

## Mosaic Garden city

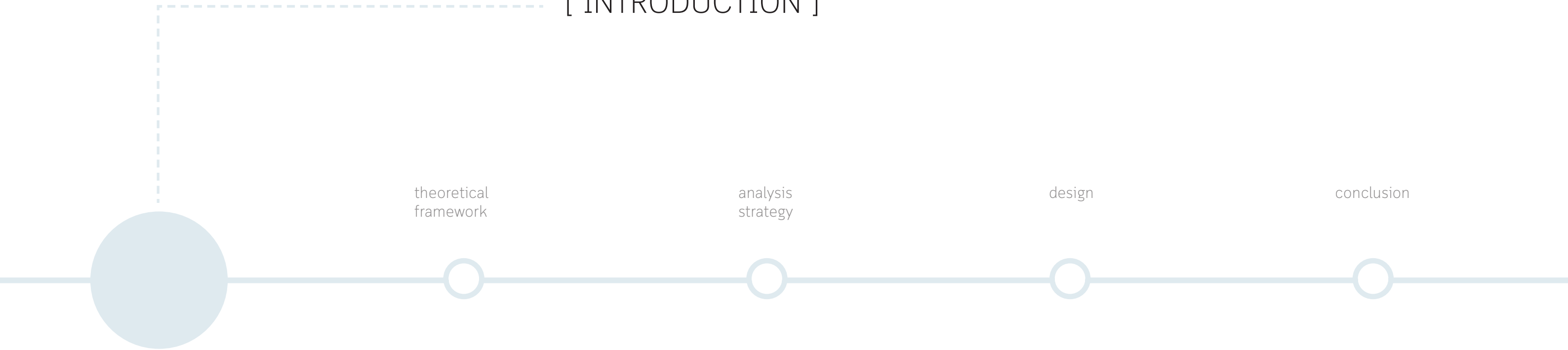


Redefining the relation between people and nature  
by structuring water management through landscape infrastructure  
in Kampung Tamansari, Bandung





[ INTRODUCTION ]



Cities are a part of nature,  
they are the habitat of our species.

Alexandros, 2013



## [ ECOSYSTEM SERVICE]

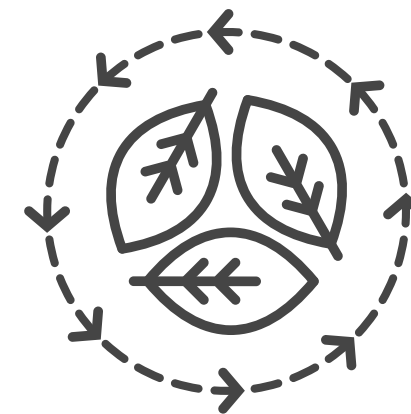
: The benefits which people obtain from ecosystem  
(Wrattem, et al., 2013)



1. Ecological Support



2. Goods and Service for  
Human Consumption



3. Regulating  
Ecological Process



4. Cultural Service





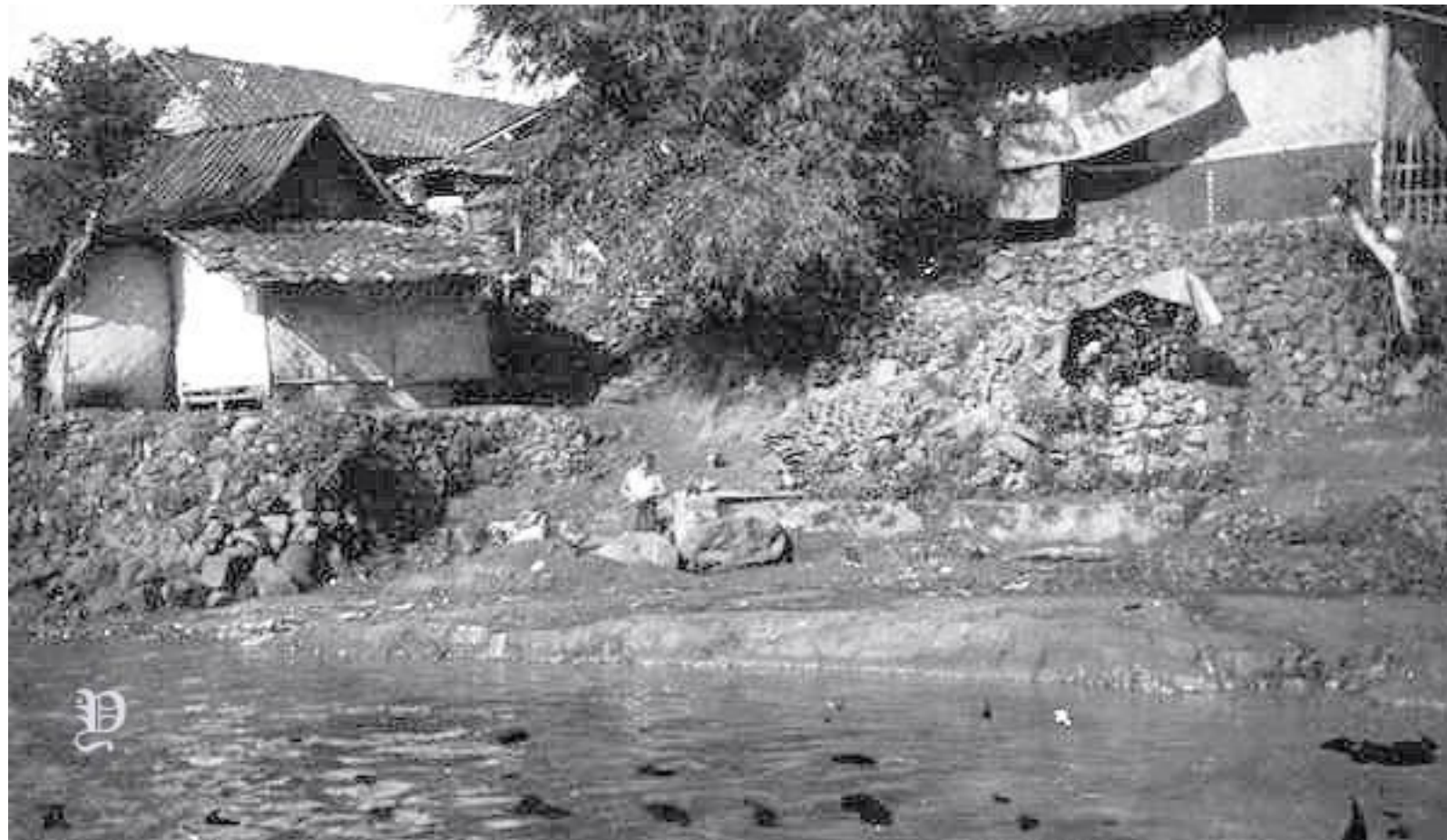


# [ SITE LOCATION ]

B A N D U N G







*Kampung in the Cikapundung River, Bandung 1923*

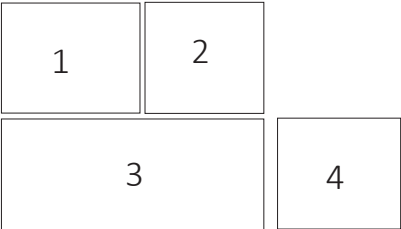


[ GARDEN CITY ]



*North side of Bandung*

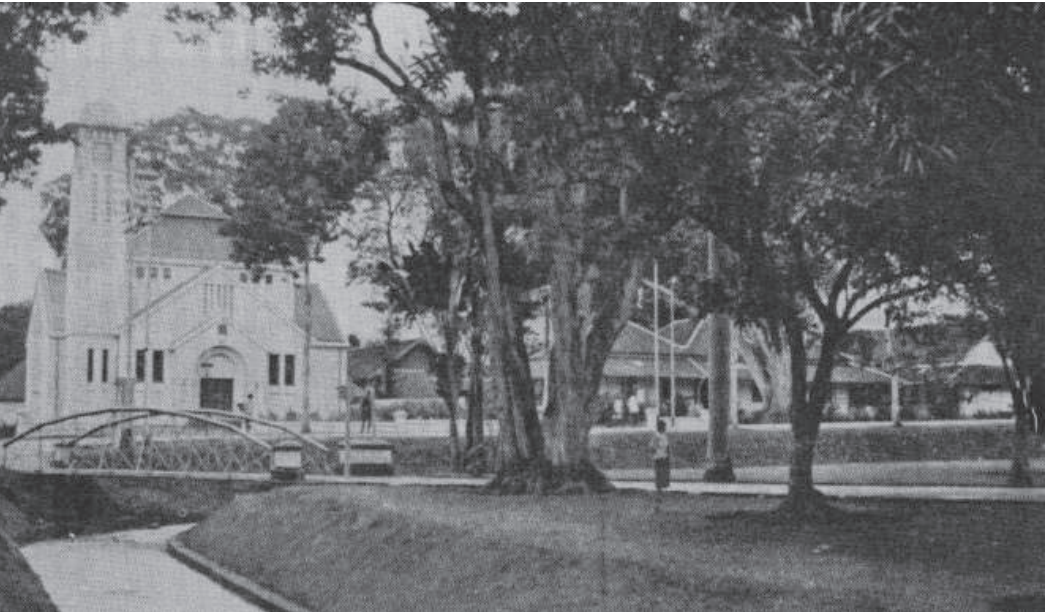
- 1   TEA PLANTATION 1923
- 2   LEMBANG 1949
- 3   LEMBANG 1940
- 4   DAGO 1915





[ GARDEN CITY ]

Bandung City



- 1 DEWI SARTIKA PARK
- 2 GEDUNG SATE
- 3 CIKAPUNDUNG RIVER
- 4 BRAGA STREET

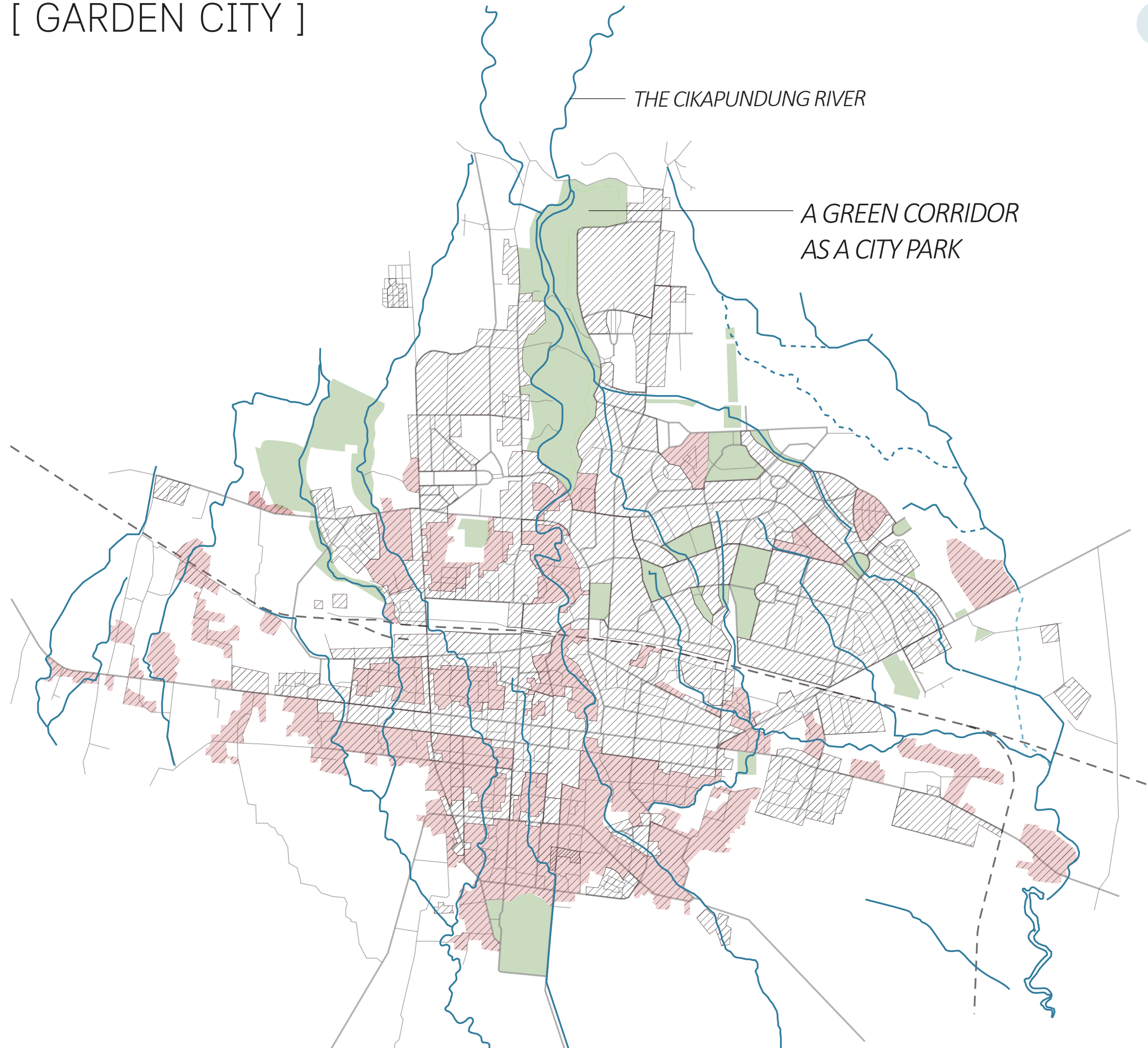
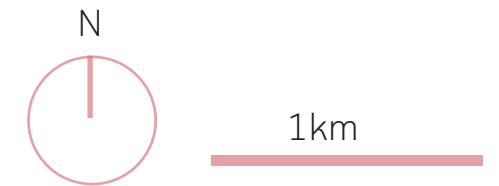


source: <https://phinemo.com/bandung-tempo-dulu-dan-masa-kini/>

1	2
3	4

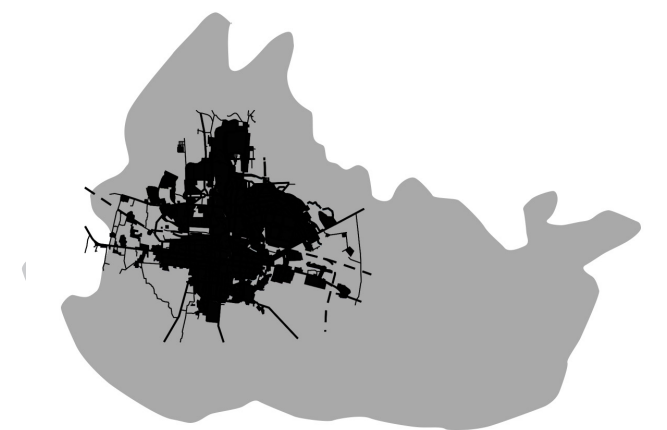


# [ GARDEN CITY ]



- KAMPUNG
- COLONIAL BUILDINGS
- GREEN SPACES
- RIVER
- ROAD
- RAILWAY

1933 Bandung City



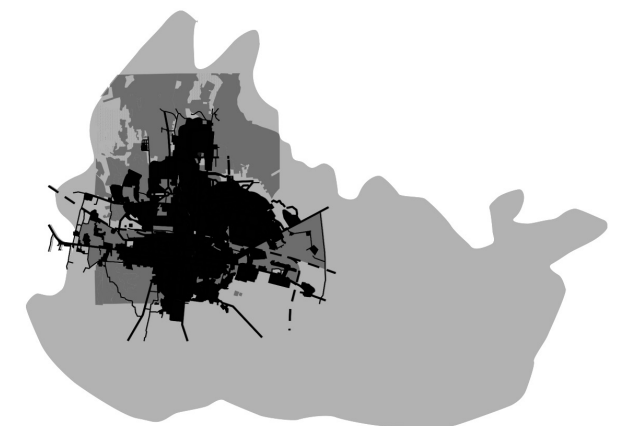
# [ LOST GARDEN CITY ]



GREENSPACES ARE  
OCCUPIED BY KAMPUNG

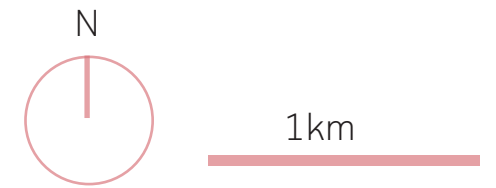
- KAMPUNG
- COLONIAL BUILDINGS
- GREEN SPACES
- RIVER
- ROAD
- RAILWAY

1989 Bandung City











# [ LOST GARDEN CITY ]



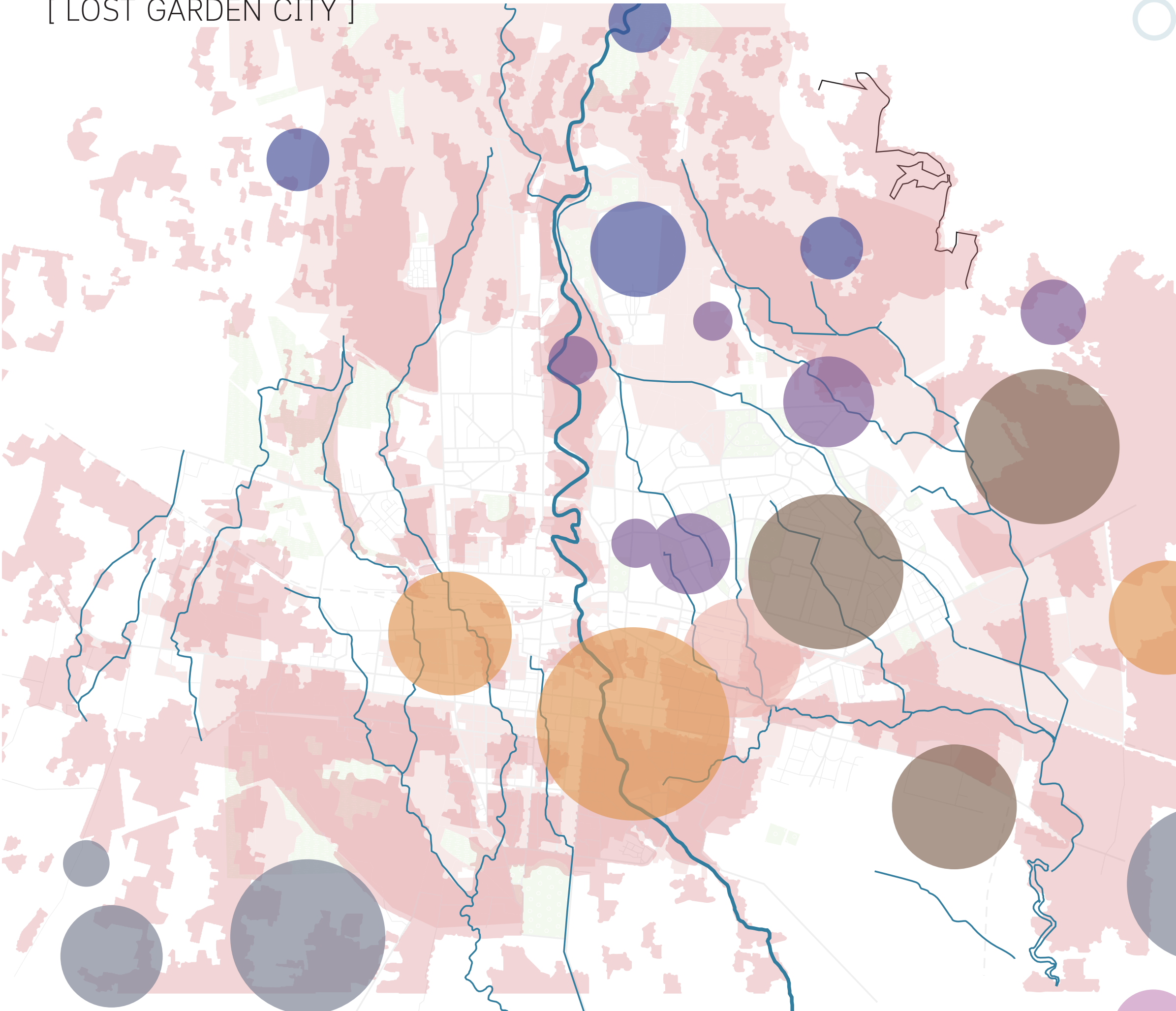
*Kampung sprawls along the river*

-  KAMPUNG
-  COLONIAL BUILDINGS
-  GREEN SPACES
-  RIVER
-  ROAD
-  RAILWAY

*2018 Bandung City*



# [ LOST GARDEN CITY ]



*Economic Opportunity*

- Education Building
- Government Building
- Industry
- Service
- Military



KAMPUNG TAMANSARI

<https://mahdikarim.files.wordpress.com/2011/08/dsc00014.jpg>

KAMPUNG BRAGA

<https://mahdikarim.wordpress.com/2011/08/07/braga-lain-di-luar-lain-di-dalam/>



LACK OF GREEN SPACE



Lack of openspace



lack of publicsace



Disconnected to Nature

Lack of Ecosystem Service



Unpleasant Microclimate



Linear waterflow  
due to paved ground



Poor Biodiversity

*LACK OF GREEN SPACE*



Water Supply



Supply water by water tank



Common well in Kampung



Water market

*LACK OF  
WATER INFRASTRUCTURE*

Water Management



Clogged Ditch



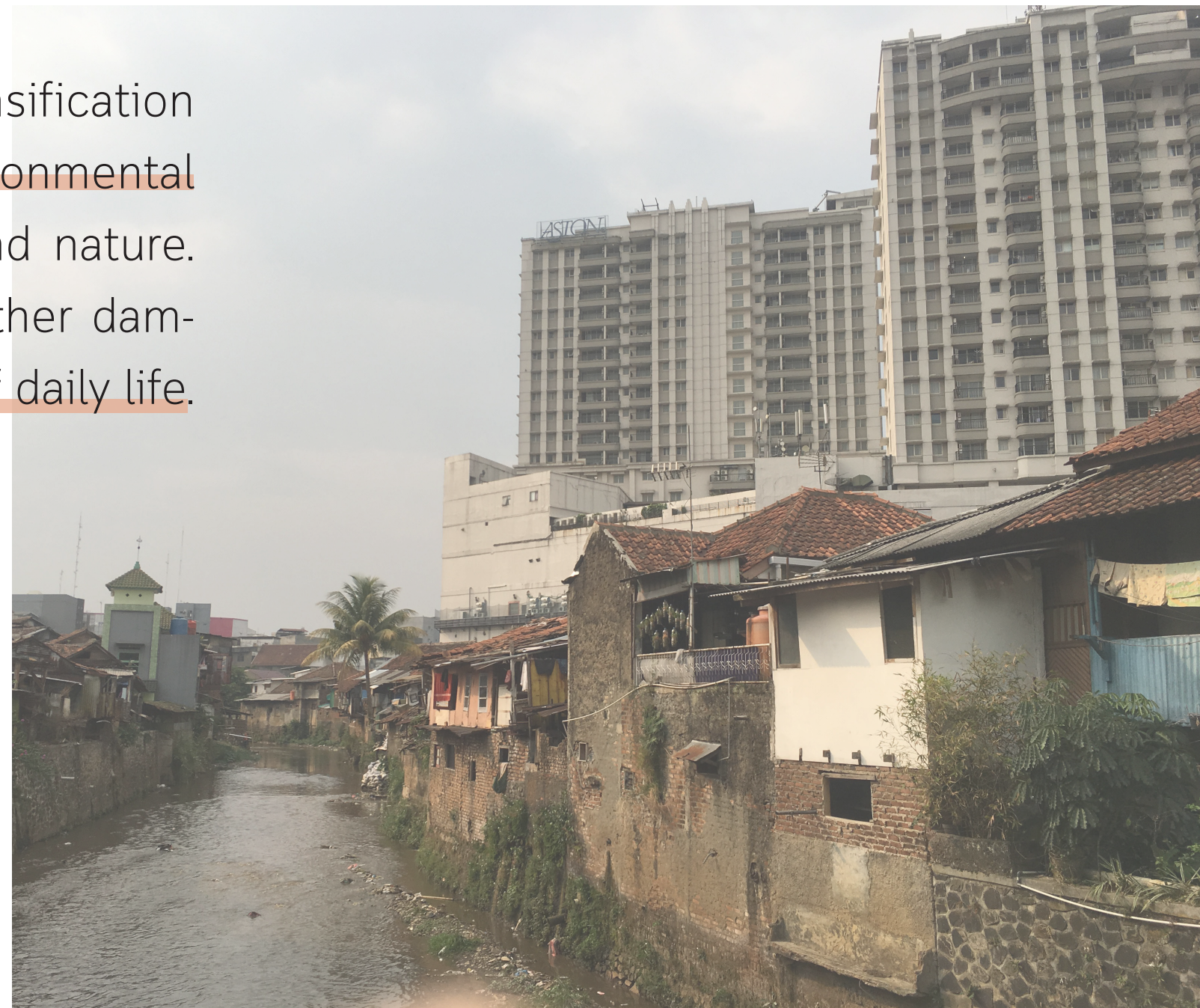
Common Toilet in Kampung



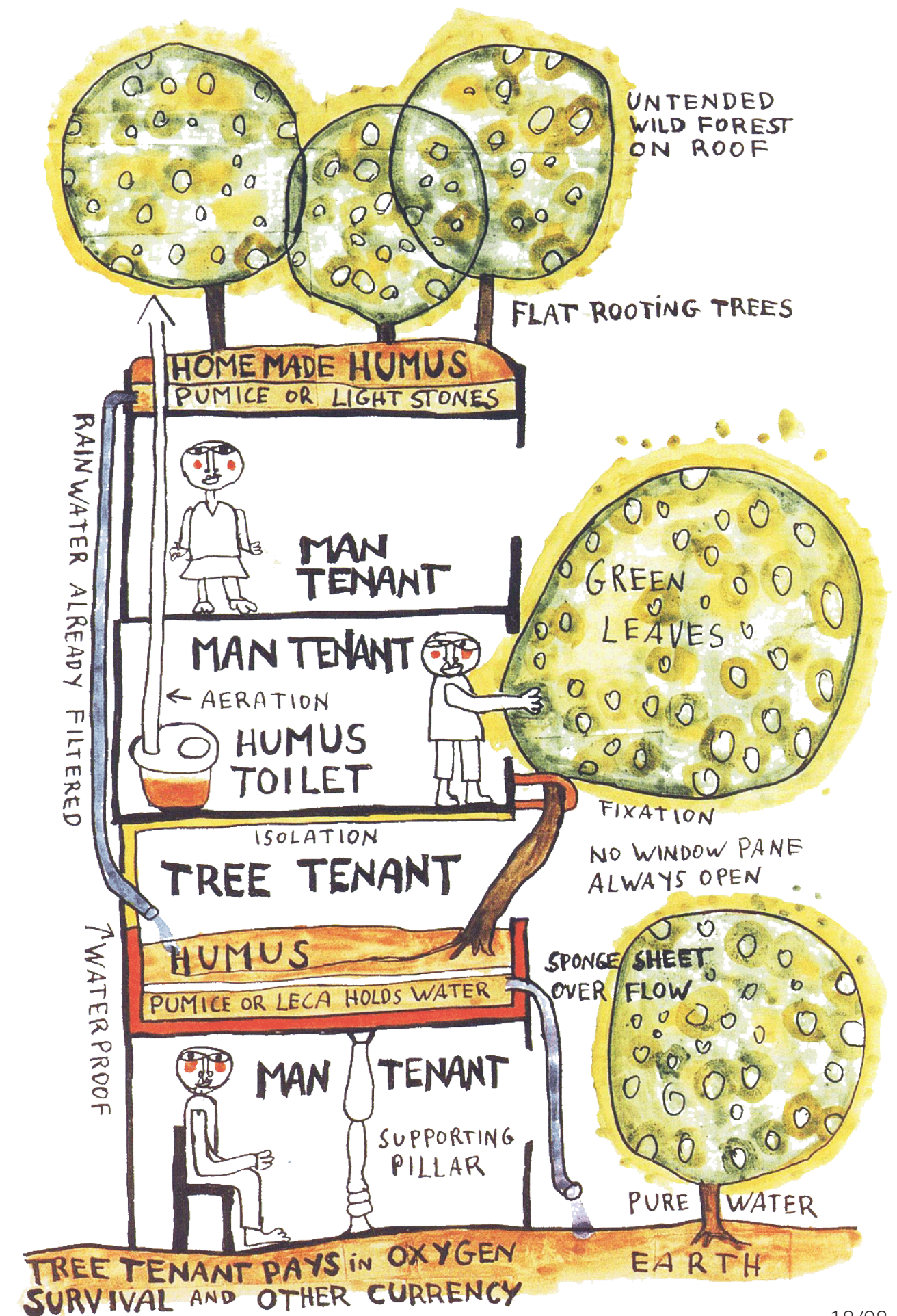
Direct discharge of waste  
water into the river



Lack of water related infrastructure and densification in informal settlements has led to environmental degradation, thereby disconnecting people and nature. This situation forms a vicious circle which further damages the urban river and depletes the quality of daily life.



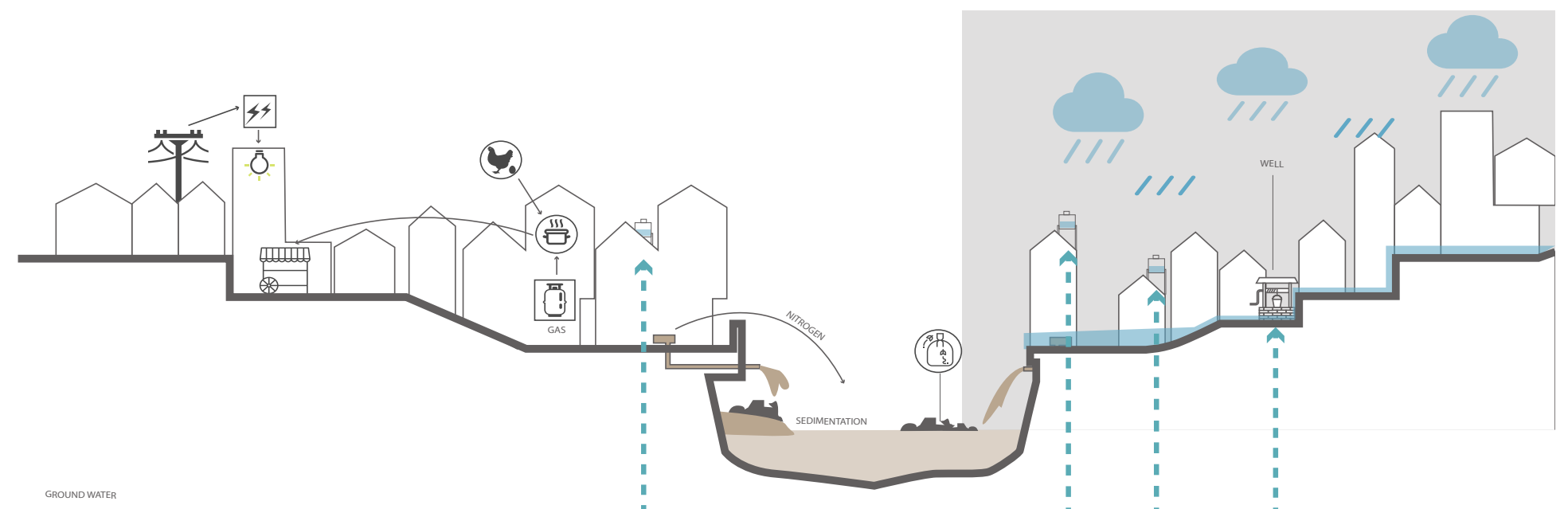




Tree Tenants  
source: Hundertwasser



Reconnect people and nature  
by improving the living quality  
through ecosystem service



Current urban metabolism in Kampung Tamansari



The diagram illustrates the integration of water and energy systems in a sustainable urban environment. The left side shows a cross-section of a building and its surrounding landscape, including a bioswale, rainwater harvesting, and energy production (biogas, solar). The right side shows a city skyline with rainwater harvesting and energy production (solar, wind).

