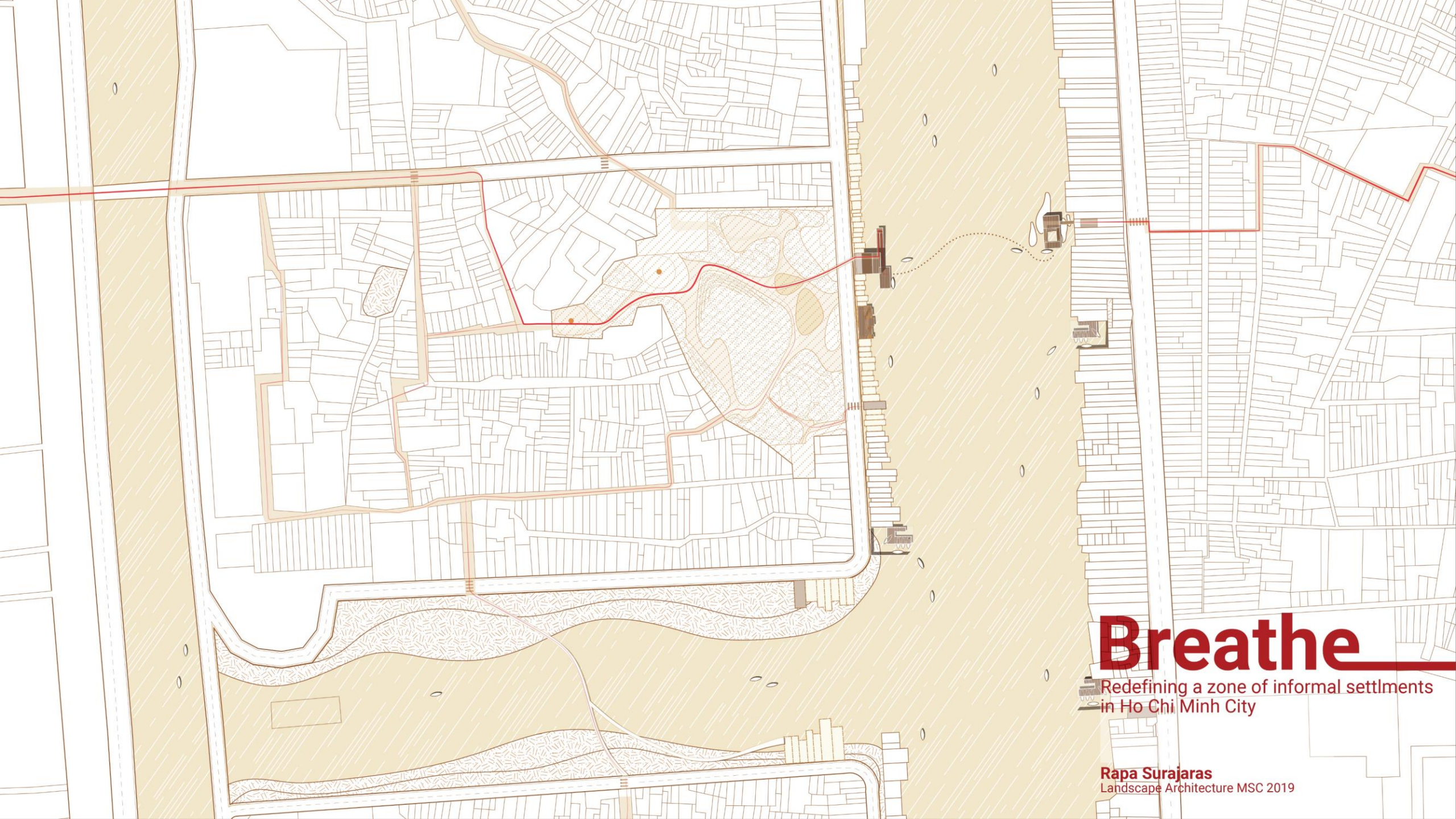
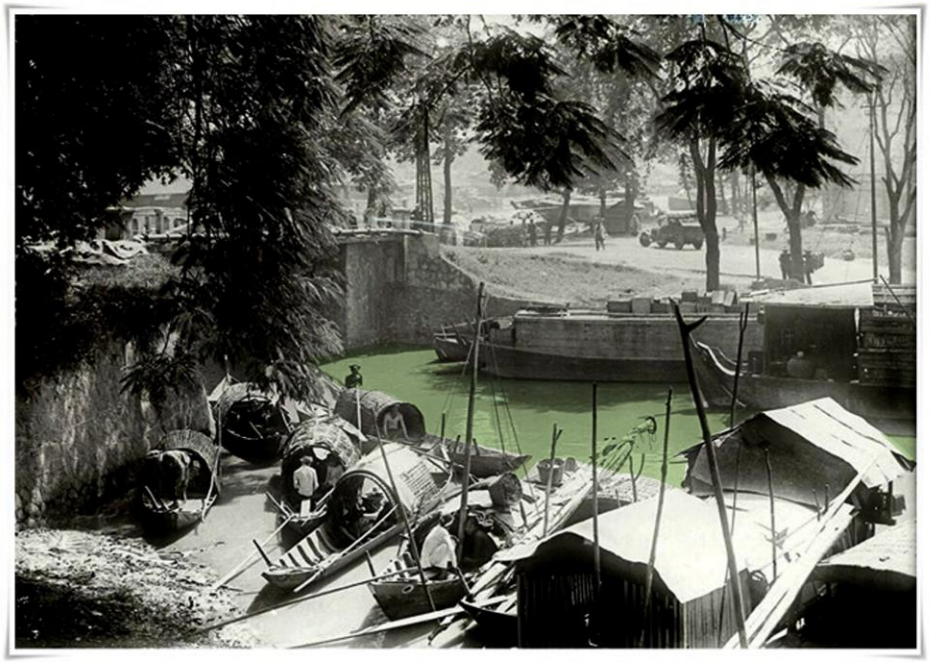


Breathe

Redefining a zone of informal settlments
in Ho Chi Minh City

Rapa Surajaras
Landscape Architecture MSC 2019


China
Vietnam
Burma
Laos
Thailand
Cambodia
Phillippines
Andaman Sea
The East Sea
Malaysia



BEFORE
Water transportation

AFTER
Filled in canals and build more road

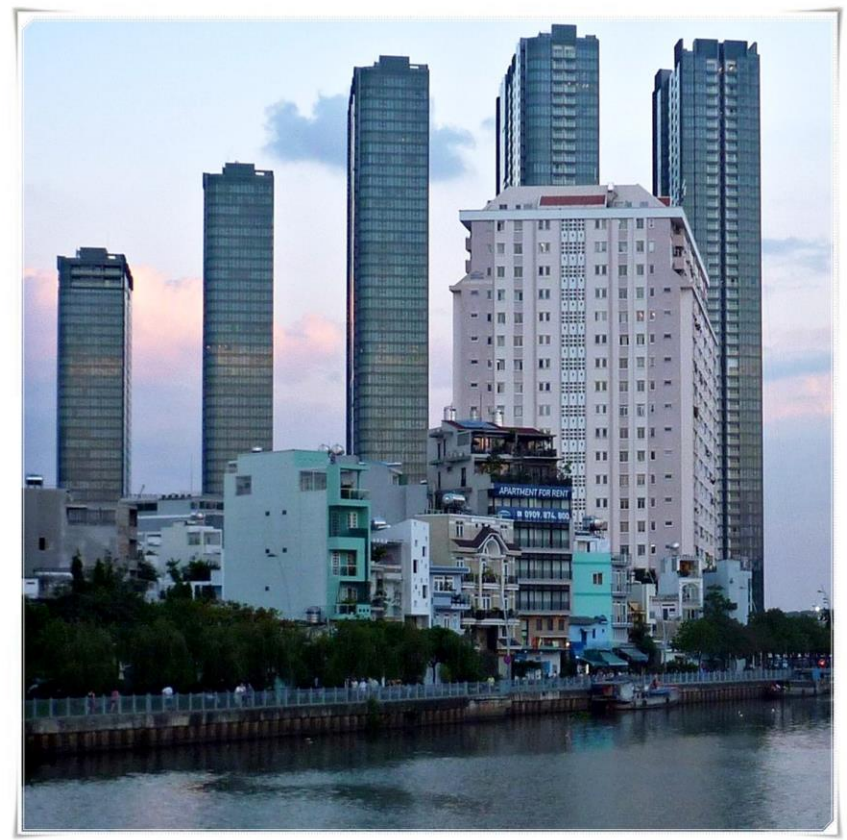
BEFORE
Small Vehicle

AFTER
Auto-Oriented

BEFORE
Traditional Gable Roof

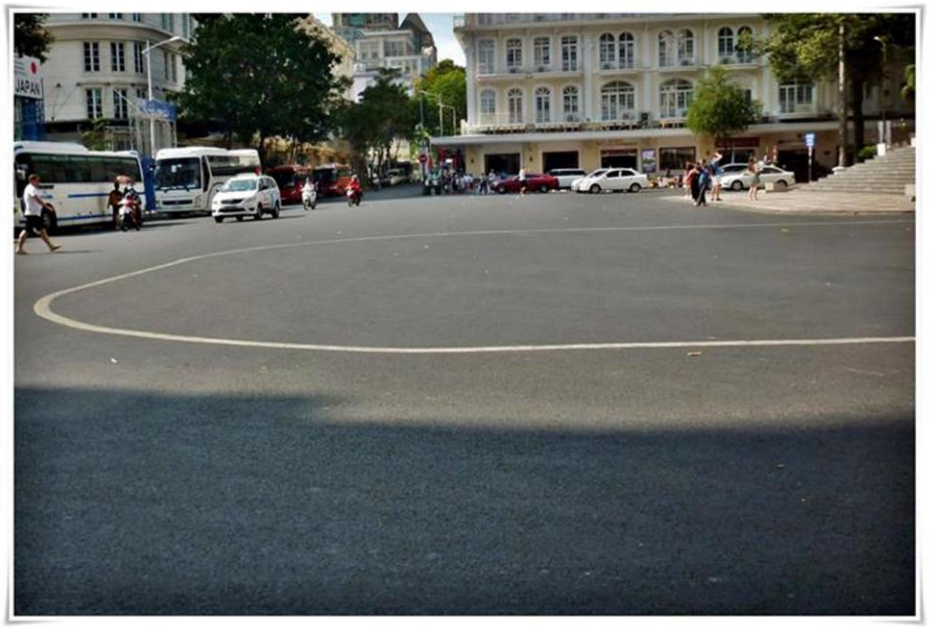
AFTER
High-rise building

BEFORE
Low houses city with access to water front



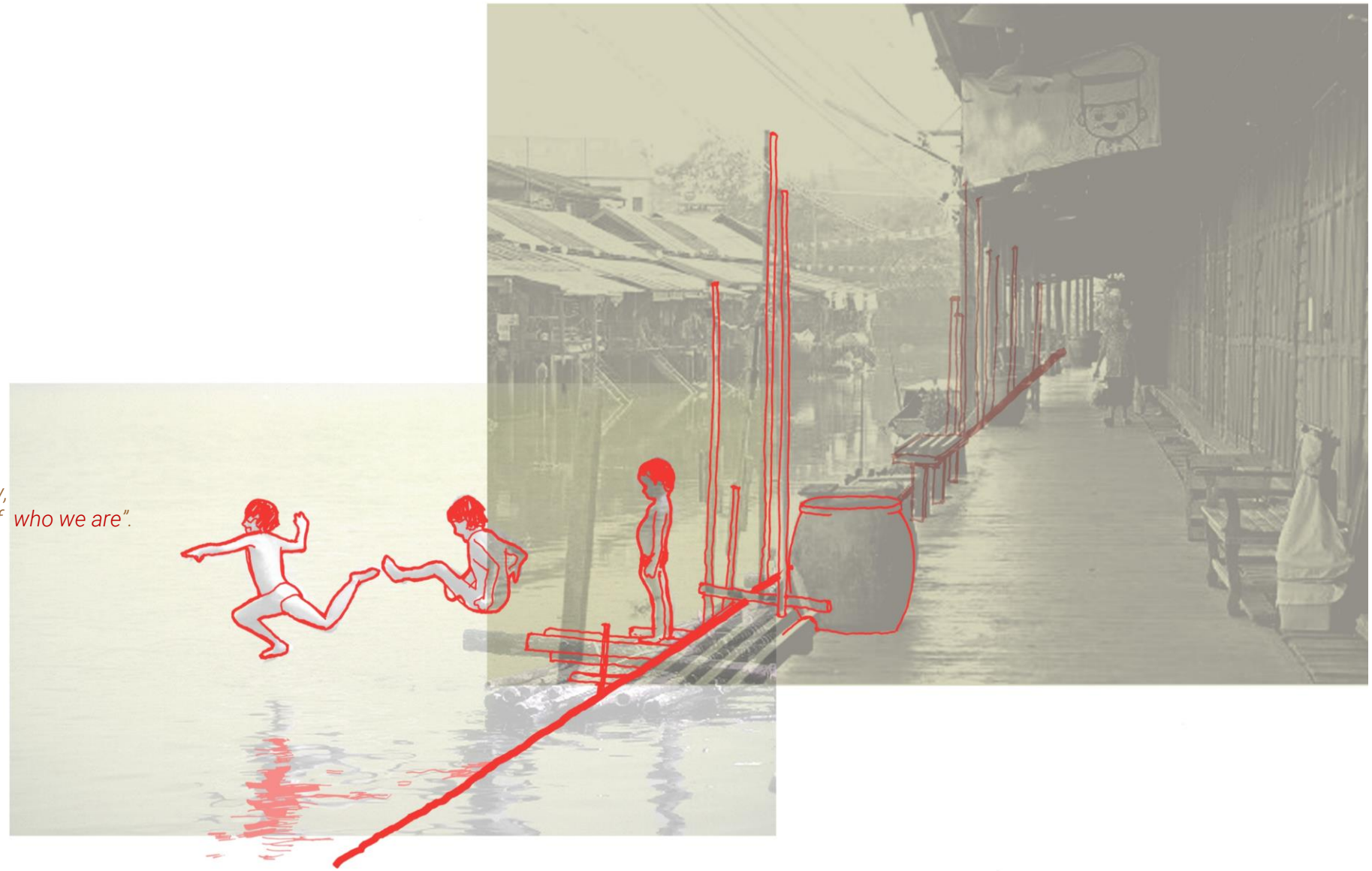
AFTER
Skyscraper city with fence along the river

BEFORE
Human Interaction in the city



AFTER
Car Interaction in the city

“ When we lost a cultural history,
we lost a part of who we are”.



SITE-LOCATION
REGIONAL SCALE

SITE-LOCATION
REGIONAL SCALE

Ho Chi Minh City,
South Vietnam

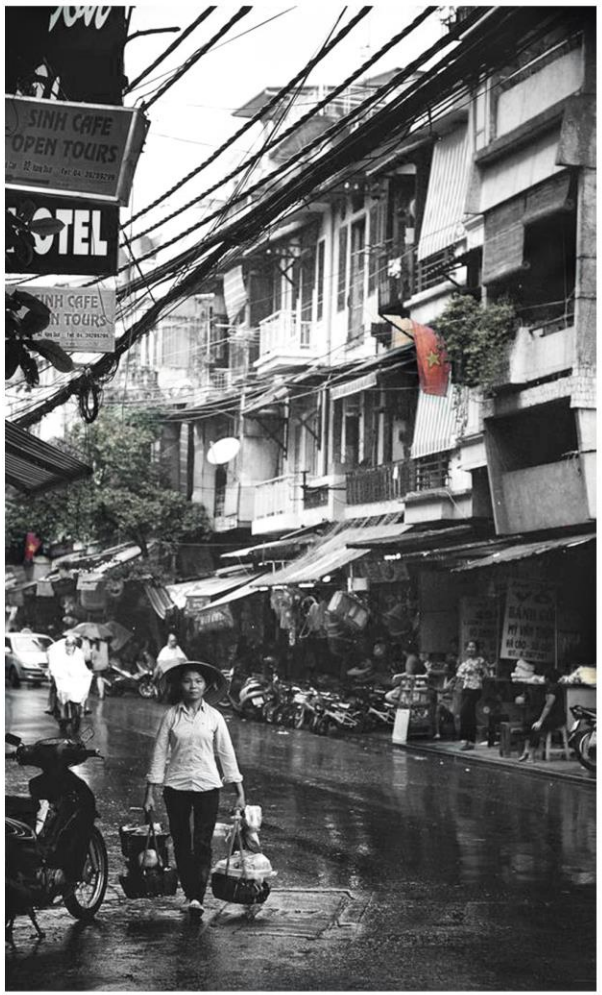
SITE-LOCATION
HO CHI MINH CITY

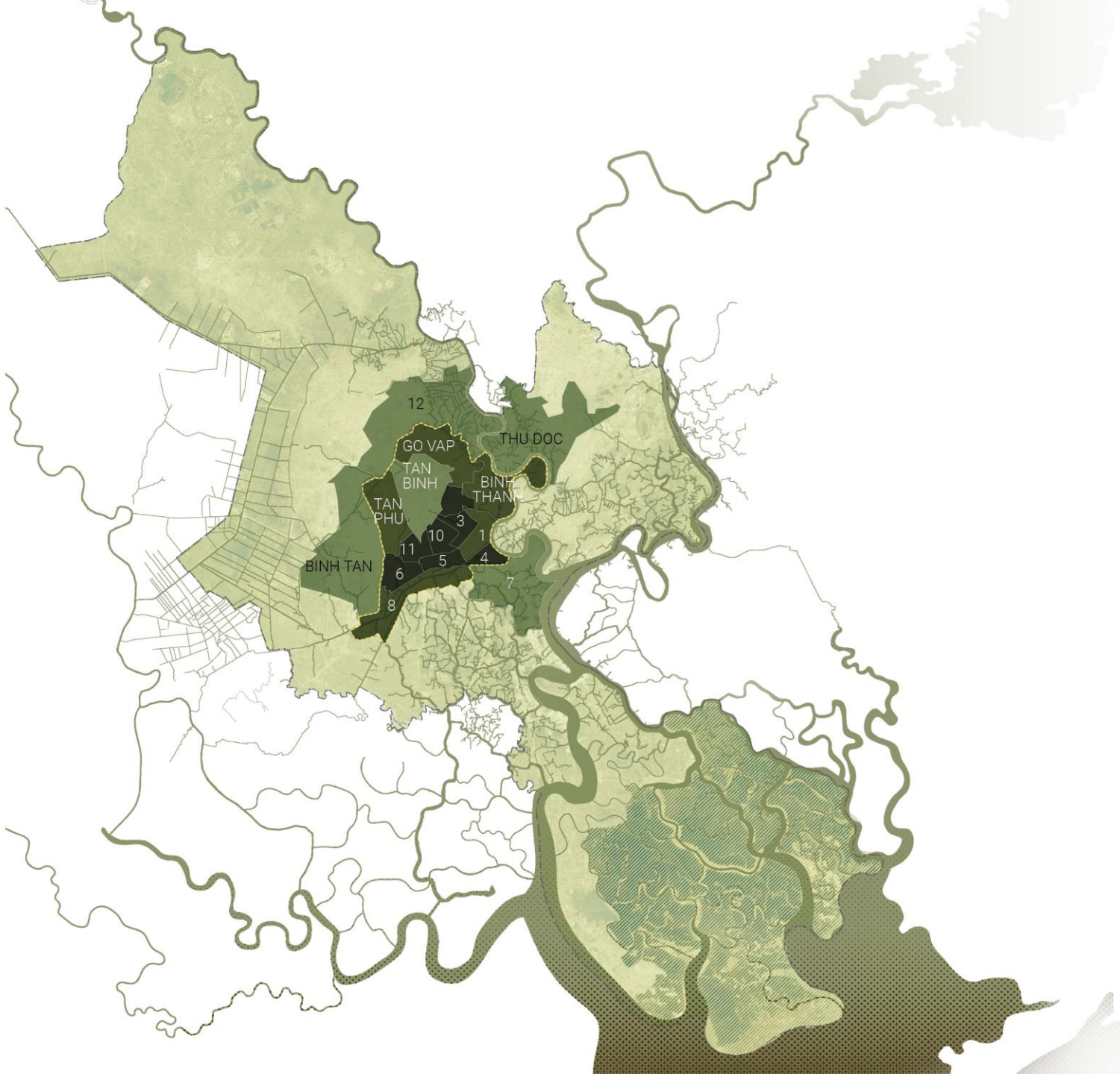
WATER BODY
SALT WATER
CITY CENTER
HCMC BOUNDARY

ELEVATION
>20.00 m.
15.00 - 20.00 m.
10.00 - 15.00 m.
6.00 - 10.00 m.
4.00 - 6.00 m.
2.00 - 4.00 m.
1.50 - 2.00 m.
1.00 - 1.50 m.
0.50 - 1.00 m.
0.00 - 0.50 m.
<0.00 m.

