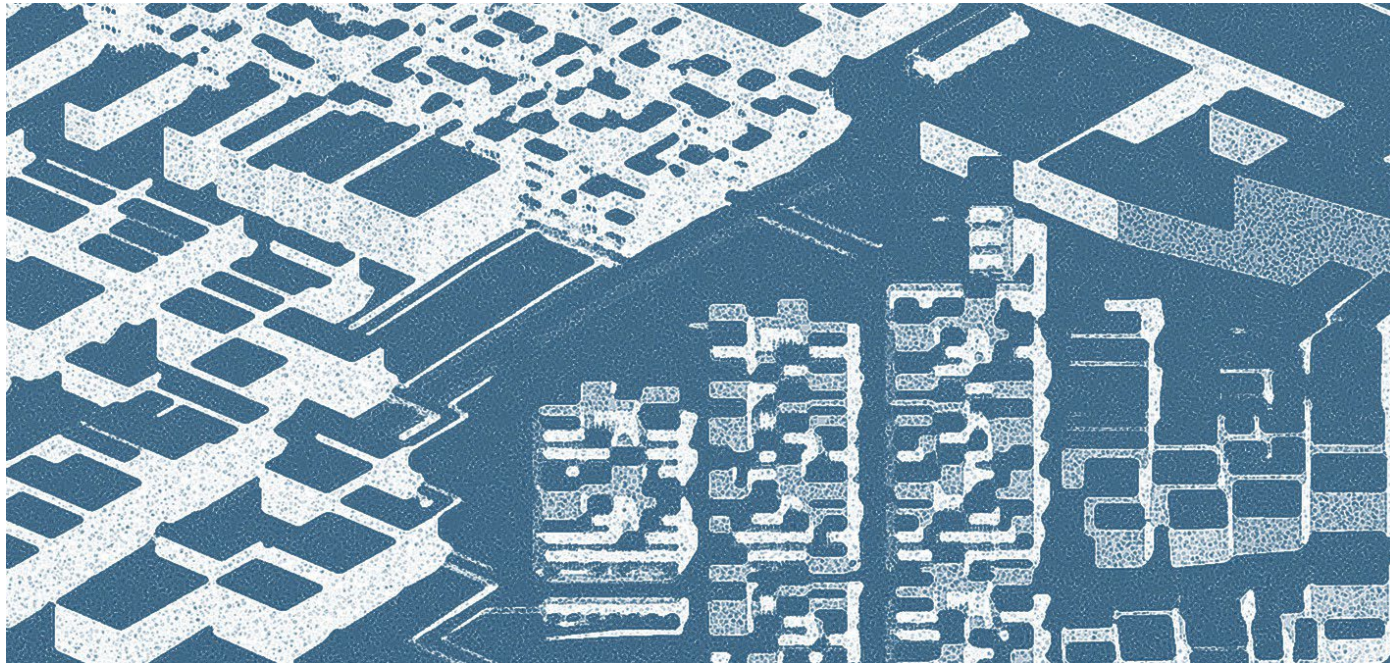


# Pockets of Change



**Flood Resilience Strategies in Dense Low-Income Neighborhoods in Metro Manila**





Flooding in Metro Manila  
Note. From greenpeace (2021)

# 26.09.2009



Typhoon Ondoy

Note. From abcnews (2009)