20/98



*What kind of landscape architectural design intervention  
can improve the water management  
and living quality in informal settlement, Kampung Tamansari?*

### Sub-research question

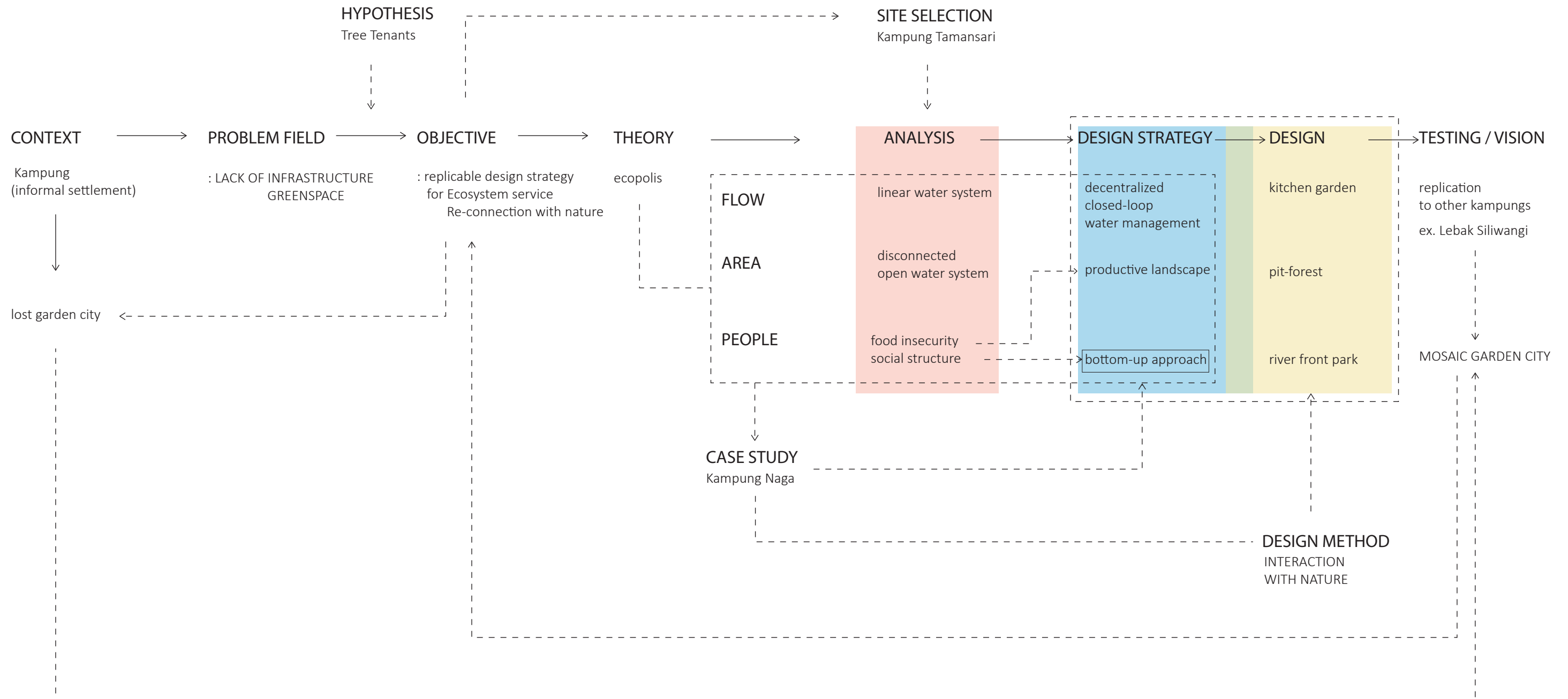
Q1. How the relationship between people and nature/water management in Indonesia create the cultural landscape?

Q2. Which urban metabolism principles could be applied in the current linear water flow?

Q3. What kind of landscape strategy can create awareness for people to preserve *green spaces* from informal settlement expansion?

Q4. Which design strategies can be replicable in the similar context of other Kampung?







[ THEORETICAL FRAMEWORK ]

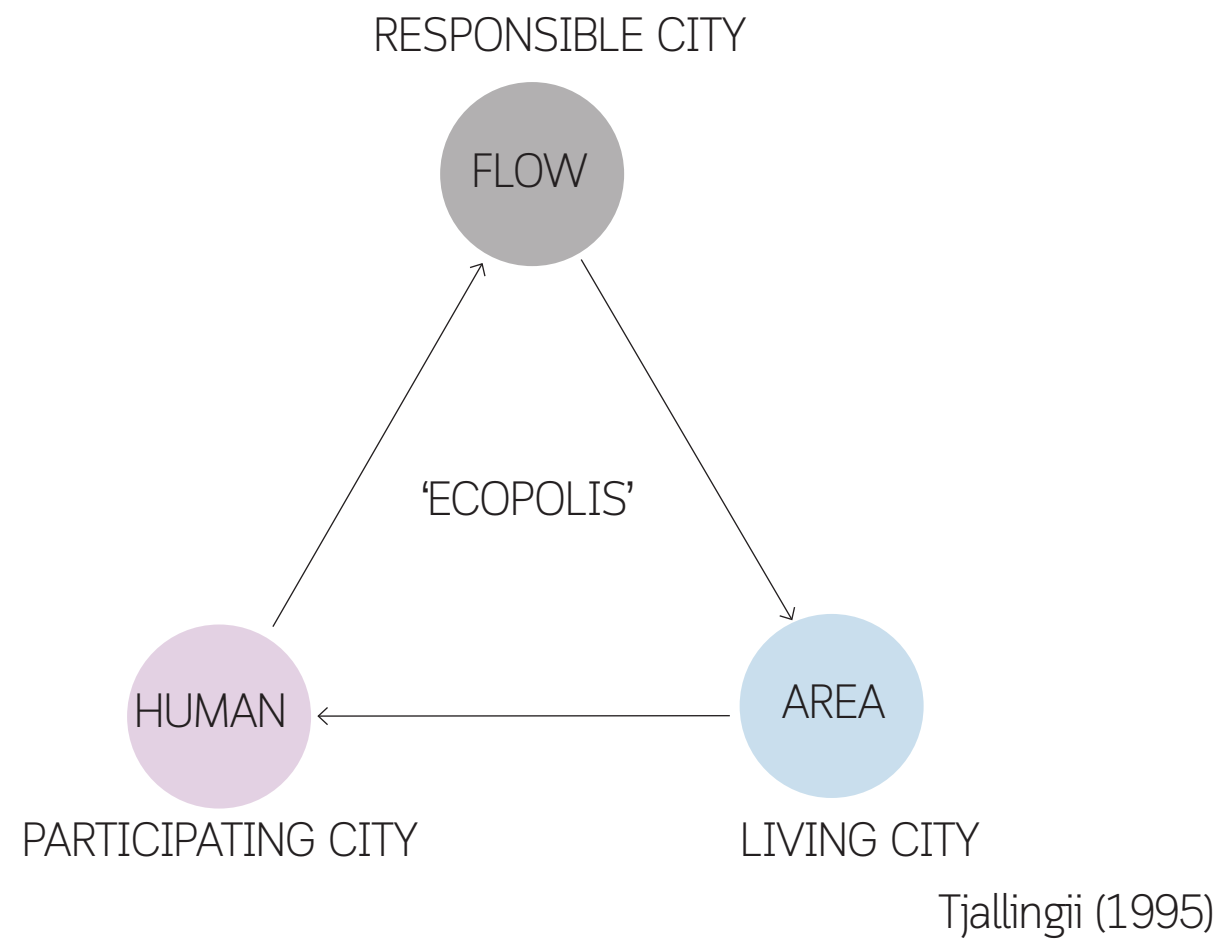
introduction

analysis  
strategy

design

conclusion

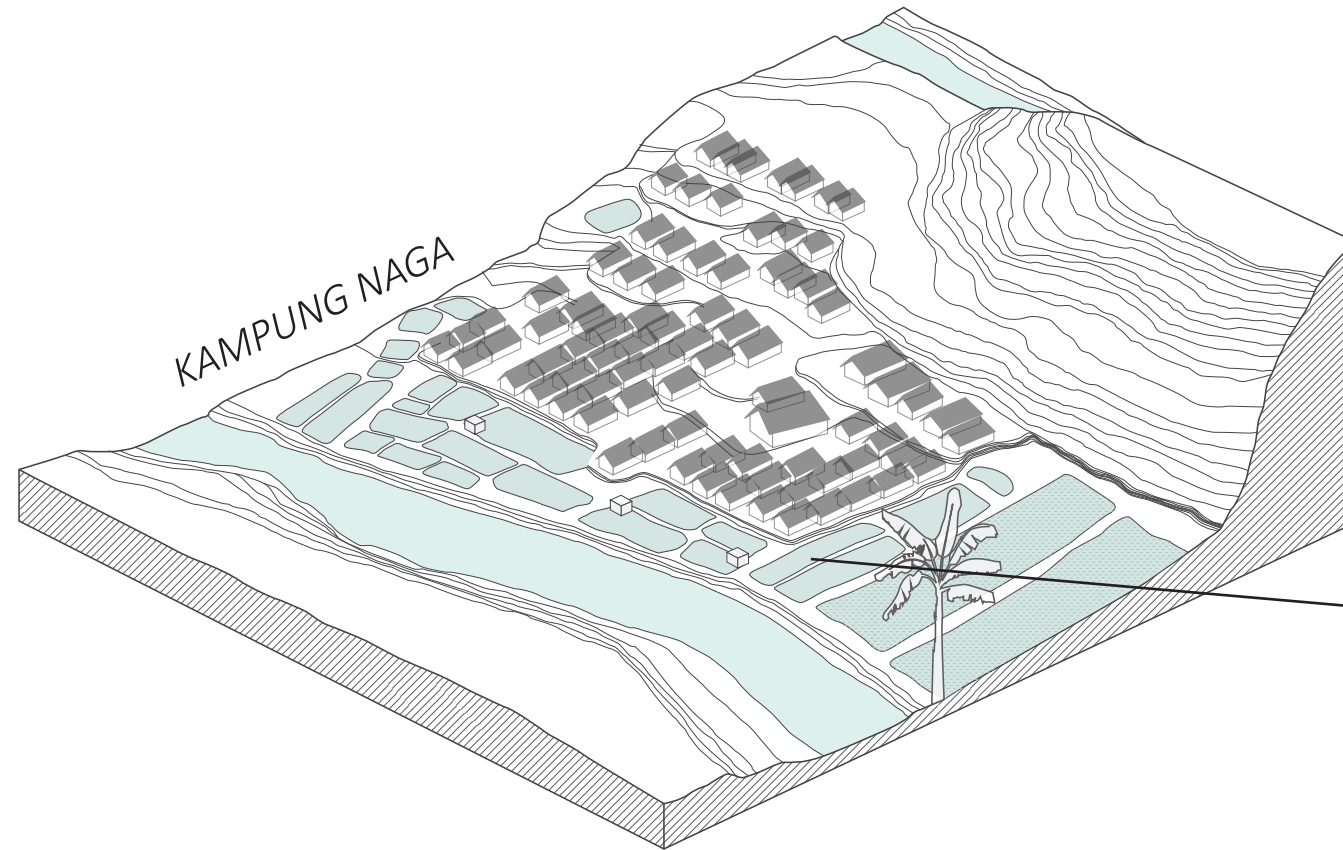
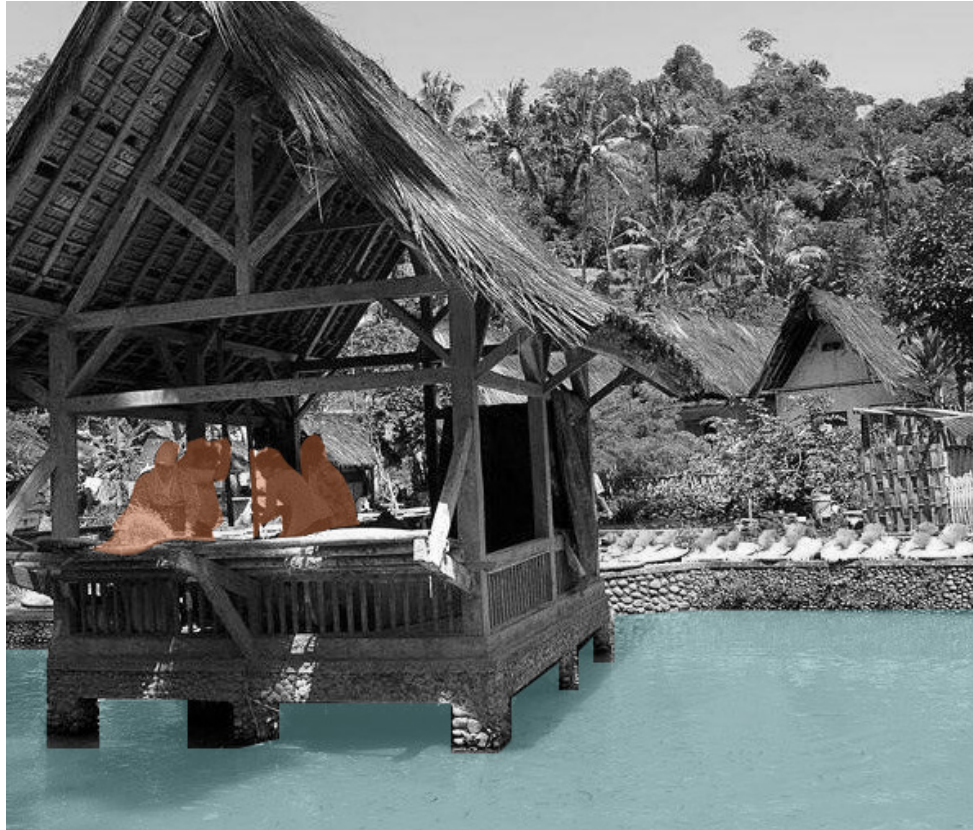




ECOPOLIS = ECO + POLIS  
environment self-governing



# [ CASE STUDY\_ Kampung Naga ]



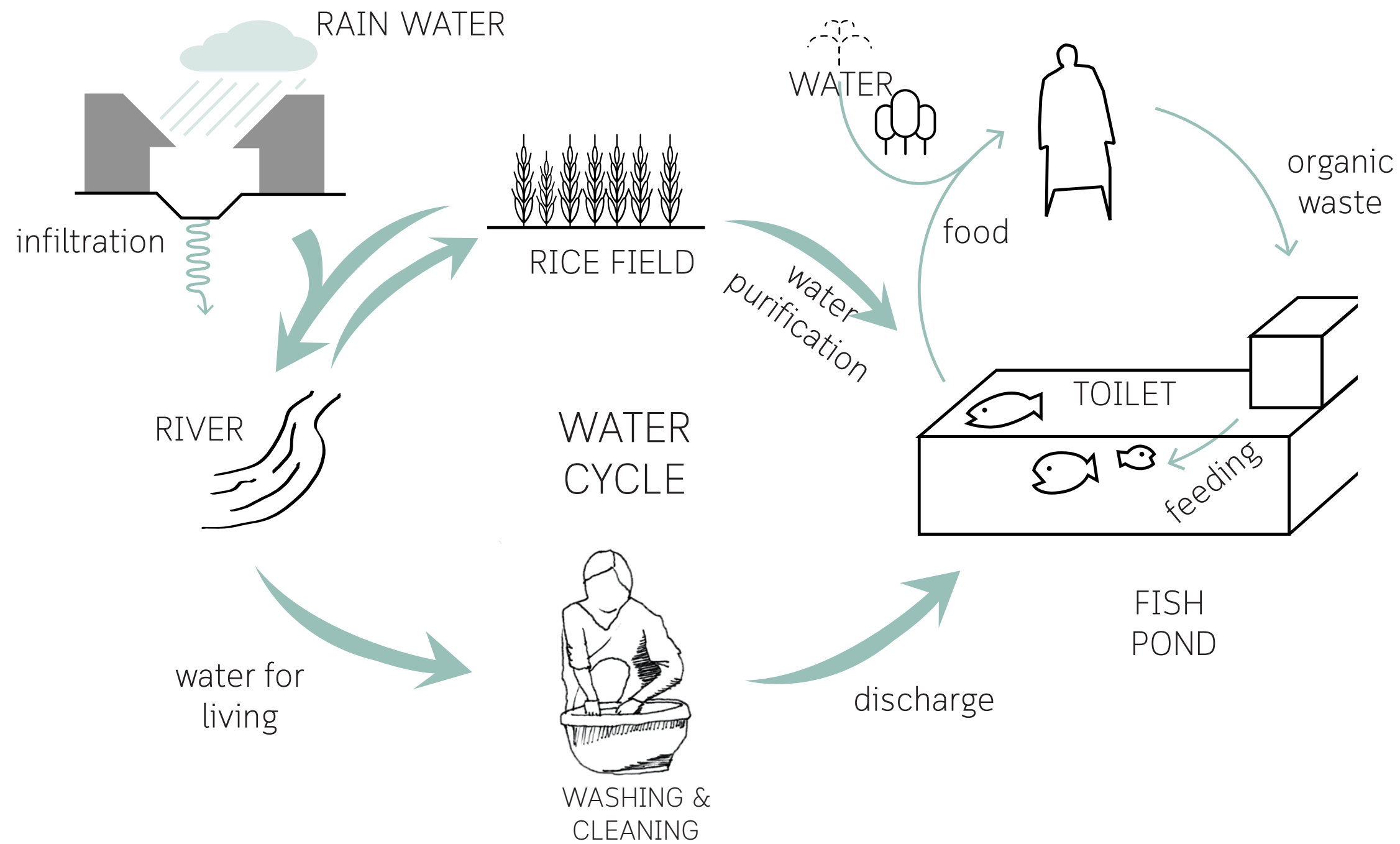
*FISHPOND  
CONNECT BETWEEN  
LIVING ENVIRONMENT  
AND NATURE*



1	
2	3

- 1 working space on the fishpond
- 2 washing on the fishpond
- 3 toilet on the fishpond

## Circular water system





[ analysis & design strategy ]

introduction

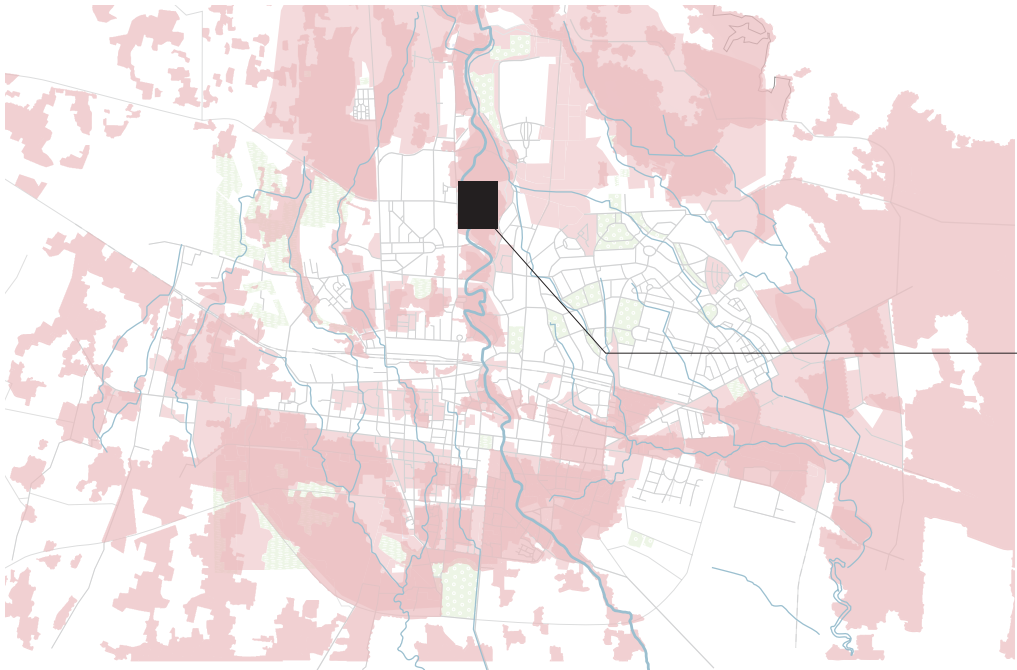
research  
framework

design

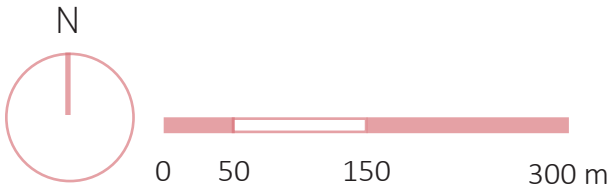
conclusion



[ PROJECT SITE ]



KAMPUNG  
TAMANSARI



- PROJECT SITE
- ECO-DISTRICT BOUNDARY
- CIKAPUNDUNG RIVER

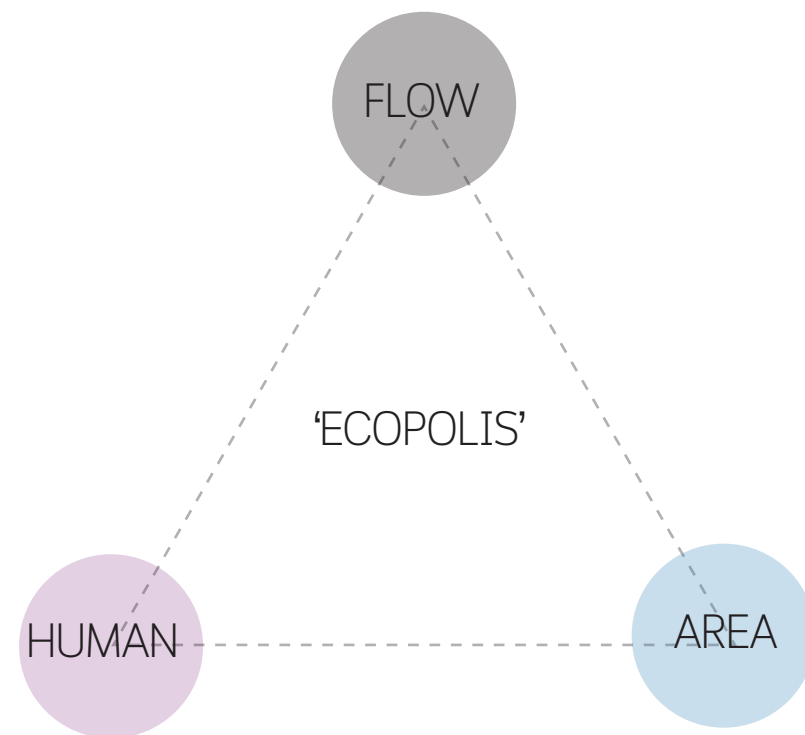




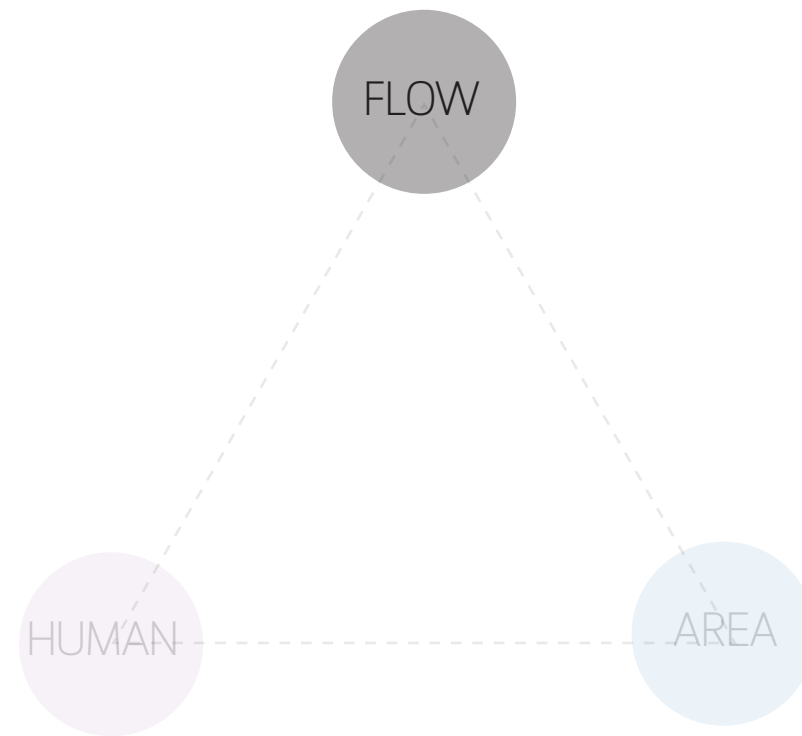


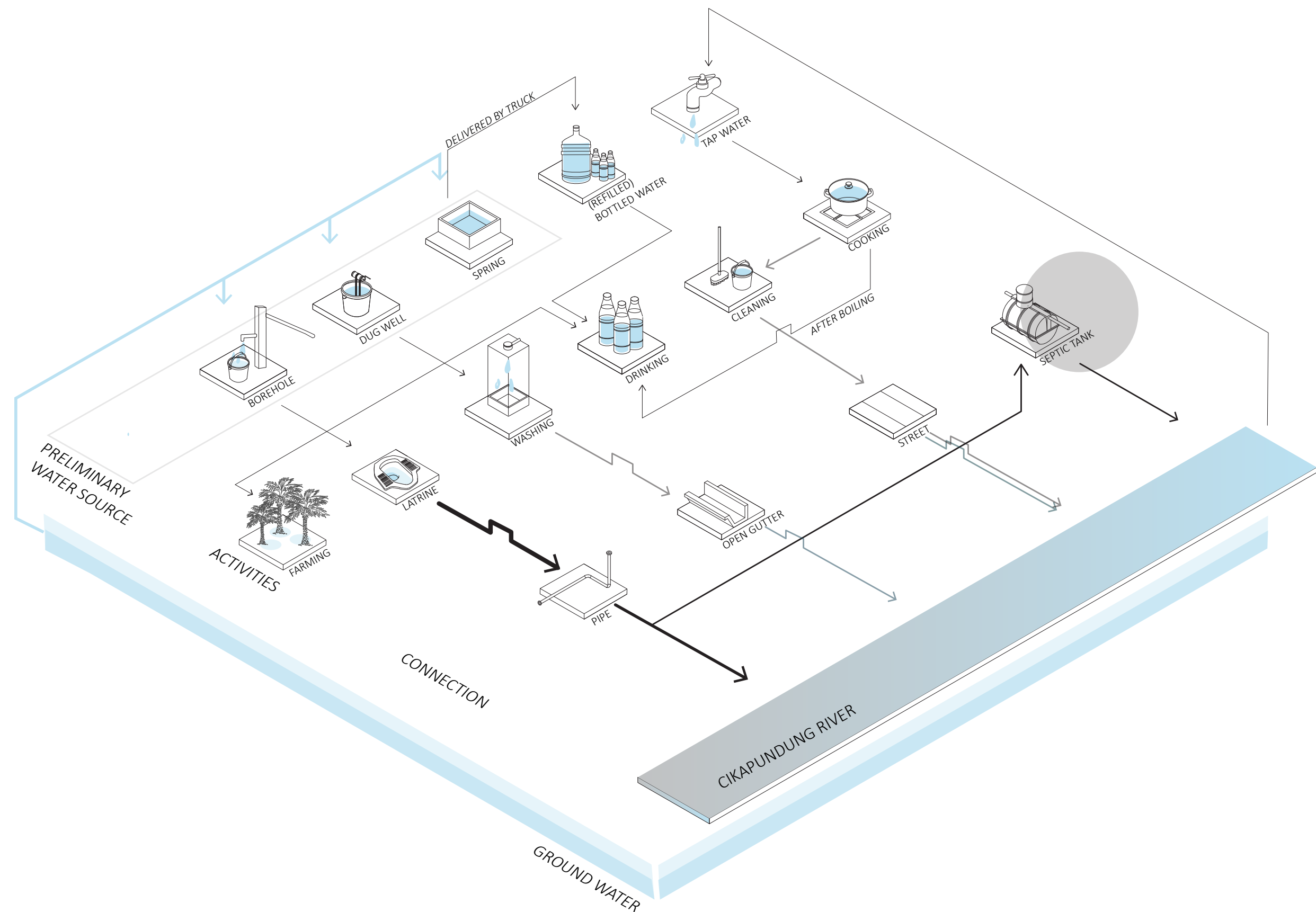
AERIAL VIEW OF KAMPUNG TAMANSARI  
Source: Paul Jones (2017)



