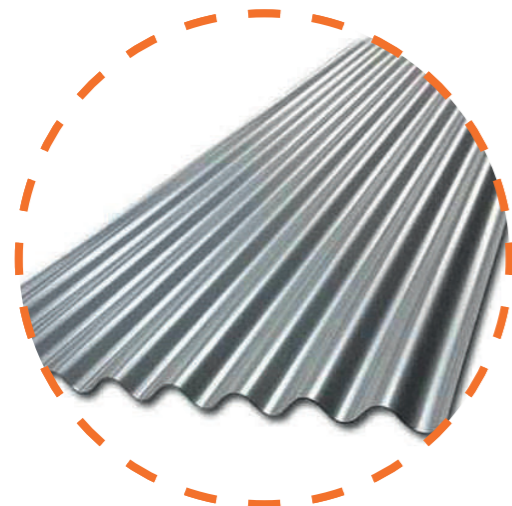
Local Methods



Raised Plinth



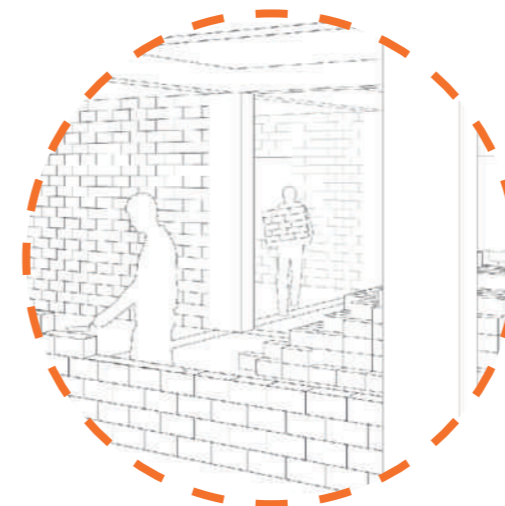
Corrugated Roof



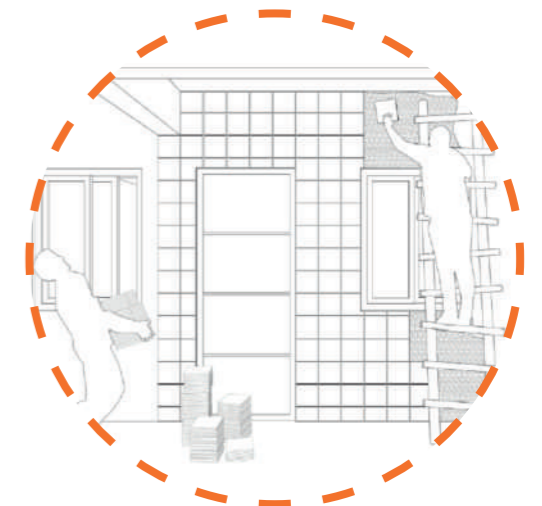
Corrugated sheets



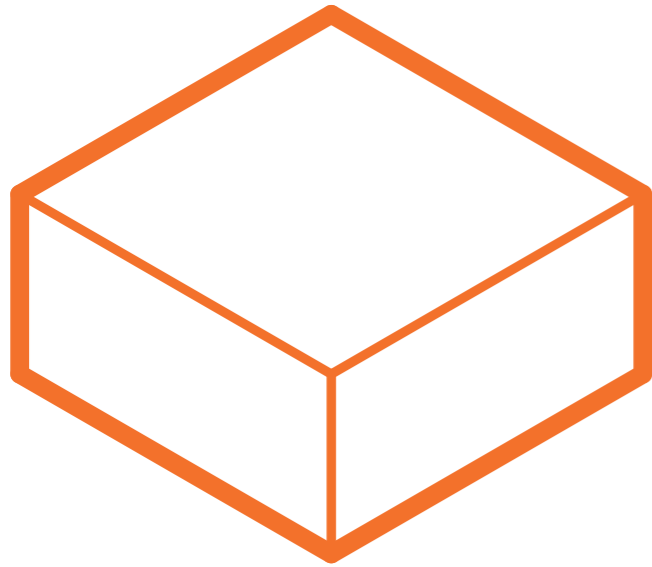
Bamboo



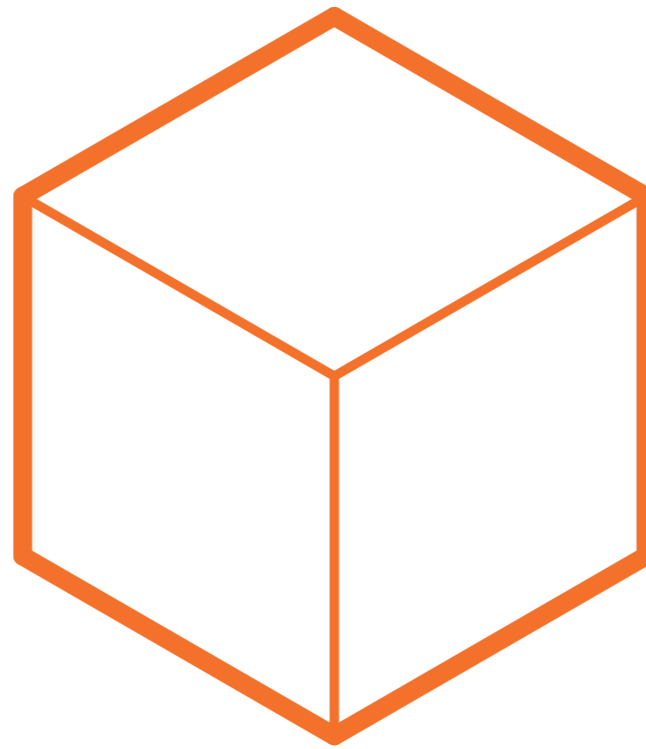
Concrete Frame/ Brick infill



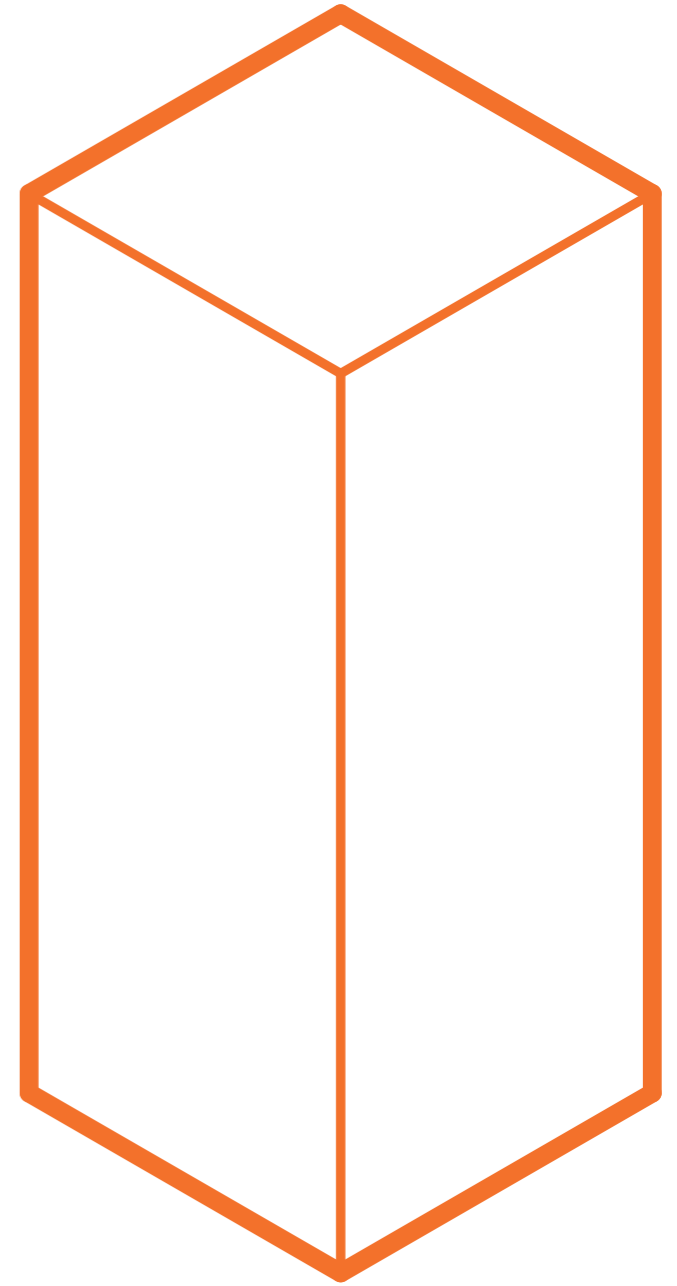
Tiled Surfaces



Low-rise



Mid-rise



High-rise

Key Takeaways



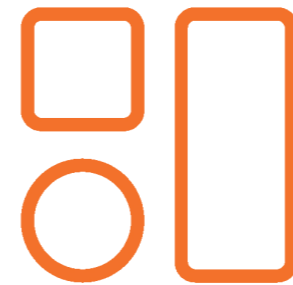
Flexibility



Efficiency



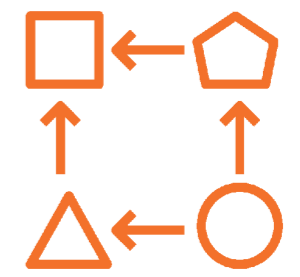
Community



Social Mix



Space for
income
generation

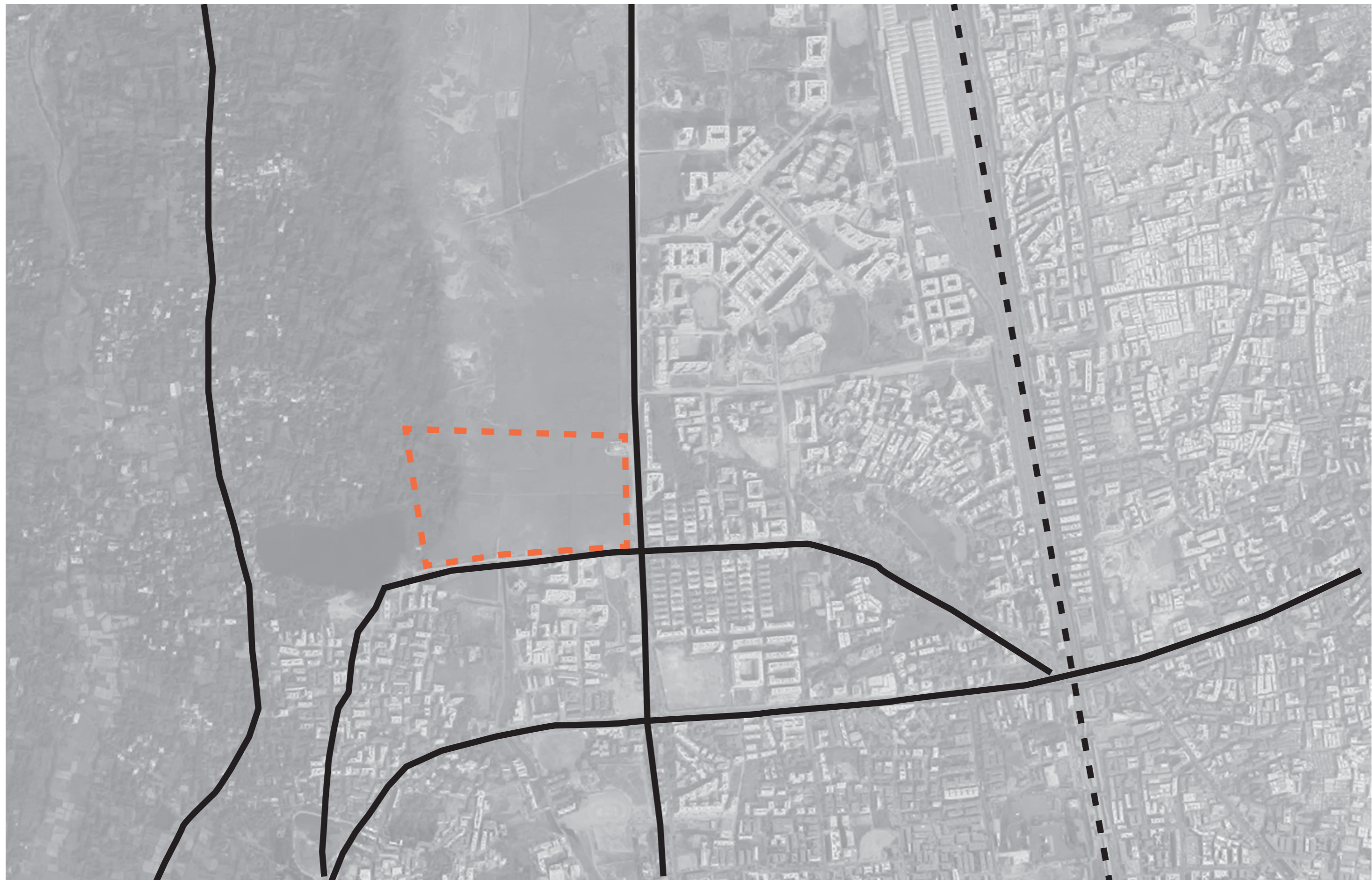


Adaptability

L O C A T I O N



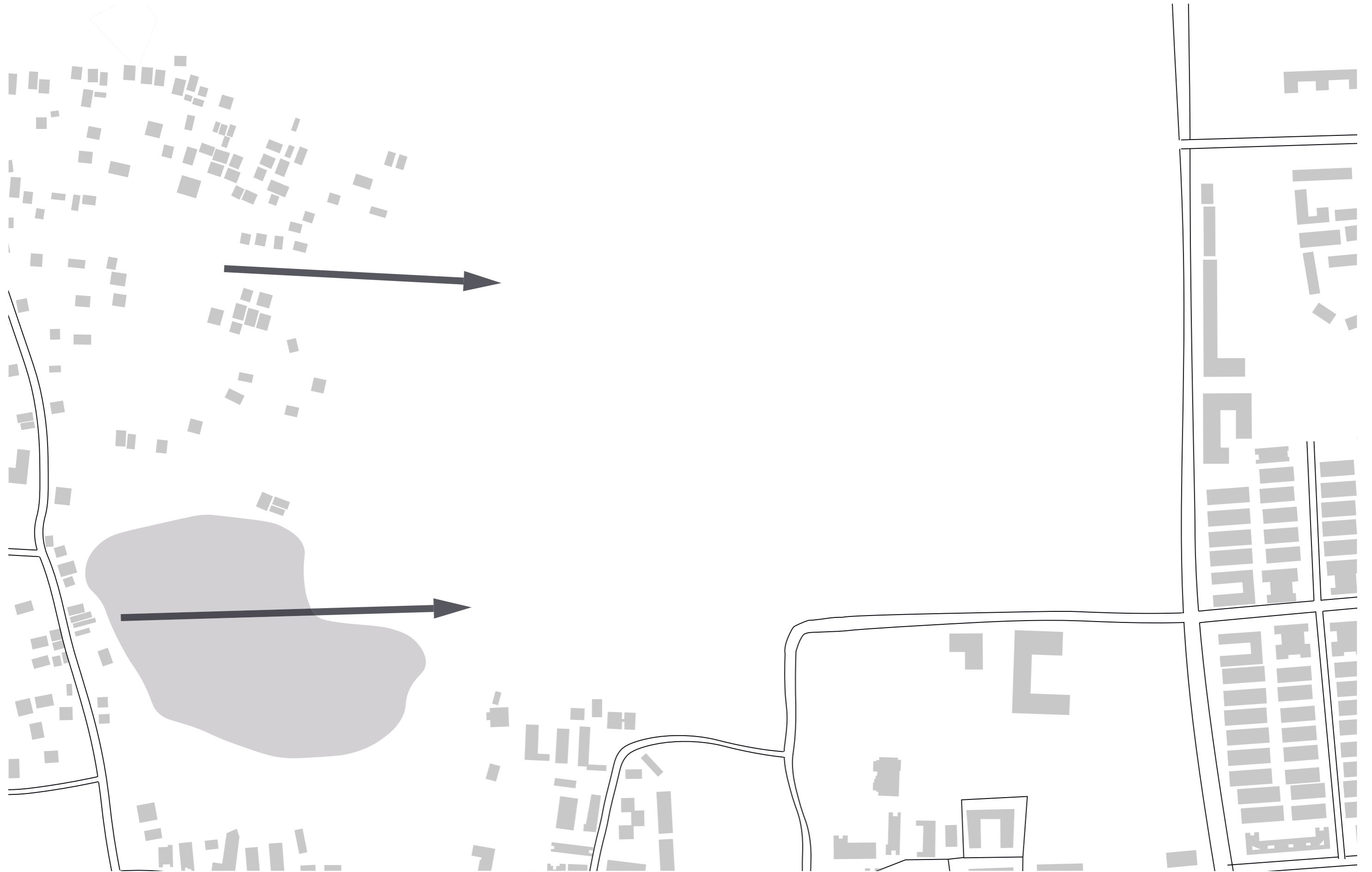


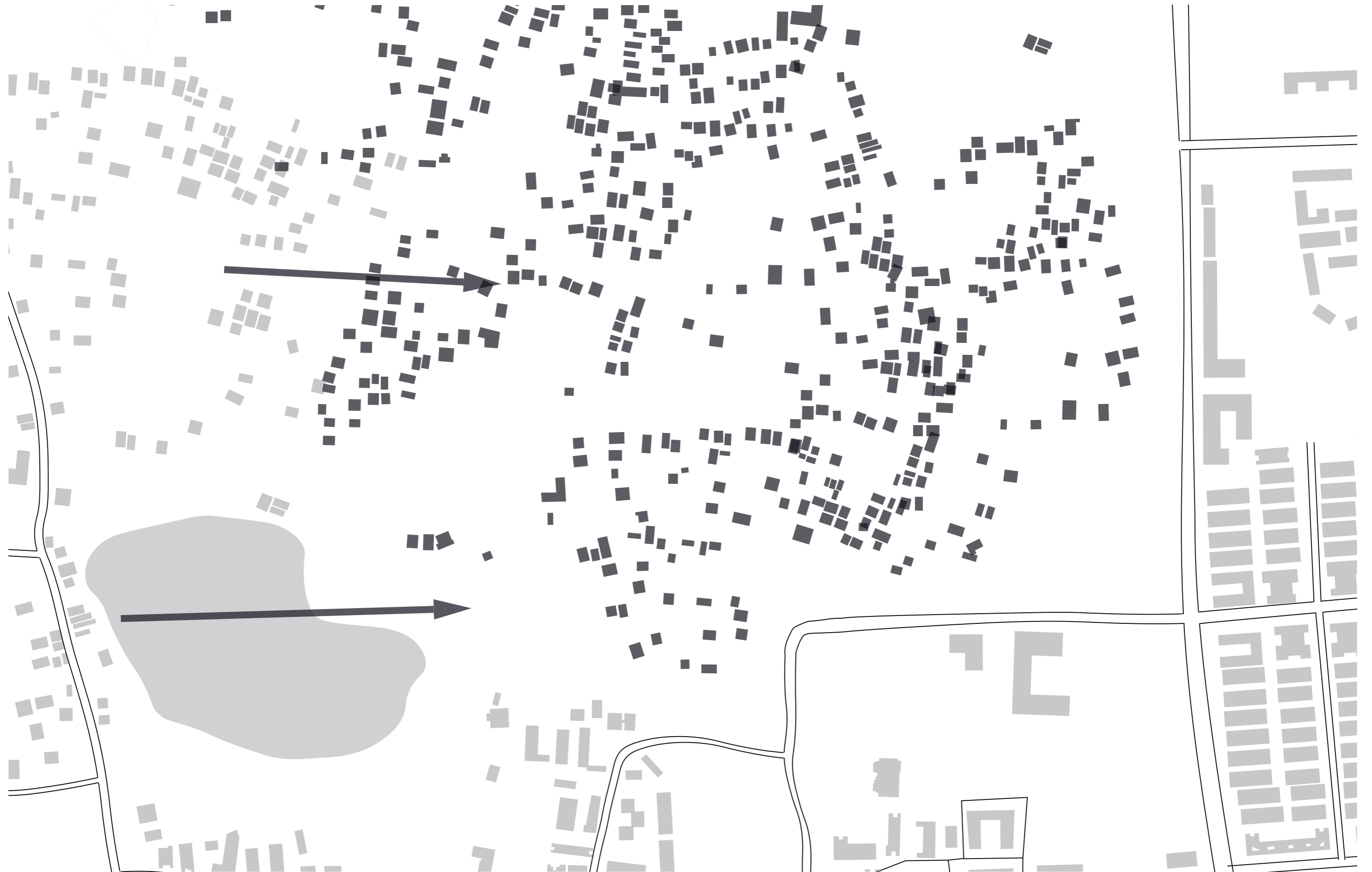


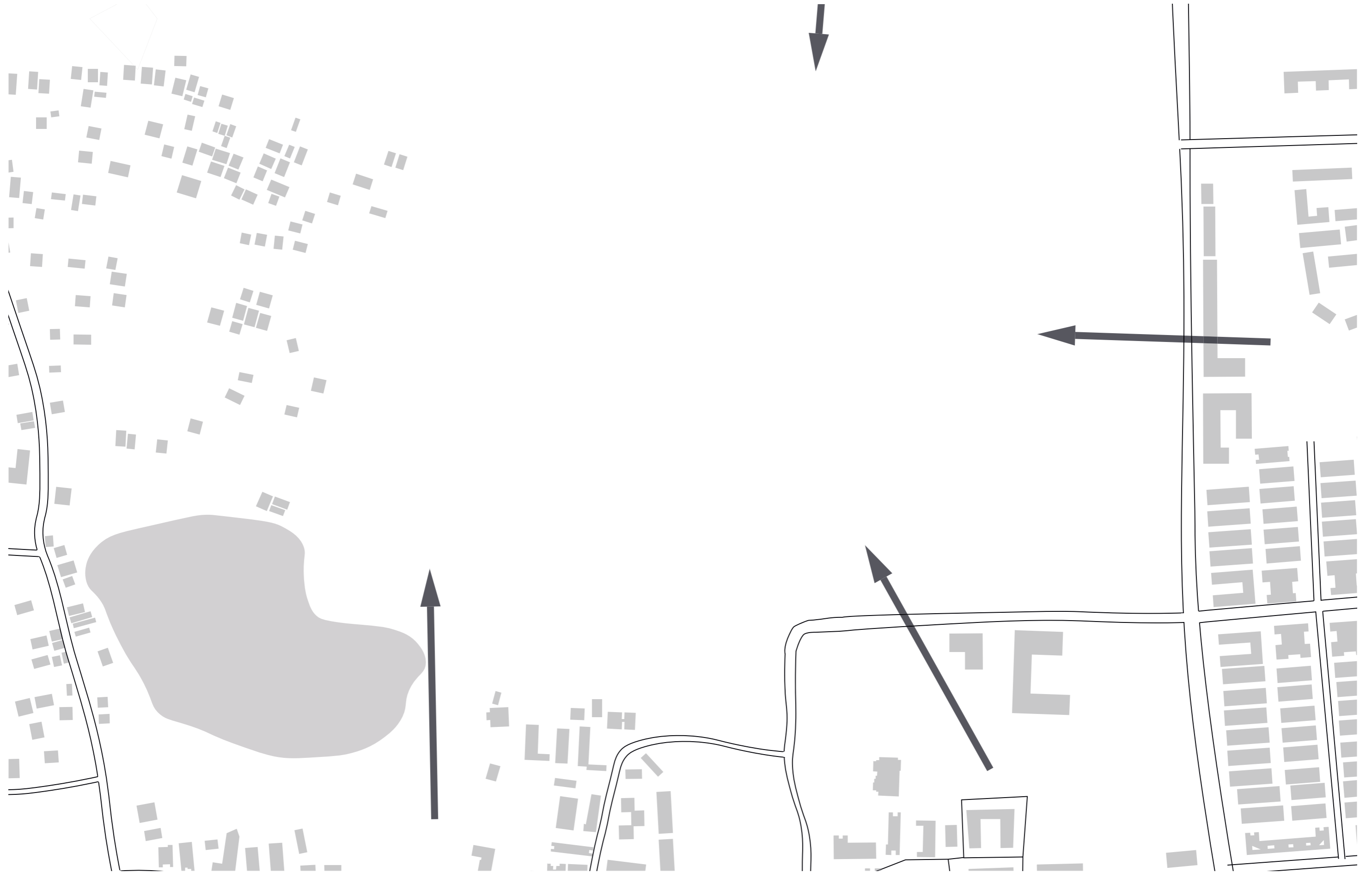


**U R B A N
S T R A T E G Y**



