TU DELFT | FACULTY OF ARCHITECTURE AND THE BUILT ENVIRONMENT
DEPARTMENT OF ARCHITECTURE | GROUP GLOBAL HOUSING



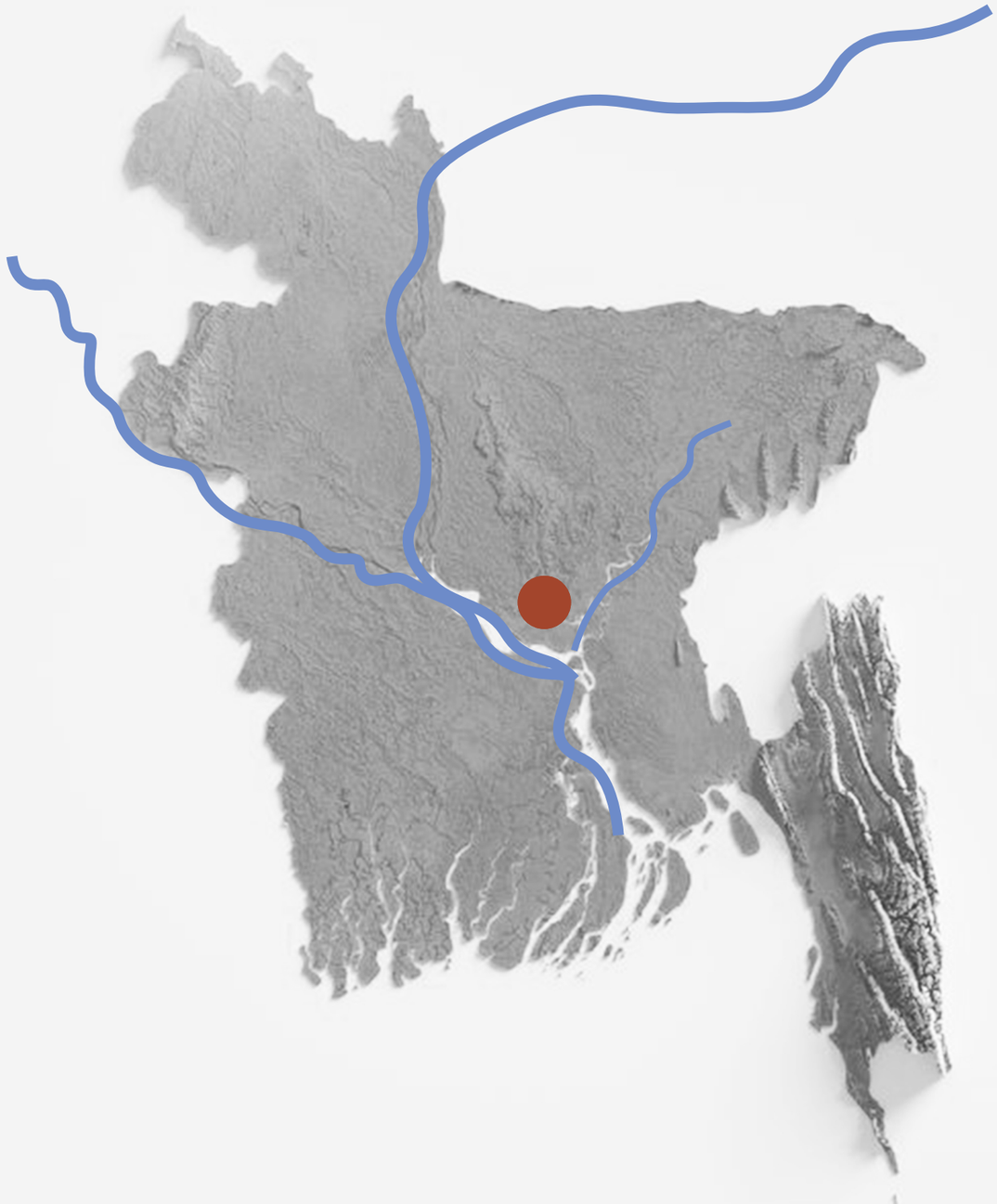
Half Pucca

Danai Makri

Half Pucca

Temporary to permanent.
Housing for internally displaced communities in Bangladesh

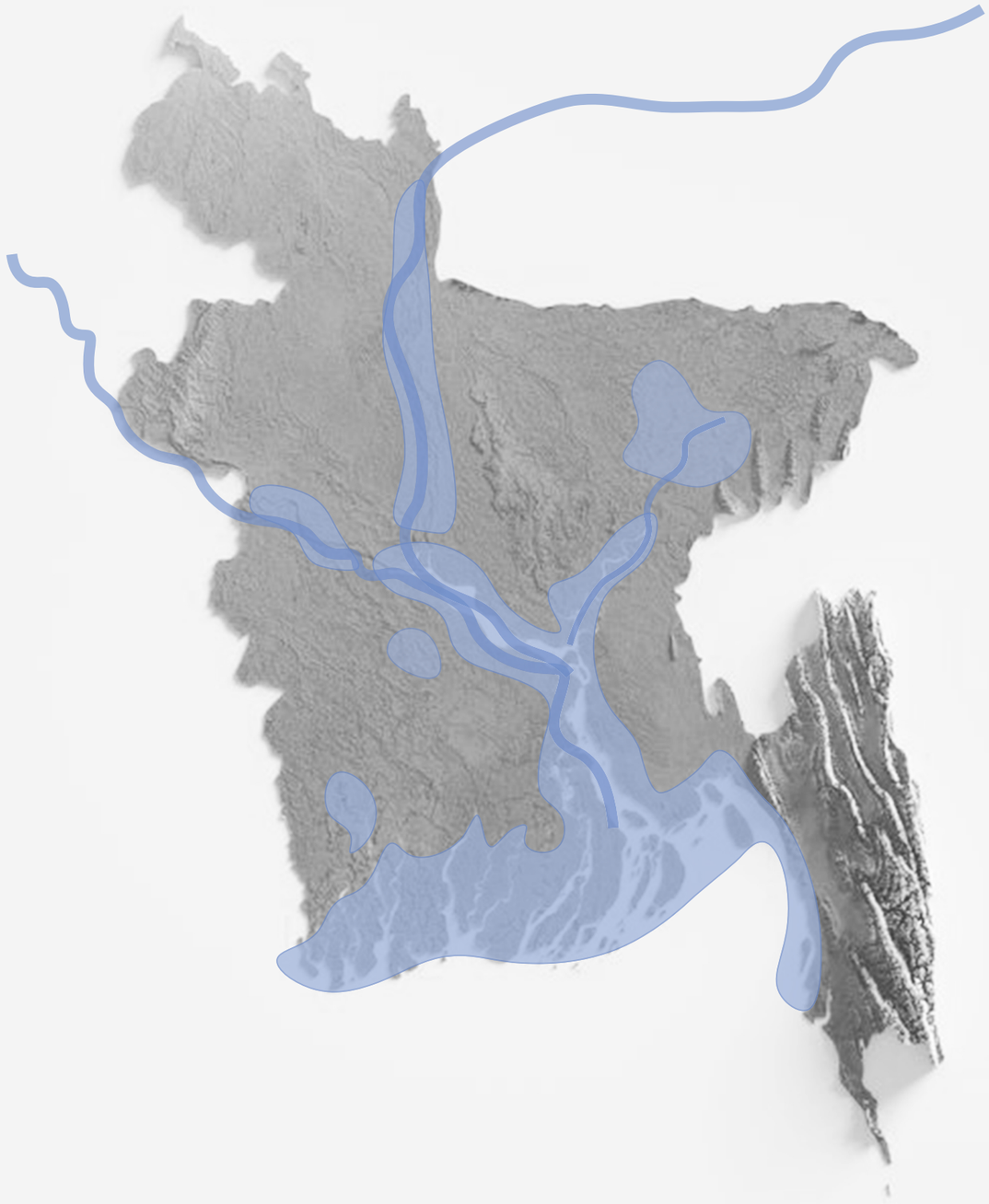
"The best architecture is not just shelter, but a framework for life to unfold."
— Charles Correa











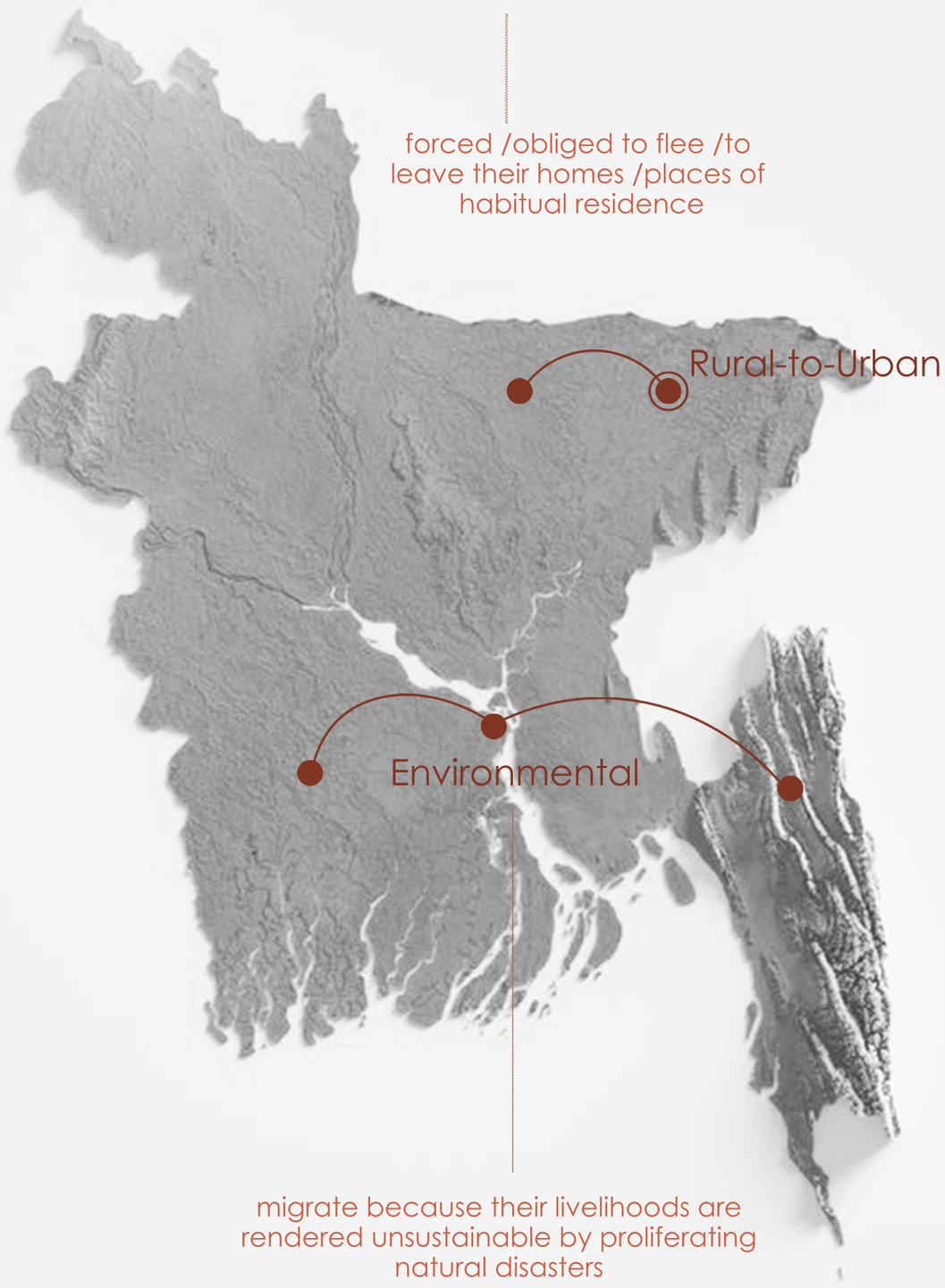


External



Internal

forced /obliged to flee /to leave their homes /places of habitual residence



migrate because their livelihoods are rendered unsustainable by proliferating natural disasters



temporary
displaced



in-between
temporary and permanent
displaced



permanent
displaced

According to Ministry of Disaster Management and Relief. (2021). National Strategy on Internal Displacement Management

the categorization of the displaced people as outlined in the National Strategyon Internal Displacement Management + Comprehensive Disaster Management Programme phase 2 (CDMP II)



temporary displaced

possibility of return in the short or medium term

RETURN



in-between temporary and permanent displaced

LOCAL INTERGRATION



permanent displaced

no prospect of return in the long or very long term

RELOCATION

Durable Solutions

According to Ministry of Disaster Management and Relief. (2021) + Internal Displacement Monitoring Centre









HAOR

FLOODED

embankments

river band erosion **66%**

cyclones + king tides **64%**

embankments

school/ shelter

river band erosion **8%**

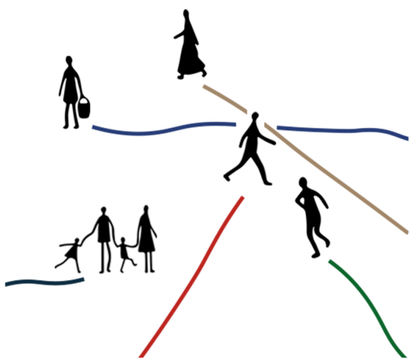
cyclones + king tide **9%**

ABROAD

cyclones + king tide **27%**

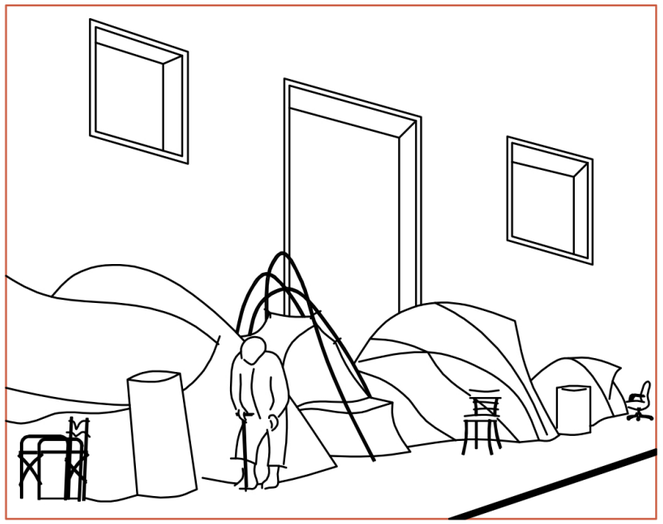
river band erosion **26%**

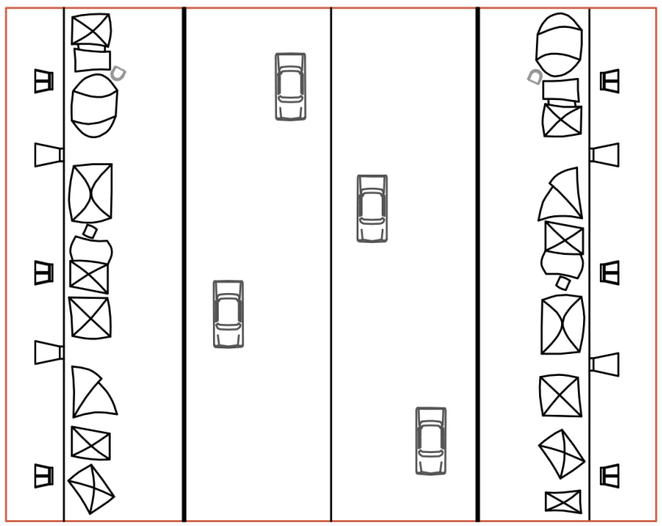
URBAN CENTERS



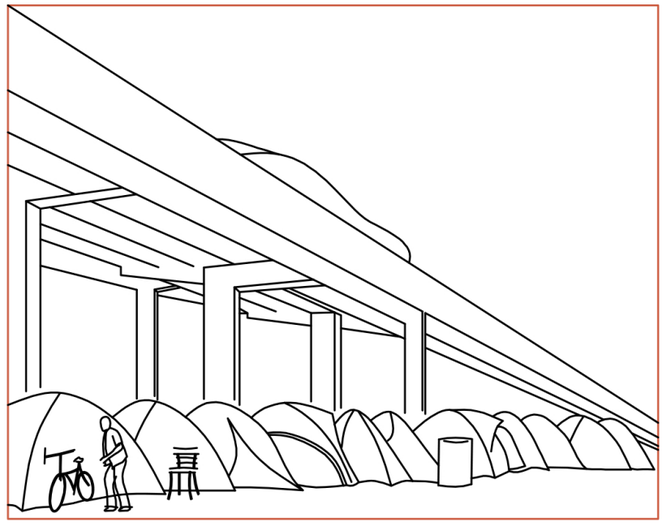
According to Displacement Solutions. (2012).Climate Displacement in Bangladesh: The Need for Urgent Housing, Land and Property (HLP) Rights Solutions

