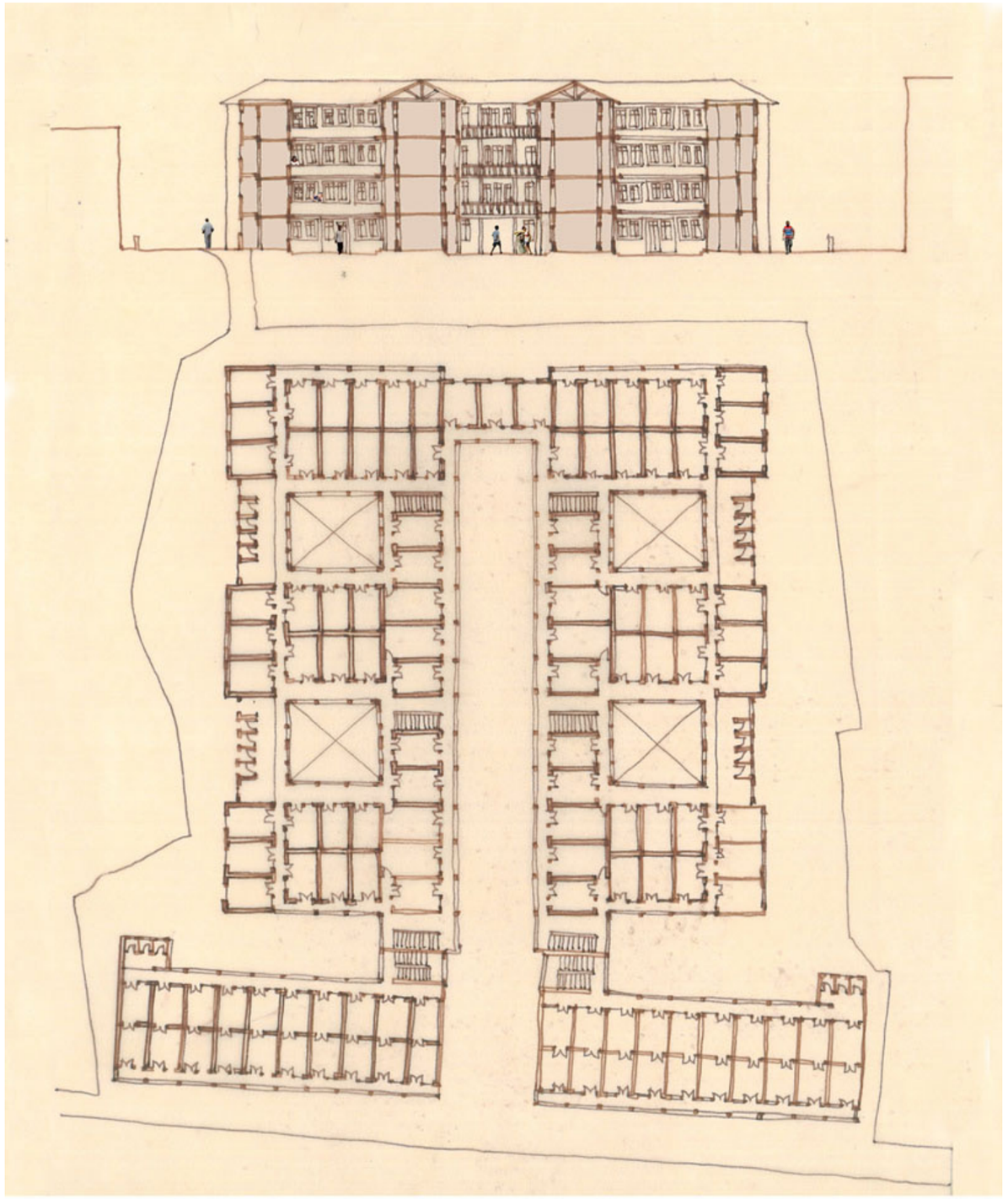
Salutogenic Homes

Research question

How could **affordable mass housing** with mixed households prevent sickness and increase wellness through a *salutogenesis approach* in Navi Mumbai?

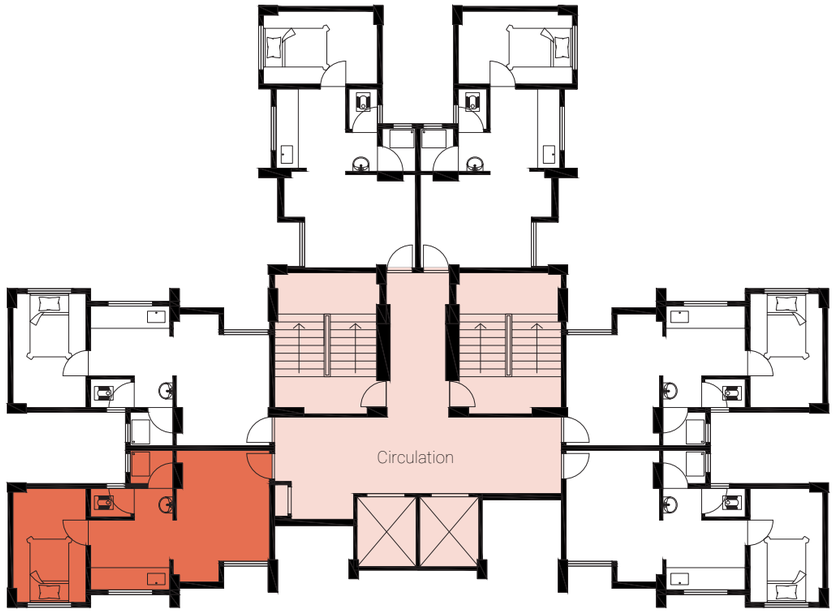
Reference projects

Hajikasam Chawl

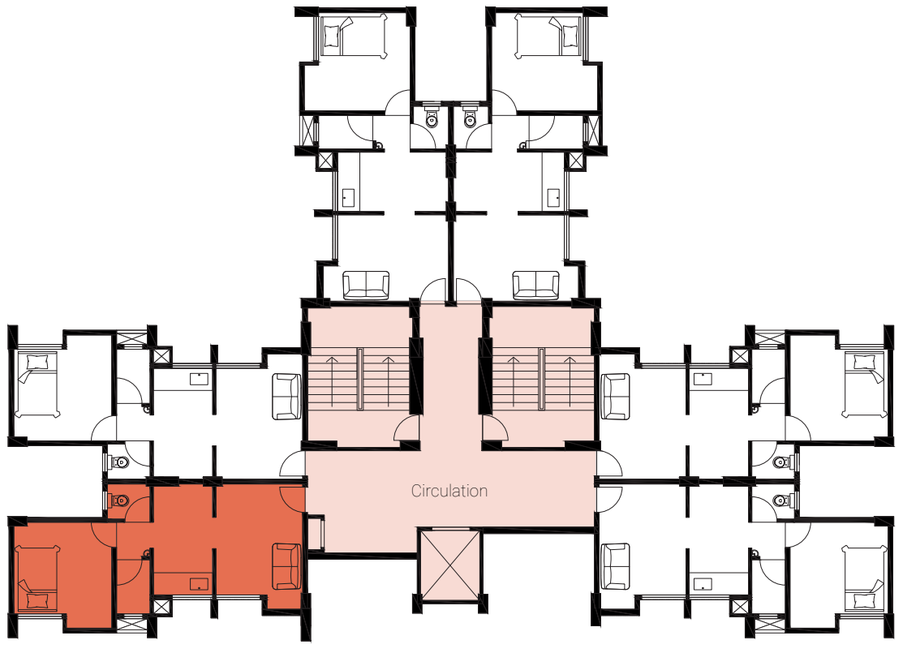


Hajikasam chawl represents a typology that shows a unique feature, where a single large building accommodating a large number of tenements is articulated with a series of internal courtyards for light and ventilation. Here you find long corridors that not only string along single-room tenements, but also courtyards and toilets.

CIDCO Mass Housing

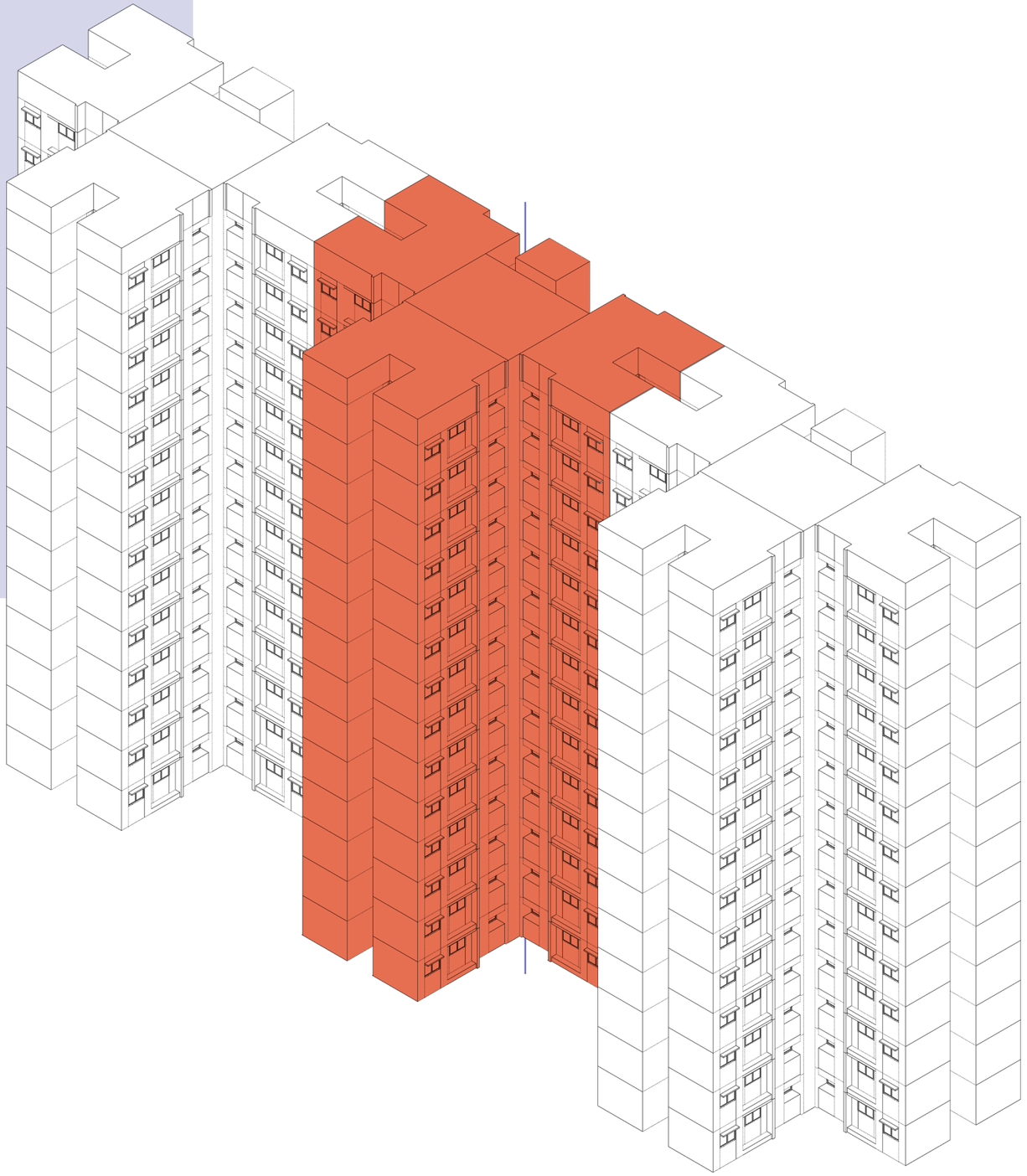


EWS - Typical Floorplan

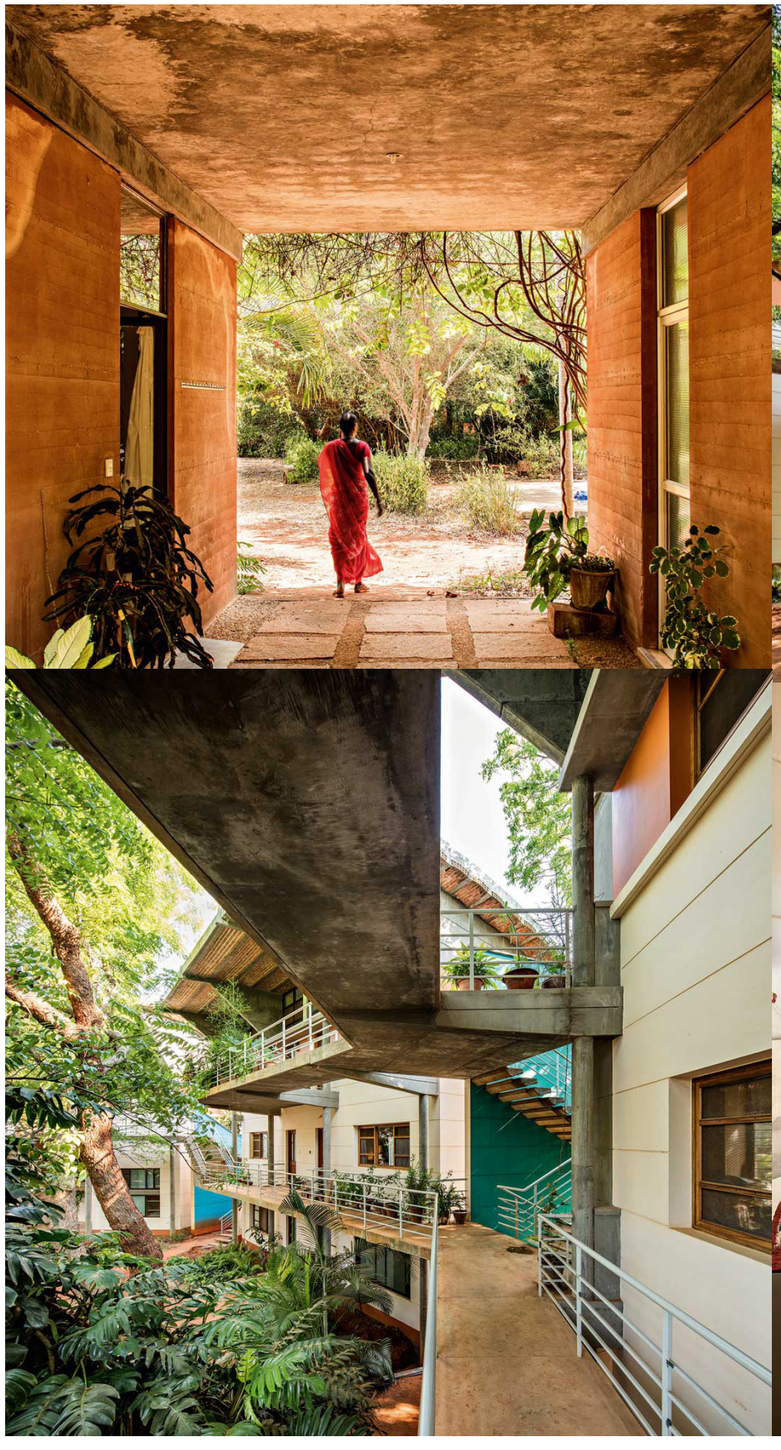


LIG - Typical Floorplan

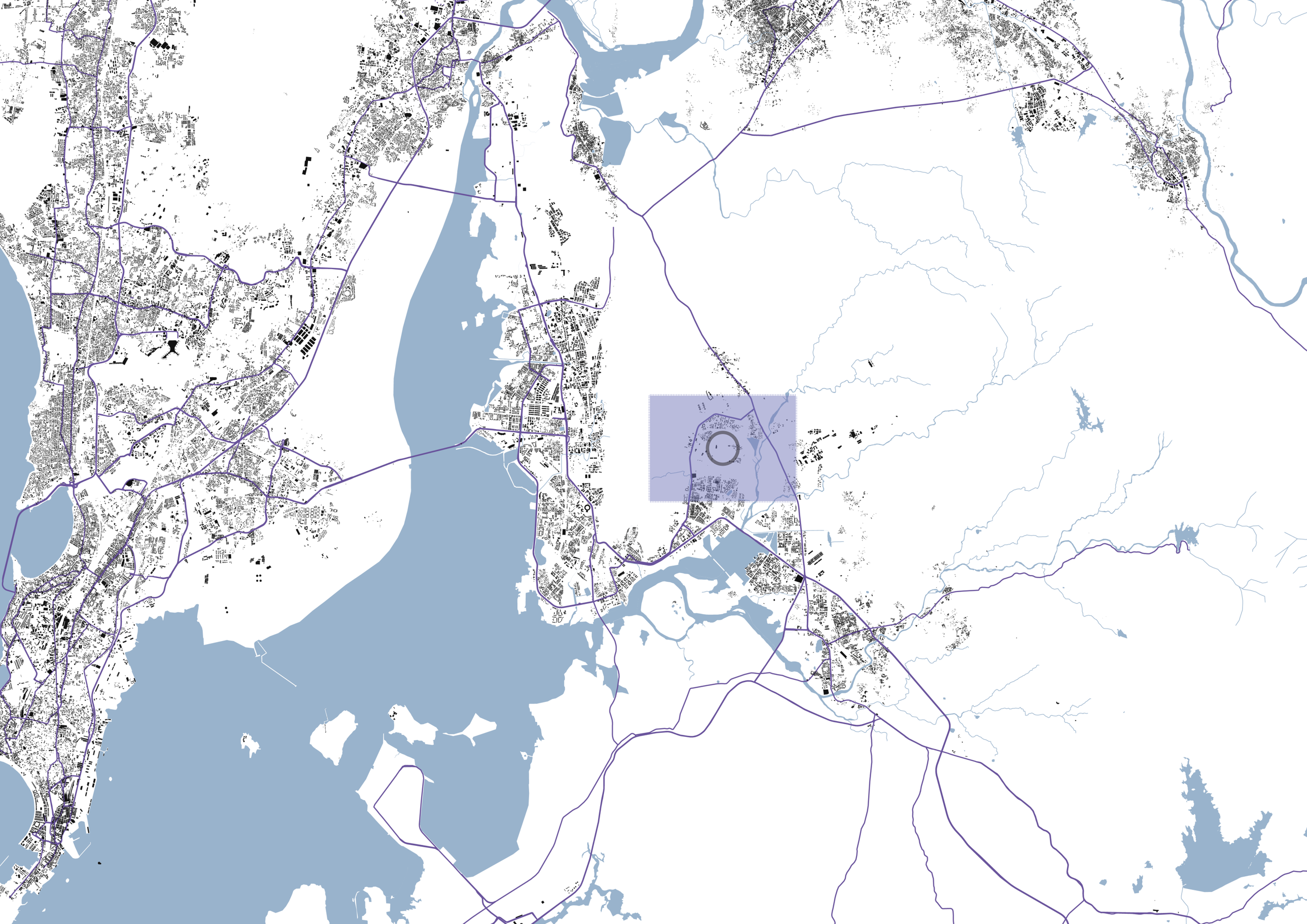
10 M



Auroville Creative Co-Housing



Location Analysis




Stone Quarries
Forest Area
CIDCO Colony
Taloja Central Jail
Sri Sathya Sai Sanjeevani Hospital
Taloje Panchnad
Stone Quarries
Residential Area
CIDCO Colony
Taloja CIDCO Mass housing scheme
TATA Memorial Centre Advanced Centre For Treatment, Research & Education in Cancer
Hanuman Kada Waterfall
Holding Pond
Pandavkada Waterfalls
4000m
2750m
1250m
500m
NMIMS Navi Mumbai University
Stone Quarries
Central Park - Kharghar
Kharghar Golf Course
Residential Area
Taloje River
Kharghar Hills
Kalamboli
Panvel Creek

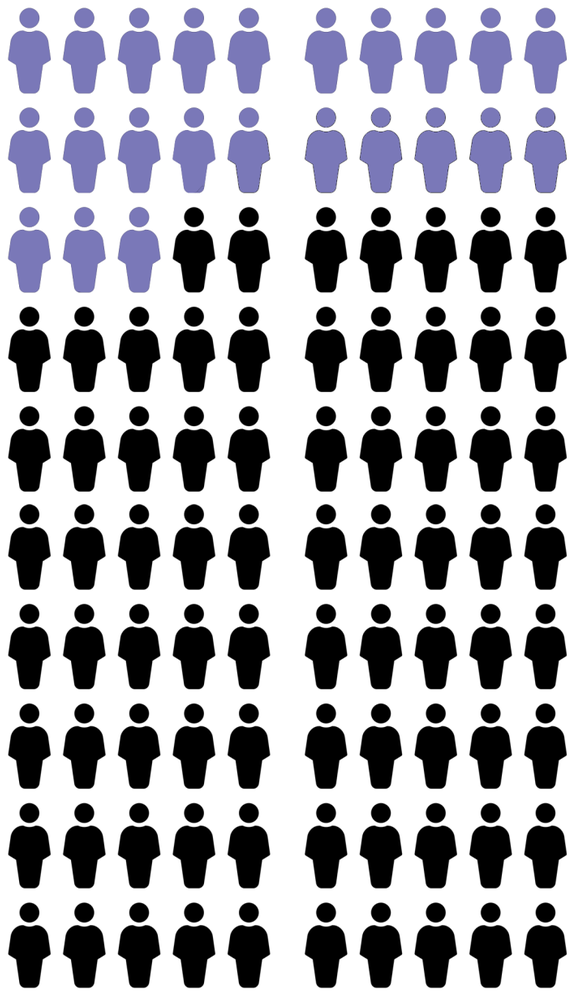
Health Status

Of adolescents in Navi Mumbai, 2011 study

Study Design: *Cross-sectional study*
Setting: *Six Colleges in Navi Mumbai*
Participants: *317 adolescents aged 17 - 19 years*

59,9 % females

40,1 % male



Adolescence is defined by WHO
as the age group of 10– 19 years. Adolescents constituted **22.8%** of the population in India.

The adolescents in the Netherlands(2019) are **12%** of the population.

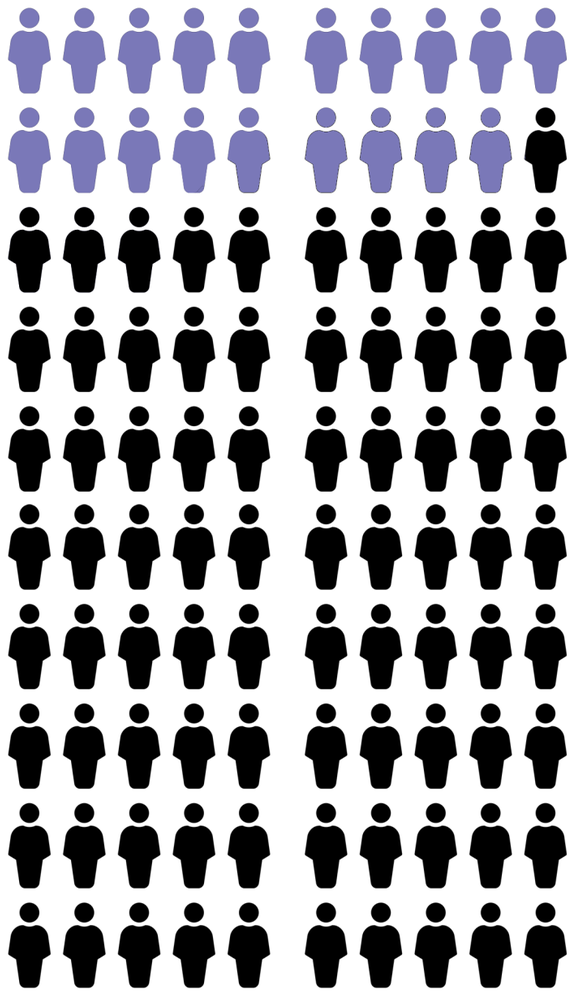
Health Status

Of adolescents in Navi Mumbai, 2011 study

The prevalence of the psychosocial problems was **19.2%** among adolescents

Most common problems:
- Educational difficulties
- Trouble sleeping
- Crying a lot
- Easily irritable
- Get easily in arguments or fights

This is **10.4%** in the Netherlands

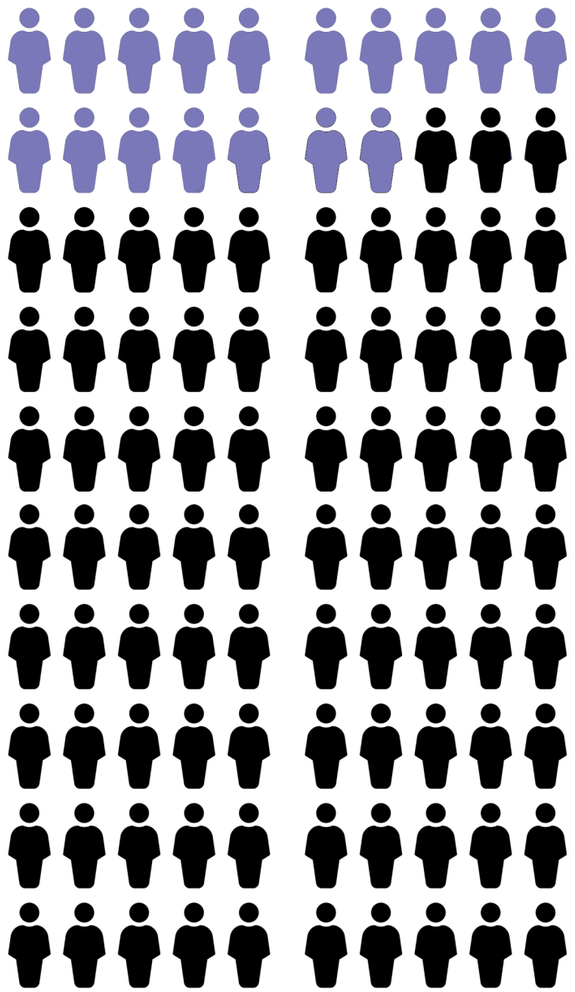


Health Status

Of adolescents in Navi Mumbai, 2011 study

Navi Mumbai
Stressed
16,6%

Suicidal tendencies
16,8%



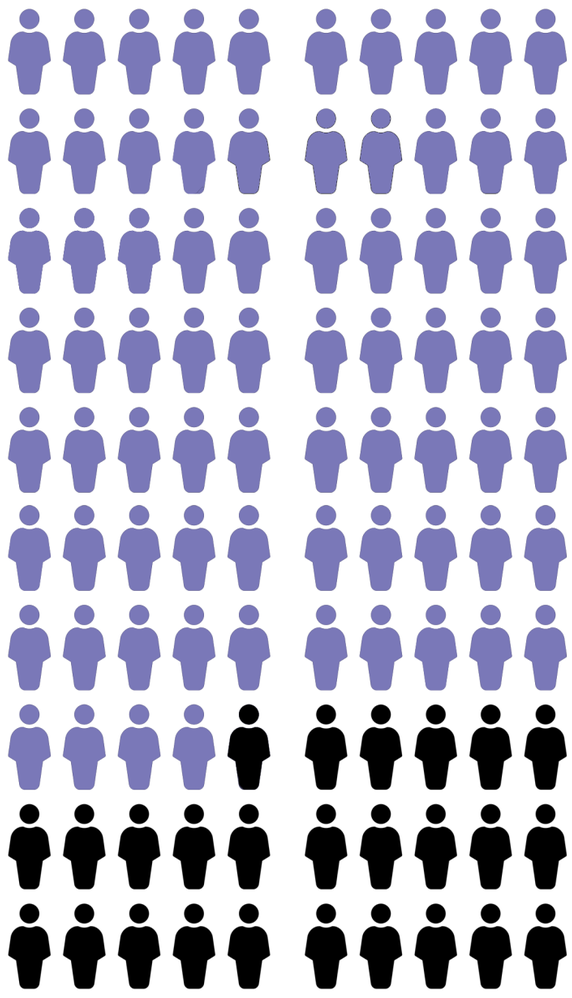
Netherlands
Stressed
25%

Suicidal tendencies
13,2%

Health Status

Of adolescents in Navi Mumbai, 2011 study

74% are underweight
out of which 85.3% are females and 58.2% are males.