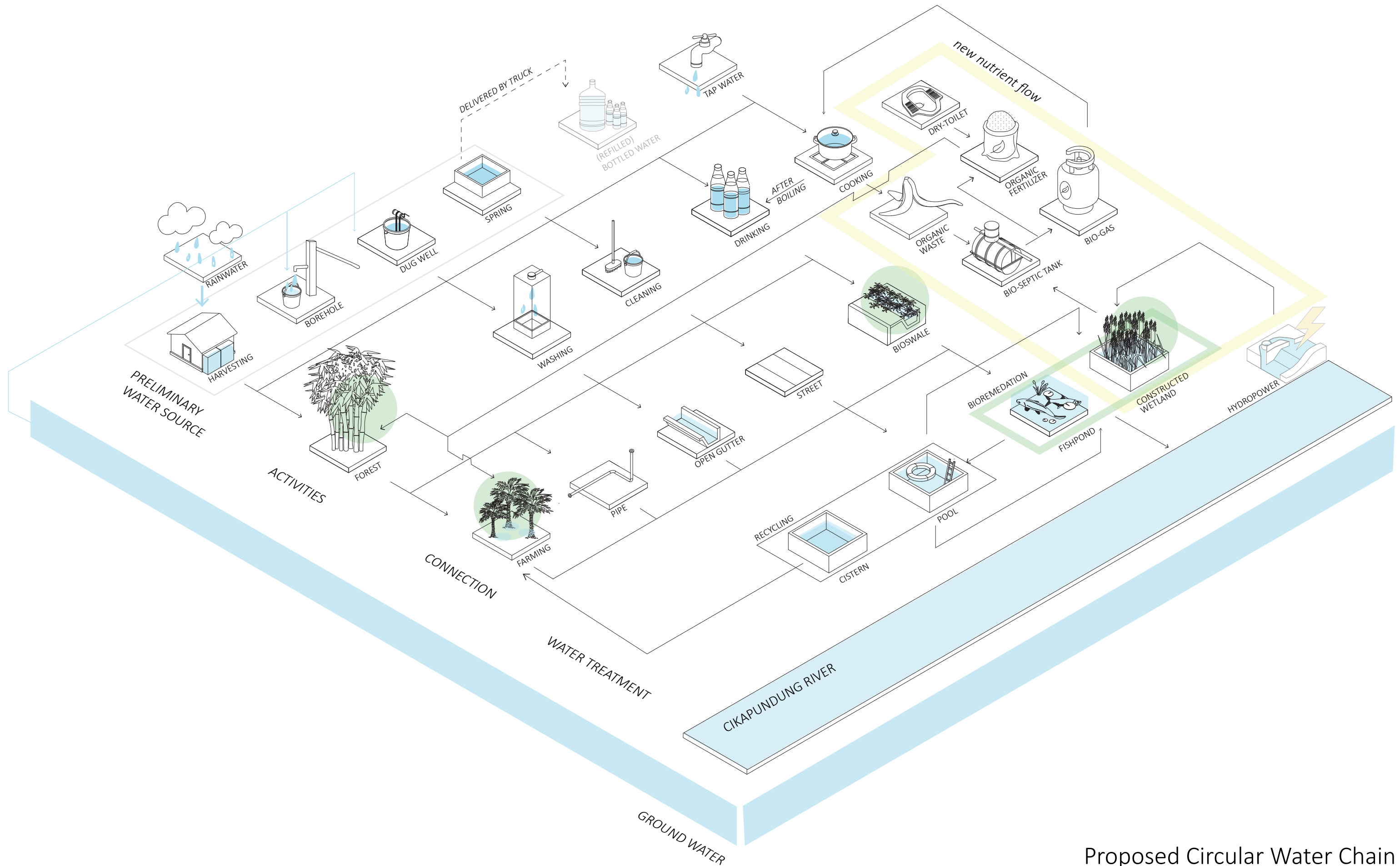




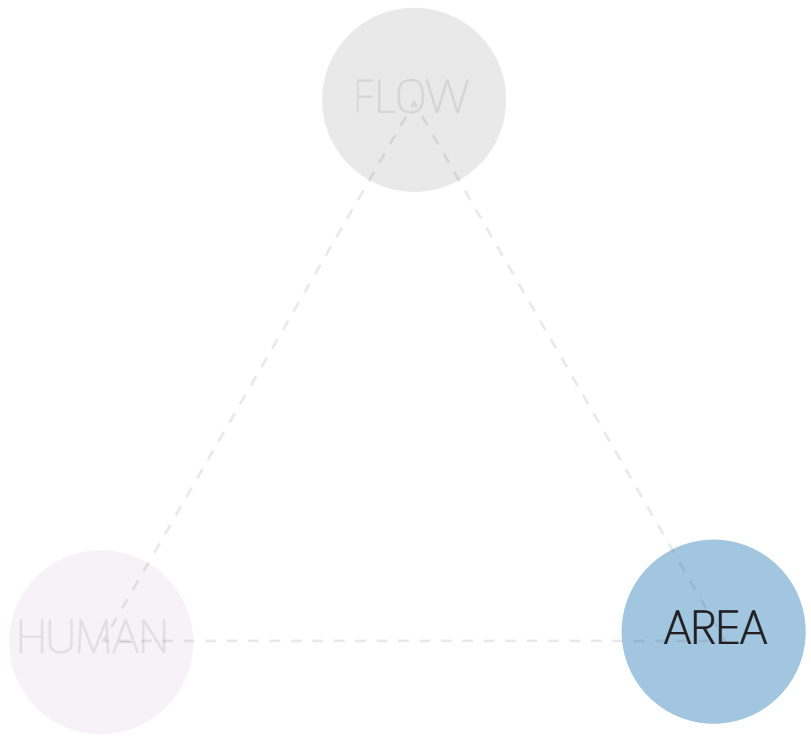






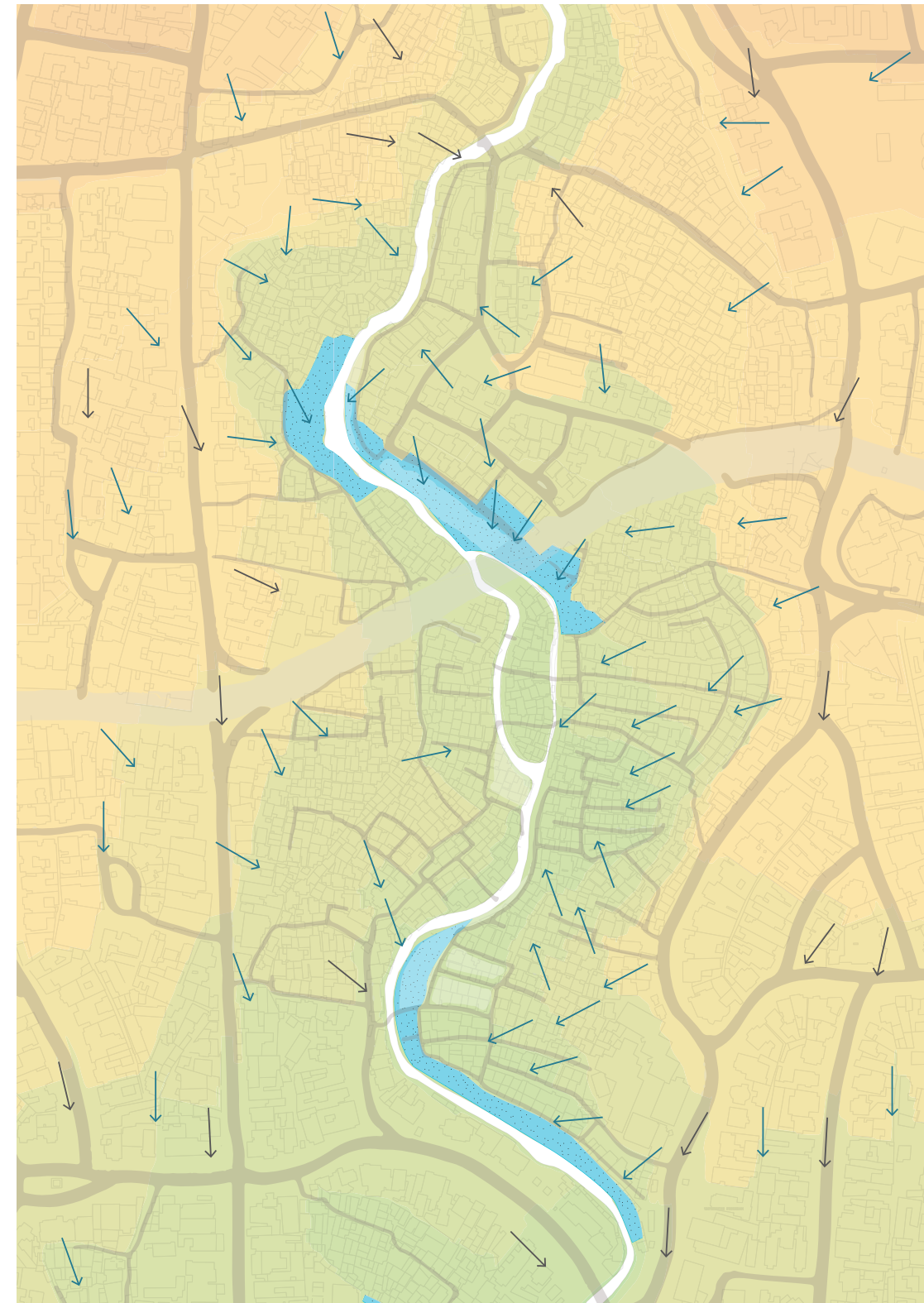
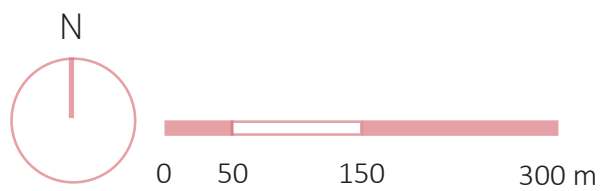
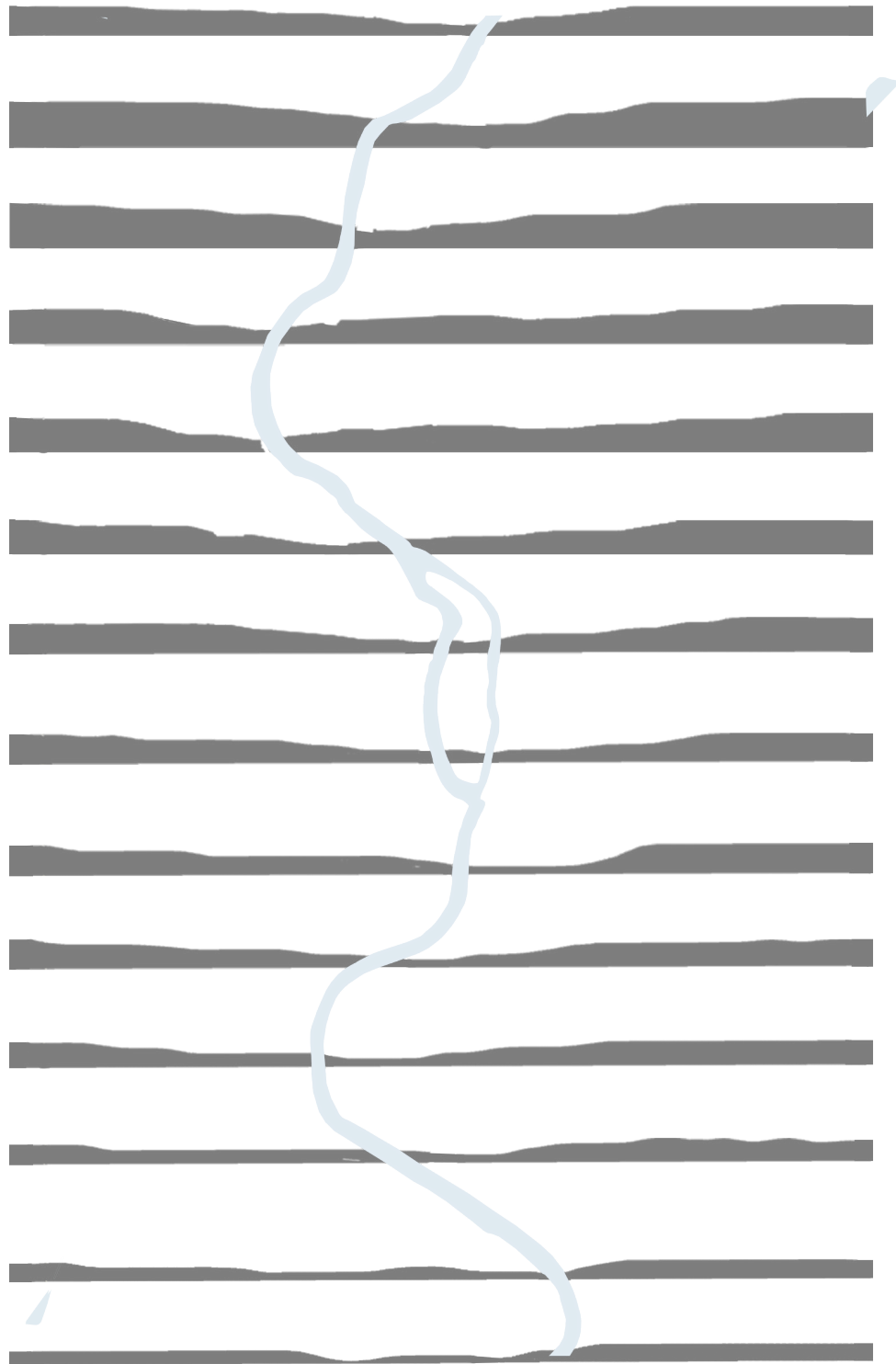


Proposed Circular Water Chain

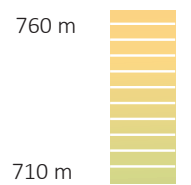




Informal Settlement Challenges



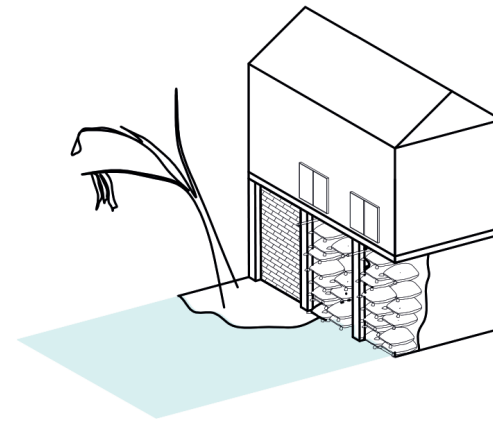
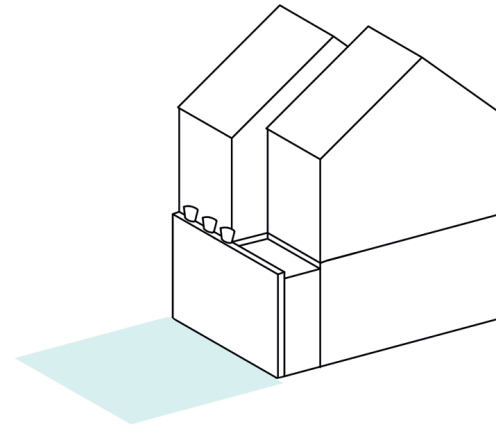
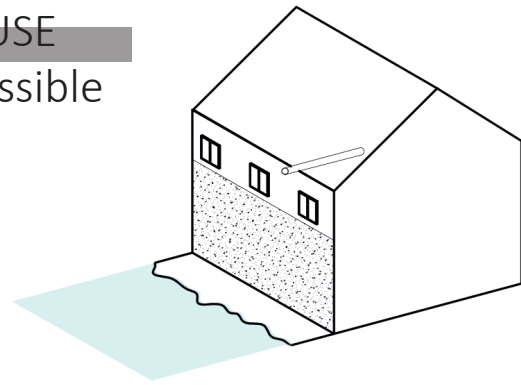
WATER COLLECTING AREA



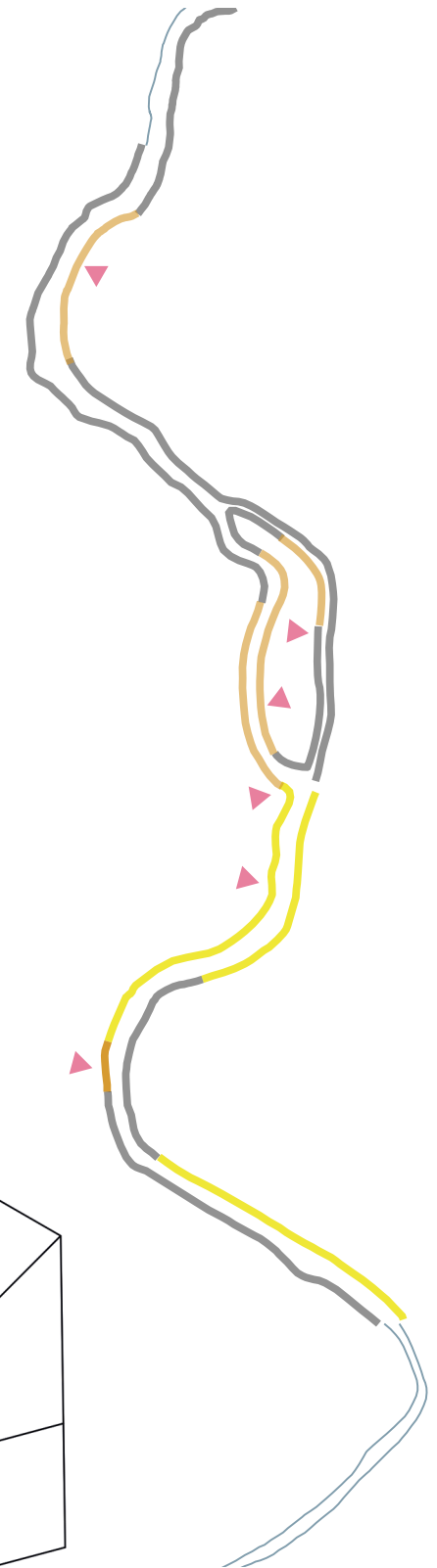
# [ SITE ANALYSIS ]

## Informal Settlement Challenges : Riverfront Typology

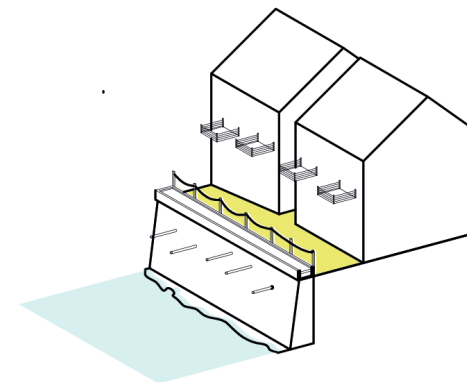
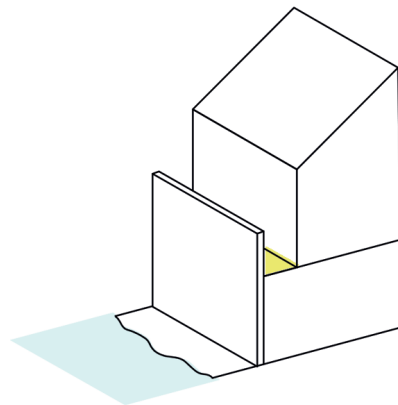
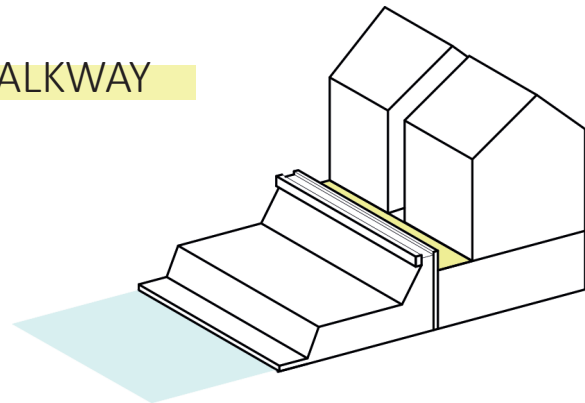
HOUSE  
inaccessible



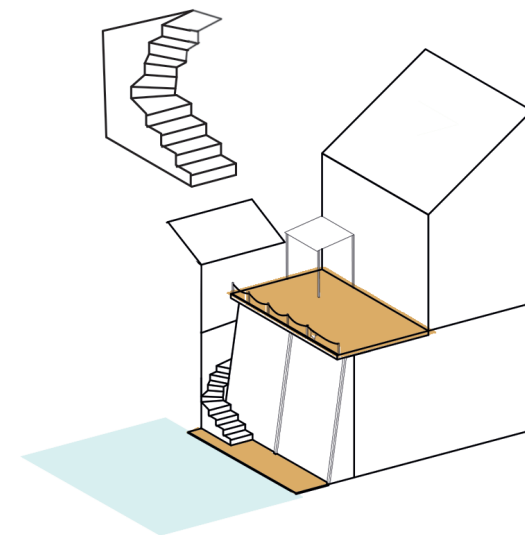
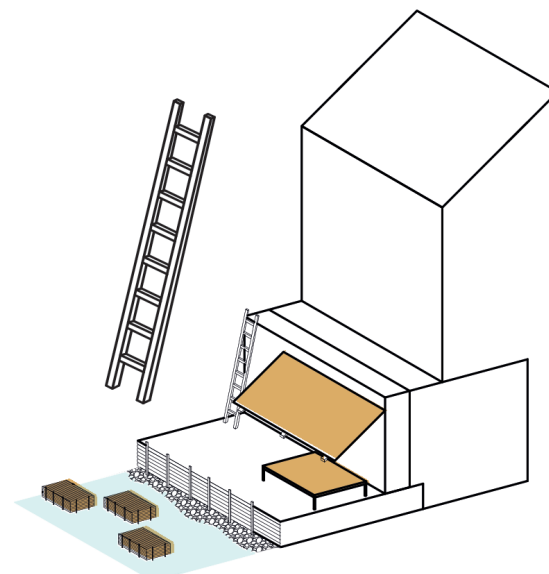
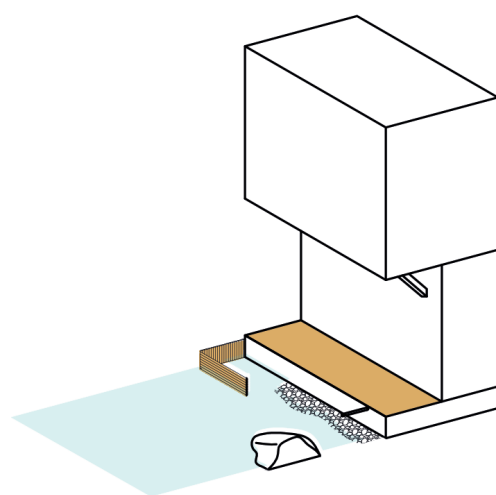
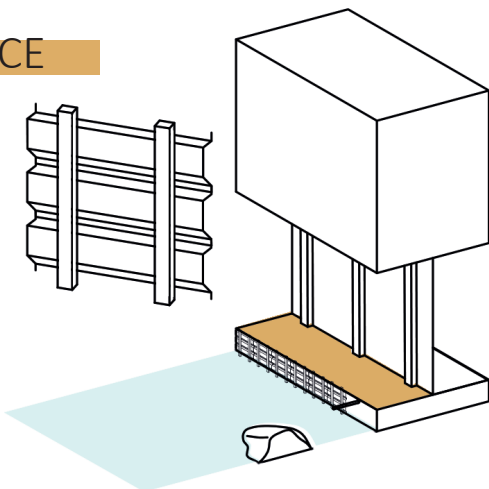
HOUSE  
WALKWAY  
TERRACE  
ACCESSIBILITY  
TO THE RIVER