N
0
30 km

HO CHI MINH CITY
WAY OF LIVING





SITE-LOCATION
HO CHI MINH CITY

Population

In 1987

3.78 million

In 2017

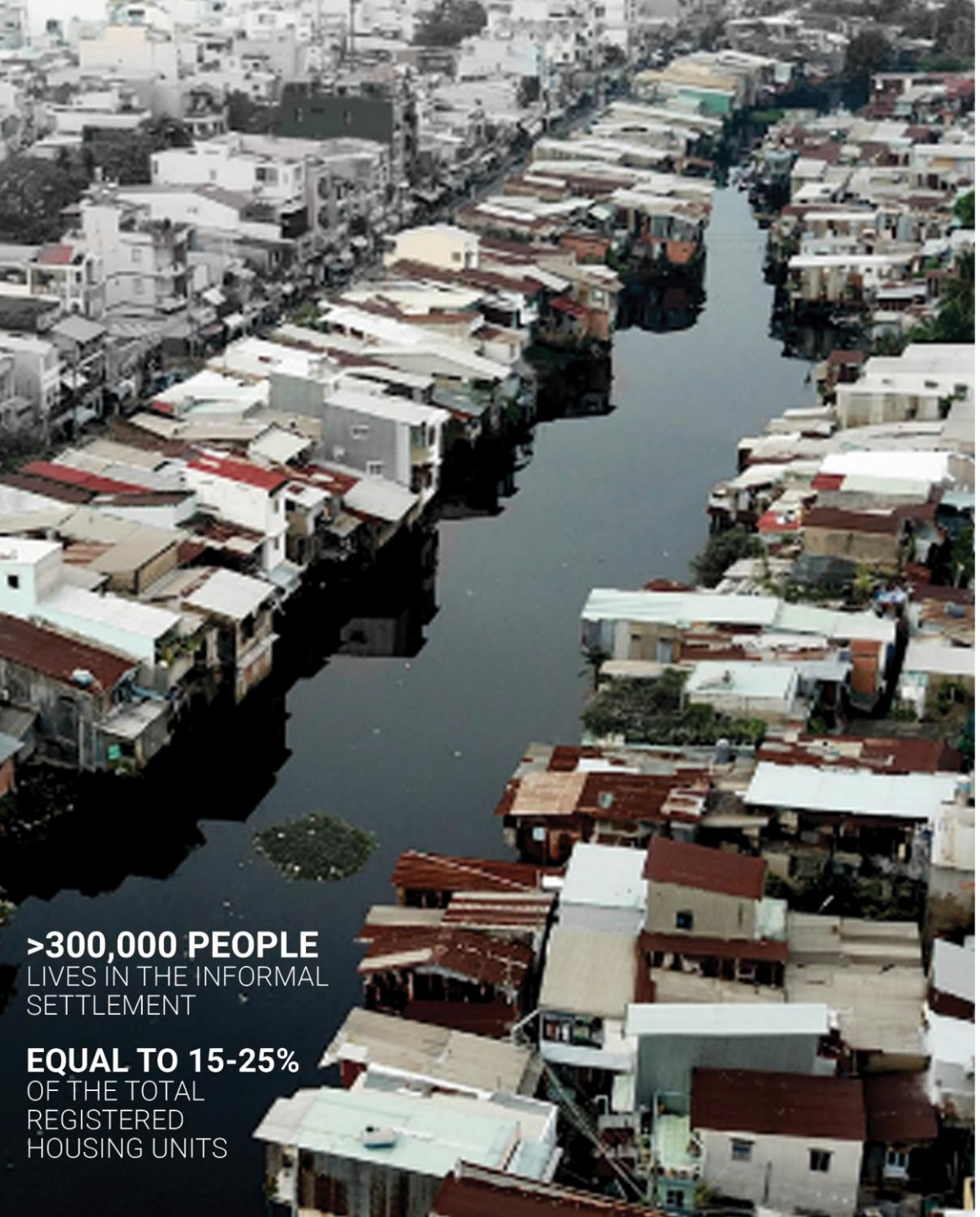
8.44 million + **2 million migrants**

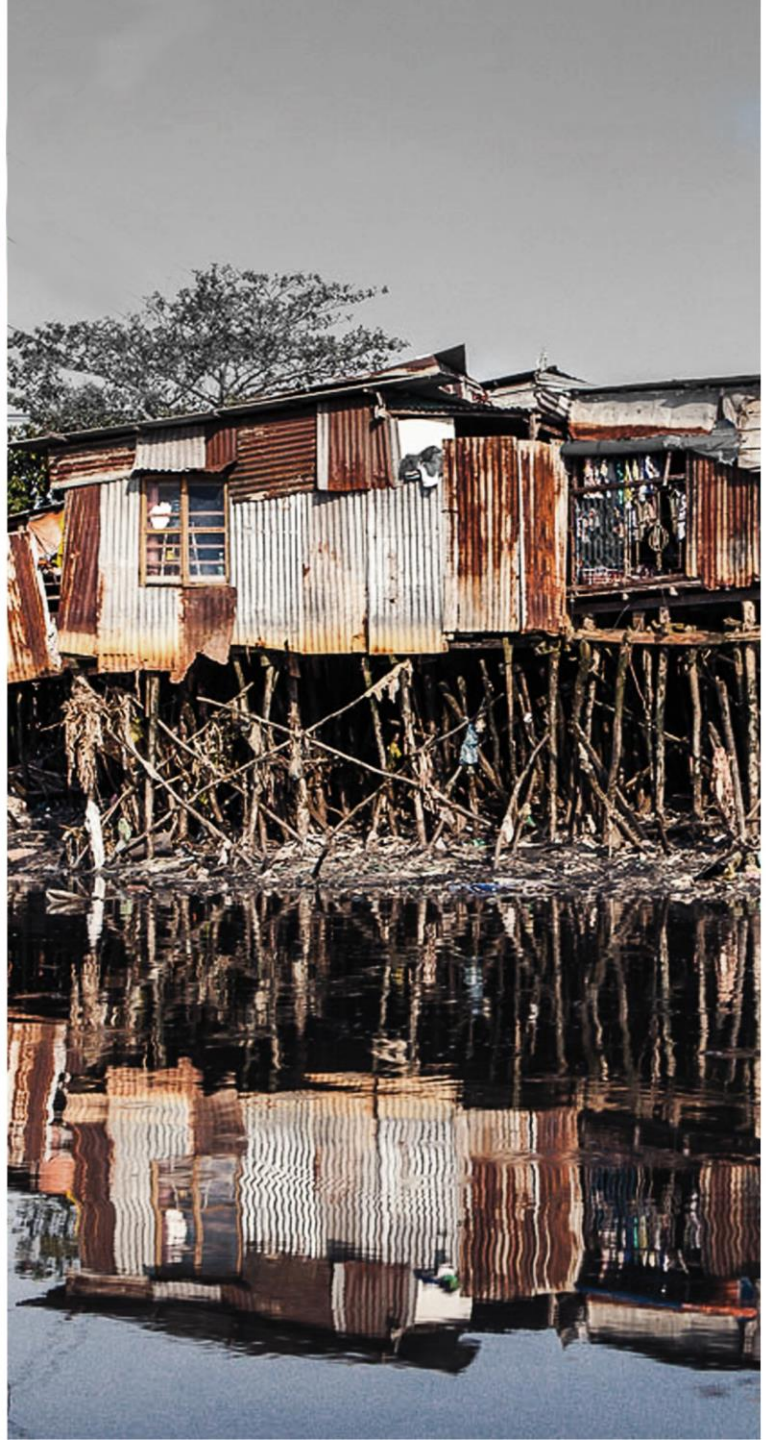
Insufficient living area
30% of population

<3sq.m.

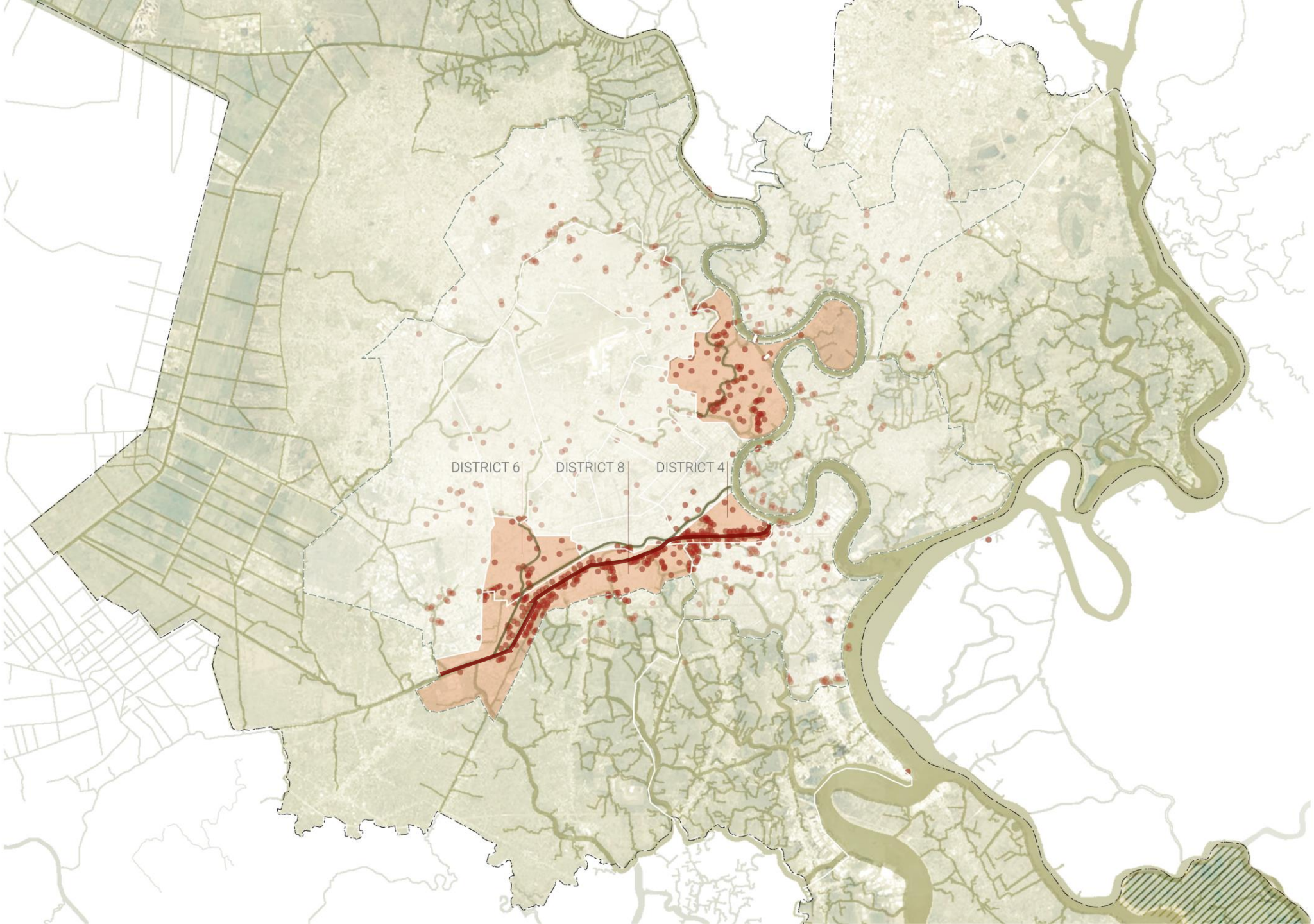
DENSITY (person/sq.m.)
0-5,000
5,000 - 20,000
20,000 - 30,000
30,000 - 50,000

0 30 km N


>300,000 PEOPLE
LIVES IN THE INFORMAL SETTLEMENT
EQUAL TO 15-25%
OF THE TOTAL REGISTERED HOUSING UNITS




APPROACHING
HO CHI MINH



LOCATION
HO CHI MINH CITY
DOI-TE CANAL

DISTRICT WITH INFORMAL SETTLEMENT COMMUNITIES
GROUP OF INFORMAL HOUSING
CITY CENTER
URBAN DISTRICT BOUNDARY
HCMC BOUNDARY

DOI TE CANAL
CONTEXT

URBAN AREA

RURAL AREA

WHOLESALE MARKET

CHINESE COMMUNITY

BEN THANH

CBD

URBAN DISTRICT

INDUSTRIAL AREA

TO BEN THANH

TO BINH TAN

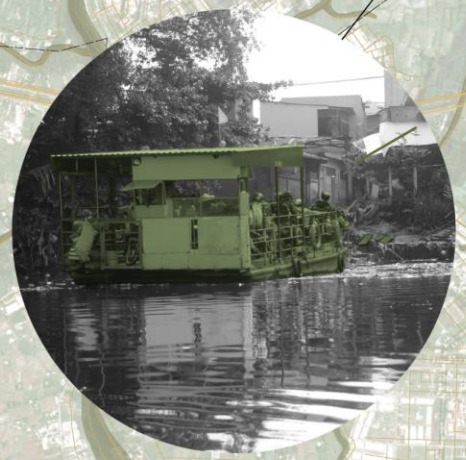
TO DISTRICT 5

TO DISTRICT2

DISTRICT 7 TO DISTRICT 4

SAIGON RIVER

TEMPORARY HOUS



0 500 1000 1500m

N

Before

After

Before - The Pearl of The Far East,
living with water city

After - Bussiness town of Vietnam
future of canal

RESEARCH QUESTION

"How to **redefine a zone of informal settlments as an opportunity** to the city **and the environment** for Ho Chi Minh City through **landscape architectonic interventions ?**"

What row can the informal settlement be **integrated into the city**?

How is the **architectonic design** functioned **as part of the landscape architectural system**?

How can the design **constitute the social-ecological resilience** condition to the environment of Ho Chi Minh City?

How is the design strategy **enhancing the cultural value** of "life with water " back to the city?

DESIGN PROCESS

HO CHI MINH CITY

DESIGN STRATEGIES
DOI & TE CANAL

CASE STUDY 1
HOUTAN PARK,
WATER PURIFICATION PARK

THEORY 1

SOCIAL-ECOLOGICAL RESILIENCE
URC

LANDSCAPE DESIGN STRATEGIES

SMALL SCALE DESIGN INTERVENTIONS

THEORY 2

URBAN ACUPUNCTURE

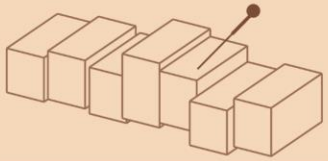
CASE STUDY 2
MAKOKO,
URBAN DESIGN TOOLBOX

