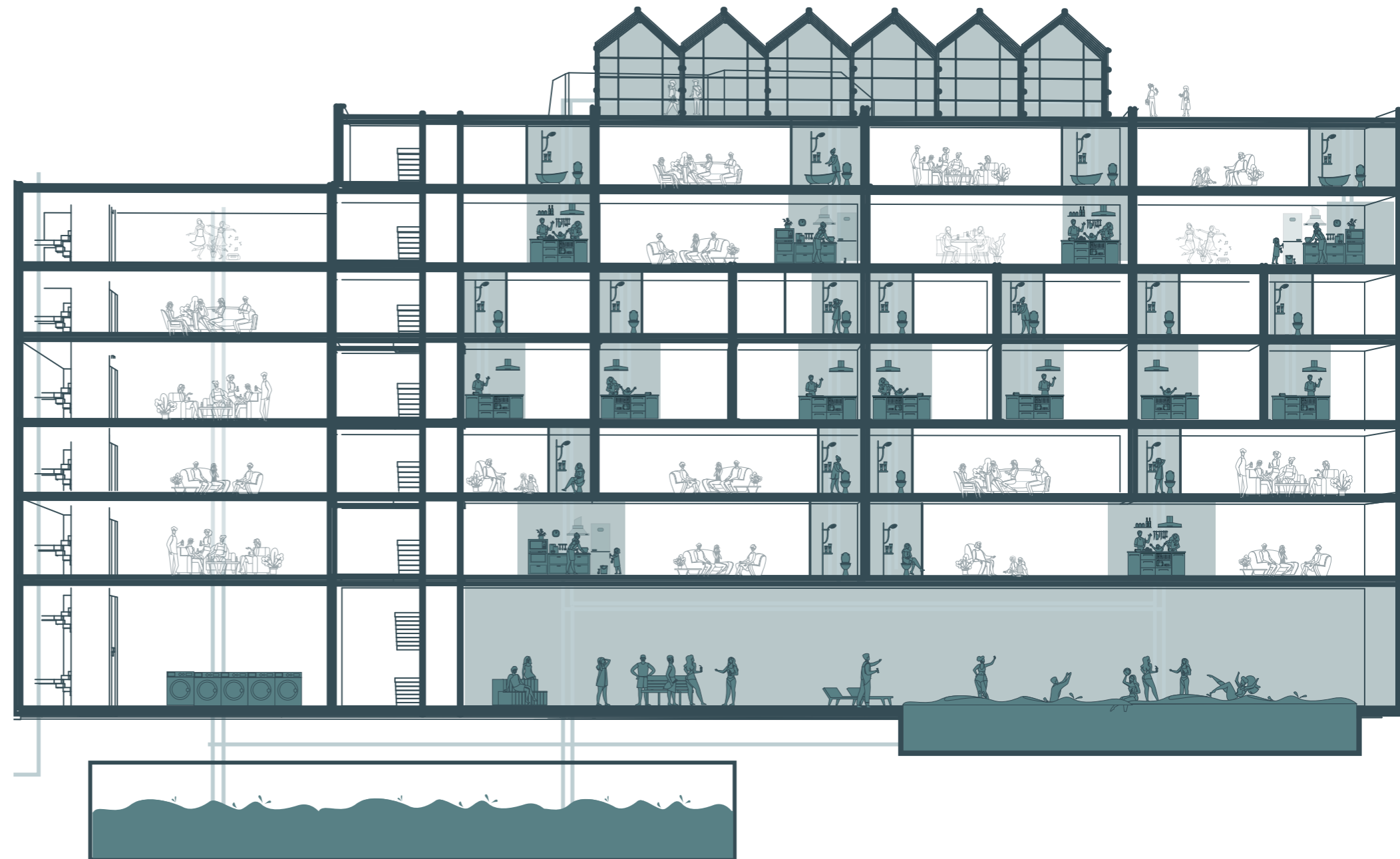


BIND BY WATER

BUILDING A COMMUNITY AMONGST SOLO DWELLERS
THROUGH WATER INFRASTRUCTURE

[AR3AD100 - ADVANCED HOUSING STUDIO]



KELLY WONG

4557697

11-11-22

OLV KLIJN (ARCH) - ANNE KOCKELKORN (RESEARCH) - FERRY ADEMA (BT) - INGE BOBBINK (DELEGATE)

