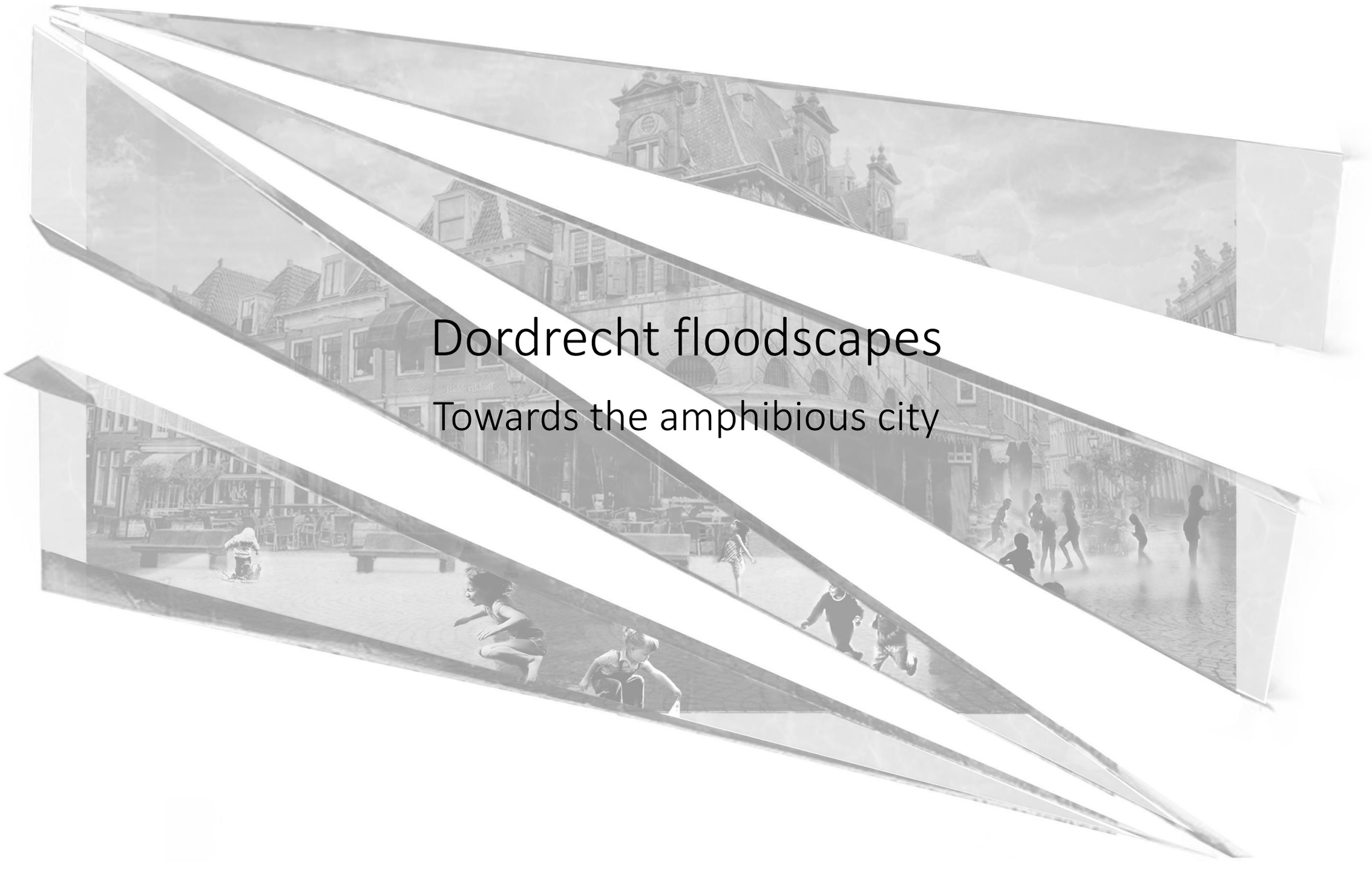


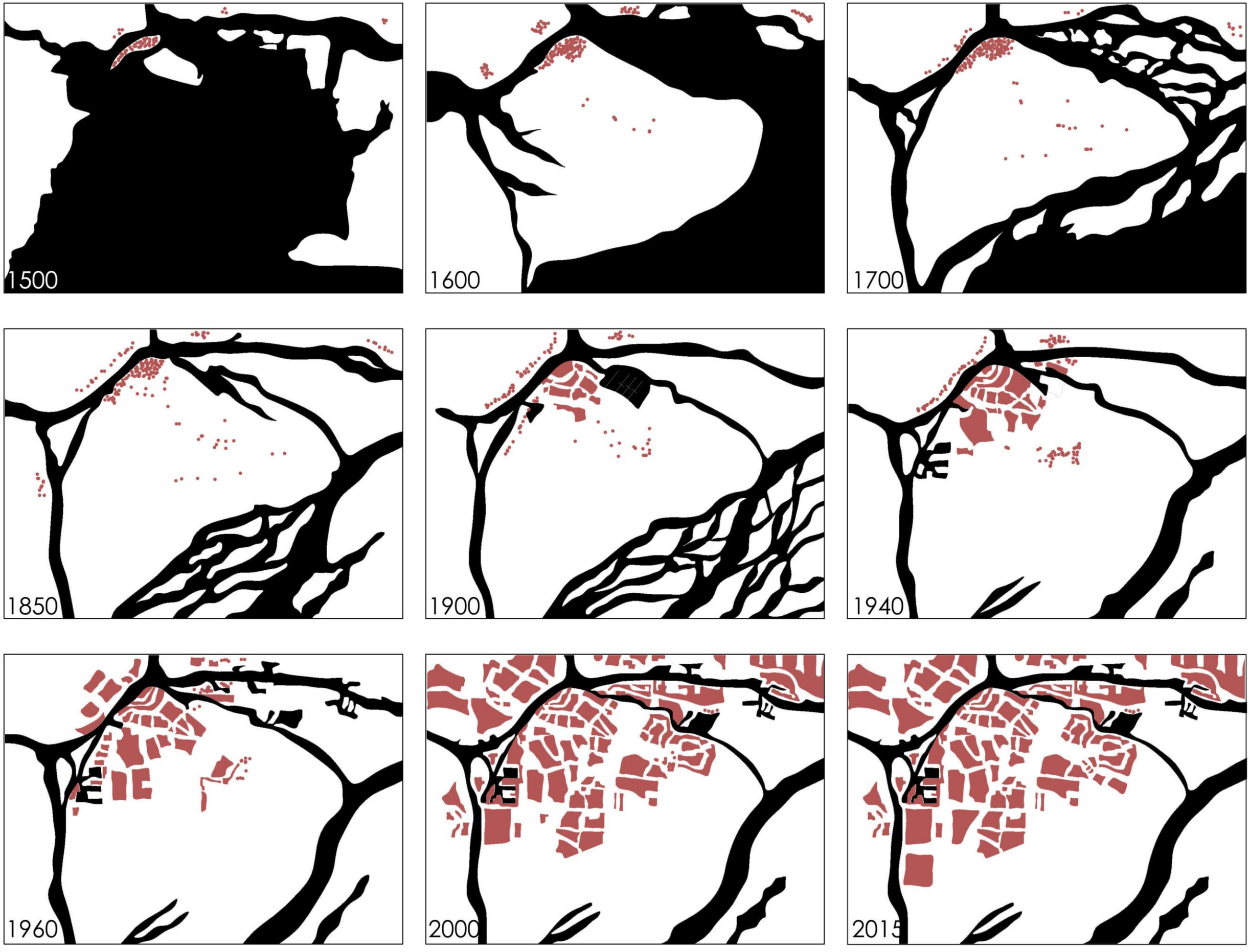
Dordrecht floodscapes

Towards the amphibious city

man ⟷ water

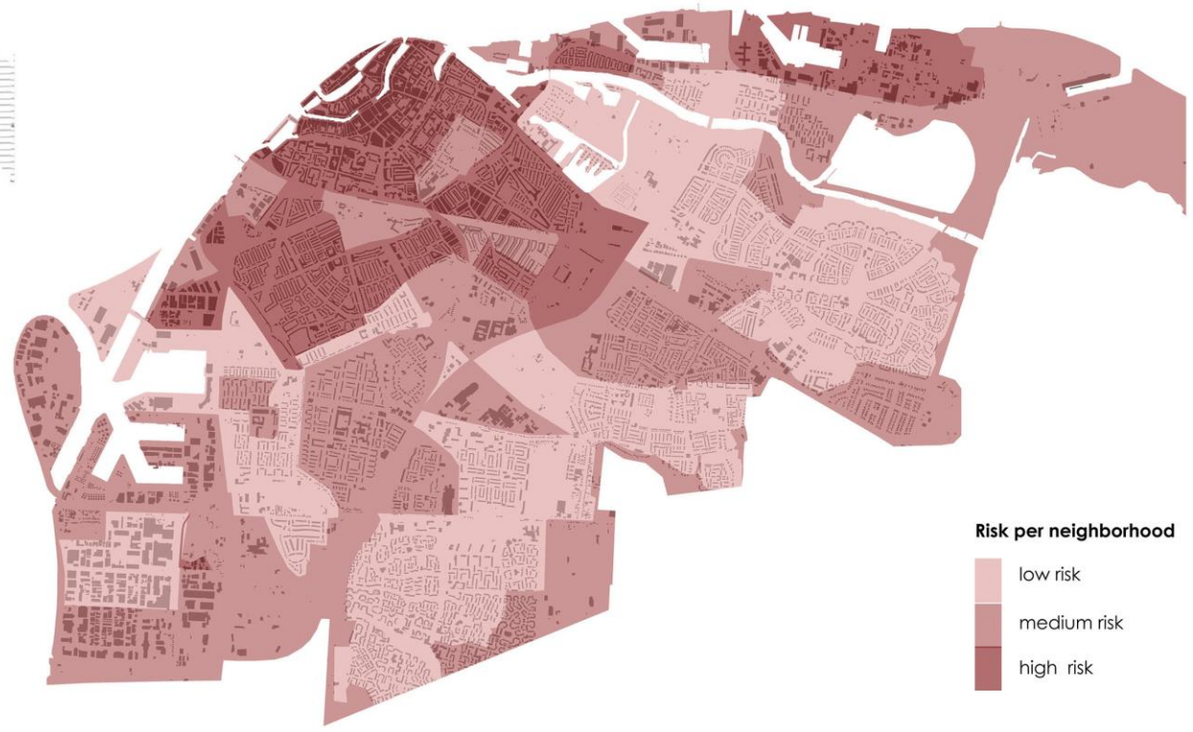
Oh, the humanity.
Scars of the storm
Death, devastation leaves six states in shock
DEVASTATION
olt the South
STORM IN
5 dead after weekend storms
killed
tornado
outbreak of
Storm: 'We've los
New
thread
that's
storms
since 1950
LOOD
housands homeless

dordrecht


1500
1600
1700
1850
1900
1940
1960
2000
2015

water as a threat

Hard surfaces
per neighborhood
< 40%
40-50%
50-60%
60-70%
70-80%
> 80%
unknown


Risk per neighborhood
low risk
medium risk
high risk

Green
per neighborhood
< 10%
10-20%
20-30%
30-40%
40-50%
> 50%
unknown

Potential water depths
< 5m.
5 - 10m.
> 10m.

Dordrecht is faced with a major flooding hazard, in which climate change adds up to its inherent vulnerable nature.

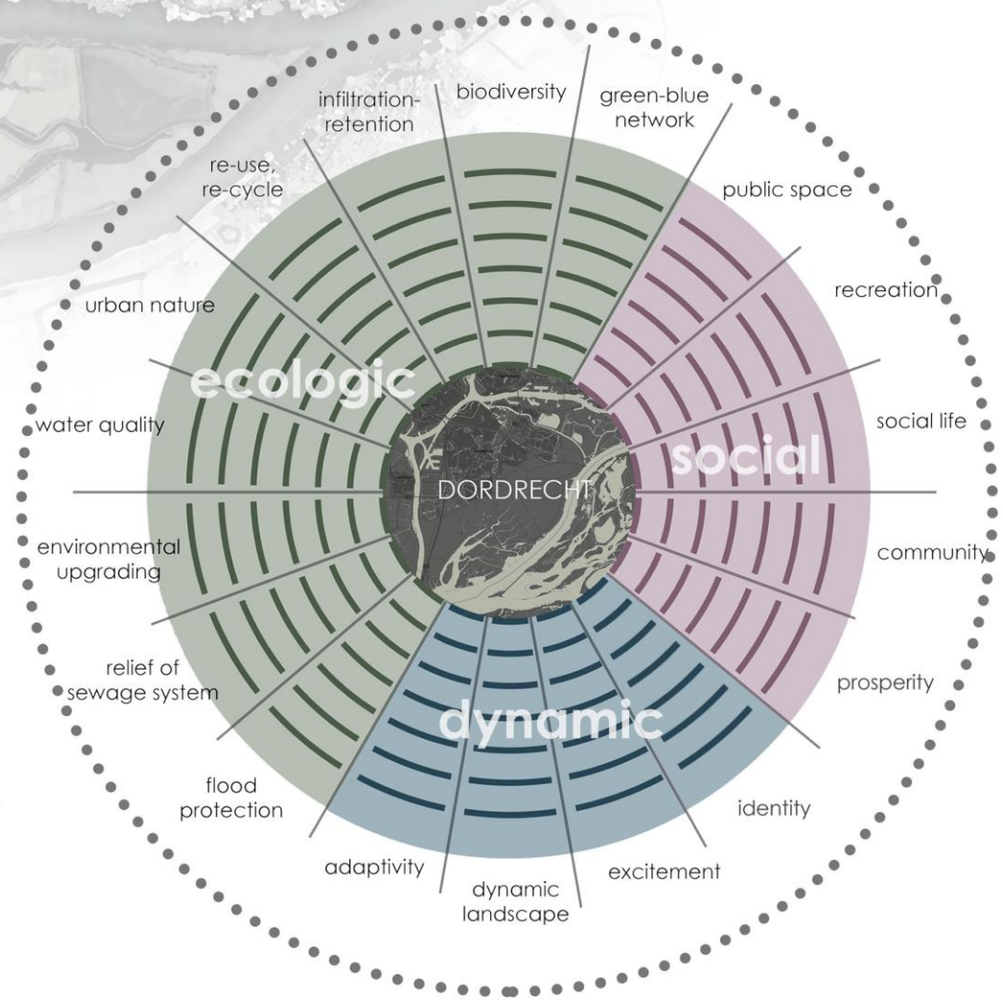
In an era of rapid climate change, how can Dordrecht transform into an amphibious, multifunctional spatial entity?

Green-blue network that:

- accommodates excessive rainfall
- acts as a series of public spaces
- enhances biodiversity
- fosters social dynamics
- offers contrasting spatial experiences
- strengthens the identity of Dordrecht

Water as a visible and tactile feature

water as a threat ⟶ water as a chance



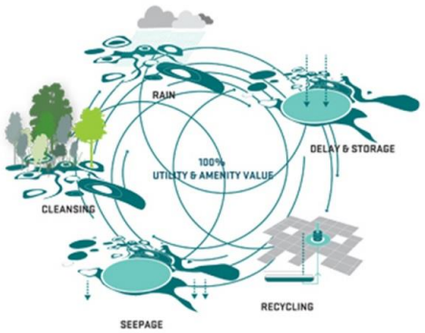
sustainability

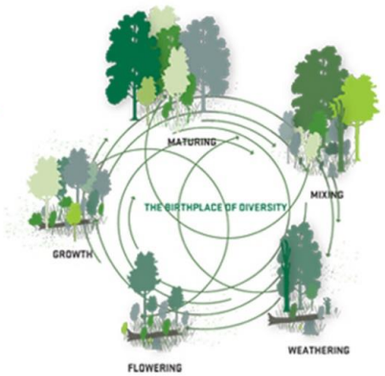
+

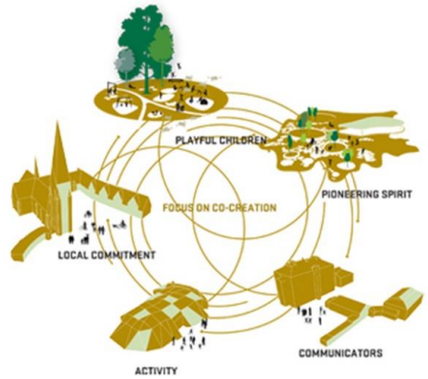
experience

precedents

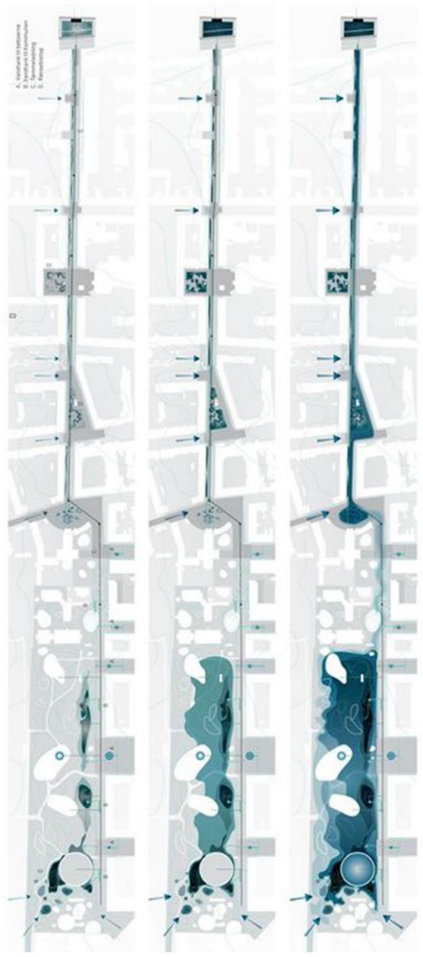
Copenhagen cloudburst plan, Tredje Natur





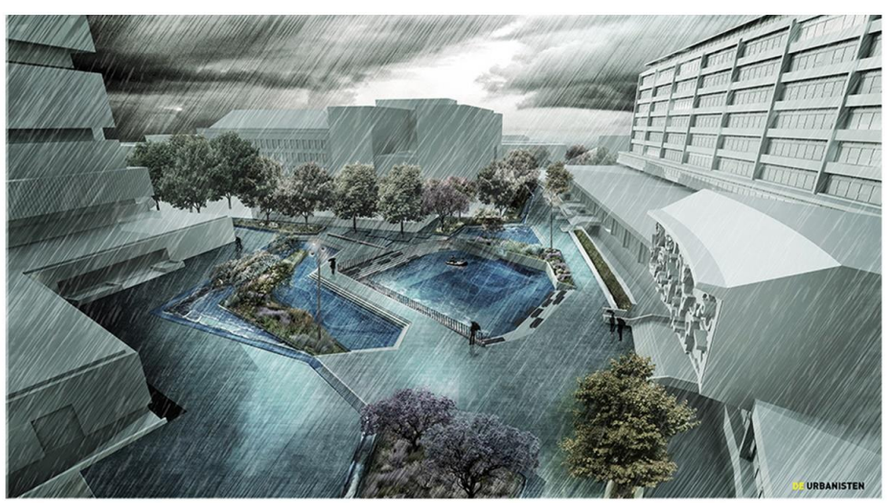


The soul of Nørrebro, SLA

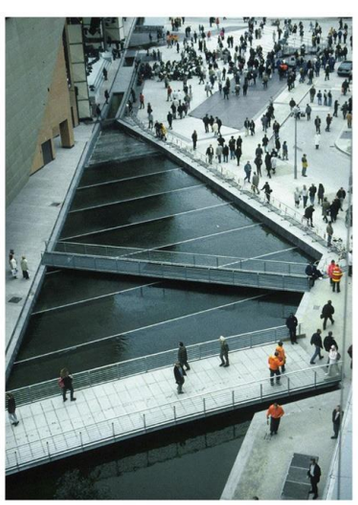


The soul of Nørrebro, SLA

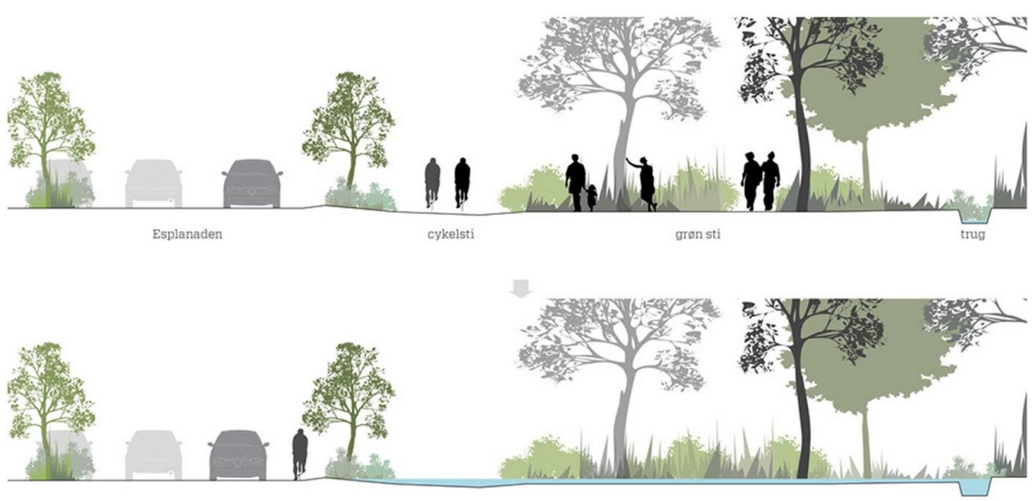
Benthemplein watersquare, De Urbanisten



Potsdamer Platz, Studio Dreiseitl



Copenhagen cloudburst plan, Tredje Natur



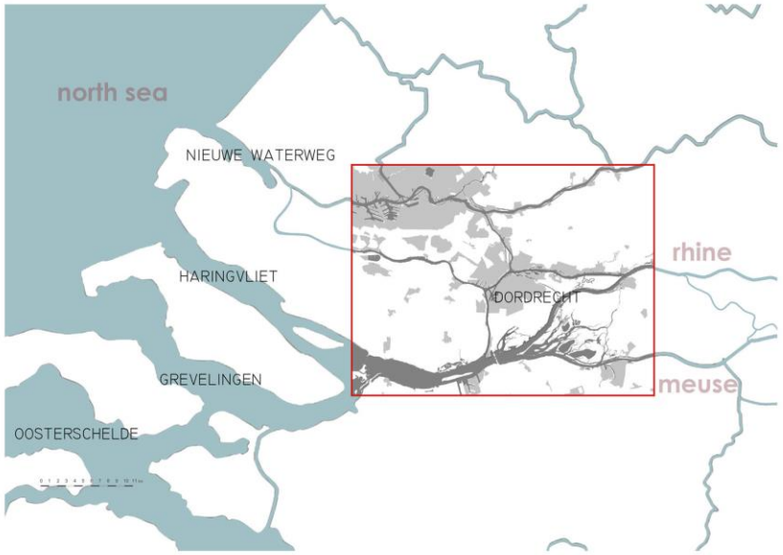
Principles:

- rainwater collection, storage and re-use
- increase of permeability
- creation of wet and dry zones
- visible flooding techniques
- link flood protection-ecology-social life
- different typologies for different street profiles/ public spaces (toolbox)
- infrastructure as waterways/ public spaces as basins
- changing, adaptive, dynamic city

flows-networks

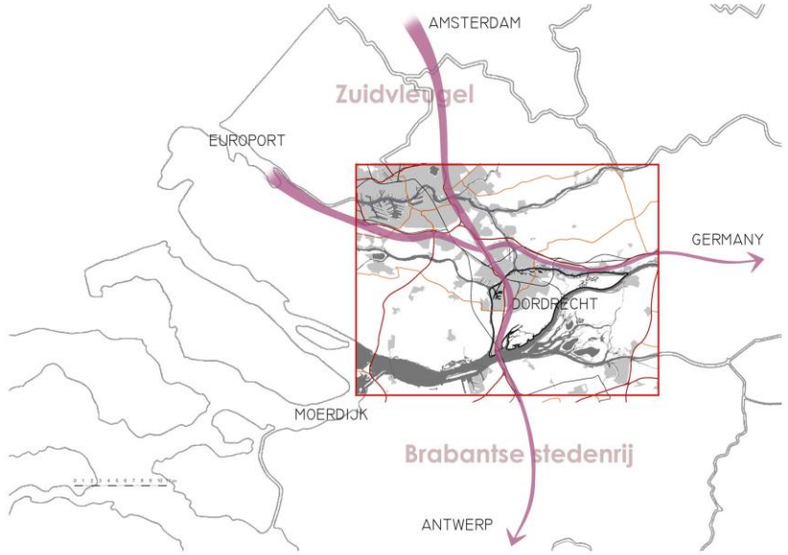
MACRO

water

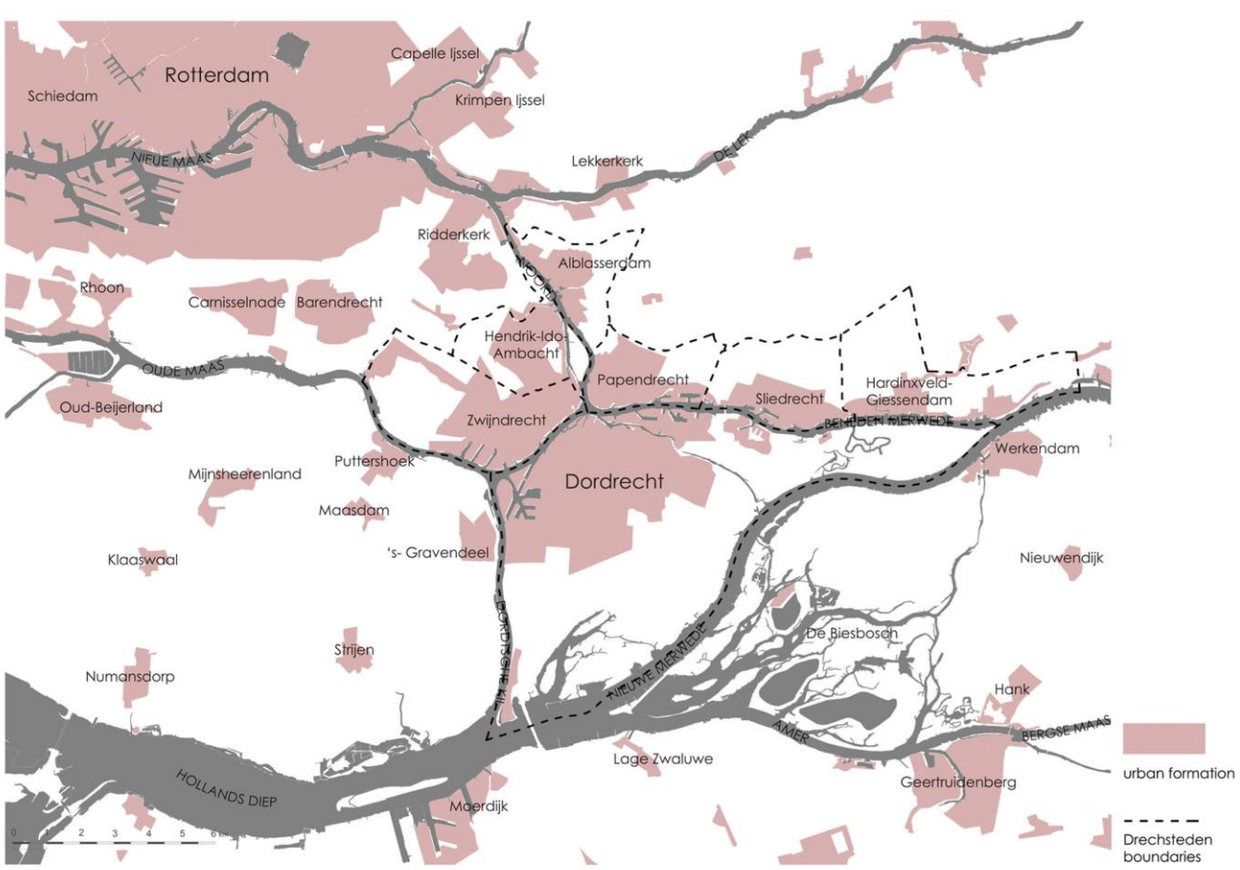


ecology

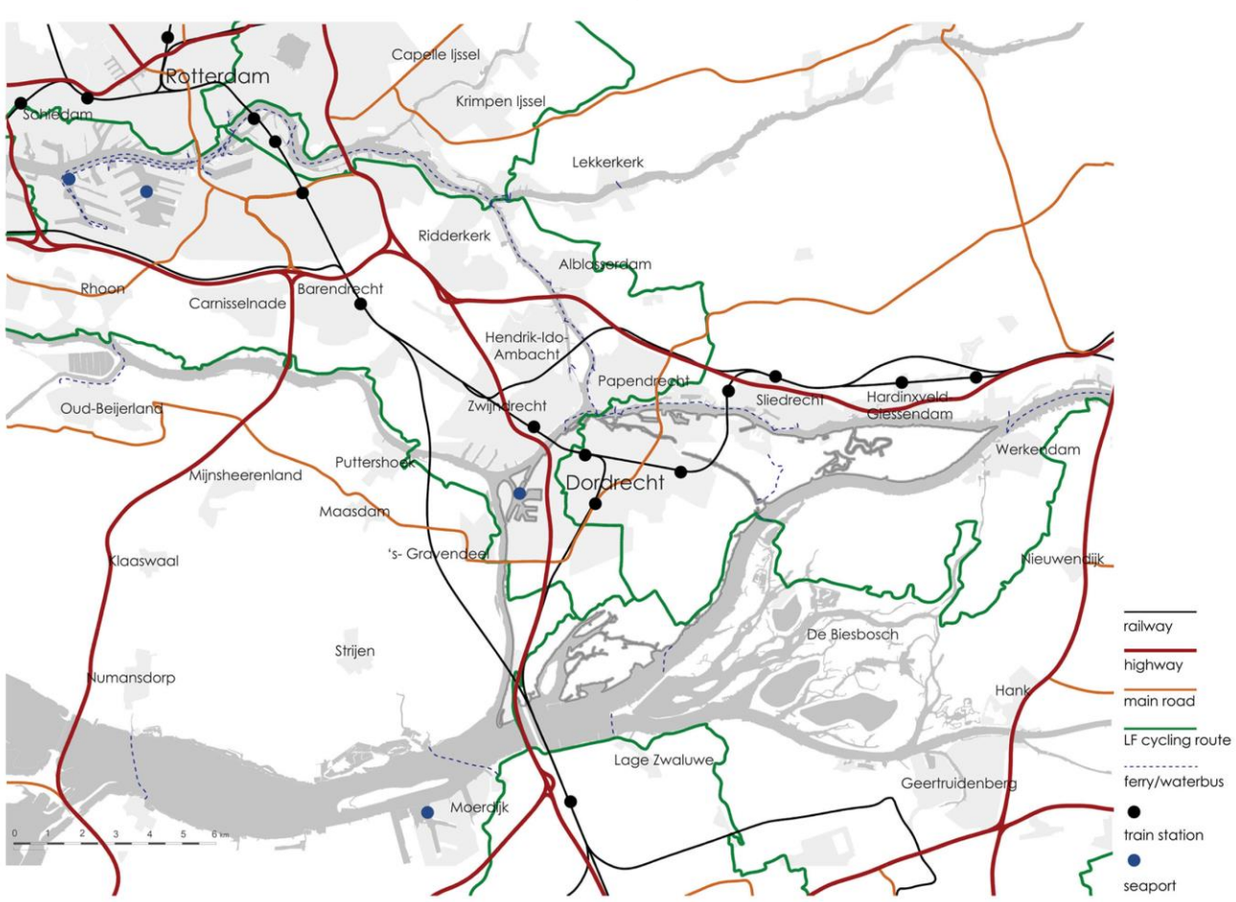
urbanization



urbanization



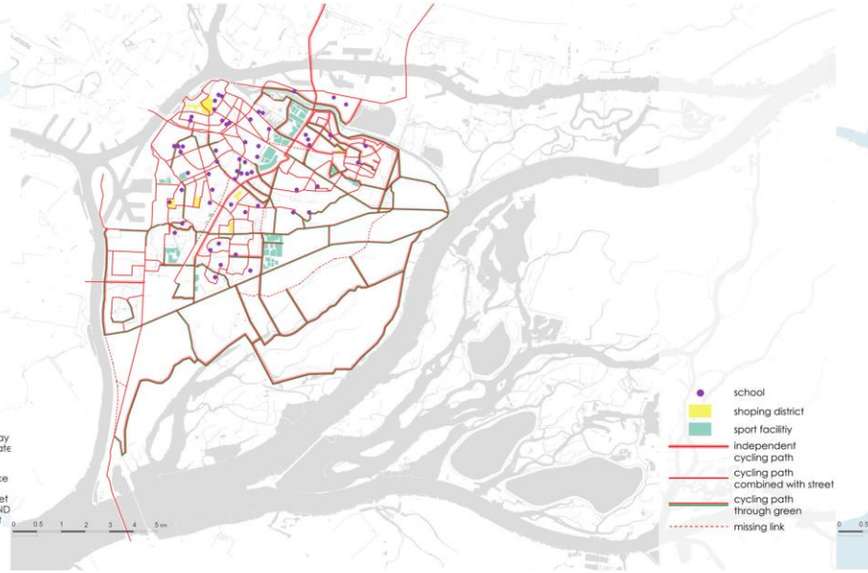
mobility



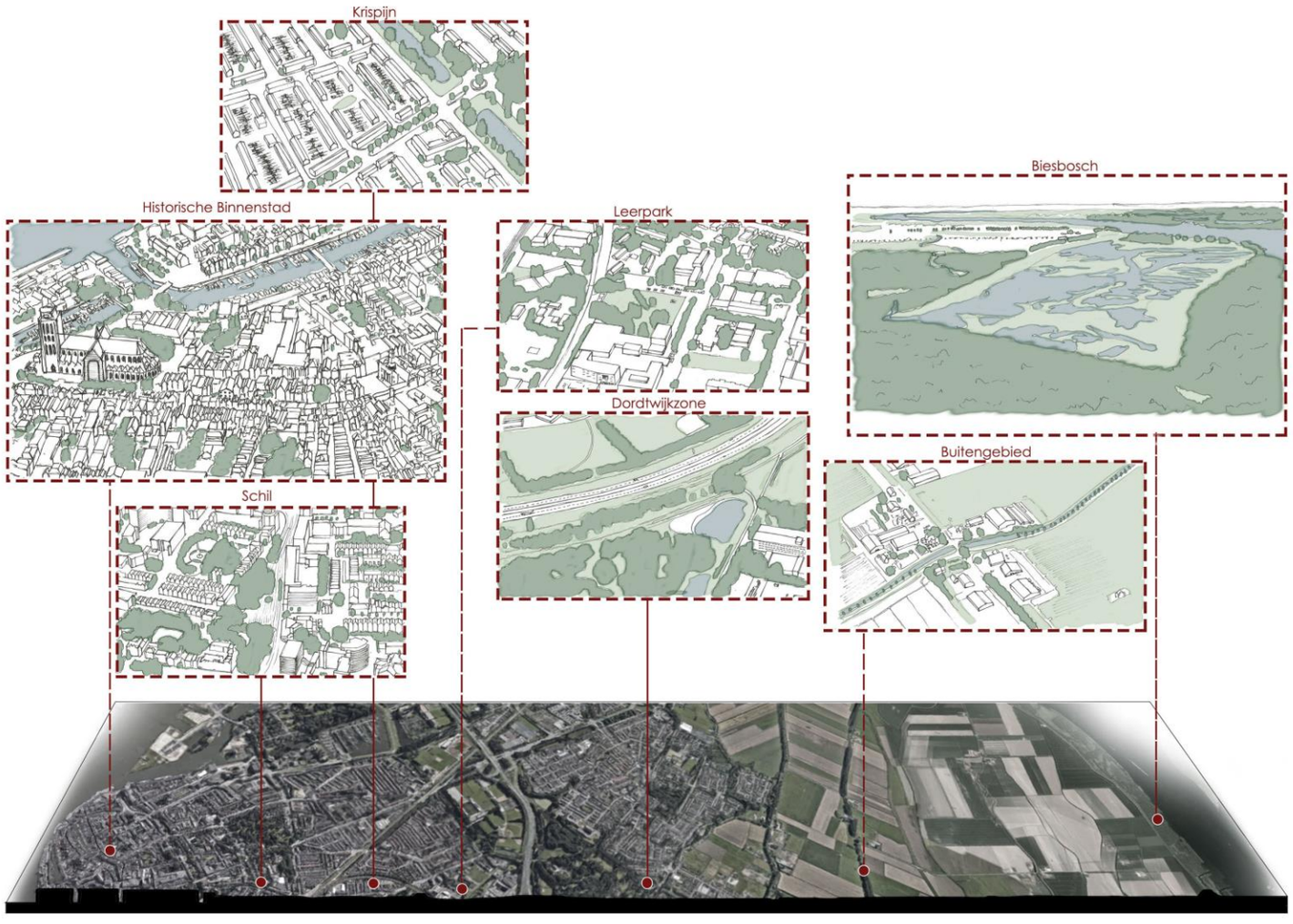
MESO

water

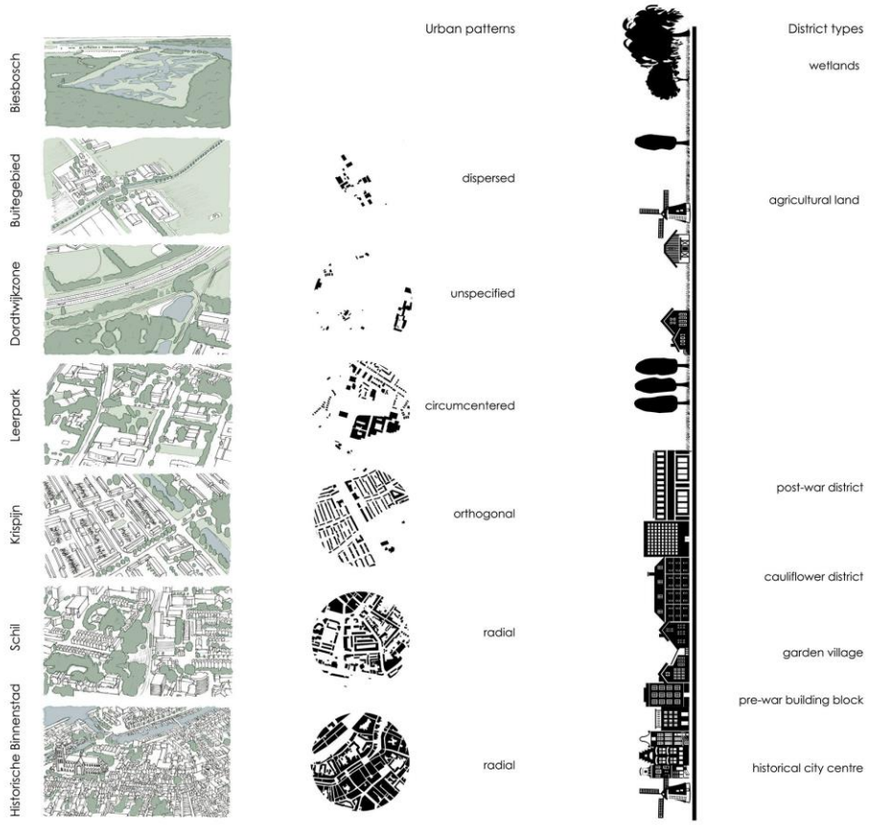
mobility



ecology

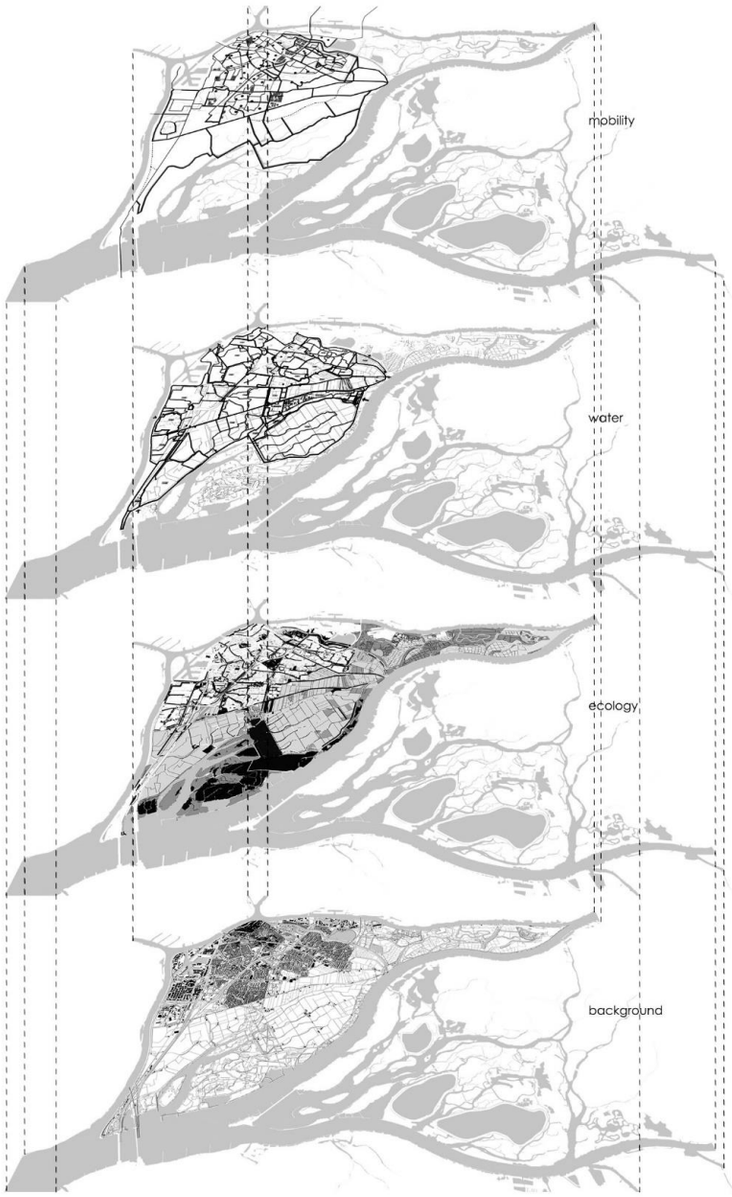


landscape characters

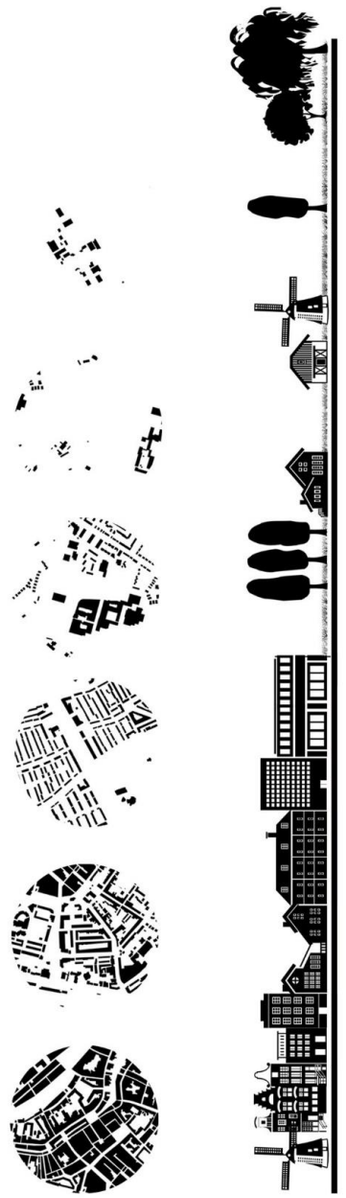


crossroads

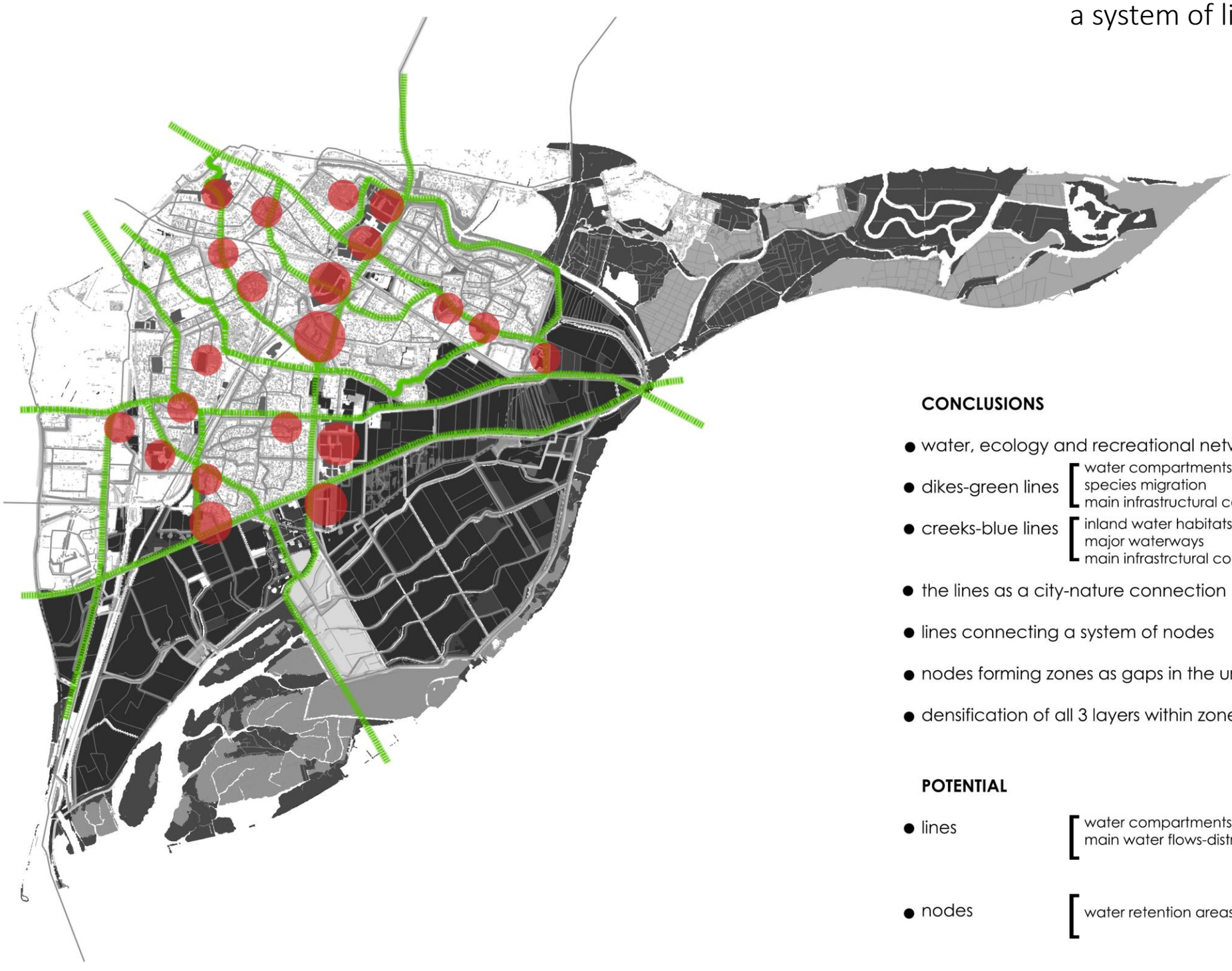
layers



transition



a system of lines and nodes



CONCLUSIONS

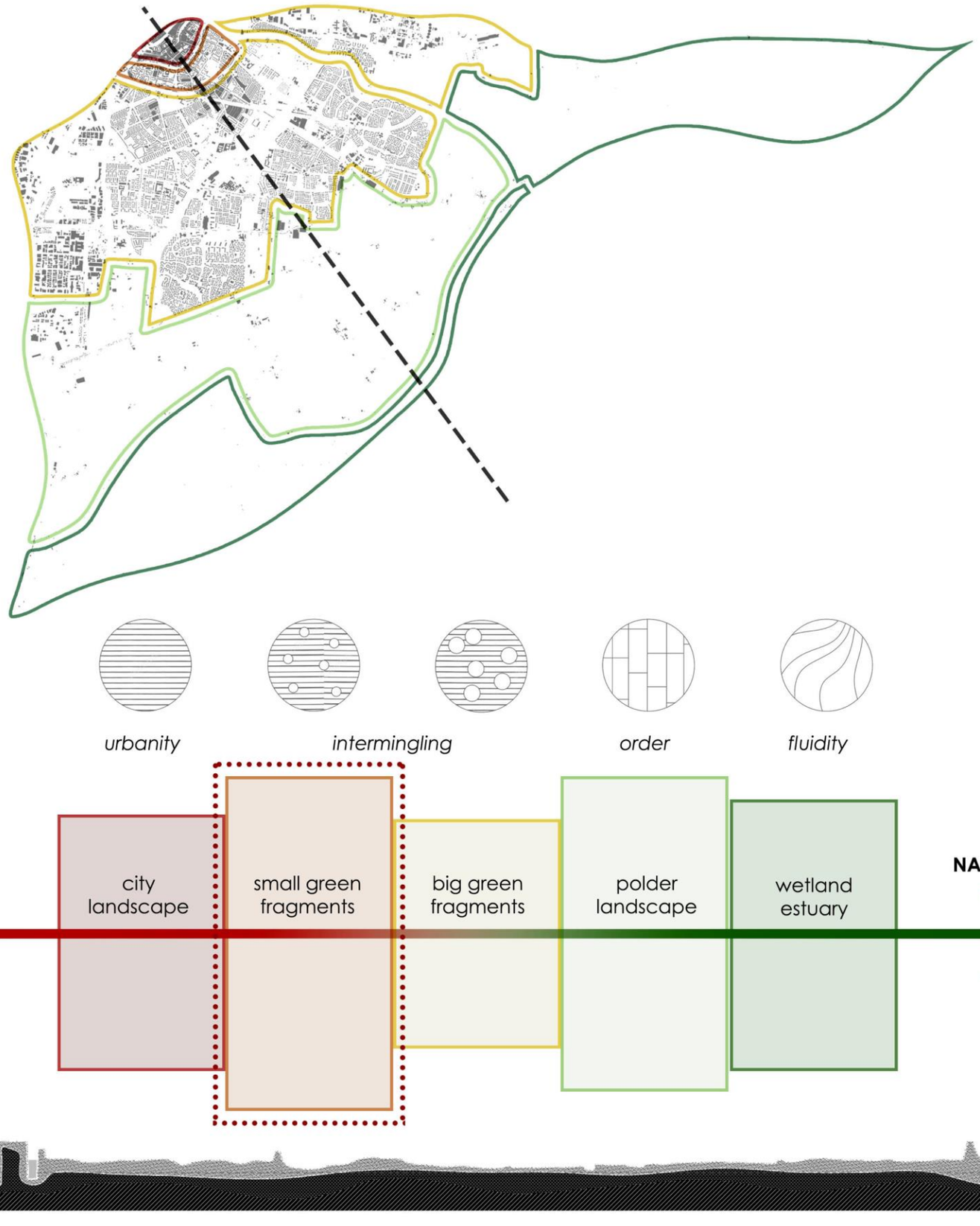
- water, ecology and recreational networks along main lines
- dikes-green lines
  - water compartments
  - species migration
  - main infrastructural connections
- creeks-blue lines
  - inland water habitats
  - major waterways
  - main infrastrctural connections
- the lines as a city-nature connection
- lines connecting a system of nodes
- nodes forming zones as gaps in the urban fabric
- densification of all 3 layers within zones