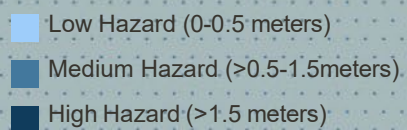
# 500,000 ISF

## Informal Settlers Flood Vulnerability

### Informal Settlers



### 100 year Flood Hazard Map



Background

Analysis

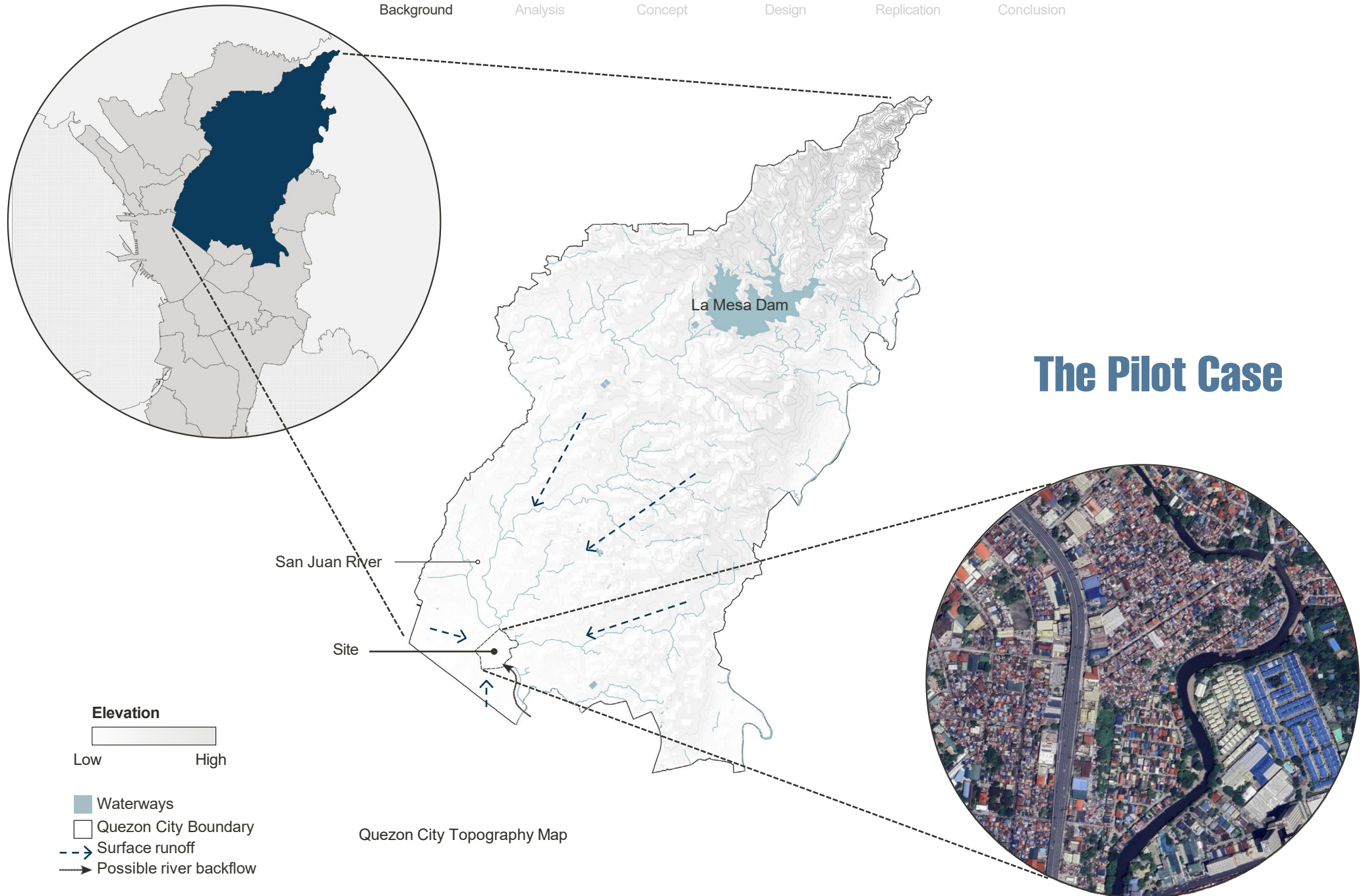
Concept

Design

Implementation

Conclusion





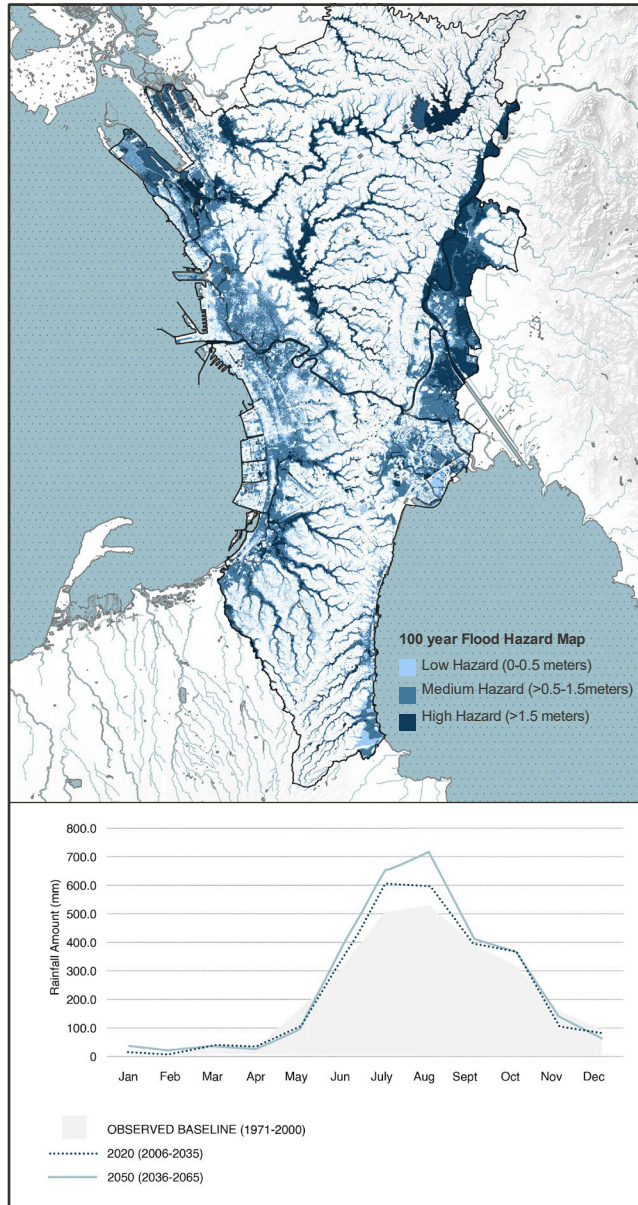




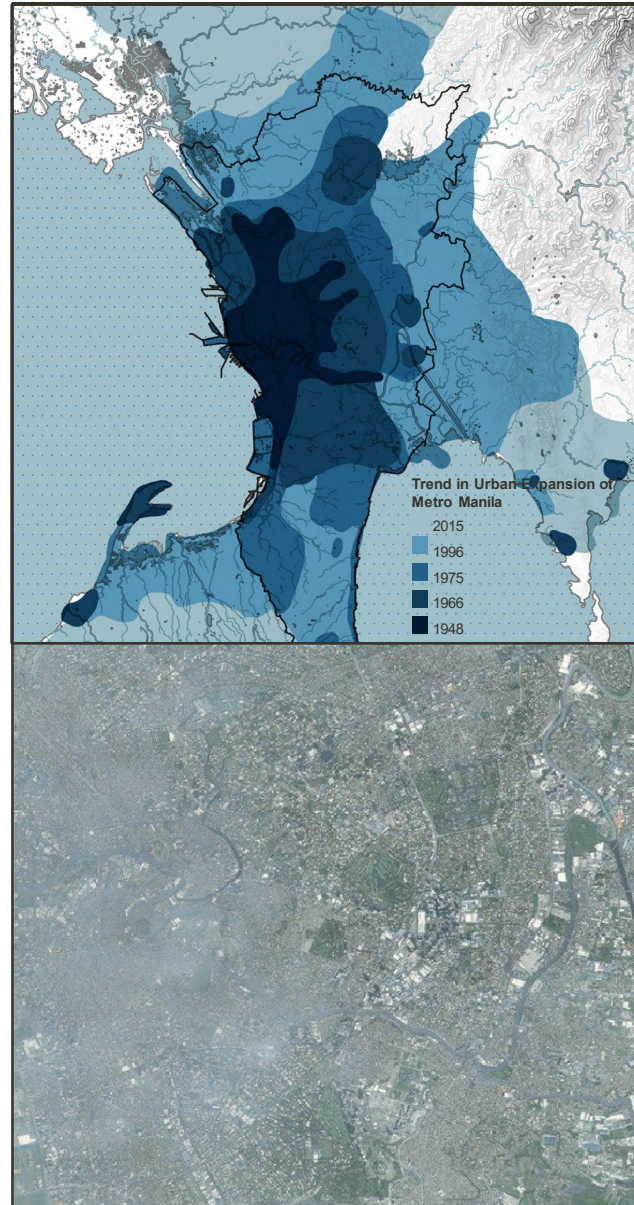
Barangay tatalon  
Note. From author



# Environmental



# Spatial



# Social



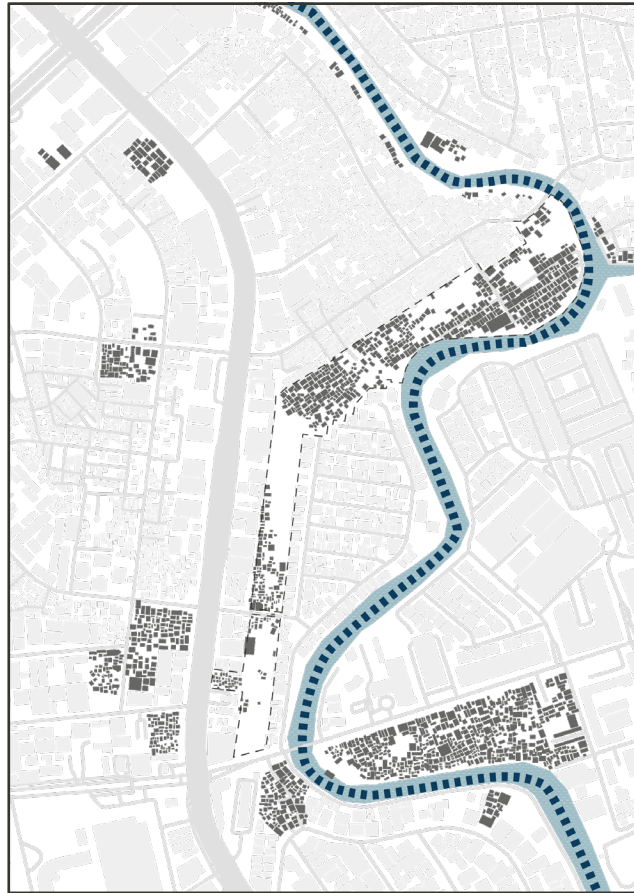


# Environmental



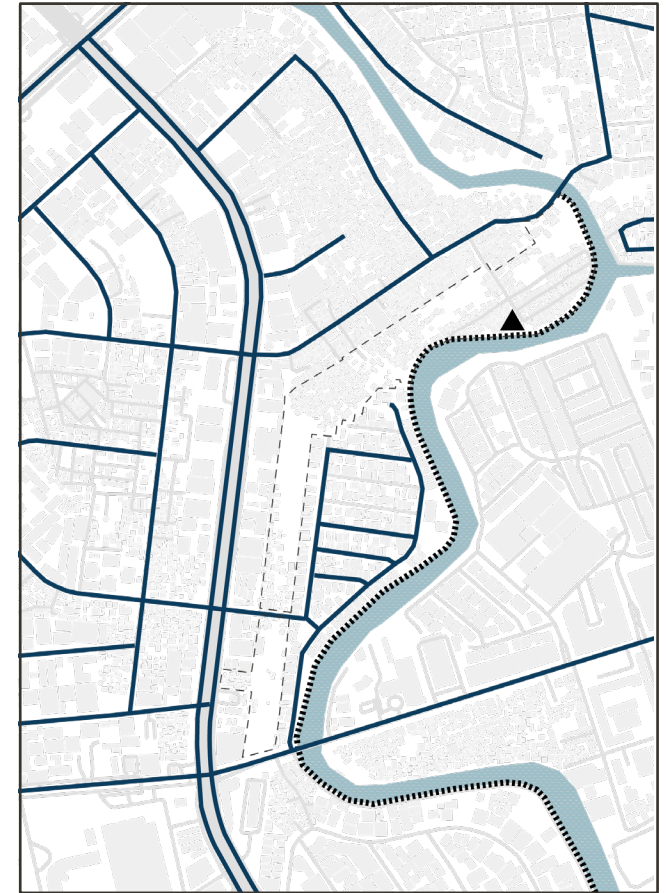
Flood Vulnerability Map

# Spatial

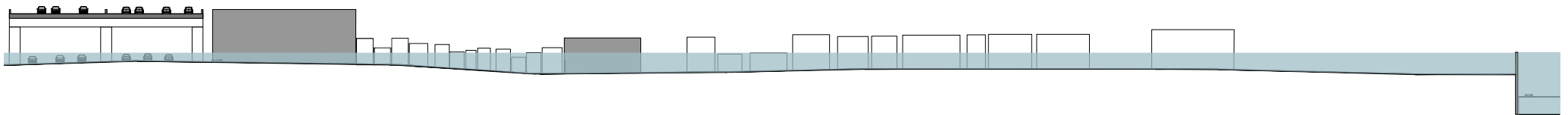


Formal and Informal Divide