COLLECT

PURIFY

CONNECT

ADAPT

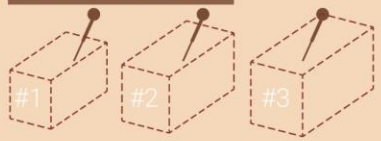


INFORMAL SETTLEMENT

FLOATING DEBRIS

TIDAL EFFECT

IFMS TYPE 1, 2, 3



POLLUTED WATER

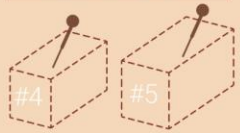
CONSTRUCTED WETLAND
MANGROVE RESTORATION
CANAL BANK IMPROVEMENT

IFMS TYPE 1,4

HCMC PEOPLE

EXPERIENCE ROUTES
PEDESTRIAN CONNECTION
ECOLOGICAL CONNECTION

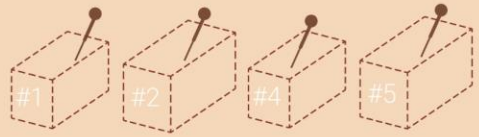
IFMS TYPE 4,5

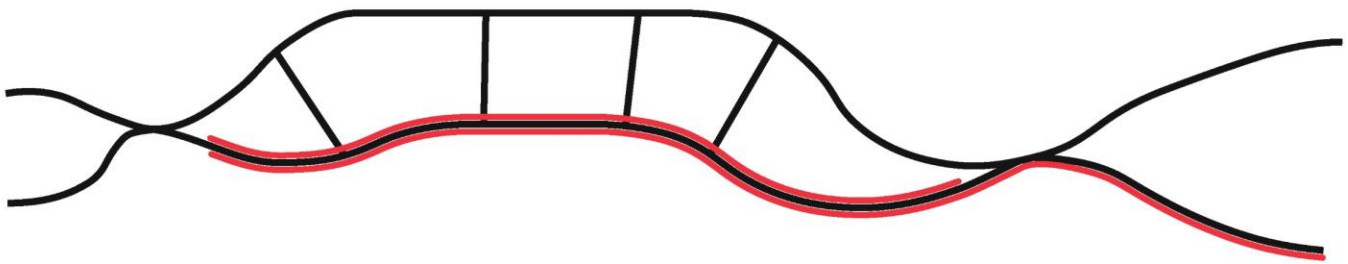


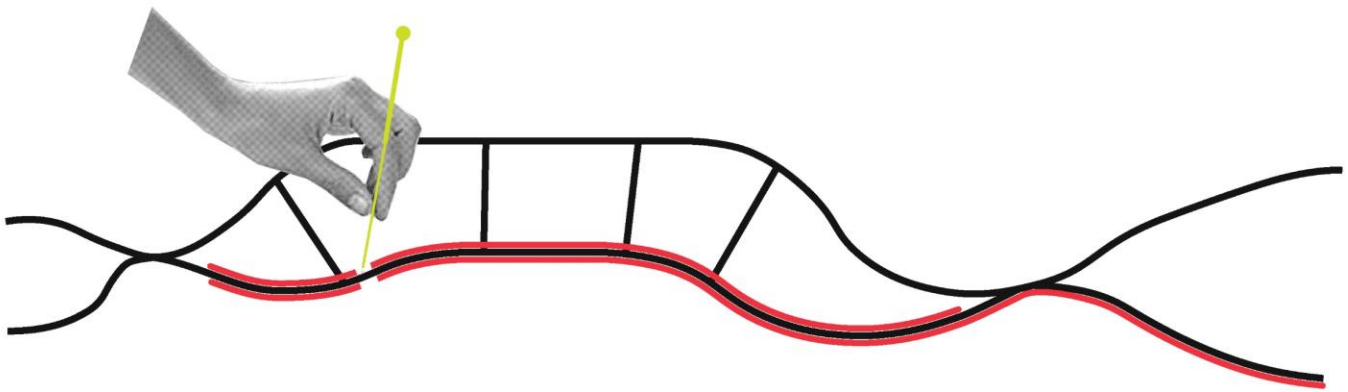
HCMC PEOPLE

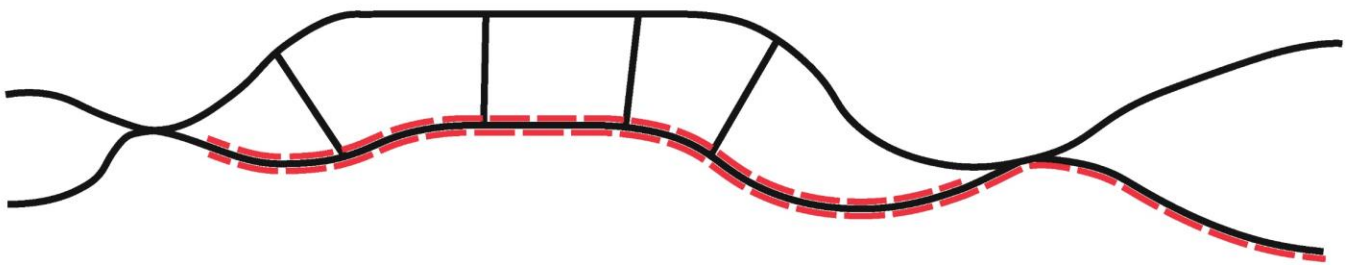
SPONGE AREA
INCREASE GREEN AREA

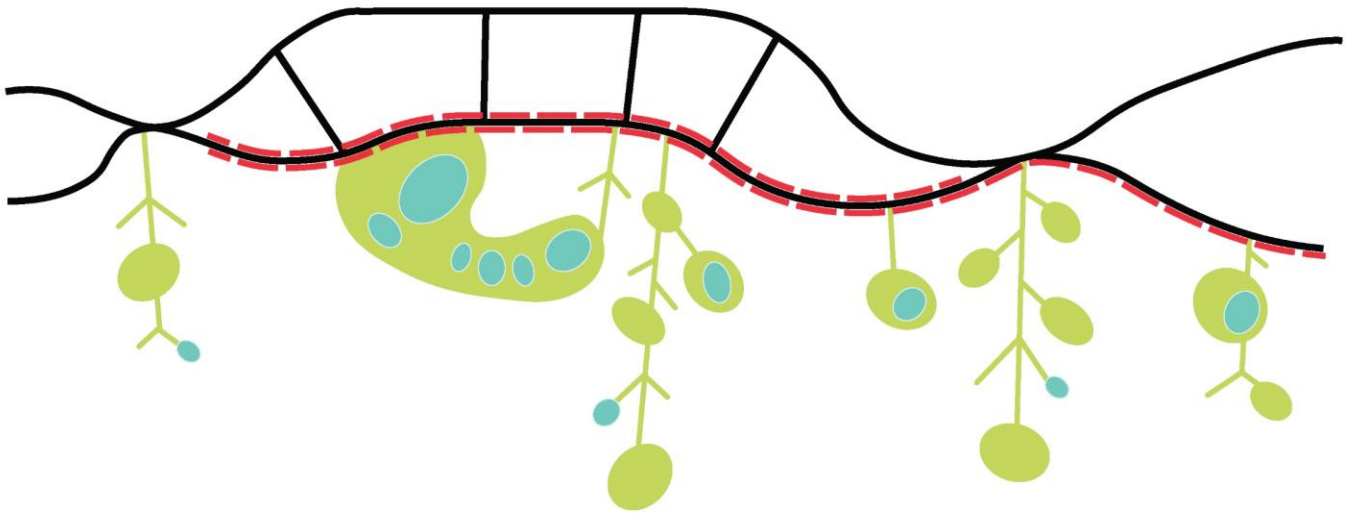
IFMS AS TEMPORARY BARRIER

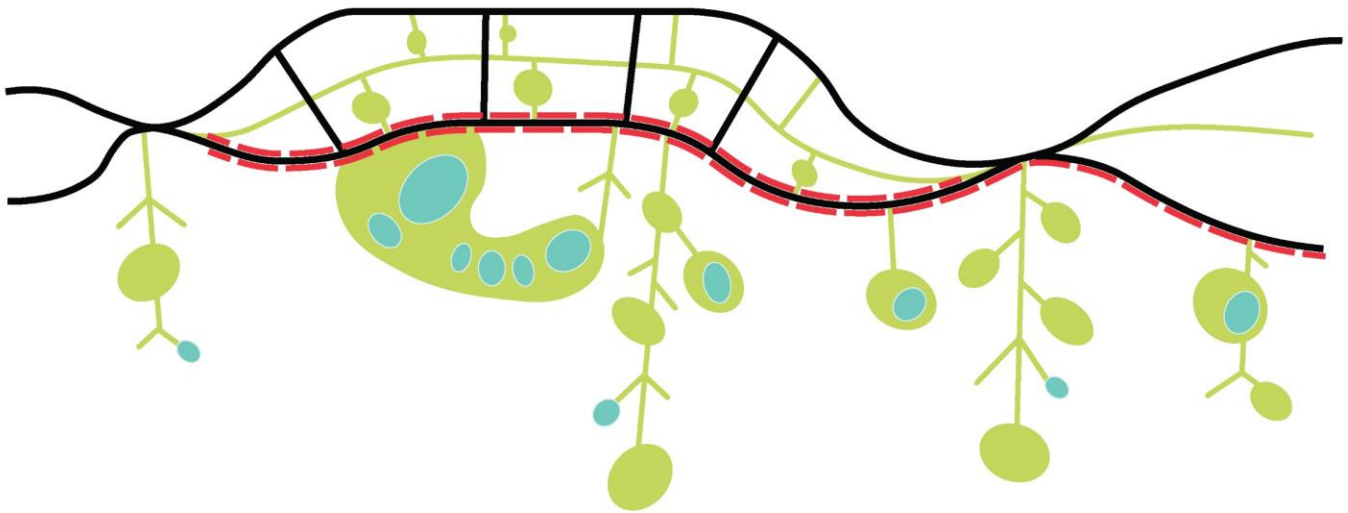


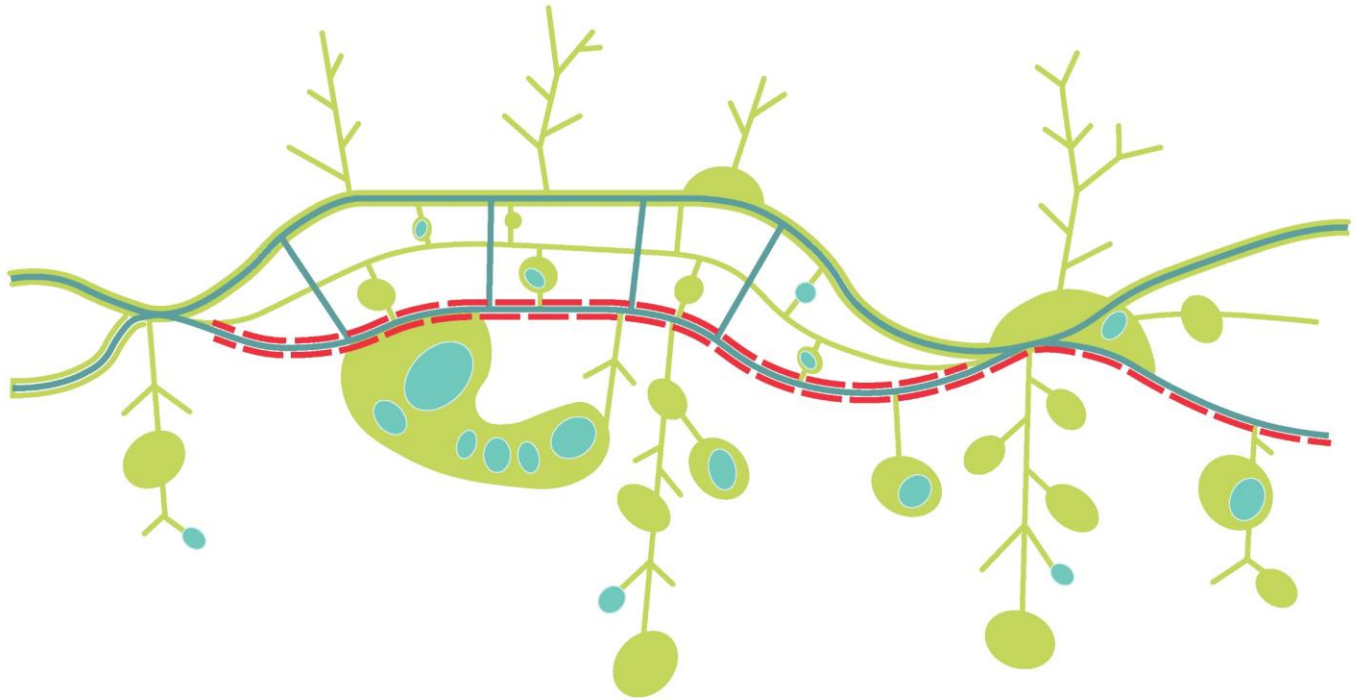










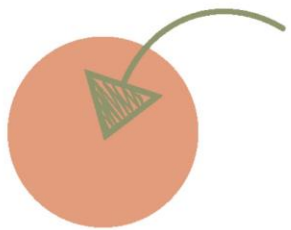


“ RESPIRATORY SYSTEM “

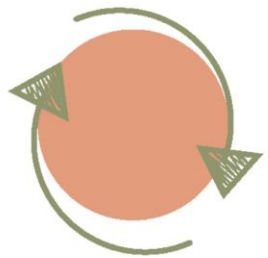
MASTERPLAN


TO DISTRICT 11
TO DISTRICT 10
TO DISTRICT 3
TO CITY CENTER
TO DISTRICT 2-NEW DEVELOPMENT
TO RURAL AREA
RACH LO GOM CANAL
THAM LUONG CANAL
TAU HU CANAL
DOI CANAL
BEN NGHE CANAL
TE CANAL
SAIGON RIVER
RACH ONG LON CANAL
EXISTING
ZONE OF INFORMAL SETTLEMENT
EXISTING INFORMAL HOUSES
1 PORT AREA
2 DISTRICT 4 - CBD
3 HIGH WAY
4 INDUSTRIAL AREA
5 GOVERNMENT OFFICE
6 RESIDENTIAL AREA
7 ABANDONED AQUACULTURE FARM
8 RURAL AREA
PROPOSE
a SPONG PARK
b SPONGE AREA
c CITY PARK
d WATER INLET TO PURIFICATION PARK
e PURIFICATION POND
f AQUACULTURE FARM
g GREEN BUFFER
h CONSTRUCTED WETLAND
i RECREATIONAL AREA
j BIOGAS ISLAND
k ECOLOGICAL STRIP ALONG DIVERTED CANAL
DEMOLISHED HOUSES
NEWLY PROPOSED HOUSES
INTERVENTION TYPE 2
INTERVENTION TYPE 3
INTERVENTION TYPE 4
INTERVENTION TYPE 5
WATER GATE
PUMP
BRIDGE
0
1000
2000 m
N

