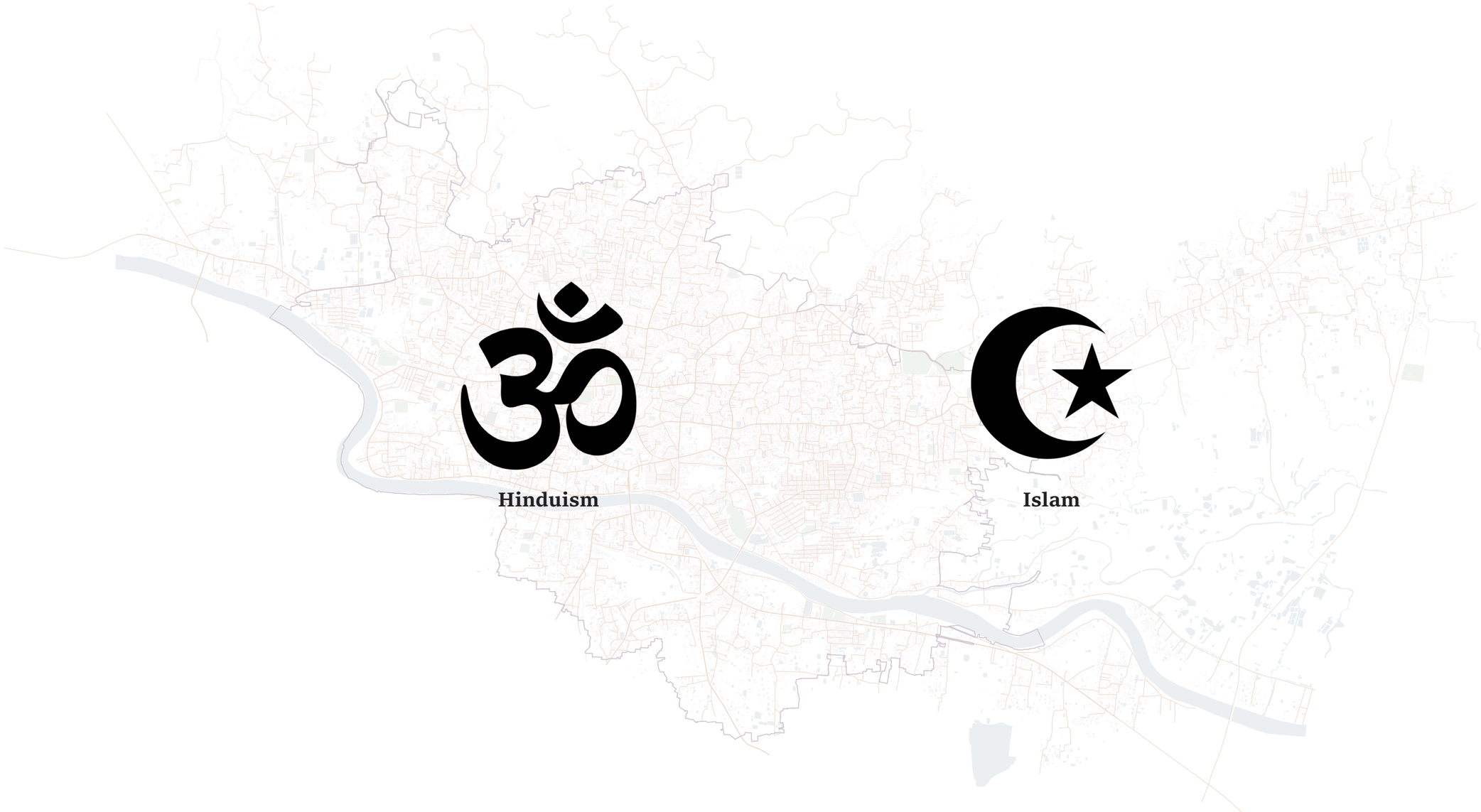
INCLUSIVE WATERS

P5 Presentation
Global Housing Graduation Studio
Architecture in Transition in the
Bangladesh Delta

Lisa Wassink

Date: 2nd of July 2024

Sylhet - A sacred city

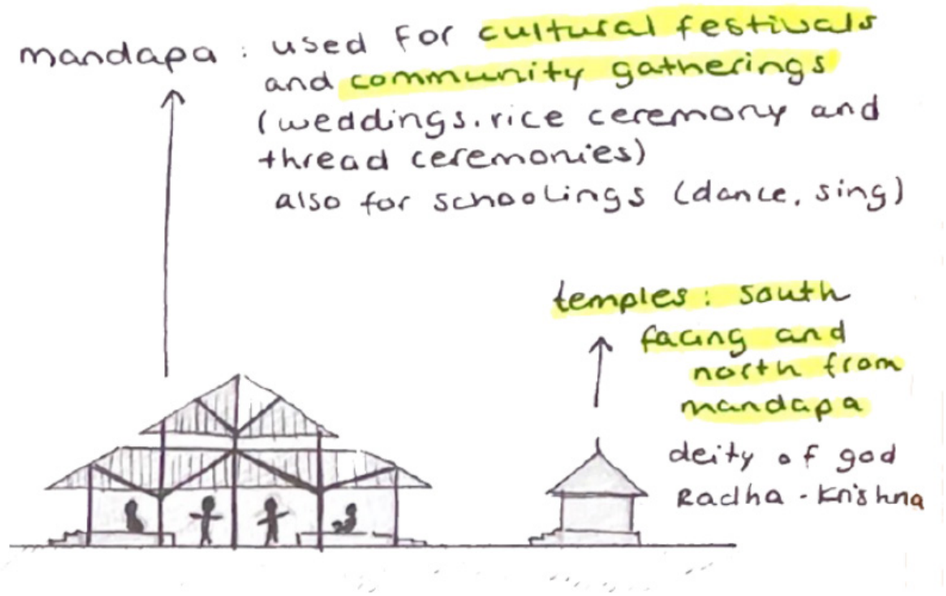

Hinduism
Islam

“Contemporary architecture should seek a greater understanding of local culture if it is to be sustainable”

- Guy and Farmer (2002)

Prefer to live near a source of natural water

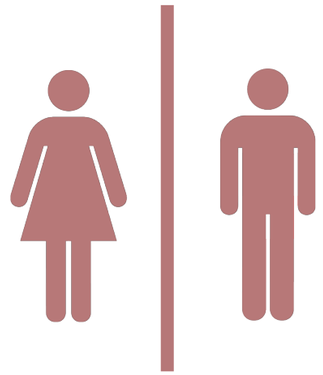
Prefer to live together in their territory, making small neighbourhood of 10-20 families



Every community has a Mandapa and temple for cultural festivals and community gatherings

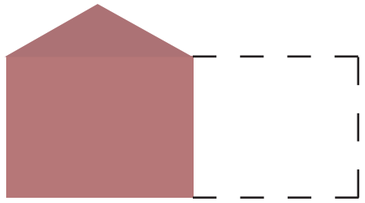
Mosque is focal point of the neighbourhood

There is a clear separation between public and private life

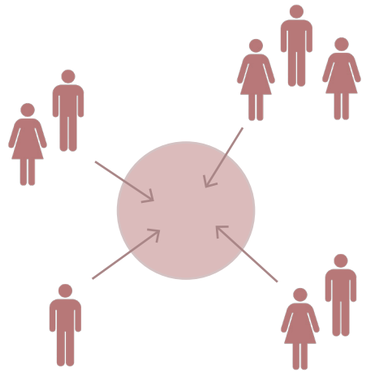


Within the house, there is a division between male and women area

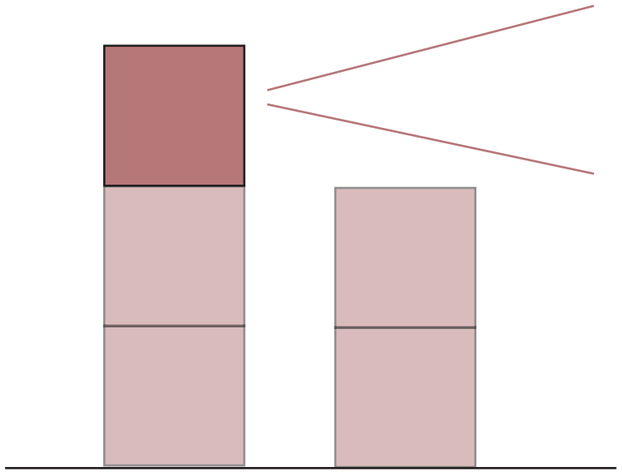
Possibility to generate income



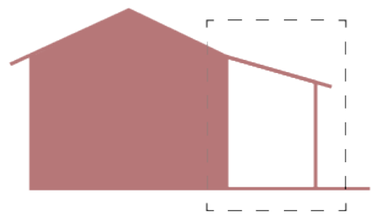
Possibility to extend living area



Community space for social activities

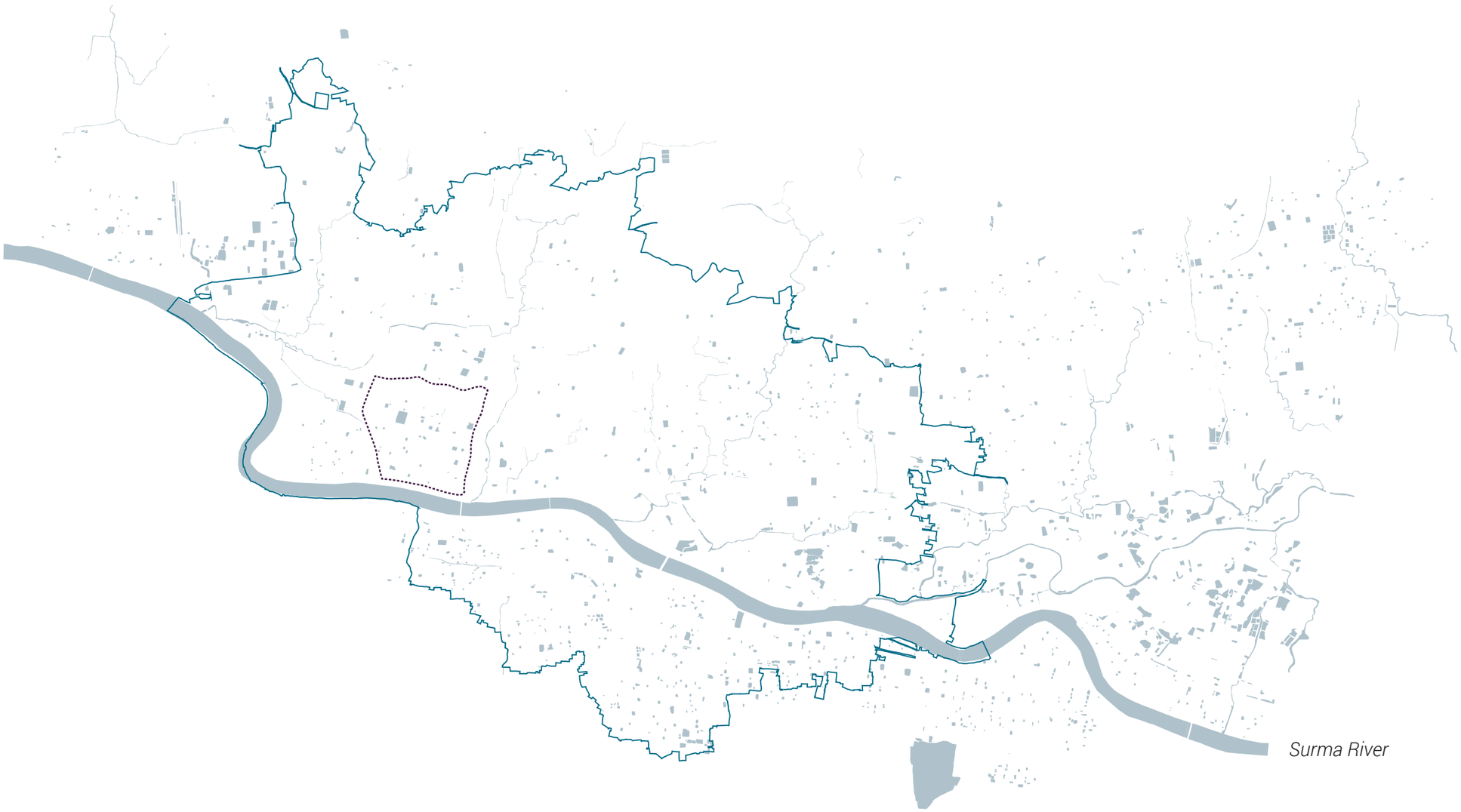


Located on the upper floors the best views



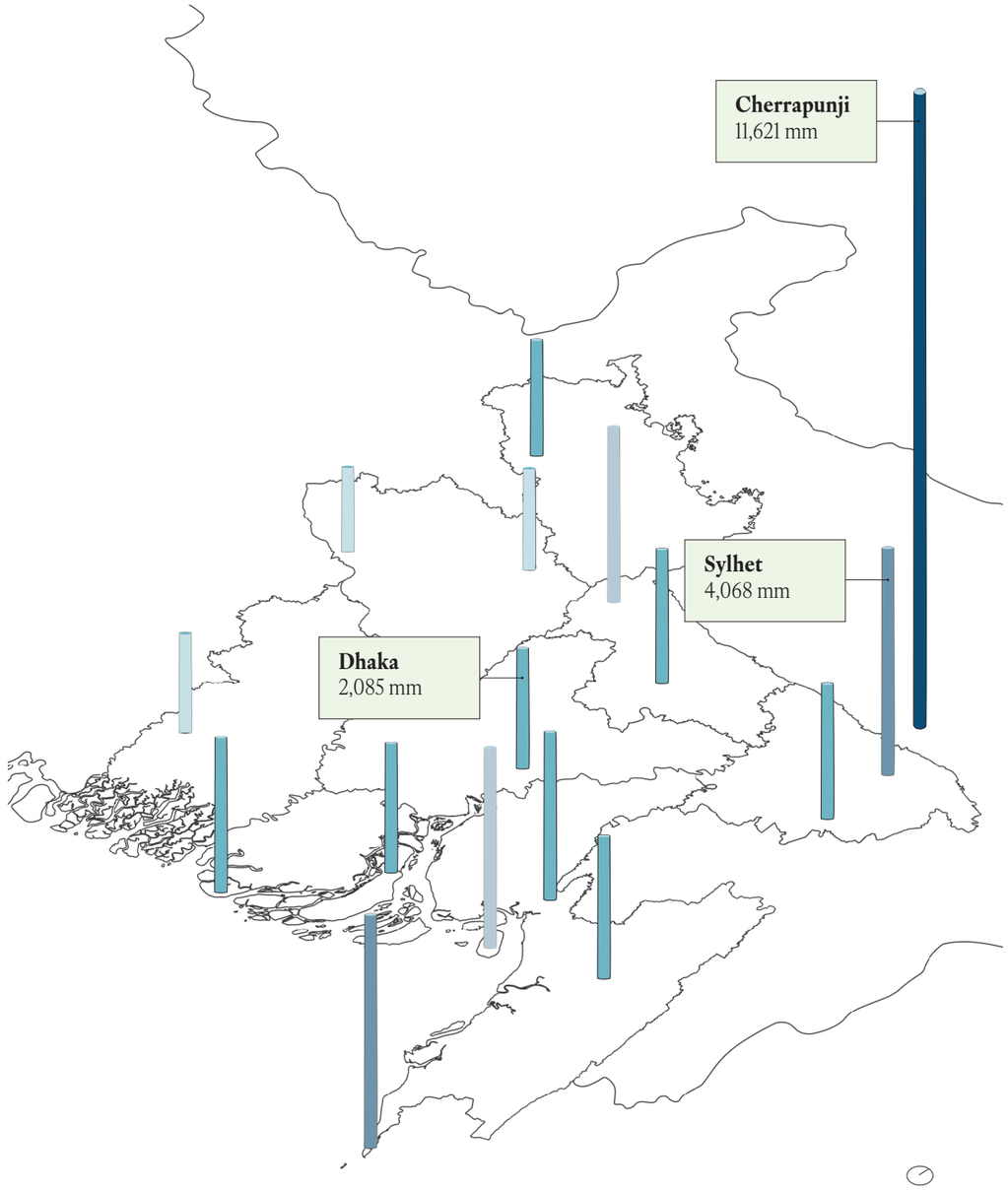
Private outside spaces

Sylhet - Urban waterscape



Sylhet - Urban waterscape

Annual rainfall in Bangladesh and India



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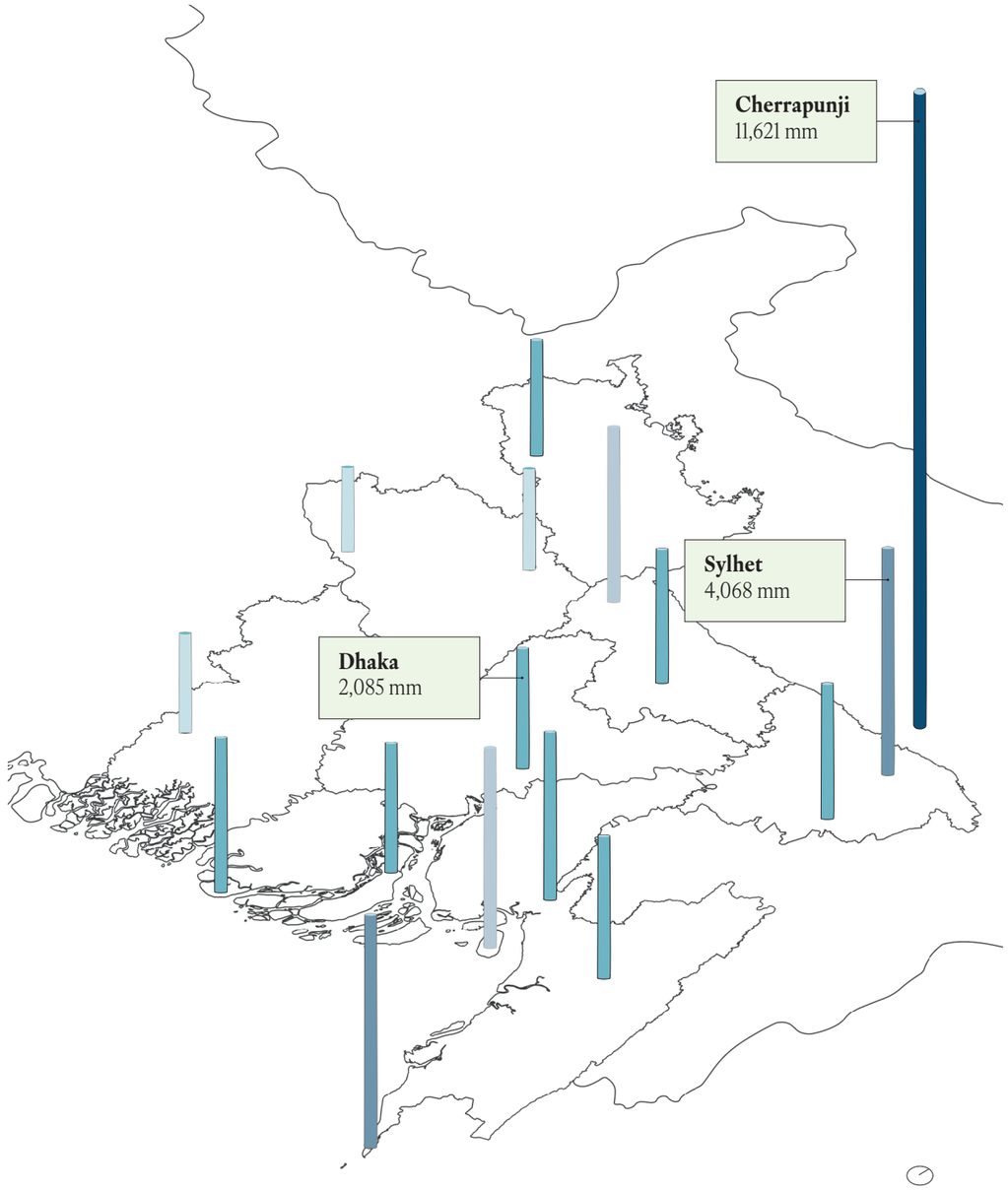
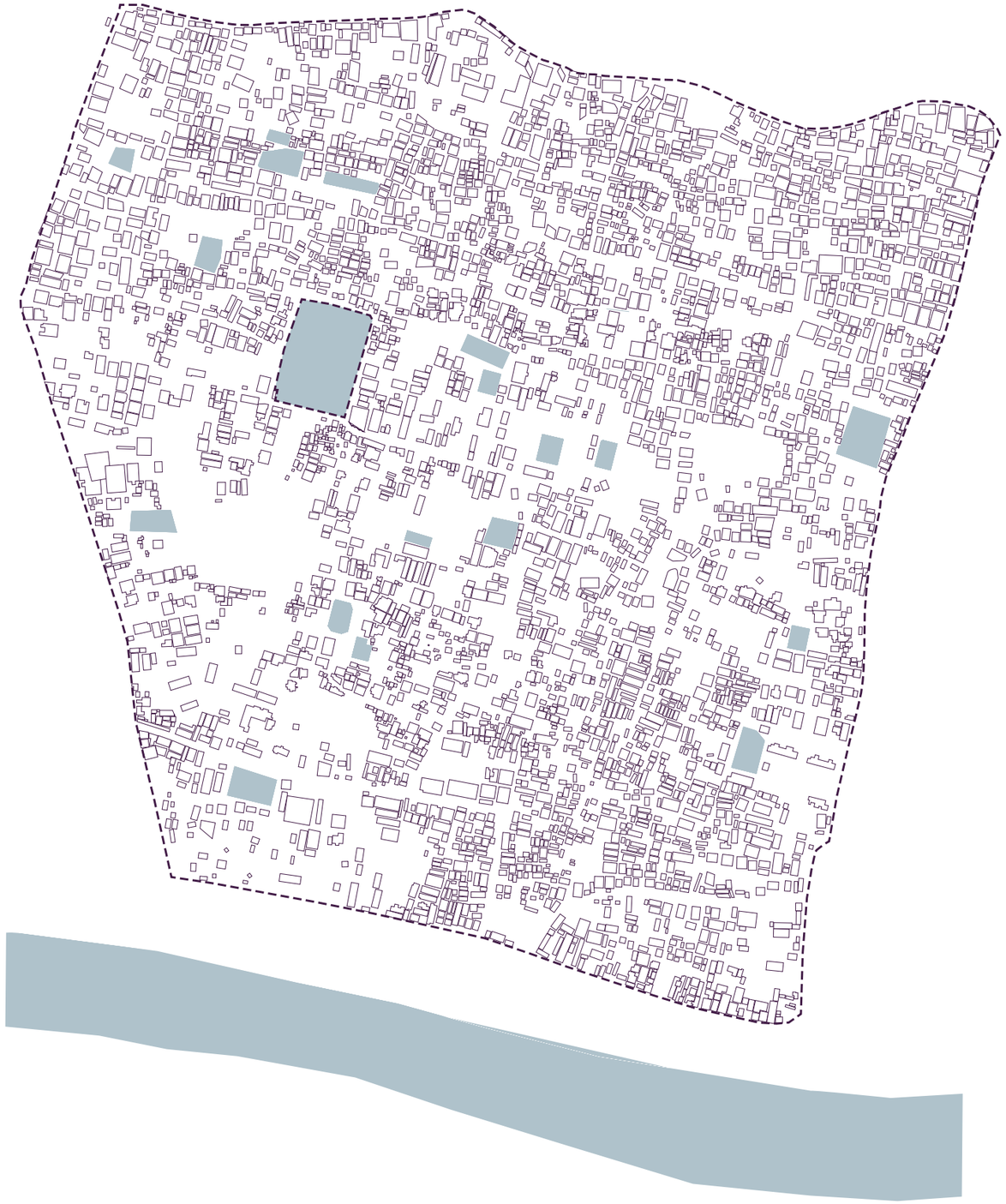