P5 PRESENTATION

BIND BY WATER
presentation structure

1 RESEARCH

2 FROM
RESEARCH
TO DESIGN

3 FINAL
DESIGN

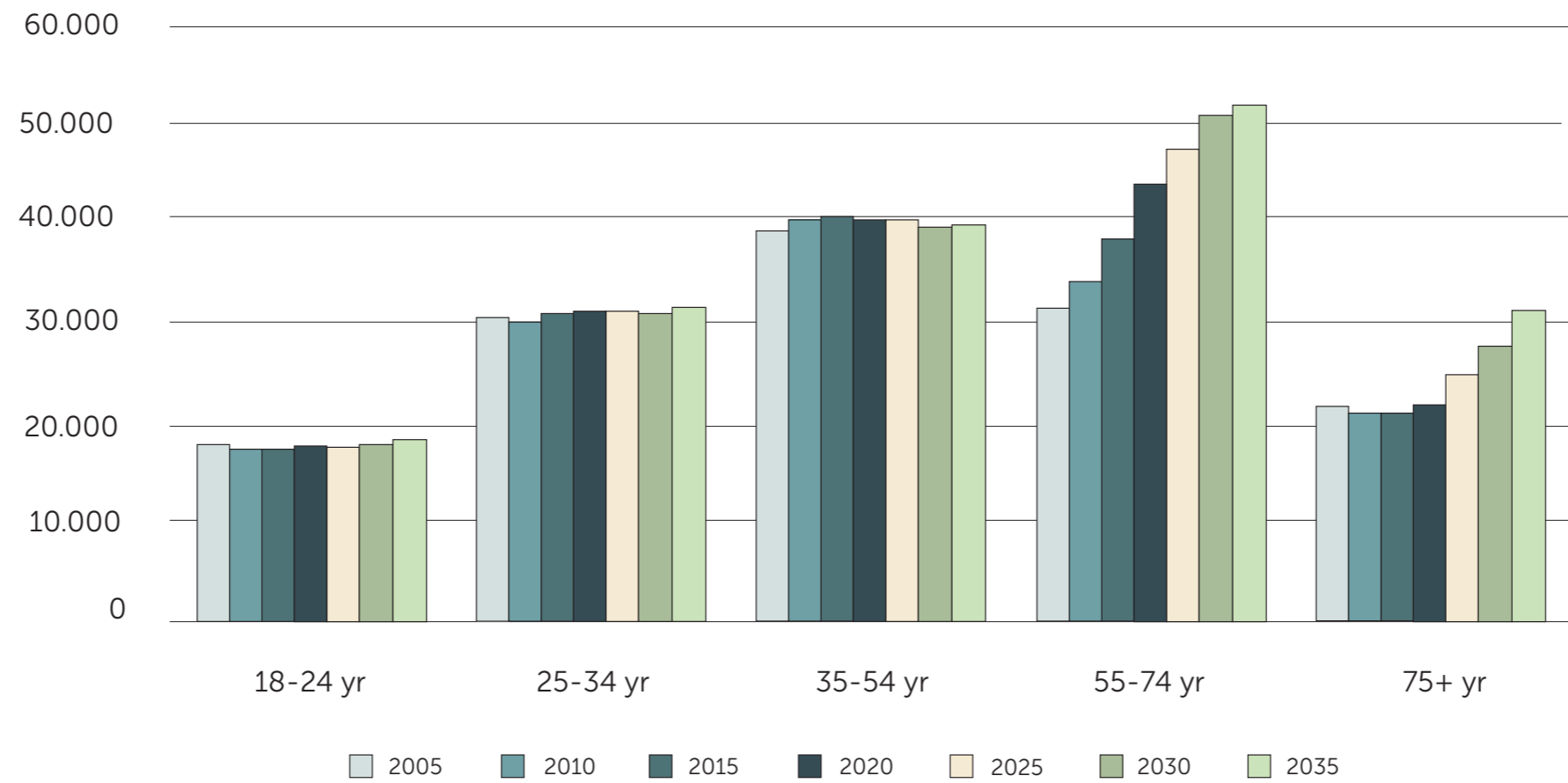
4 LIVING IN
BIND BY
WATER

BIND BY WATER
site: Blijdorp, Rotterdam