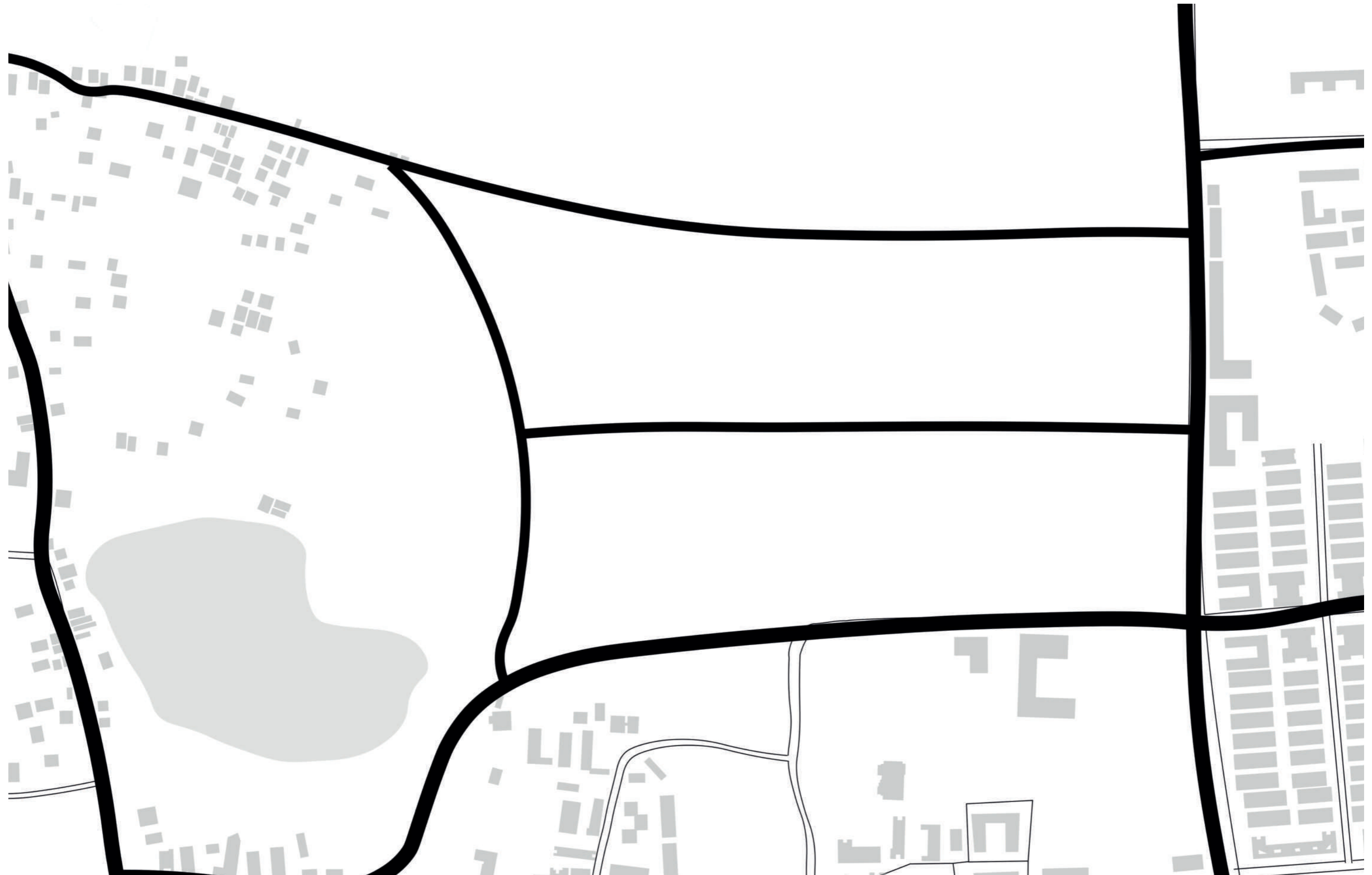


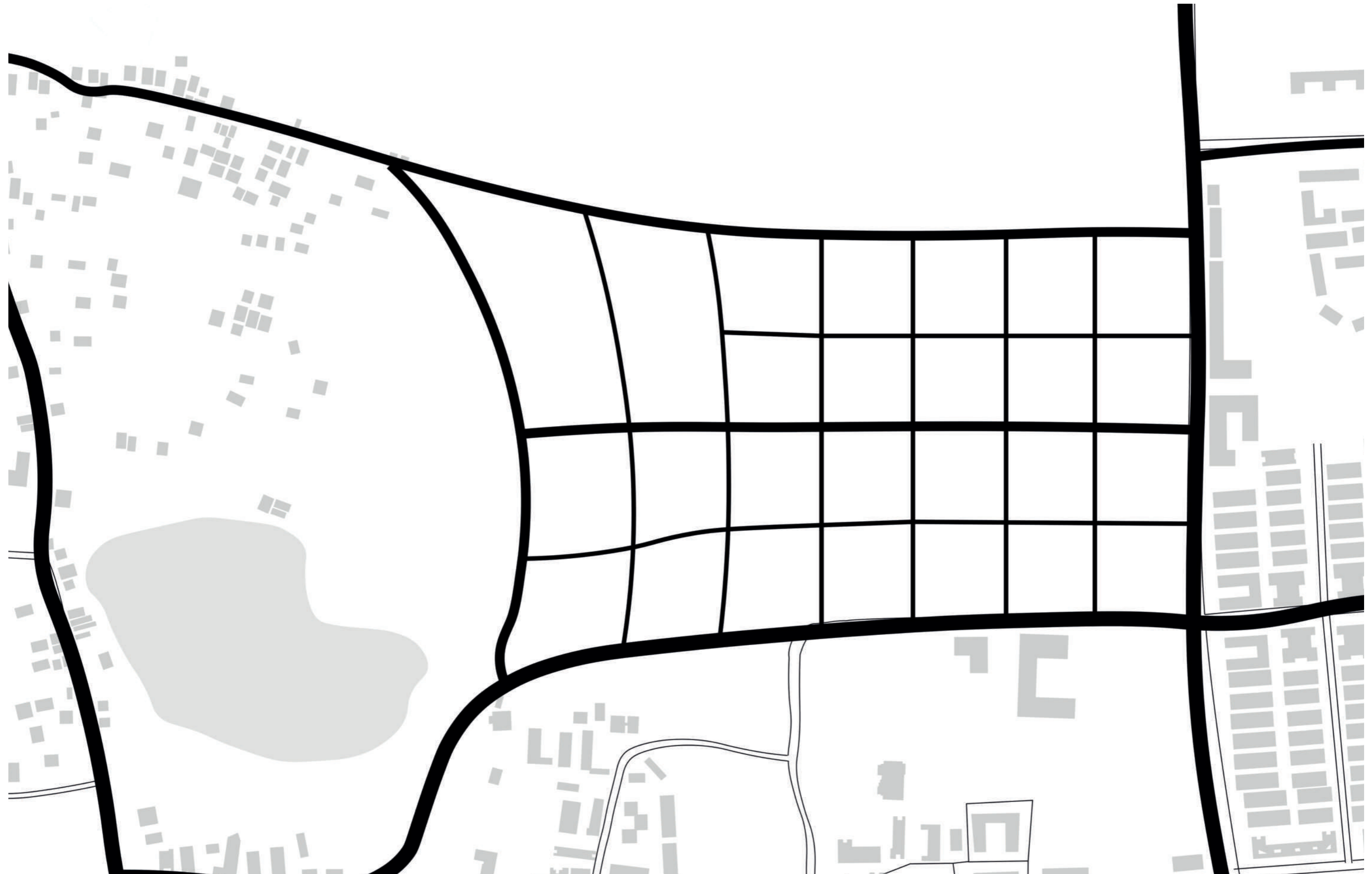


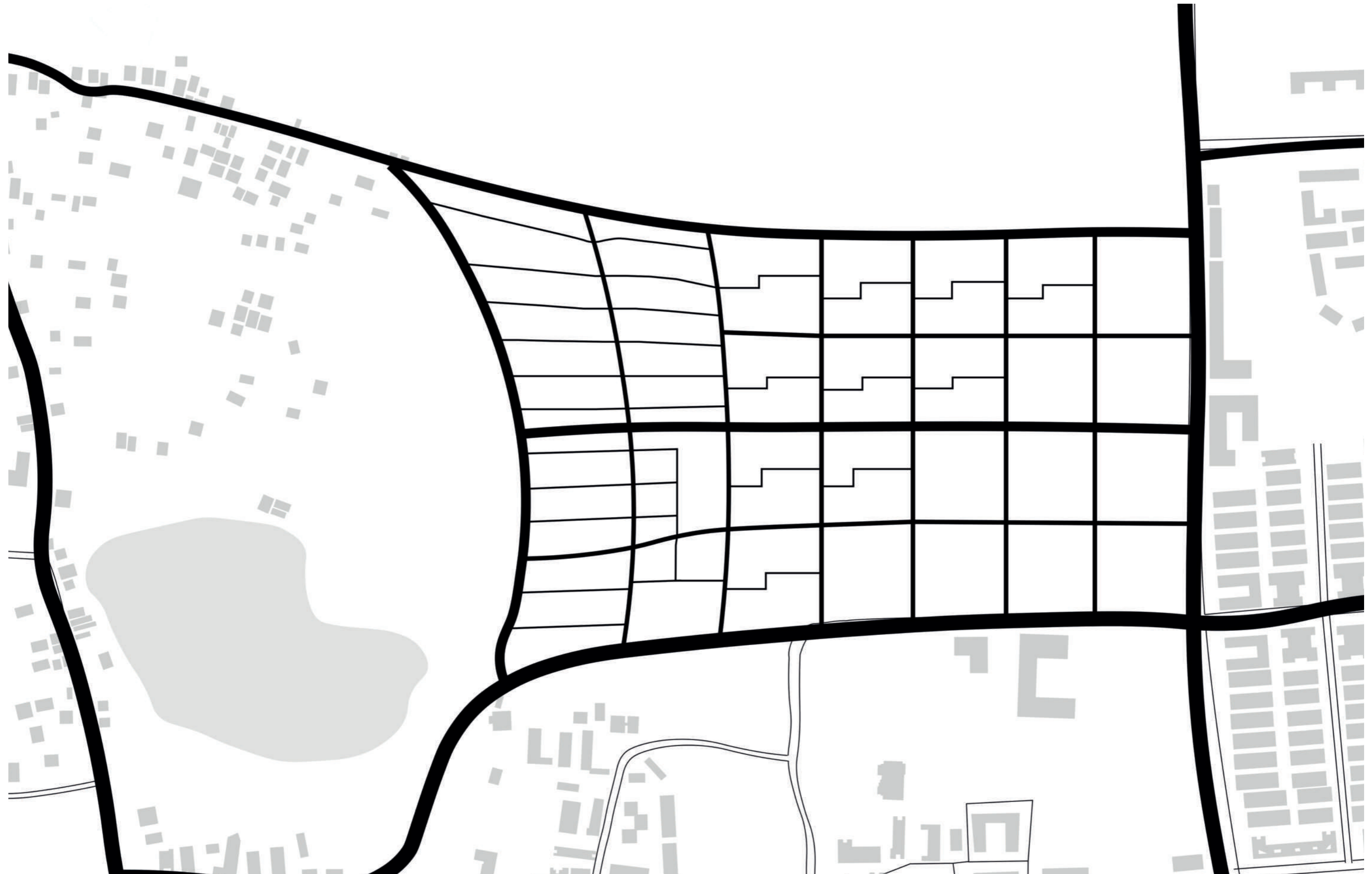


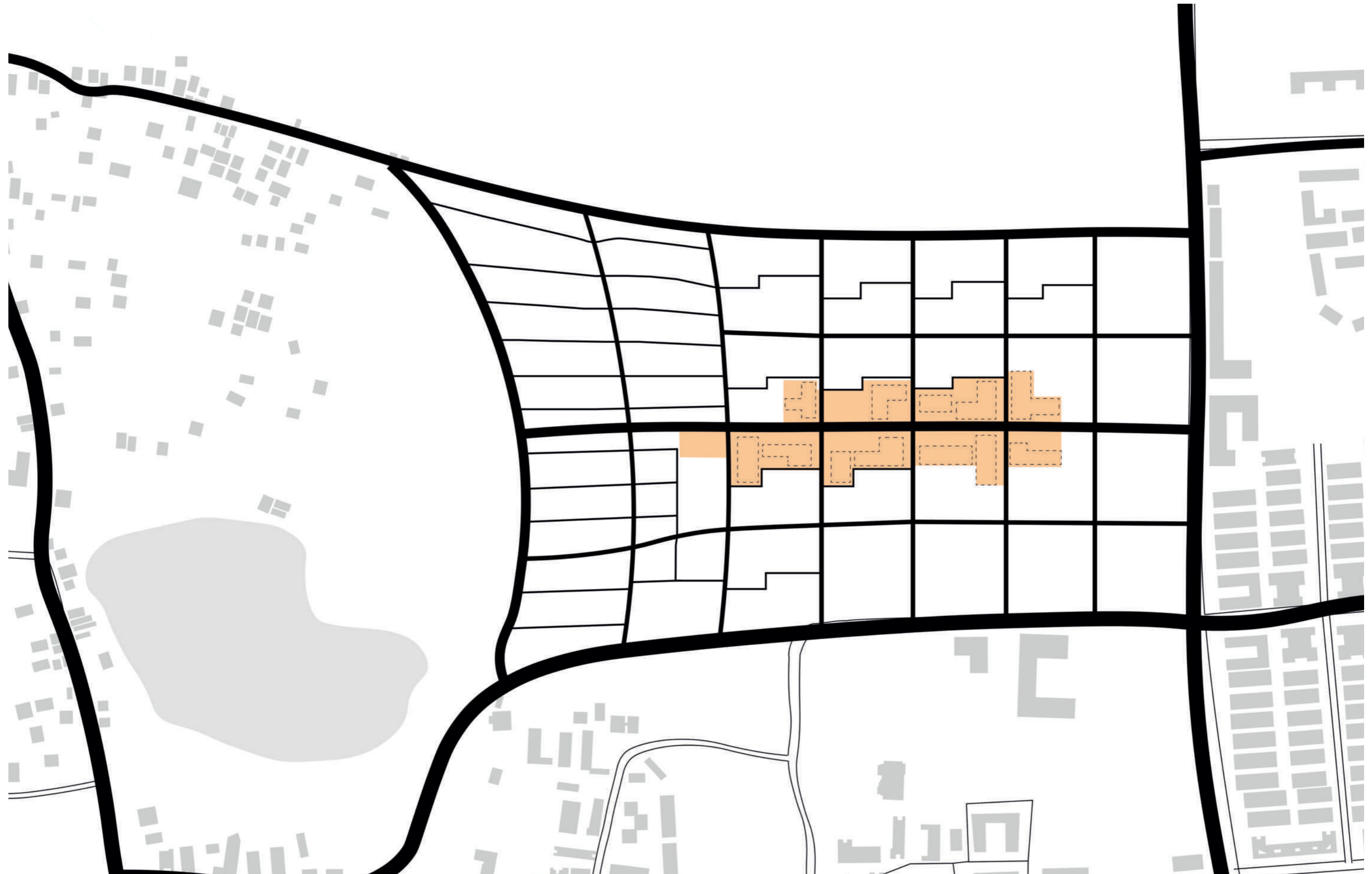


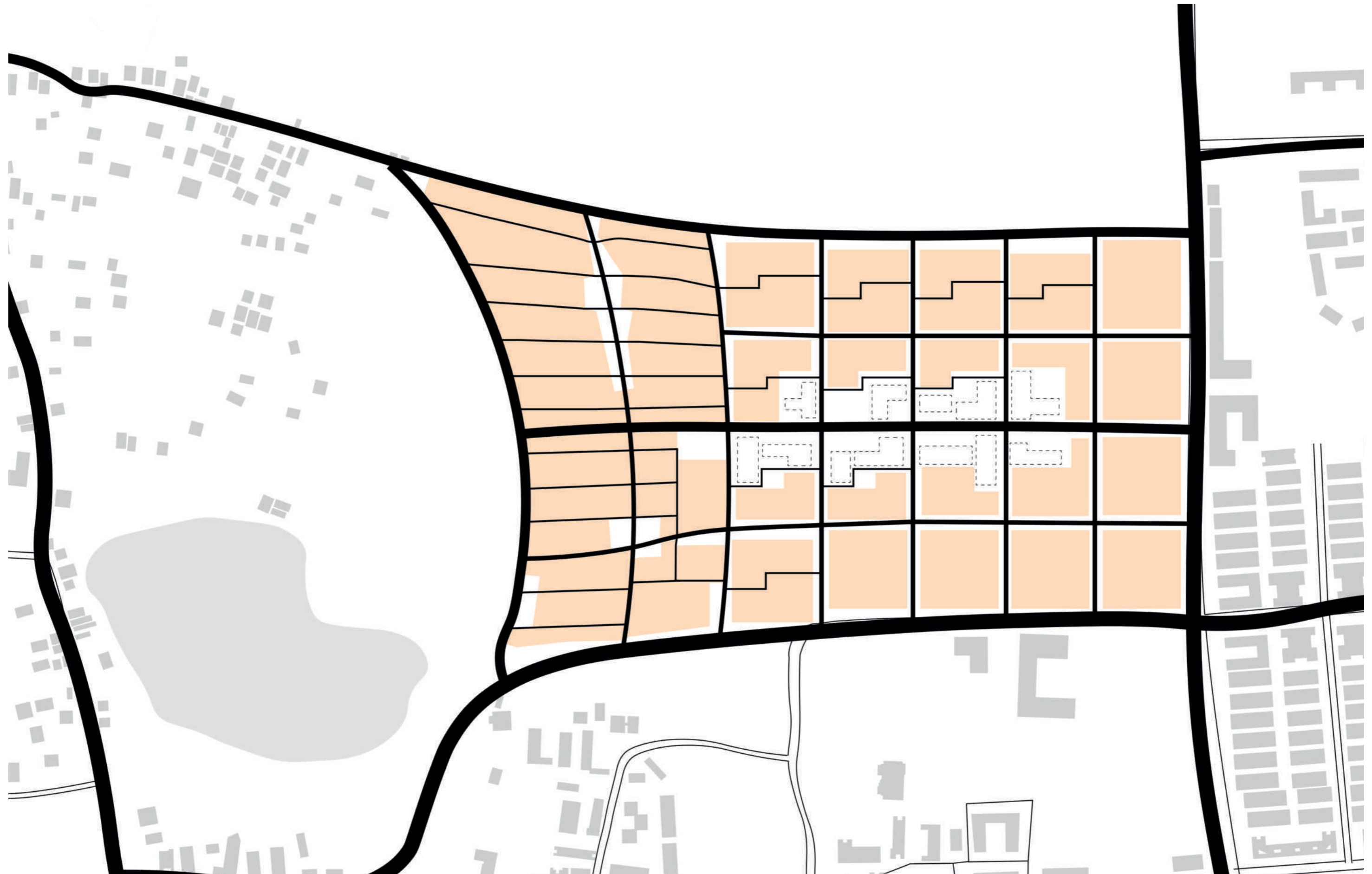


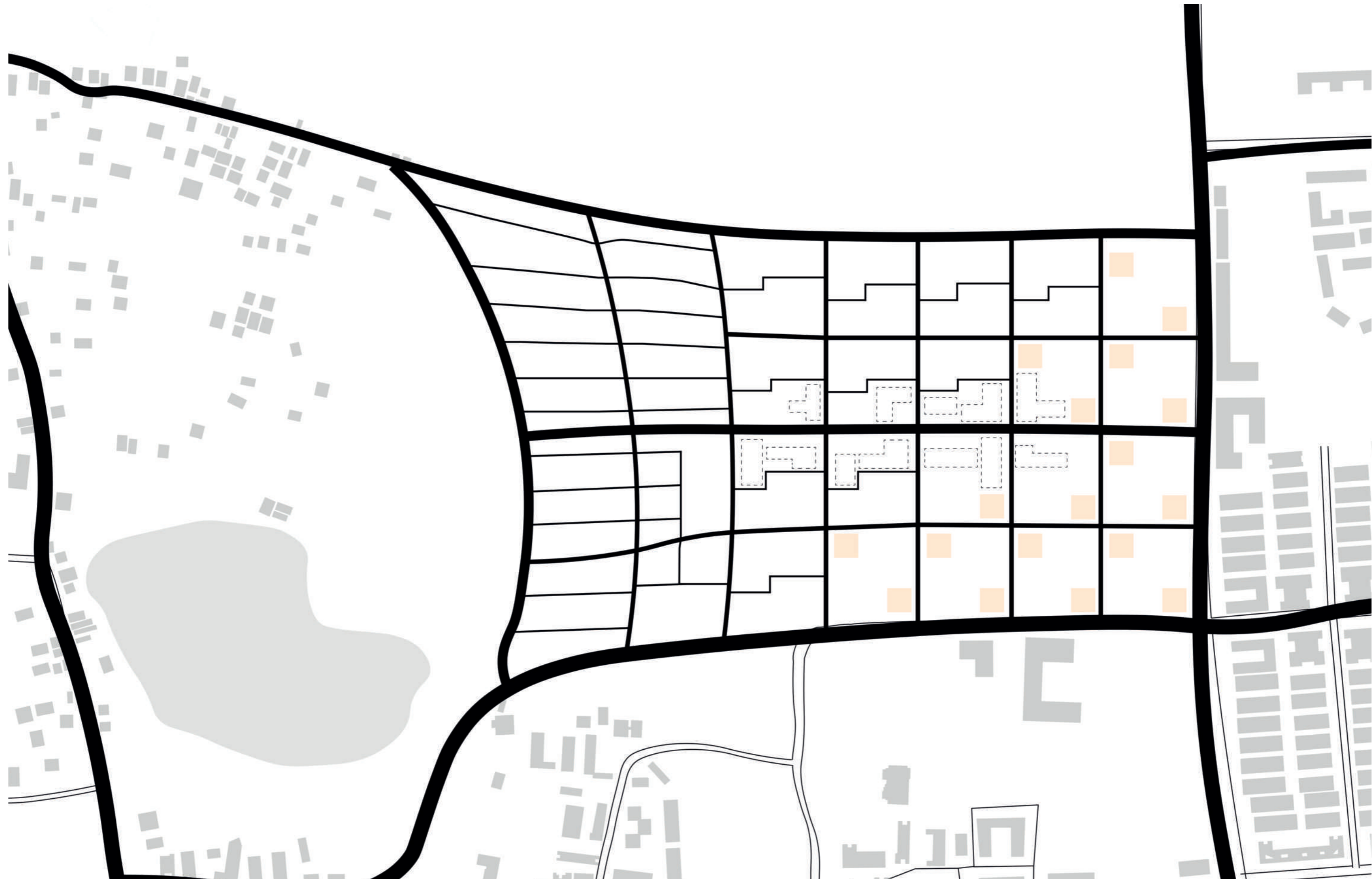


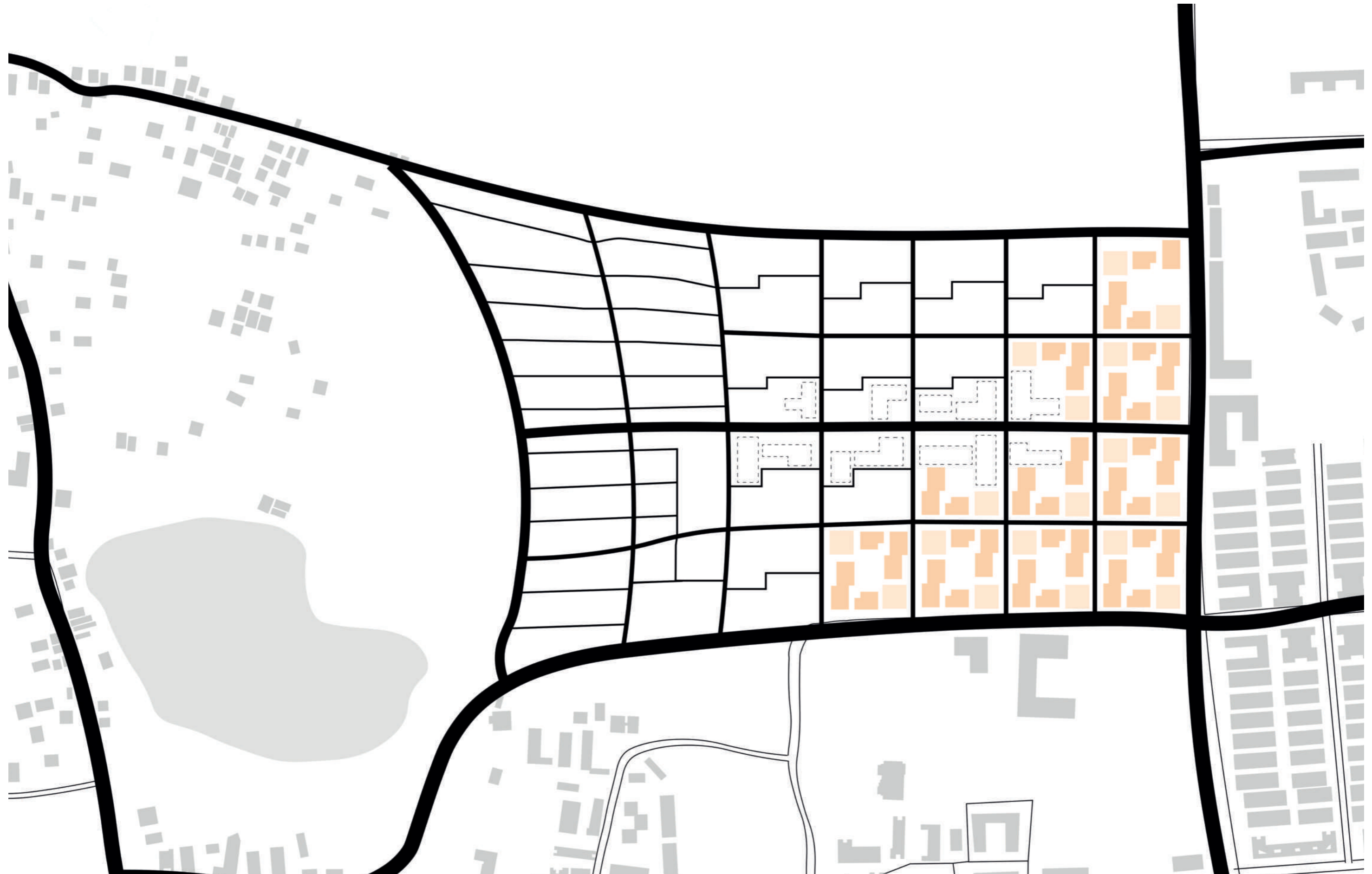


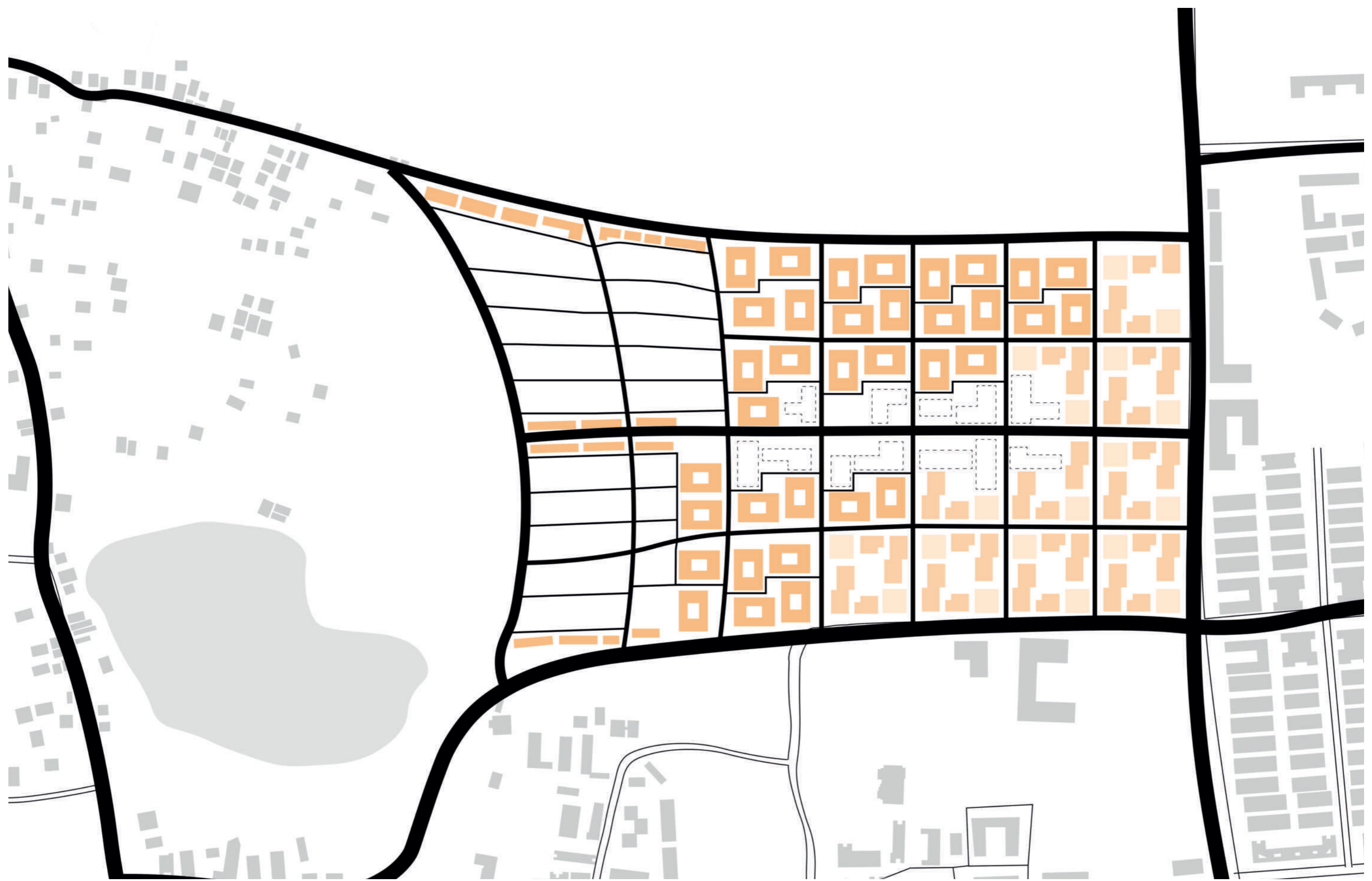


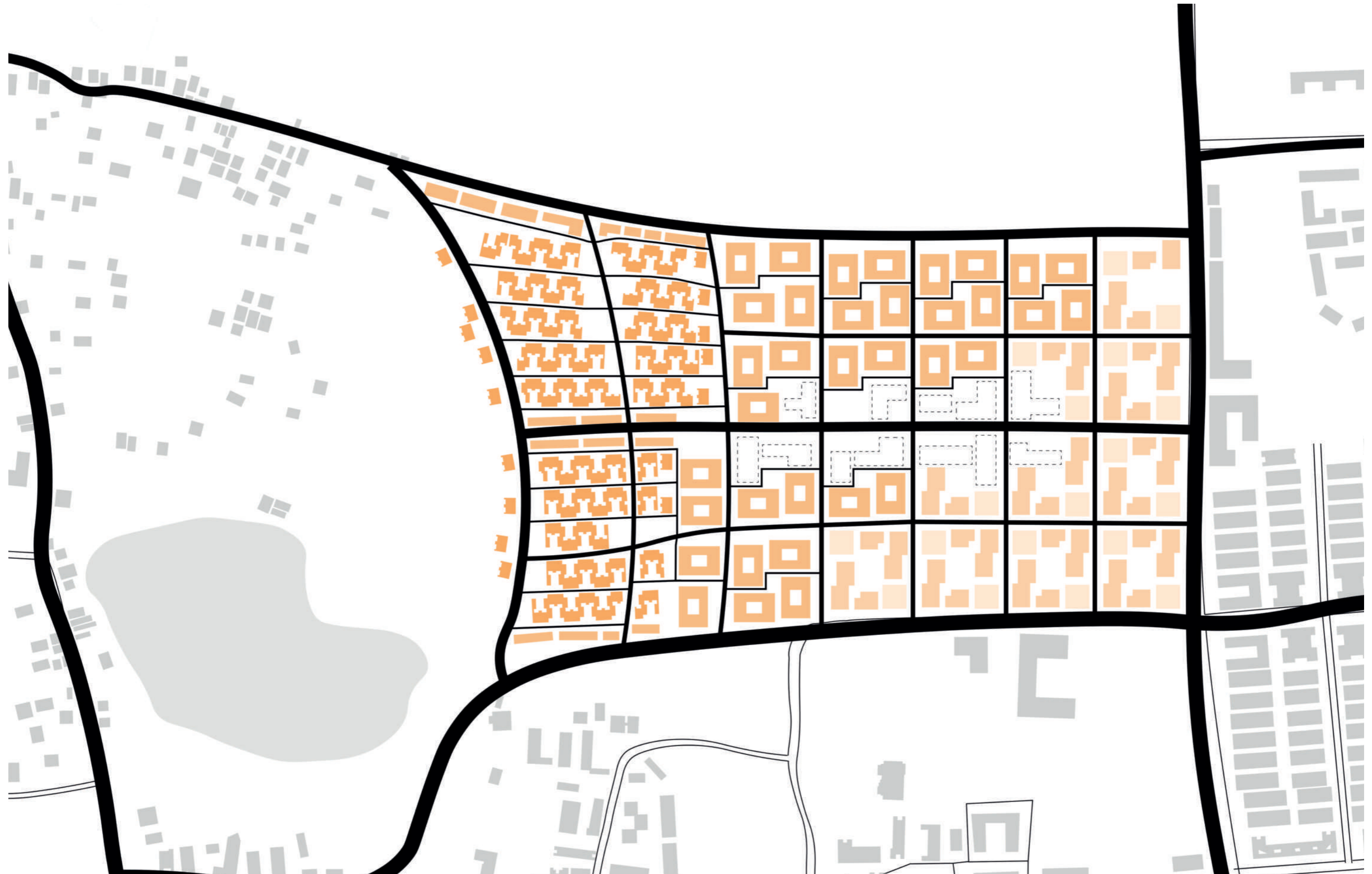


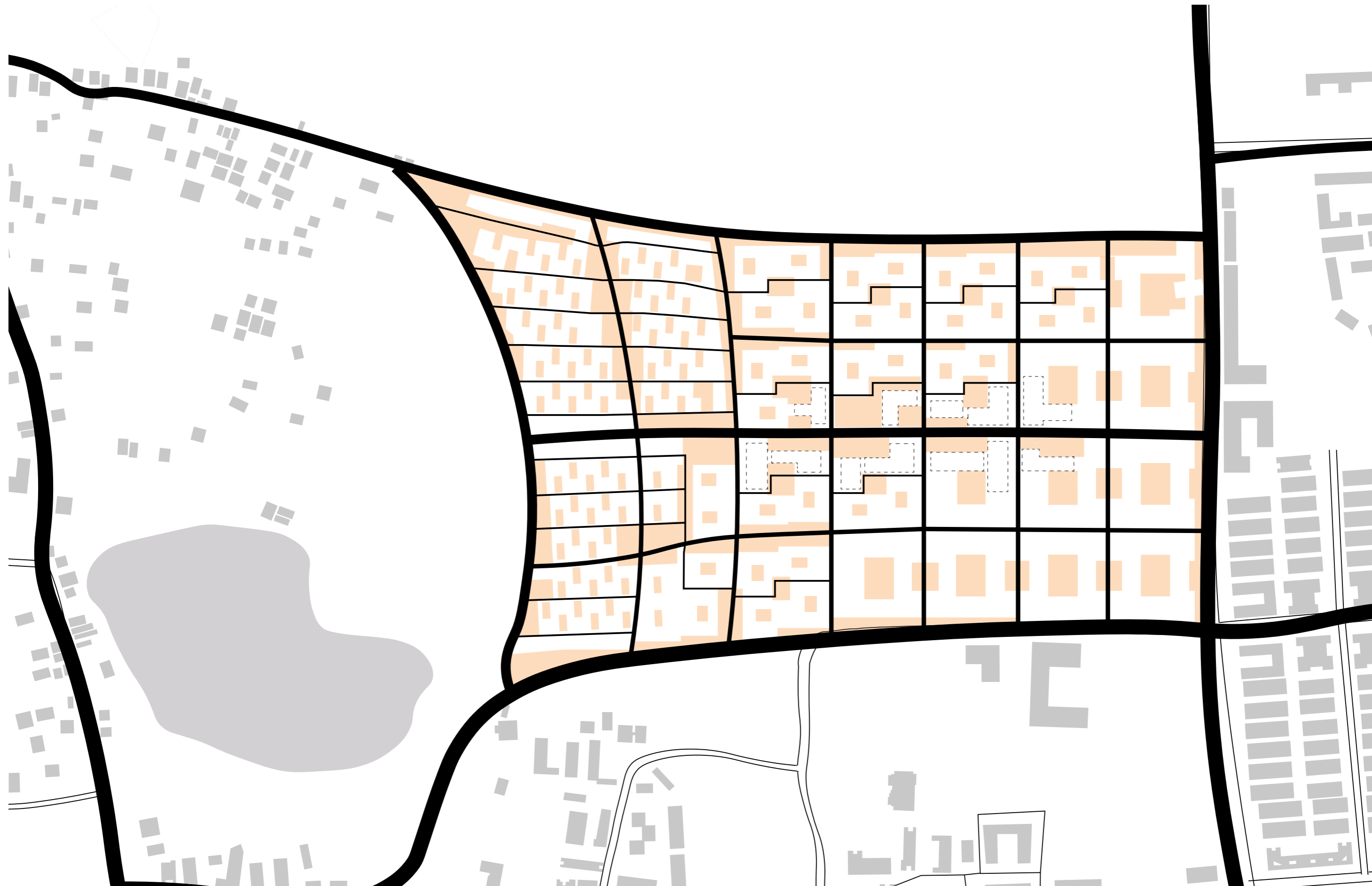








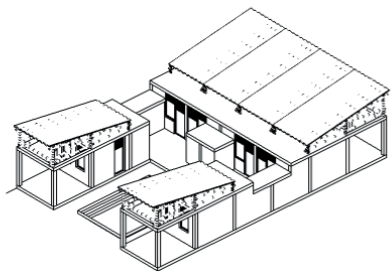




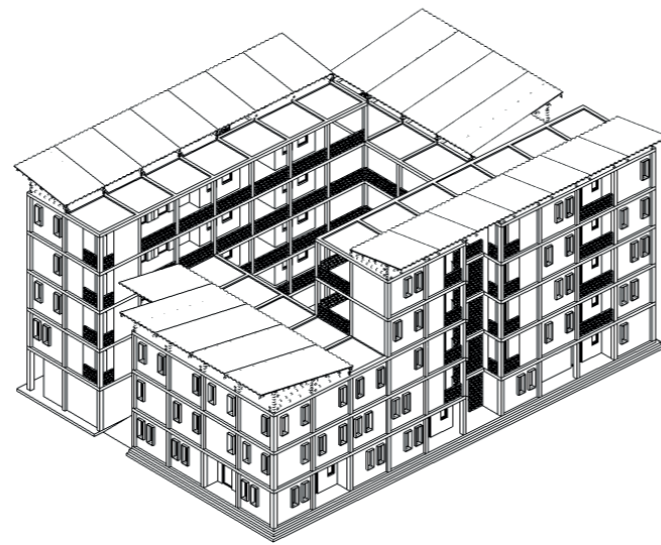


**BUILDING
STRATEGY**

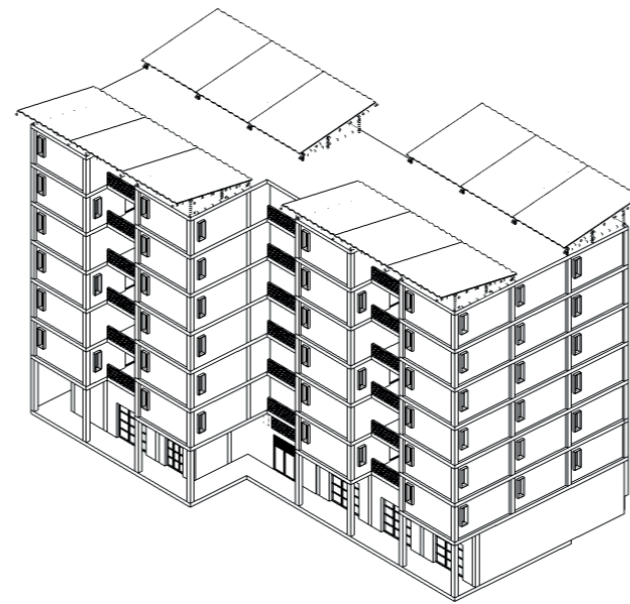
Different Typologies



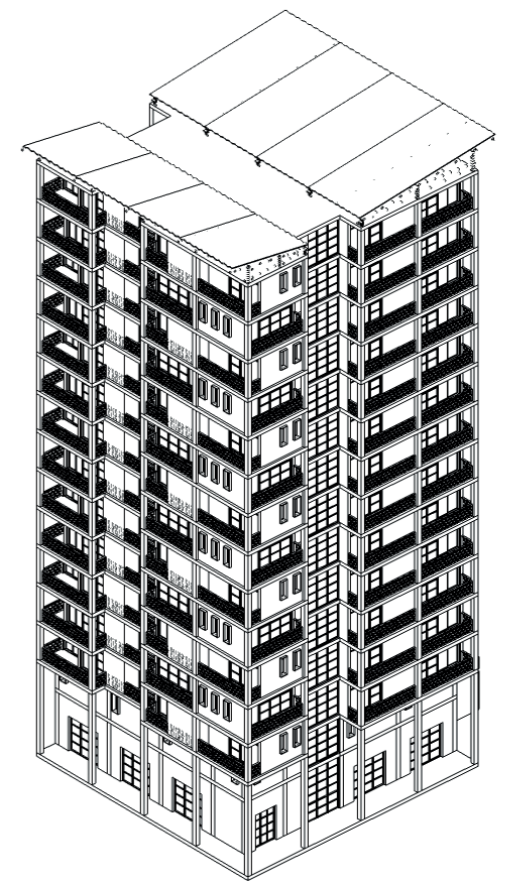
Sites & Services



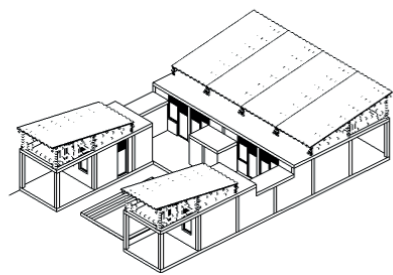
Courtyard



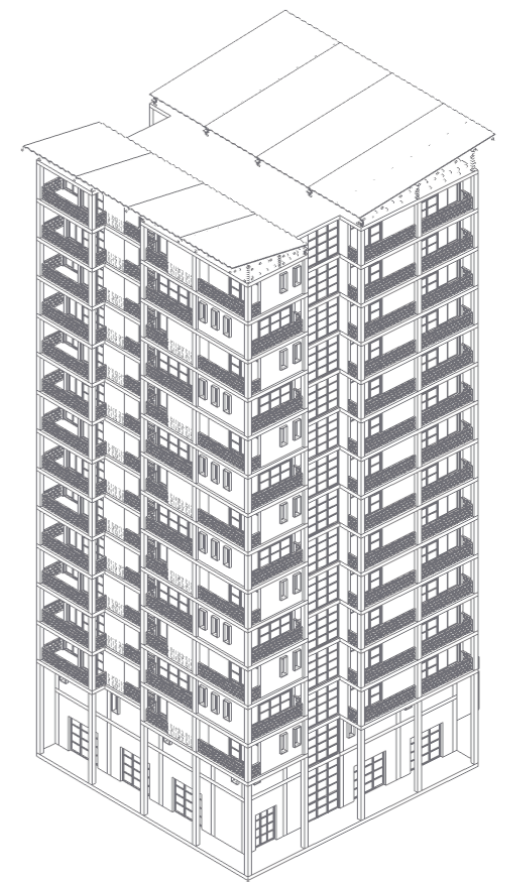
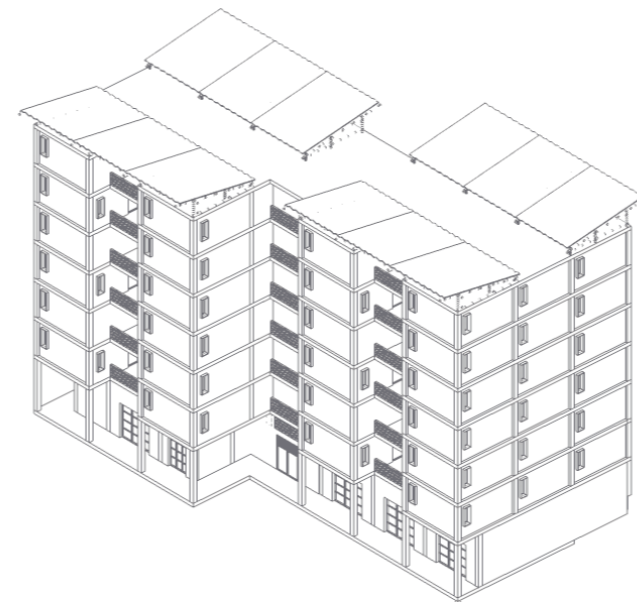
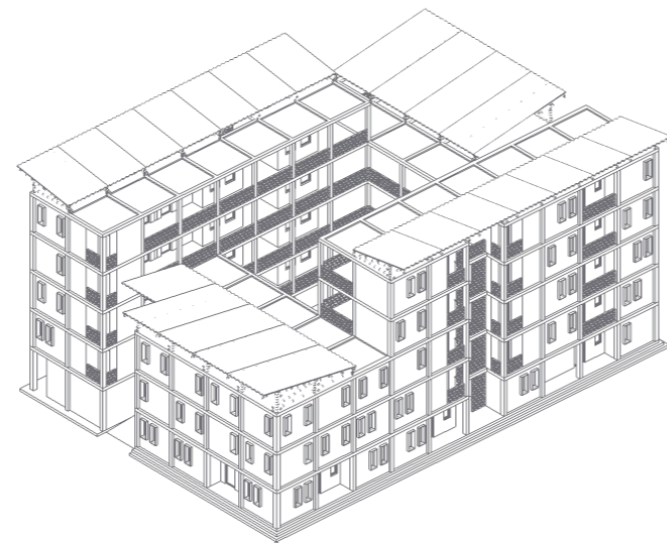
Slab