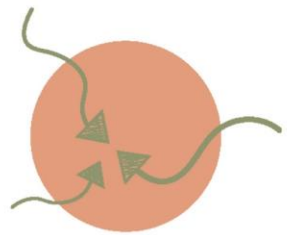
DESIGN
STRATIGIES



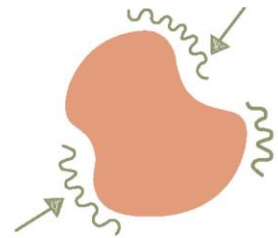
COLLECT



PURIFY



CONNECT



ADAPT


COLLECT

EXISTING
WASTE CONDITION

- WATER QUALITY (DARK=POOR)
- WATER QUALITY (LIGHT=GOOD)
- WASTE COLLECTING BOAT
- GATHERING STATION

1

2

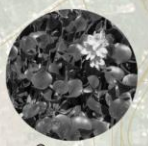
A

B

C

D

Type of floating waste


Common water hyacinth


Coconut Shell


Leafs


Dry vegetal


Wood


Aluminium Foils


Medicine


Foam


Glass bottle

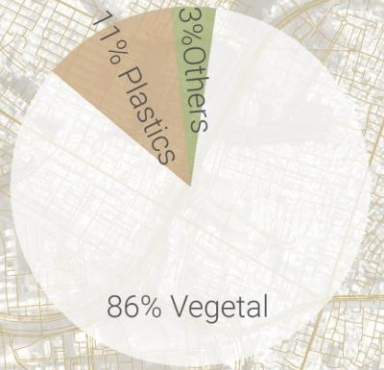

Slipper


Can


Plastic Bag


Helmet

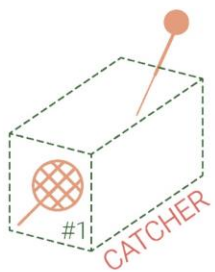

Plastic bottles

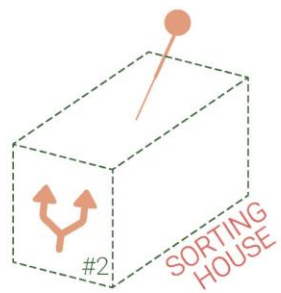


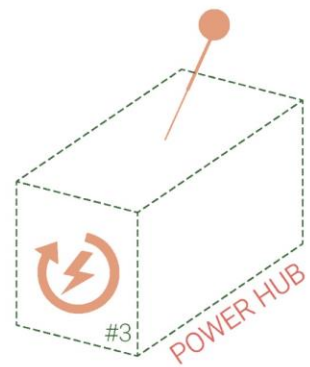
COLLECT
STRATEGY

PRODUCT

DESIGN INTERVENTION







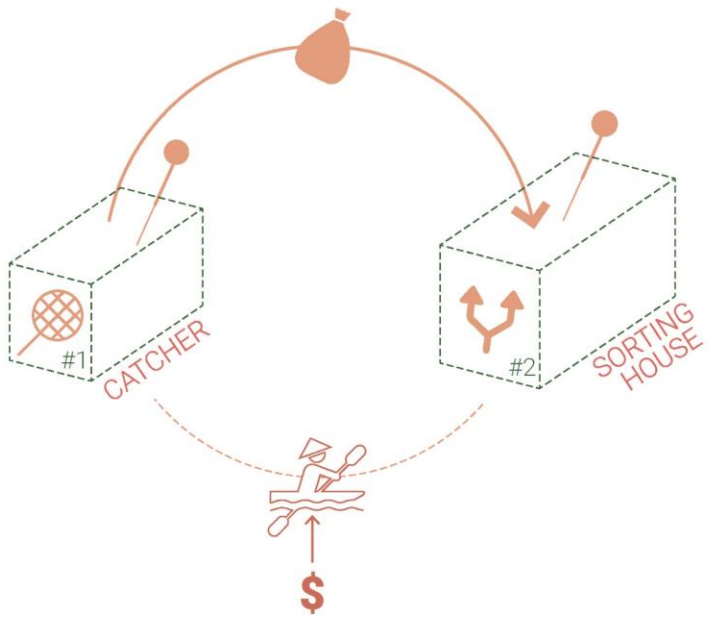
JOB OPPORTUNITIES

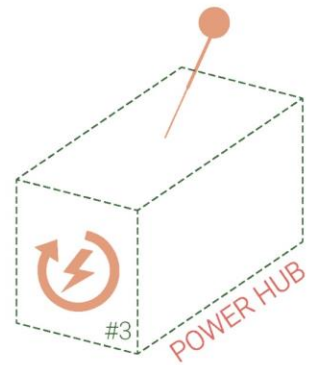
COLLECT
STRATEGY

PRODUCT

DESIGN INTERVENTION

JOB OPPORTUNITIES



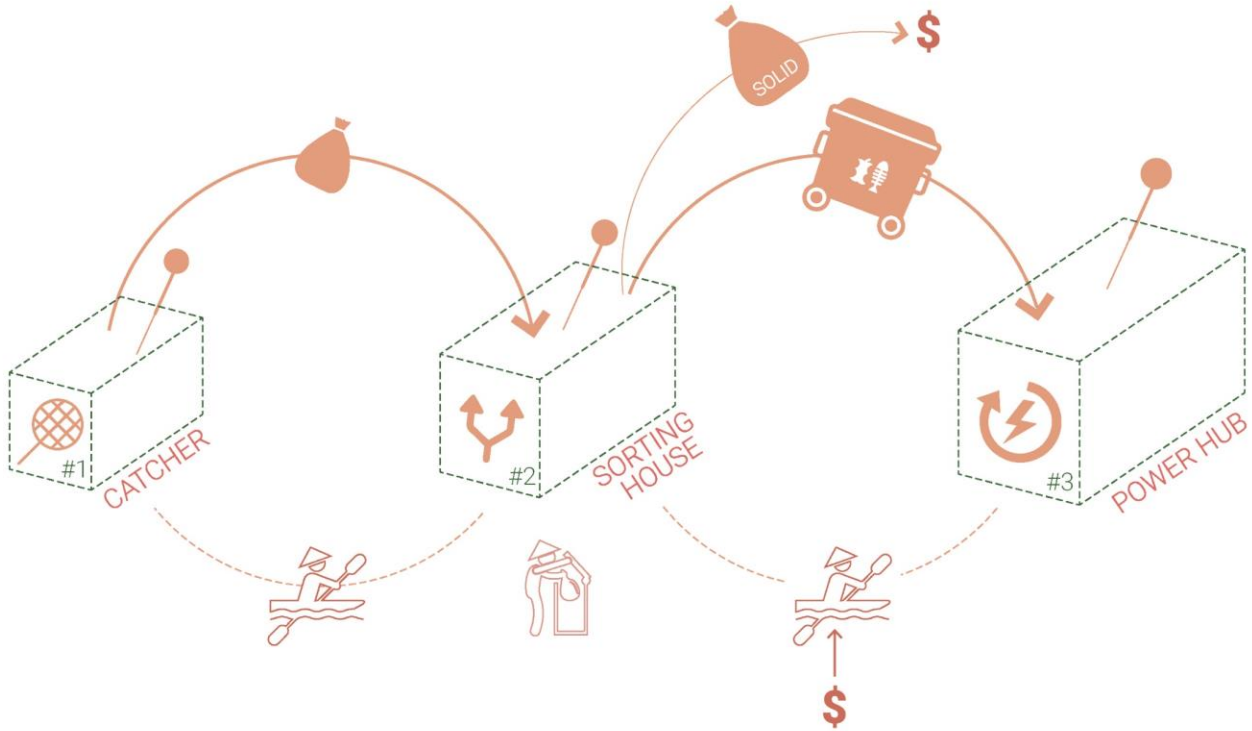


COLLECT
STRATEGY

PRODUCT

DESIGN INTERVENTION

JOB OPPORTUNITIES

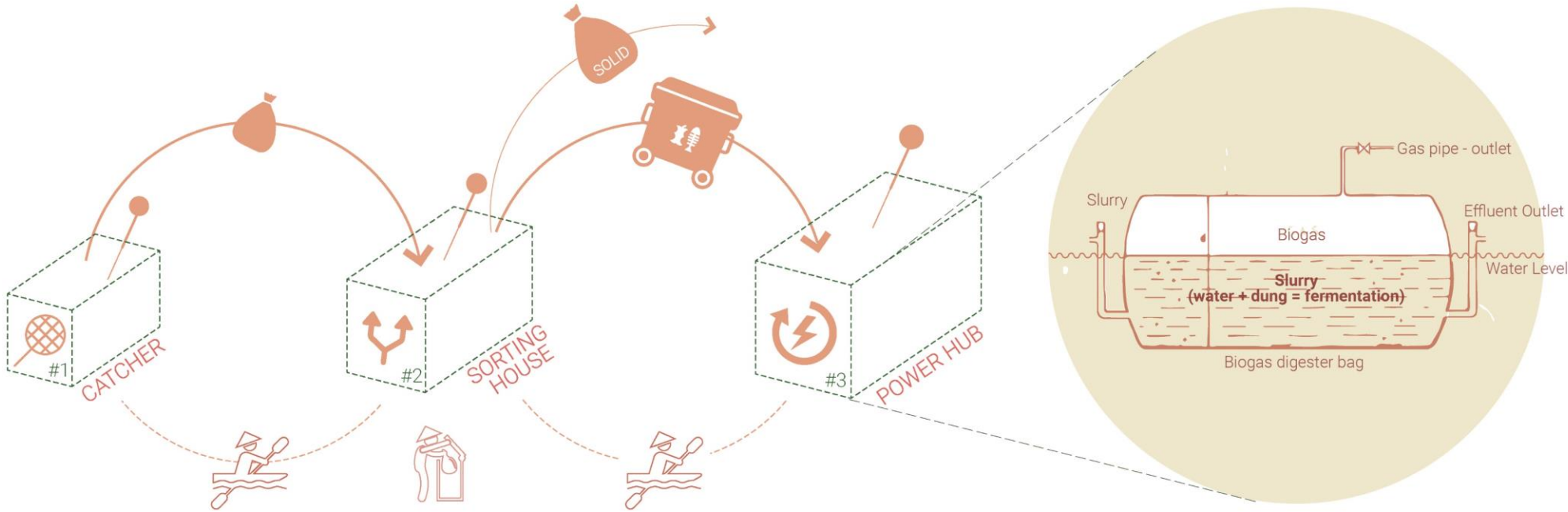


COLLECT
STRATEGY

PRODUCT

DESIGN INTERVENTION

JOB OPPORTUNITIES

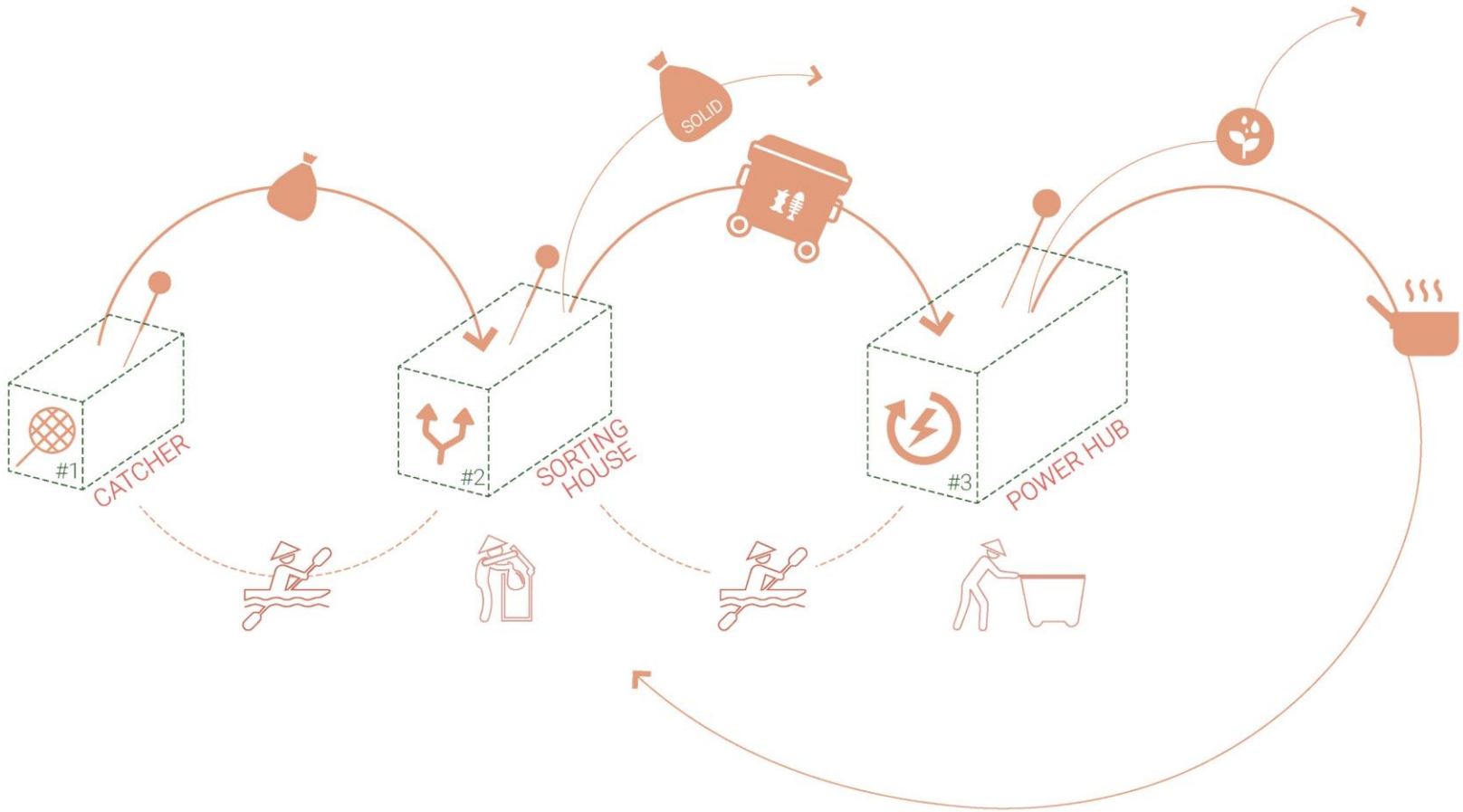


COLLECT
STRATEGY

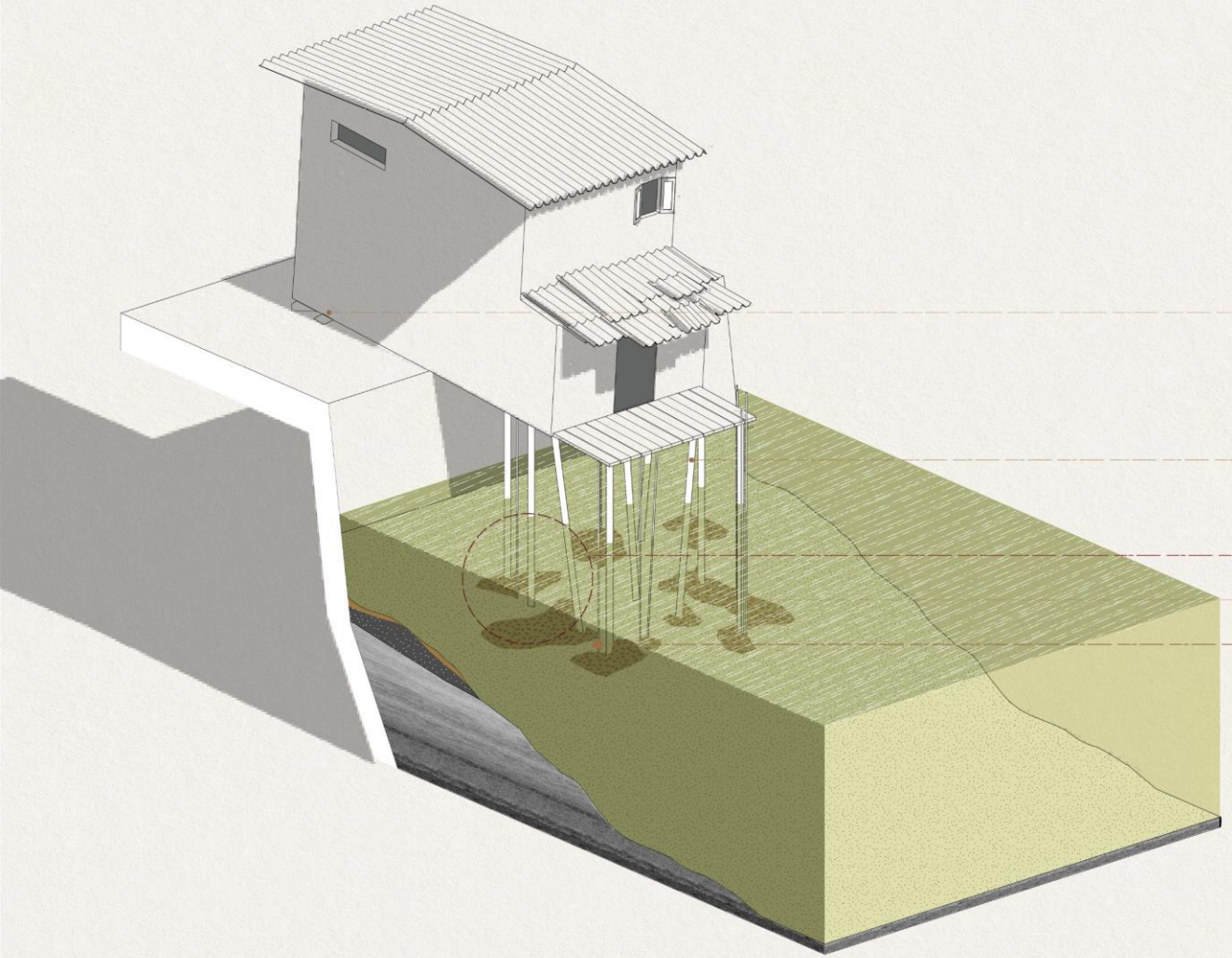
PRODUCT

DESIGN INTERVENTION

JOB OPPORTUNITIES



INFORMAL HOUSE
EXISTING CONDITION



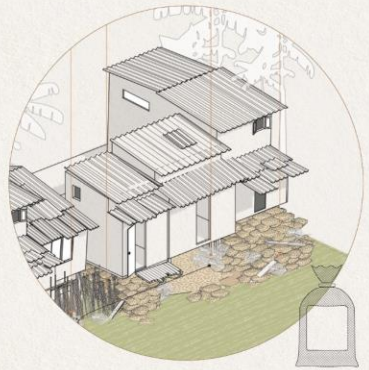
UNSTABLE STRUCTURE

MANY COLUMNS WITH UNSTABLE

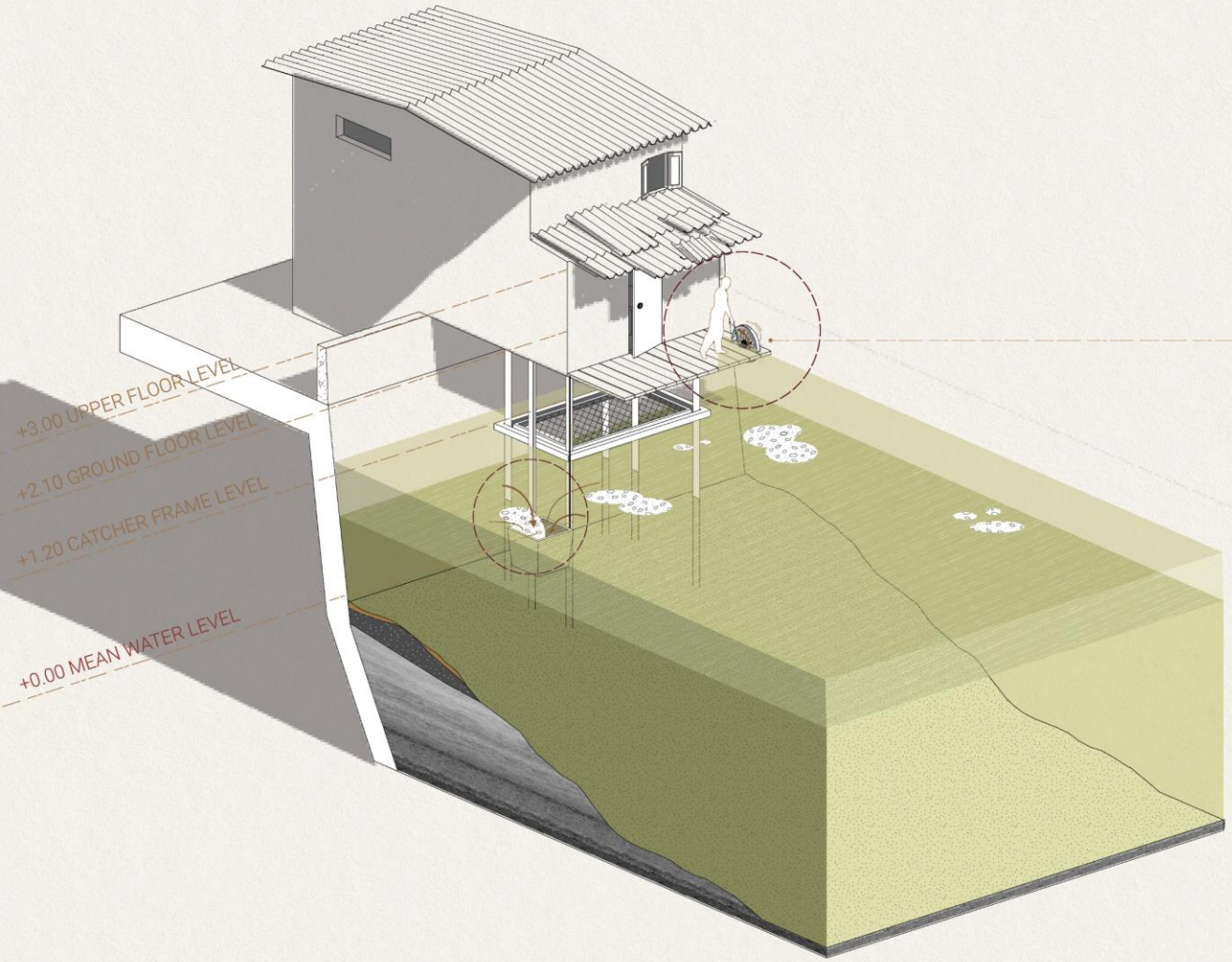
COLUMN STOPPED AT SOFT CLAY LAYER

CREATES MORE SEDIMENTATION

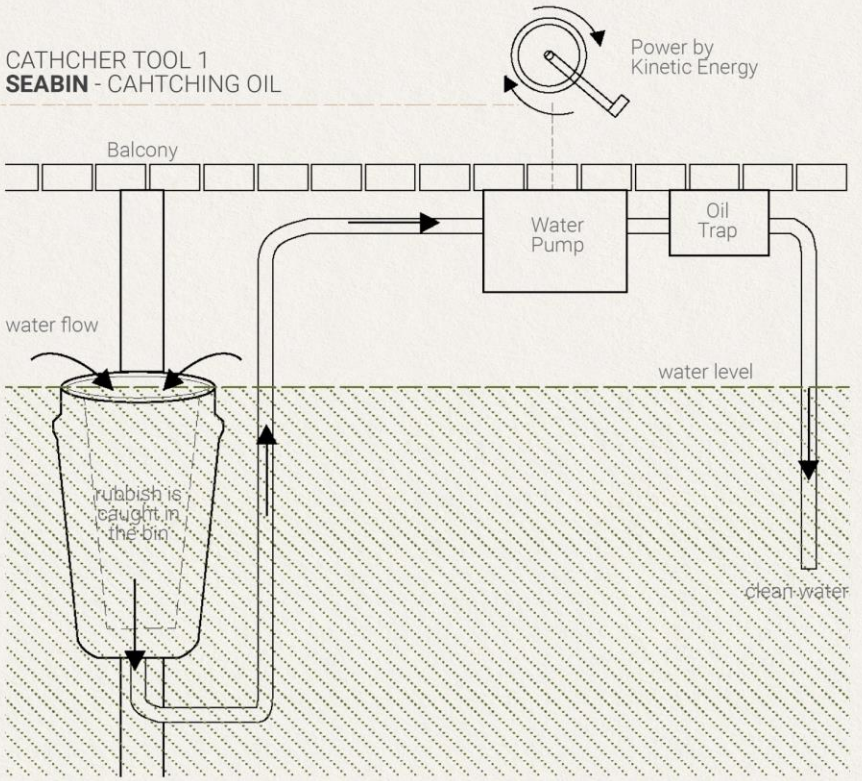