POTENTIAL

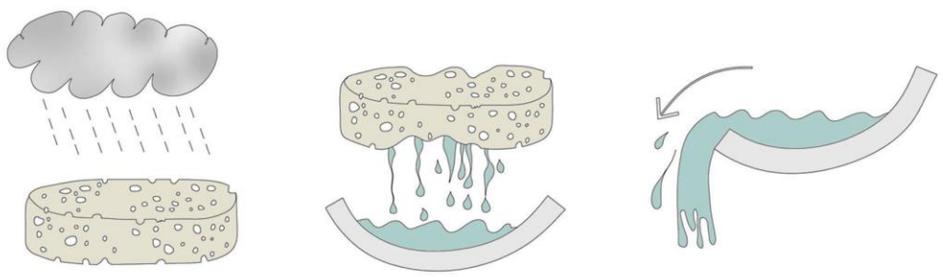
- lines
  - water compartments enclosing sub-systems
  - main water flows-distribution of rainwater
- nodes
  - water retention areas (flood protection)
    - ecology
    - recreation

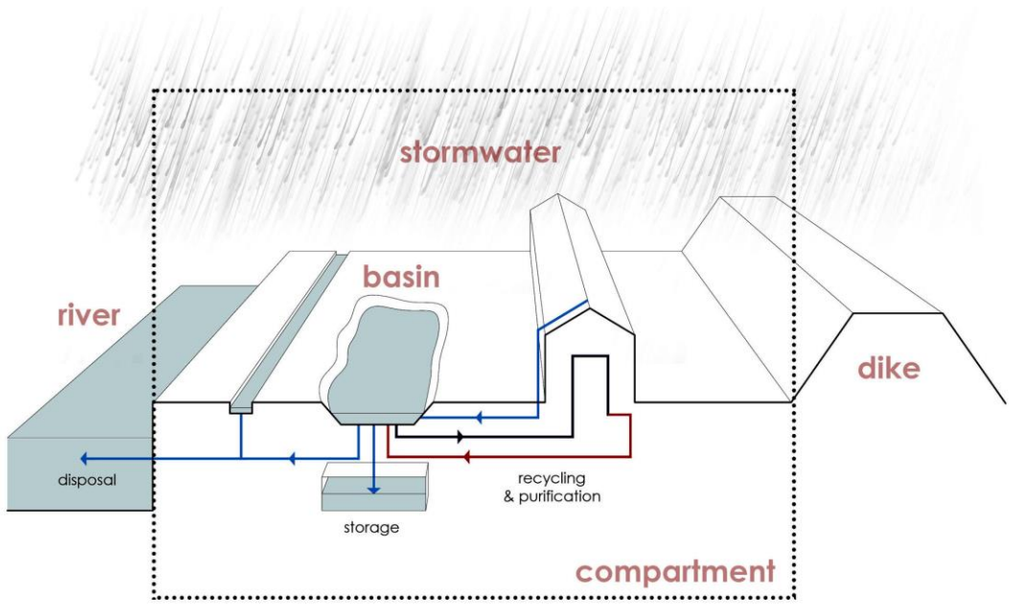
principles

city-nature transition



the city as a sponge

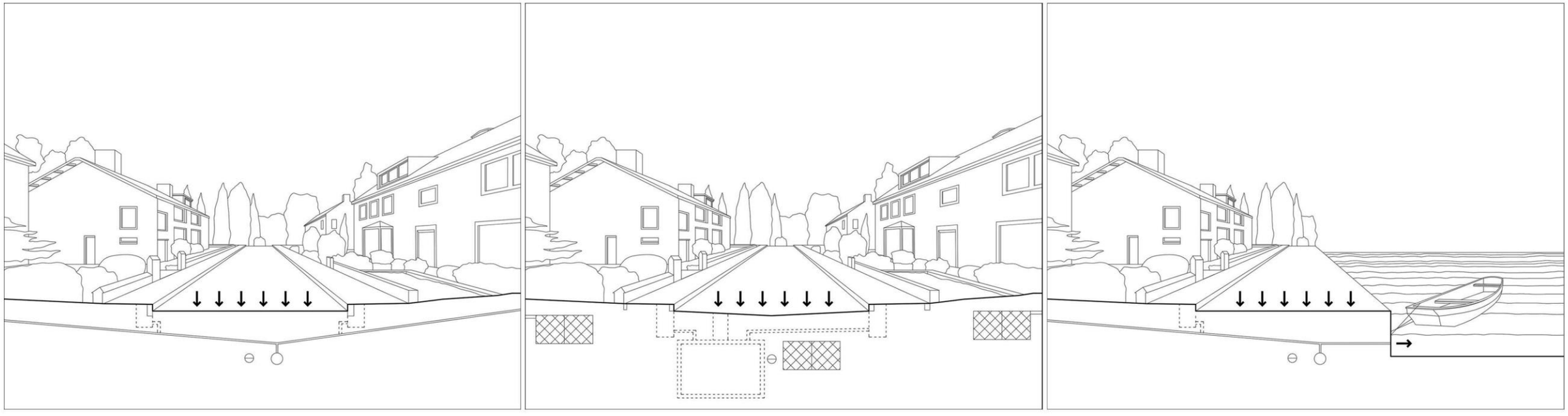




1. RETENTION

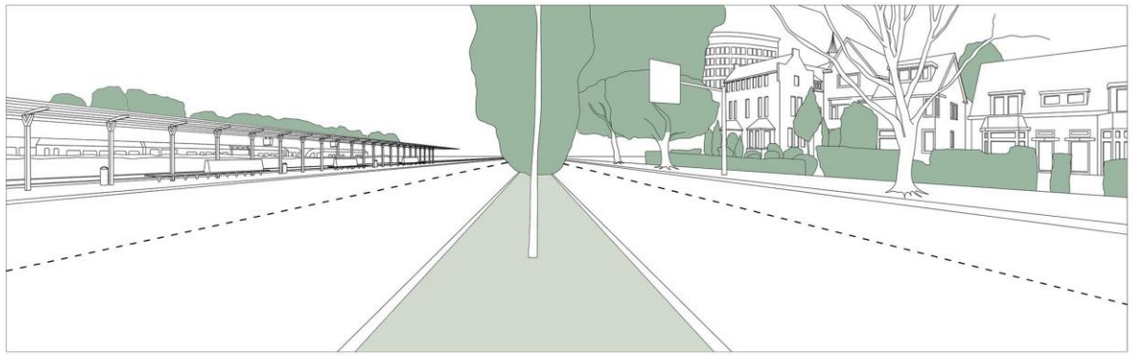
2. STORAGE

3. DISPOSAL

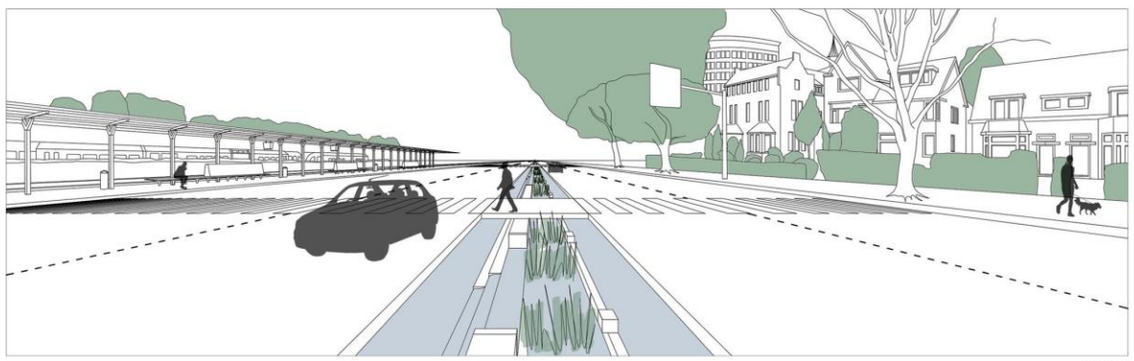


multifunctionality

Burgemeester de Raadtsingel (retention boulevard)



BEFORE



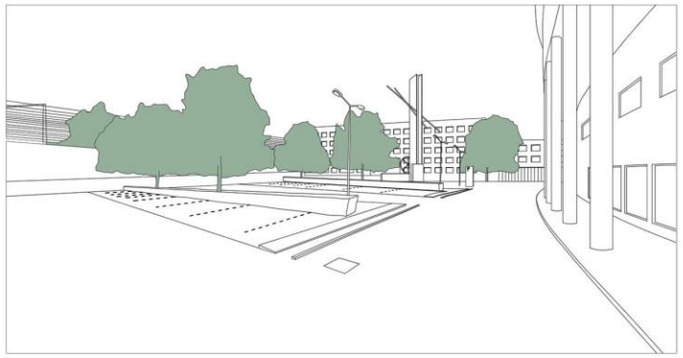
AFTER

Energieplein (watersquare)

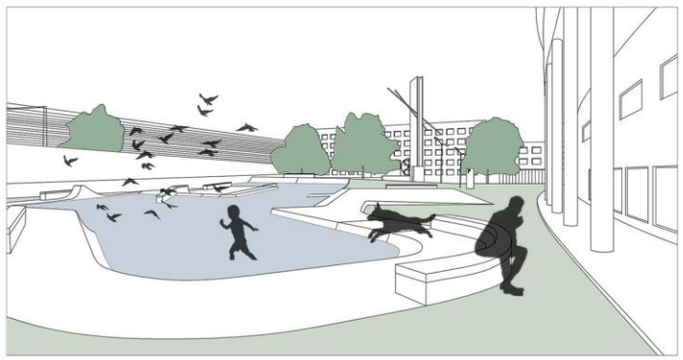
BEFORE

AFTER

Maasplaza (water reservoir)



BEFORE

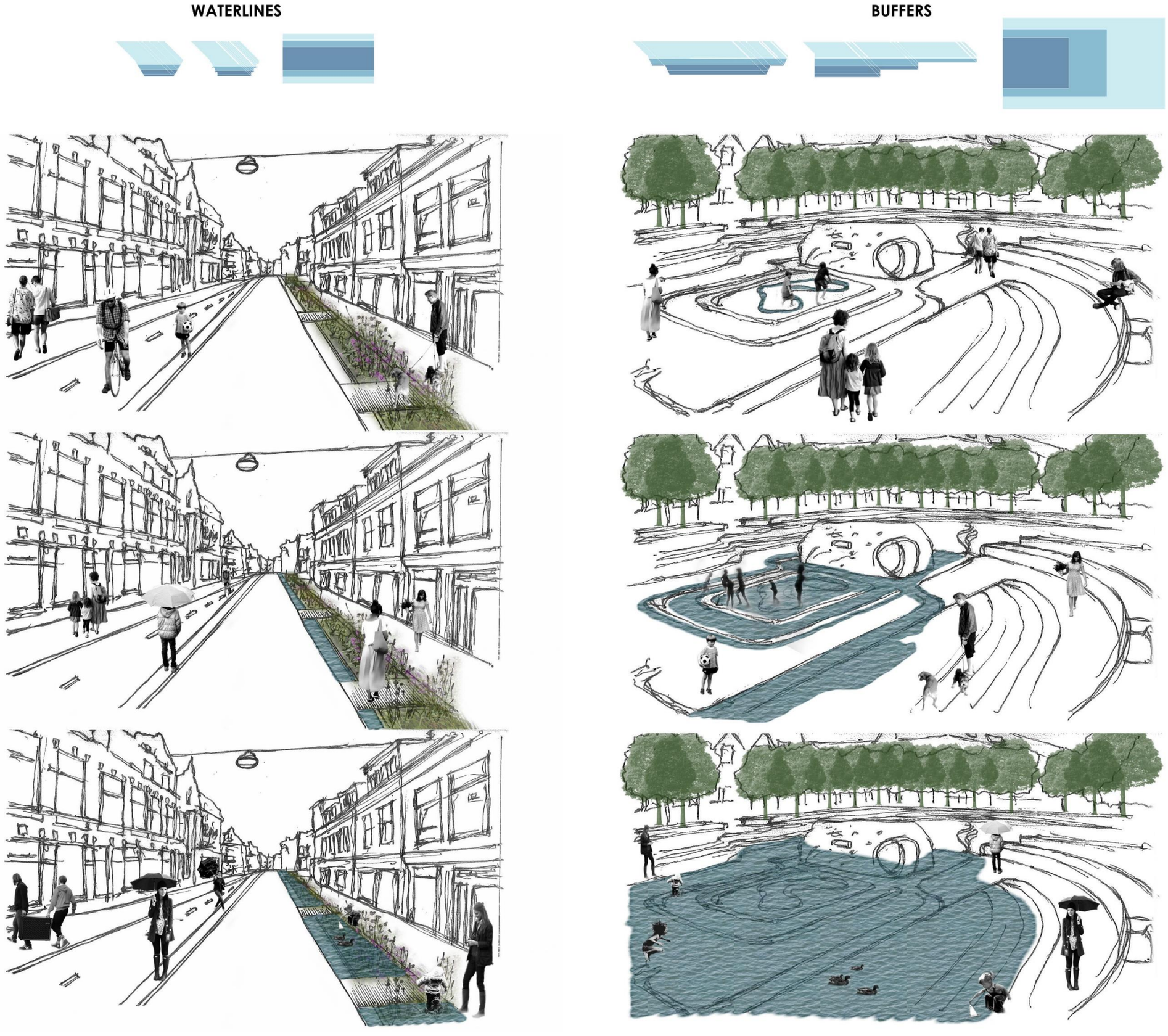


AFTER

everchanging landscapes

WATERLINES

BUFFERS



the 19th cent. schil

Verklaring

a. Binnen Walenvest
b. Hooge Nieuwstraat
c. Varken- markt
d. Groen -
e. Wijn Straat
f. Voor
g. Prinsen
h. de Hoogt
i. Suikerstraat
k. Lange Breestraat
l. Bagijnhof
m. Vriezestraat
n. Kolf
o. Nieuw
p. Steeg over Sloot
q. Doelenstraat
r. Wijngaard
s. Rietdijk
t. Heimansuis Straat
u. Marienborn
v. Noorderdijk
w. Bleckersloot
x. Vriezeweg
y. Bleckersdijkje
z. Spuiweg
1. Groote Kerk
2. Nieuwe
3. Augustijnen Kerk
4. Geb. v. Evang.
5. Luthersche Kerk
6. Jansenisten
7. Synagoge
8. Gasthuis
9. Raadhuis
10. Postkantoor
11. Waag
12. Schouwburg
13. Tribunaal
14. Gevangenis
15. H.B. School
16. Vischmarkt
17. Walen Kerk
18. Korenbeurs
19. Kazerne.
20. Krankzinnige Gest.
21. Liefdadigheids en R.K. Kerk
22. Hofjes
23. Boterbeurs en Museum
24. Societeiten
25. Gasfabriek
26. Landsmagazijnen
27. Chr. Afg. Kerk
28. Oliemolens
29. Zaagmolens
30. Nieuwe weeshuis
31. Manege

PAPENDRECHT
De Noord
Veerplaat
Rietdijksche Hoofd
Dammaten hofmuur
Groot Hoofd
Visserspoort
Pont Veer
Zwijndrechtsche Veer-hoofd
Blauwe poort
Katharijne poort
Anna poort
de Bom
Gr. Kerks plein
Gr. Kerksbuurt
Oude Haven
Nieuwe Kalk Haven
Kuipers Haven
Nieuwe Haven
Oude Haven
Rietdijksche Haven
Ve Kerkes plein
Hoge Nieuwstraat
Hoge Nieuwstraat
Spuikom
Spuikom
Spuikom
Kalk Haven
Spoorweg brug
Doorvaart veer
Werf
Ijzer Kerkhof
Exercitie Veld
Stads weide
Rozenhof
Bellevue
Spoorweg Haven
Pelm
Veerpagat
Werf
Molenweide
Waterm.
Weiziqt
Station
Spoorweg
naar Willemsdorp
DUBBELDAM
naar Dubbeldam
Merwestein
Noord hove
Noord Polder
Stadsweide
Schaal van 1: 12,500
Nederlandsche Ellen
0 100 200 300 400 500

Spuiboulevard

Vriesepleín

Villa Augustus

Beverwijksplein

Station Dordrecht

Park Merwestein

Noordendijk

old city walls

city gates

BINNENSTAD

Kleyne Sluyspoort

St. Jorispoort

Voorstraat

ZONE 1

ZONE 2

Hooge Sluyspoort

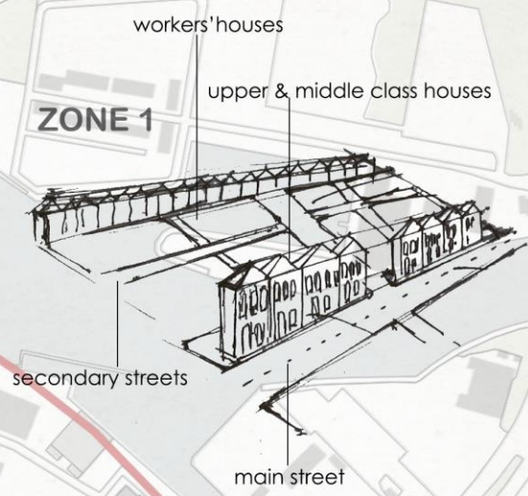
Spuypoort

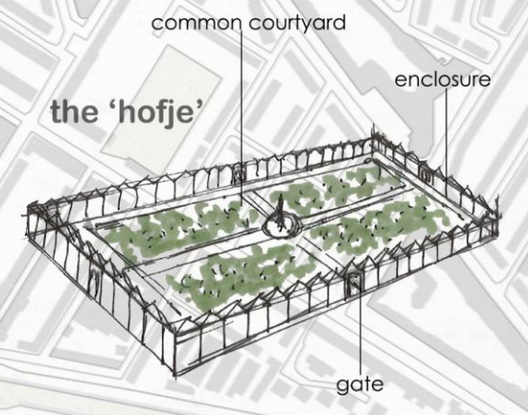
Vrieze poort

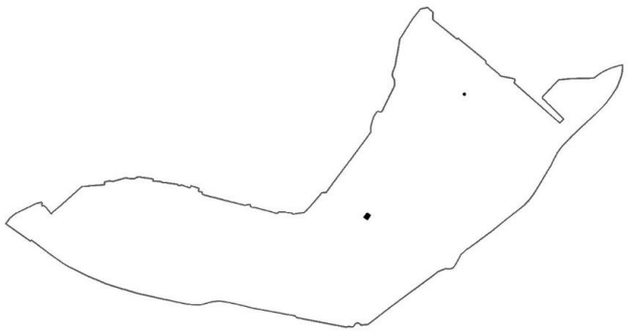
radials

SCHIL

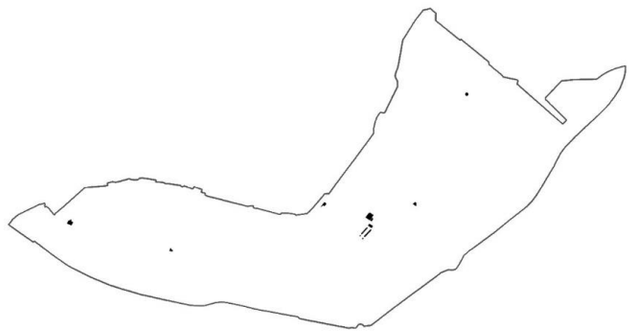
Singel



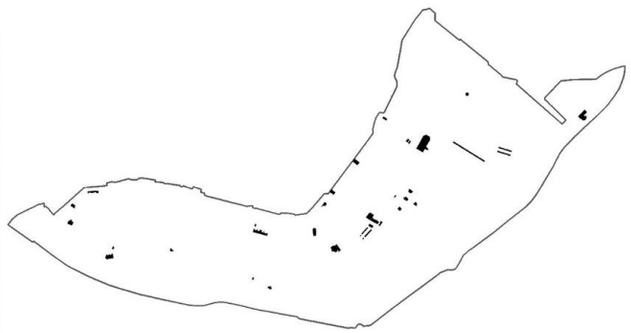




< 1800



1800-1850

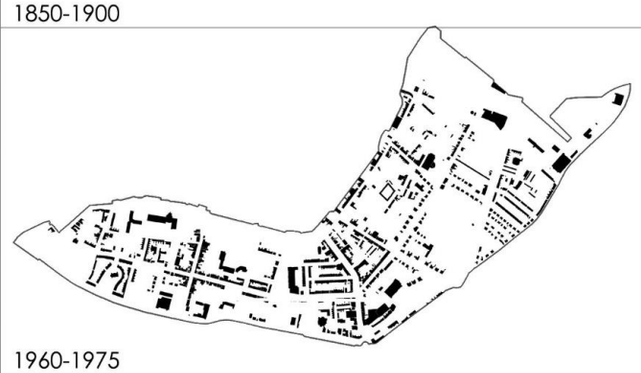


1850-1900

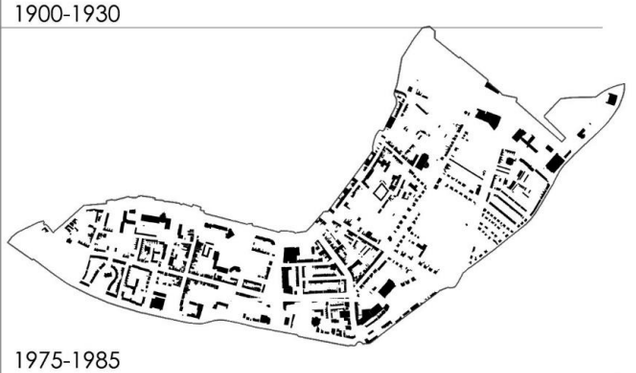
1900-1930

1930-1945

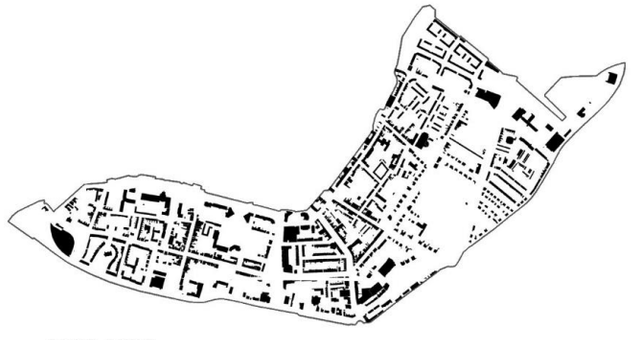
1945-1960



1960-1975



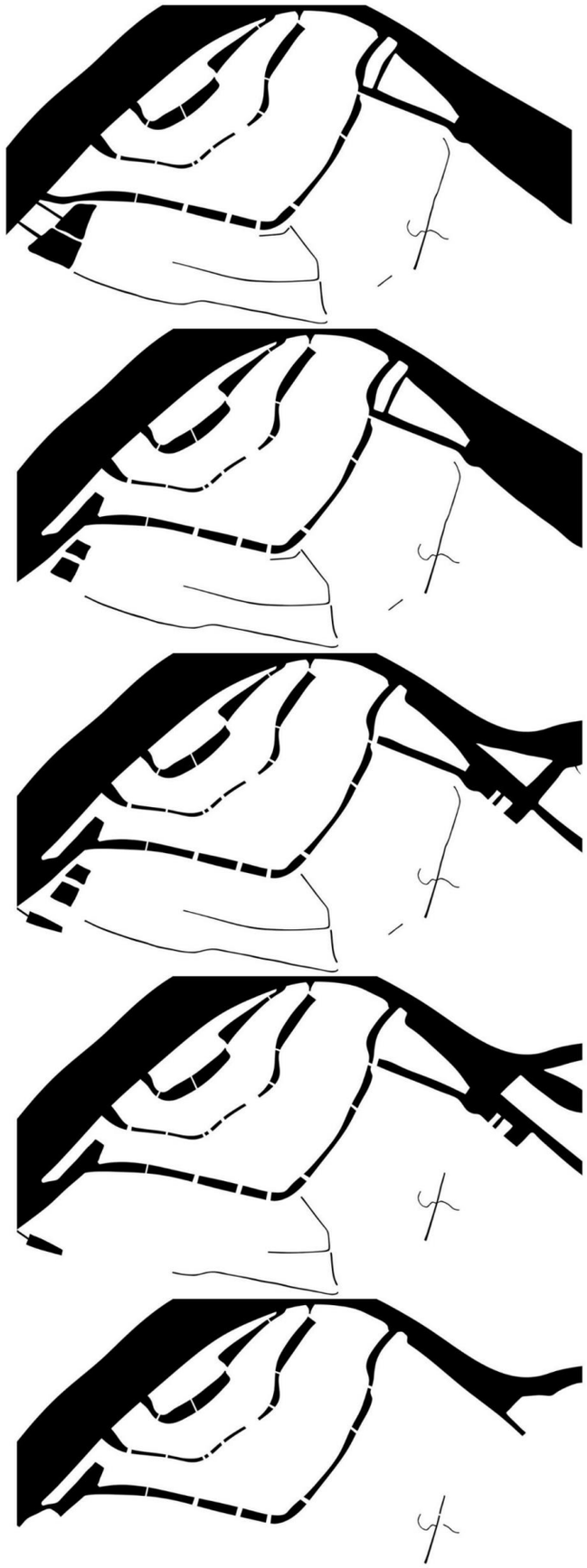
1975-1985



1985-1995

1995-2005

> 2005

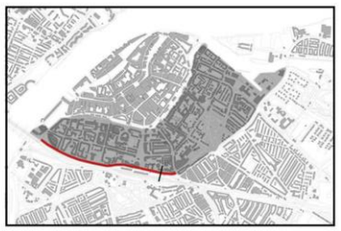

1600
1700
1800
1900
2000

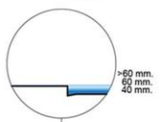
Dordrecht van Hoogstratensingel.
A. G. V. - D. 466.