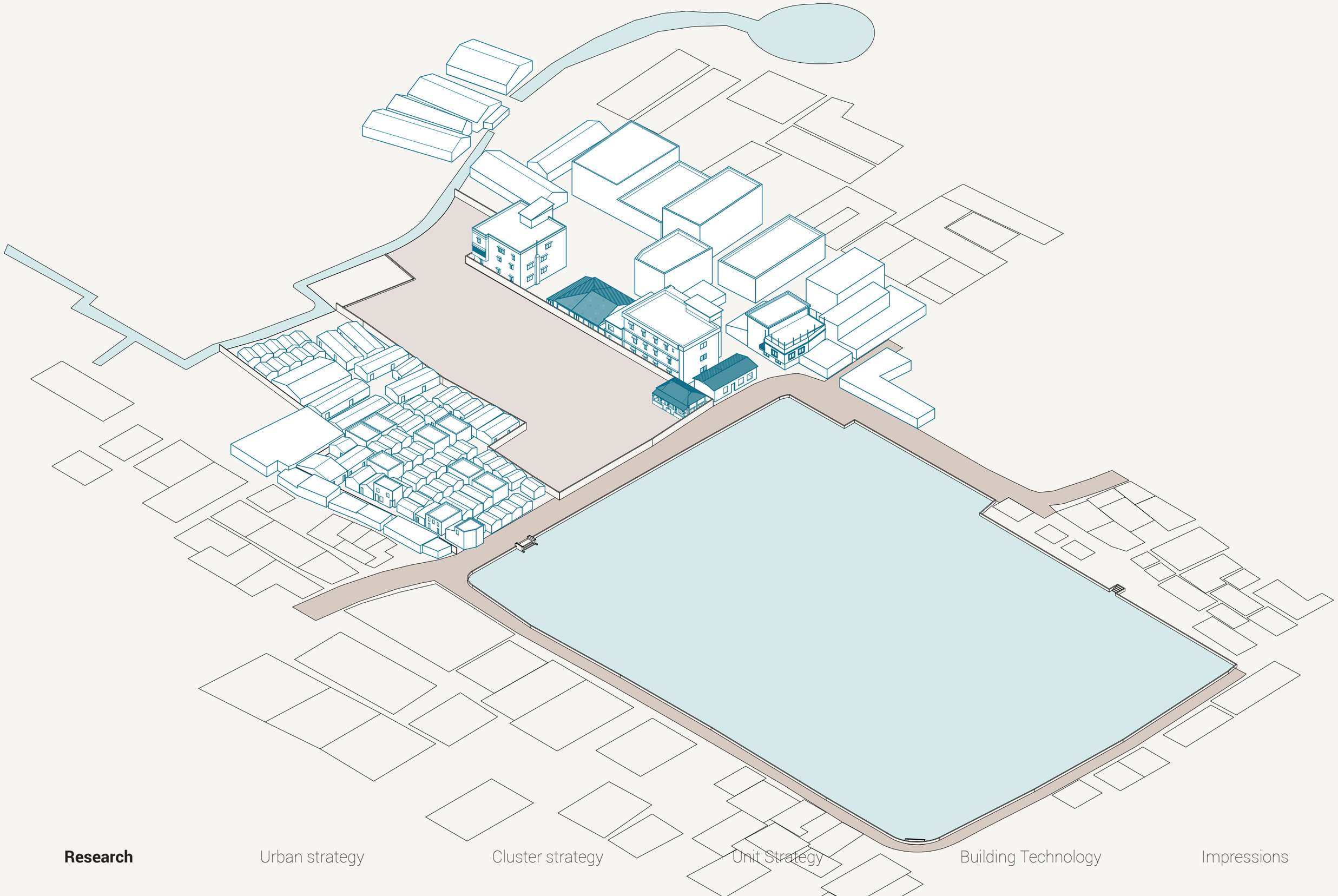
Annual rainfall in the Netherlands

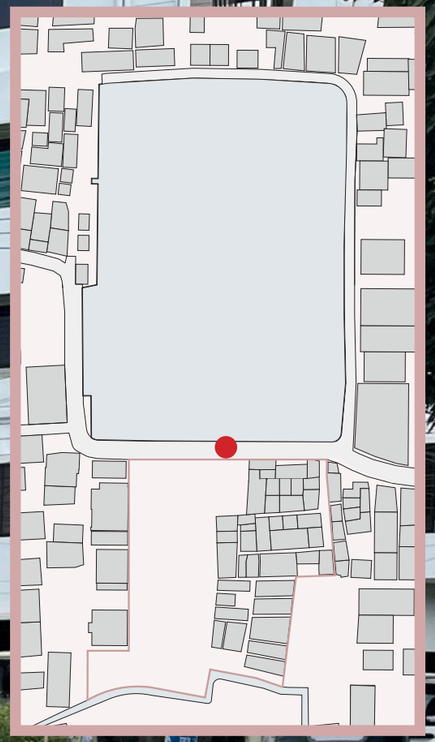
700-900 mm

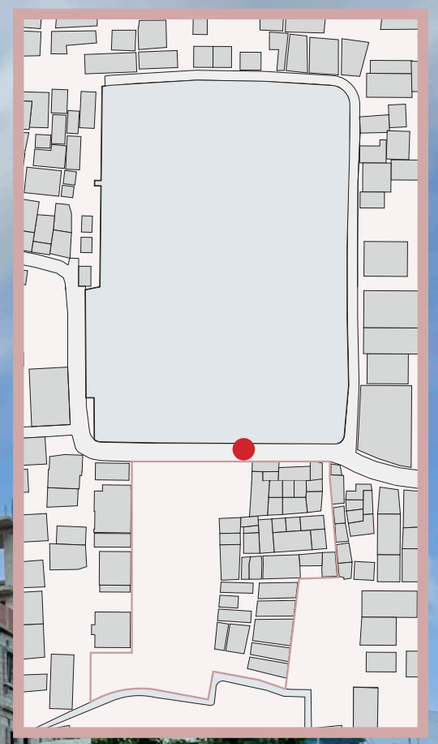
Sylhet - Urban waterscape

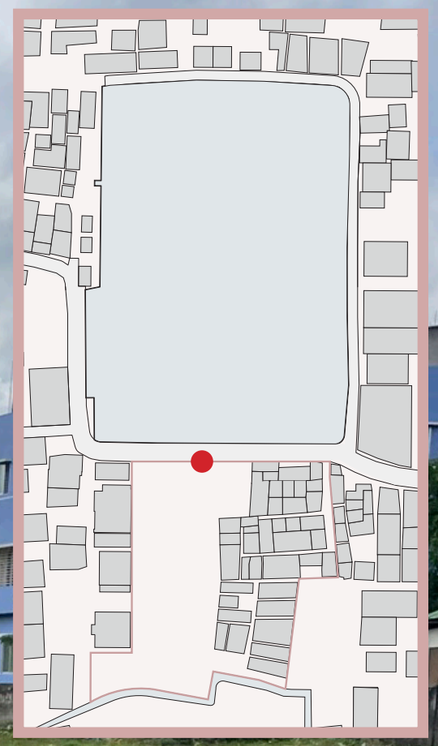


Sylhet - Design location, Laladighir





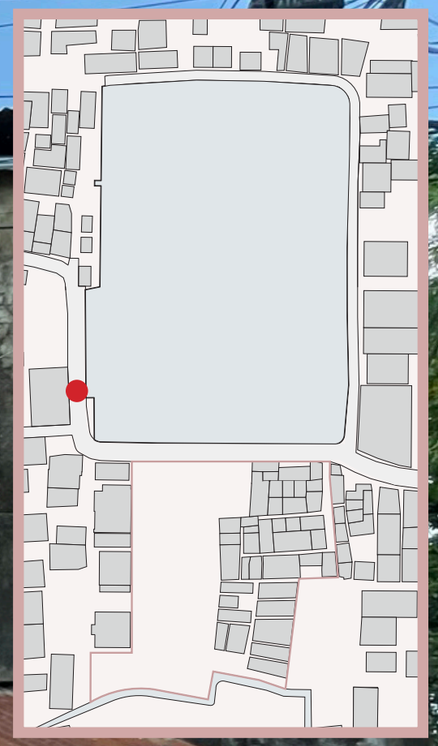


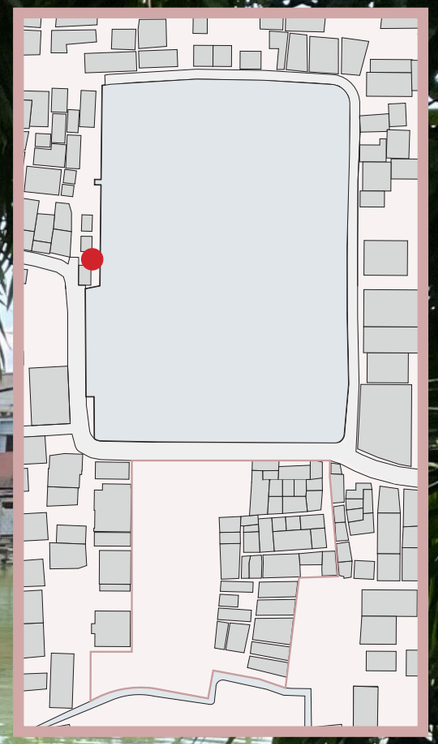


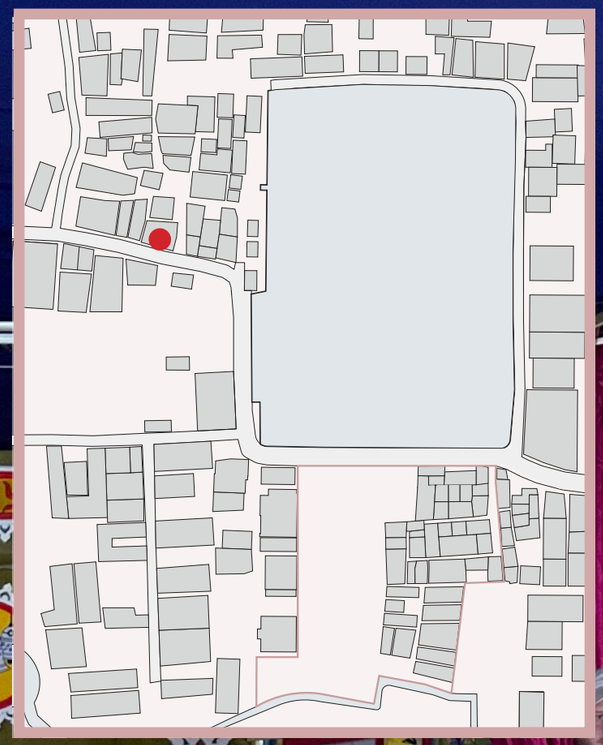
শ্রাবন্তী এন্ড শ্রেষ্ঠ
স্টোর

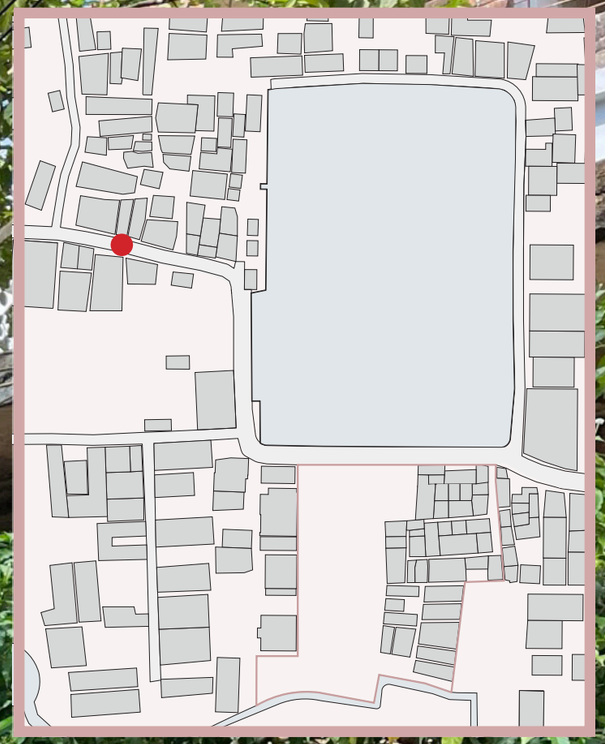
বাসেল মোবাইল

FASTEST 4G
মানেই বাংলালিংক









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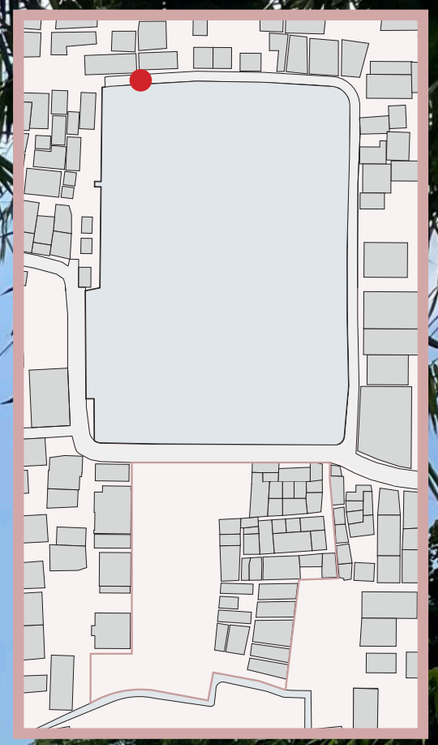
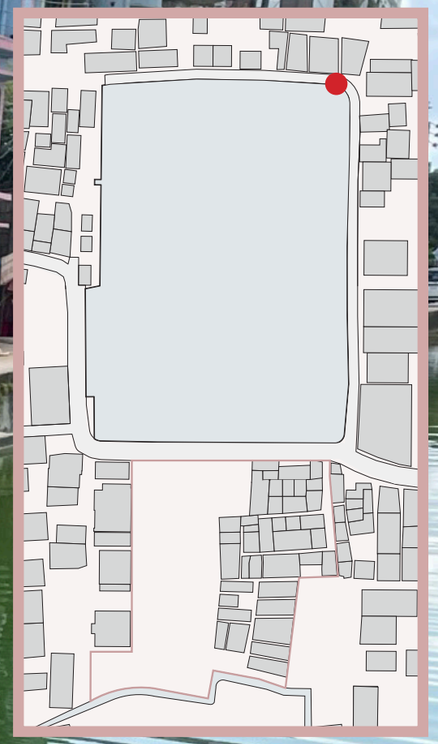
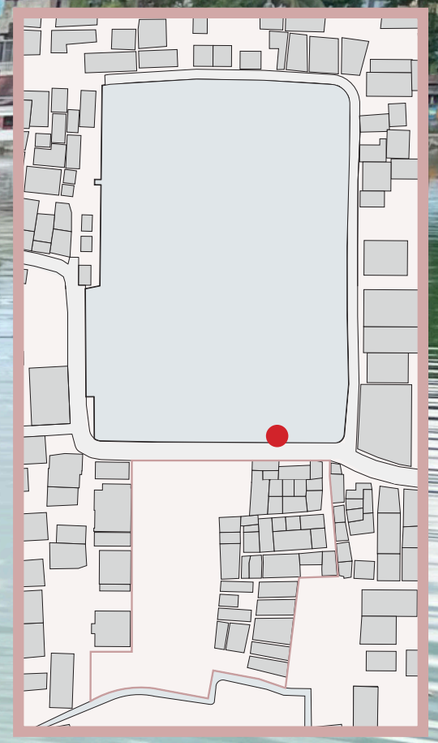
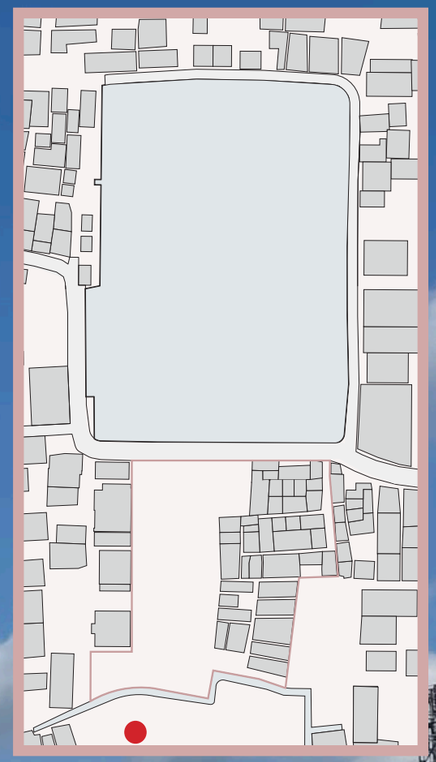
স্থাপিতঃ ২০১১









Design goals

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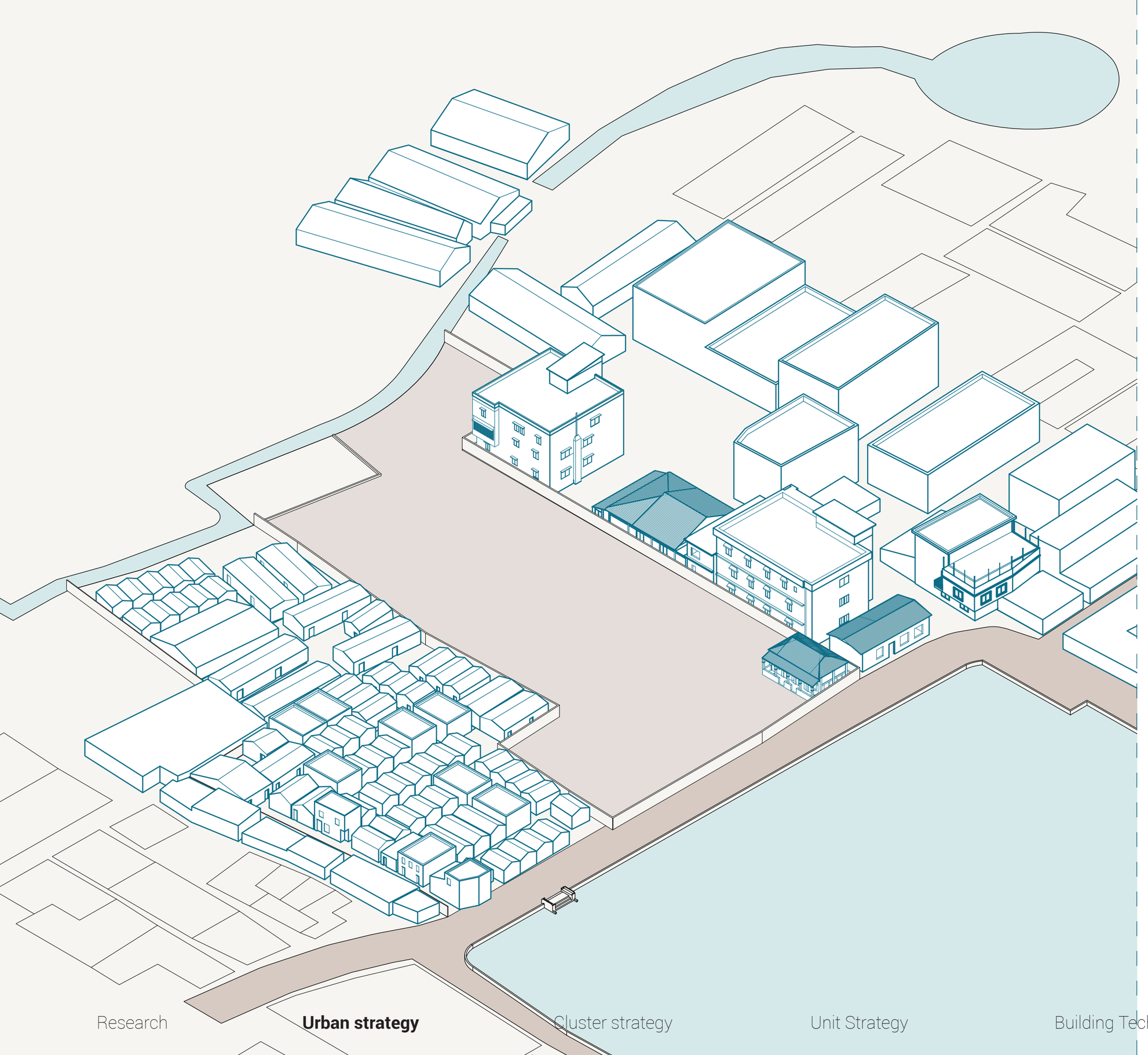
keep the cost low for low income housing,

and **mitigate flood risks** due to climate change,

which all together create an inclusive, sustainable living environment where water is the central theme