UNSTABLE SUPPORT BASE



INTERVENTION 1
CATCHER

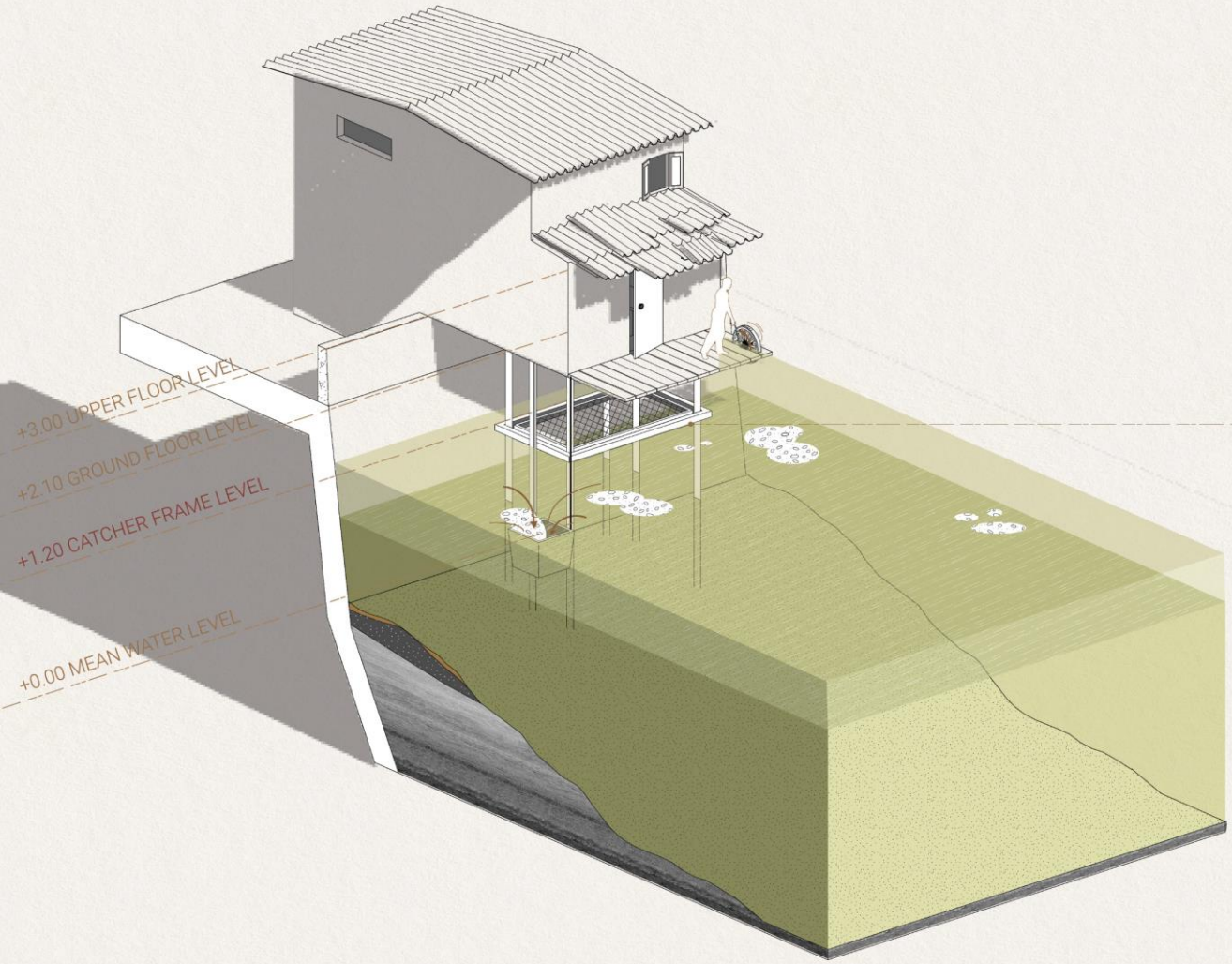


CATHCHER TOOL 1
SEABIN - CAHTCHING OIL

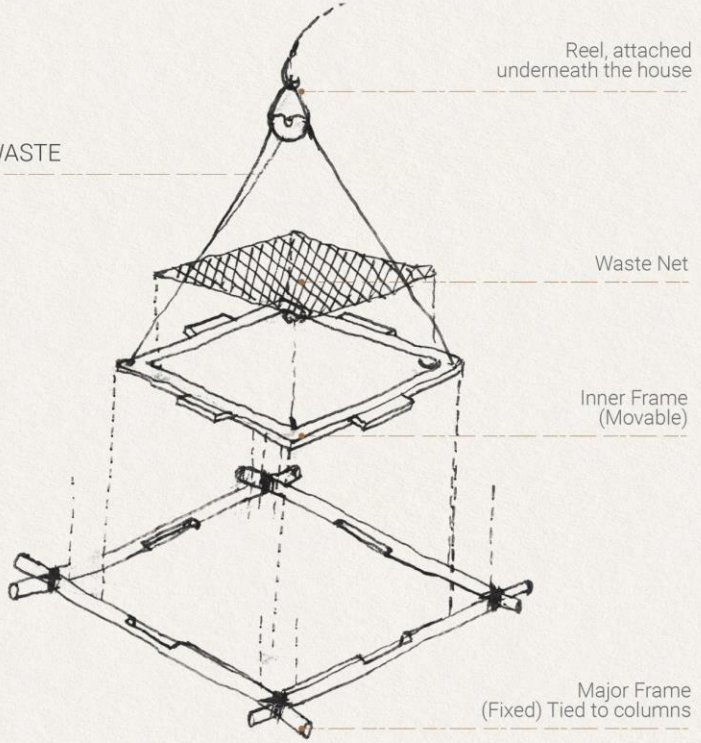


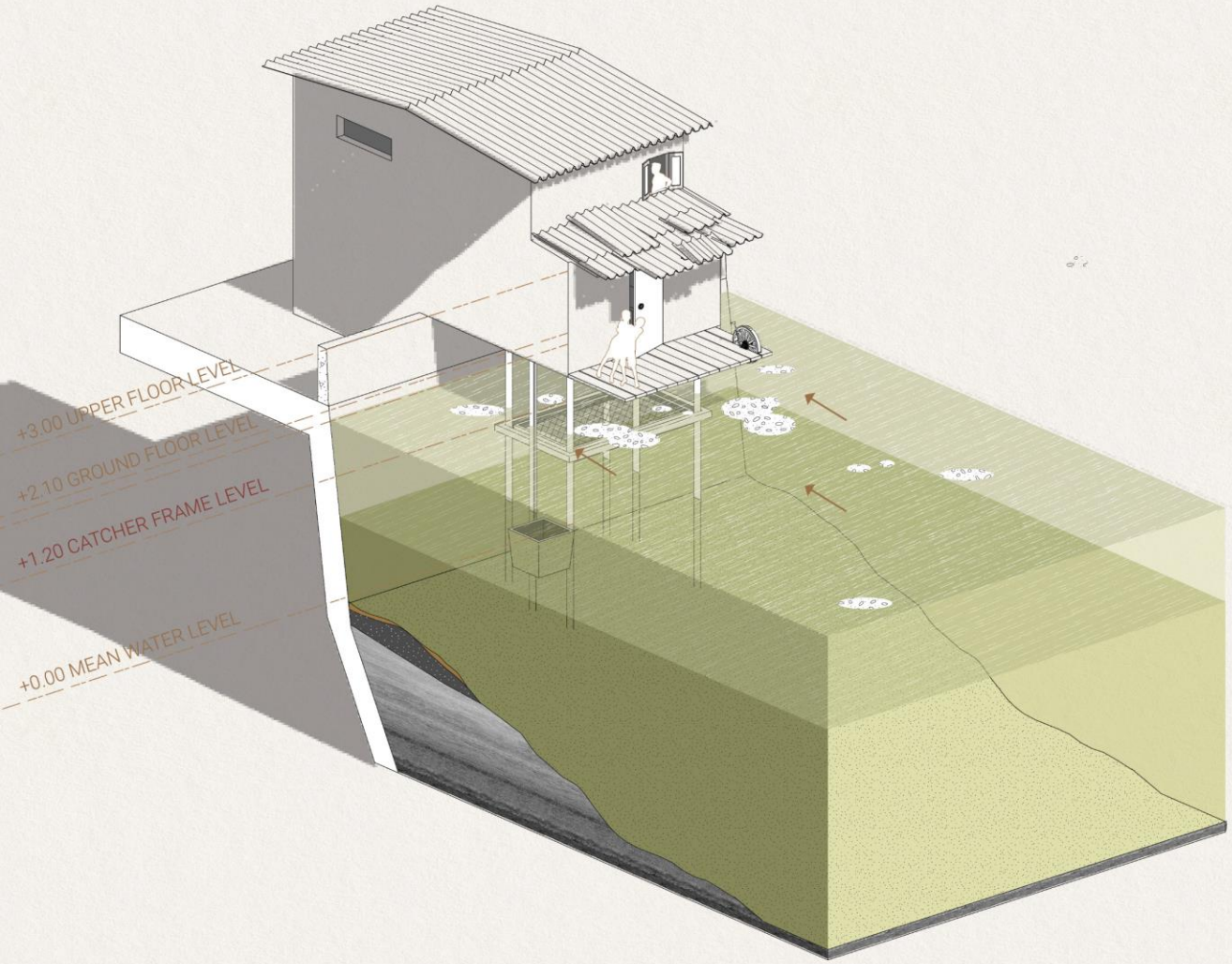
Seabin Project. (n.d.). In Seabin V5. Retrieved from https://seabinproject.com/the-seabin-v5/, Redraw by Author

INTERVENTION 1
CATCHER

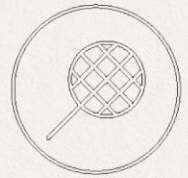


CATHCHER TOOL 2
CATHCER FRAME
CAHTCHING FLOATING WASTE



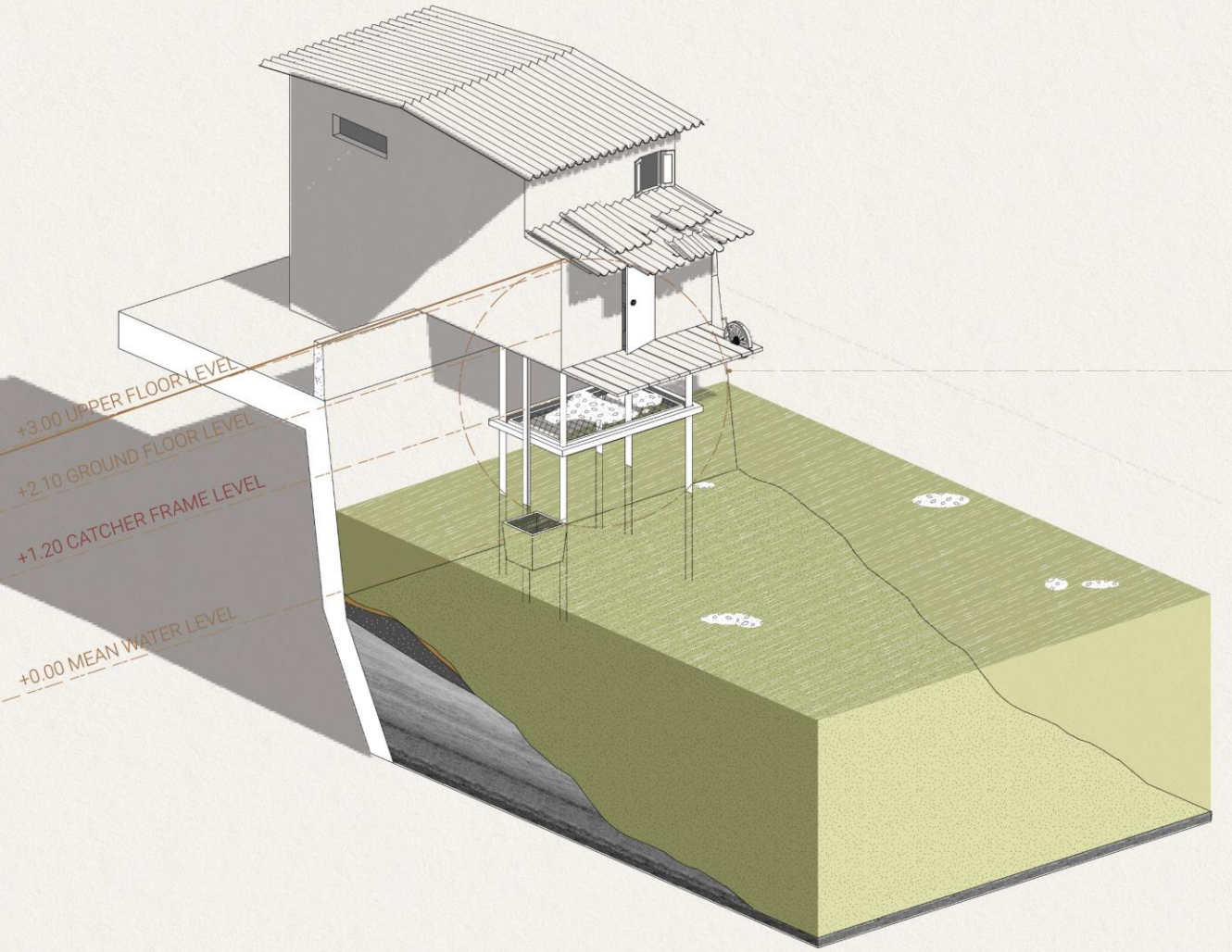


INTERVENTION 1
CATCHER

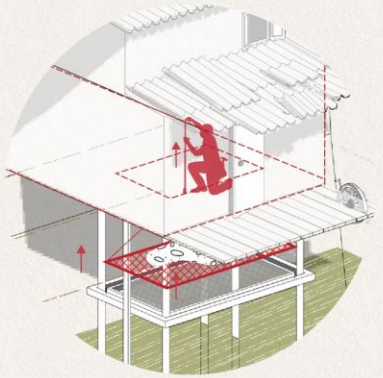


During High Tide

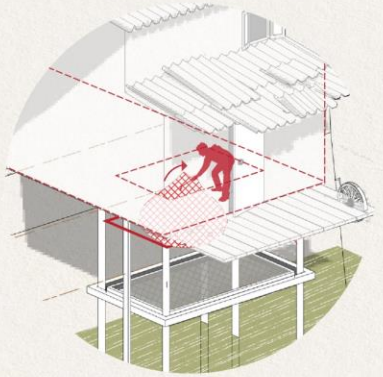
The floating waste is moving all over canal surface, and most of them remains underneath the house due to the obstruction from the columns



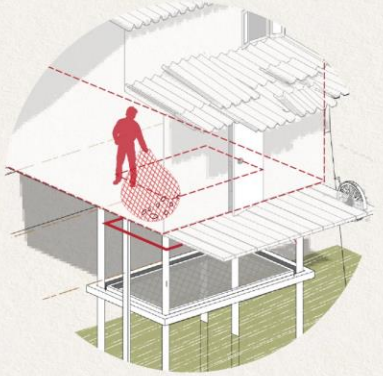
Detail a
WASTE COLLECTING PROCESS



Step 1 Open part of the wood



Step 2 Pull up the trash net



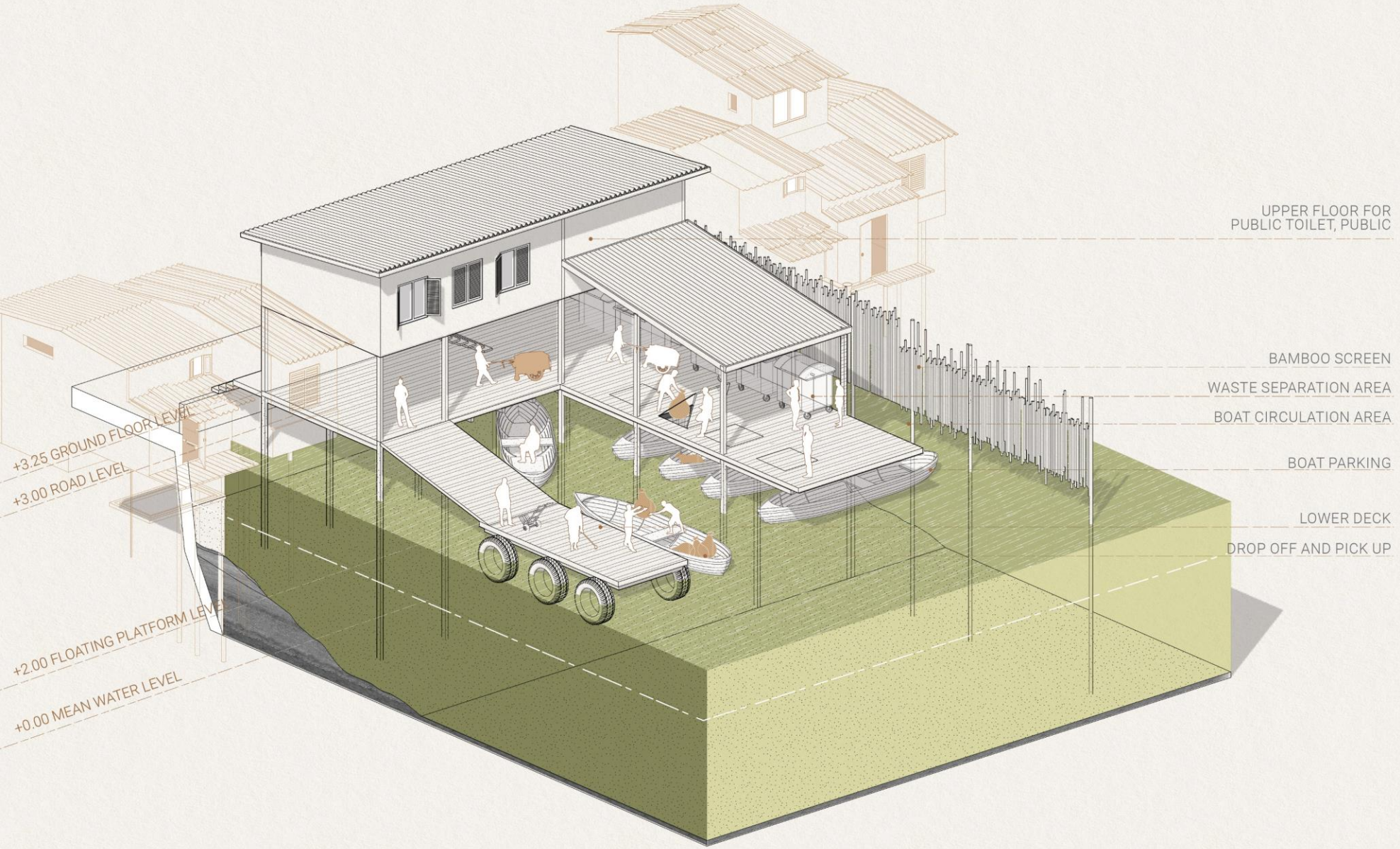
Step 3 Transfer the waste to garbage bin,
Readty to be picked up by the boat

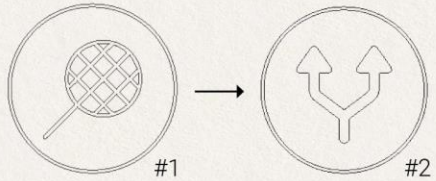
INTERVENTION 1
CATCHER

During Low Tide

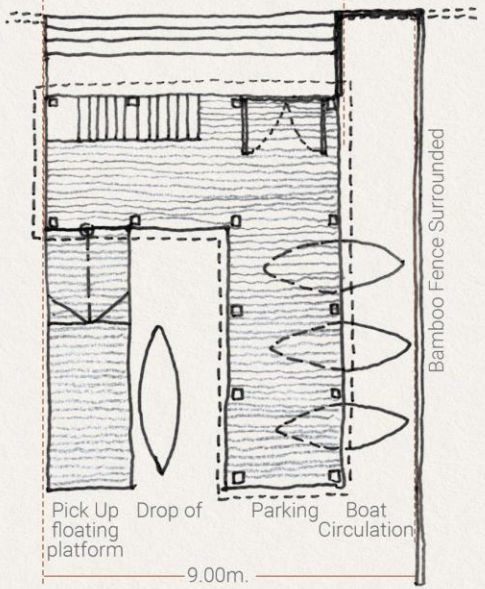
The water level dradually lowered, part of the waste naturally stucked on the catcher frame

INTERVENTION 2
SORTING HOUSE





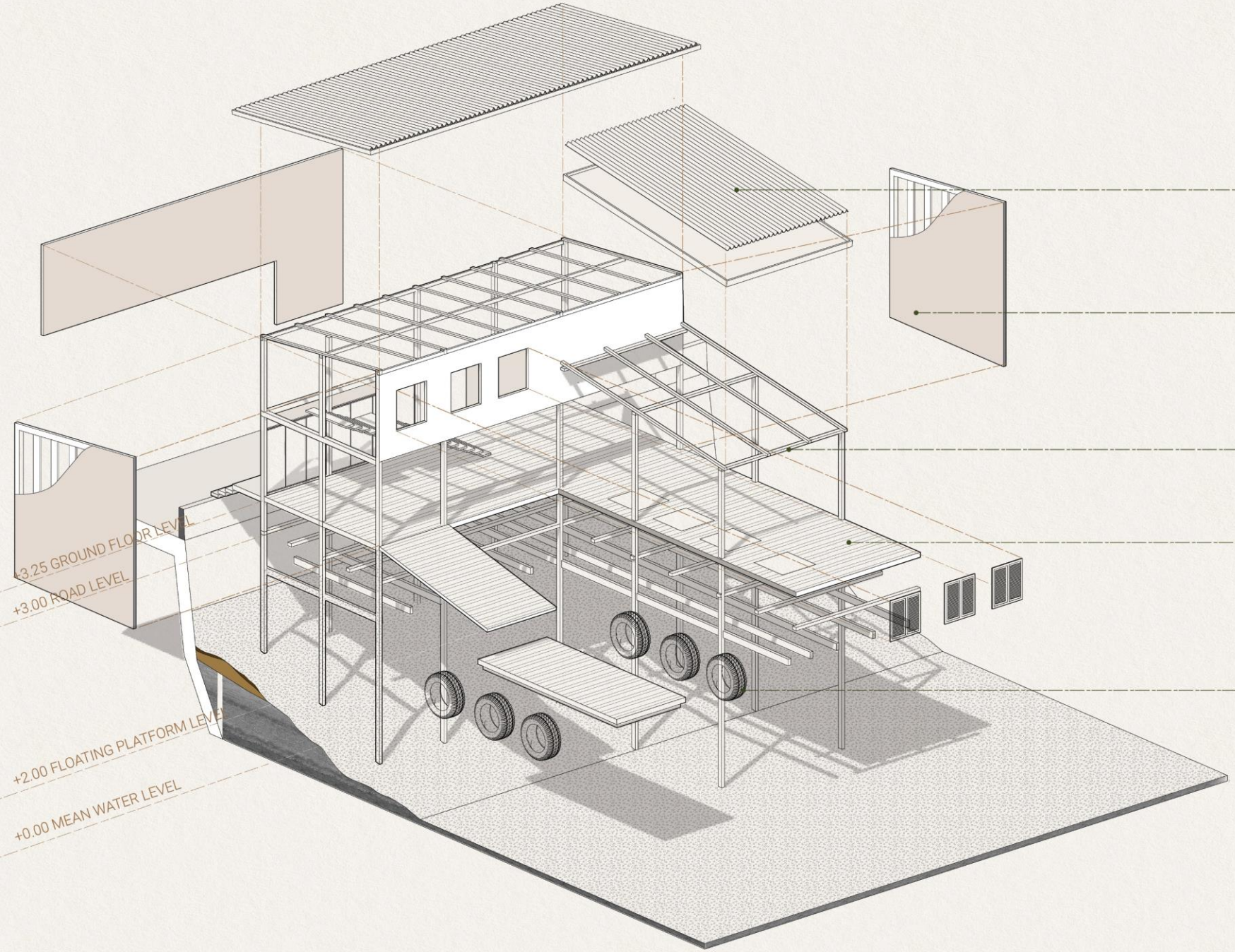
Upper Floor plan

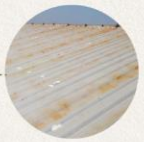


Ground Floor plan

INTERVENTION 2
SORTING HOUSE
STRUCTURE
EXPLODED DIGRAM

#2





Metal Sheet

Fiber Cement Board

Wood column
(Reused from Shutte boards)