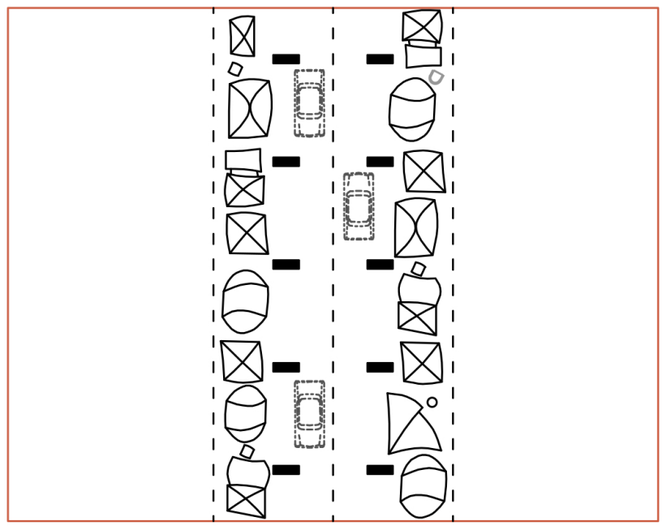
streets



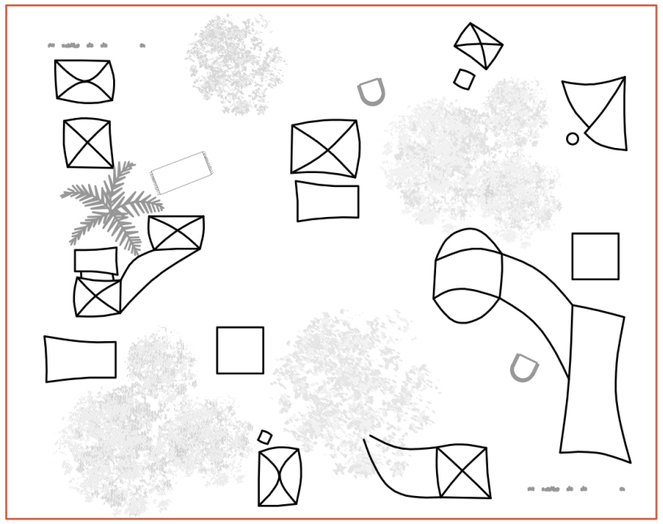


under bridge



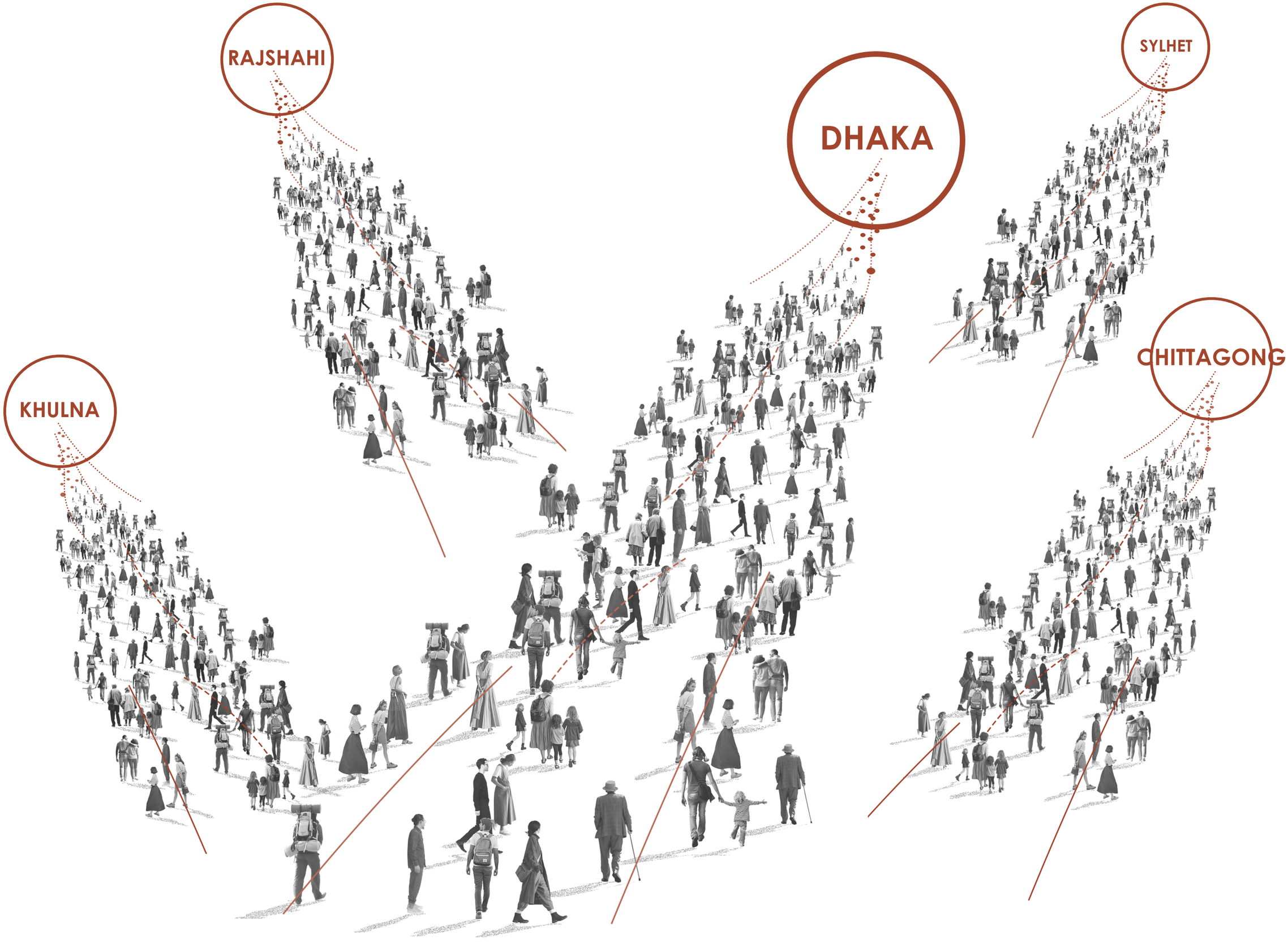


park

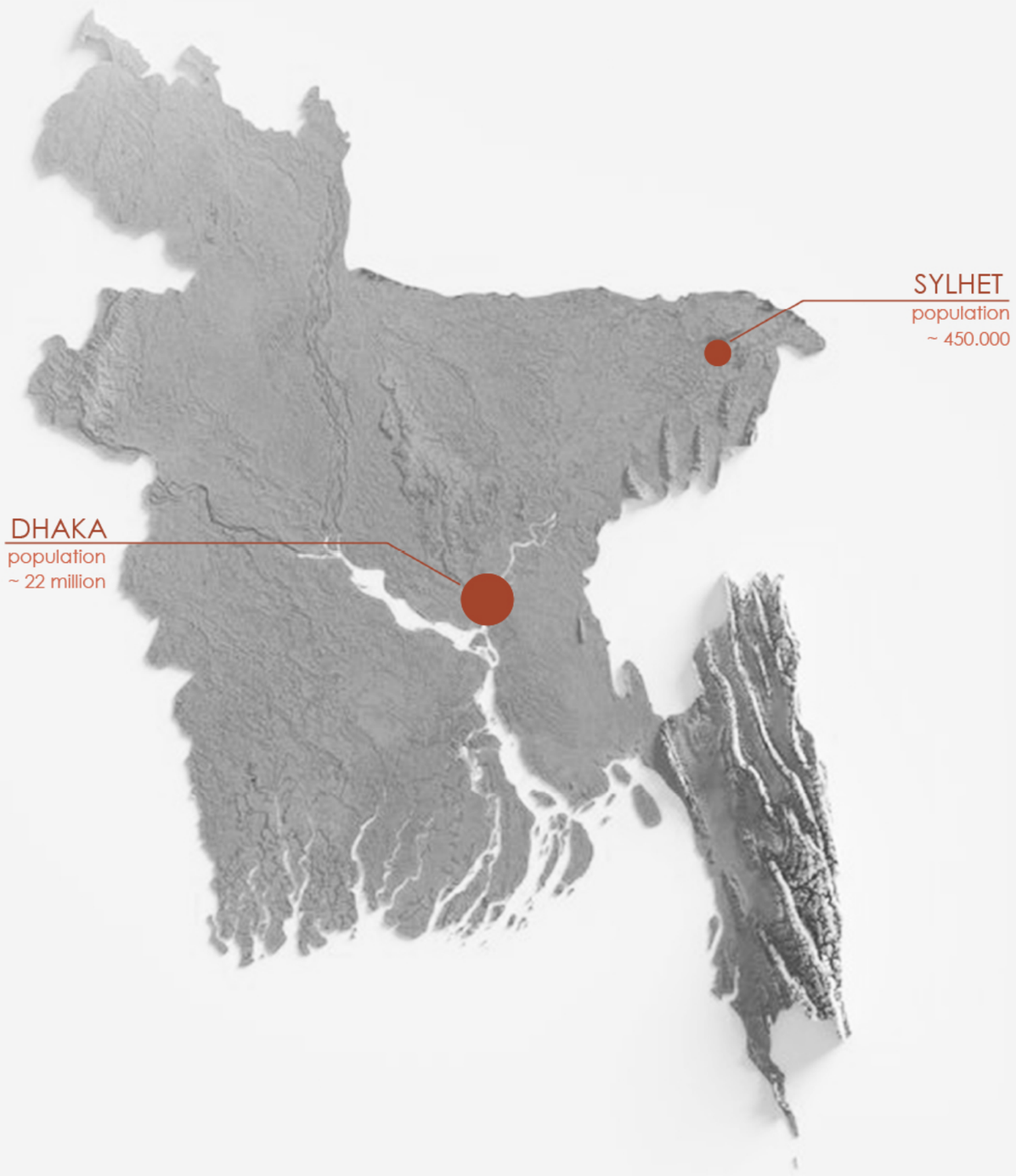




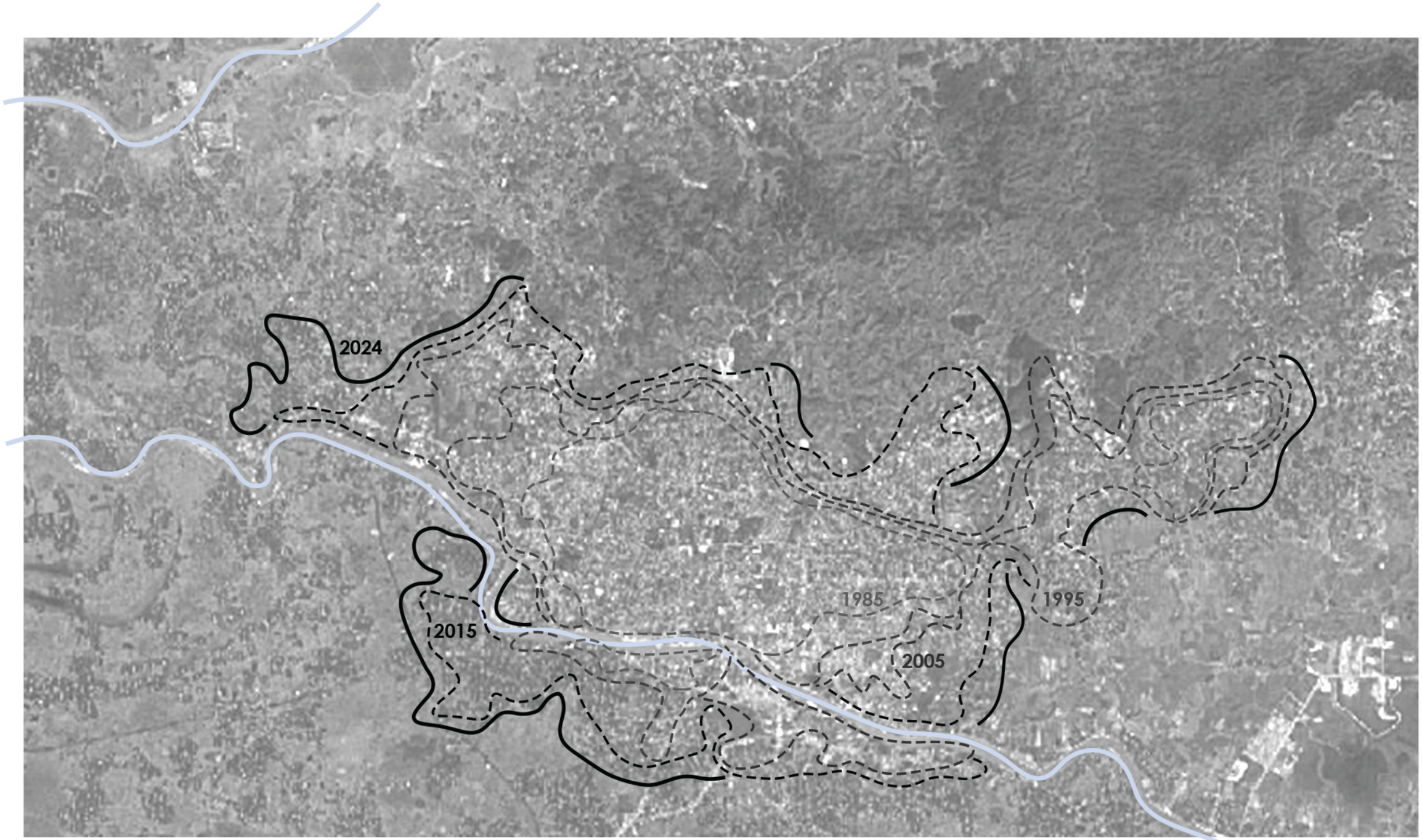


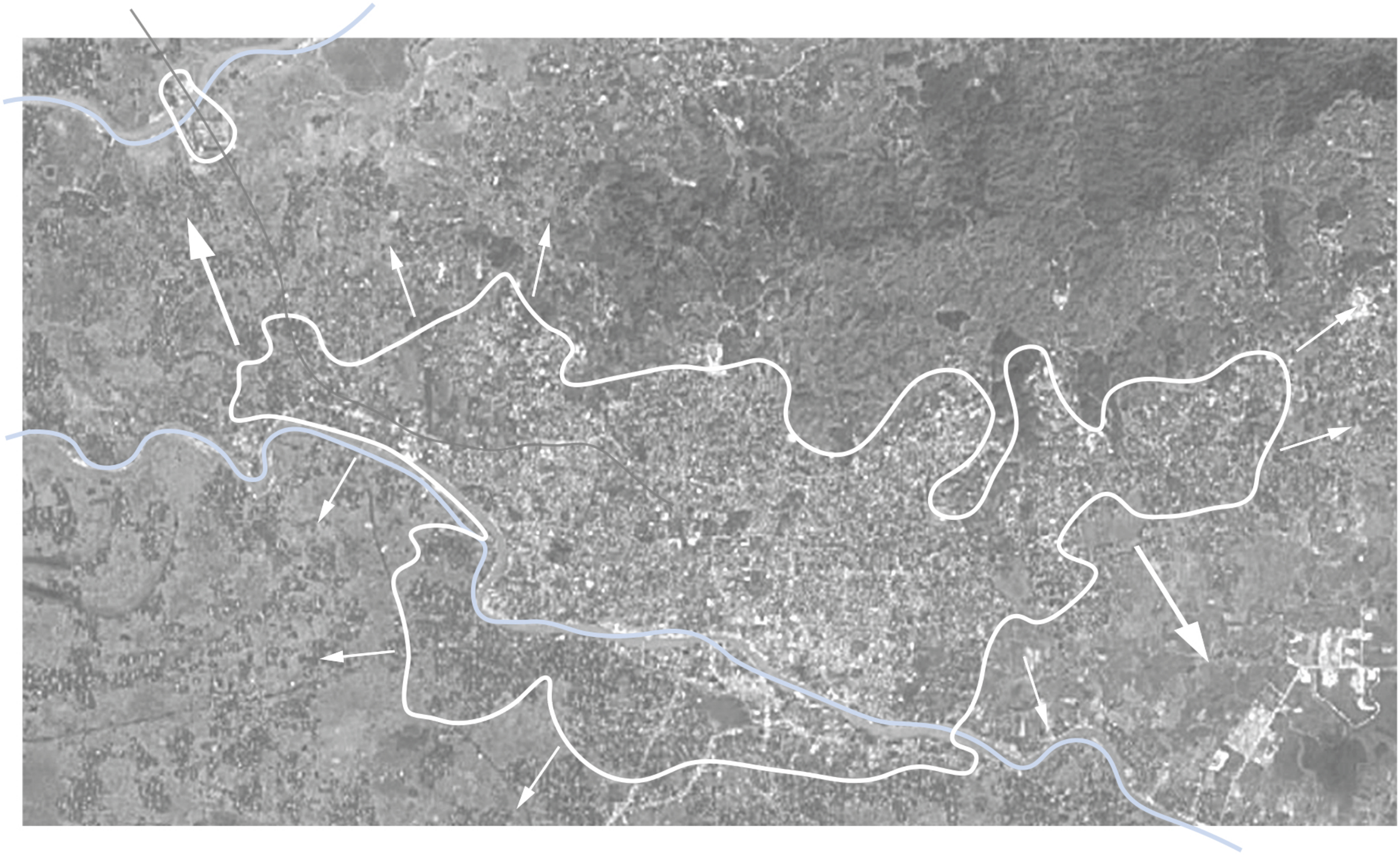

RAJSHAHI
DHAKA
SYLHET
KHULNA
CHITTAGONG

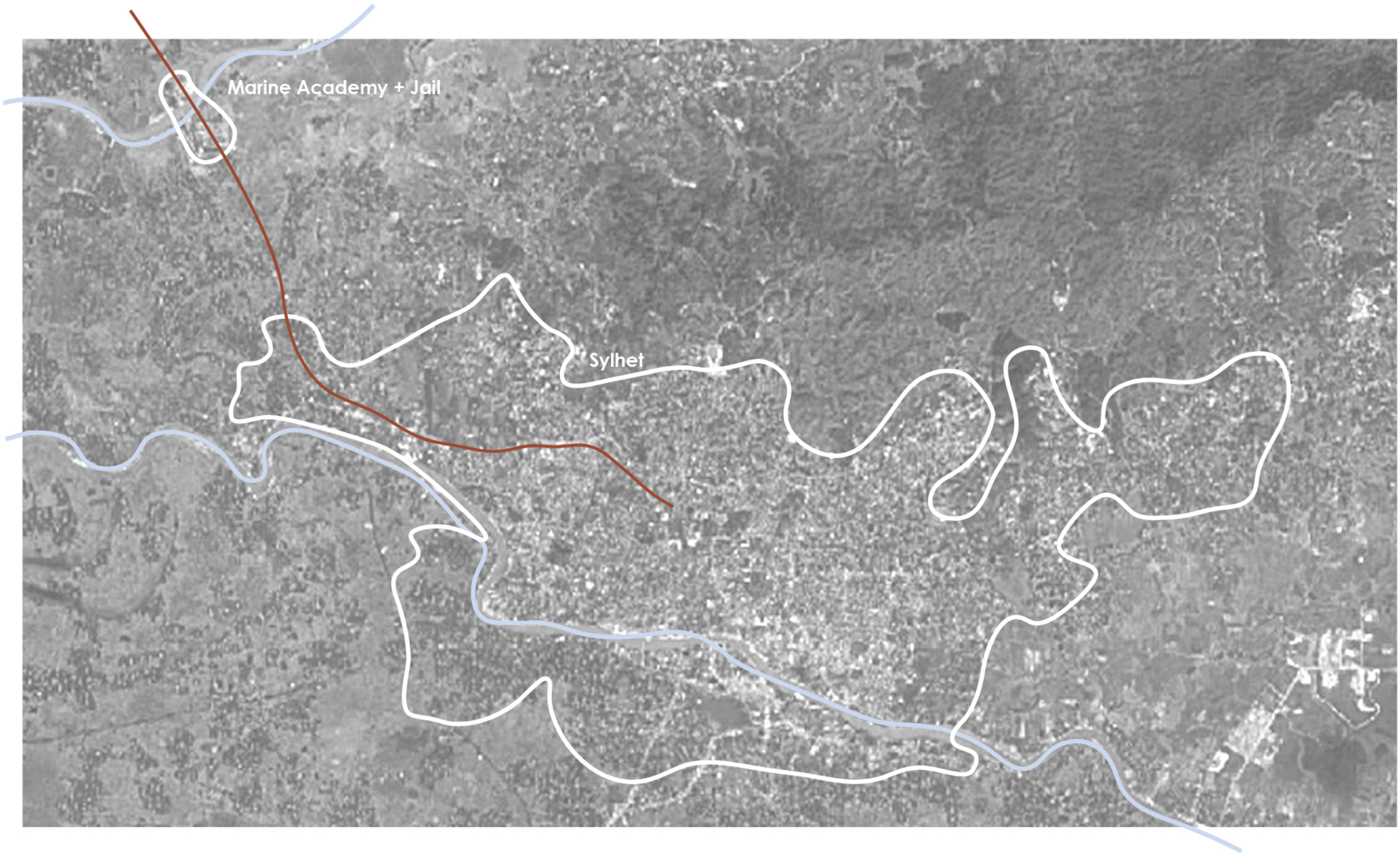
Population density of Bangladesh: 1265 people/ square kilometre