Consumption of fast food in a week

40,1% Once a week
39,1% Twice a week
14,8% Daily

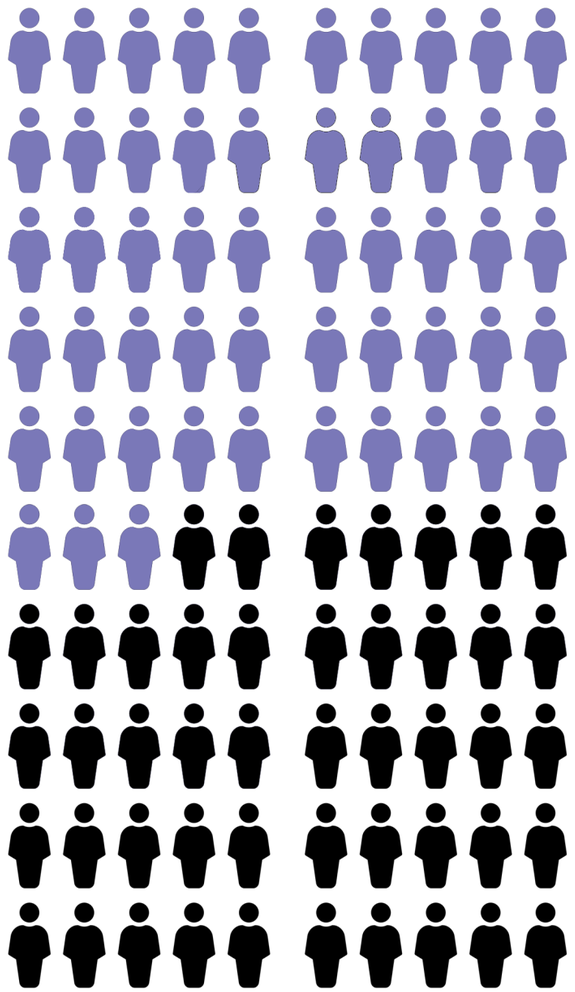
Less than 4% in the Netherlands is underweight

Health Status

Of adolescents in Navi Mumbai, 2011 study

Knowledge about emergency contraceptives is only around 53%

Knowledge about contraceptives is a mandatory curriculum for primary and secondary schools in the Netherlands.



Current Masterplan “Heart of the City”

Design Strategy

Design strategy

Focus point to achieve a salutogenesis approach

Social Cohesion

(create opportunities for social connectivity)

Greenery

(reduce air pollution with greenery, produce local plants for the local community)

Water Management

(design interventions to minimize monsoon effects)

Amenities

(accessible amenities in the neighborhood)

Connectivity

(encouraging cycling and walking)

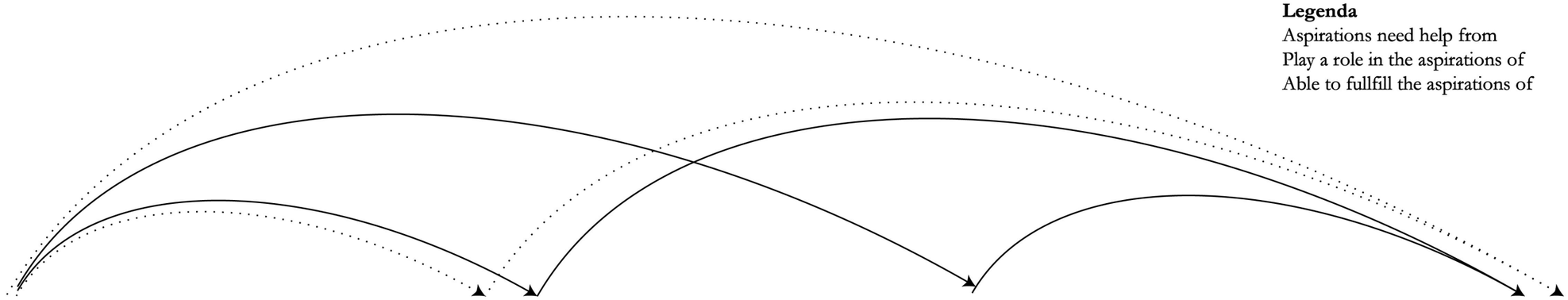
Individual Health

(providing healthy living environment)

Cultural Aspects

(design suited for cultural lifestyle)

Managerial Strategy



Legenda
Aspirations need help from
Play a role in the aspirations of
Able to fullfill the aspirations of

Residents
- MIG ranged income groups
- LIG ranged income groups
- migrant workers

aspirations
- better living qualities
- generating income; employment; building a business
- affordable housing
- comfortable living and safe living environment

offer
- the people to build a community
- the need for living ammenities: healthcare, education, shops, services, public parks etc.
- workers & employers

CIDCO
City and industrial development corporation
- ownership plot
- government corporation

aspirations
- FSI of 3 or higher
- selling to corporates to make a profit
- better version of Bandra - Kurla Complex with nightlife
- lively city centre of Kharghar

offer
- investment for the project
- managing the whole process
- possible ownership to corporates, businesses or residents

PM-JAY
National Health Protection Scheme
- financed by taxes
- government scheme

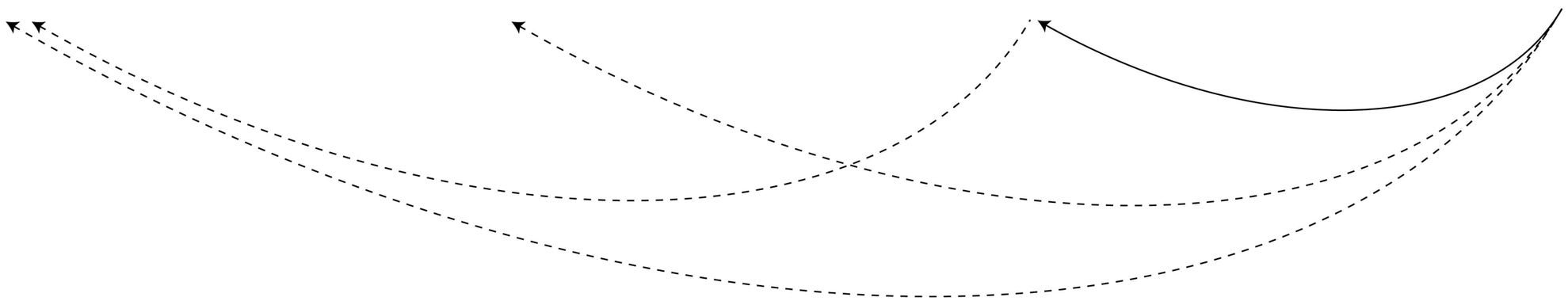
aspirations
- allow low-income to get cashless secondary and tertiary care at private facilities
- giving financial support in order to improve public health

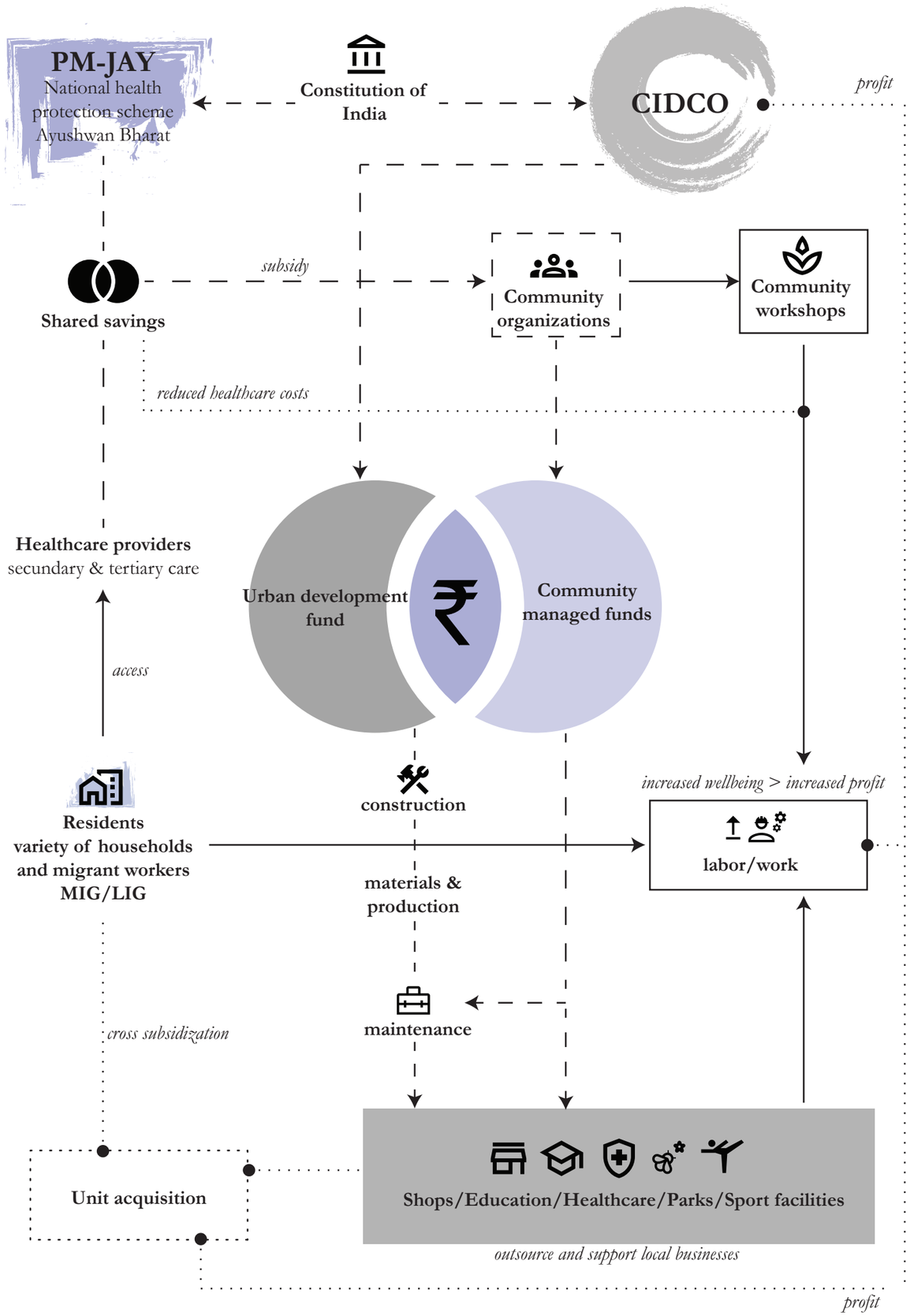
offer
- state health agency
- financial aid for secondary and tertiary care
- coverage of 5 lakhs for each family in the lower-income

Architect/Designer

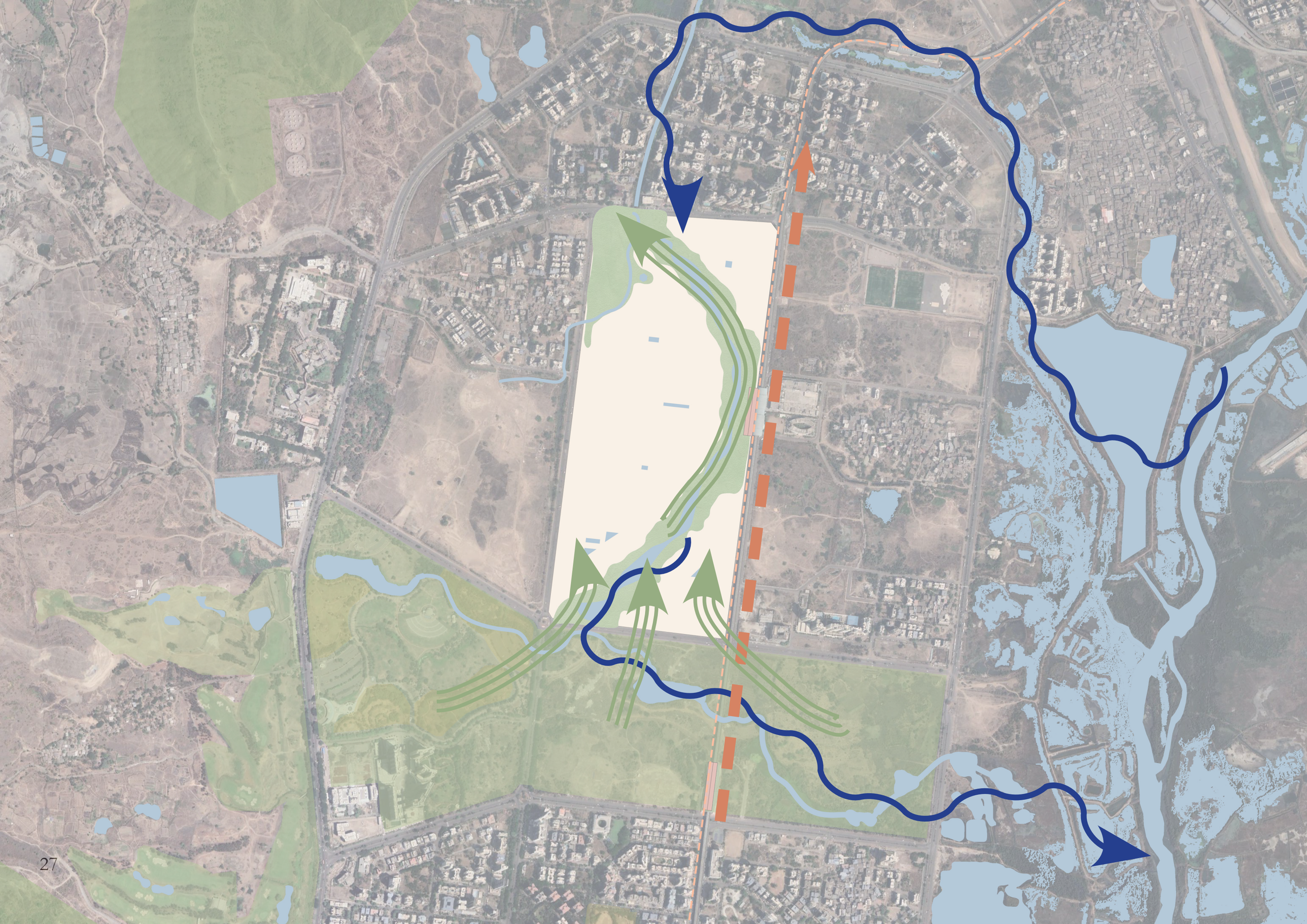
aspirations
- raising quality of health in residential build environment
- providing affordable housing suited for the residential needs
- raising the well being of the residents and creating opportunities for a rich community life

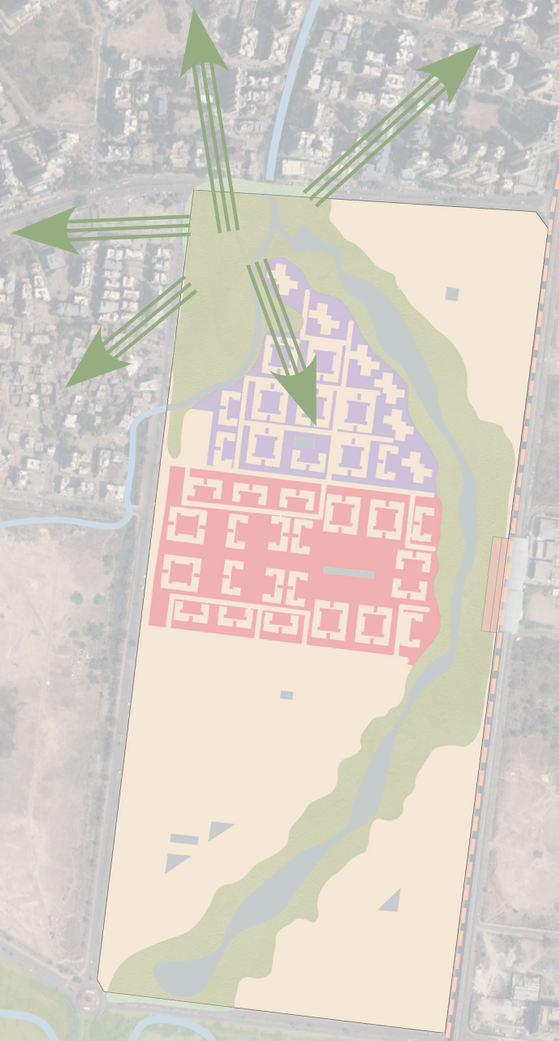
offer
- healthy affordable housing design
- allocated variety of ammenity spaces in the vicinity
- opportunity to reduce healthcare costs by improving the well being
- housing design for a variety of households

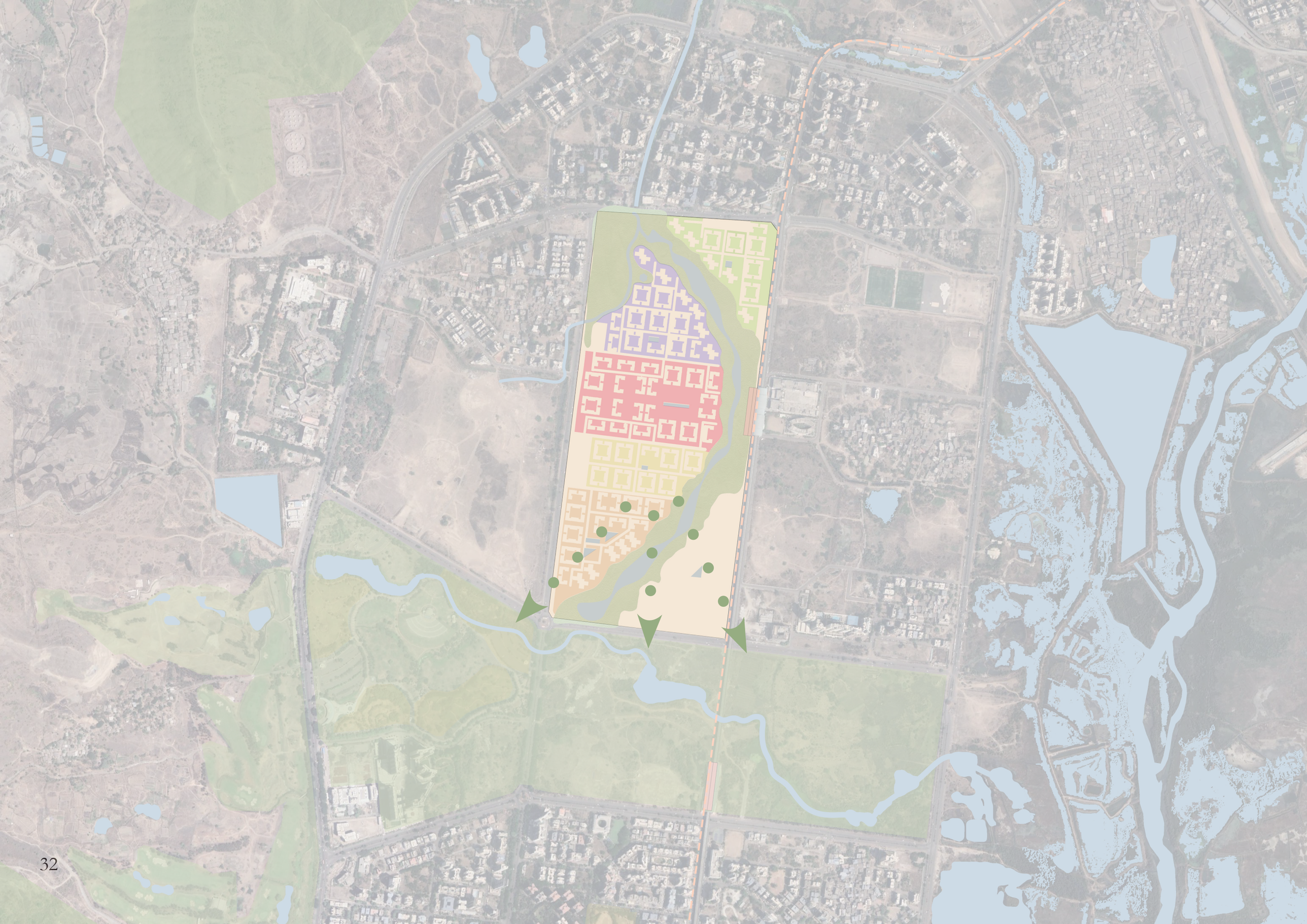


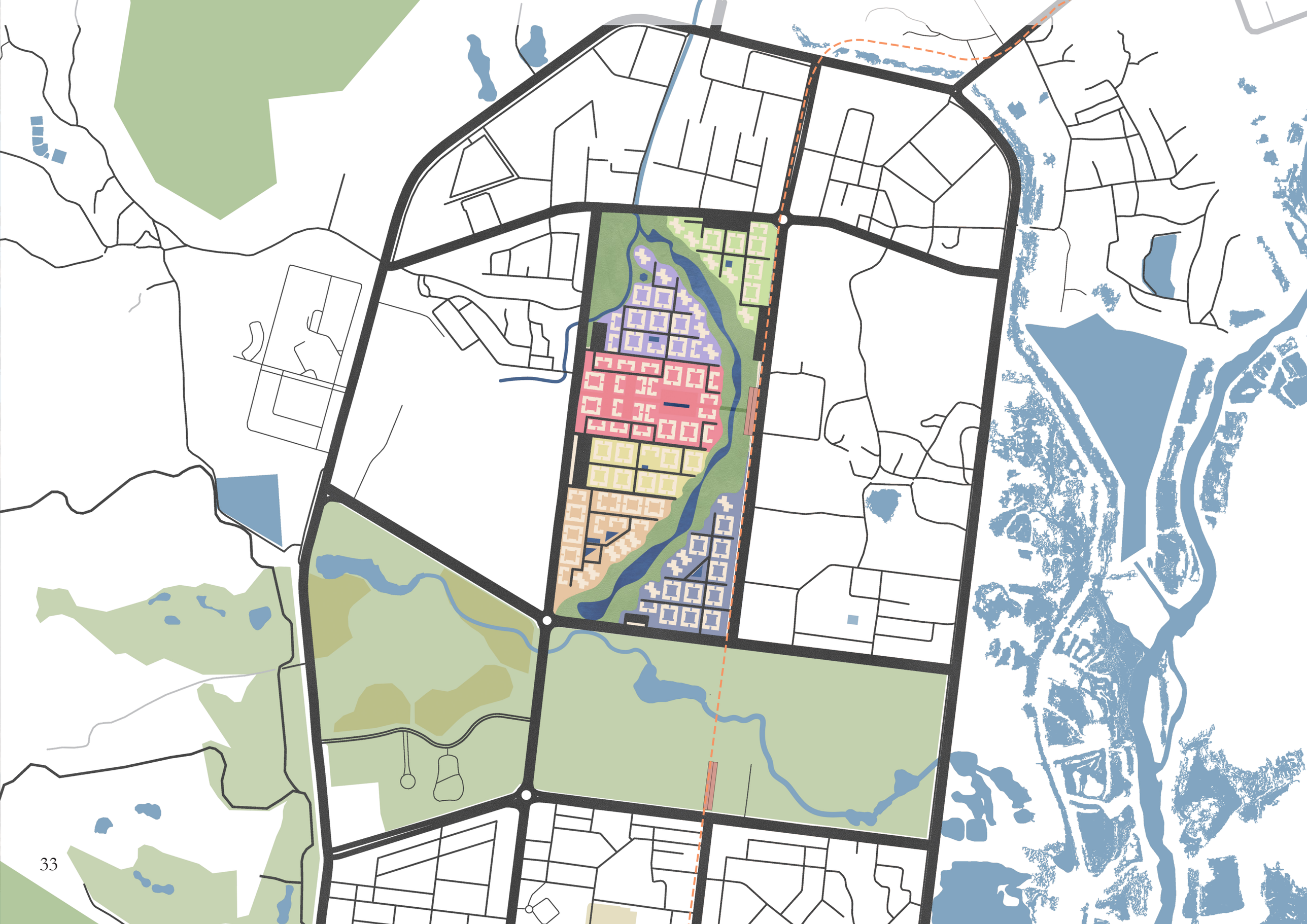

PM-JAY
National health protection scheme Ayushwan Bharat
Constitution of India
CIDCO
profit
subsidy
Shared savings
Community organizations
Community workshops
reduced healthcare costs
Healthcare providers
secundary & tertiary care
Urban development fund
₹
Community managed funds
access
construction
increased wellbeing > increased profit
Residents
variety of households and migrant workers
MIG/LIG
materials & production
labor/work
maintenance
cross subsidization
Unit acquisition
Shops/Education/Healthcare/Parks/Sport facilities
outsource and support local businesses
profit