# Social



Existing drainage infrastructure



Existing section showing regular flooding

Informal settlements

■ Flooding

Gated community

San Juan River



## Environmental



**Working with water  
and not against it**

## Spatial



**Settlement as  
infrastructure**

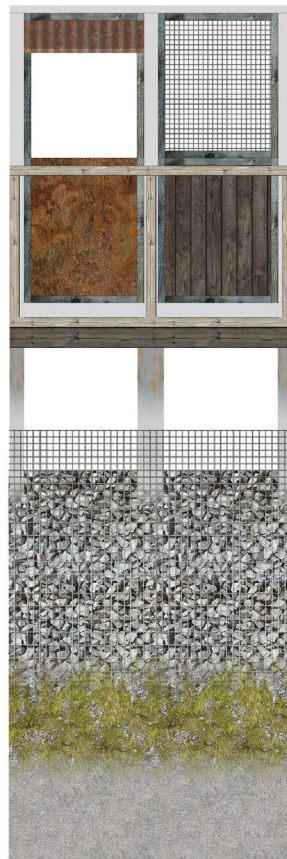
## Social



**Formal and informal  
must work together**



# What if flood resilience is co-produced by the formal and informal sectors?



## 3. Informal (freedom above)

household adaptation

## 2. Negotiation

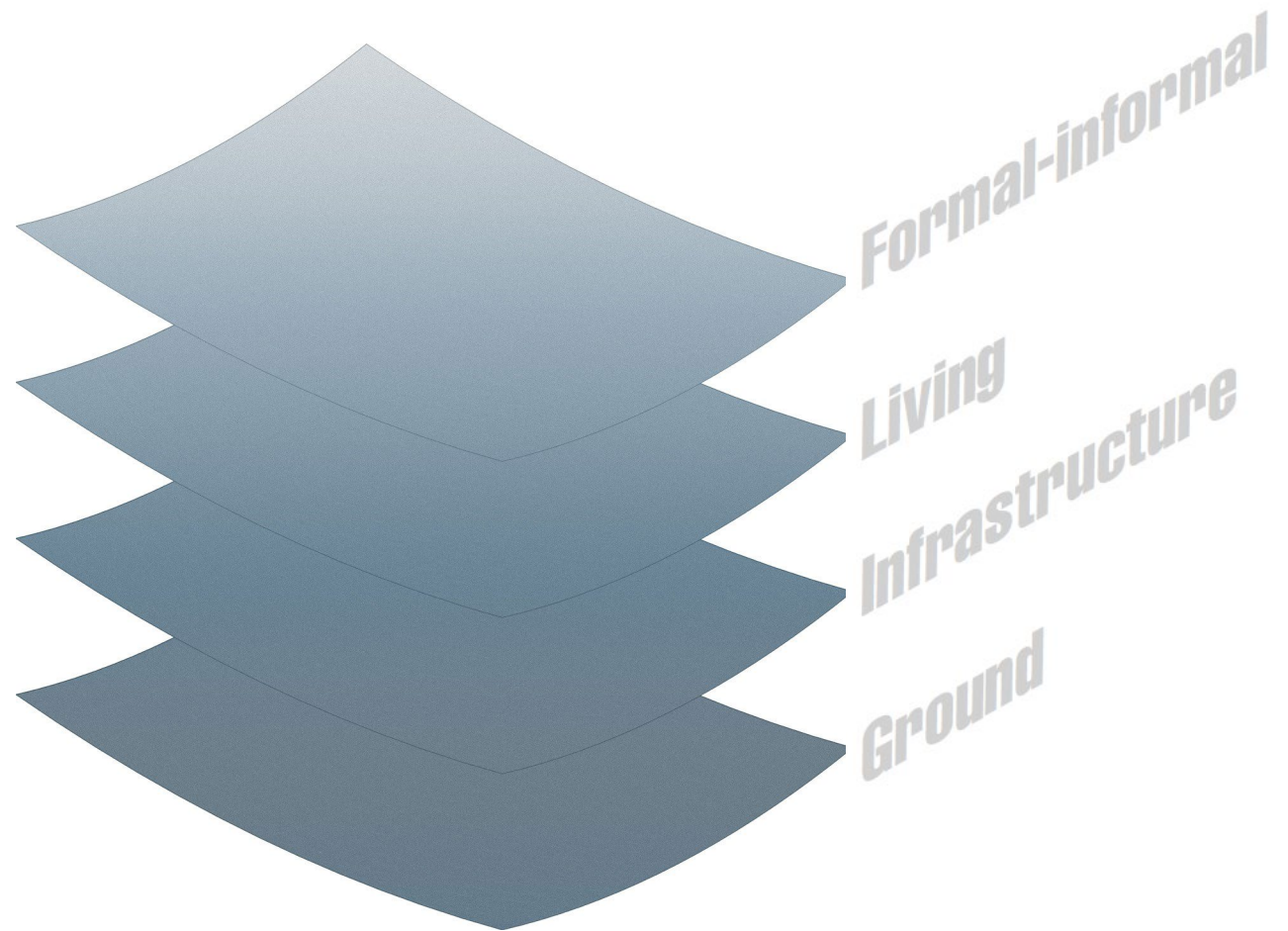
co-produced; materials provided by government; built by community