Tower

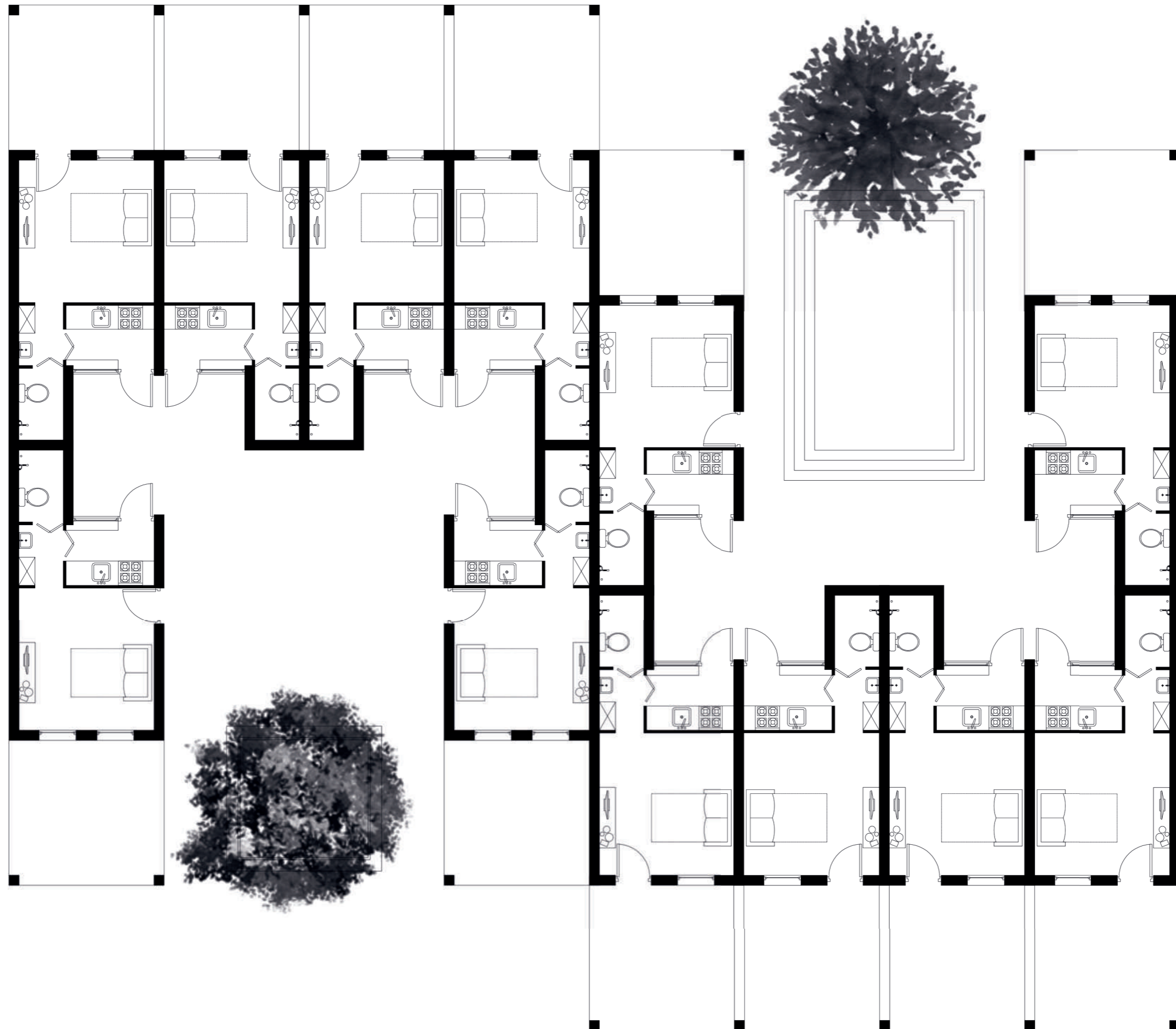


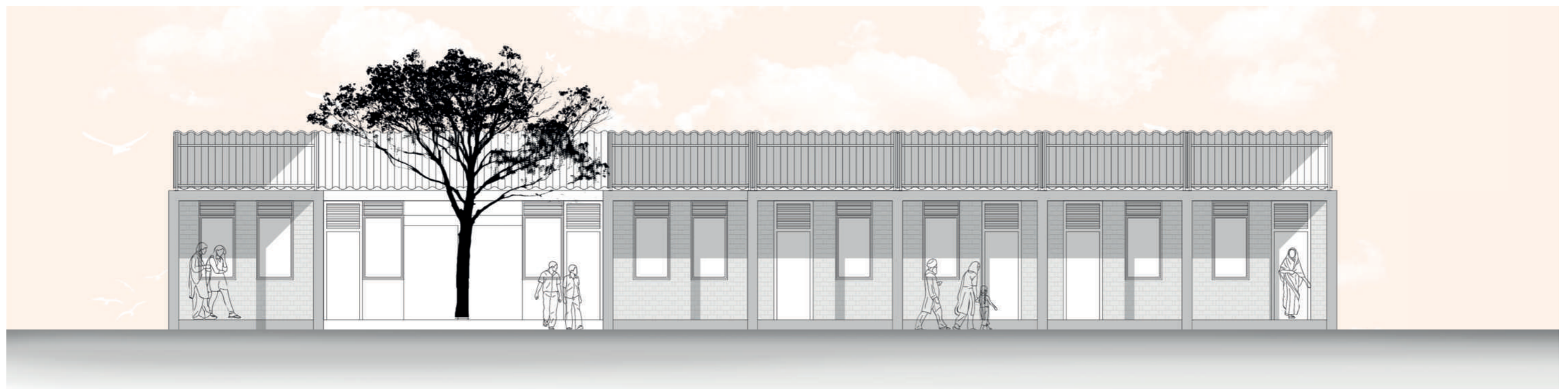
Sites & Services

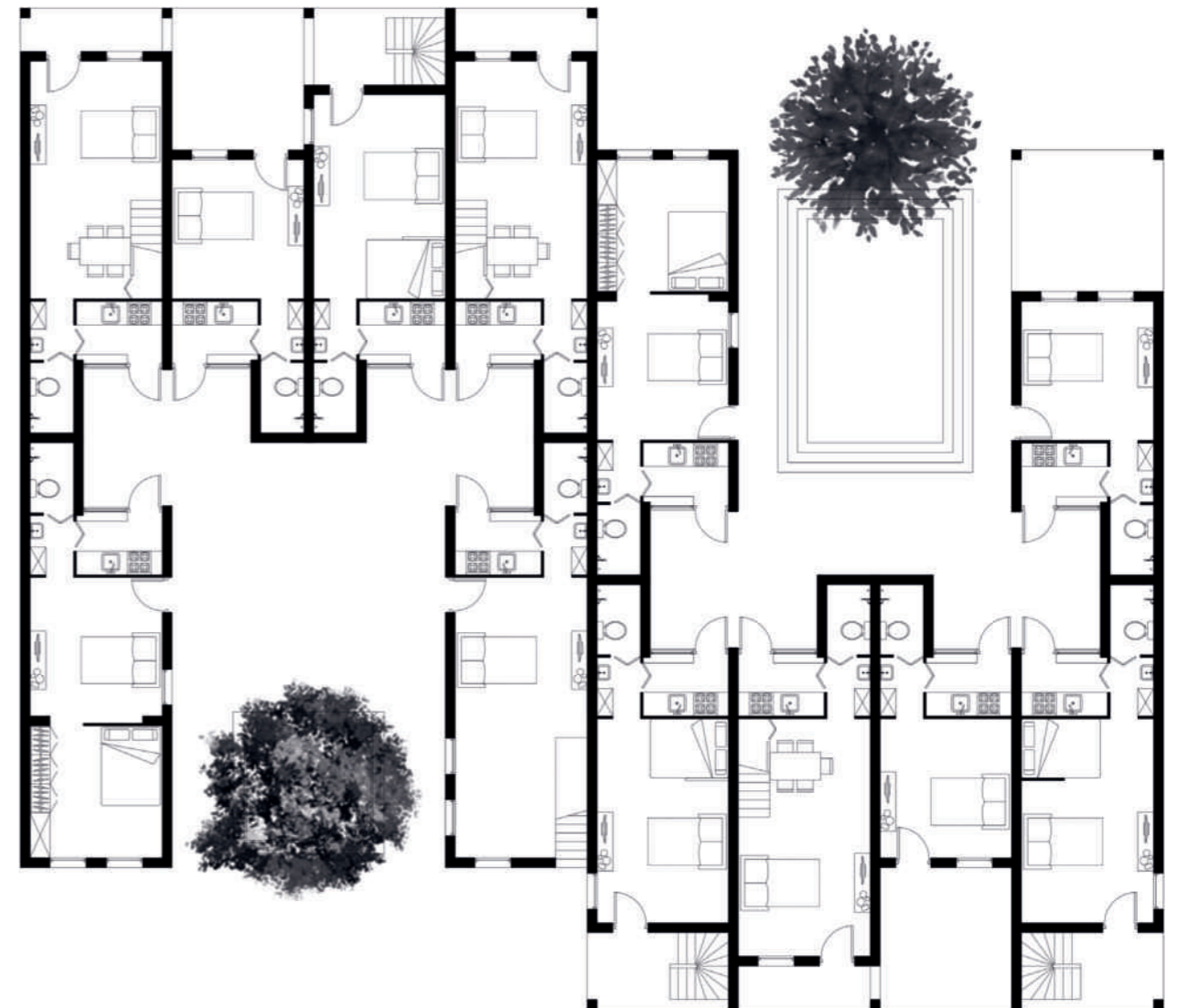
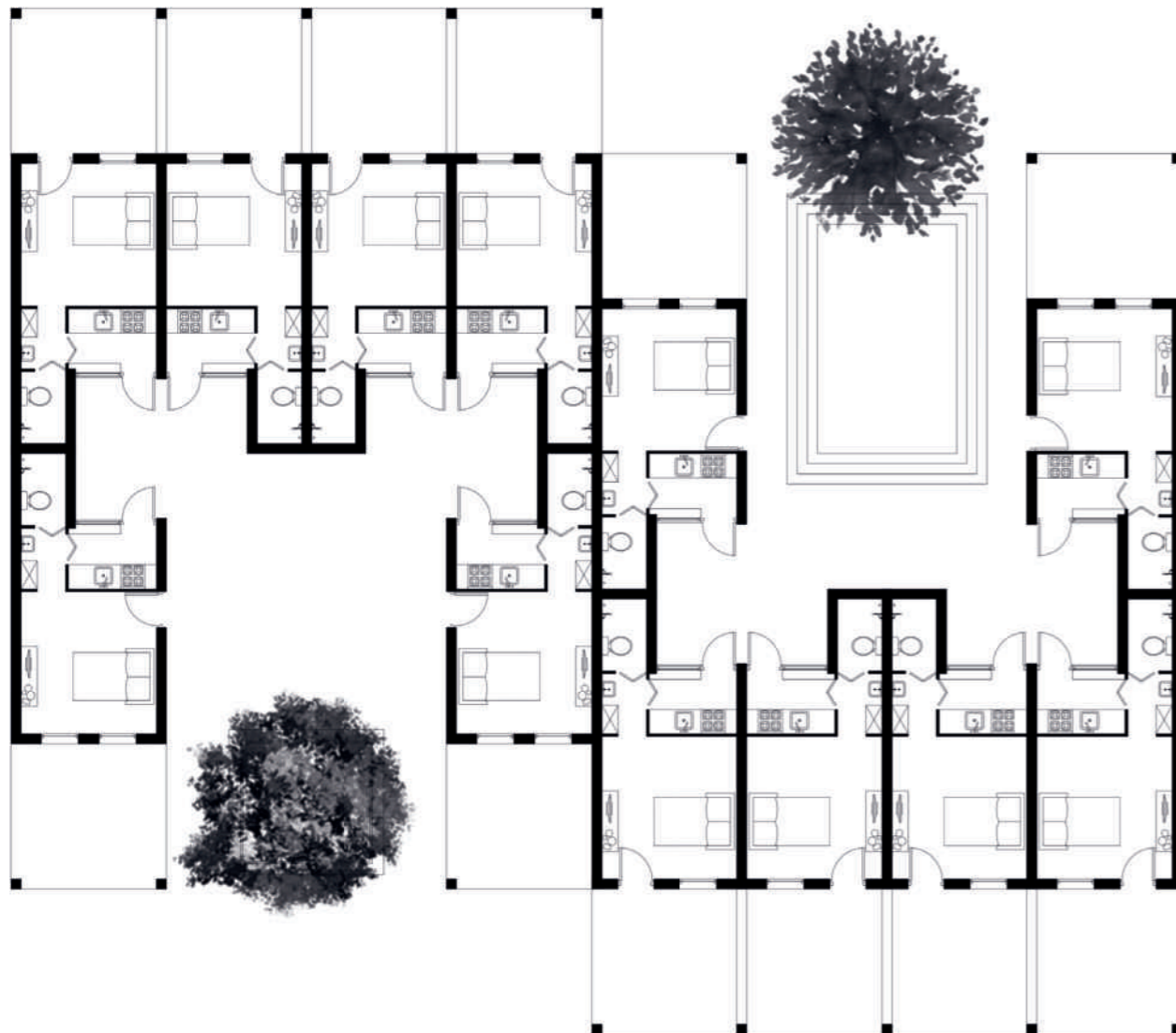




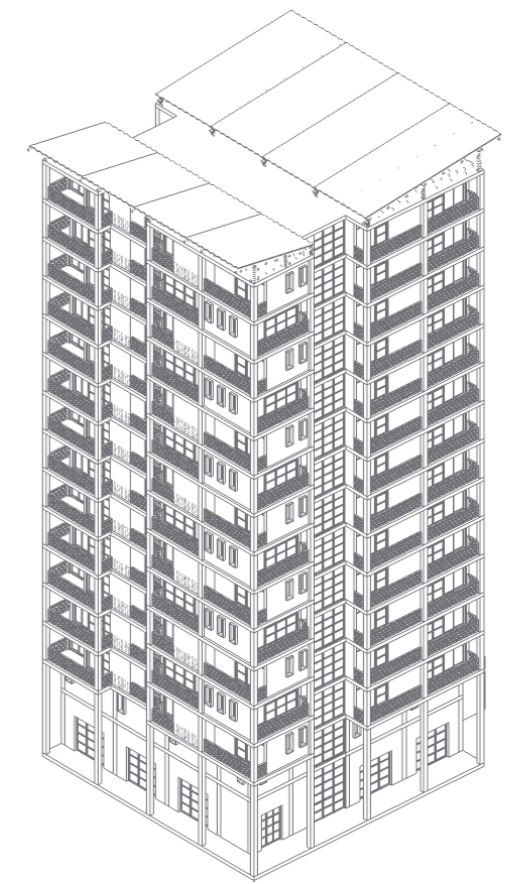
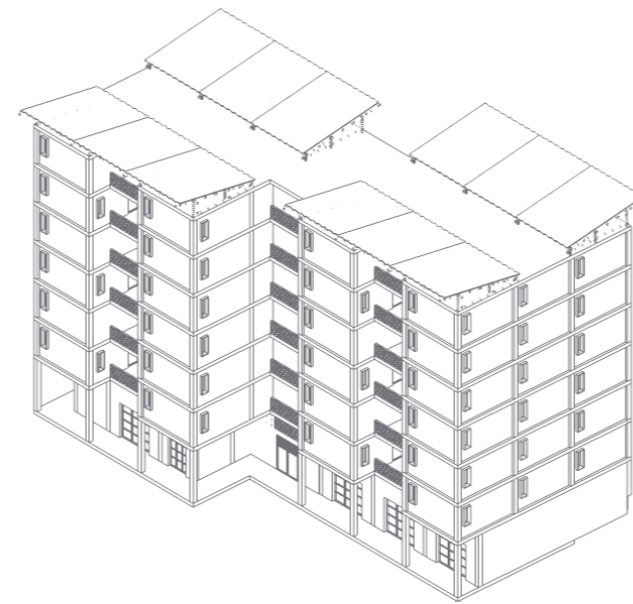
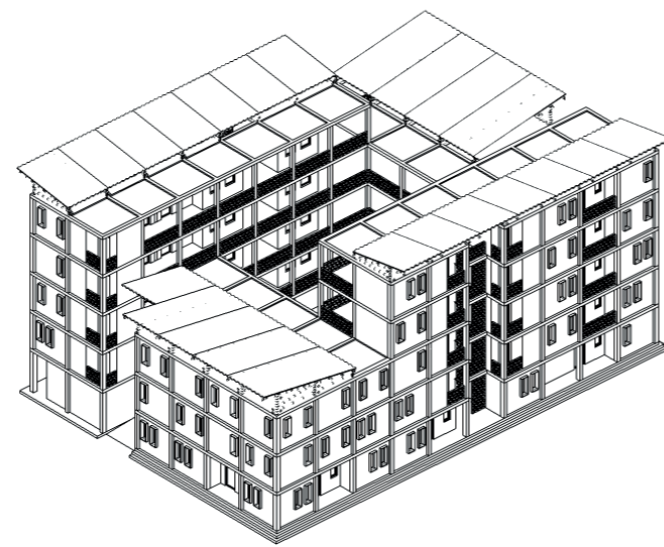
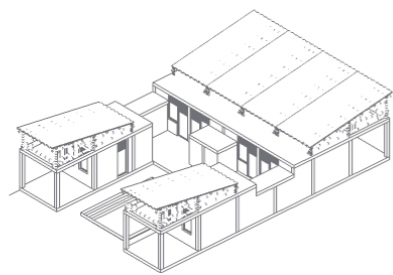