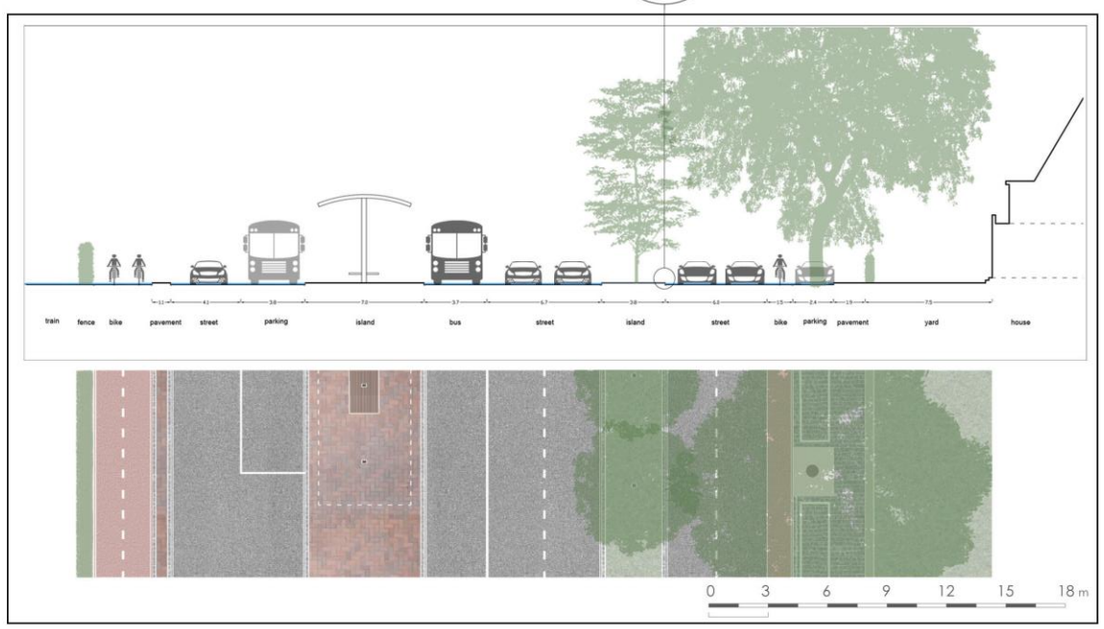
K. Parallelweg-
Burgemeester de Raadtsingel

vulnerability: hard: 77 %, soft: 23%

typology: high-traffic avenue



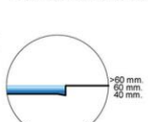


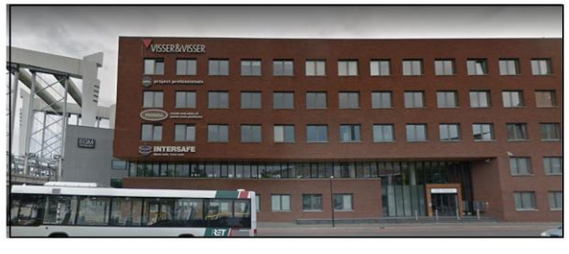


Parking Maasplaza

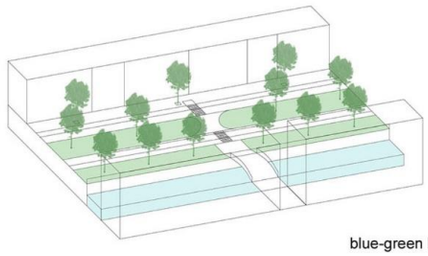
vulnerability: hard: 92 %, soft: 8 %

typology: parking area

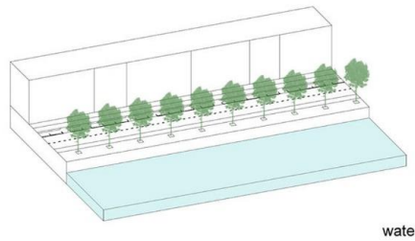




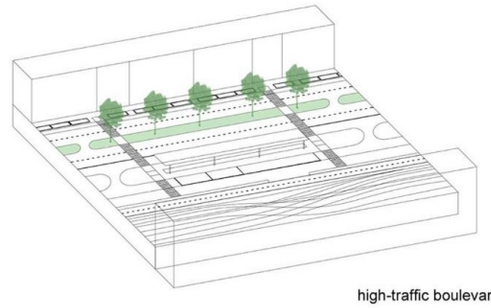
STREETS



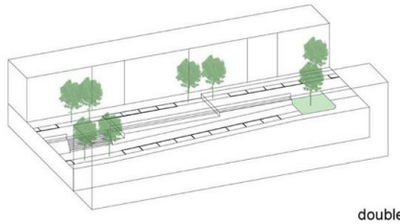
blue-green boulevard



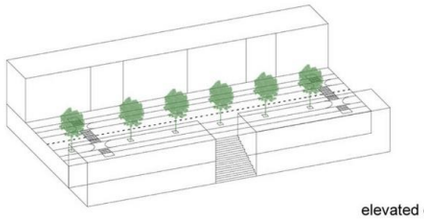
waterfront street



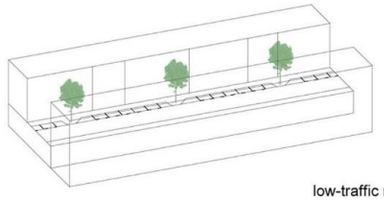
high-traffic boulevard



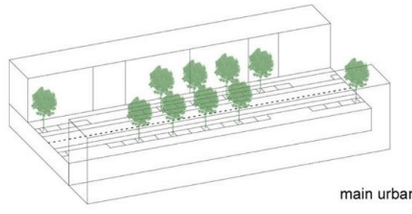
double-height street



elevated dike street

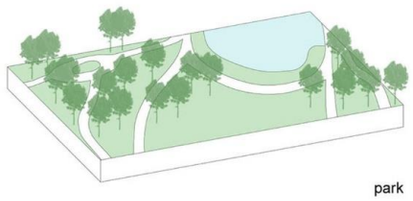


low-traffic residential street

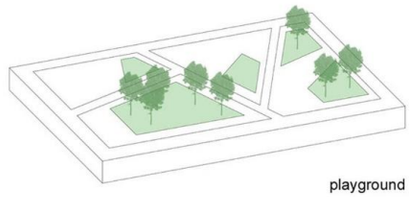


main urban connection

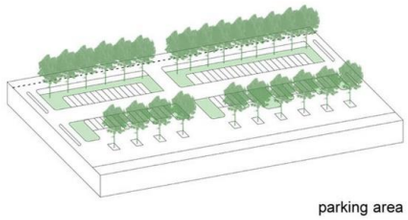
PUBLIC SPACES



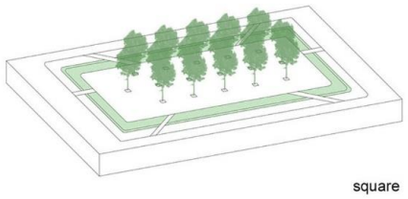
park



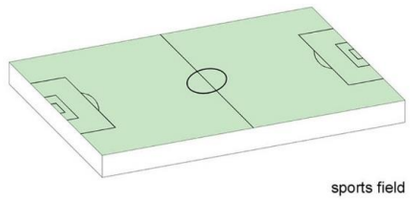
playground



parking area

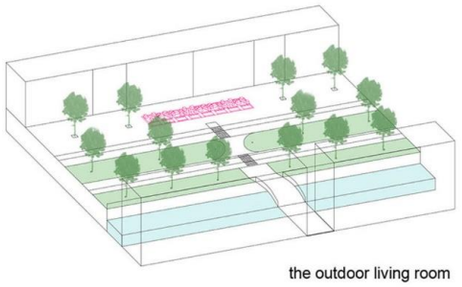


square

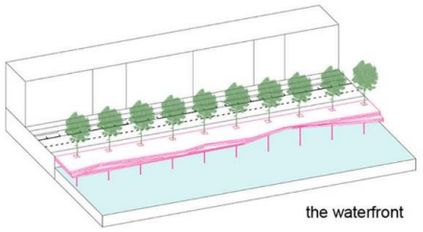


sports field

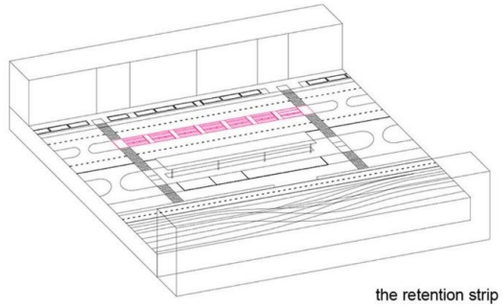
STREETS



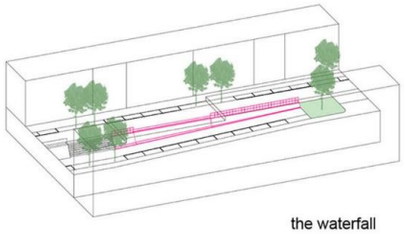
the outdoor living room



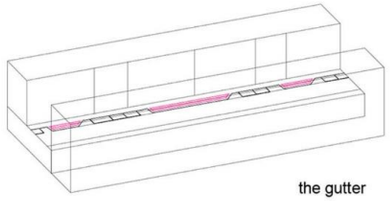
the waterfront



the retention strip

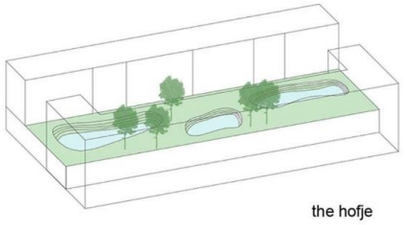


the waterfall

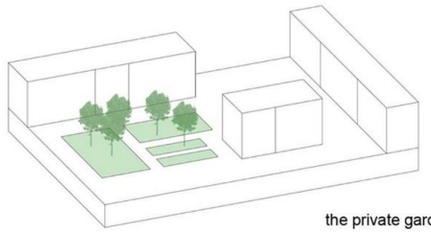


the gutter

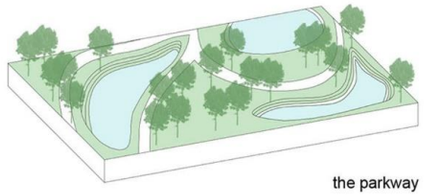
PUBLIC SPACES



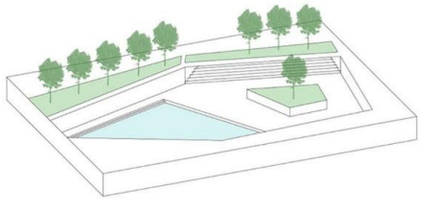
the hofje



the private garden

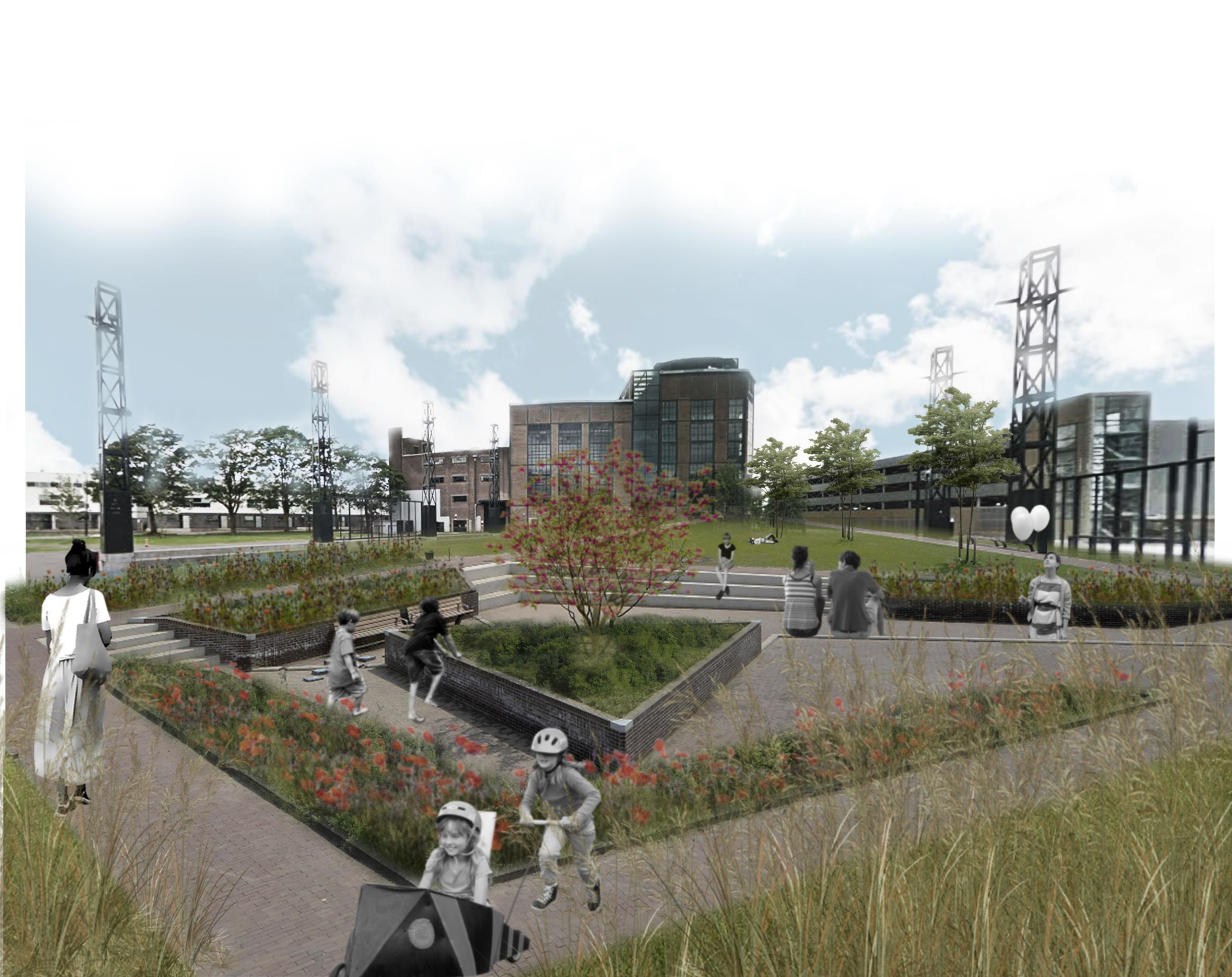


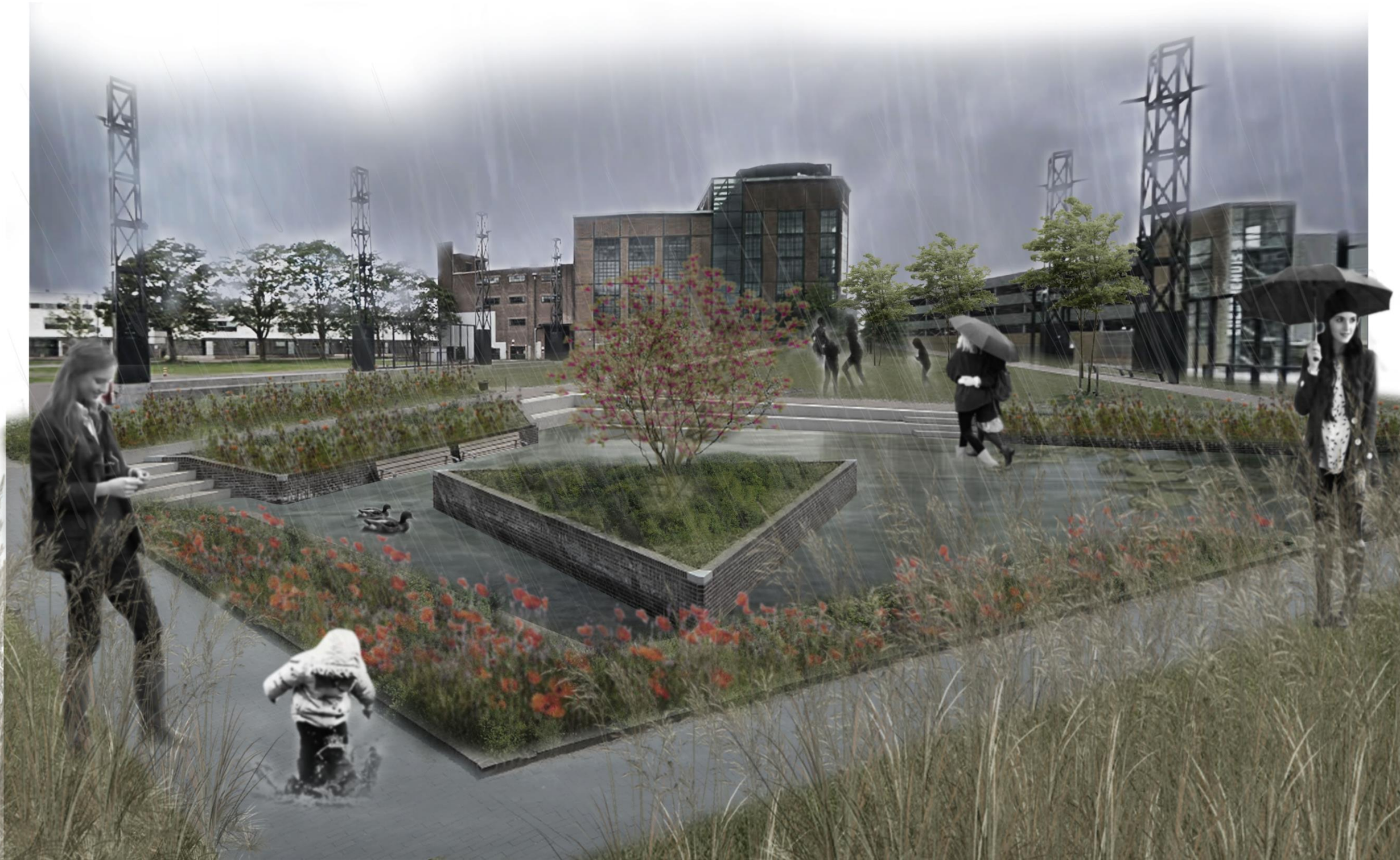
the parkway

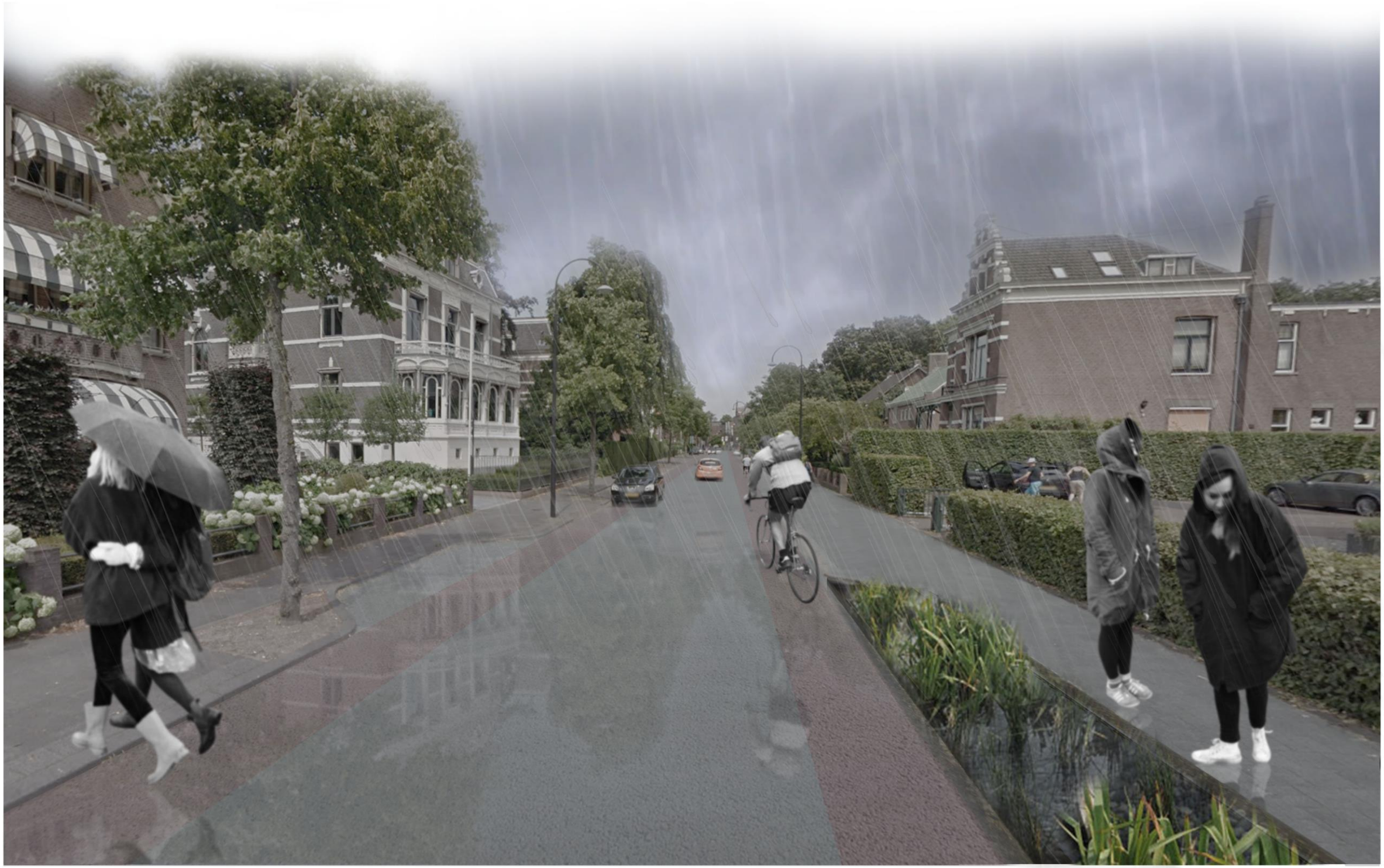


the watersquare

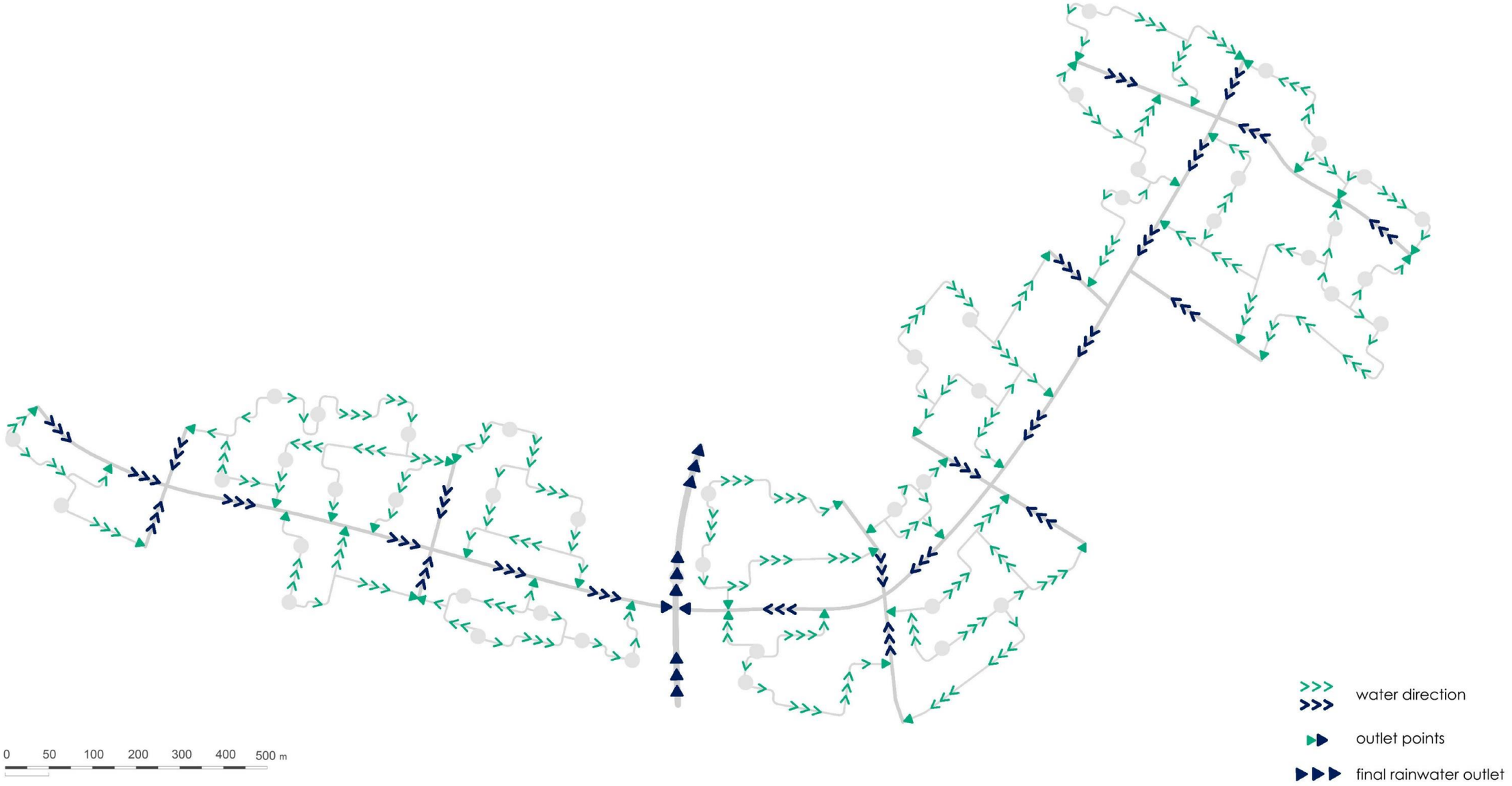
design proposal



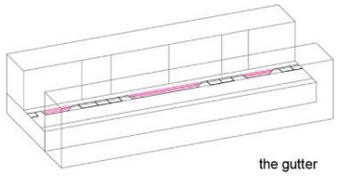




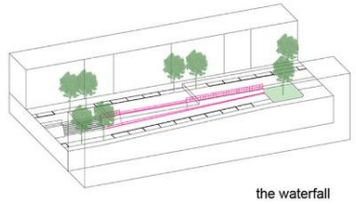
0 50 100 200 300 400 500 m
seasonal buffer
secondary waterline
primary waterline
main water srtorage/disposal axis


0 50 100 200 300 400 500 m
water direction
outlet points
final rainwater outlet

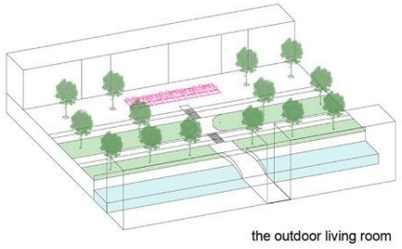
hofje
private garden
parkway
watersquare
gutter (inside building block)
waterfall/ gutter
outdoor living room
retention strip
waterfront