WALKWAY

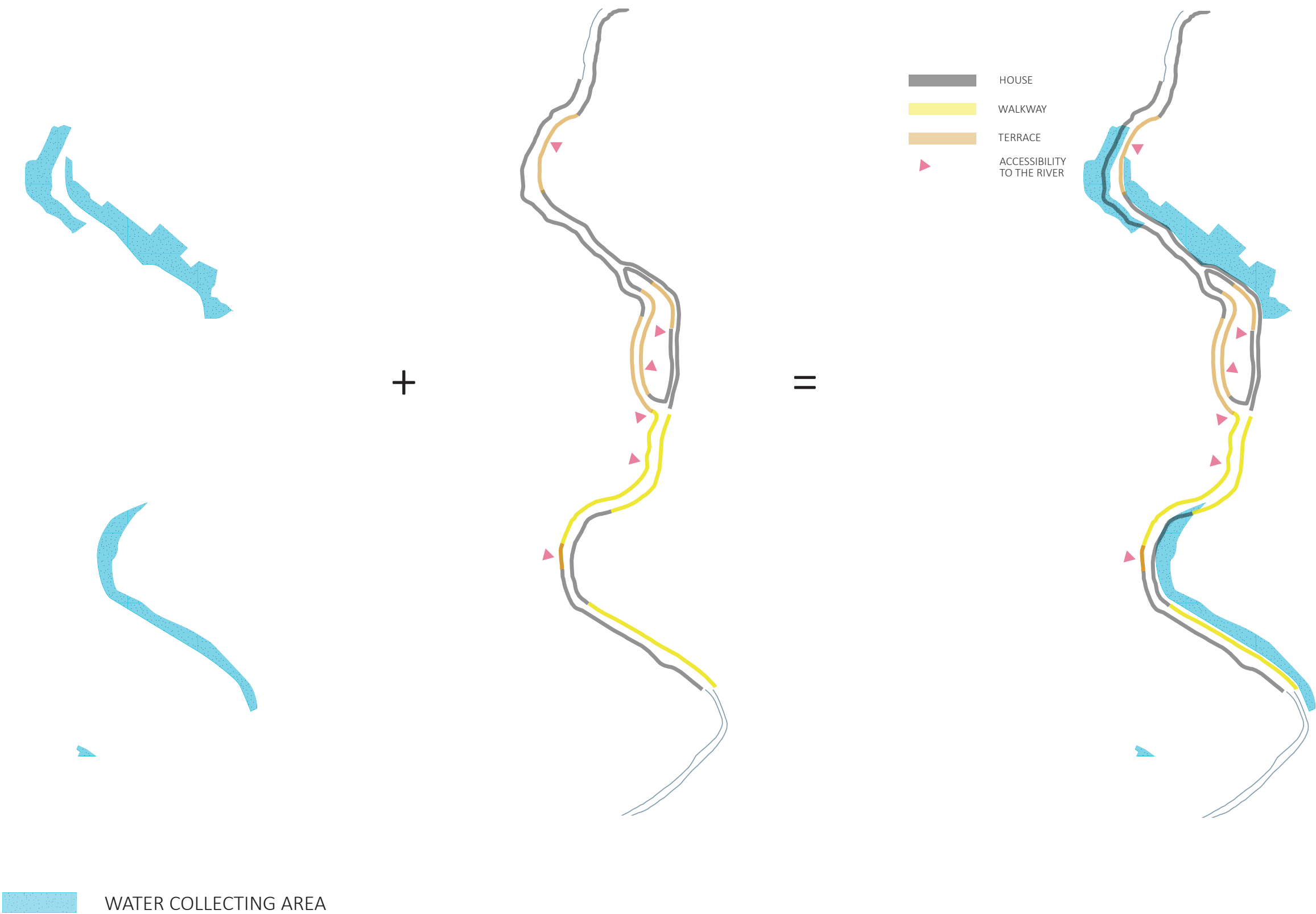


TERRACE

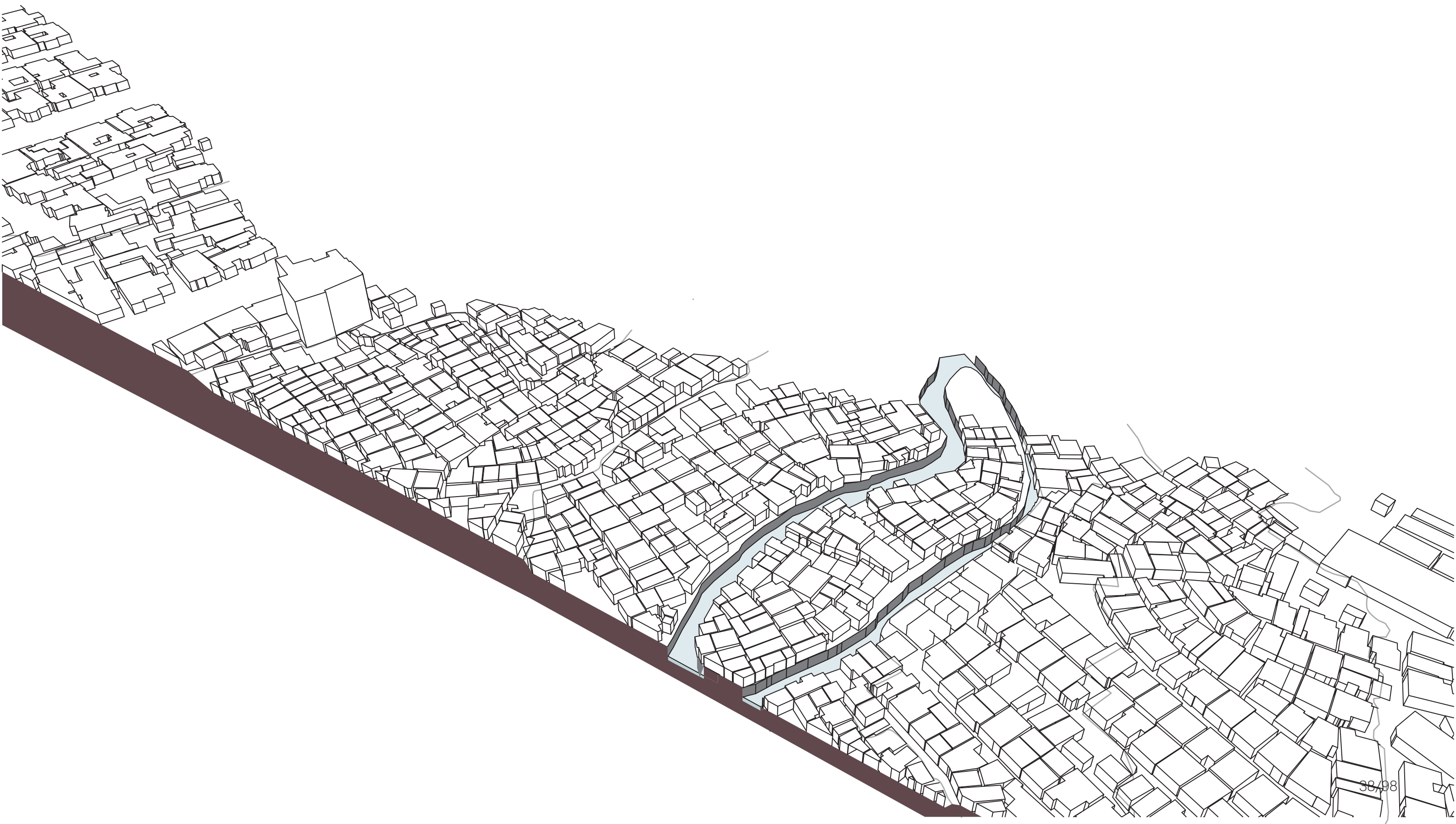




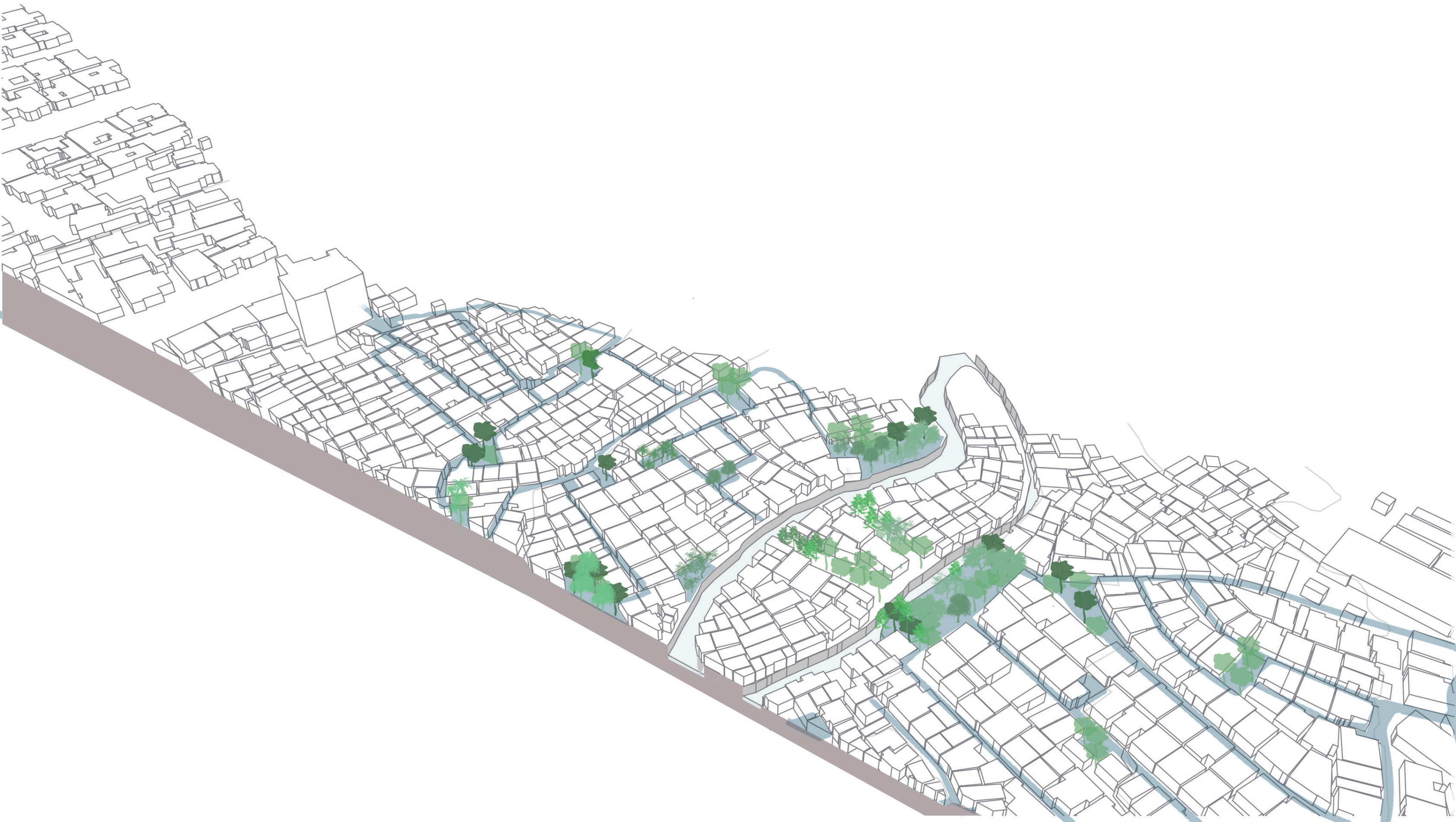
Informal Settlement Challenges

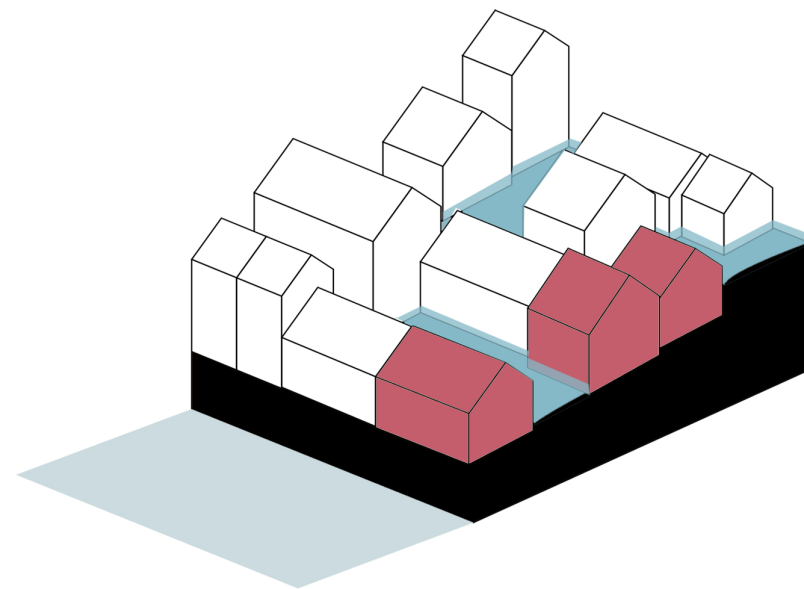


# [ CURRENT SITUATION ]

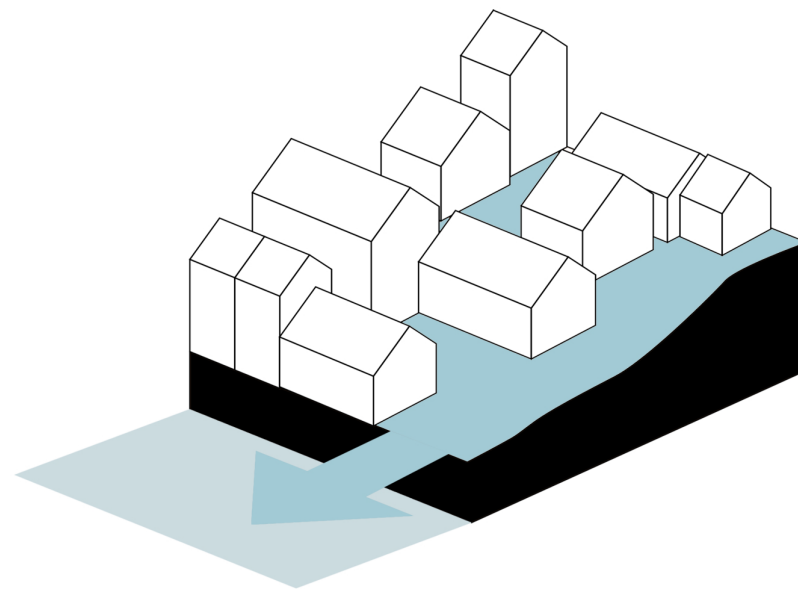




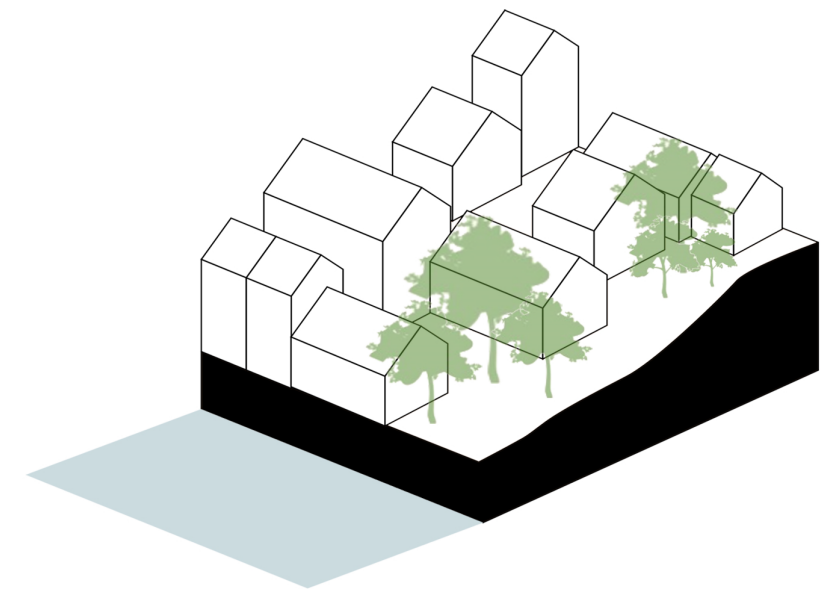




REMOVE BUILDINGS

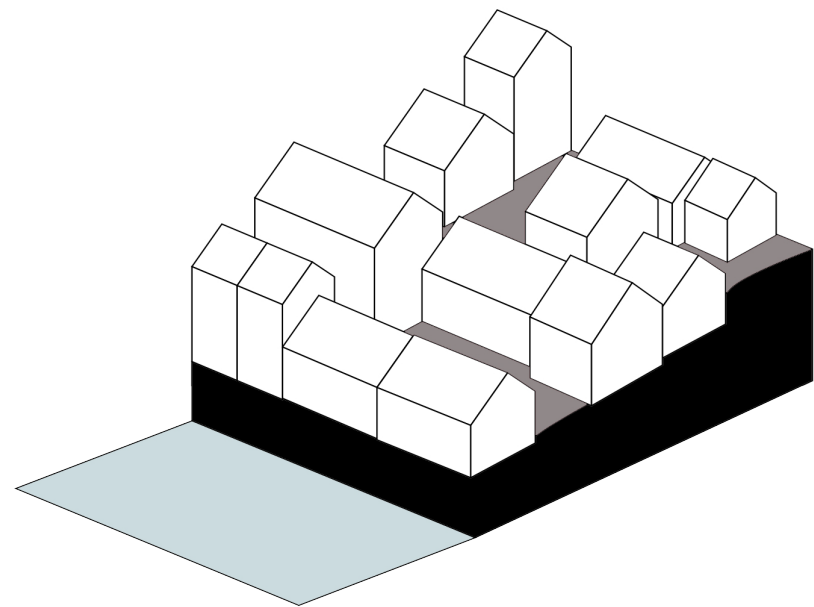


RECONNECT



CREATE  
GREEN PATCHES

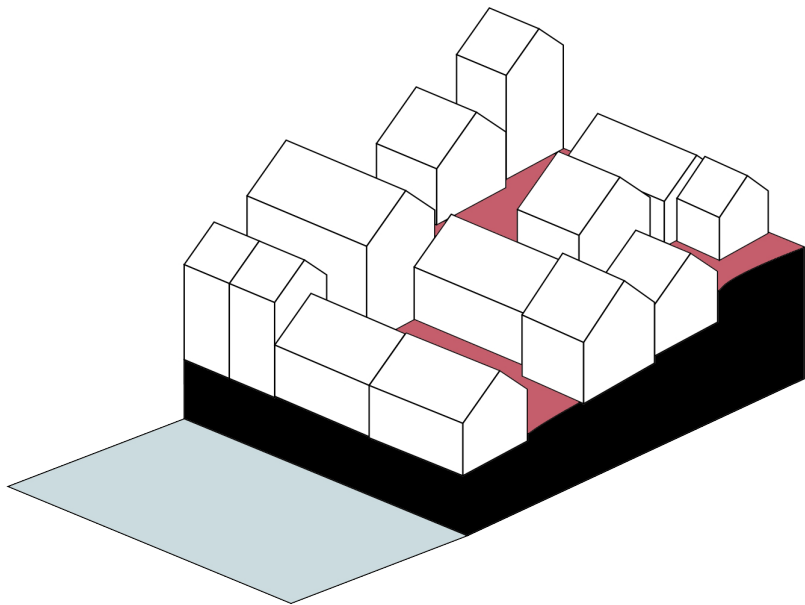




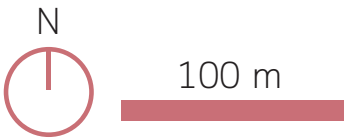
CURRENT SITUATION



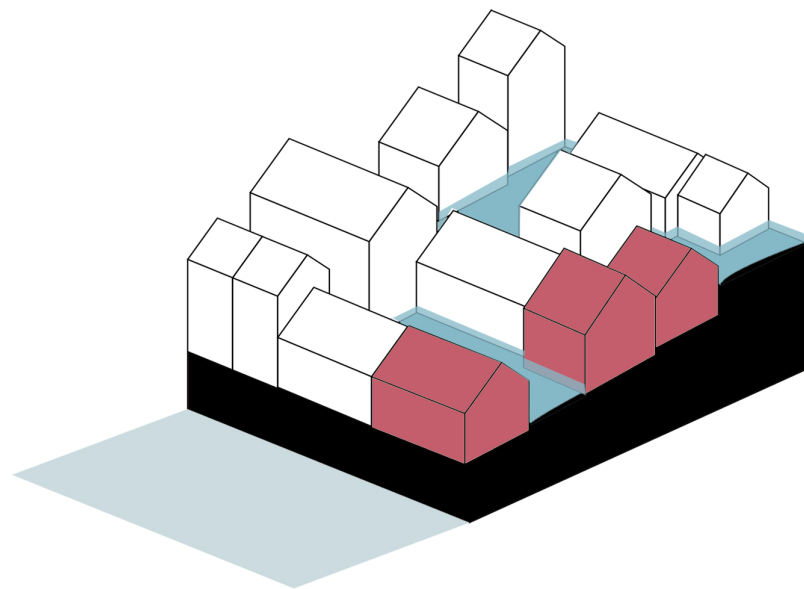




DISCONNECTED DRAINAGE



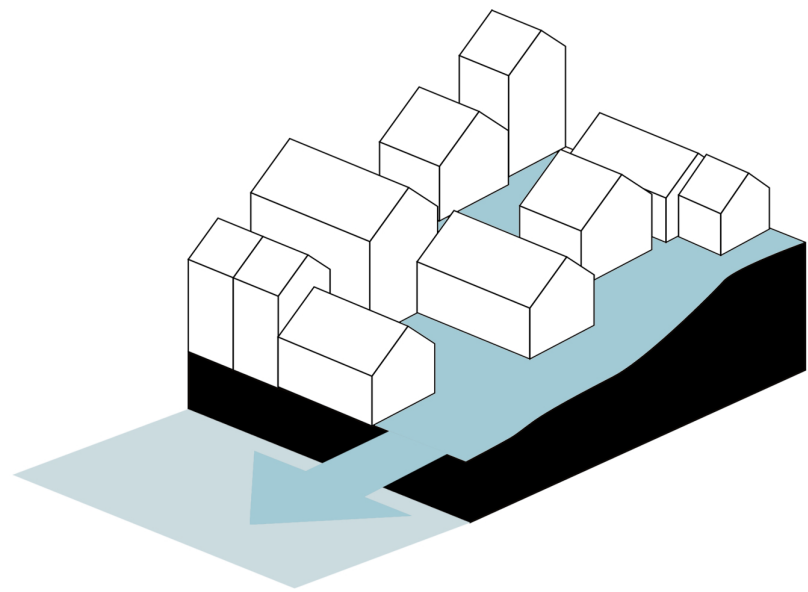




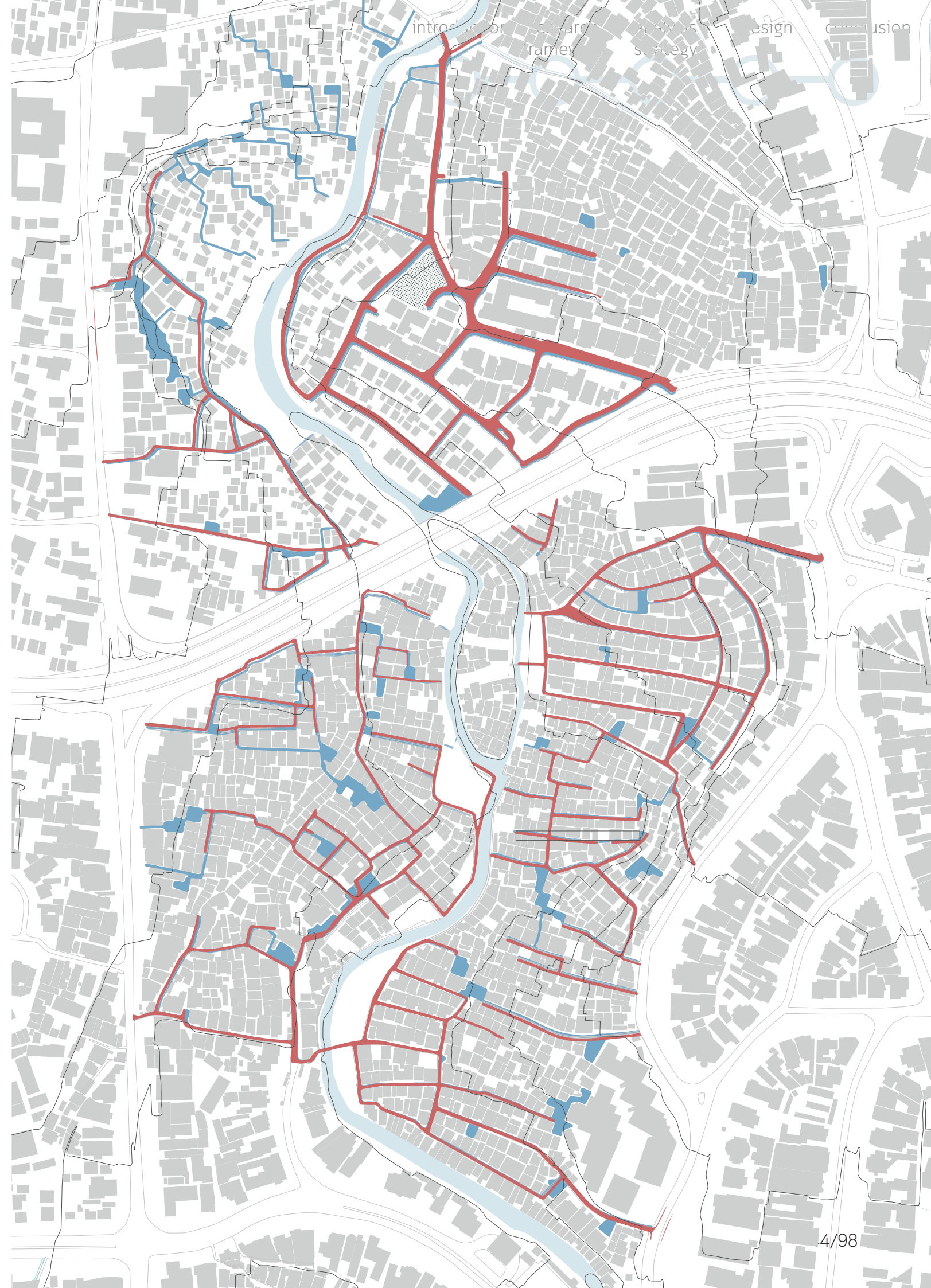
REMOVING HOUSE



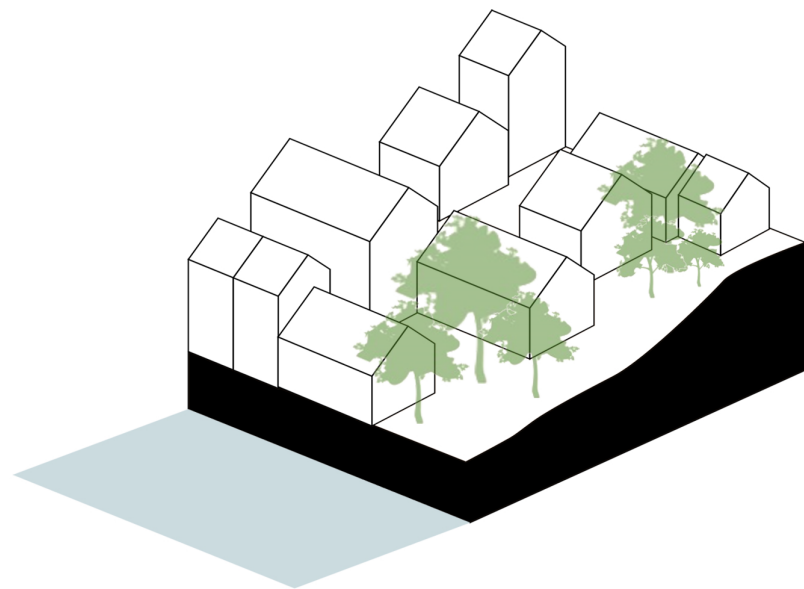




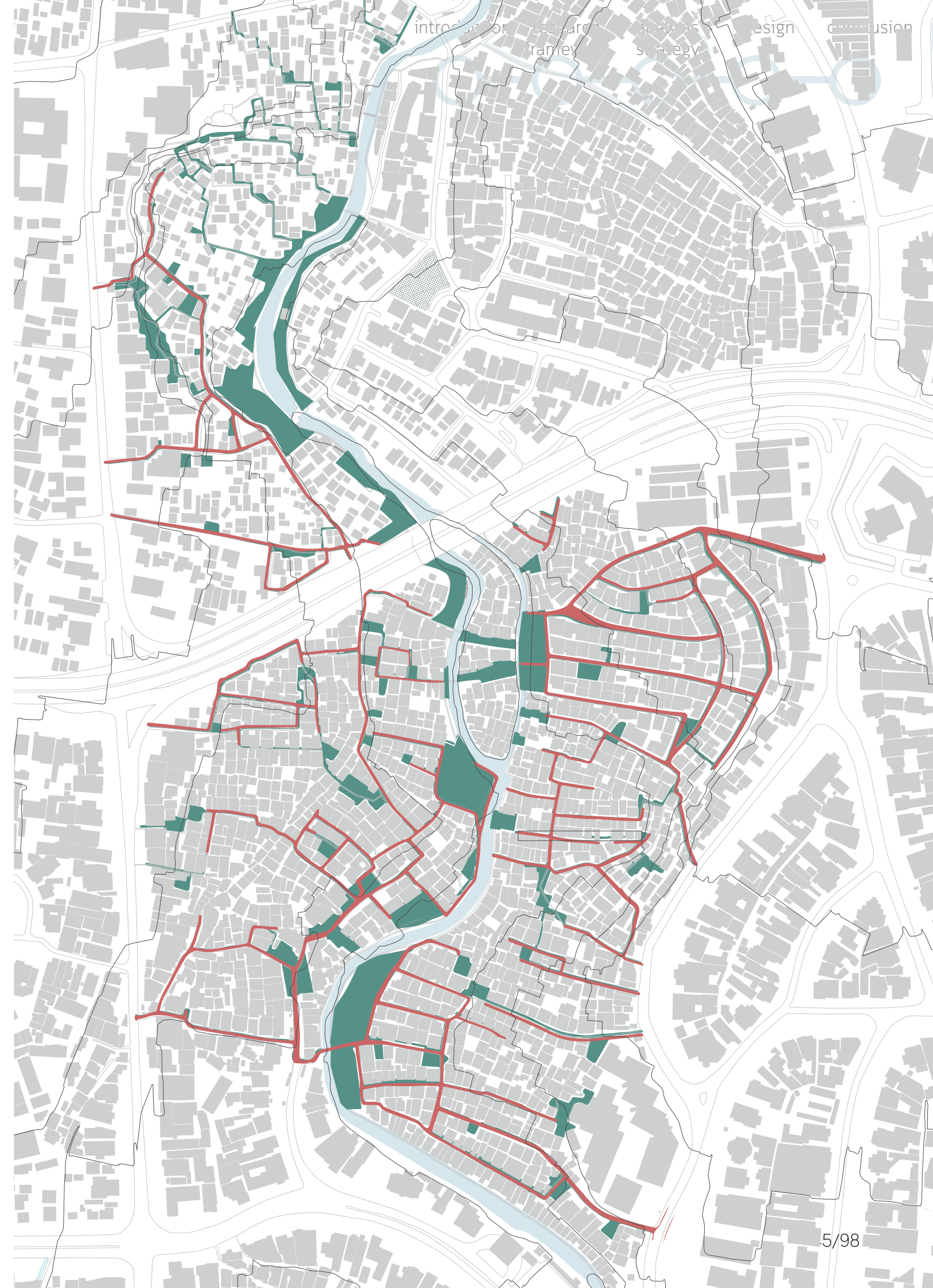
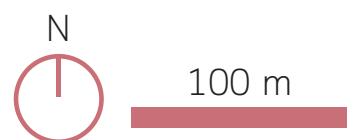
RECONNECT





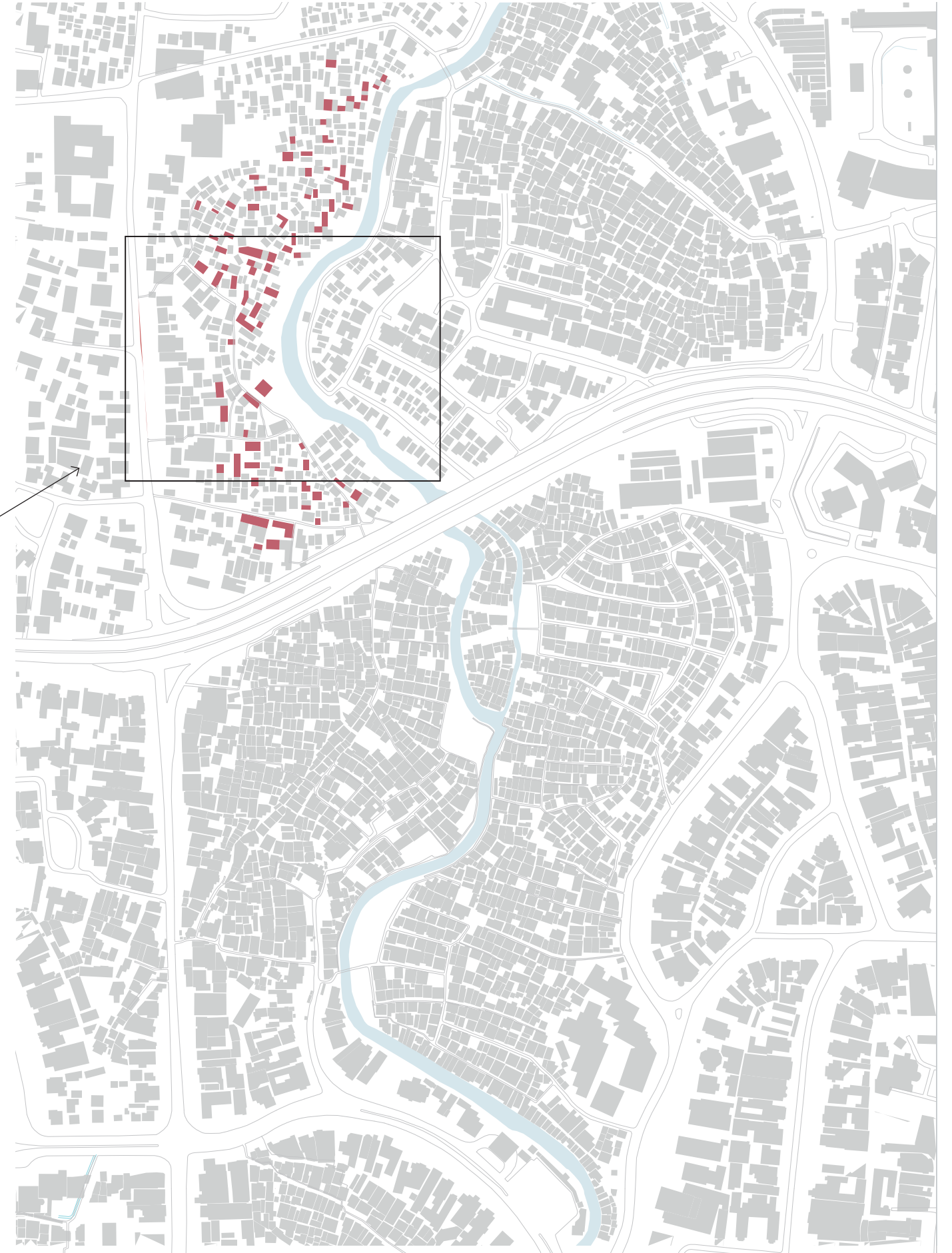


ADD GREENSPACE

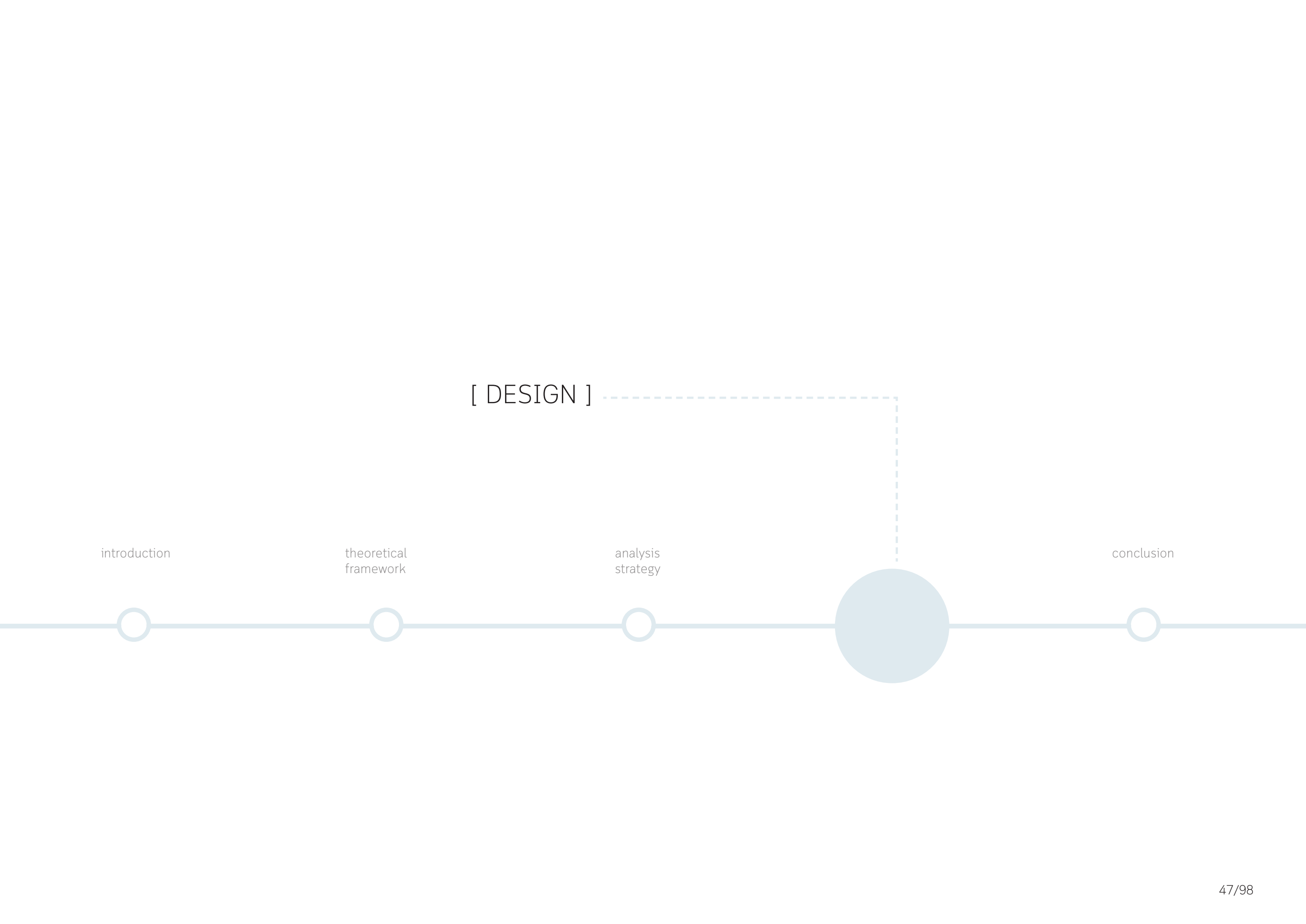




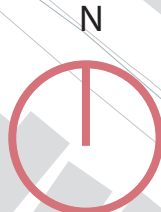
# [ STRATEGY: HOUSING RELOCATION ]







[ CURRENT SITUATION ]



N

25 m



# [ 1. REMOVING HOUSES ]

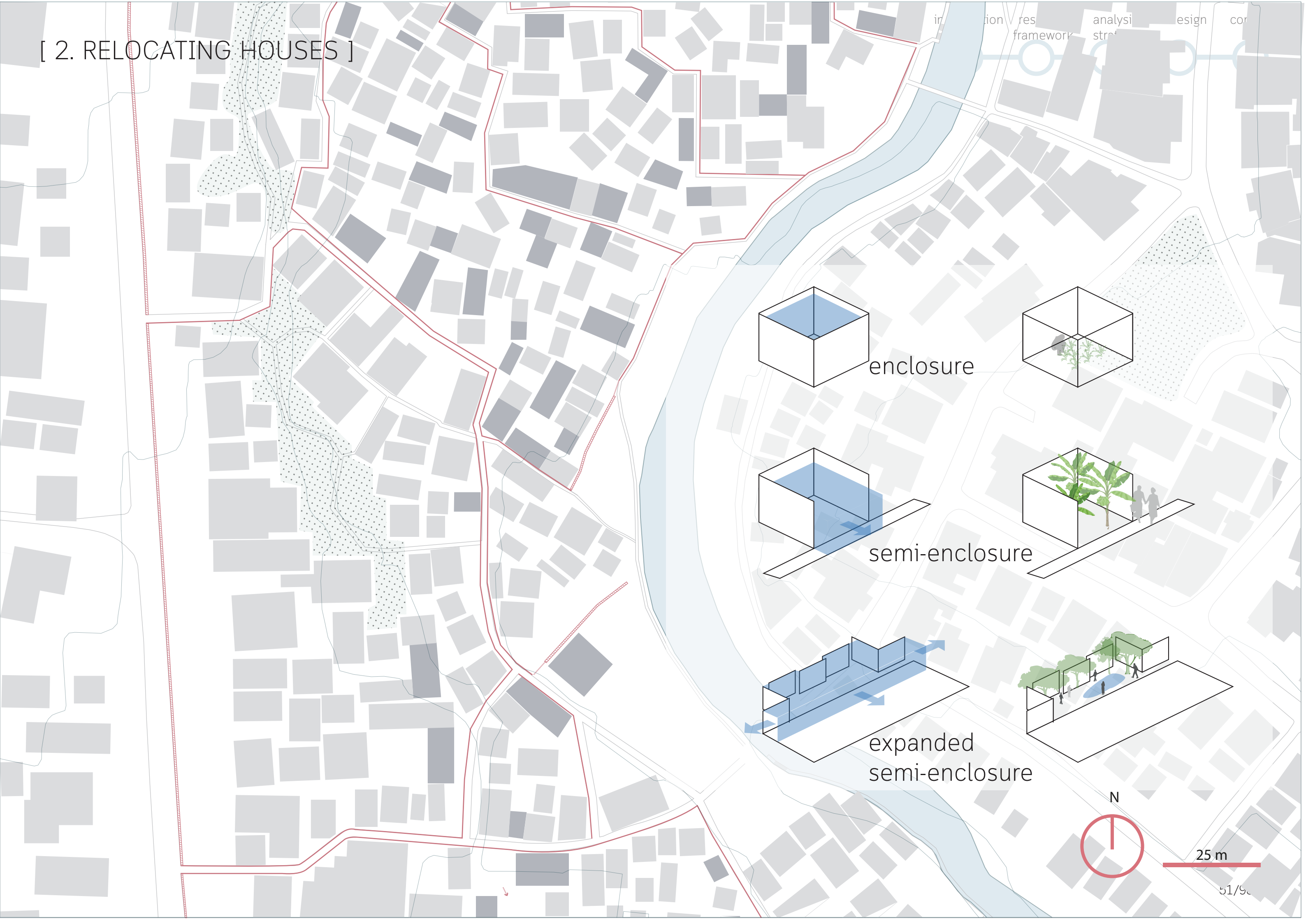


## [ 2. FINDING DITCHES ]





# [ 2. RELOCATING HOUSES ]



enclosure

semi-enclosure

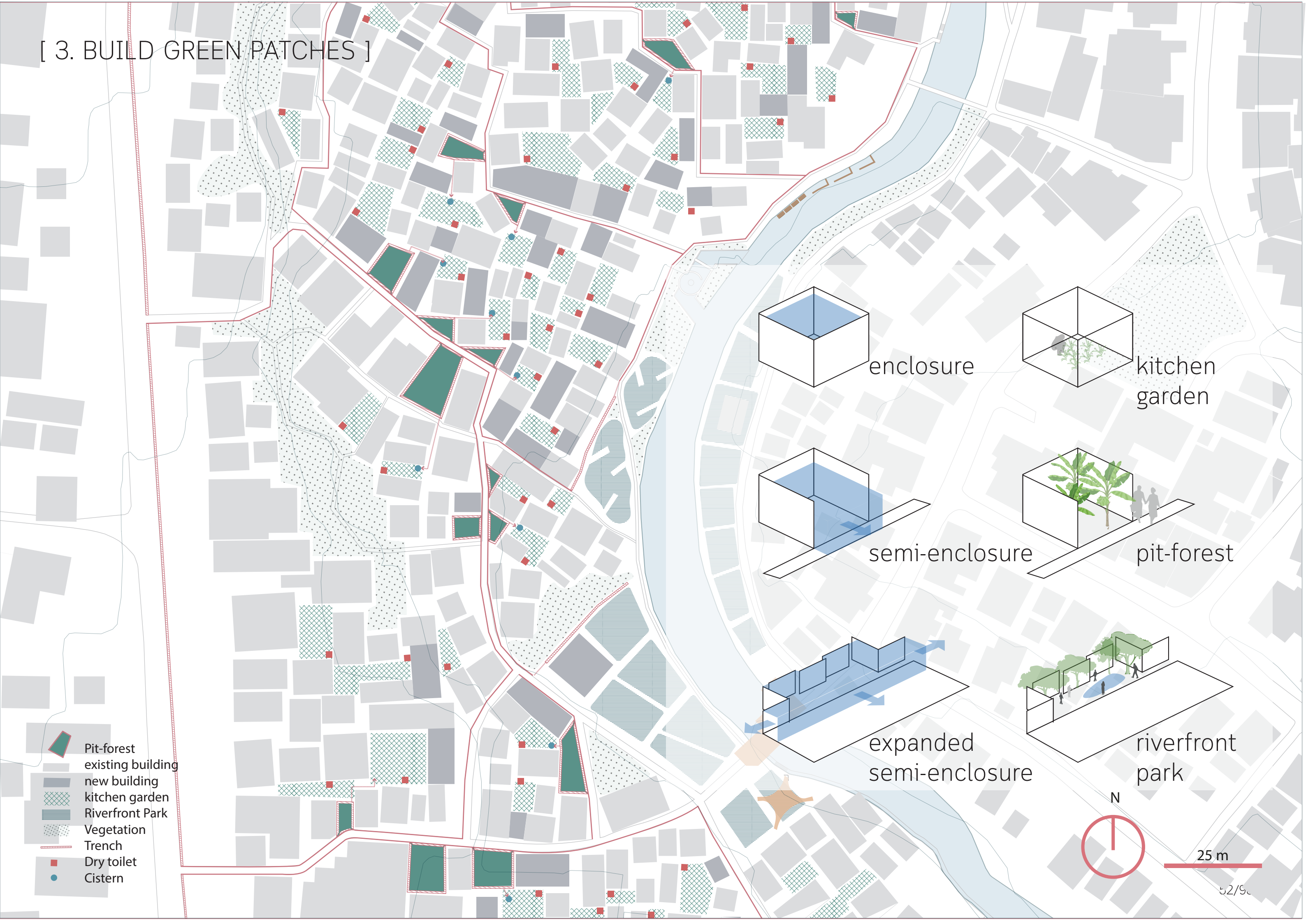
expanded  
semi-enclosure

N

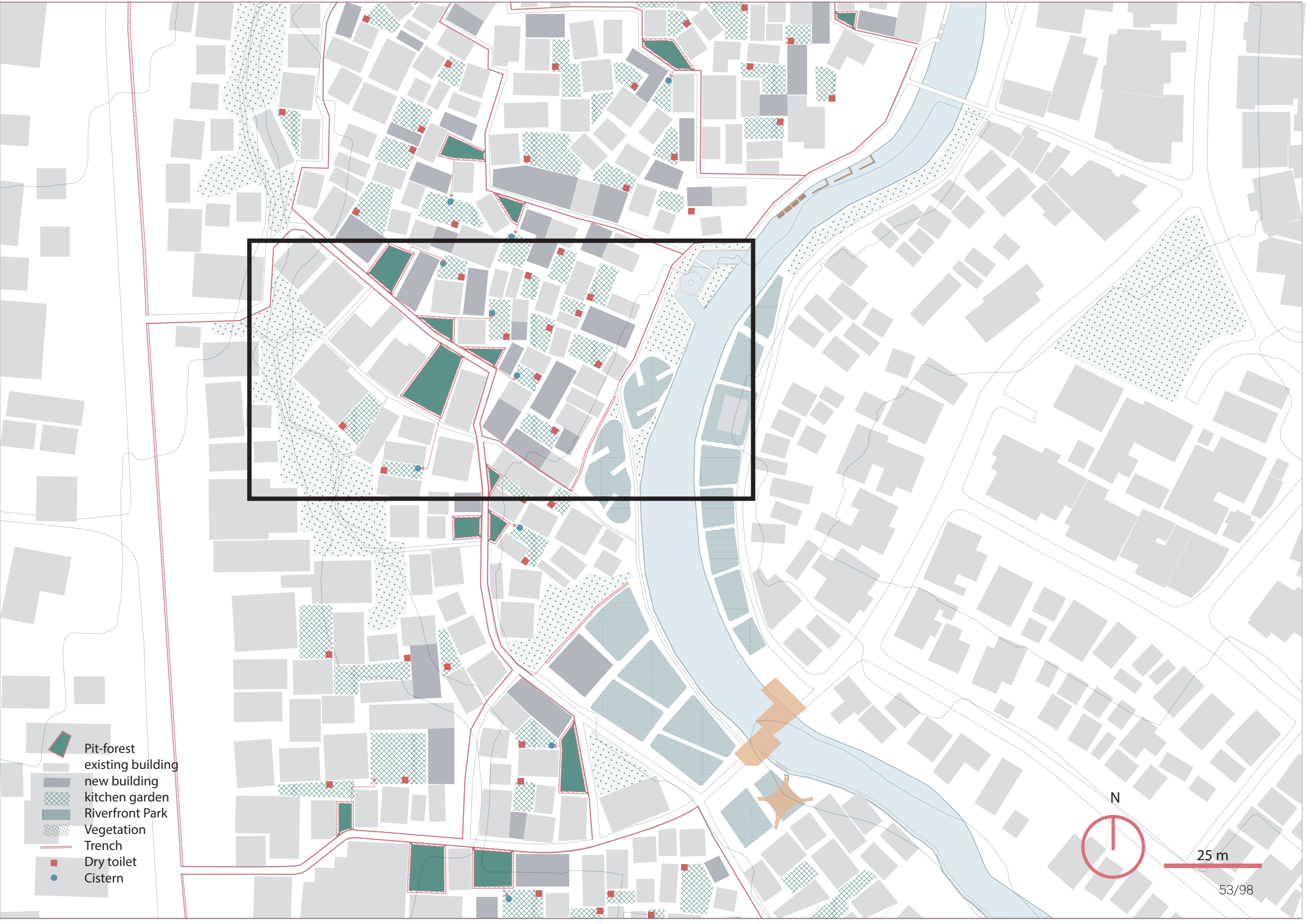
25 m

51/90

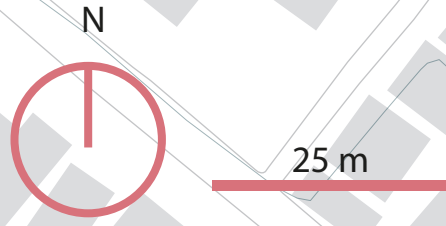
[ 3. BUILD GREEN PATCHES ]