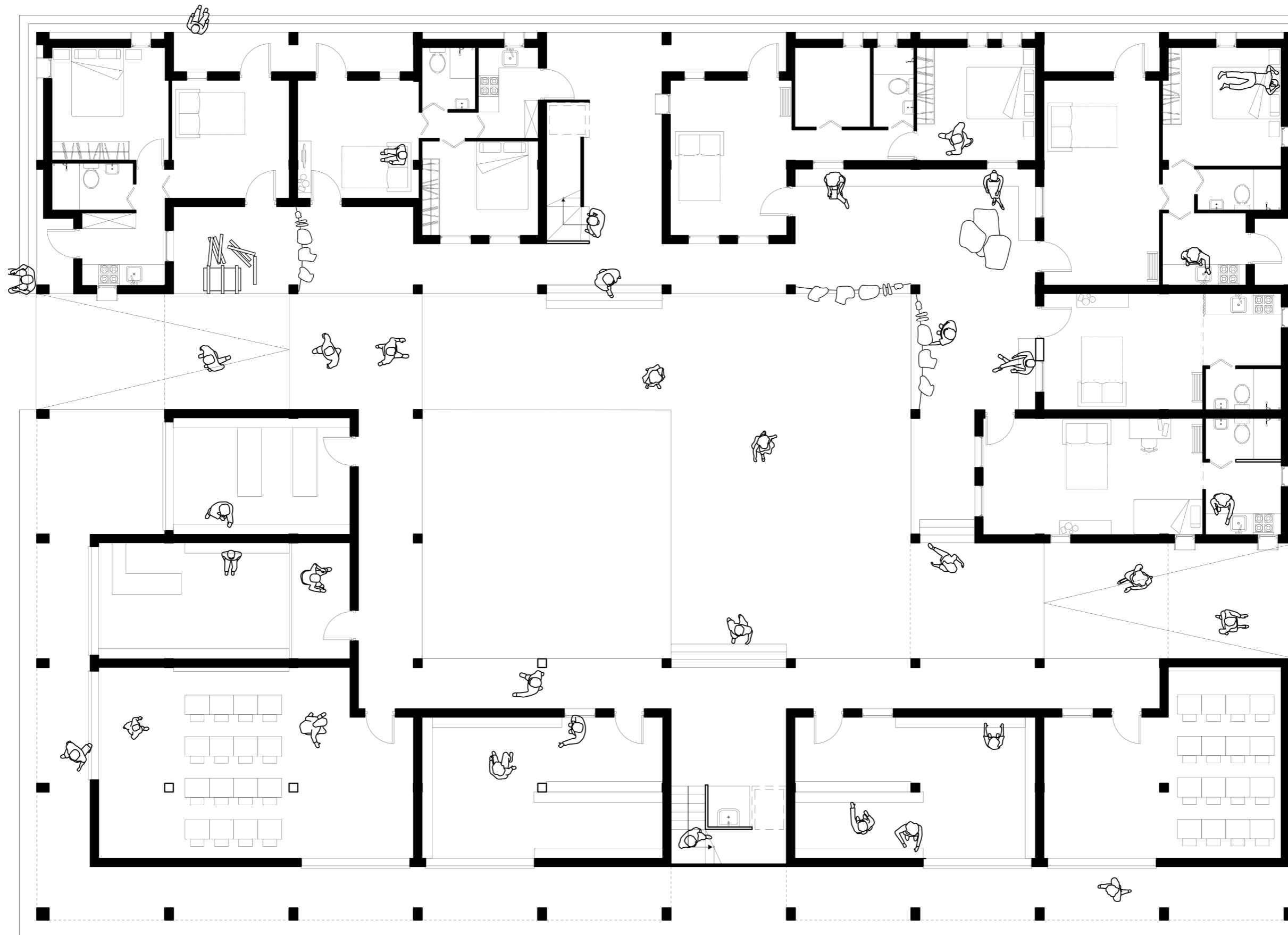


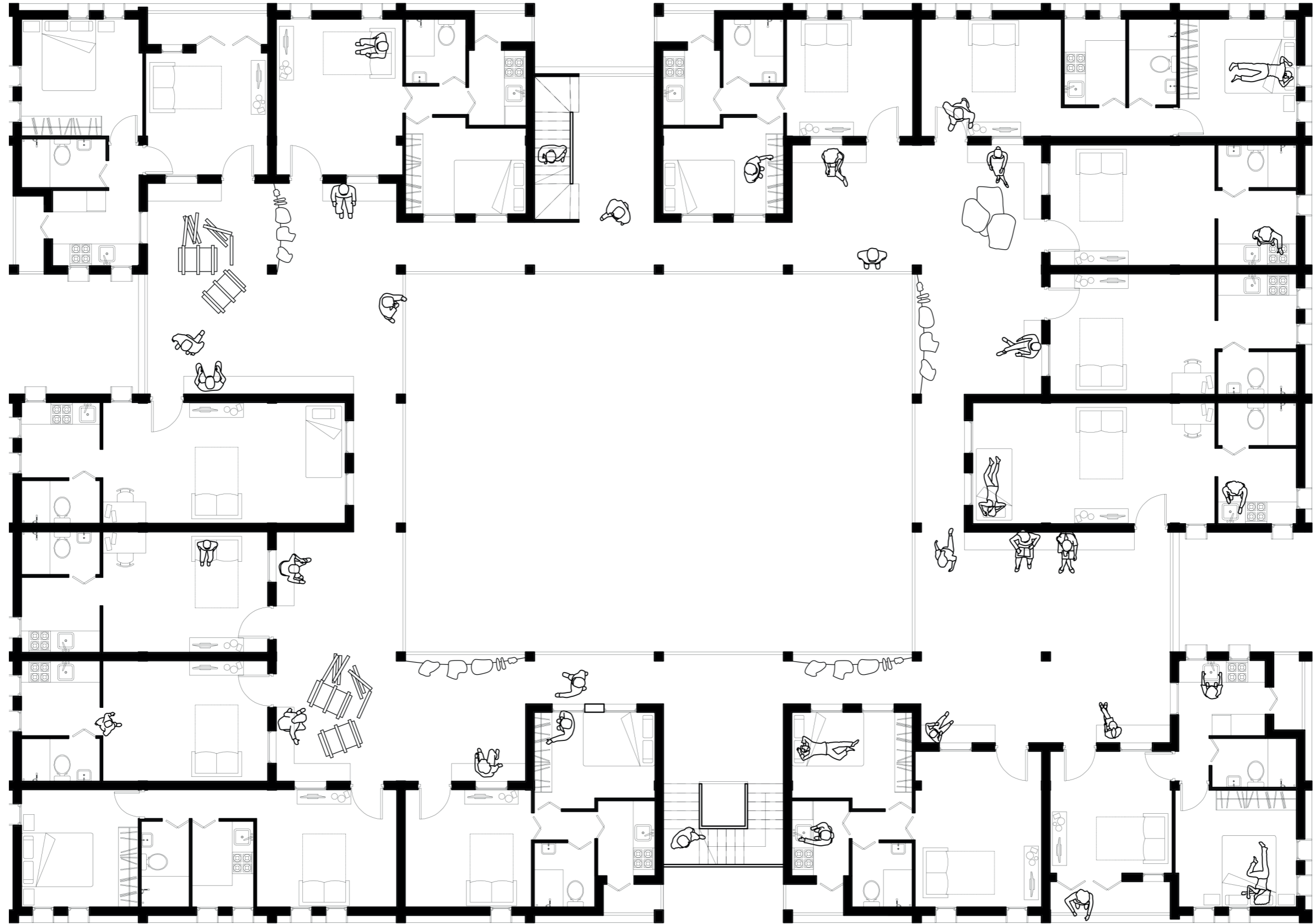


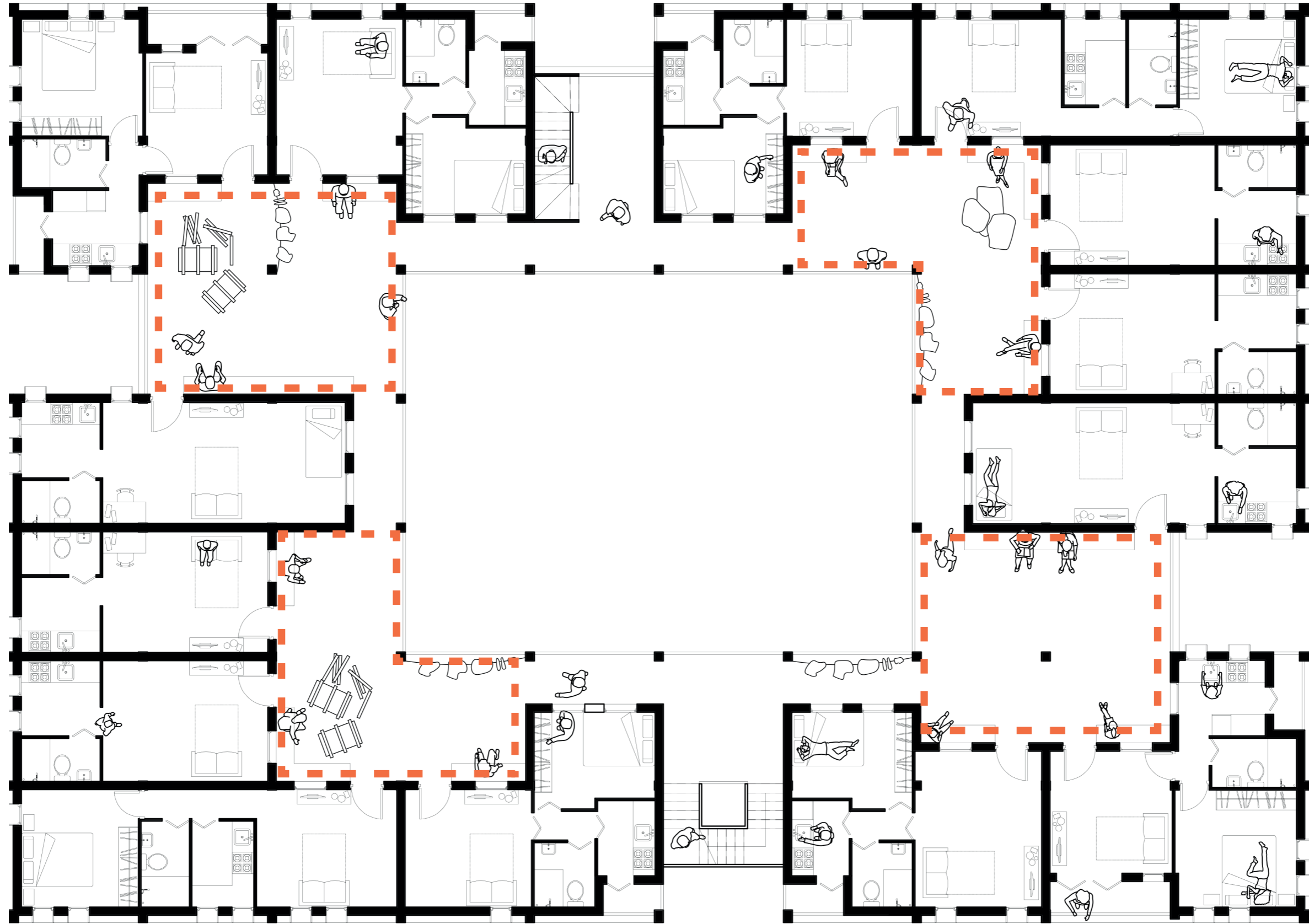
Courtyard



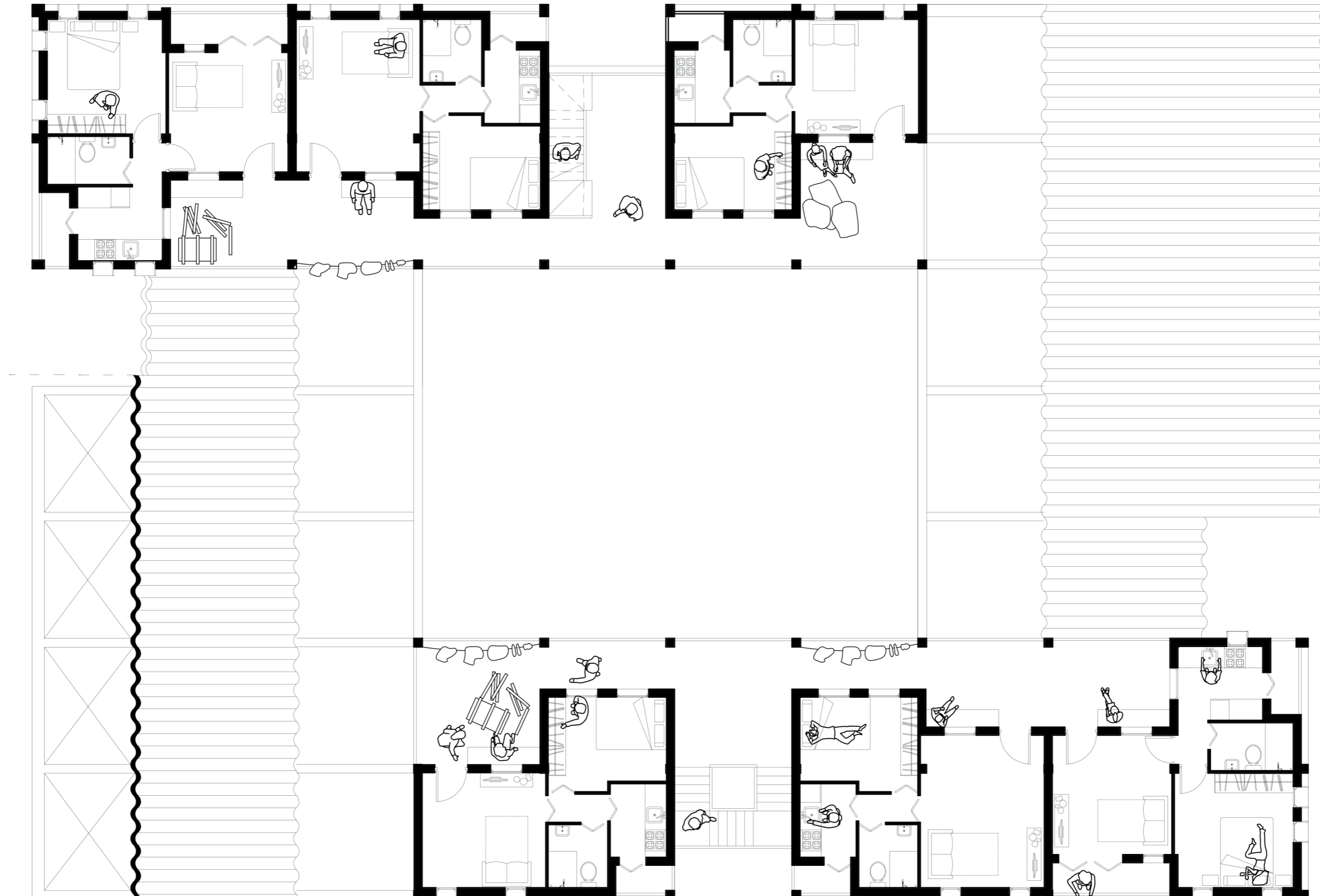












Courtyard | Section

0 2.5m

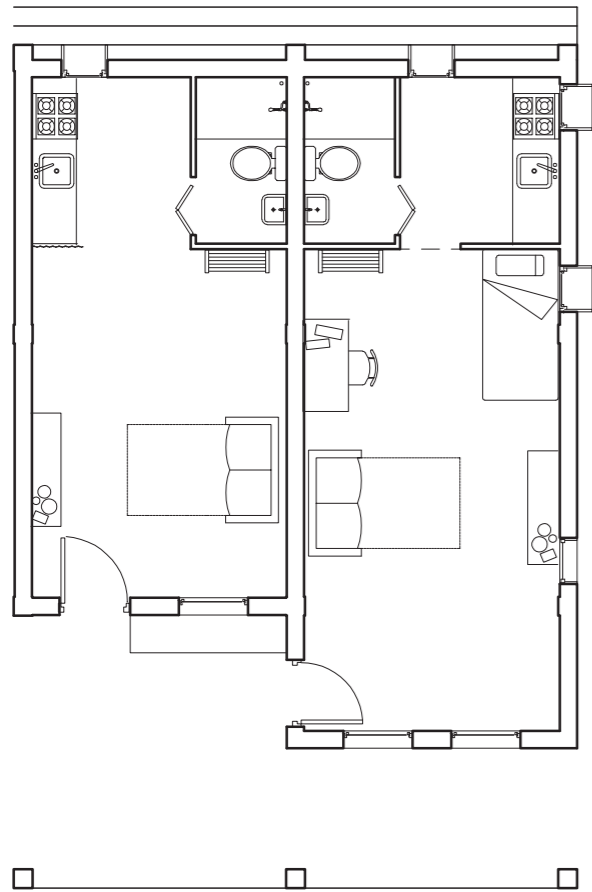




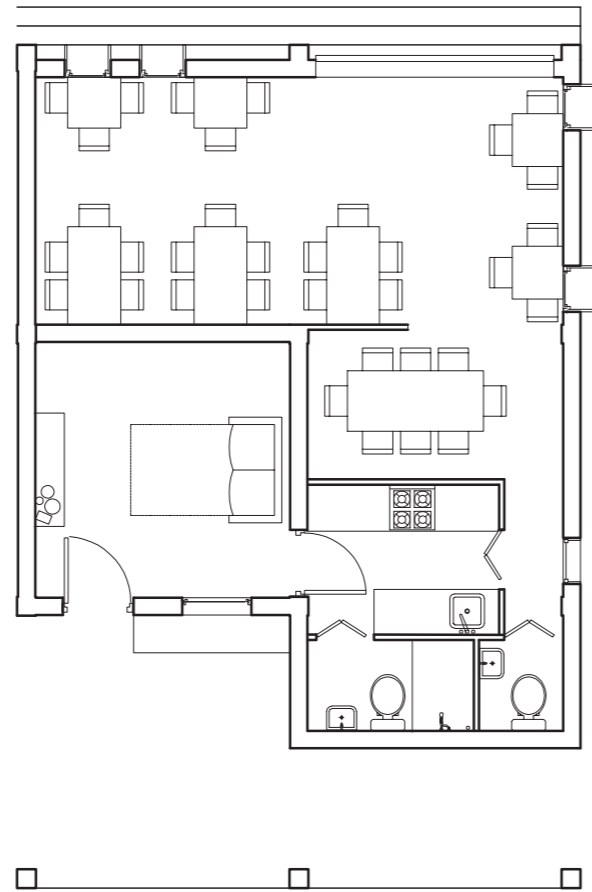




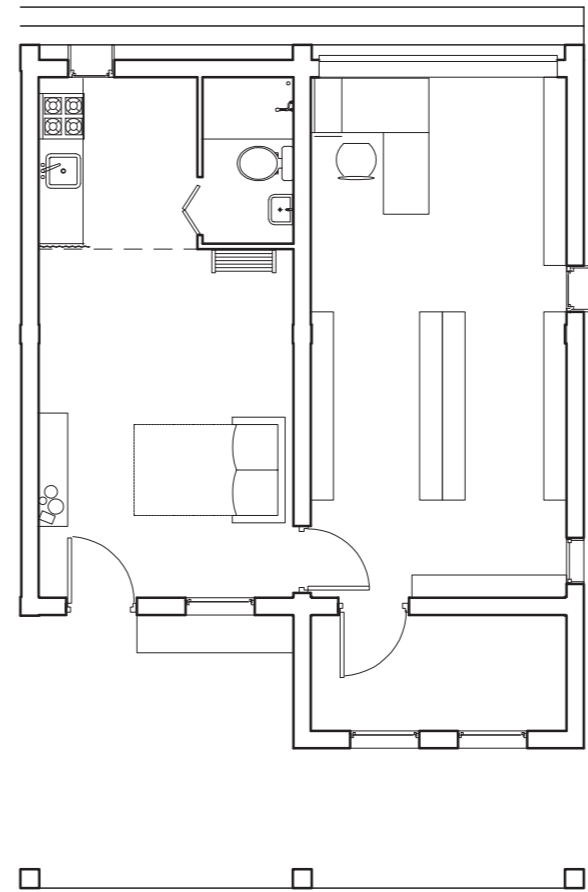




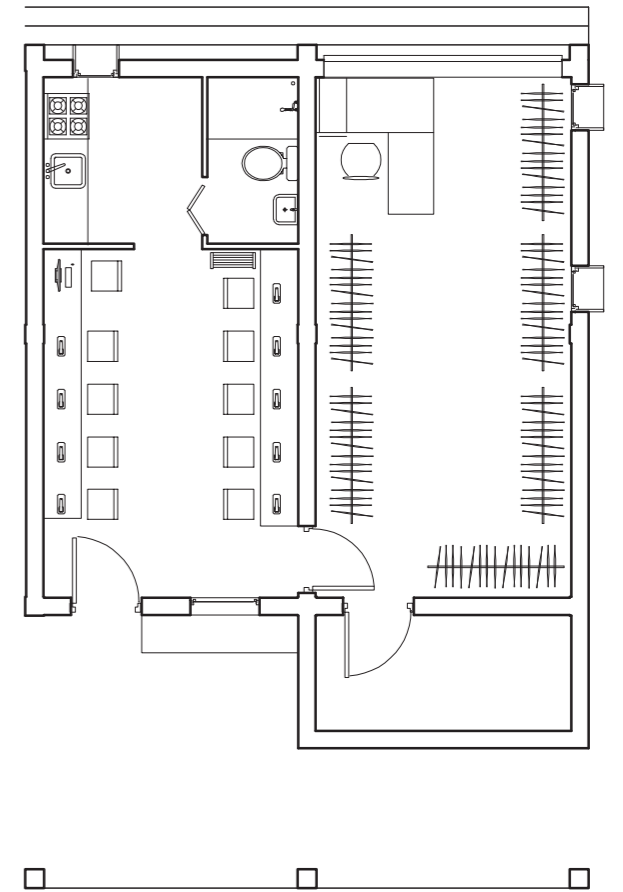
Living



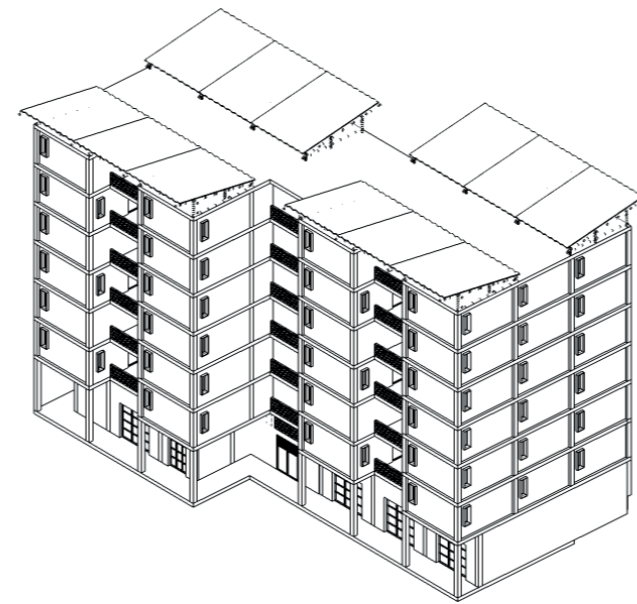
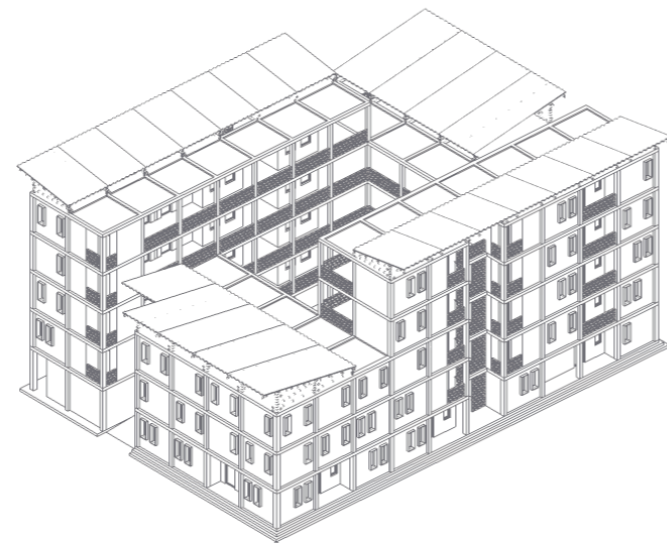
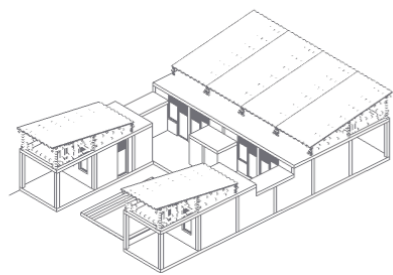
Living + Restaurant



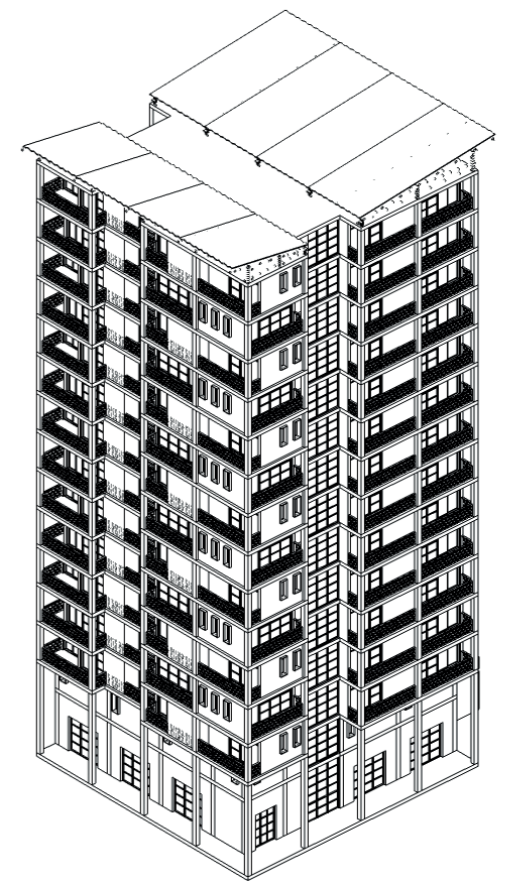
Living + Retail



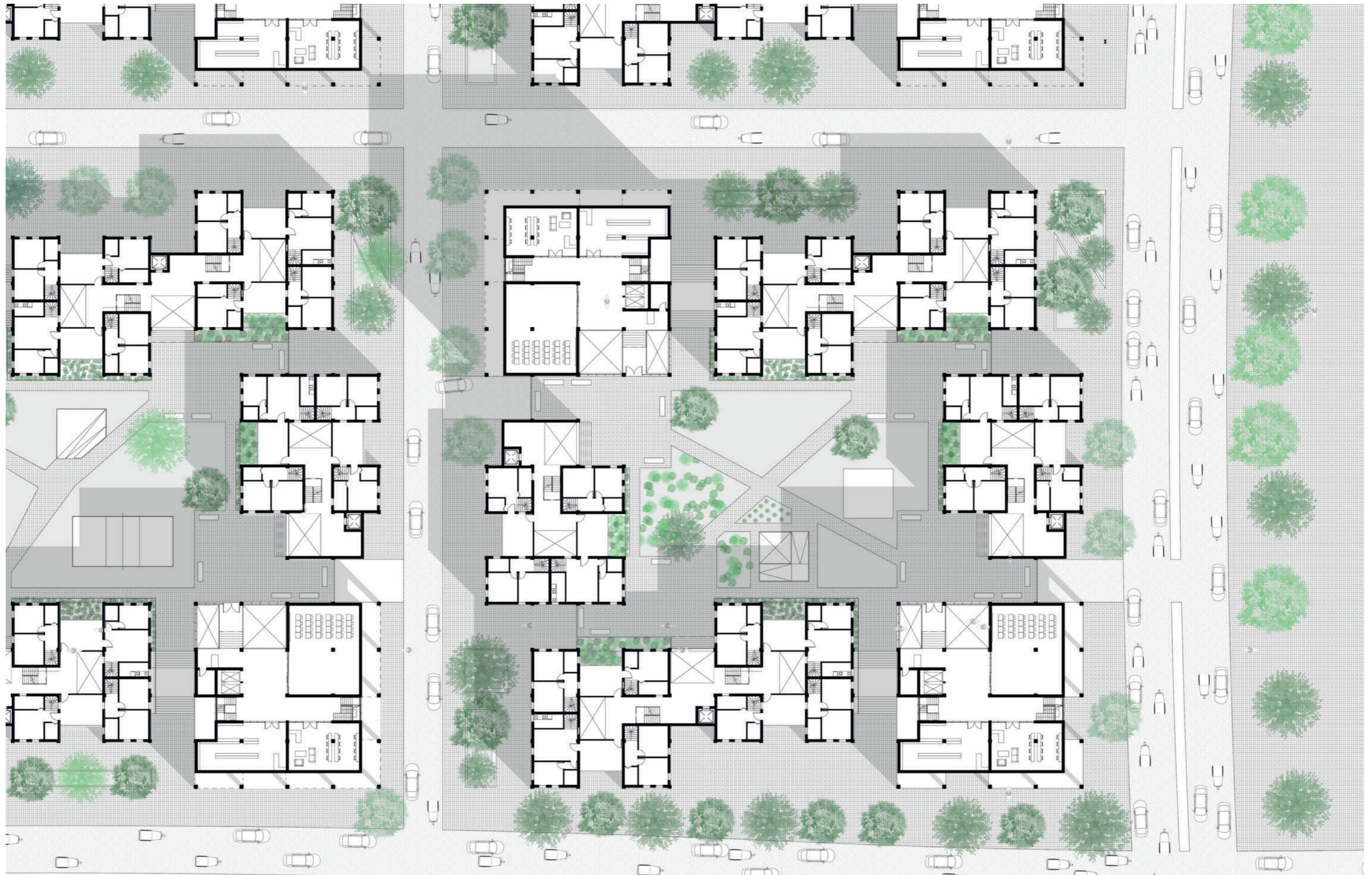
Production + Retail

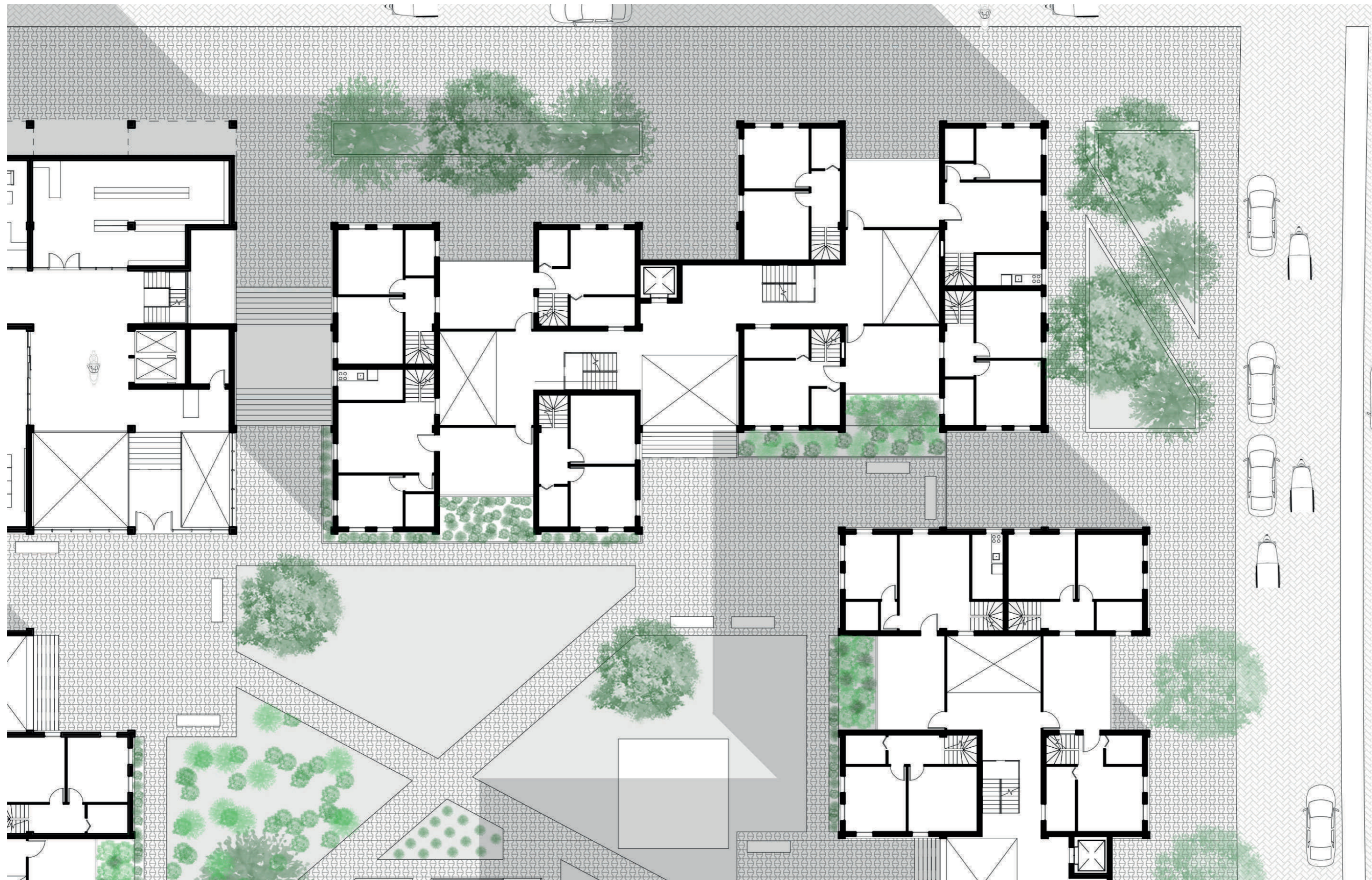


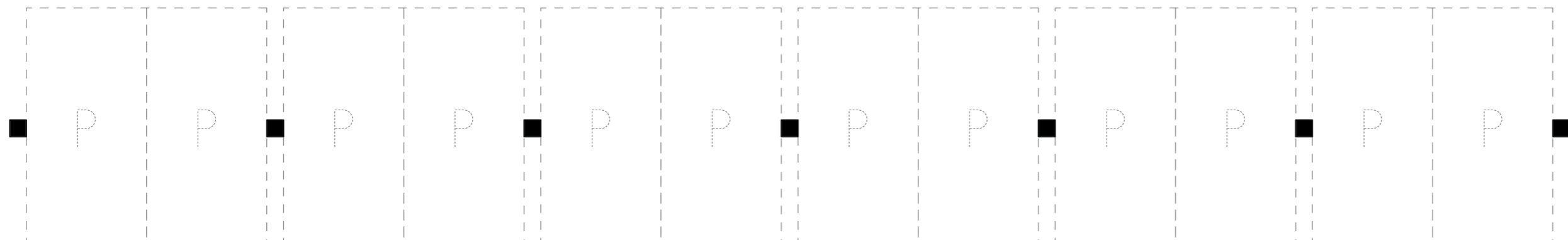
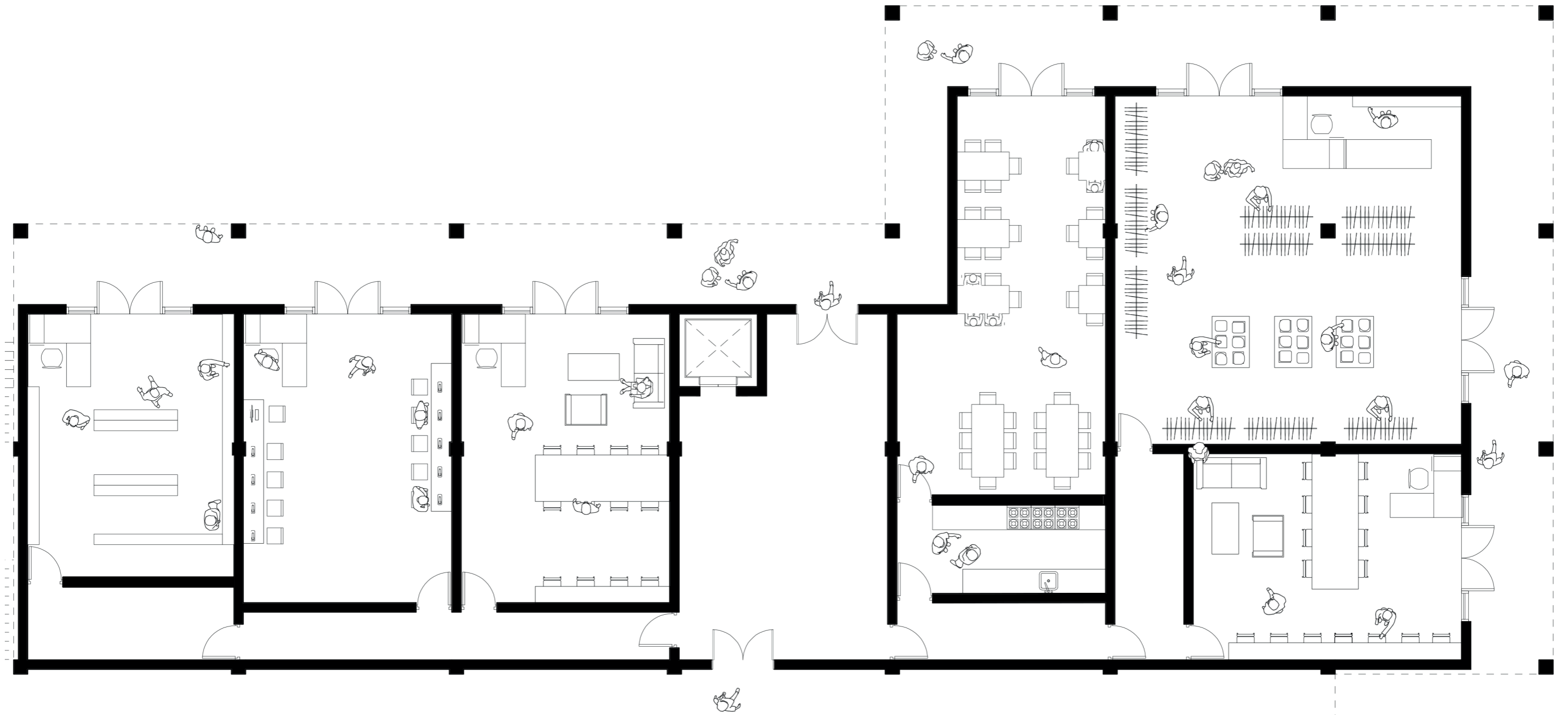
Slab