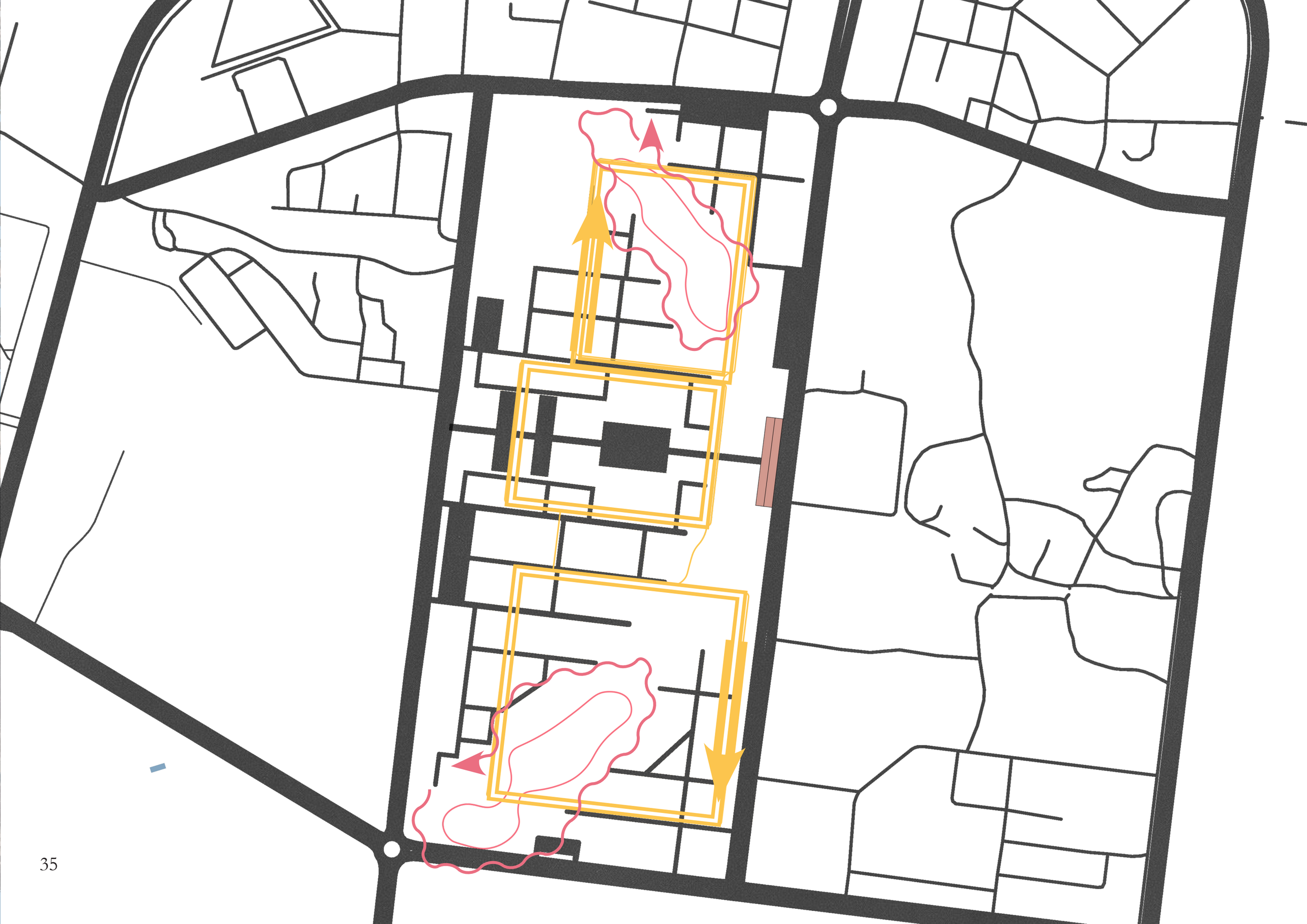
Urban Strategy



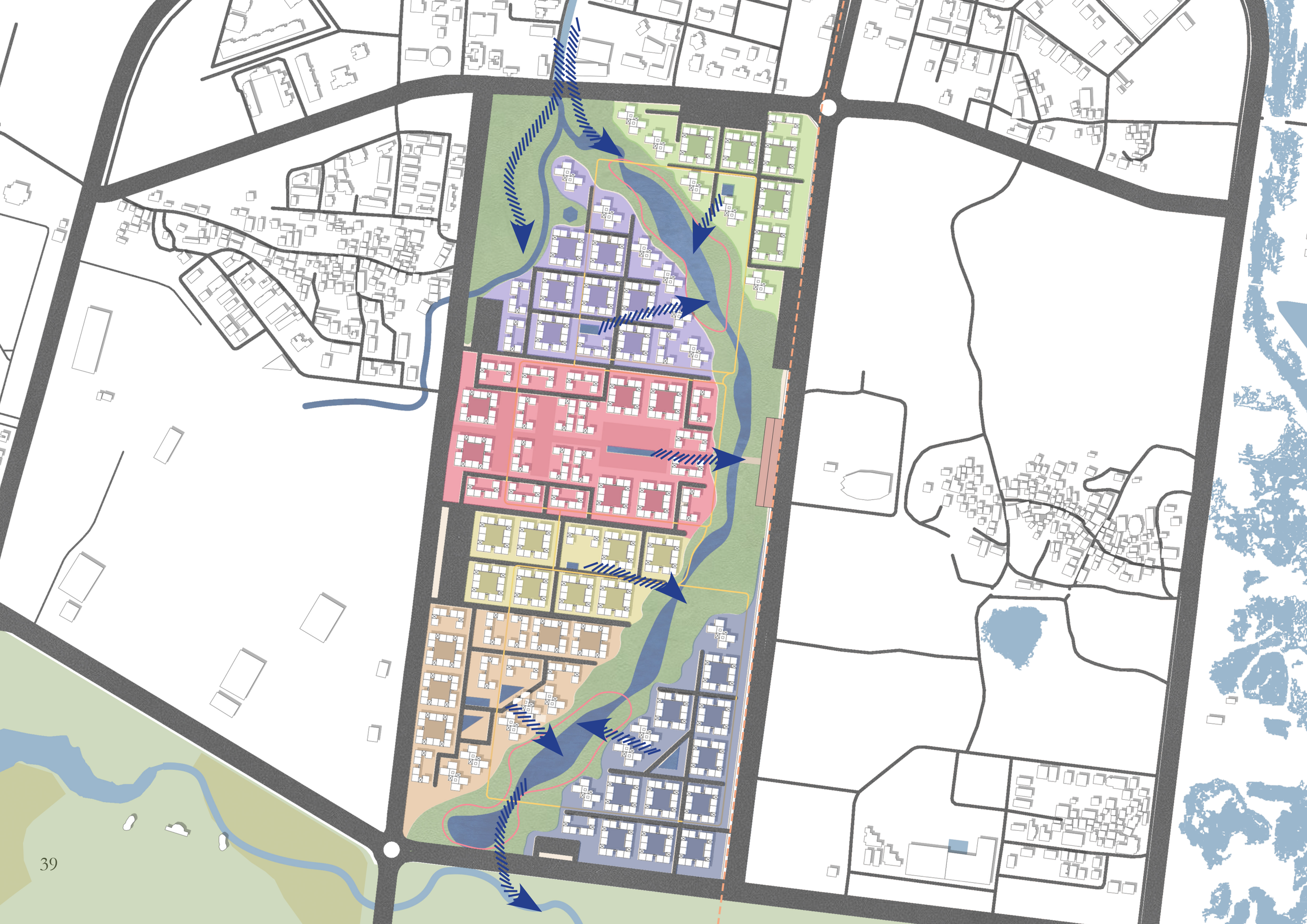


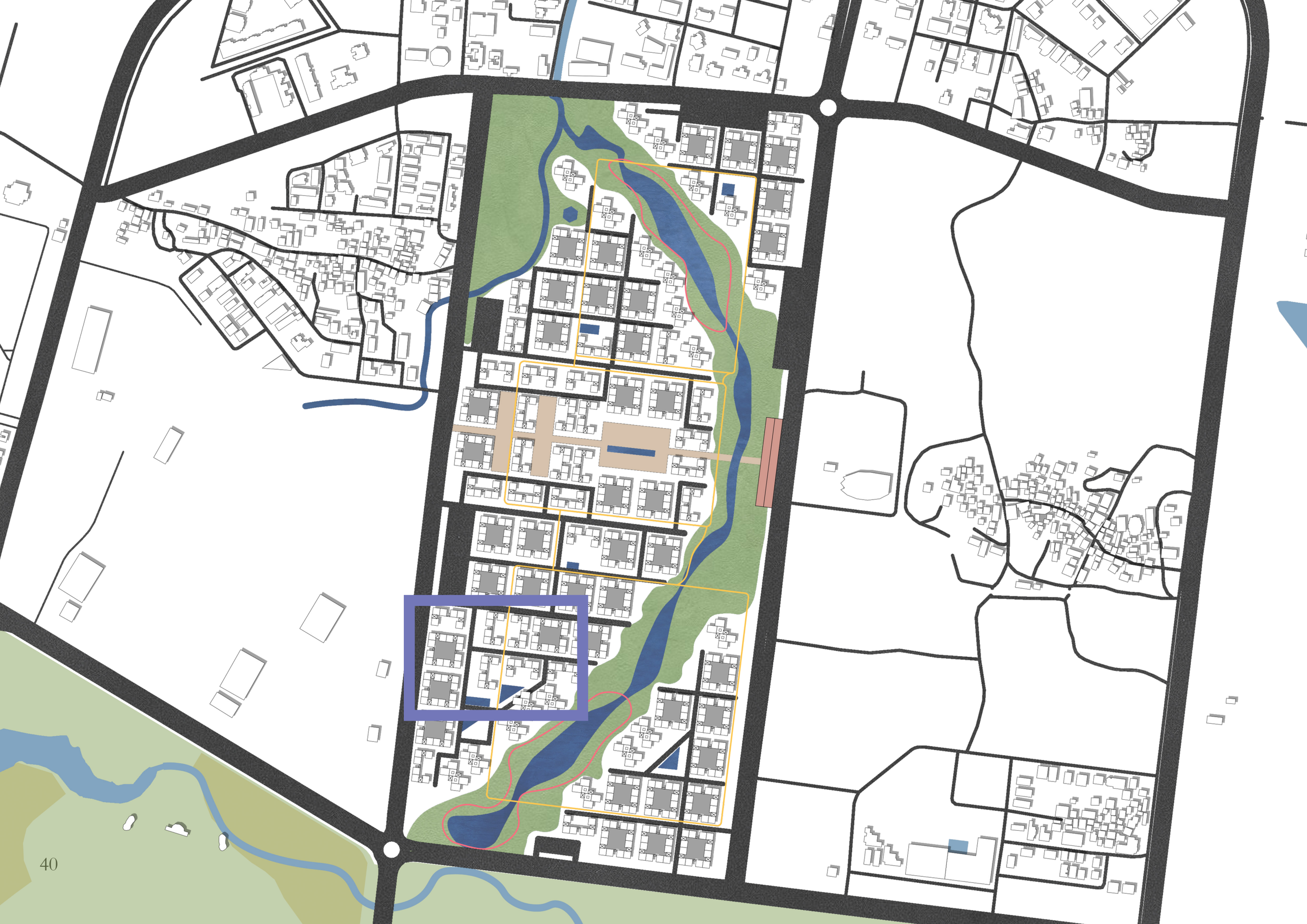




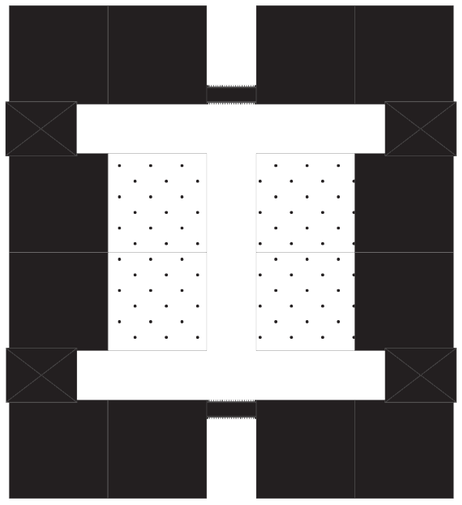



info@aokruze.com
MH-03-AV-9510



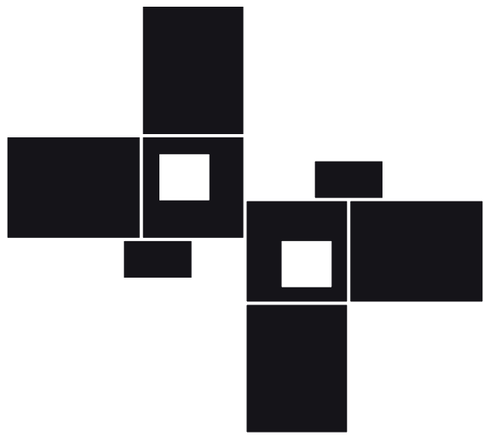


Neighborhood types



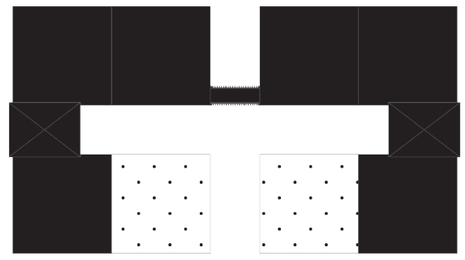
Typical Neighborhood

EWS/LIG/MIG



High-rise Neighborhood

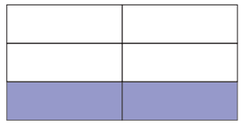
HIG/MIG



Open Neighborhood

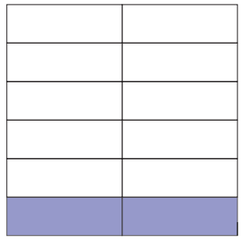
EWS/LIG/MIG

Elevation

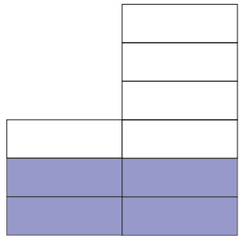


Topview

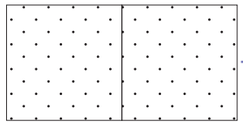
Type 3 - migrant workers and shared living



Type 6 - mixed households of a variety of income ranged around MIG or HIG

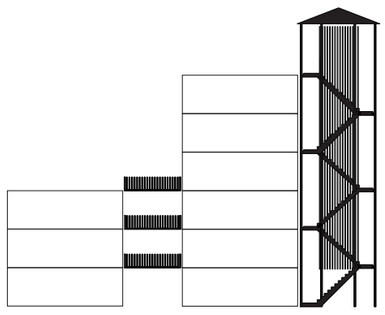


Type 36 - mixed use, variety of ammenities, shops, schools, offices, healthcare, start-ups etc.



Public space - park, playgrounds, water storage, parking, kitchen garden

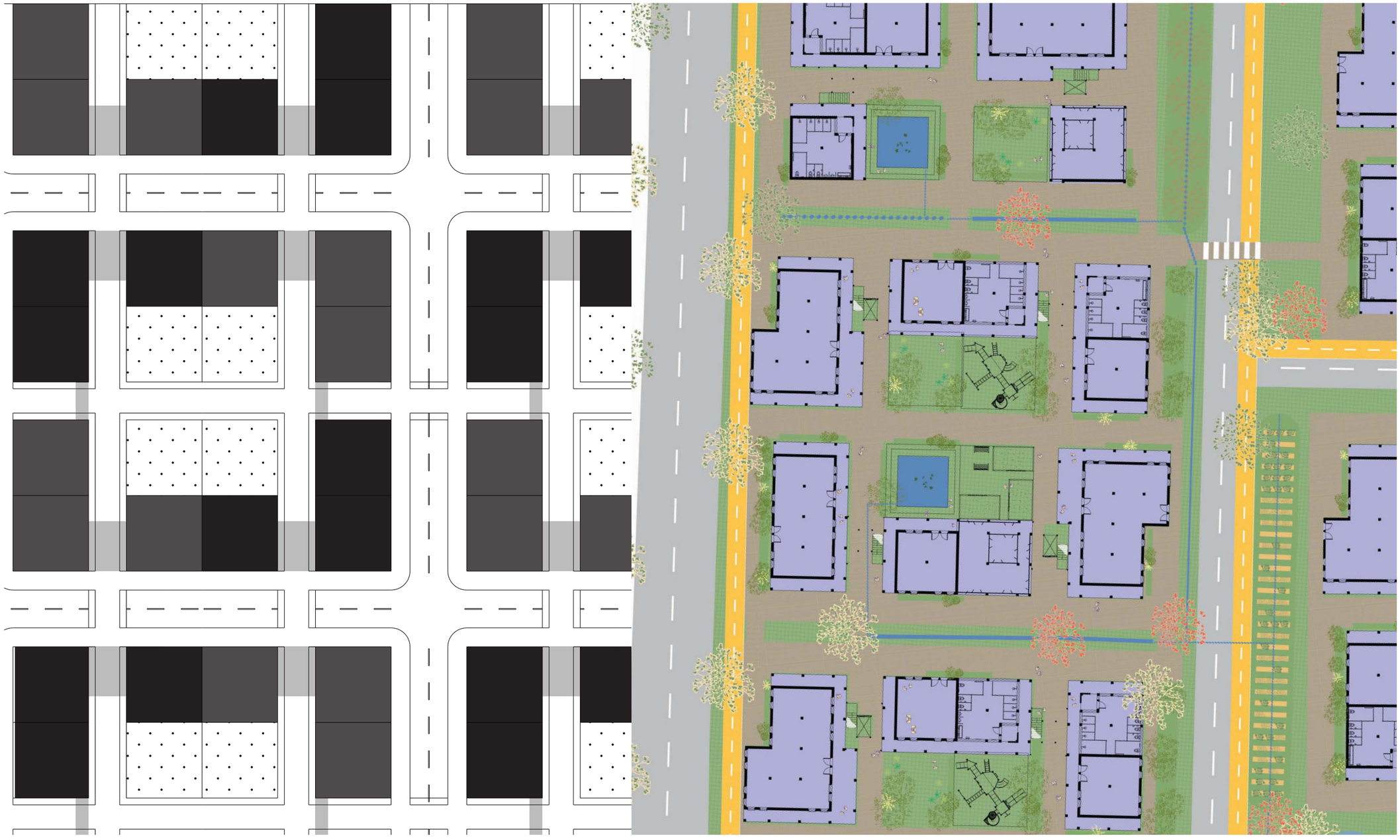
Elevation



Topview **1.** **2.**

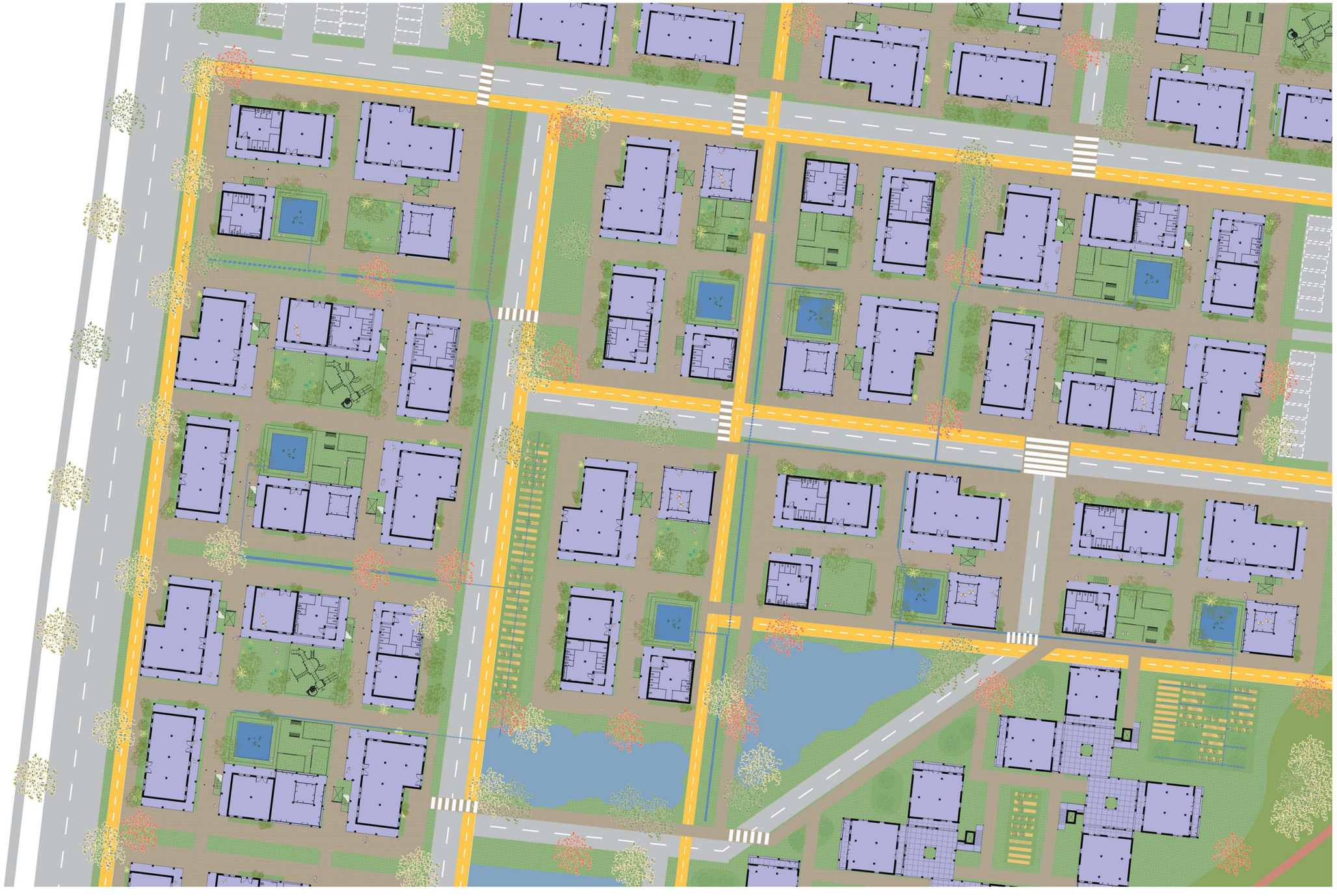
1. Horizontal connectivity - walkway connecting building blocks, residents only

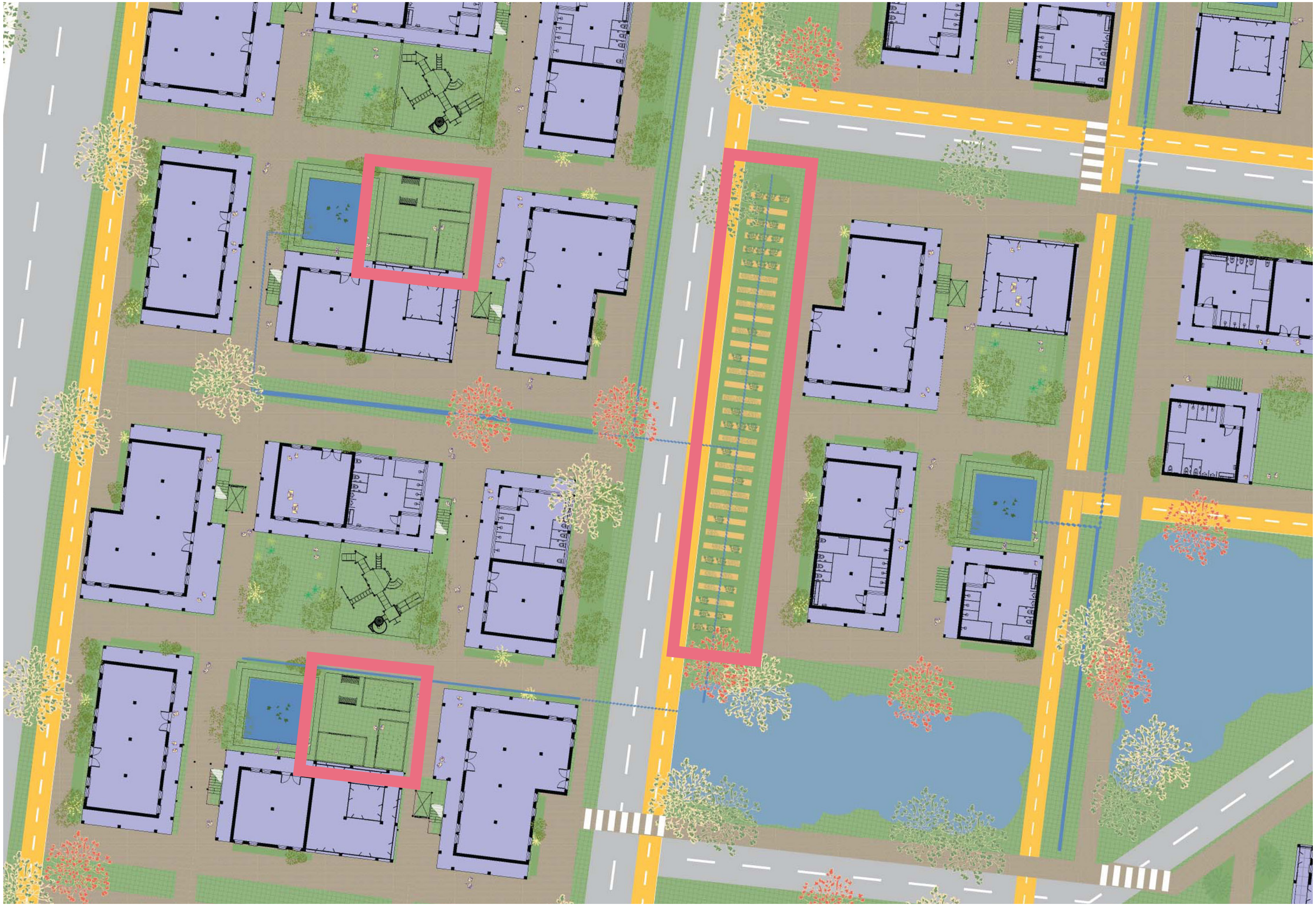
2. Vertical connectivity - stairway connecting building blocks, residents only