## 1. Formal (ground control)

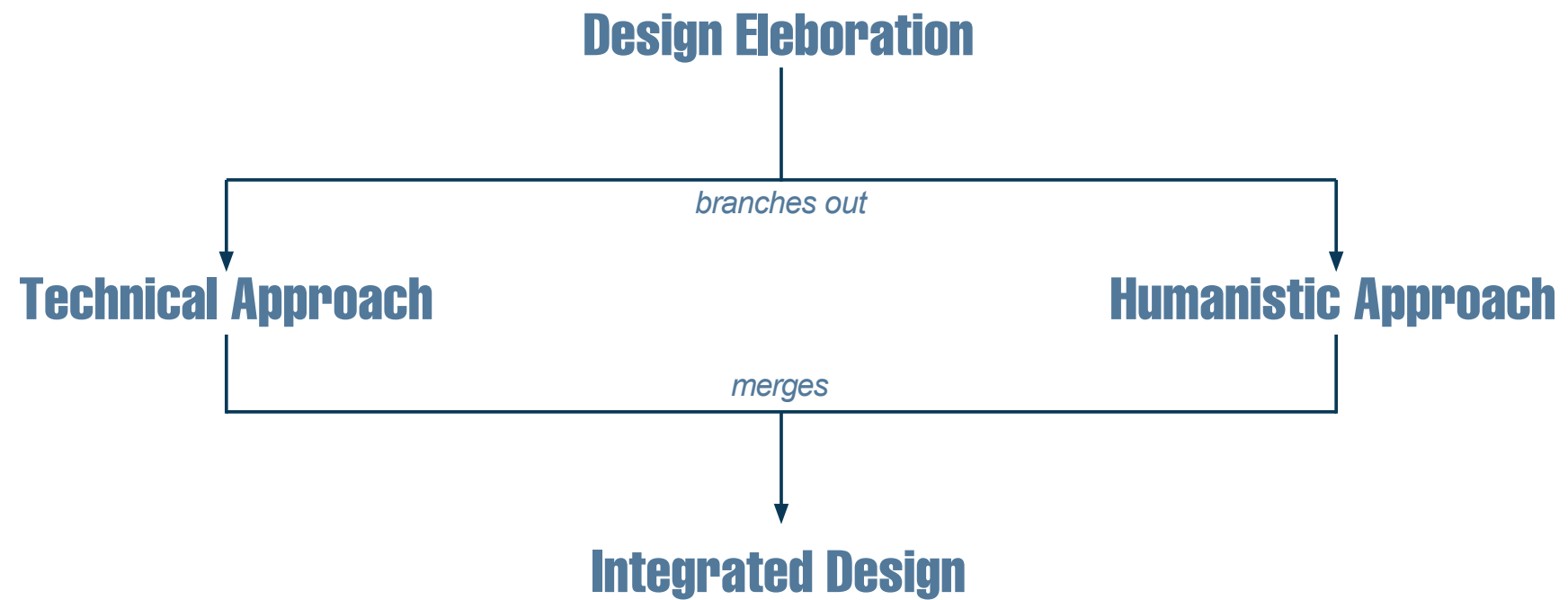
structured intervention and maintenance by government