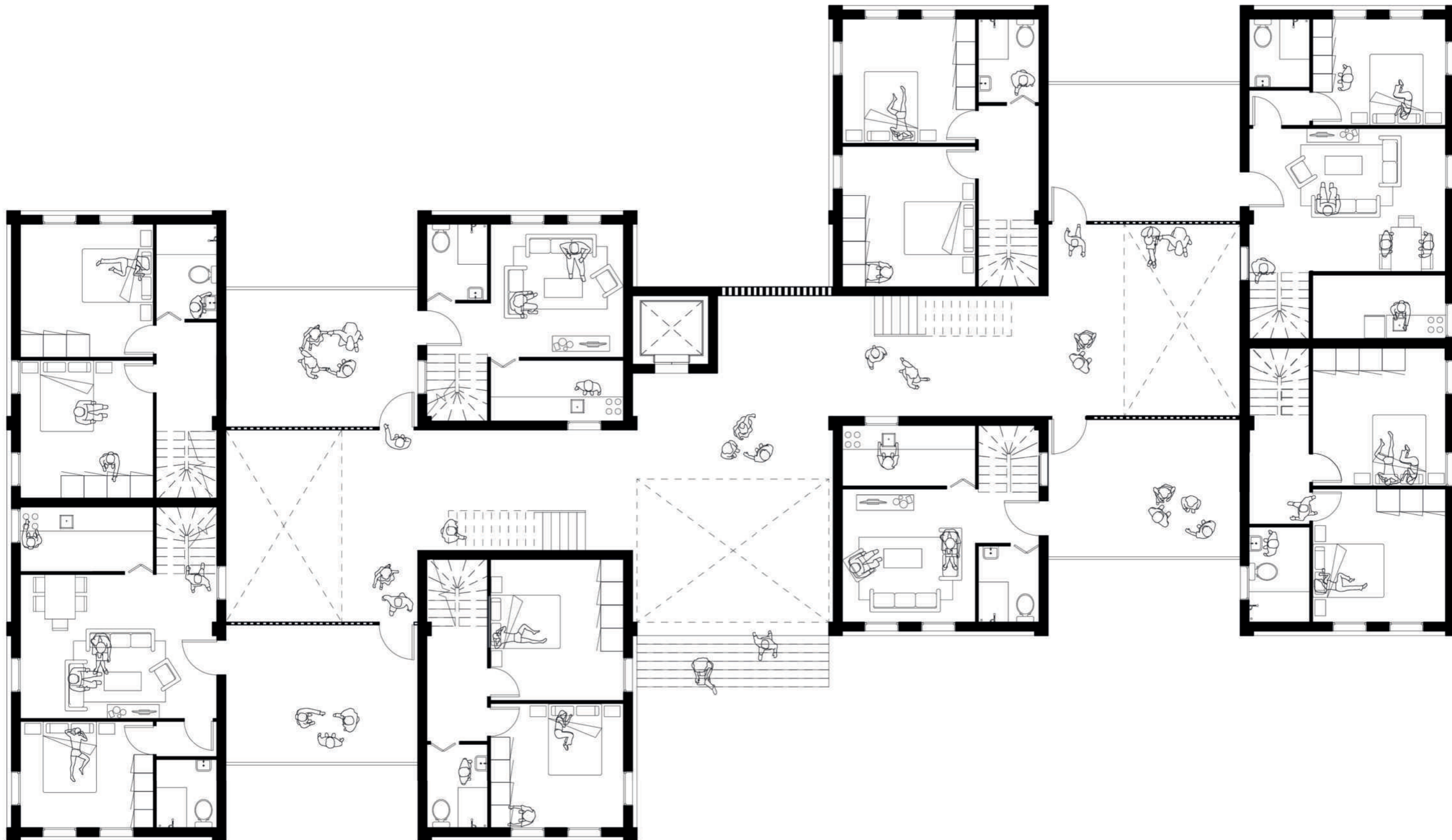


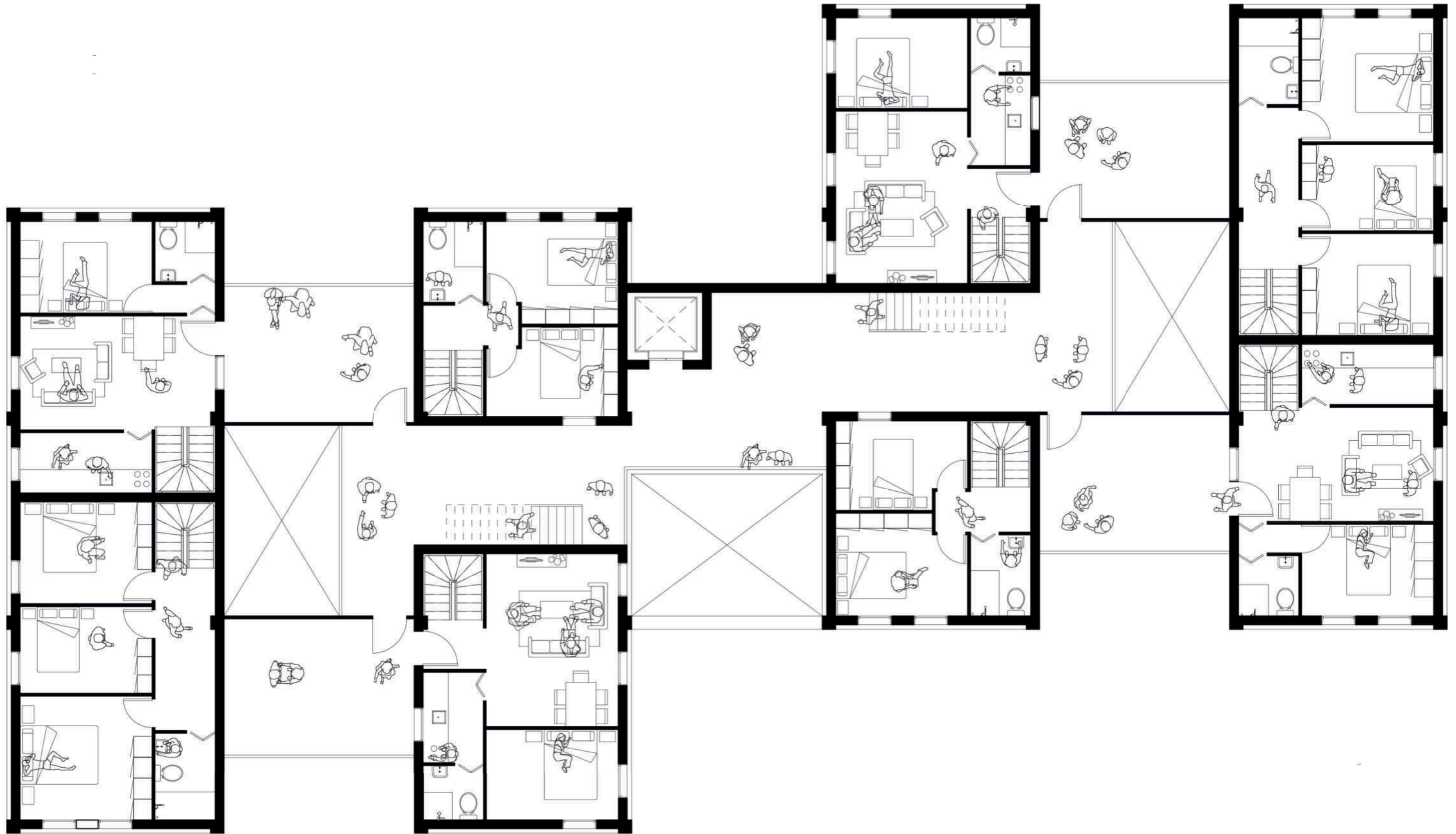
Tower









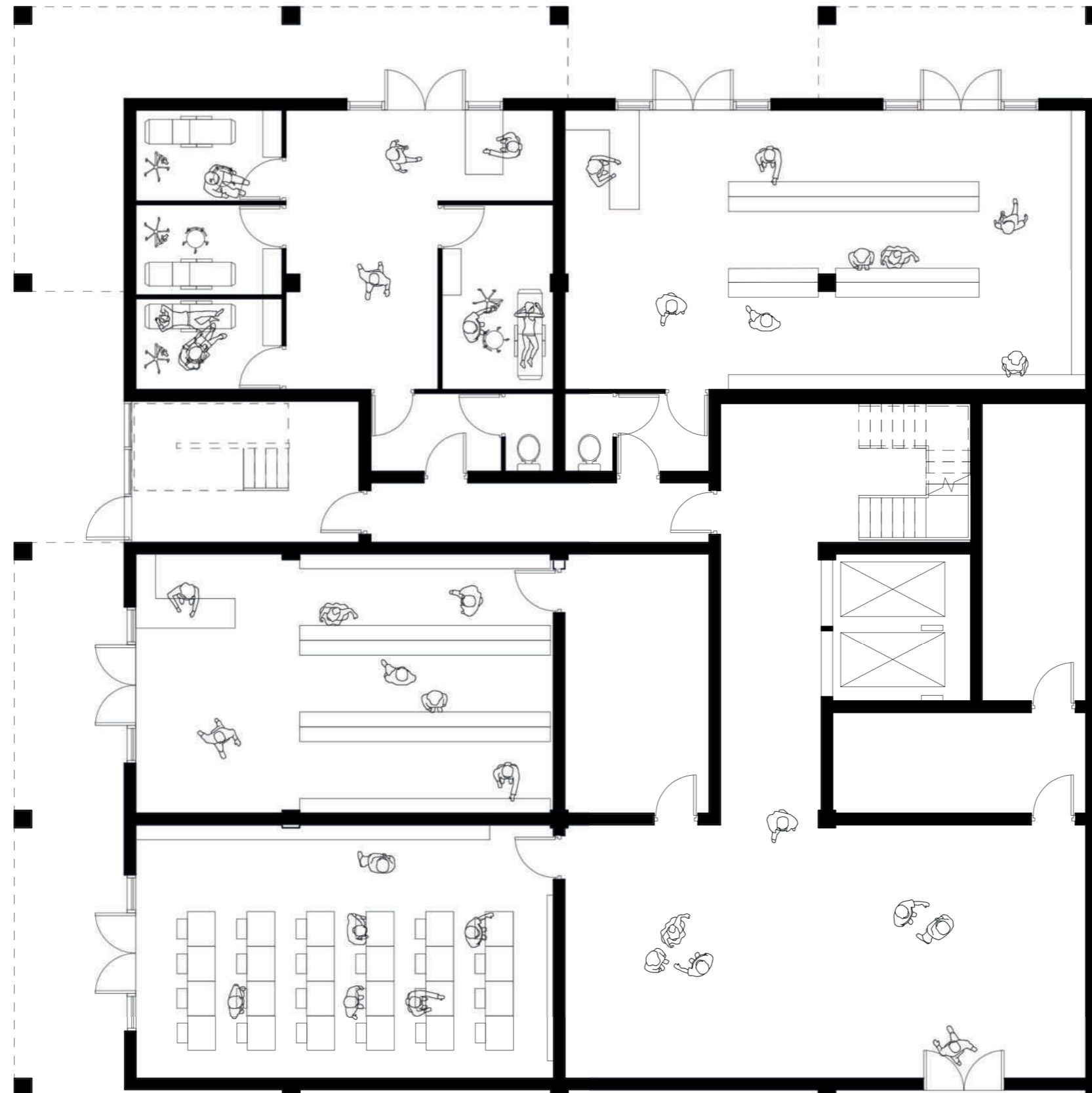


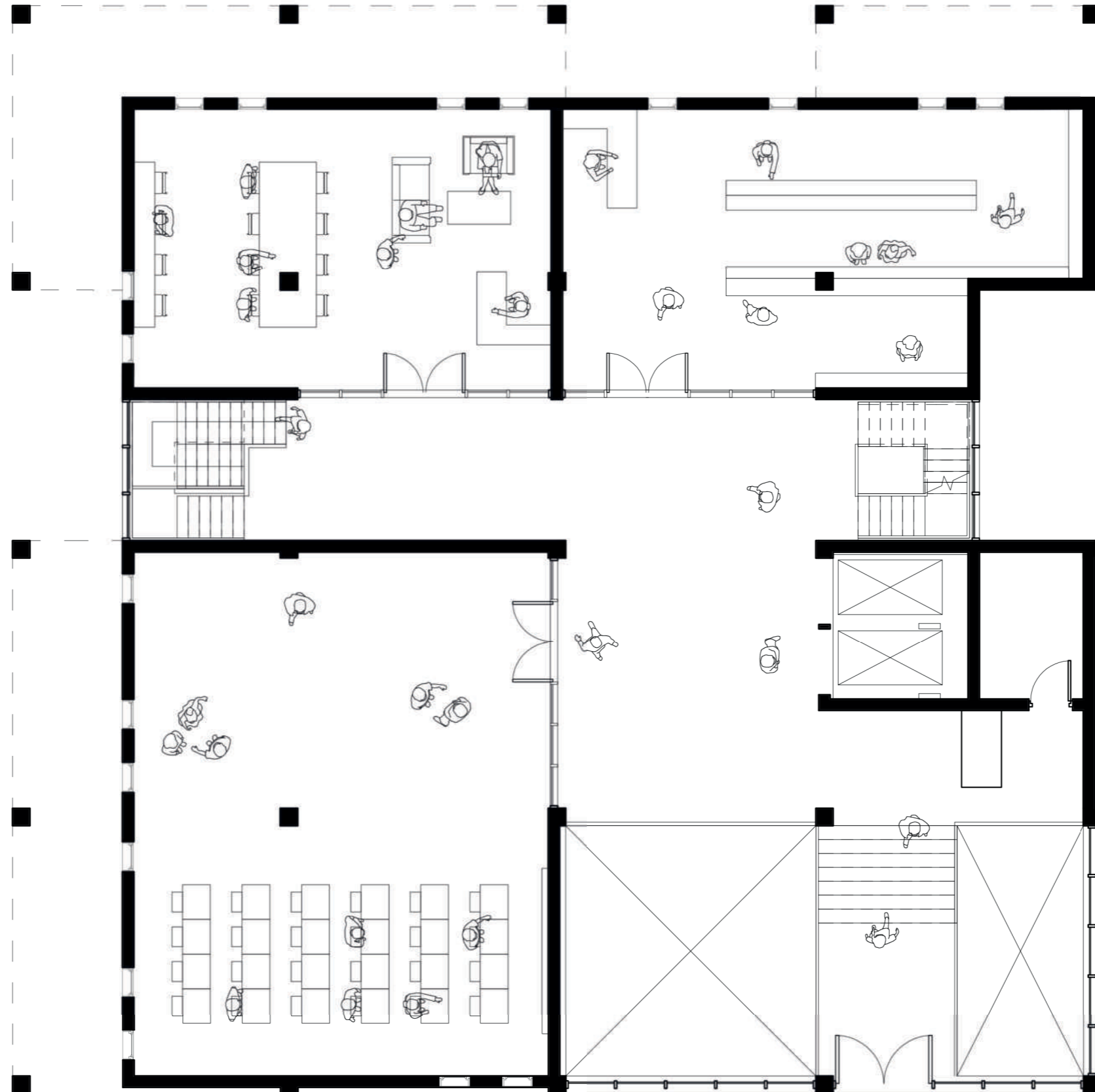


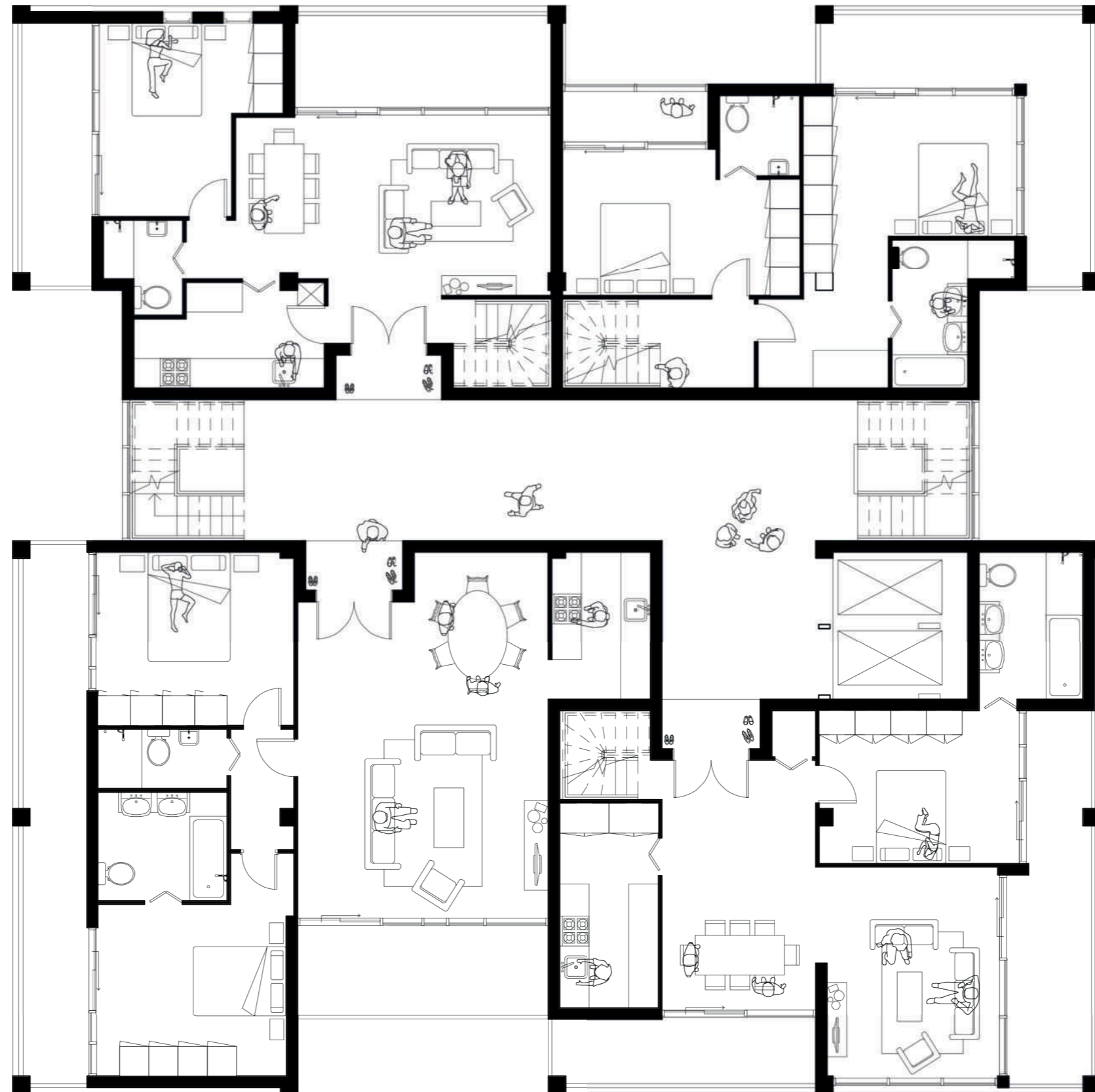


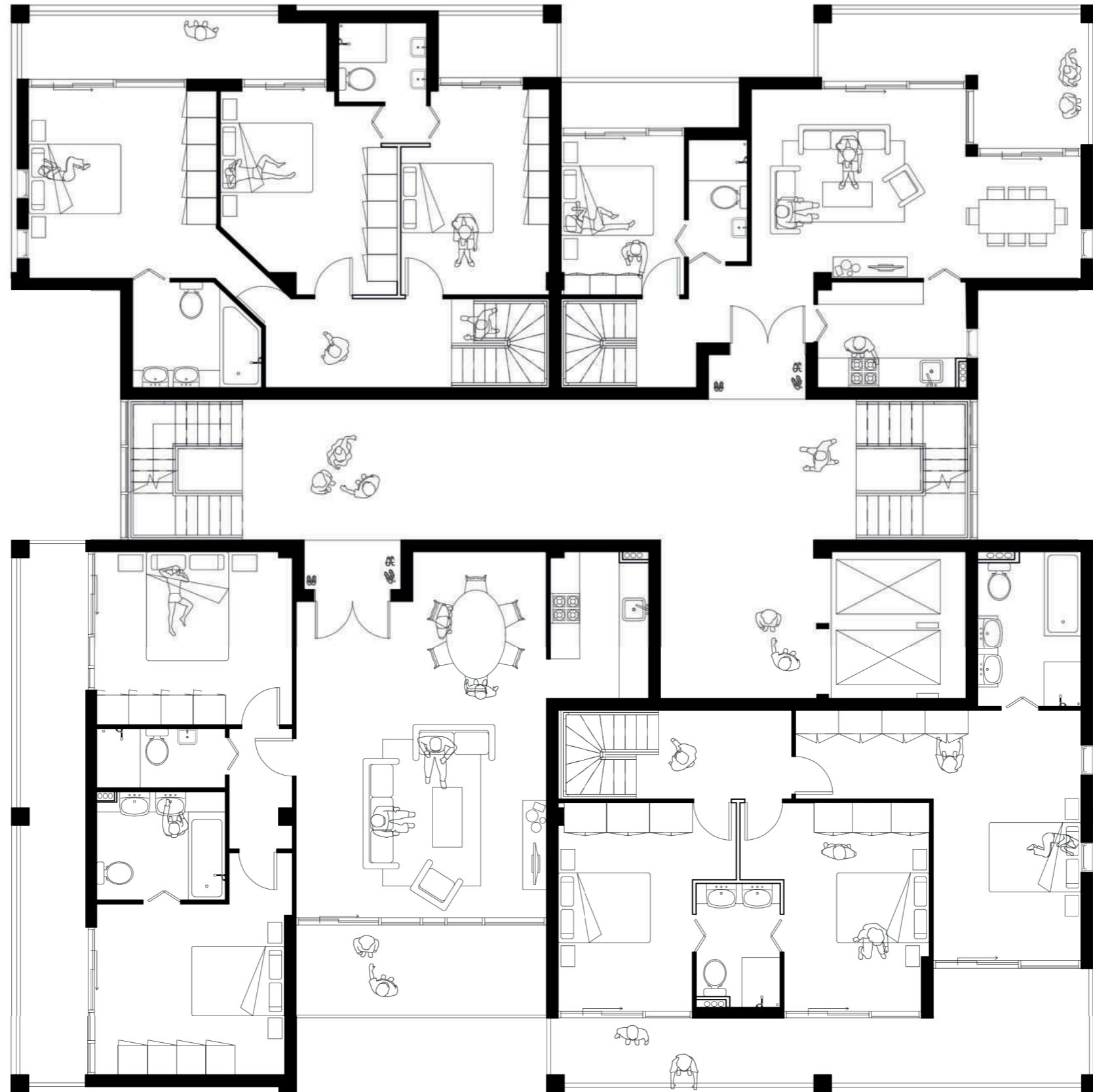












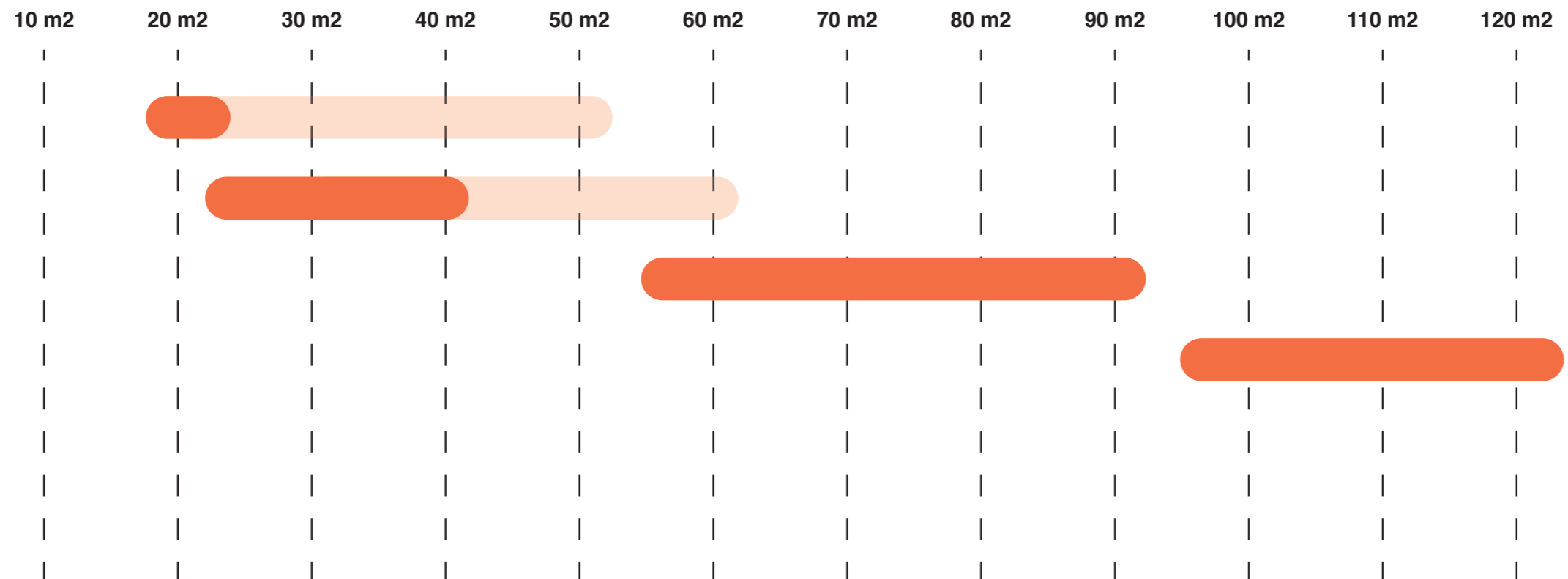
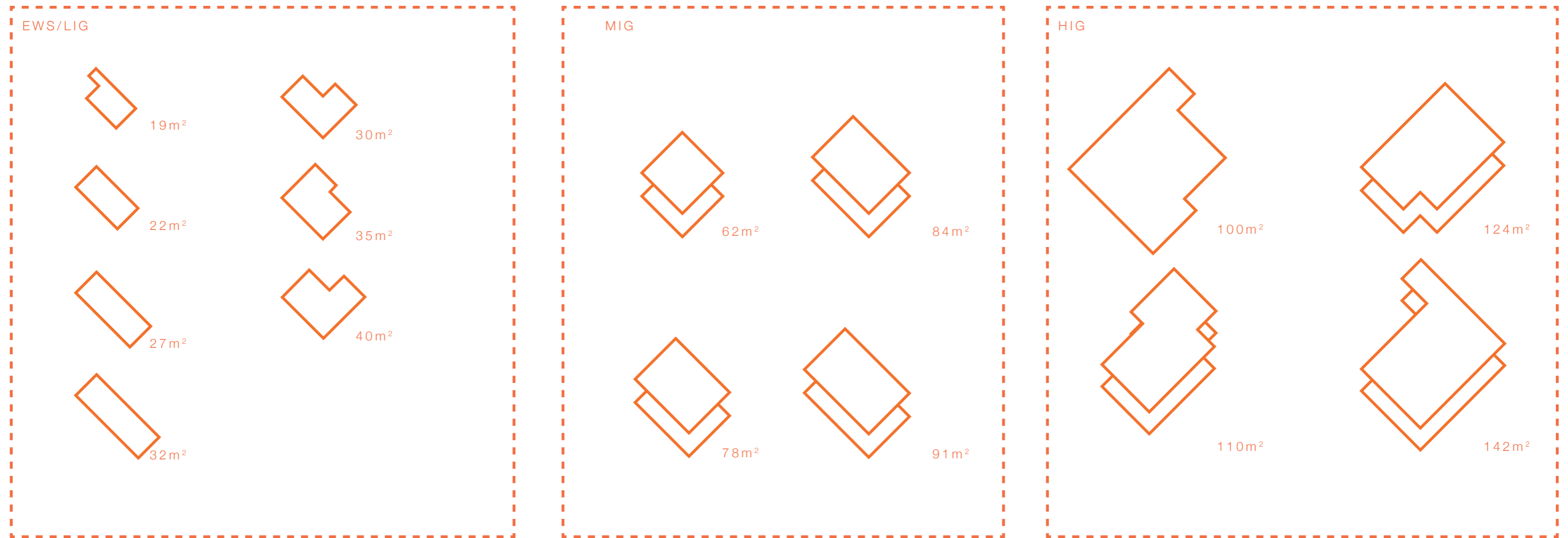


Tower | Facade

0 5m



Comparison



Comparison



Sites & Services

- No elevator
- Flexible floor plan
- Extendible horizontal/vertical
- Shared courtyards per 6 units



Courtyard

- No elevator
- Shared courtyard on ground floor
- Flexible work-live units on ground floor.
- 'Social hubs' per 3 units to use as an extension of their home.



Slab

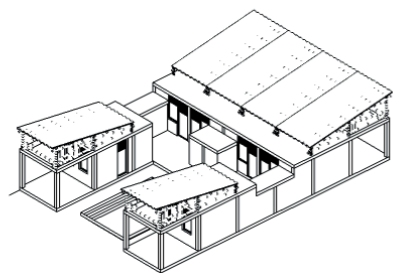
- Elevator
- Shared courtyard with tower typology
- Quiet entrance through courtyard
- Opportunities to rent out certain part of dwelling
- Amenities/ other functions on ground floor



Tower

- Elevator
- Own private entrance
- Large Balconies
- Panoramic views
- Shared courtyard with slab typology
- Amenities on ground floor
- Private communal amenities on first floor

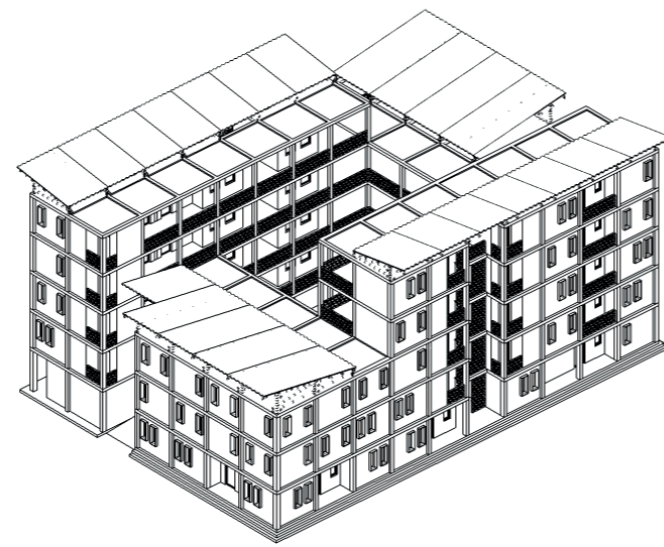
Comparison



Sites & Services

Unit sizes: 20- 52m²
FSI: 0.7 - 1.4
Stories: 1-2

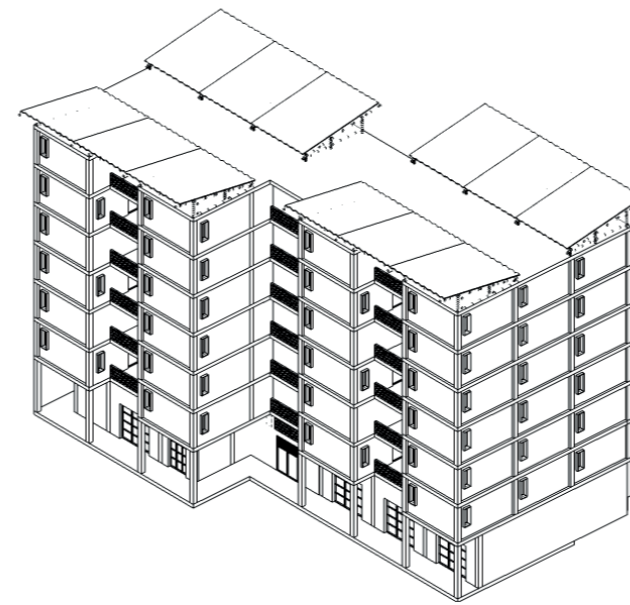
Target Groups: EWS/LIG/Lower MIG



Courtyard

Unit sizes: 22- 54m²
FSI: 2.0 - 2.5
Stories: 5

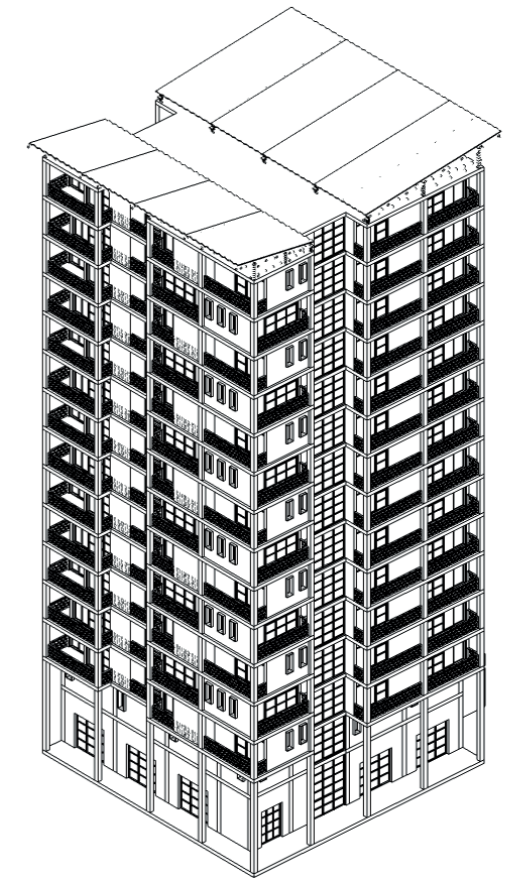
Target Groups: EWS/LIG/Lower MIG



Slab

Unit sizes: 65 - 97m²
FSI: 3.3
Stories: 6-9

Target Groups: Middle/Upper MIG



Tower

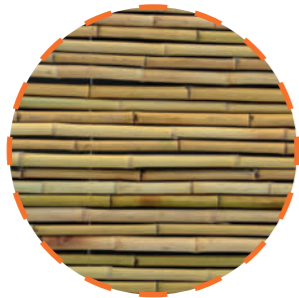
Unit sizes: 100 - 135m²
FSI: 3.9
Stories: 10-15

Target Groups: Upper MIG/HIG

Construction & Materiality



Bamboo-reinforced concrete



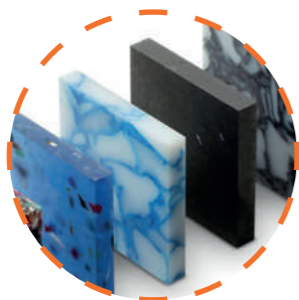
Bamboo roof



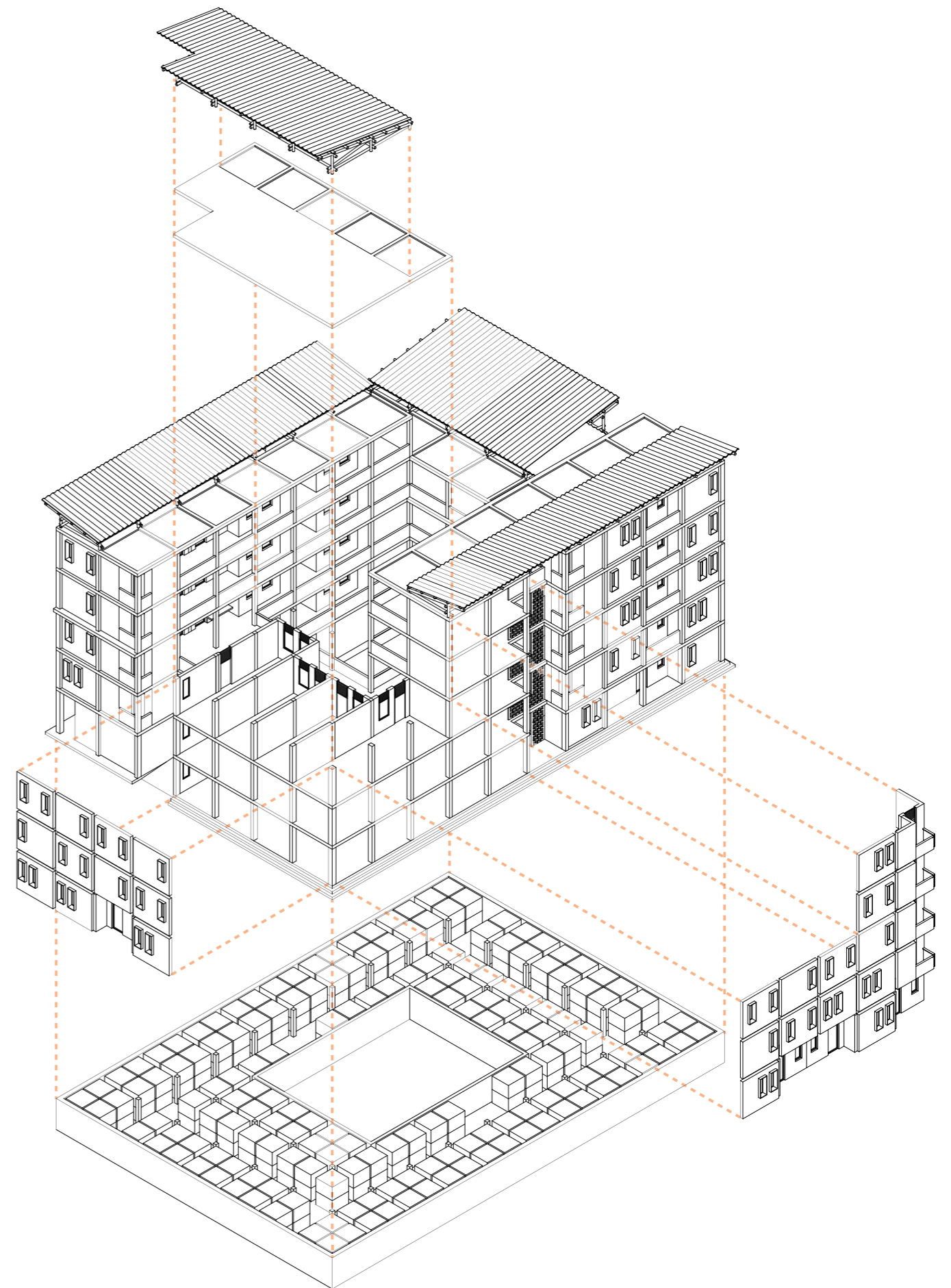
Fly ash bricks



AAC Blocks



Recycled Plastic sheets

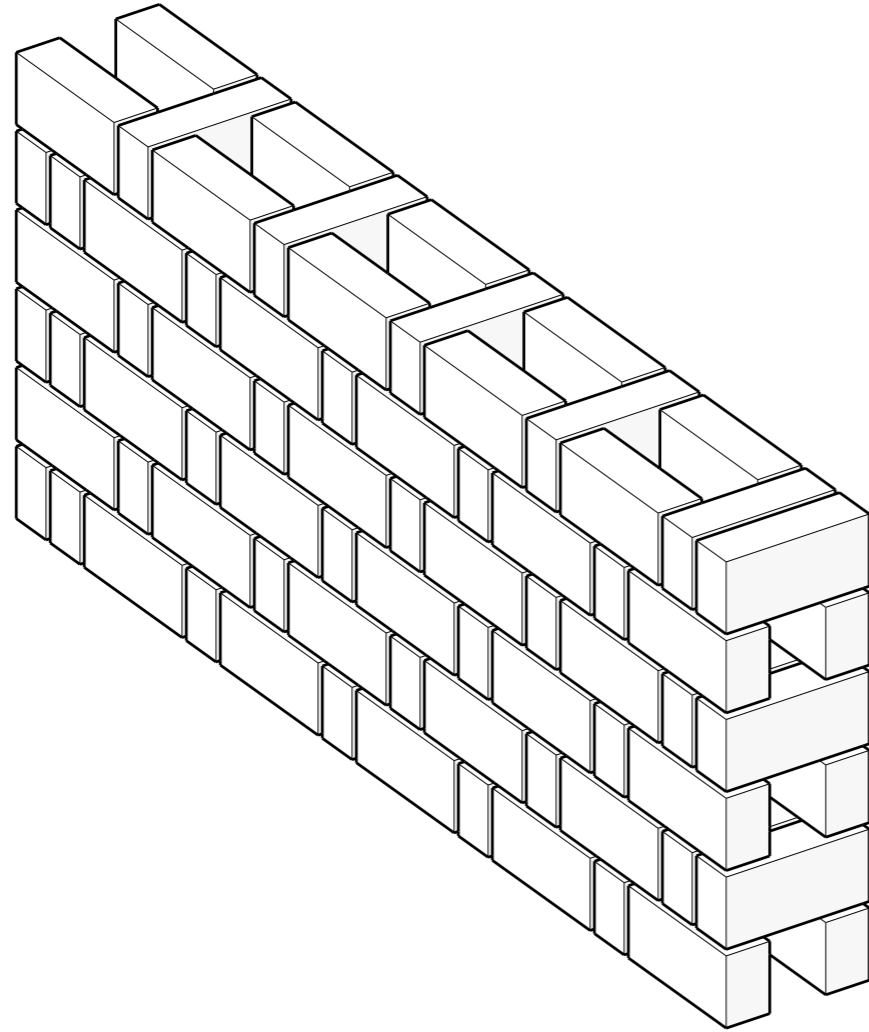


Construction & Materiality

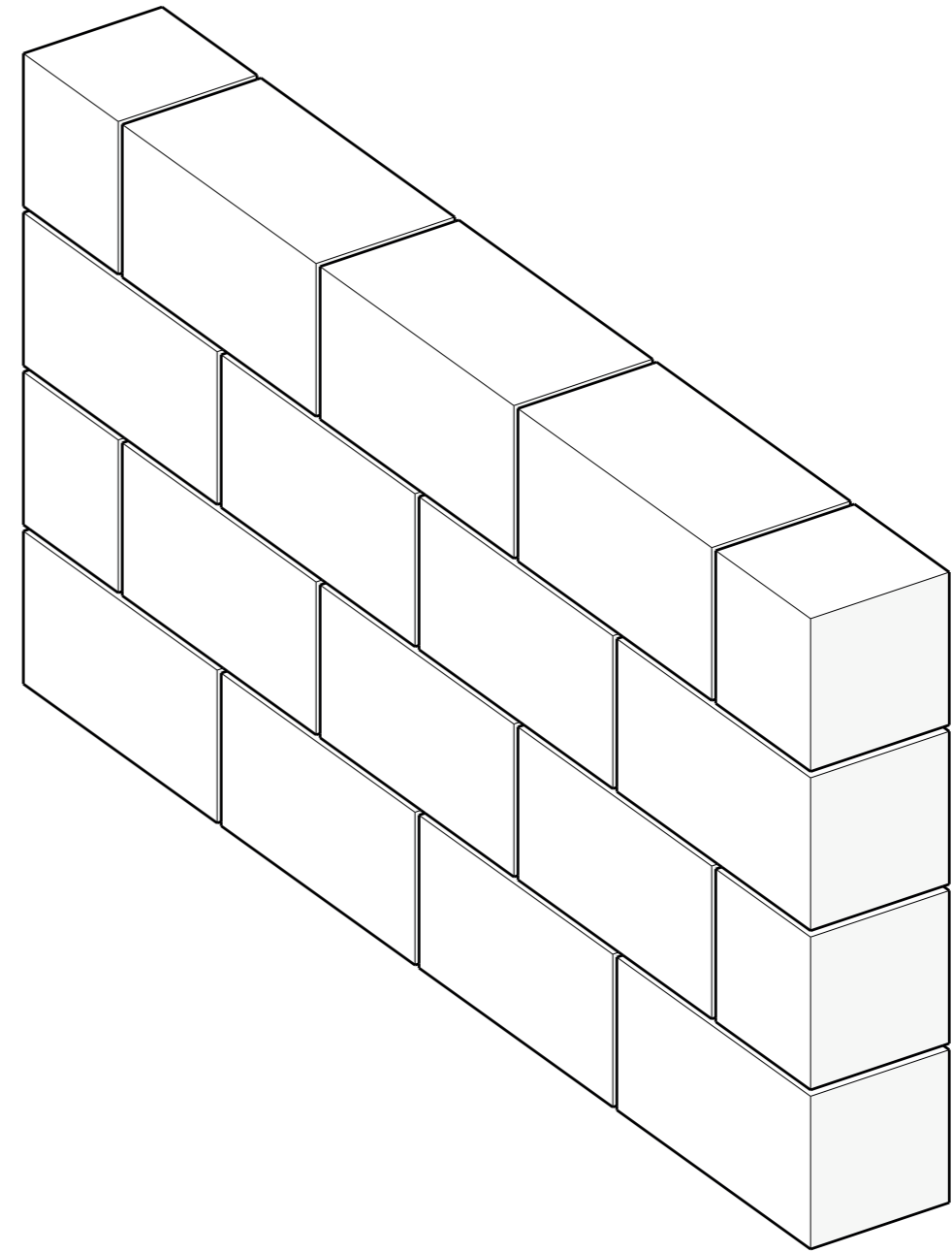
	Compressive Strength	Porosity	Dry Density	Thermal Conductivity	Mortar Consumption	Environmental Impact
Clay Brick	30-35 kg/m ³	More porous	1600-1700 kg/m ³	0.6-1 W/mK	More	Due to firing, more CO ₂ and energy used
Fly Ash Brick	90-100 kg/m ²	Less Porous	1700-1800 kg/m ³	0.3-0.4 W/mK	Less	Uses waste material. Curing reduces energy use. Low CO ₂ emissions
AAC Block	100-110 kg/m ²	Less Porous	1600-1920 kg/m ³	0.21-0.40 W/mK	Less	Recycles waste material, Low CO ₂ emissions