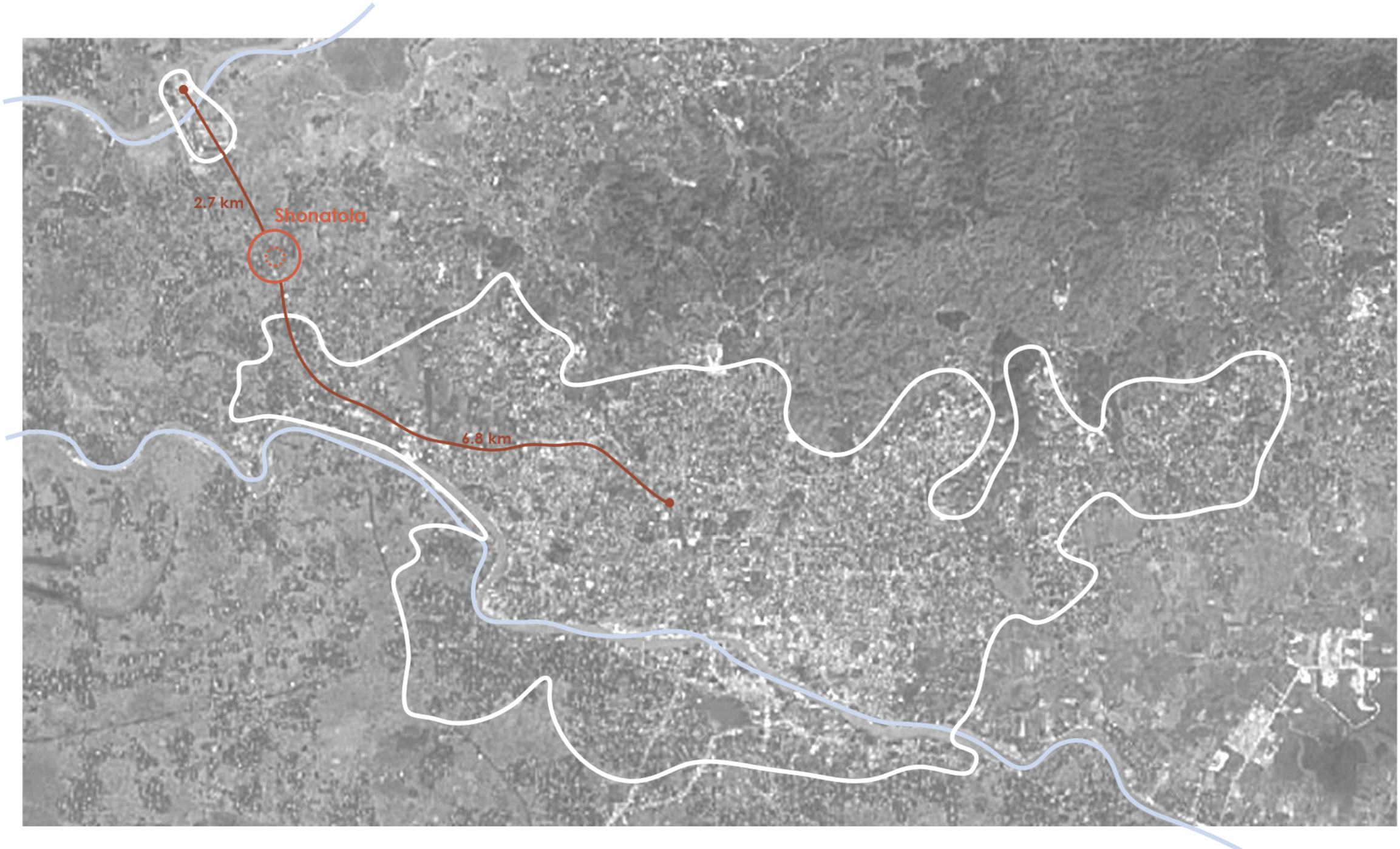


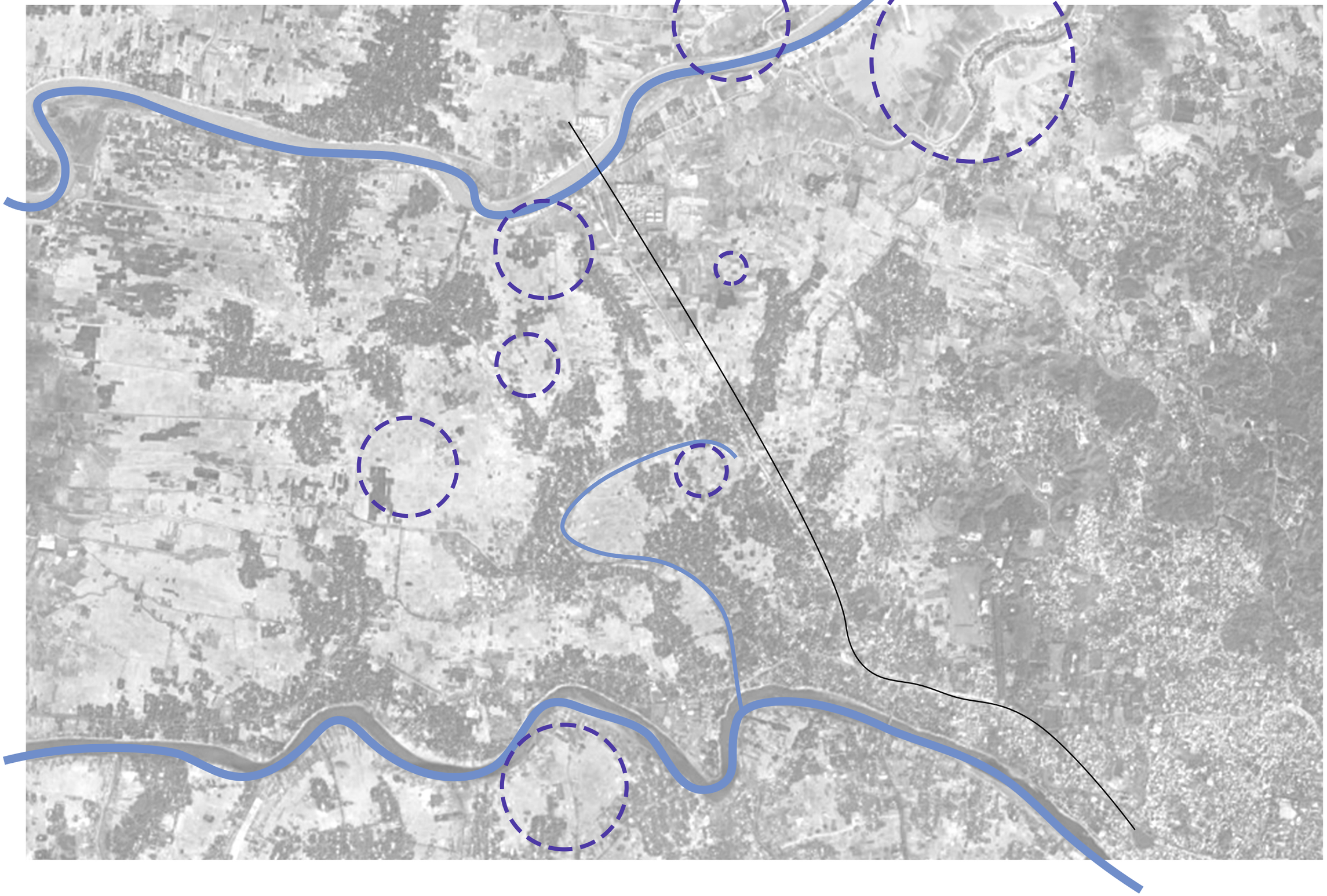

Sylhet Division

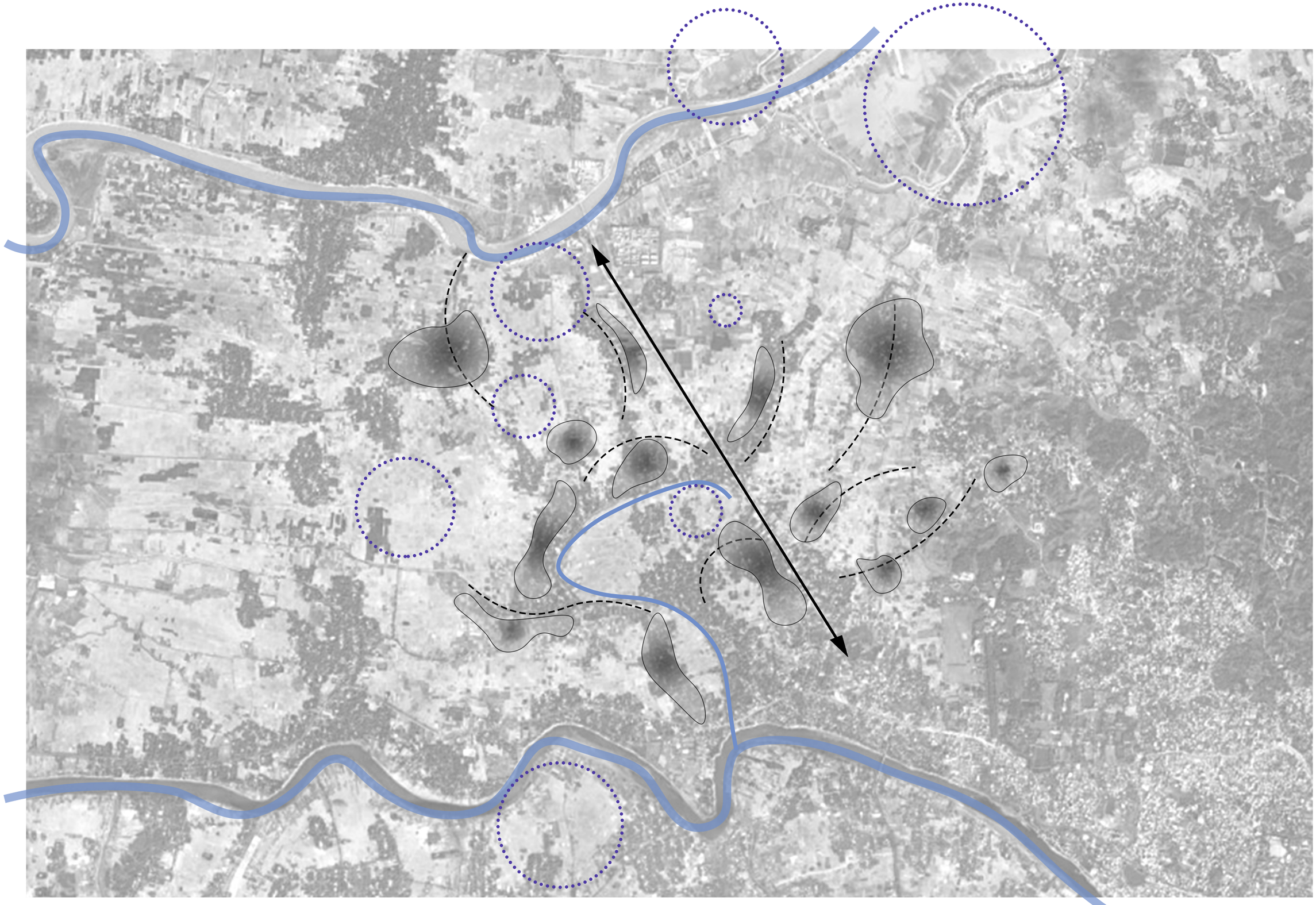

2024
2015
1985
1995
2005

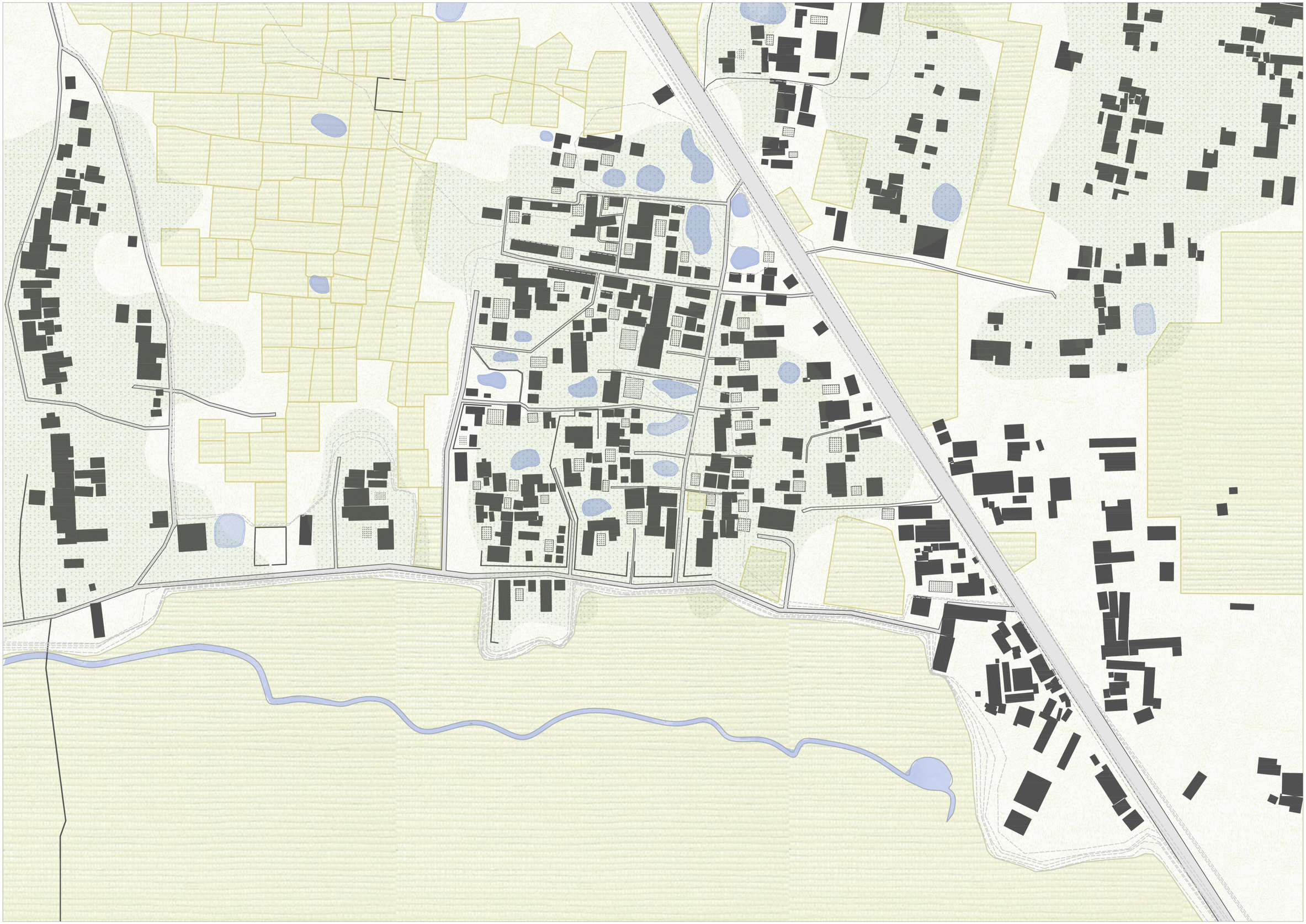


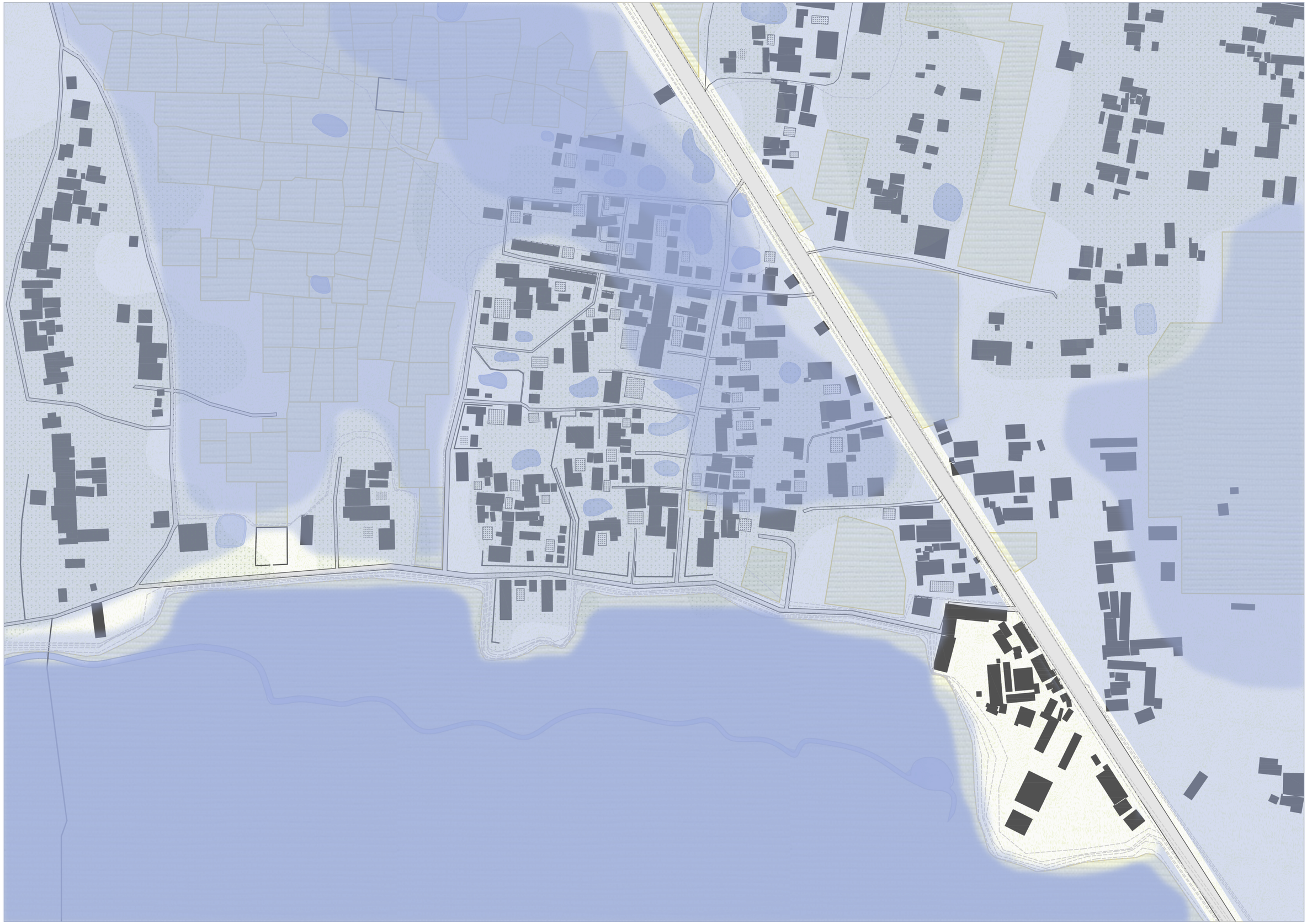

Marine Academy + Jail
Sylhet

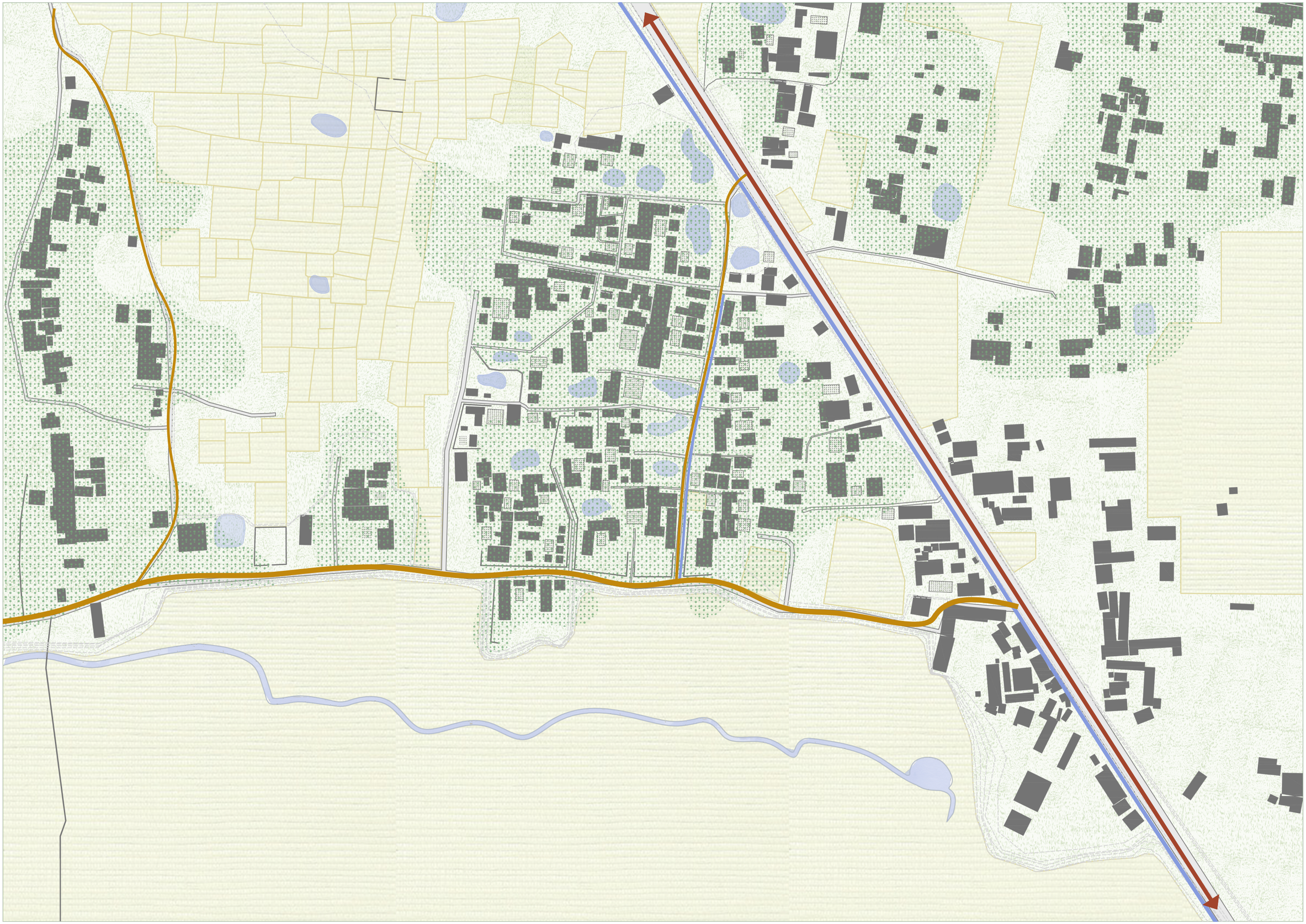

2.7 km
Shonatola
6.8 km

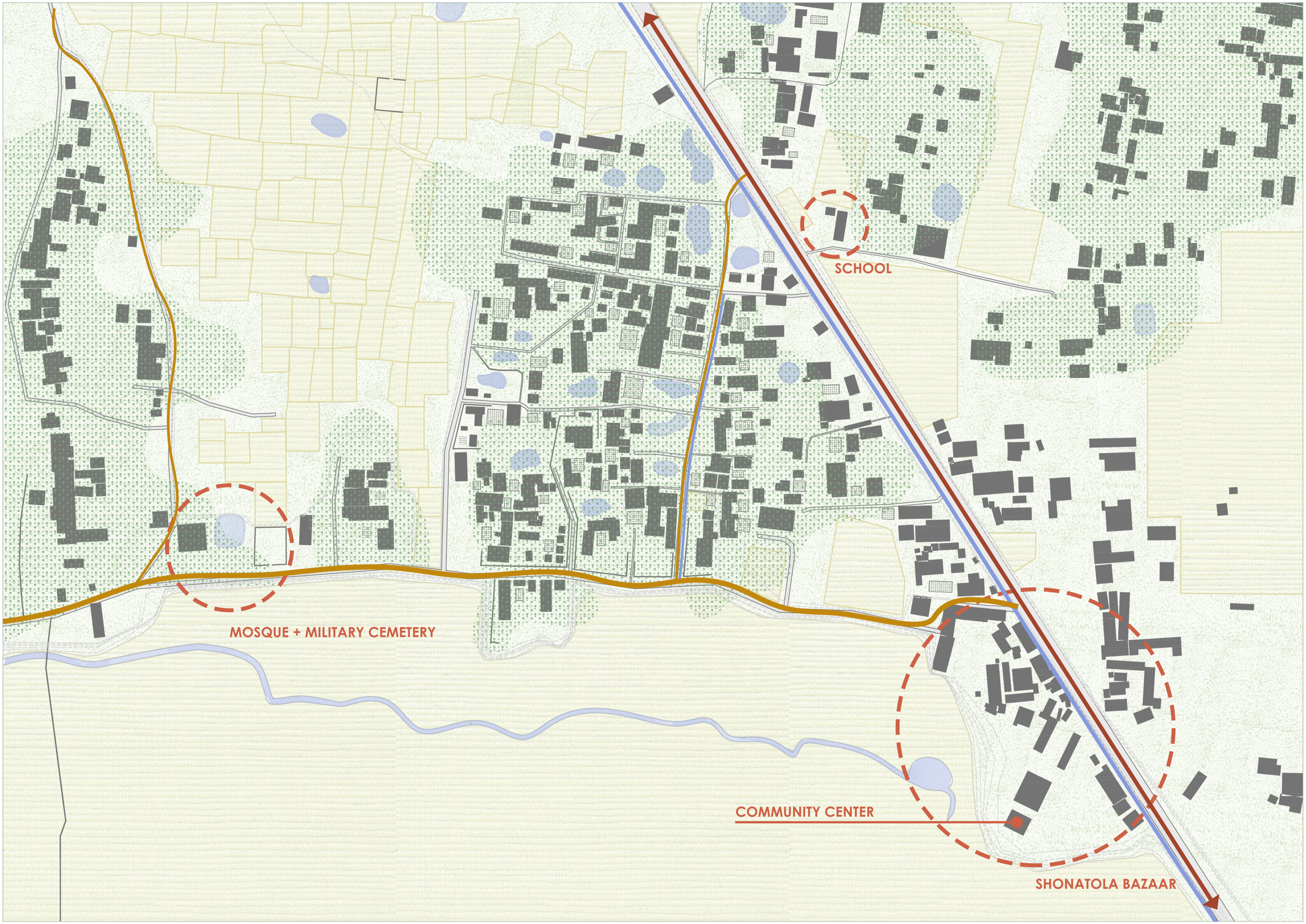






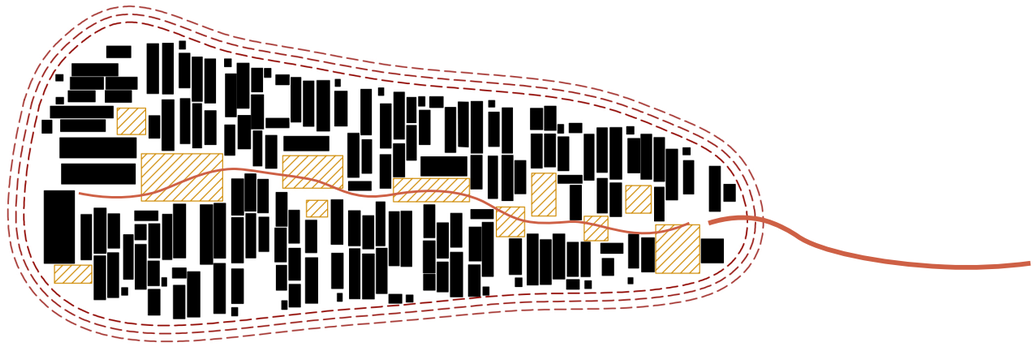




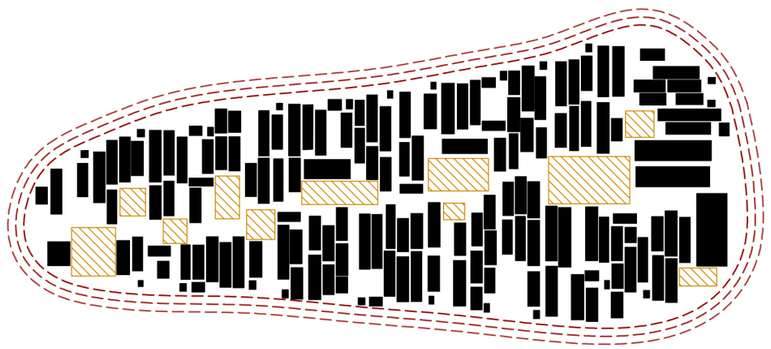

SCHOOL
MOSQUE + MILITARY CEMETERY
COMMUNITY CENTER
SHONATOLA BAZAAR

Haor Settlements

Wetlands

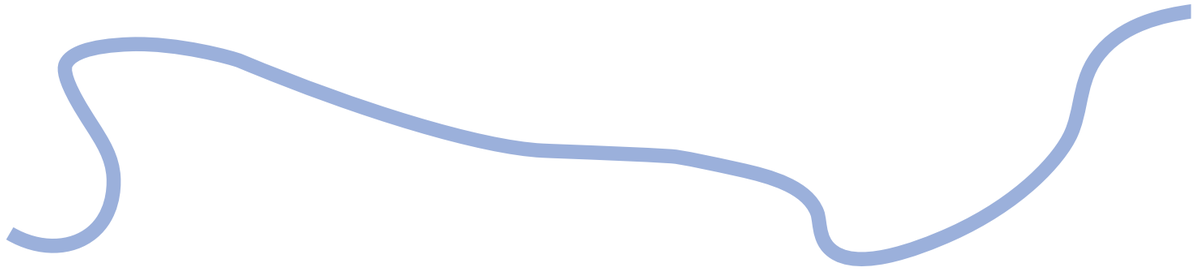


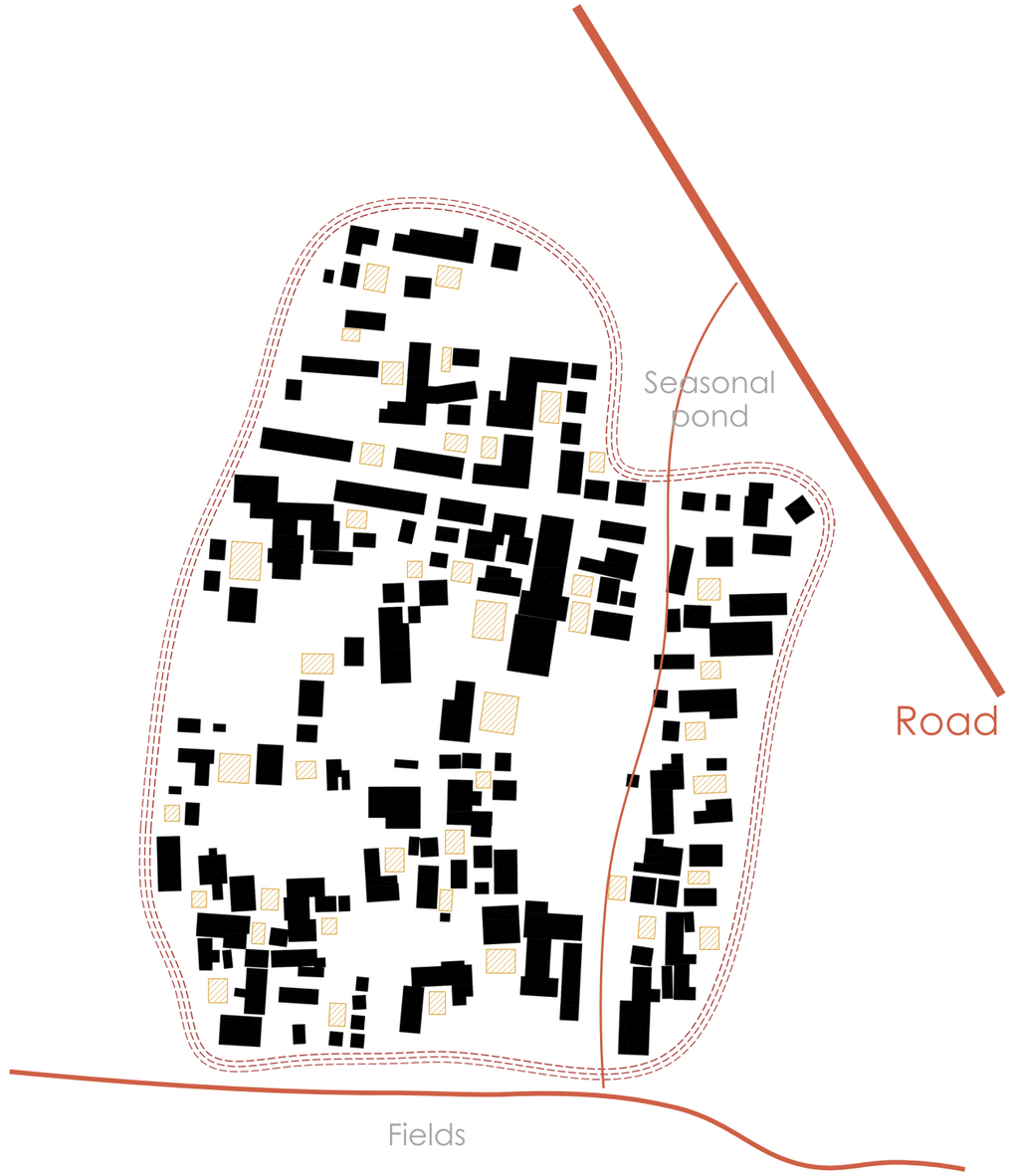
Water way



Wetlands

Shonatola

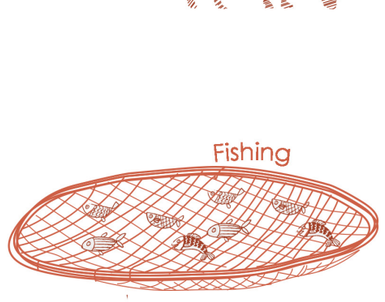




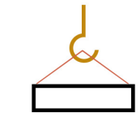
Haor Settlements
income

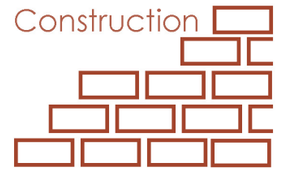






Shonatola
income













village
residents



climate
displaced



village
residents

need for better living conditions

income generation

flood proteciton

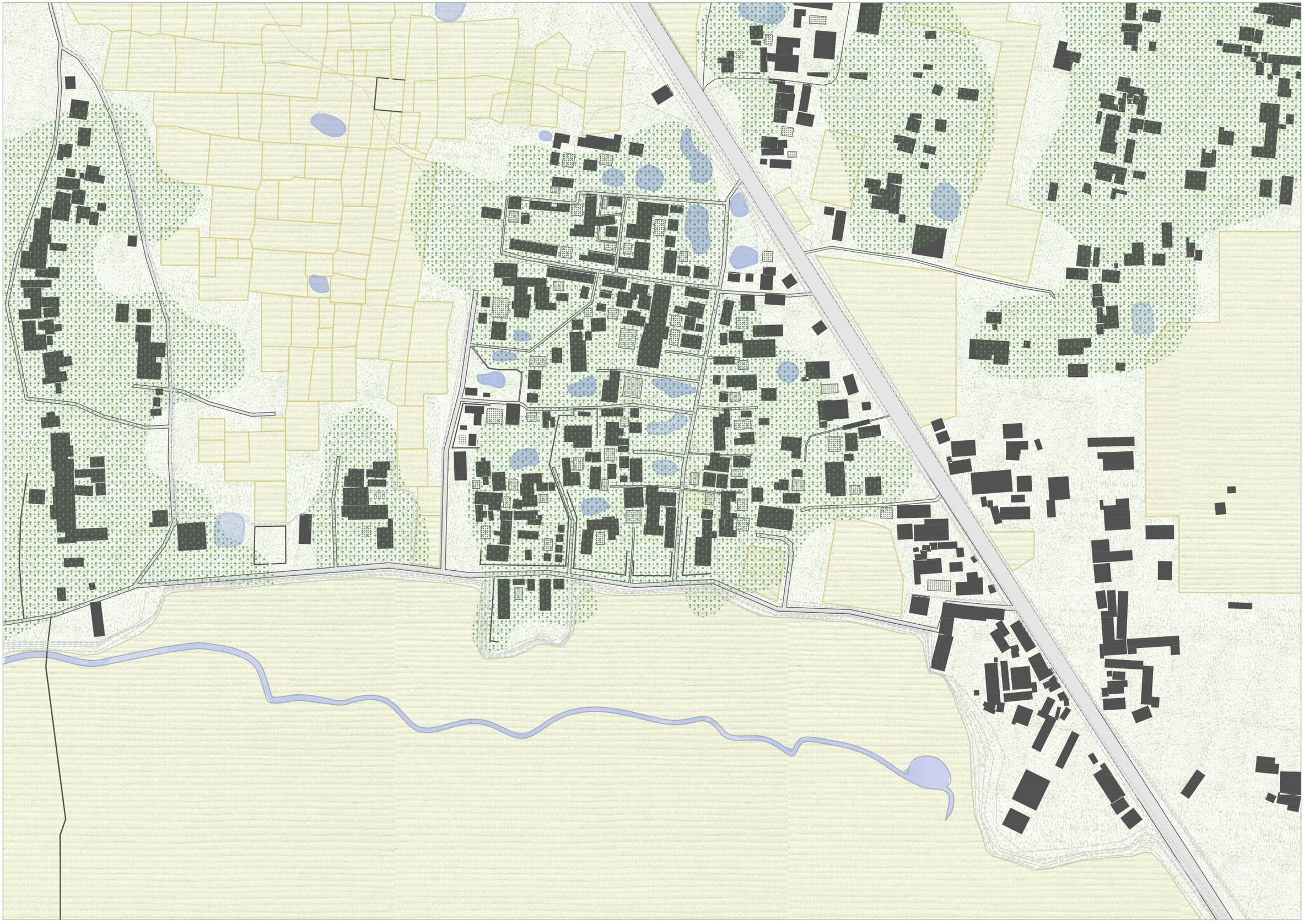


climate
displaced

need for better living conditions

income generation

safe and permanent housing solutions