Urban strategy

Current situation



Plot

Area	*6,040 sqm*
FSI	*0.39*
GSI	*0.34*
Low income dwellings	*65*
Dwellings/ha	*39*
Area/dwelling	*40 sqm*

Informal settlement

Amenities	-
Open space	*14.8%*
Open space/resident	*1.5 sqm/res.*

Slum Clearance

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Relocation to medium-rise blocks in alternative locations

Allows government to unlock the development potential of well-located land parcels

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The state grants slum dwellers legal titles to their properties

Alleviates concerns about demolition, displacement and relocation

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New housing on the same location

Construction of additional floorspace that could be sold on the open market, making it more financially feasible to cross-subsidize housing for slum residents

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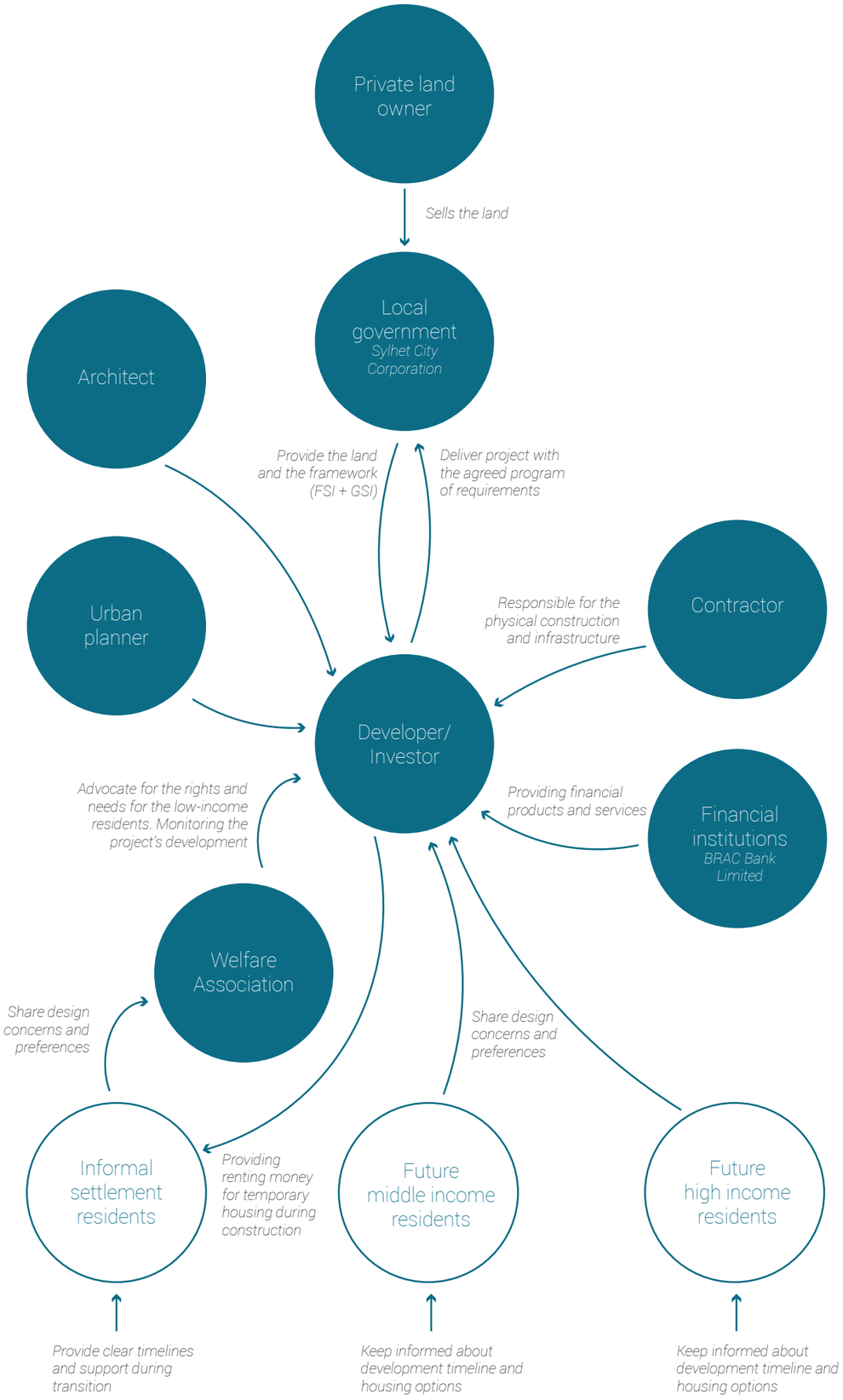
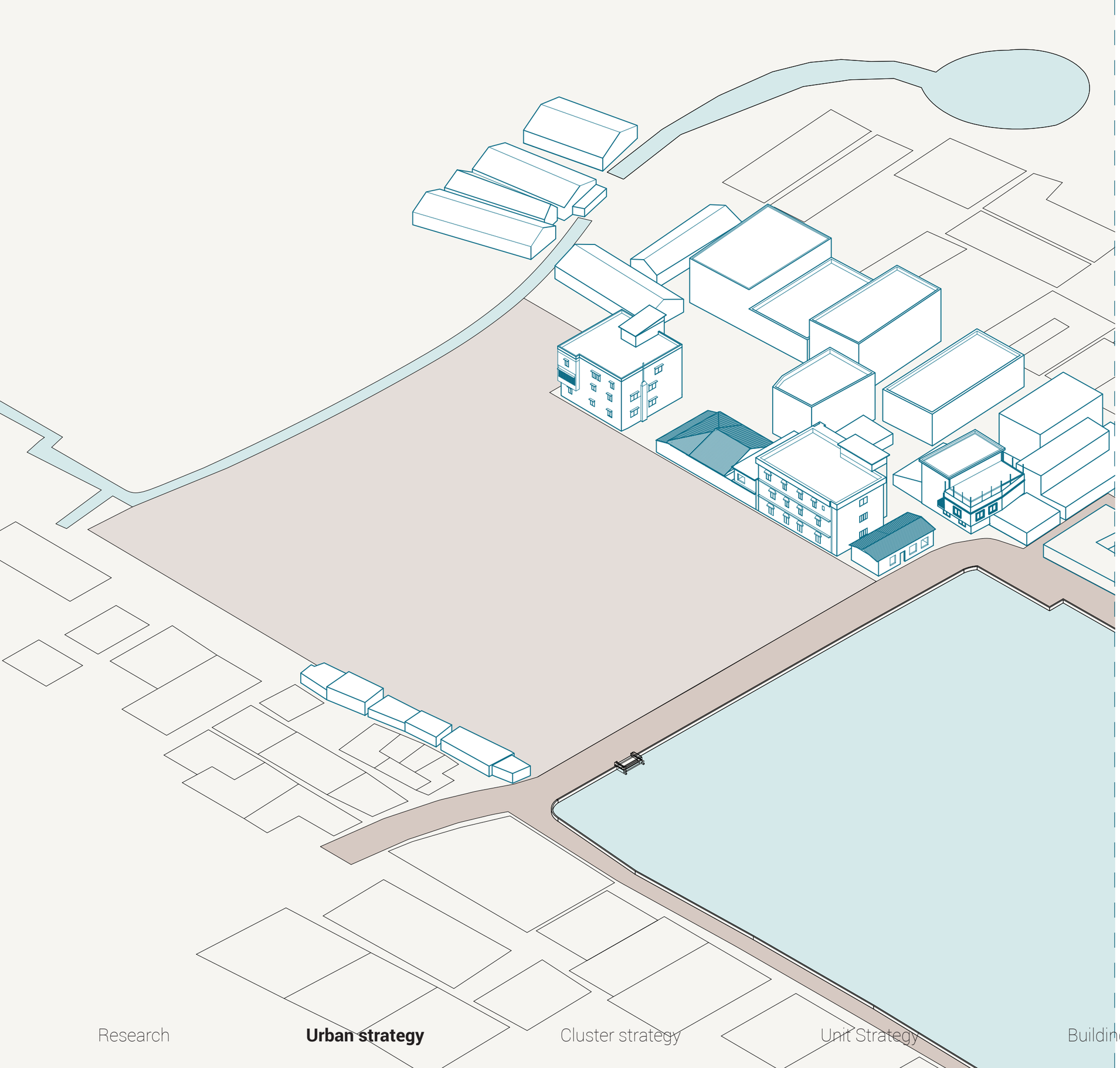
“By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums”

- Sustainable Development Goal 11.1 Bangladesh

Urban strategy - Managerial plan





Phase 01 - Slum clearance

Plot
Area *7,374 sqm*

Phase 01 - Slum clearance

Connect urban pond and cricket field

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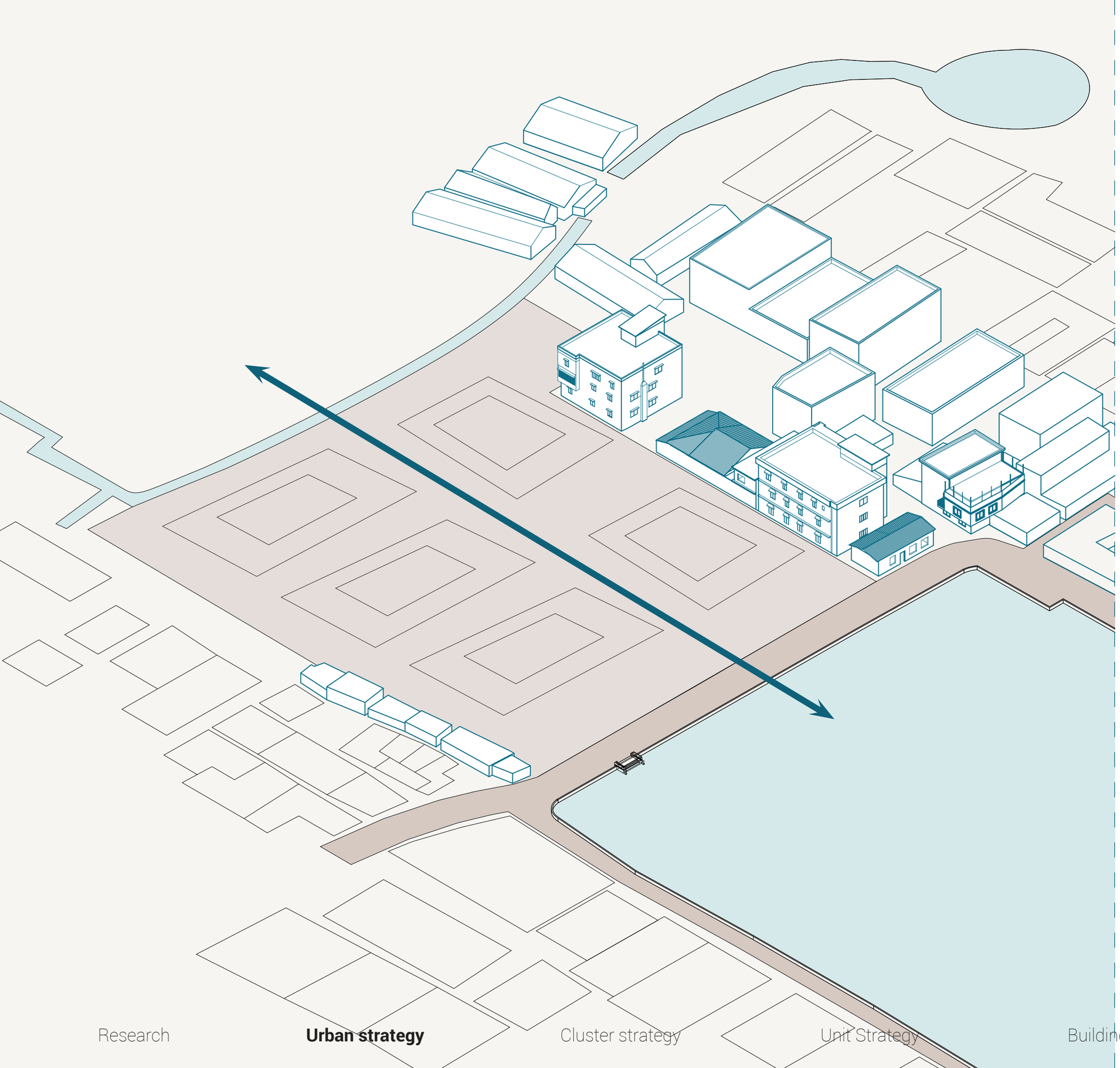
Area *7,374 sqm*



Phase 01 - Slum clearance

Connect urban pond and cricket field

Clustering around public axis

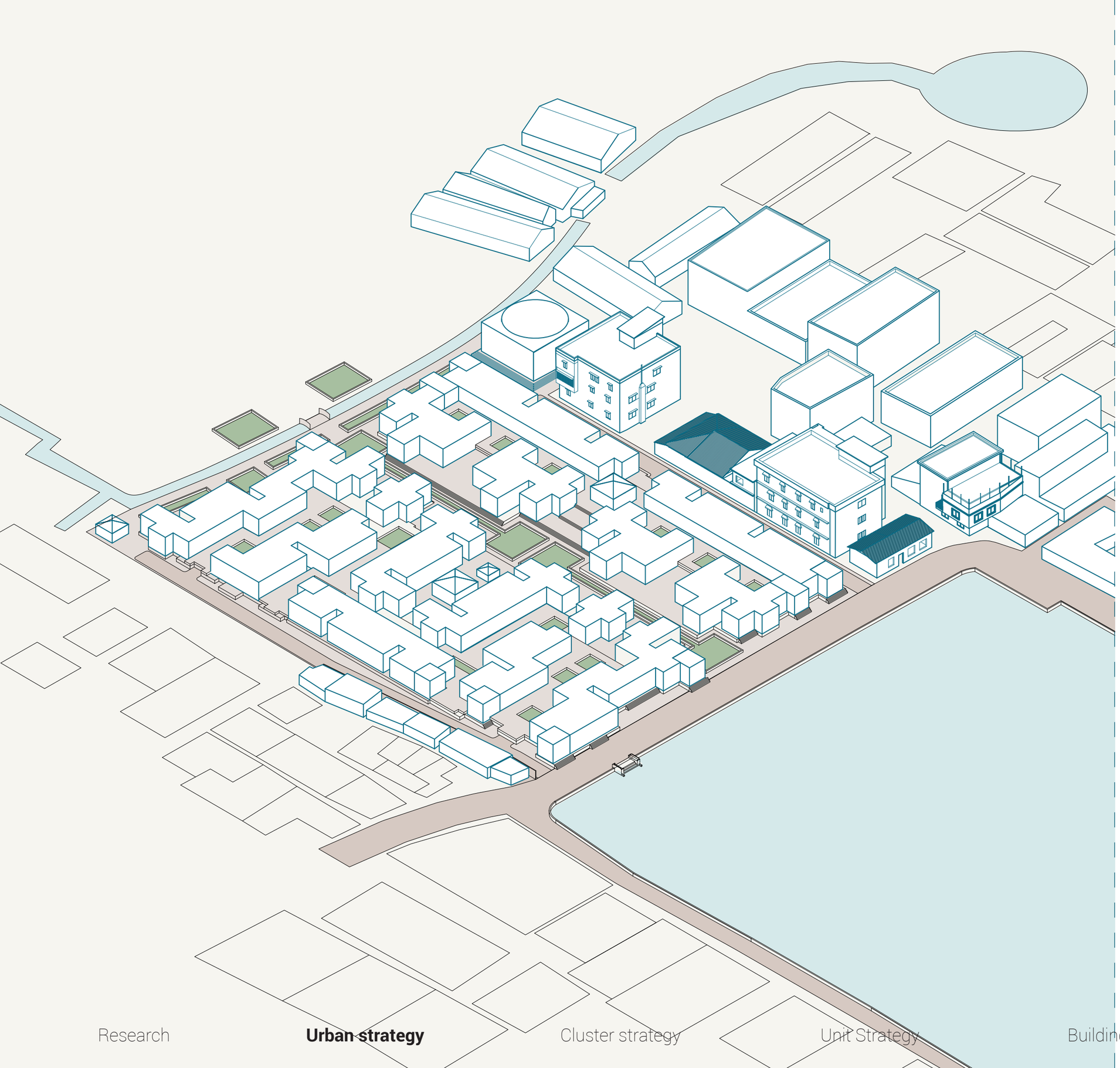
Plot
Area *7,374 sqm*

Phase 02 - Raised platforms

Integration of water management system

Plot

Area	*7,374 sqm*
Platform heigth	*750 mm*
Constructed wetlands	*630 sqm*



Phase 03 - Low income

Direct street acces

Income generation

Plot	
Area	*7,374 sqm*
Low-income housing	*66*
Old informal settlement	
Housing units	*65*

Phase 04 - Middle income

Upper floors for best views

Terraces

Plot

Area	*7,374 sqm*
Middle-income housing	*64*

Phase 05 - High income

Upper floors for best views

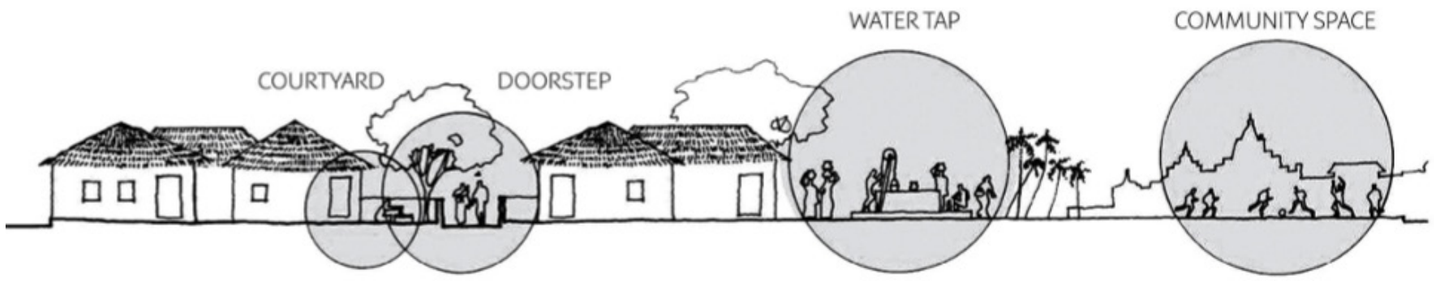
Terraces

Plot

Area	*7,374 sqm*
High-income housing	*18*

"The room (the box) is only one element in a whole system of spaces which a family needs in order to live in a city"

- Charles Correa (2002)

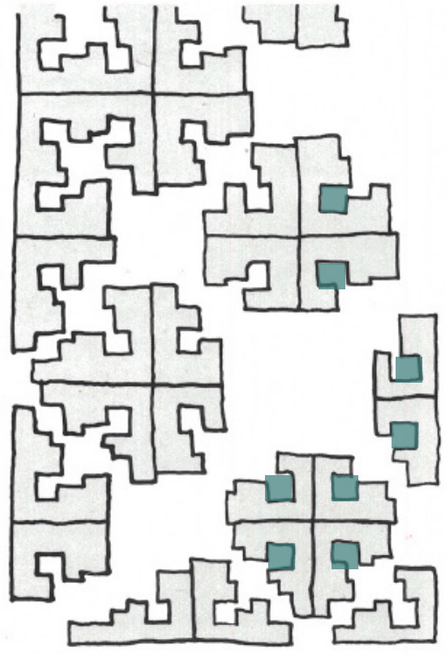


Urban strategy - Hierarchy of spaces

Belapur Housing by Charles Correa

Basic unit
Shared courtyard of 8m x 8m
7 houses around courtyard

Cluster
Three such basic units are grouped in a cluster of 25 houses (adding 4 houses at the open corners)