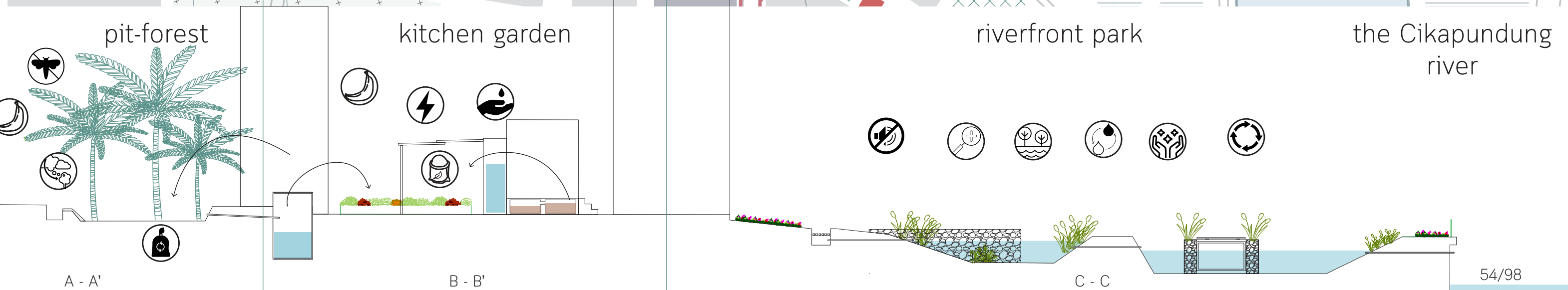
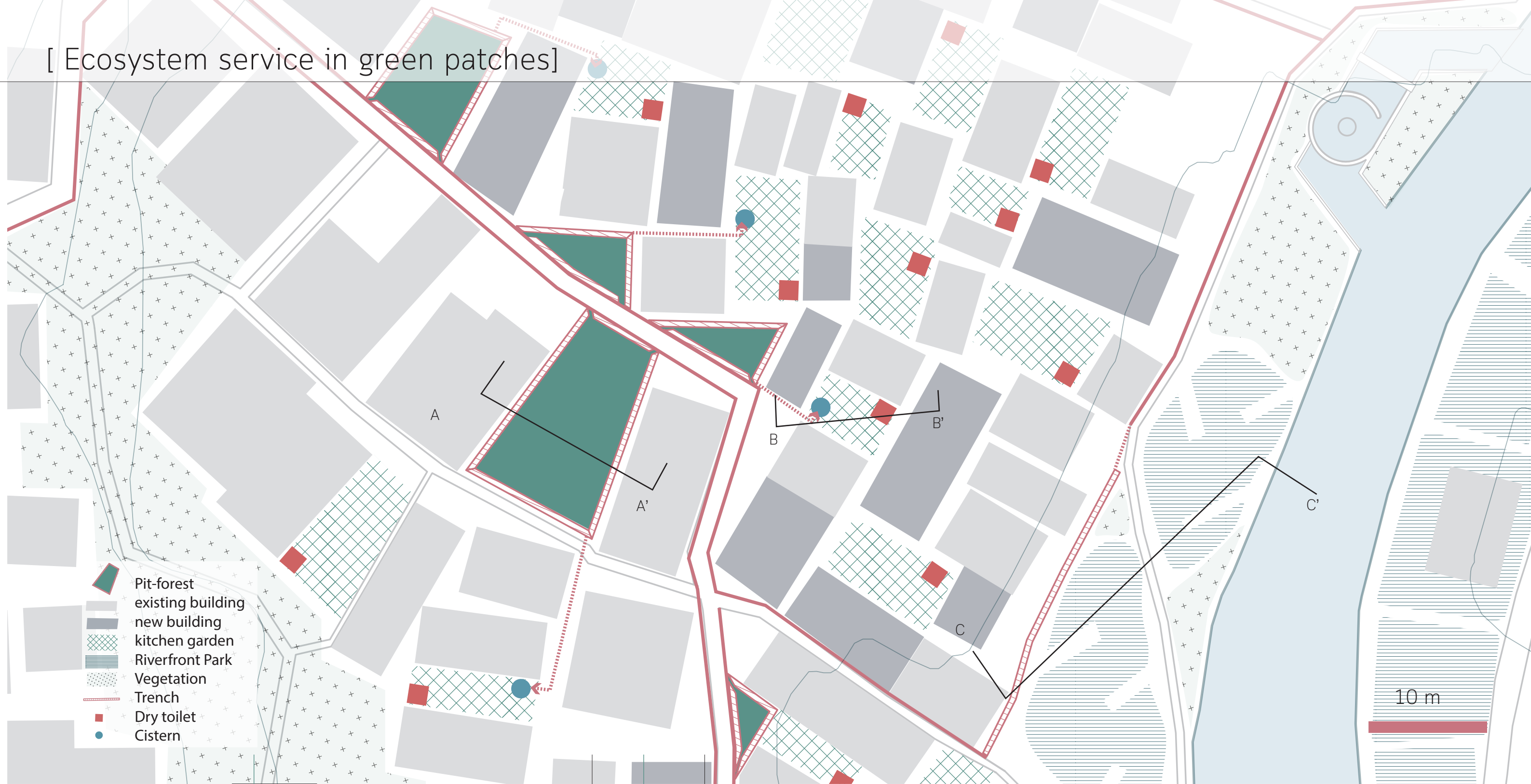




- Pit-forest
- existing building
- new building
- kitchen garden
- Riverfront Park
- Vegetation
- Trench
- Dry toilet
- Cistern

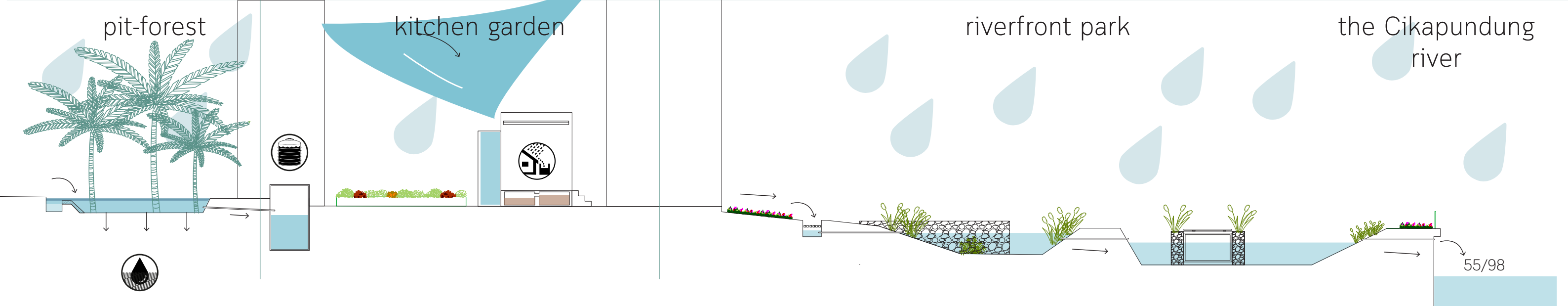
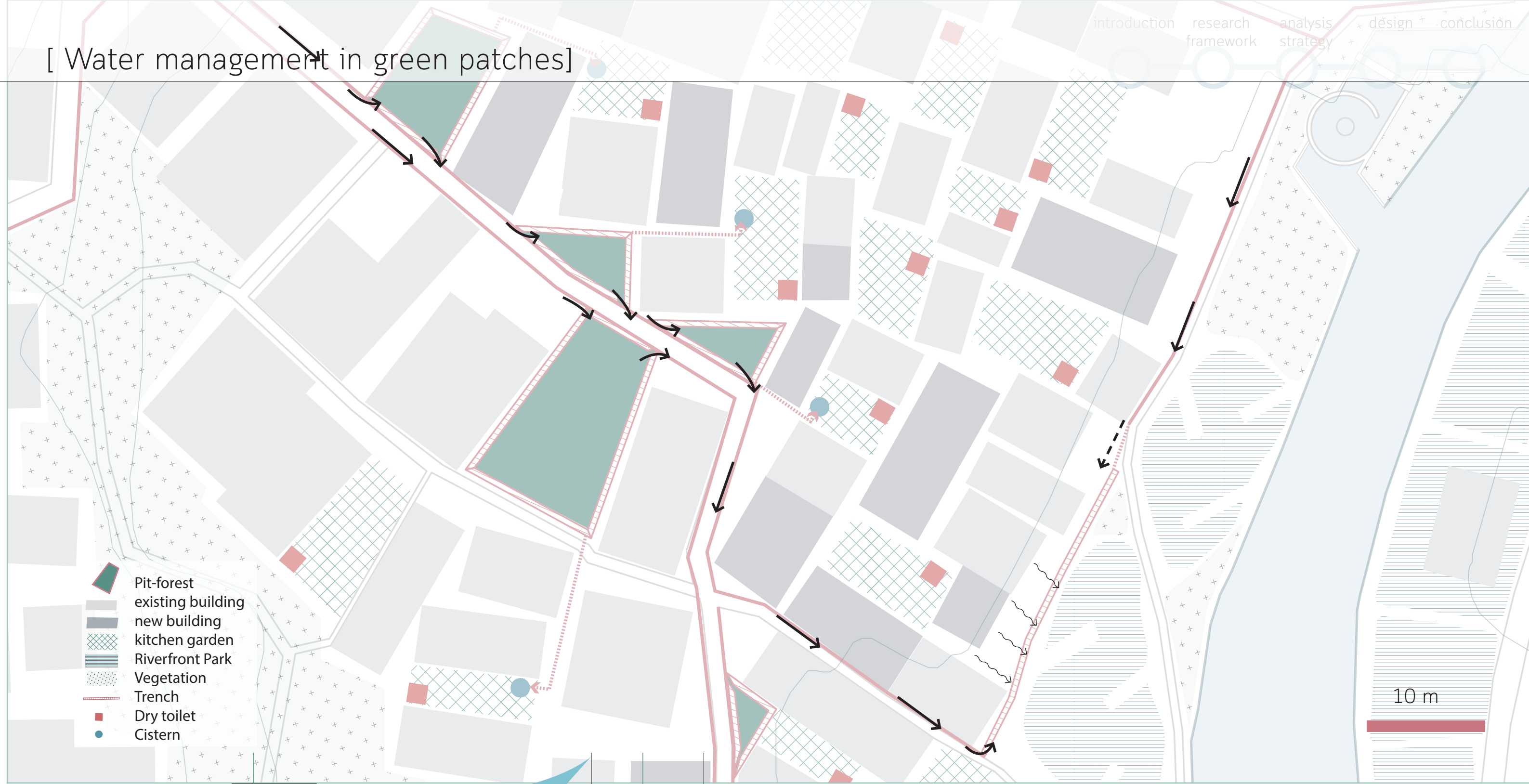


[ Ecosystem service in green patches]





[ Water management in green patches]



# [ 3. BUILD GREEN PATCHES ]

Riverfront Park

Kitchen Garden

Pit Forest

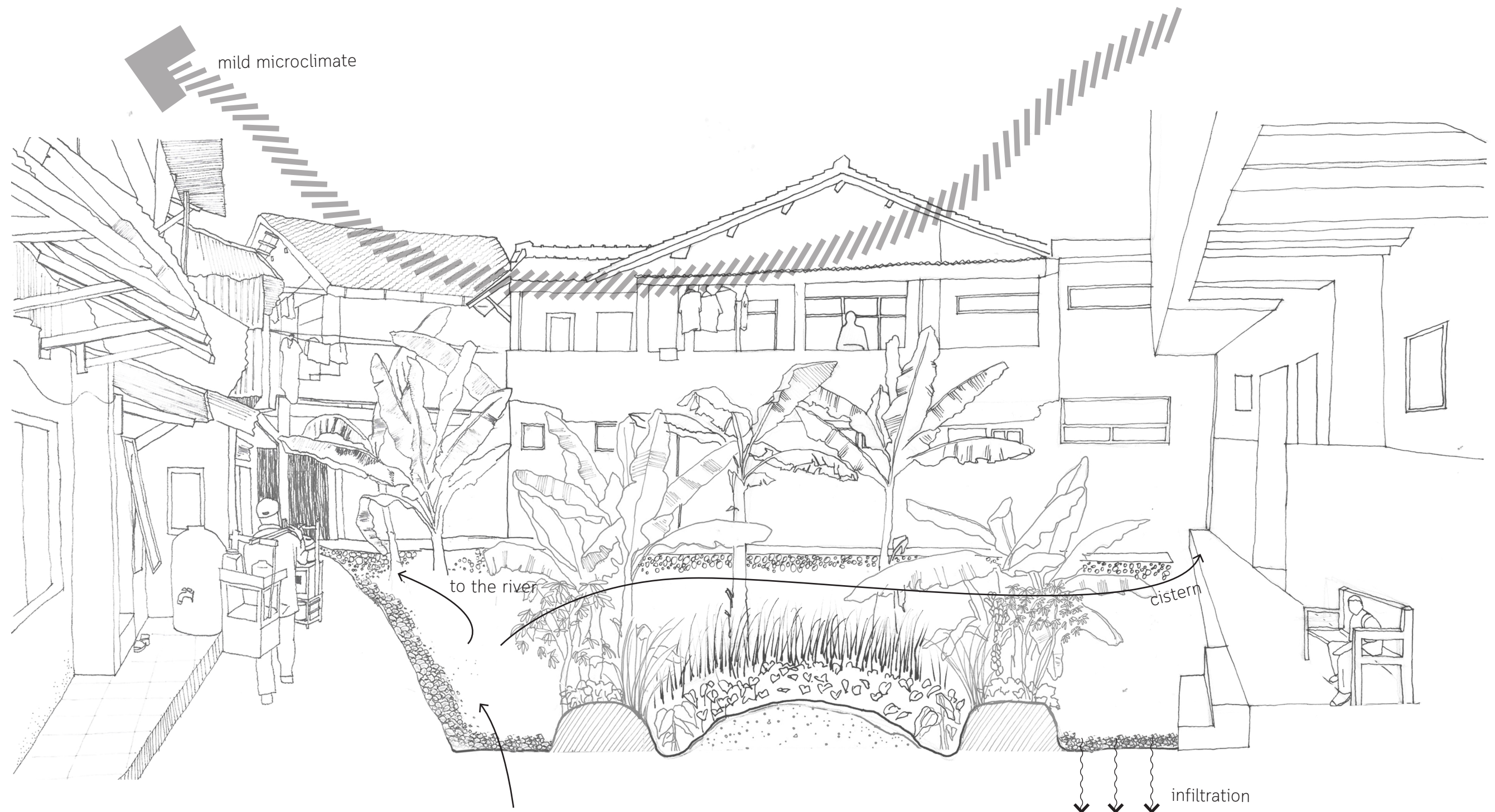








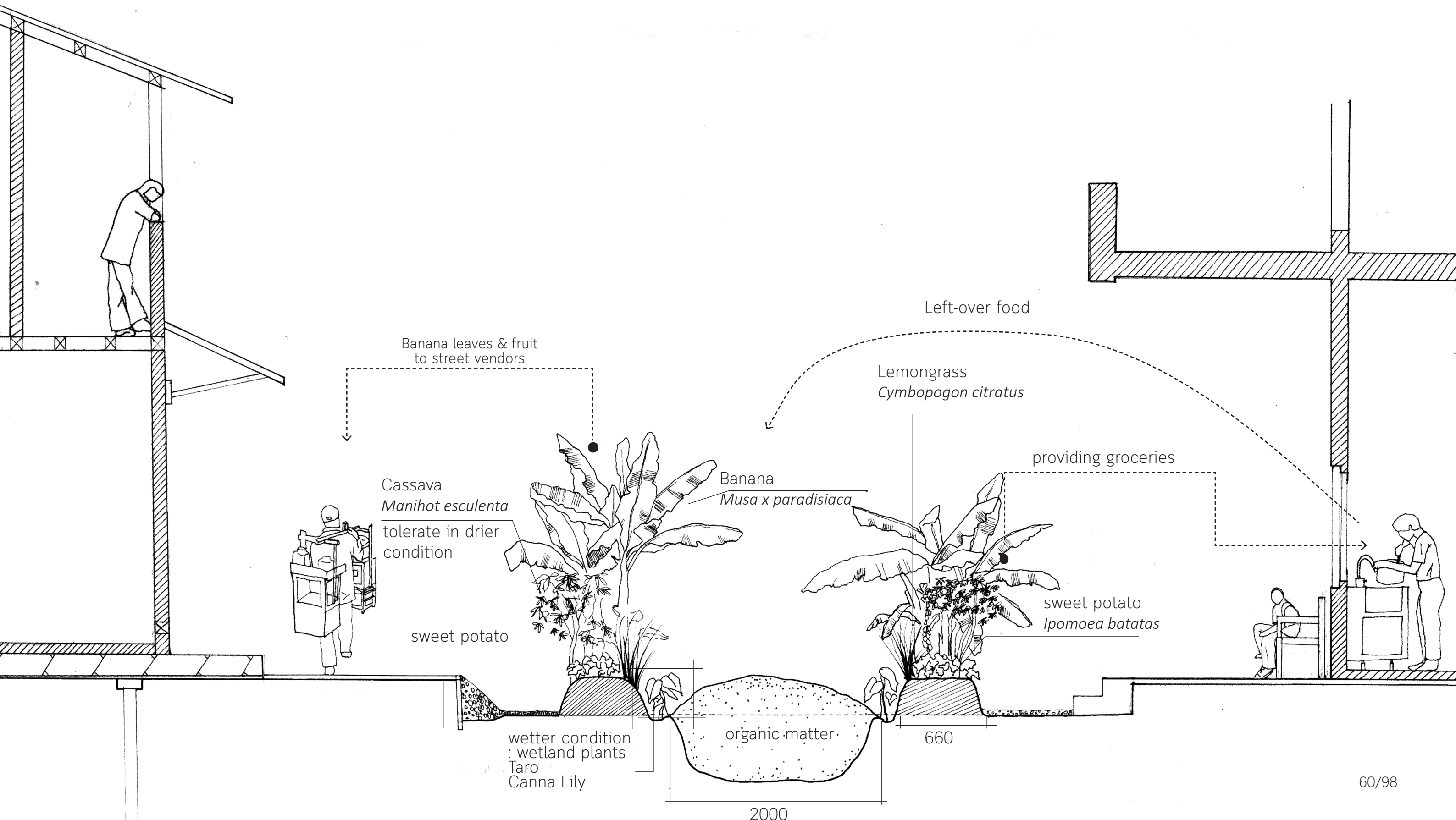




# [ Pit-forest ]

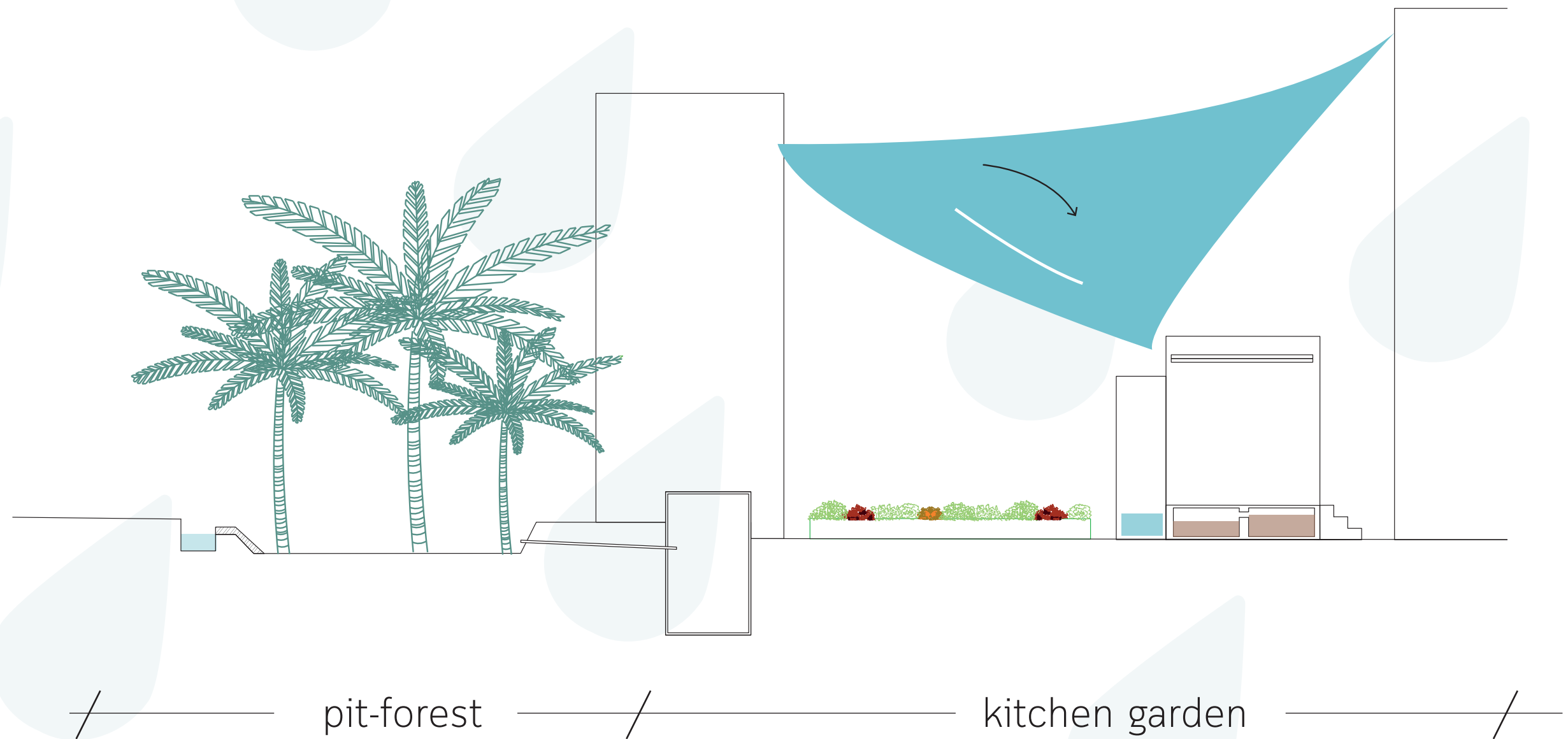
## Banana Circle

source: Mollison, B. (1988)