URBAN STRATEGY

Beneficiary Identification

Baseline survey



Selection Framework

Prioritize the most vulnerable households



Funding Allocation

Capital from national and climate funds
to cover land, infrastructure



Implementation & Scaling

Pilot
then scale based on impact evaluation



Participation & Feedback

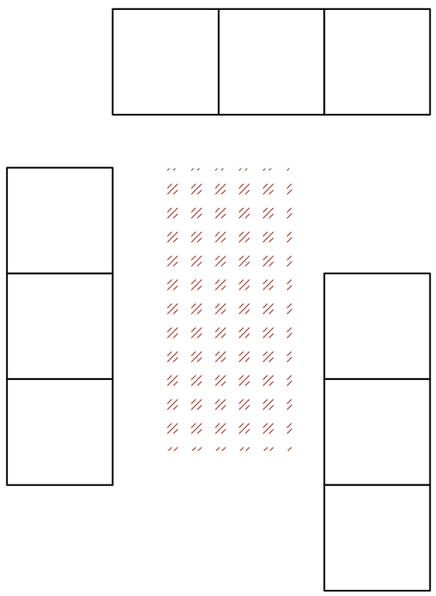
Establish feedback channels
Co-design



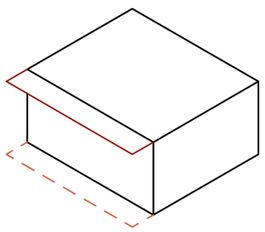
"Architects have to be really sensitive about their own traditions."
— Yasmeen Lari

Design Principles

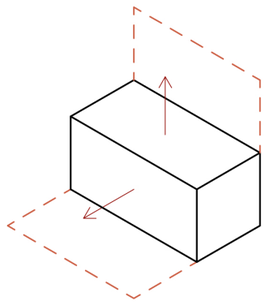
courtyard



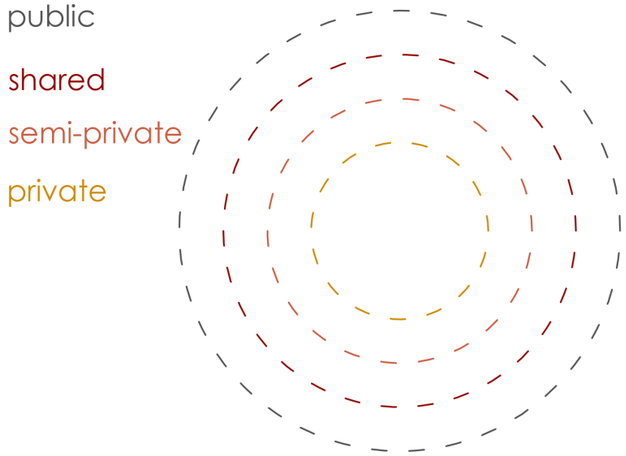
threshold



expansion



private-public



MATERIAL ECONOMY

VILLAGE

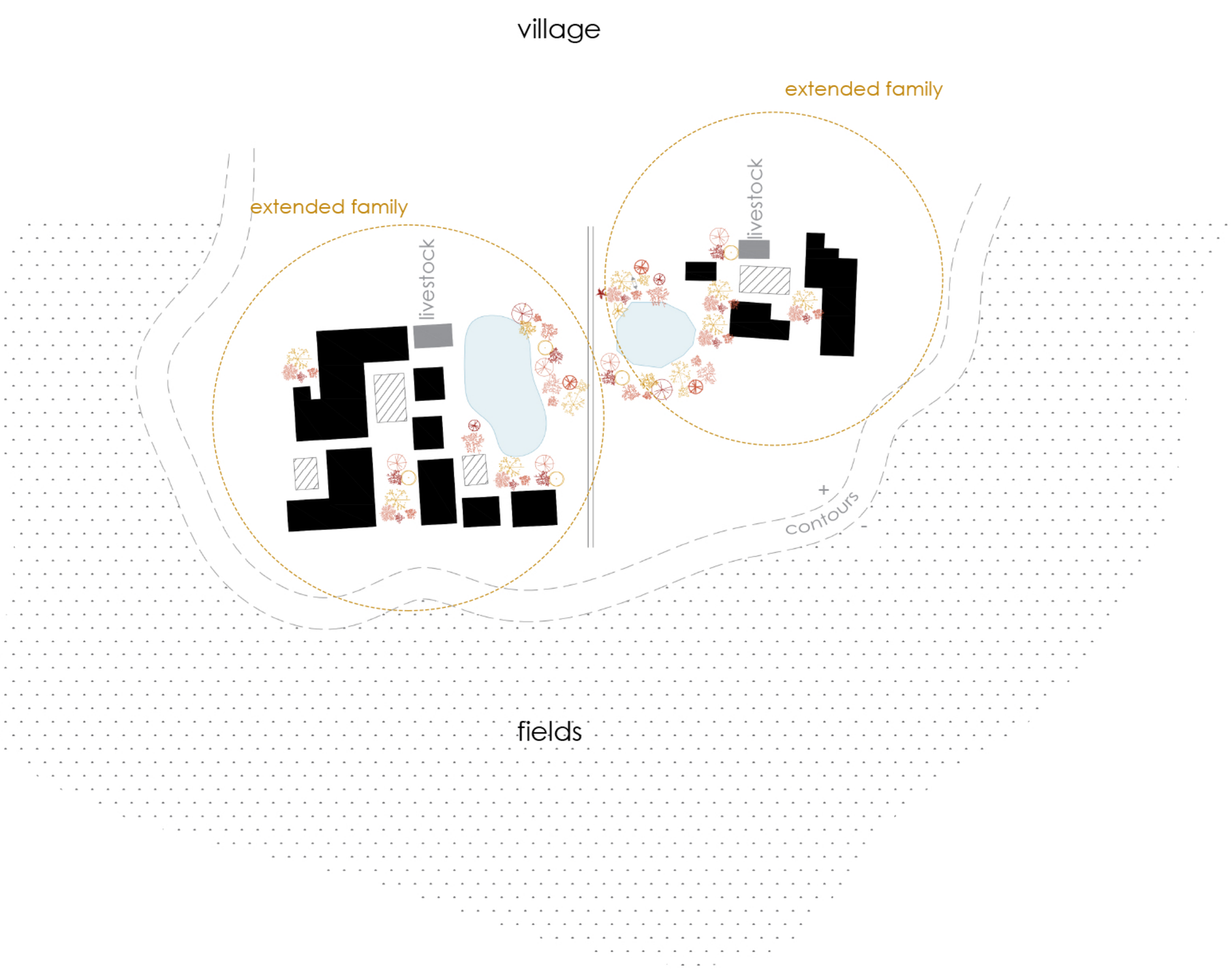
PLOT -1.00 m

VILLAGE

PLOT -1.00 m

FIELDS -3.00 m




village
extended family
extended family
livestock
livestock
+
contours
-
fields

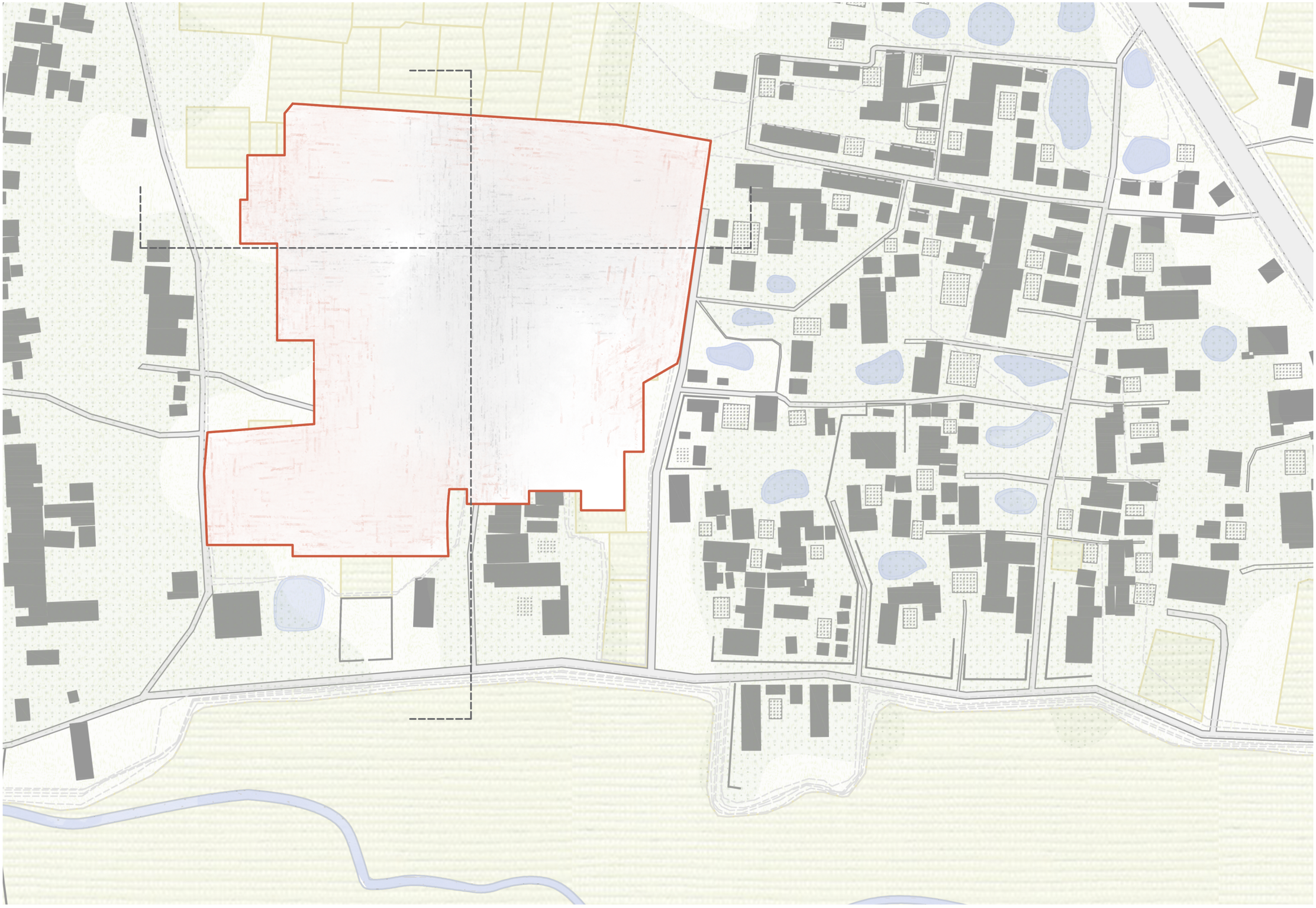


VILLAGE

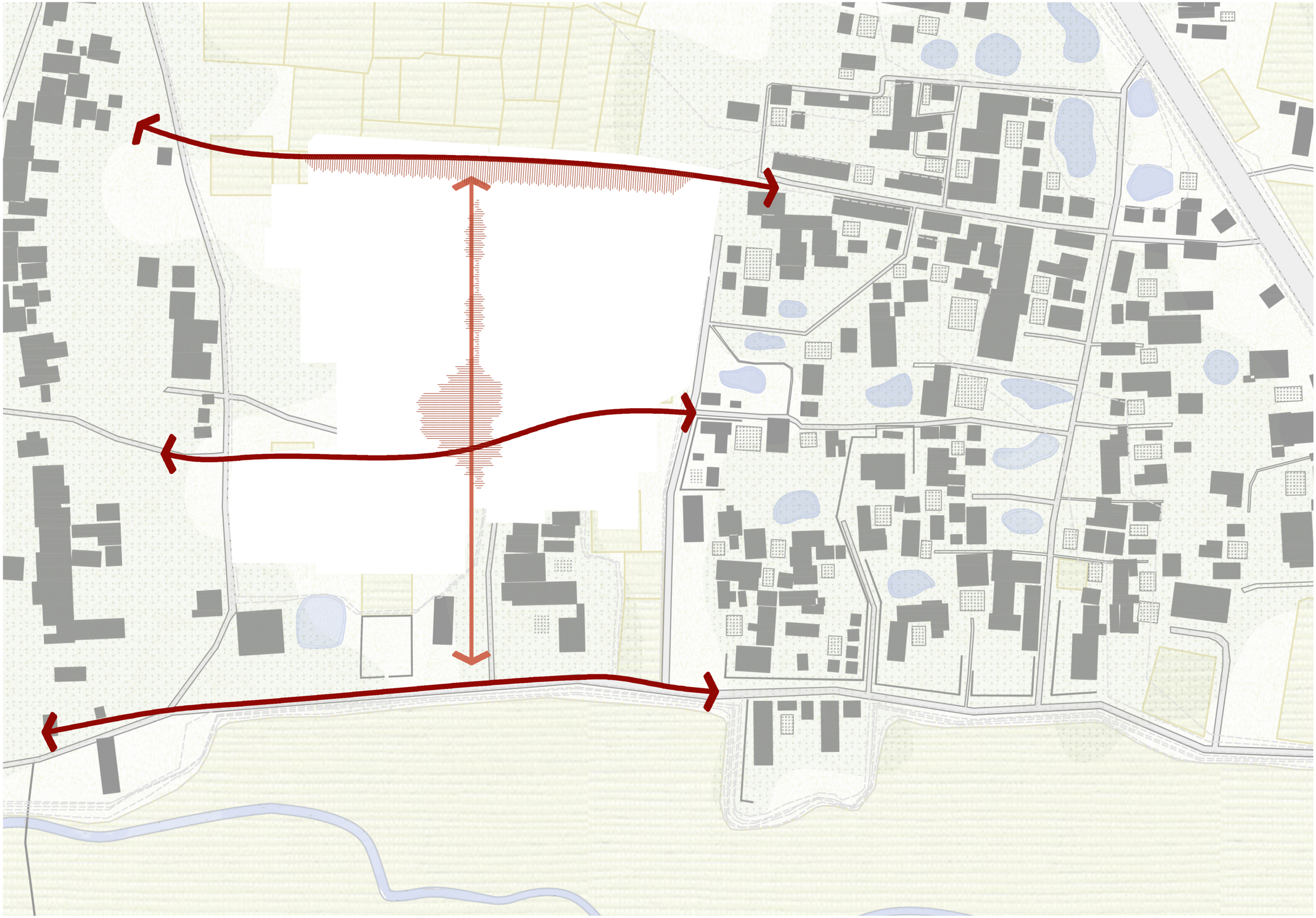
PLOT -+0.50 m

VILLAGE

PLOT +0.50 m



FIELDS -3.00 m








playground
picnic area
market
exercise
garden
multi-purpose lawn
communal-1st floor
workshop
public -ground floor
cafe
library





