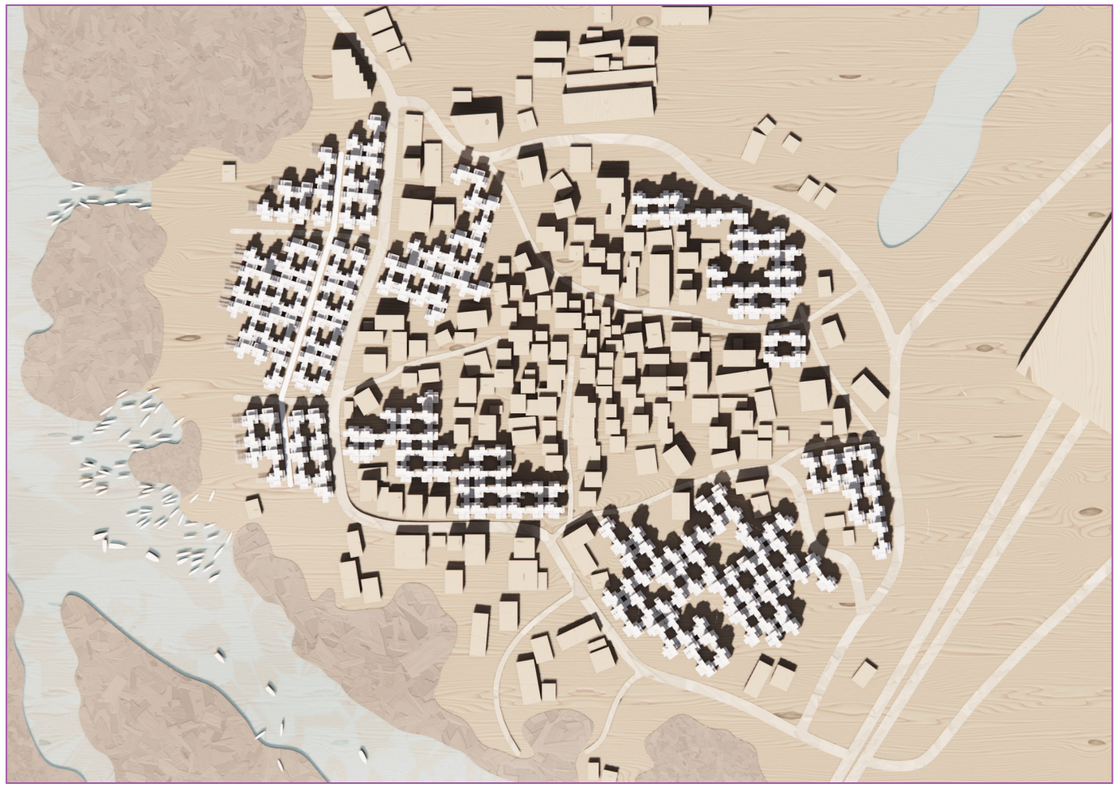


ANTICIPATING INFORMALITY

NEW HOUSING FOR THE URBANISING VILLAGES OF NAVI MUMBAI

AR3AD105 Dwelling Graduation Studio: Global Housing (2021/22)

Tasos Antonopoulos

BRIEF

The assignment of the studio is to explore possibilities to develop affordable and adequate housing for all in Navi Mumbai, rethinking housing as a resource for a more equitable city.

CONCEPT VS REALITY

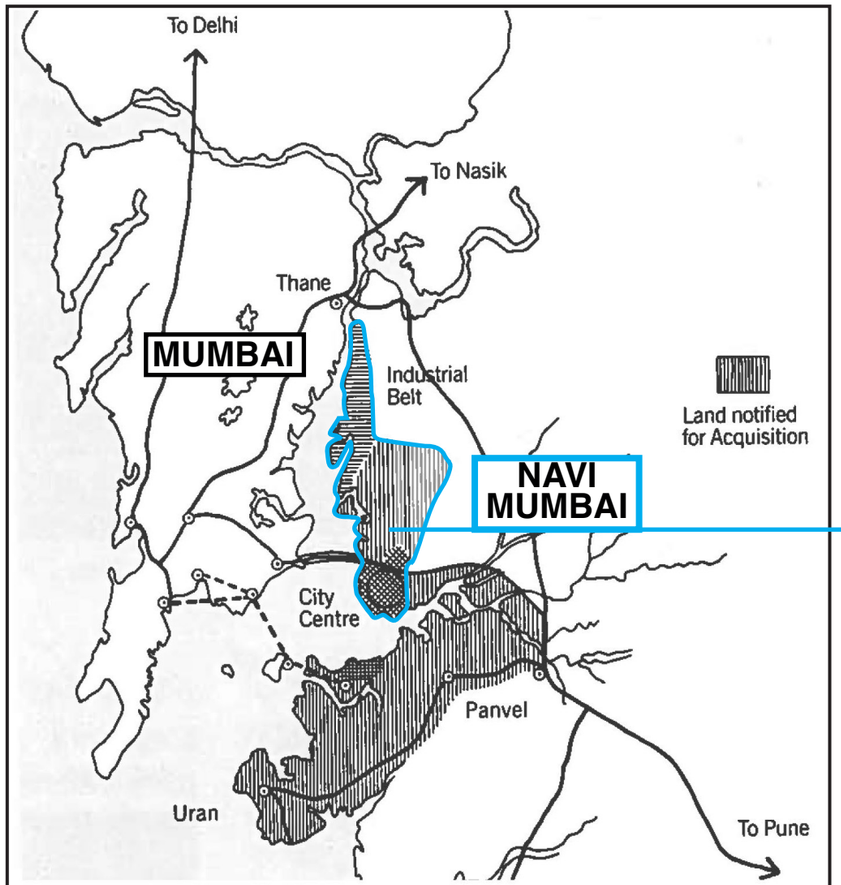


Fig.1. Land acquisition map for expansion of Navi Mumbai

Source:
Correa, C. (2000). Housing and Urbanisation. London: Thames & Hudson.

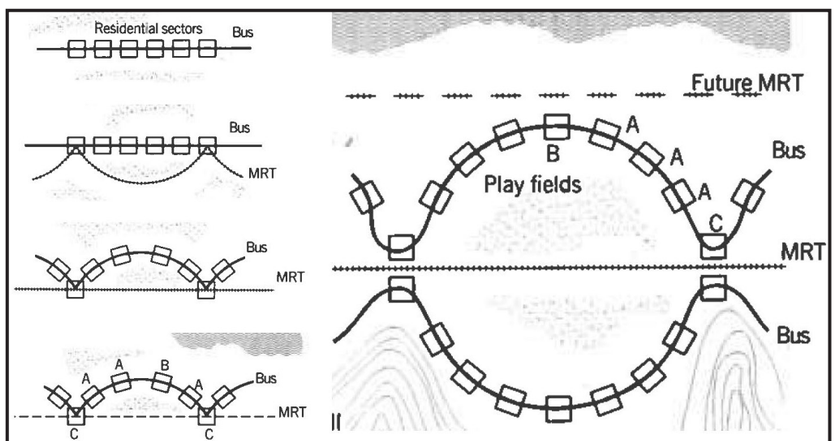


Fig.2. Housing clusters and transport connections for Navi Mumbai

Source:
Correa, C. (2000). Housing and Urbanisation. London: Thames & Hudson.

Navi Mumbai concept plans

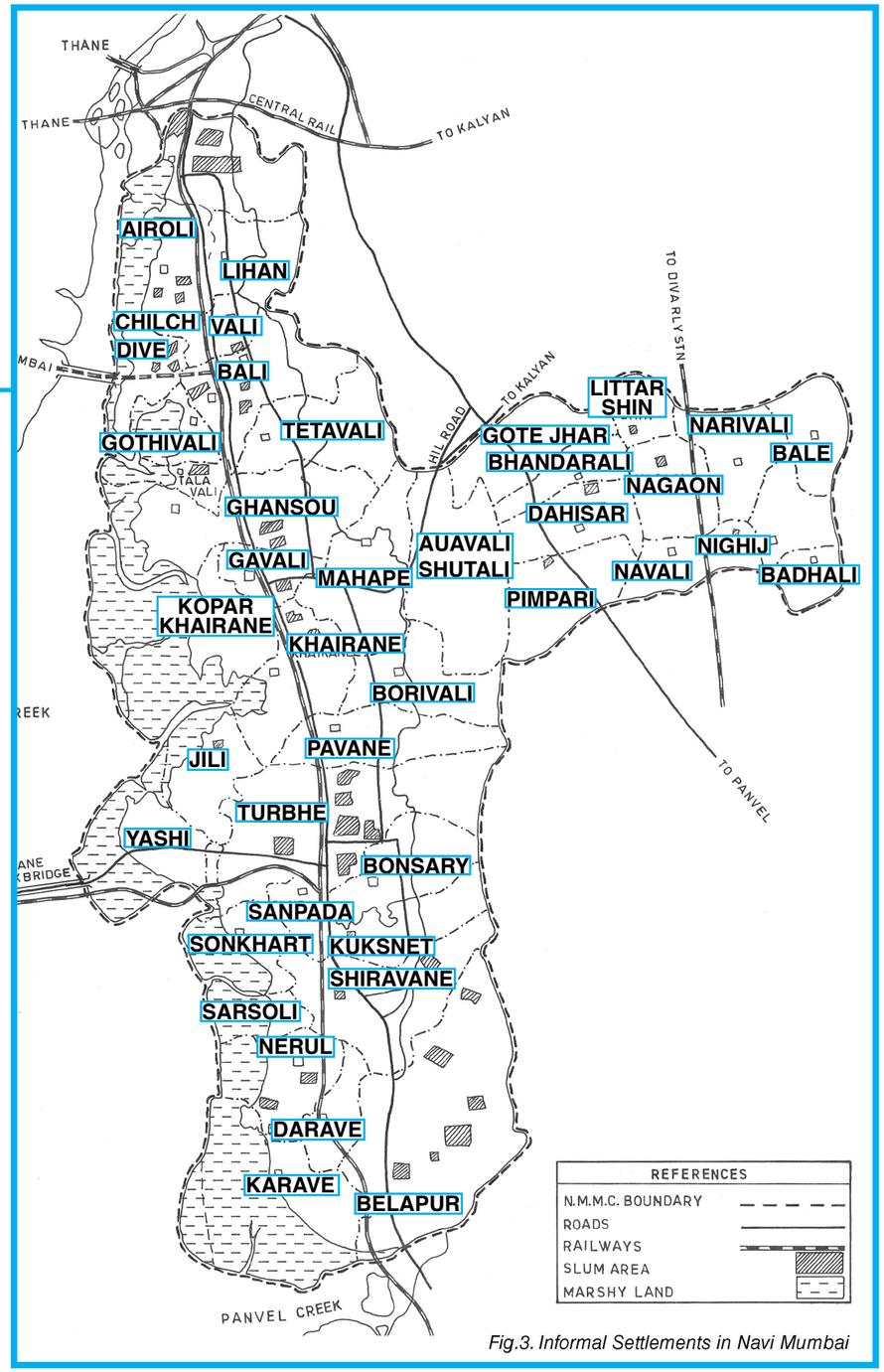


Fig.3. Informal Settlements in Navi Mumbai

Source:
Shaw, A. (1999). The planning and development of new bombay. Modern Asian Studies, 33(4), 951–988. Retrieved from: https://www.jstor.org/stable/313106

Informal settlements in Navi Mumbai

TYPES OF INFORMAL SETTLEMENTS

2003:

2021:

CONSTRUCTION SQUATTED SHANTIES

PRE-EXISTING VILLAGE

ATTACHED SQUATTED SHANTIES

URBAN VILLAGES IN NERUL NODE

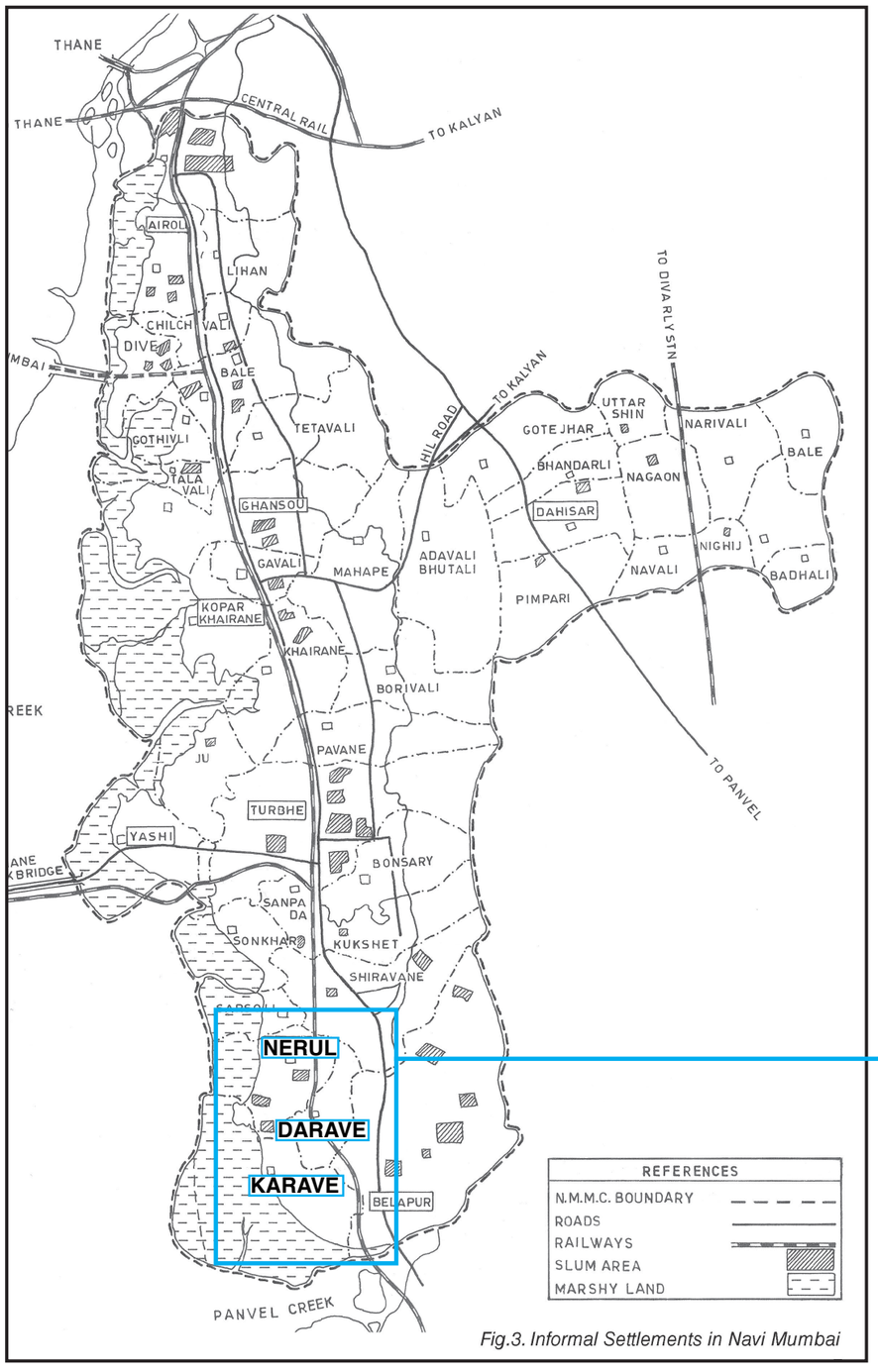
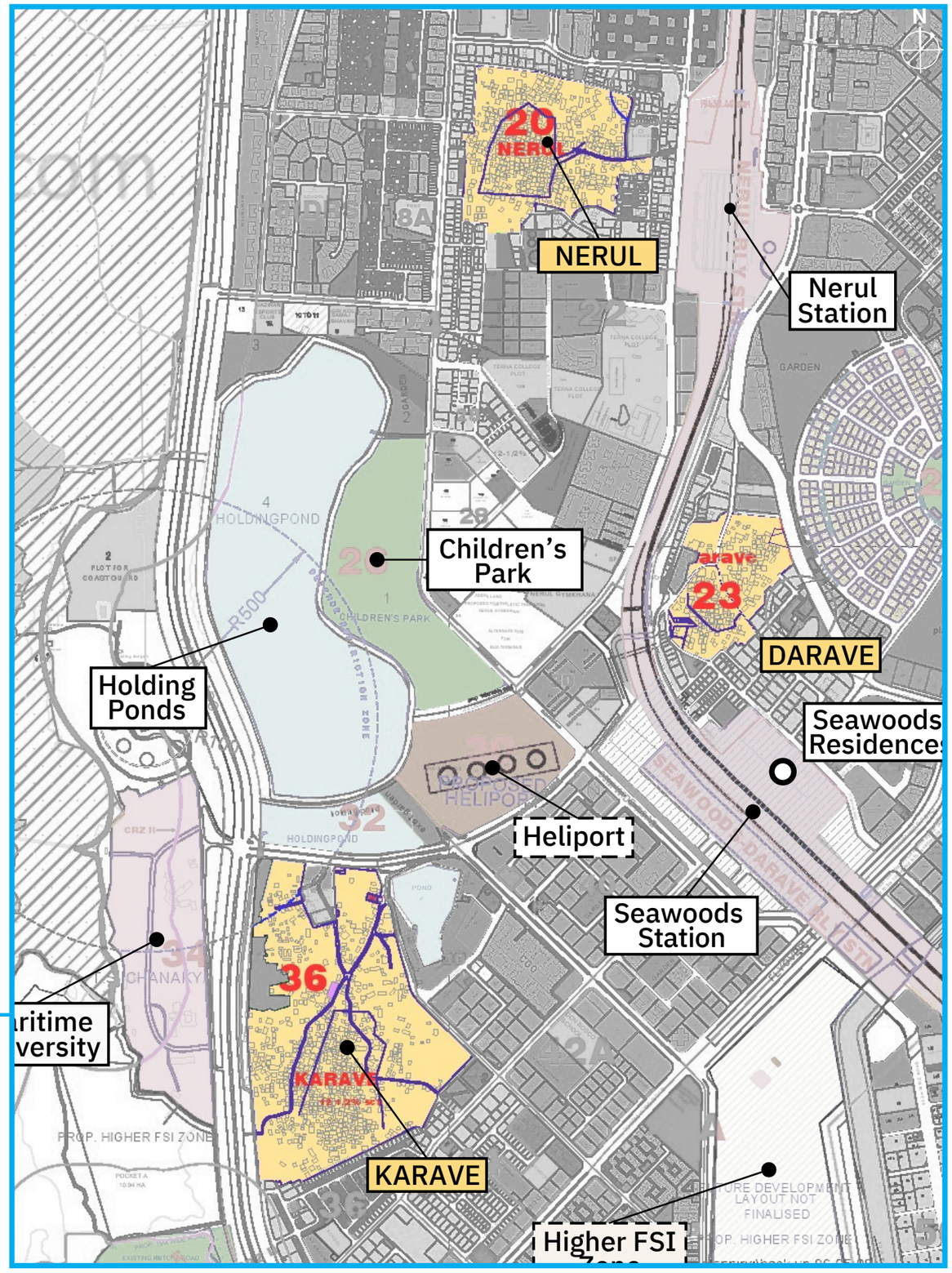


Fig.3. Informal Settlements in Navi Mumbai

North Navi Mumbai



Source: https://nmmc.gov.in/navimumbai/development-plan

Nerul node plan

ADVANTAGES OF URBAN VILLAGES

- Affordable rent.
- Absorption of rural migrants.
- Proximity to work in the formal city.
- Walkability within the village/ for work = relief of pressure from public transport.
- Strong community ties.
- Small scale sustainable industries eg. recycling, crafts, fishing.

Sources:

Burdett, R. (2018). Flexible Urbanisms. In Shaping cities in an urban age (1st ed. pp.391-403). (R. Burdett & P. Rode, Eds.). London: Phaidon Press.

Kumar, M. (2015). Erstwhile villages in urban india. Development in Practice, 25(1), 124–132. Retrieved from: https://doi.org/10.1080/09614524.2015.986066

Huang, W. (2016). Power, Rights and Emerging Forces: New Models of Urban Planning Practice in China. In Shaping cities : emerging models of planning practice. (Al-Asad, M. & Mehrotra, R.,Eds.). Berlin: Hatje Cantz Verlag GmbH.

Ivan Abreu. (2016, November 24). The Fall of a Village [Video]. Youtube. https://www.youtube.com/watch?v=HyJXVlb2F0Y

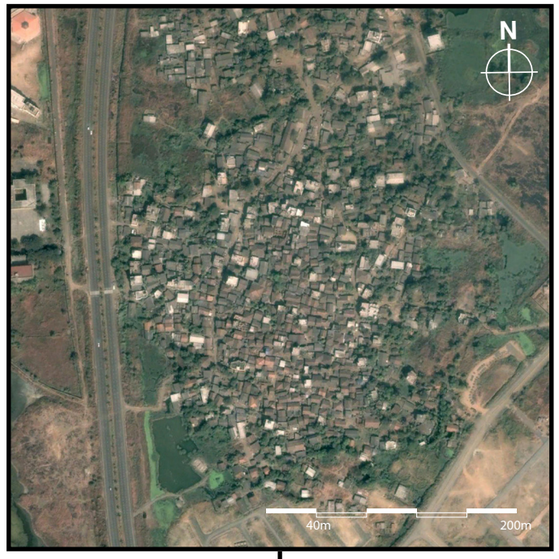
Lueder, C. (2018). Urban villages and informal settlements as protagonists of urban futures. Urban Design International, 23(1), 4–21. Retrieved from: https://doi.org/10.1057/udi.2016.12

Wang, P. W., Wang, Y., & Wu, J. (2009). Urbanization and informal development in china: urban villages in shenzhen/ International Journal of Urban and Regional Research, 33(4), 957–973. Retrieved from: https://doi.org/10.1111/j.1468-2427.2009.00891.x

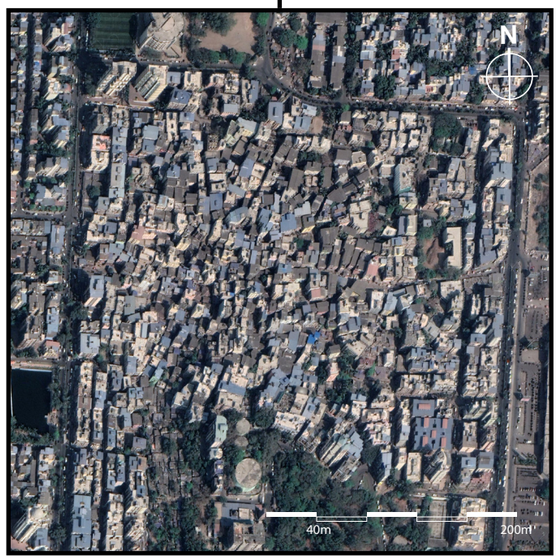
Skinner, C. and Watson, W. (2018). The Informal Economy in Cities of the Global South: Challenges to the planning lexicon. In Bhan, G., Srinivas, S., & Watson, V. (Eds.). The Routledge Companion to Planning in the Global South (1st ed, pp.140-152). London: Routledge. Retrieved from: https://www-taylorfrancis-com.tudelft.idm.oclc.org/books/edit/10.4324/9781317392842/routledge-companion-planning-global-south-gautam-bhan-smita-srinivas-vanessa-watson.