Wooden Floor
(Reused from Shutte
boards and column boards)

Reused Tire

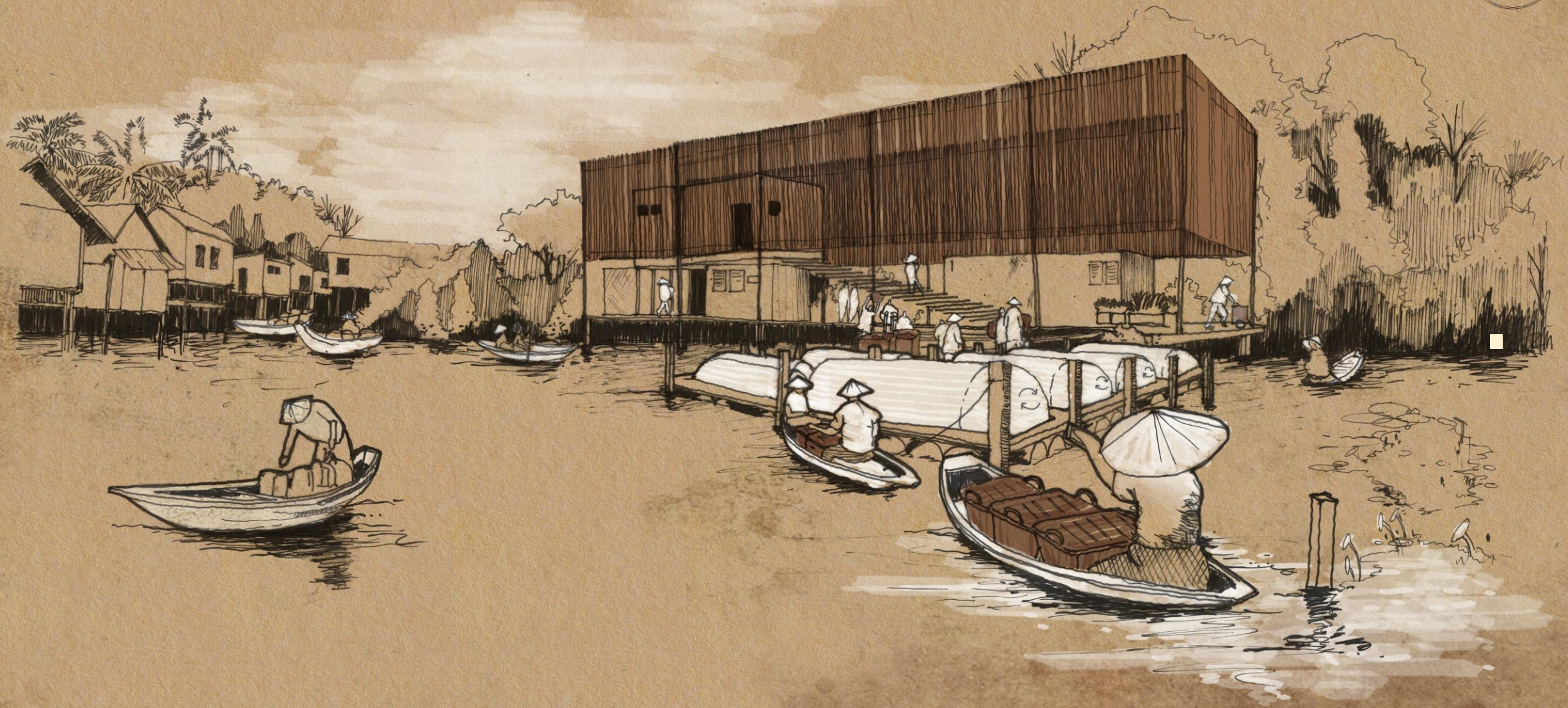
Material

Principles of Design Intervention

1 Easeofconstruction
2 Light weight
3 Minimal Maintenance

WASTE COLLECTING
& DELIVERING

POWER HUB #3




PURIFY

PURIFY
WATER FLOW DIAGRAM

DELAY — DIVERT — RELEASE

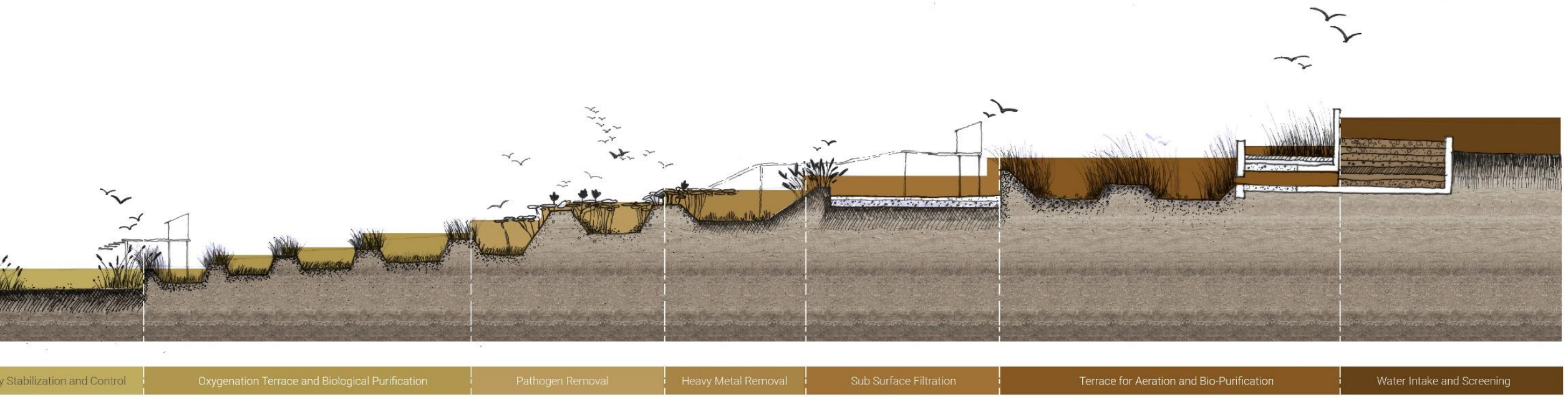

PURIFY
MANGROVE ZONE


SECTION A
GREEN BANK
+2.10 ROAD LE-
+1.90 GREEN BANK GROUND
+0.00 MEAN WATER LEVEL
Recreational Area
Gentle Berm
Pathway
Main Road
Pathway
Residential Area
10.00
2.00
10.00
2.00
EXISTING
CONDITION
+2.80 TOP OF BERM LEVEL
+2.10 ROAD LEVEL
+1.60 GREEN BANK RECREATIONAL
+1.00 TIDAL AREA LEVEL
+0.00 MEAN WATER LEVEL
Tidal Zone
Recreational Area
Gentle Berm
Pathway
Main Road
Pathway
Residential Area
15.00
2.00
2.00
PROPOSED
SECTION

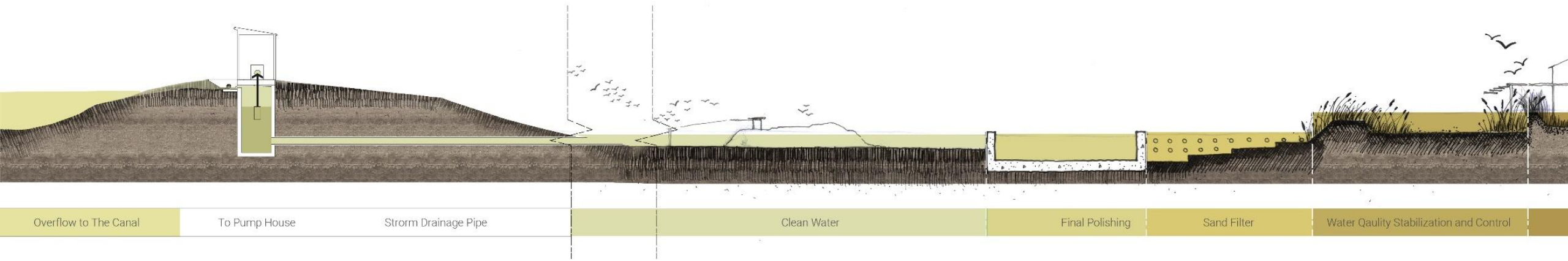
PURIFICATION PARK
DETAIL PLAN

1 Existing informal houses
2 Mangrove Island
3 Public Park - Recreation
4 Amphitheater Island
5 Stage
6 Public Park - Passive Zone
7 Public Park - Active Zone
8 New Area for Informal Settlement (Relocation)
9 Existing Residential Area
10 Ecological Pond
11 Existing Aquaculture Farm
12 Green area Preservation
13 Screening Forest
14 Wetland
15 Power Hub Island
16 Access for Waste Delivery Boat with Sluce Control
17 Existing Highway
18 Water Inlet
19 Water Outlet Controled by Water Pump