Community space
Cluster is repeated to form larger community spaces

Urban strategy
Hierarchy of spaces

Urban strategy
Hierarchy of spaces

Main public space

Urban strategy
Hierarchy of spaces

Semi-public space

Urban strategy
Hierarchy of spaces

Semi-private space

Urban strategy
Masterplan

Shophouses

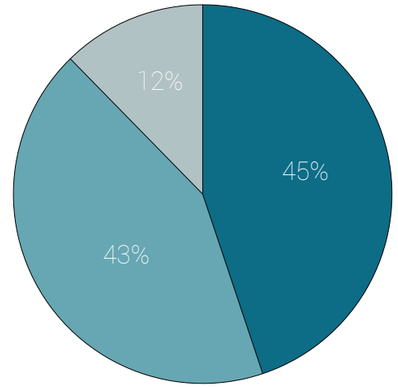
Urban strategy
Masterplan

Commercial space for rent

Urban strategy
Masterplan

Religious spaces

Urban strategy
Masterplan

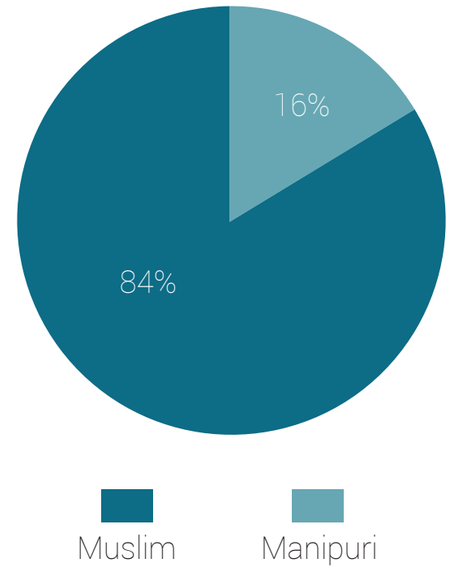


LI MI HI

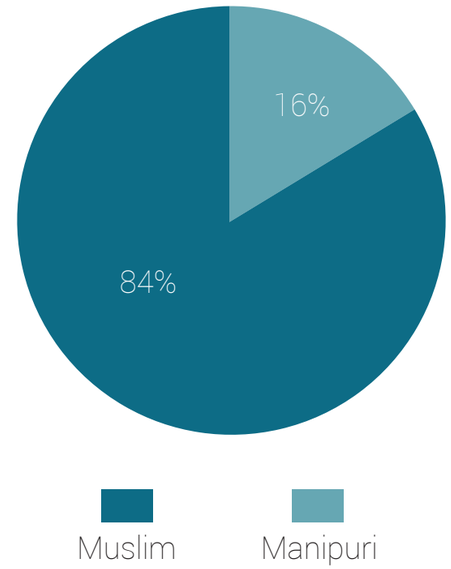
Area	*7,374 sqm*
FSI	*1.48*
GSI	*0.32*
LI units	*66*
MI units	*64*
HI units	*18*
Total dwellings	*148*
Residents	*888*
Residents/ha	*1,251*
Dwellings/ha	*208*
Amenities	
mosque	*1*
Religious buildings	*4*
commercial space for rent	*120 sqm*
Open space	*68%*
Open space/resident	*4.7 sqm*

Cluster strategy

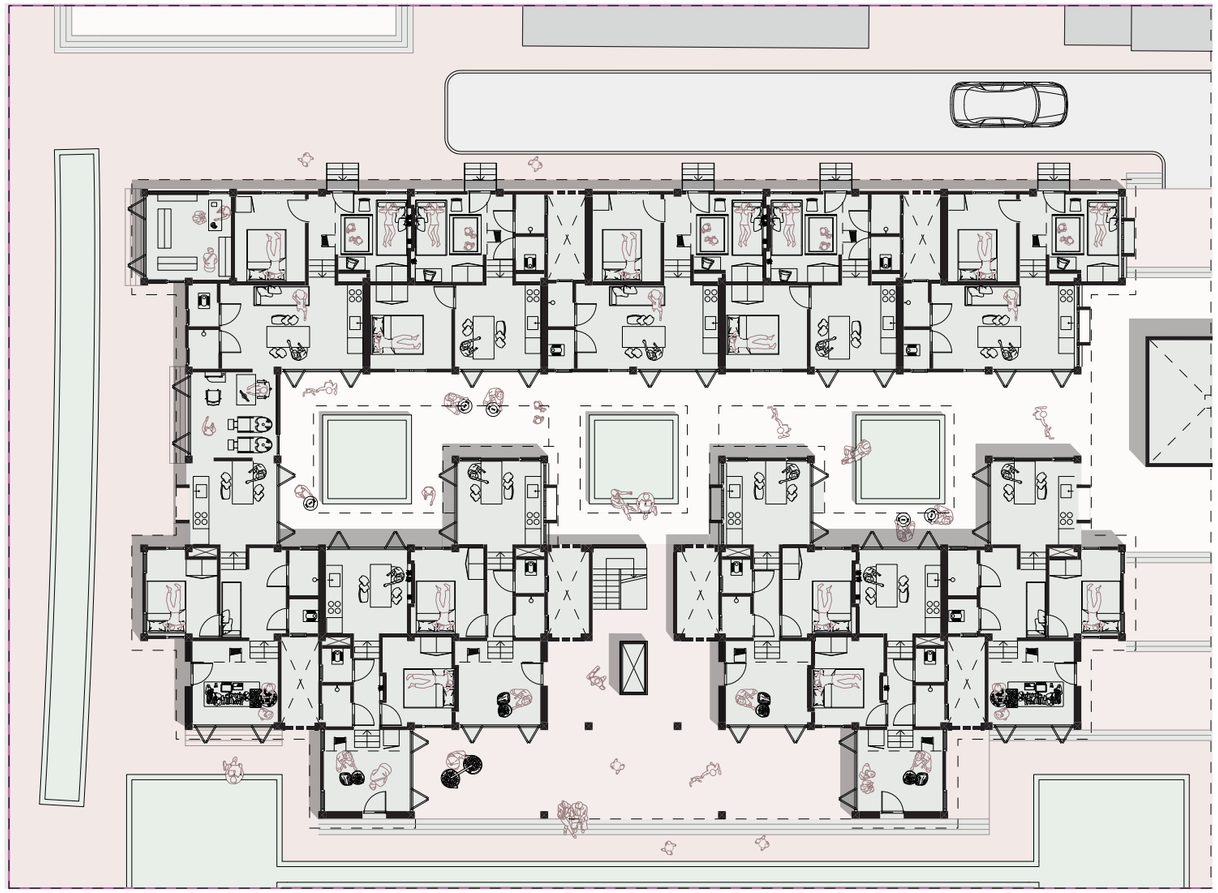
Cluster strategy
Muslim clusters



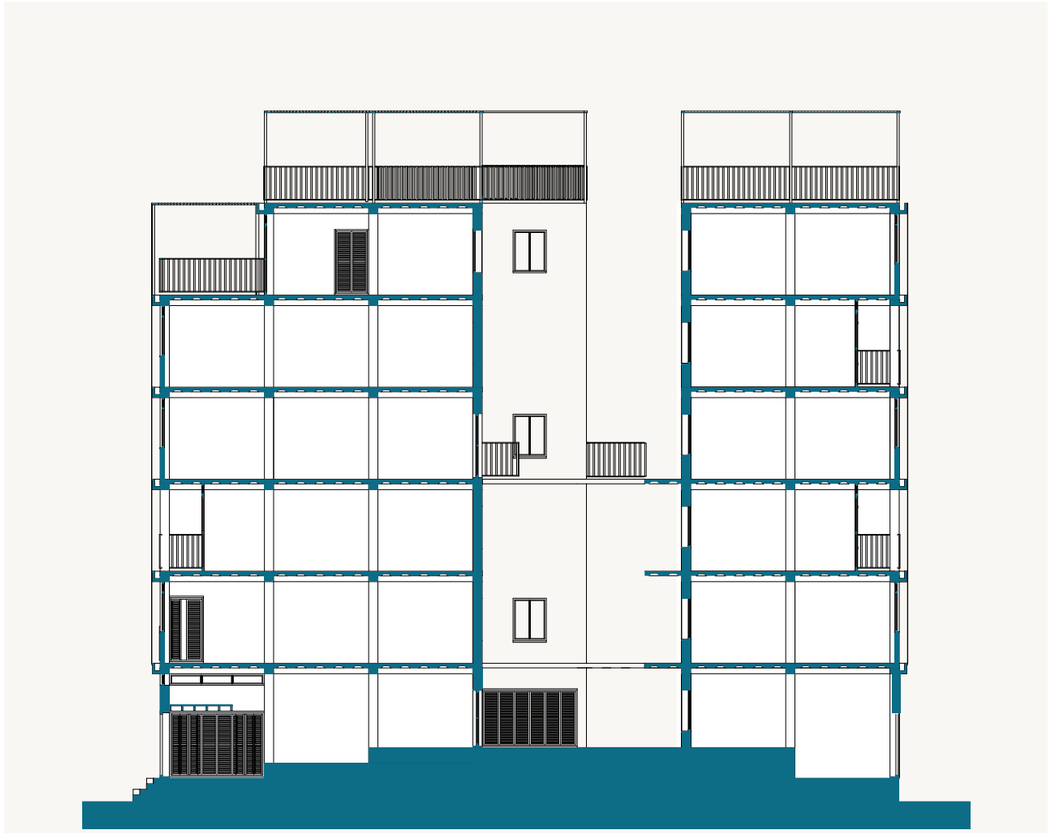
Cluster strategy
Manipuri cluster



Cluster strategy - Muslim cluster

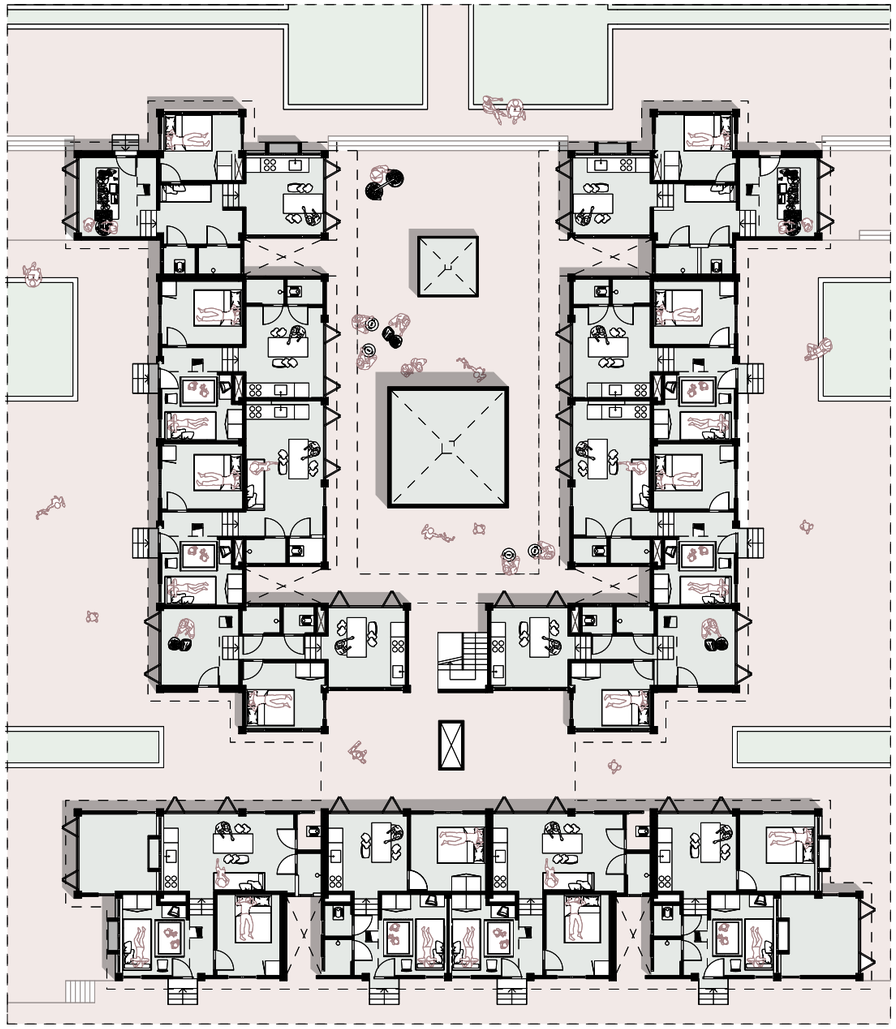


Ground floorplan



Section

Cluster strategy - Manipuri cluster



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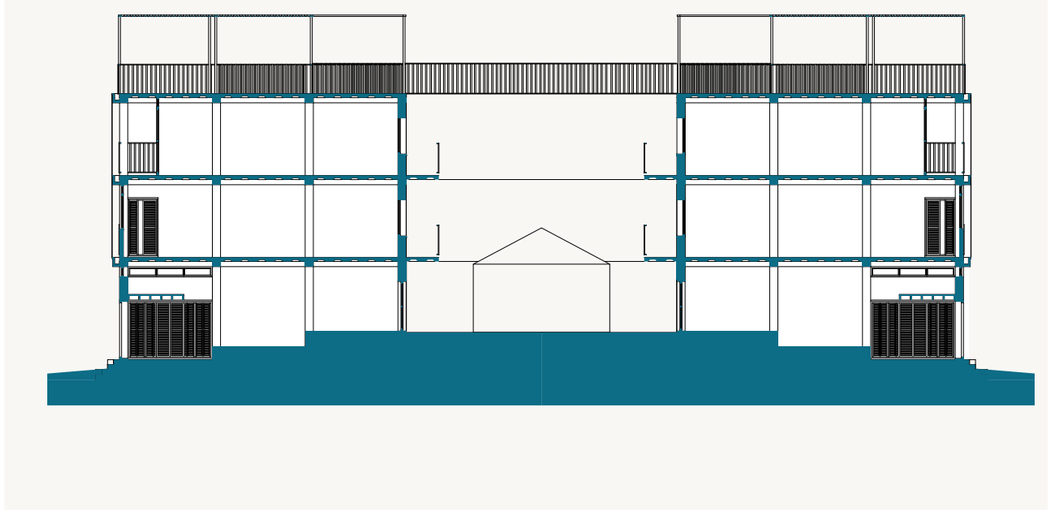
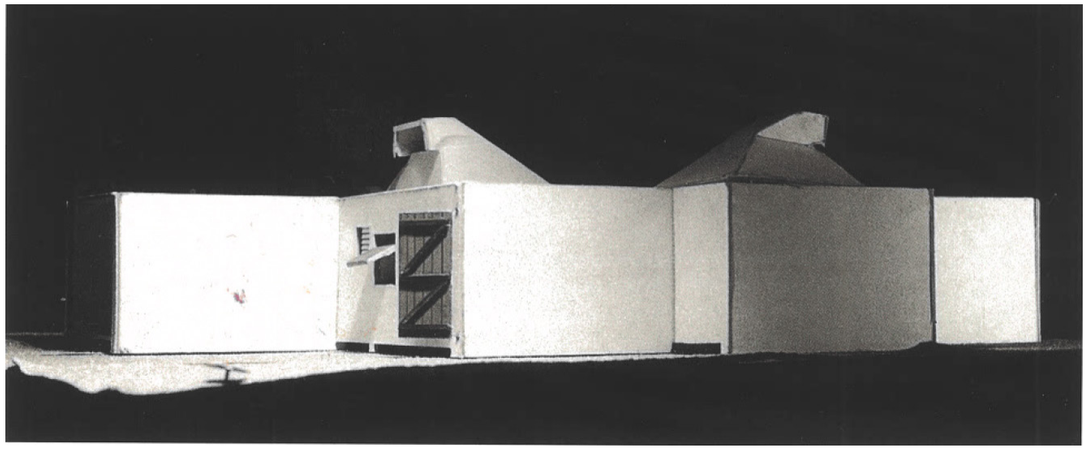
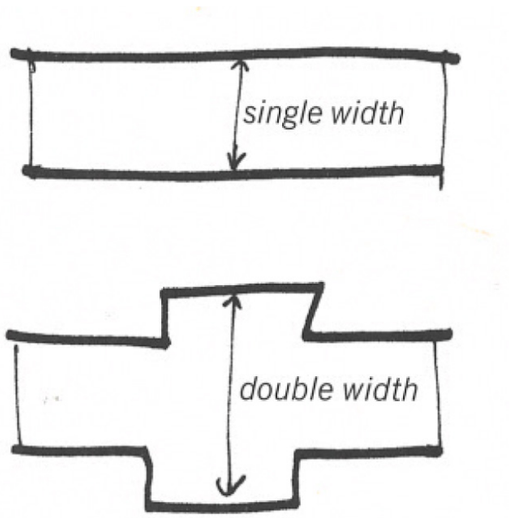