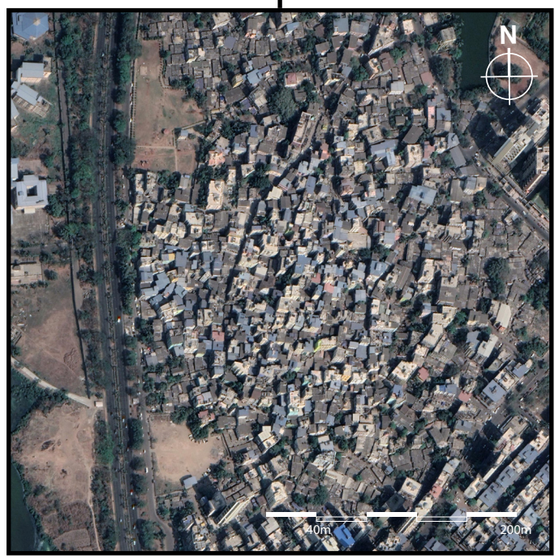
URBAN VILLAGES IN NERUL NODE

2003:



2021:





NERUL

DARAVE

KARAVE

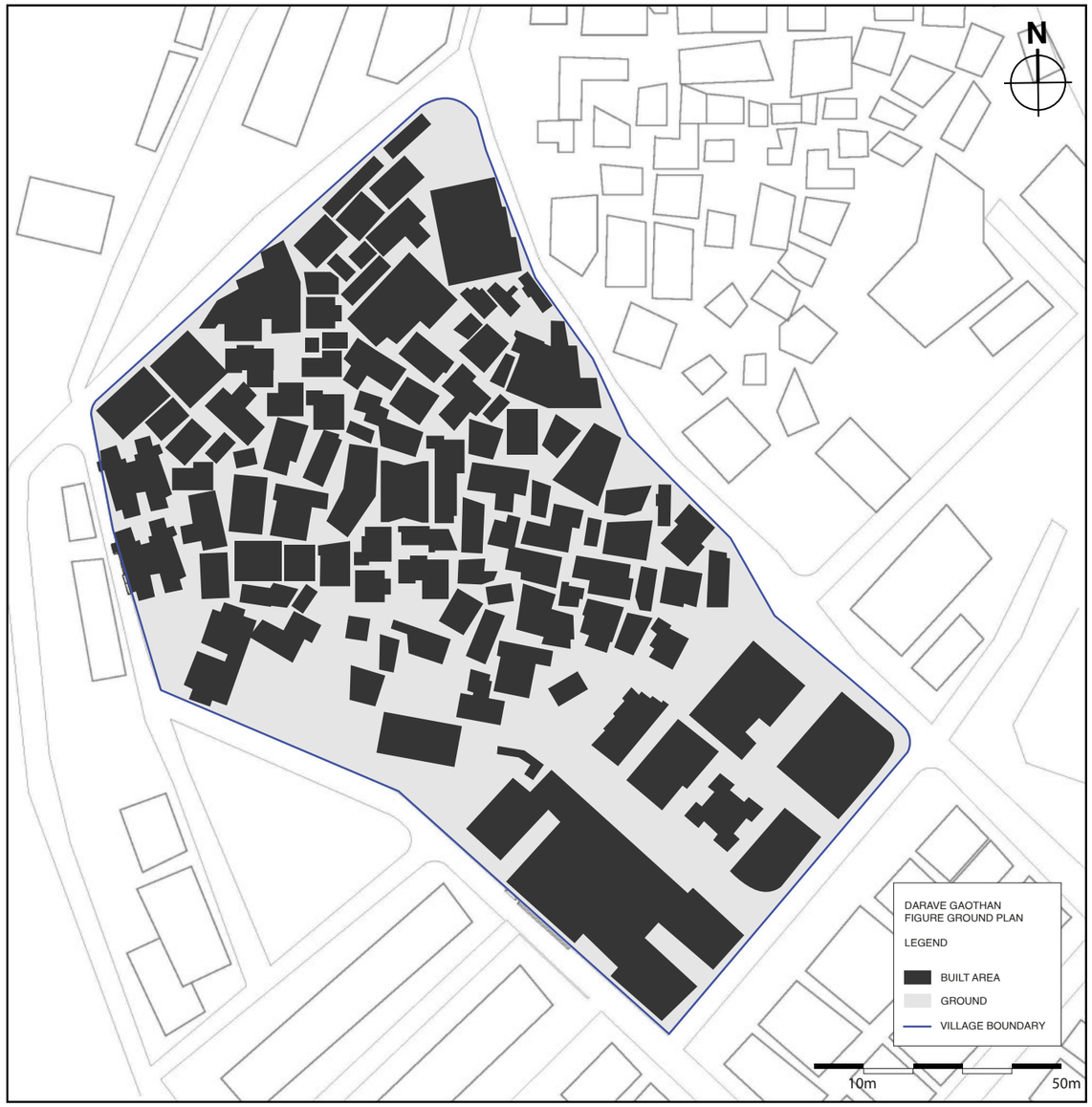
DARAVE VILLAGE STUDY

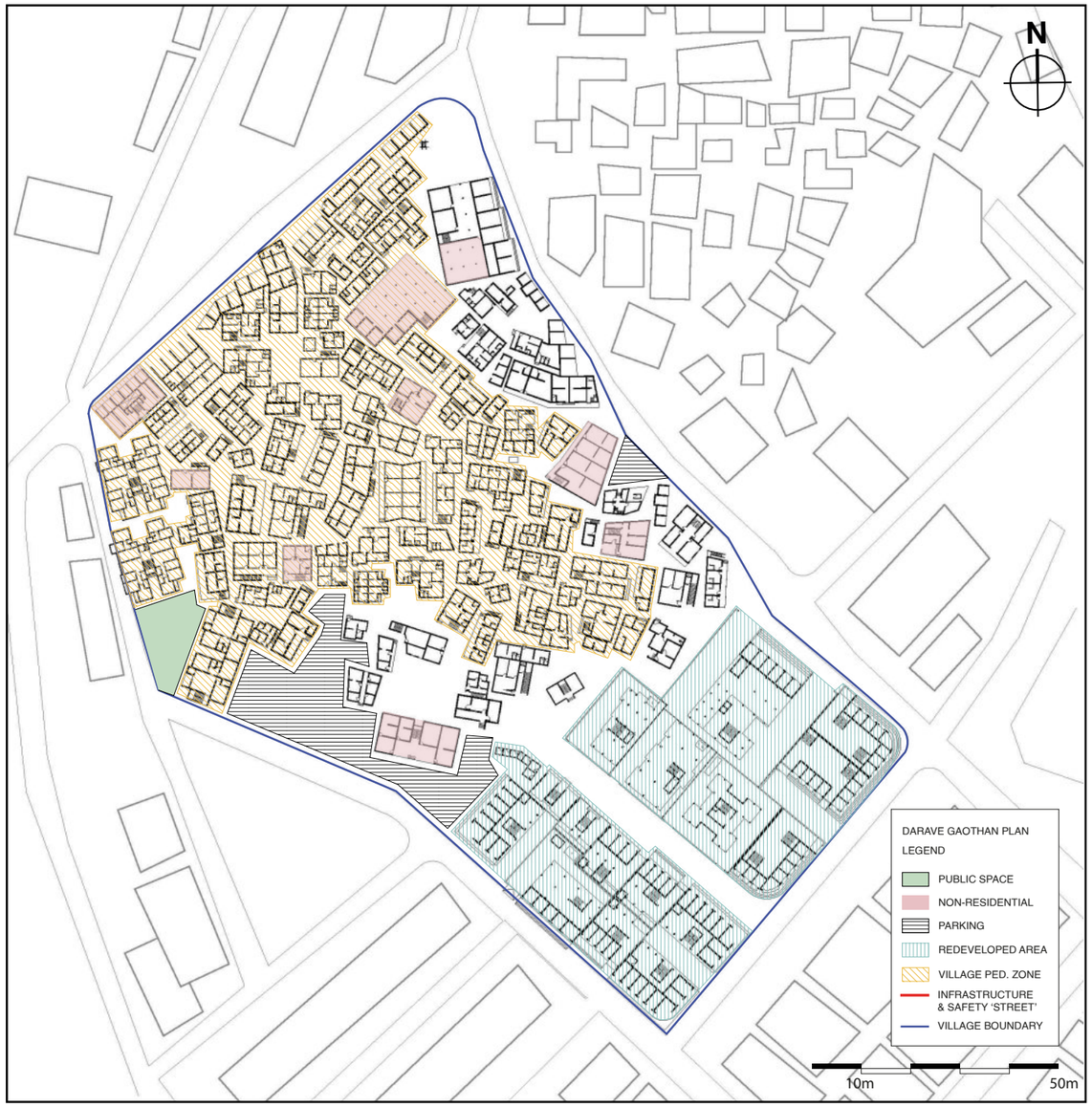
DARAVE

DARAVE MAP

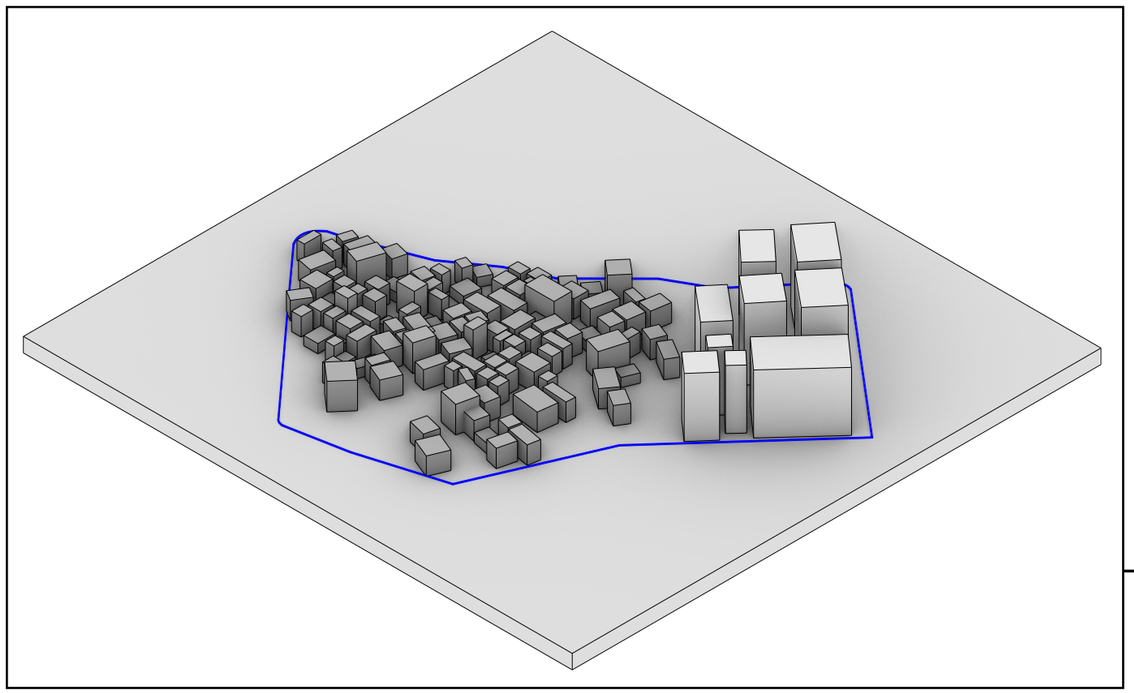
Source: https://landscapeiskingston.wordpress.com/2014/07/22/mapping-workshop-navi-mumbai-india/

DARAVE VILLAGE STUDY

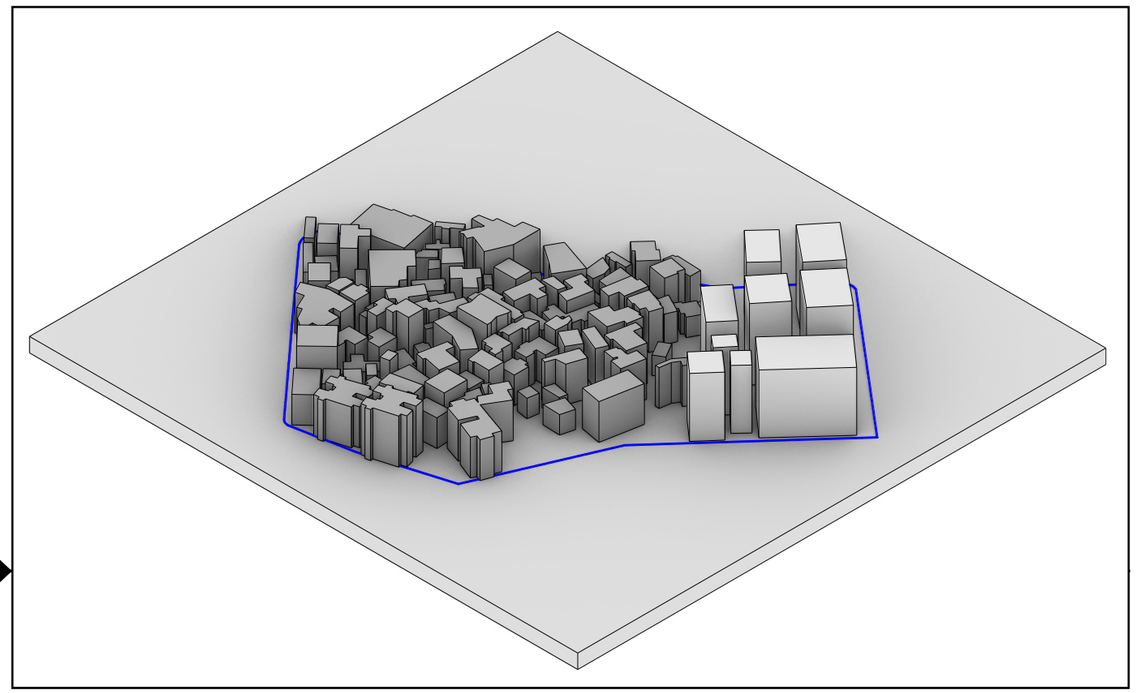




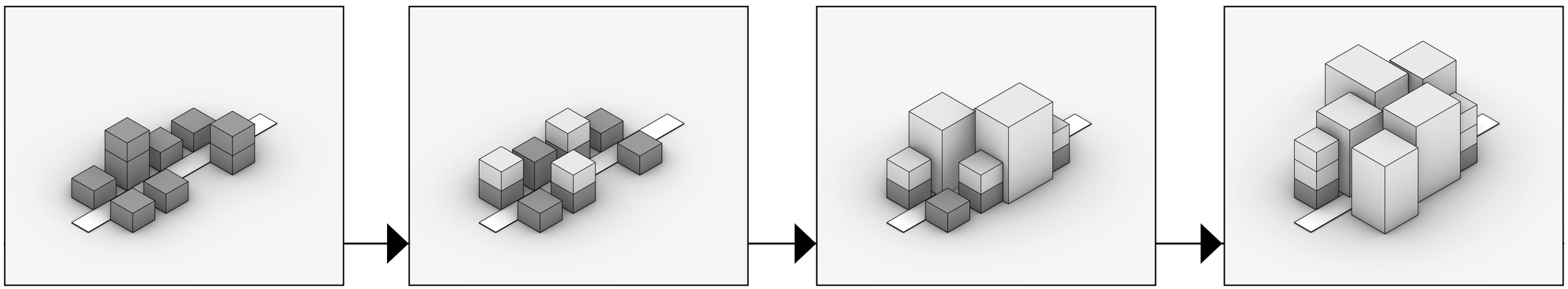
VILLAGE DEVELOPMENT



Darave 2003 axonometric



Darave 2021 axonometric



Conceptual development

DISADVANTAGES OF URBAN VILLAGES

1. Identity loss

2. Lack of instrastructure, eg. sewage

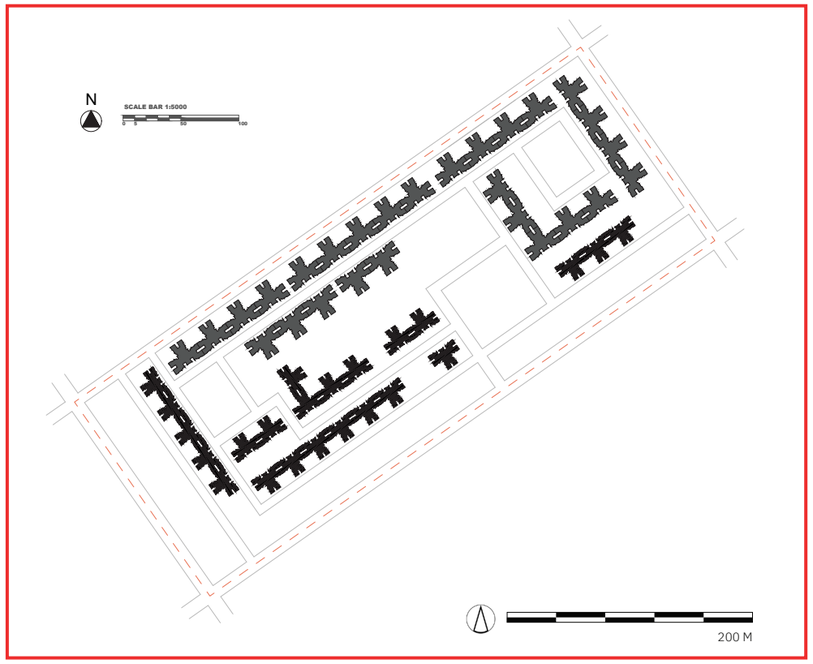
3. Lack of infrastructure for industries

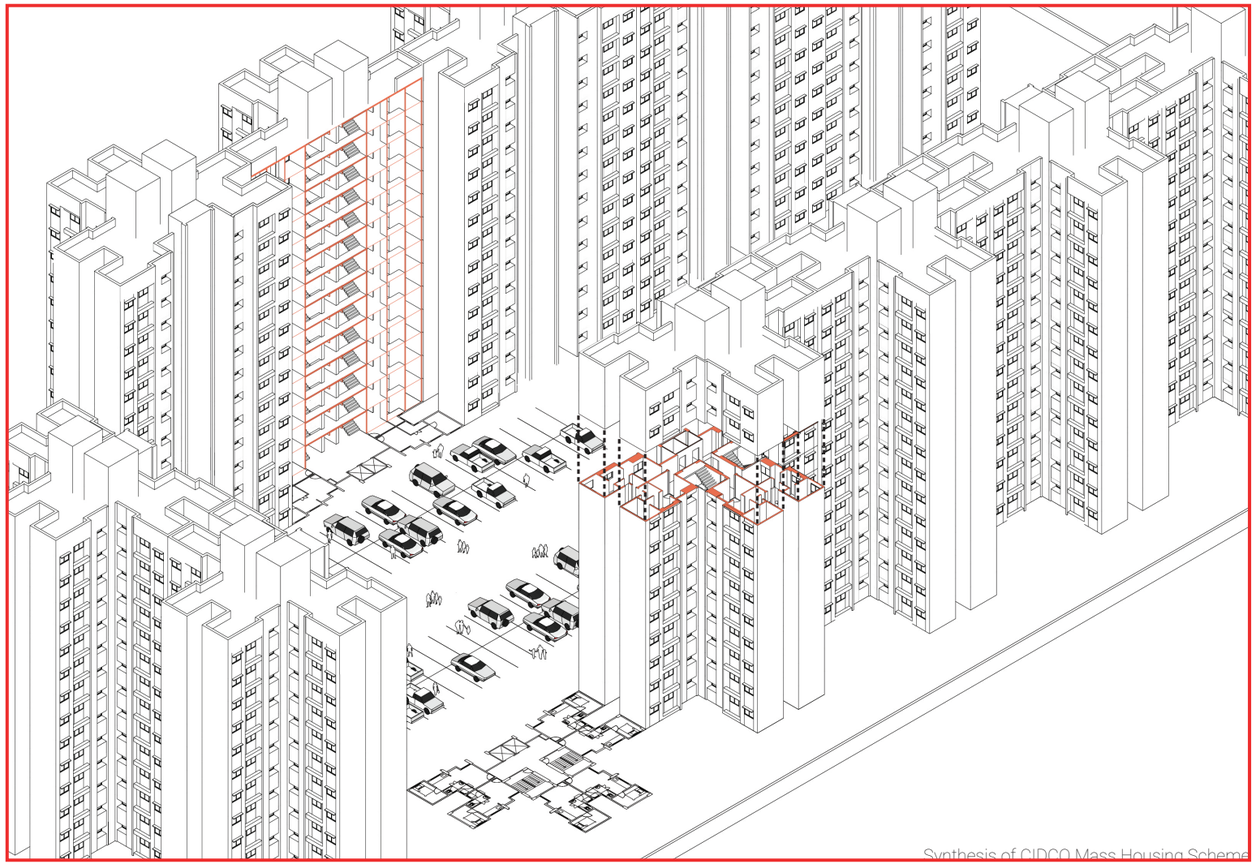
4. Overcrowding

5. Narrow streets, incaccessibility, safety issues

6. Unwelcoming borders

MASS HOUSING SCHEMES





Source: Global Housing Graduation Studio Research (2021/2022)

DISADVANTAGES OF MASS HOUSING SCHEMES

- Peripheral locations, displacement of people, bad proximity to work.
- Reliance on limited, burdened public transport by payment.
- Typically no amenities provided.
- No ground association for residents of the towers.
- Poor quality in anything but the structure.
- No maintenace or unaffordability of maintenance lead to quick dilapitation.
- Unaffordable appartments to buy/ rent for too many.
- Even those who can afford resell and go back to inforal settlements eg. urban villages.

Sources:

Caldeira, T. P. (2017). Peripheral urbanization: Autoconstruction, transversal logics, and politics in cities of the global south. Environment and Planning: Society and Space, 35(1), 3–20. Retrieved from: https://doi.org/10.1177/0263775816658479

Mehrotra, R. (2021). The kinetic city & other essays. Berlin: ArchiTangle.

Shaw, A. (1999). The planning and development of new bombay. Modern Asian Studies, 33(4), 951–988. Retrieved from: https://www.jstor.org/stable/313106

MASS HOUSING IS NOT THE ~~ONLY~~ SOLUTION

- Affordable rent.
- Absorption of rural migrants.
- Proximity to work in the formal city.
- Walkability within the village/ for work = relief of pressure from public transport.
- Strong community ties.
- Small scale sustainable industries eg. recycling, crafts, fishing.

WHY THE FOCUS ON URBAN VILLAGES

SLUMS
INFORMAL/ KINETIC

URBAN VILLAGES

MASS HOUSING SCHEMES
FORMAL/ STATIC

Sources:

Shenzhen & Honk Kong Bi-City Biennale of Urbanism/ Architecture

Around 40% of the 1.1 million residents of Navi Mumbai live in informal settlements because of their affordability - whether by renting or squatting. Informal dwellers consitute a large body of people that require better housing with improved living conditions. It is aspired that mass housing schemes of high-rise residential buildings can be provided for informal dwellers and solve this problem.

PROBLEM STATEMENT

Currently, informally developed villages provide a substantial amount of affordable housing for the urban poor but of a substandard quality. Meanwhile, high-rise buildings designed for mass housing schemes prove to be inadequate too for a number of reasons.

How can architecture and urban planning guide villages to plan better for their urbanisation, in anticipation of informality, and provide quality housing for all their future residents?

DESIGN HYPOTHESIS

To design an appropriate housing typology and strategy for the currently urbanising villages that can provide better quality of life for all future residents and therefore, contest the notion that the high-rise building typology and the mass housing schemes are the solution for informal dwellers.

If the design proposal is deemed promising this would signify that urbanising villages can be worthily pursued as sites of providing both afforable and adequate in terms of quality housing for the urban poor; an alternative to the aspired model of the mass housing schemes and the high-rise building typology.

Around 40% of the 1.1 million residents of Navi Mumbai live in informal settlements because of their affordability - whether by renting or squatting. Informal dwellers consitute a large body of people that require better housing with improved living conditions. It is aspired that mass housing schemes of high-rise residential buildings can be provided for informal dwellers and solve this problem.

PROBLEM STATEMENT

Currently, informally developed villages provide a substantial amount of affordable housing for the urban poor but of a substandard quality. Meanwhile, high-rise buildings designed for mass housing schemes prove to be inadequate too for a number of reasons.

How can architecture and urban planning guide villages to plan better for their urbanisation, in anticipation of informality, and provide quality housing for all their future residents?

DESIGN HYPOTHESIS

To design an appropriate housing typology and strategy for the currently urbanising villages that can provide better quality of life for all future residents and therefore, contest the notion that the high-rise building typology and the mass housing schemes are the solution for informal dwellers.

If the design proposal is deemed promising this would signify that urbanising villages can be worthily pursued as sites of providing both afforable and adequate in terms of quality housing for the urban poor; an alternative to the aspired model of the mass housing schemes and the high-rise building typology.

Around 40% of the 1.1 million residents of Navi Mumbai live in informal settlements because of their affordability - whether by renting or squatting. Informal dwellers consitute a large body of people that require better housing with improved living conditions. It is aspired that mass housing schemes of high-rise residential buildings can be provided for informal dwellers and solve this problem.

PROBLEM STATEMENT

Currently, informally developed villages provide a substantial amount of affordable housing for the urban poor but of a substandard quality. Meanwhile, high-rise buildings designed for mass housing schemes prove to be inadequate too for a number of reasons.

How can architecture and urban planning guide villages to plan better for their urbanisation, in anticipation of informality, and provide quality housing for all their future residents?

DESIGN HYPOTHESIS

To design an appropriate housing typology and strategy for the currently urbanising villages that can provide better quality of life for all future residents and therefore, contest the notion that the high-rise building typology and the mass housing schemes are the solution for informal dwellers.

If the design proposal is deemed promising this would signify that urbanising villages can be worthily pursued as sites of providing both afforable and adequate in terms of quality housing for the urban poor; an alternative to the aspired model of the mass housing schemes and the high-rise building typology.