Street profile

Situation Plan





Medicinal garden

Local plants used in medicine and the Indian kitchen


Amla


Black Cumin


Gilou


Ginger


Tulsi


Turmeric

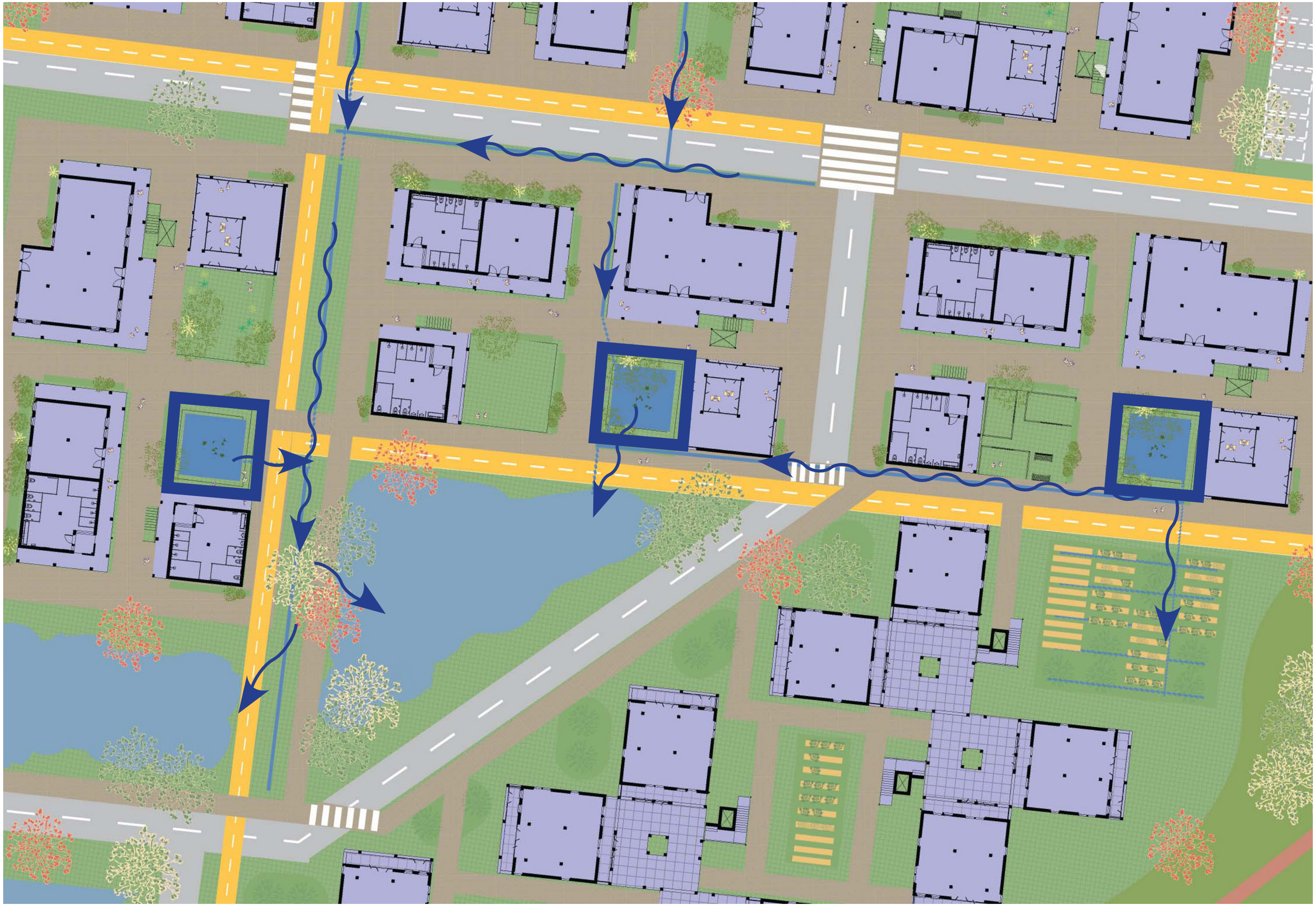

Ashwaghandha


Black Pepper


Cinnamon


Flax Seeds


Garlic

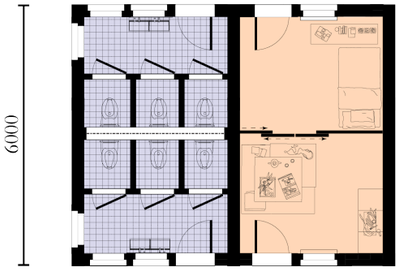


Axonometric

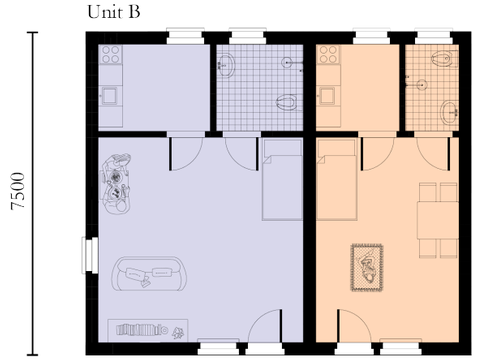

TATTOO
PIERCINGS

Elevation, Plans and Sections

Housing units

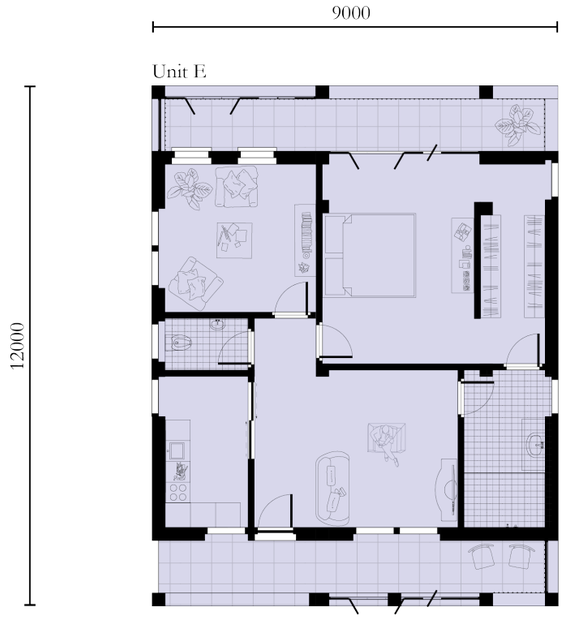


Type 1 - Unit A

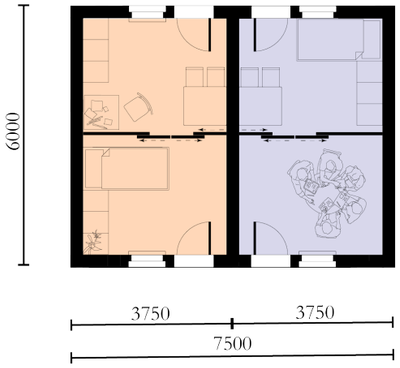


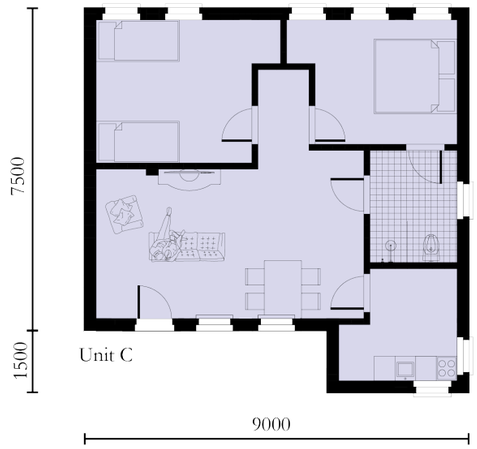
Type 1 - Unit B, C

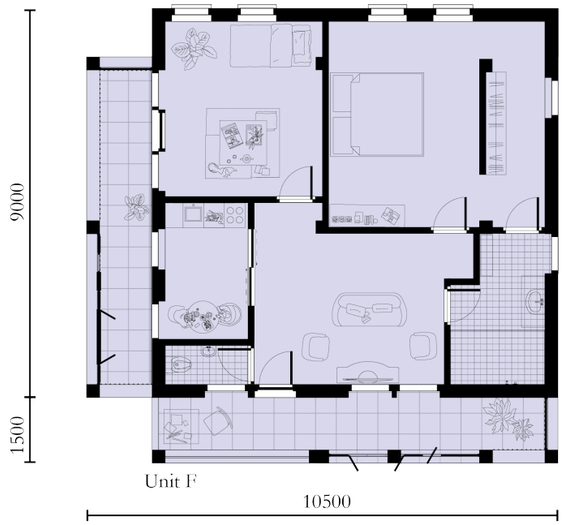
Type 1 - Unit D



Type 2 - Unit E, F







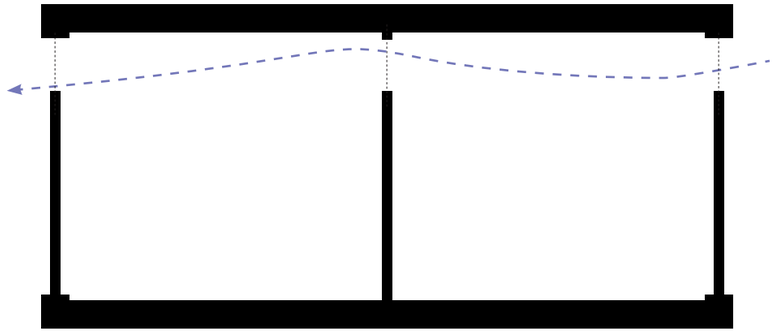
Unit A: Area 34 m^2
- 2 room apartment (roomdivider with sliding-doors).
- Shared toilet and access to bathspace on ground-floor.

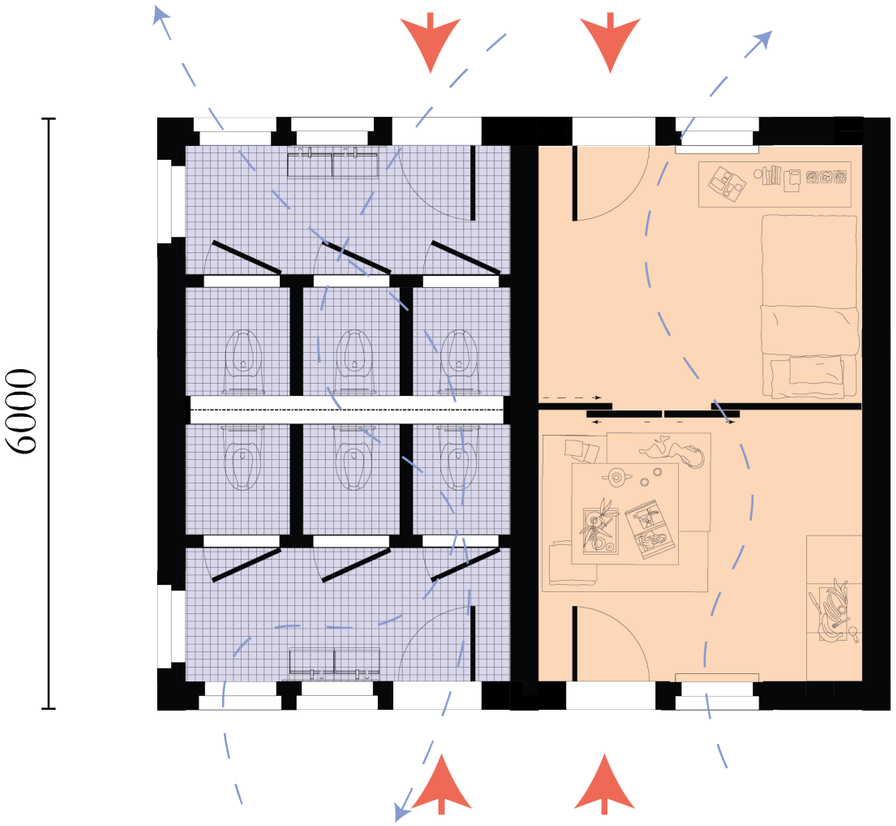
Unit B: Area 28; 39 m^2
- Studio apartment with seperate kitchen and bathroom.

Unit C: Area 72 m^2
- Livingroom, bathroom with toilet, kitchen and 2 bedroom apartment.

Unit D: Area 56; 69 m^2
- Maisonette apartment, livingroom, private livingroom with kitchen, bathroom, toilet and bedroom.

Unit E; F: Area 108; 106 m^2
- Front porch, livingroom, balcony, kitchen, bathroom, toilet, 2 bedrooms and master bedroom with walk in closet.

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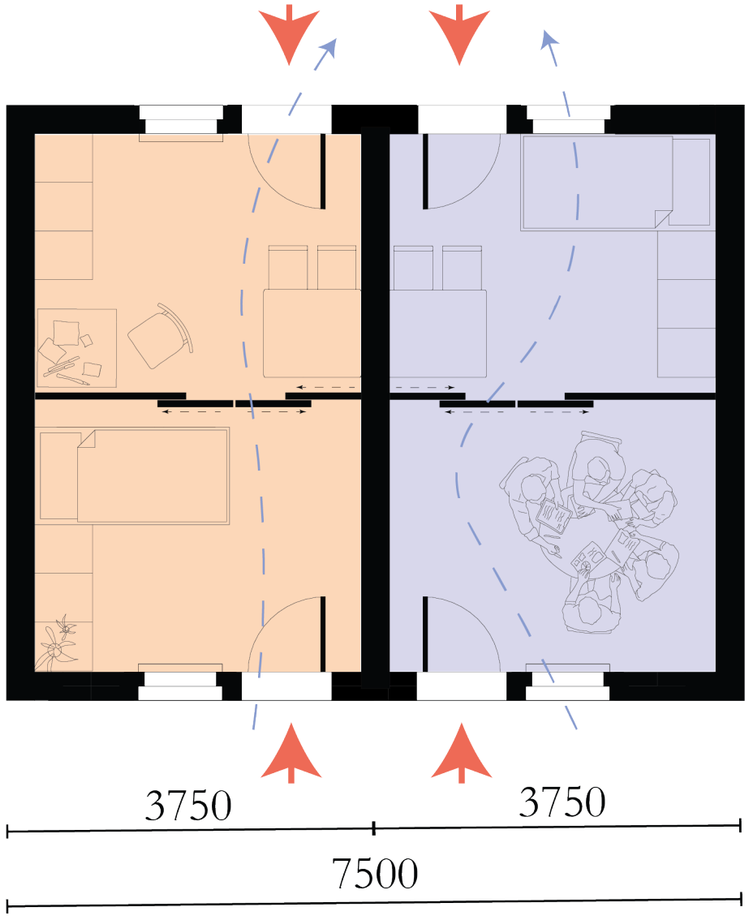
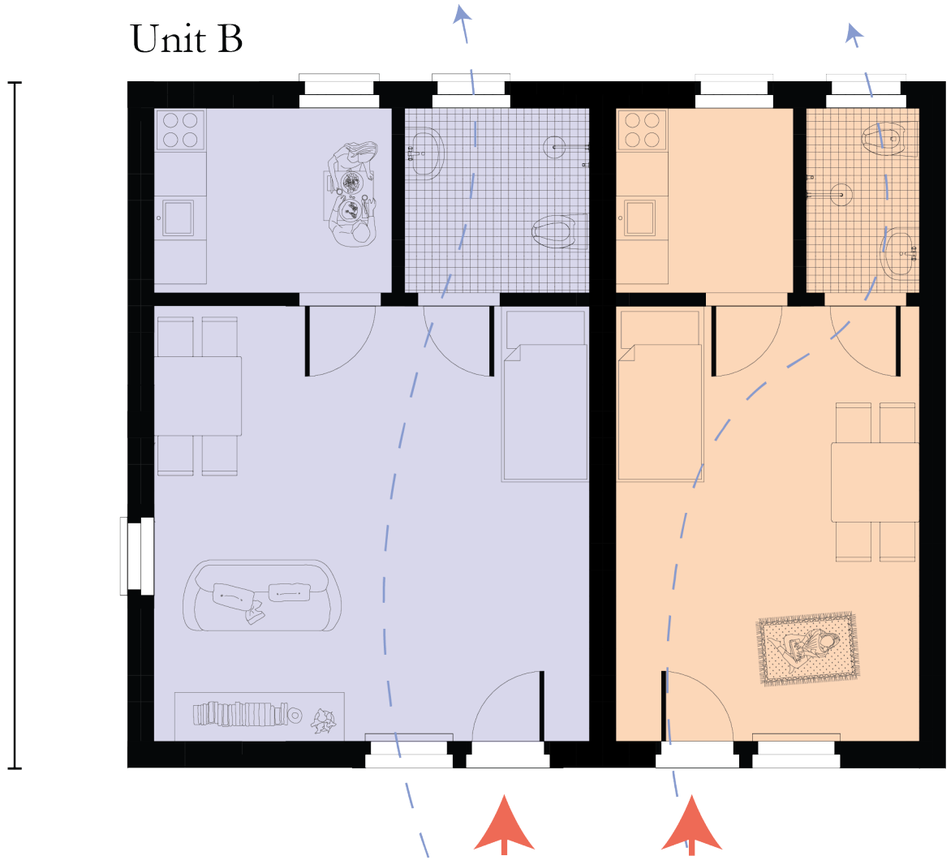
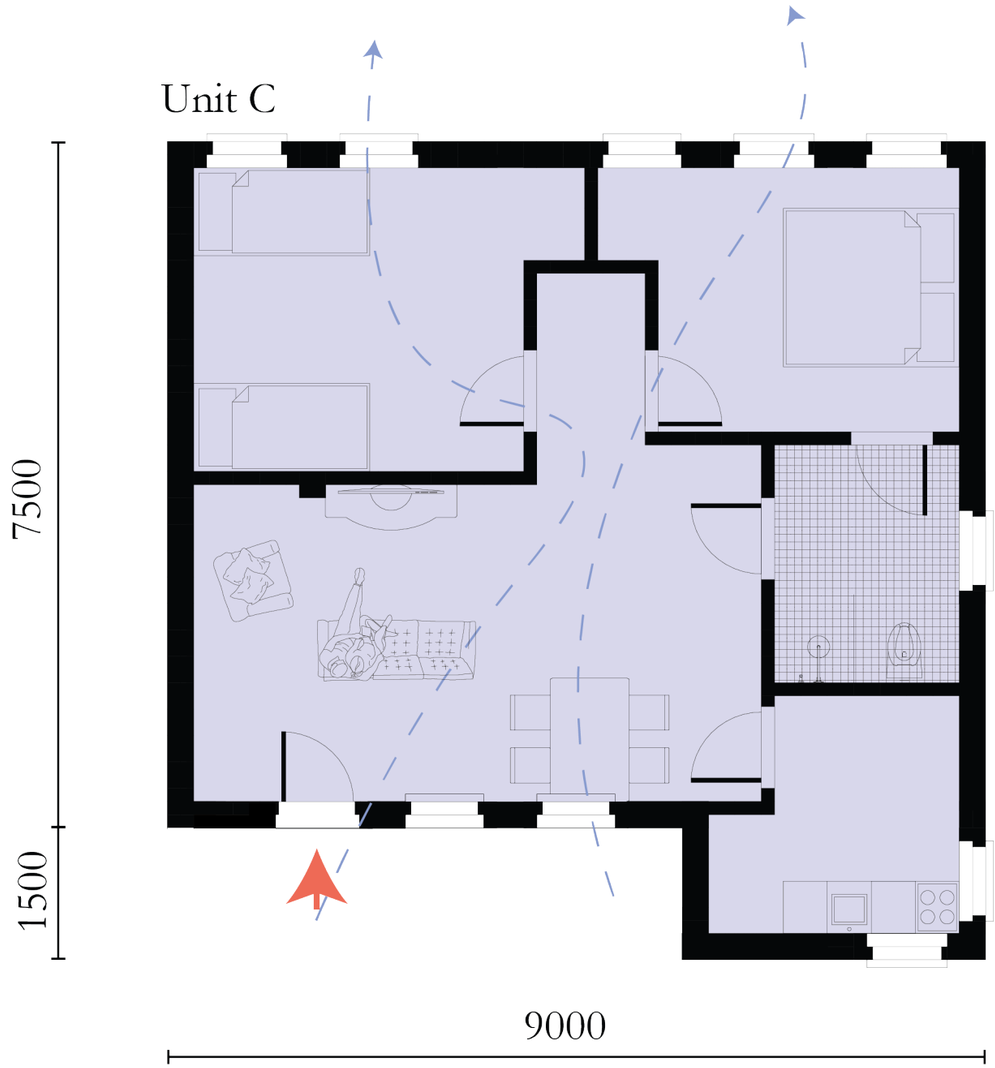