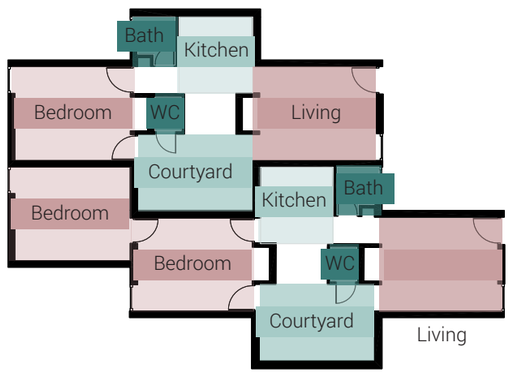
Section

Unit strategy

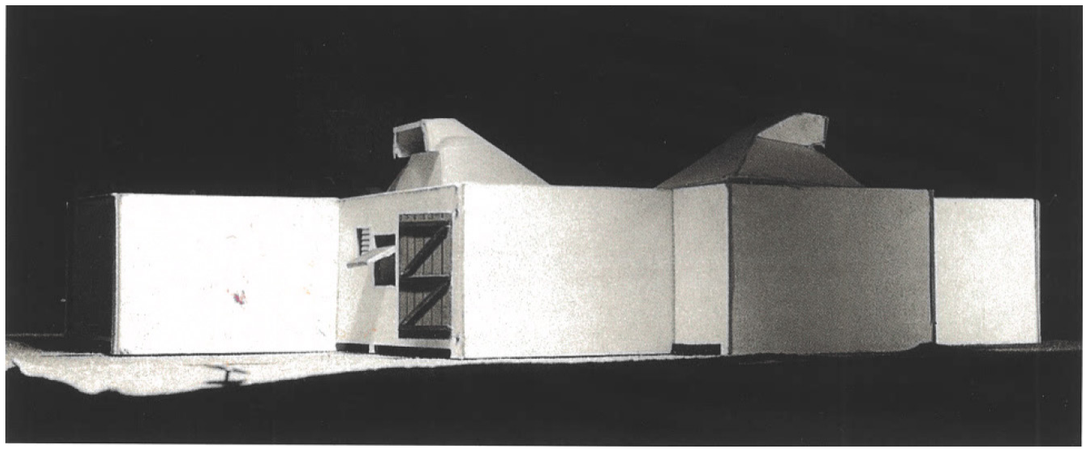
GHB -2 by Charles Correa

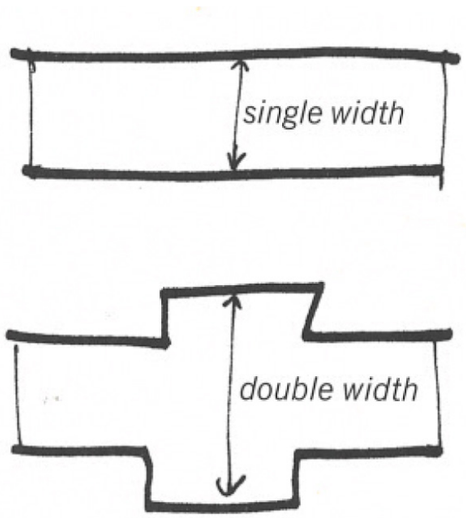


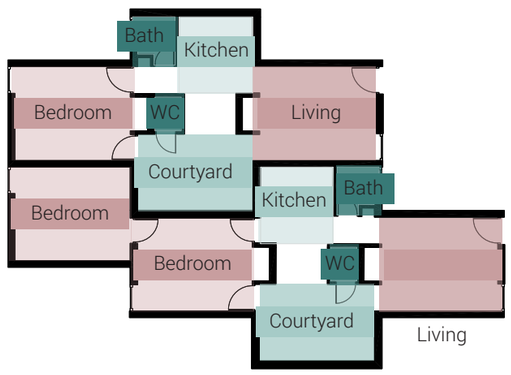




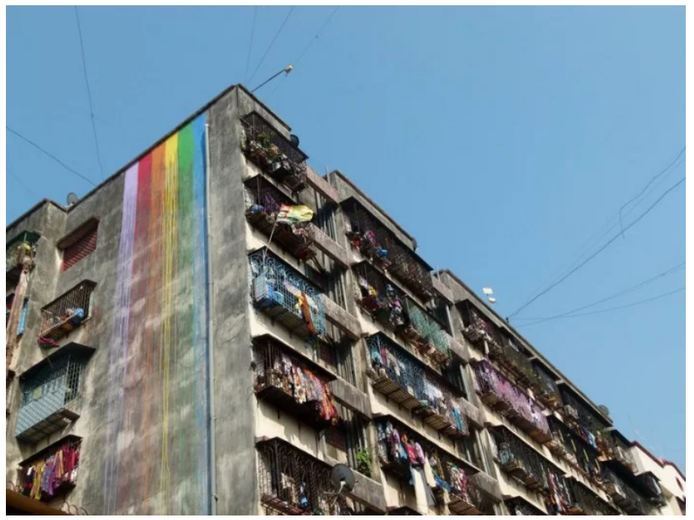
GHB -2 by Charles Correa

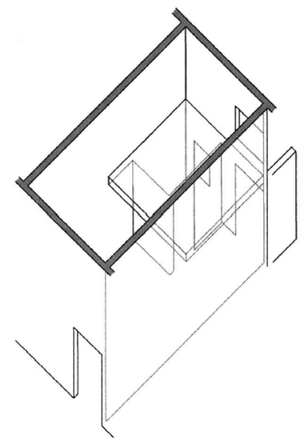


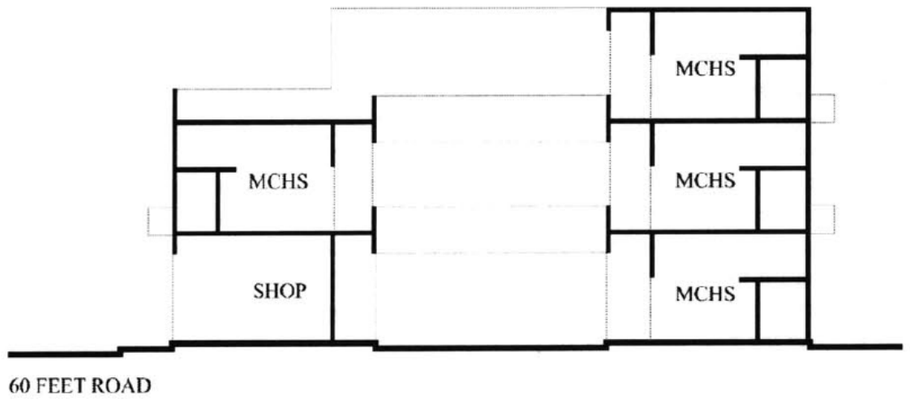




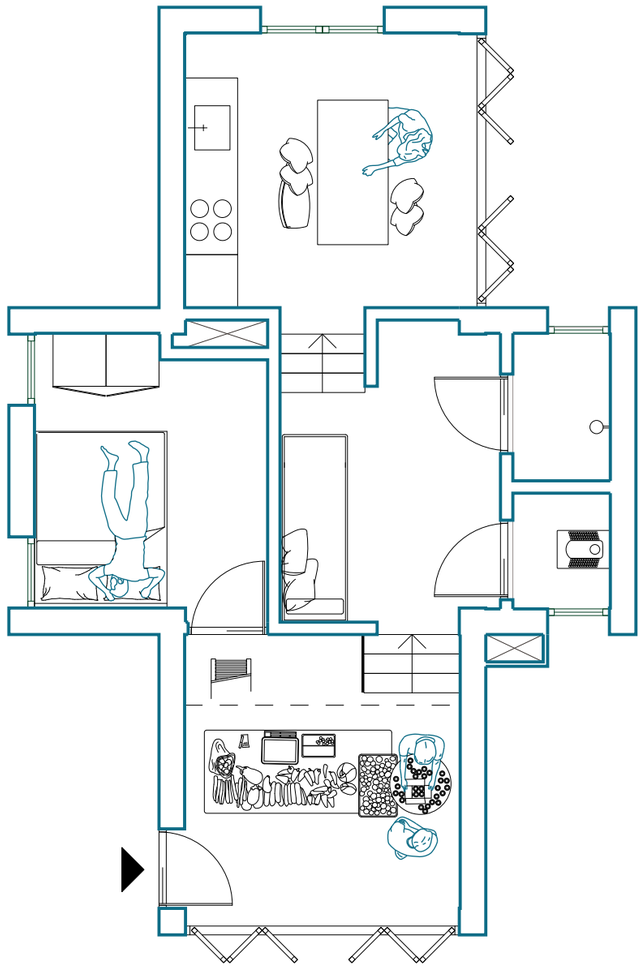
Markandeya cooperative housing society

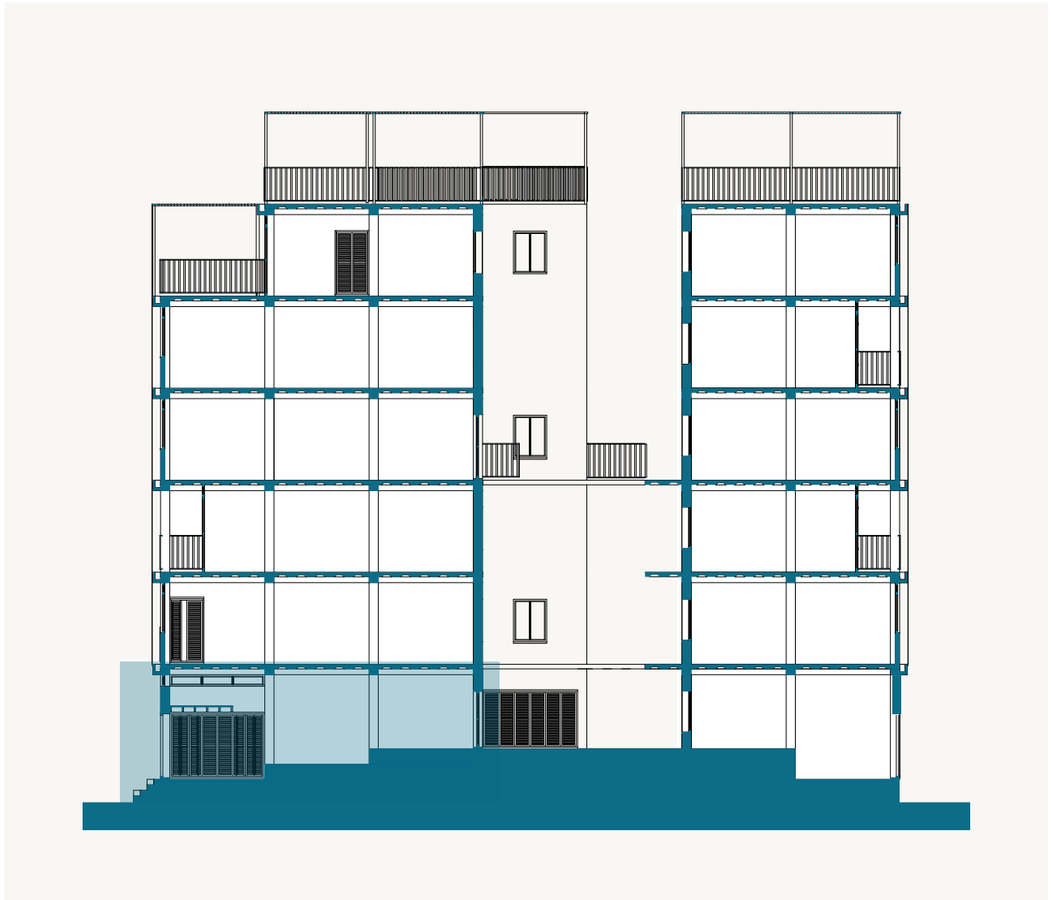






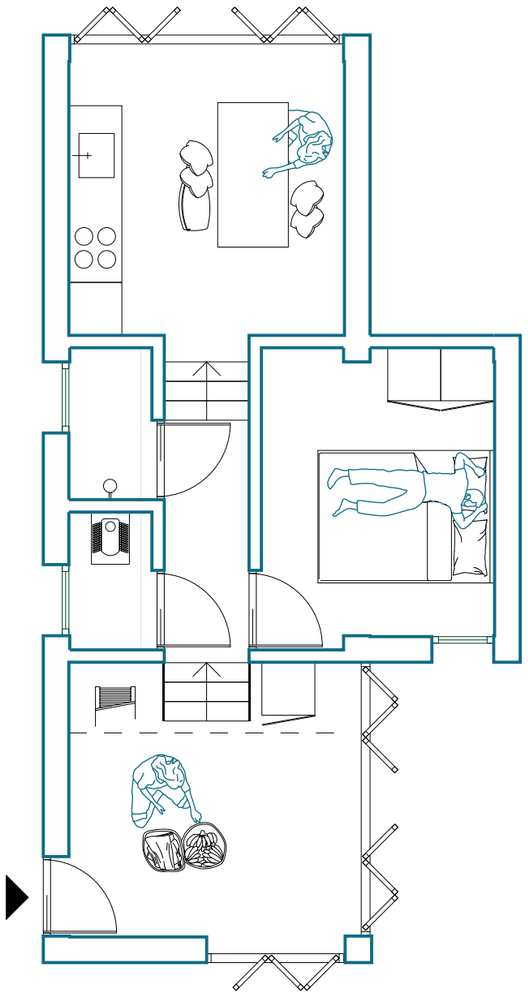
Unit strategy - Low income housing

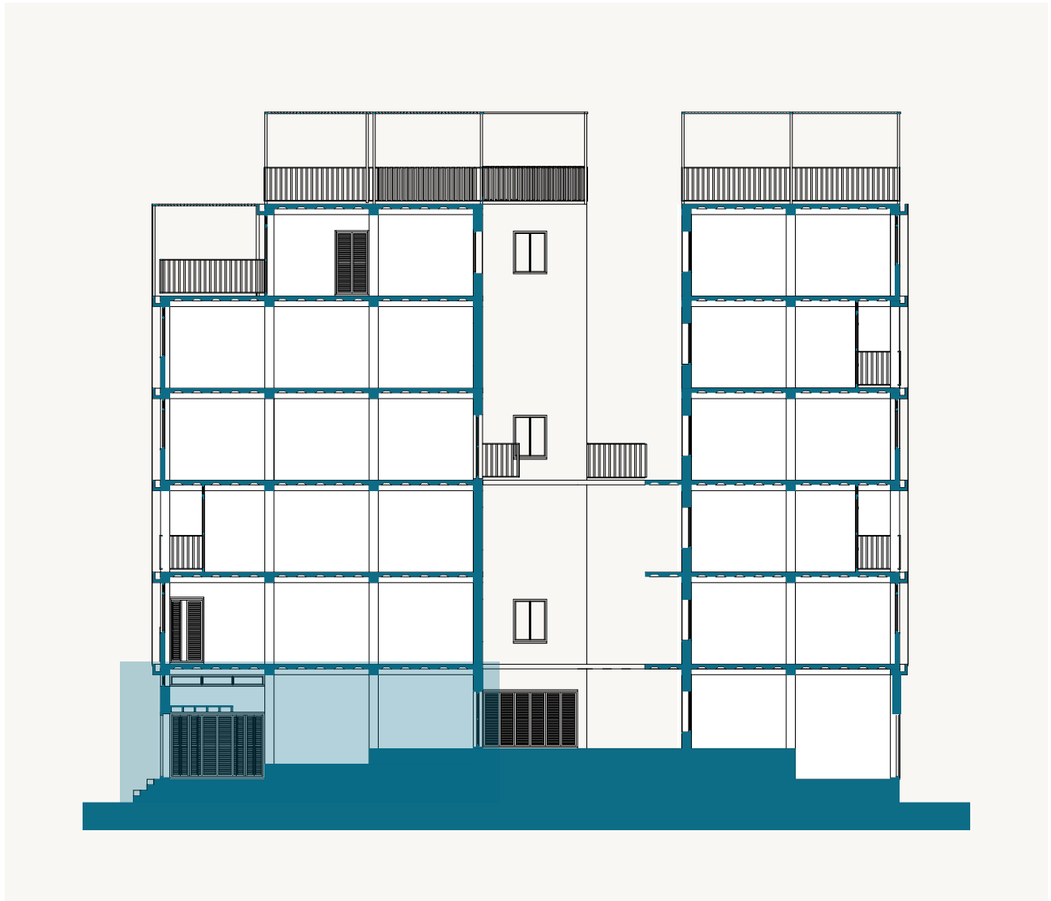




48 m2
Shophouse
1 bedroom

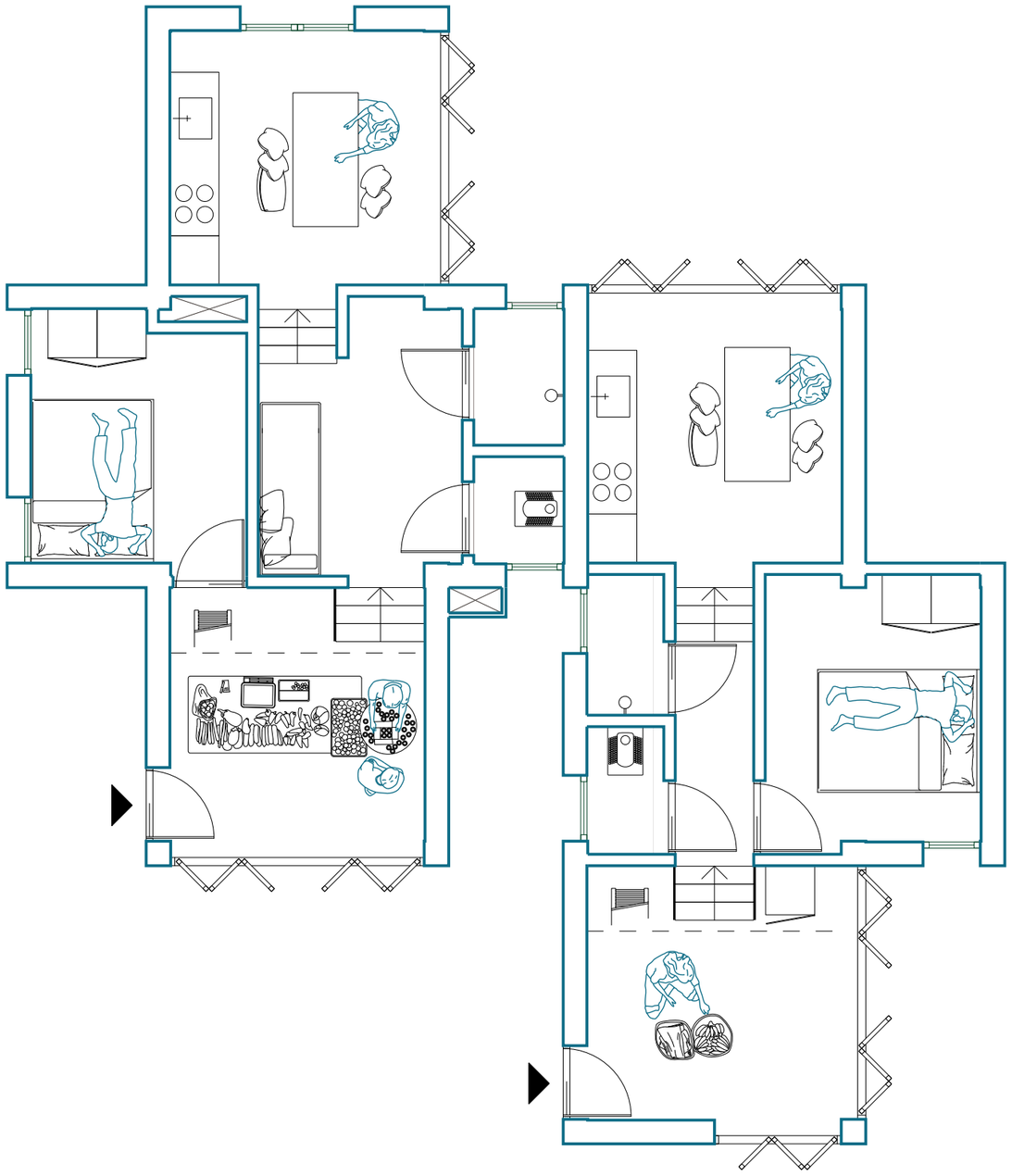
Unit strategy - Low income housing



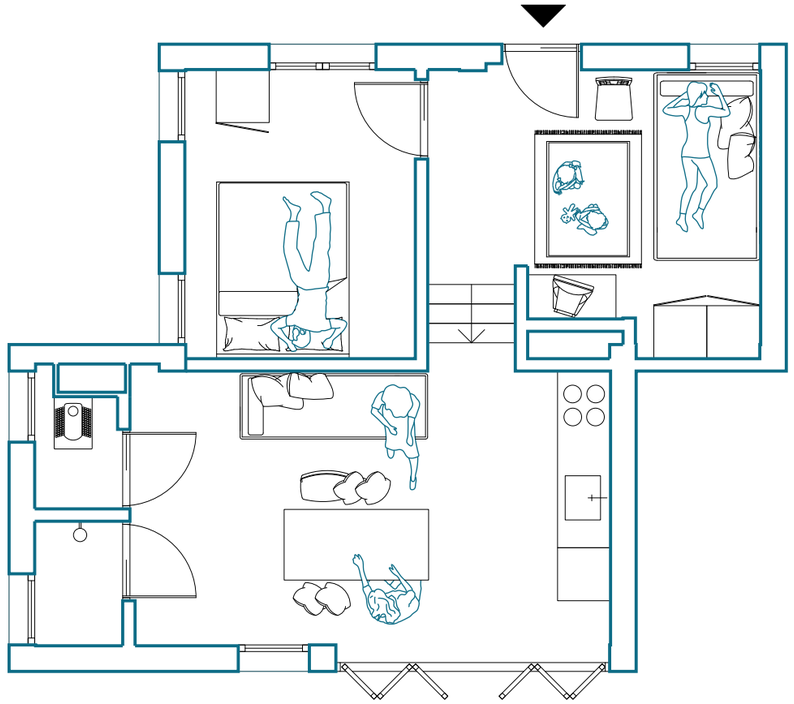


42 m2
Shophouse
1 bedroom

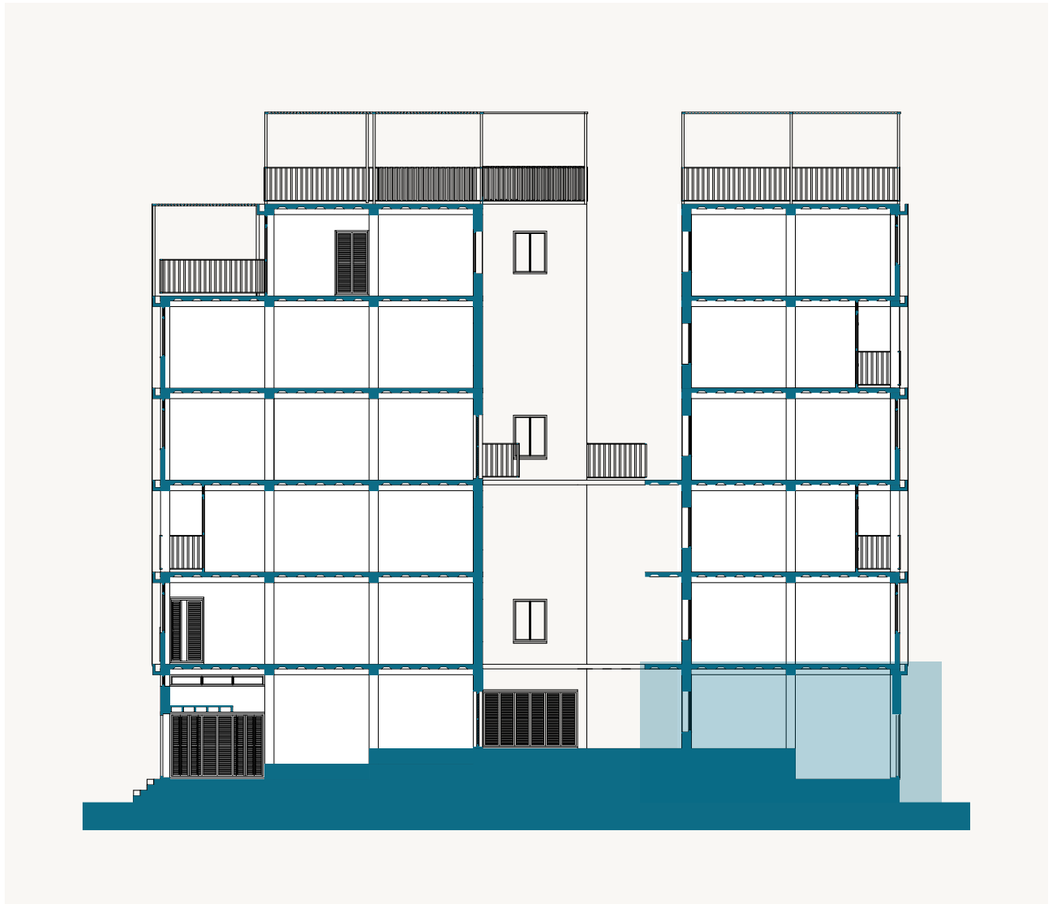
Unit strategy - Low income housing



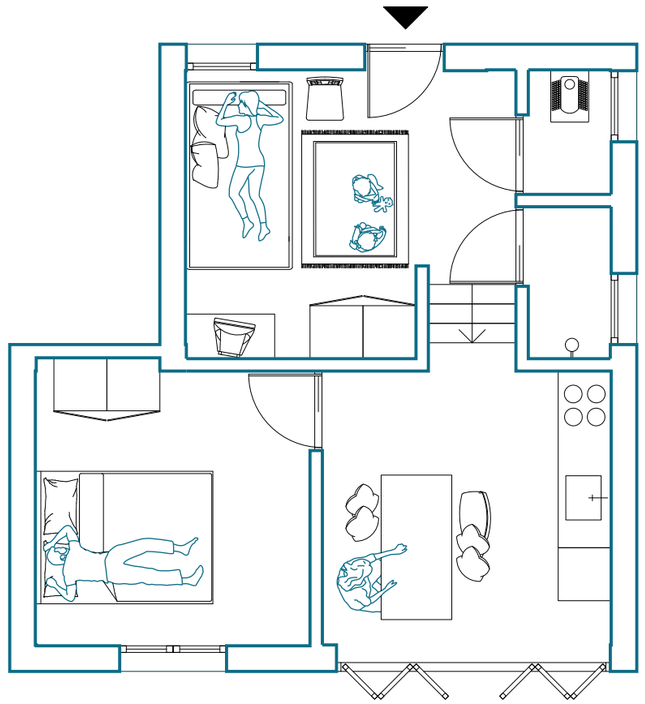
Unit strategy - Low income housing



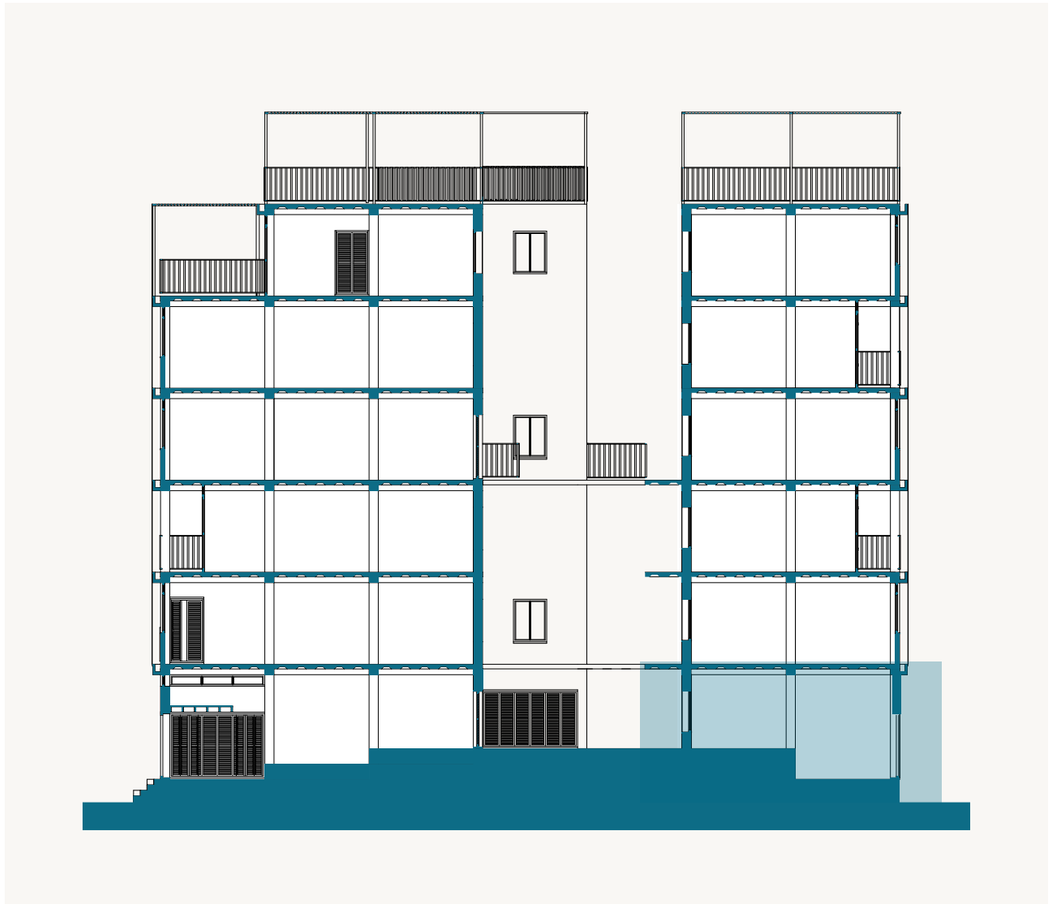
48 m2
Extra living space
1 bedroom



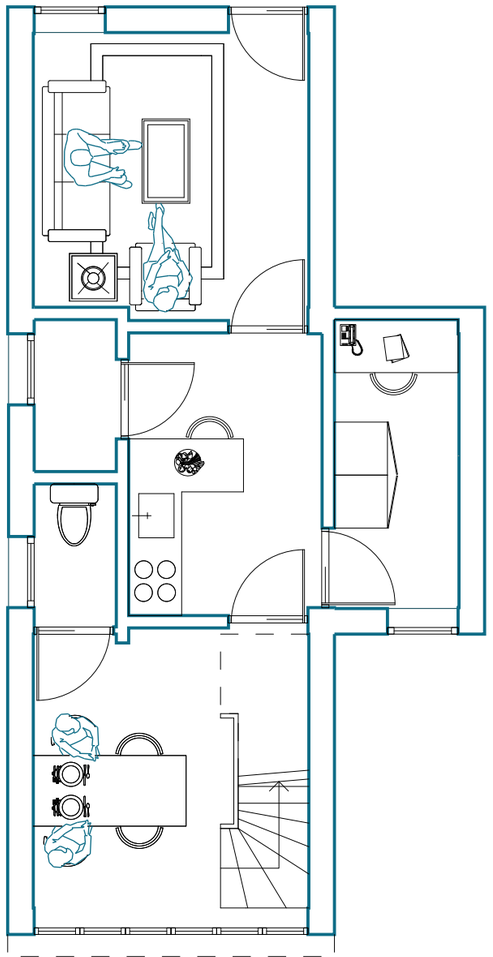
Unit strategy - Low income housing



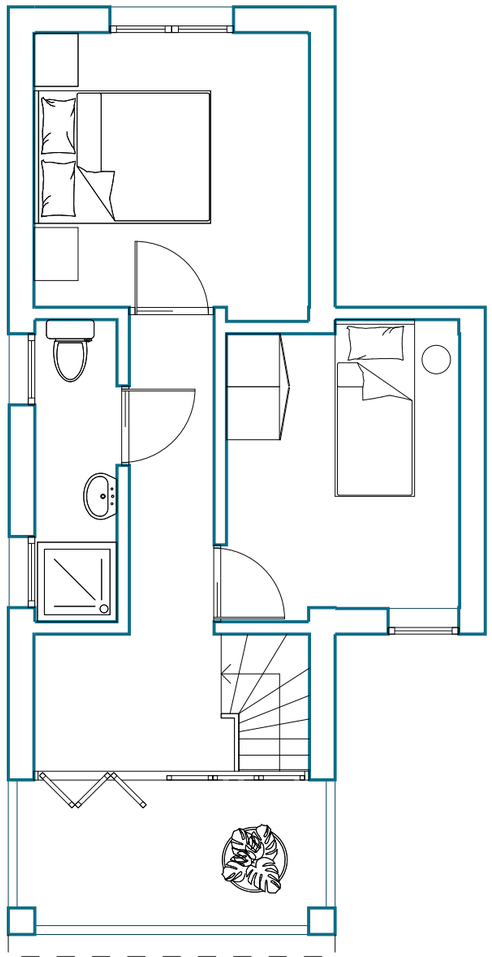
42 m2
Extra living space
1 bedroom



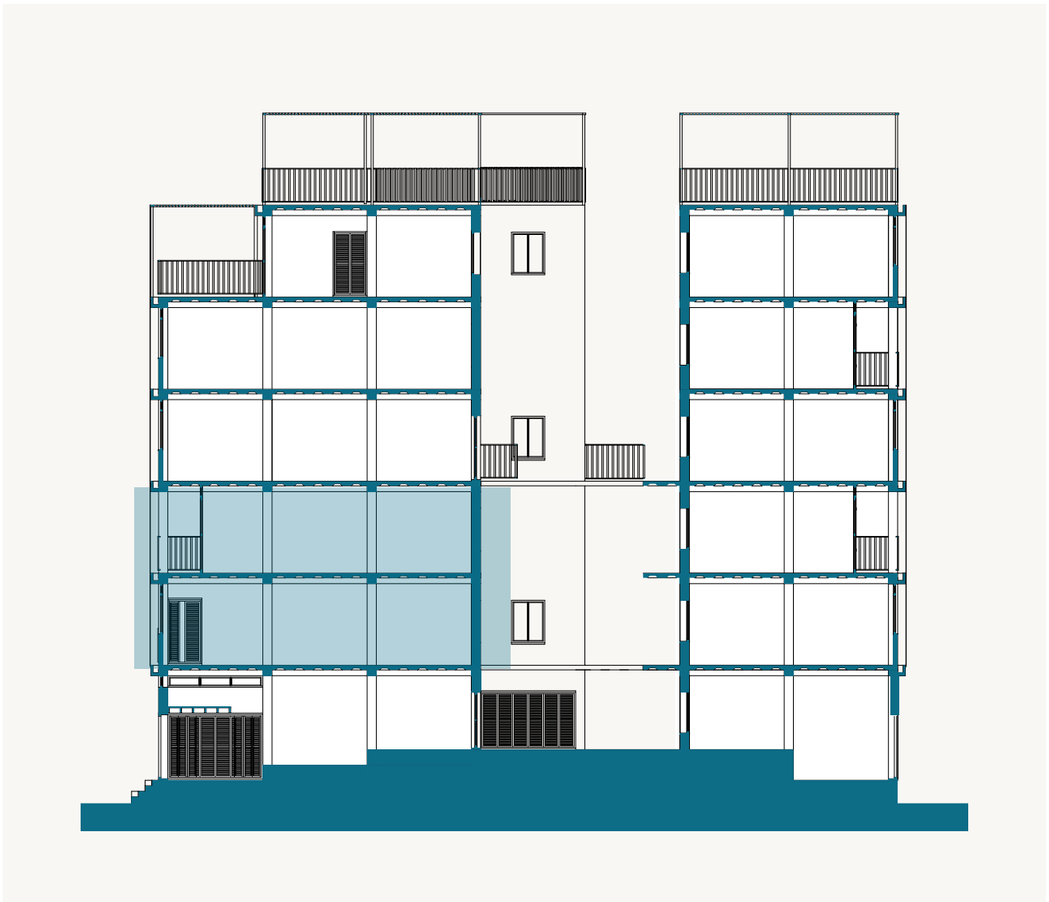
Unit strategy - Middle income housing



Maisonette MI-1
Ground floor

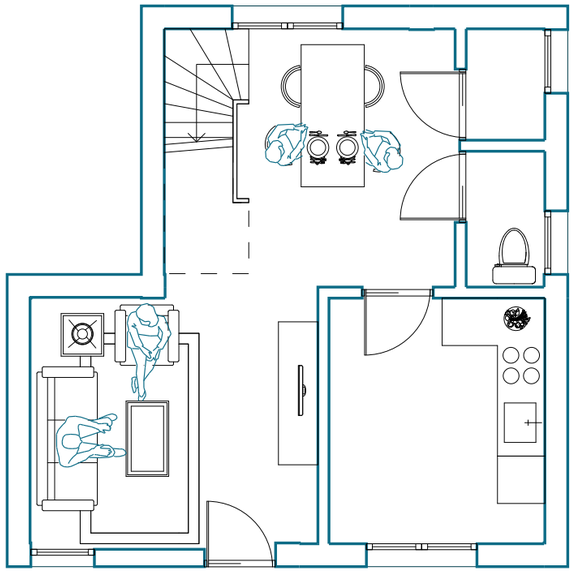