DWELLING

KUTCHA

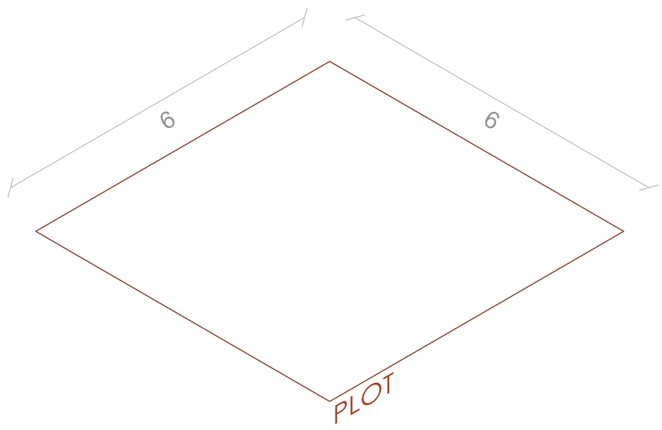
temporary or semi-permanent structure built using natural or locally available materials

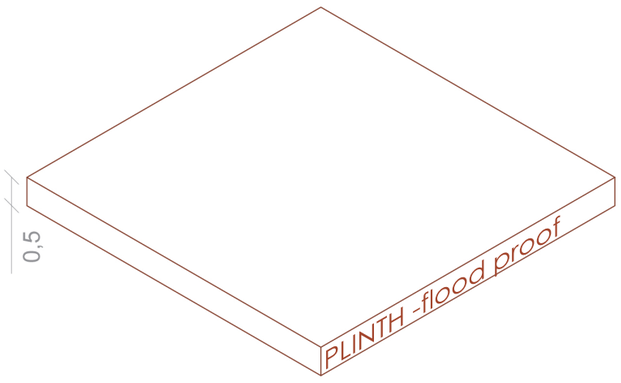
"unfinished" "temporary"

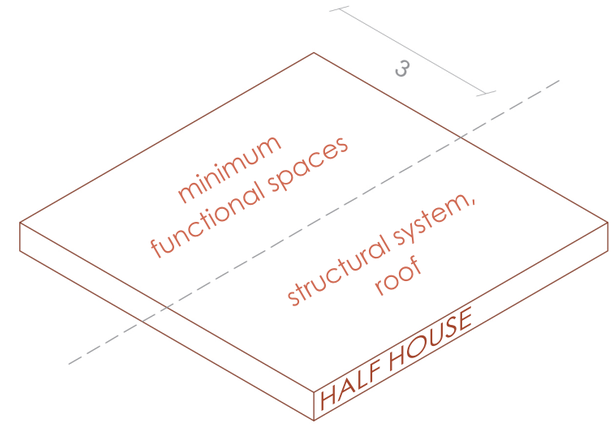
PUCCA

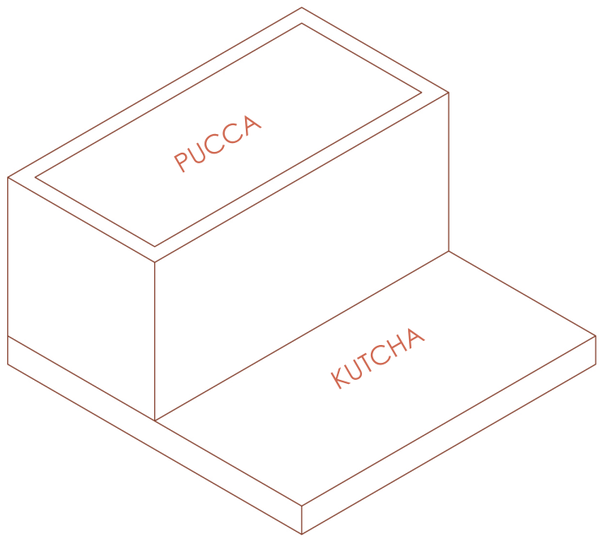
permanent structure built with durable, engineered materials

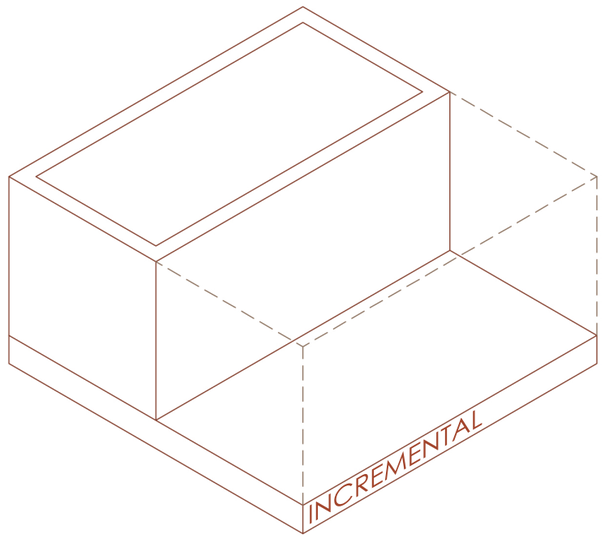
"finished" "durable" "permanent"

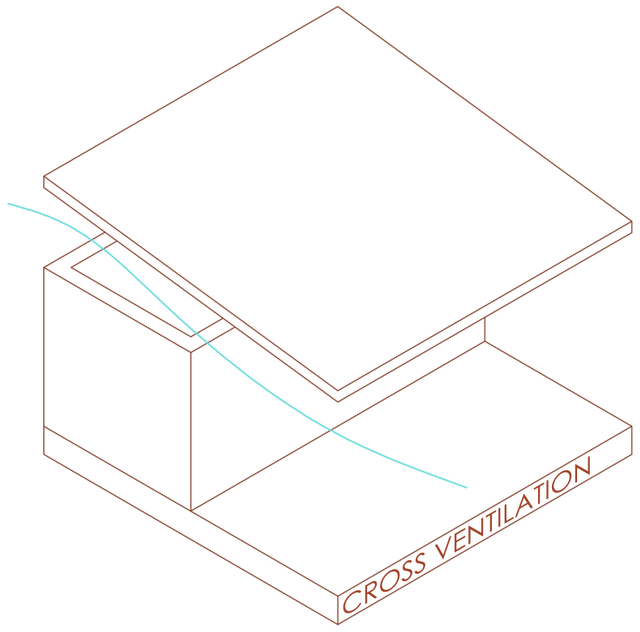

6
6
PLOT

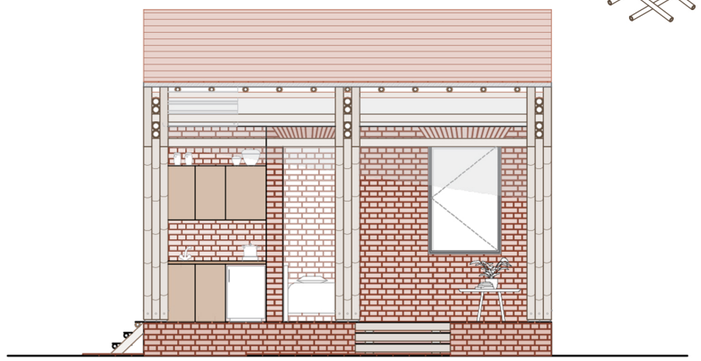

0,5
PLINTH -flood proof

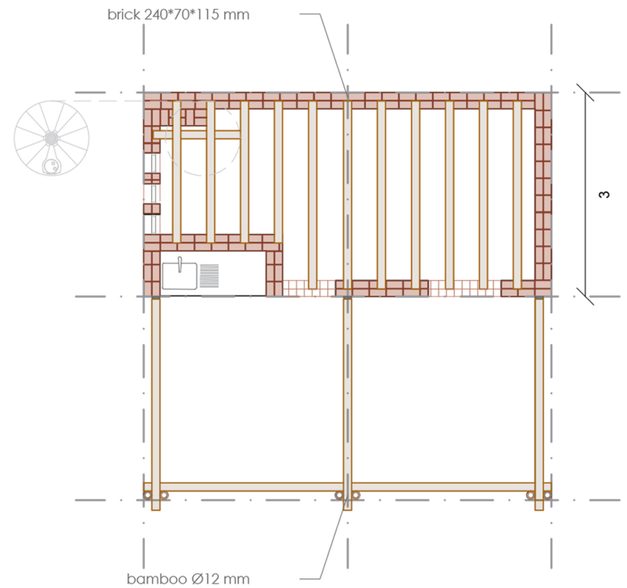

3
minimum
functional spaces
structural system,
roof
HALF HOUSE

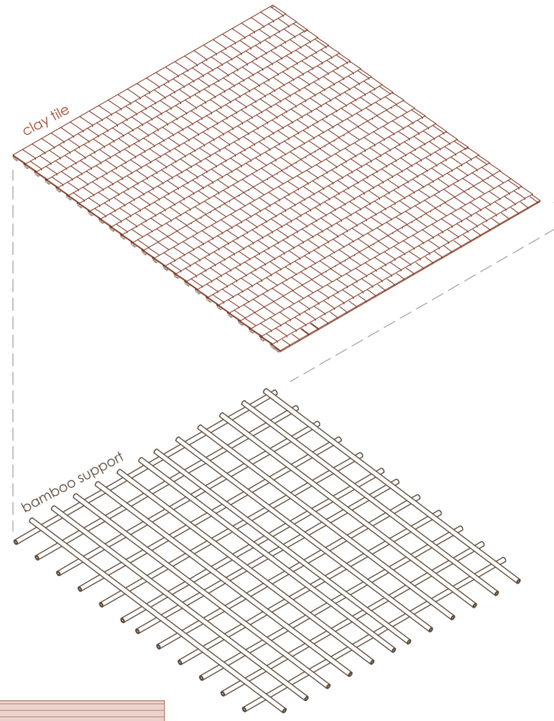

PUCCA
KUTCHA

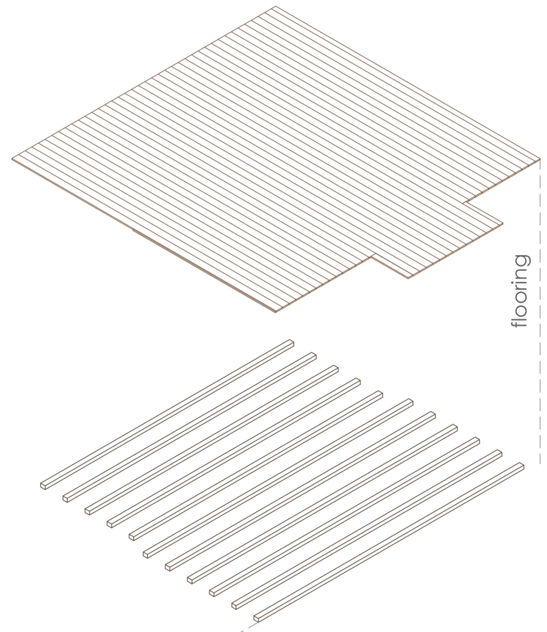

INCREMENTAL

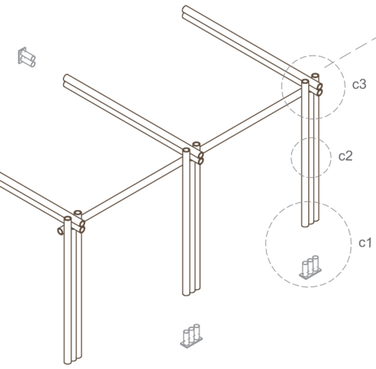

CROSS VENTILATION

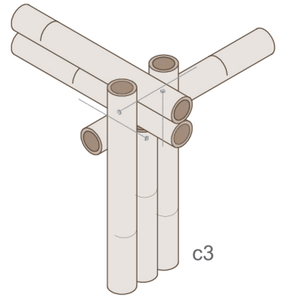


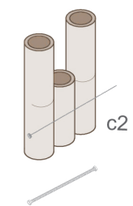

brick 240*70*115 mm
3
bamboo Ø12 mm

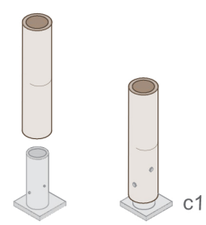

clay tile
roof
bamboo support
load bearing wall
water tank 1000 liters
column- beam
foundation