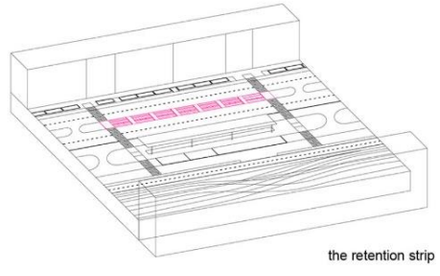
the gutter



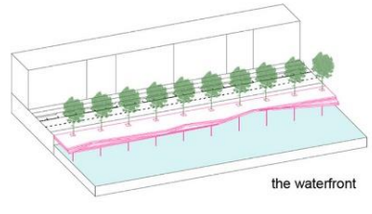
the waterfall



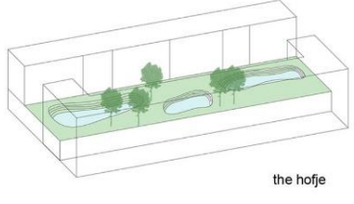
the outdoor living room



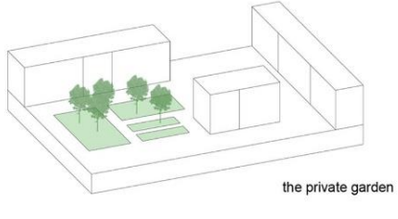
the retention strip



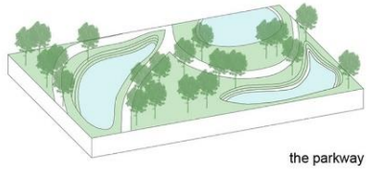
the waterfront



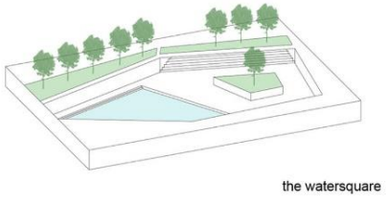
the hofje



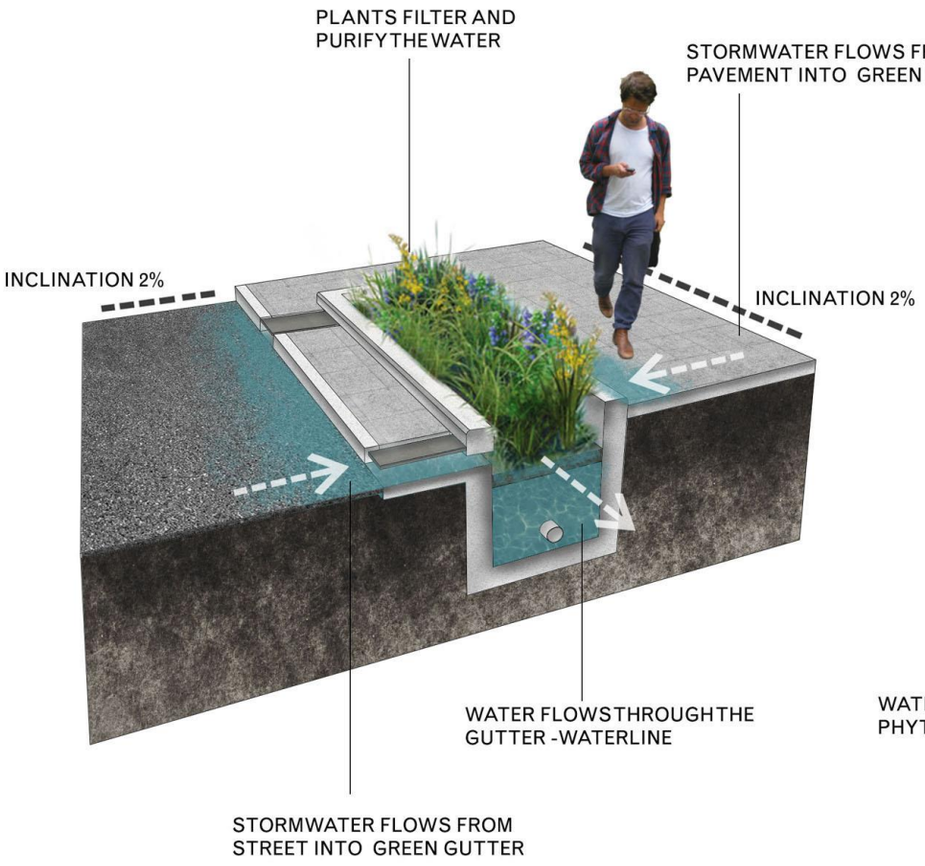
the private garden

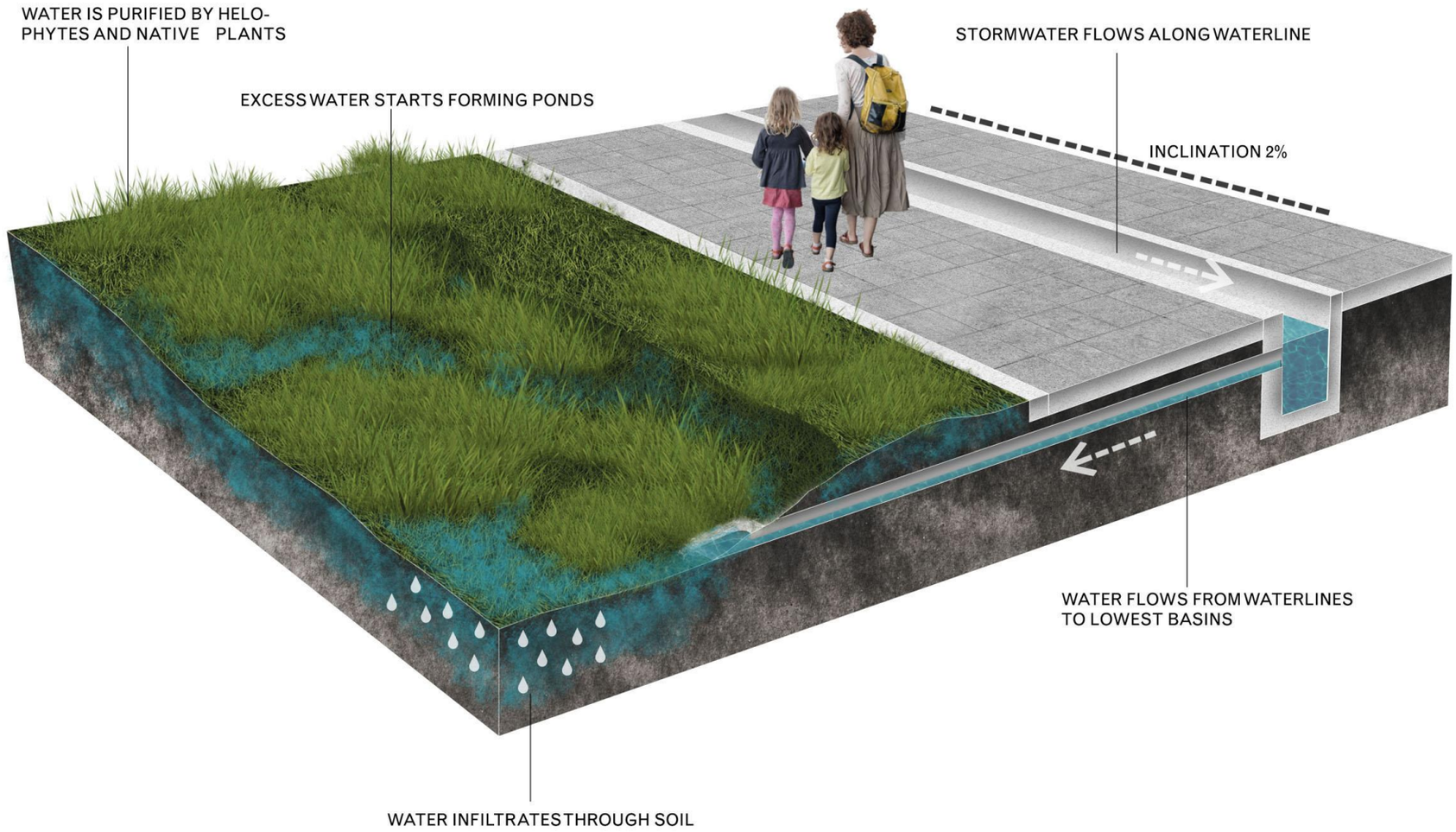


the parkway

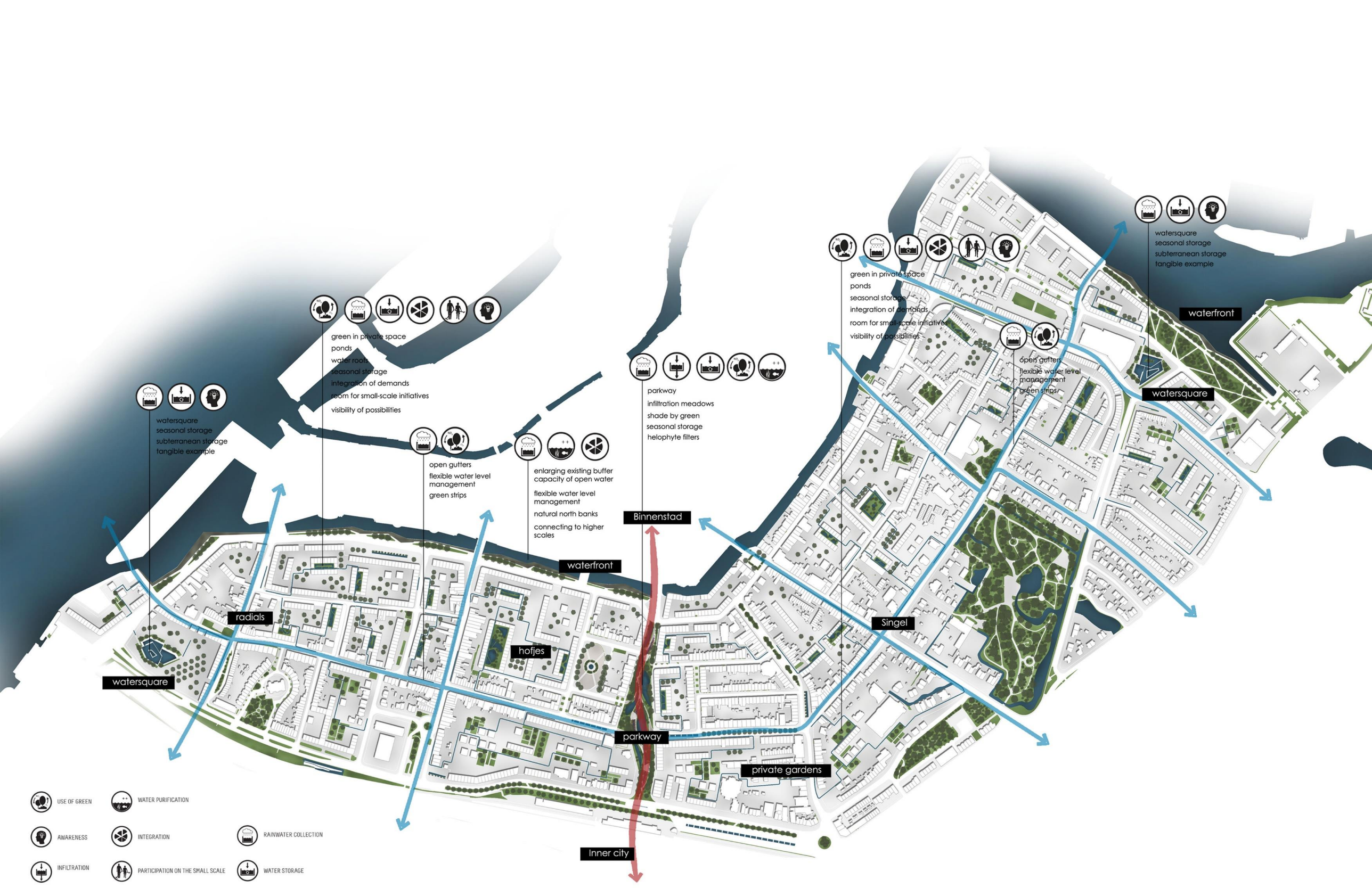


the watersquare


PLANTS FILTER AND
PURIFY THE WATER
STORMWATER FLOWS FROM
PAVEMENT INTO GREEN GUTTER
INCLINATION 2%
INCLINATION 2%
WATER FLOWS THROUGH THE
GUTTER -WATERLINE
STORMWATER FLOWS FROM
STREET INTO GREEN GUTTER


WATER IS PURIFIED BY HELO-
PHYTES AND NATIVE PLANTS
EXCESS WATER STARTS FORMING PONDS
STORMWATER FLOWS ALONG WATERLINE
INCLINATION 2%
WATER FLOWS FROM WATERLINES
TO LOWEST BASINS
WATER INFILTRATES THROUGH SOIL

climate adaptation


watersquare
seasonal storage
subterranean storage
tangible example
green in private space
ponds
water roofs
seasonal storage
integration of demands
room for small-scale initiatives
visibility of possibilities
open gutters
flexible water level management
green strips
enlarging existing buffer capacity of open water
flexible water level management
natural north banks
connecting to higher scales
parkway
infiltration meadows
shade by green
seasonal storage
helophyte filters
green in private space
ponds
seasonal storage
integration of demands
room for small-scale initiatives
visibility of possibilities
open gutters
flexible water level management
green strips
watersquare
seasonal storage
subterranean storage
tangible example
waterfront
watersquare
waterfront
Binnenstad
radials
hofjes
watersquare
Singel
parkway
private gardens
Inner city
USE OF GREEN
WATER PURIFICATION
AWARENESS
INTEGRATION
RAINWATER COLLECTION
INFILTRATION
PARTICIPATION ON THE SMALL SCALE
WATER STORAGE

current situation

2048 (without intervention)

after prolonged heavy rainfall

2048 (design proposal)

after prolonged heavy rainfall

transformation

0 initial dry condition

1

2

higher basins of watersquares fill up
water starts flowing in waterlines
hofjes completely fill up

3

watersquares completely fill up
park basins start to fill up
water keeps flowing in waterlines
hofjes are completely filled up

4

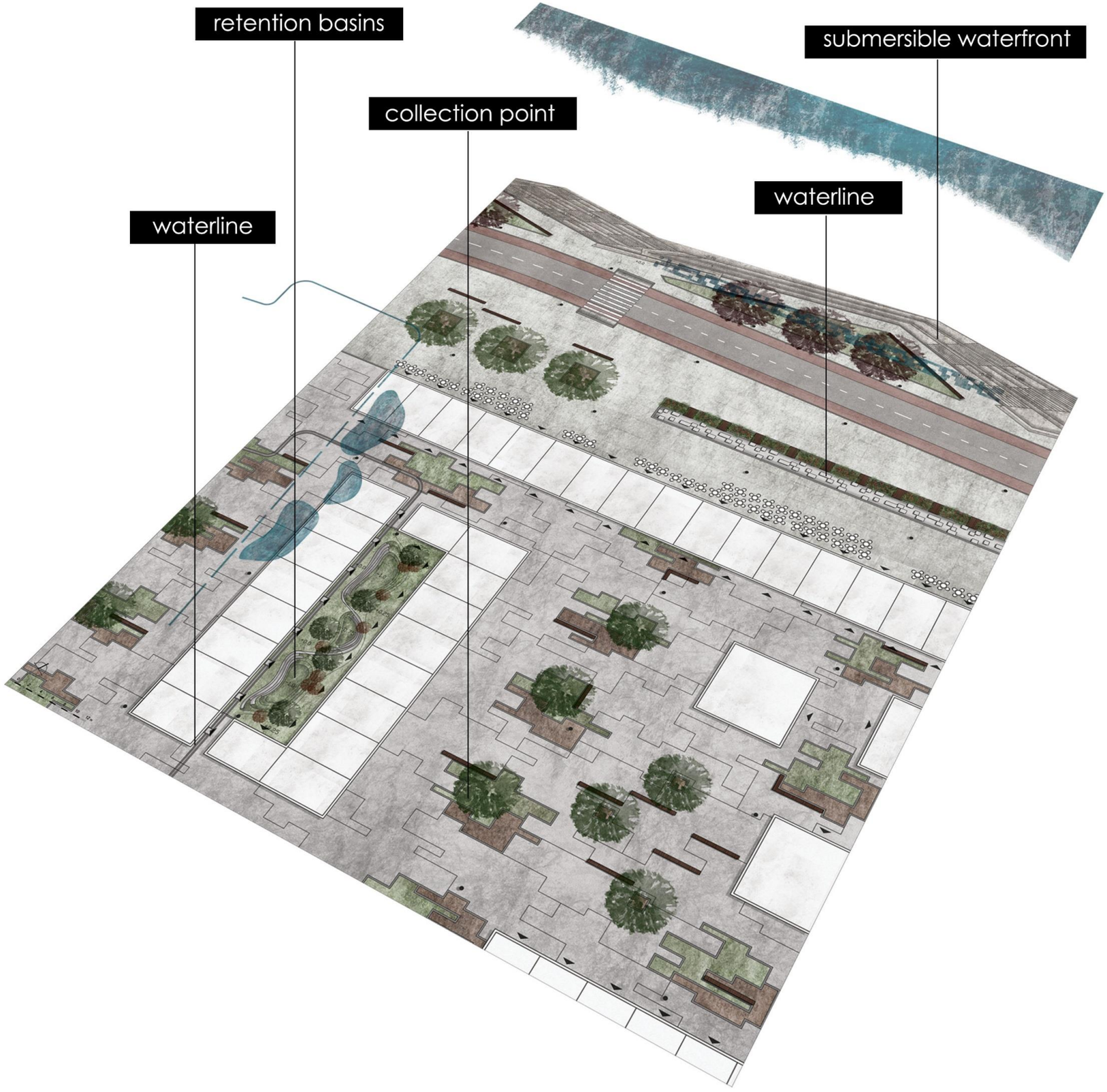
water keeps flowing in waterlines
hofjes start to drain
park basins completely fill up
watersquares start to drain

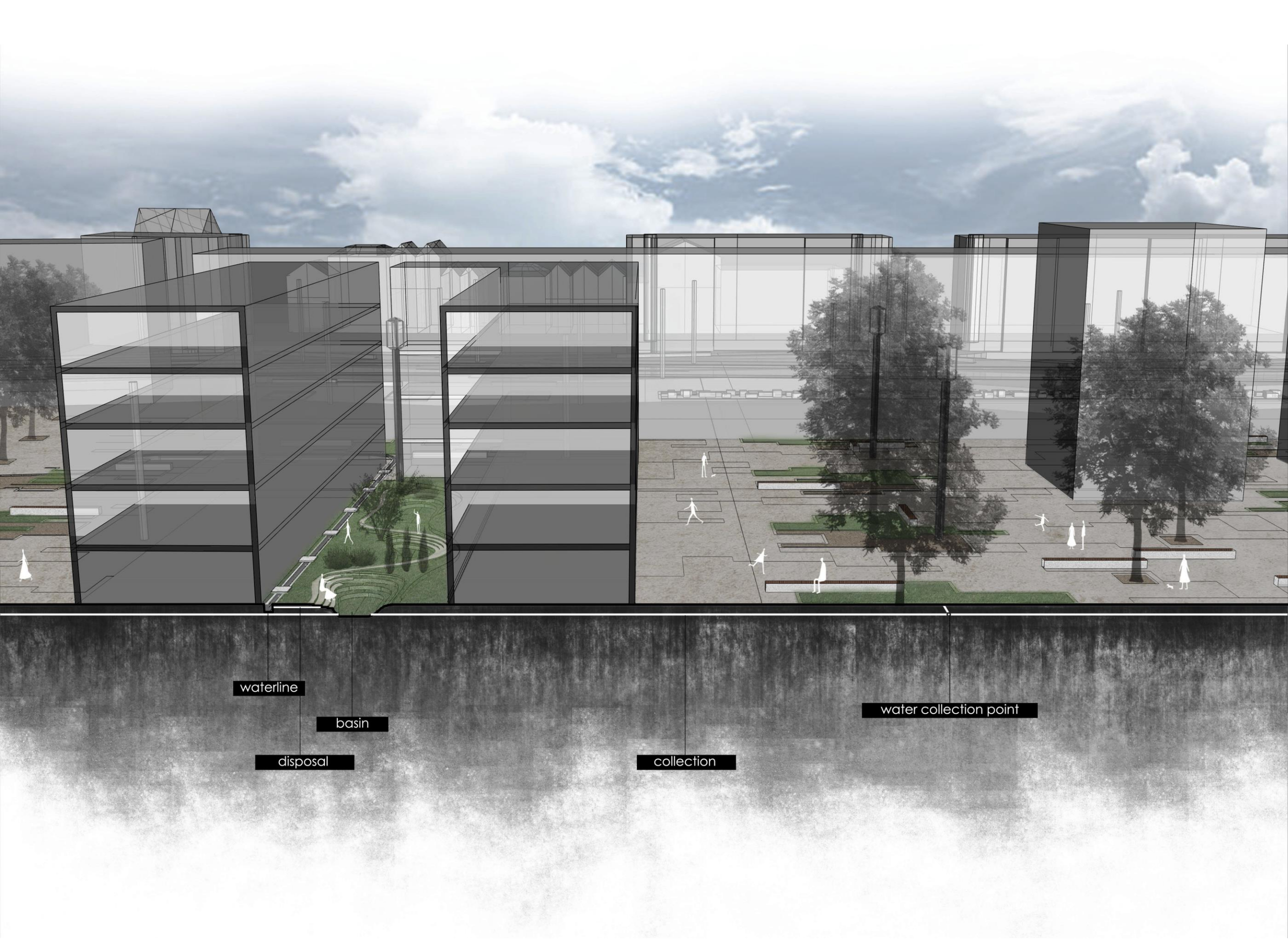
5

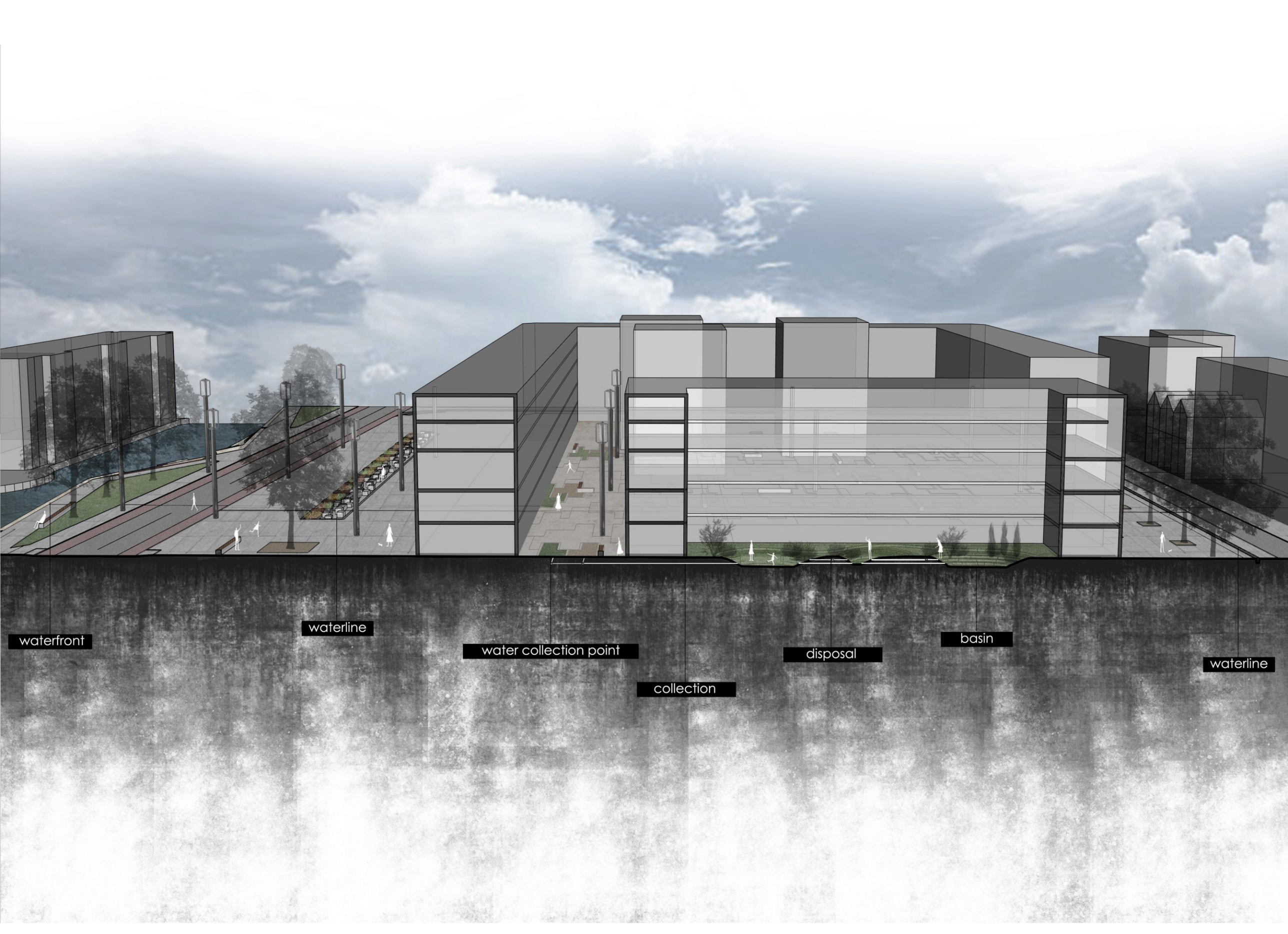
watersquares are drained
park basins start to drain
waterlines are drained
hofjes are drained