## The layered basin



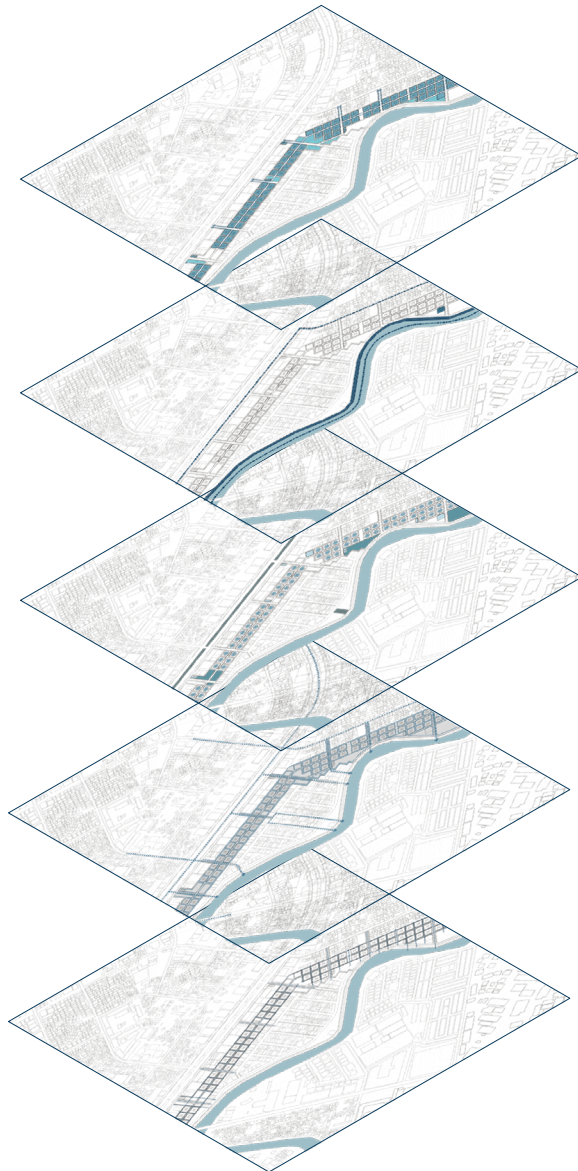






## Technical Approach

# Flood resilience strategies



Accommodate water



Structural defense



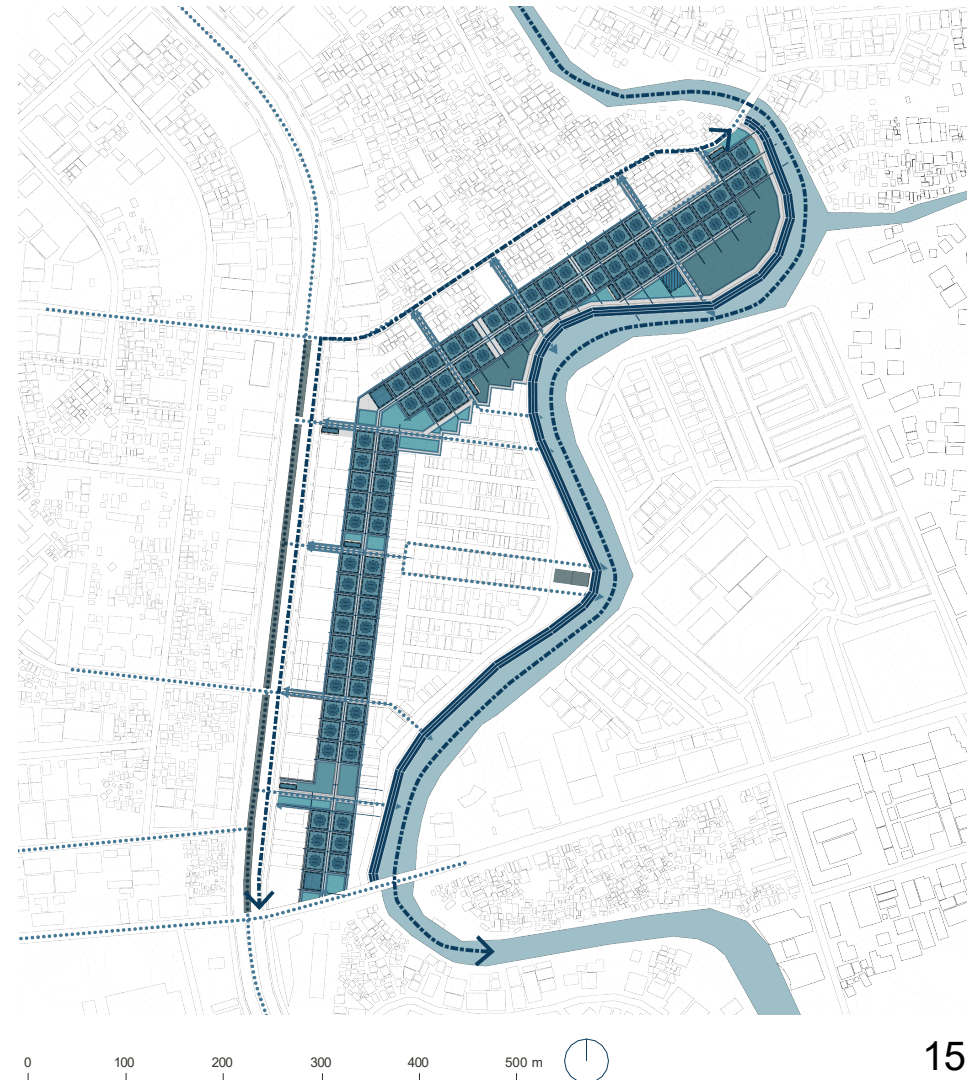
Store and absorb water



Enhance ground drainage



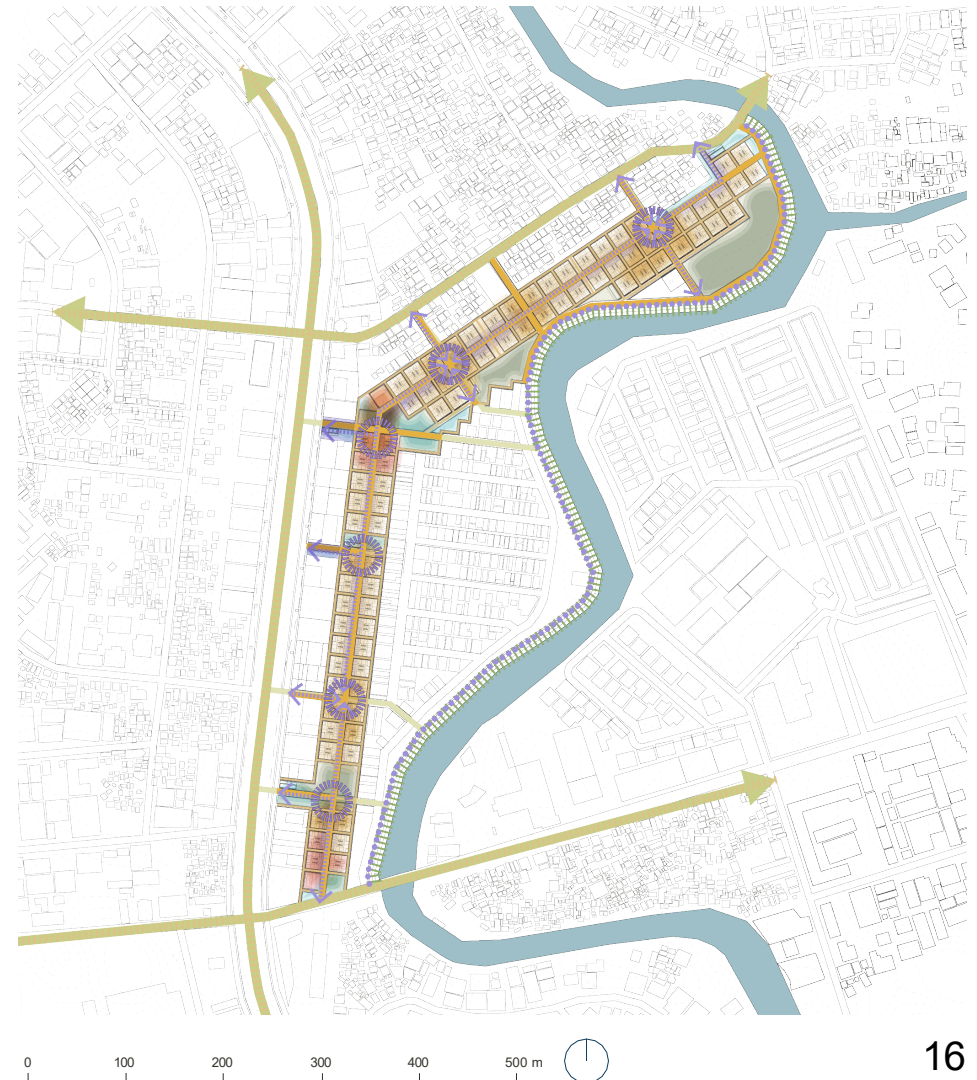
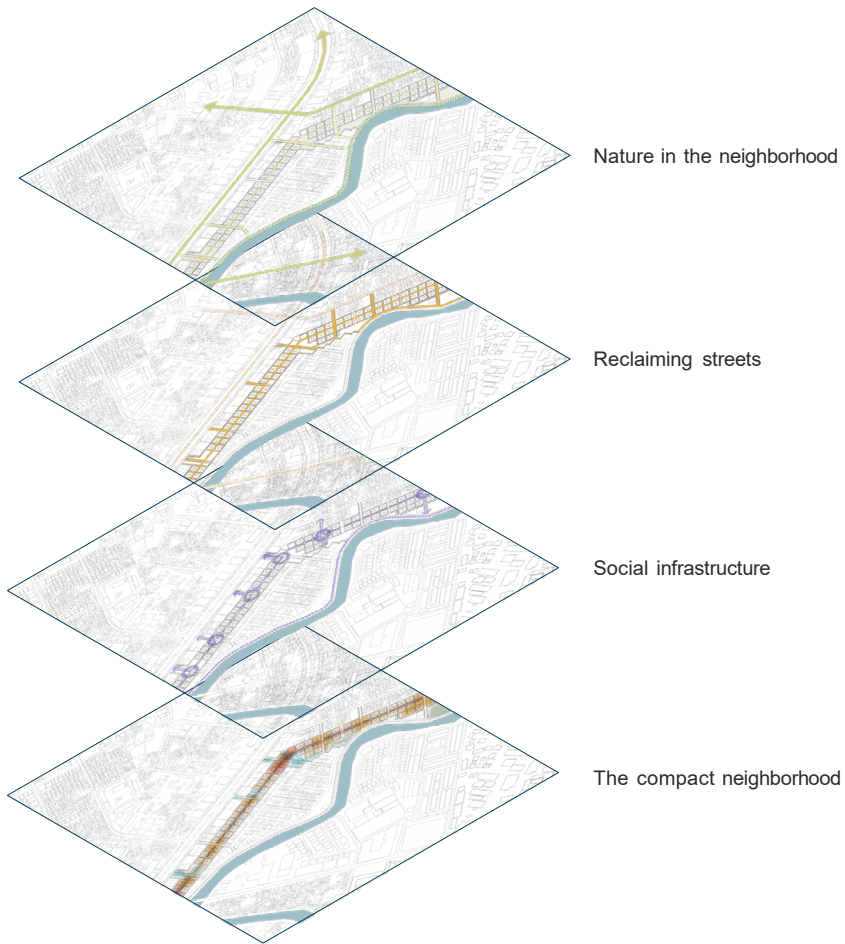
Upgrade urban layout