3750
3750
7500

Unit B

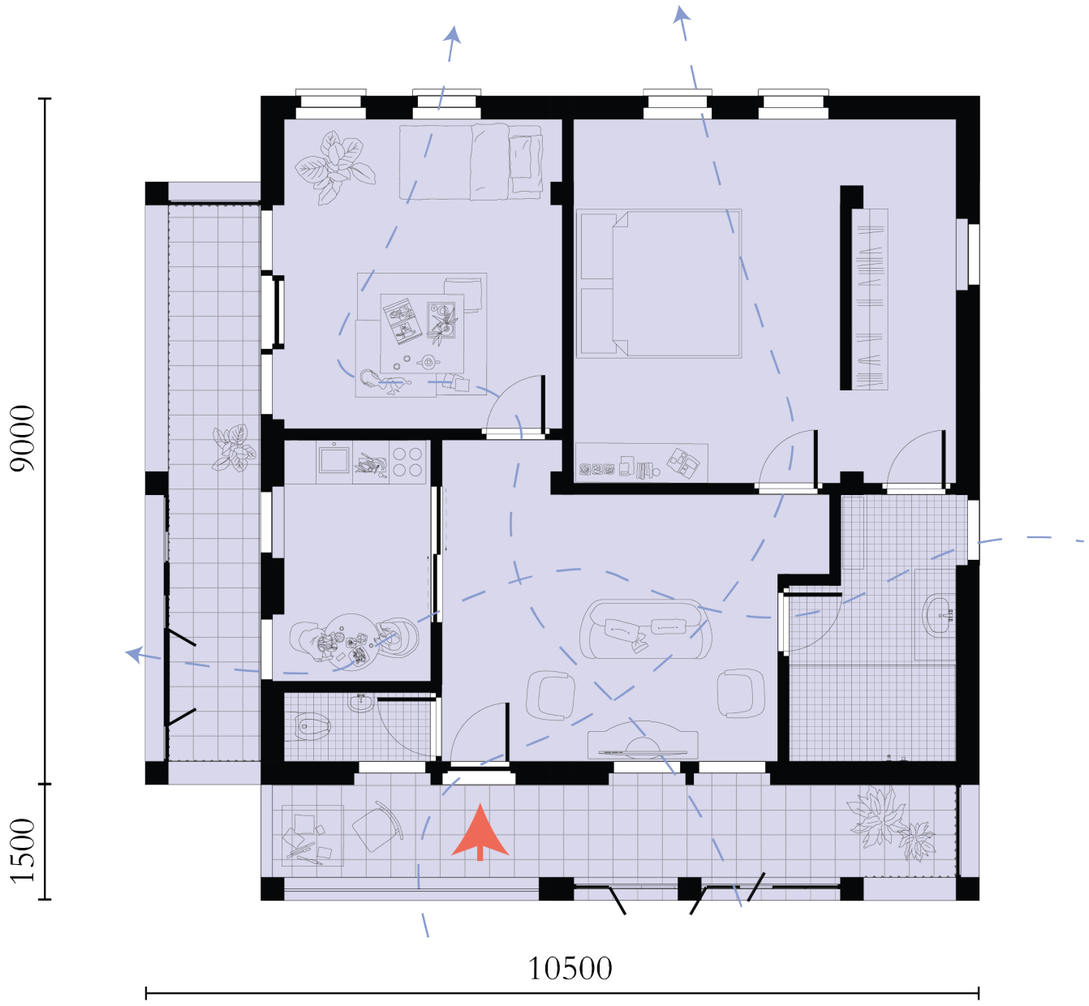


Unit C

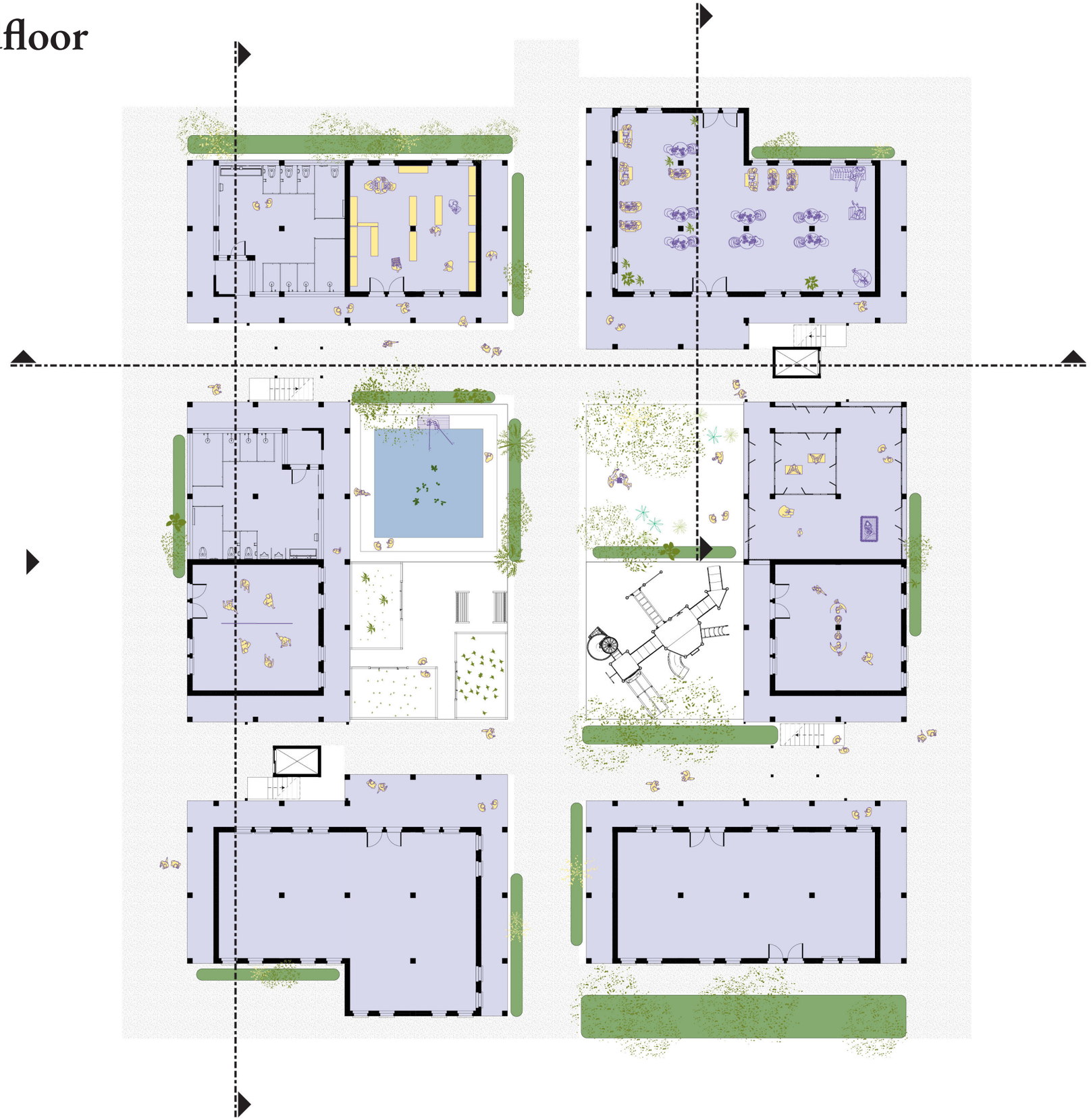


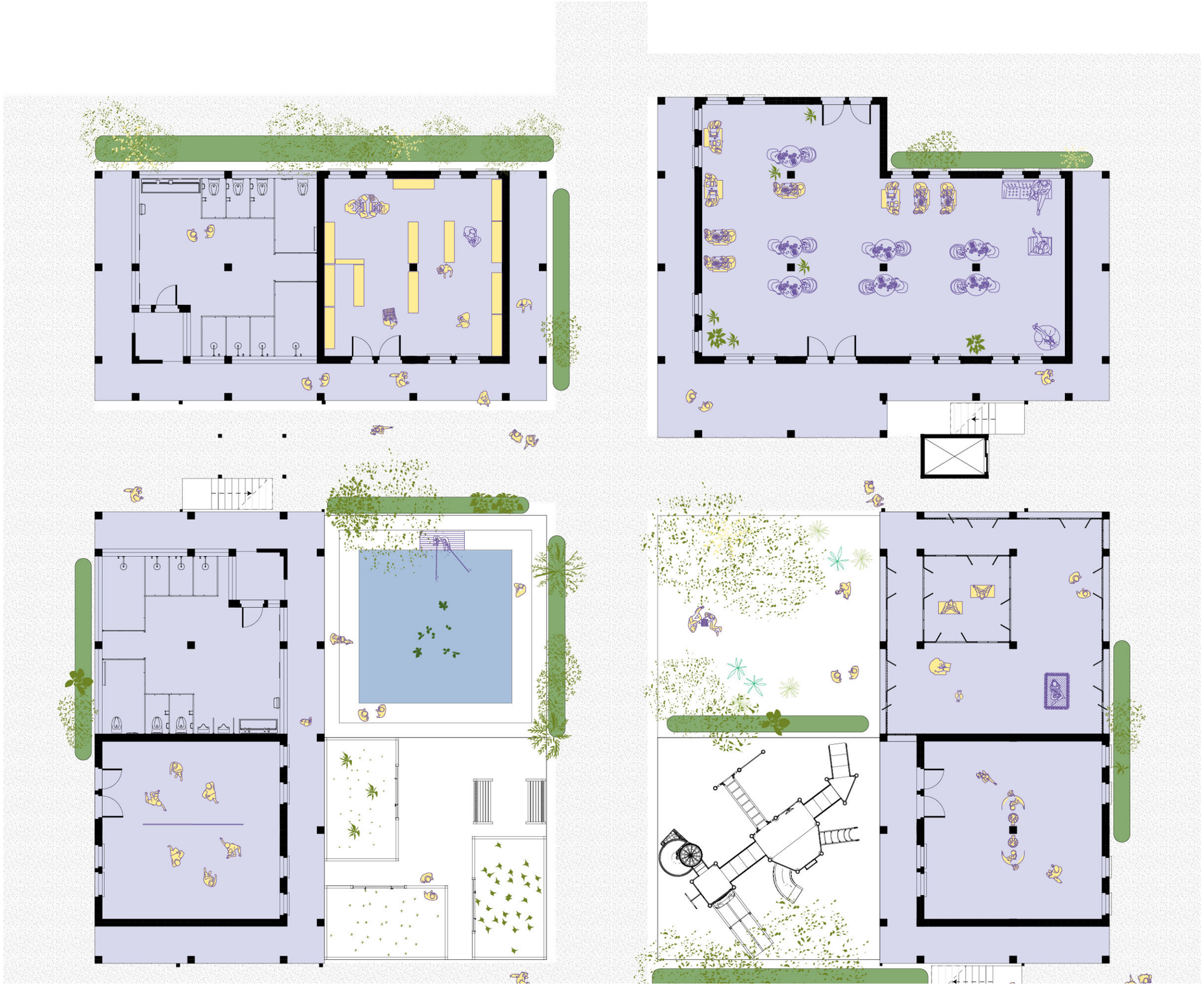
Unit E

Unit F

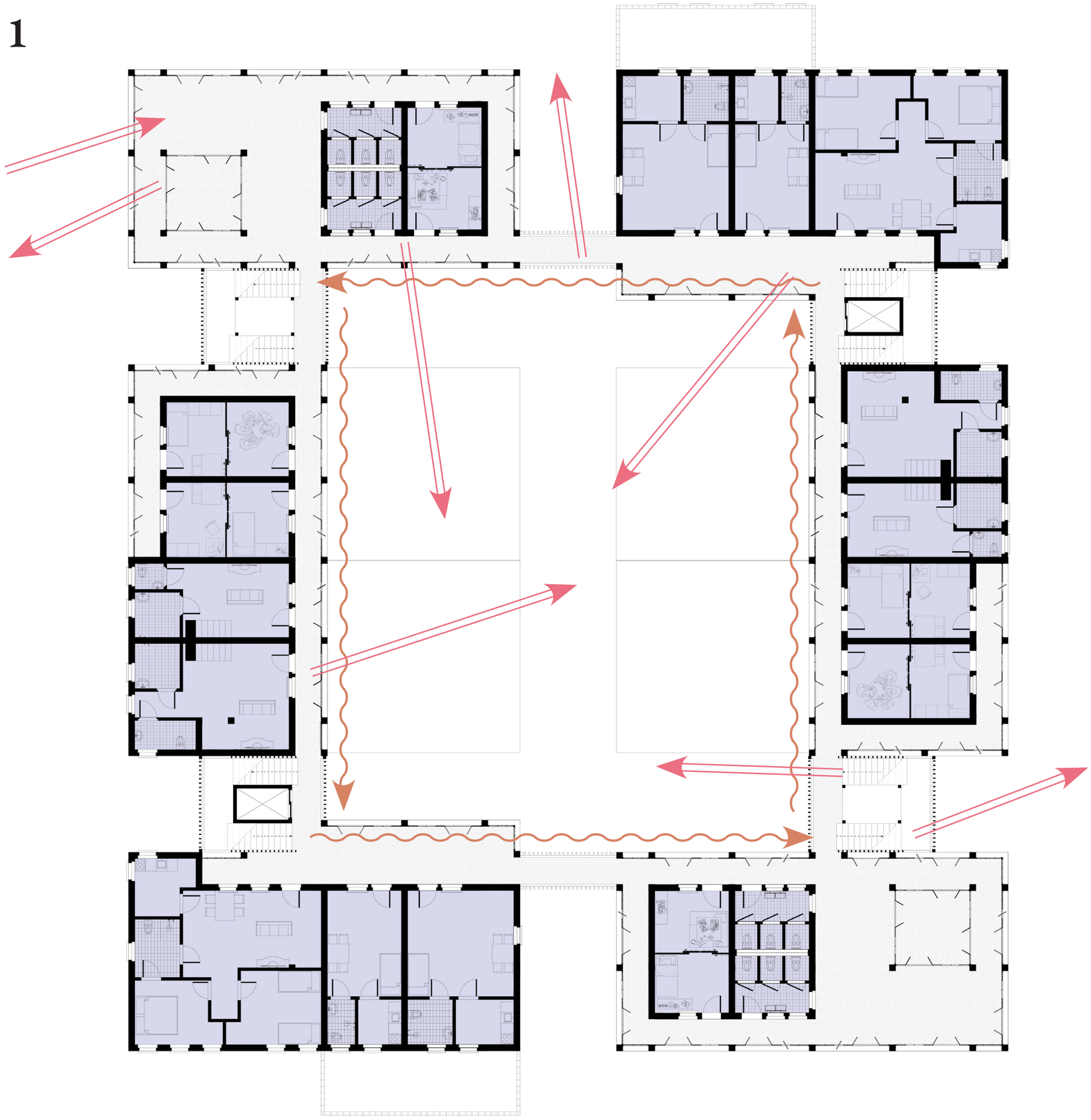


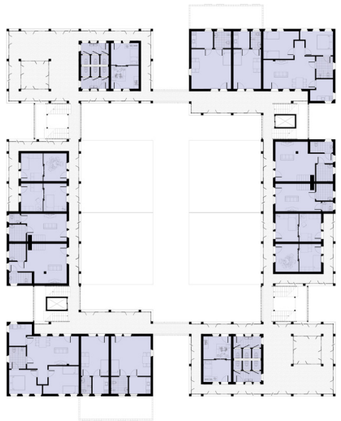
Type 1 Groundfloor

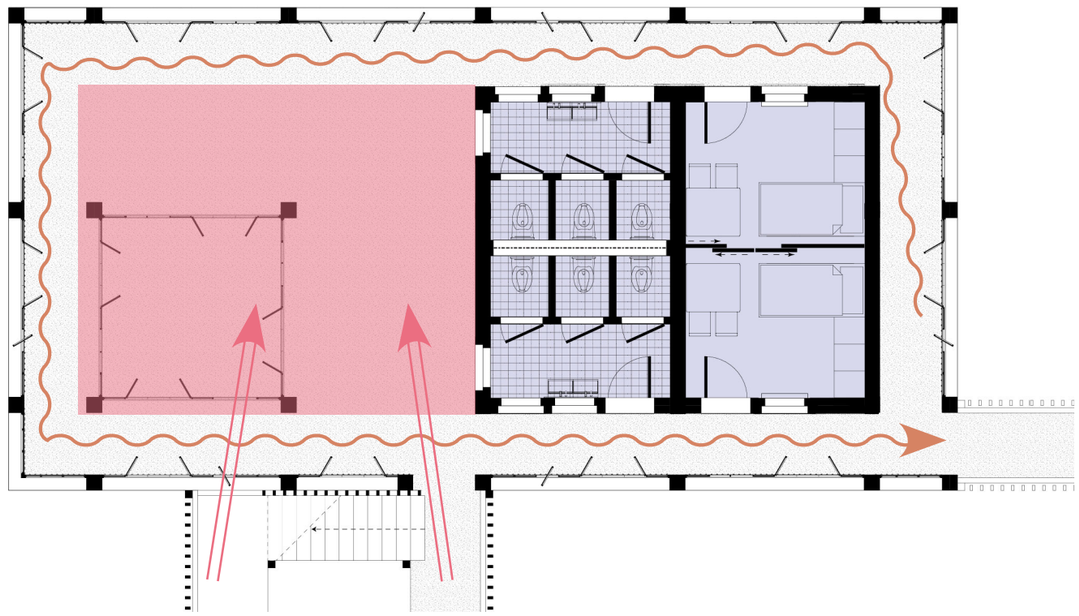




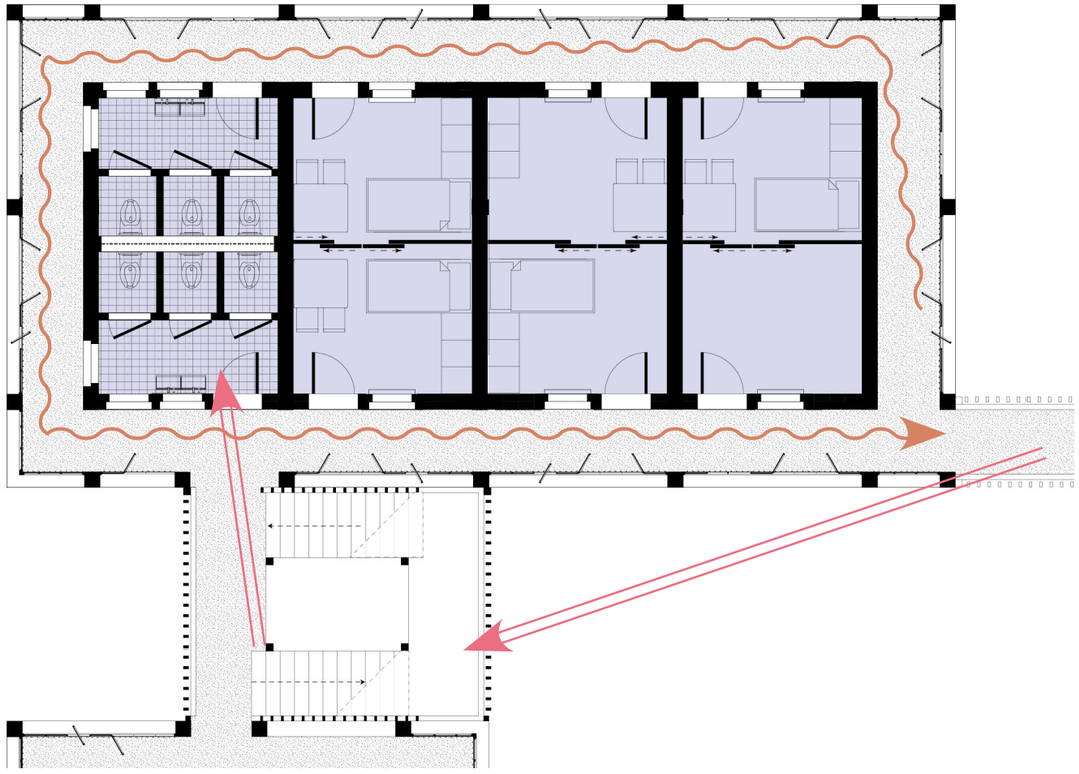
Type 1 - floor 1





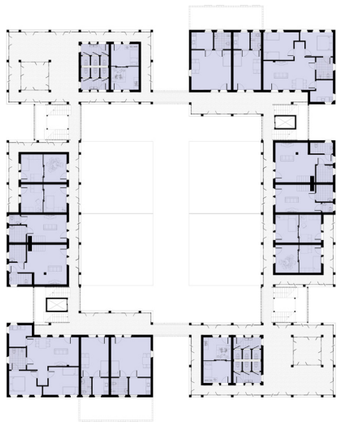


Type 1 - floor 1

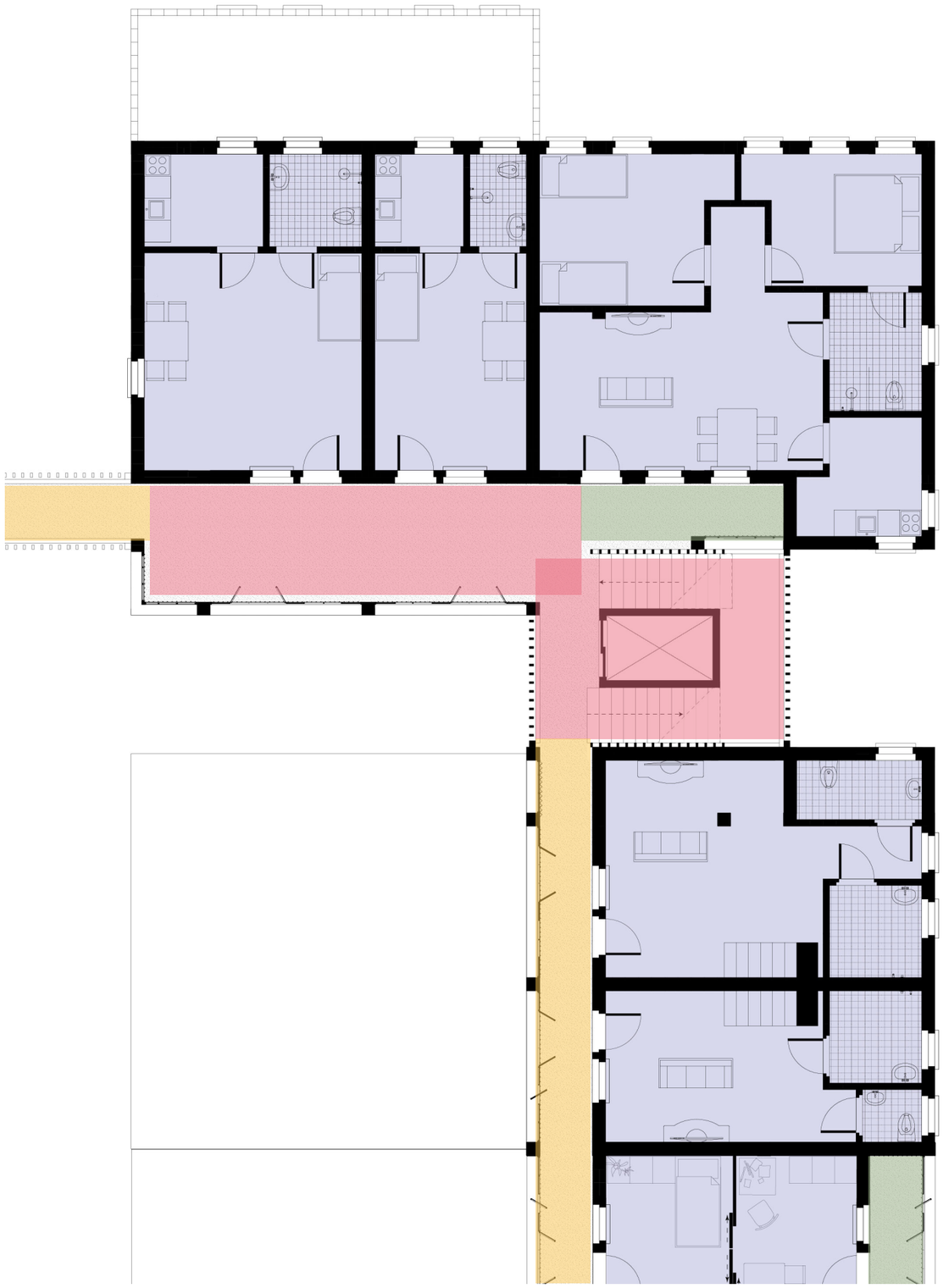


Type 1 - floor 2

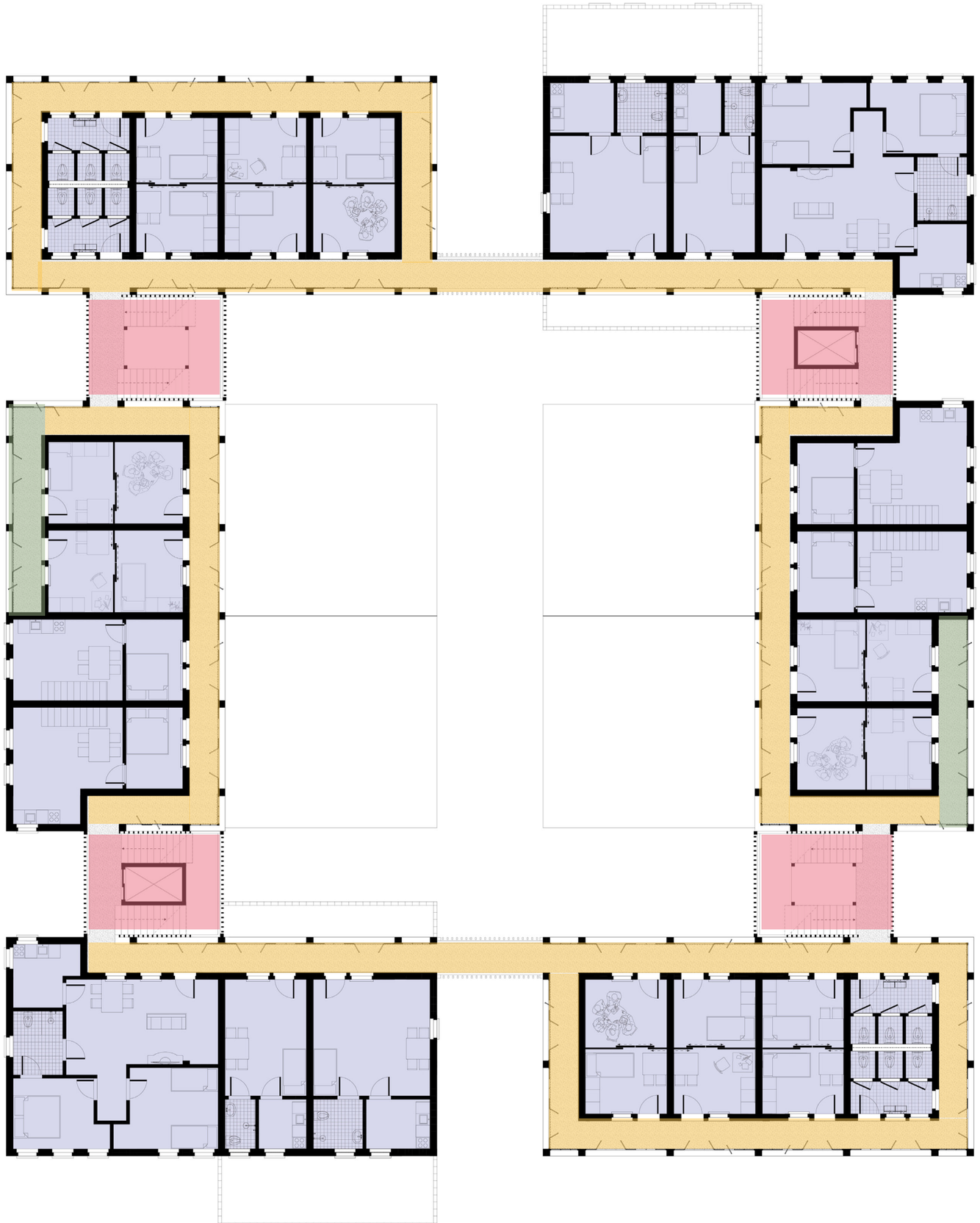

Bonny N



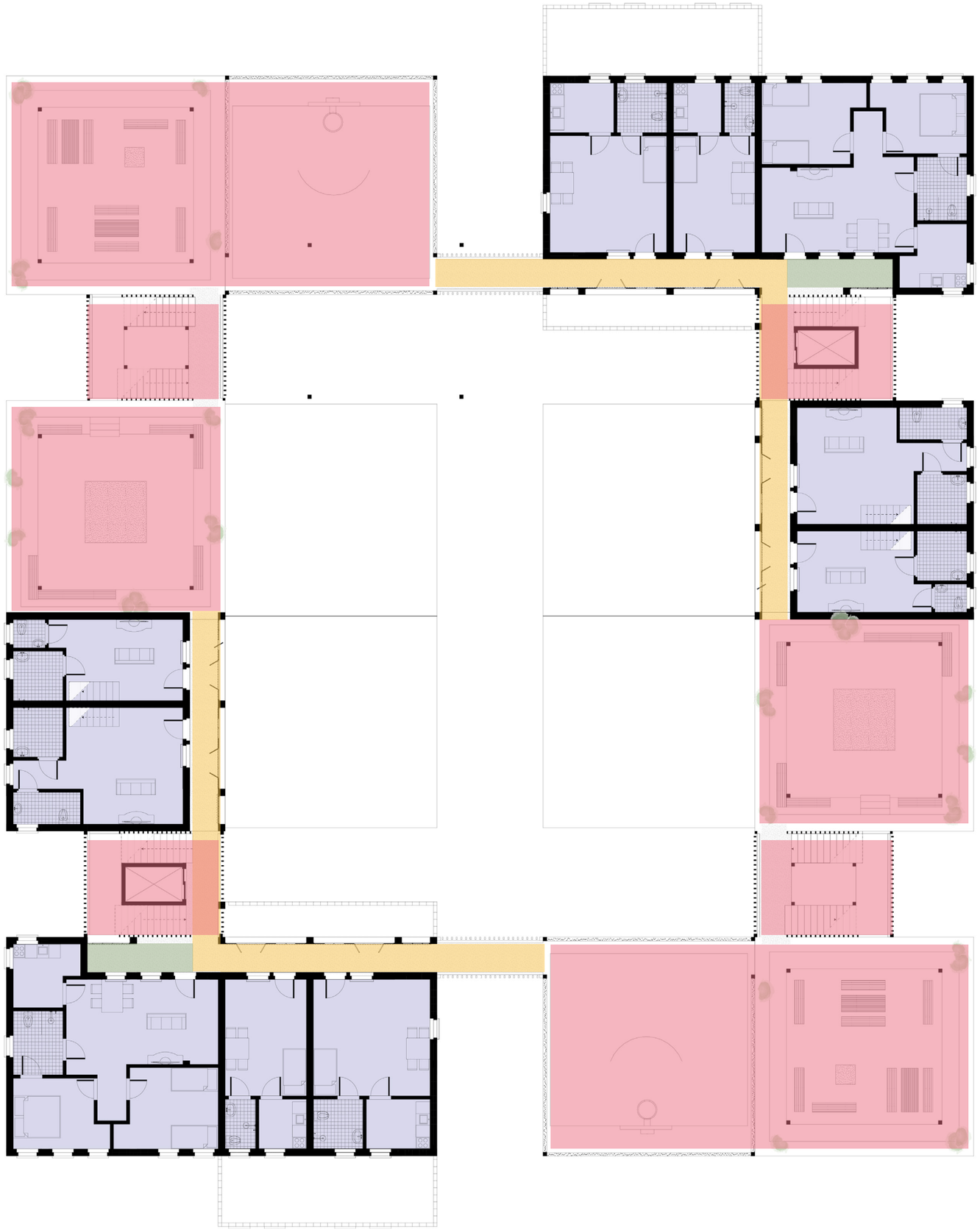
Type 1 - floor 1



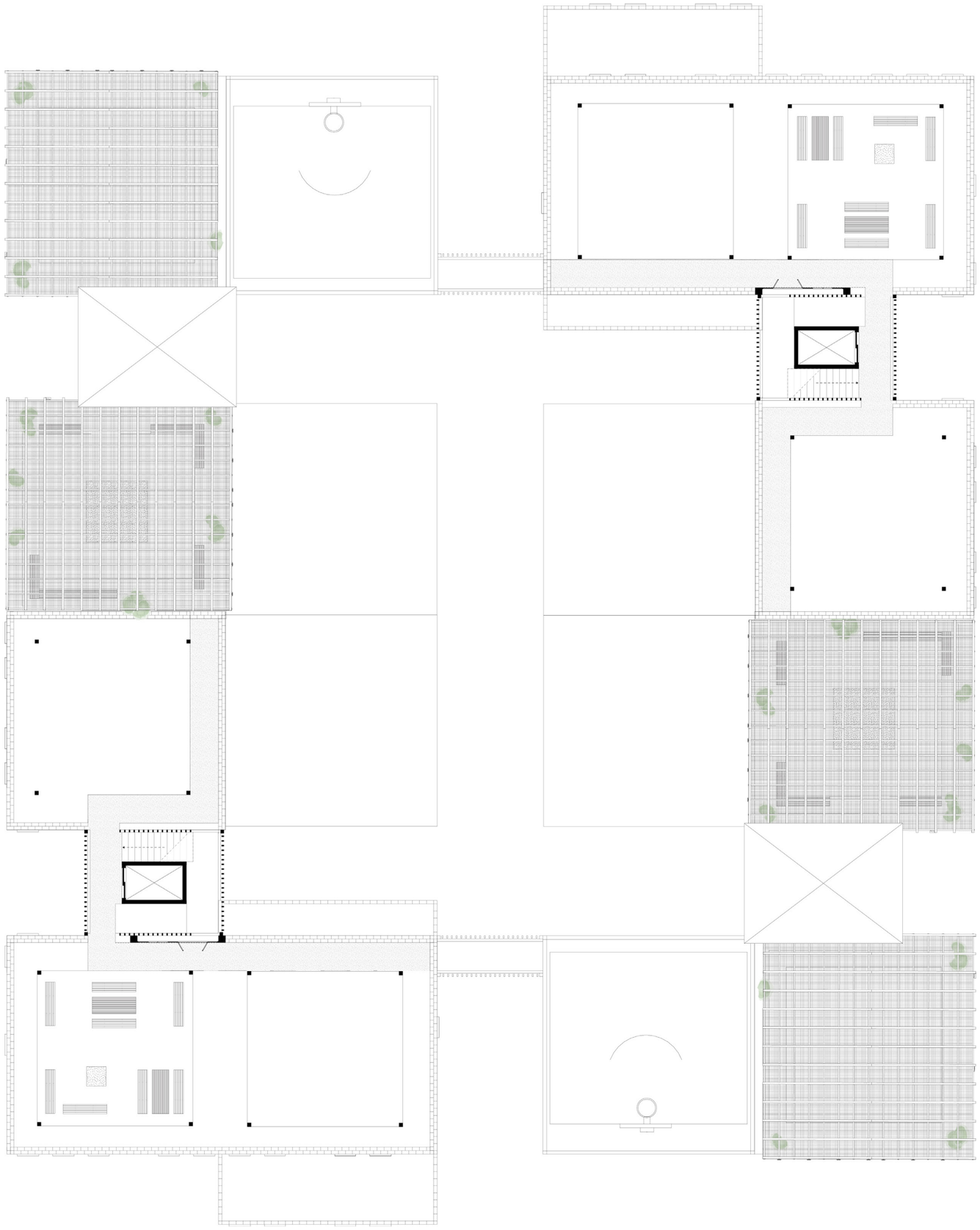
Type 1 - floor 2



Type 1 - floor 3

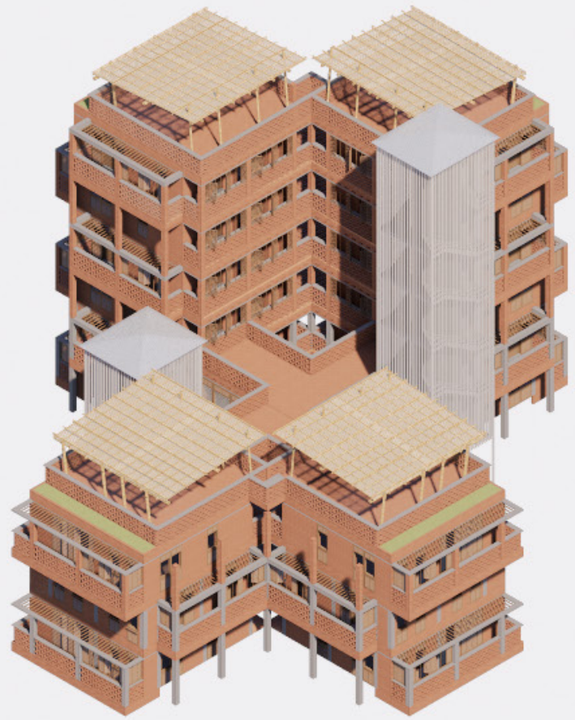


Type 1 - floor 6

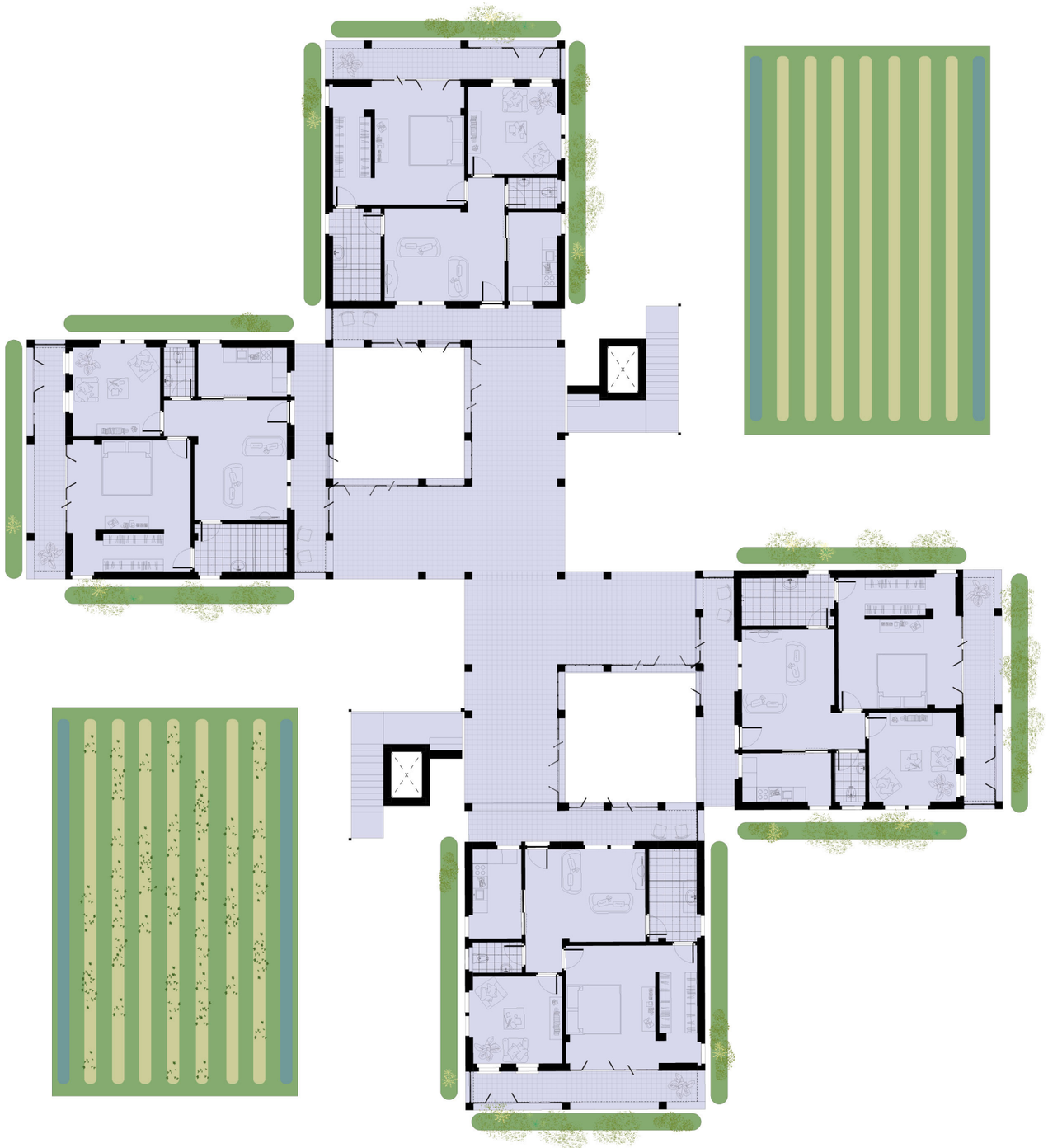


Type 1 - Elevation

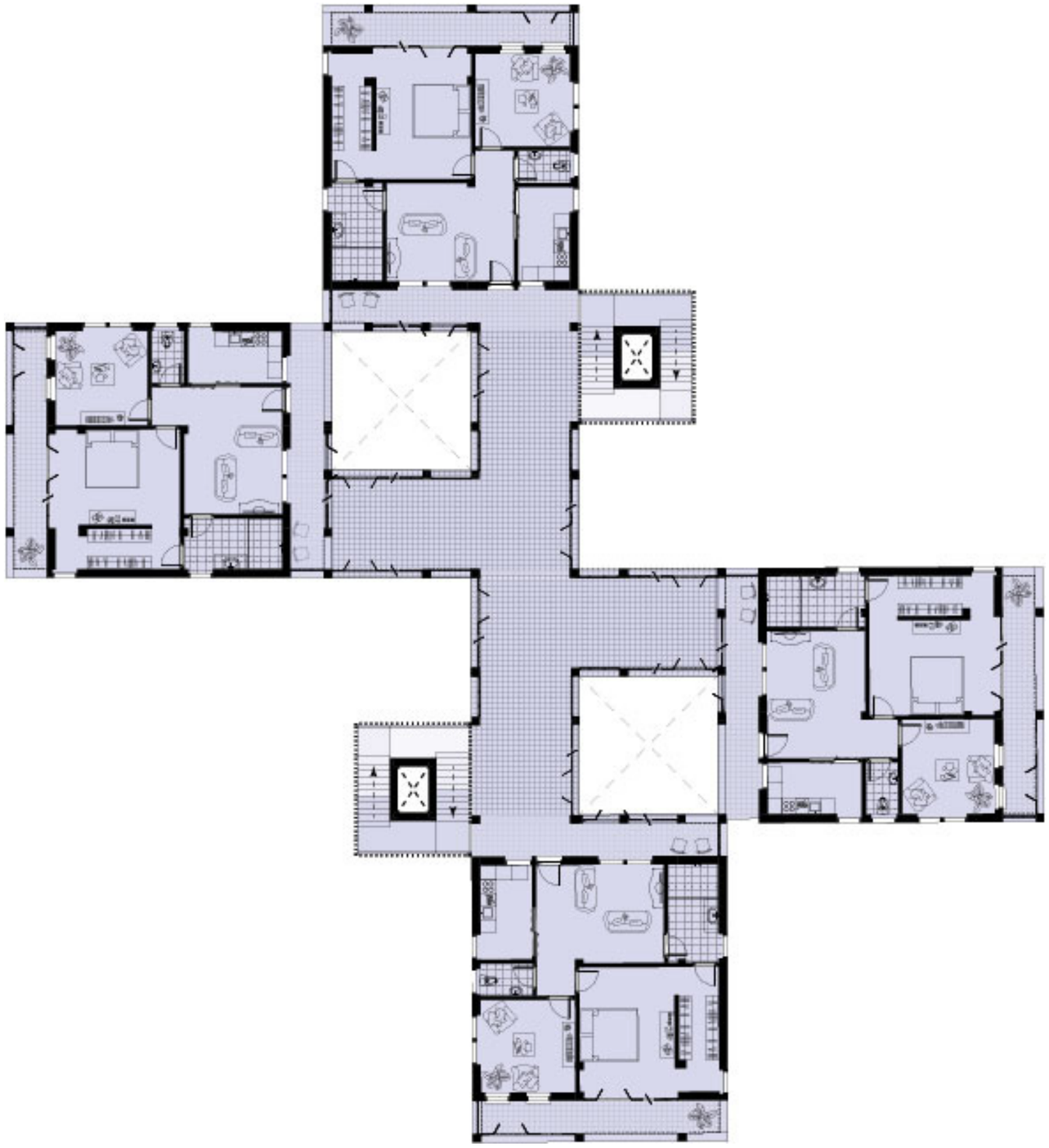
Type 1 - Section



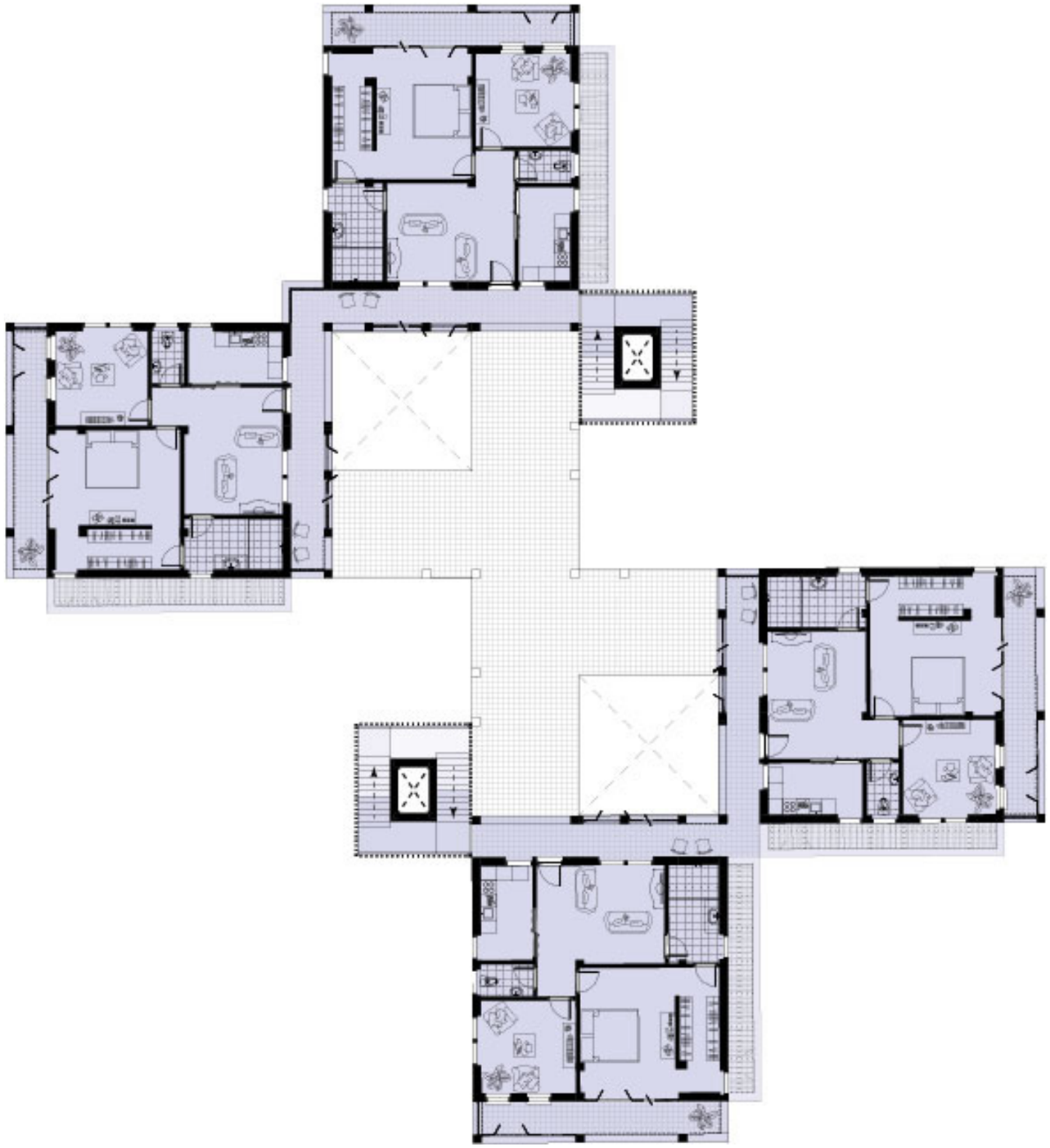
Type 2 - Groundfloor



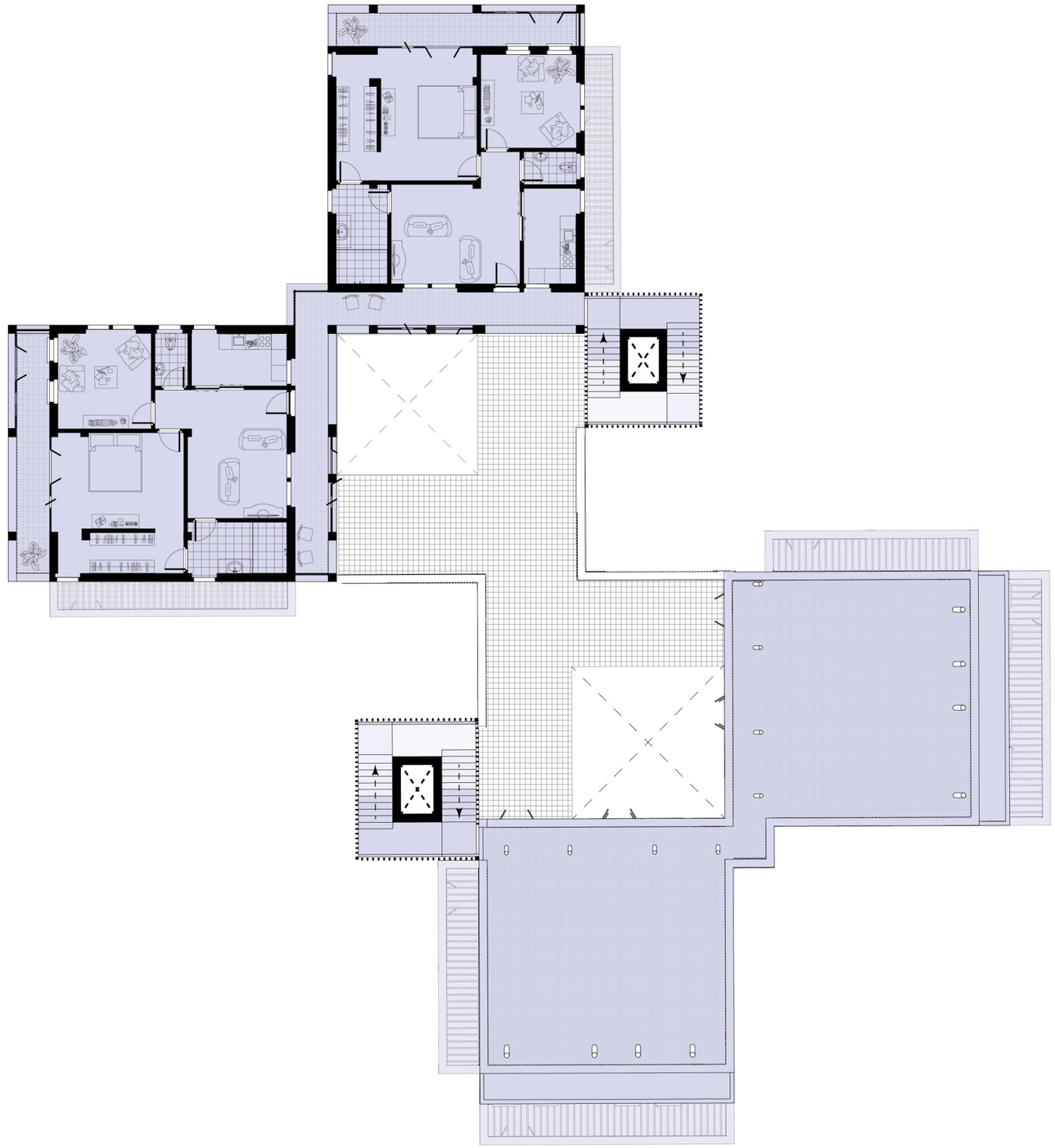
Type 2 - Floor 1



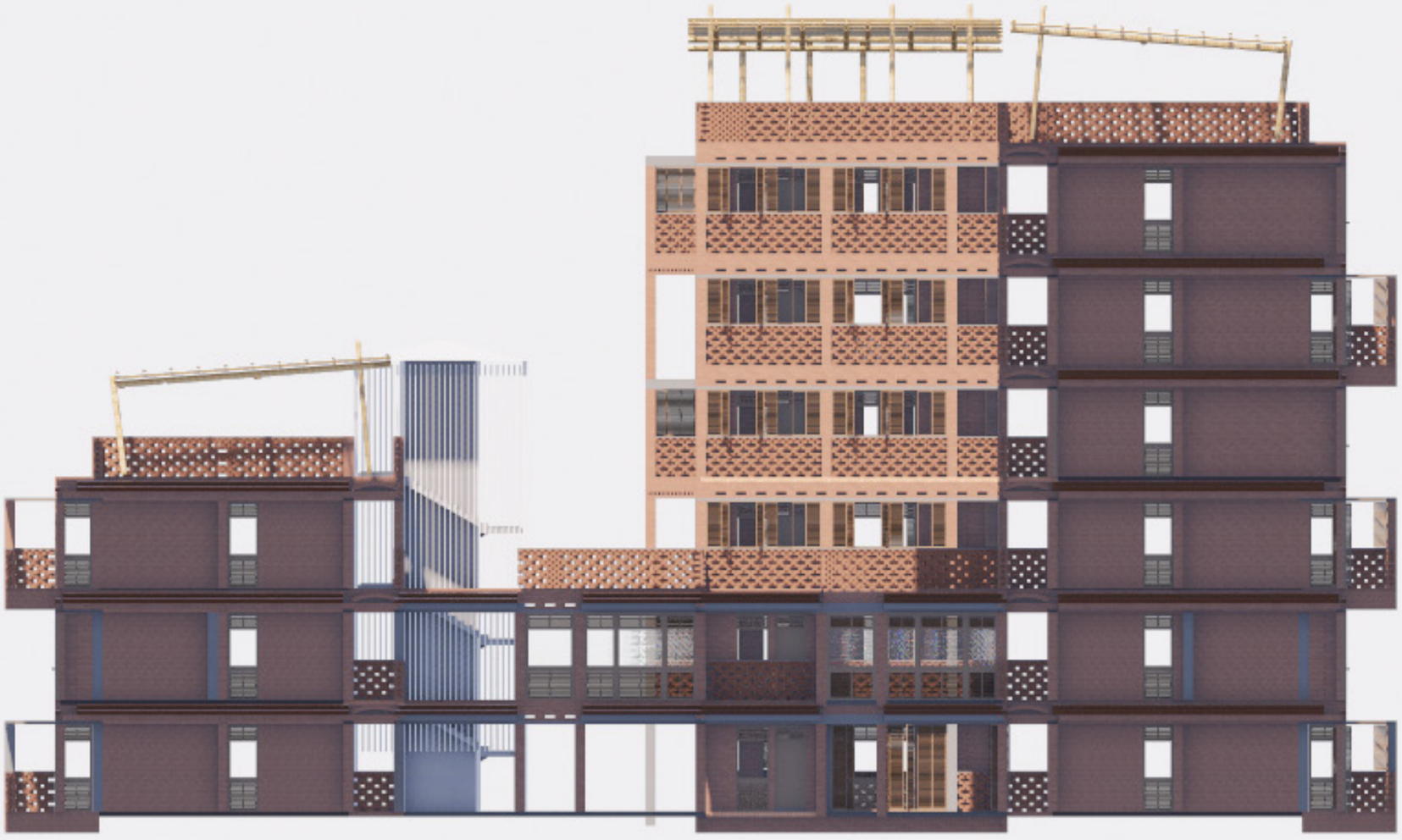
Type 2 - Floor 2



Type 2 - Floor 3



Type 2 - Section

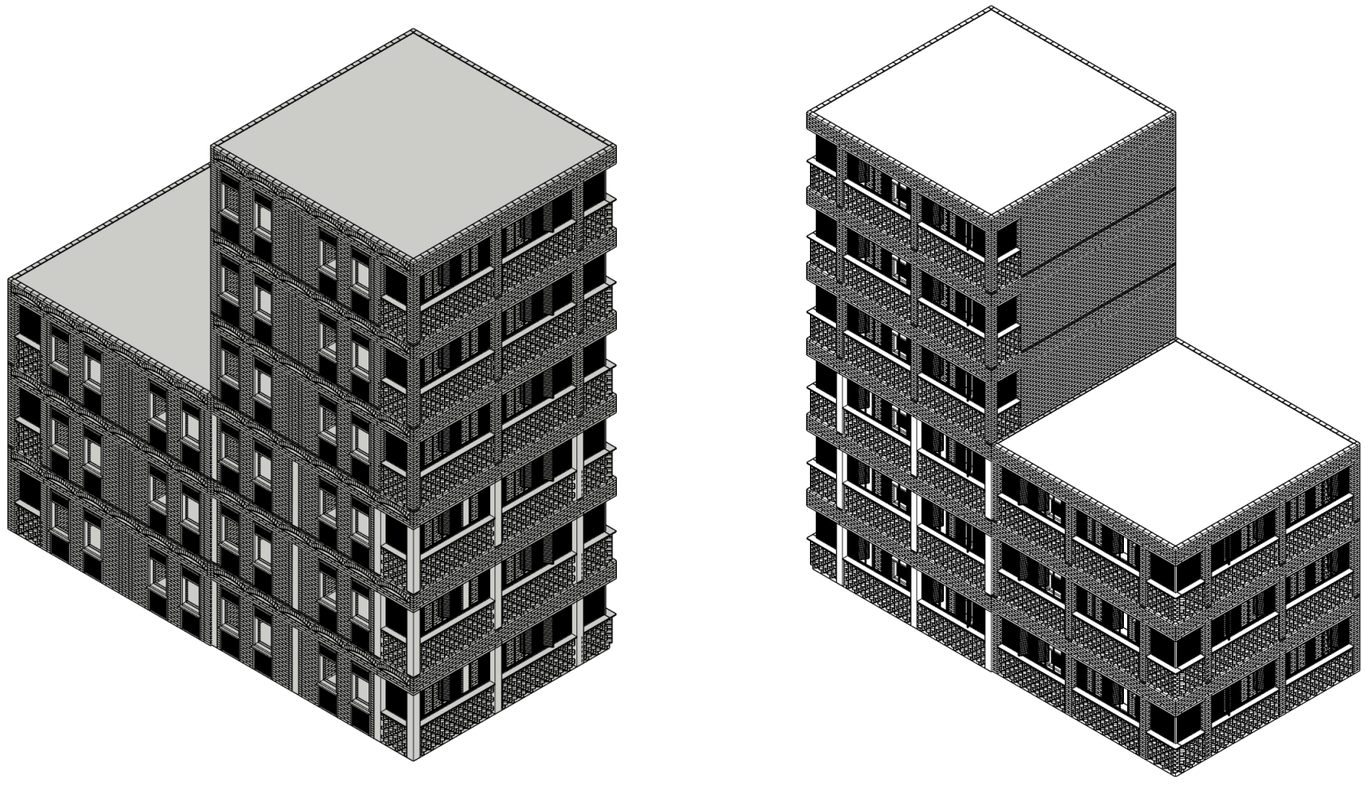


Type 2 - South Elevation

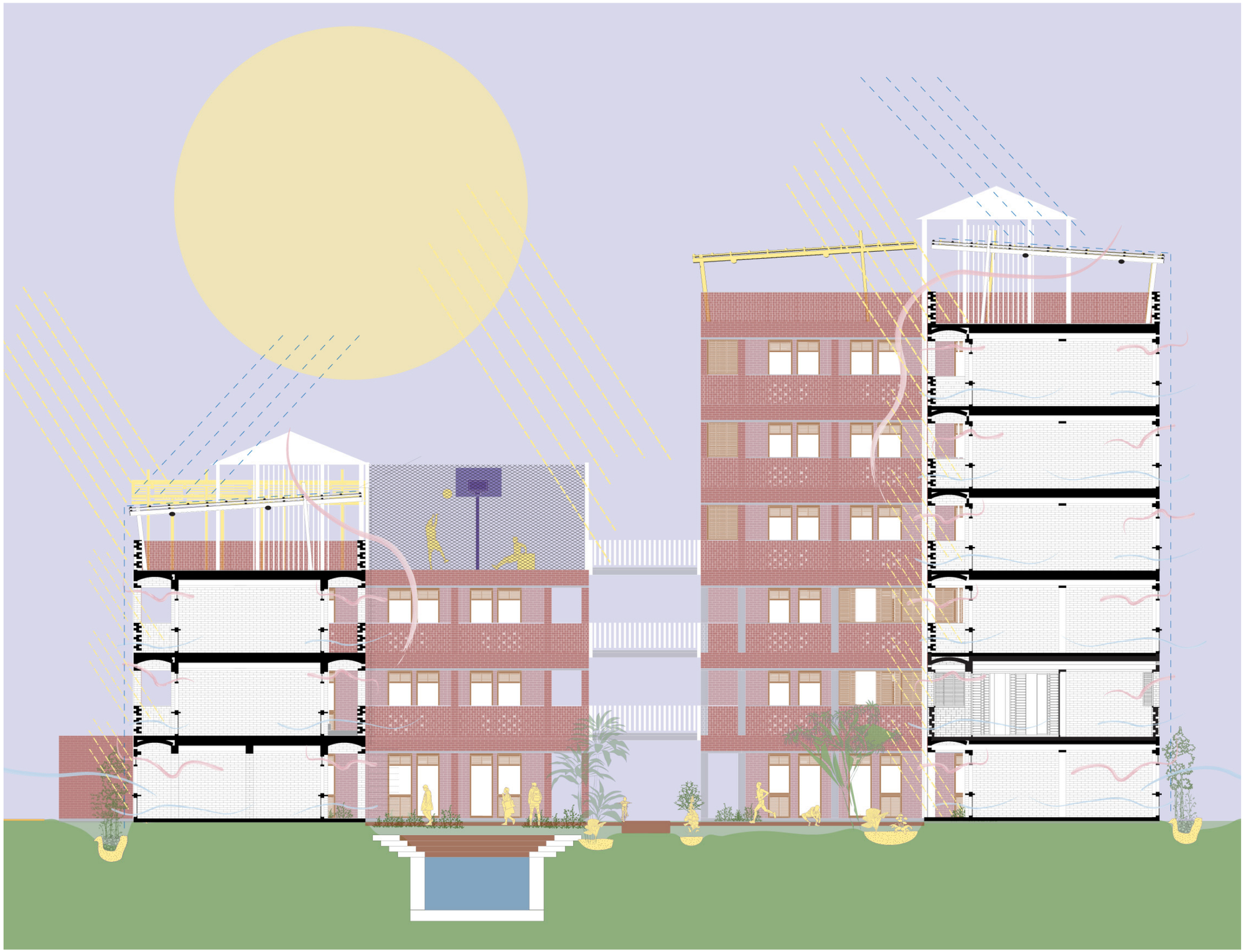
Type 2 - North Elevation

Building Technology

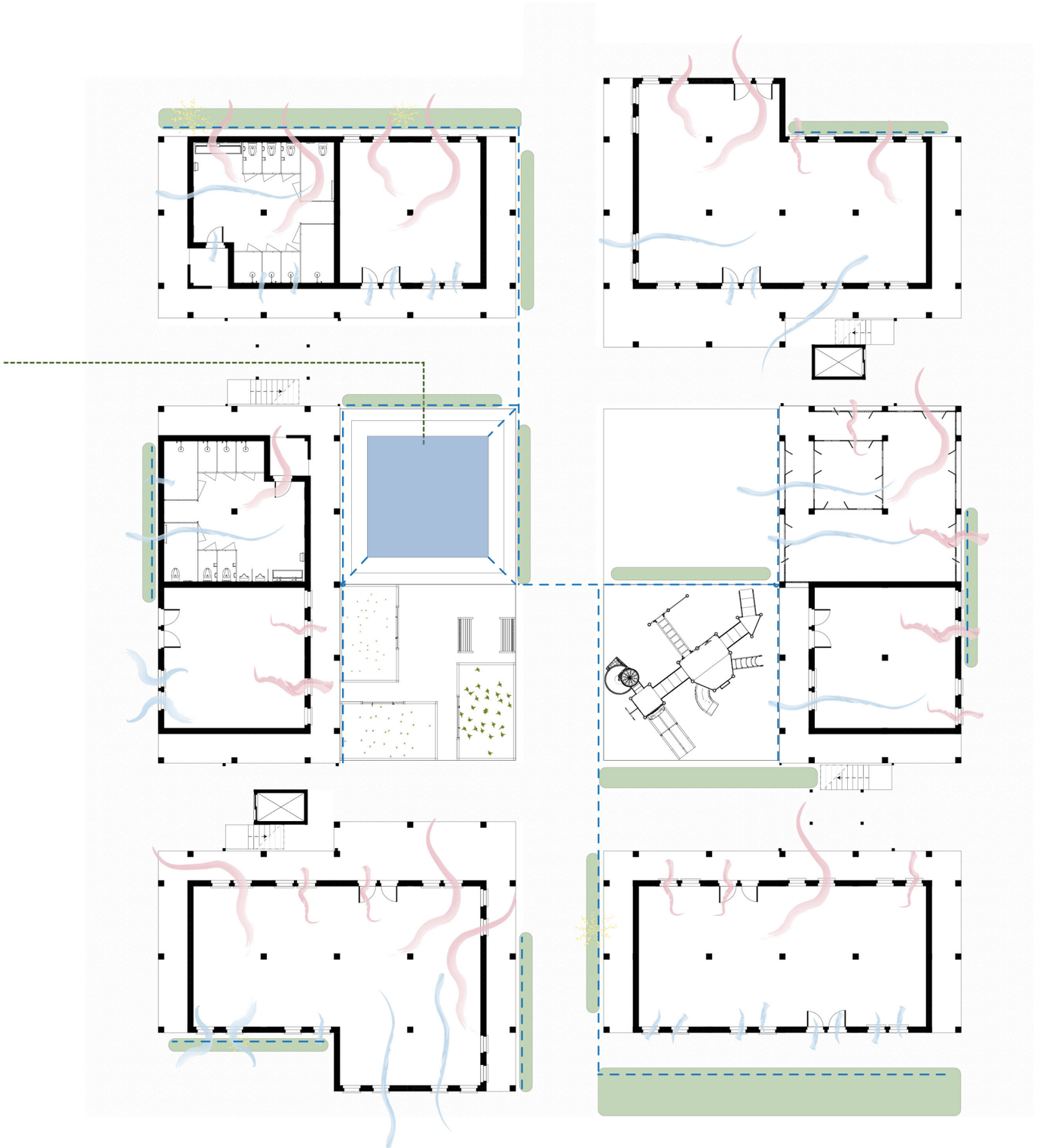
axonometric building block



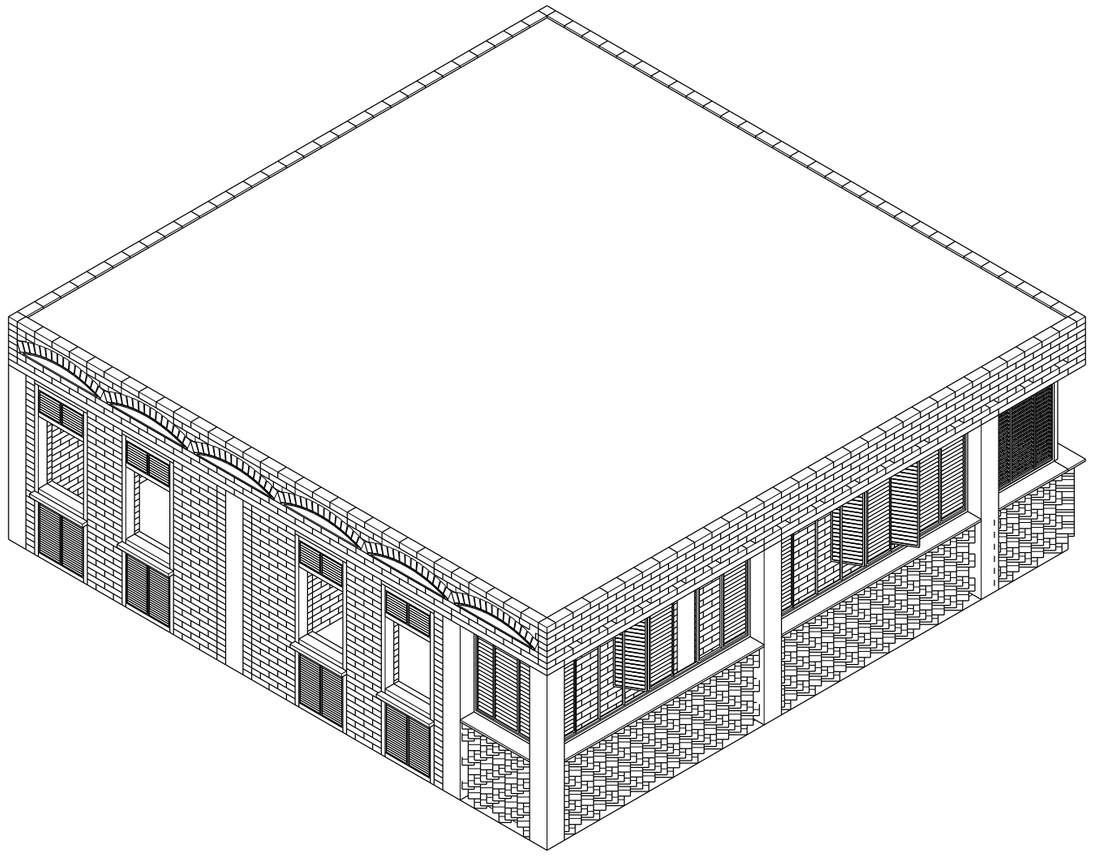
Climate design - vertical section