BIND BY WATER
(social) problem statement

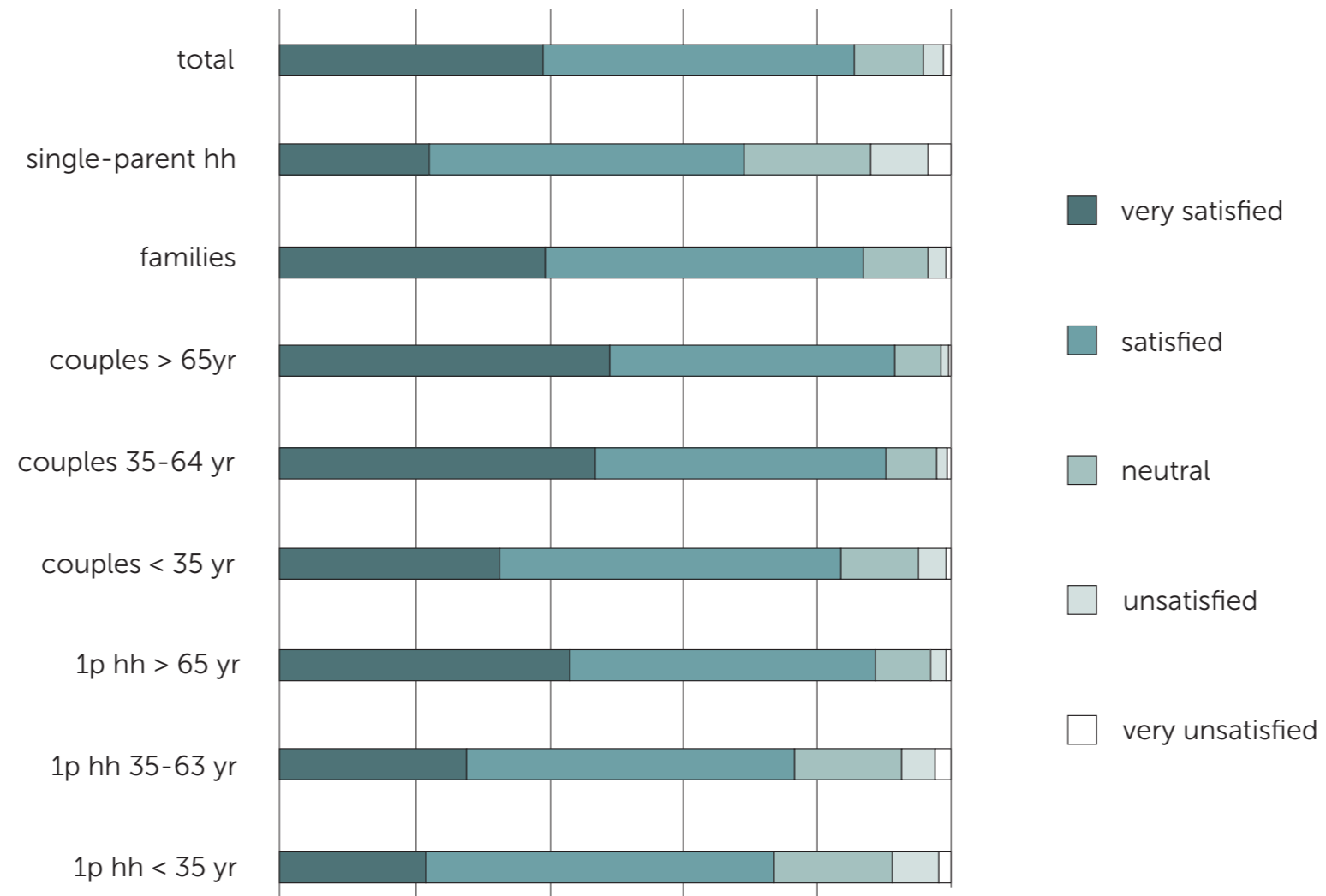
single-person household prognosis



Growth in single-person households in Rotterdam by age group
source: Gemeente Rotterdam, 2020