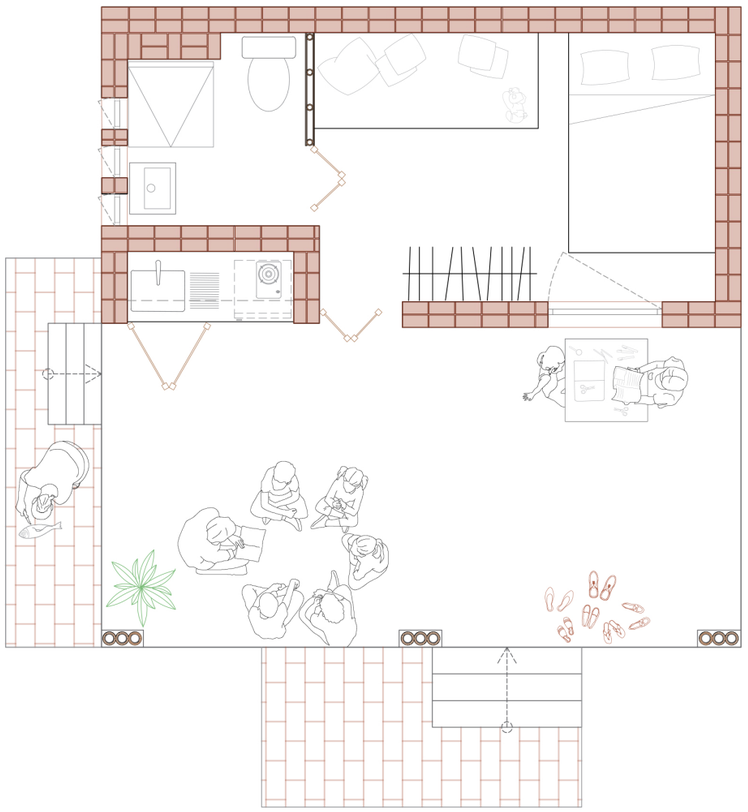

flooring

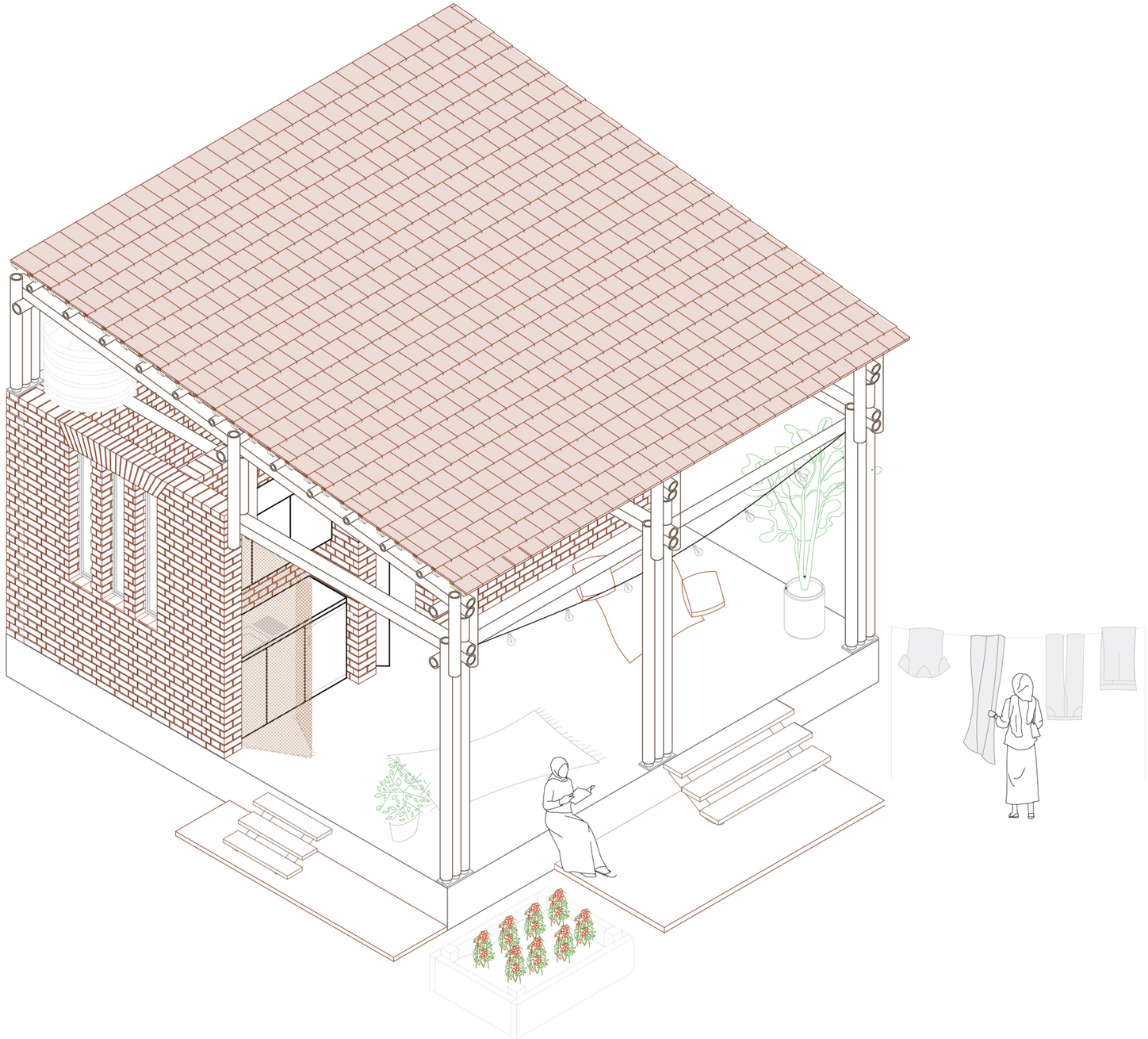

c3
c2
c1

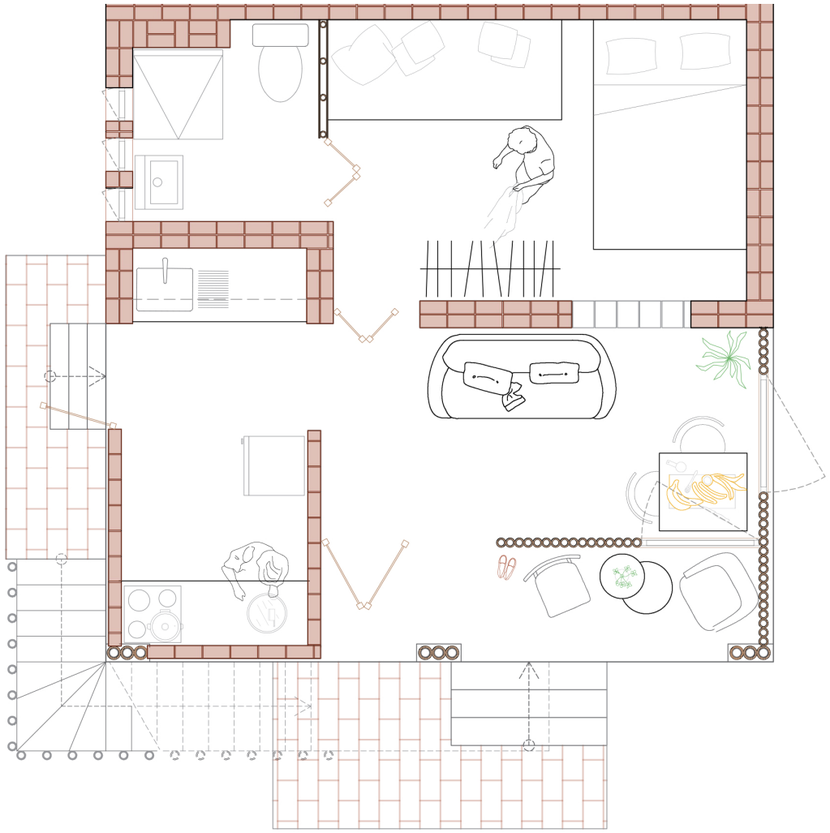

c3

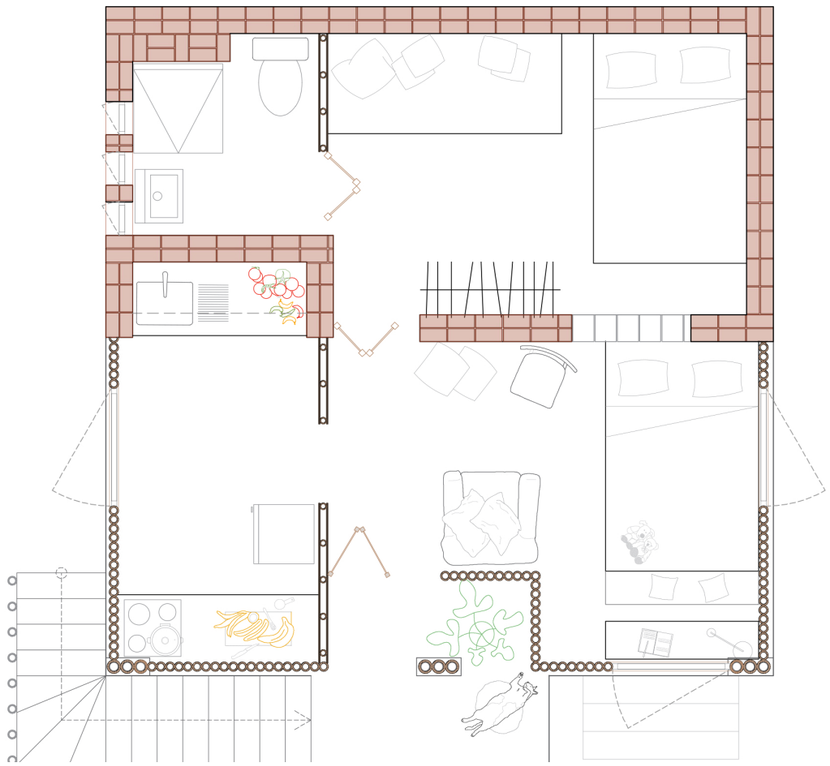

c2

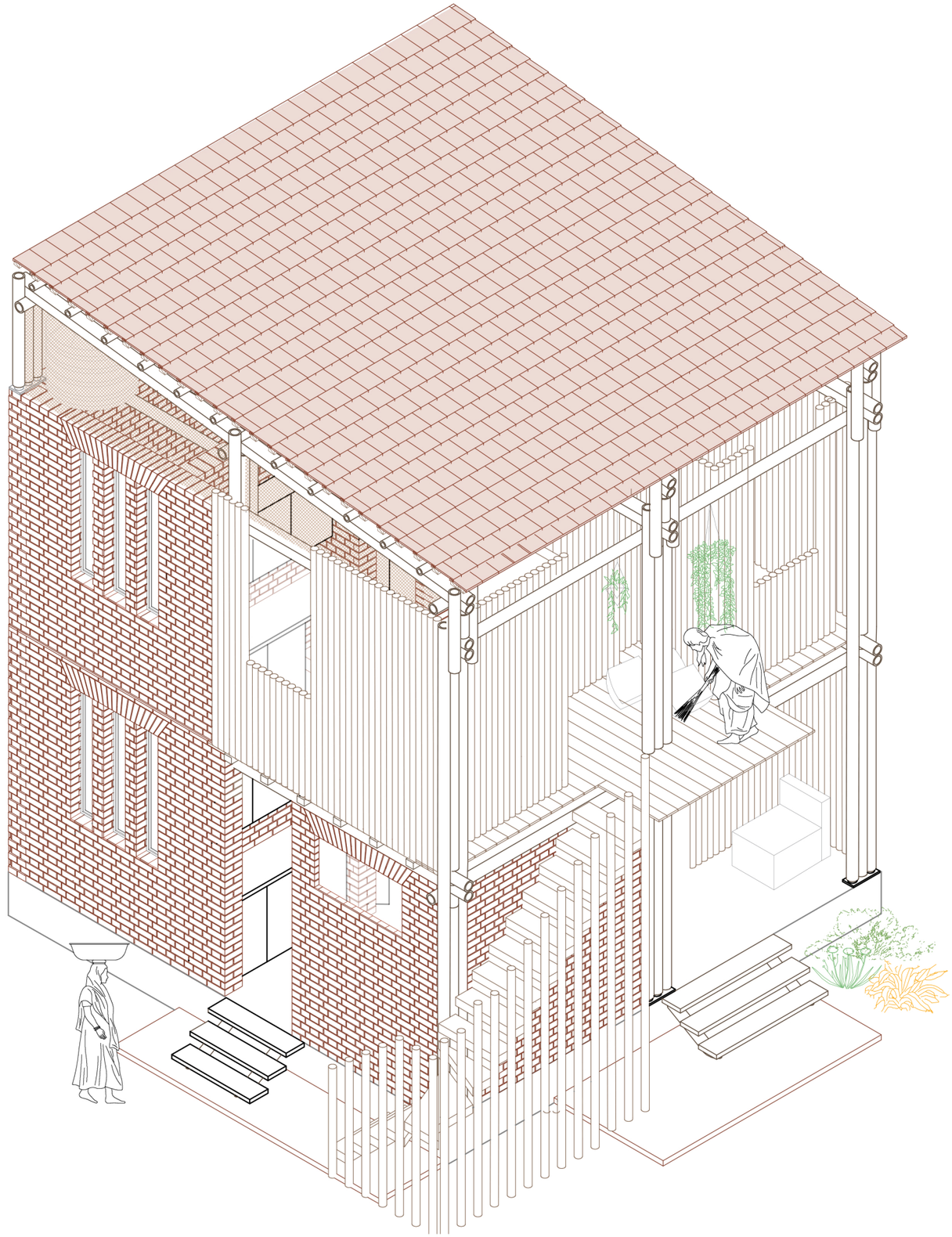

c1



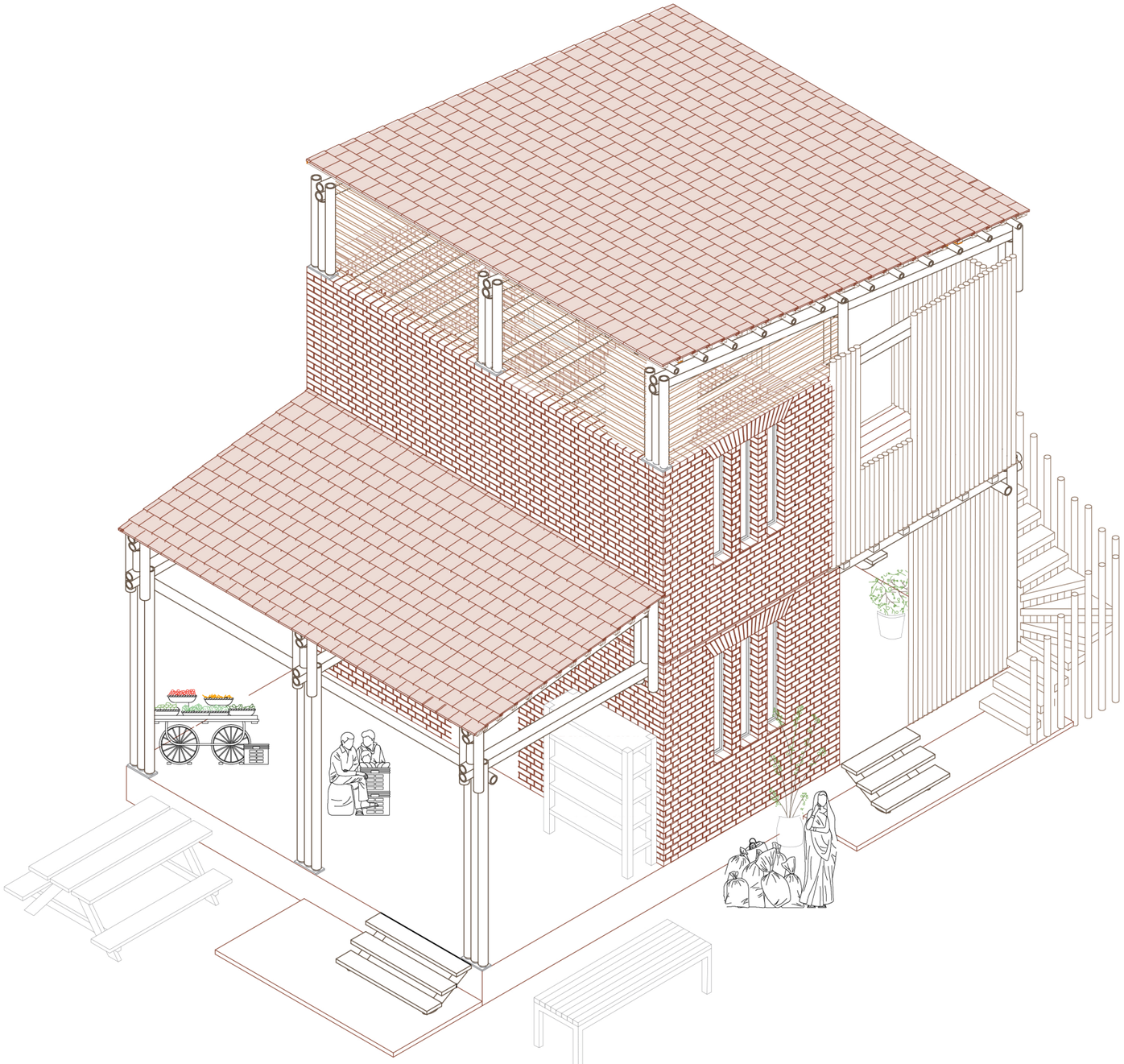




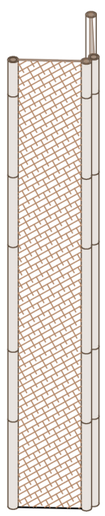




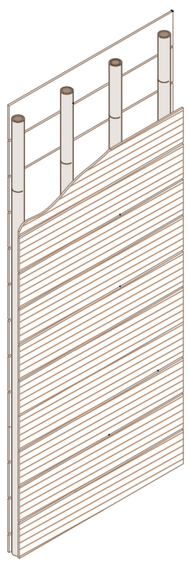




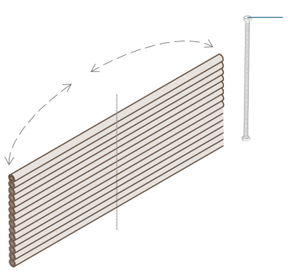




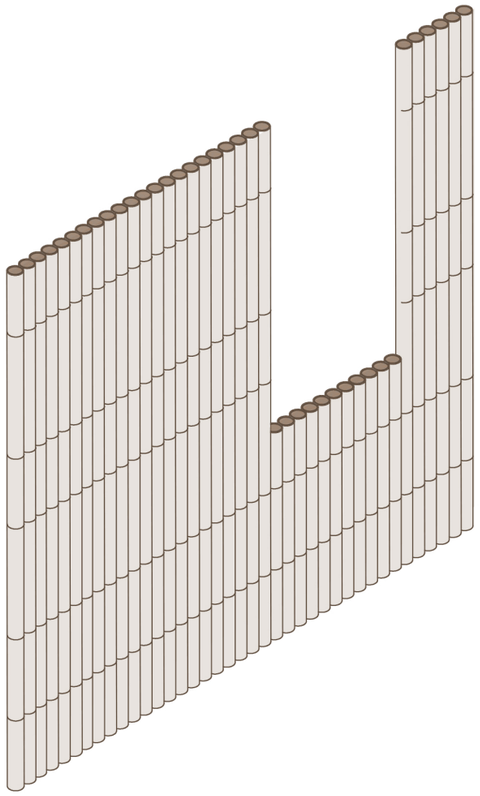
bamboo
perforated doors



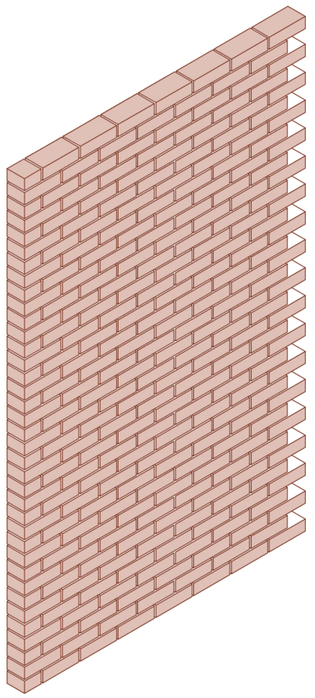
bamboo
partition wall



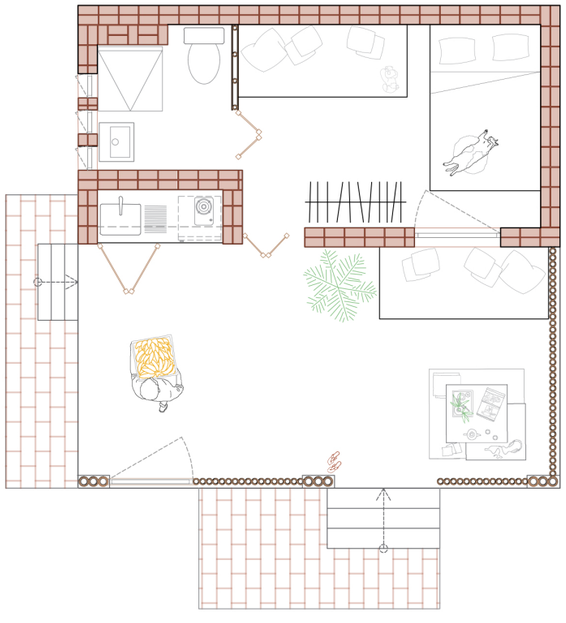
bamboo
rotated roof shutter

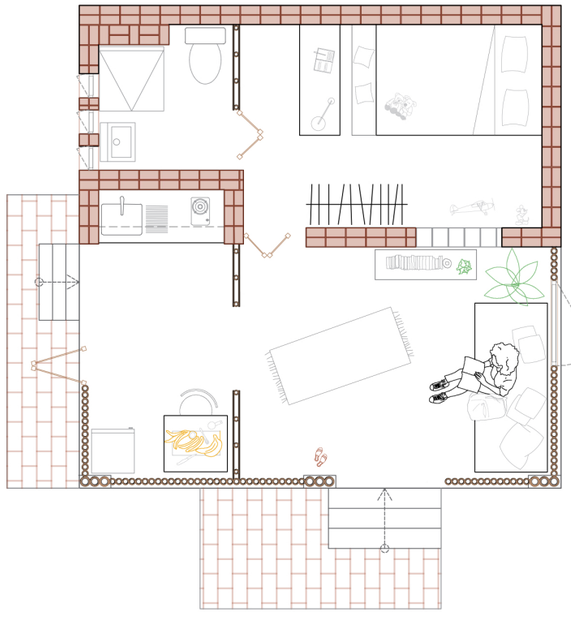


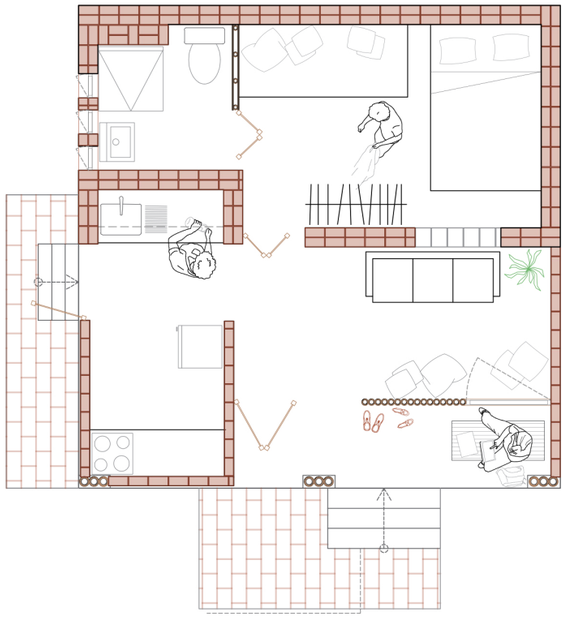
bamboo
exterior wall

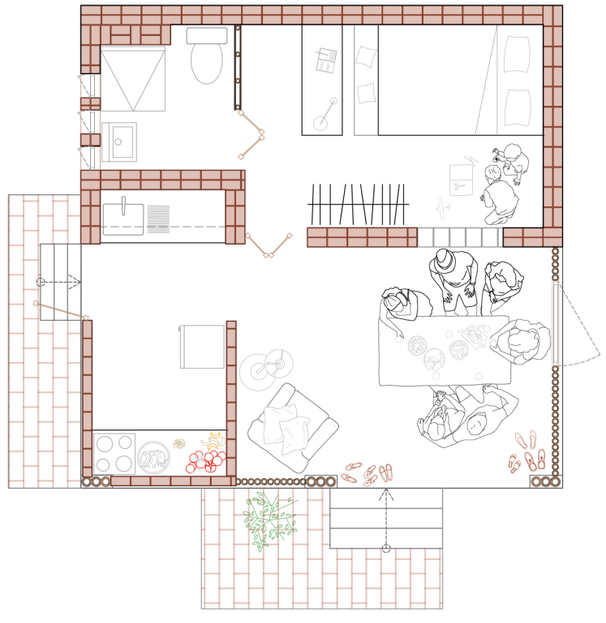


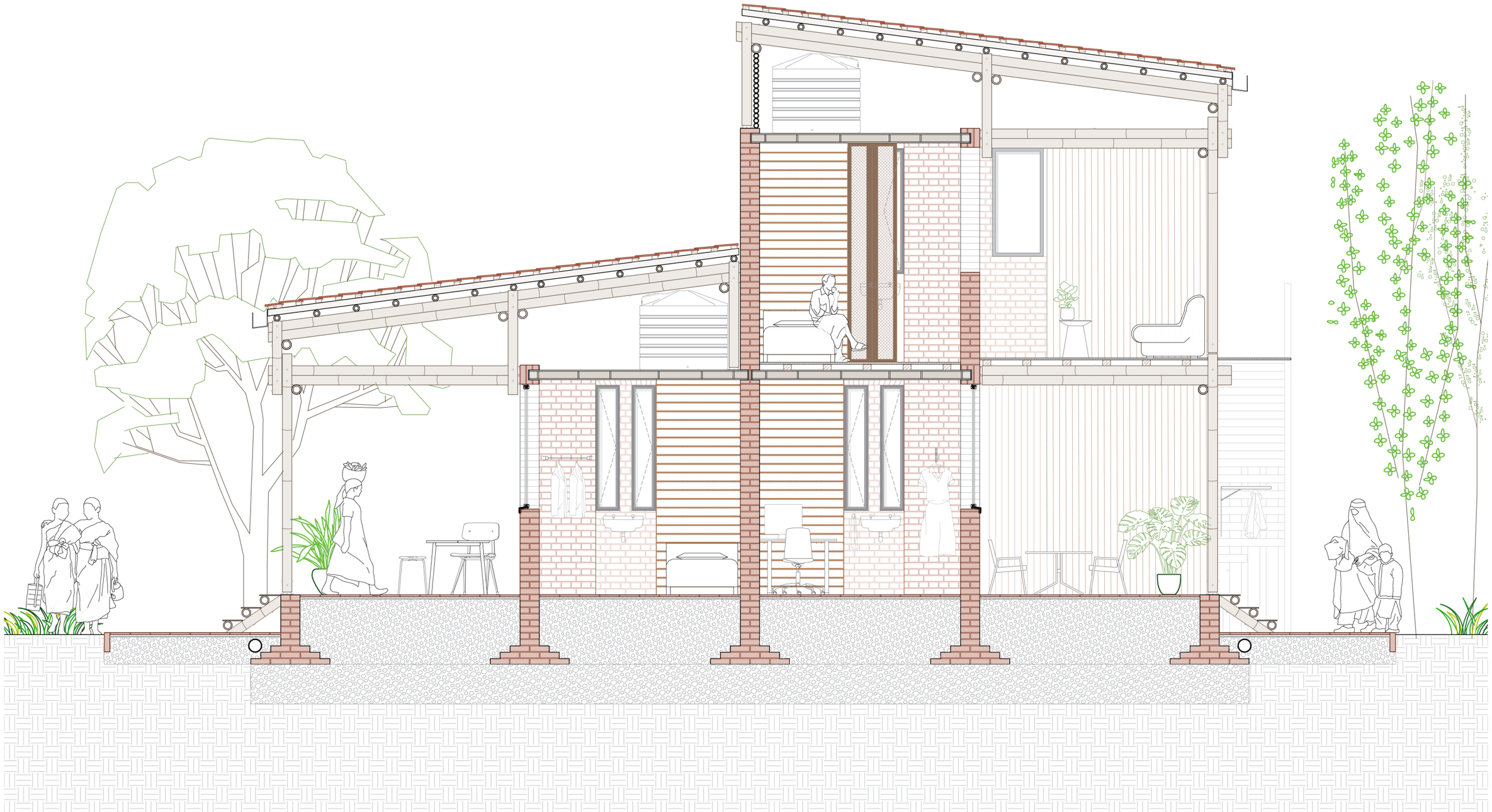
brick
exterior wall



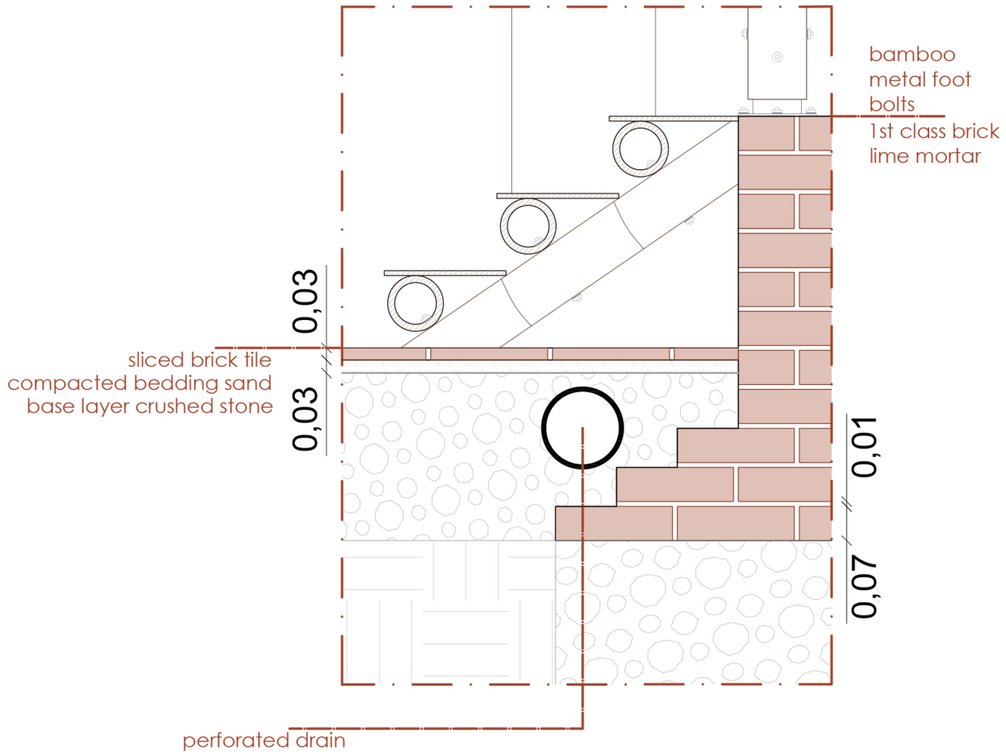




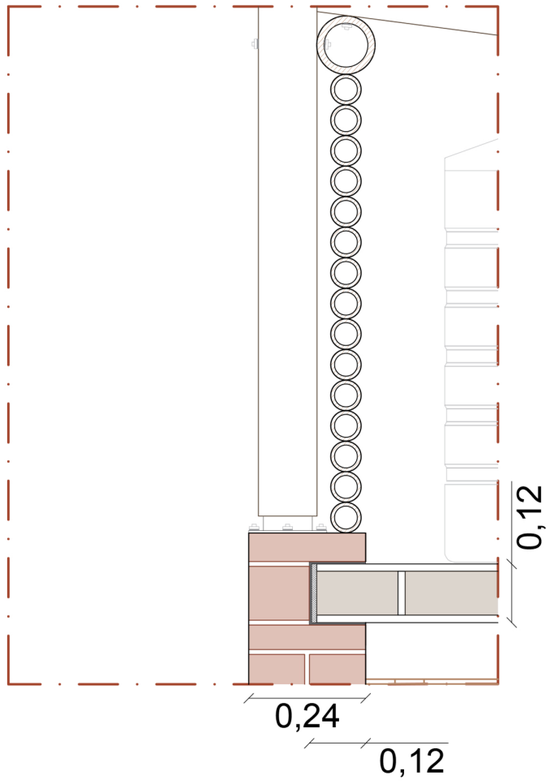




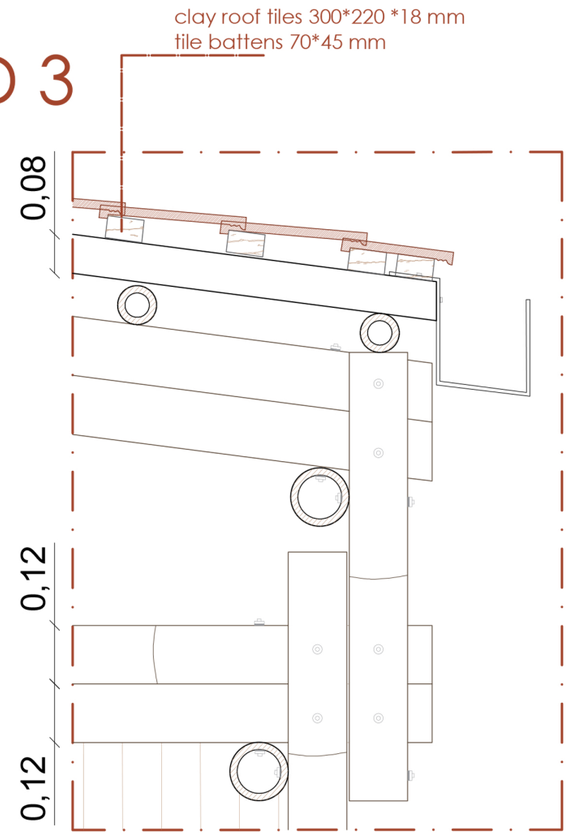
D 1

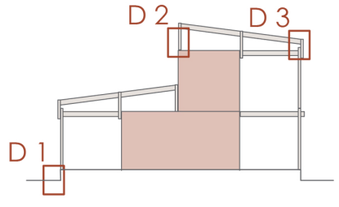

bamboo
metal foot
bolts
1st class brick
lime mortar
0,03
sliced brick tile
compacted bedding sand
base layer crushed stone
0,03
0,01
0,07
perforated drain