SITE SELECTION

N
MUMBAI
EAST COAST
NORTH
NAVI MUMBAI
MUMBAI TRANS
HARBOR LINK
TOWARDS
ARABIAN SEA
MOHA
KOLIWADA
NAVI MUMBAI
AIRPORT
NAVI MUMBAI
SOUTH
1km
5km

N
MOHA KOLIWADA
40m
200m

MOHA KOLIWADA

2003:

2021:

MOHA KOLIWADA

MOHA KOLIWADA

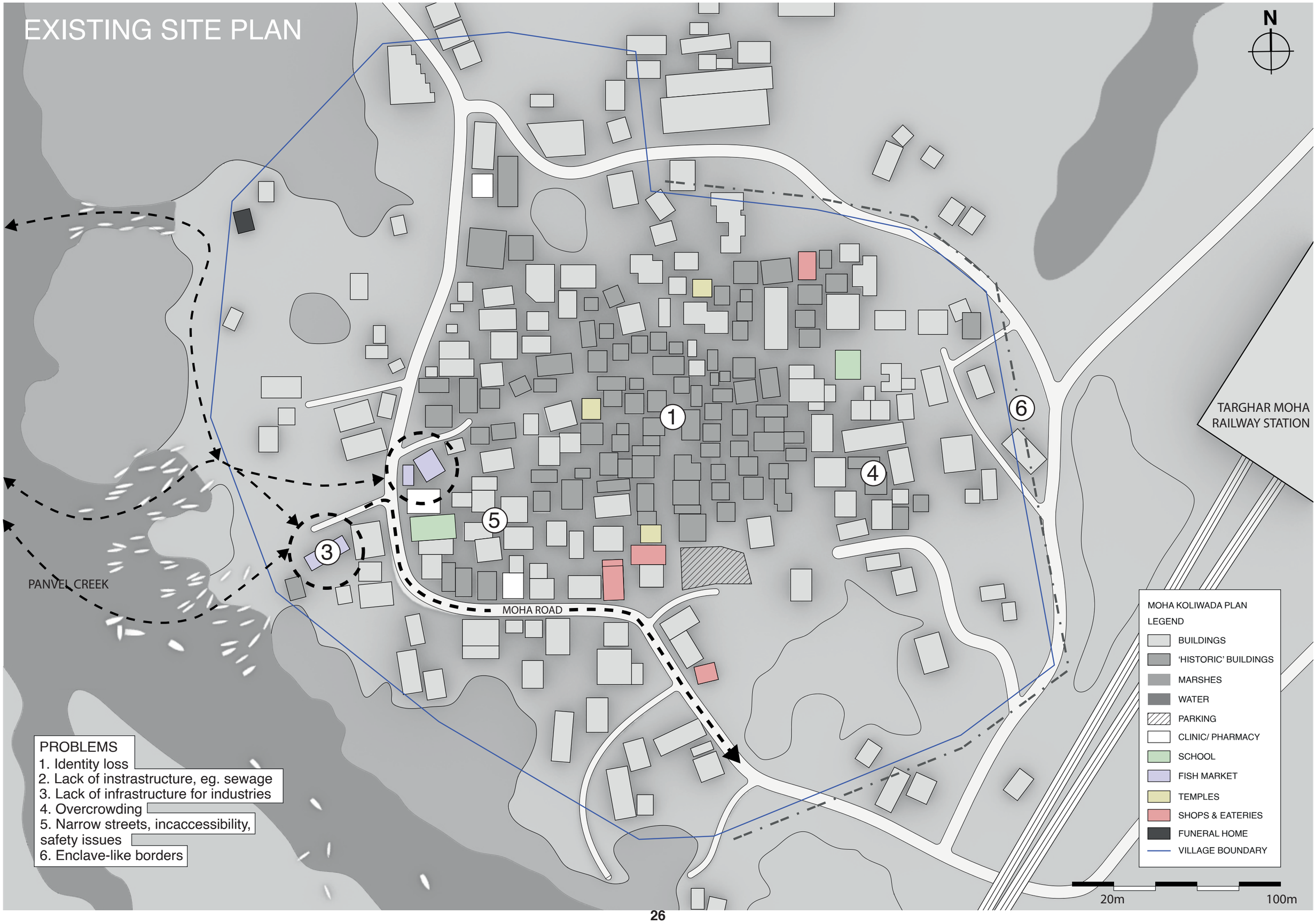
Shops

School

Street

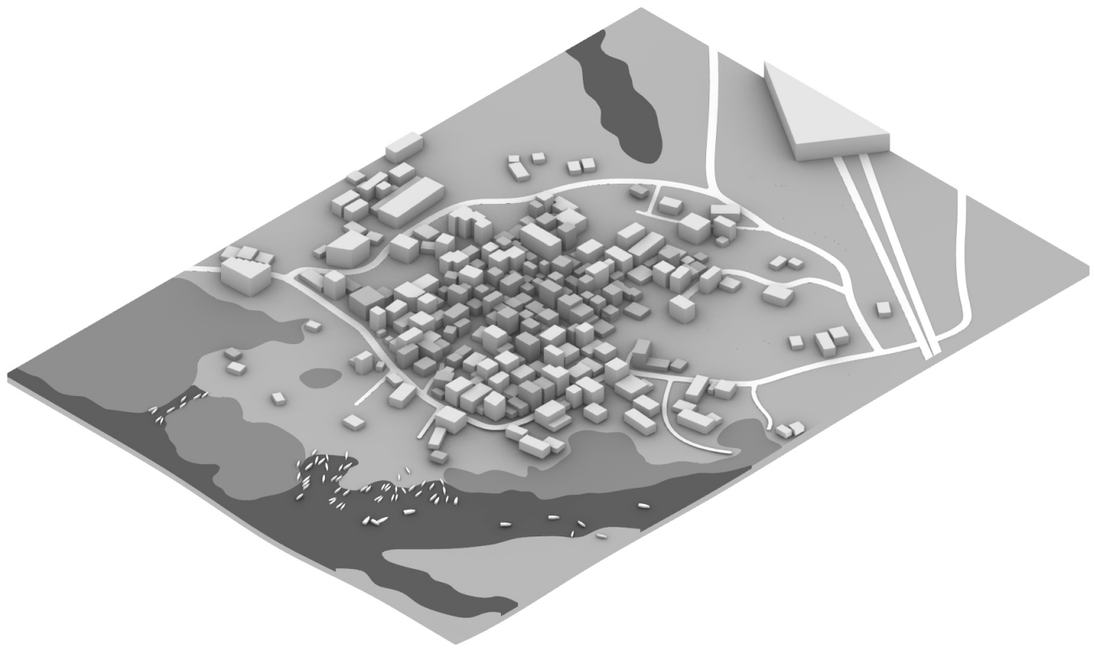
MOHA KOLIWADA - FISHING & THE COAST

EXISTING SITE PLAN

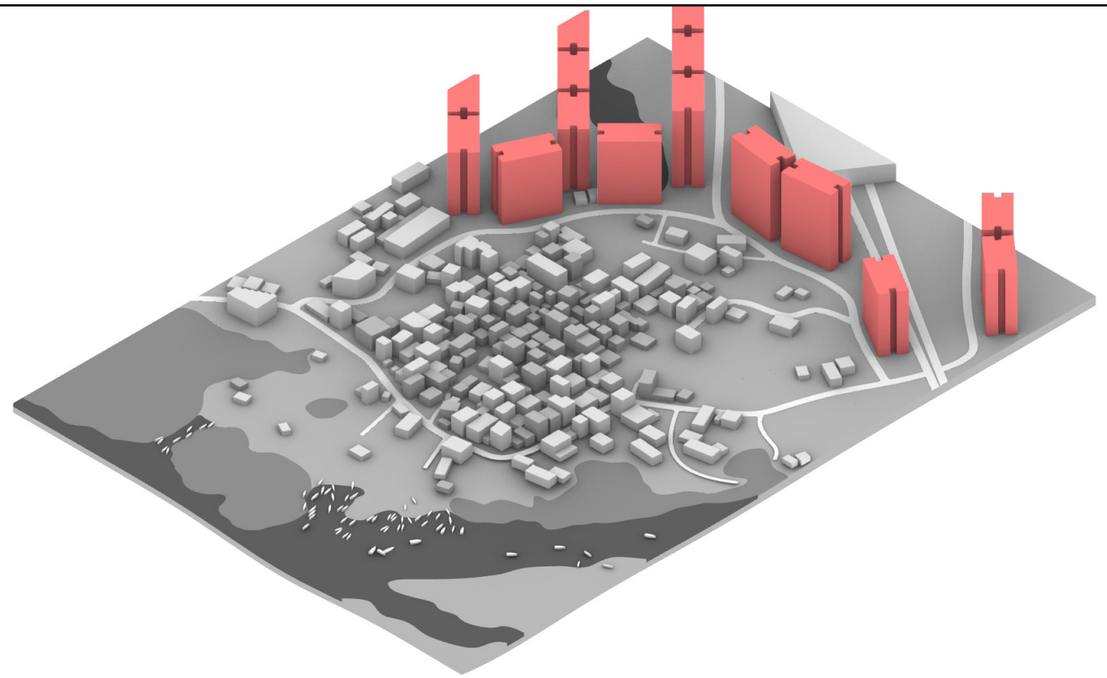


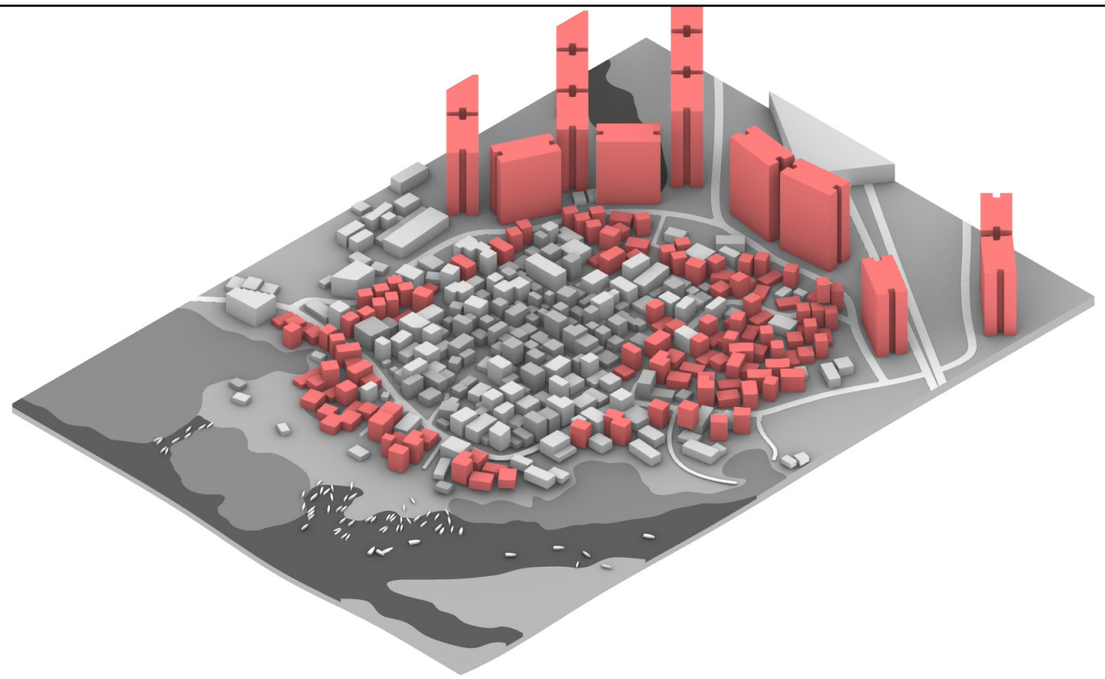
URBANISATION SCENARIOS

1. Existing condition

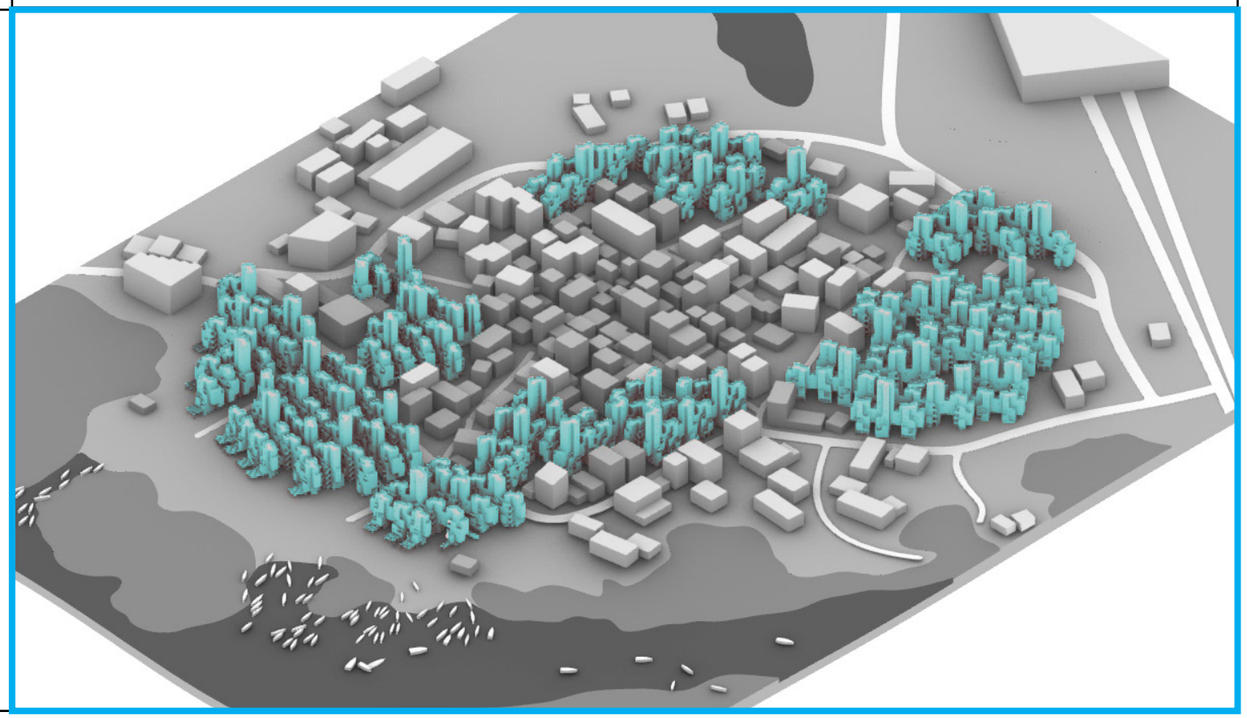


2. Urbanisation pressure





3. Informal urbanisation...



4. ...or Indicative proposed urbanisation

INDICATIVE PROPOSED SITE PLAN

INDICATIVE PROPOSED PHASING

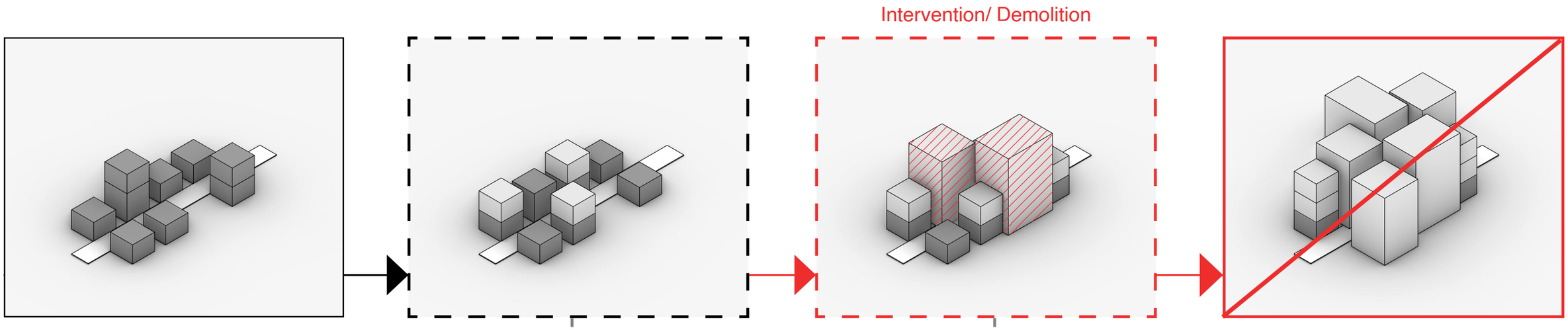
1.

2.

3.

4.

PHASING & DEVELOPMENT



Urban village development

Proposed urban village development

INDICATIVE PROPOSED SITE PLAN

N

TARGHAR MOHA
RAILWAY STATION

PANVEL CREEK

MOHA ROAD

MOHA KOLIWADA PLAN

LEGEND

- BUILDINGS
- 'HISTORIC' BUILDINGS
- PROPOSED
- MARSHES
- WATER
- GF SPECIAL
- FISH MARKET
- FISH SORTING
- SHOPS/ EATERIES
- VILLAGE BOUNDARY