## Humanistic Approach

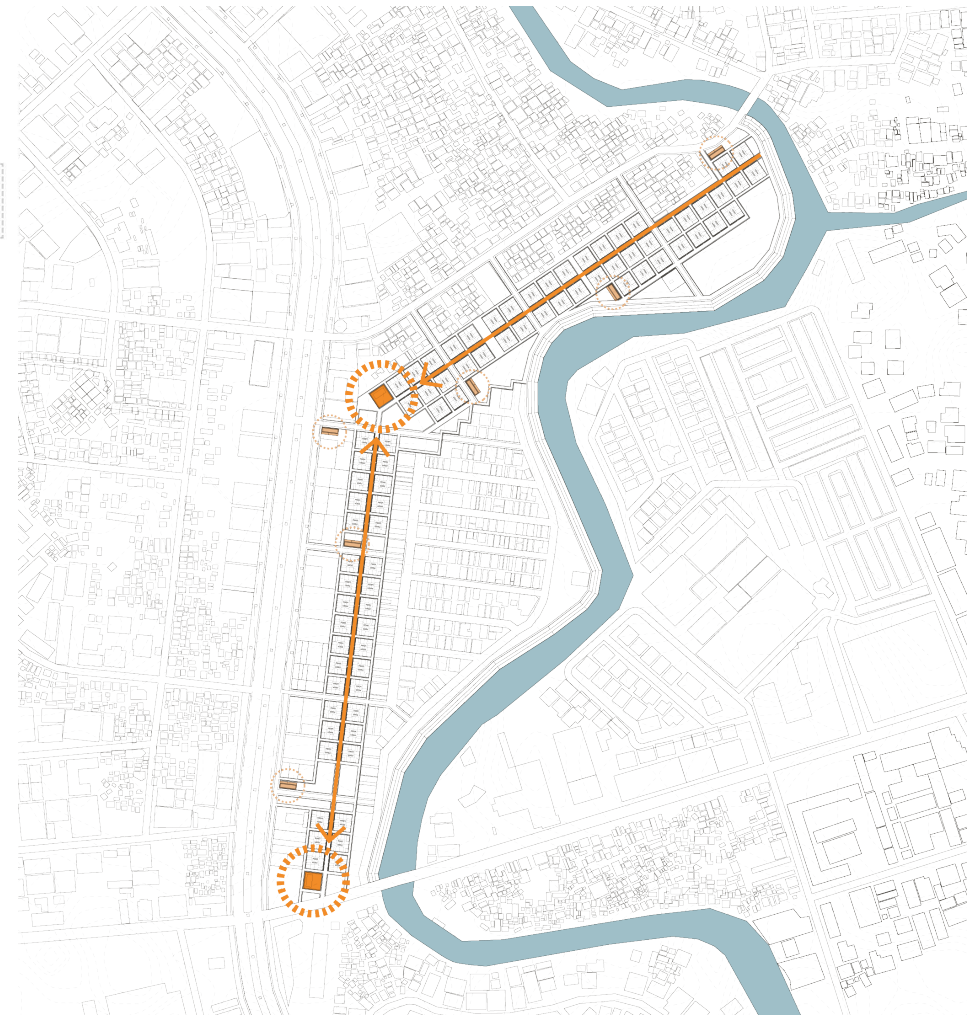
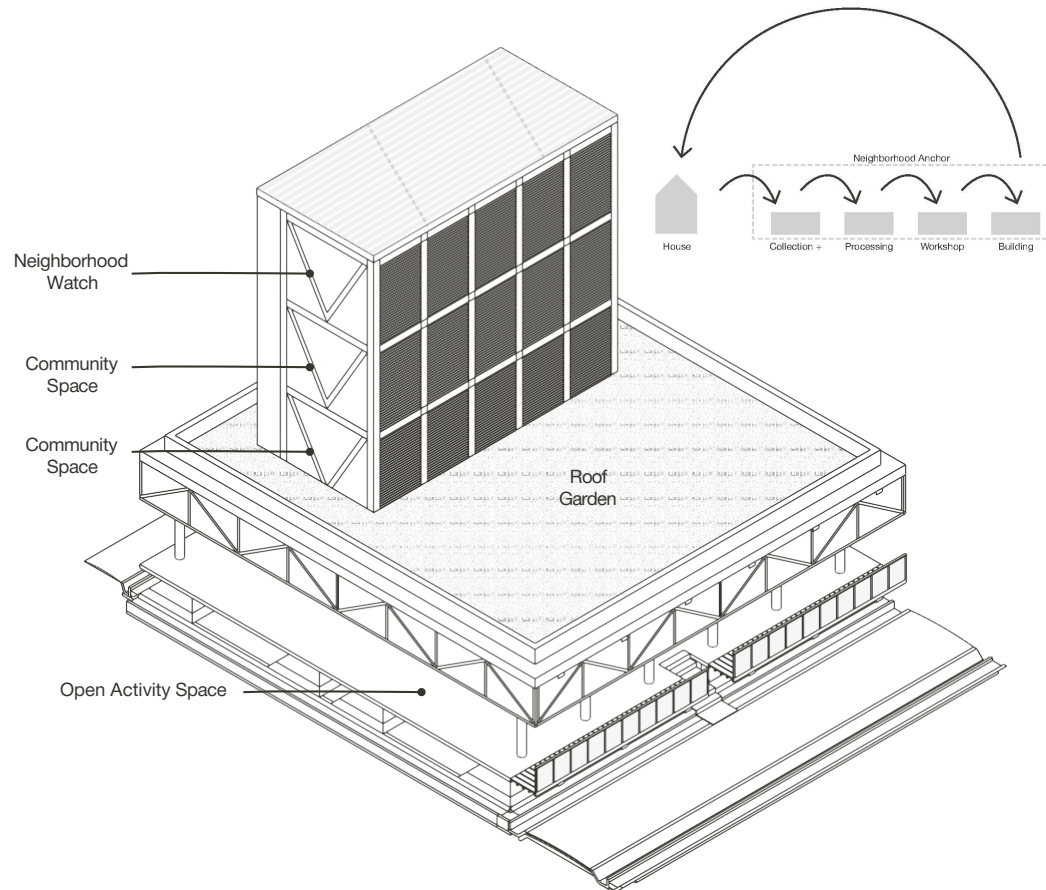
# Socio-spatial resilience strategies





## Humanistic Approach

# The neighborhood anchor



-  Community organizations
-  Community risk mapping
-  Rainfall gauge and forecasting

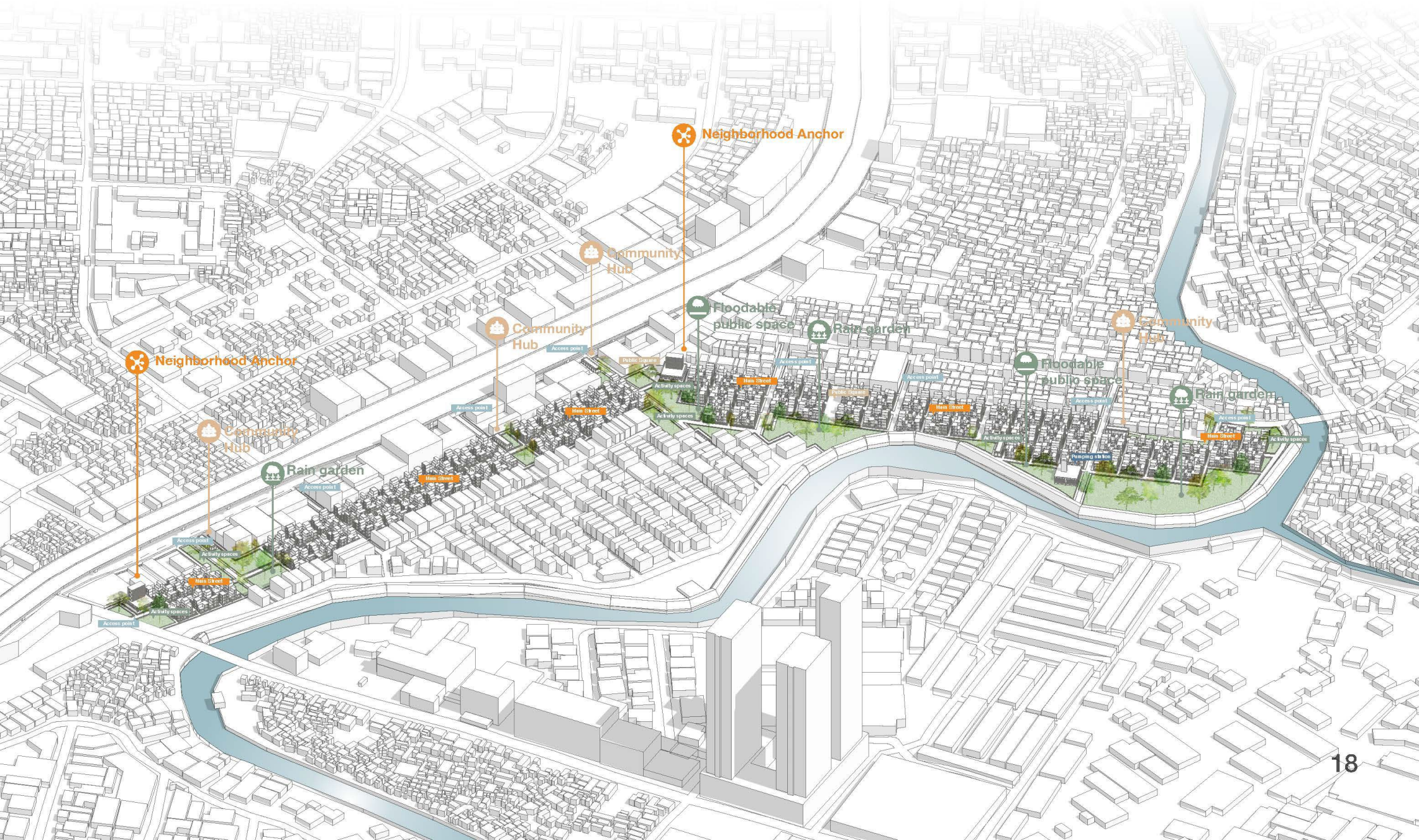
-  Educational program waste management
-  Community hazard awareness