Climate design - horizontal section



axonometric one floor

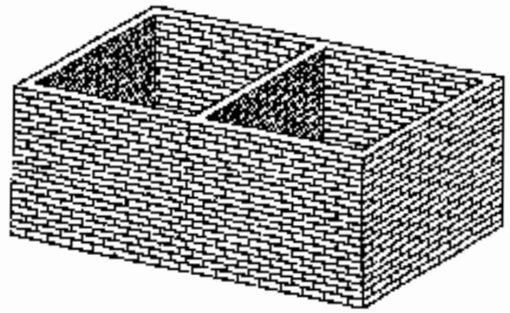


WALLS

THE PLACING OF BASIC ELEMENTS ONE ON TOP OF THE OTHER USING A BONDING PATTERN RECONSTITUTES A HOMOGENOUS MASS. FOUR TYPES OF STRUCTURE CAN BE CONSIDERED.

BUILDING CONSISTING OF PERIPHERAL WALLS AND CONTINUOUS PARTITIONS: MONOLITHIC ENVELOPE.

MONOLITHIC ENVELOPE

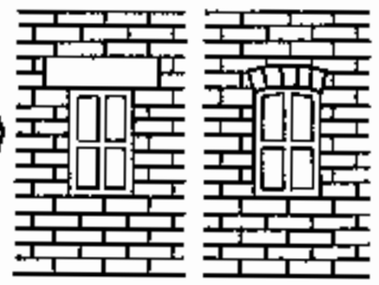


BUILDING CONSISTING OF INDEPENDENT, SELF-STABLE BLOCKS

OPENINGS

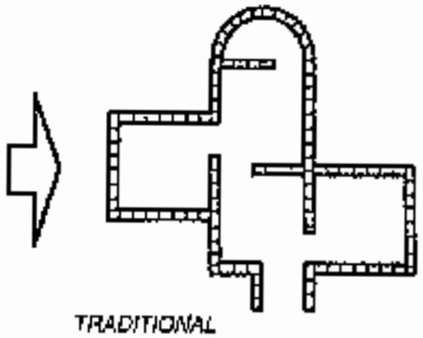
THERE ARE TWO WAYS OF PROCEEDING: WITHIN THE MASS OF THE INFILL MATERIAL, OR USING AN EXISTING GAP BETWEEN TWO MASONRY STRUCTURES.

WITHIN THE MASS OF THE WALL



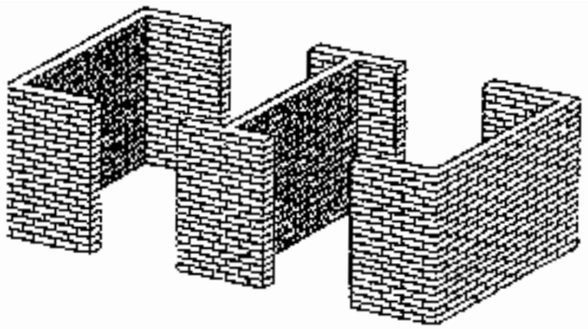
THE SPACE IS CONTINUOUS (WORK ON THE ENVELOPE)

PLAN RESOURCES



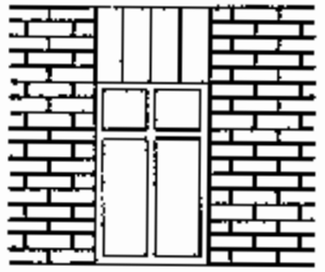
TRADITIONAL

WALLS WITH BUTTRESSES AND ANGLES

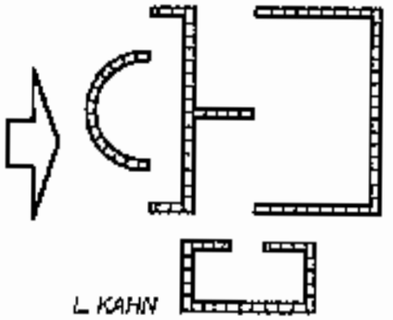


LOADBEARING FRAME + MASONRY INFILL

FILLING IN AN EXISTING GAP BETWEEN TWO SELF-STABLE BLOCKS

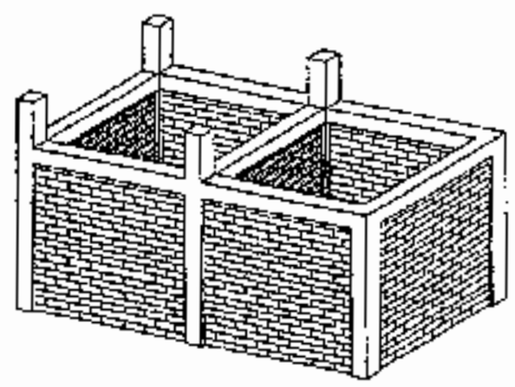


THE SPACE IS CONTAINED (WORK ON THE BOUNDARIES)



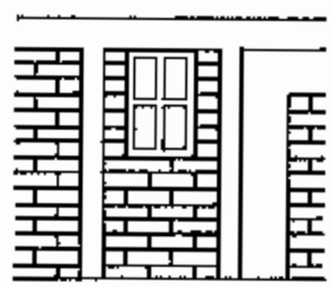
L. KAHN

INFILL OF POST/BEAM FRAME (concrete, wood, steel)

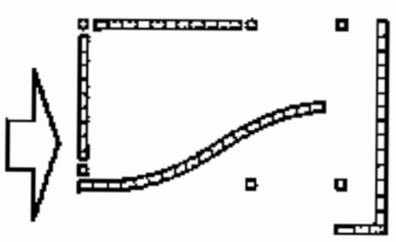


BRICK LOADBEARING FRAME + INFILL

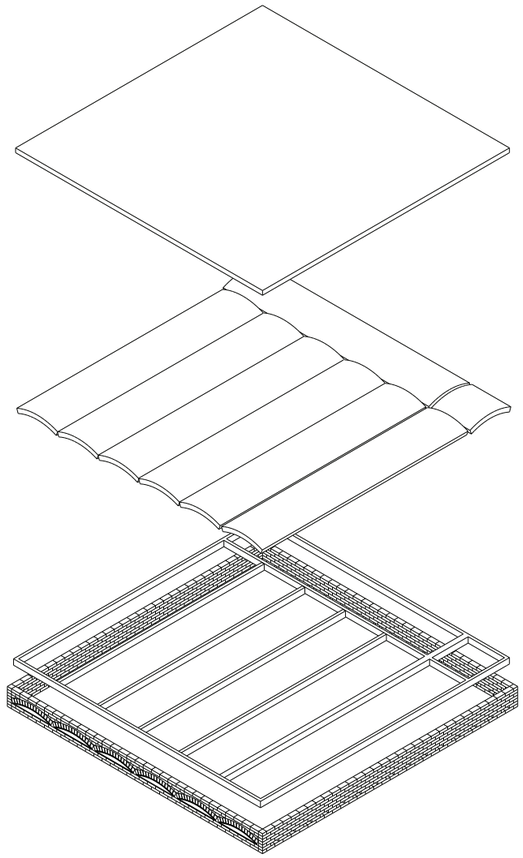
WITHIN THE MASONRY INFILL BETWEEN CONCRETE FRAME POSTS



THE SPACE IS SCREENED (WORK ON THE ENVELOPE)