20m 100m

INDICATIVE DEMOLITION PLAN

TARGHAR MOHA
RAILWAY STATION

PANVEL CREEK

MOHA ROAD

MOHA KOLIWADA PLAN

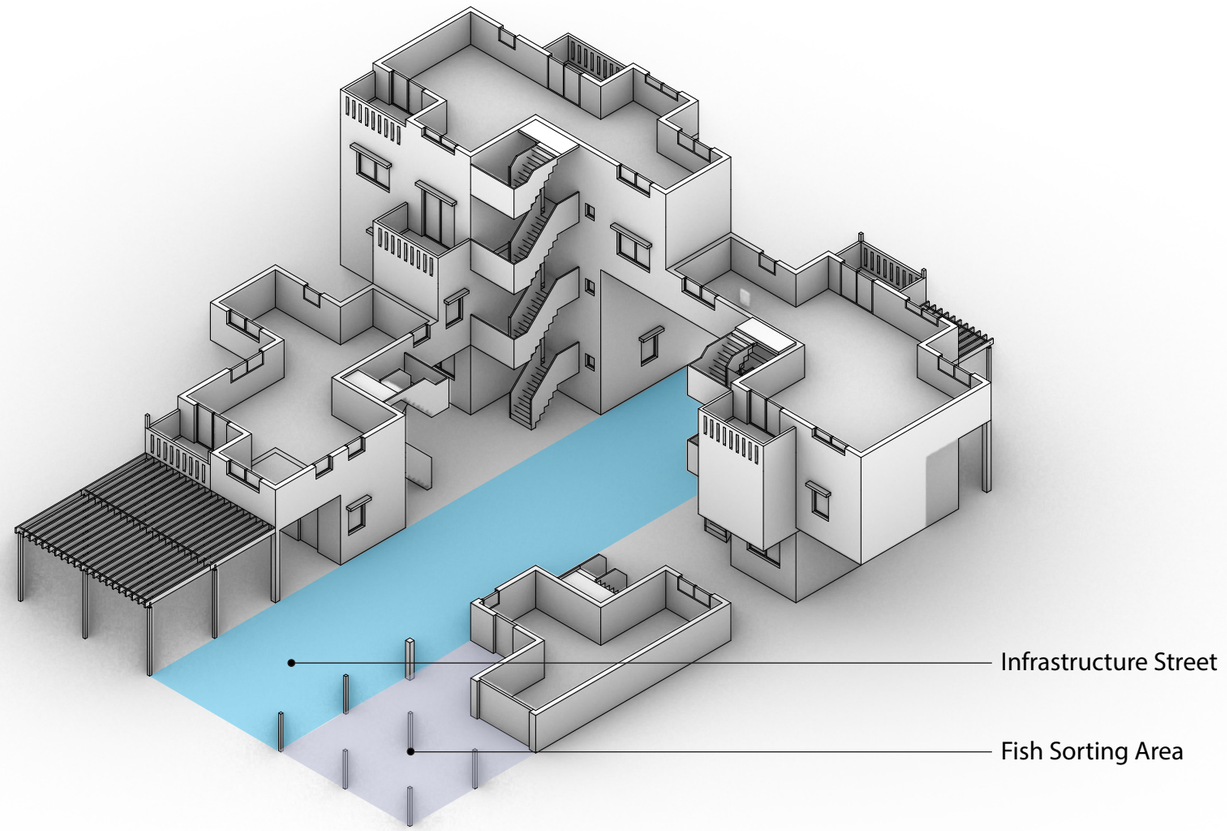
LEGEND

- BUILDINGS
- 'HISTORIC' BUILDINGS
- INDICATIVE DEMOLITION
- MARSHES
- WATER
- VILLAGE BOUNDARY

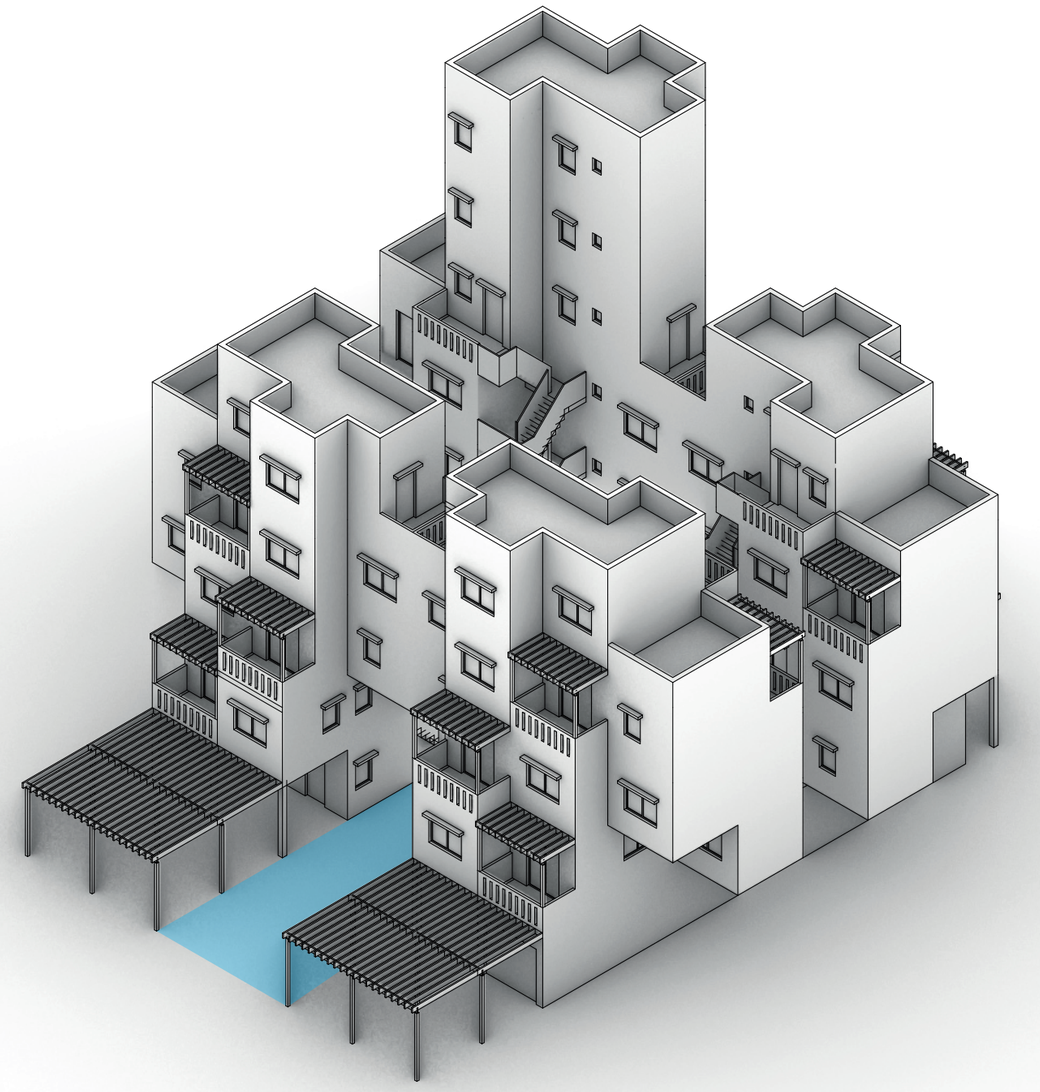
20m 100m

INDICATIVE PROPOSED SITE PLAN

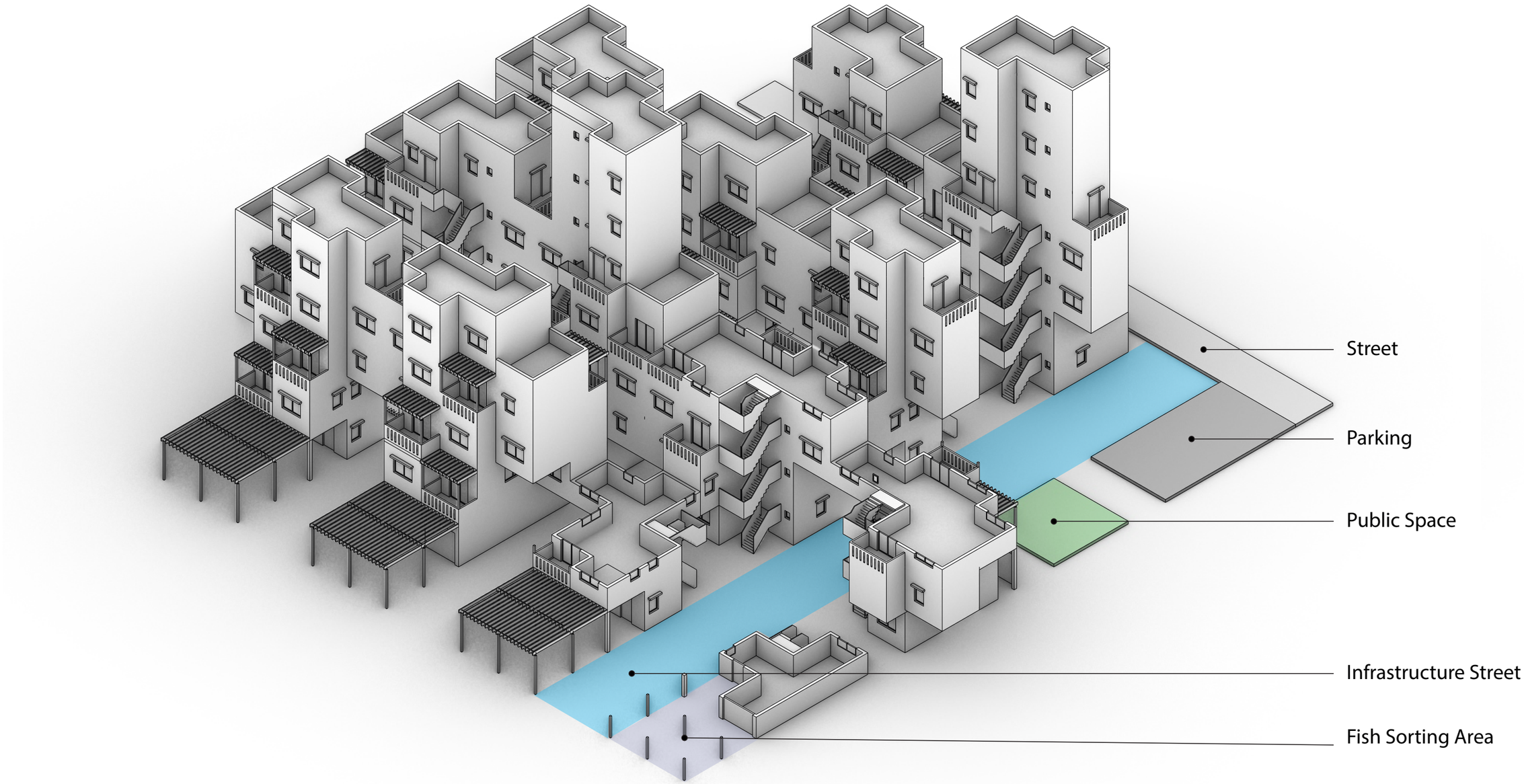
DESIGN - BLOCK



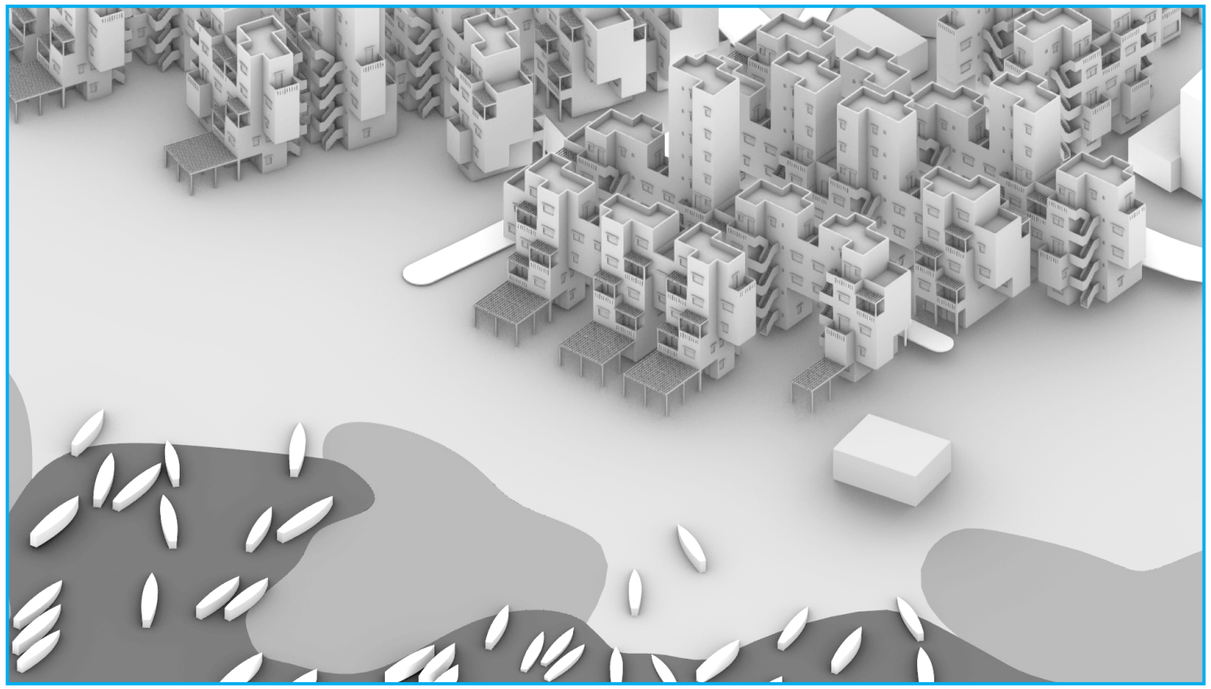
DESIGN - BLOCK
HEGHT/ DENSITY/ GROUND CONNECTION



DESIGN - CLUSTER & NEIGHBORHOOD



DESIGN - BORDERS



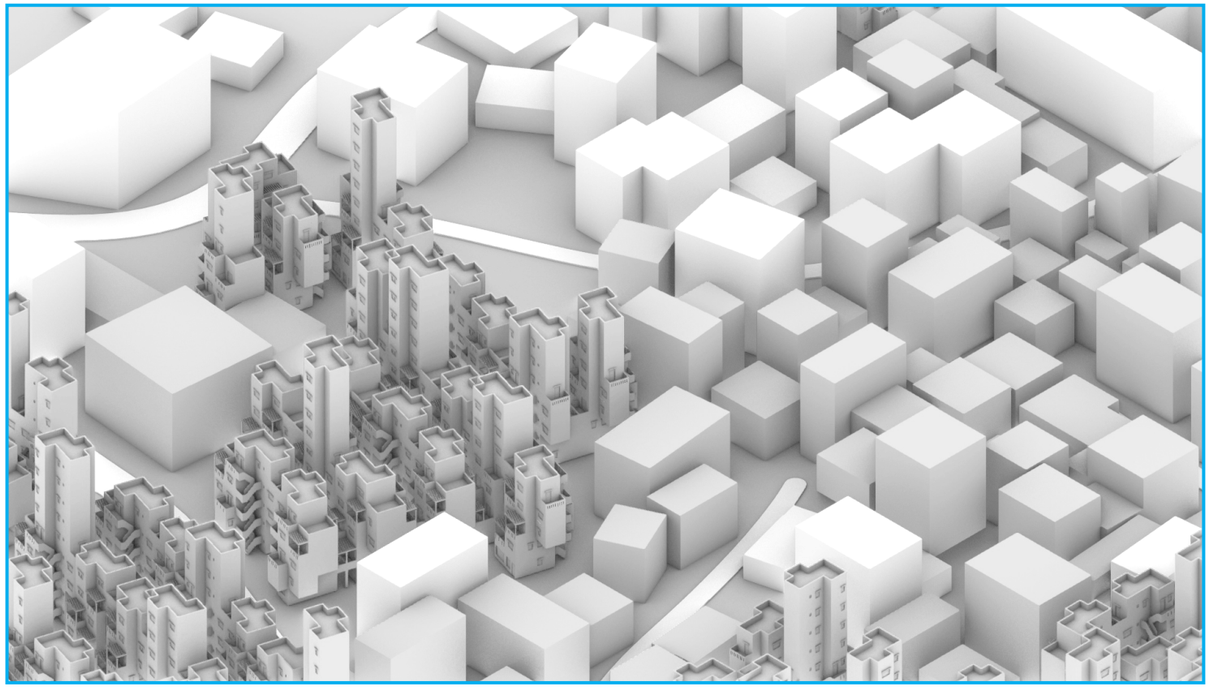
1. Defining the coast...

2. ...and the village borders

Key plan diagram

DESIGN - INFILTRATION

3. Infiltrating the village...

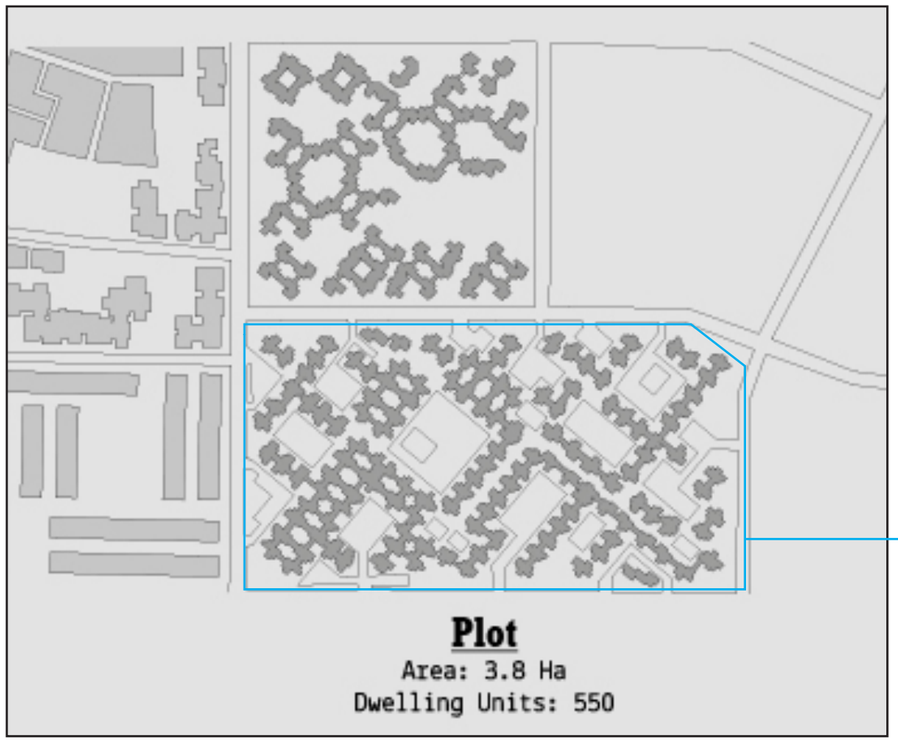


4. ...and preserving the historic core

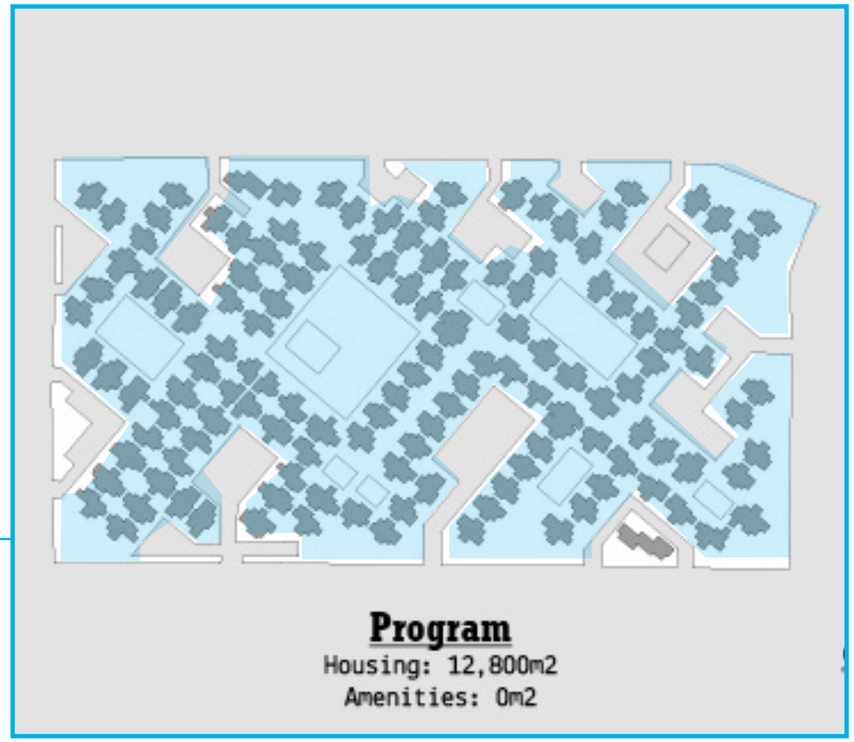
Key plan diagram

PRECEDENT STUDY - SHEIKH SARAI HOUSING
NEW DELHI, RAJ REWAL ARCHITECTS, 1970

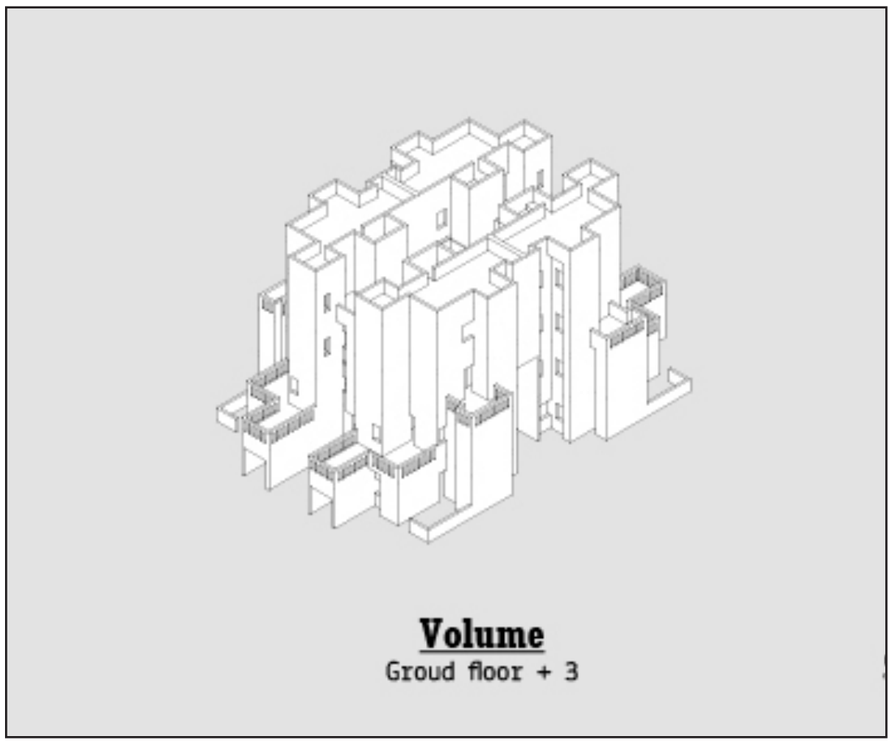
PRECEDENT STUDY - SHEIKH SARAI HOUSING



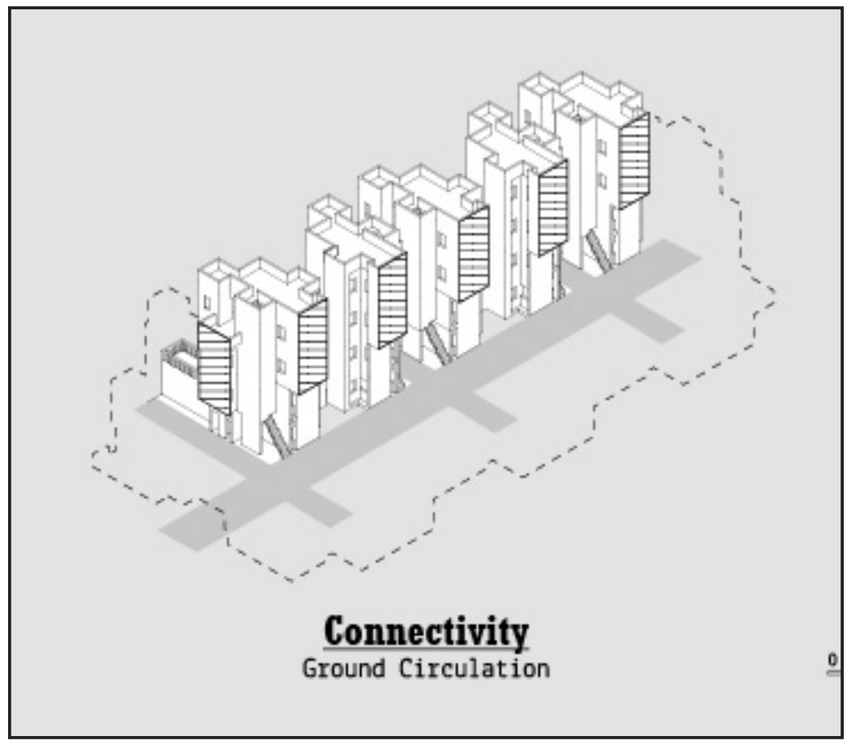
Plot
Area: 3.8 Ha
Dwelling Units: 550



Program
Housing: 12,800m2
Amenities: 0m2

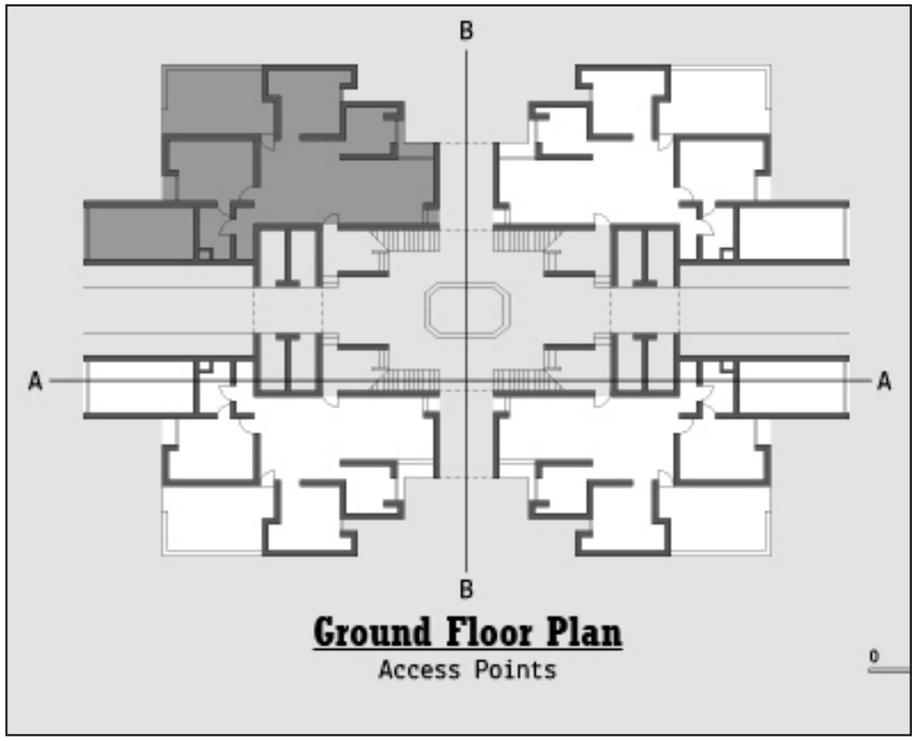


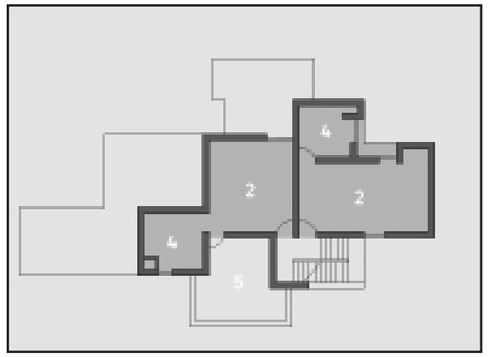
Volume
Groud floor + 3

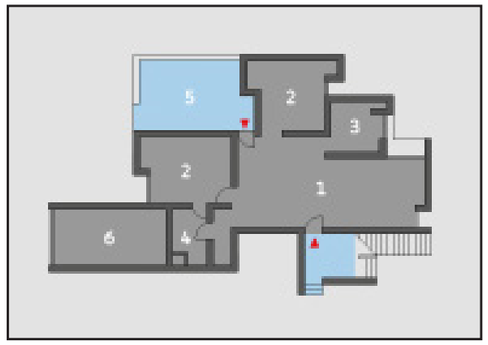


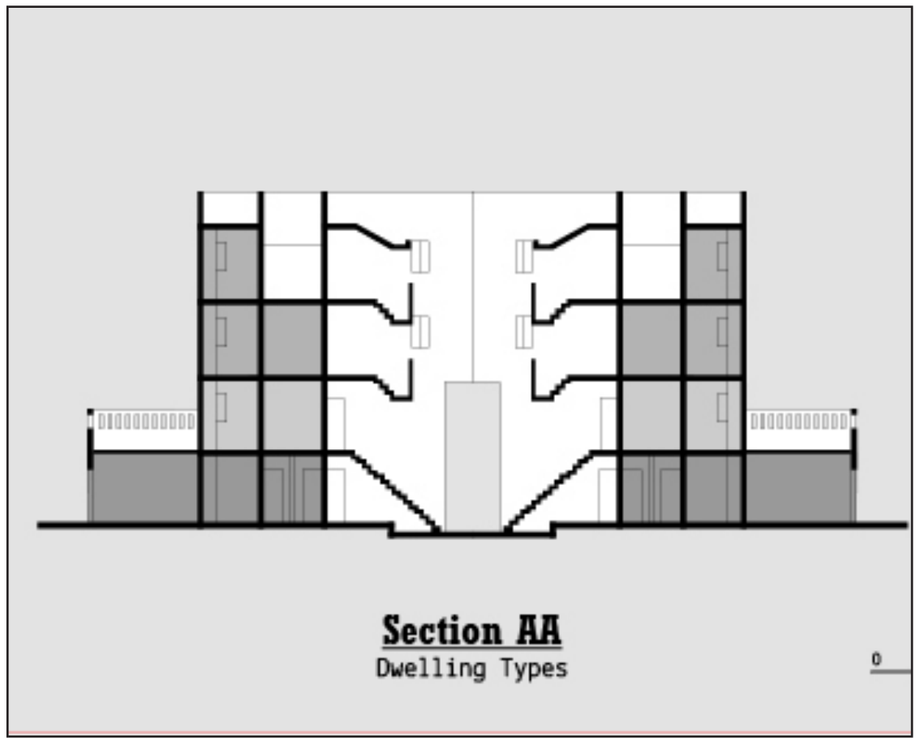
Connectivity
Ground Circulation

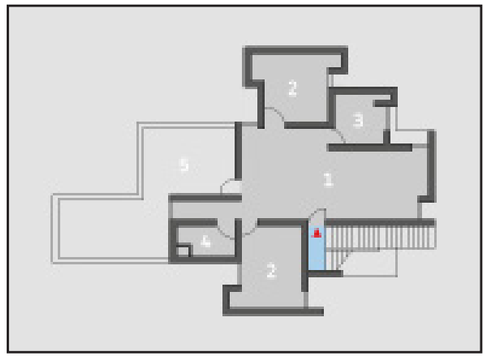
UNIT & CLUSTER SCALES

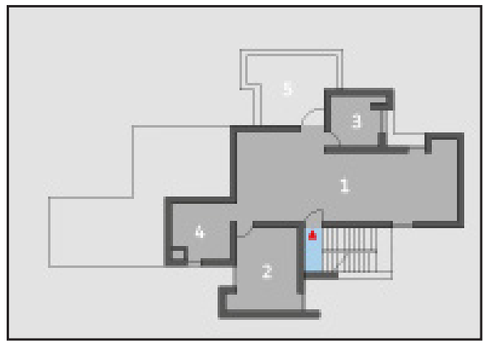


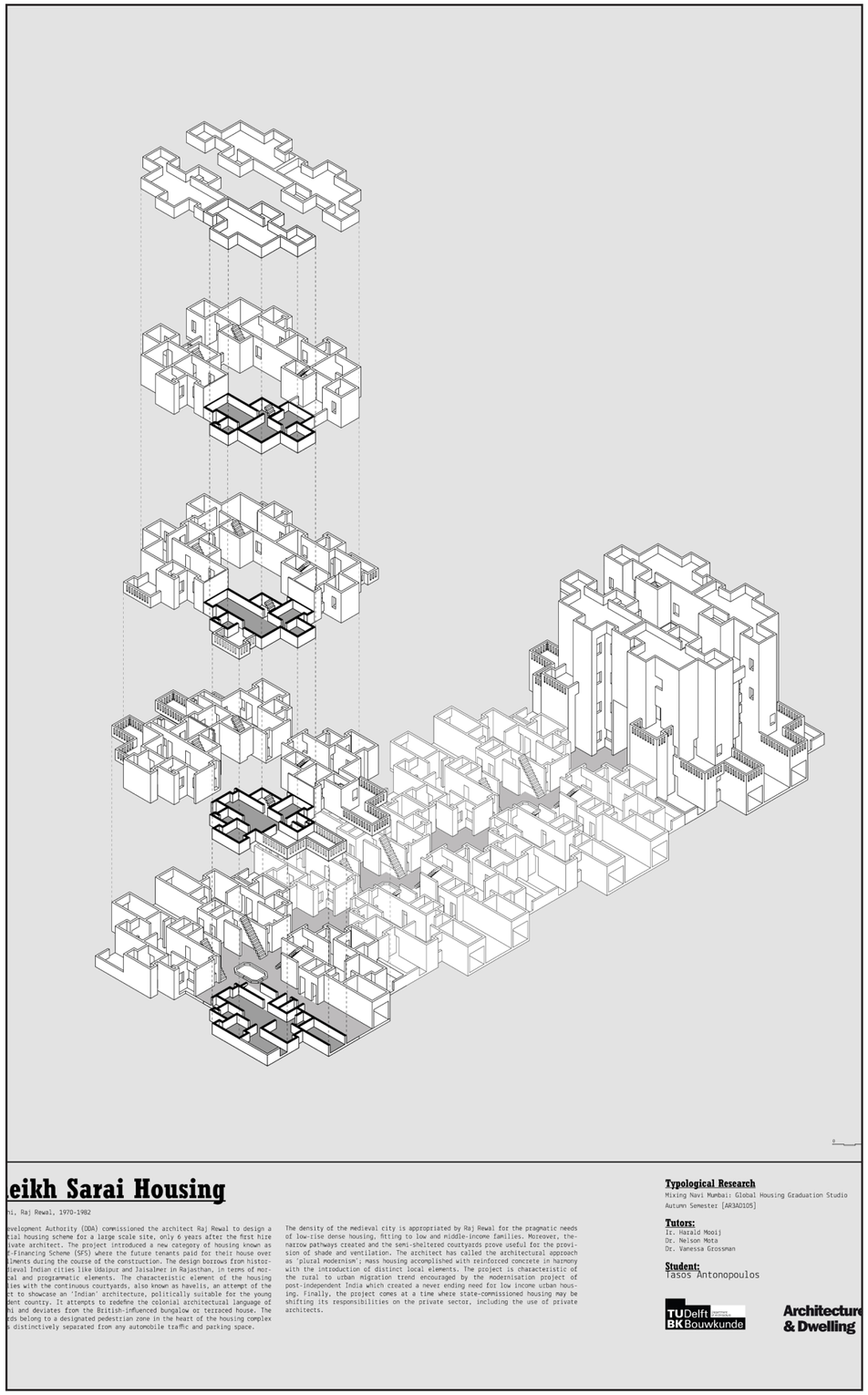












Density
- Low-rise and high-density housing similar to urban villages.