0 100 200 300 400 500 m



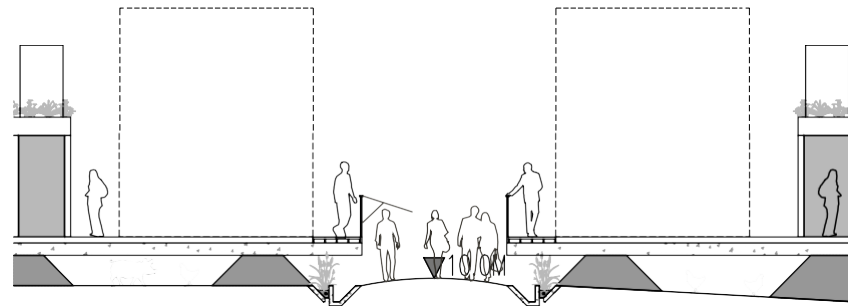


## Integrated Design

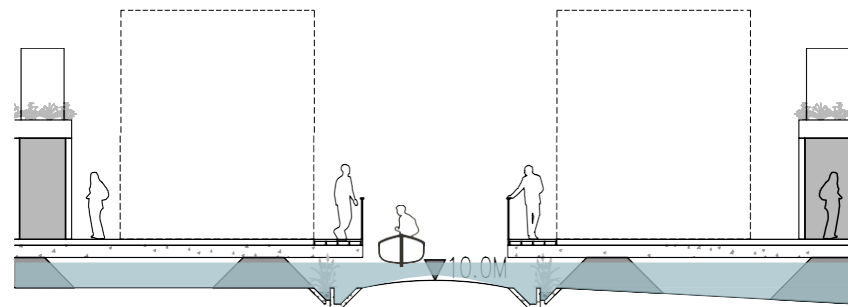




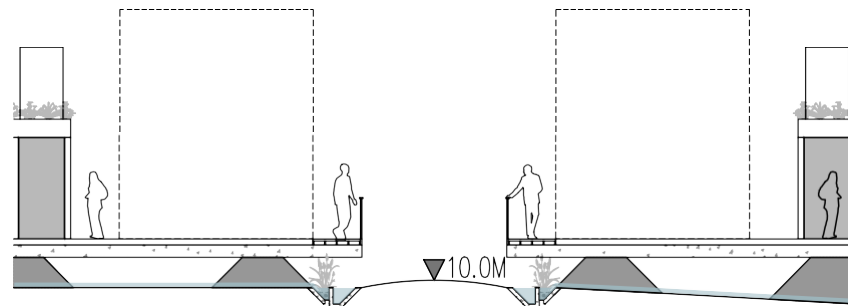
## Integrated Design



**Dry scenario**



**Flood scenario**



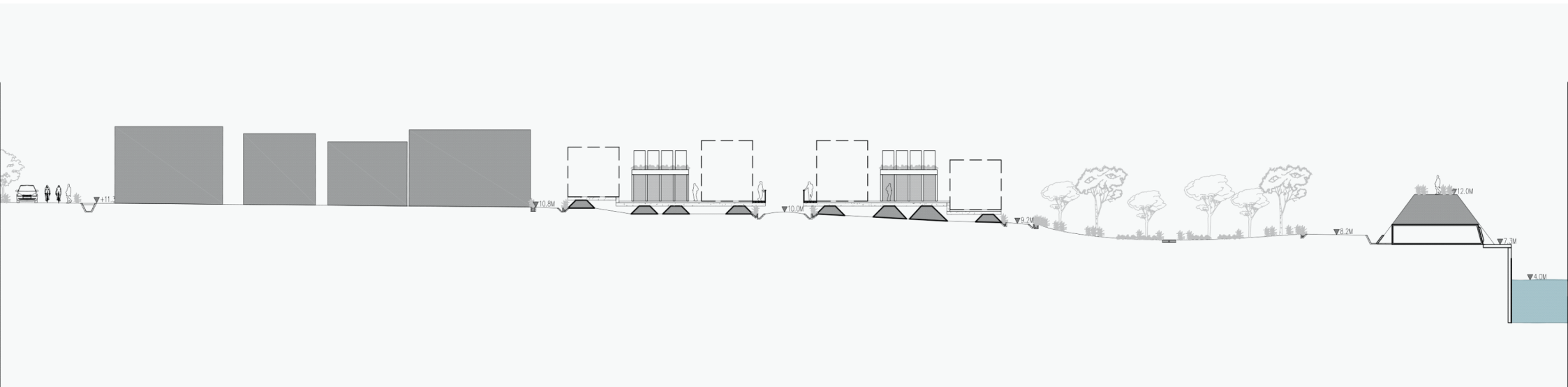
**Post flood scenario**

0 5 10 m

All elevations are measured above sea level



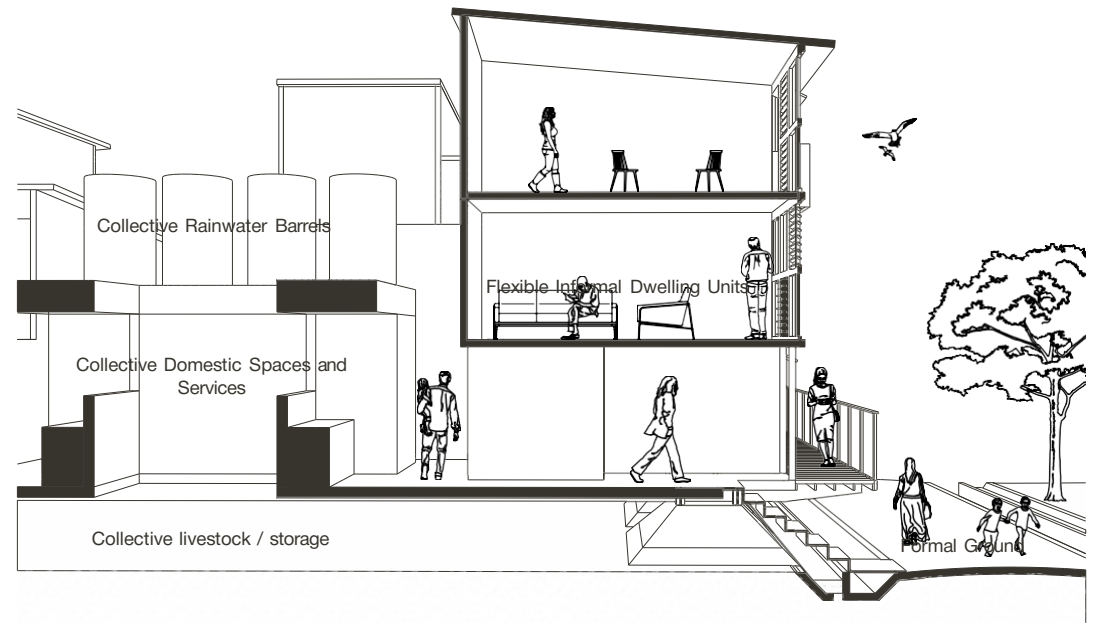
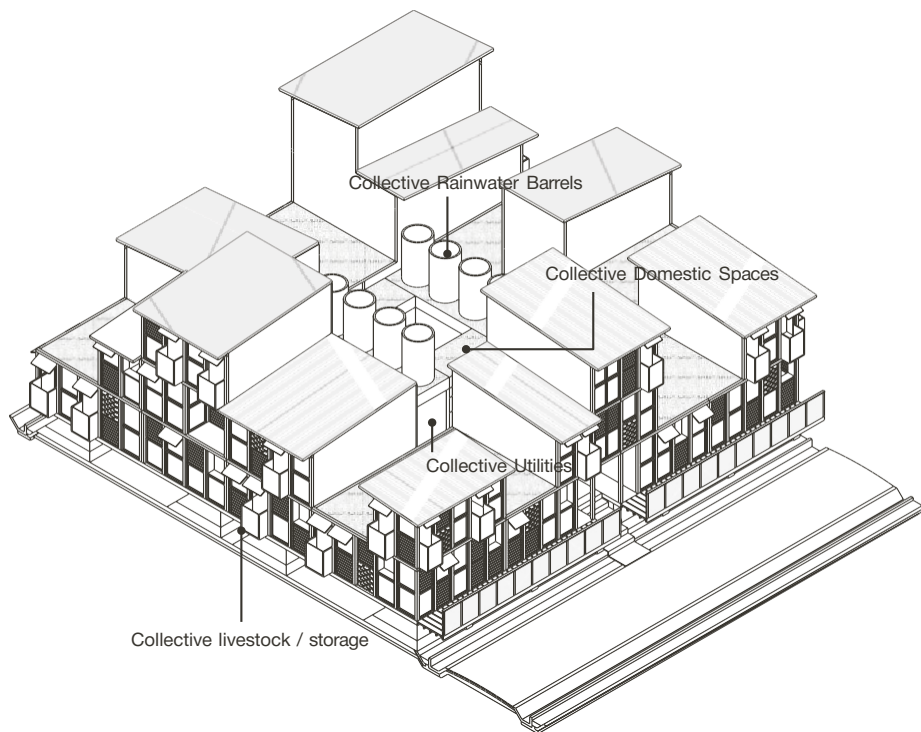
## Integrated Design