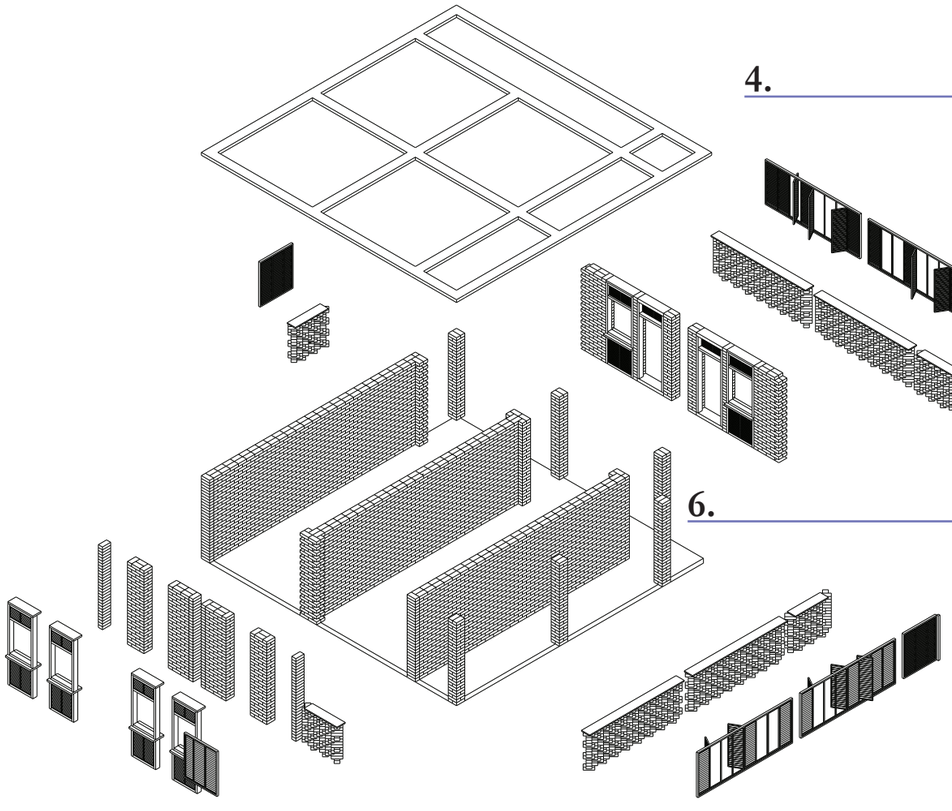
LE CORBUSIER



1. Floorfinishing & screed lime concrete

2. CSEB/compressed stabilised earth block jack arch floor

3. Concrete beams and CSEB brick work as plint



4. Concrete ring beam

5. Open removable wooden louver shutters

6. CSEB structure or concrete framework with masonry infill

7. Perforated CSEB brick balustrade

SUSTAINABILITY AND ENVIRONMENTAL FRIENDLINESS OF CSEB

- Earth is a local material and the soil should preferably be extracted from the site itself or not transported from too far away
- Labour costs for CSEB production amount to 40 to 45% of the total cost. This promotes endogenous development.
- It is a cost and energy effective material.
- The embodied energy of CSEB is 10.7 times less than country fired brick.
- Carbon emissions of CSEB are 12.5 times less than country fired brick.

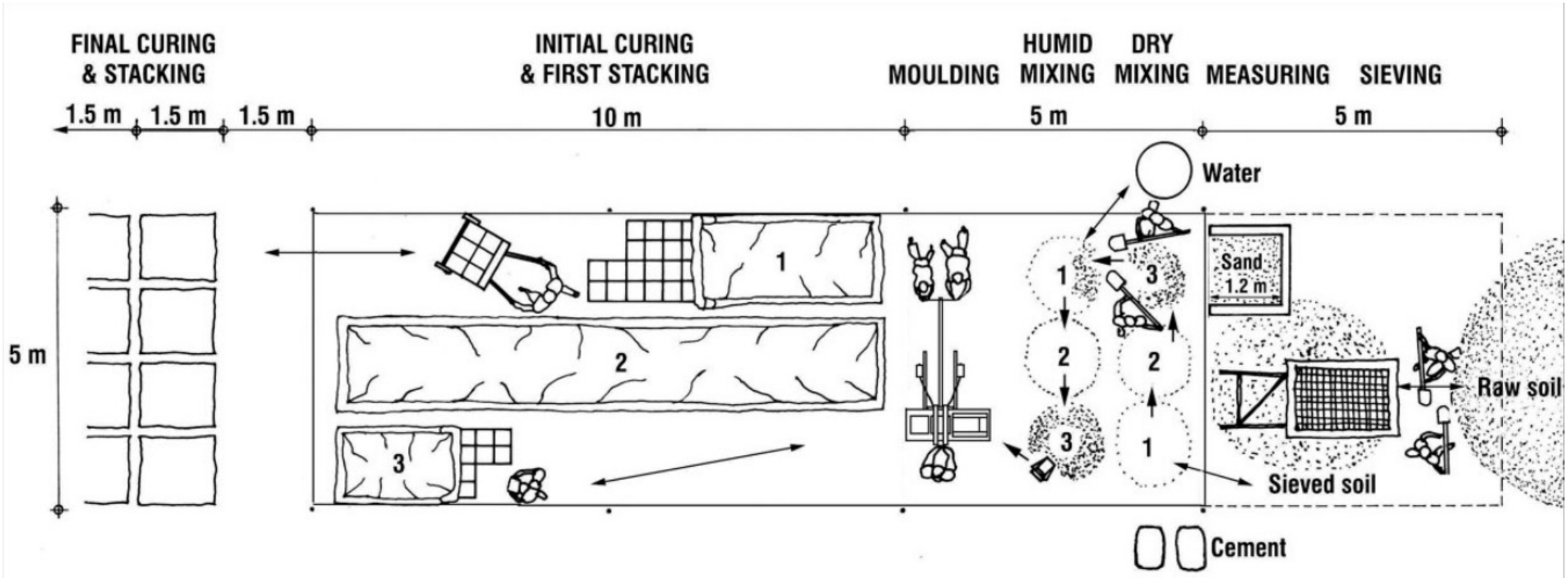
INITIAL EMBODIED ENERGY PER M^3	CARBON EMISSIONS (Kg of CO_2) PER M^3
CSEB = 572.6 MJ / m^3 Country Fired Brick (CFB) = 6,122.5 MJ / m^3	CSEB = 51.5 Kg / m^3 Country Fired Brick (CFB) = 642.9 Kg / m^3

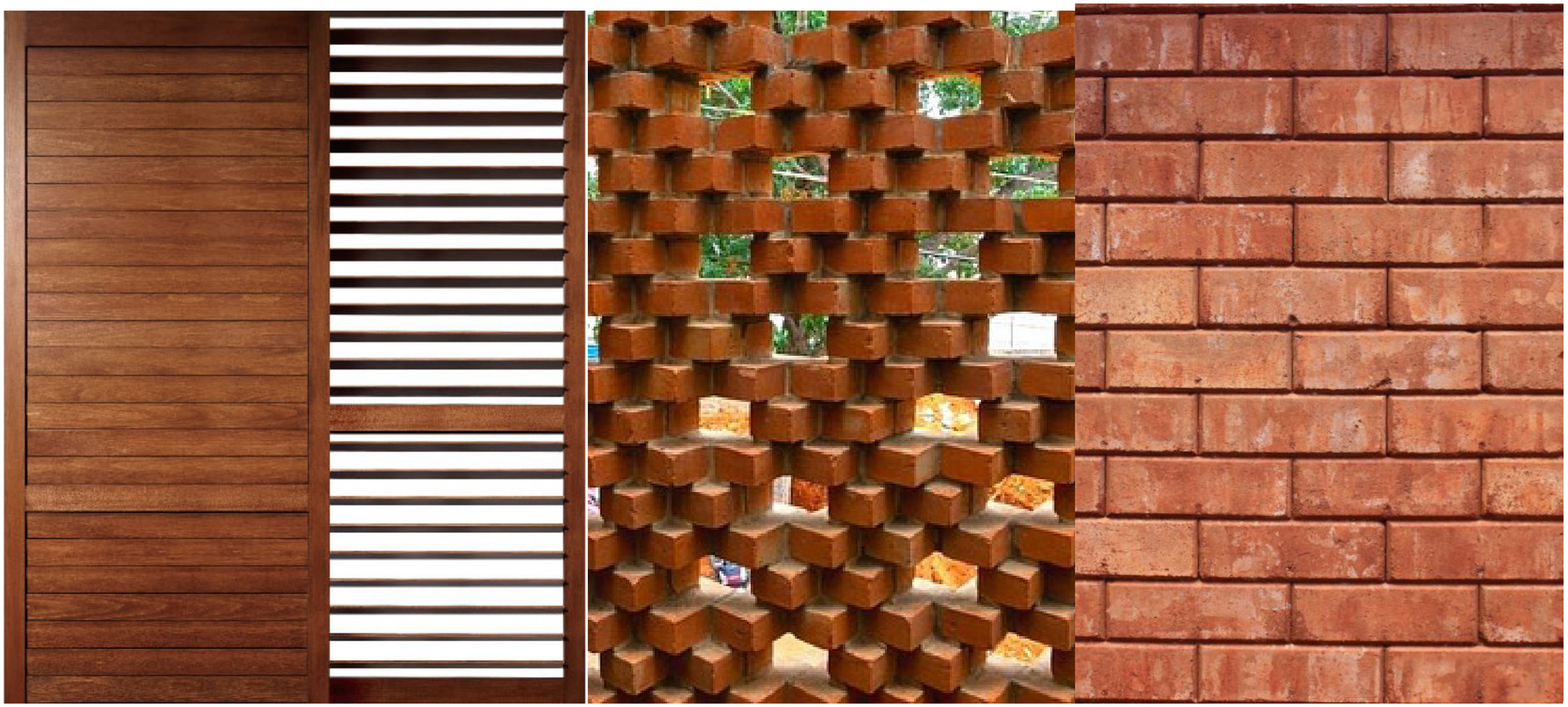
Note: Data for Auroville and Pondicherry, India, 2005.

Red soil in Navi Mumbai

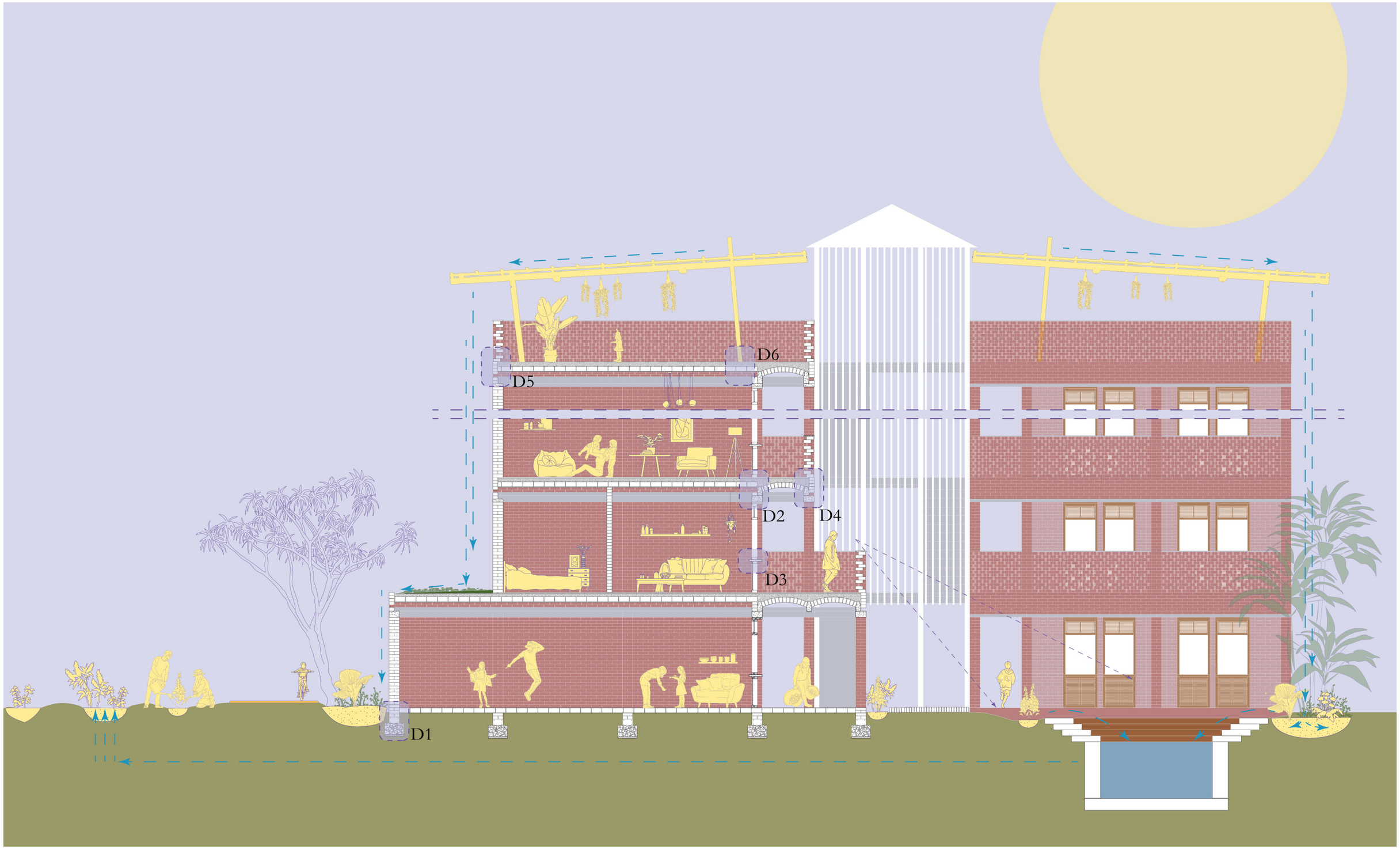
suitable for compressed stabilized earth blocks stabilized with cement or lime

producing CSEB is labour friendly and has environmental benefits compared to fired brick