Maisonette MI-1
1st floor

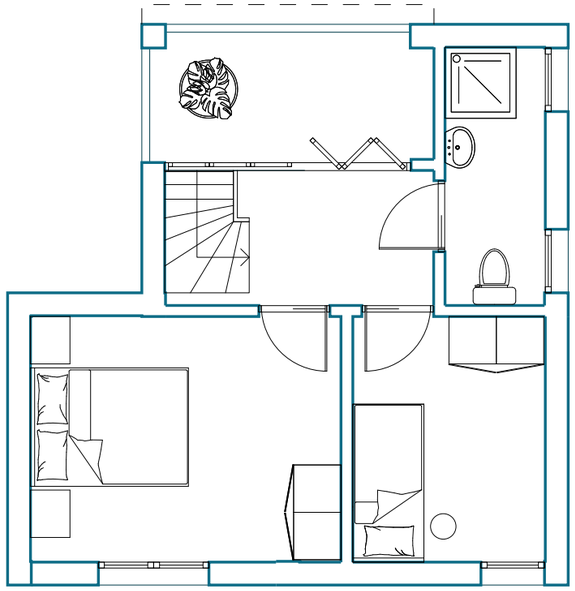


84 m2
2 bedrooms

Unit strategy - Middle income housing



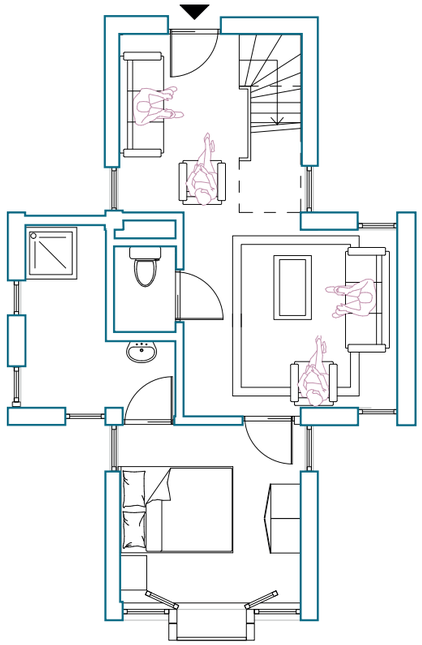
Maisonette MI-2
Ground floor



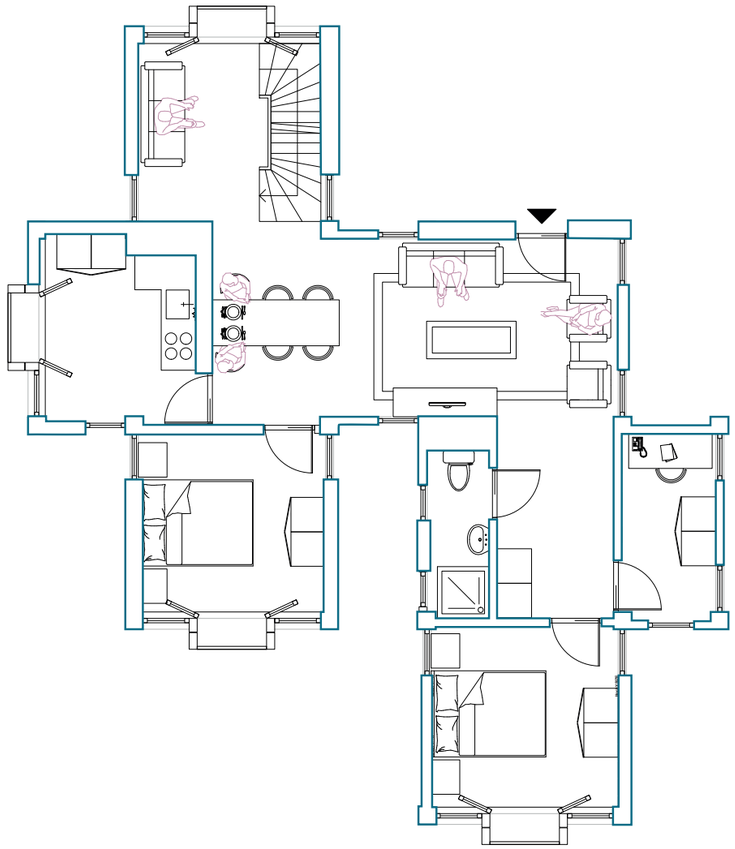
Maisonette MI-2
1st floor

84 m2
2 bedrooms

Unit strategy - High income housing

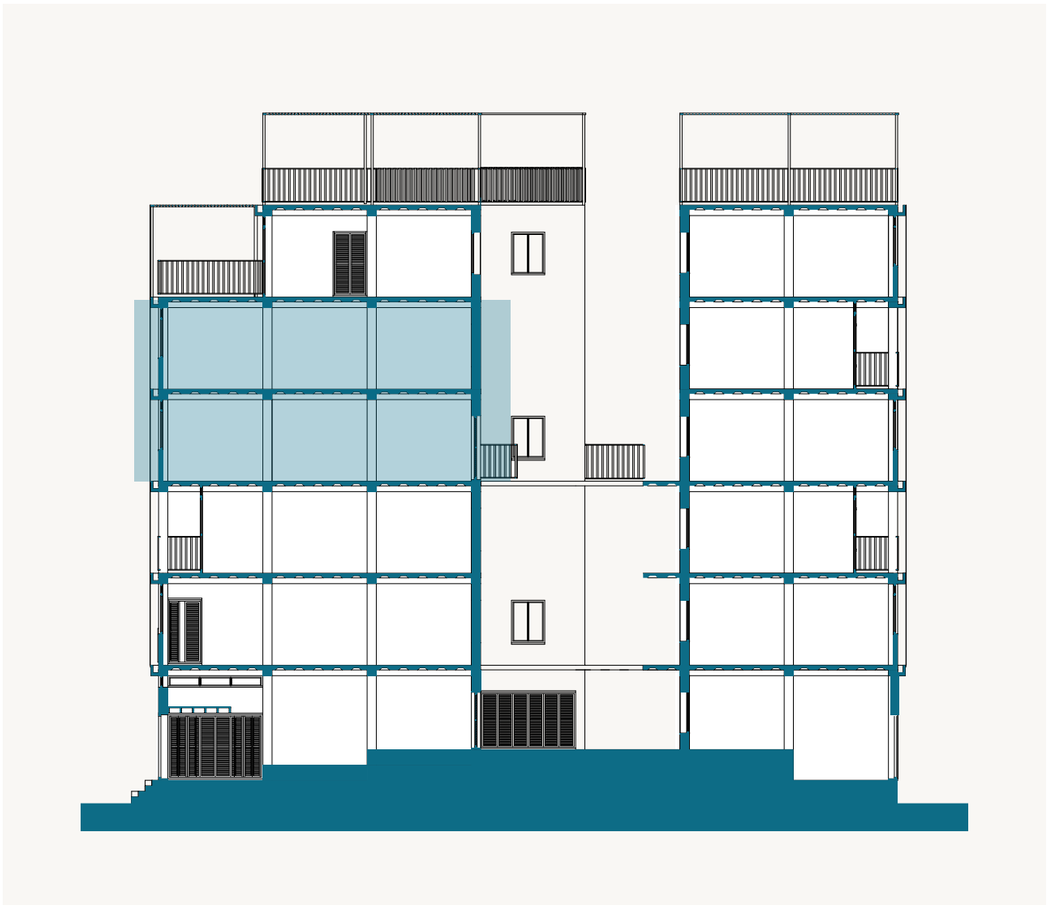


Maisonette HI-1
Ground floor

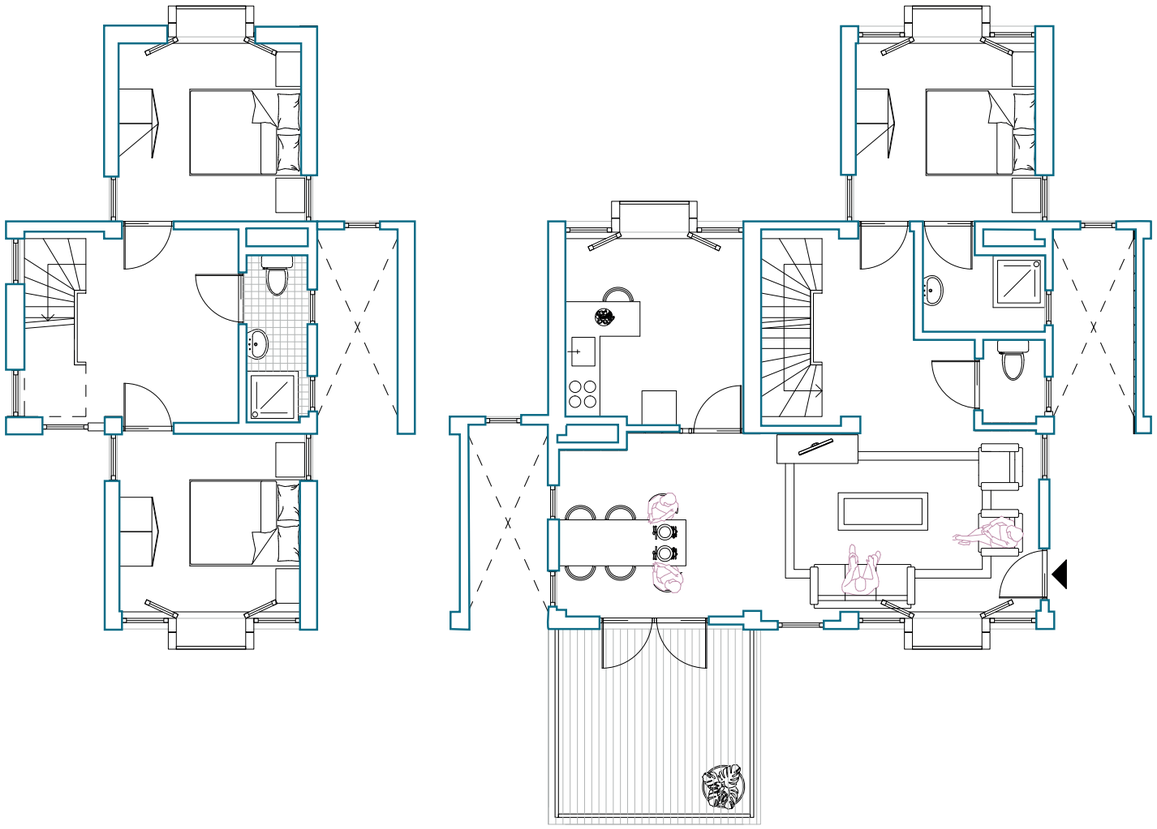


Maisonette HI-1
1st floor

138 m2
Extra living space
3 bedrooms



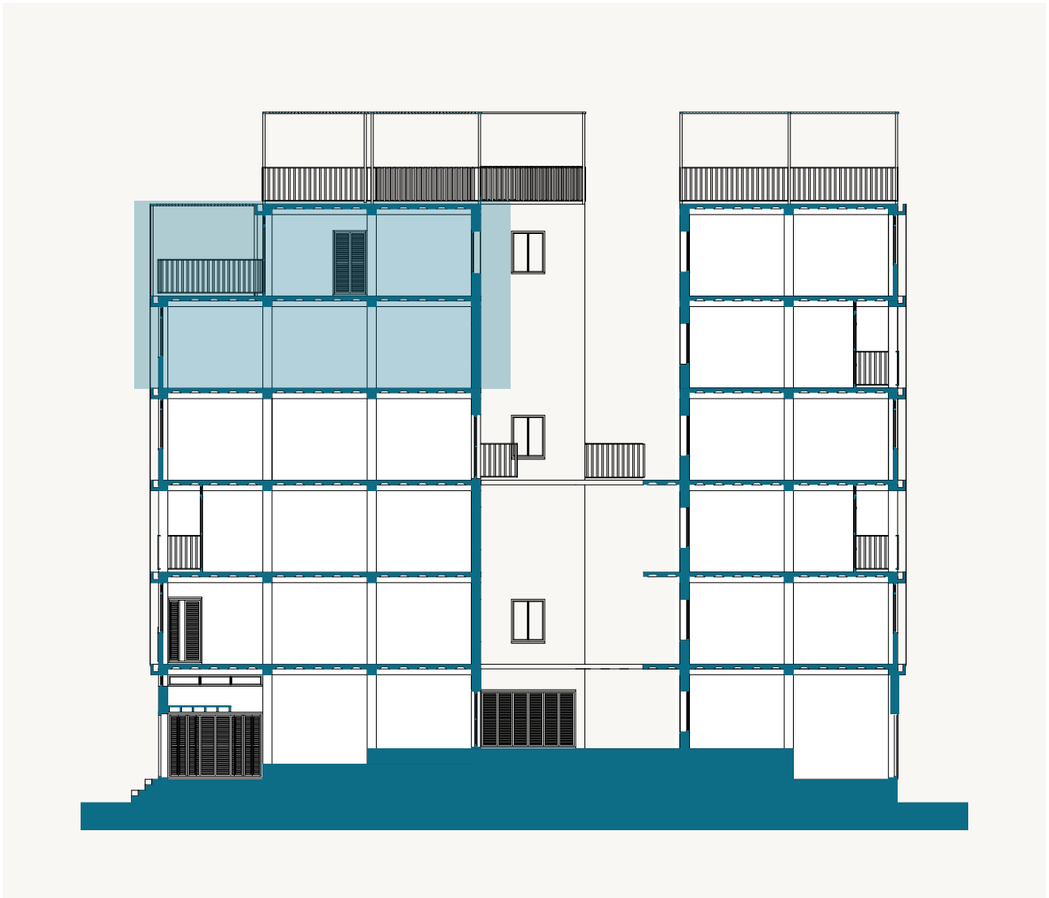
Unit strategy - High income housing



Maisonette HI-2
Ground floor

Maisonette HI-2
1st floor

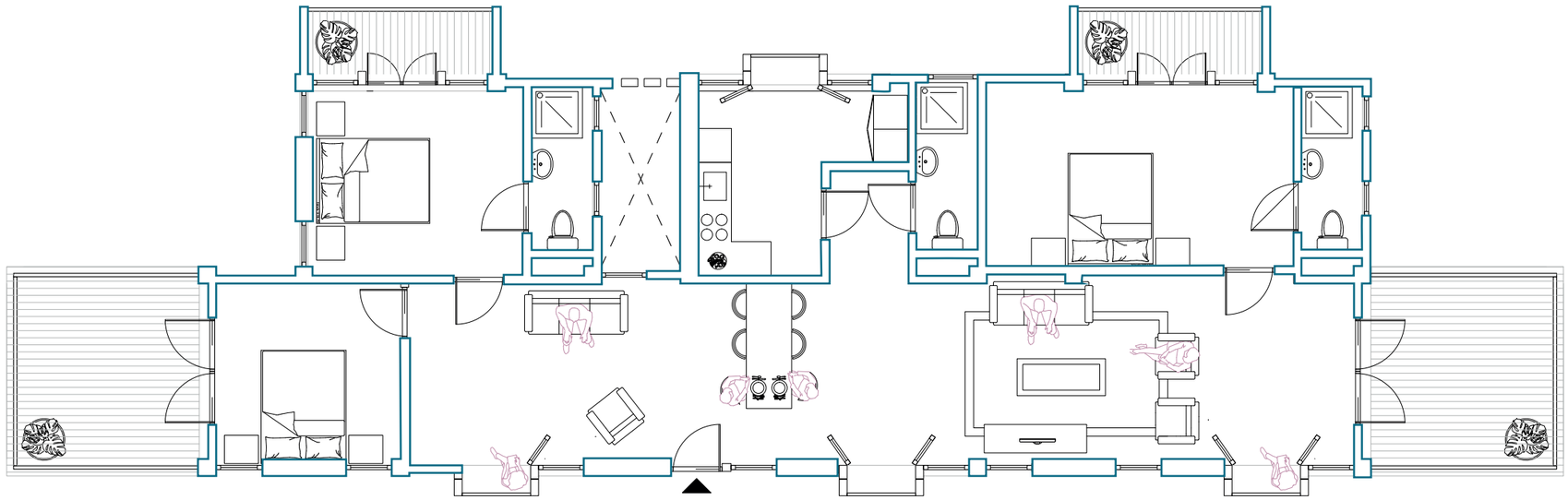
126 m2
Outside space
3 bedrooms



Unit strategy - High income housing

Appartment HI

138 m2
Extra living space
Outside space
3 bedrooms

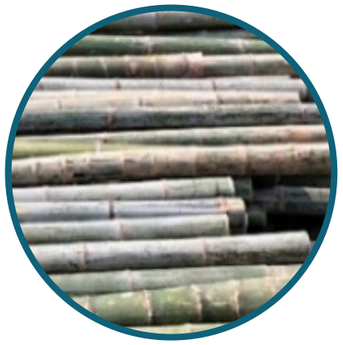


Building Technology

Materials -Vernacular materials

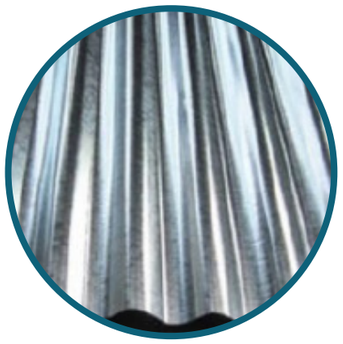
Materials -Vernacular materials

Mud



Bamboo

Wood

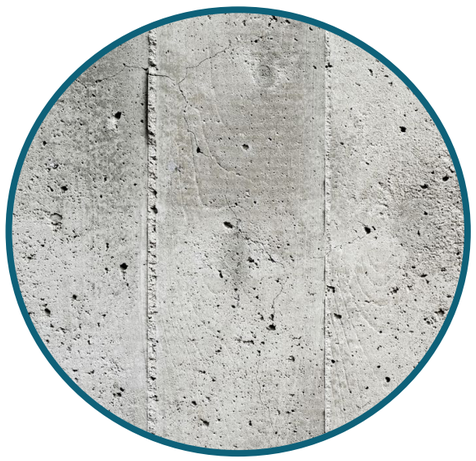


Tin

Straw/thatch

Nipa palm

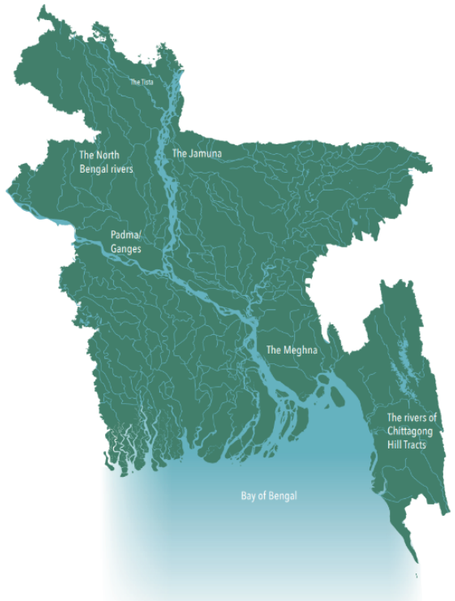
Materials - Major materials in urban area



Concrete

Fired bricks

Materials - Brick-making process



The alluvial deposits and silt come from the Himalayas carried downstream by rivers during monsoon season