Water System in Pit-forest



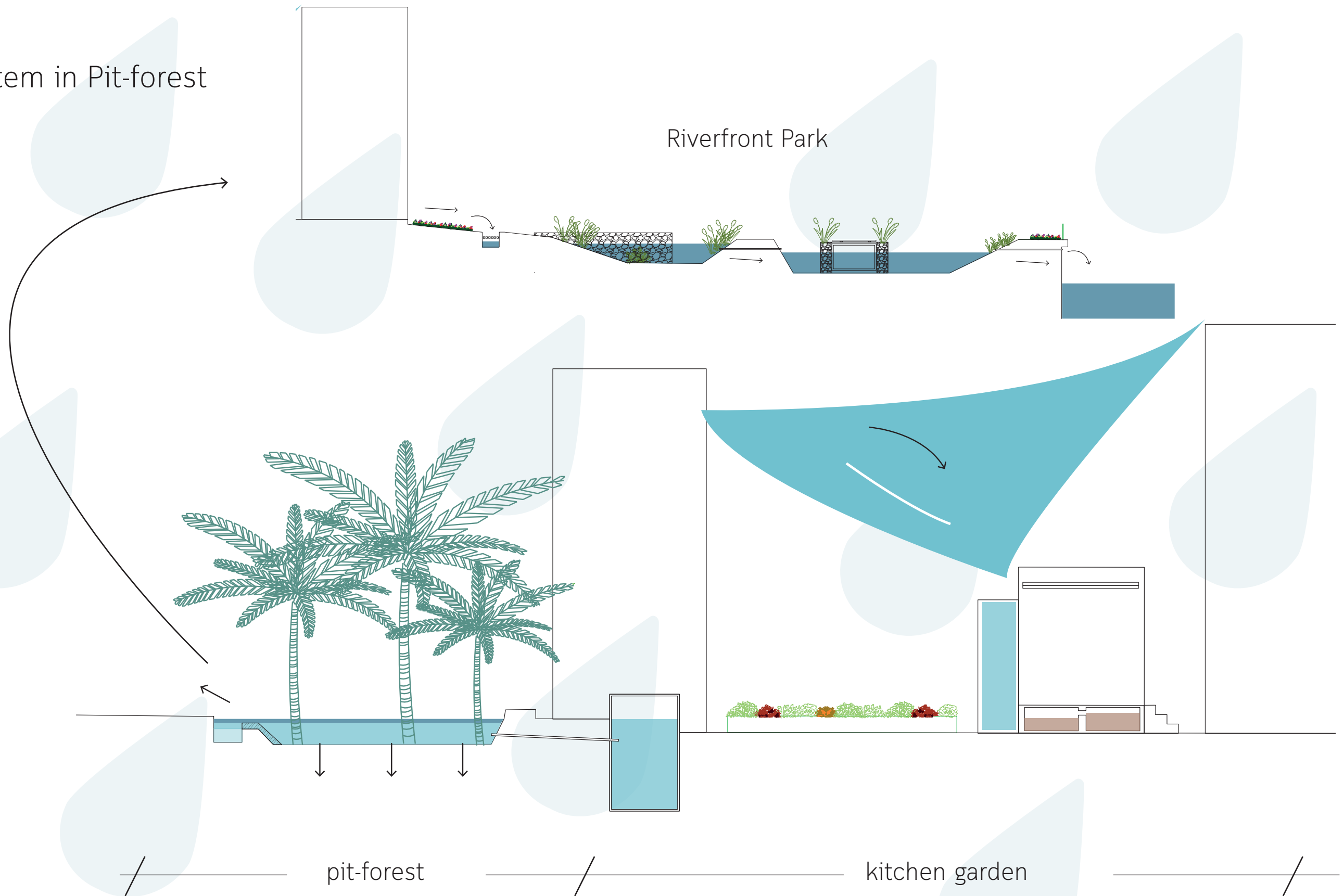
Water System in Pit-forest



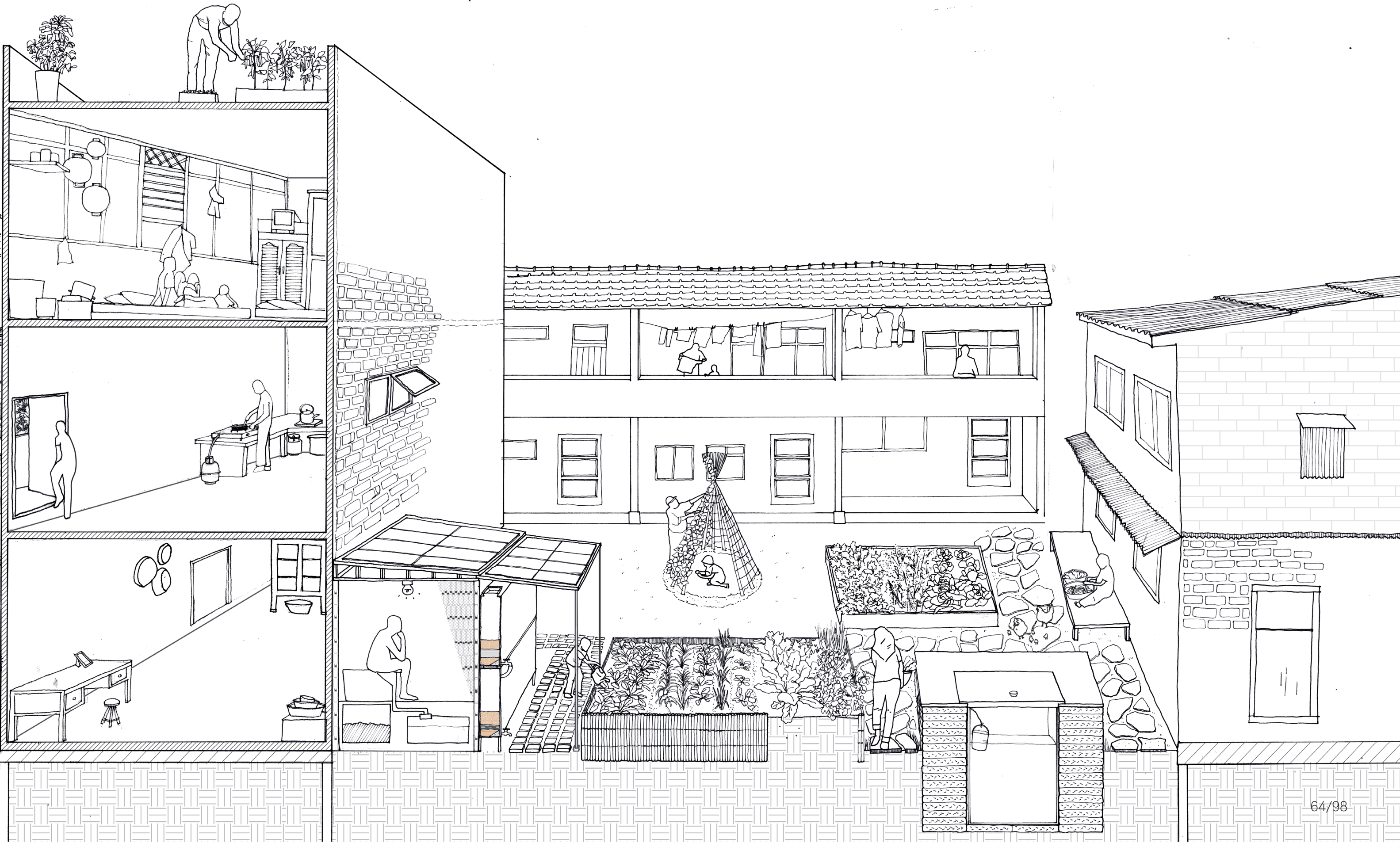


# [ Pit-forest ]

## Water System in Pit-forest

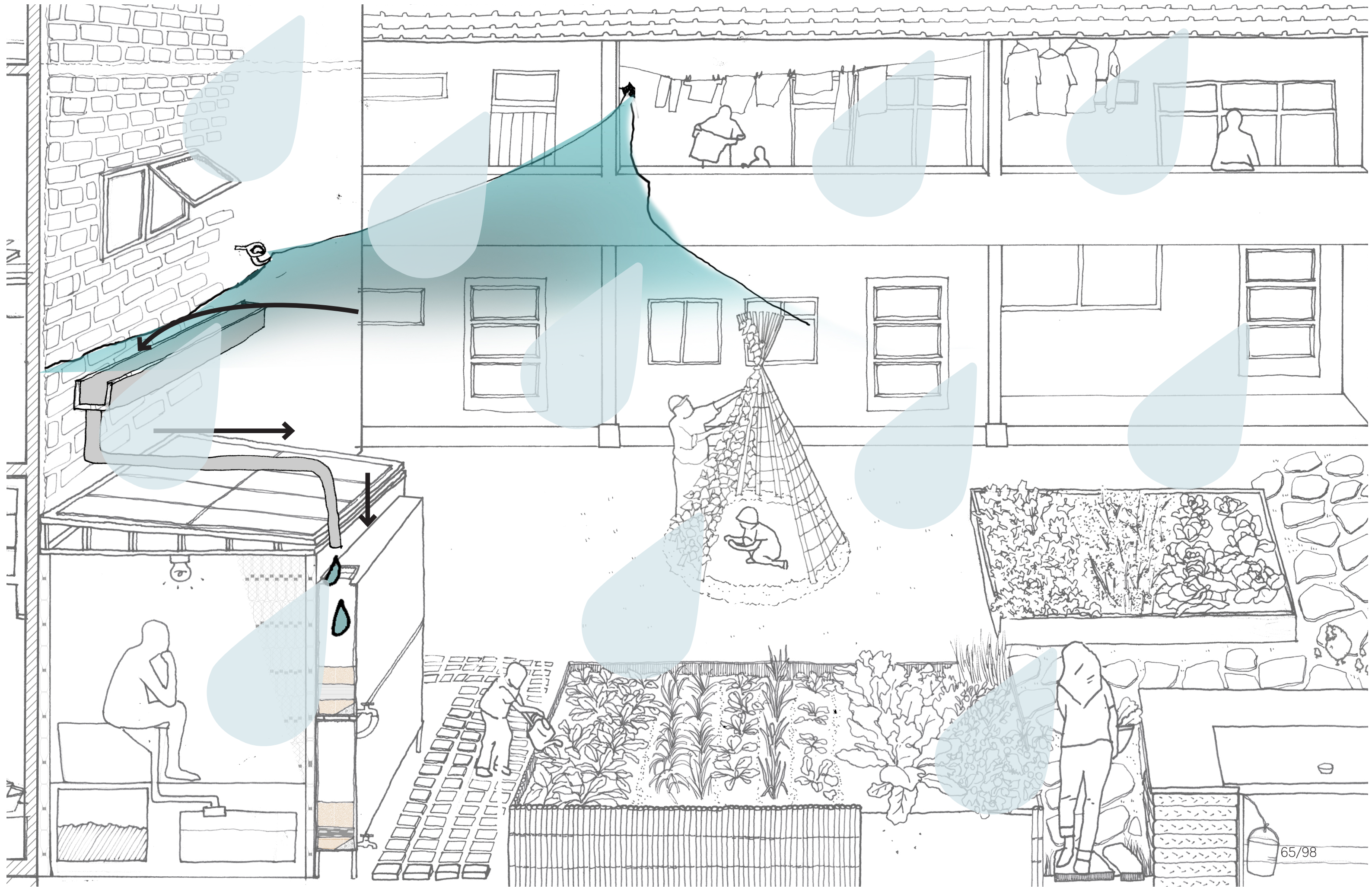


# [ Kitchen Garden ]

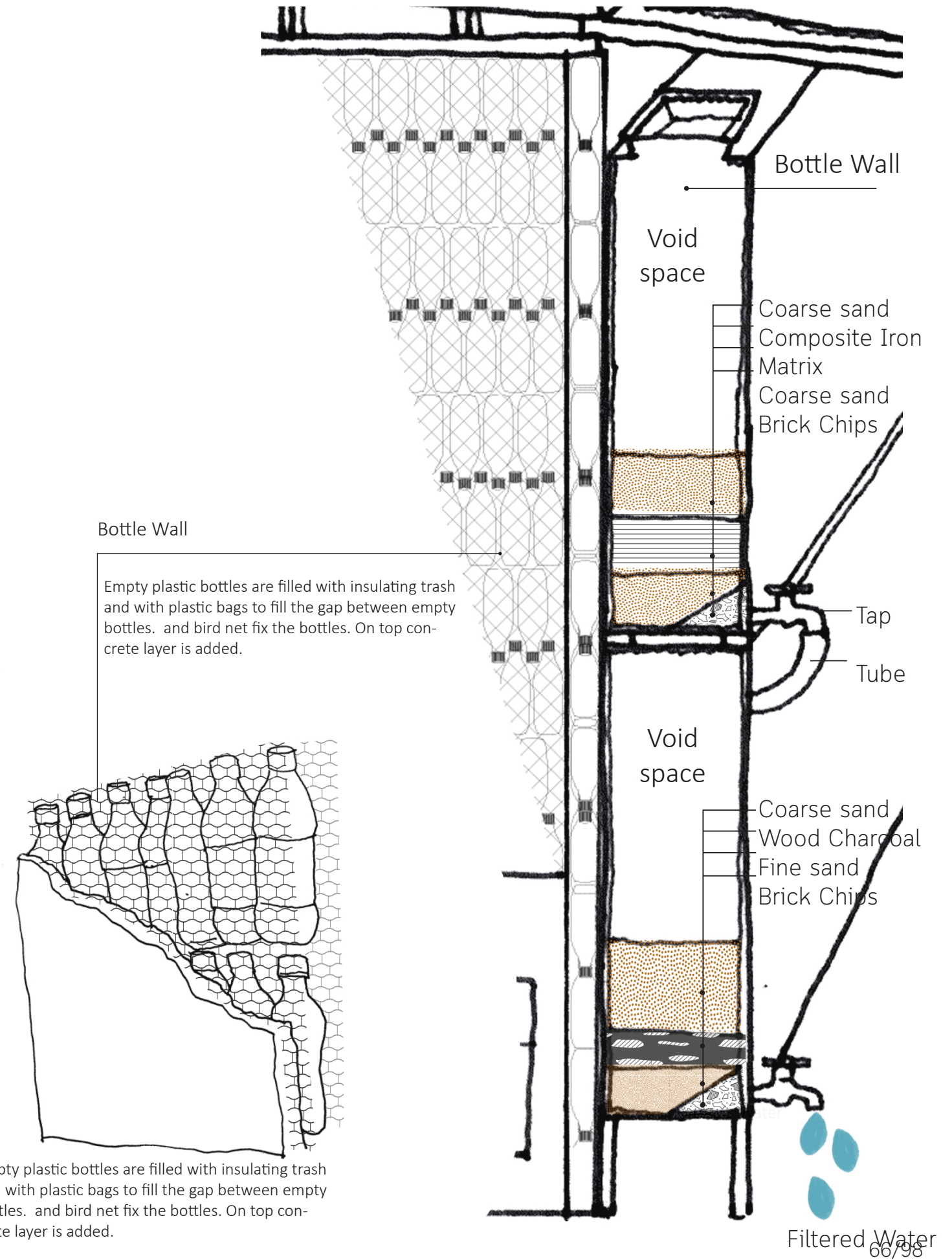
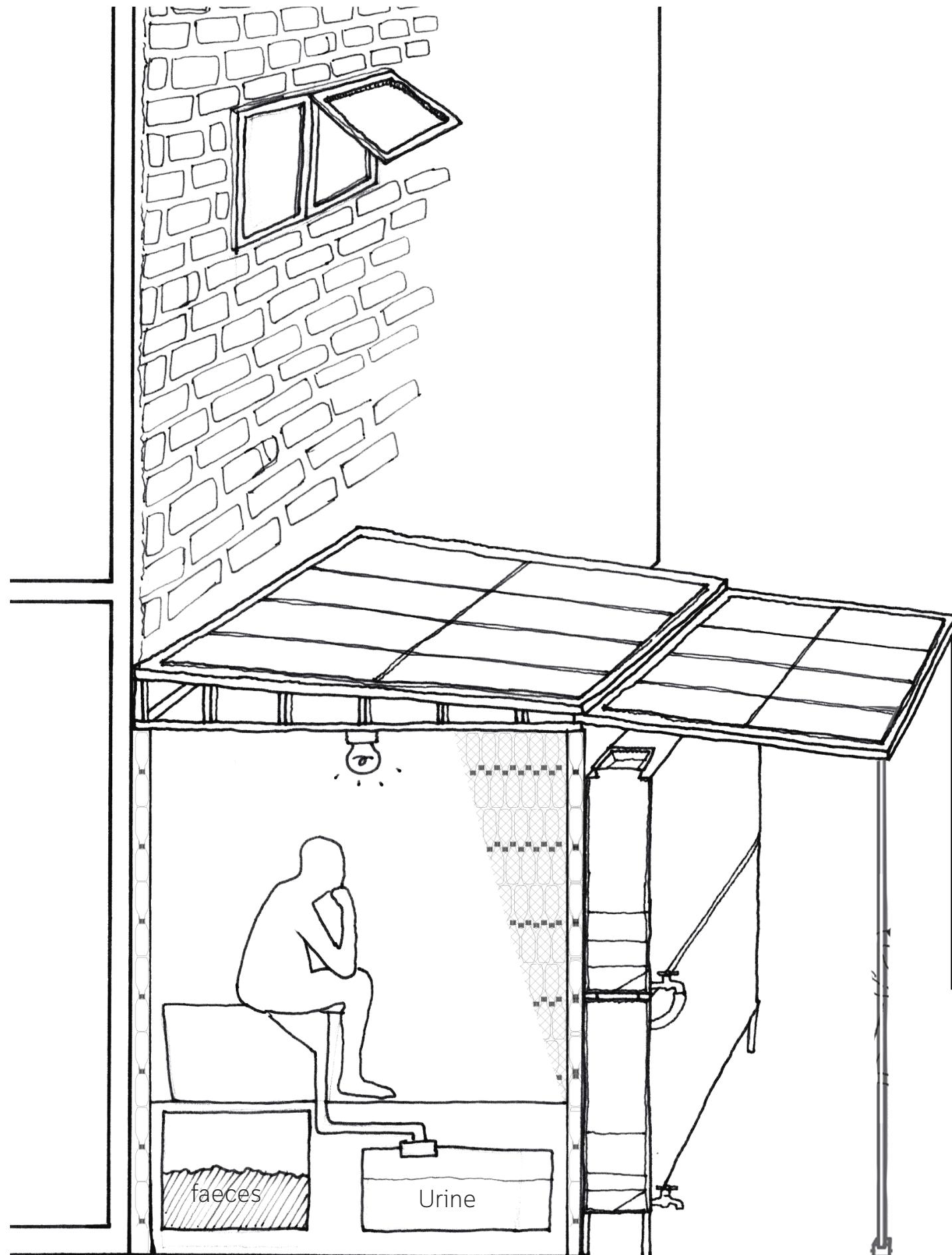




# [ Kitchen Garden ]





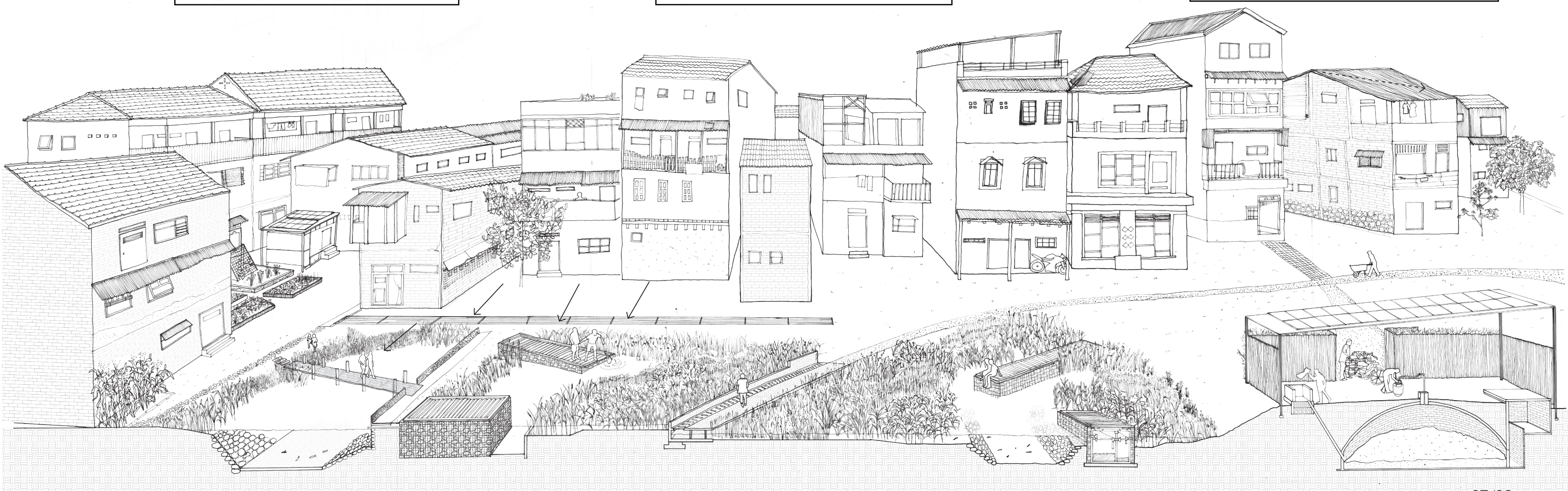




Sedimentation Pond

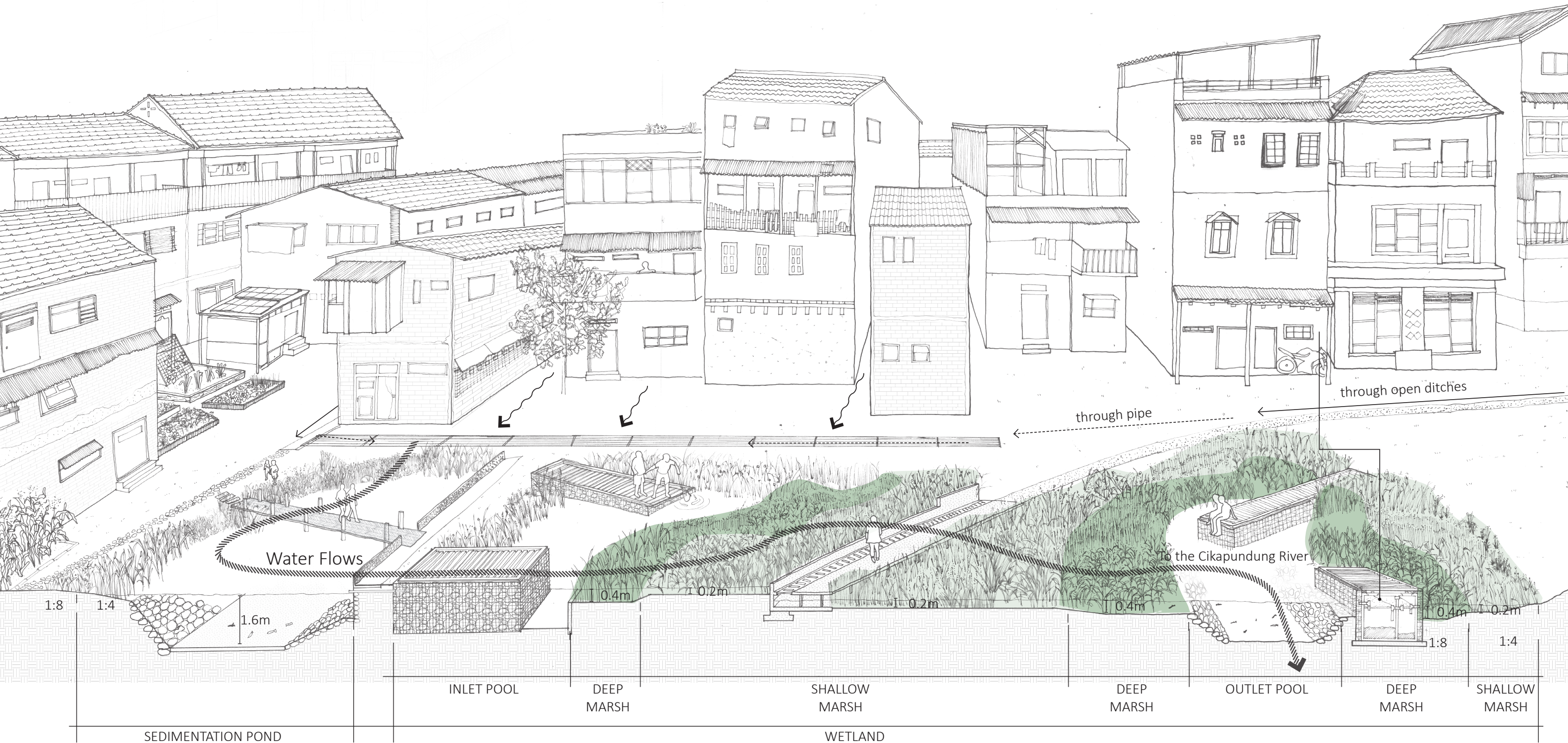
Constructed Wetland

Biogas Digester Plant



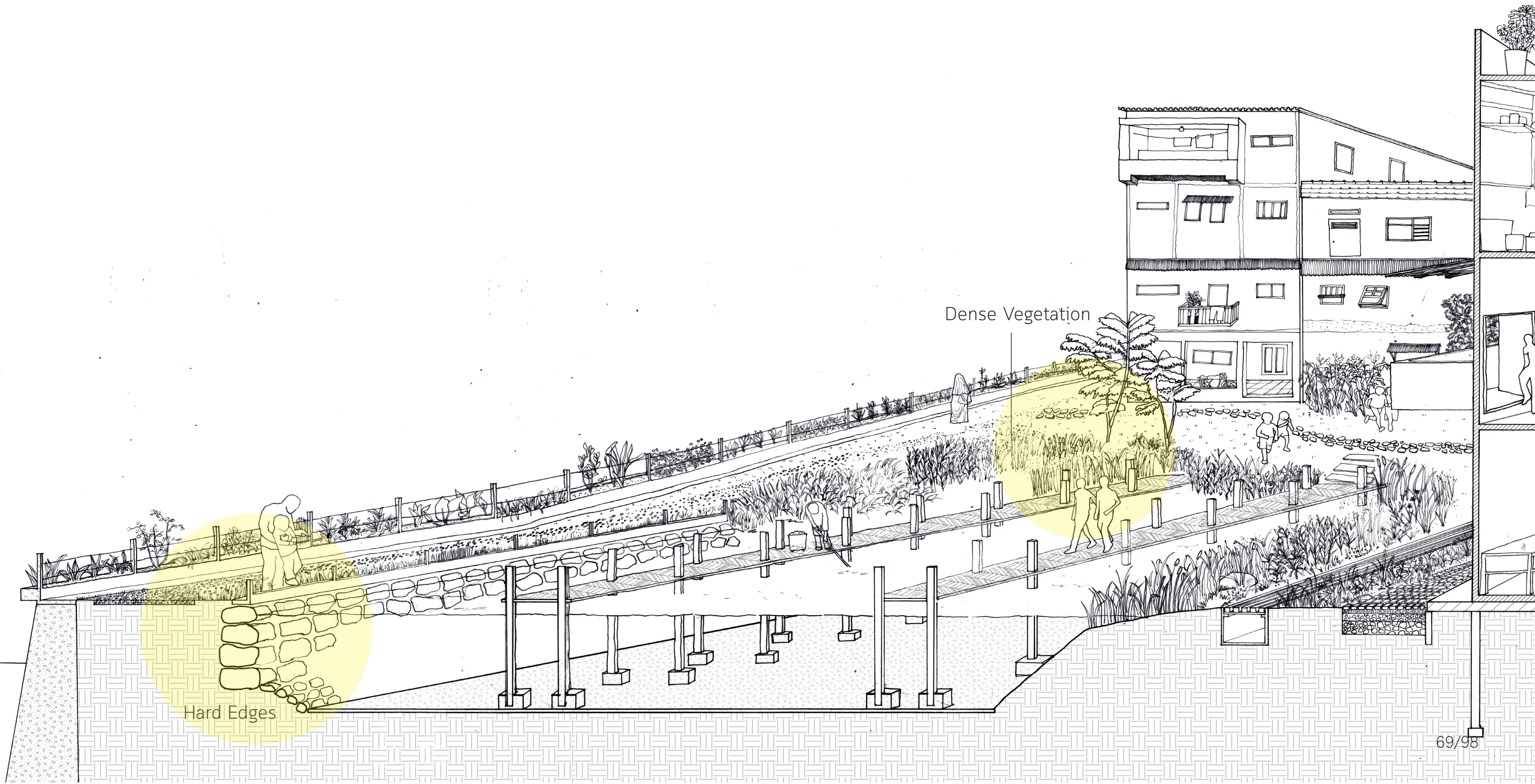


## Water Purification using Bioremediation



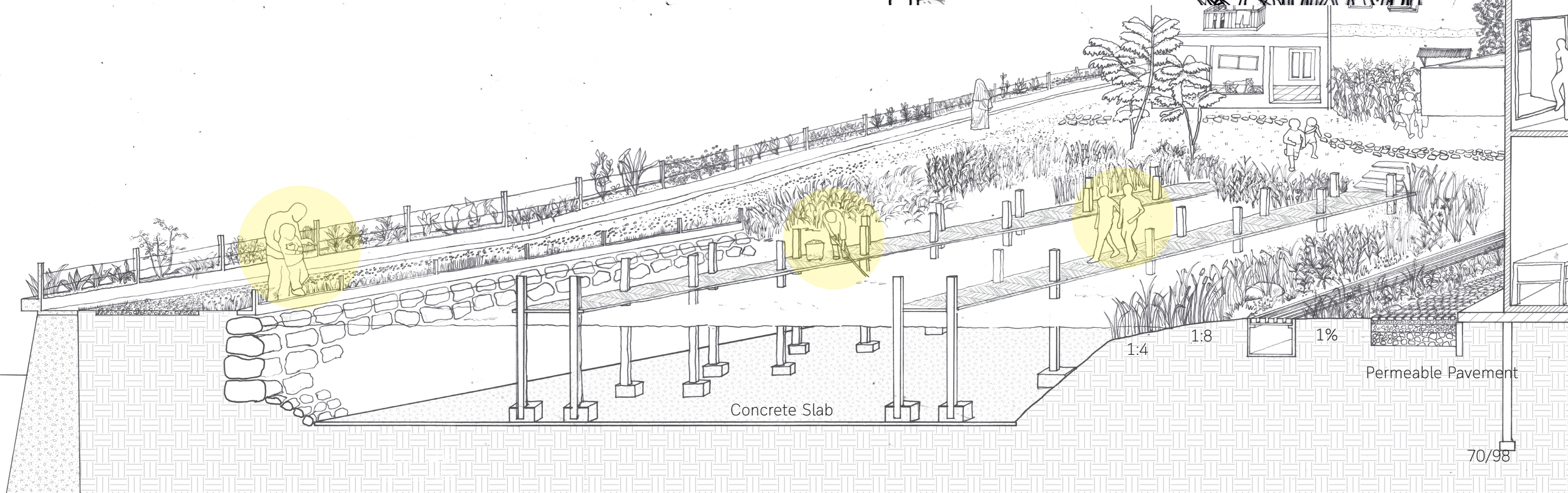
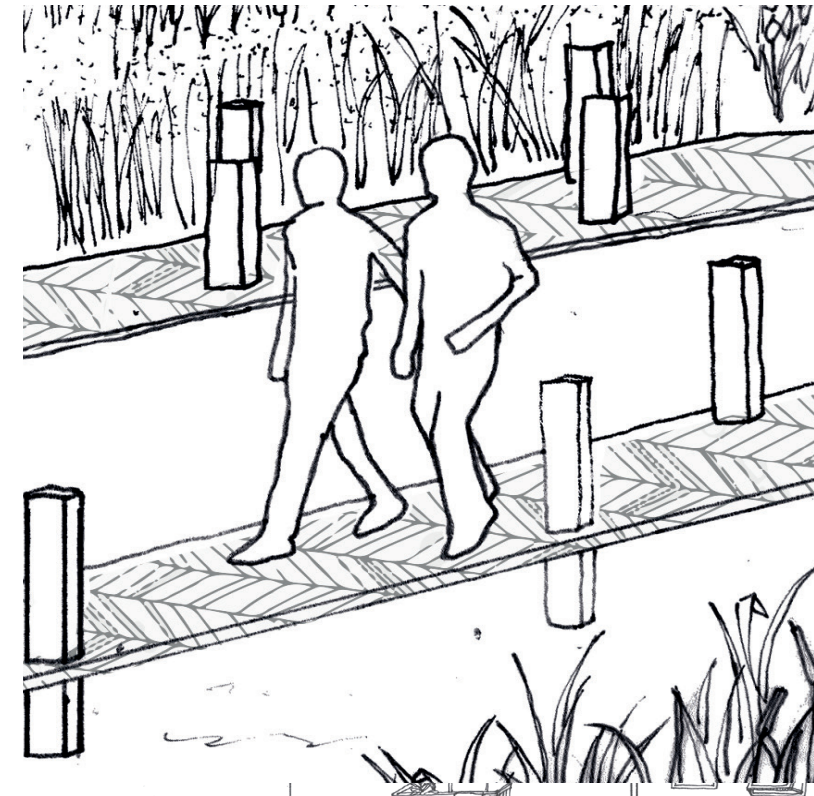
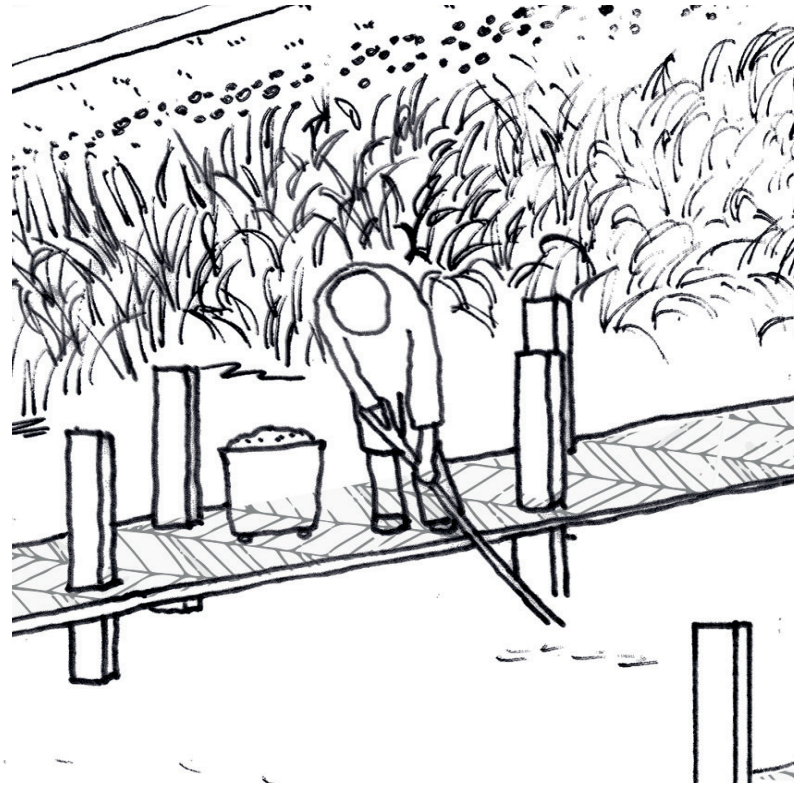