PURIFICATION PARK
SECTION



PURIFICATION PARK
SECTION



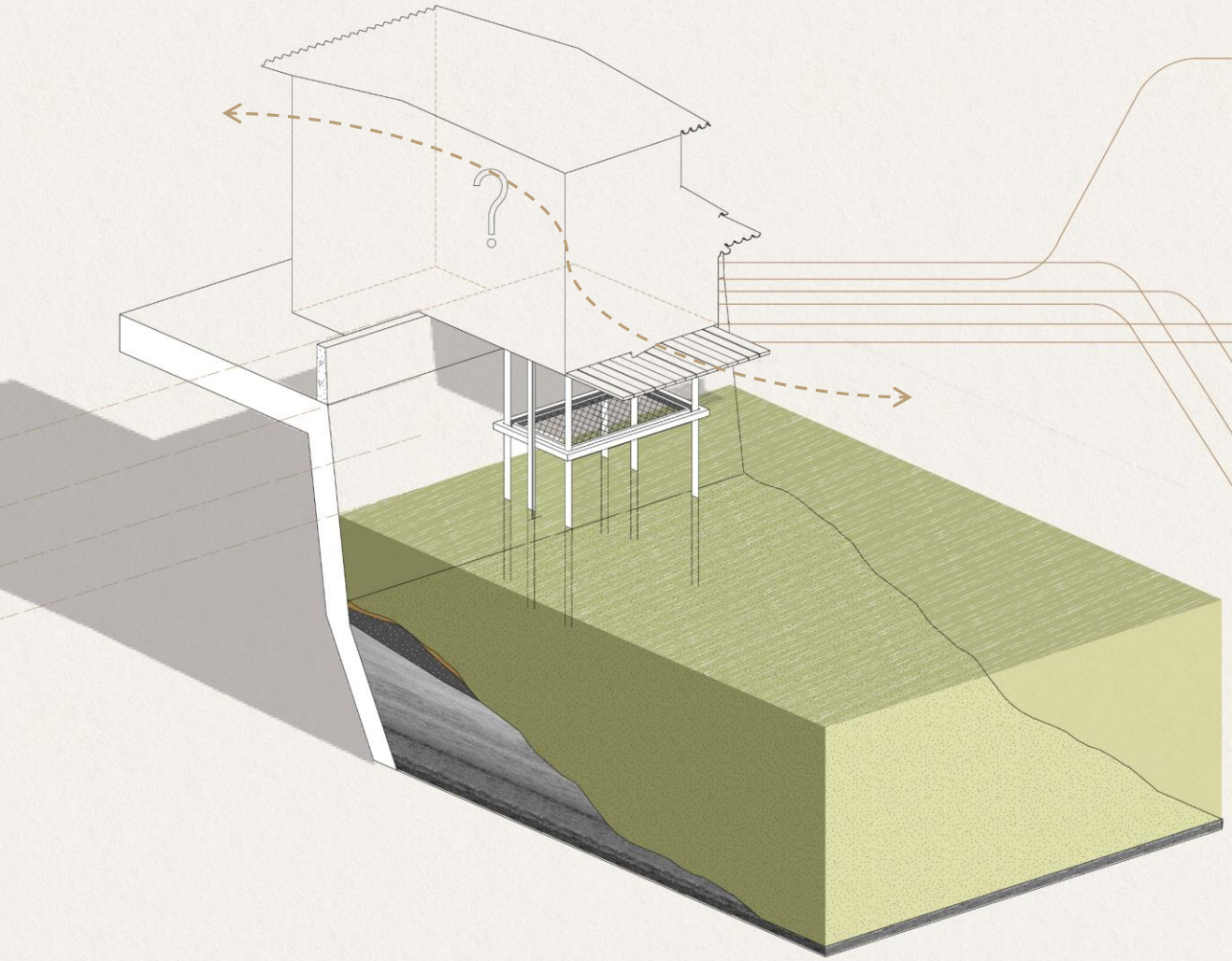

CONNECT

CONNECT
CONTEXT STUDY

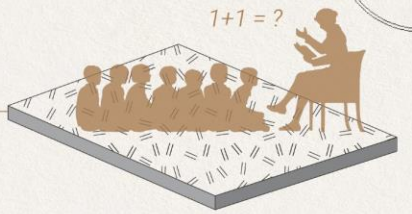
CONNECT
EXPERIENCE ROUTES

INTERVENTION #4
GATHER

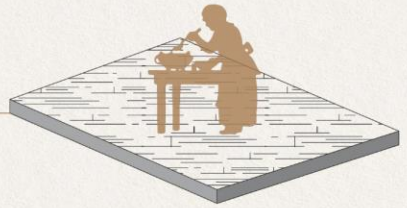
#4



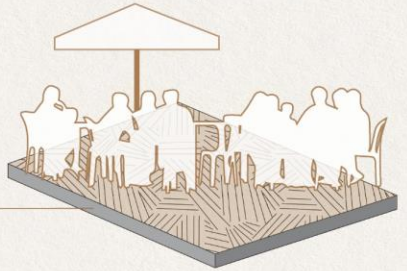
Green Space



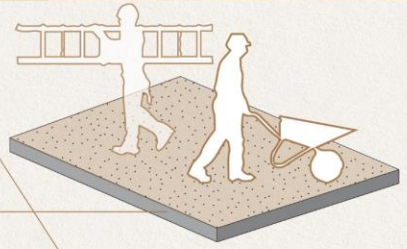
Community Classroom



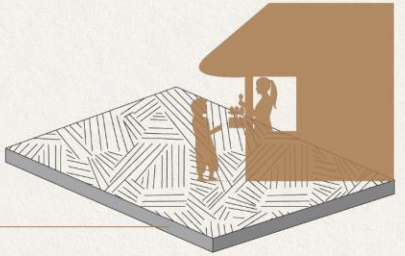
Community Kitchen



Canteen



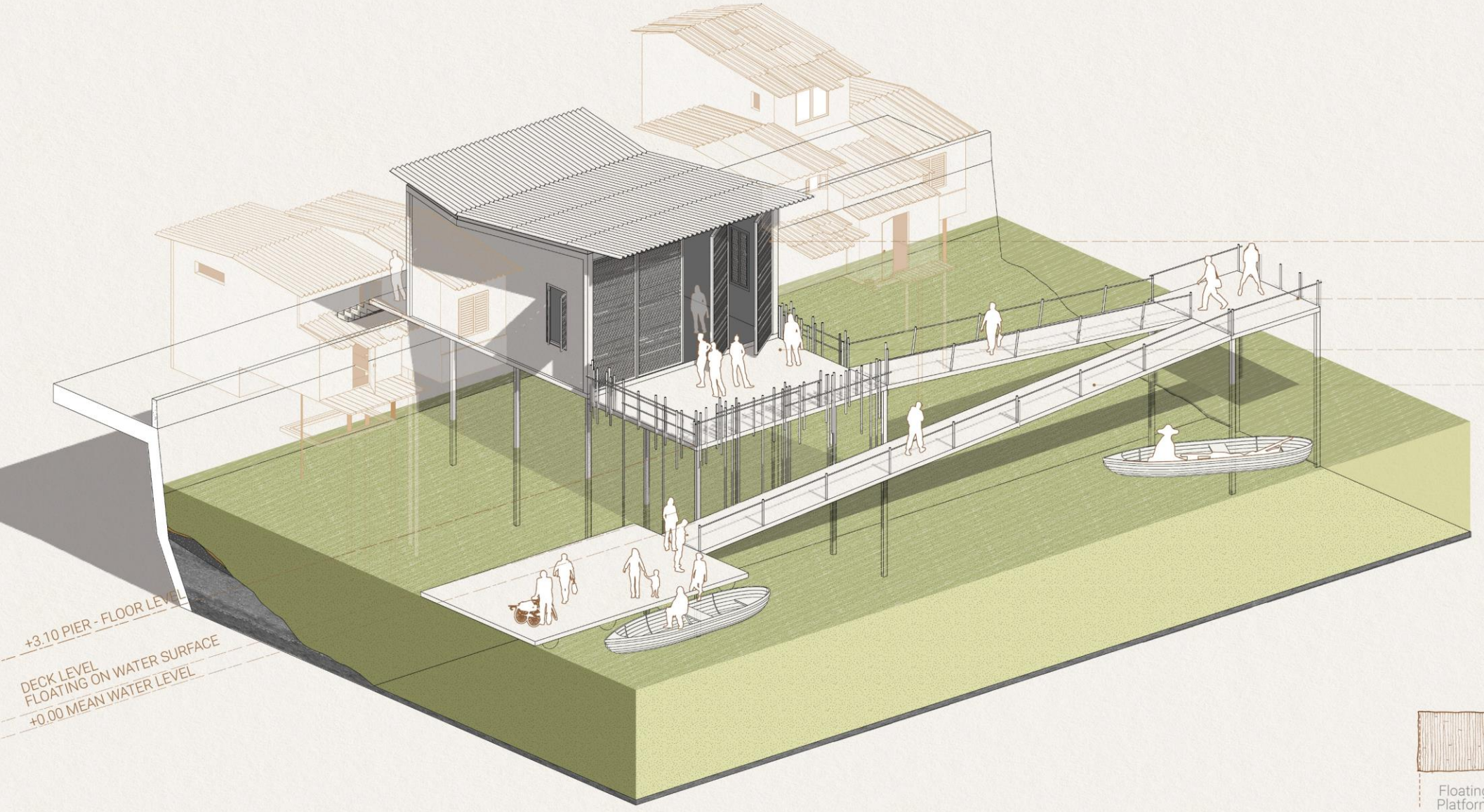
Construction Storage

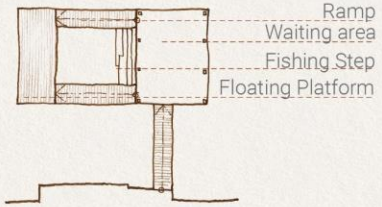


Donation Place

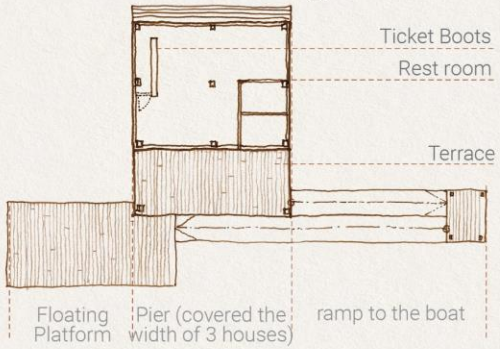
INTERVENTION#5
PIER

#5



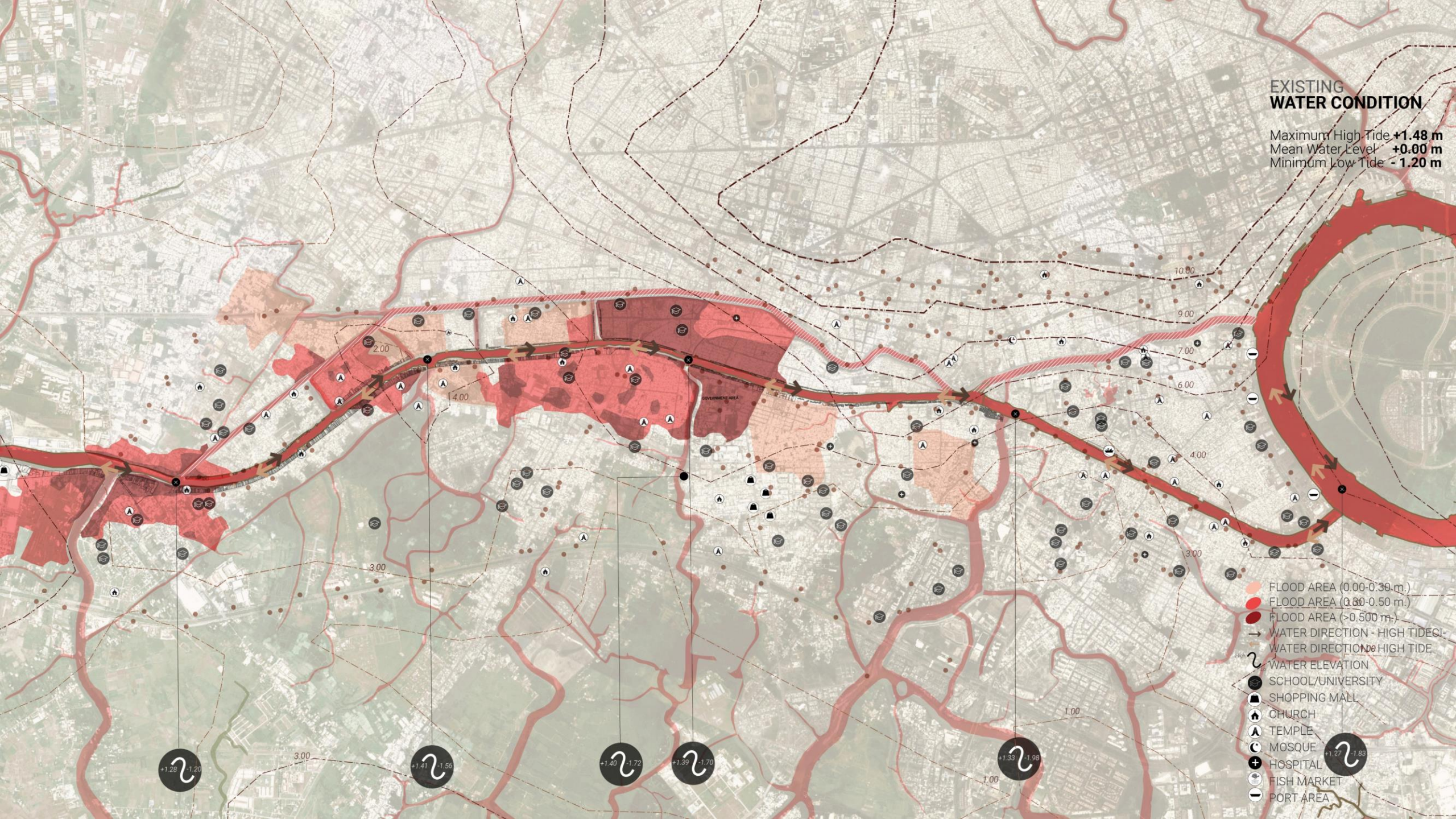


Pier Type 2 - Floor Plan



Pier Type 1 - Floor Plan


ADAPT


EXISTING
WATER CONDITION
Maximum High Tide +1.48 m
Mean Water Level +0.00 m
Minimum Low Tide - 1.20 m
10.00
9.00
7.00
6.00
4.00
3.00
2.00
1.00
GOVERNMENT AREA
+1.28 -1.20
+1.41 -1.56
+1.40 -1.72
+1.39 -1.70
+1.33 -1.98
+1.27 -1.83
FLOOD AREA (0.00-0.30 m.)
FLOOD AREA (0.30-0.50 m.)
FLOOD AREA (>0.500 m.)
WATER DIRECTION - HIGH TIDE
WATER DIRECTION - HIGH TIDE
WATER ELEVATION
SCHOOL/UNIVERSITY
SHOPPING MALL
CHURCH
TEMPLE
MOSQUE
HOSPITAL
FISH MARKET
PORT AREA

ADAPT
SPONGE AREA
DRY CONDITION

GREEN AREA
INCREASING

14%

FROM TOTAL
AREA

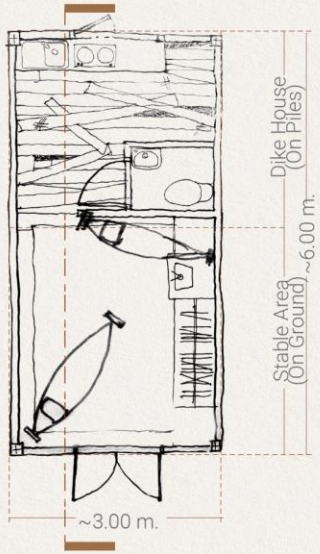
GREEN AREA
4,826,000 sq.m. (14.82%)
TOTAL AREA
38,400,000 sq.m. (100%)

ACTIVITY
LEVEL

1 ●○○○ 2 ●○○○ 3 ●●●○ 4 ●●●●


ADAPT
SPNGE AREA
WET CONDITION
GREEN BANK as Flood Protection
DIKE HOUSE as Flood Protection
HIGH WAY as Flood Protection
Water way with exceesisve water
Availability of pond with the ability to hold water
Porous area to increase the drain surface
Proposed Dike Houses
Proposed Green Bank
High way - existing dike

EXISTING
INFORMAL HOUSE
WET CONDITION



+3.95 Upper Floor Level

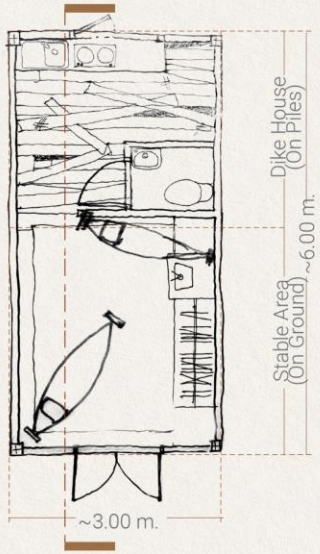
+2.15 Ground Floor

+2.00 Road Level

+0.00 Mean Water Level

Road — Stable area — Unstable area (On Piles) — Terrace

EXISTING
INFORMAL HOUSE
WET CONDITION



+3.95 Upper Floor Level

+2.15 Ground Floor

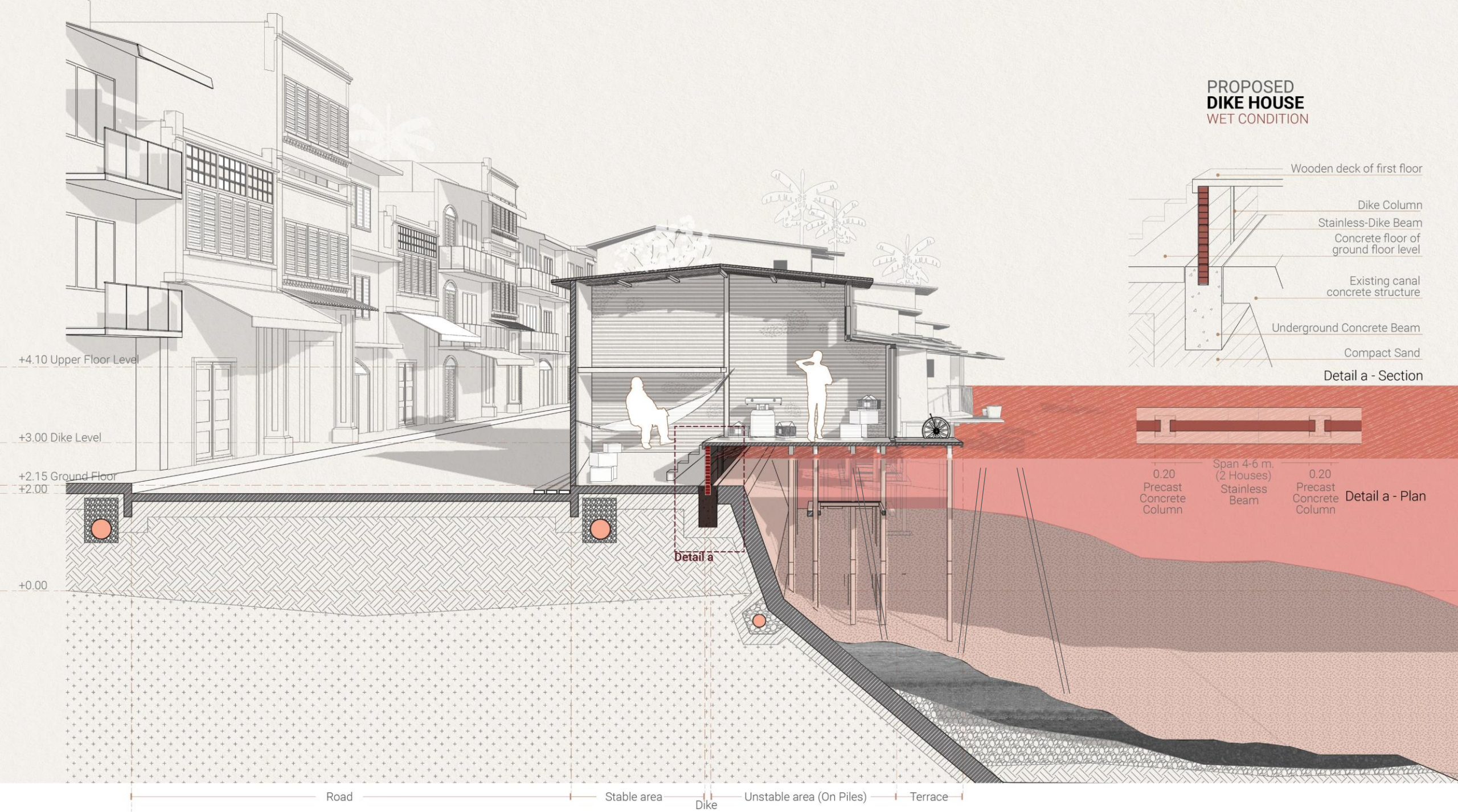
+2.00 Road Level

+0.00 Mean Water Level

Road — Stable area — Unstable area (On Piles) — Terrace


PROPOSED
DIKE HOUSE
DRY CONDITION
Dike House
(1 Floor)
~6.00 m.
Stable Area
(G Floor)
~3.00 m.
+4.10 Upper Floor Level
+3.00 Dike Level
+2.15 Ground Floor
+2.00
+0.00
Road
Stable area
Dike
Unstable area (On Piles)
Terrace

PROPOSED
DIKE HOUSE
WET CONDITION



Detail a - Section

Detail a - Plan

DESIGN ELABORATION

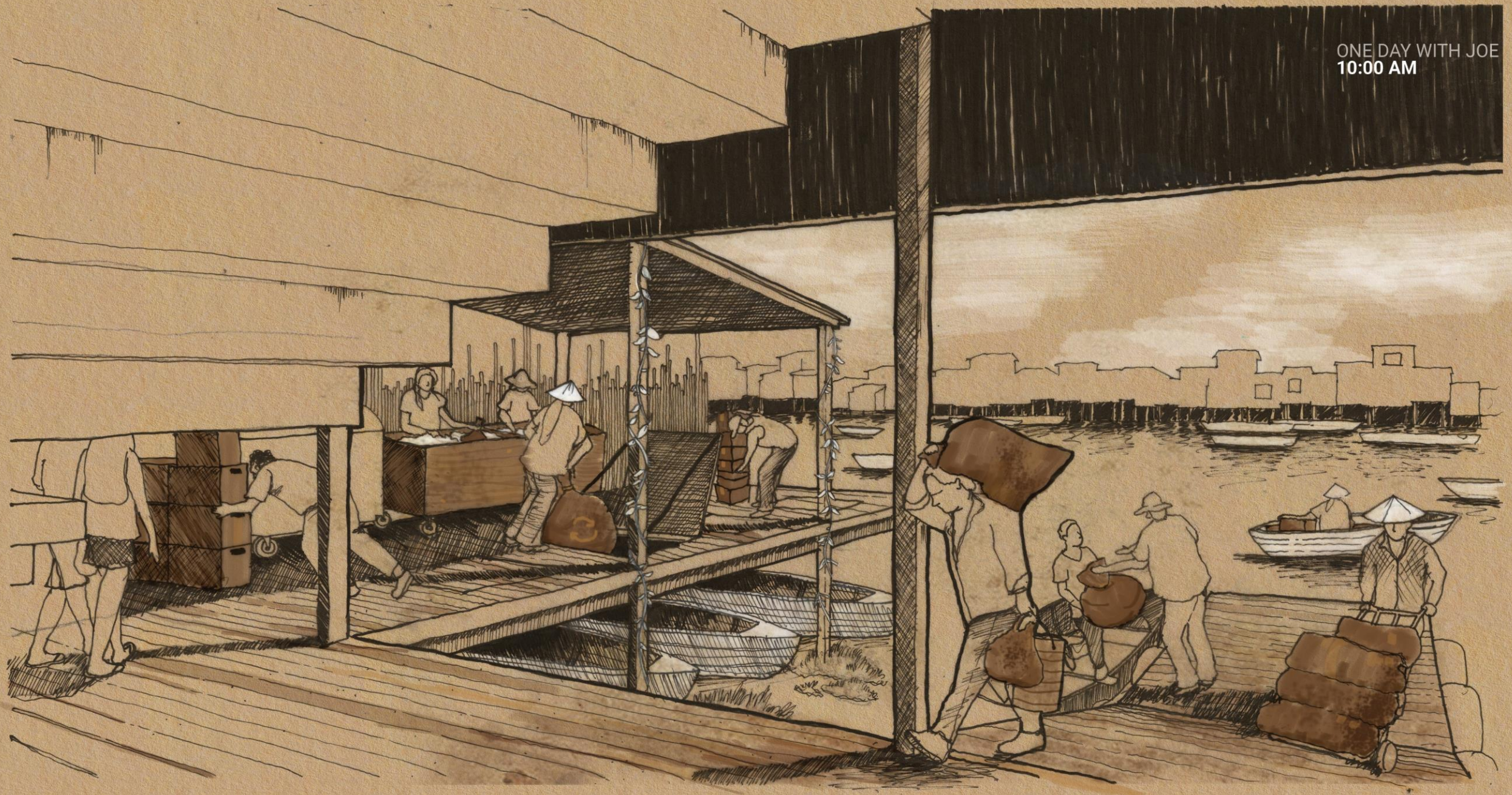
Name : Joe
Age : 23
Nationality : Vietnam
Career : Part time Tour Guide


District 6
Tau hu - Ben Nghe
District 8
Doi-Te Canal
N
0
50
100
150m

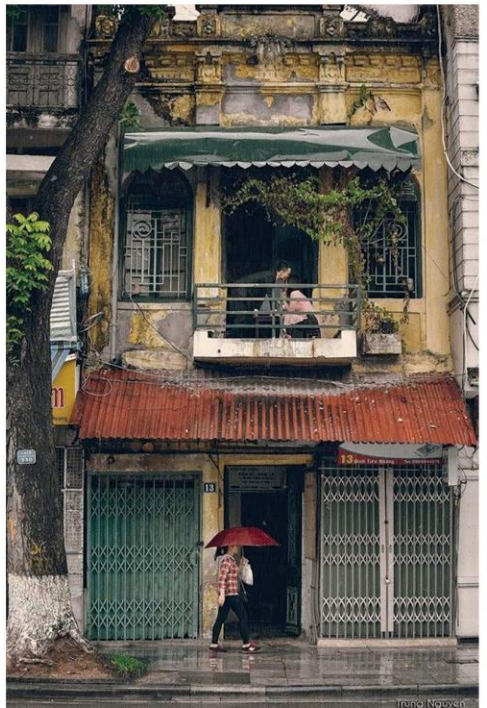
Joe's Place

ONE DAY WITH JOE
8:00 AM

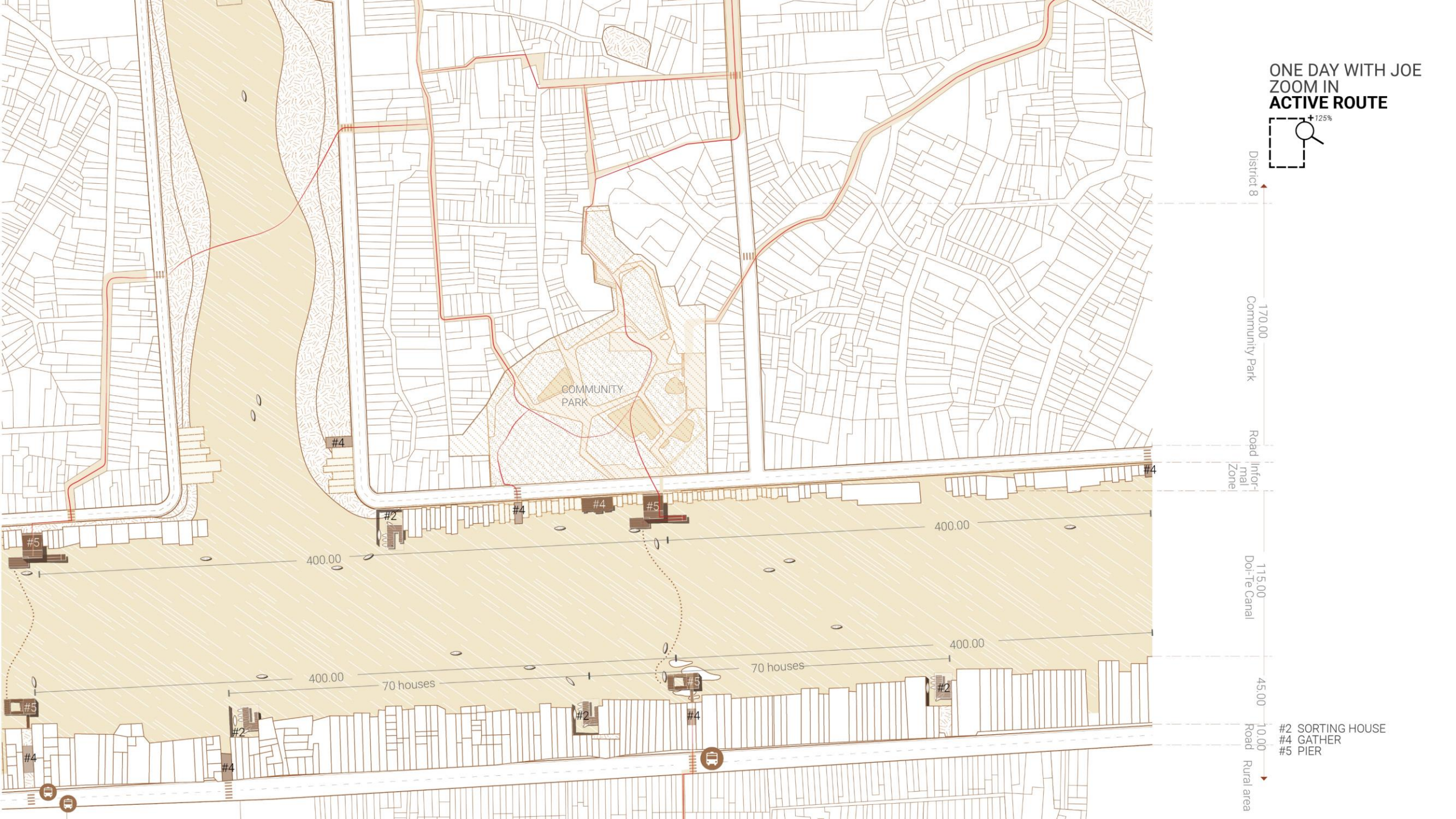
ONE DAY WITH JOE
8:30 AM


ONE DAY WITH JOE
10:00 AM

ONE DAY WITH JOE
ACTIVE ROUTE



ONE DAY WITH JOE
16:00


ONE DAY WITH JOE
ZOOM IN
ACTIVE ROUTE
125%
COMMUNITY PARK
#4
#2
#5
400.00
70 houses
District 8
170.00
Community Park
Road
Infor-mal Zone
115.00
Doi-Te Canal
45.00
10.00
Road
Rural area
#2 SORTING HOUSE
#4 GATHER
#5 PIER