80% of the soils in Bangladesh are alluvial deposits from rivers

Collecting clay-rich soils from rivers

Soils become extremely fertile

Removing topsoil

Reduced crop productivity

Agriculture productivity decreases

People move from rural to urban areas

Increasing demand for housing in urban area

More demand for materials

Materials - Brick-making process

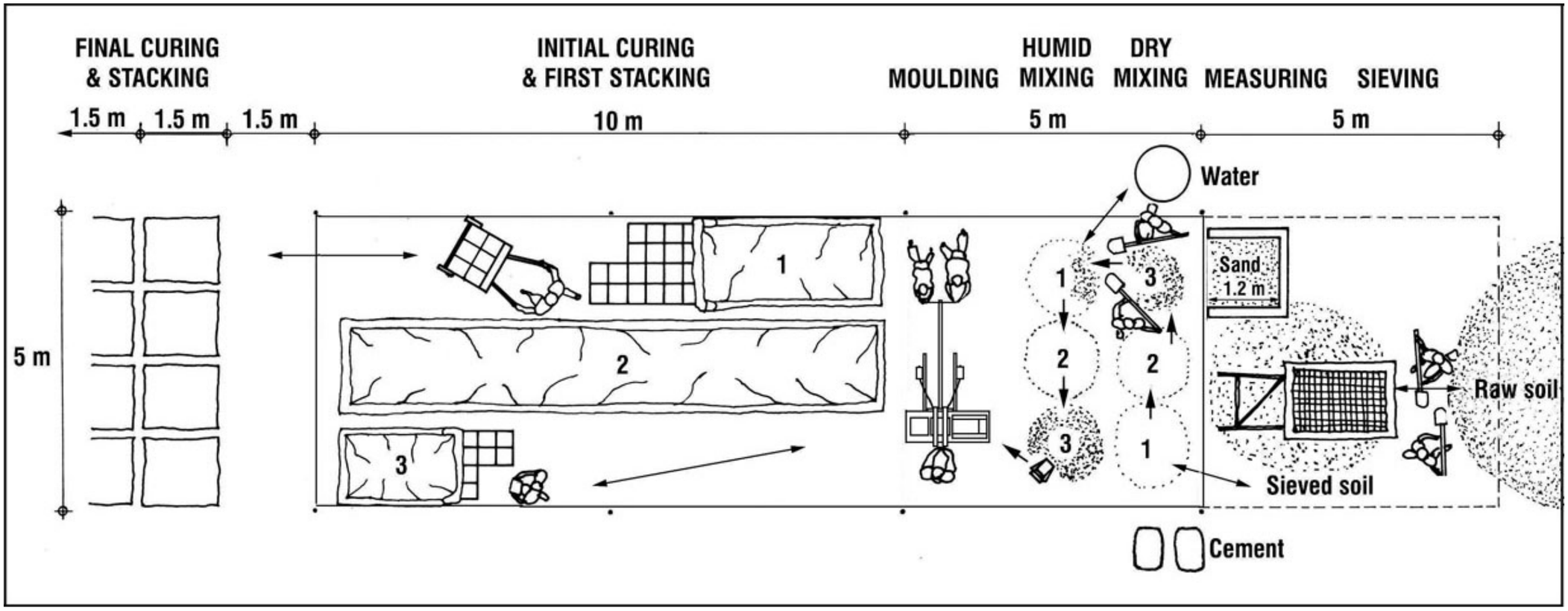
Use of agriculture topsoil for brick-making

Use of river dredging soil which is abundant in Bangladesh

Use of agriculture topsoil for brick-making

→

Use of river dredging soil which is abundant in Bangladesh



- Limited structural strength
- Should not be directly exposed to rain

Facade design - principles

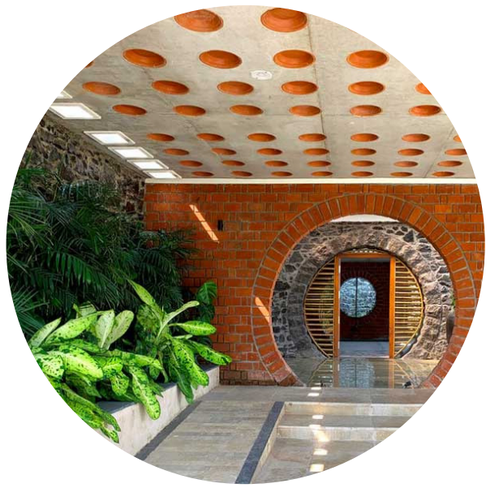
Low carbon footprint

Unplastered CSEB

Flexibility

Materials - used in project

RCC frame structure



Filler slab

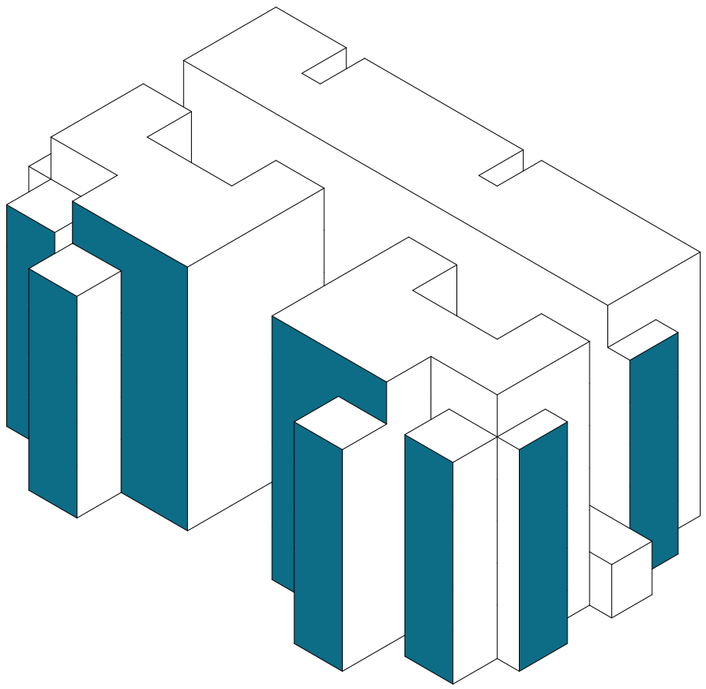
Wood

CSEB

Steel

Facade design - open VS closed

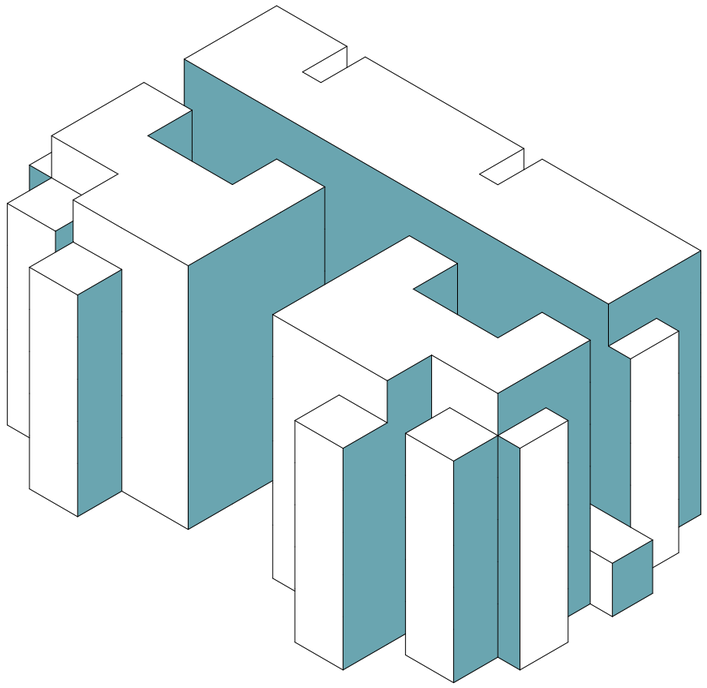
Open



Cable trellis system with plants

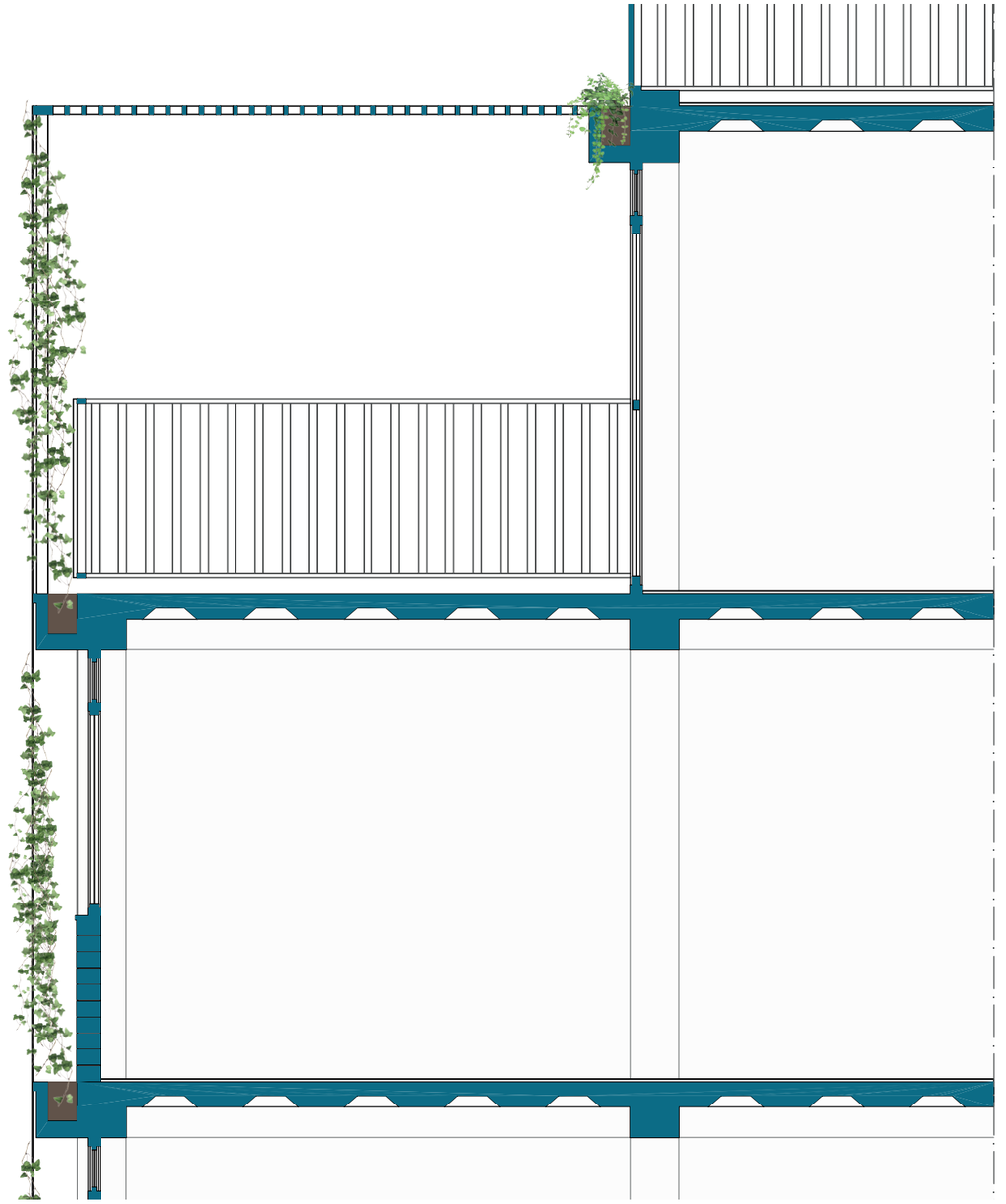
Facade design - open VS closed

Closed



Plastered walls

Facade design - principles



Water management

"We have to be ahead of the game. We have to work pre-disaster. We have to look at the future, not the past."