BIND BY WATER
(social) problem statement

satisfaction on living environment according to age, household type, 2018



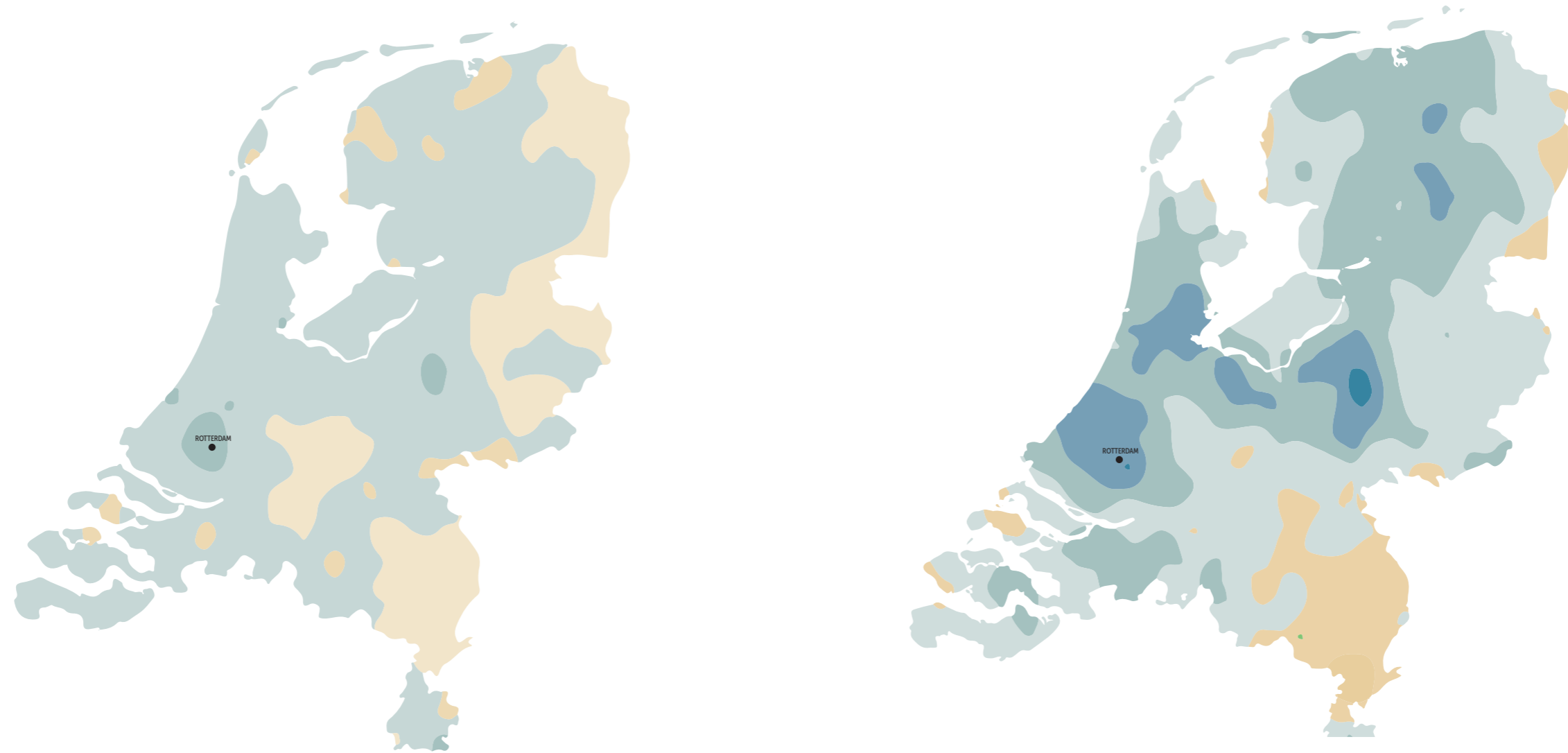
Living environment satisfactions by age and householdtype
source: Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2019

BIND BY WATER
(social) problem statement

	total household consumption	total consumption per person
1-person household	52.000 L	52.000 L
2-person household	99.000 L	49.500 L
3-person household	145.000 L	48.333 L
4-person household	191.000L	47.750 L

Average annual water usage according to the number of people in a household
source: Waternet, 2016

BIND BY WATER
(ecological) problem statement



Map of rainfall in the Netherlands in 2020 & 2050.
source: Esri Nederland (n.d.) ArcGIS-apps

RESEARCH QUESTION

How could community building amongst solo dwellers be enhanced through water infrastructure?

DESIGN QUESTION

How can bathing infrastructure and the social spaces of bathing influence a housing complex (located above it) and its residents?

1.

THE SOLO DWELLER

- Why did the solo dweller rise as a prominent household type in Western societies?
- Which type of solo dwellers are there?
- What are the housing needs of solo dwellers?

2.

BUILDING A COMMUNITY

- How is a community built?
- How can a community be built amongst different types of solo dwellers?
- How can communal spaces foster social interaction and community building?

3.

COMMUNITY BUILDING THROUGH WATER INFRASTRUCTURE

- Which domestic spaces relate to the water infrastructure of a building?
- What is the meaning of water in different cultures compared to the Netherlands?
- How has bathing culture developed in Europe historically, and how can these (historical) examples be implemented in a contemporary context like Blijdorp?