Community
- Ground association promotes community feeling, for example with the connectivity of courtyards.
- Radburn principle, designated pedestrianised and traffic zones.

Income groups
- Variation of apartments stacked allow for different sizes of apartments to be occupied by different income groups.

Environment
- Ventilation and shading within courtyards is appropriate for the humid and tropical climate of Mumbai.

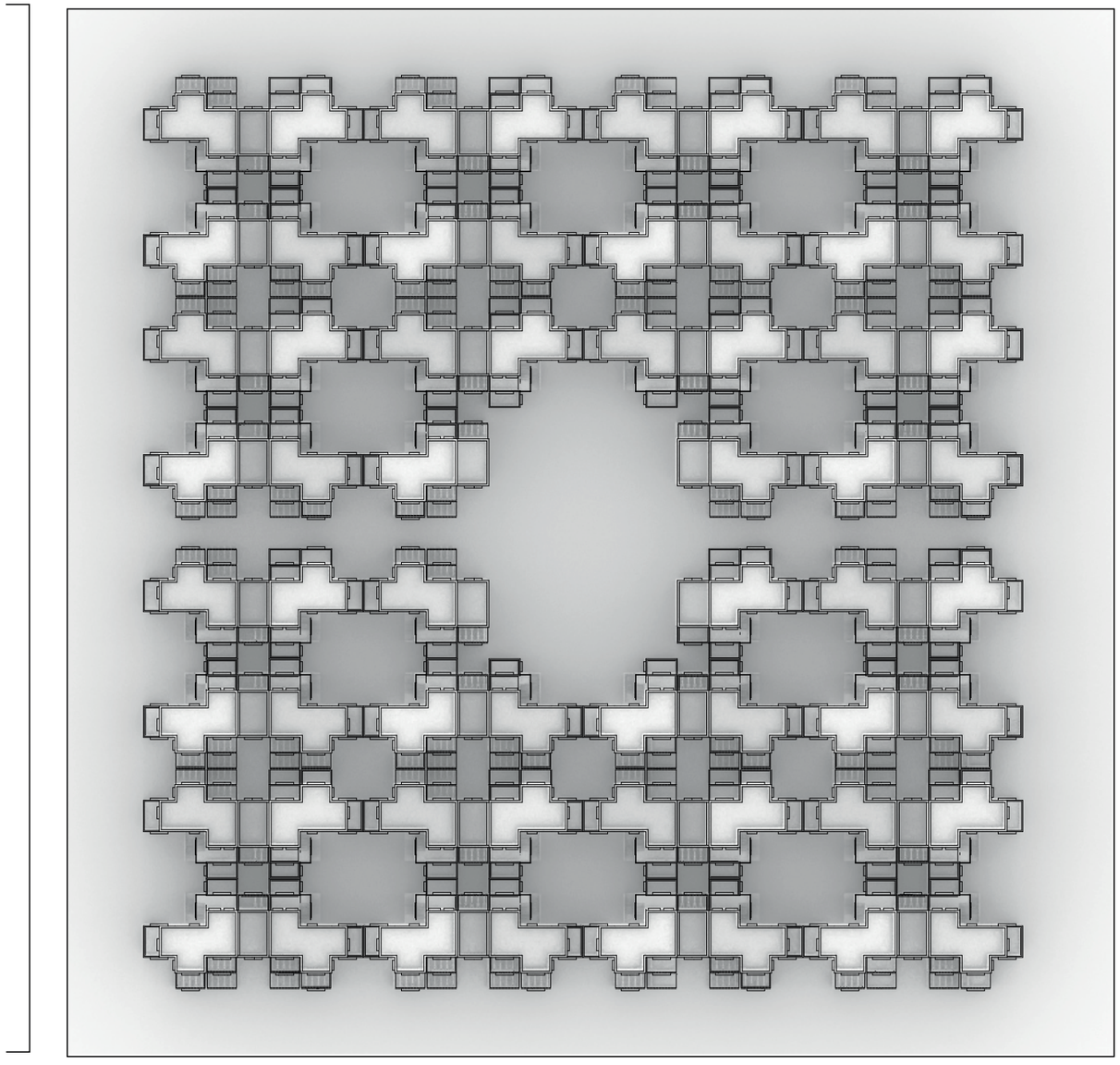
Density

- Higher density with some taller buildings appropriate for 21st century urbanisation.

Ground floor amenities

- To support the local economy and industry, basic needs of the residents.

DESIGN DENSITY



LAYOUT USED FOR CALCULATIONS

DW/HA breakdown

30 (8%) Studios ≈ 25sqm (Seasonal workers)
150 (42%) 1Bed ≈ 30sqm (EWS/ Rural migrants)
180 (50%) 2Bed ≈ 50-55sqm (Families)

FSI breakdown

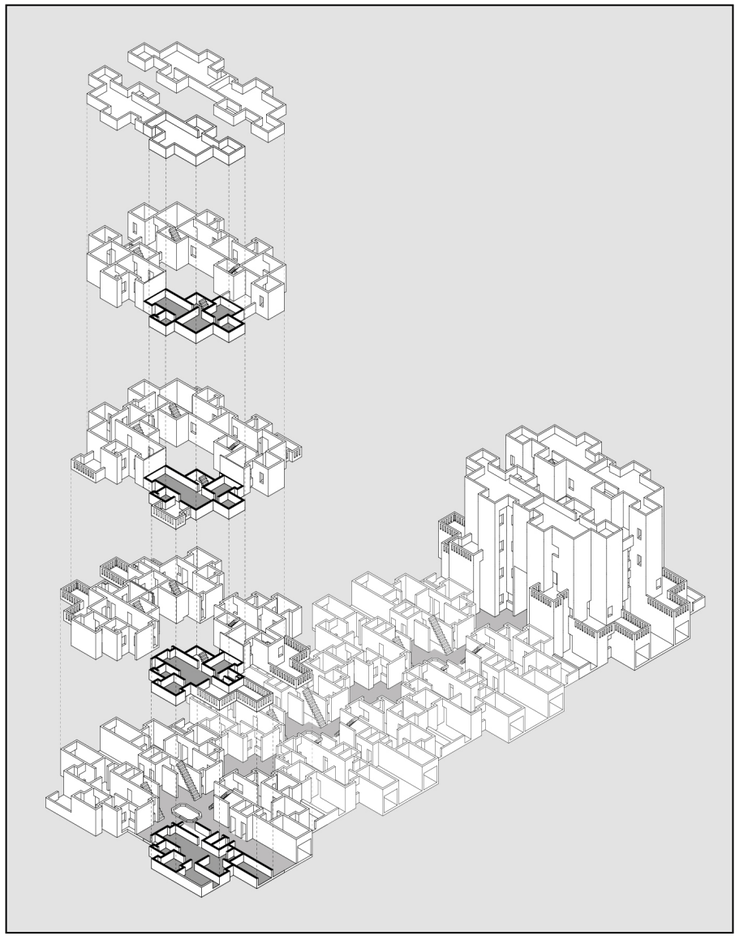
/Residential
Studios - 30x25= 750sqm (5%)
1Bed - 150x30= 4,500sqm (28%)
2Bed - 180x52.5= 9,450sqm (59%)

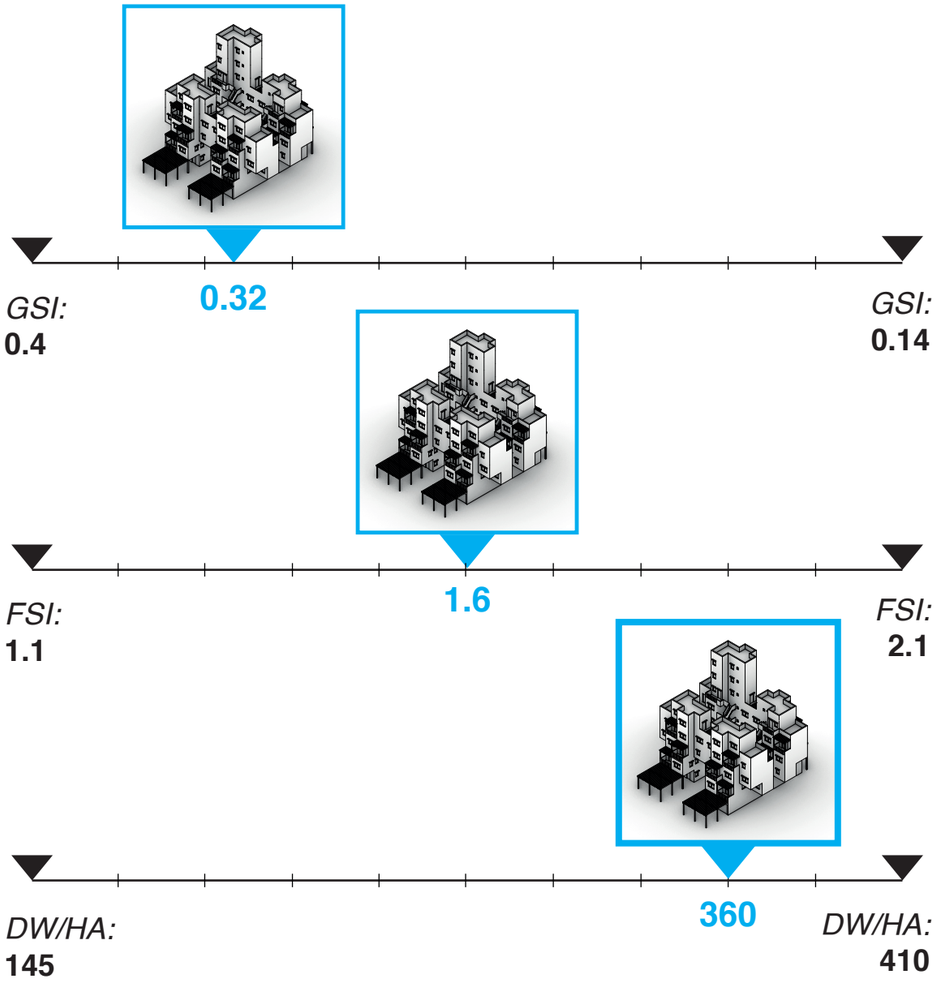
/Non-Residential
≈ 1,350sqm (8%)

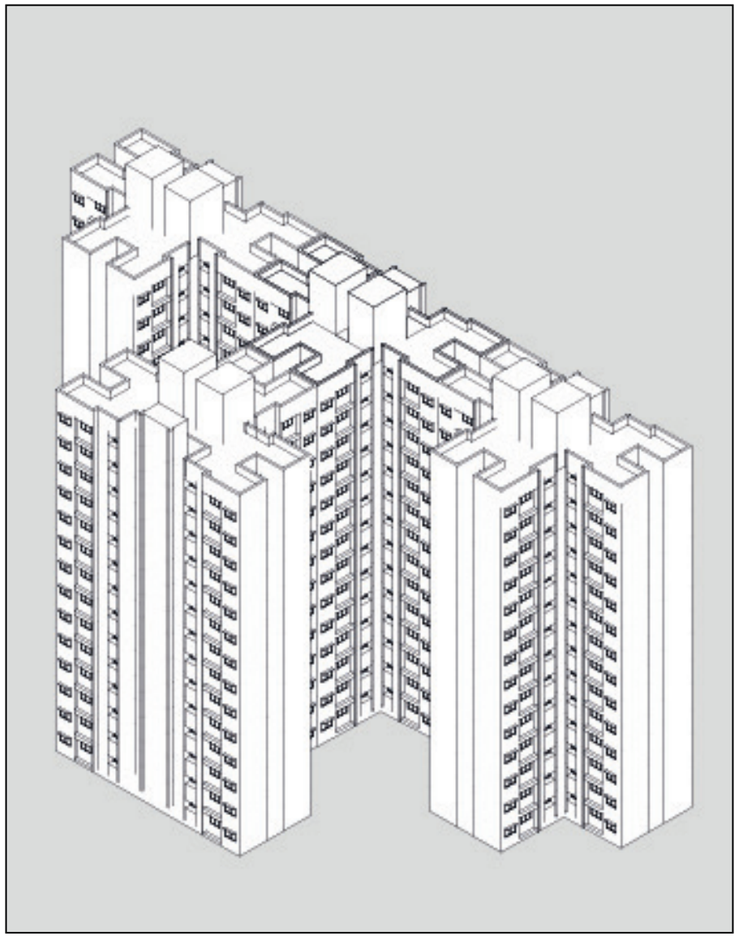
/Total= 16,050
Therefore,
16,050/ 10,000
= 1.6

GSI: 0.32
FSI: 1.6
DW/HA: 360

DENSITY BENCHMARKS



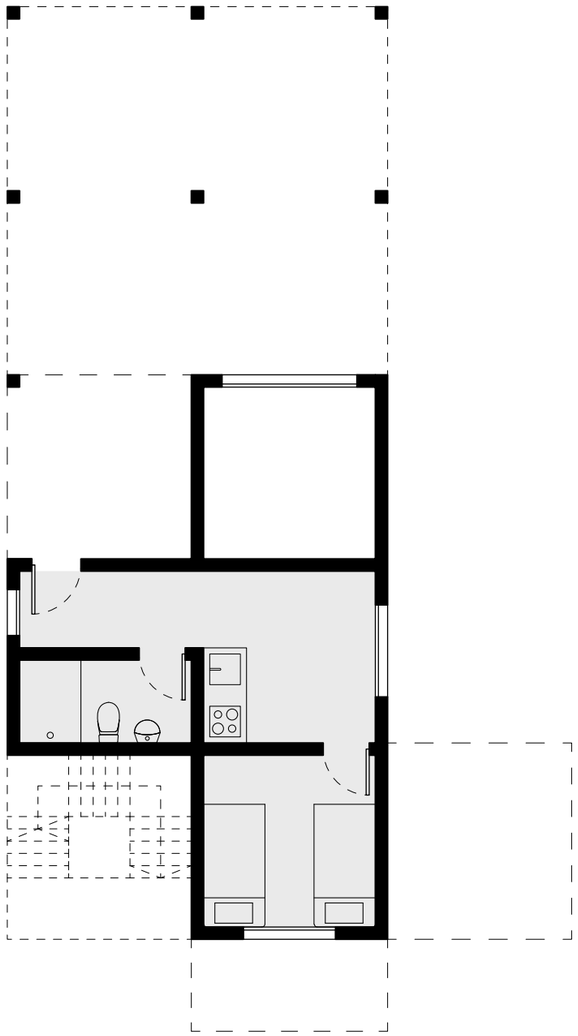


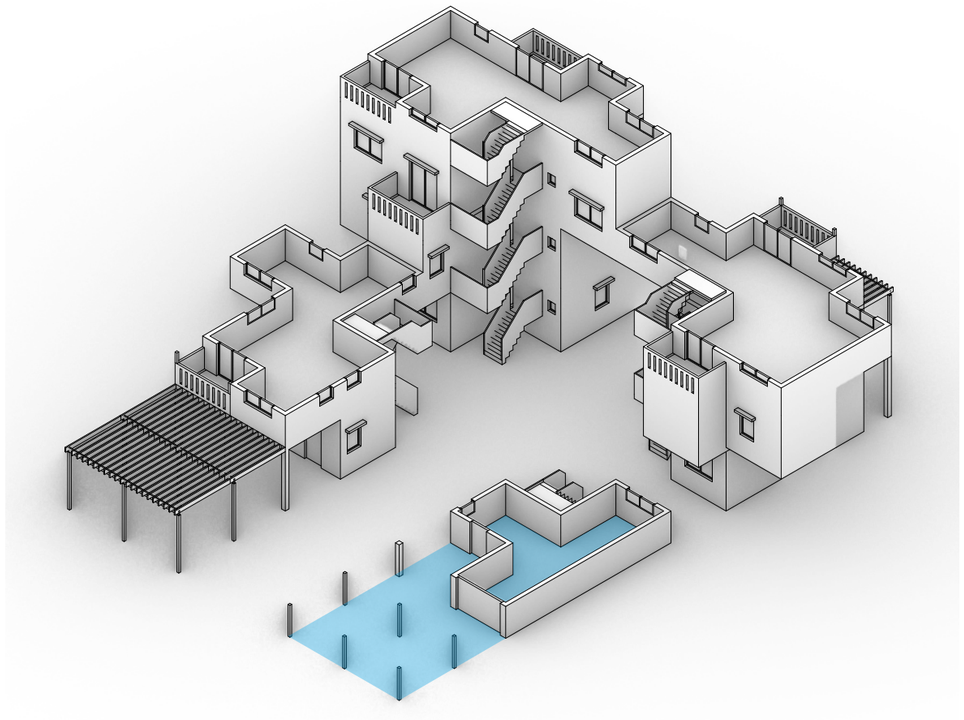


POST-INDEPENDENCE VILLAGE
LOW-RISE - 'HIGH-DENSITY'