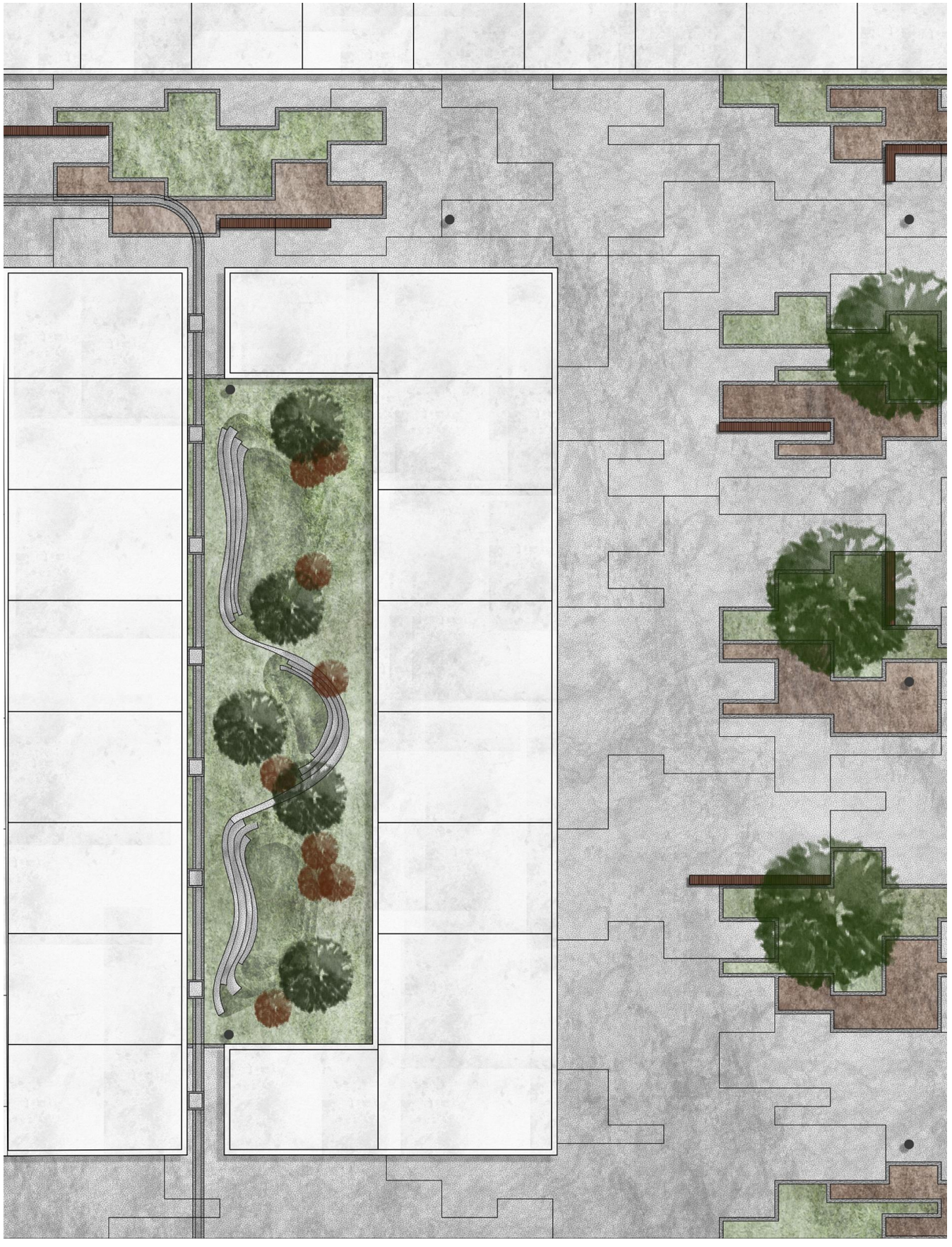
6 the area returns to initial dry condition