BIND BY WATER
case study projects



Tietgen Dormitory
Copenhagen, Denmark



Sargfabrik
Vienna, Austria

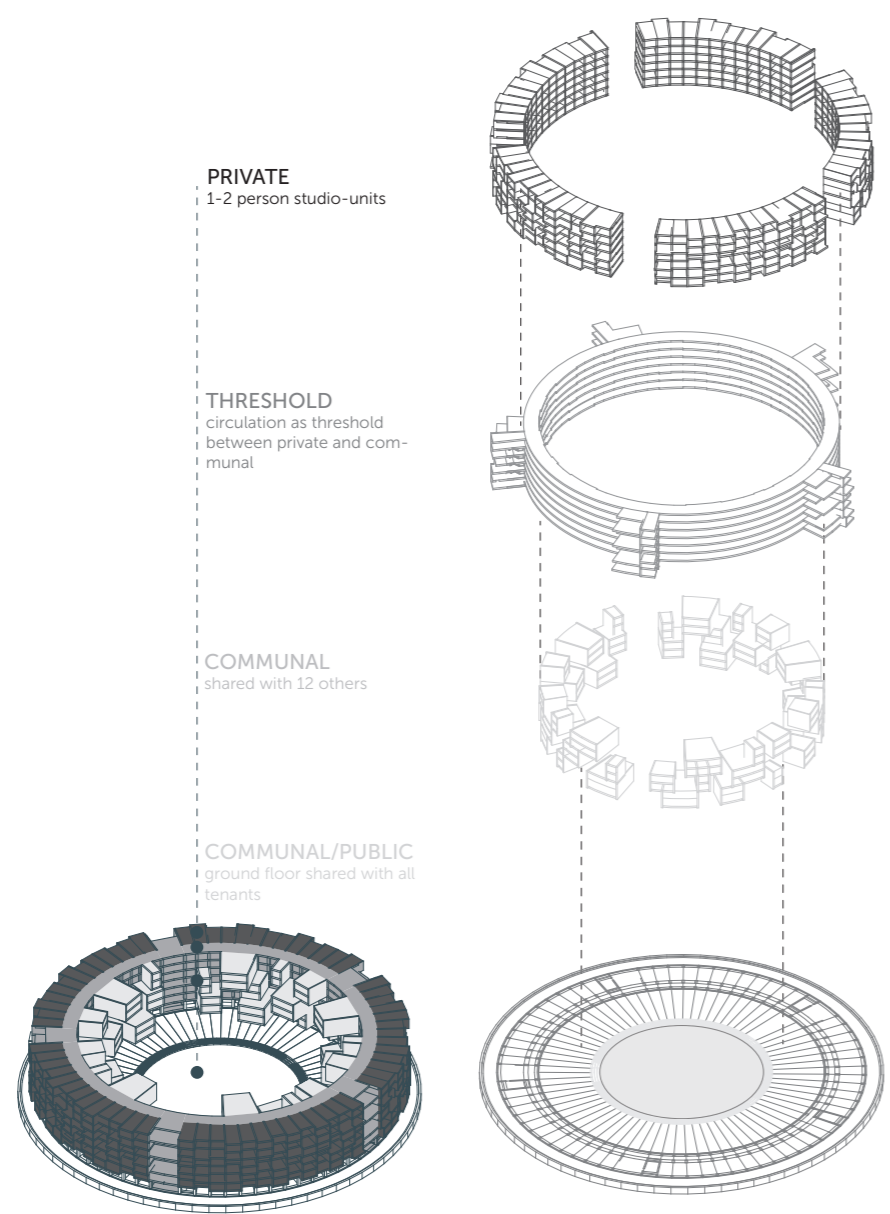
BIND BY WATER
research findings - the solo dweller