CIDCO MASS HOUSING BLOCKS
HIGH-RISE, HIGH-DENSITY

DESIGN
GROUND FLOOR PLAN

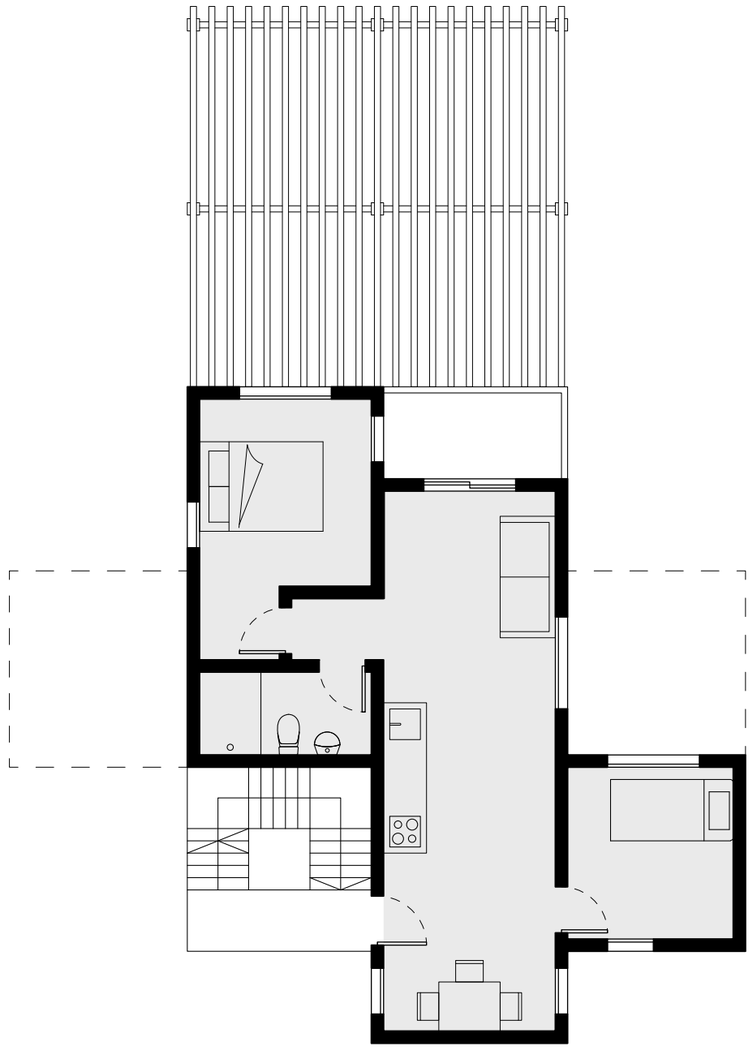


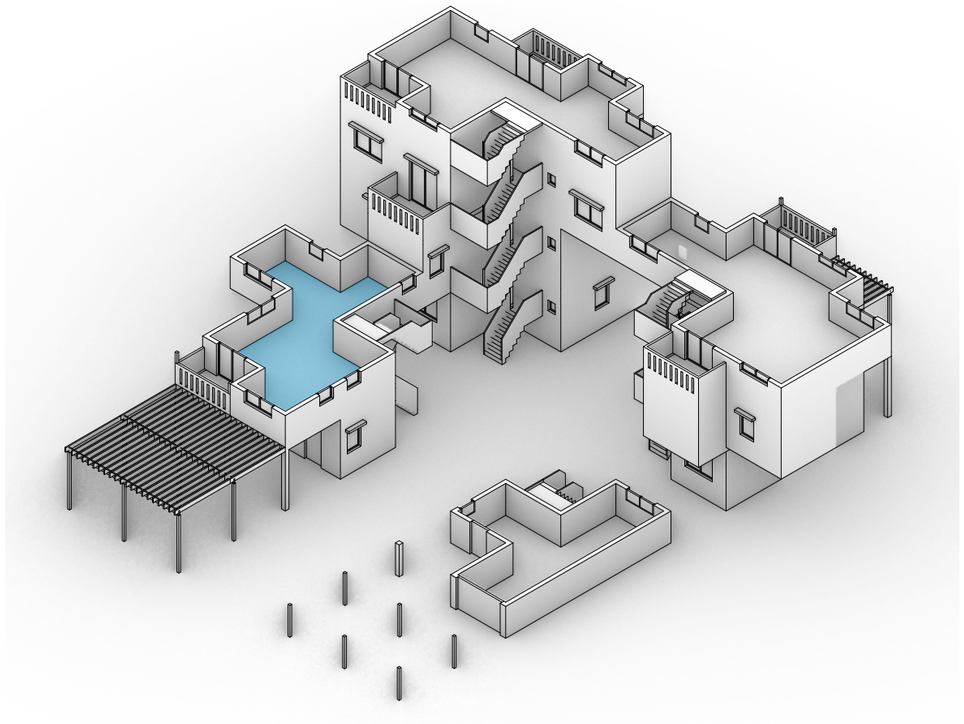


Ground Floor Plan
24.5sqm - 1Bed
Seasonal Workers

1.5m 6m

DESIGN
FIRST FLOOR PLAN

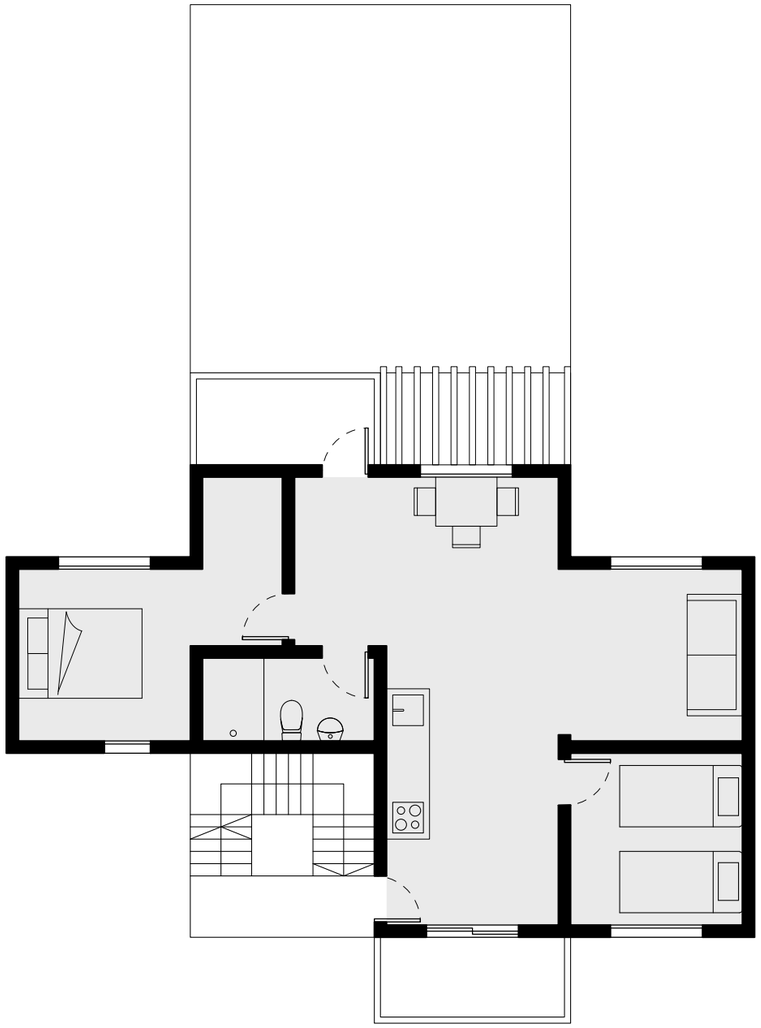


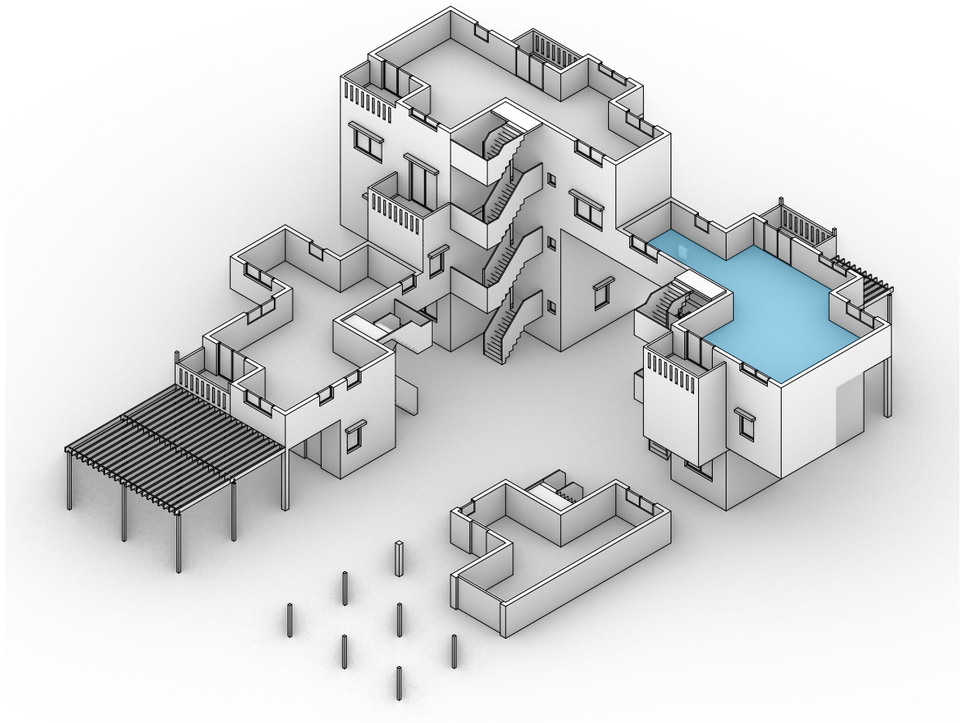


First Floor Plan
50sqm - 2Bed
Family

1.5m 6m

DESIGN
SECOND FLOOR PLAN

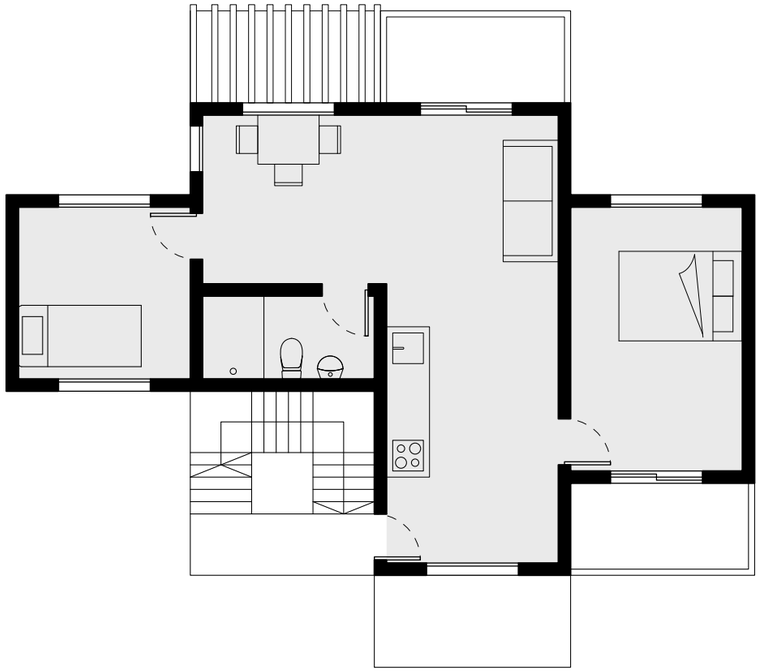


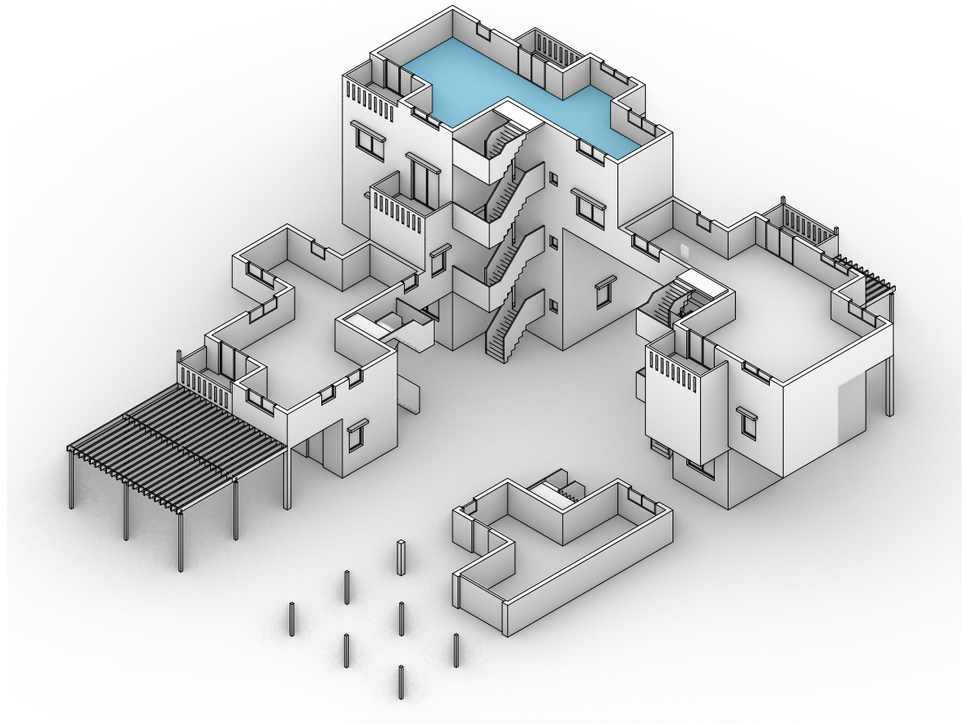


Second Floor Plan
54.5sqm - 2Bed
Family

1.5m 6m

DESIGN
THIRD FLOOR PLAN

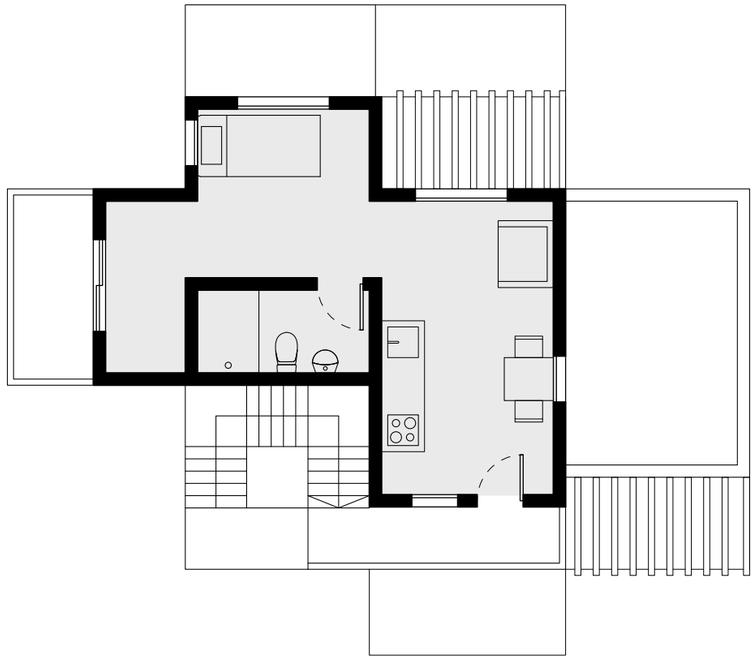


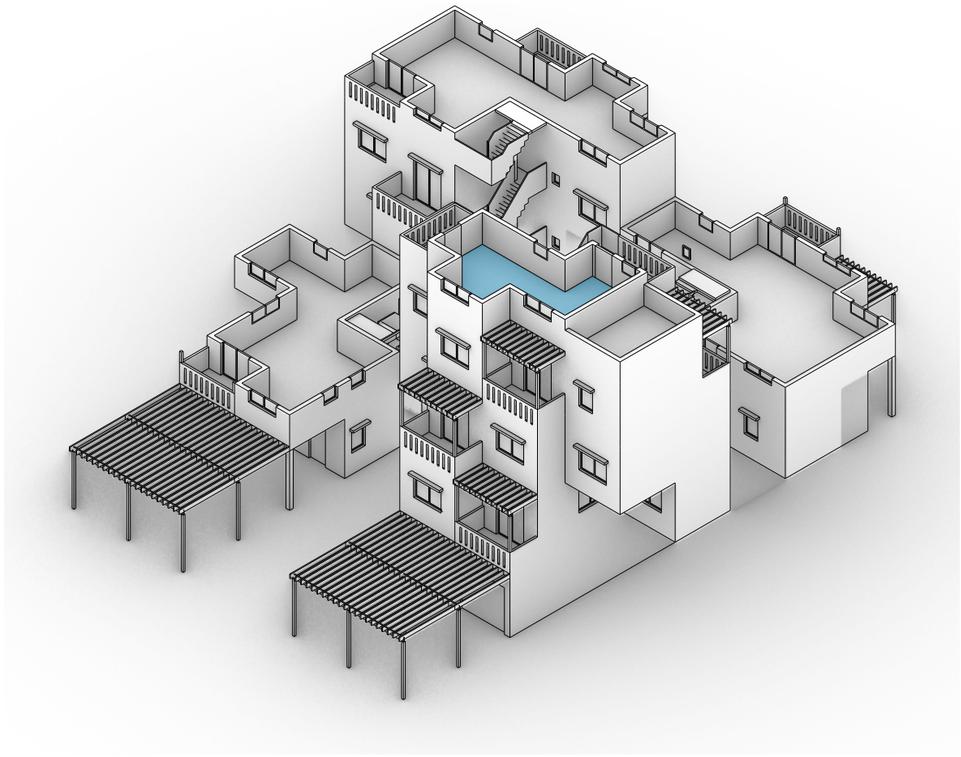


Third Floor Plan
54.5sqm - 2Bed
Family

1.5m 6m

DESIGN
FOURTH FLOOR PLAN

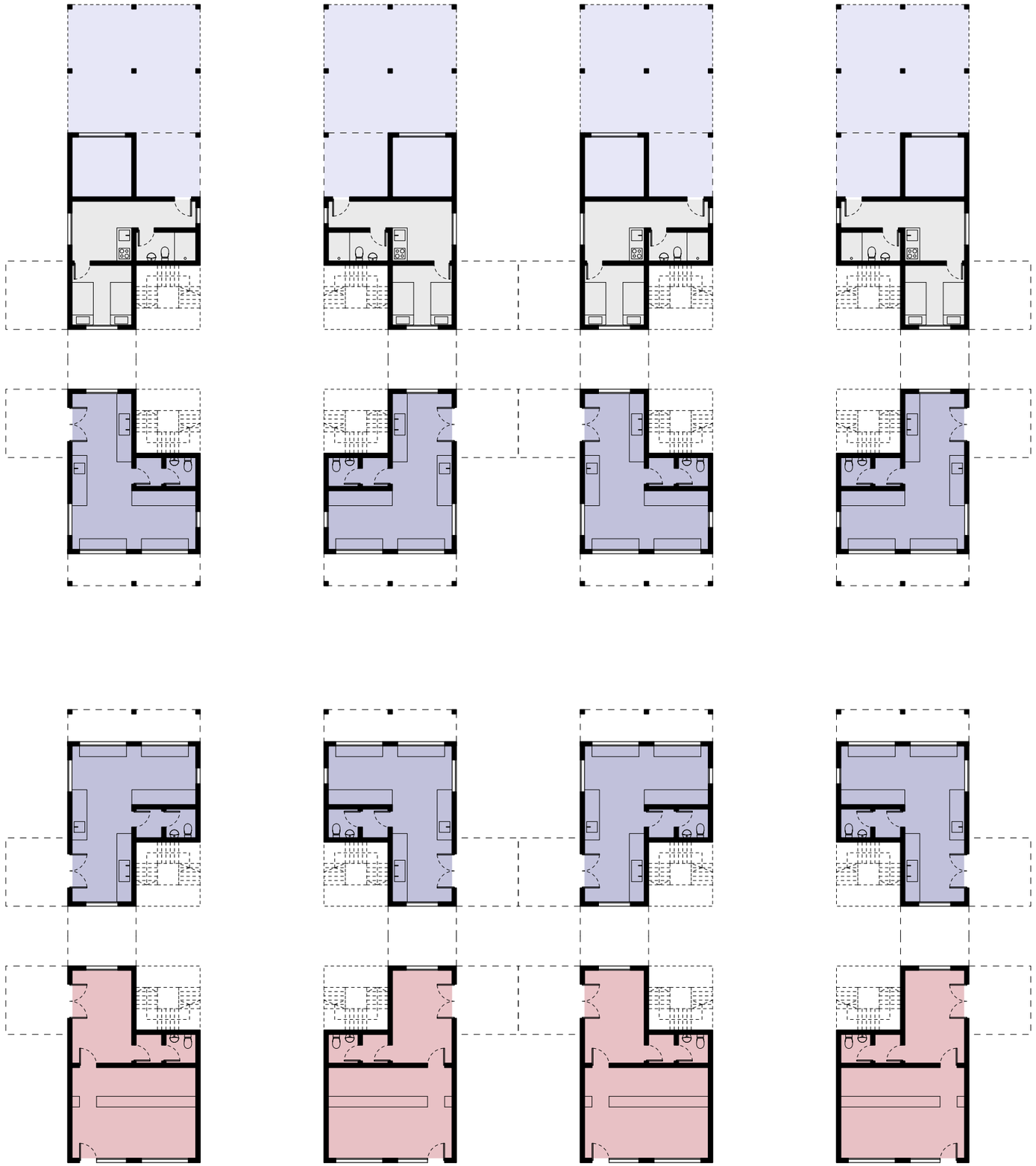


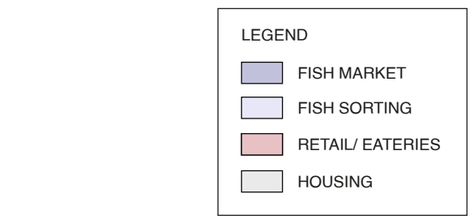


Fourth Floor Plan
30sqm - 1Bed
EWS/ Rural-Urban Migrants

1.5m 6m

DESIGN
GROUND FLOOR PLAN

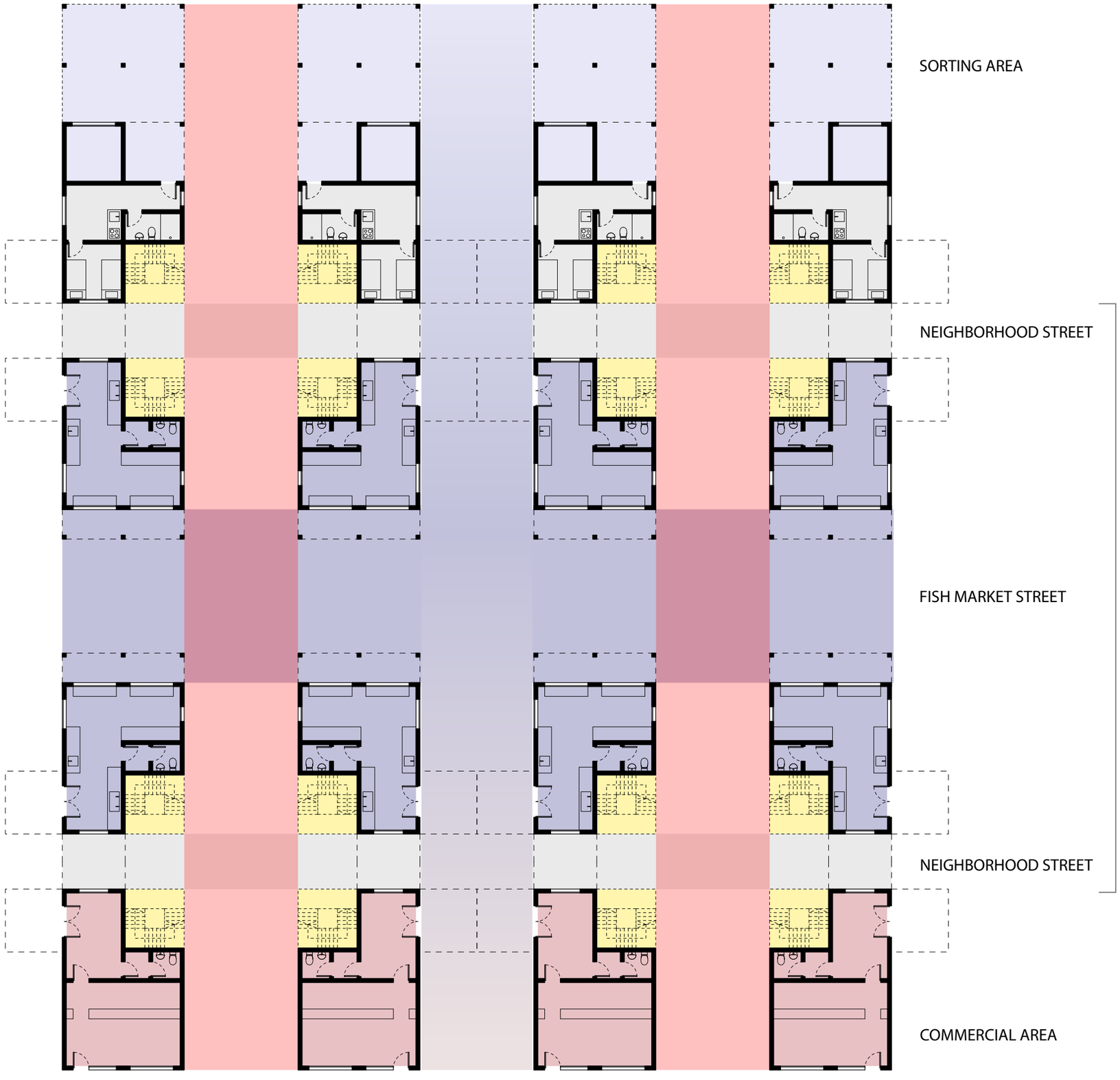