D 2

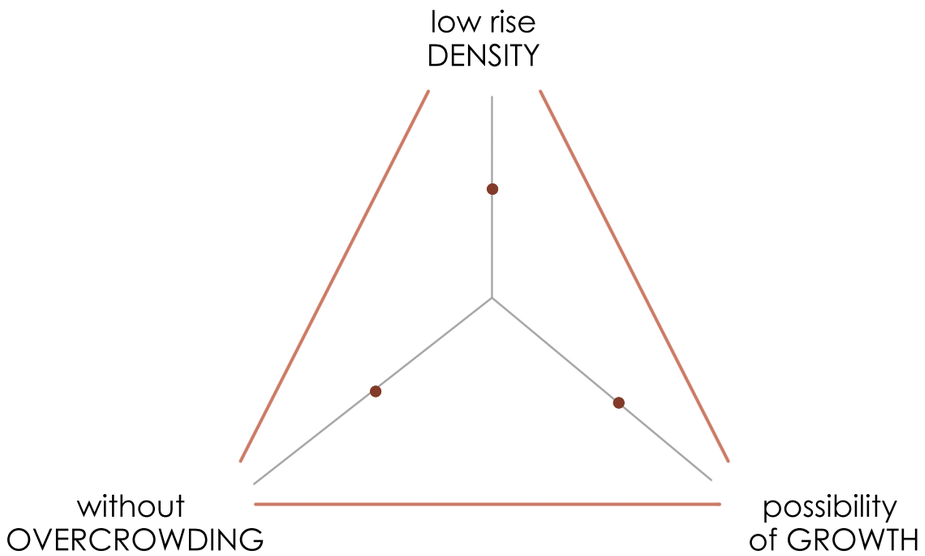

0,12
0,24
0,12

D 3

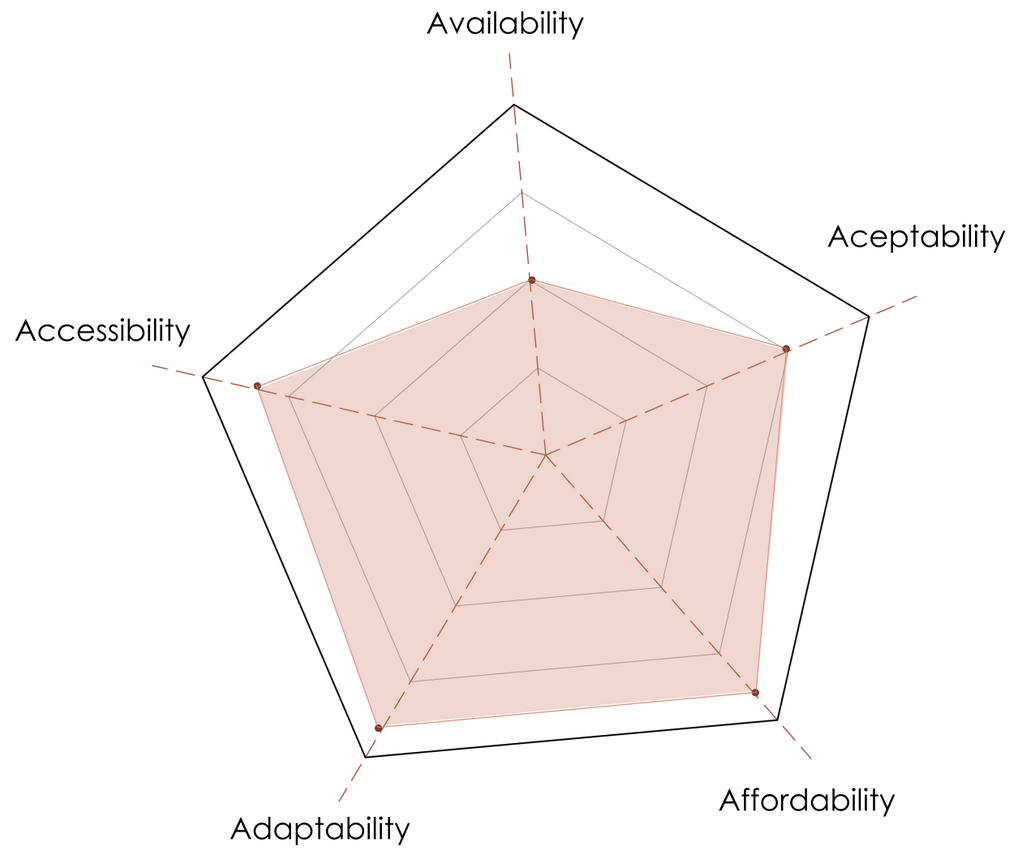

clay roof tiles 300*220 *18 mm
tile battens 70*45 mm
0,08
0,12
0,12


D 2
D 3
D 1

Social Housing



The 5 A's for Adequate Housing



MATERIAL COST

first class brick - 10 BDT

sliced brick tile - 12 BDT

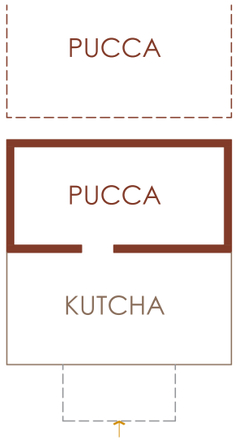
flat clay tile - 15 BDT

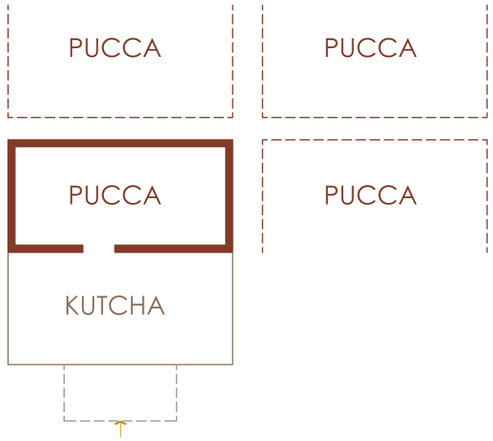
12 feet bamboo (d 12 mm) - 30 BDT

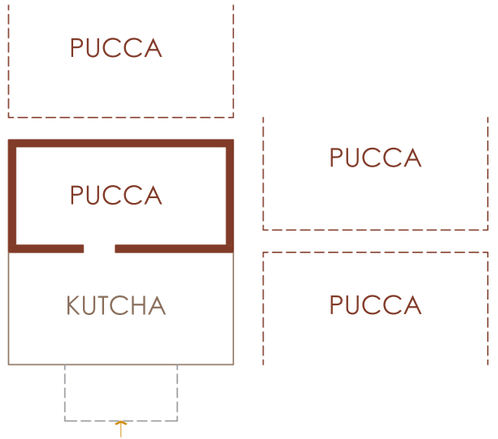
8 feet bamboo (d 10 mm) - 20 BDT

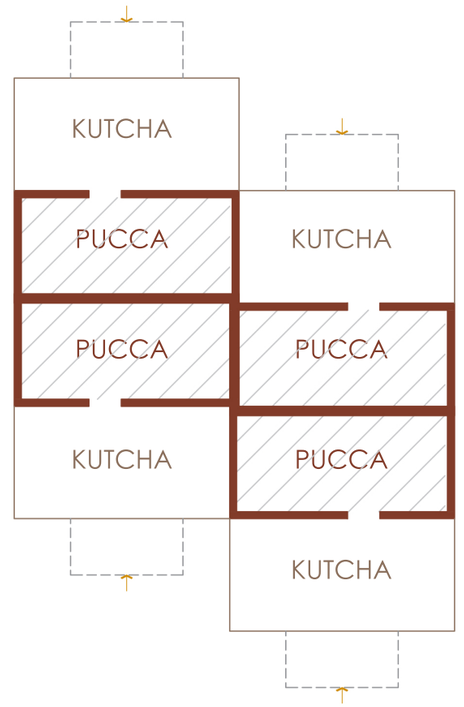
CLUSTER

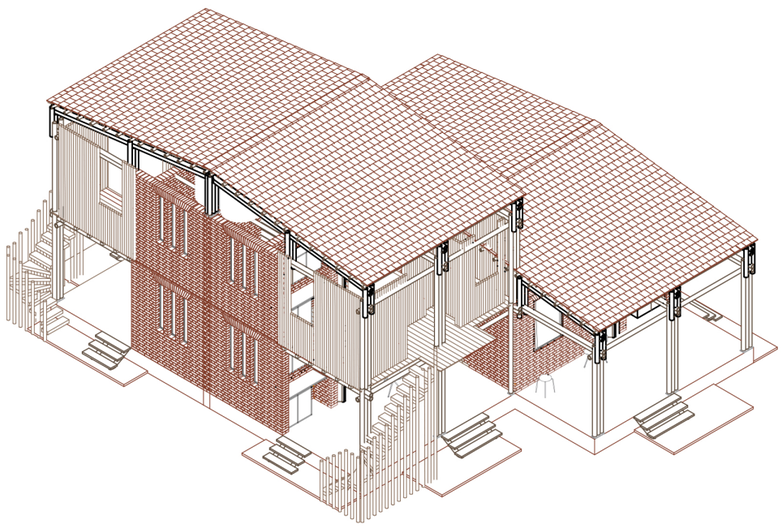


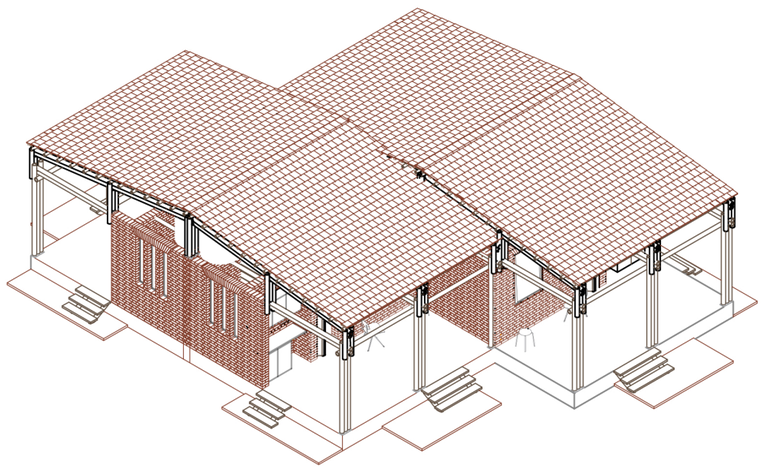

PUCCA
PUCCA
KUTCHA

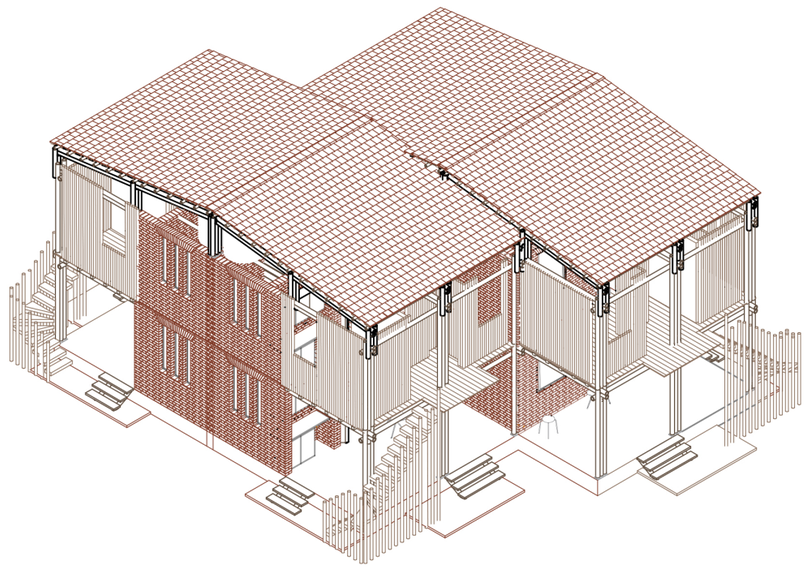

PUCCA
PUCCA
PUCCA
PUCCA
KUTCHA

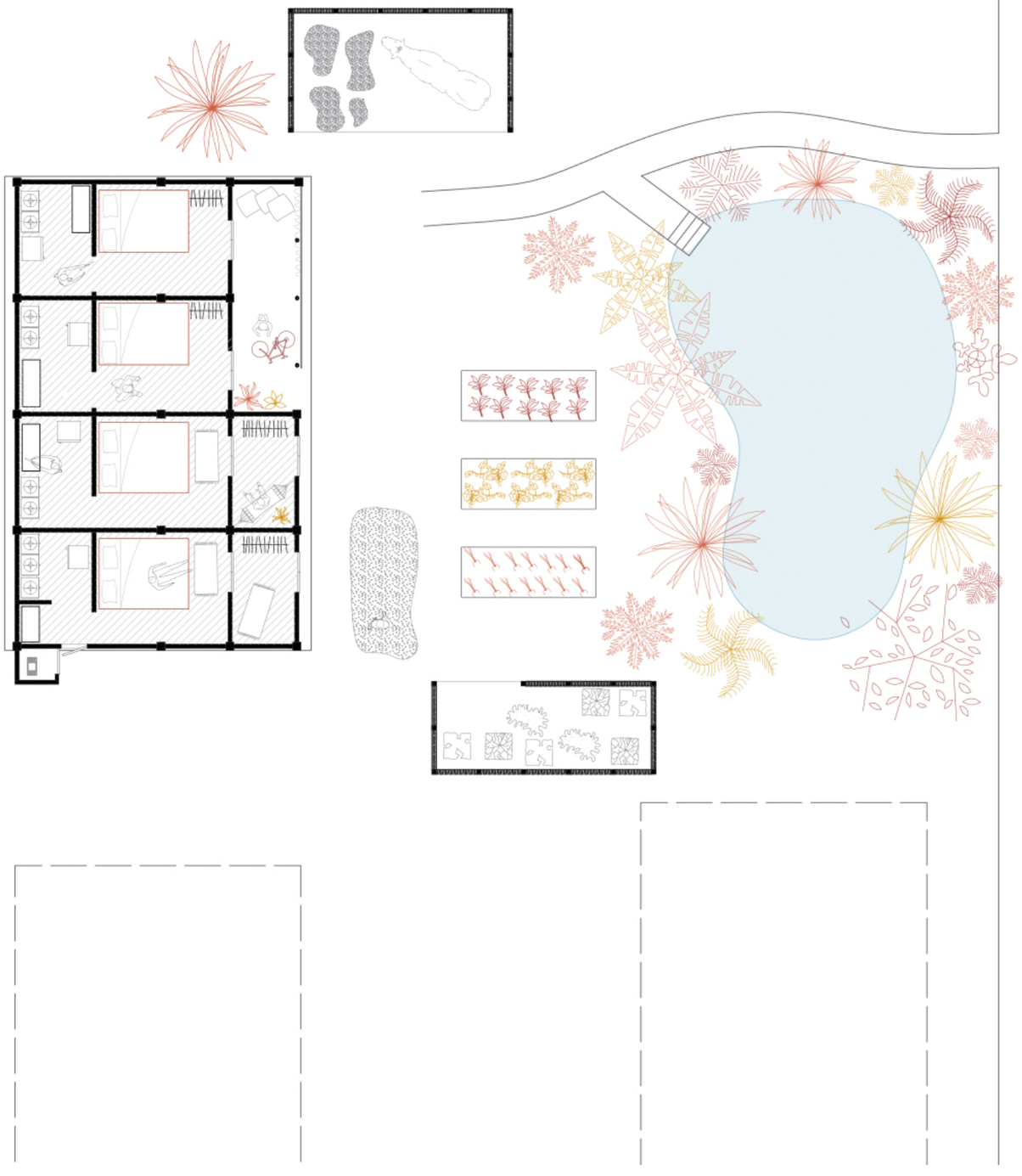

PUCCA
PUCCA
PUCCA
KUTCHA
PUCCA


KUTCHA
PUCCA
KUTCHA
PUCCA
PUCCA