## Integrated Design

# The collective block



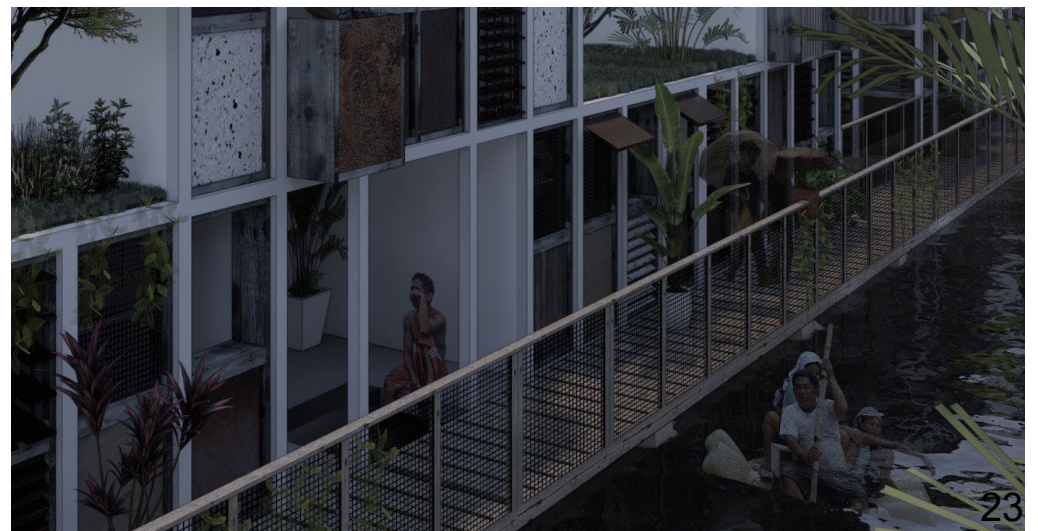


## Perspectives Dry Scenario





## Perspectives Flood Scenario



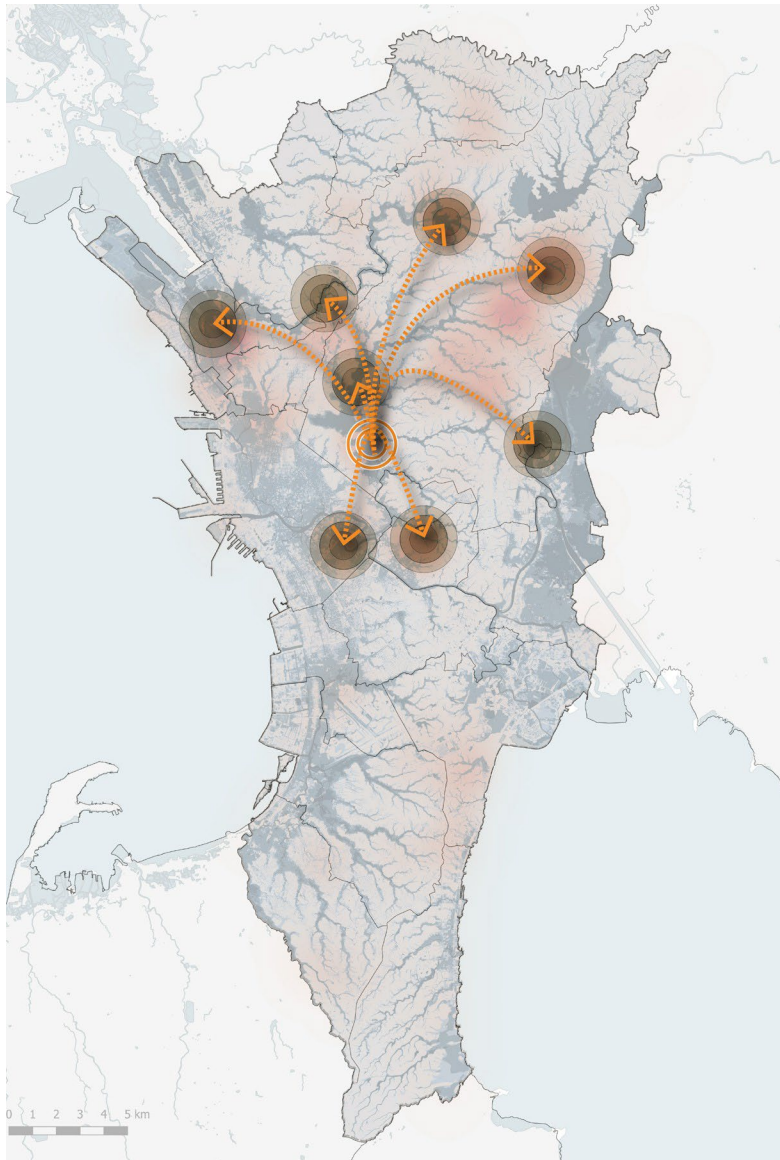


## Perspectives Post-flood Scenario

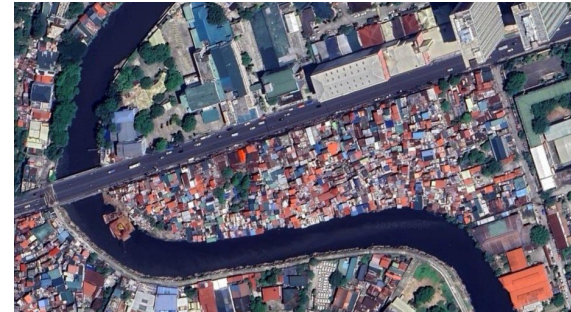




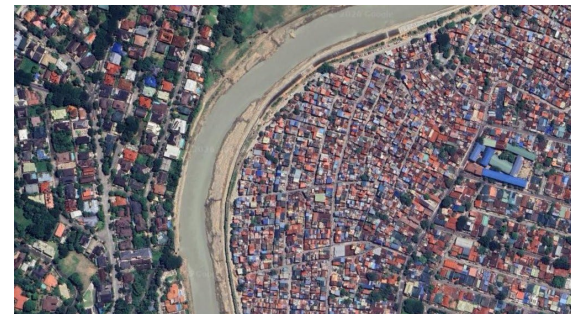
# Replicability



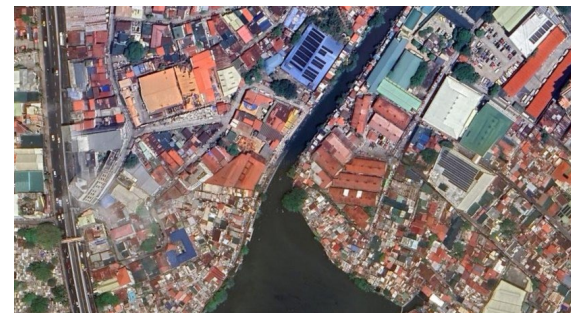
## 1. Barangay Damayang Lagi, Quezon City



## 2. Barangay Tumana, Marikina City



## 3. Estero Tripa de Gallina, Pasay City











**Thank you!**