GROUND FLOOR PLAN

3m 15m

DESIGN
GROUND FLOOR PLAN



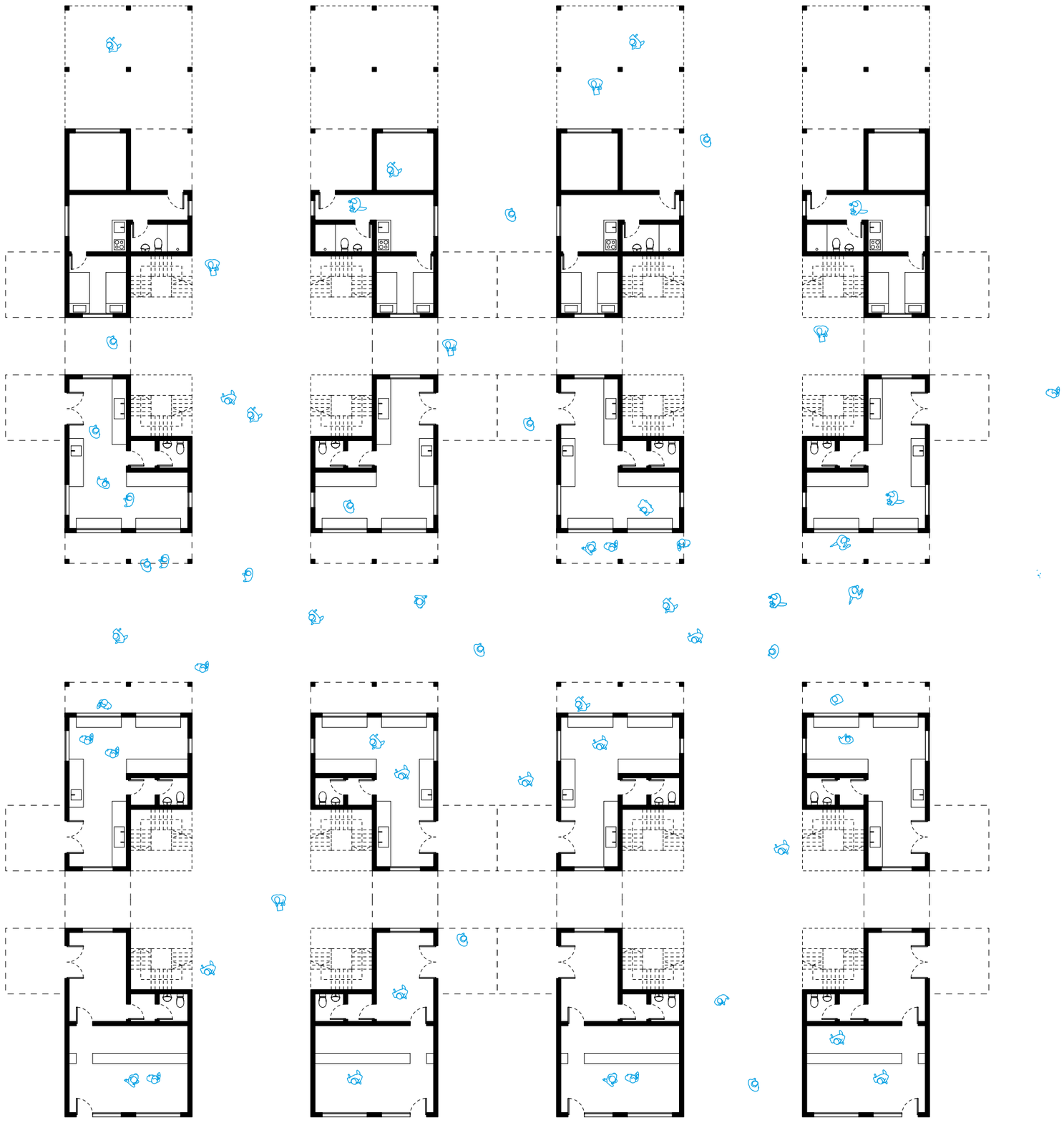
STREET
HIERARCHY

LEGEND
- FISH MARKET
- FISH SORTING
- RETAIL/ EATERIES
- HOUSING
- CIRCULATION

GROUND FLOOR PLAN

3m 15m

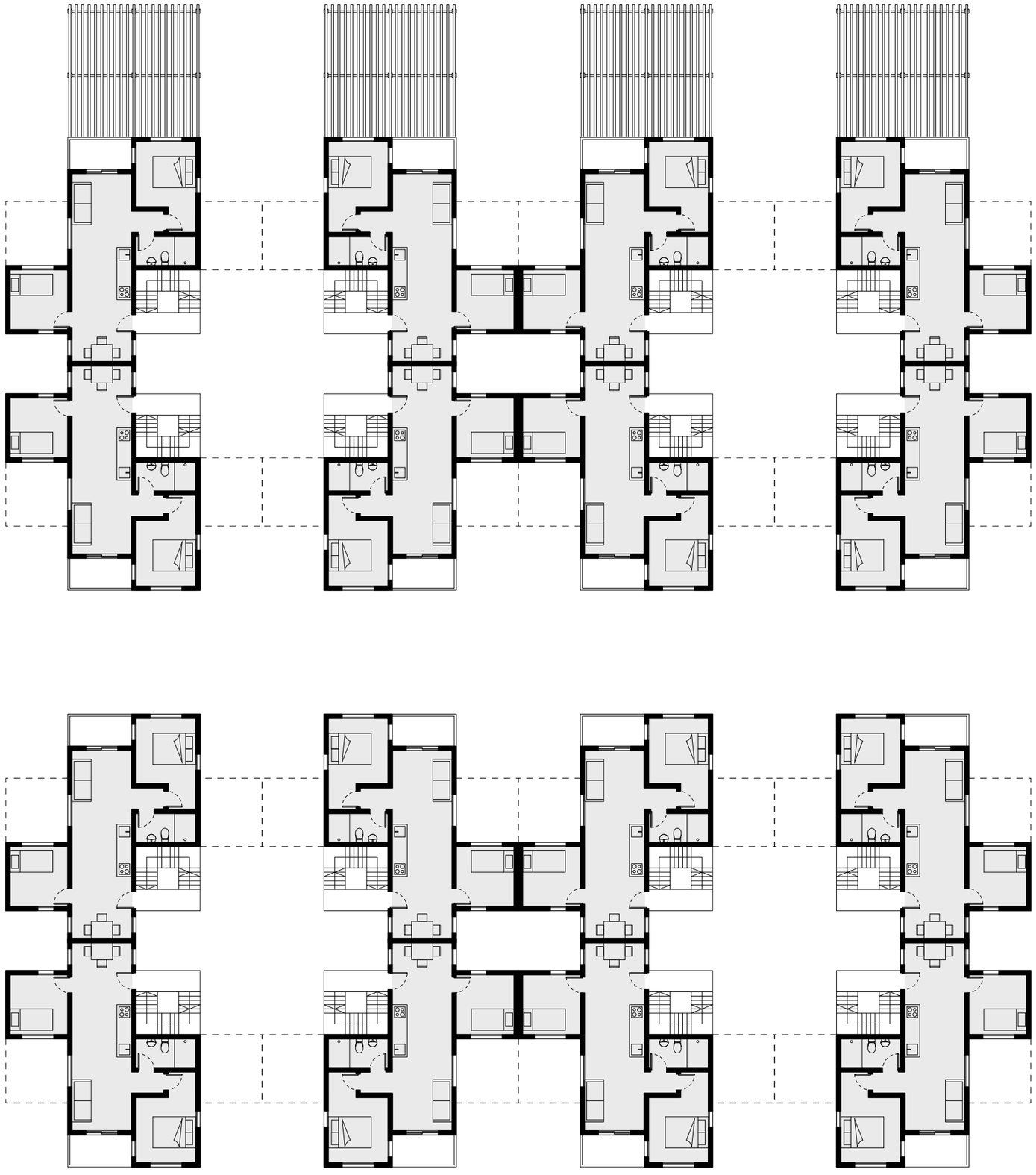
DESIGN
GROUND FLOOR PLAN



GROUND FLOOR PLAN

3m 15m

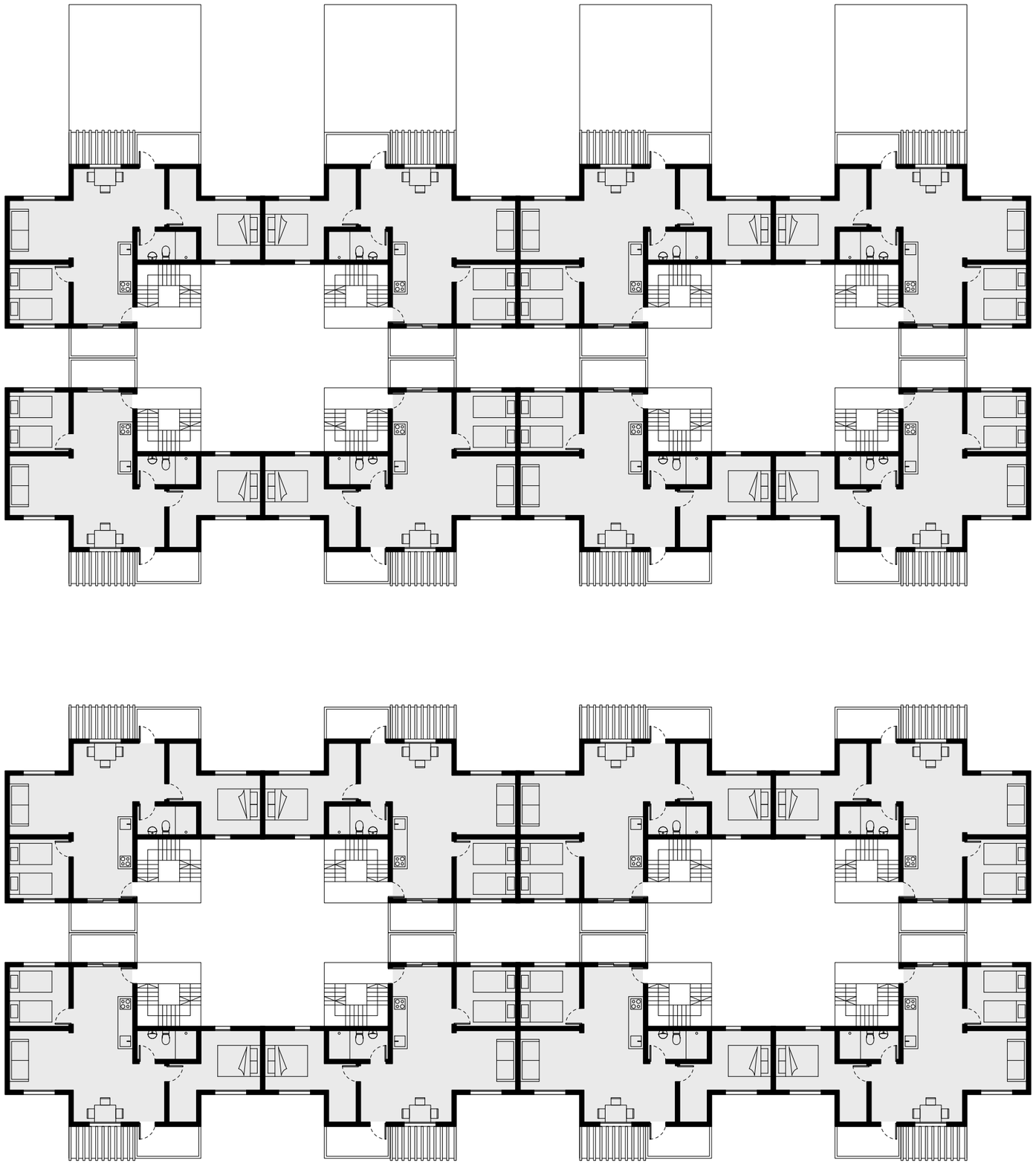
DESIGN
FIRST FLOOR PLAN



FIRST FLOOR PLAN

3m 15m

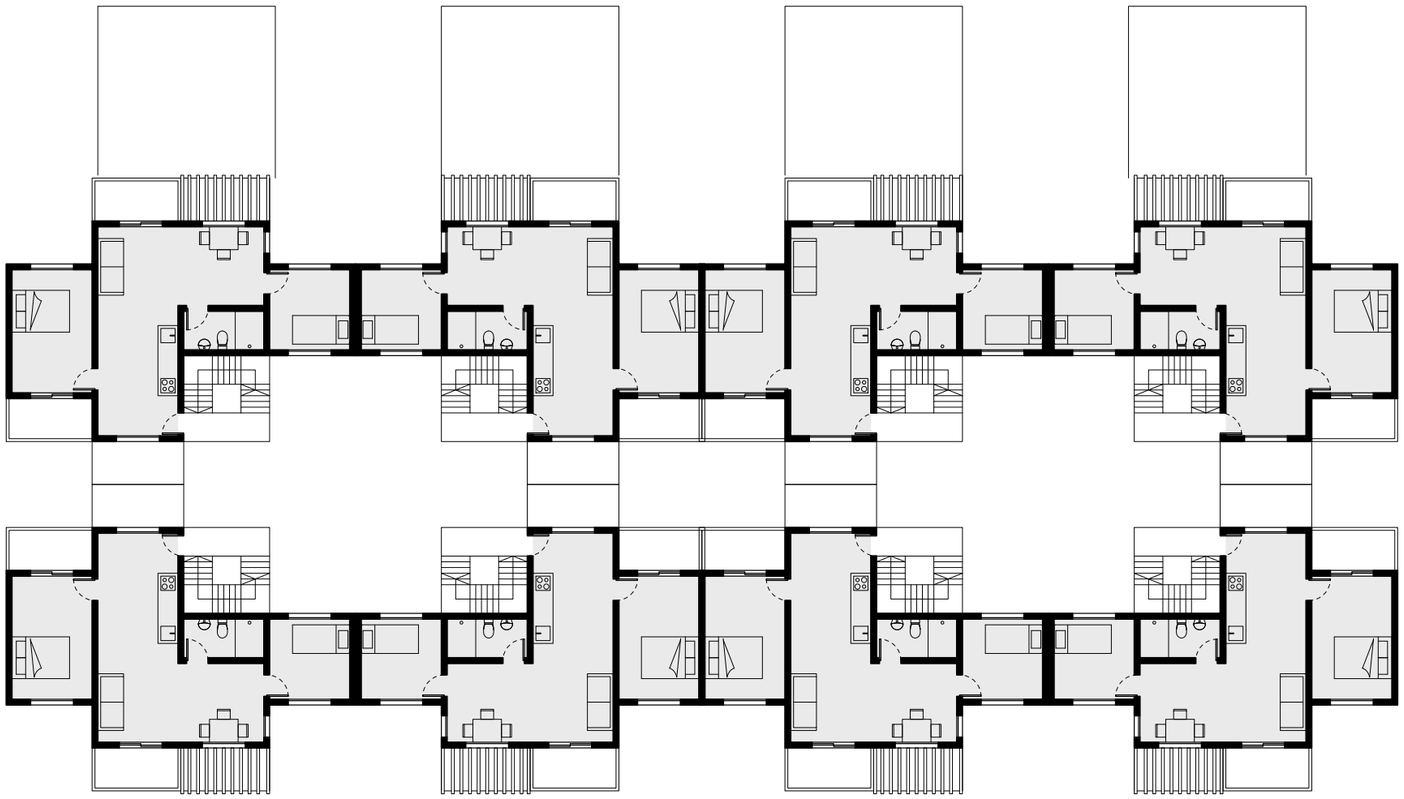
DESIGN
SECOND FLOOR PLAN

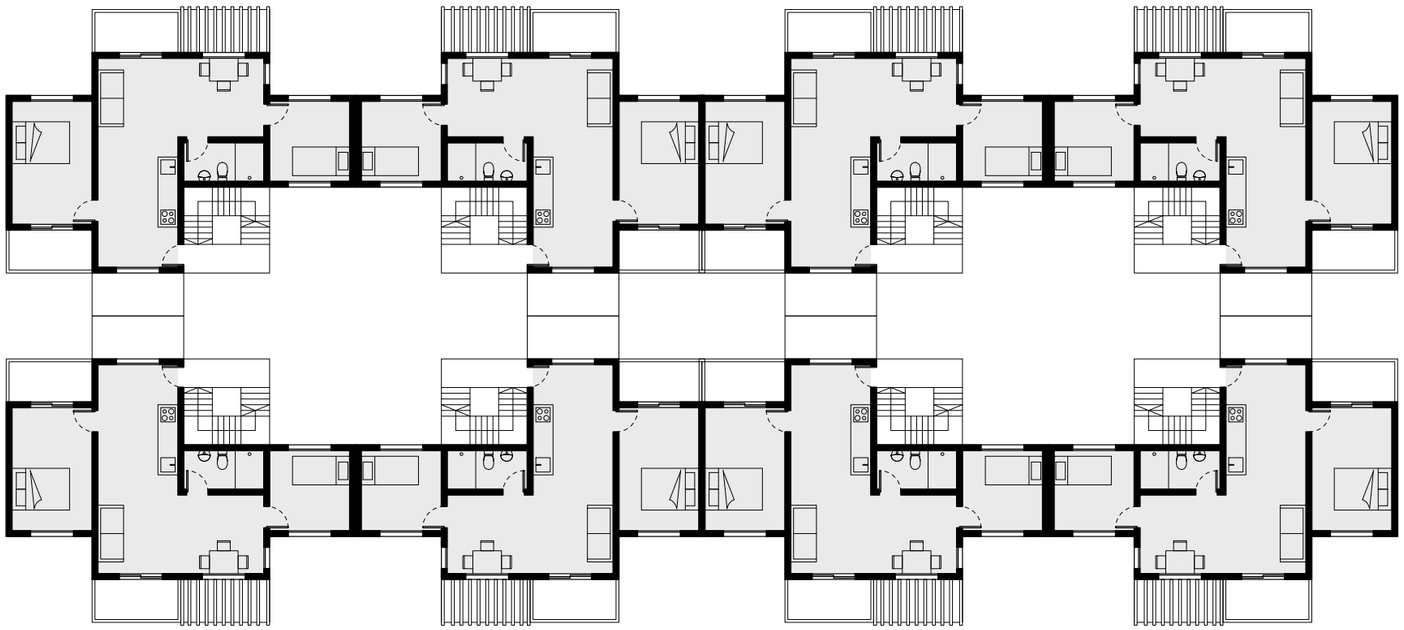


SECOND FLOOR PLAN

3m 15m

DESIGN
THIRD FLOOR PLAN

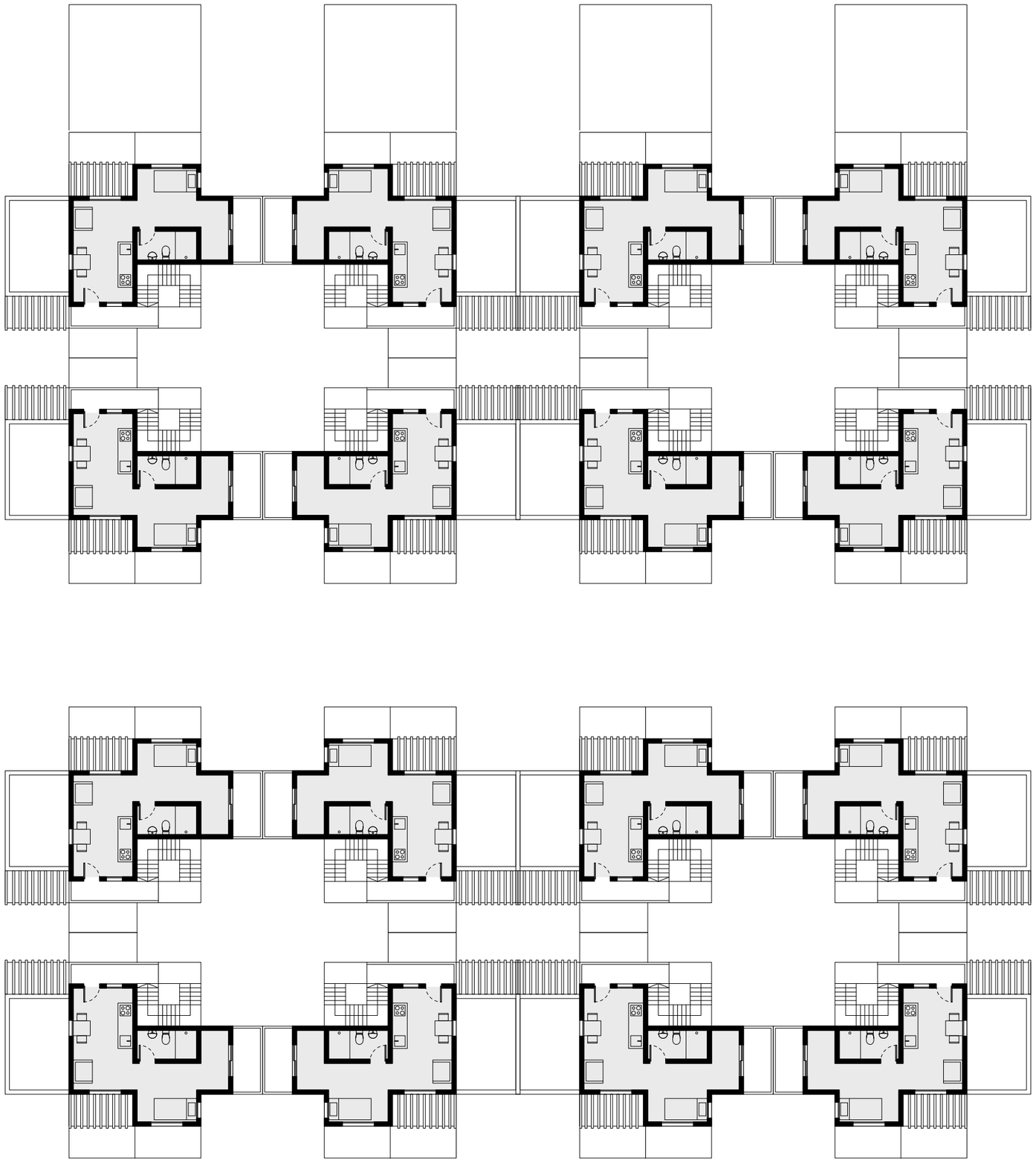




THIRD FLOOR PLAN

3m 15m

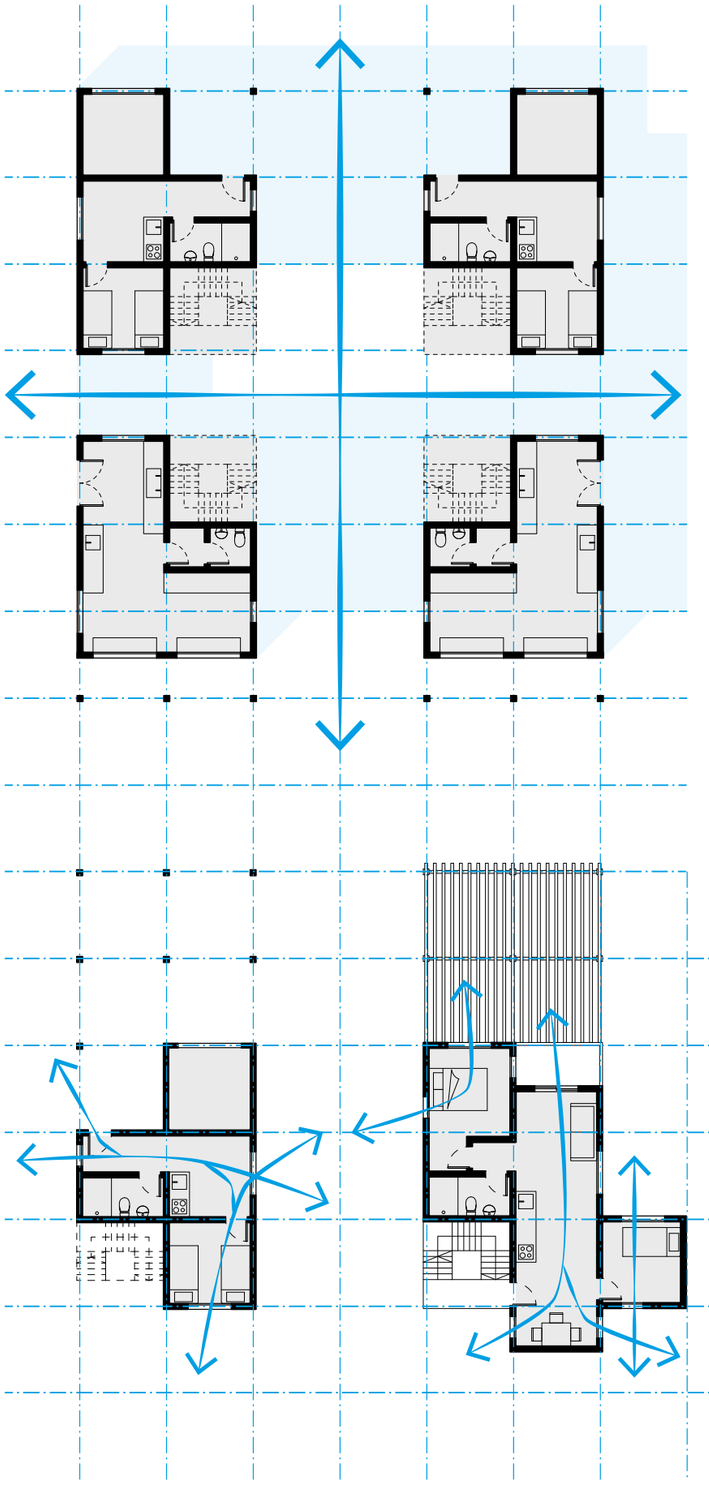
DESIGN
FOURTH FLOOR PLAN

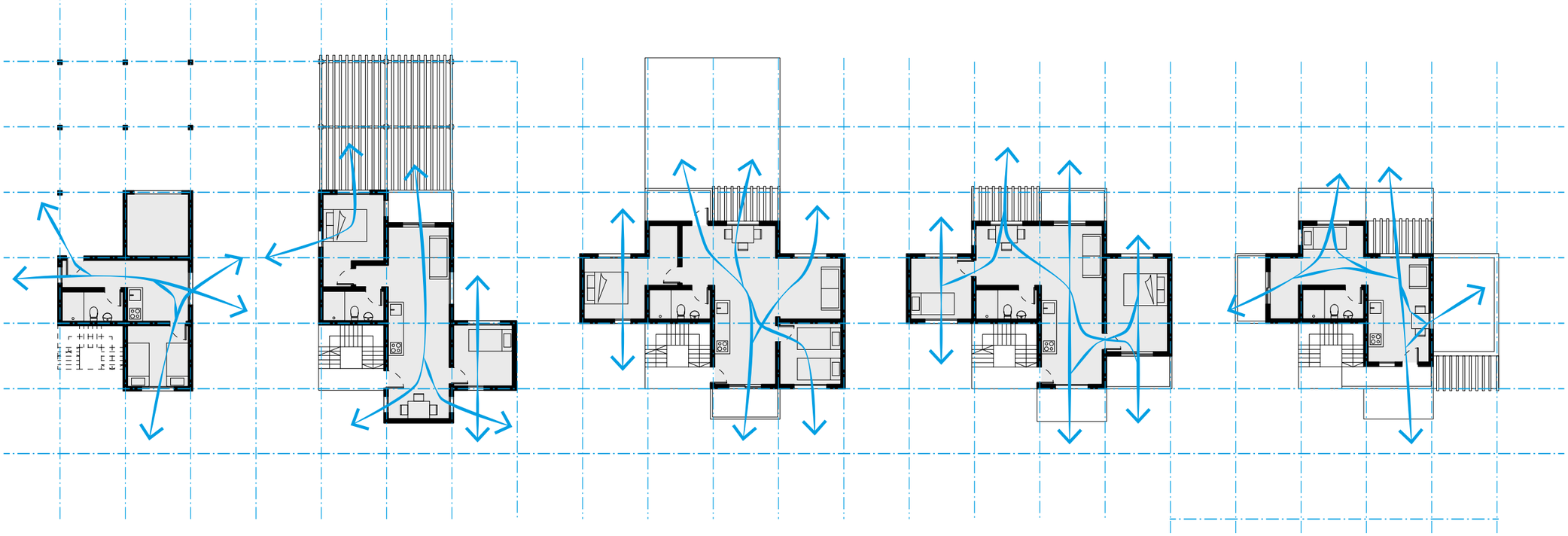


FOURTH FLOOR PLAN

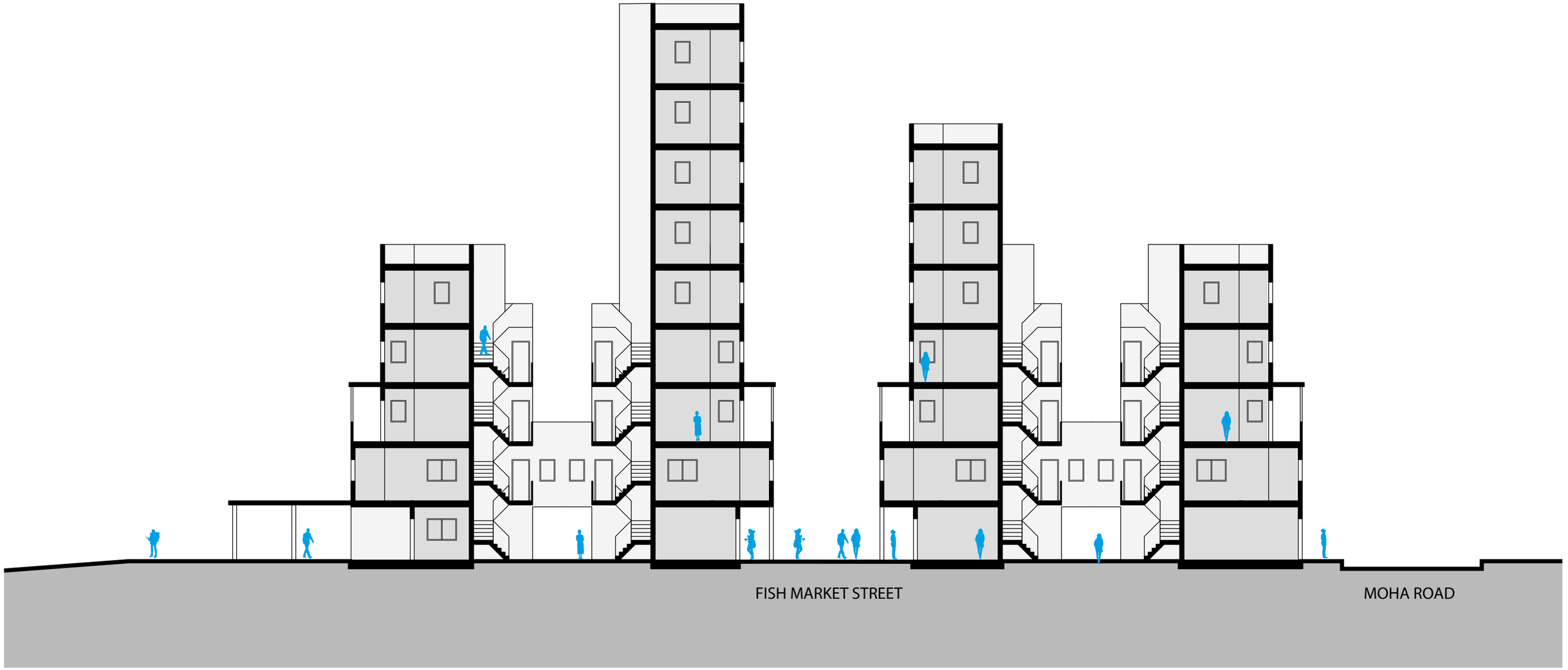
3m 15m

SUSTAINABILITY





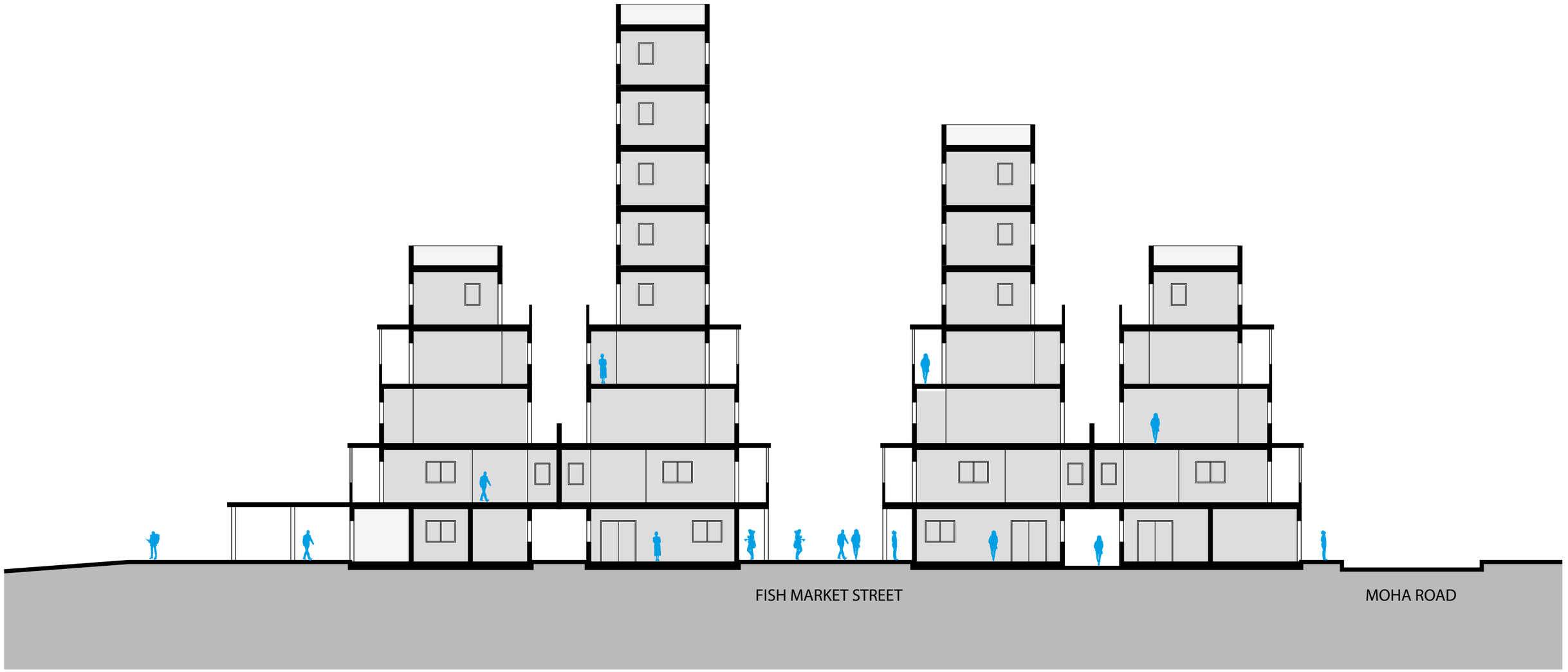
SECTION DRAWING



SECTION DRAWING

3m 15m