KUTCHA
PUCCA
KUTCHA



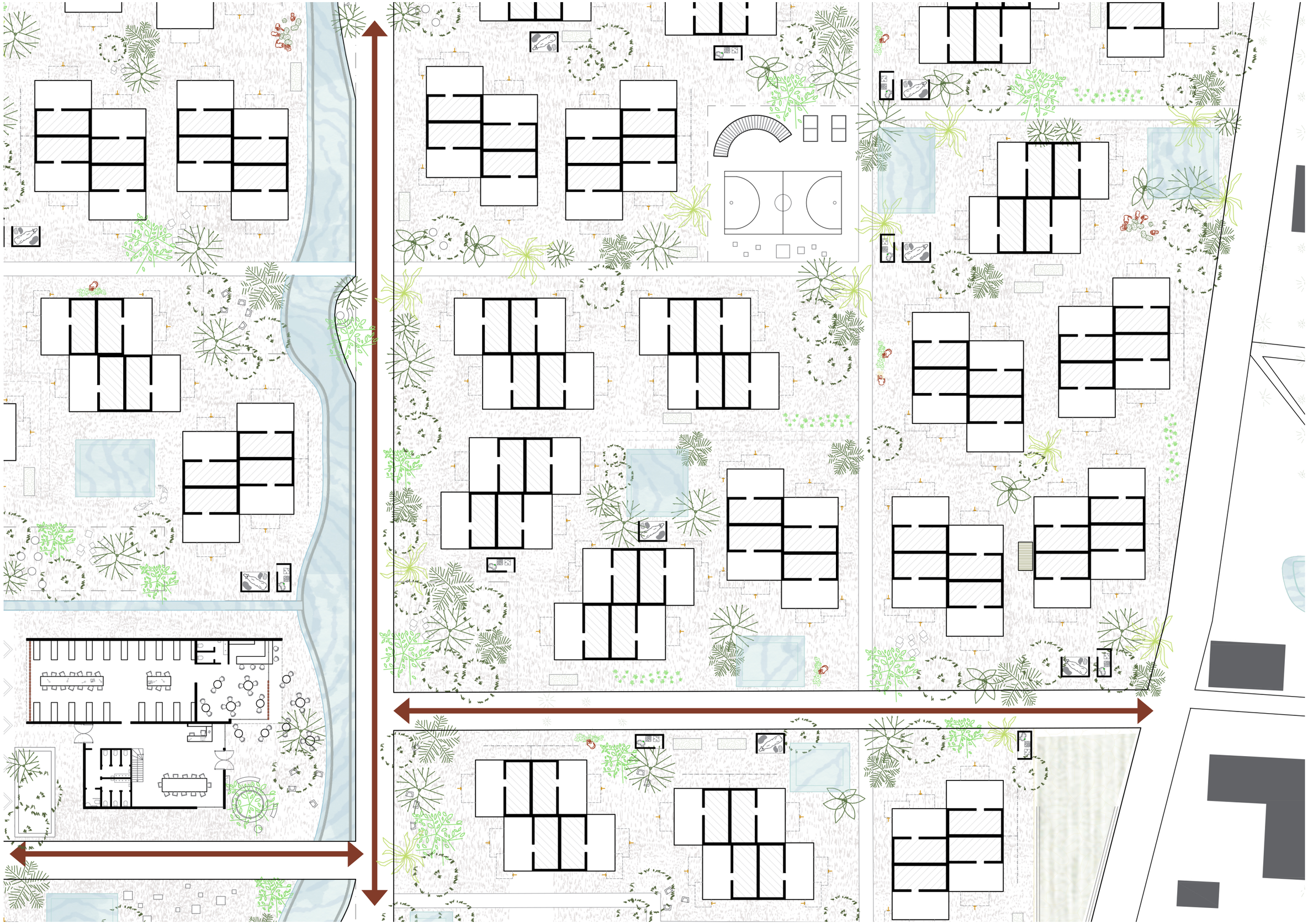


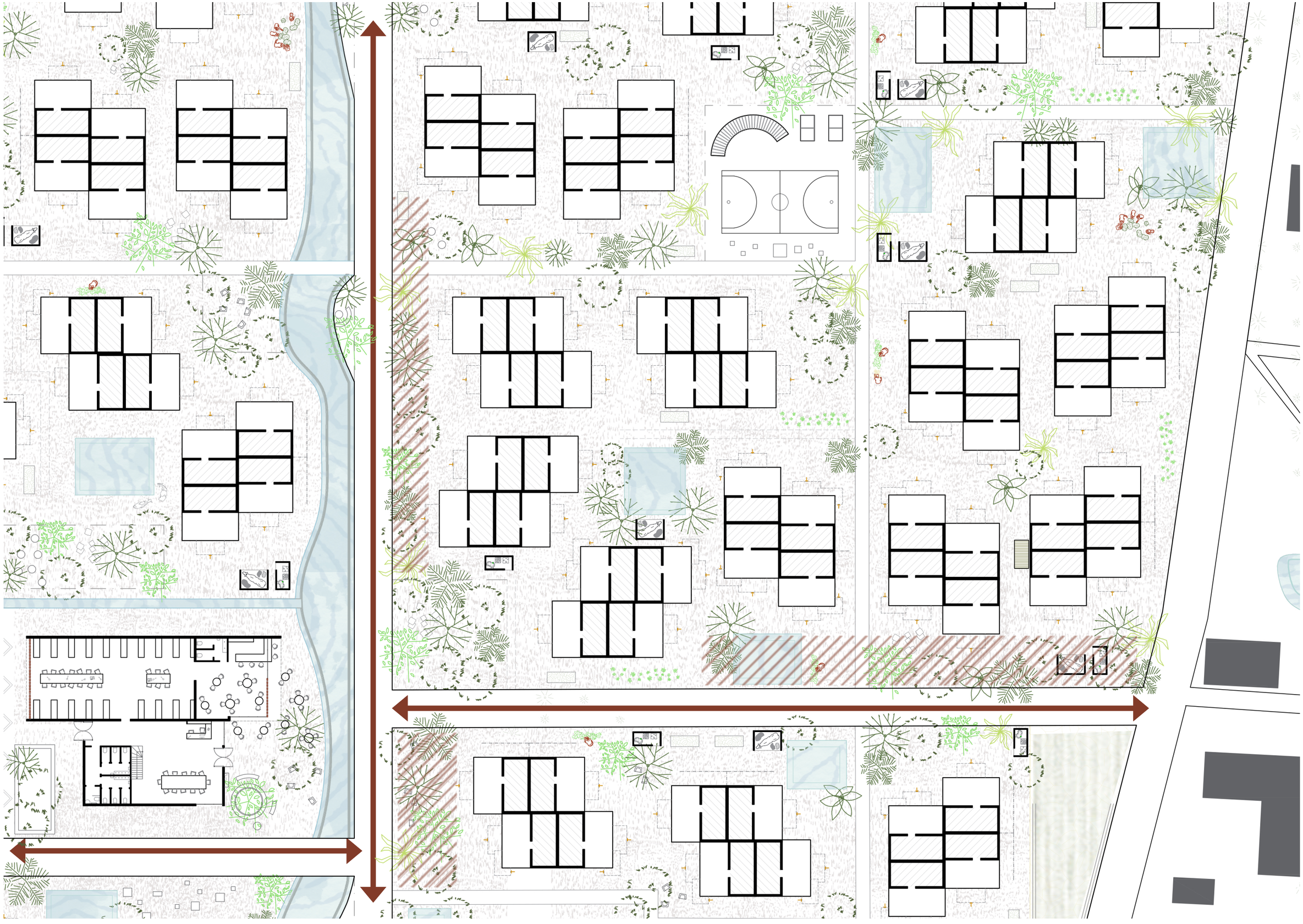


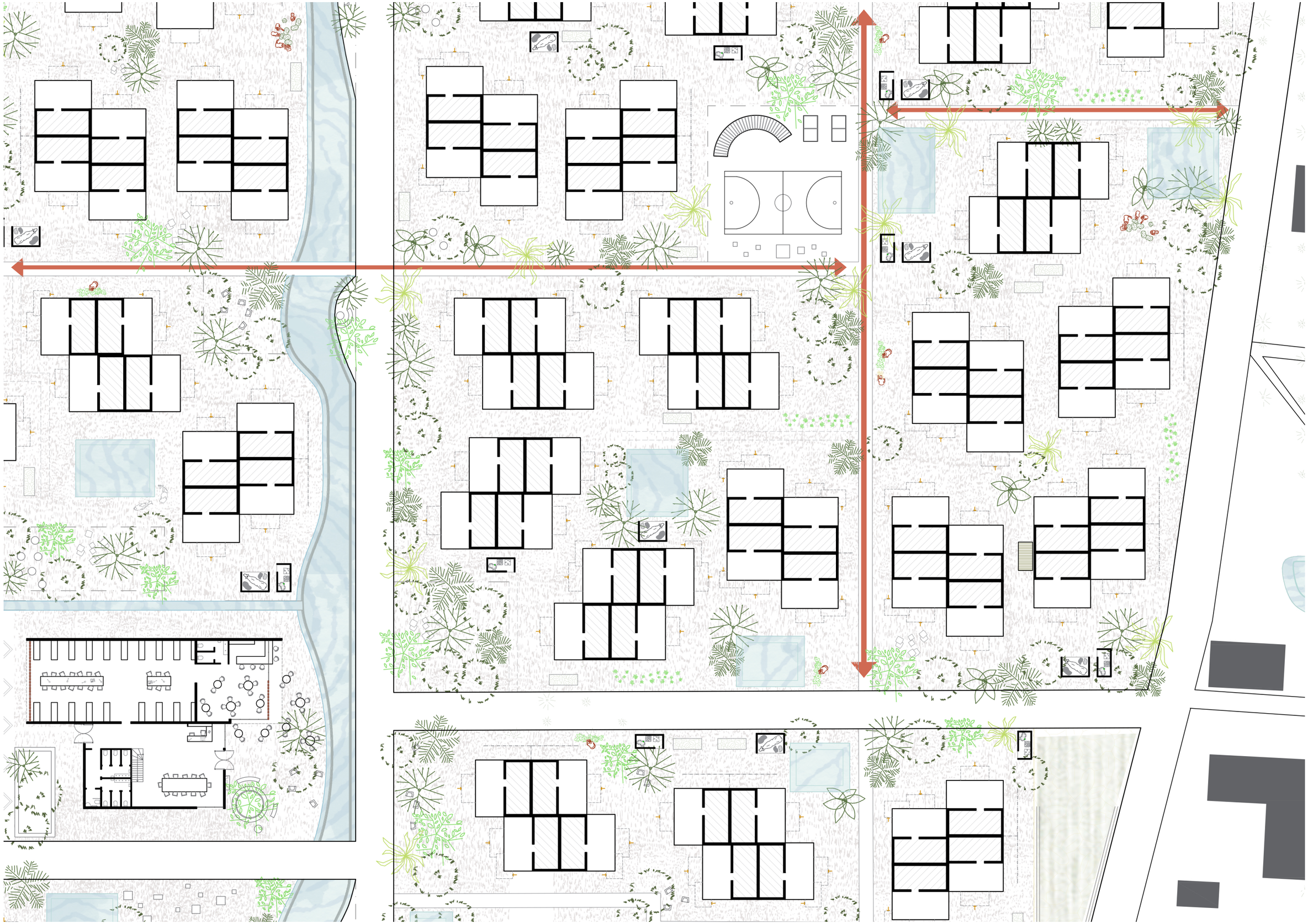


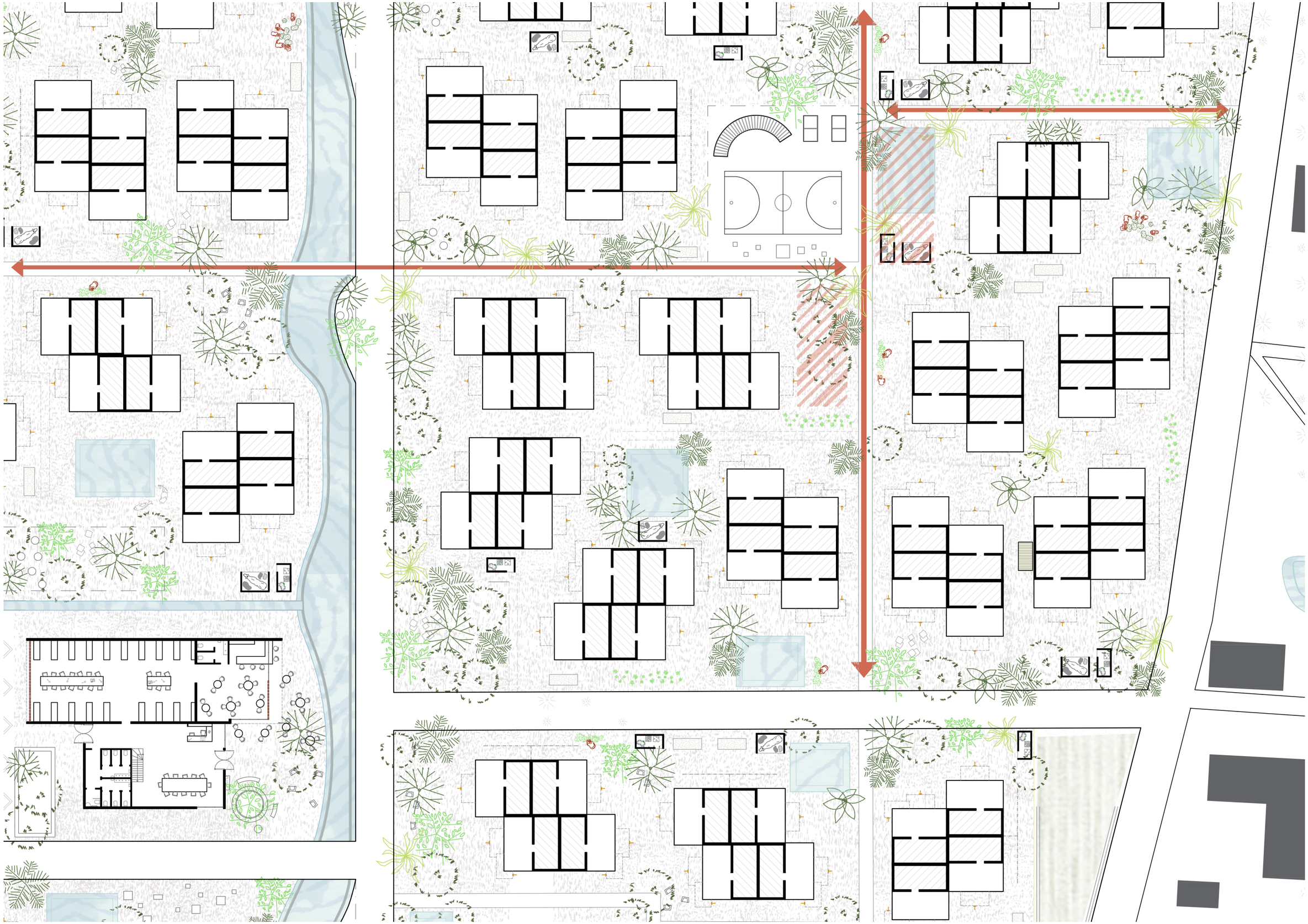


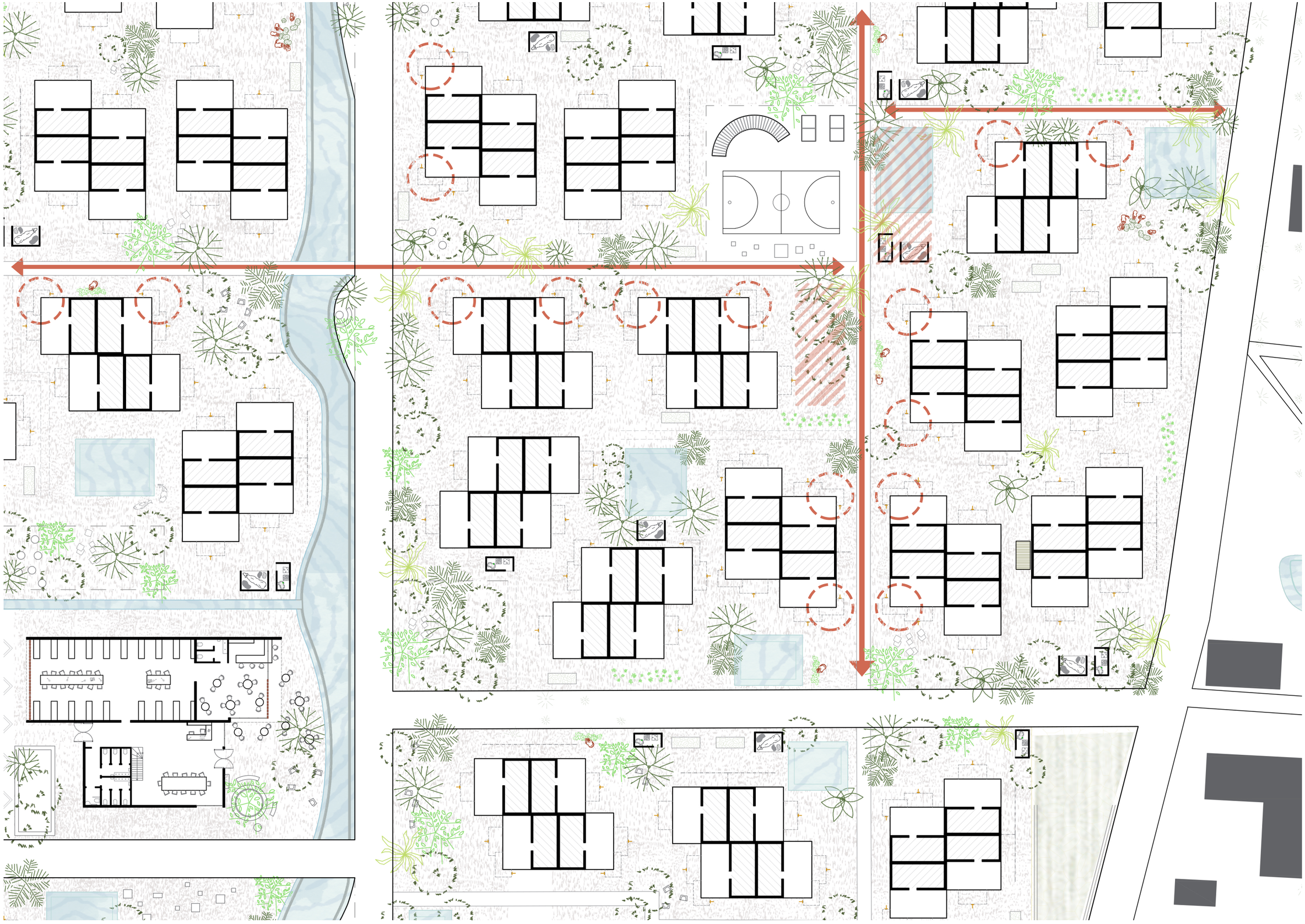




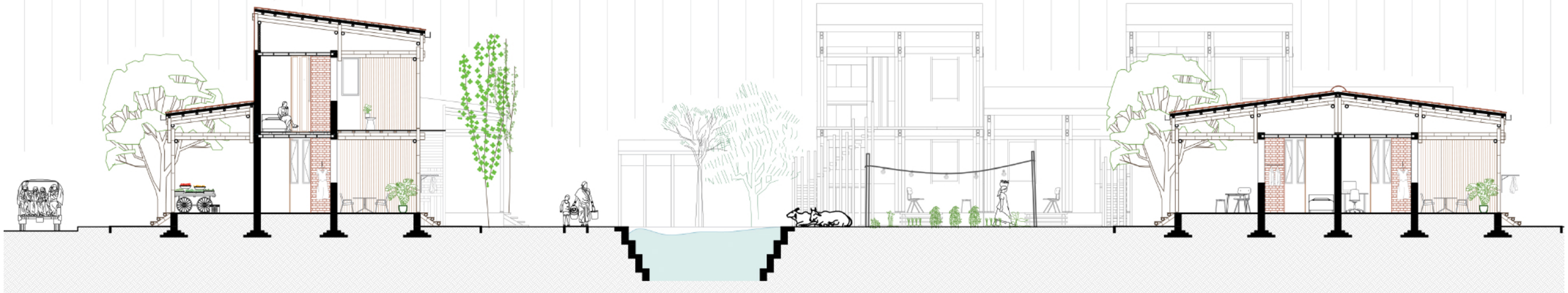












PUBLIC
car road

SEMI PUBLIC
shop

PRIVATE
pucca

SEMI PRIVATE
kutcha
threshold

COMMUNAL
secondary pedestian road
courtyard

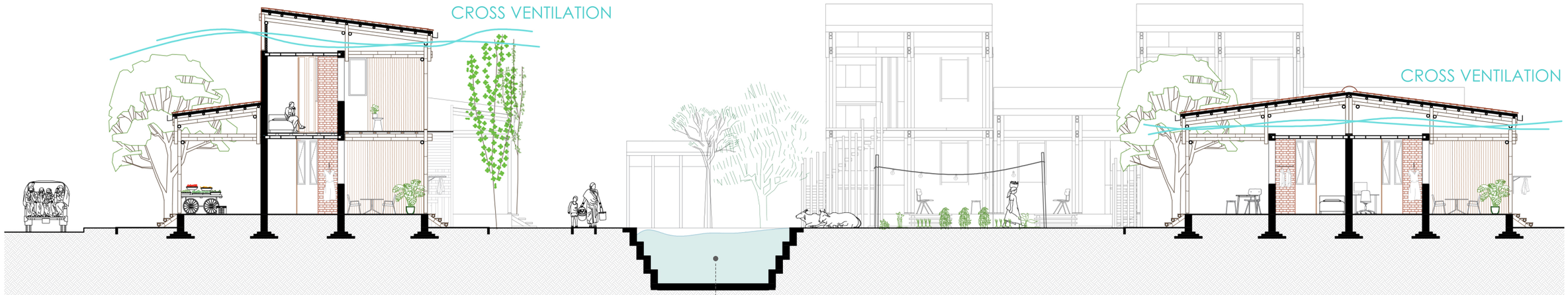
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threshold
kutcha

PRIVATE
pucca
pucca

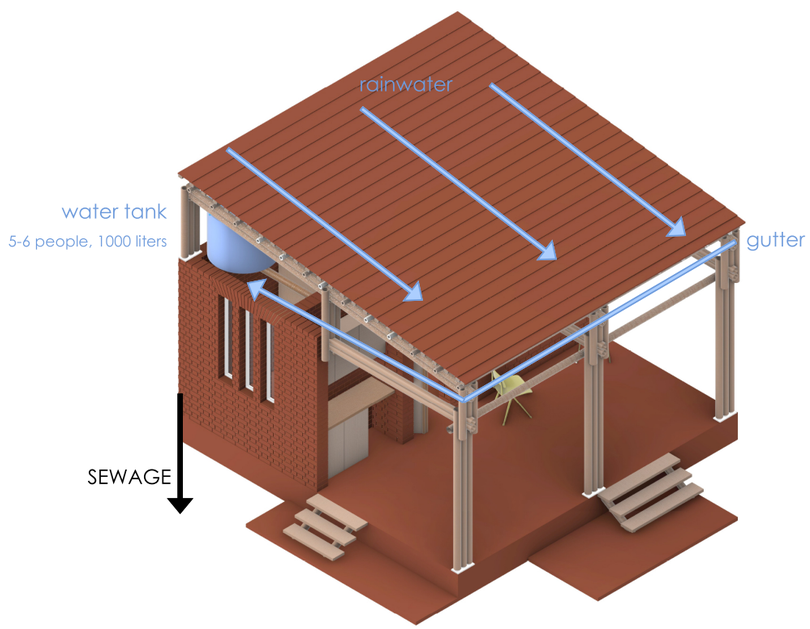
SEMI PRIVATE
kutcha
threshold

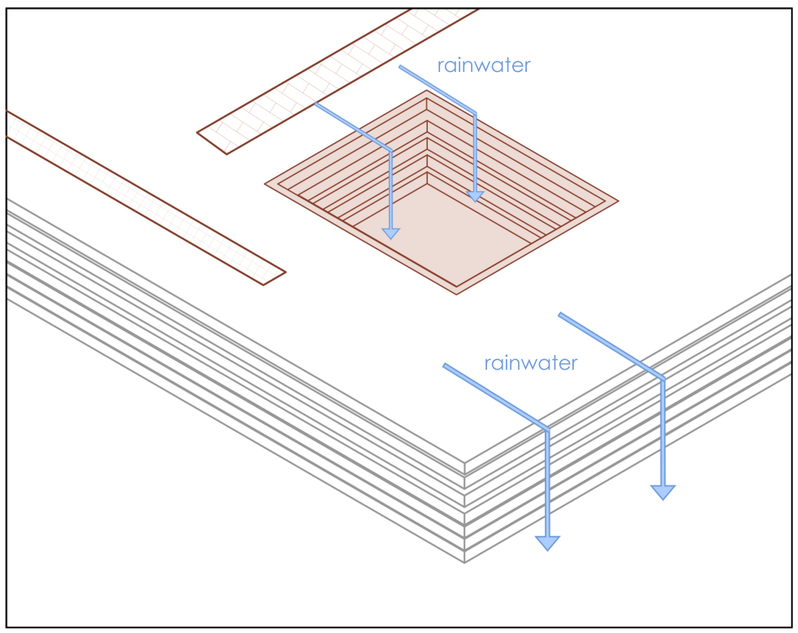
SUMMER SUN
rises northeast
85–90°

WINTER SUN
rises southeast
45–55°



water storage
rain from roads













PLot = 2.6 ha

FSI = 0.52

GSI = 0.4

Dwellings = 253

Density = 88 dw/ha





THANK YOU!