Construction & Materiality

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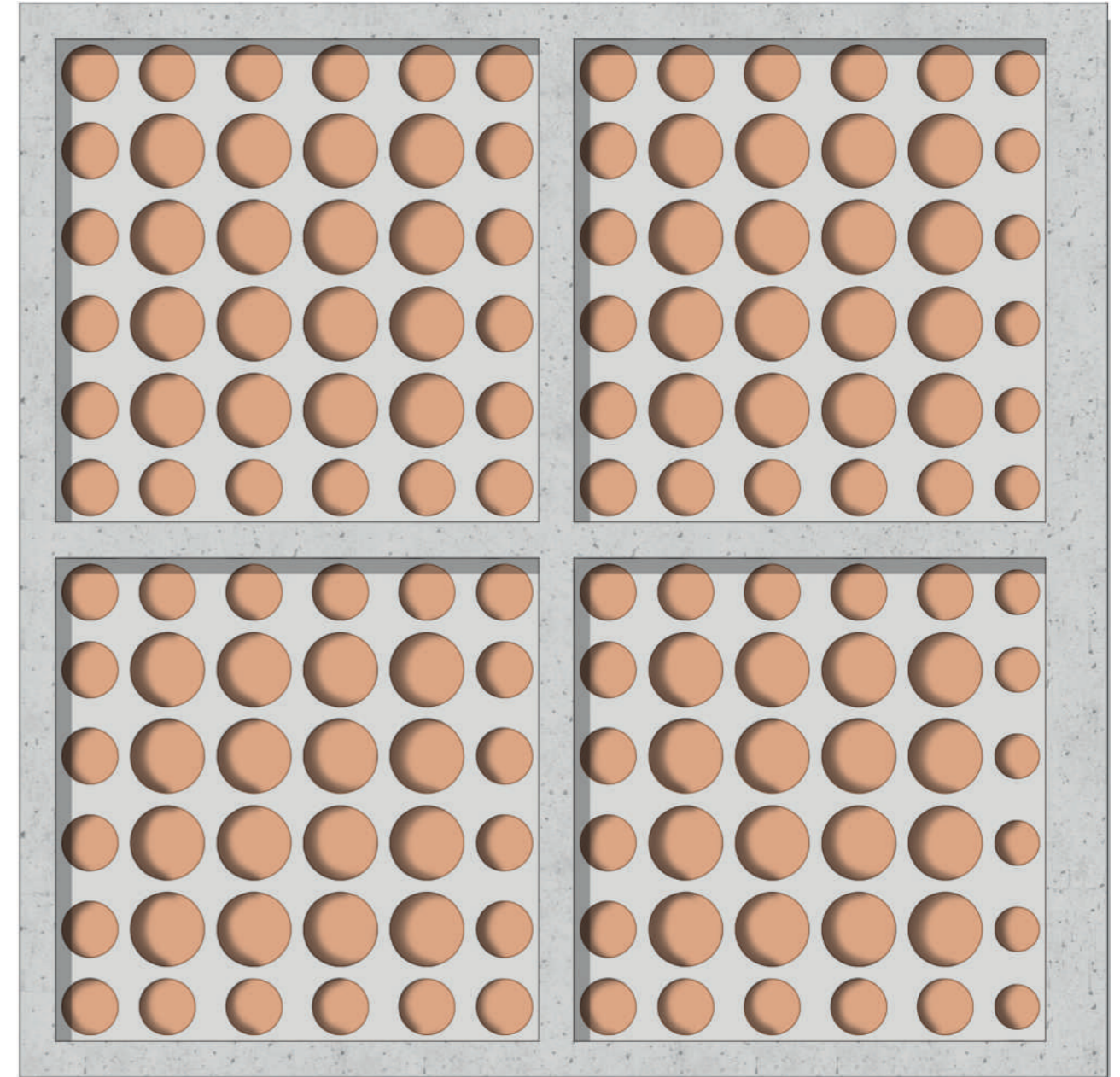
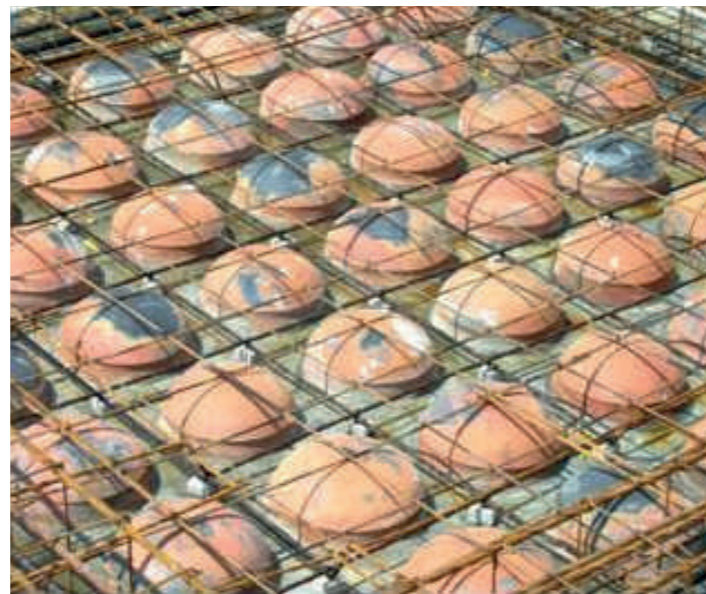
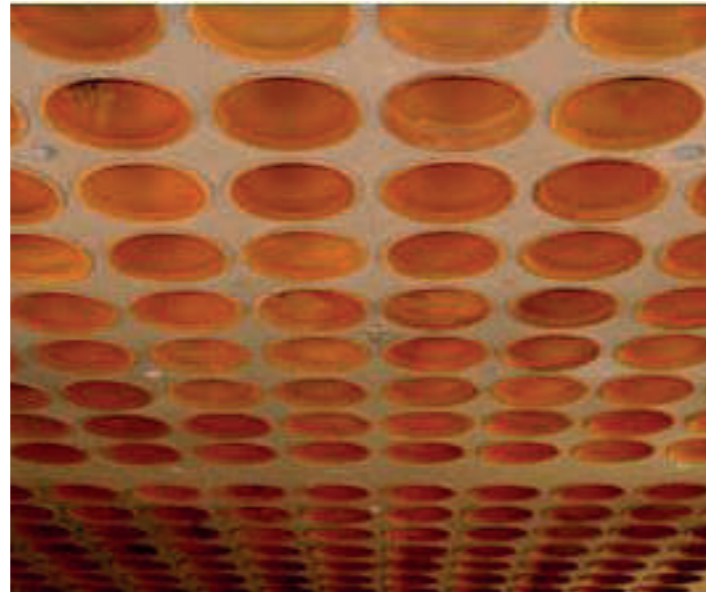
Brick infill
Stabilizing element in the facade
Rat trap bond
Requires 25% less bricks and 40% less mortar than normal bond.



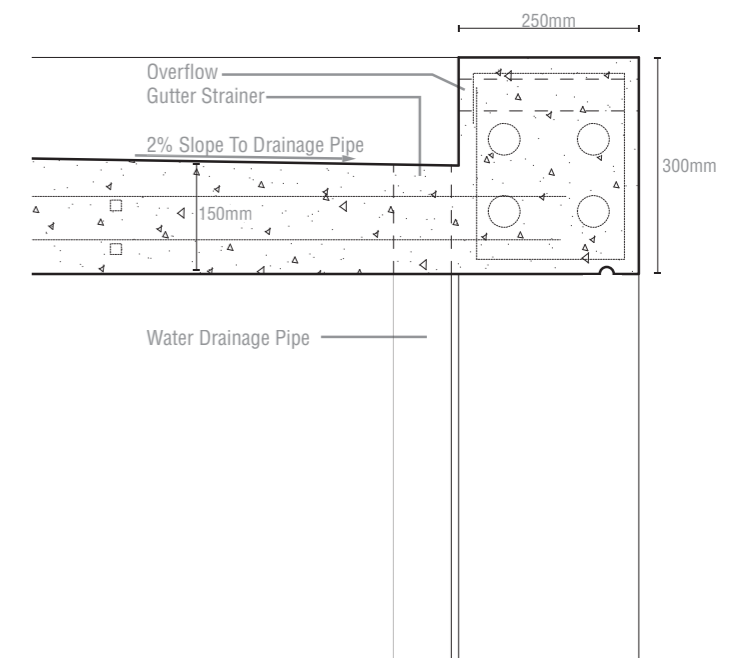
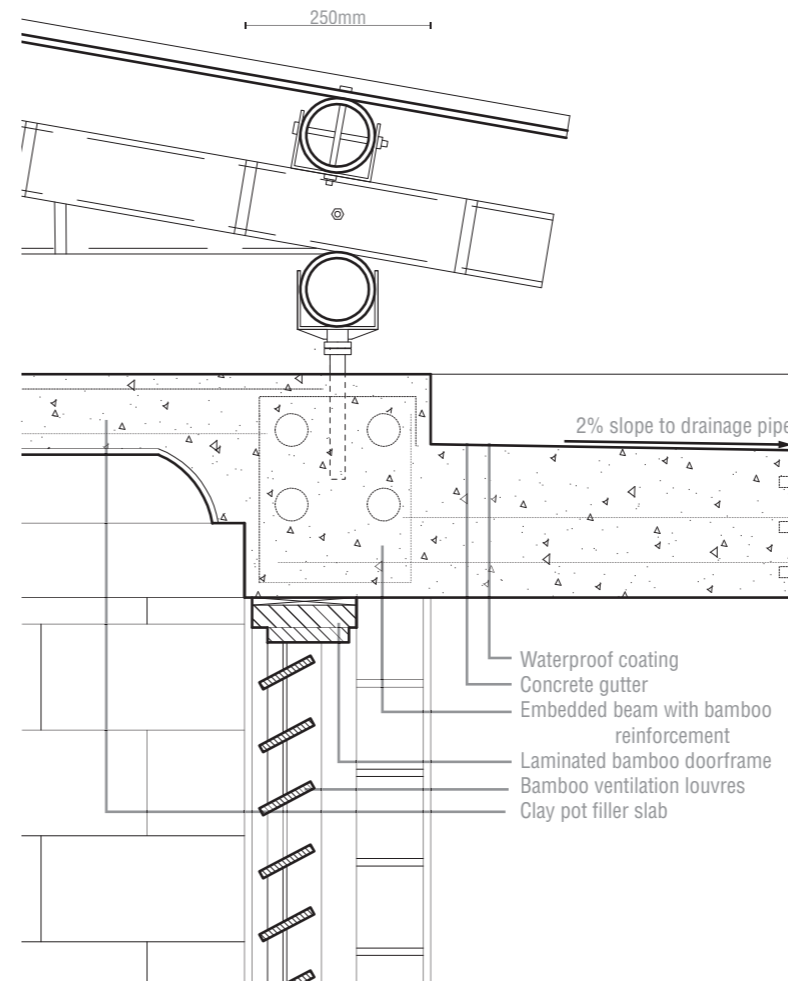
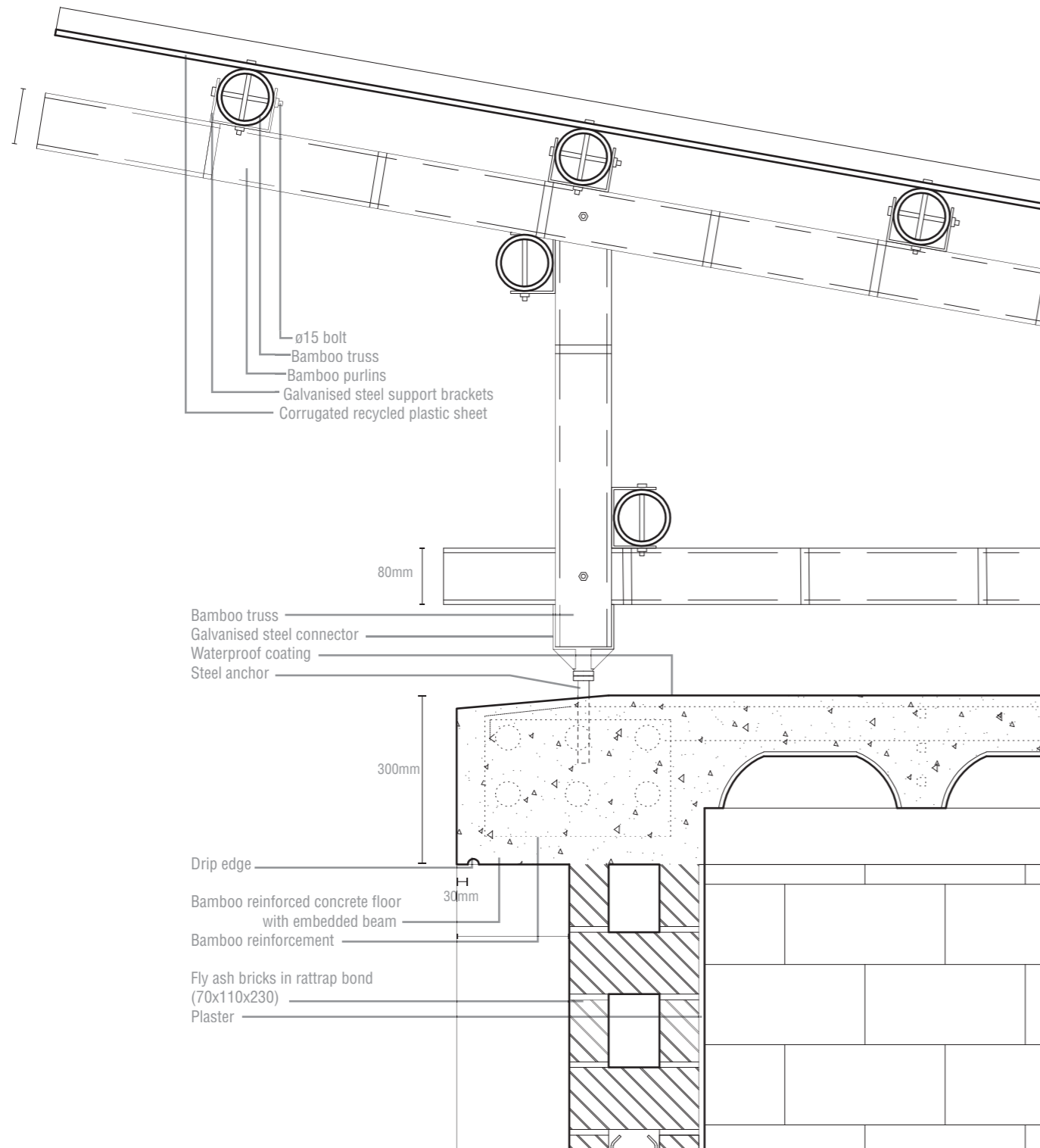
Internal stabilizing element
between units

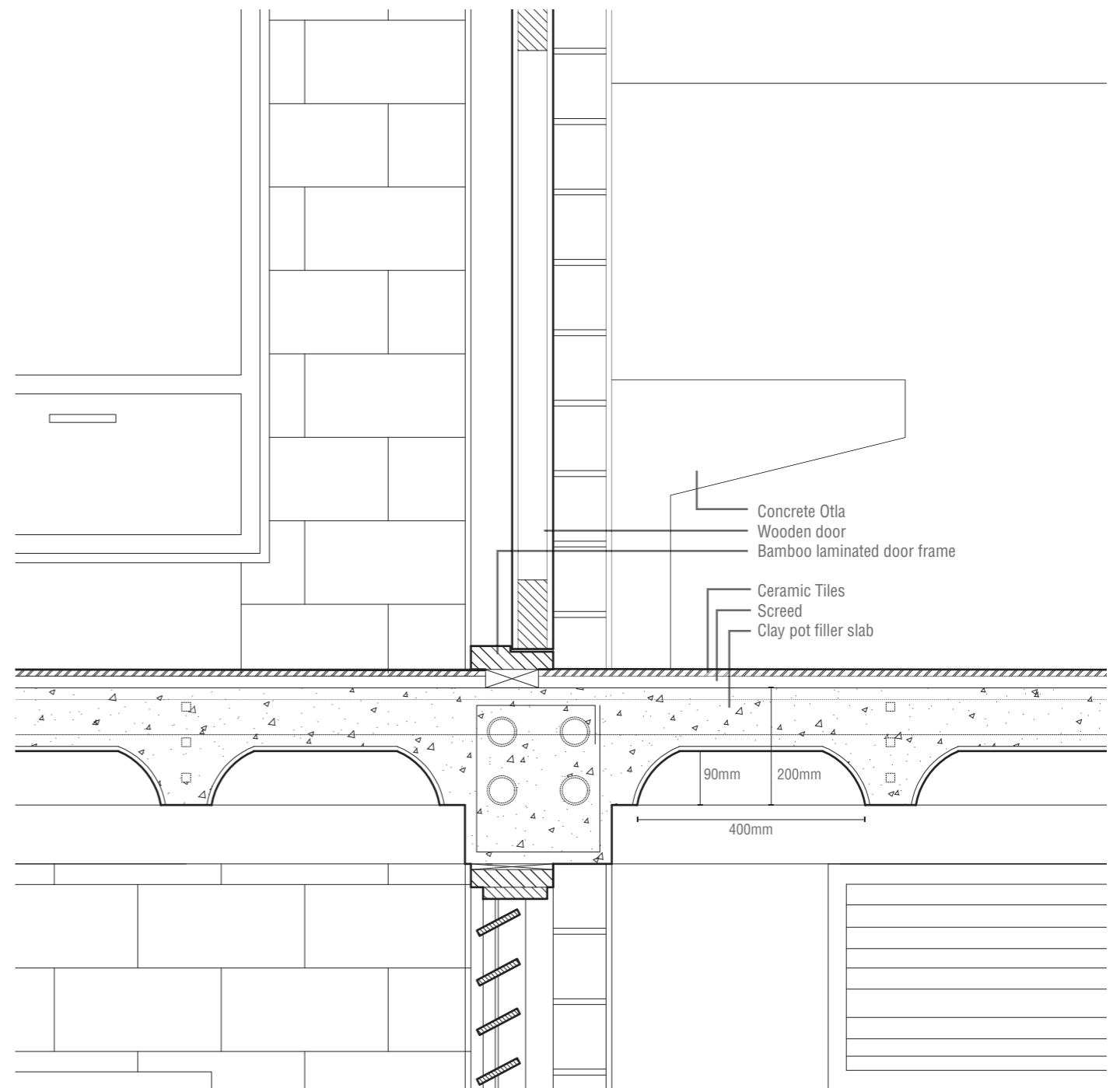
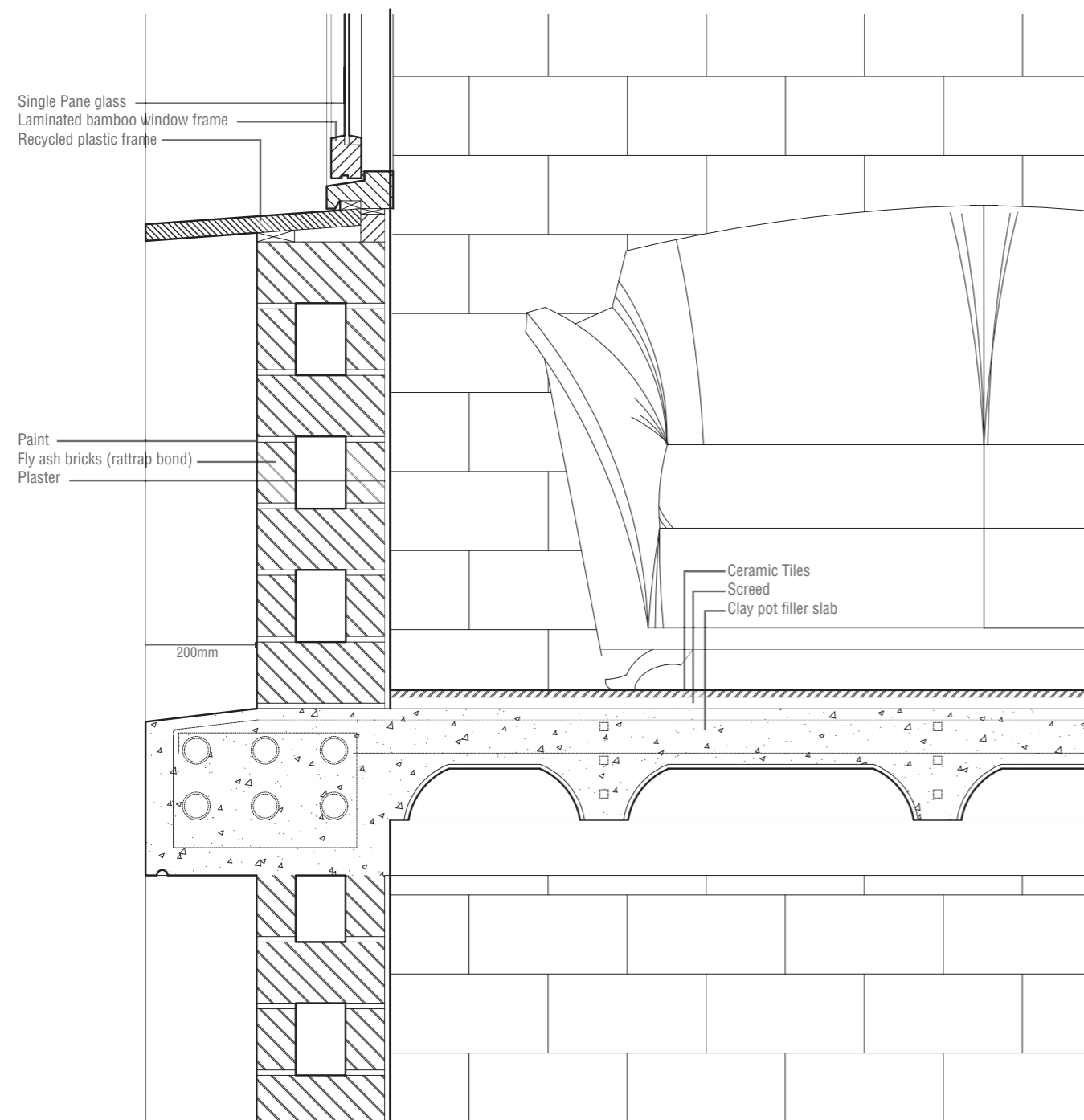
Construction & Materiality

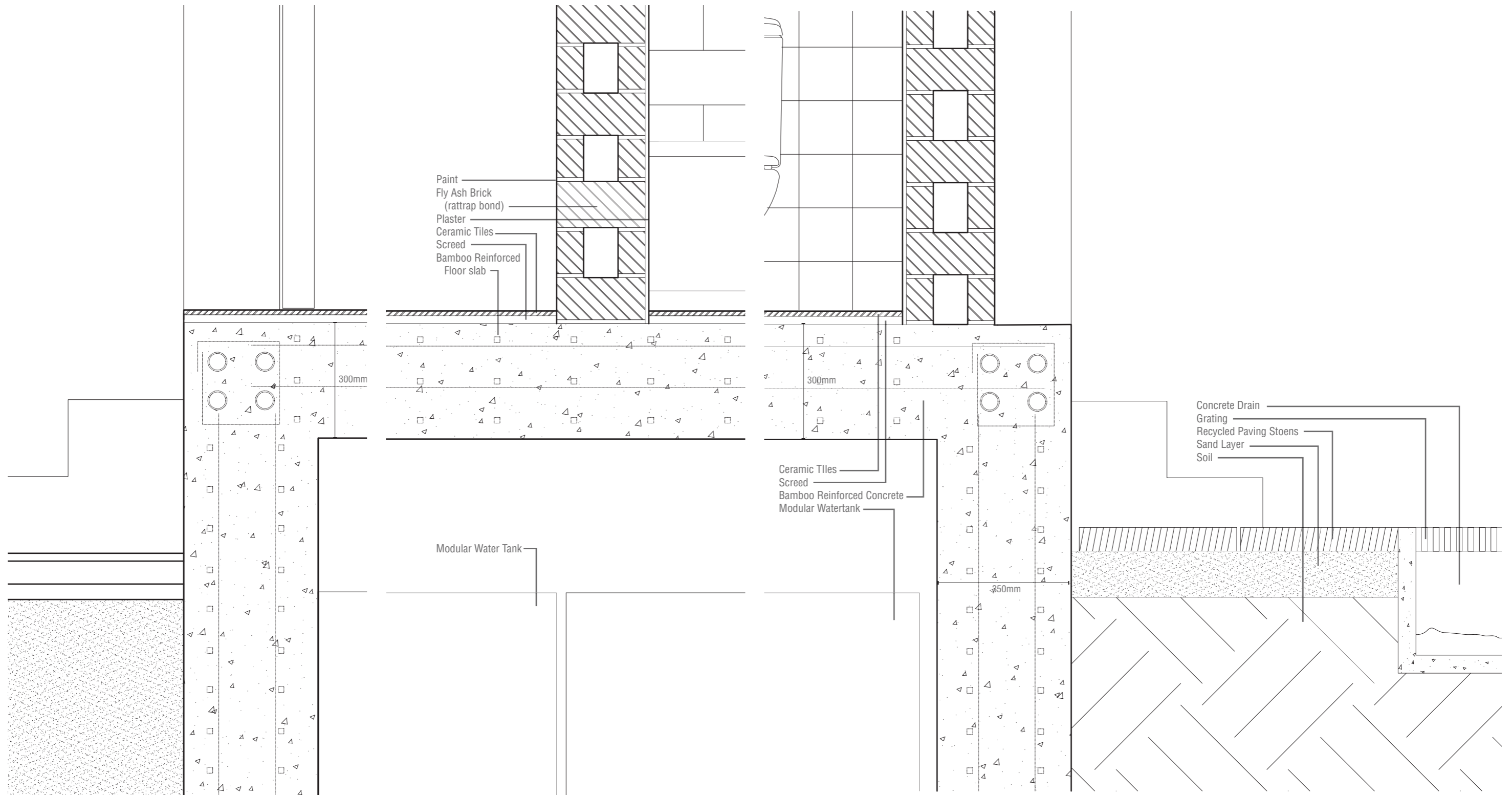
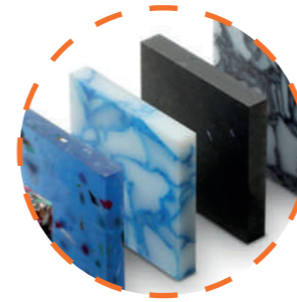
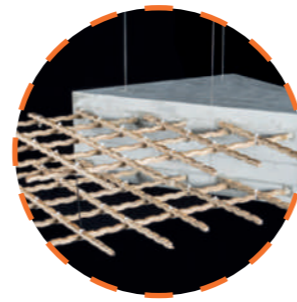
Clay pot filler slab
With bamboo reinforcement
Uses less concrete than
normal slab