## Sediment pond





Sediment pond



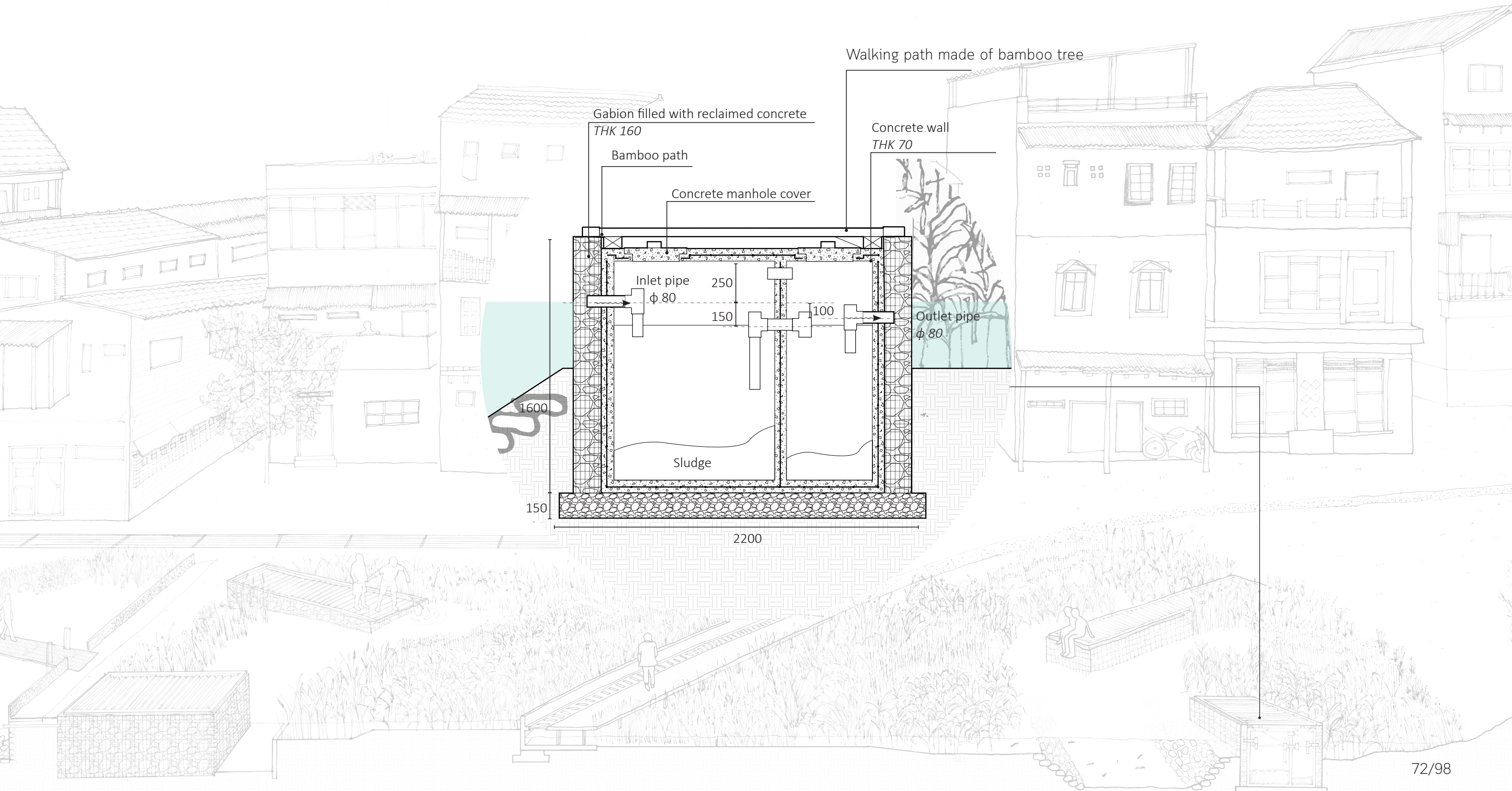


## Planting Plan



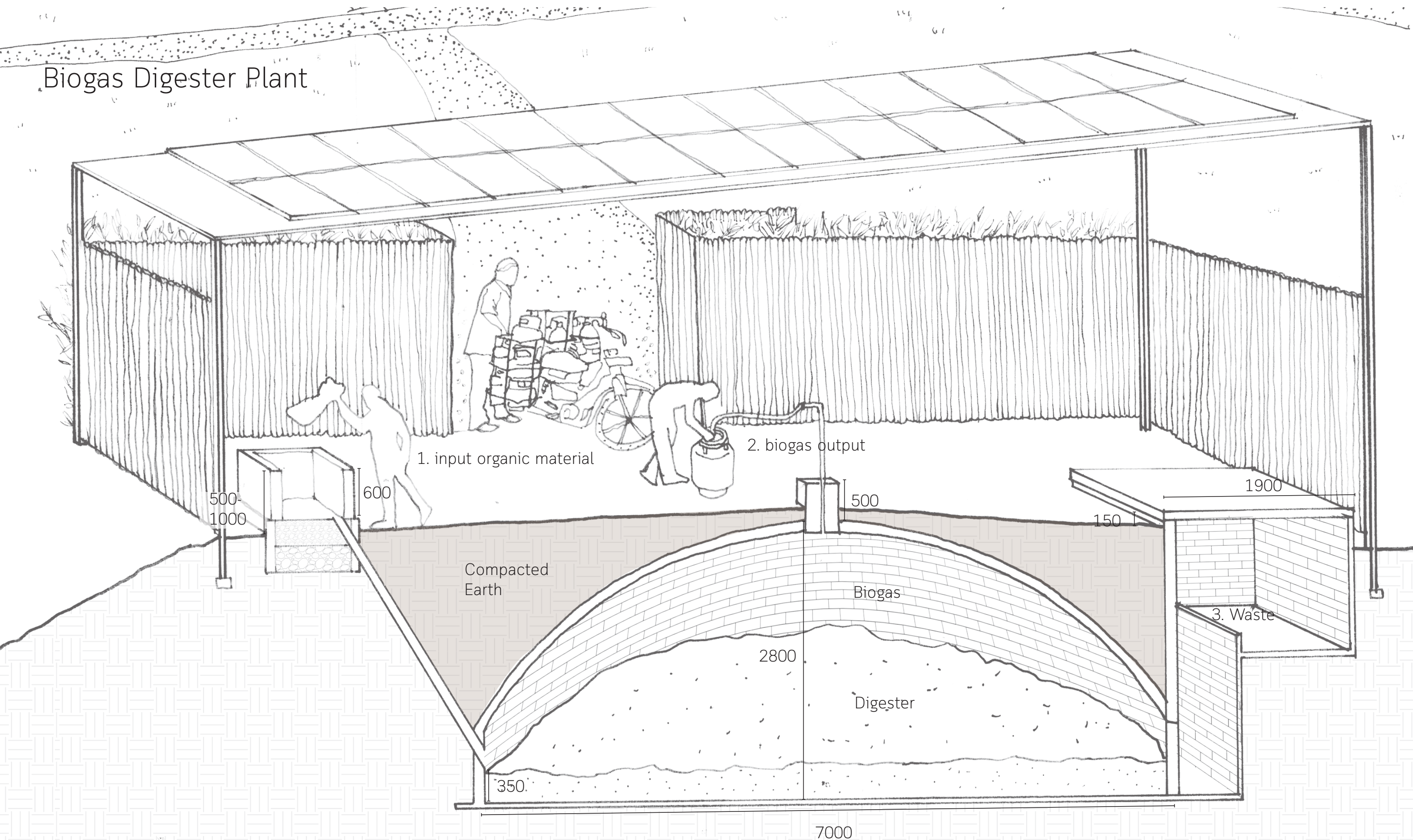


## Sedimentation Reservoir





## Biogas Digester Plant

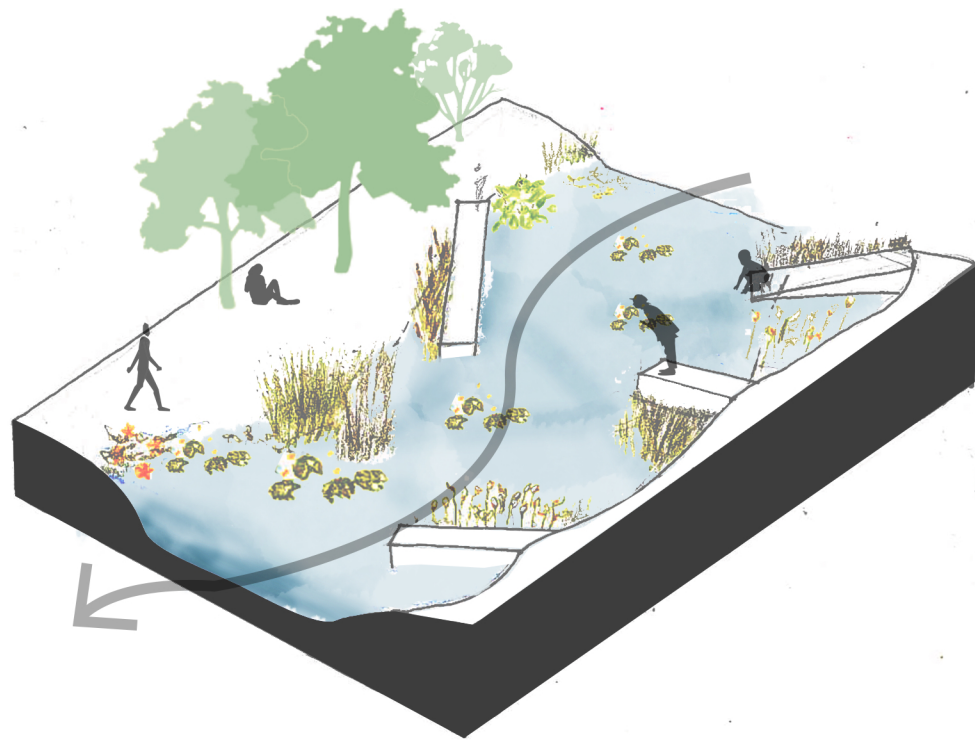




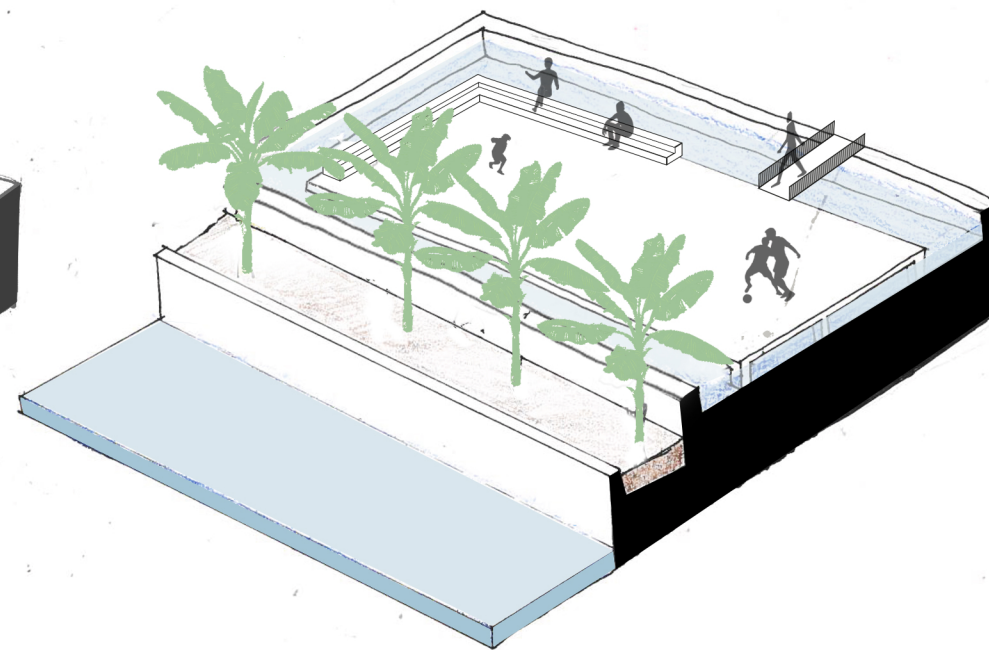




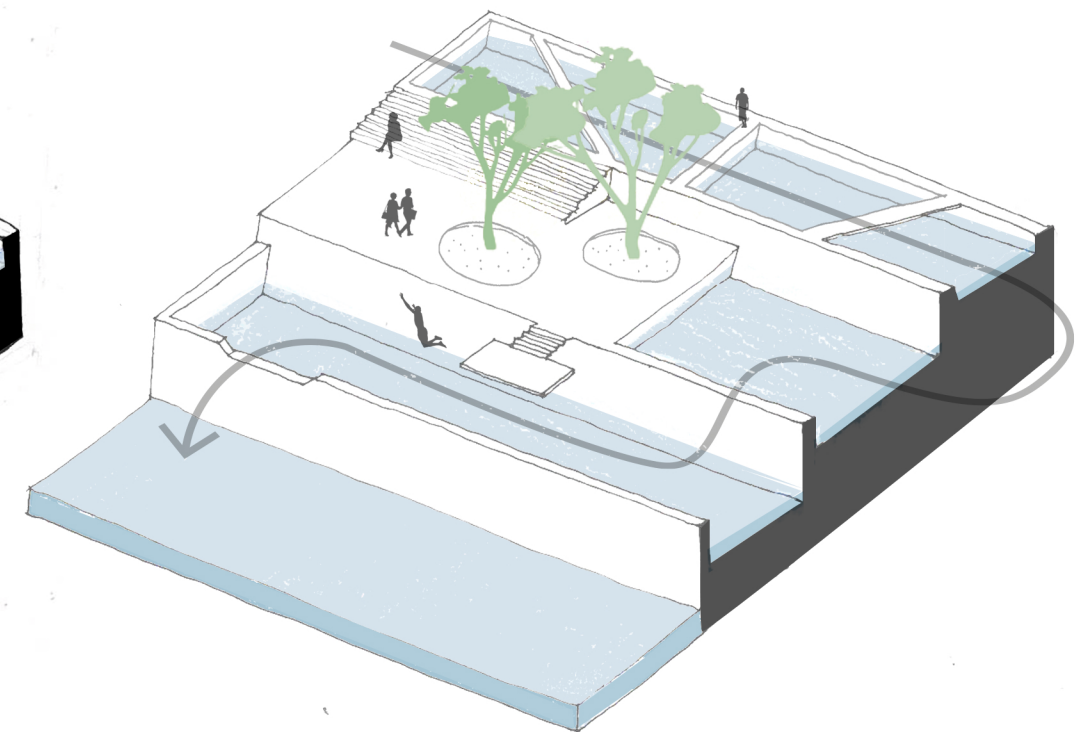
Riverfront Park Typology



ecological value



openspace for recreation



visible water cycle  
& bioremediation





I AM A MICRO-URBAN FARMER AND SELL VEGETABLES TO MY SON'S SCHOOL

DRY TOILET DOES NOT NEED TO FLUSH. WE CAN USE WASTE AS FERTILIZER AFTER COMPOSTING

GREEN ROOFS MAKE THE KAMPUNG GREENER

THIS IS MY PLAYGROUND

IF PLOT IS SMALL, WHAT ABOUT VERTICAL GARDENS?

I CAN WALK ALONG THE RIVER!

RAIN WATER IS COLLECTED BY RECYCLED CLOTH

HOUSES ALONG THE RIVERS ARE HIGHER AFTER RELOCATION

CLEAN RIVER GENERATES ELECTRICITY

WE MEET AND TALK WHILE GROWING OUR KITCHEN GARDEN

I GET THE INGREDIENTS FROM THIS PIT FOREST TO SELL MY FOODS ON THE STREET

I GET BIOGAS FOR COOKING BY MAINTAINING THE CONSTRUCTED WETLAND!

REEDS CLEAN THE STORMWATER AS WELL AS ARE GOOD BIOMASS

FREE FROM CONCRETE BUILDINGS!

YOU CAN THROW ORGANIC WASTE IN THE PIT FOREST

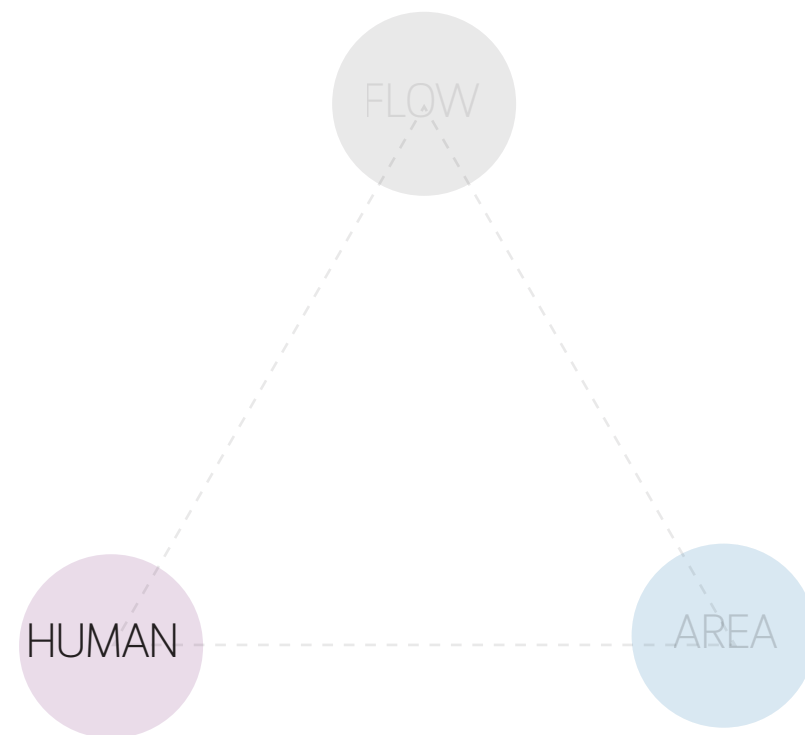
UNCOVERED CONCRETE GROUND

WE EAT MOSQUITOES!

USING LOCAL AND RECYCLED MATERIAL IS REASONABLE :)

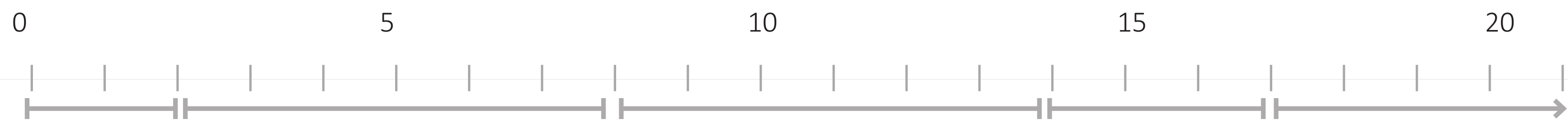
WELCOME TO KAMPUNG TAMANSARI



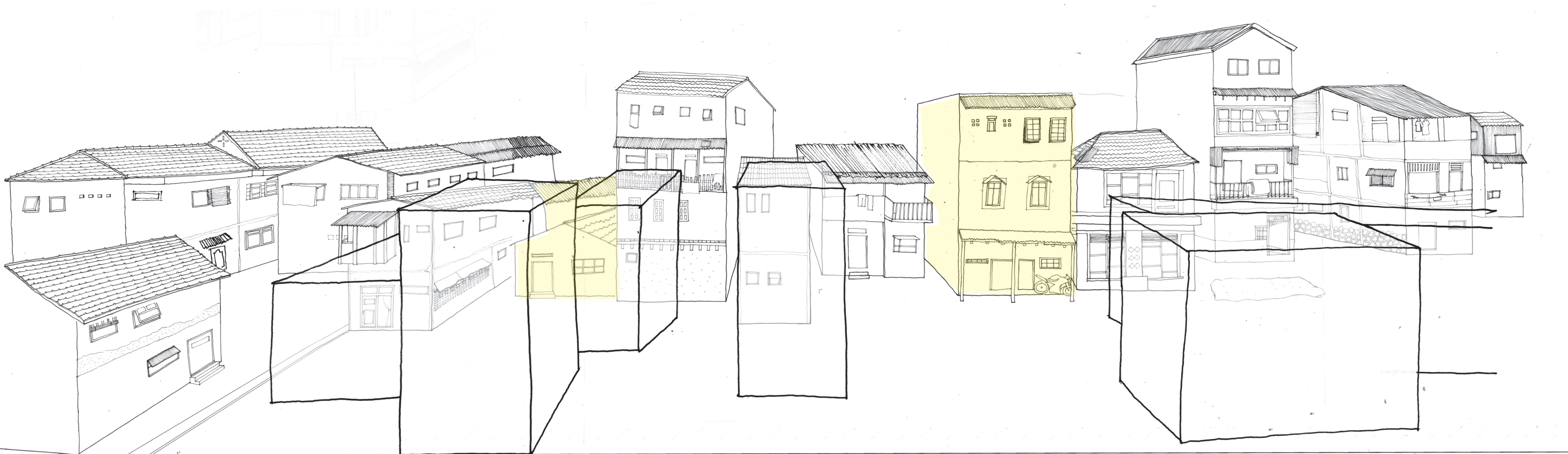


# [ PHASE DEVELOPMENT ]

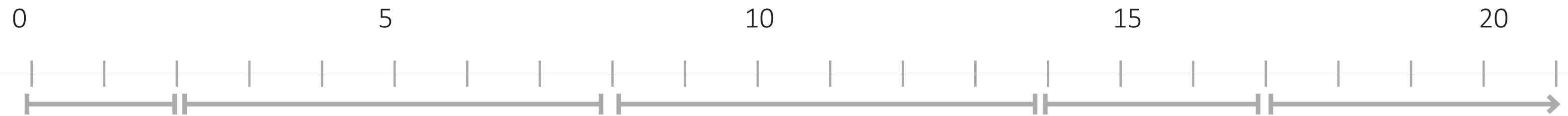
: Incremental Development & Bottom-up strategy



workshop  
urban gardening  
New houses

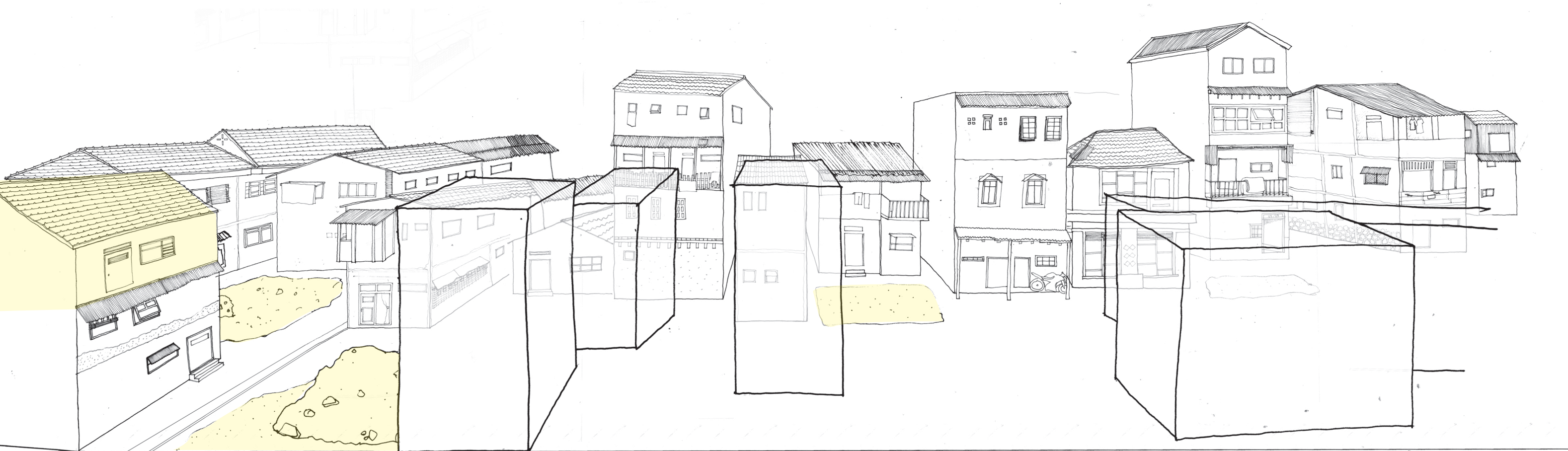


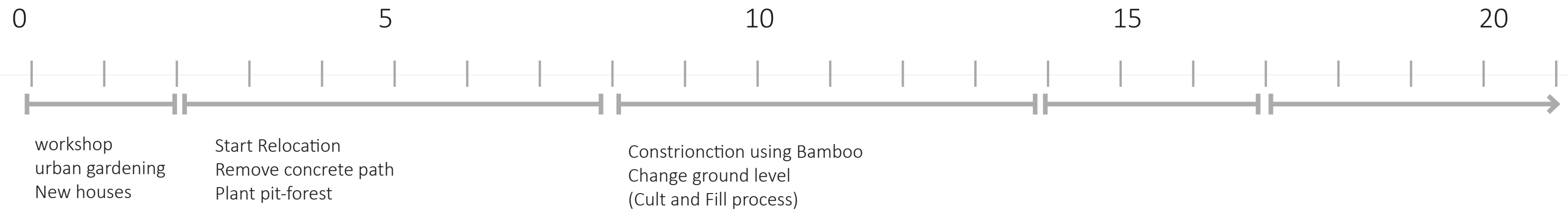




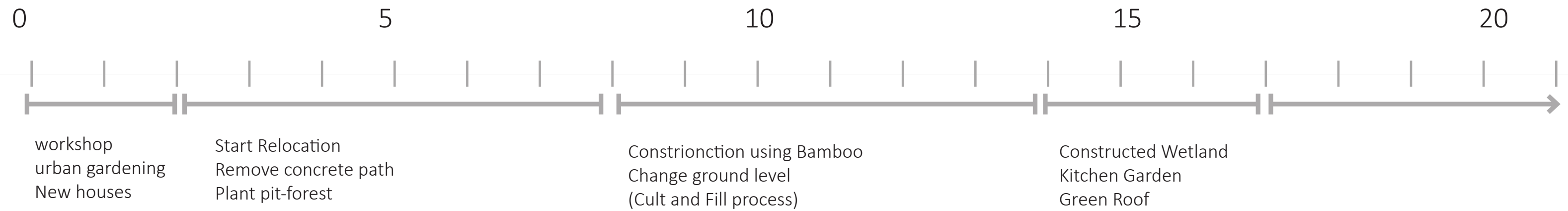
workshop  
urban gardening  
New houses

Start Relocation  
Remove concrete path  
Plant pit-forest mostly Bamboo

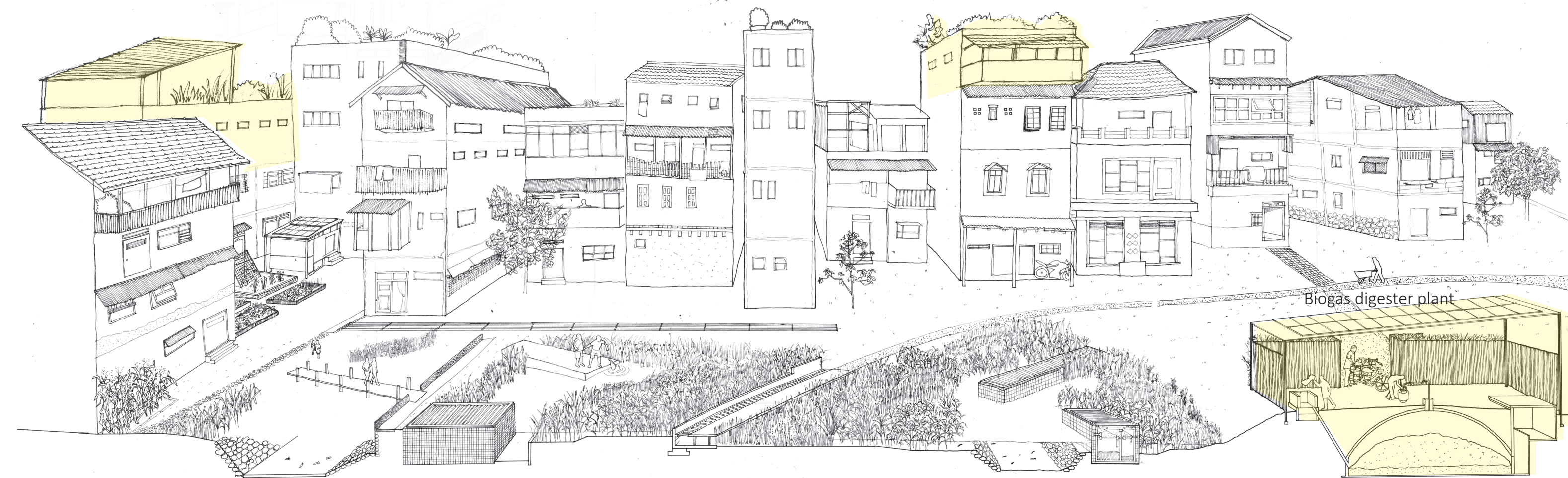
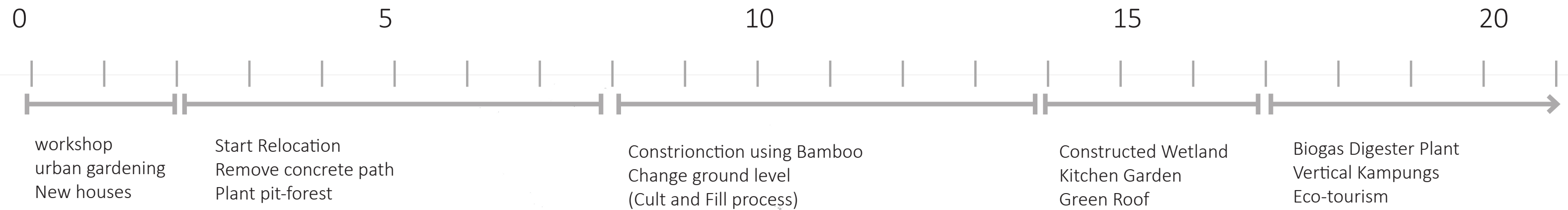