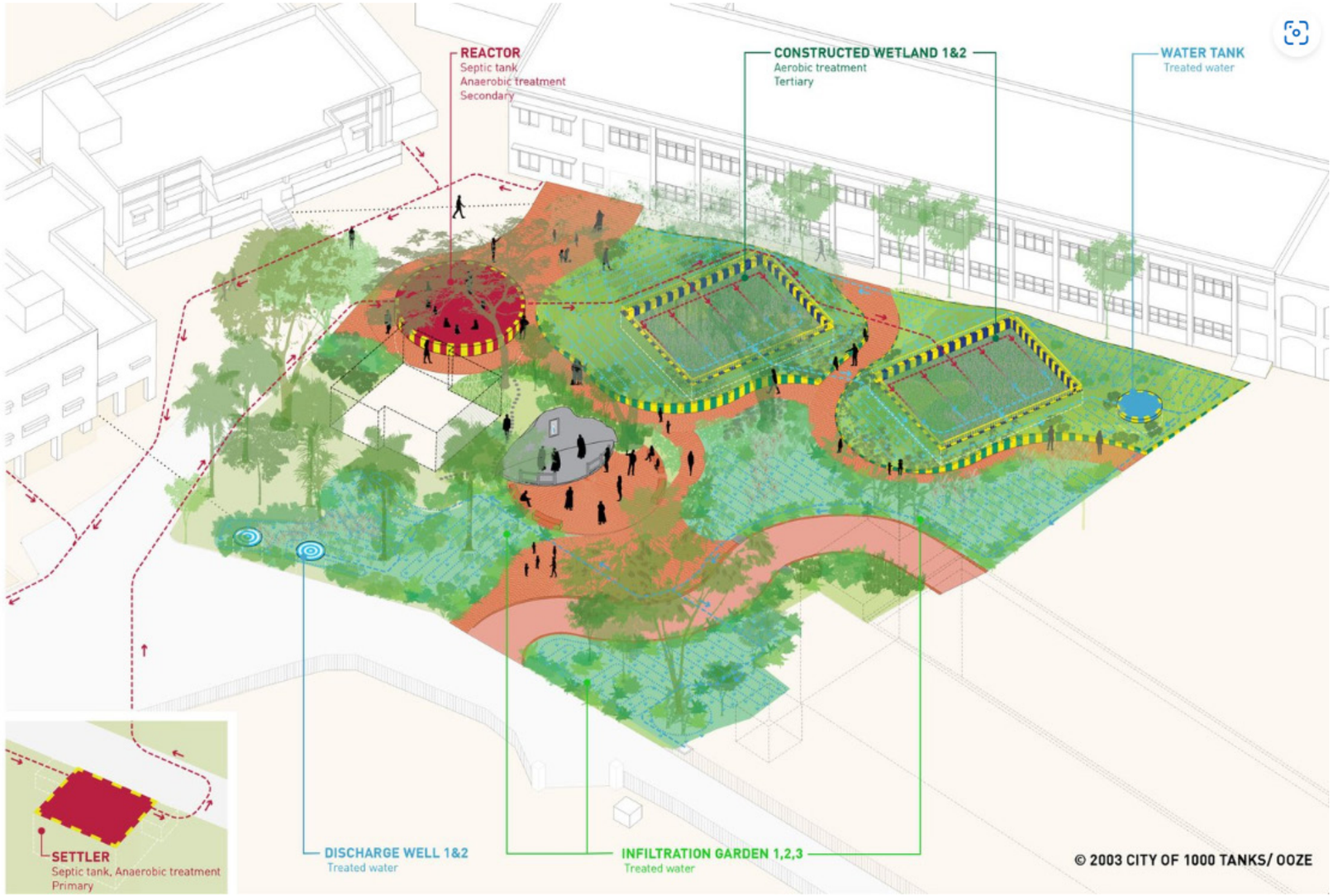
- Henk Ovink (2019)

"We need to create places, where water is welcome. Where that welcoming capacity mitigate the risk and adds value."

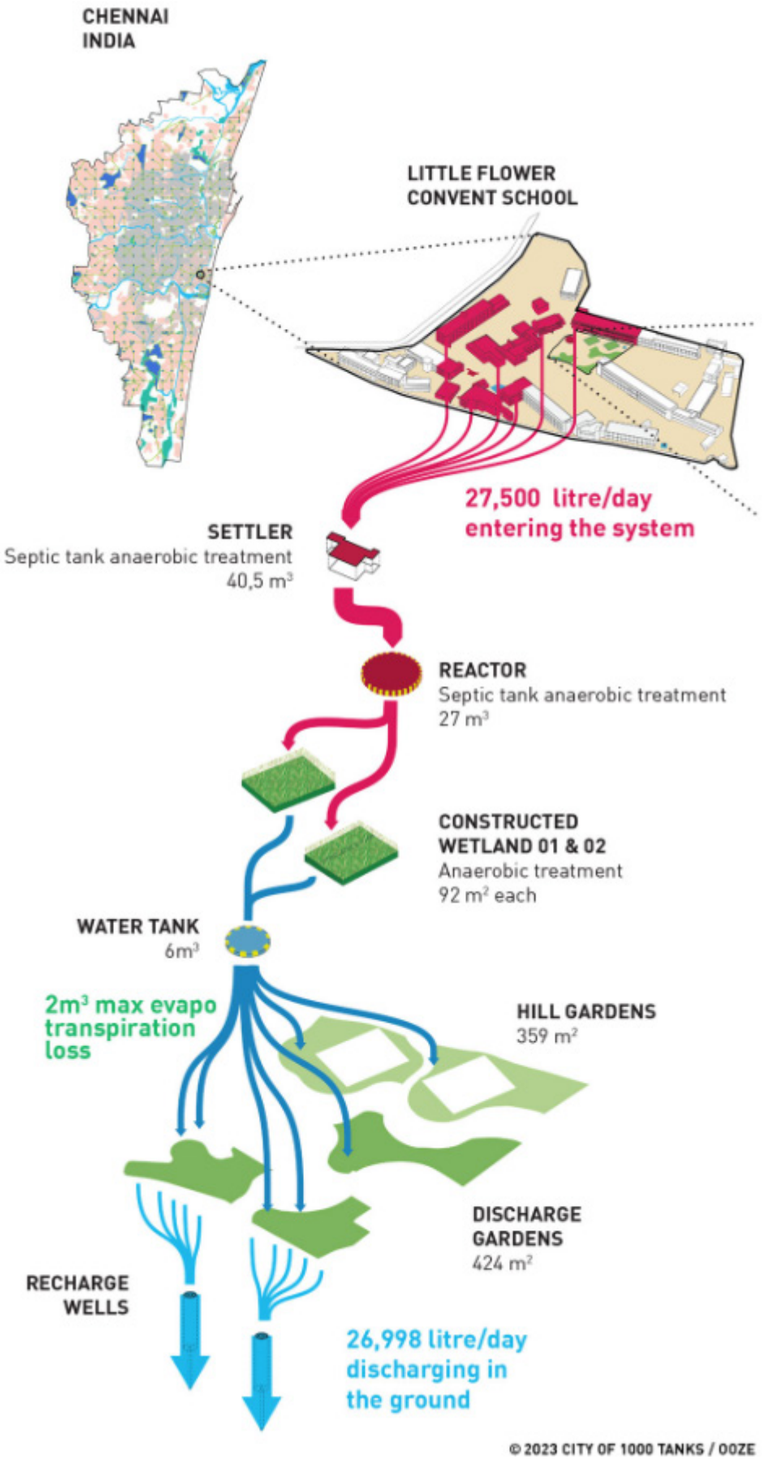
- Henk Ovink (2019)

Water management - case study

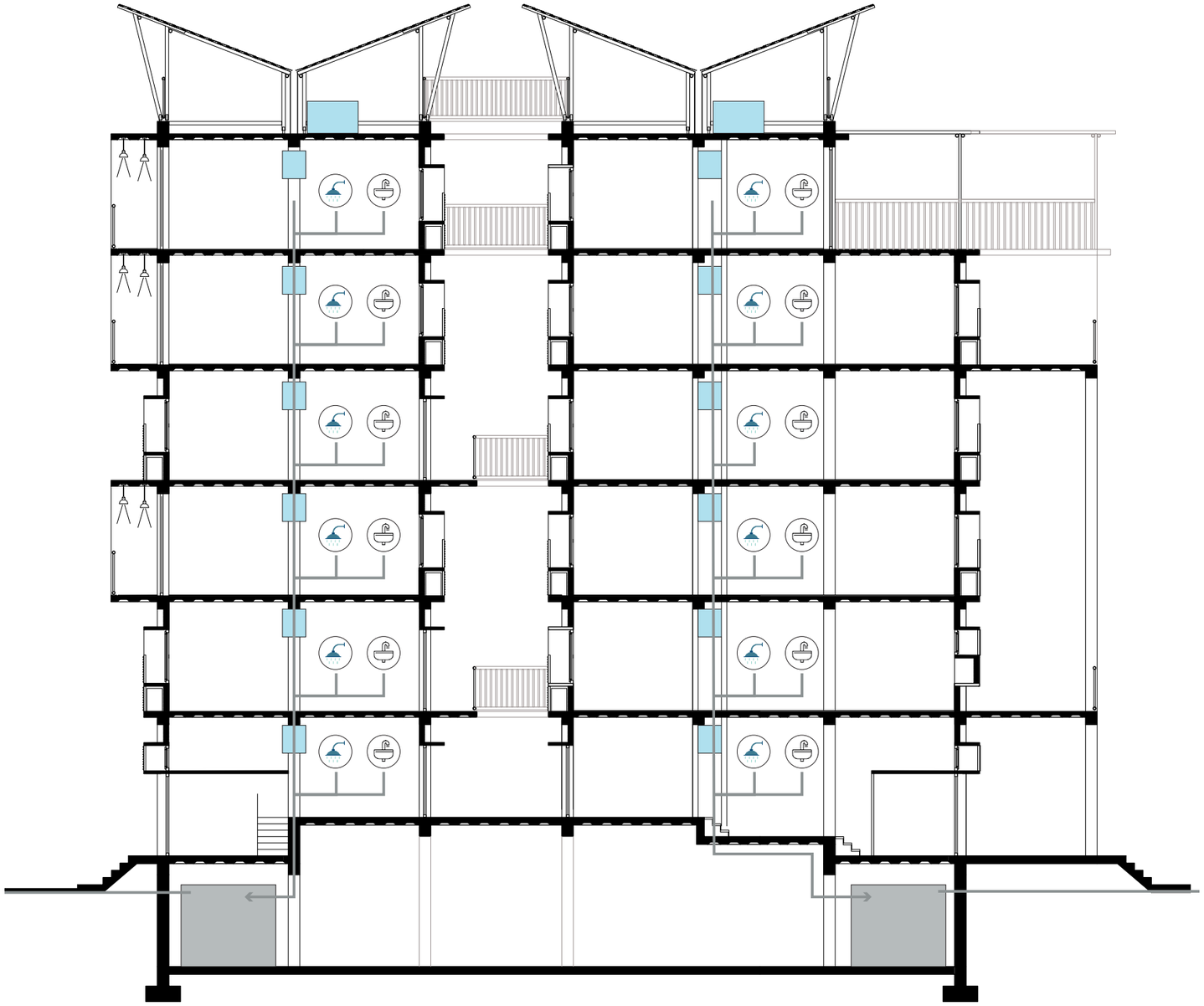
City of 1,000 Tanks Water Balance Pilot, Chennai



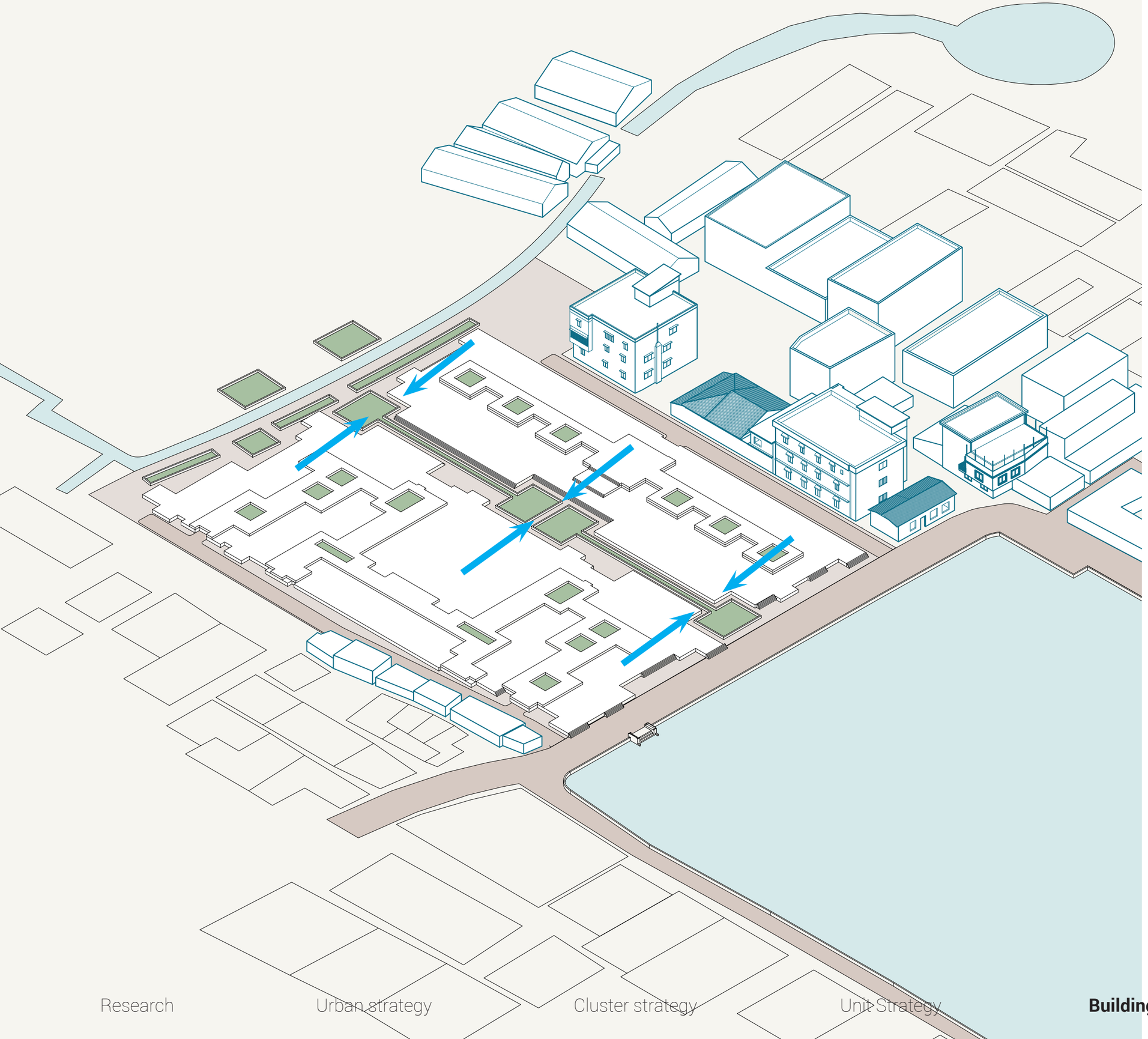
Aerial view of the Water Balance Pilot © 2023 OOZE architects



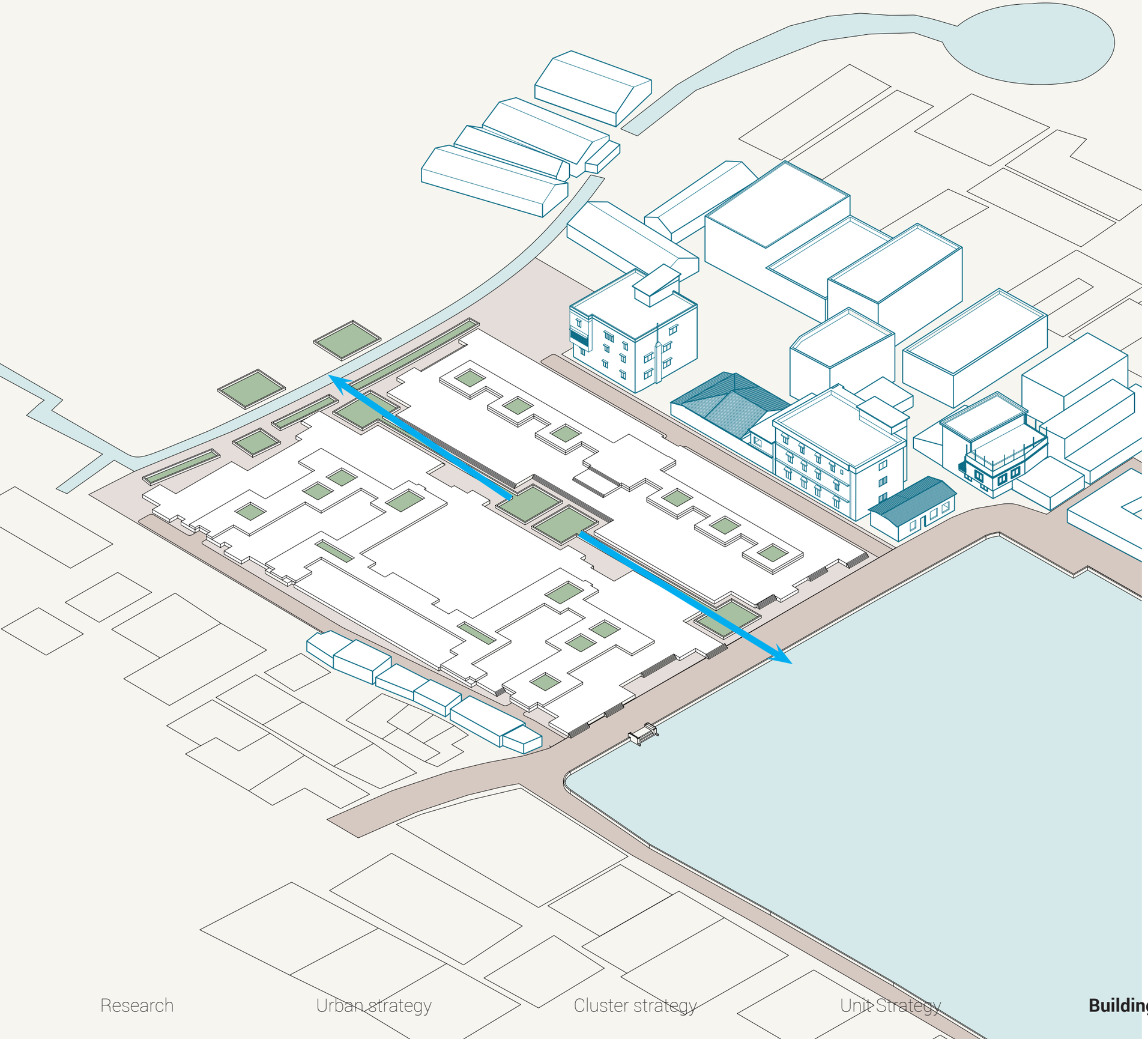
Water management - Water treatment system



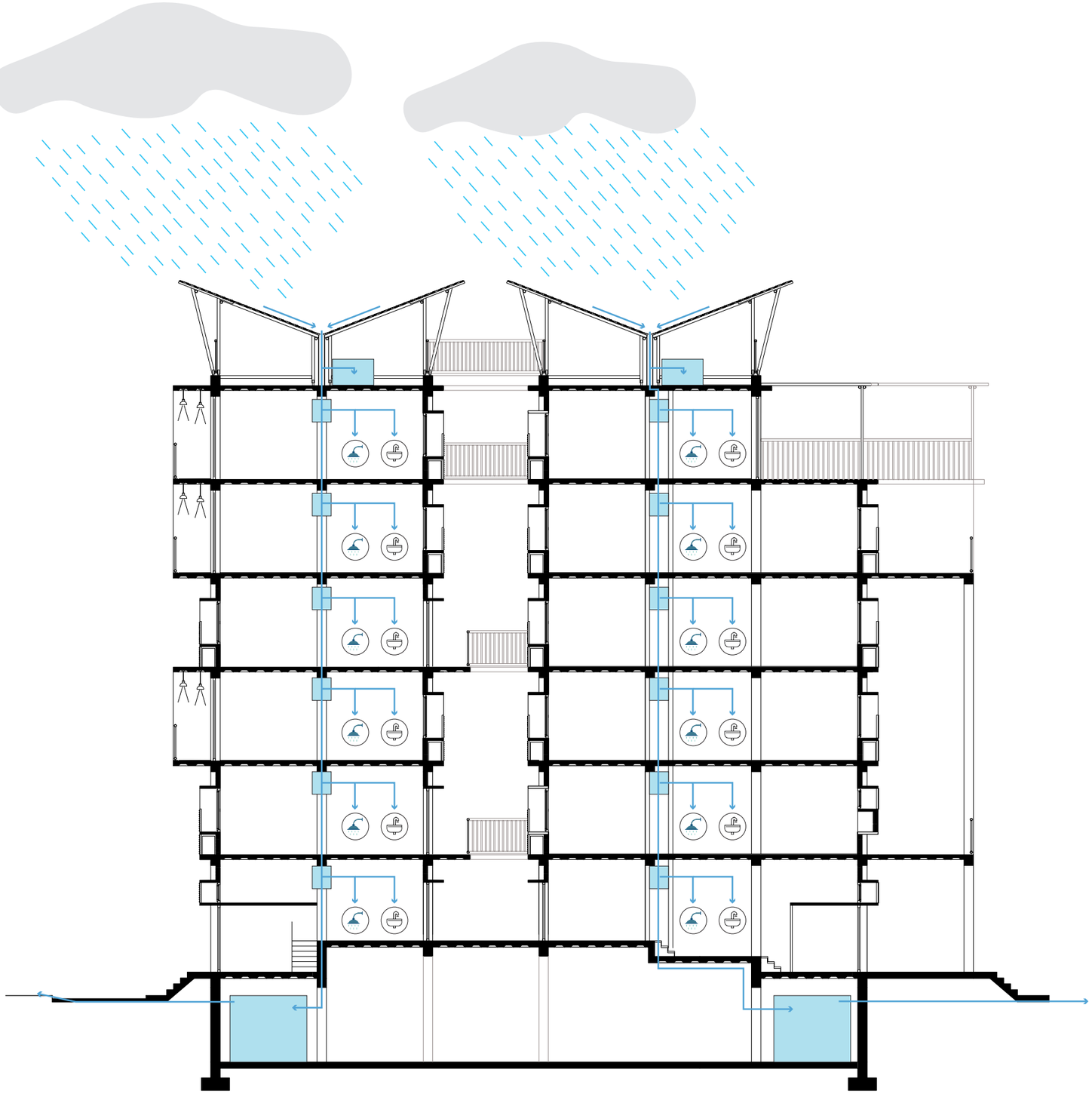
Water management
Water treatment system



Water management
Water treatment system



Water management - Water reuse system



Impressions

INCLUSIVE WATERS

Thankyou