SECTION DRAWING



SECTION DRAWING

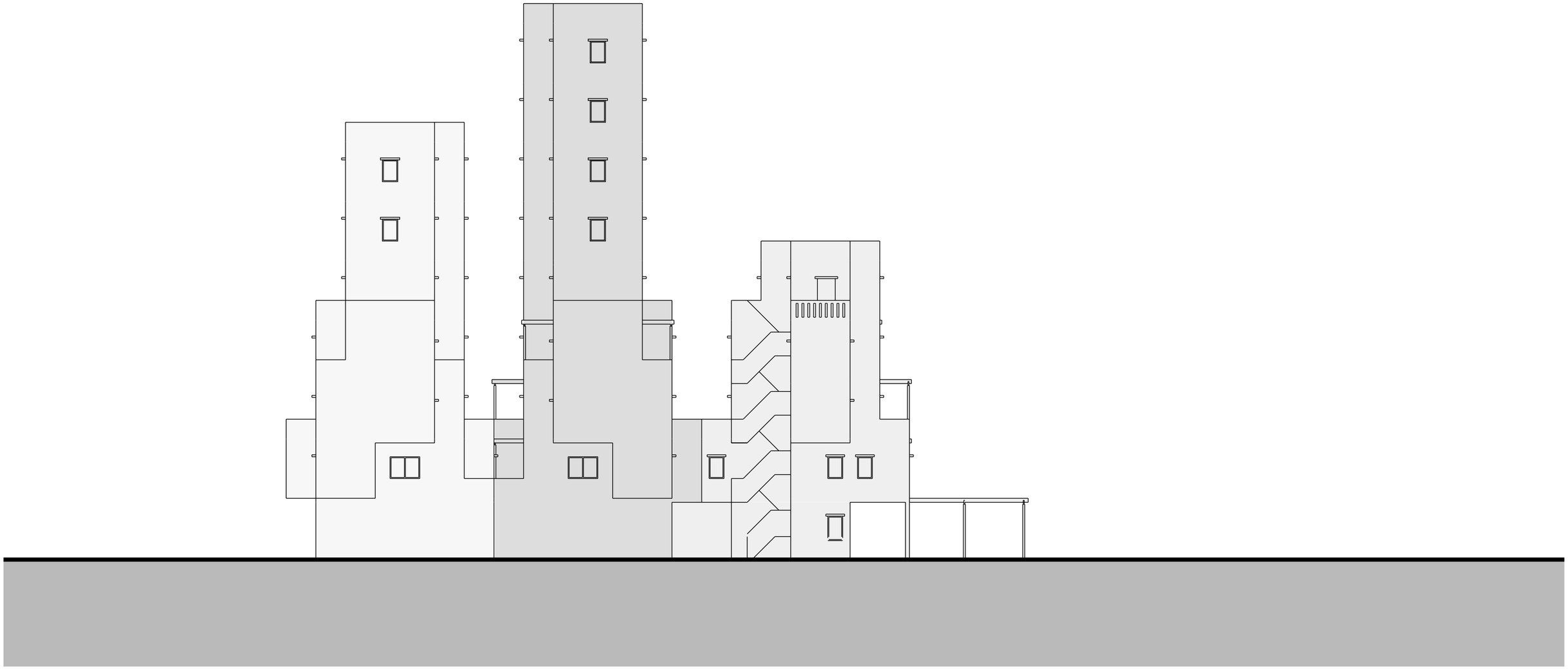
3m 15m

ELEVATION DRAWING

ELEVATION DRAWING

3m 15m

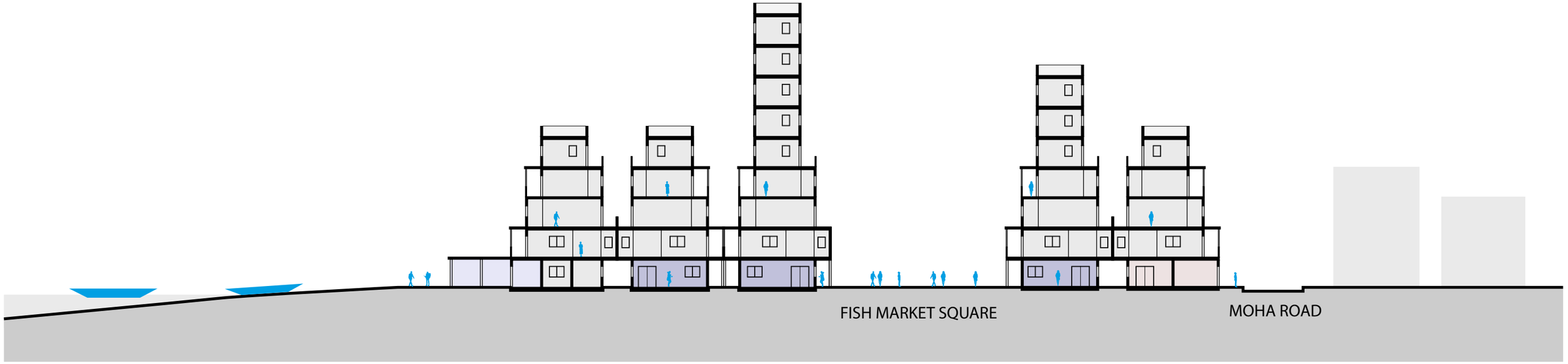
ELEVATION DRAWING



ELEVATION DRAWING

3m 15m

SECTION DRAWING



SECTION DRAWING

6m 30m

VILLAGE URBANISATION GUIDELINES AIM

Density - FSI, GSI, DW/HA

Heights - Minimum, maximum

Housing Mix - Housing types & percentages

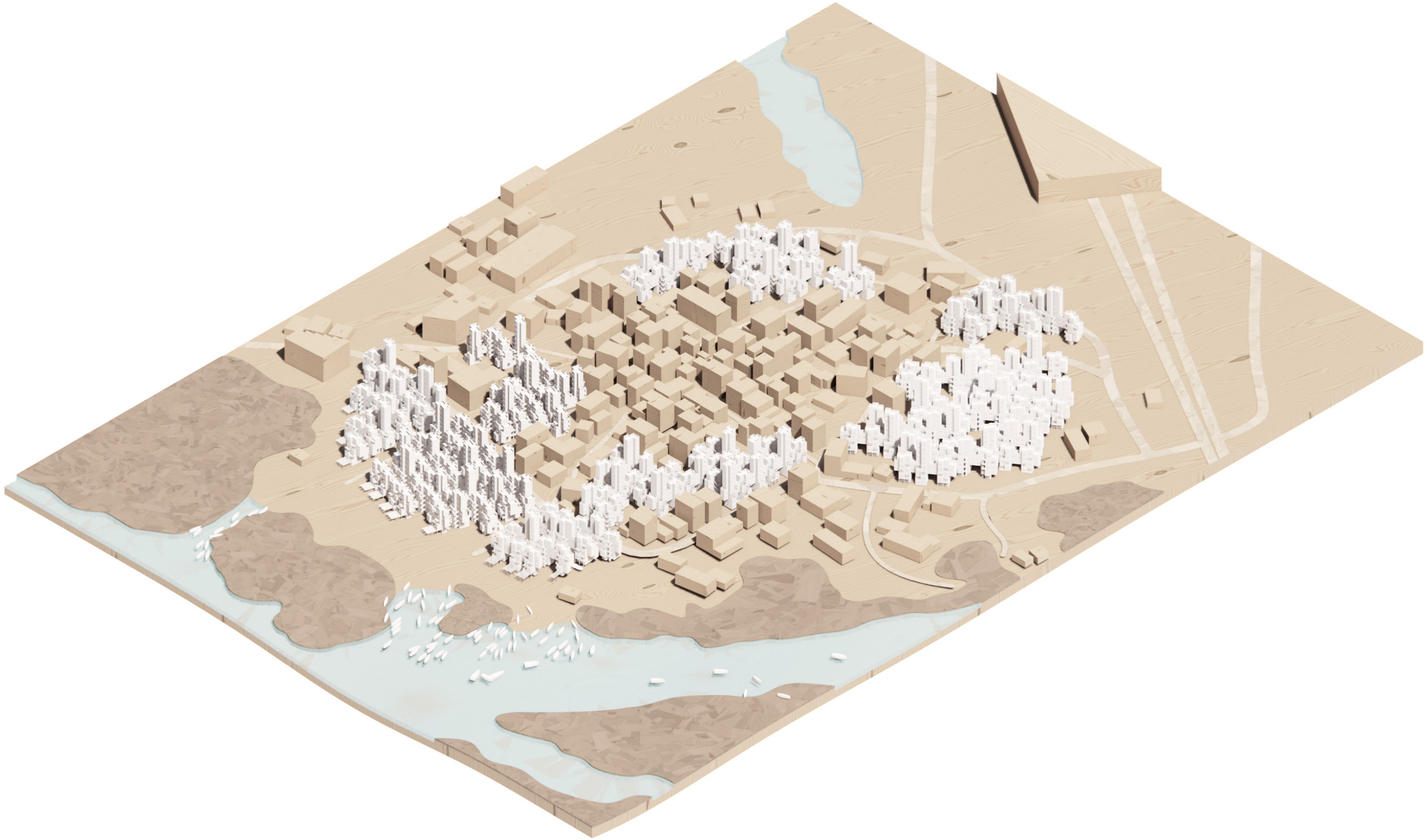
Amenities - Percentages of amenities, retail, industrial space (related to housing)

Accessibility - Vehicular, pedestrian, vertical circulation

Sustainability - Modularity, daylight, ventilation, materials, water treatment

Phasing - Construction system, priority areas, allowed demolitions

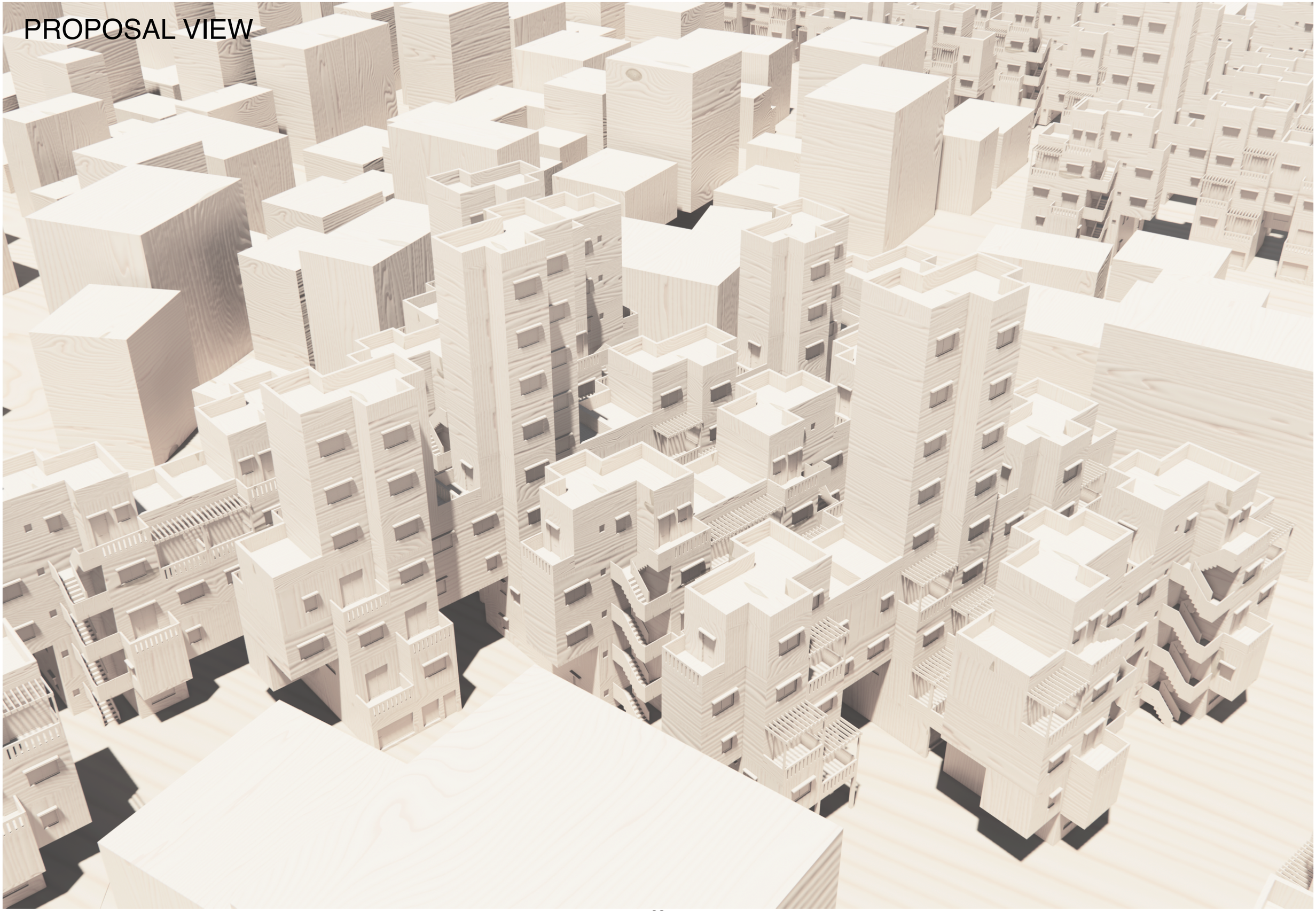
3D MODEL VISUAL



VIEW FROM THE COAST

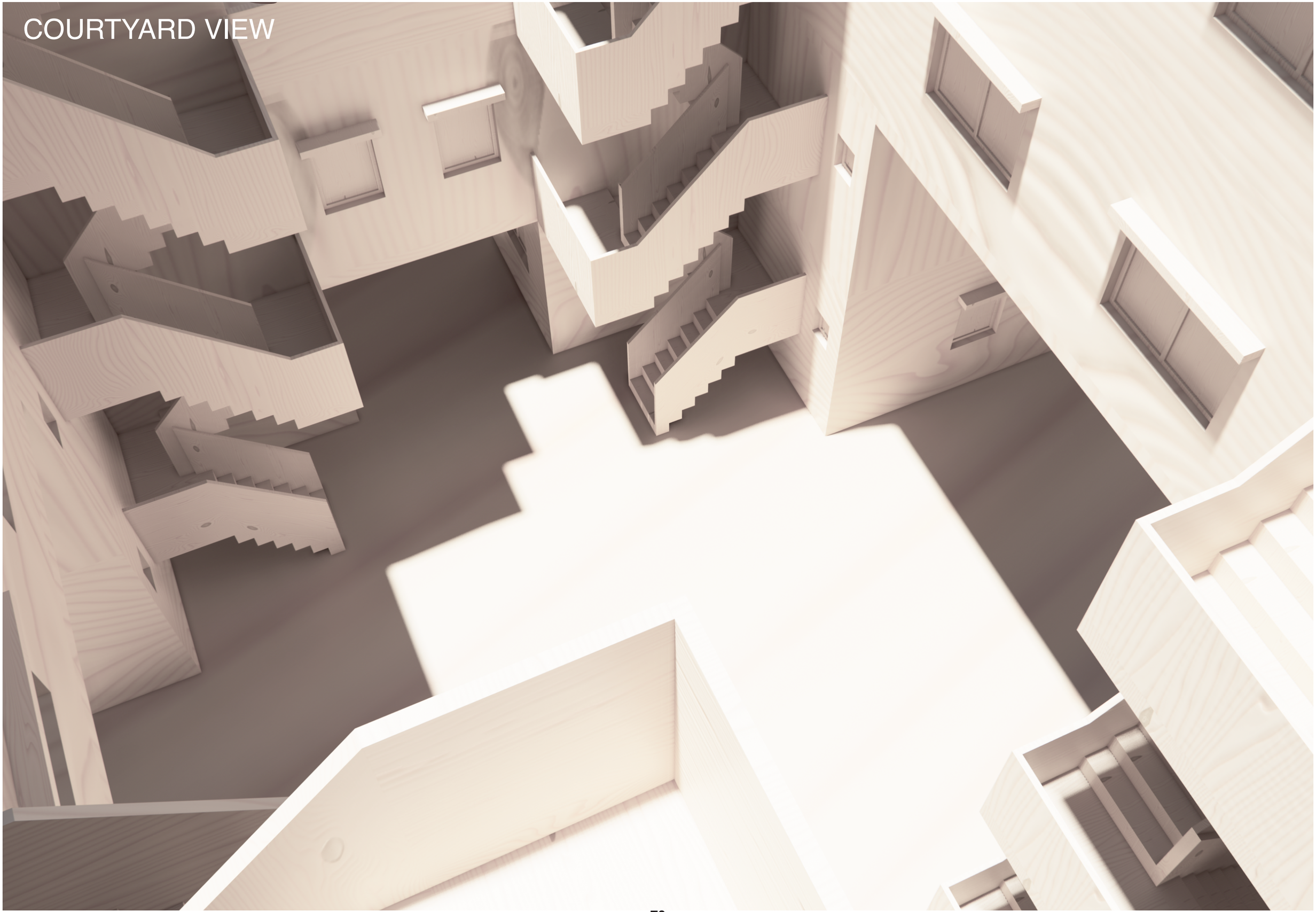
VIEW FROM THE COAST

PROPOSAL VIEW



STREET VIEW

COURTYARD VIEW



FISH MARKET STREET

THANK YOU