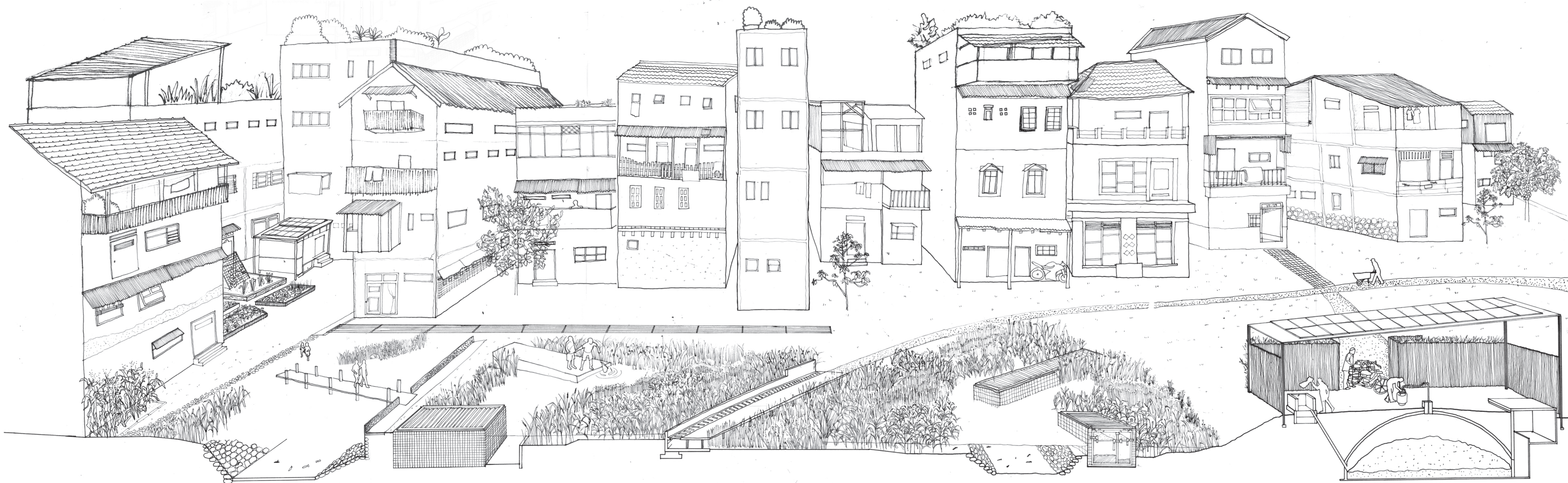


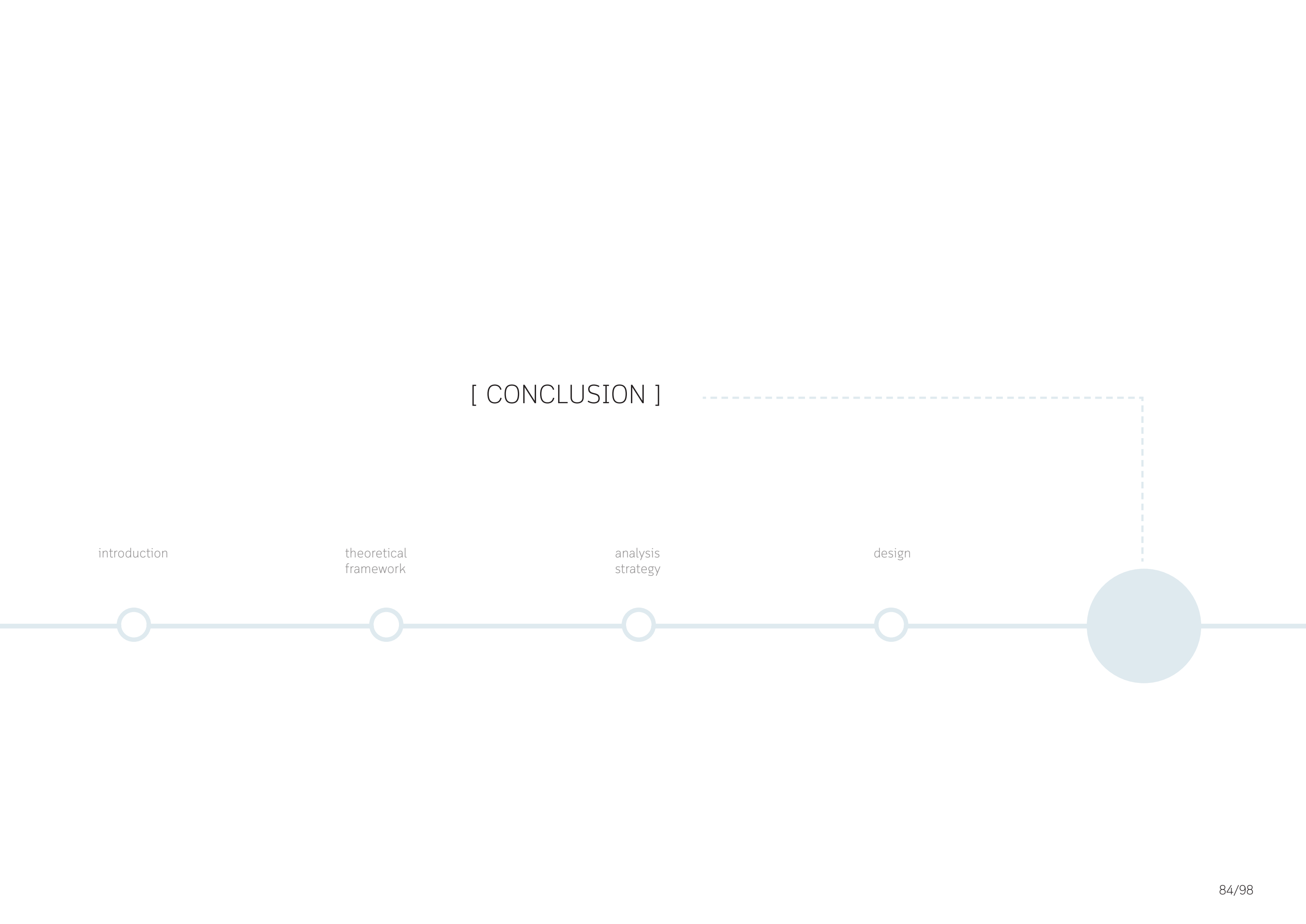






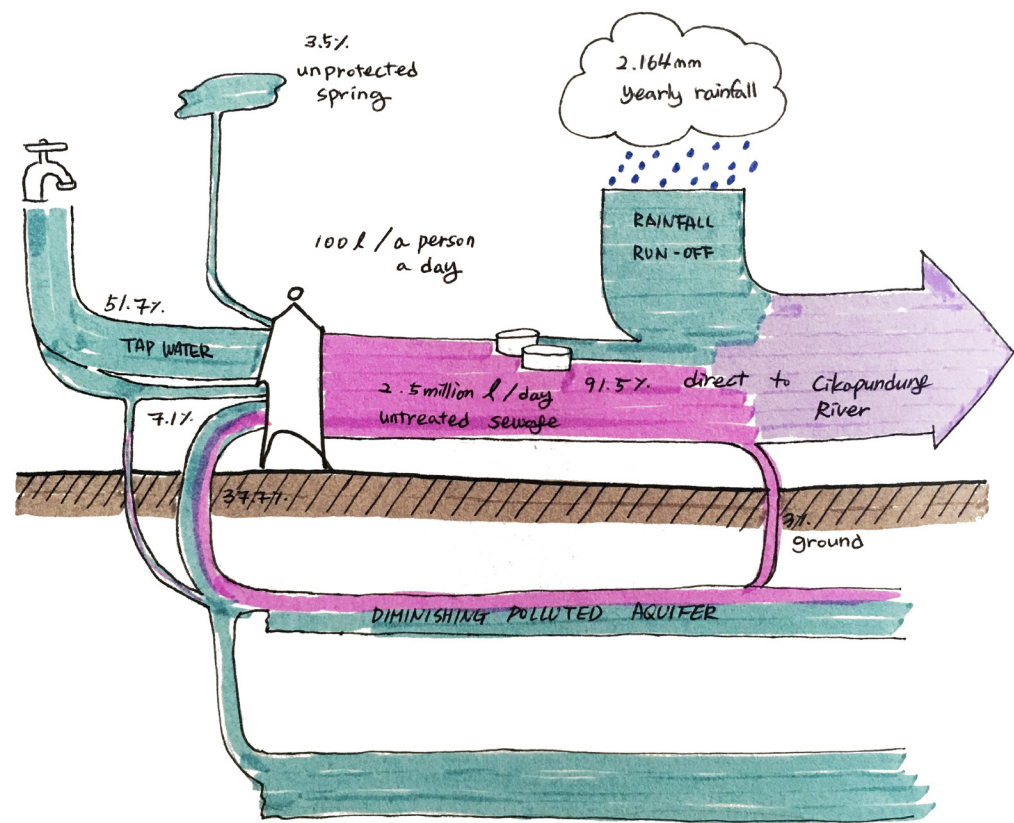




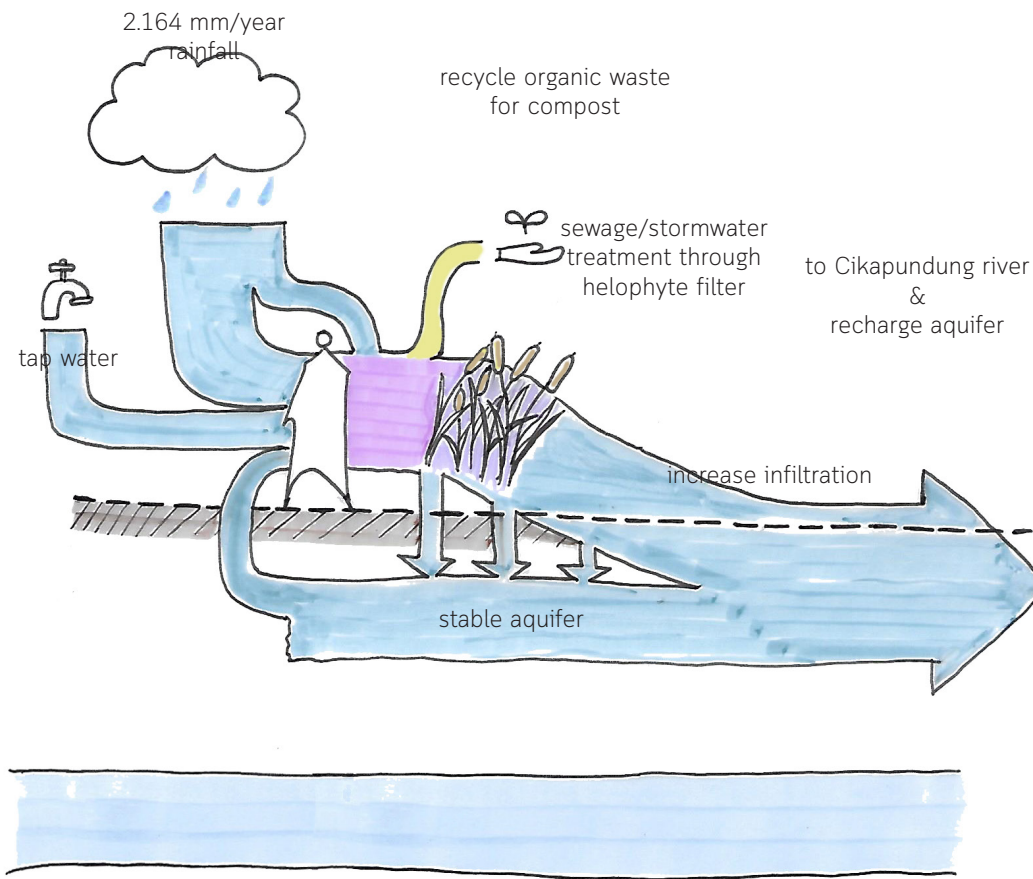




# [ Circular Water System ]

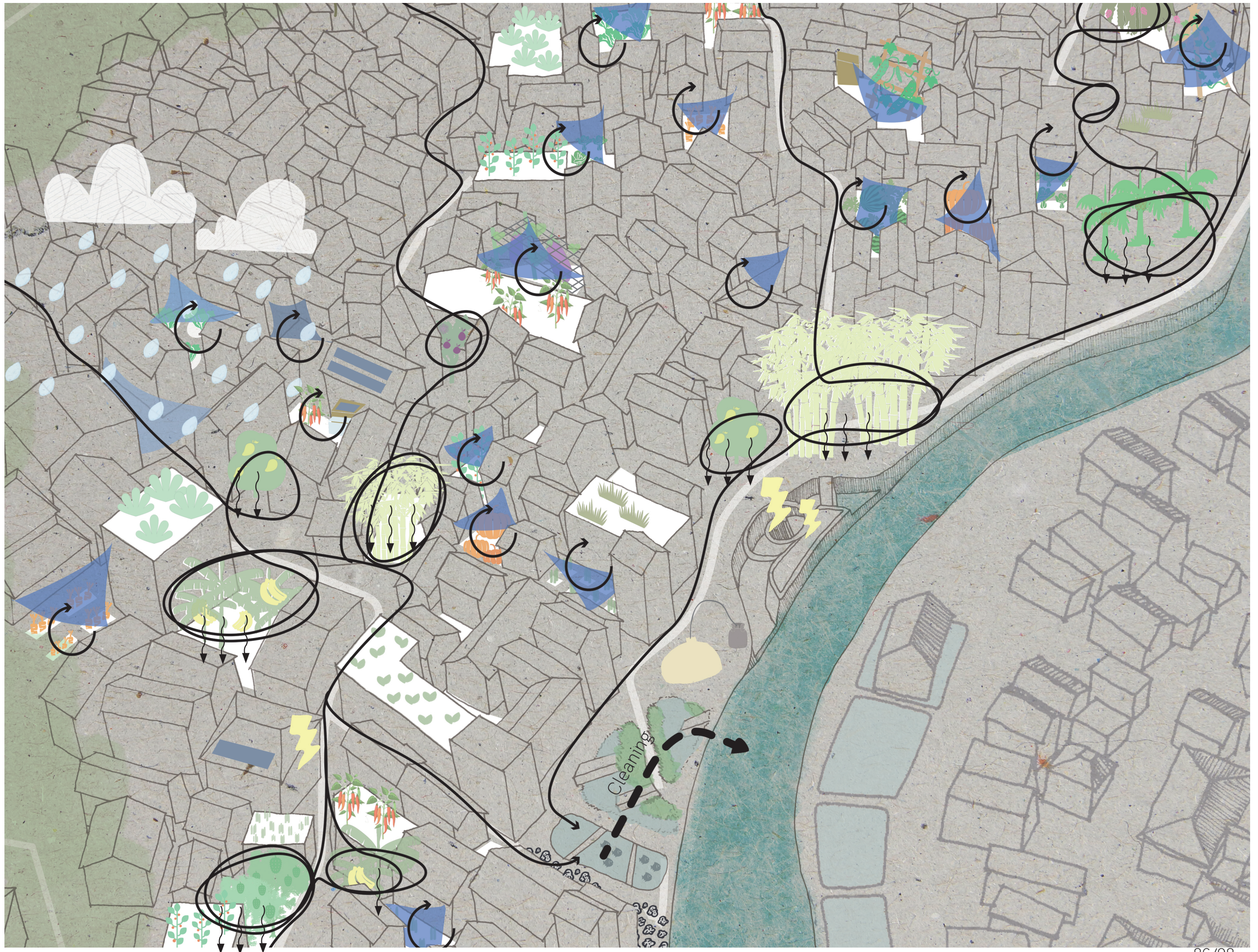


Current Water Flow

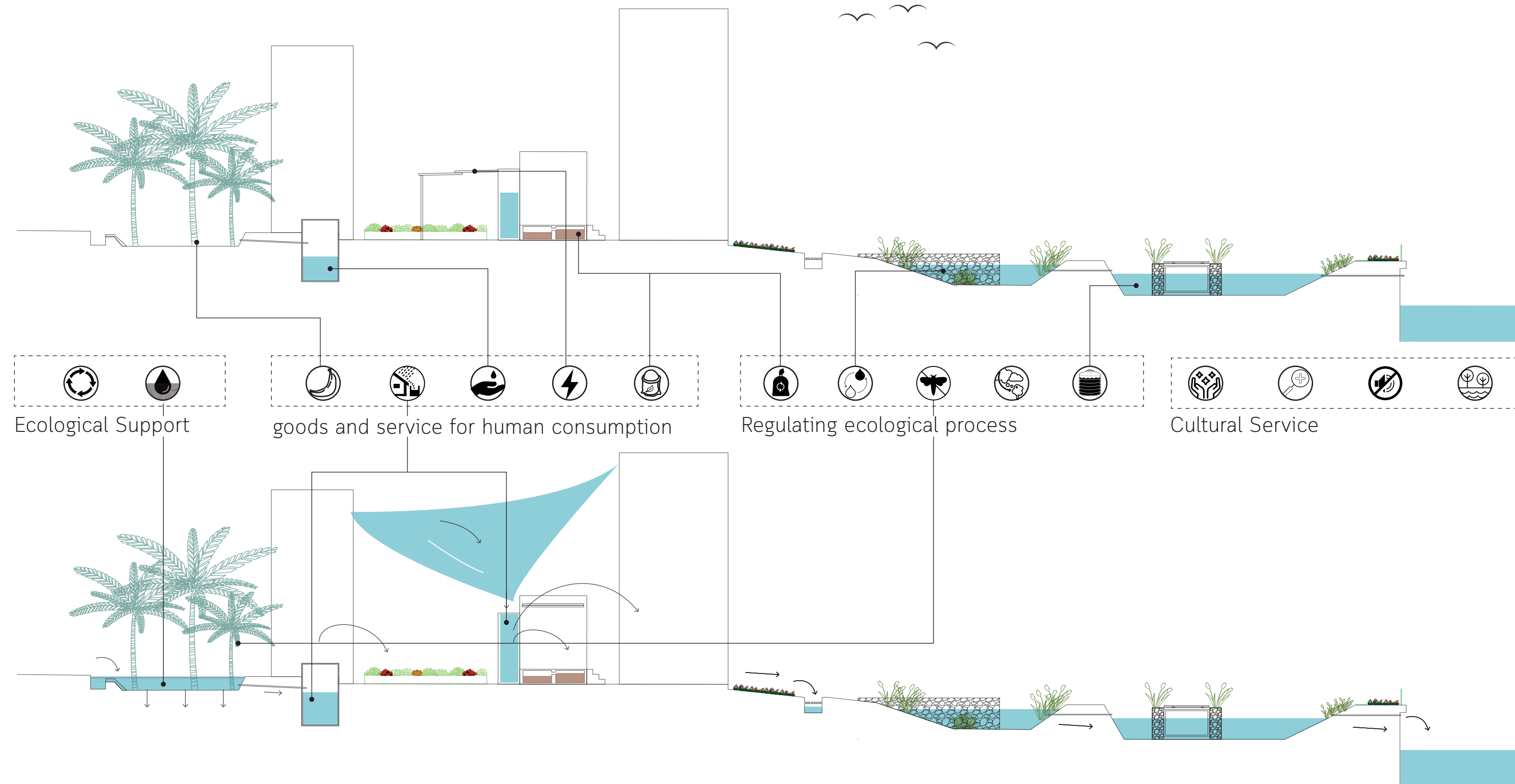


Proposed Circular Water Flow



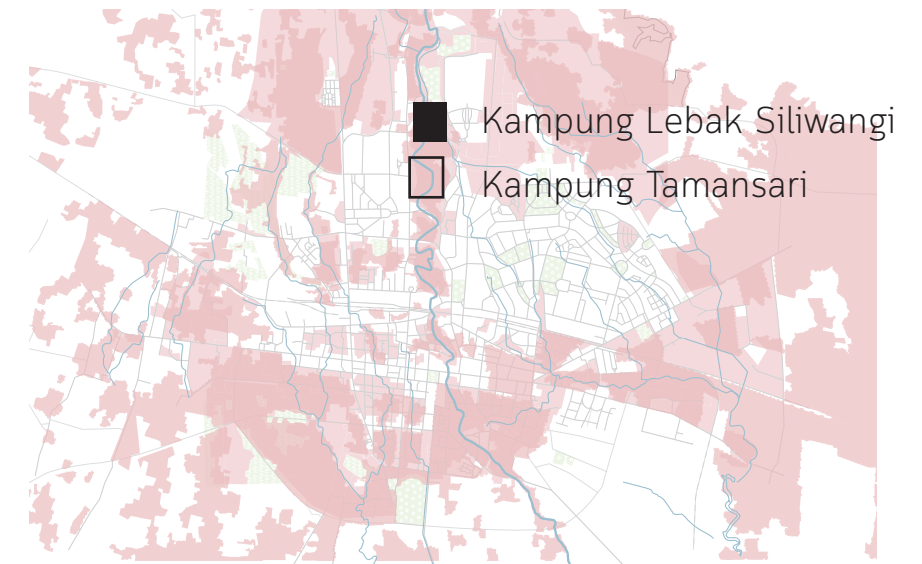








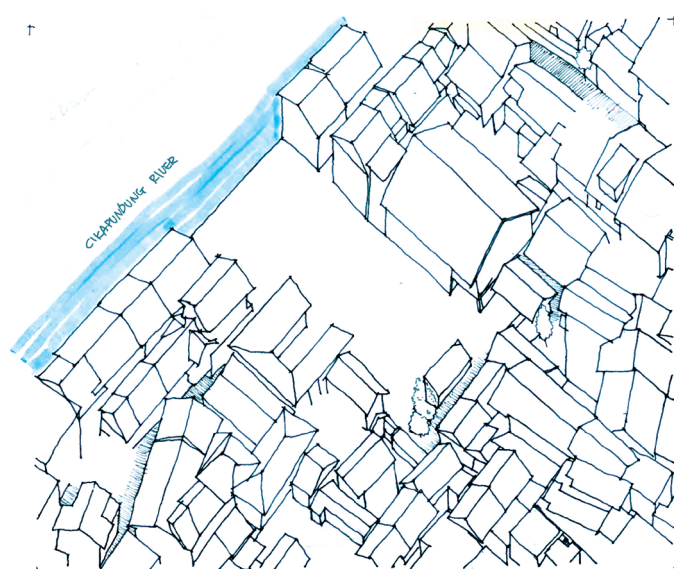
# [ Design Replication ]



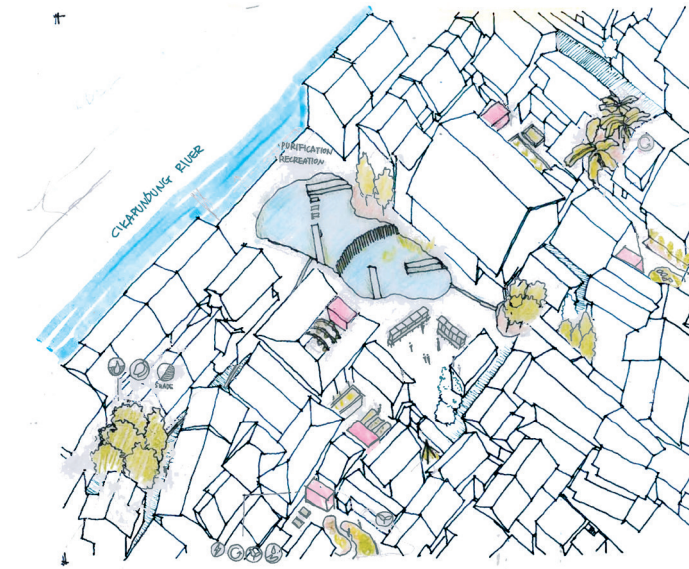
## Kampung Lebak Siliwangi



relocation



green patches



rain water harvesting







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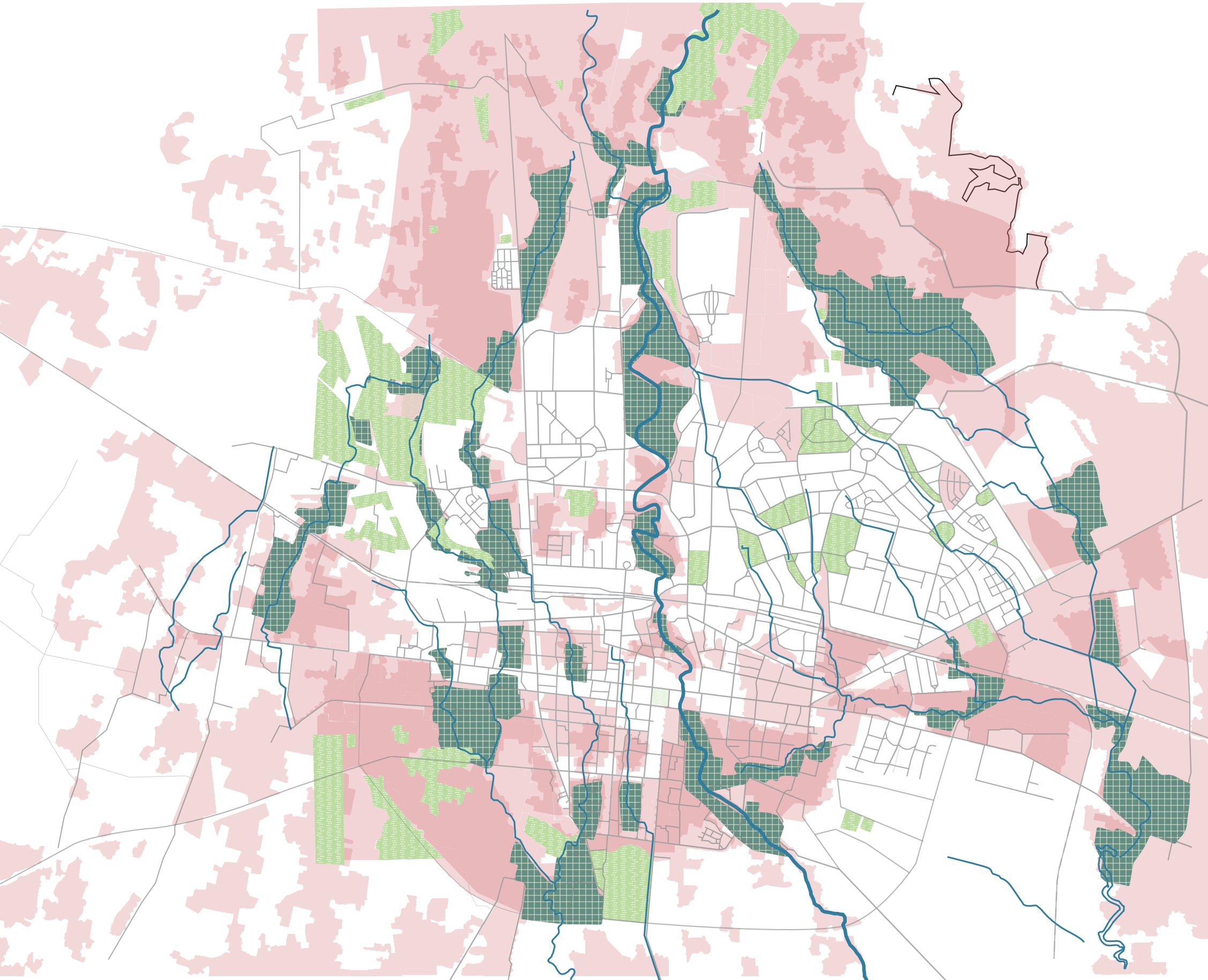
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WELCOME TO KAMPUNG TAMANSARI





green patches



greenery  
kampung

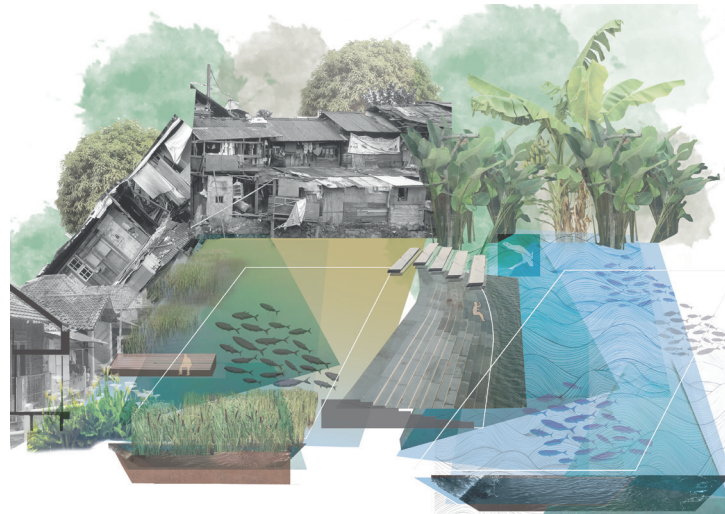


Mosaic  
Garden City

- Existing Green space
- Greenery Kampung
- Ordinary Urban Kampung

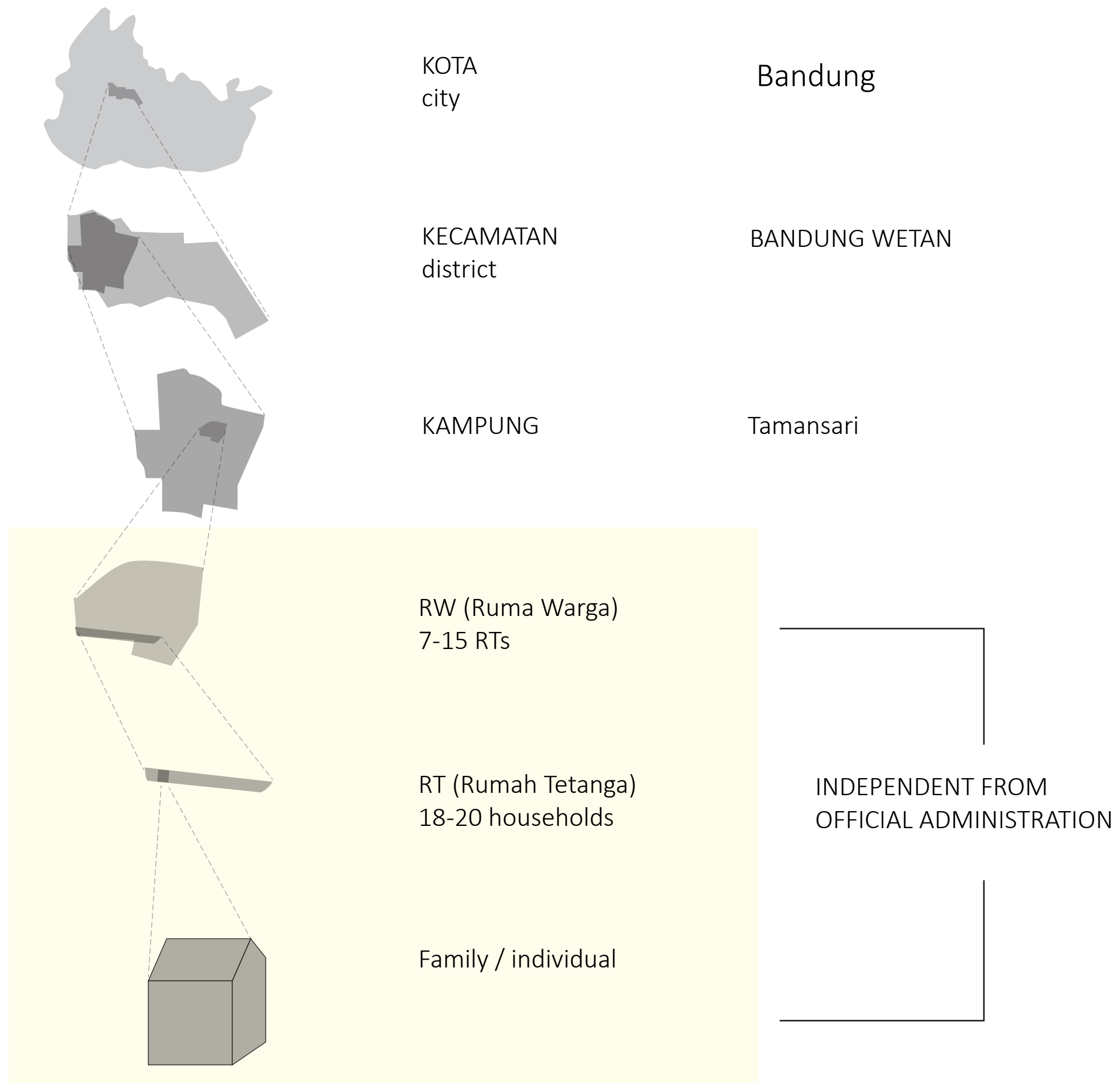


[ THANK YOU ]



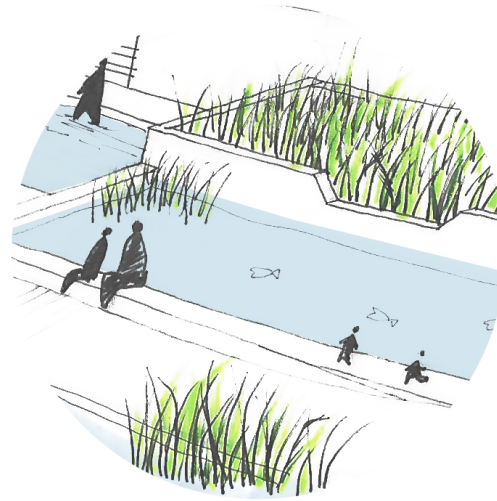


# [ AUTONOMY in a Kampung]





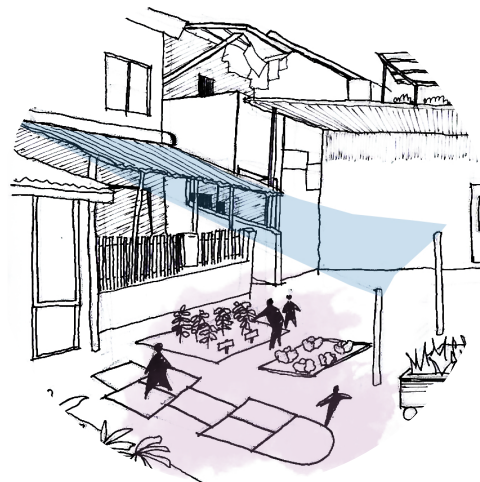
# [ OWNERSHIP OF GREEN PATCHES ]



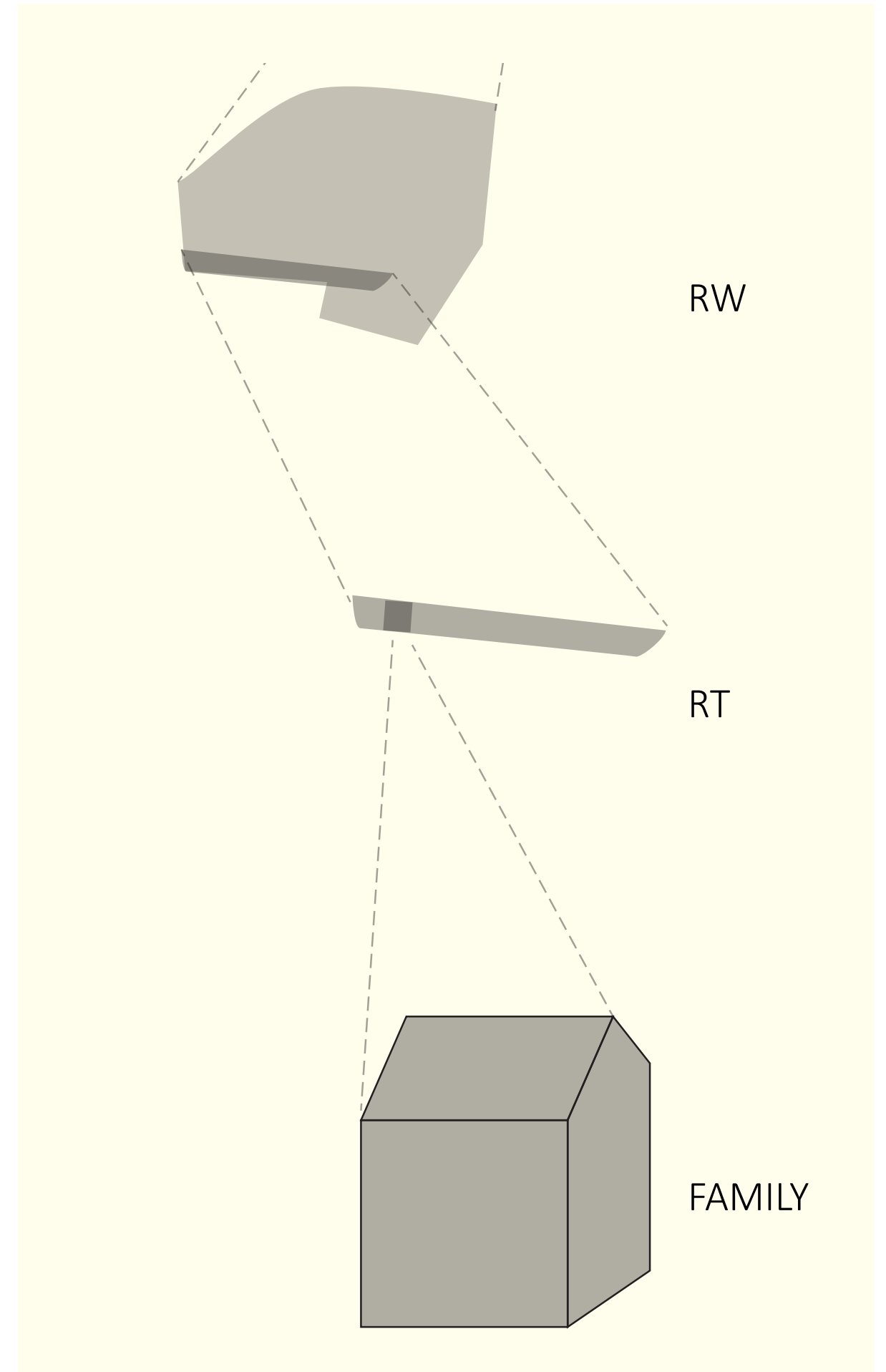
riverfront park



pit forest



kitchen garden





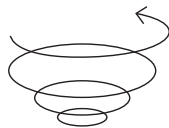
# [ Bottom-up Strategy ]



1. place making  
with NGOs



2. maintain



3. upscaling



4. major scale  
intervention  
by government



forest built by the residents of Babakan Cianjur village  
“Cooperative Rises Together”  
*source:Deden Iman(2014)*



Maintain green patches by community (RT & RW)



“kampung kreatif” community development programme in Kampung Tamansari  
*source:BCCF (2014)*



Ecodistrict Kampung Tamansari  
*source: Kota Bandung*