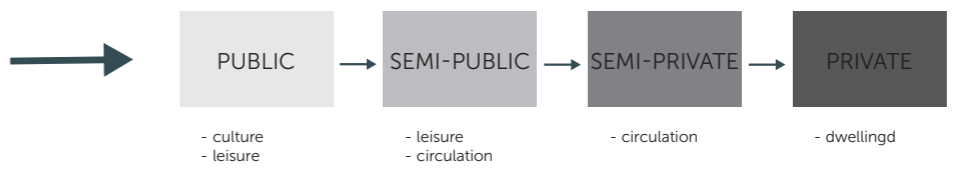
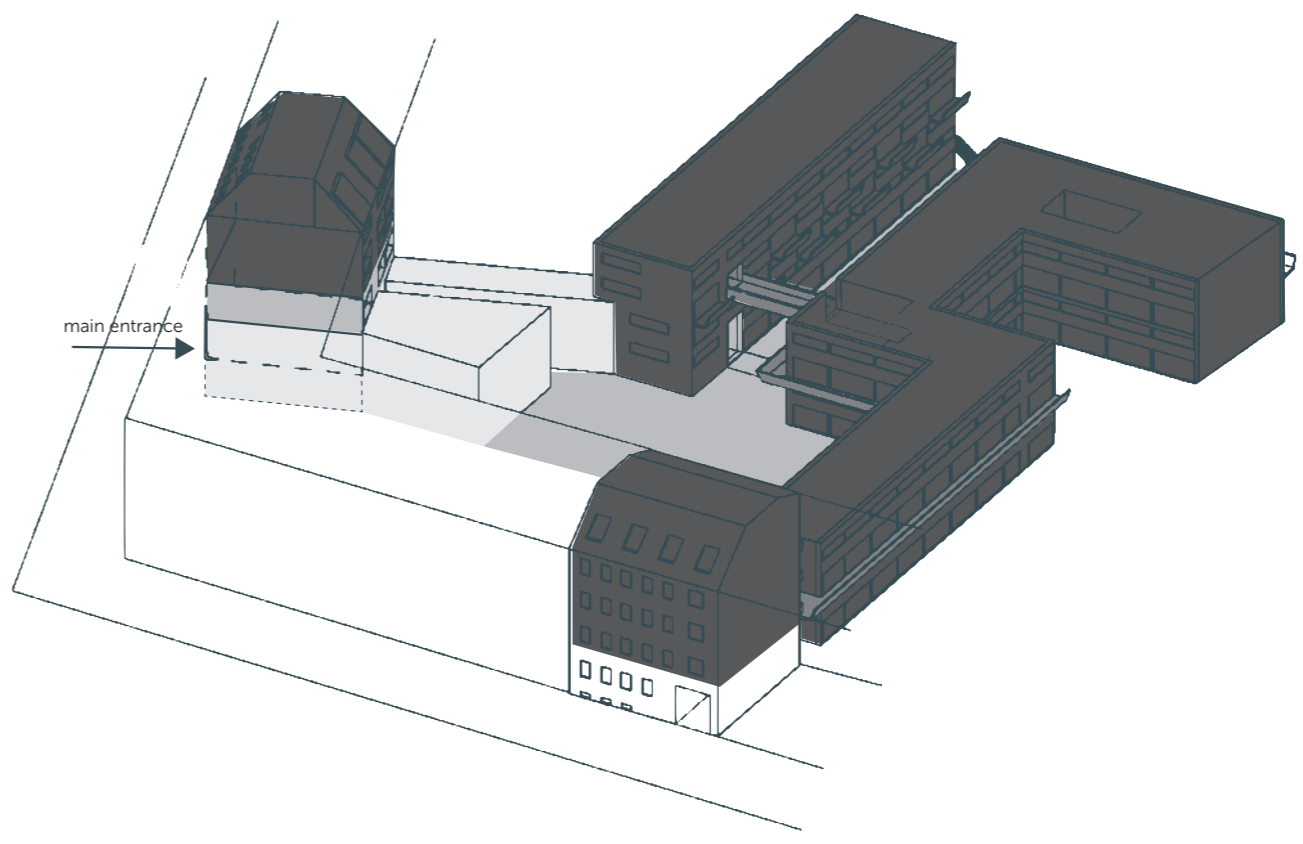
a heterogeneous group
big variety of housing need (and therefore housing typologies)

BIND BY WATER

research findings - the solo dweller



concluding diagram private/public Sargfabrik
(own illustration)



concluding diagram private/public Tietgen Dormitory
(own illustration)