ONE DAY WITH JOE
ZOOM IN
COMMUNITY PARK

150%

1 North Entrance
2 Football field/ Baseketball field
3 Sport field 2 - Open Lawn
4 Main Facility Building
5 Sunken Court
6 Amphitheater
7 Parking Space
8 Playground
9 Foot Massage Area
10 Activity Space
11 Flower Field
12 Chest Tables
13 Community Farming
14 Public Plaza
15 Flea Market Area
16 Motorcycle Parking
17 Loop Sepak Takraw Area
18 Exercise zone
19 Old brick pathway
20 Spirit house

a Pier (Intervention #5)
b Gather - Public Terrace (Intervention #4)
c Sorting House (Intervention #2)
d Proposed Dike House
e Green Bank Entrance

0 10 20 30m

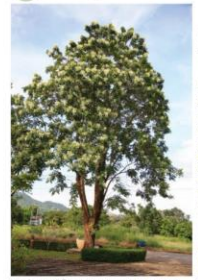
ONE DAY WITH JOE
PLANTING PLAN
COMMUNITY PARK

Feature Trees

Scientific Name: Ficus benjamina
Height : 10.00 - 20.00 m.

Scientific Name: Barringtonia Acutangula (L.) Gaertn.
Height : 5.00 - 15.00 m.

Shading Trees Medium Size with Flowers



Scientific Name: Mayodendron igneum (Kurz)
Height : 6.00 - 15.00 m.

Scientific Name: Plumeria
Height : 6.00 - 10.00 m.

Shading Trees Medium Size

Scientific Name: Maerua Siamensis (Kurz) Pax
Height : 5.00 - 10.00 m.

Scientific Name: Azadirachta indica
Height : 7.00 - 12.00 m.

Scientific Name: Terminalia catappaHeight : 8.00 - 25.00

Screening/Fencing Trees

Scientific Name: Dolichandrone serrulate (Wall. ex DC.) Seem
Height : 10.00 - 15.00 m.

Edible Trees

Scientific Name : Cocos nucifera
Height : 10.00 - 30.00 m.

Scientific Name : Ravenala madagascariensis
Height : 6.00 - 20.00 m.

Scientific Name : Mangifera indica
Height : 8.00 - 15.00 m.

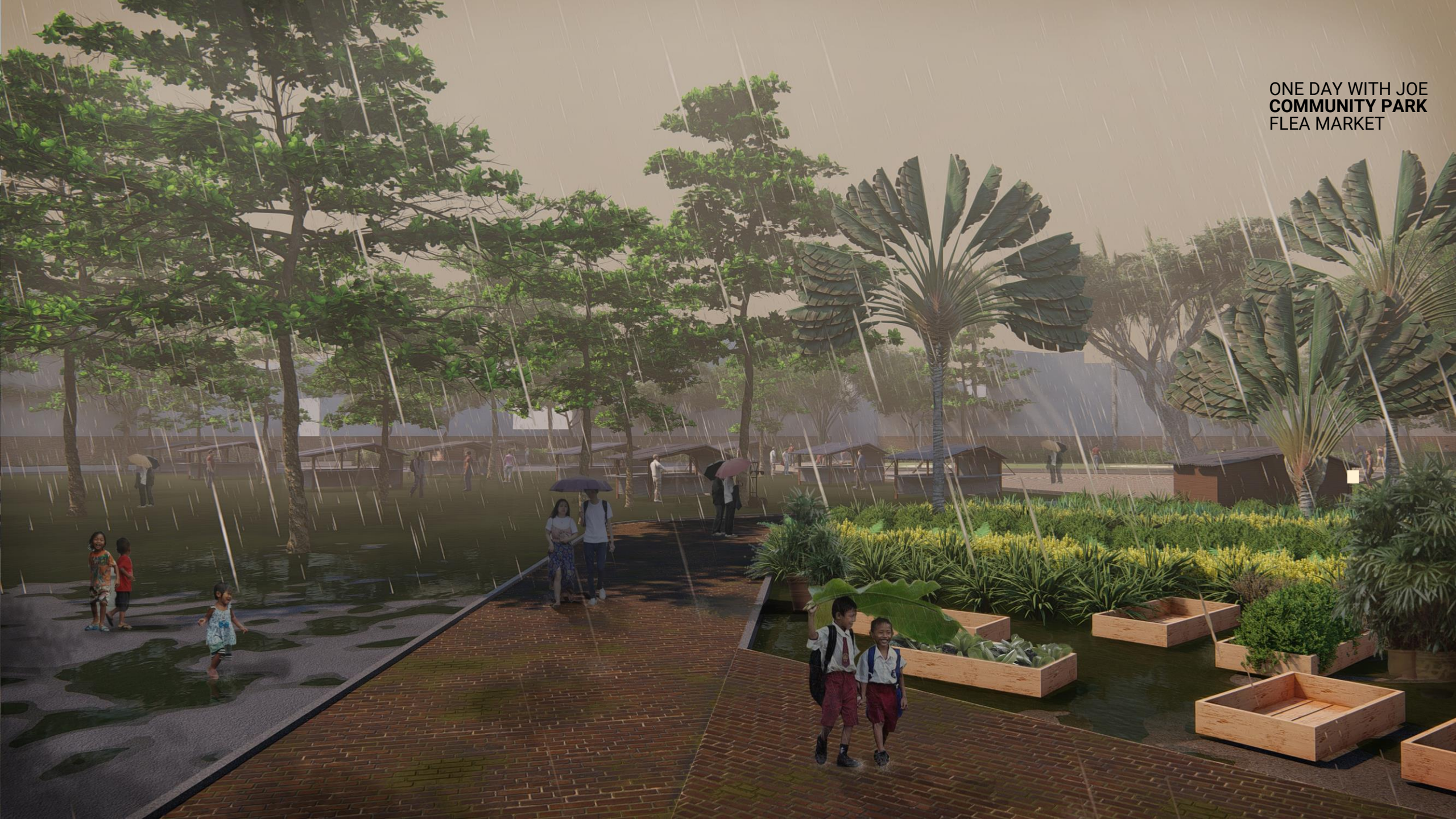
Scientific Name : Tamarindus indica L.Height : 15.00 - 25.00 m.


ONE DAY WITH JOE
COMMUNITY PARK


ONE DAY WITH JOE
COMMUNITY PARK


ONE DAY WITH JOE
COMMUNITY PARK


ONE DAY WITH JOE
COMMUNITY PARK
FLEA MARKET


ONE DAY WITH JOE
COMMUNITY PARK
FLEA MARKET

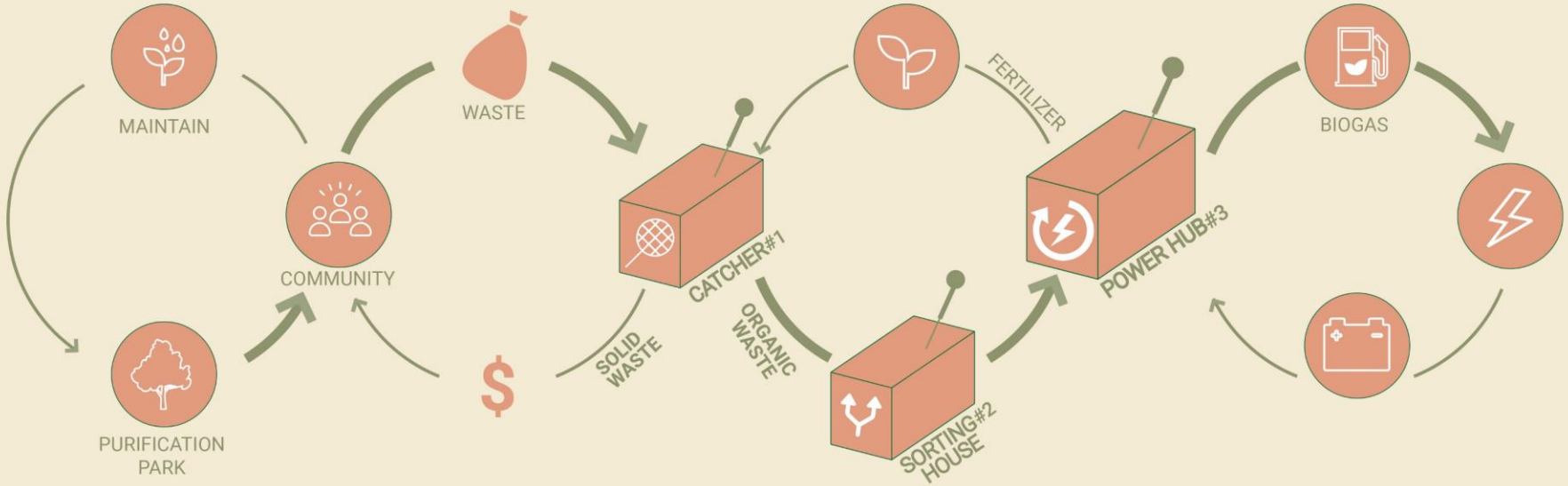

ONE DAY WITH JOE
COMMUNITY PARK
FLEA MARKET


ONE DAY WITH JOE
COMMUNITY PARK
FLEA MARKET

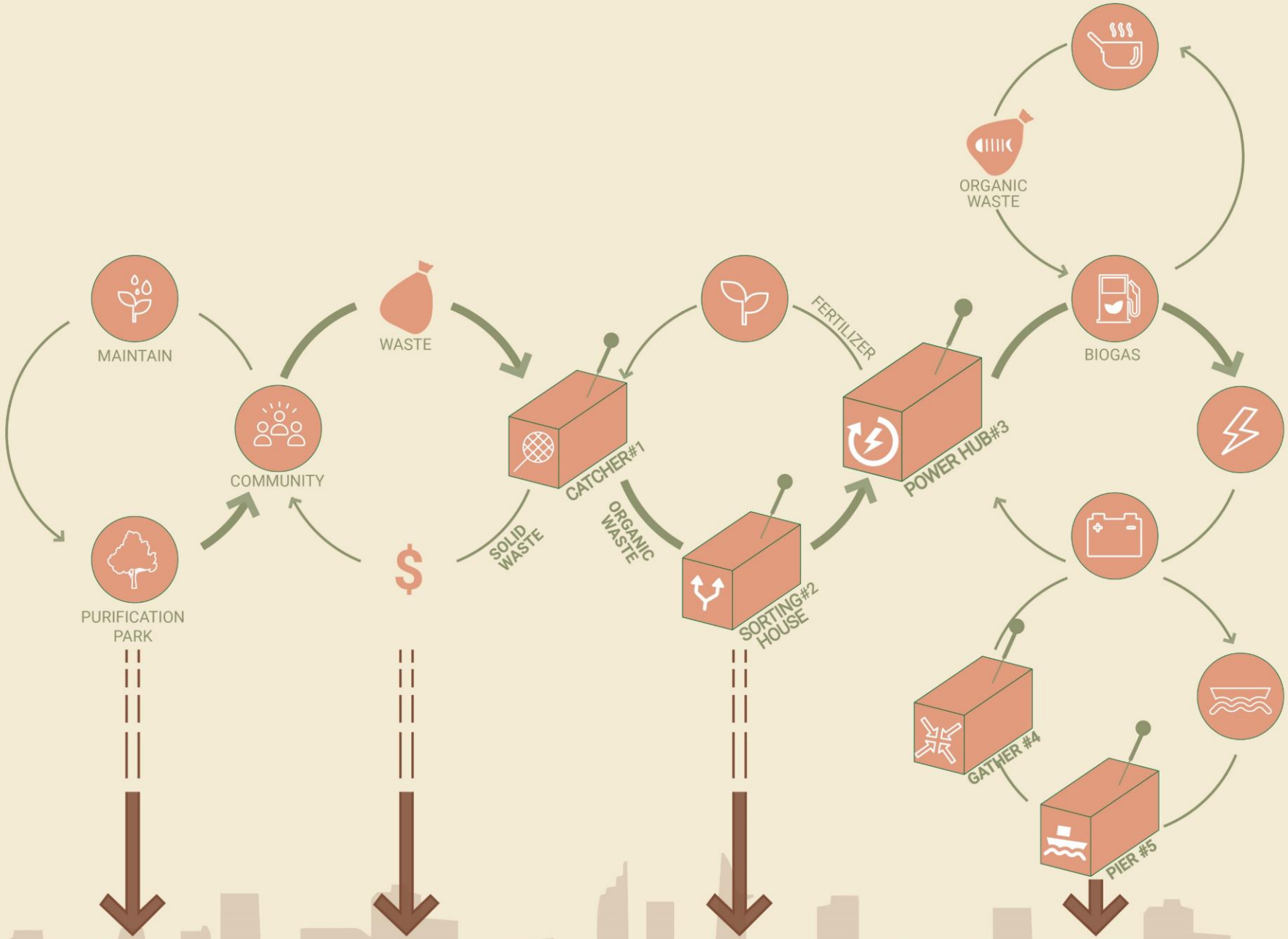
INFORMAL

COMMUNITY

DOI-TE CANAL


MAINTAIN
WASTE
FERTILIZER
BIOGAS
COMMUNITY
CATCHER#1
POWER HUB#3
SOLID WASTE
ORGANIC WASTE
SORTING#2 HOUSE
PURIFICATION PARK
$

DOI-TE CANAL



HO CHI MINH CITY

CLEAN WATER

IMPROVE SURFACE CANAL QUALITY

REDUCE THE NUMBER OF UNEXPLOYED

IMPROVING CITY'S WASTE MANAGEMENT

PRODUCING RENEWABLE ENERGY

ENHANCING THE LONG-LOST CULTURE OF LIFE WITH WATER

HO CHI MINH CITY
DOI-TE CANAL

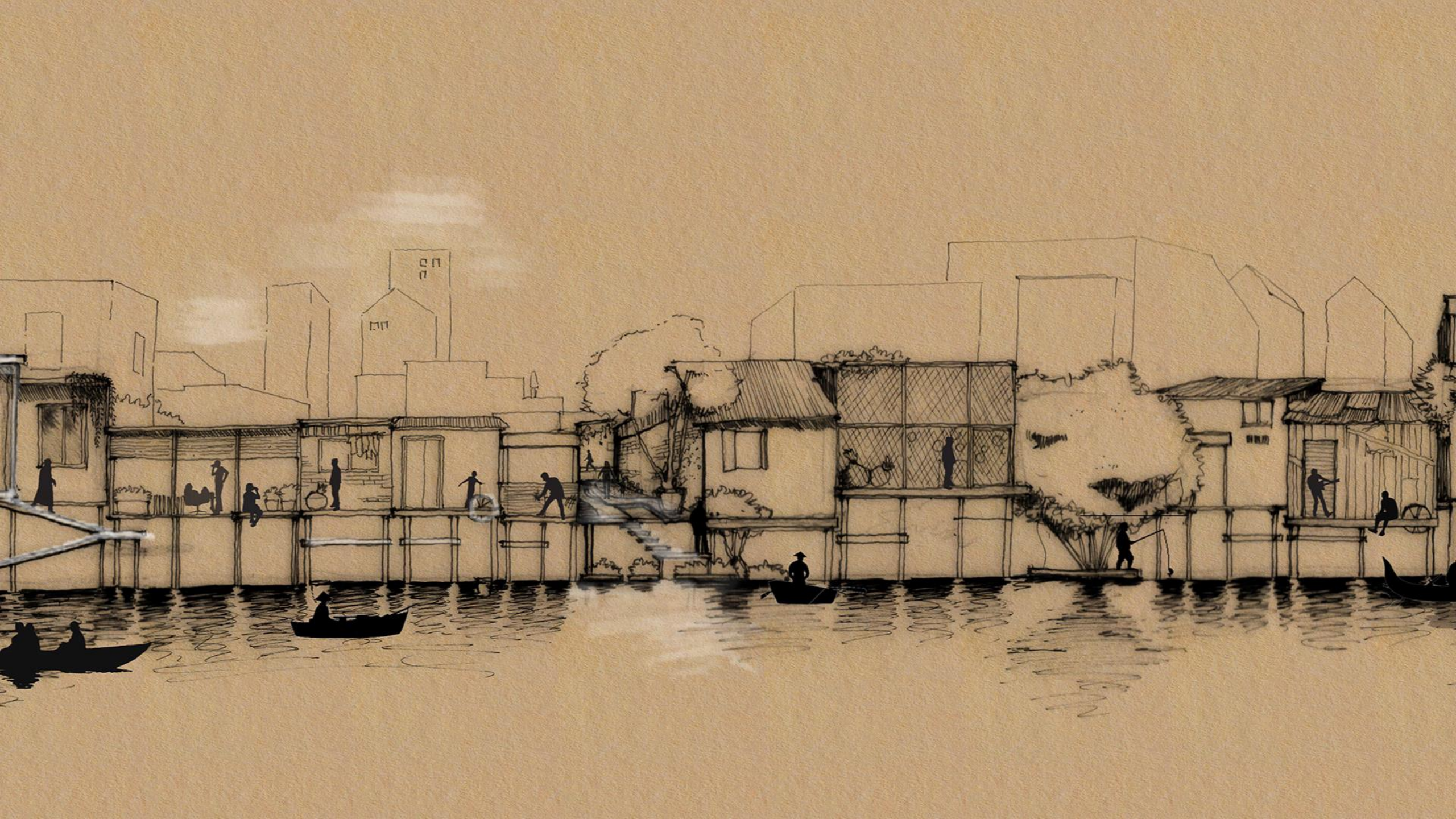
Stakeholders

- Government
  - Municipality
- JICA – Japan International Cooperation Agency for Water Environmental Improvement in Ho Chi Minh City
- Informal Settlement Community

HO CHI MINH CITY
FUTURE PLAN FOR
INFORMAL SETTLEMENT
& CANALS

Discussion for future development

- Detailing in purification park
- Detailing in “Connect” layer – further integrate to urban fabric
- Alternative solution for other landscape conditions



THANK YOU
FOR YOUR ATTENTION