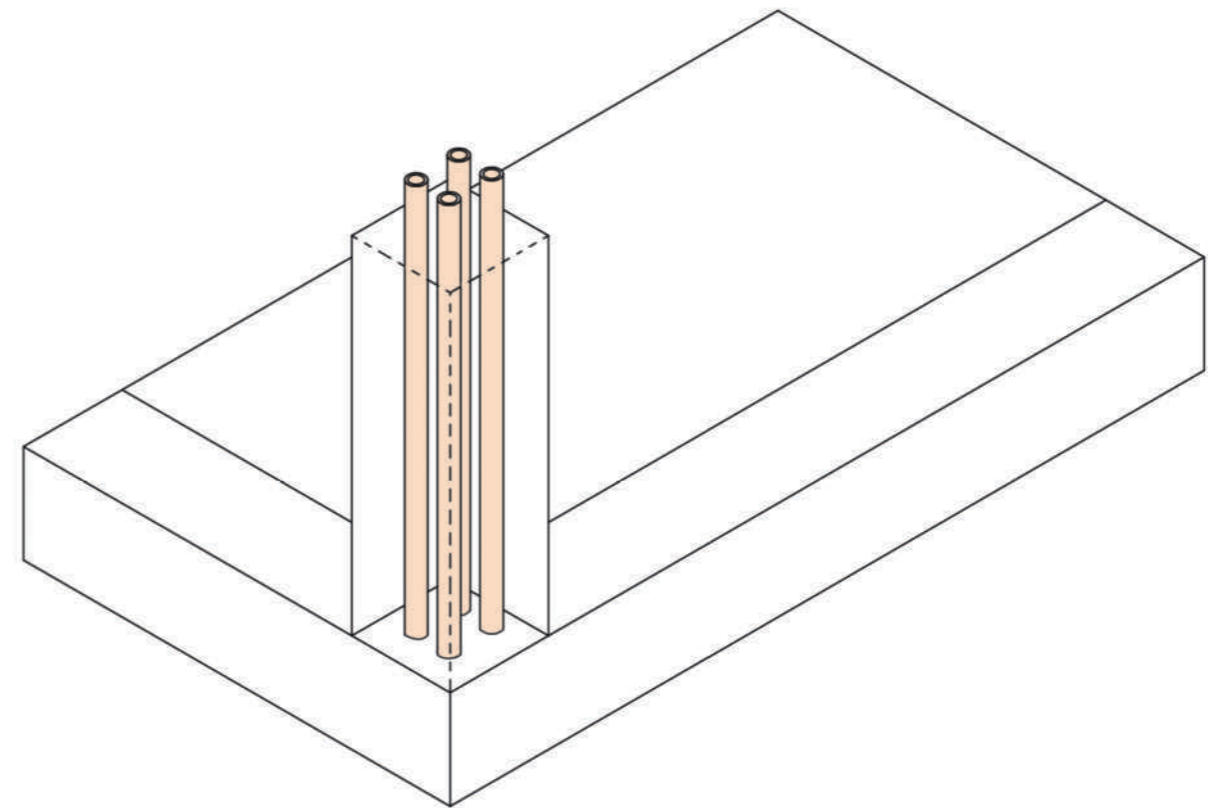
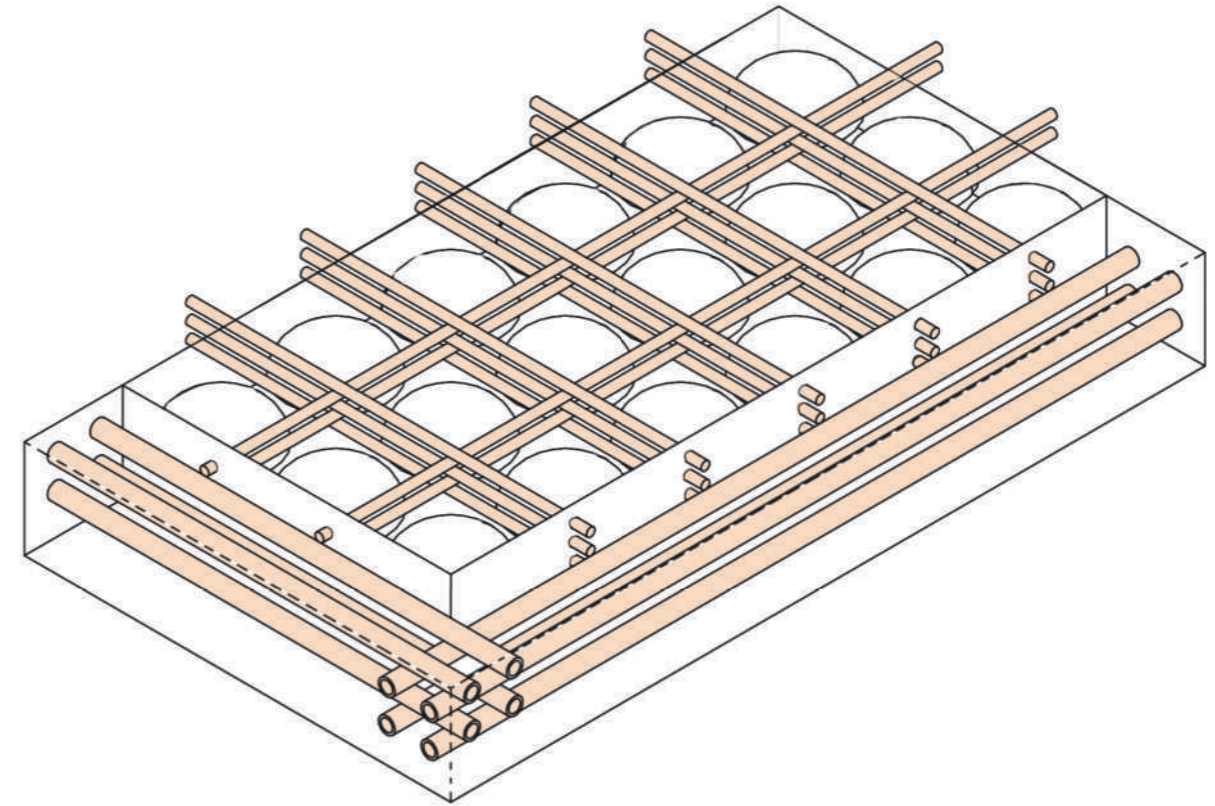
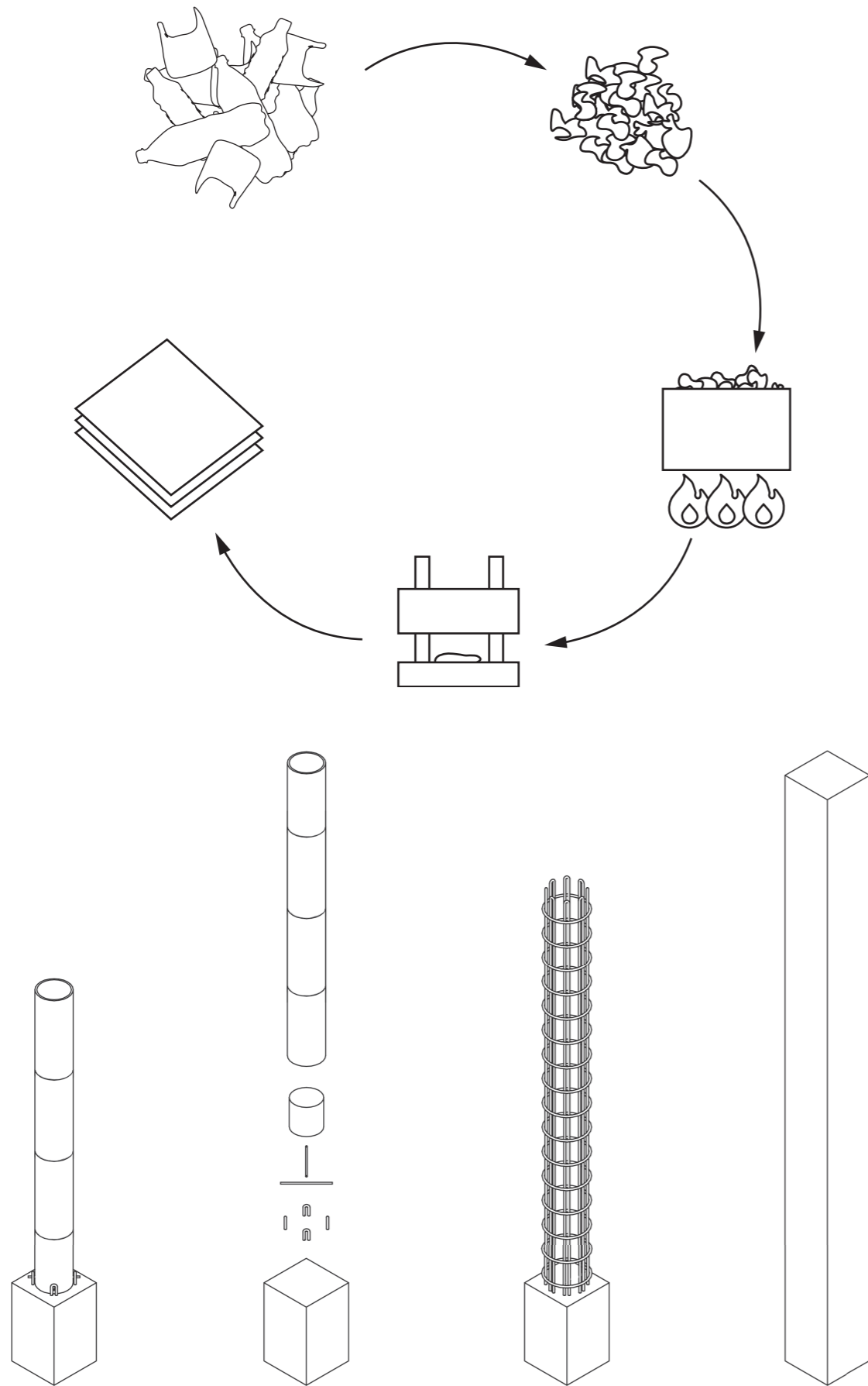




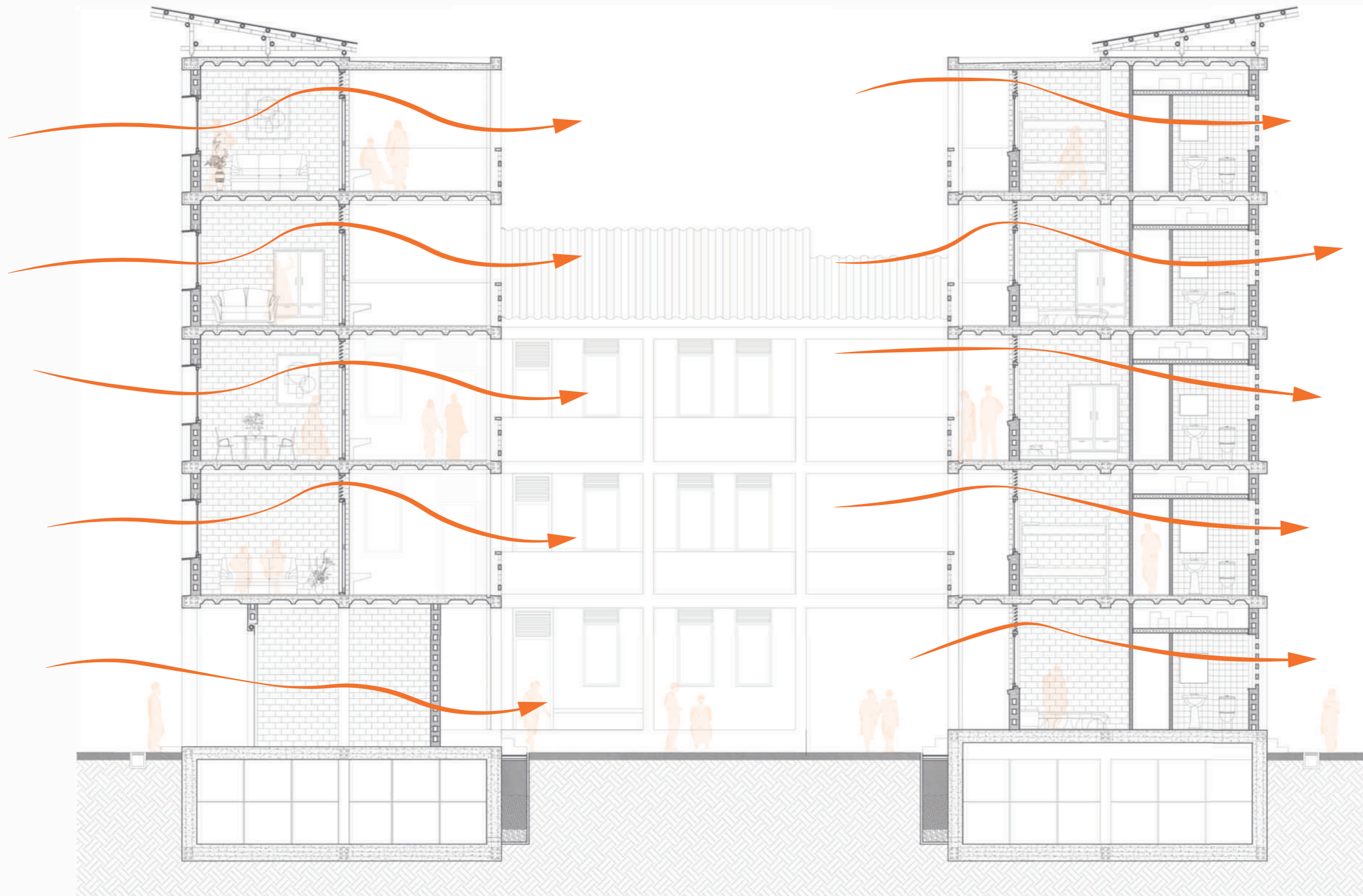
Paint options
Per building



Use of Plastic & Bamboo



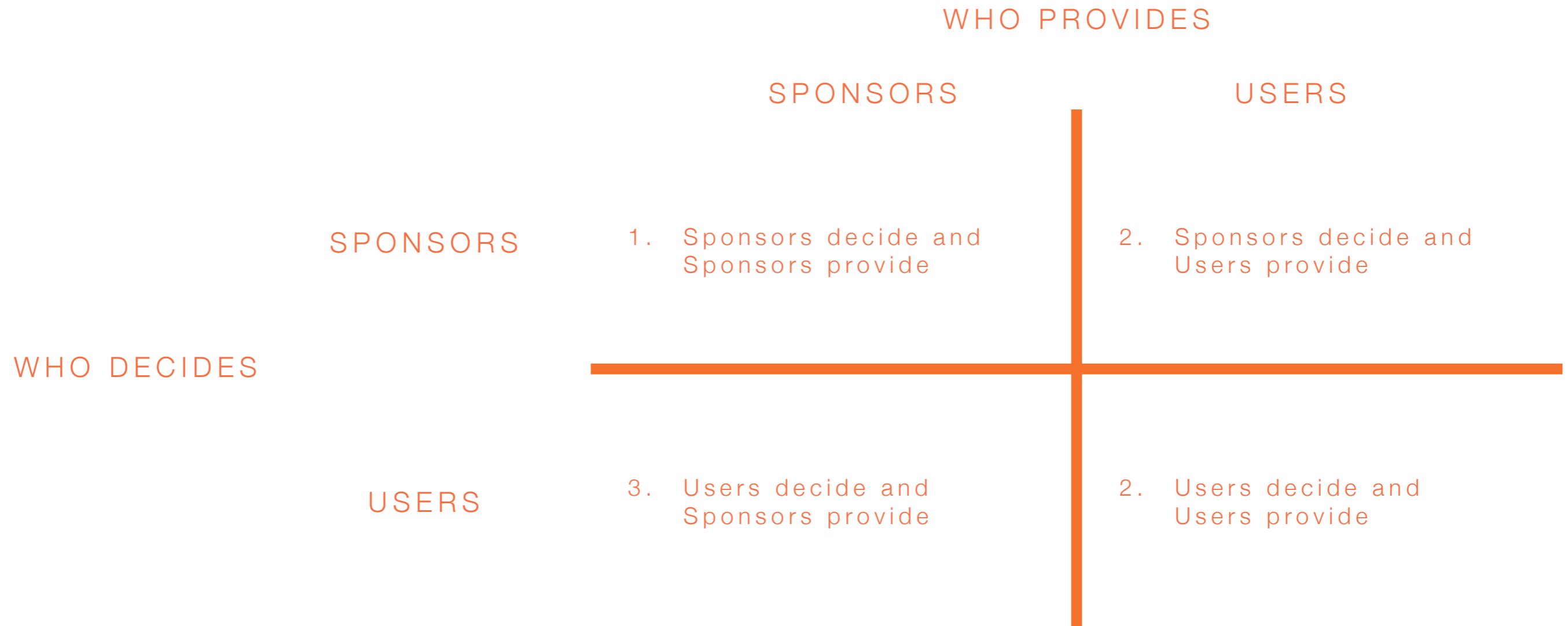




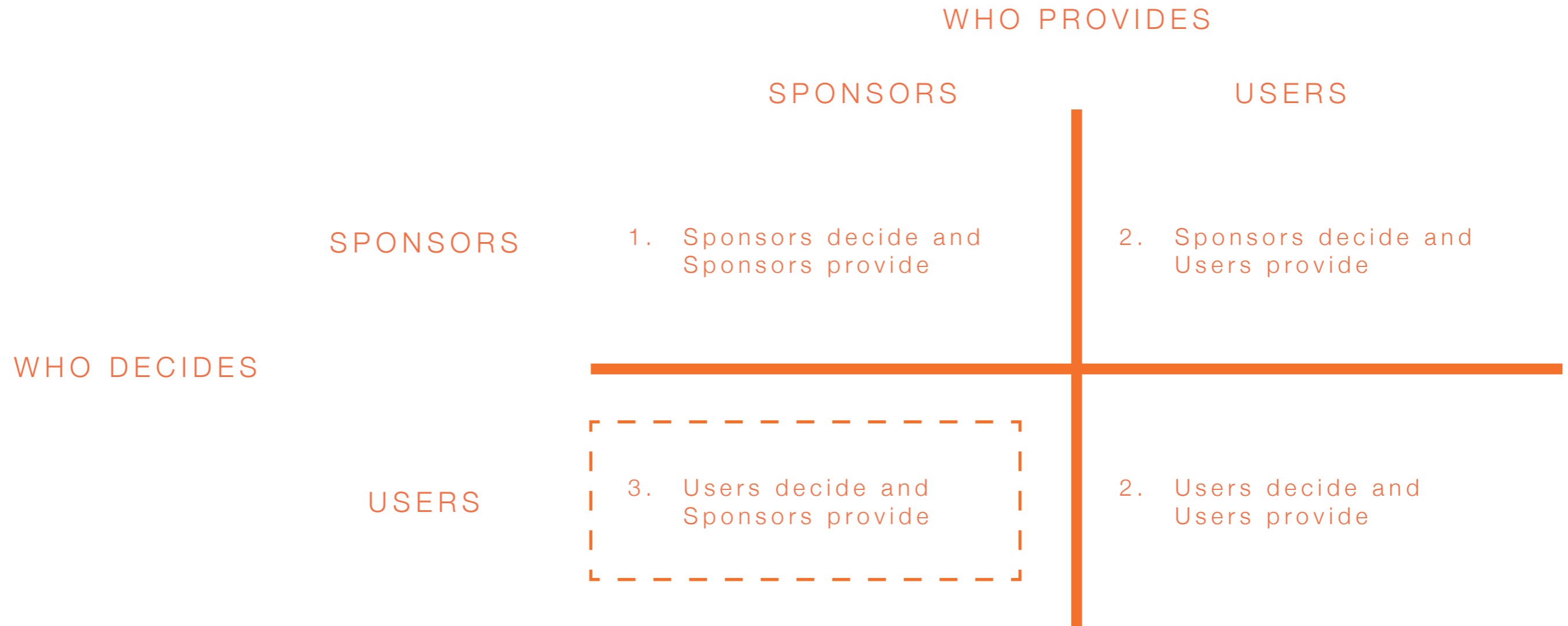


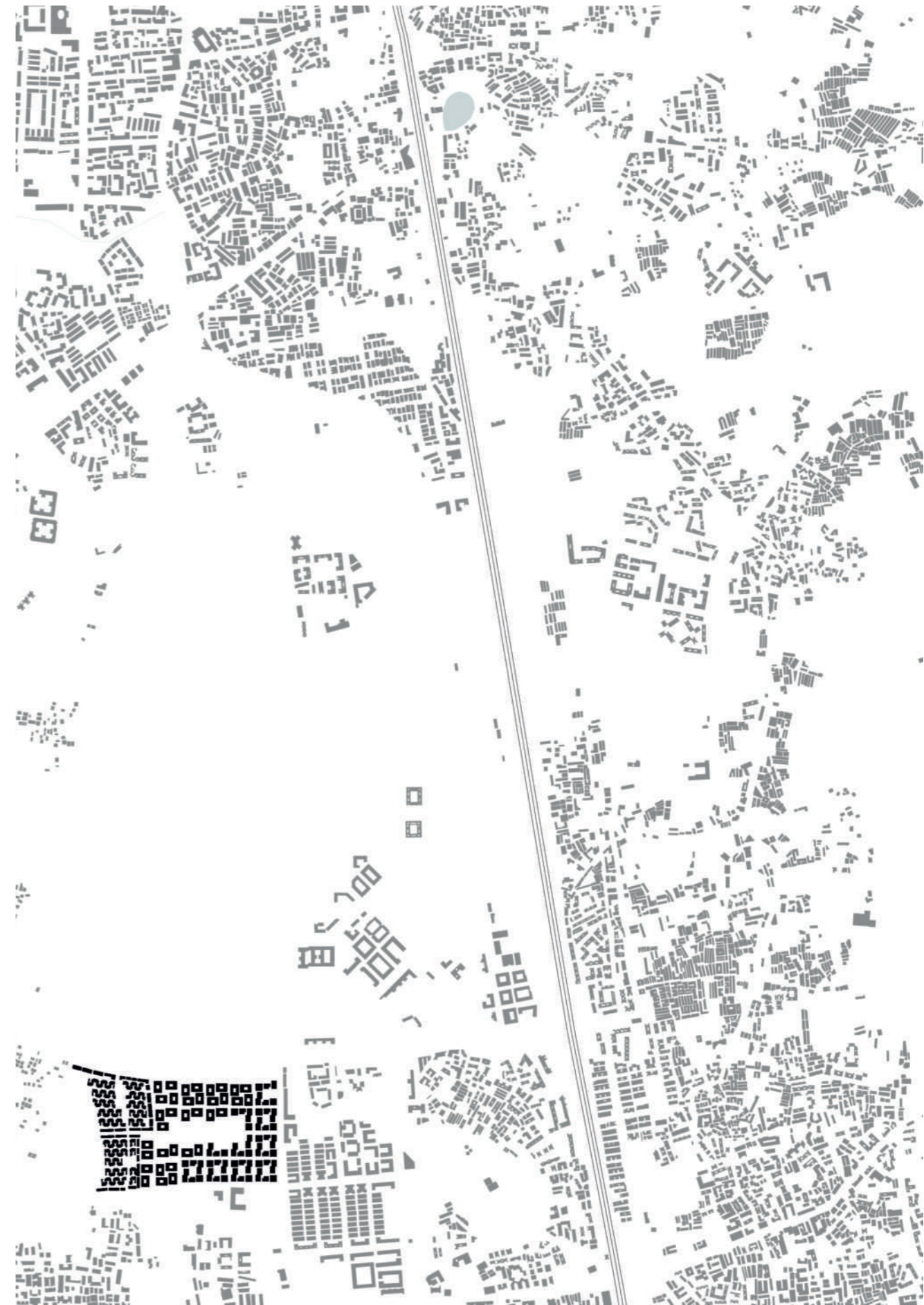
**OPERATIONAL
M O D E L**

Who Provides vs. Who Decides



Who Provides vs. Who Decides





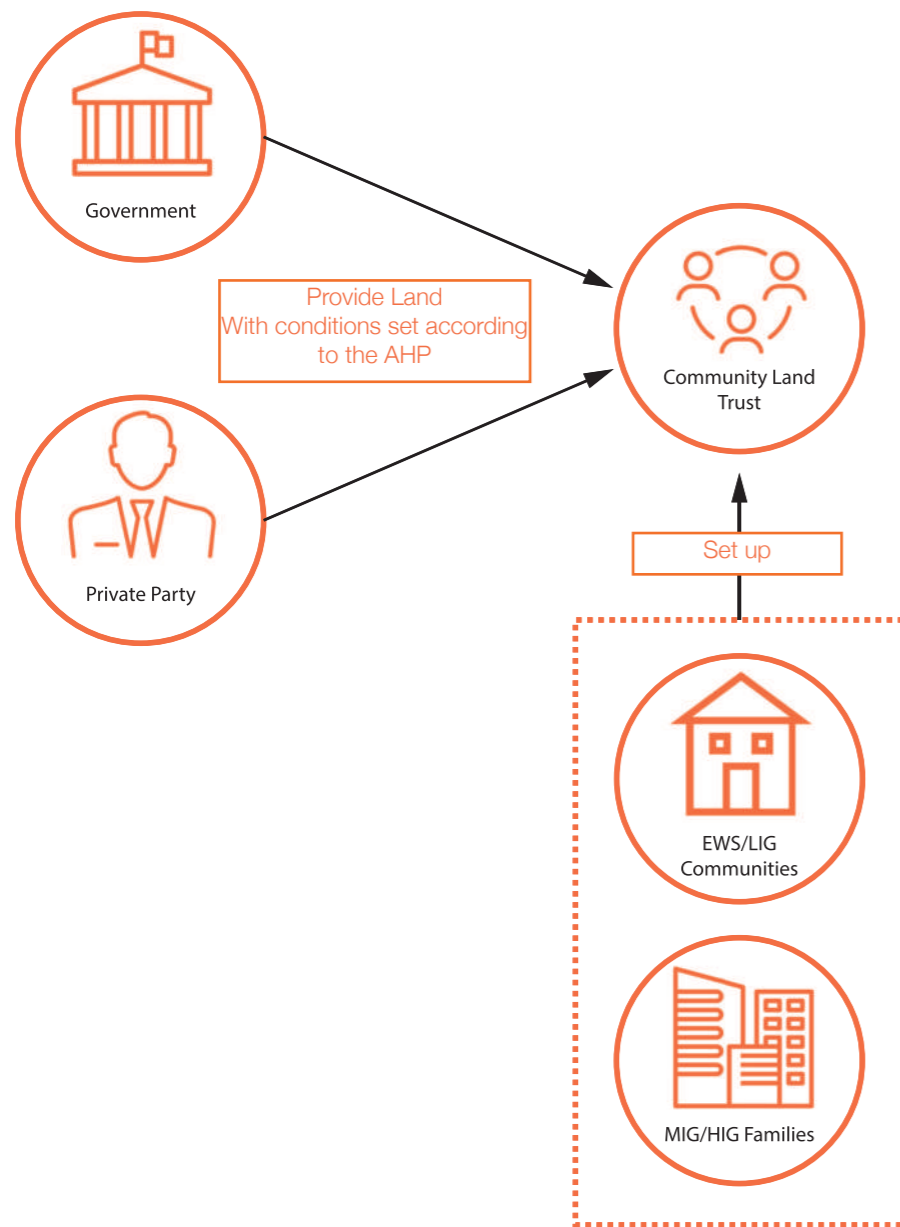


Phase 1

1. New dwellers start a Community Land trust.



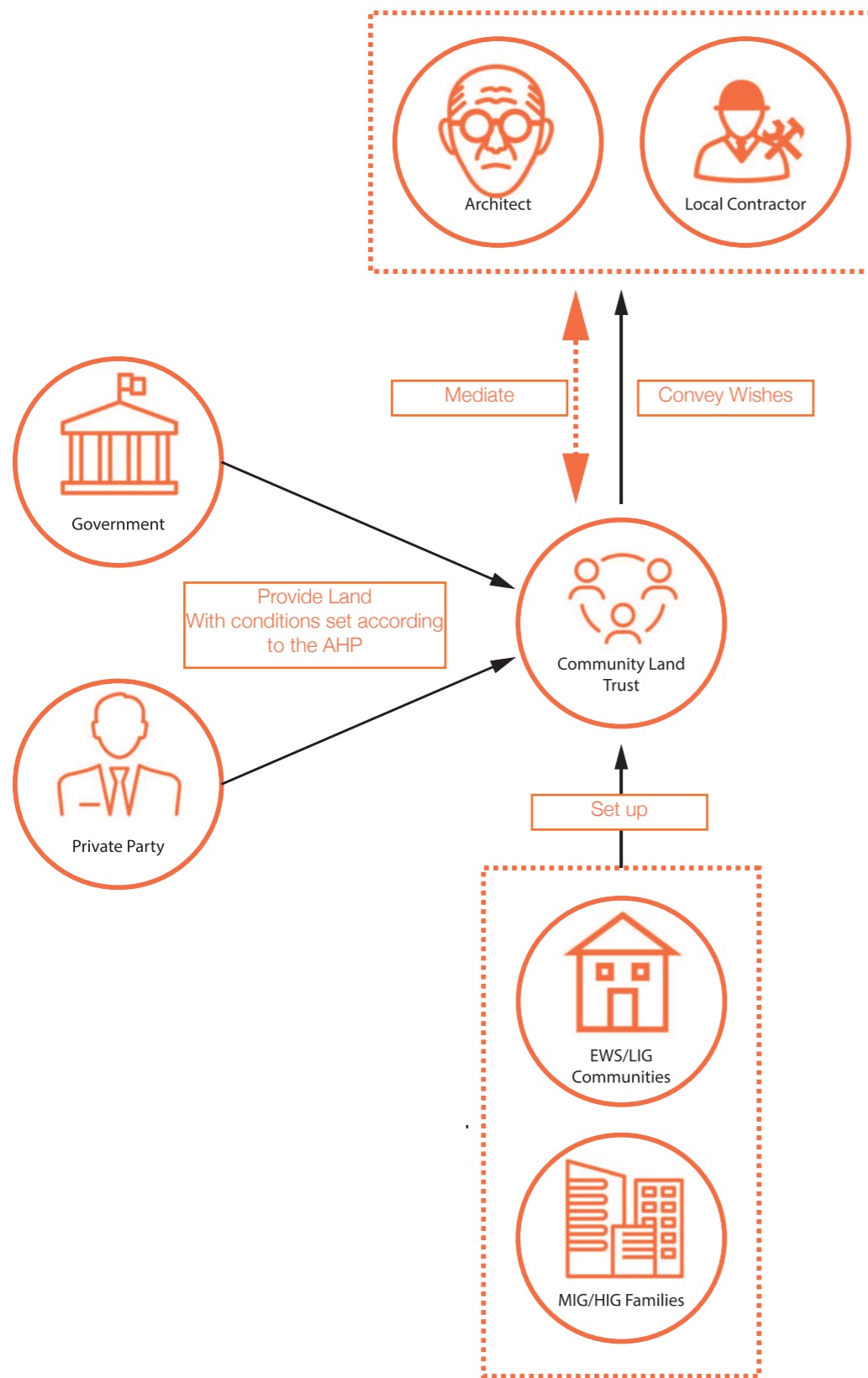
Phase 1



1. New dwellers start a Community Land trust.

2. The CLT gets land gifted or buys the land.

Phase 1

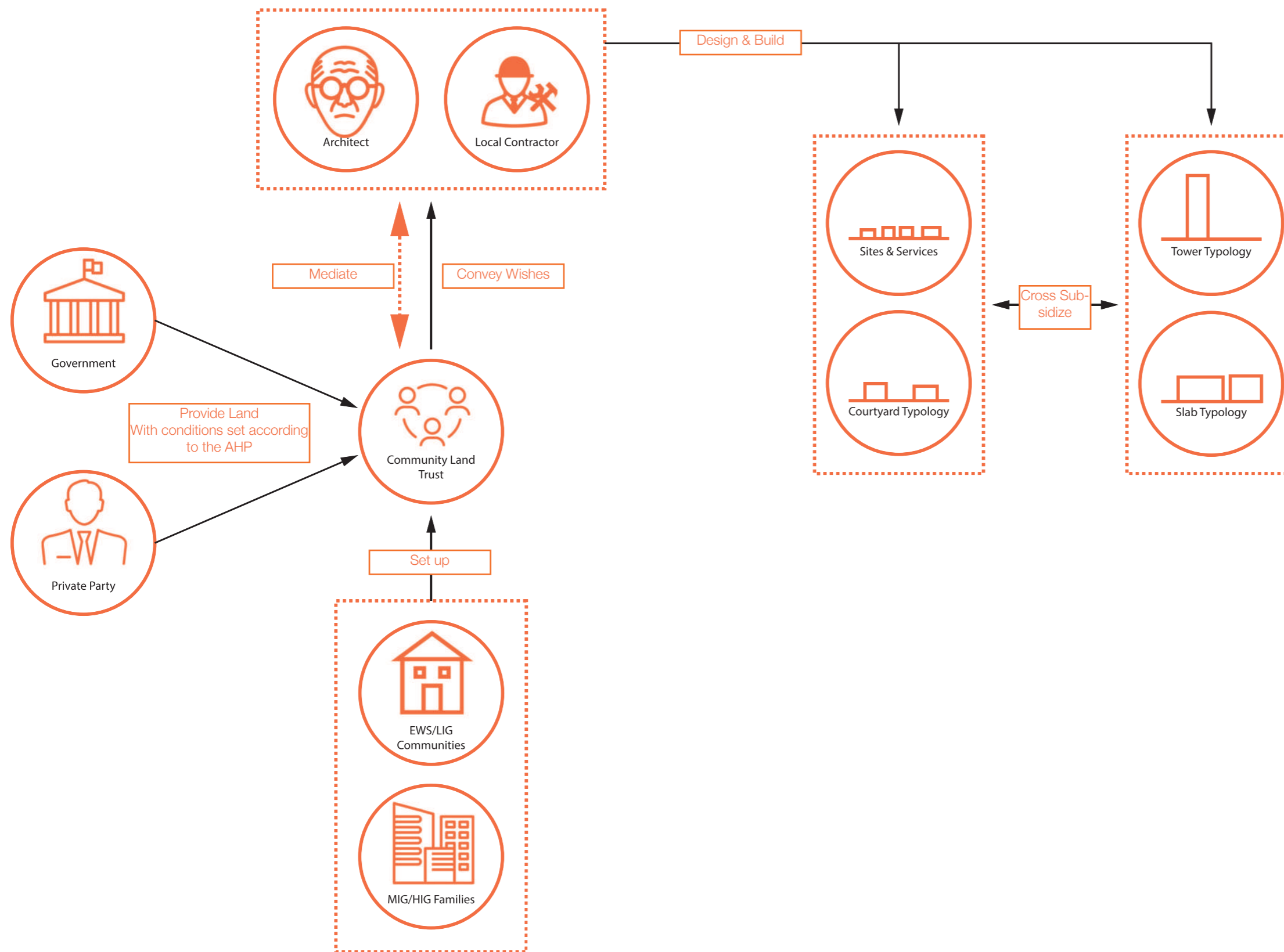


1. New dwellers start a Community Land trust.

2. The CLT gets land gifted or buys the land.

3. Architect designs according to wishes and needs of CLT and according to conditions set by the Authority.

Phase 1



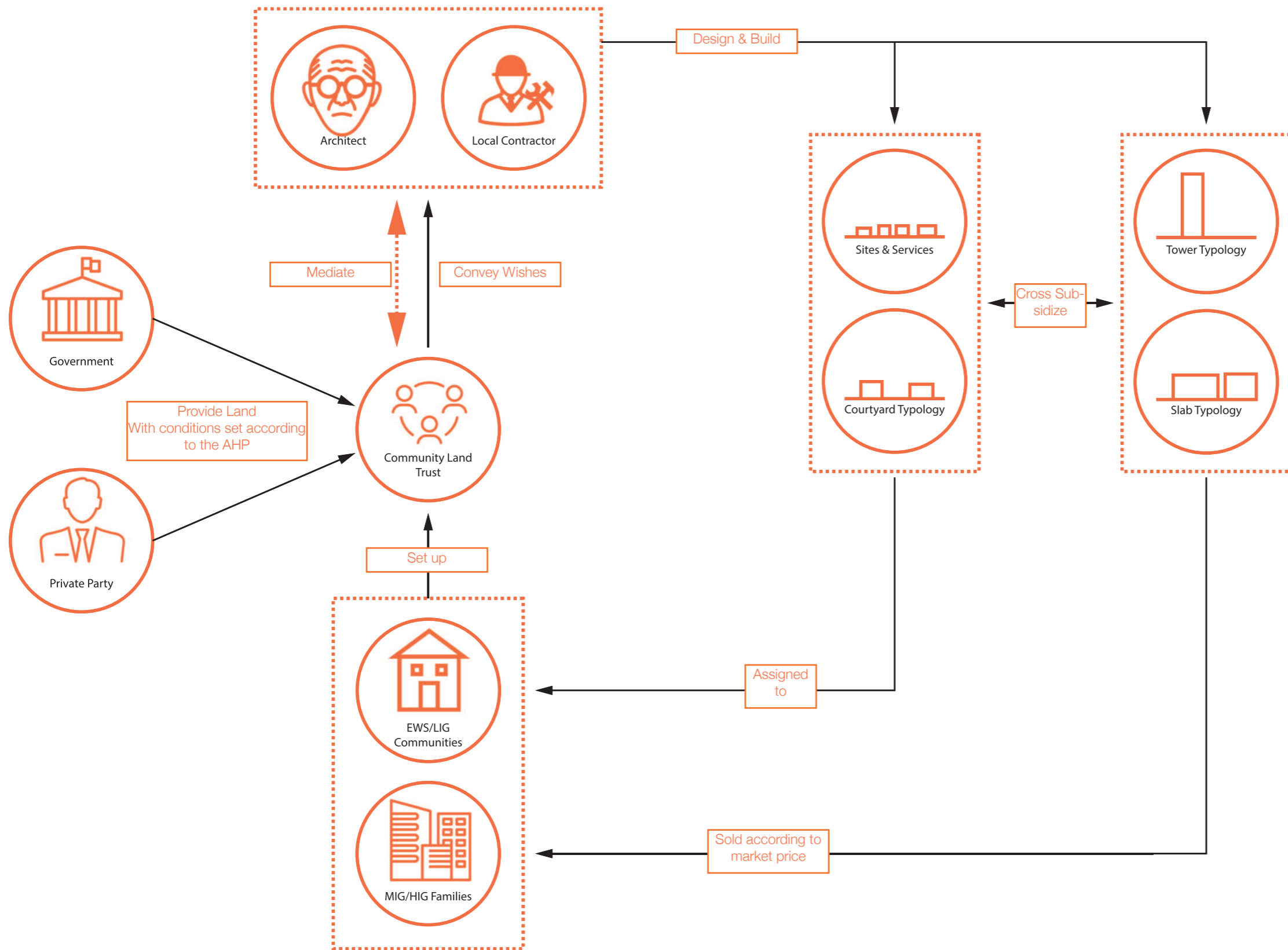
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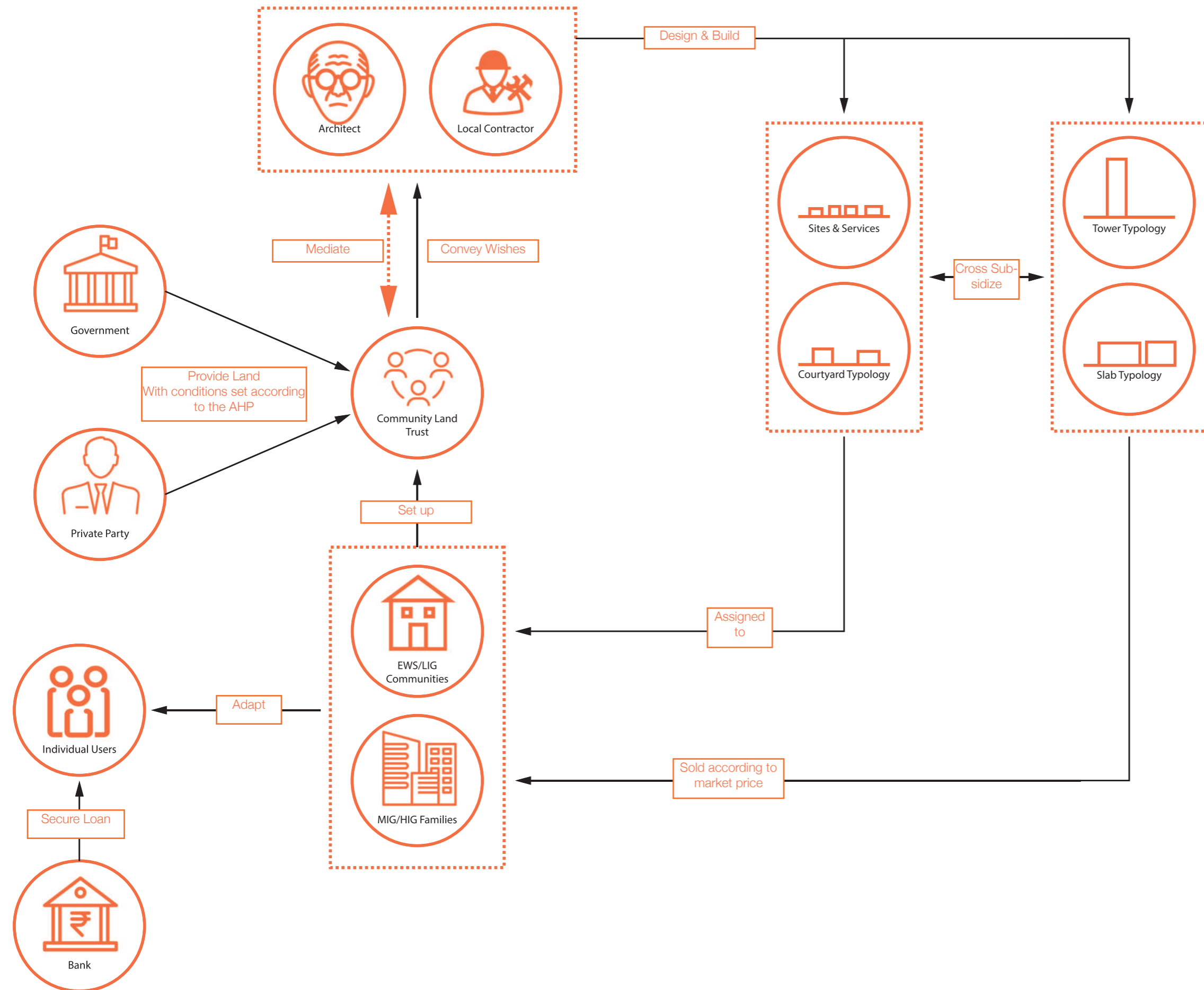
4. Local contractor builds the different typologies which are cross subsidized.