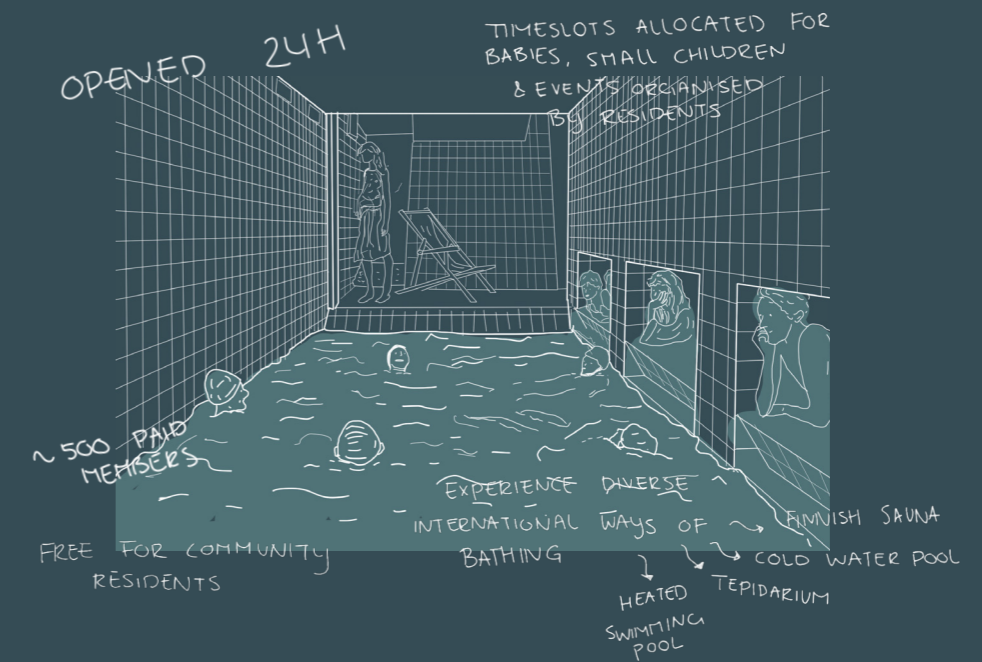
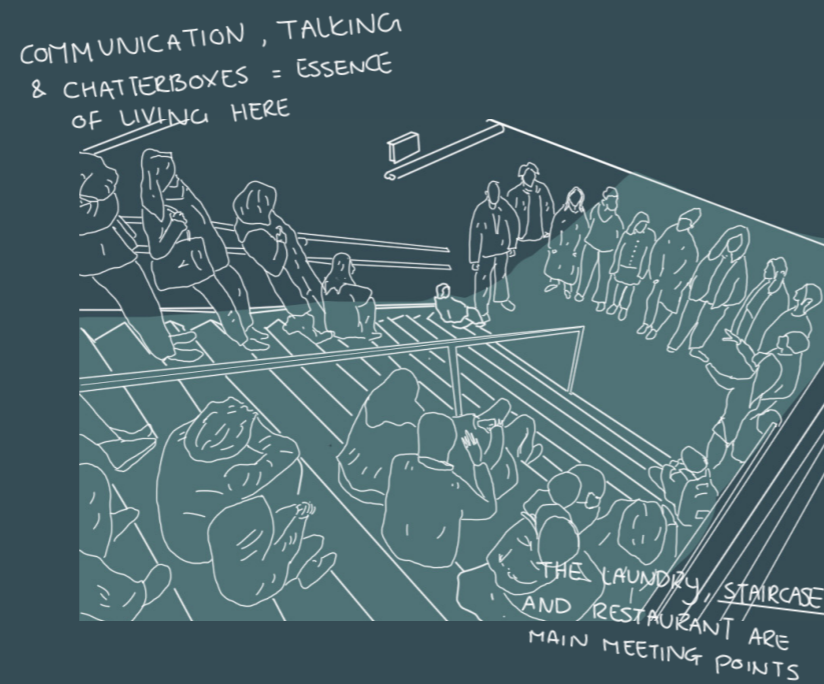
BIND BY WATER

research findings - building a community

Tietgen dormitory



Sargfabrik



BIND BY WATER

design ambition

“ Designing a residential building that fosters community building amongst solo dwellers to combat loneliness.

Generating a pleasant living environment in which water infrastructure becomes a key component in community building and sustainable water resource management. Therefore enhancing the possibility to reduce solo dwellers’ water footprint ”

RESEARCH QUESTION

How could community building amongst solo dwellers be enhanced through water infrastructure?

DESIGN QUESTION

How can bathing infrastructure and the social spaces of bathing influence a housing complex (located above it) and its residents?

BIND BY WATER
design principles

A VARIETY OF HOUSING
TYPOLOGY

for the heterogenous group



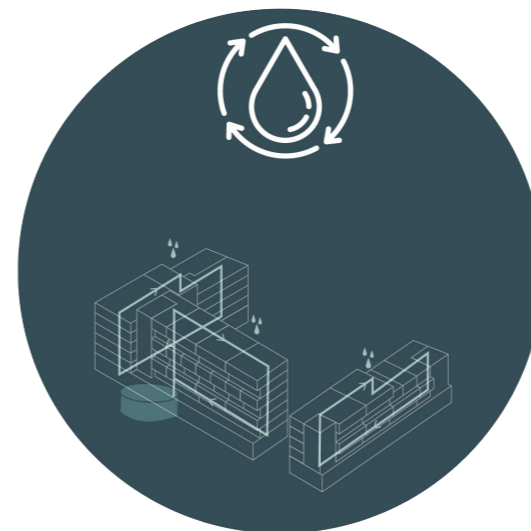
INCORPORATE COMMUNAL
SPACES

to enhance social interaction



USE INNOVATIVE WATER TREAT-
MENT SYSTEMS

(sustainable water resource
management)