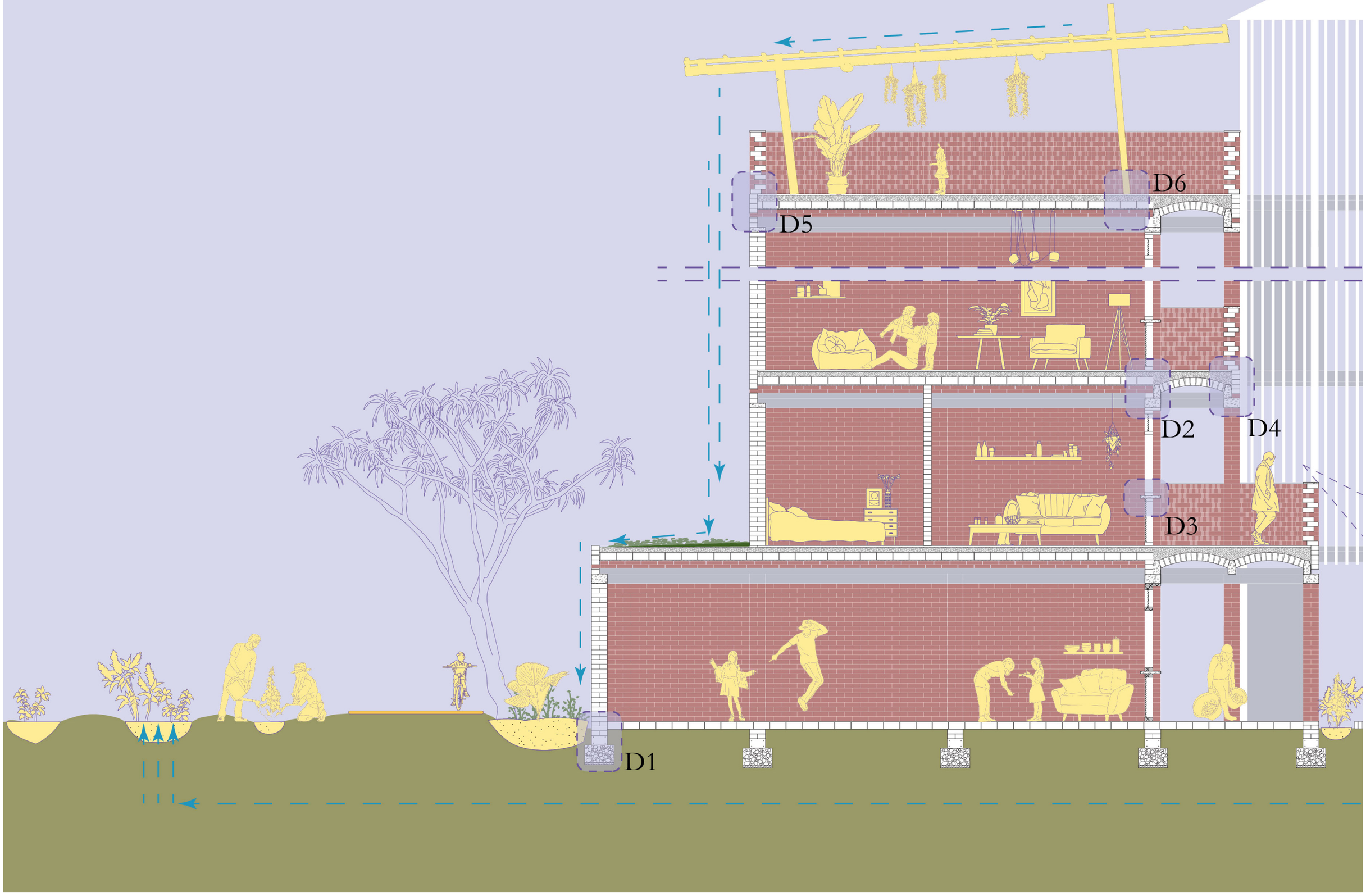

FINAL CURING
& STACKING
INITIAL CURING
& FIRST STACKING
MOULDING
HUMID
MIXING
DRY
MIXING
MEASURING
SIEVING
1.5 m
1.5 m
1.5 m
10 m
5 m
5 m
Water
5 m
1
2
3
1
2
3
2
2
1
3
Sand
1.2 m
Raw soil
Sieved soil
Cement



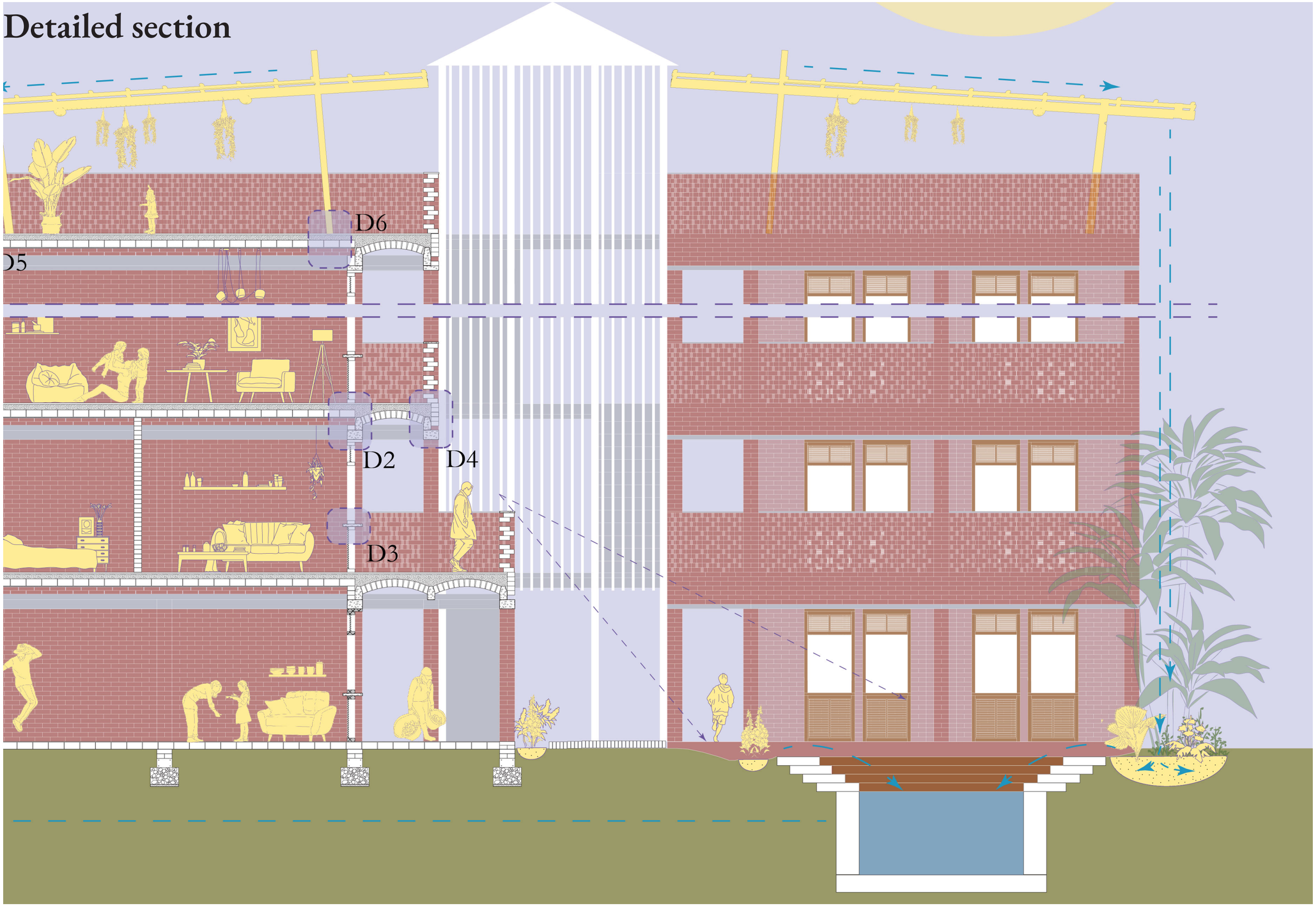
Detailed section



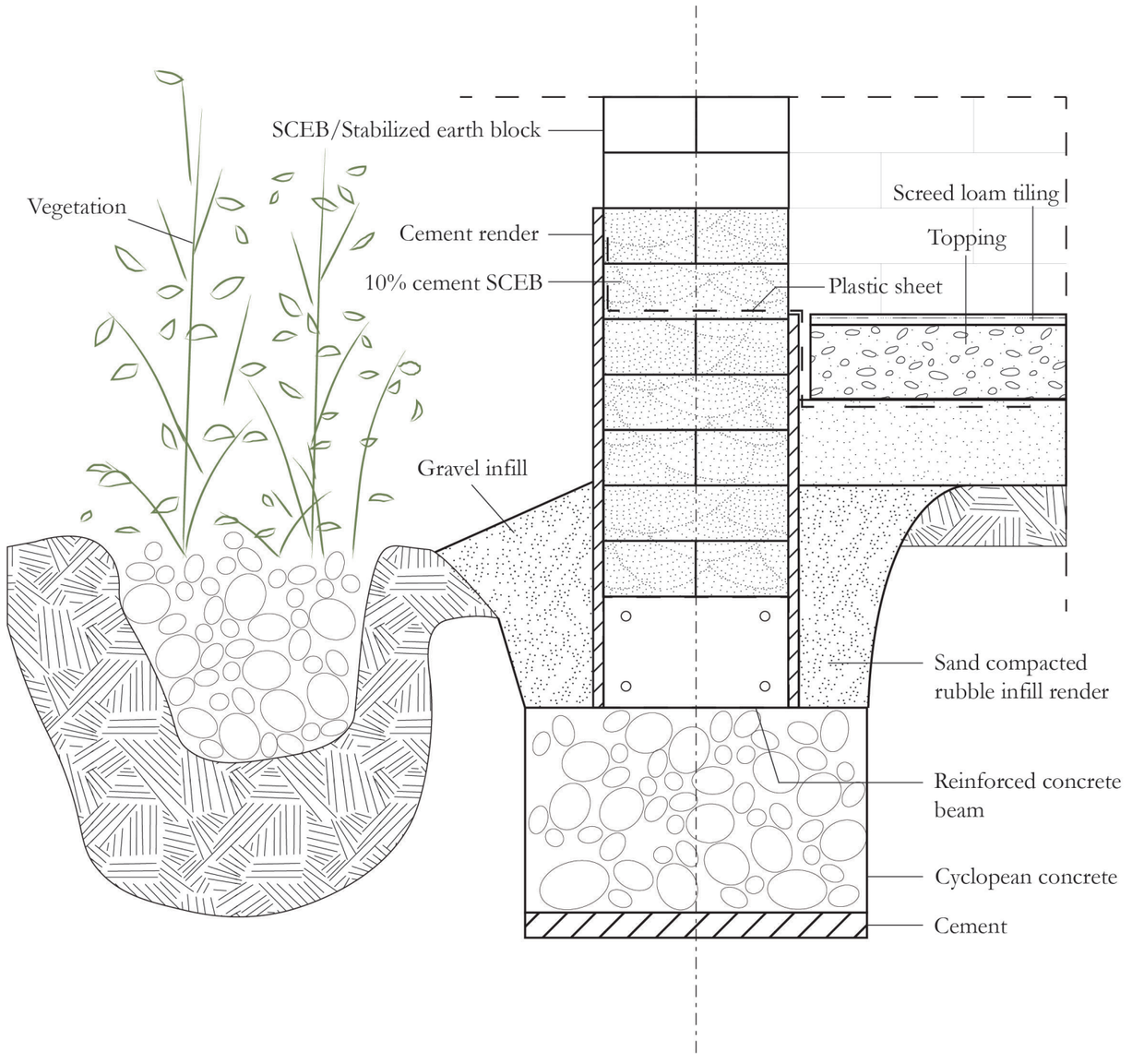
Detailed section

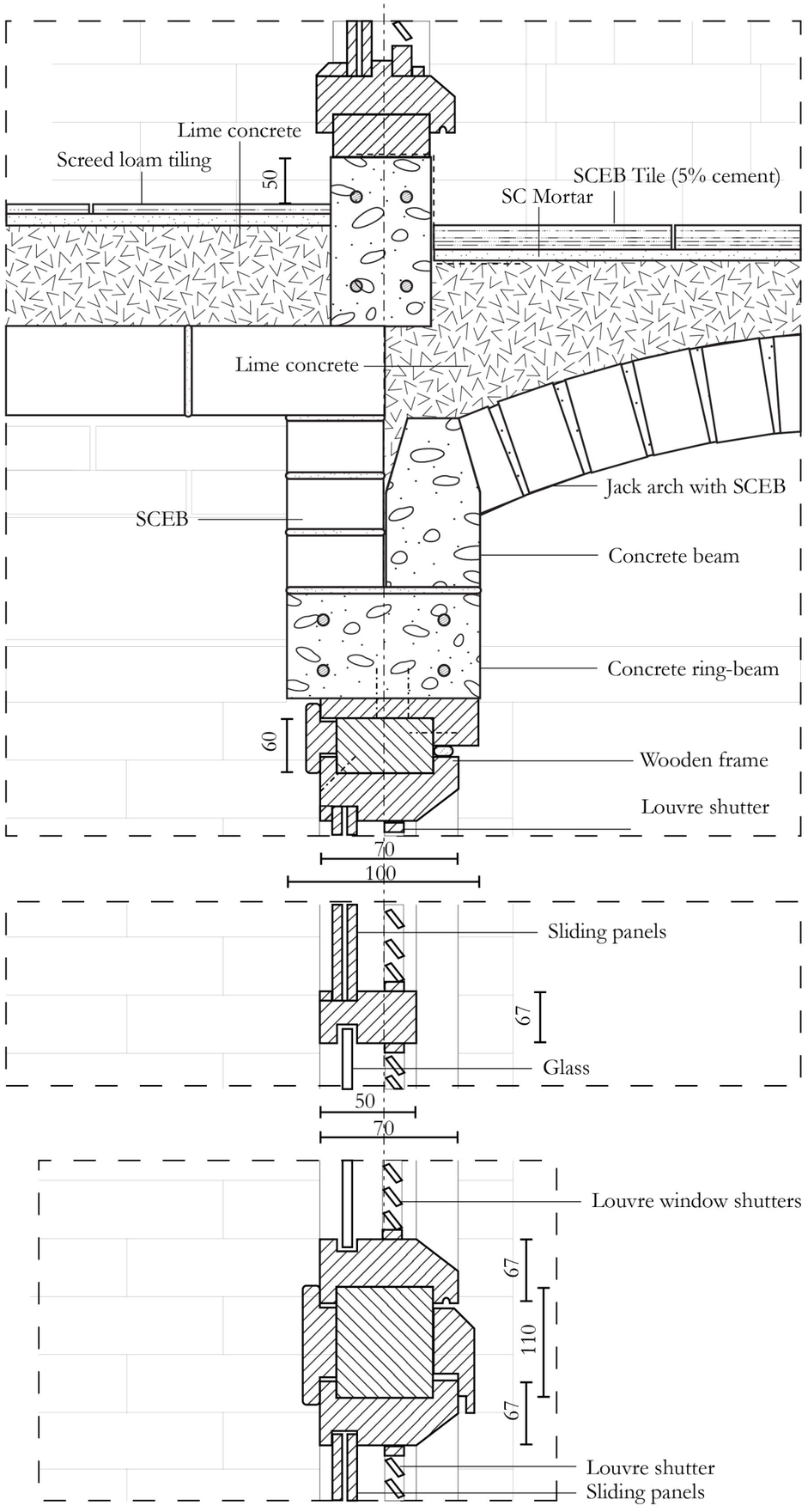


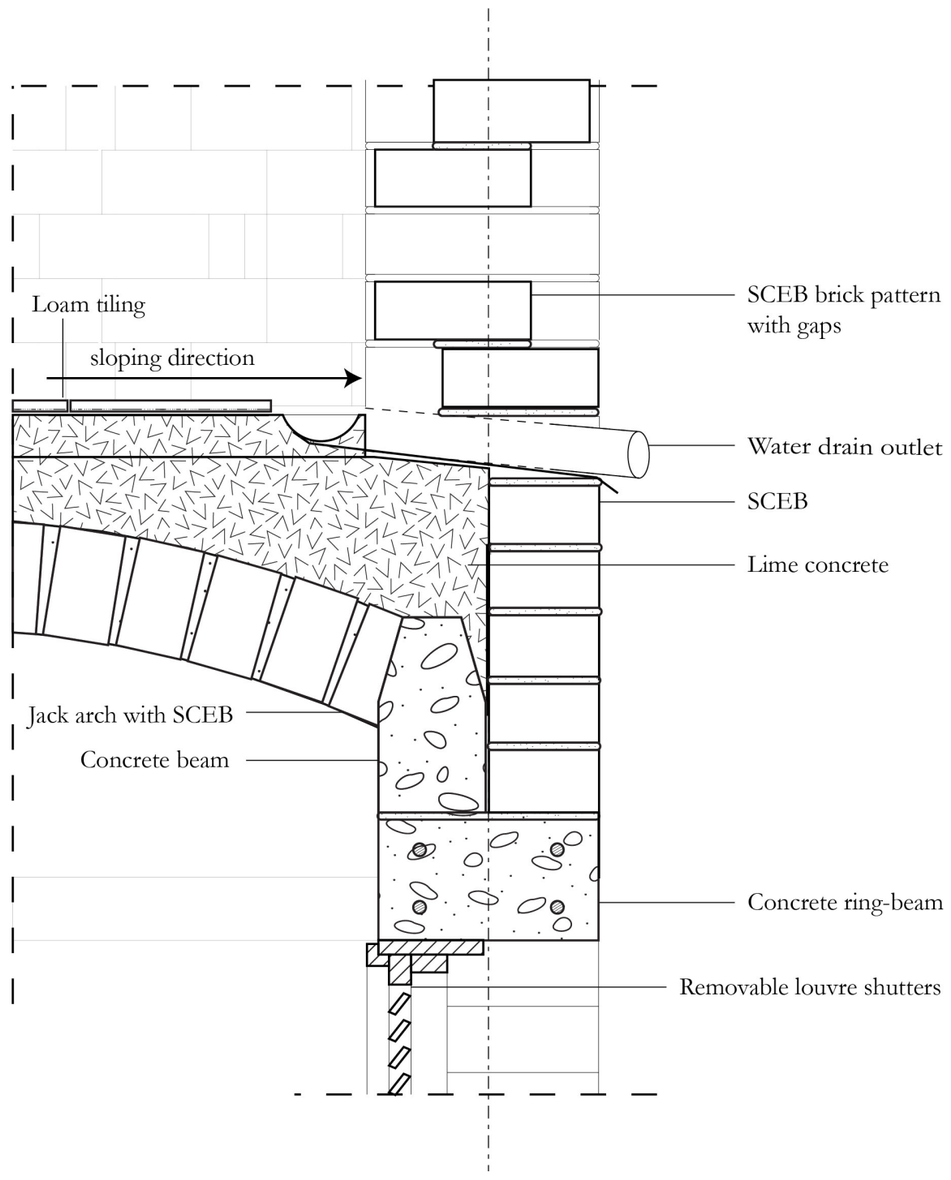
Detailed section



D1 - Groundfloor Detail

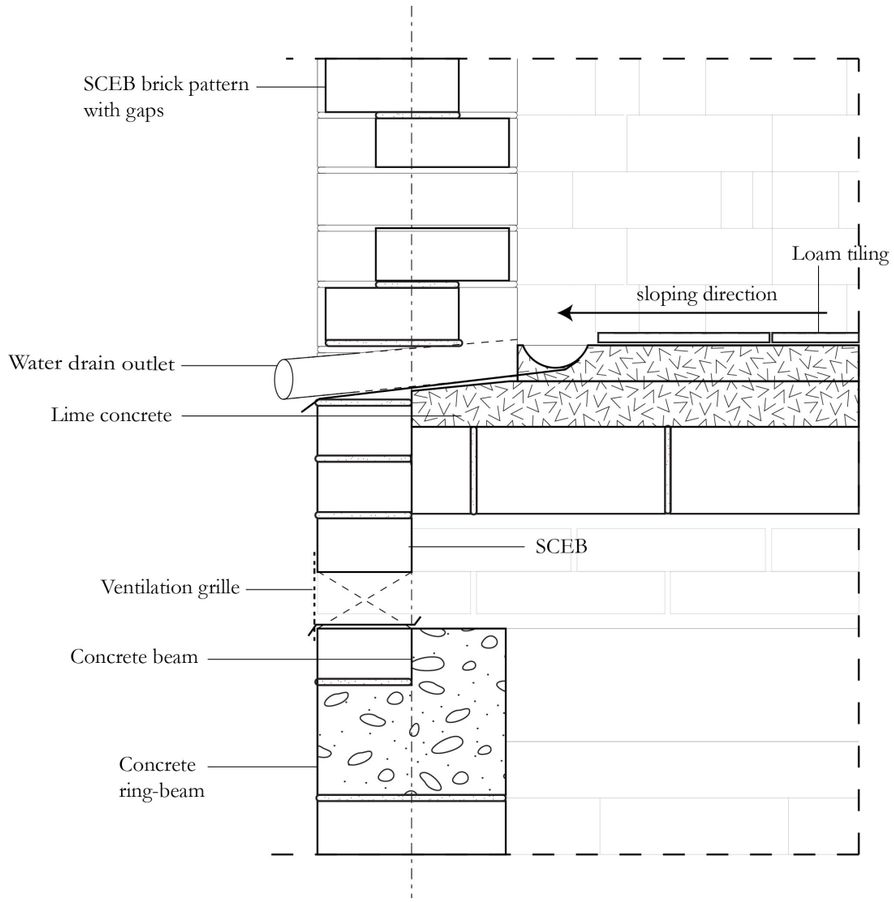


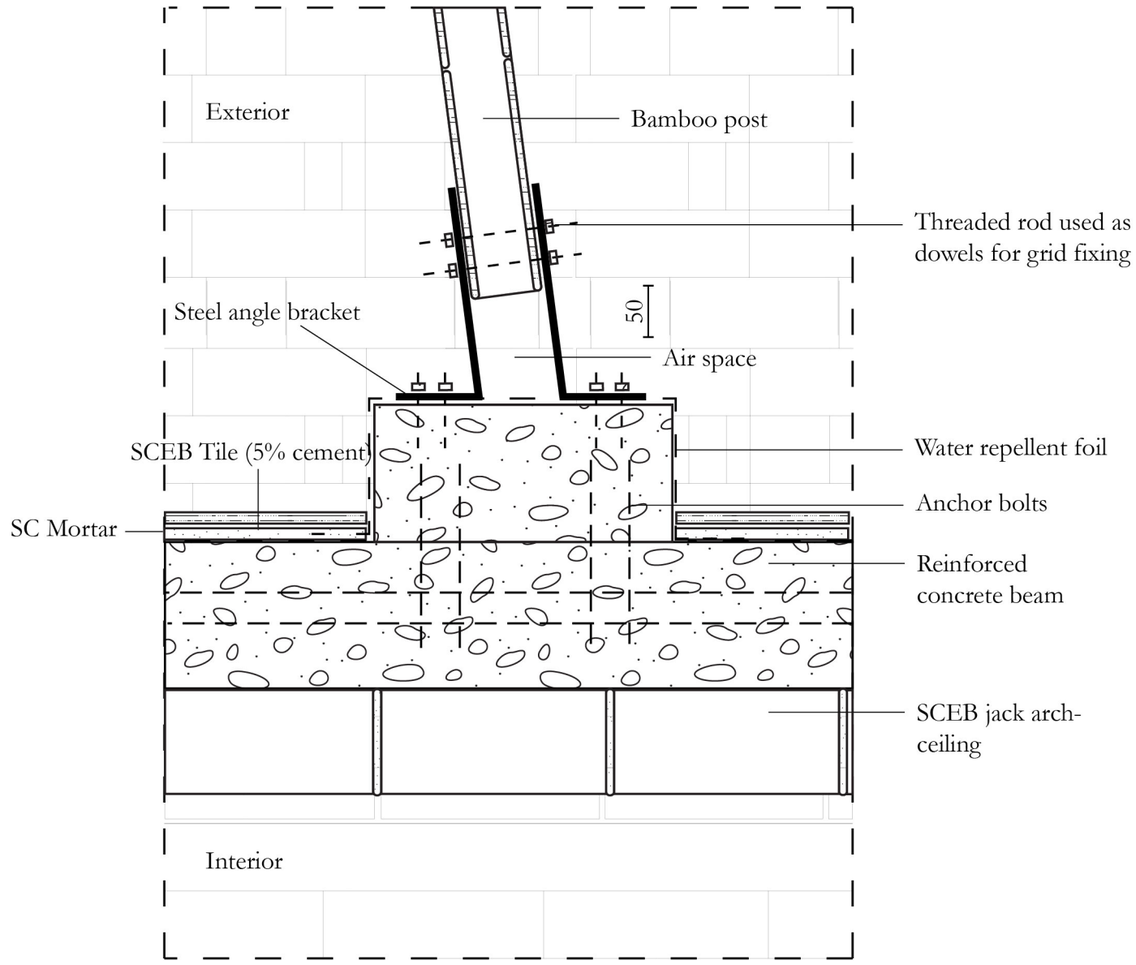




D2, D3 & D4 - Floor and window Detail

D5 - Roof Detail

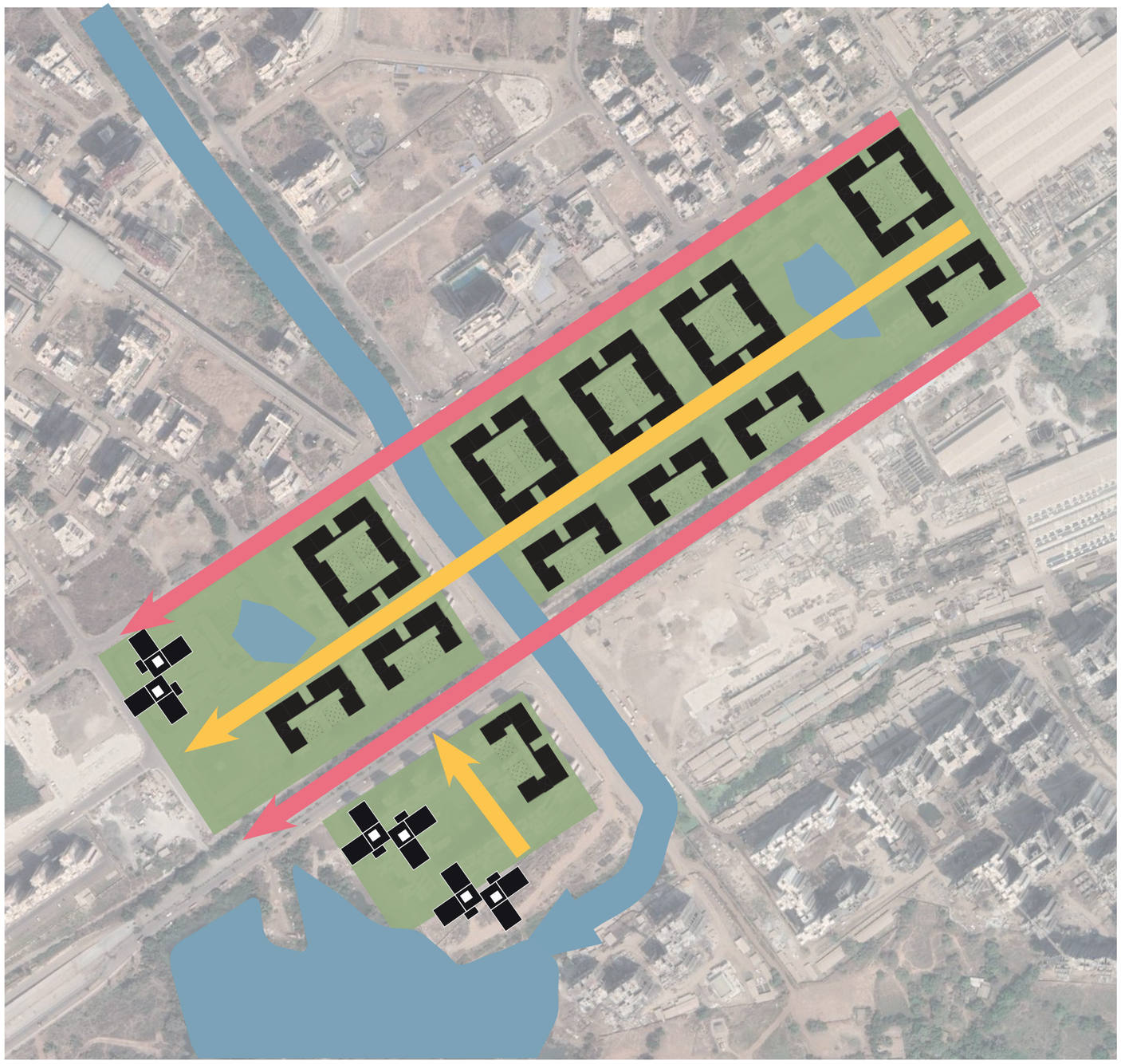




Social Cohesion	Greenery	Water Management	Amenities	Connectivity	Individual Health	Cultural aspects

Social Cohesion | Greenery | Water Management | Amenities | Connectivity | Individual Health | Cultural aspects

Application Design Strategy



Research question

How could **affordable mass housing** with mixed households prevent sickness and increase wellness through a *salutogenesis approach* in Navi Mumbai?