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5. Dwellings are given and sold to the chawl communities and MIG/HIG families.

Phase 1



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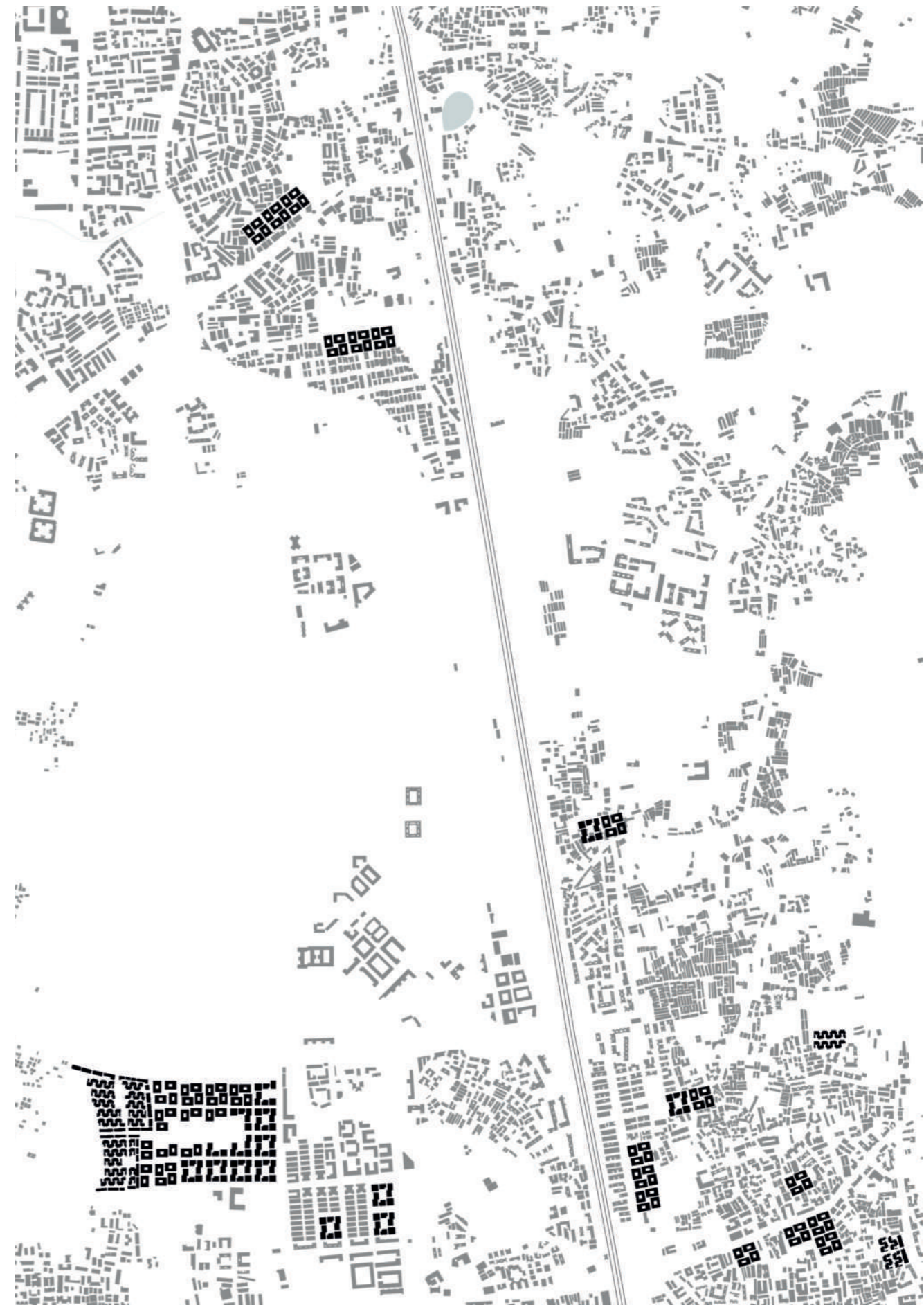
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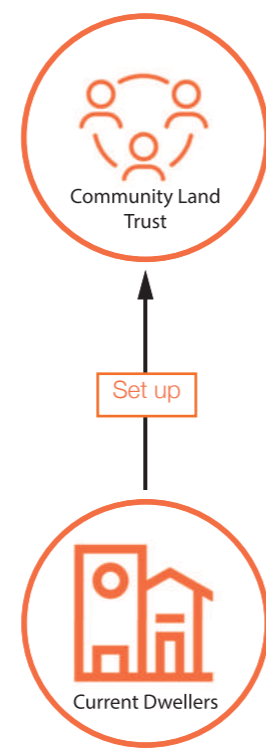
5. Dwellings are given and sold to the chawl communities and MIG/HIG families.

6. Individual owners can adapt their dwelling (if necessary a loan can be provided by a bank.)

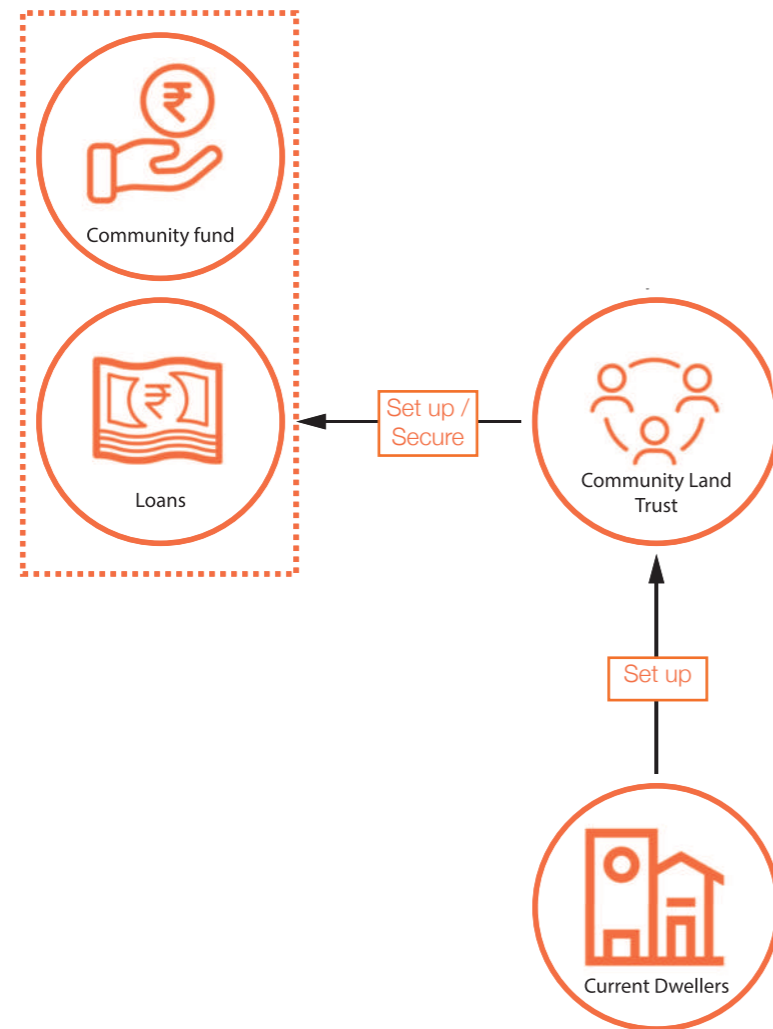


Phase 2

1. Current dwellers start a Community Land trust.



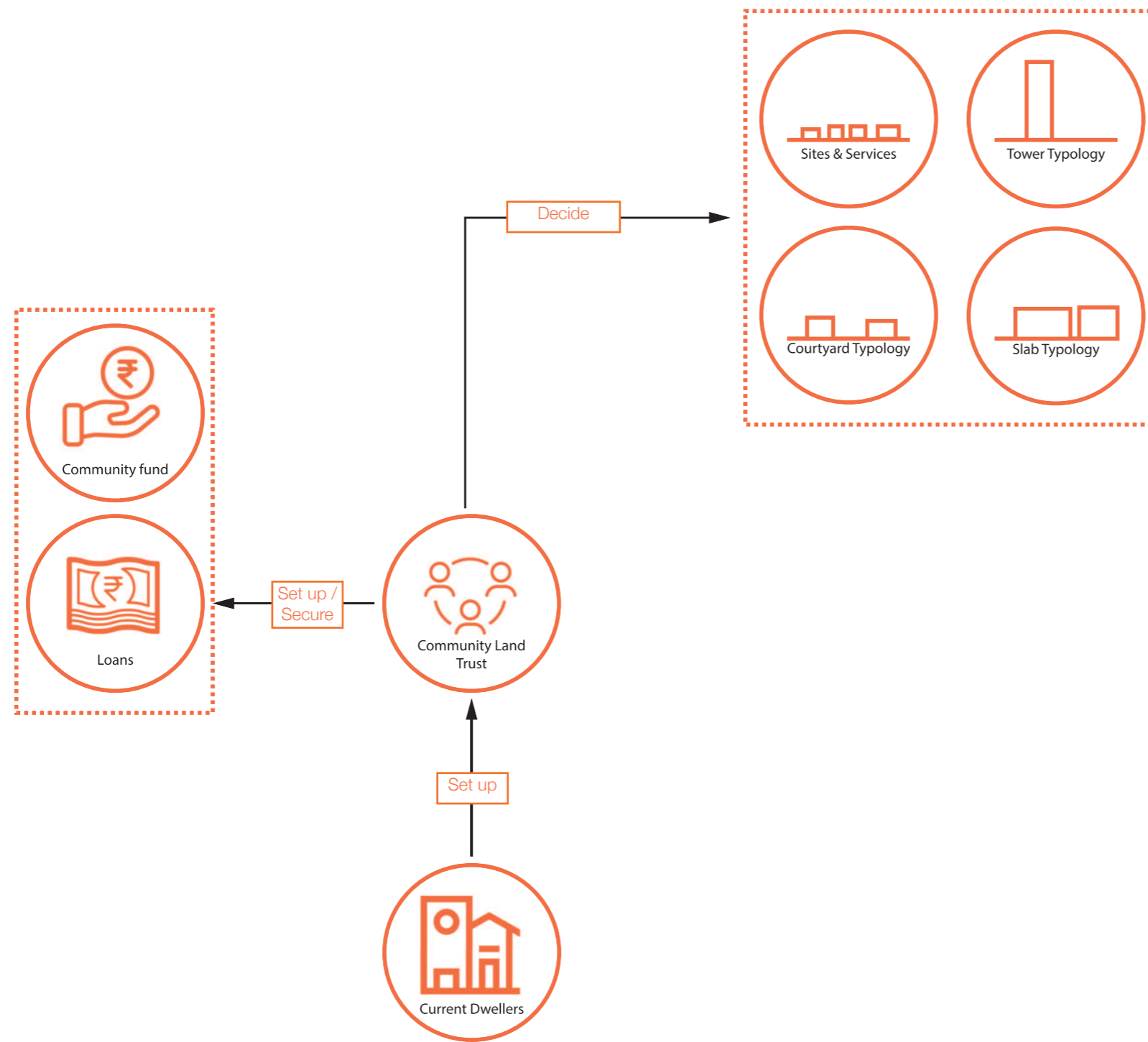
Phase 2



1. Current dwellers start a Community Land trust.

2. With a community fund and loans they can start the redevelopment.

Phase 2

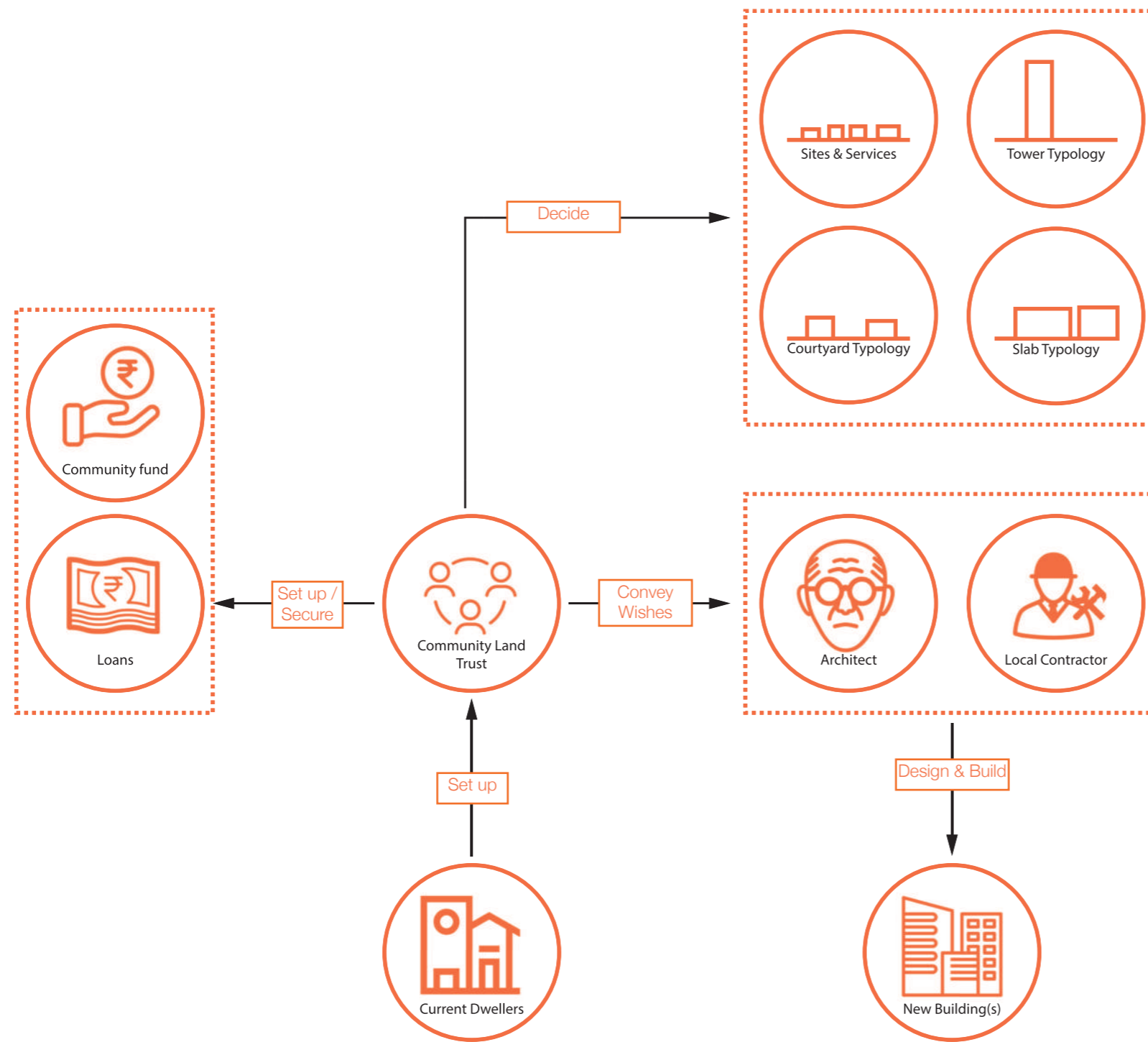


1. Current dwellers start a Community Land trust.

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3. Current Dwellers decide on which typology/typologies they want.

Phase 2



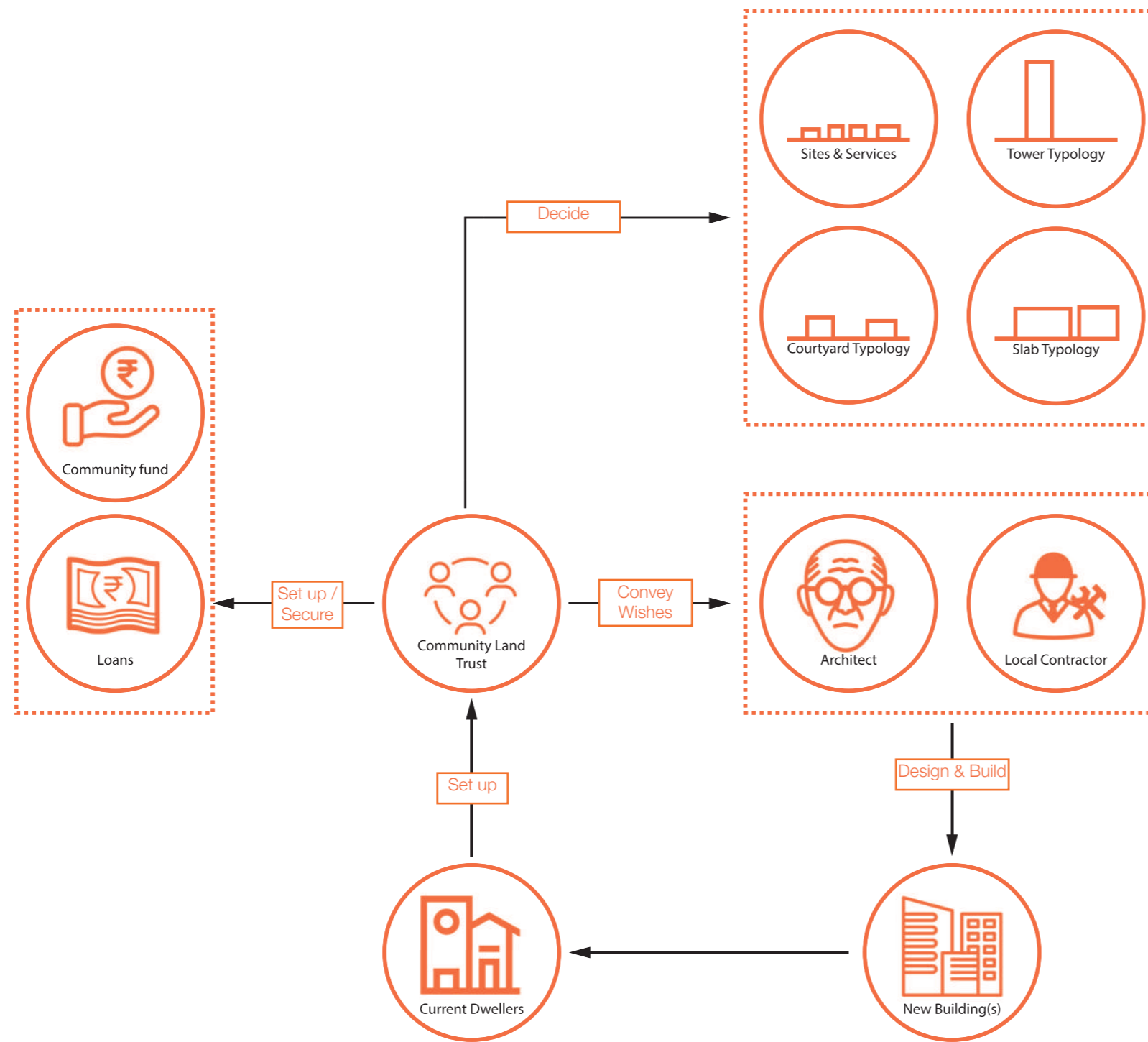
1. Current dwellers start a Community Land trust.

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3. Current Dwellers decide on which typology/typologies they want.

4. Dwellers convey their wishes to the architect and contractor who build the new building(s)

Phase 2



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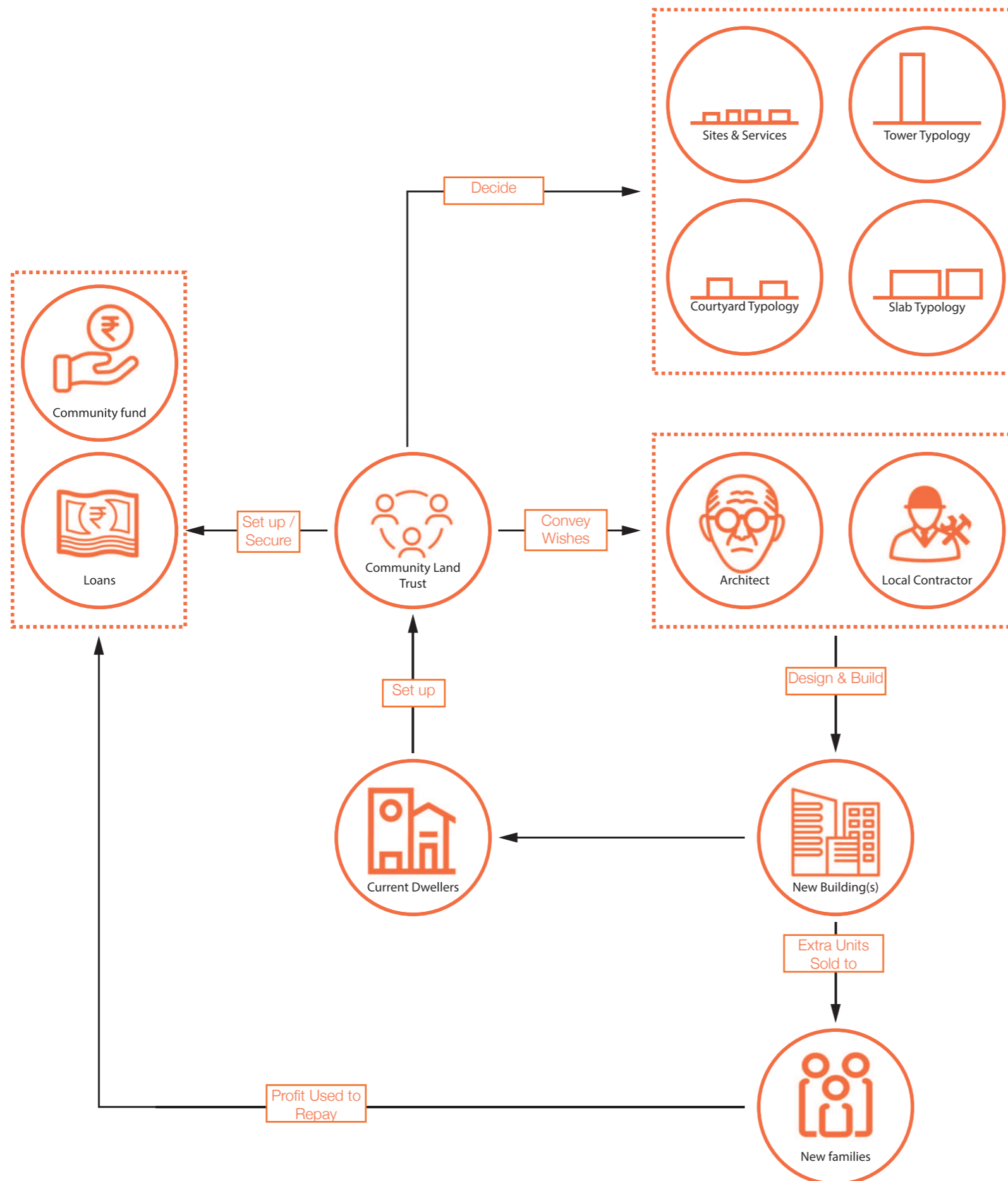
2. With a community fund and loans they can start the redevelopment.

3. Current Dwellers decide on which typology/typologies they want.

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5. New building is handed over to the Current Dwellers

Phase 2



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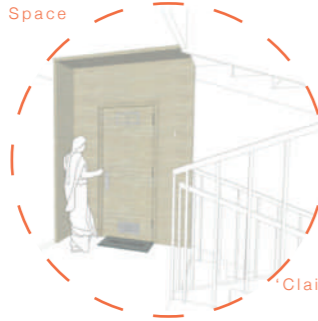
5. New building is handed over to the Current Dwellers

6. Extra units are sold to new families. Profit is used to repay loans and put into community fund.

ATMOSPHERIC IMPRESSIONS



Secure Open Space



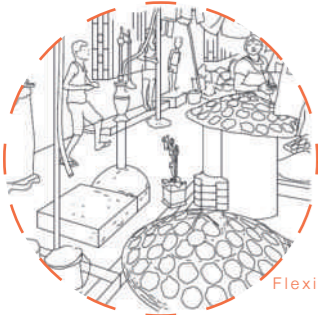
'Claiming Space'



Waiting Plinth



Alley of Intimacy



Flexible Open Spaces



Social Corridor





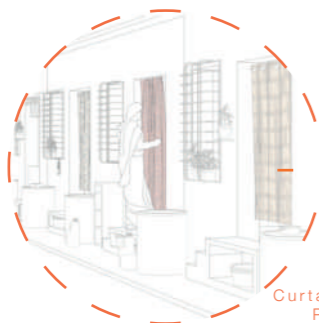
Panoramic View



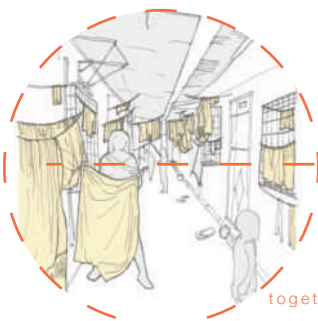
Extra Space to Rent



Large Balconies



Curtains Separate Private/Public



Washing/Drying together in social hub



Communal square



Communal square



Entrance communal square



Entrance communal square



Entrance to courtyard



Entrance to courtyard



Courtyard



Courtyard



Social hub



Social hub

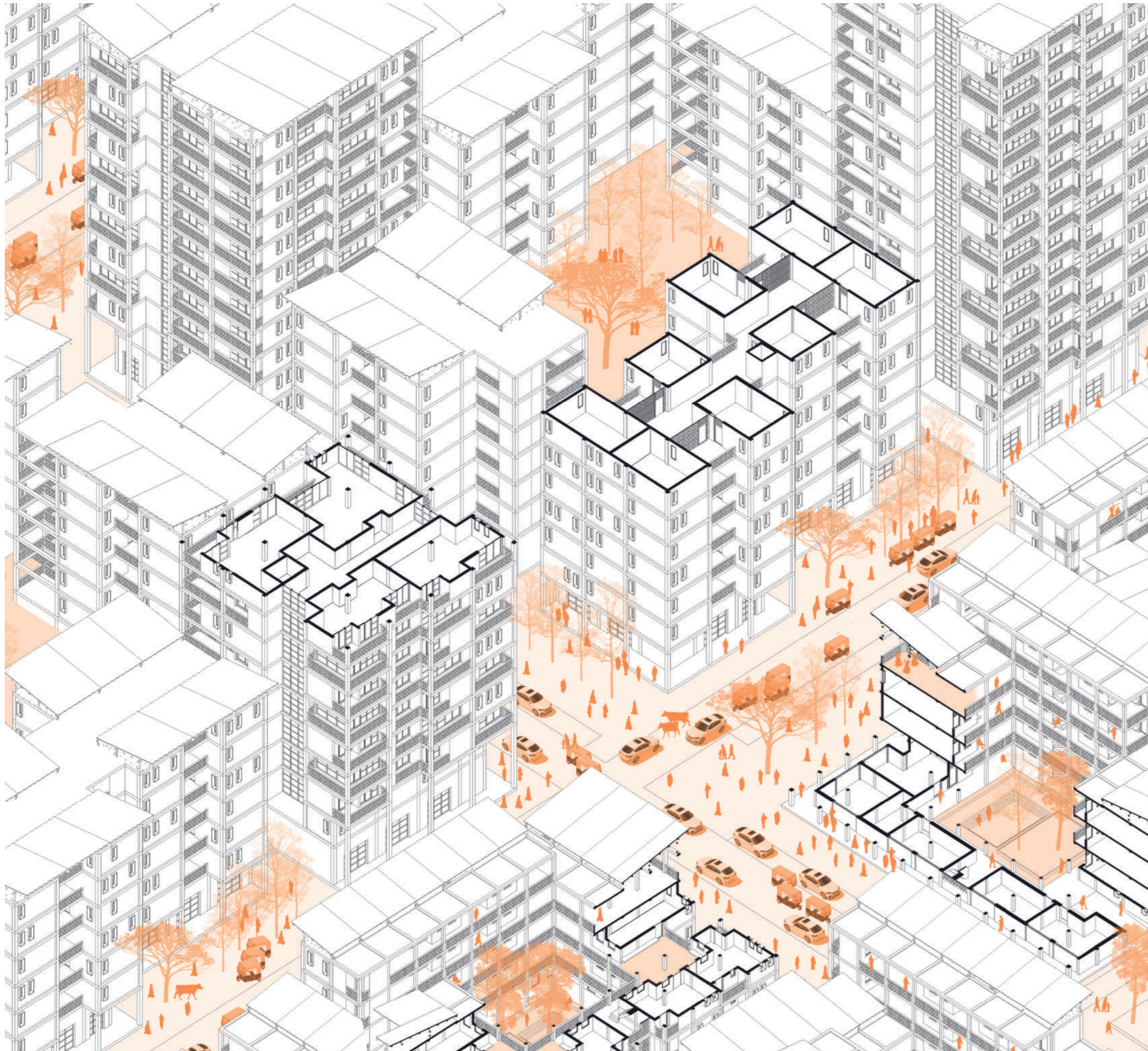












- Social polarization happening in Mumbai
- Not beneficent for the city
- Patterns of inhabitation
- Needs and aspirations
- Implemented into Urban and Building strategy
- Coherent building design/technology
- Which in turn decreases the social and spatial polarization



Thank You

"Were people to mingle only with those of like mind, every man would be an insulate being."

- Thomas Jefferson