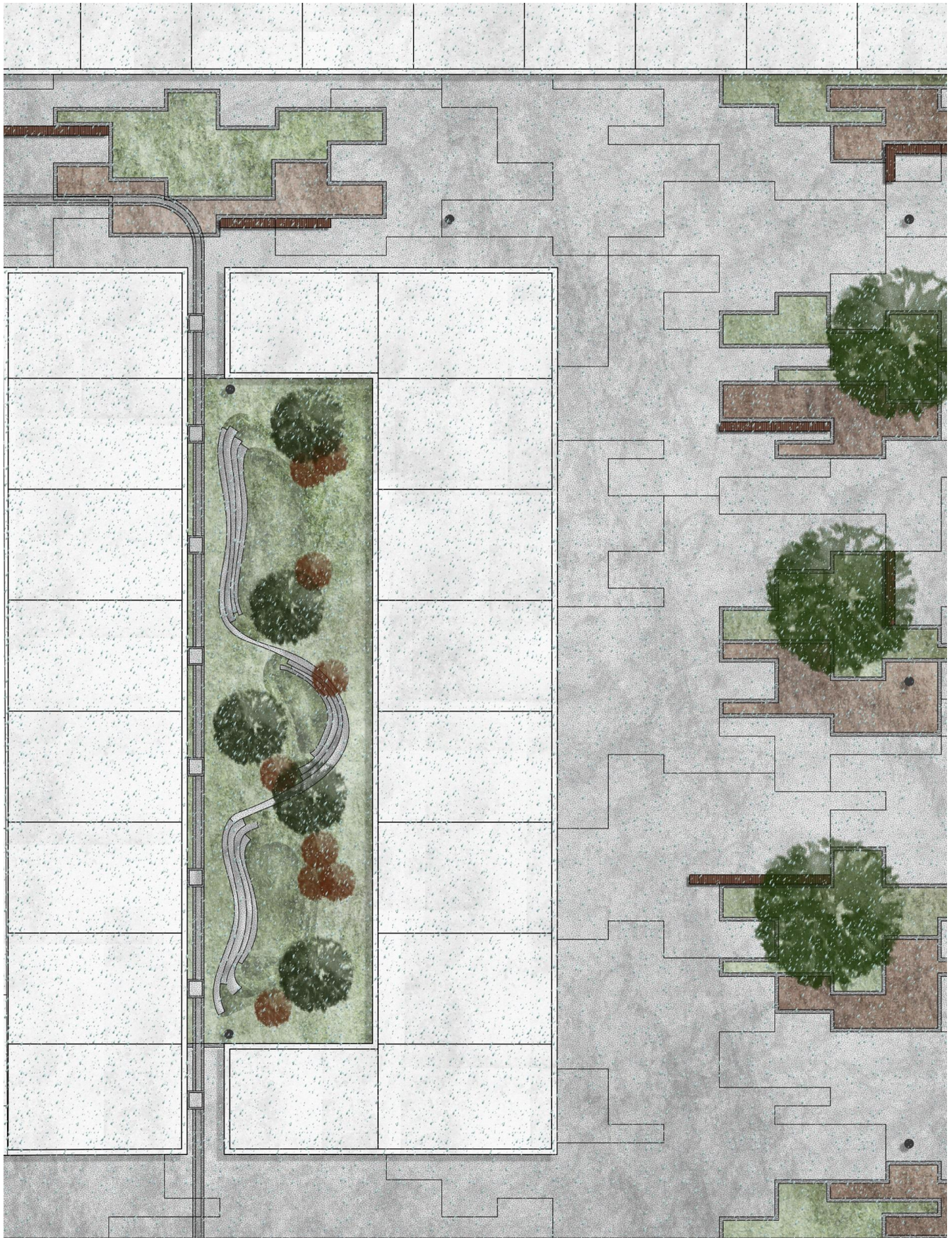
the hofje

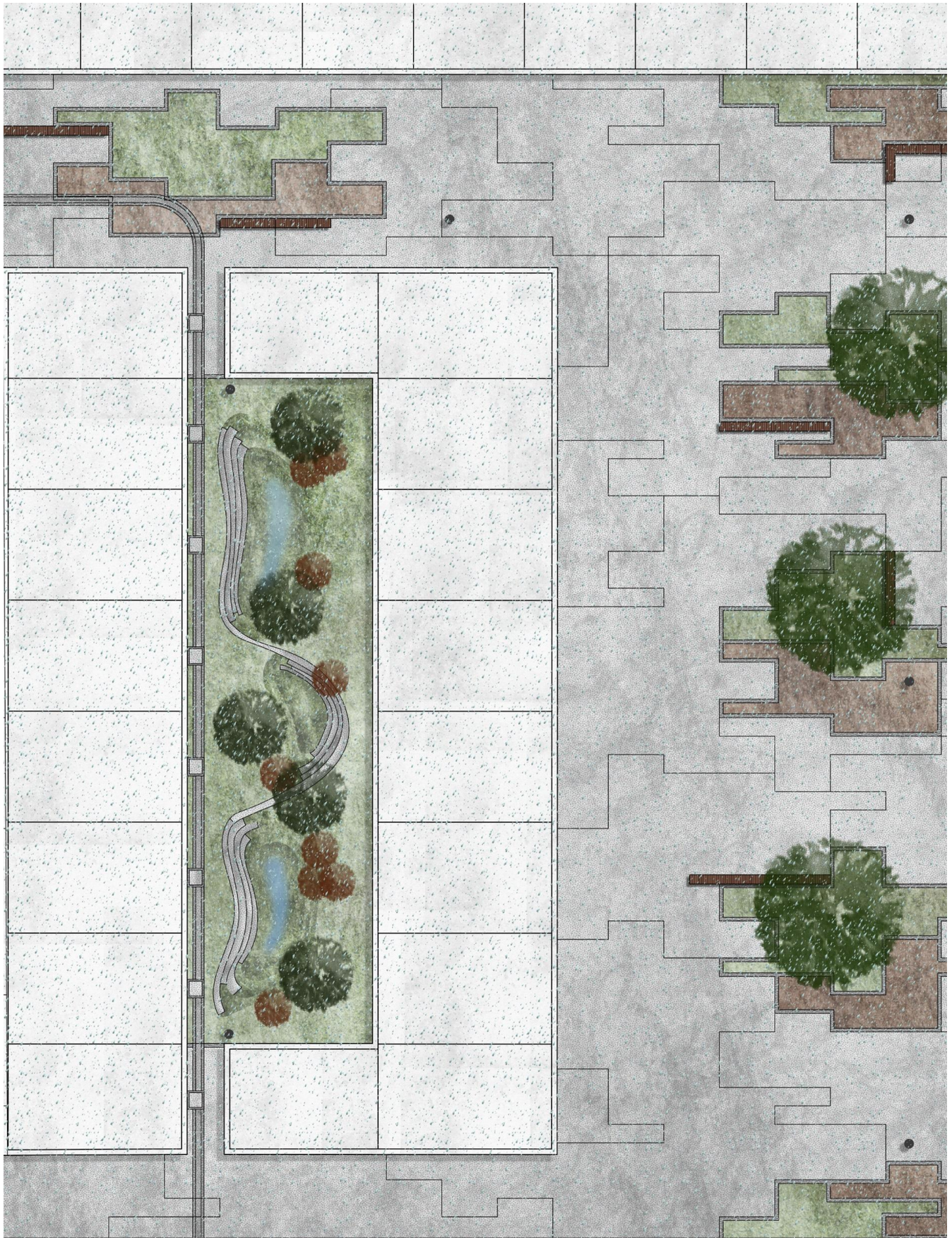

retention basins
collection point
waterline
submersible waterfront
waterline

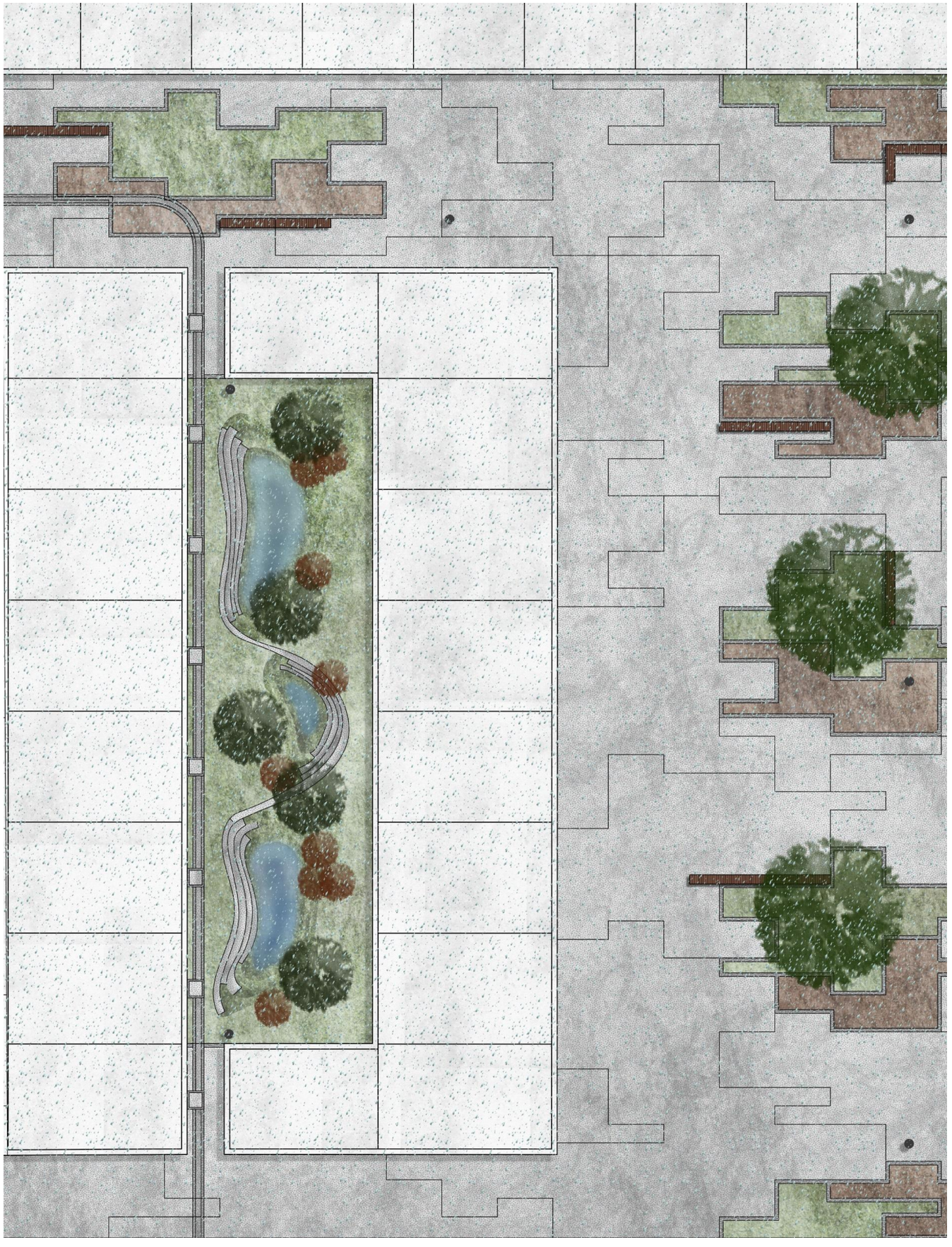

waterline
basin
disposal
collection
water collection point

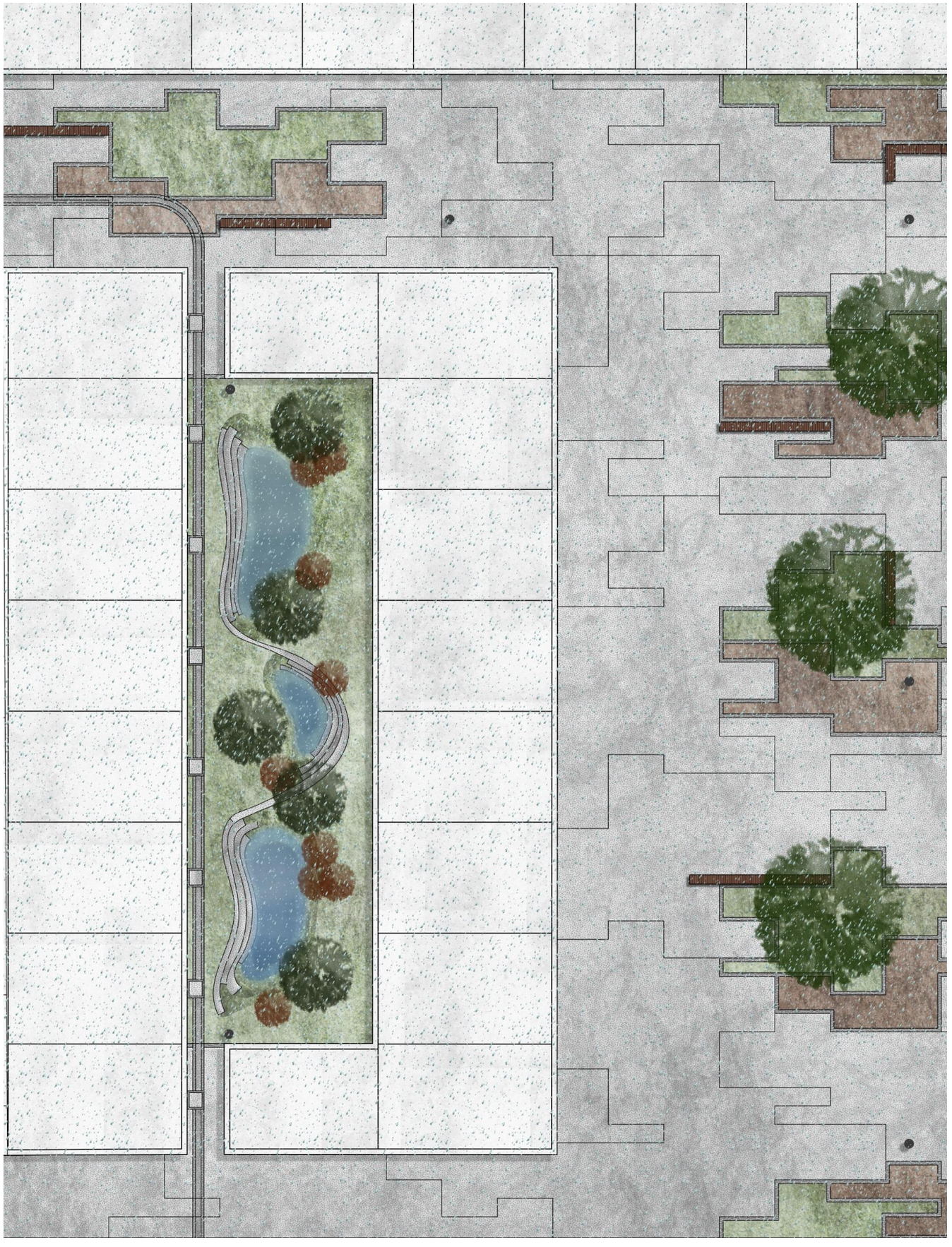

waterfront
waterline
water collection point
collection
disposal
basin
waterline

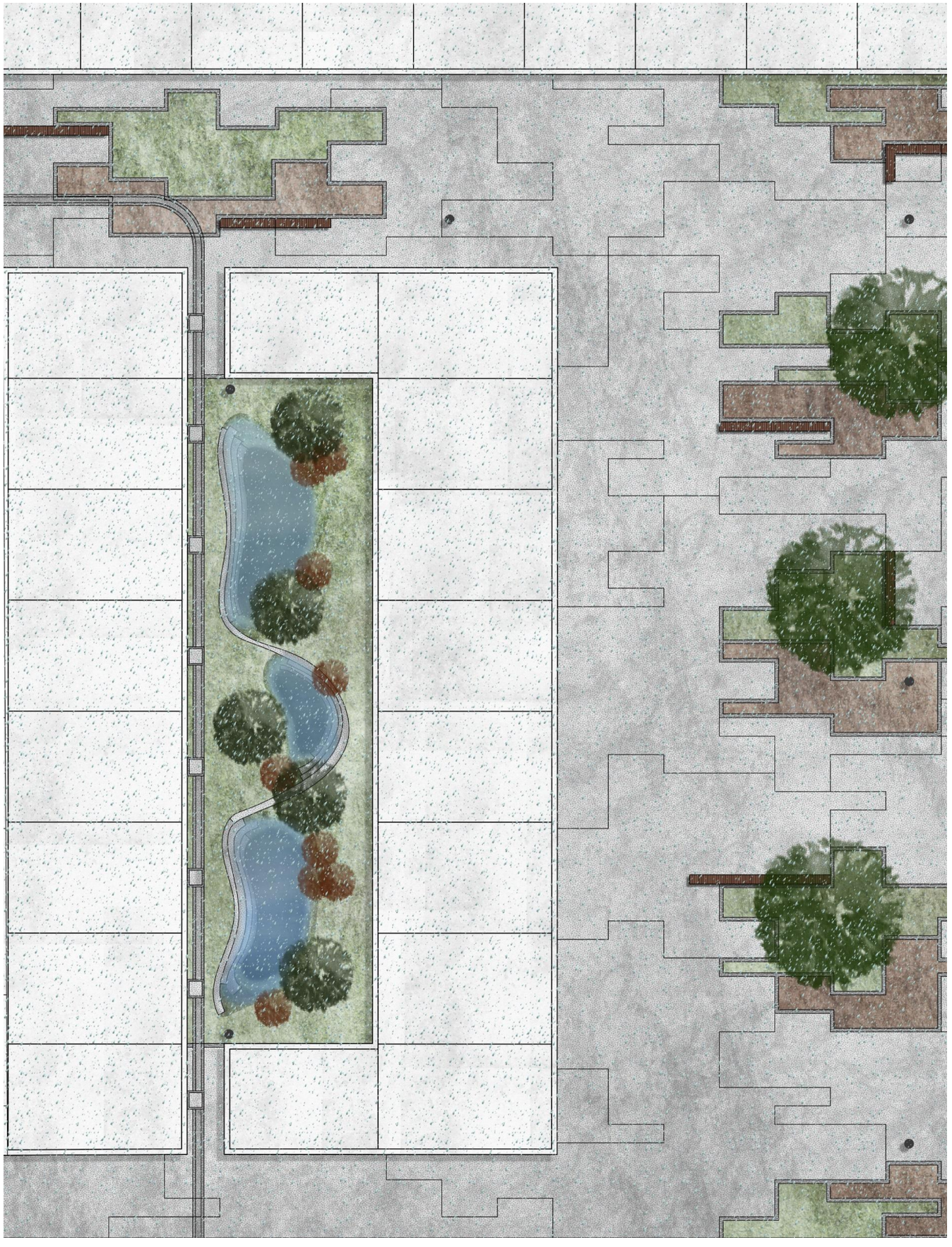


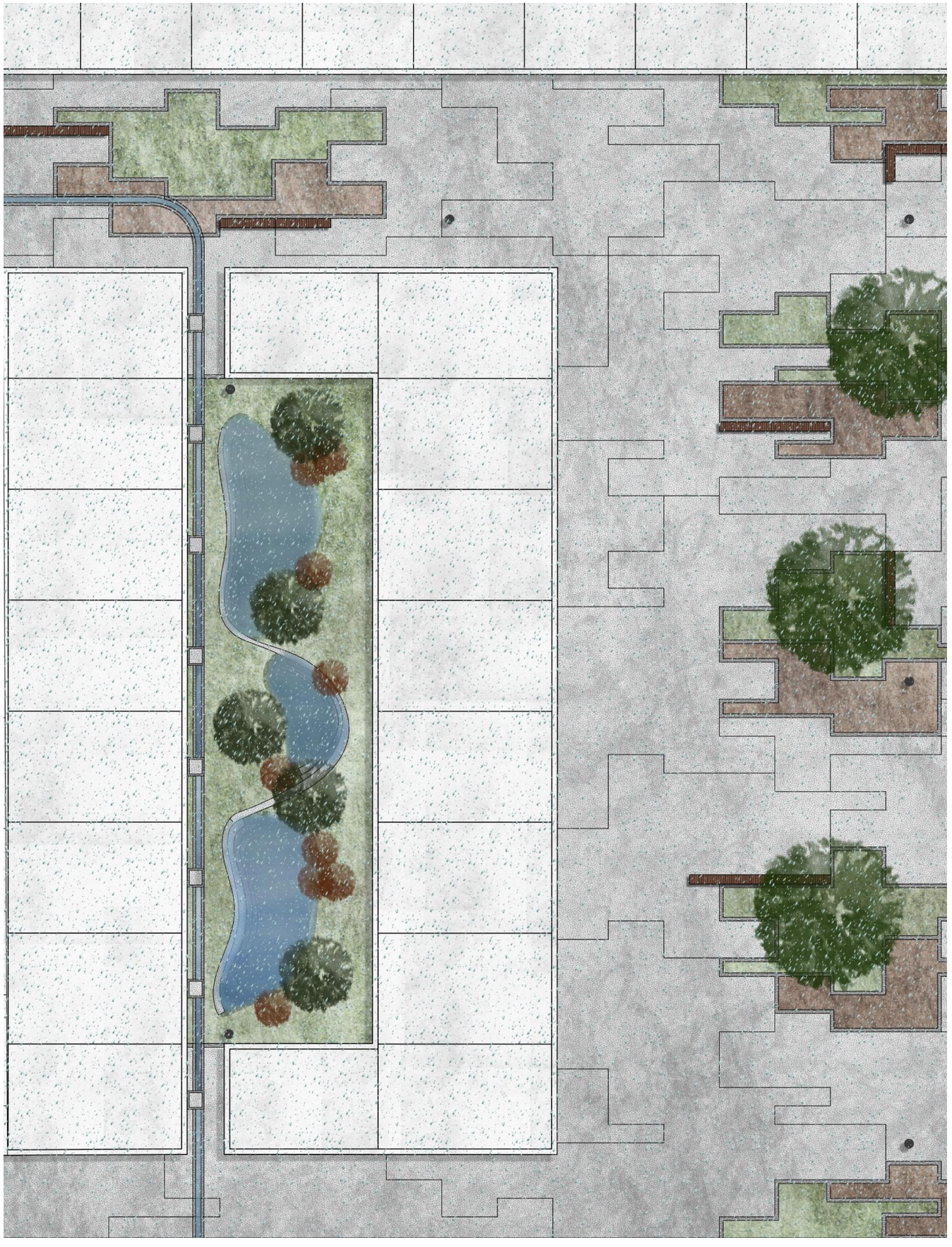


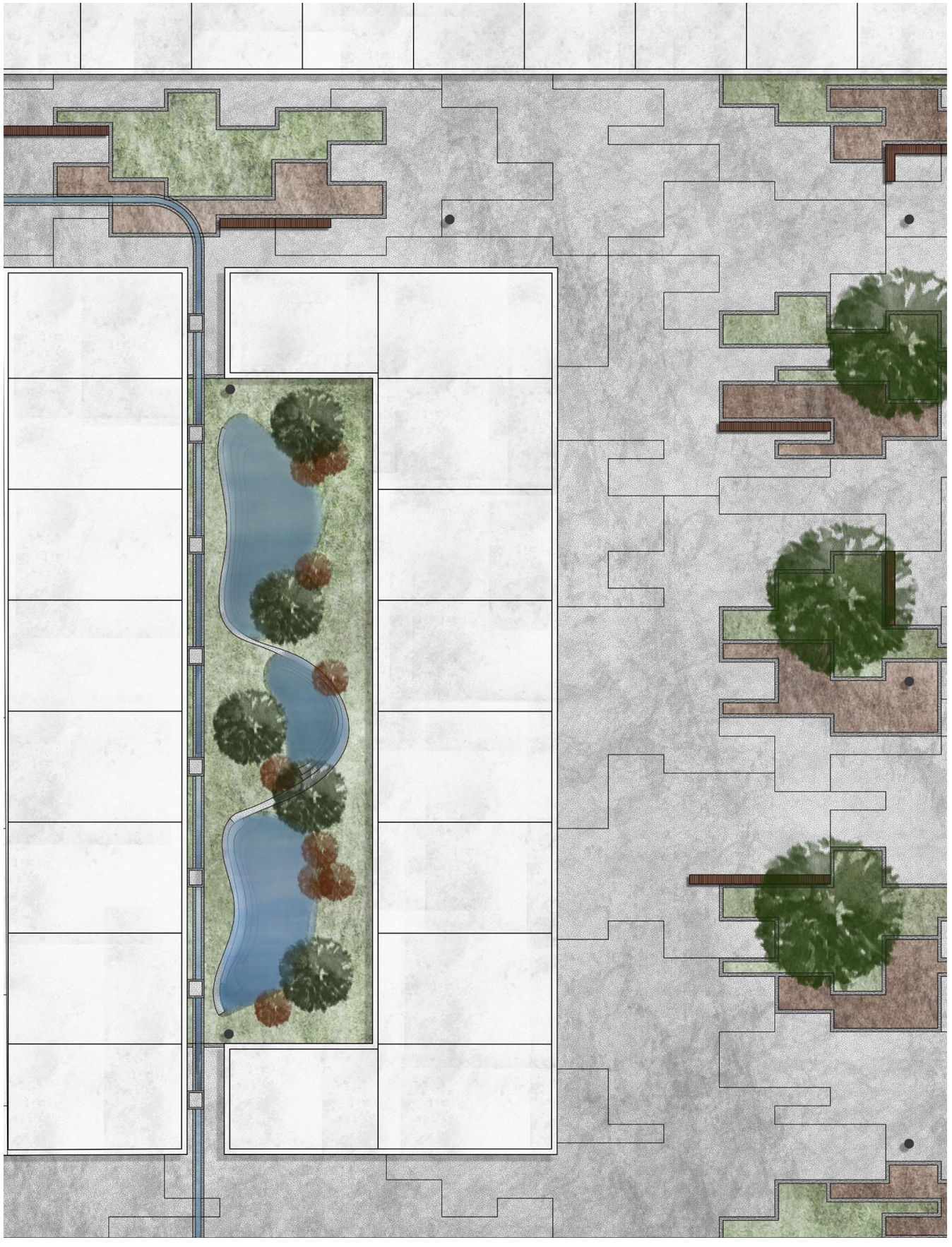


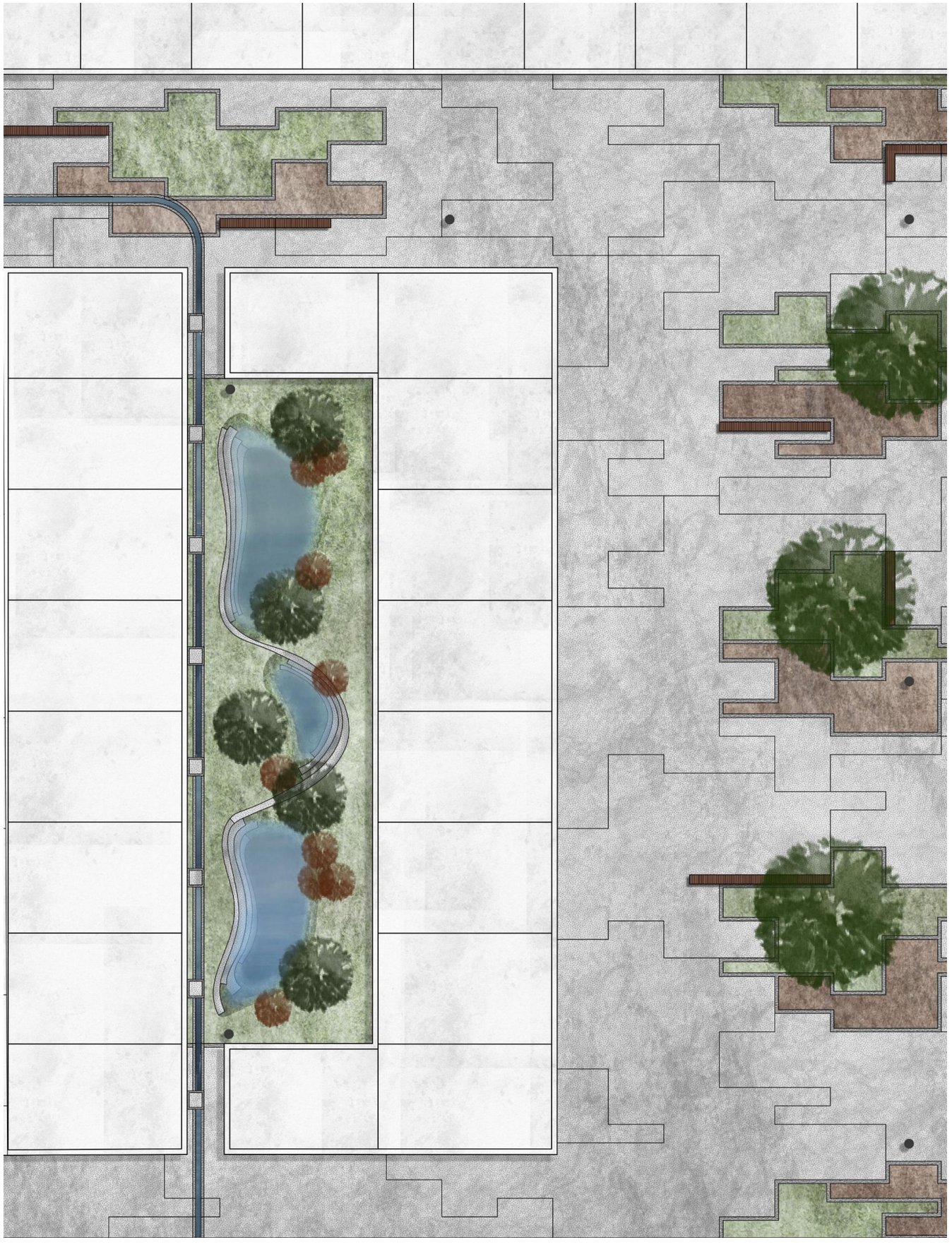


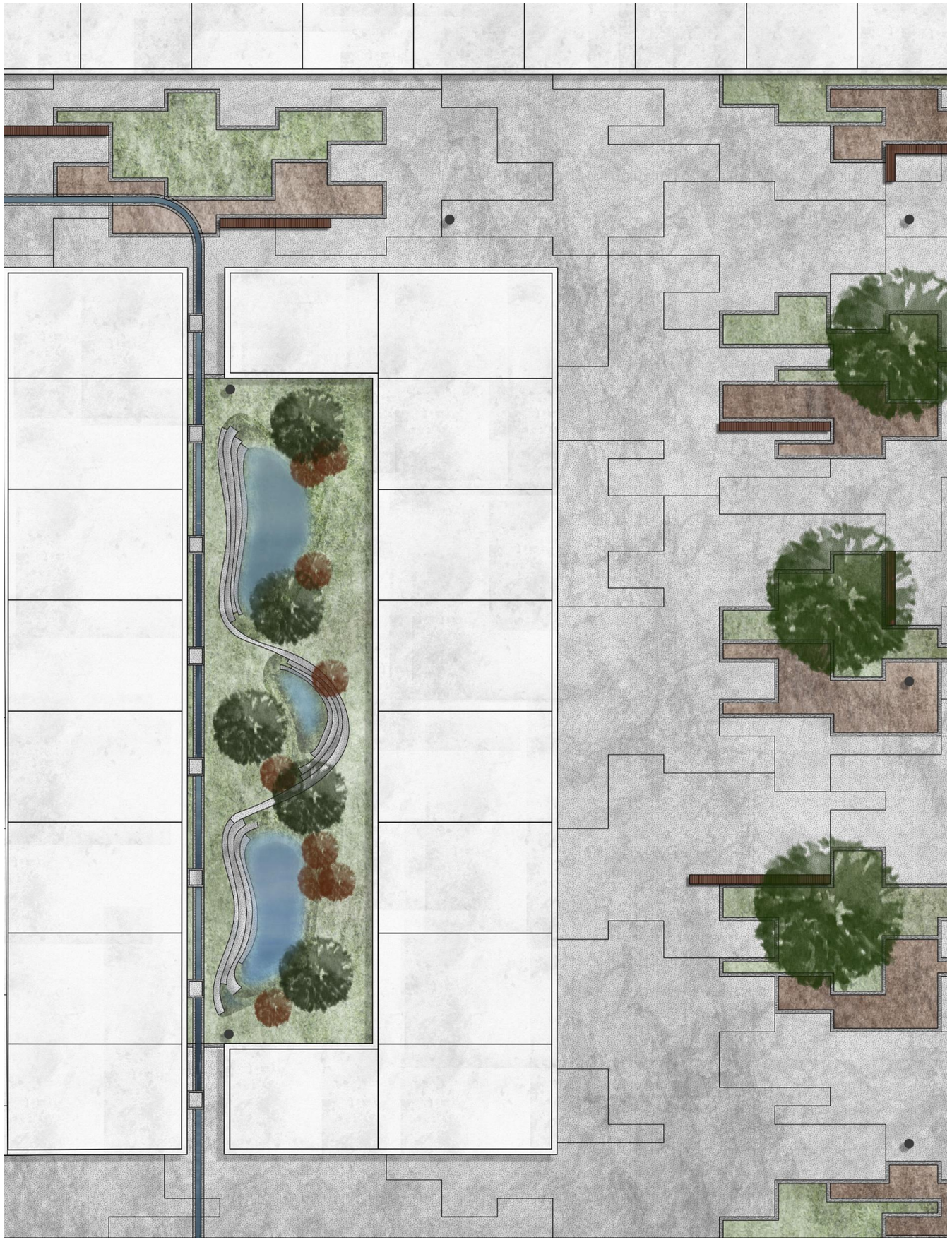


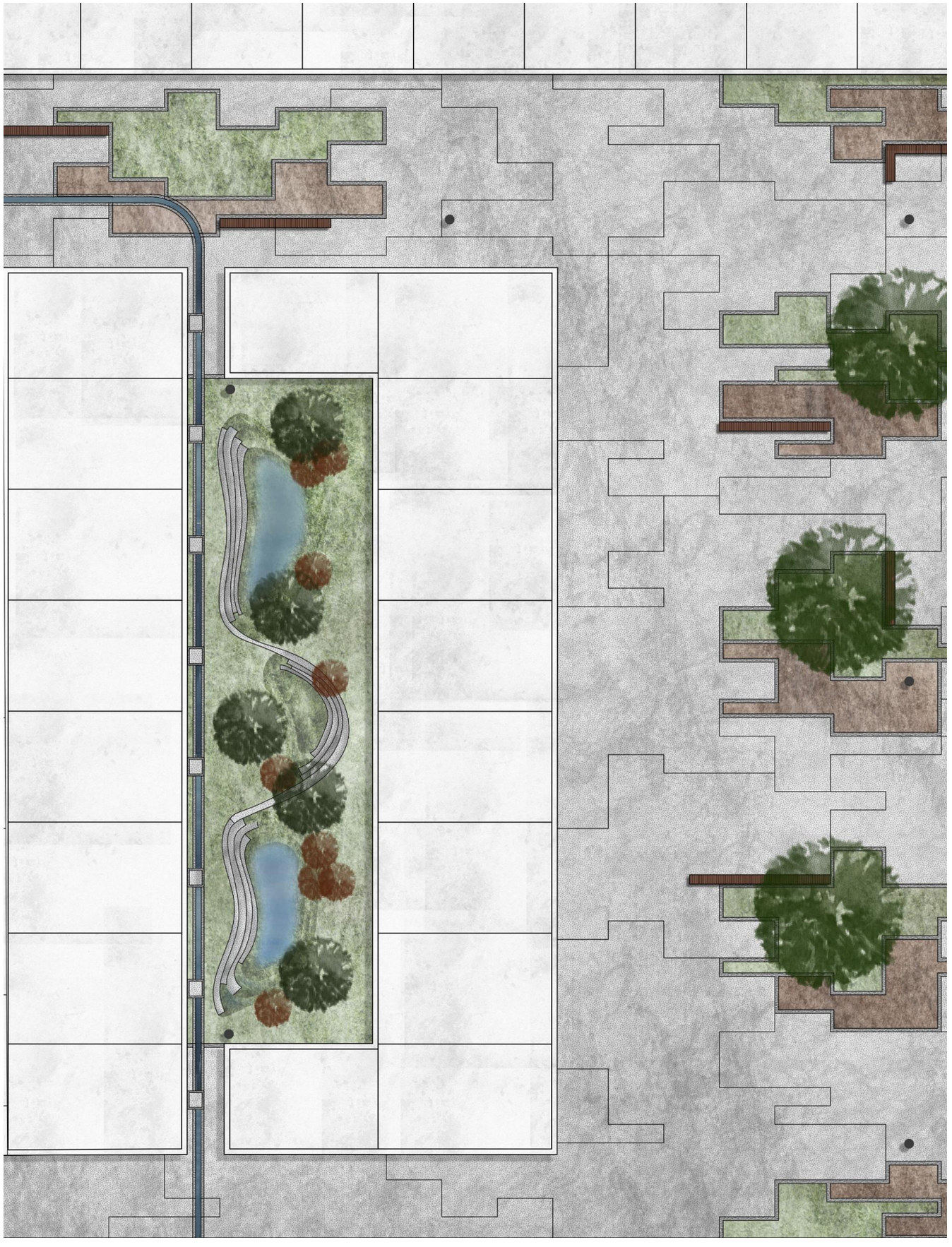


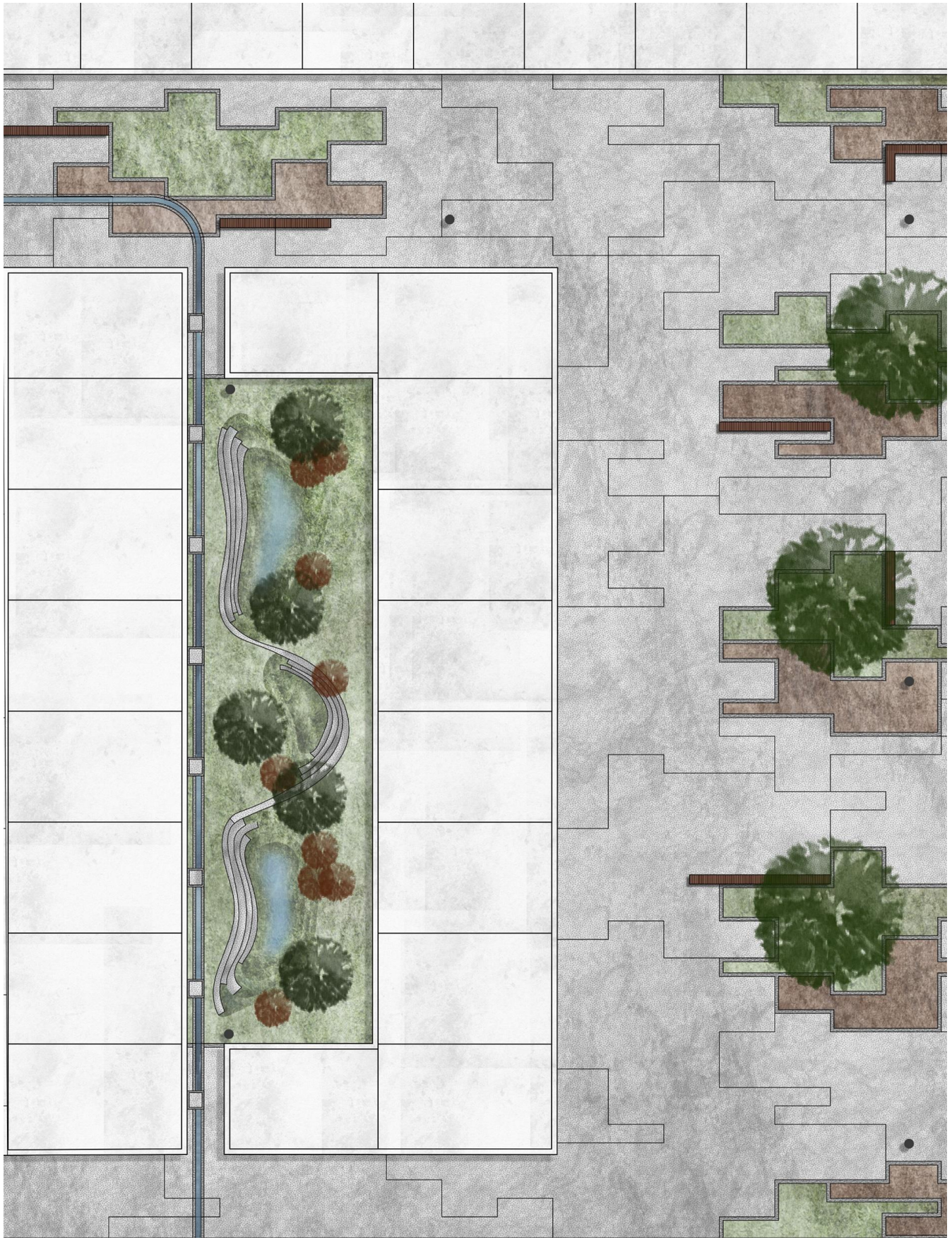


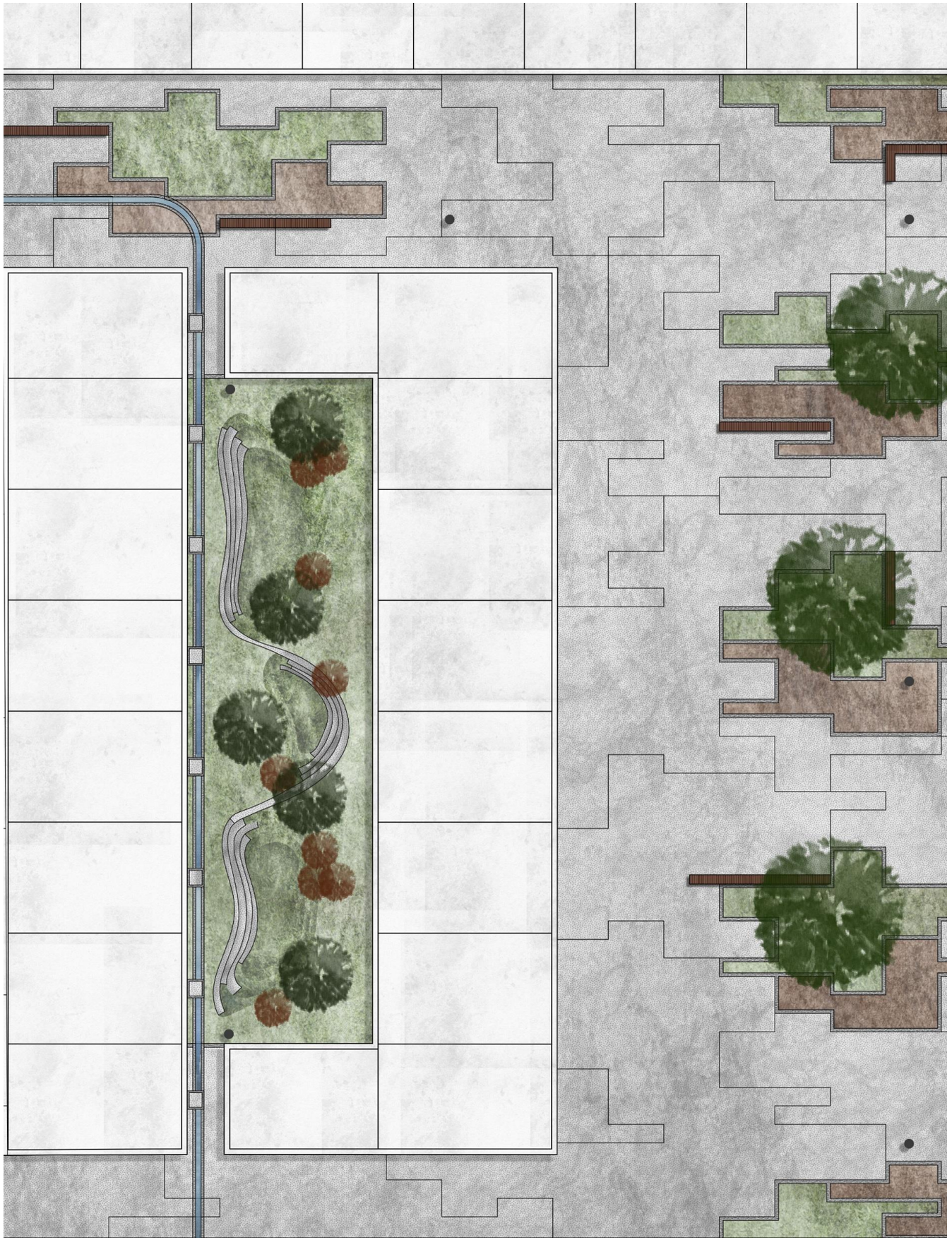


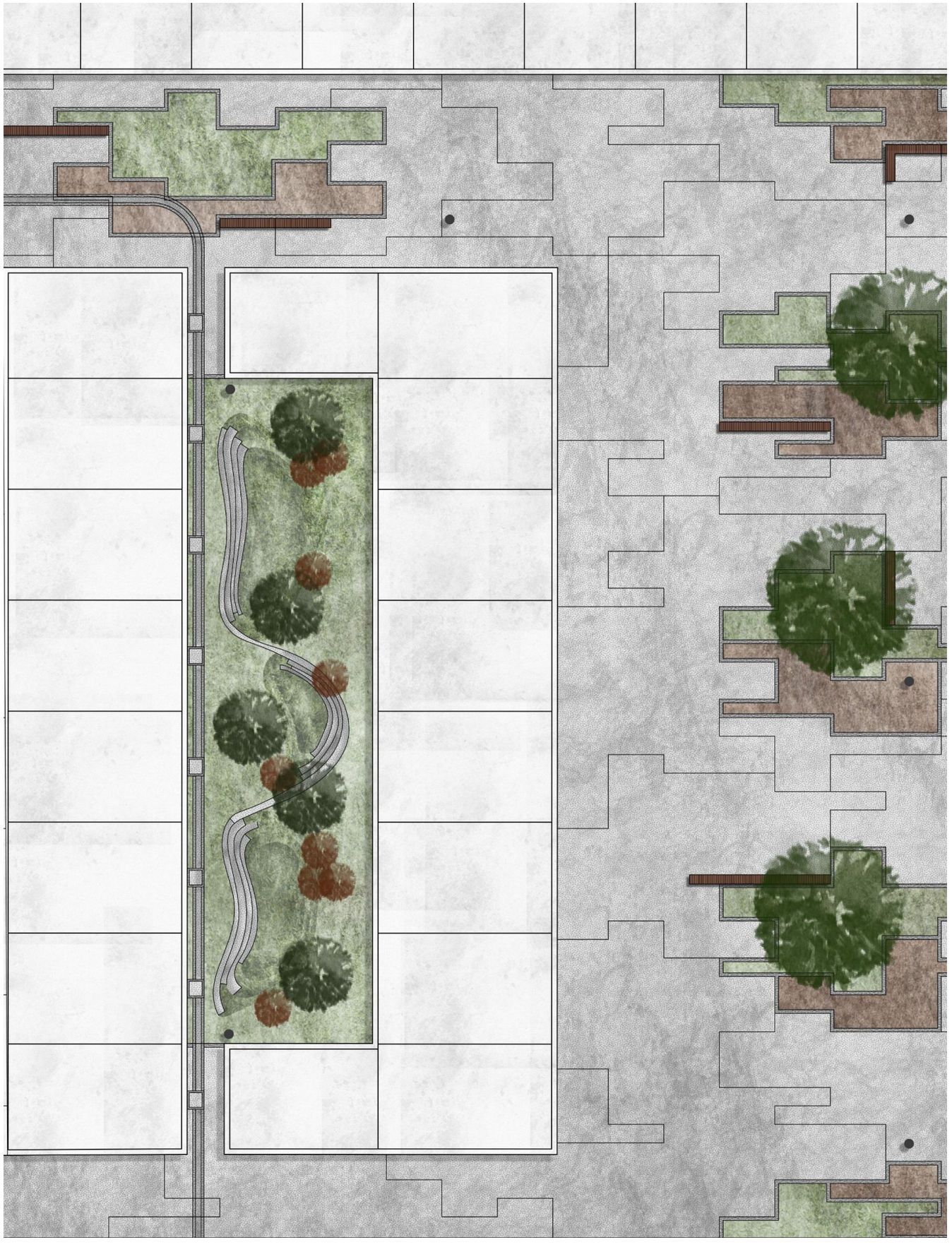




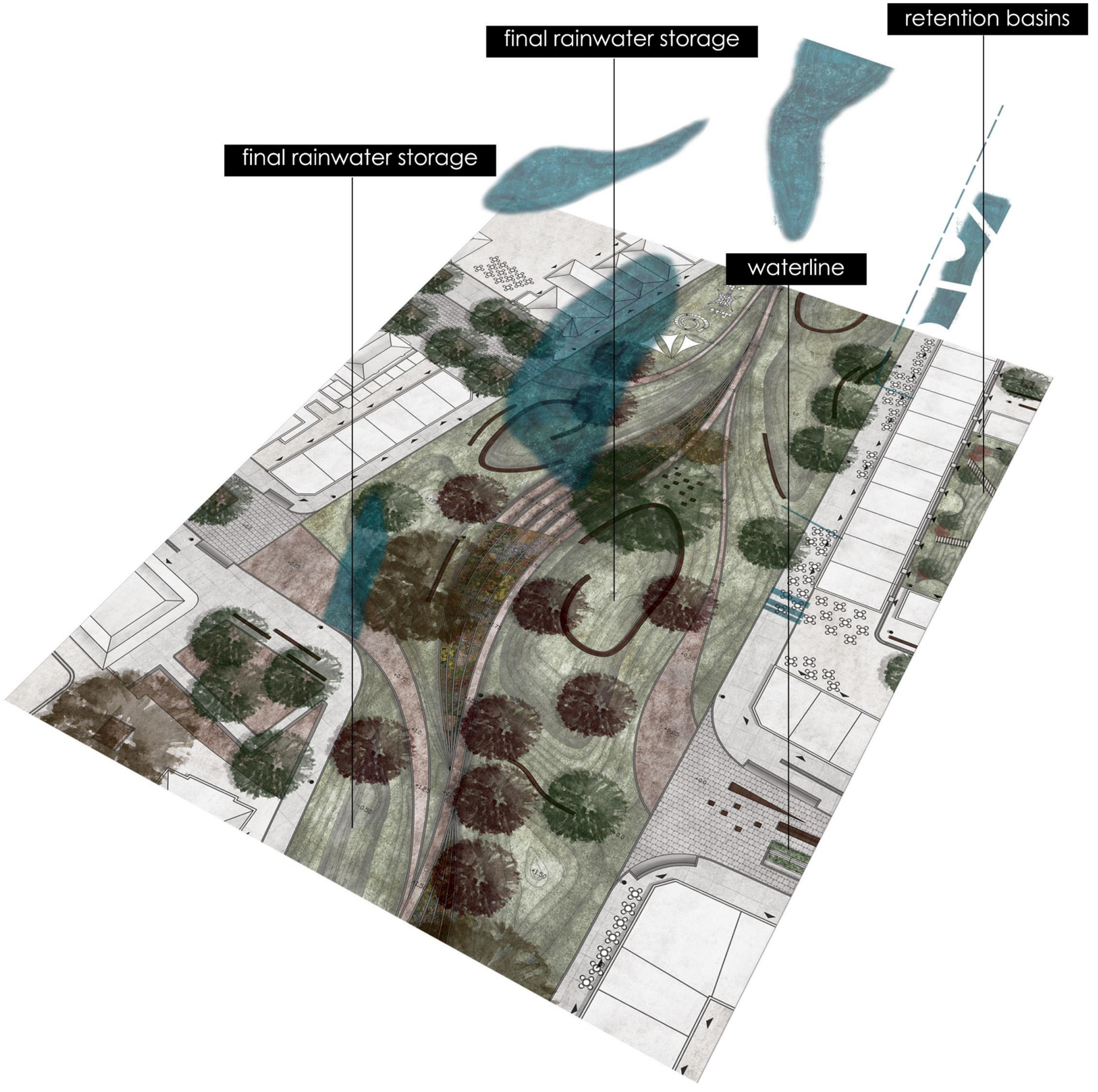


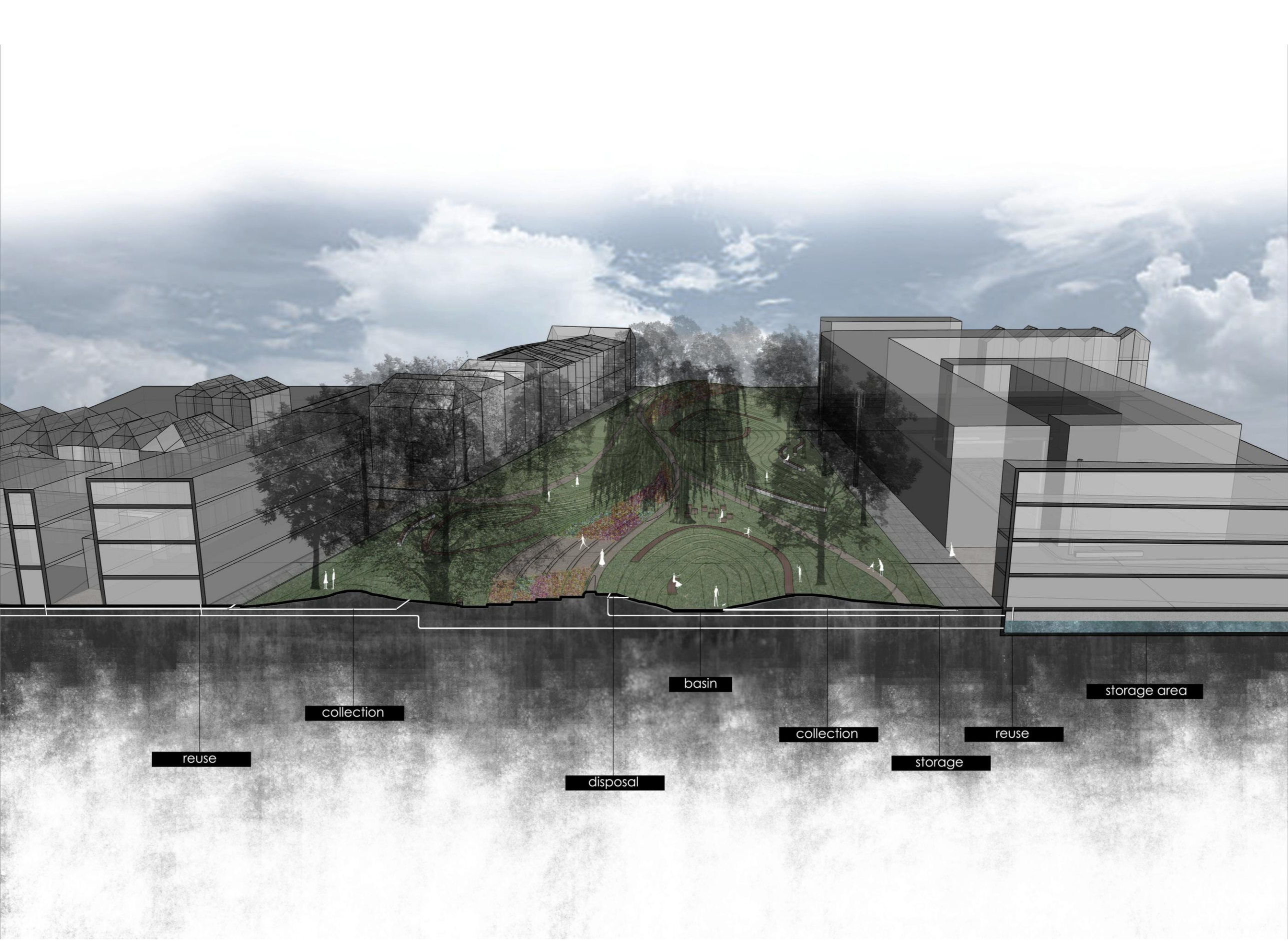


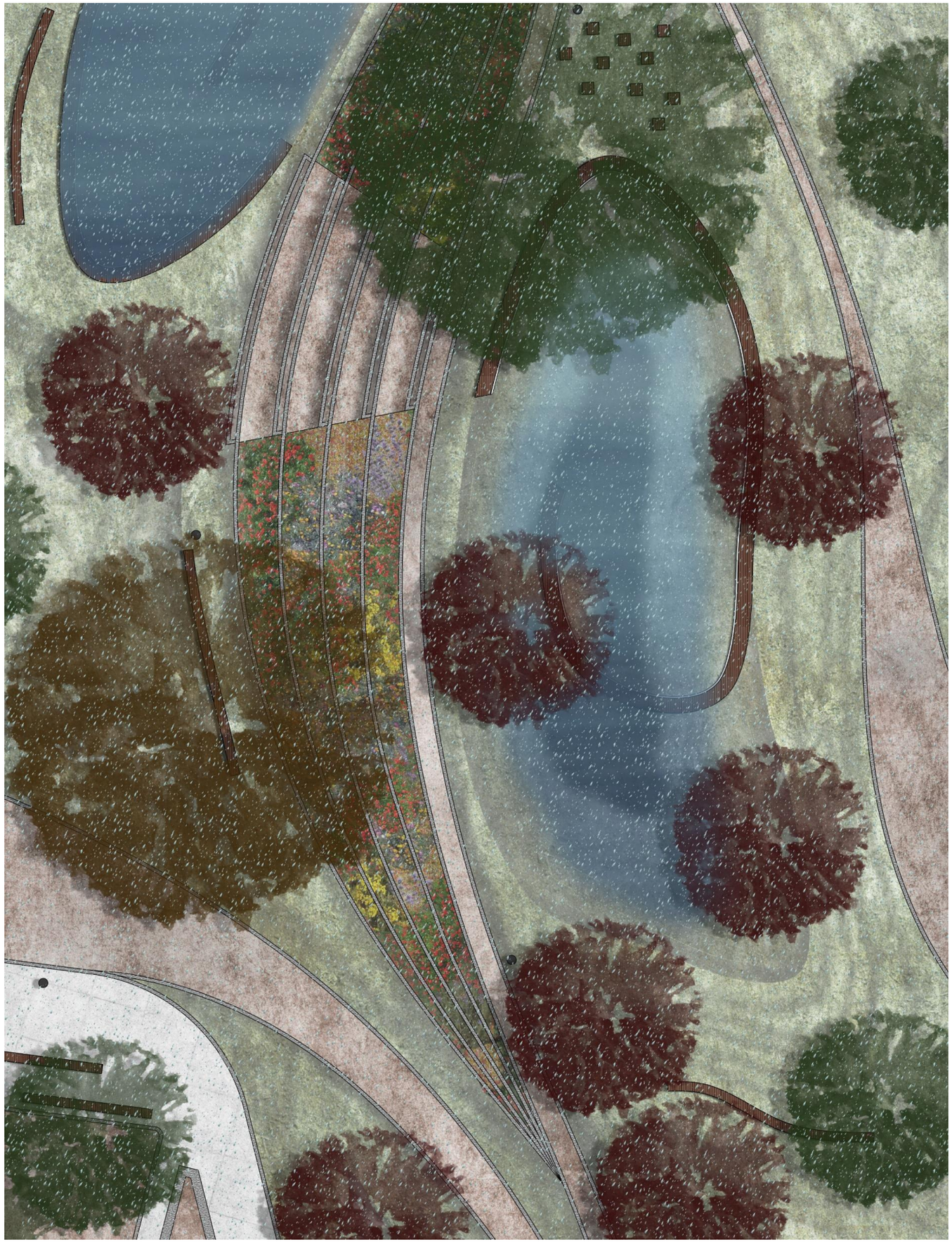


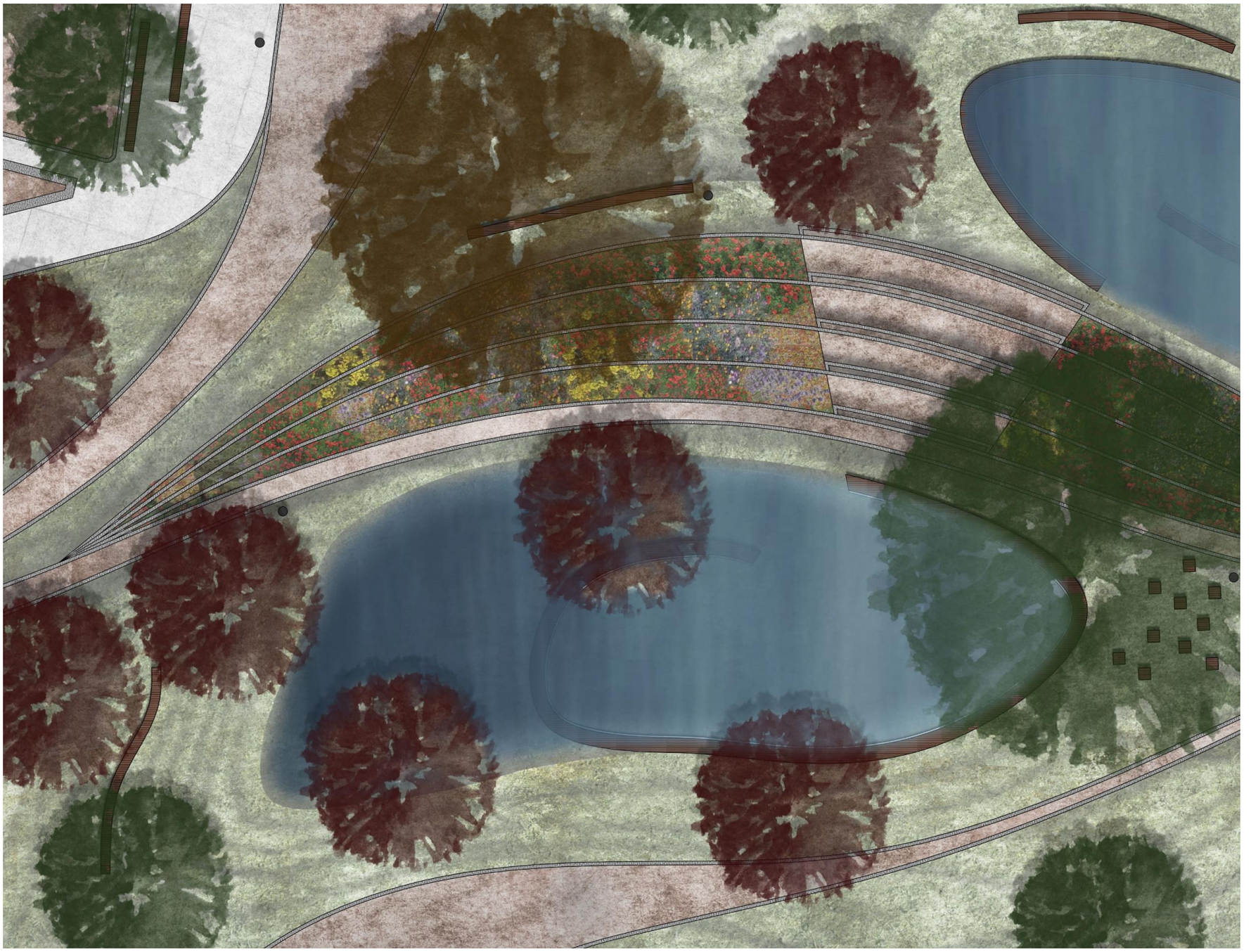


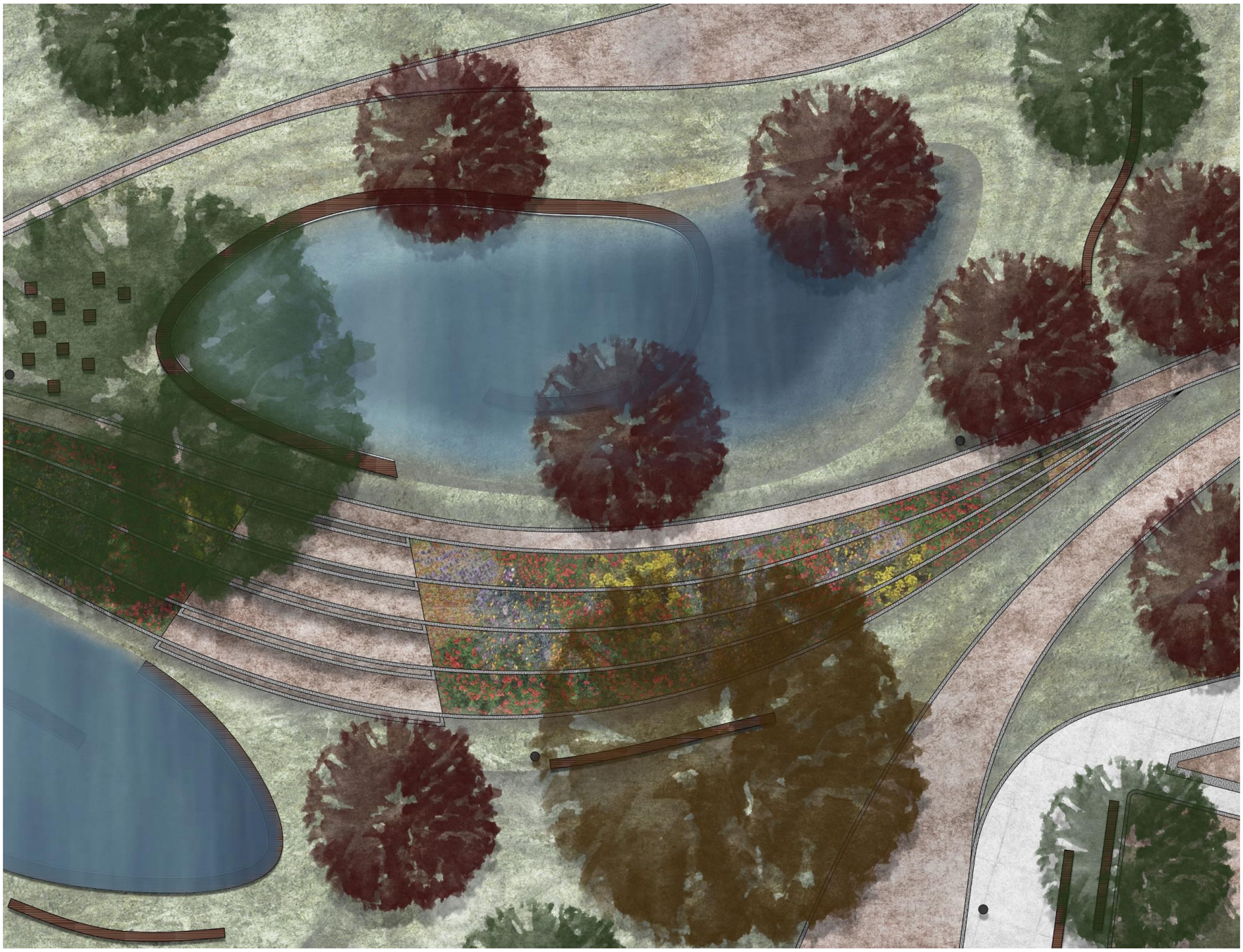
the park


retention basins
final rainwater storage
final rainwater storage
waterline


reuse
collection
disposal
basin
collection
storage
reuse
storage area







a “dordtse” story

Name: Chloe
Age: 28
Profession: Landscape Architect
Place of origin: Brussels, BE
Place of residence: Delft, NL

Blekkersdijk

Spuiboulevard

Grote Kerk

William's place

START

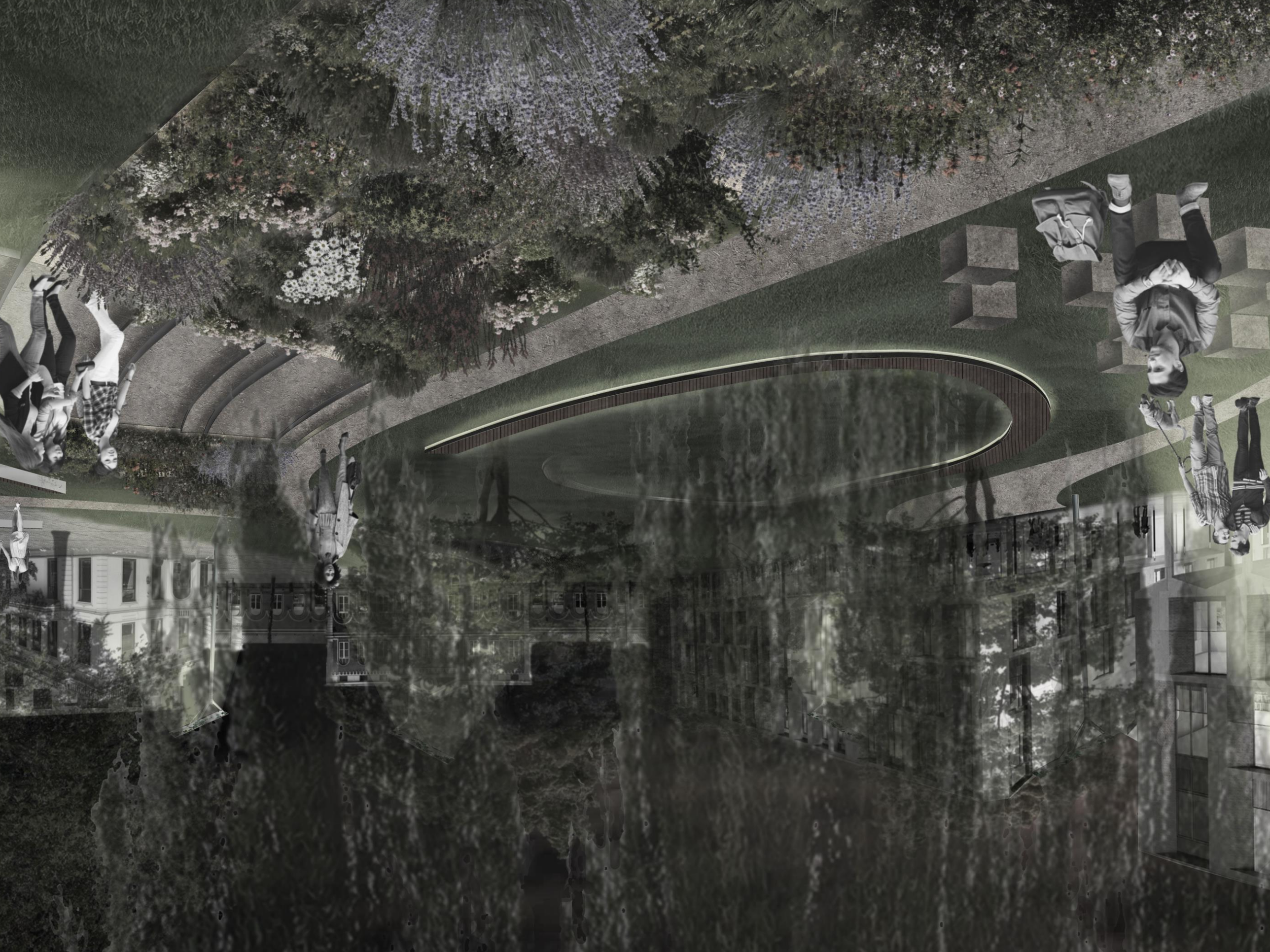
END

Spuiboulevard

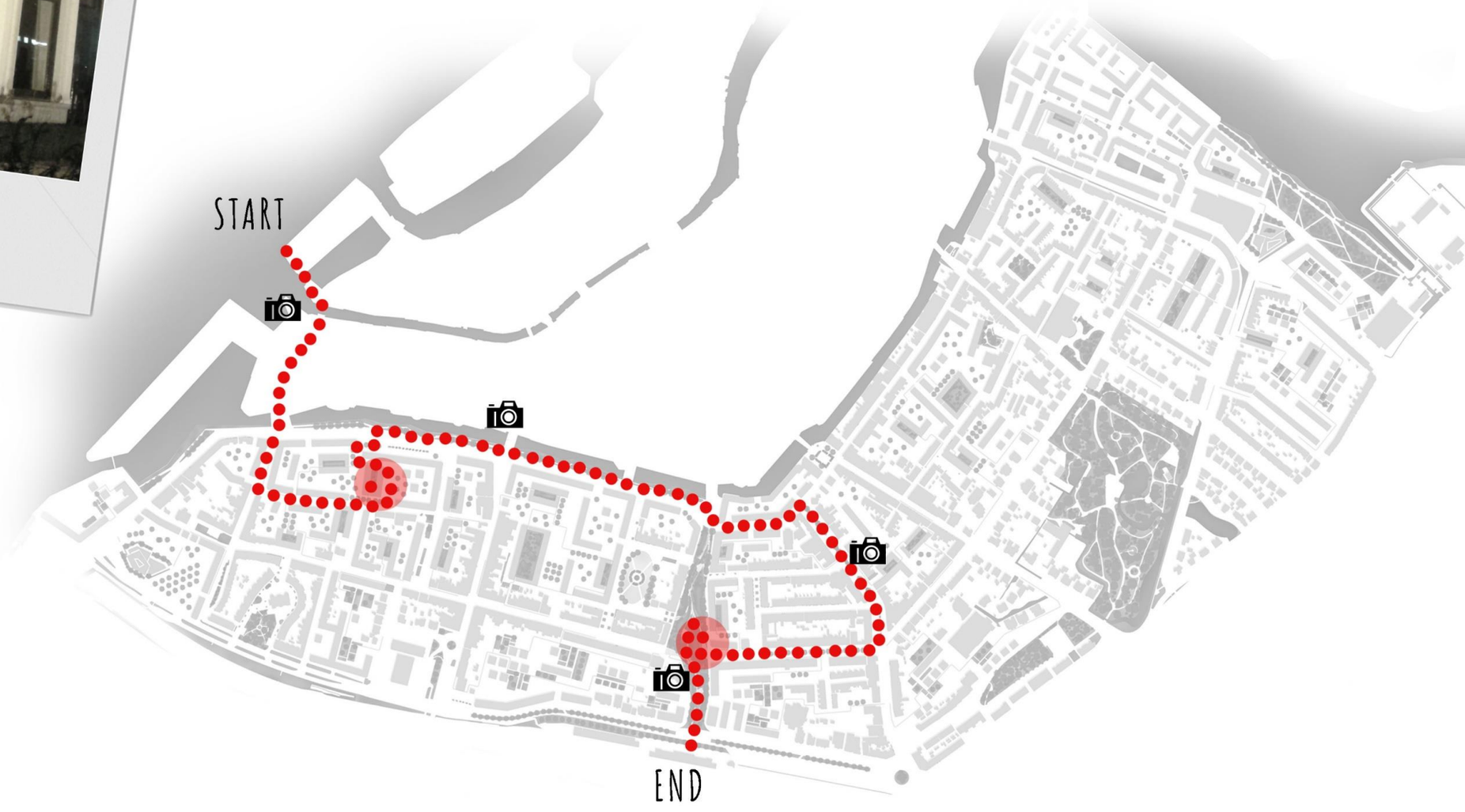
Blekkersdijk

START

END



William's place



thank you