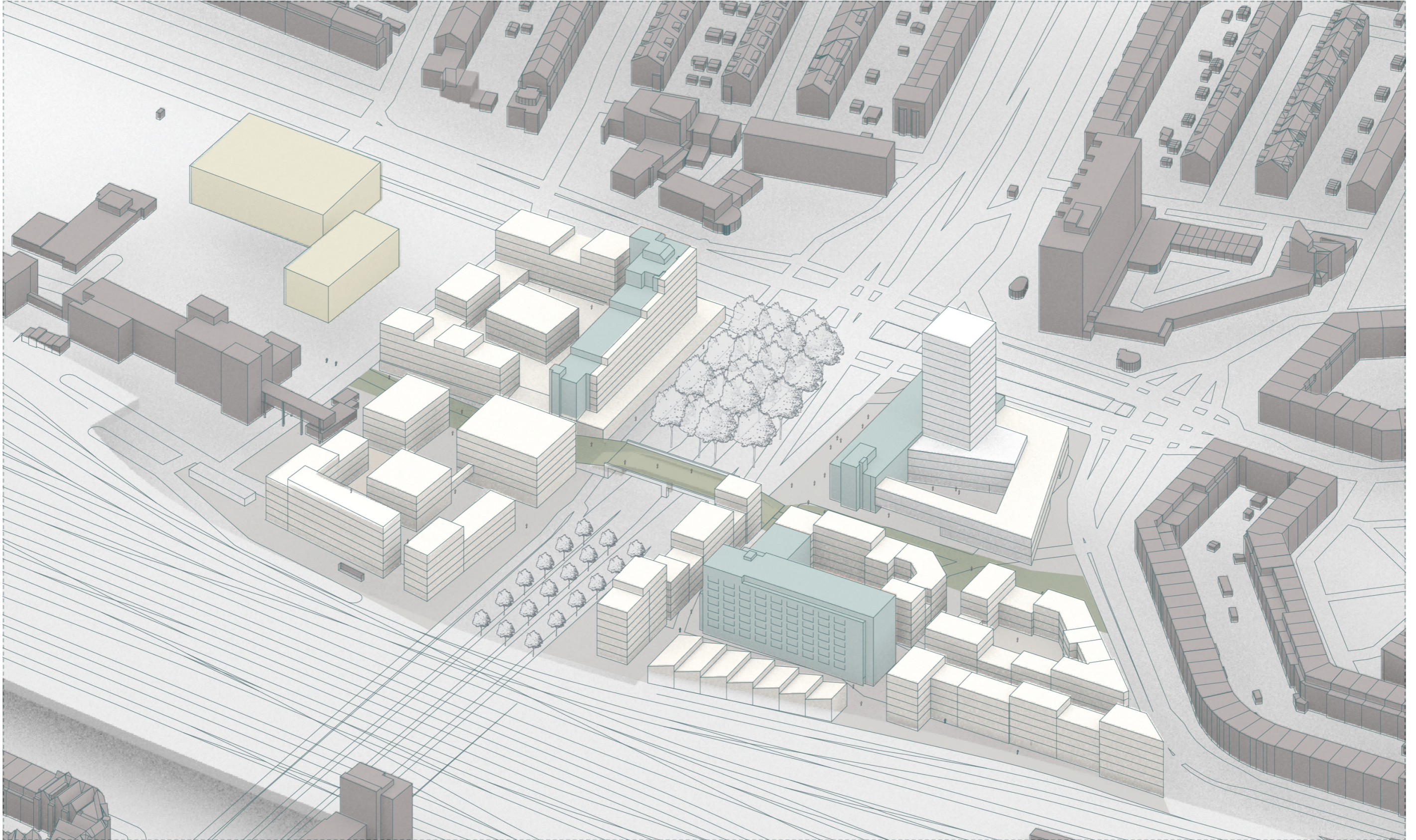


EXPLOIT COMMUNAL BATHING
+ BATHHOUSE

as a means to connect solo dwell-
ers and reduce their water foot-
print



BIND BY WATER
collective urban masterplan



BIND BY WATER

bind by water in masterplan

1. Define urban fabric

- Mid-rise buildings
- React to existing urban fabric

2. Neighbourhood center

- Mixed program
- Active groundfloor
- Bathhouse for the city

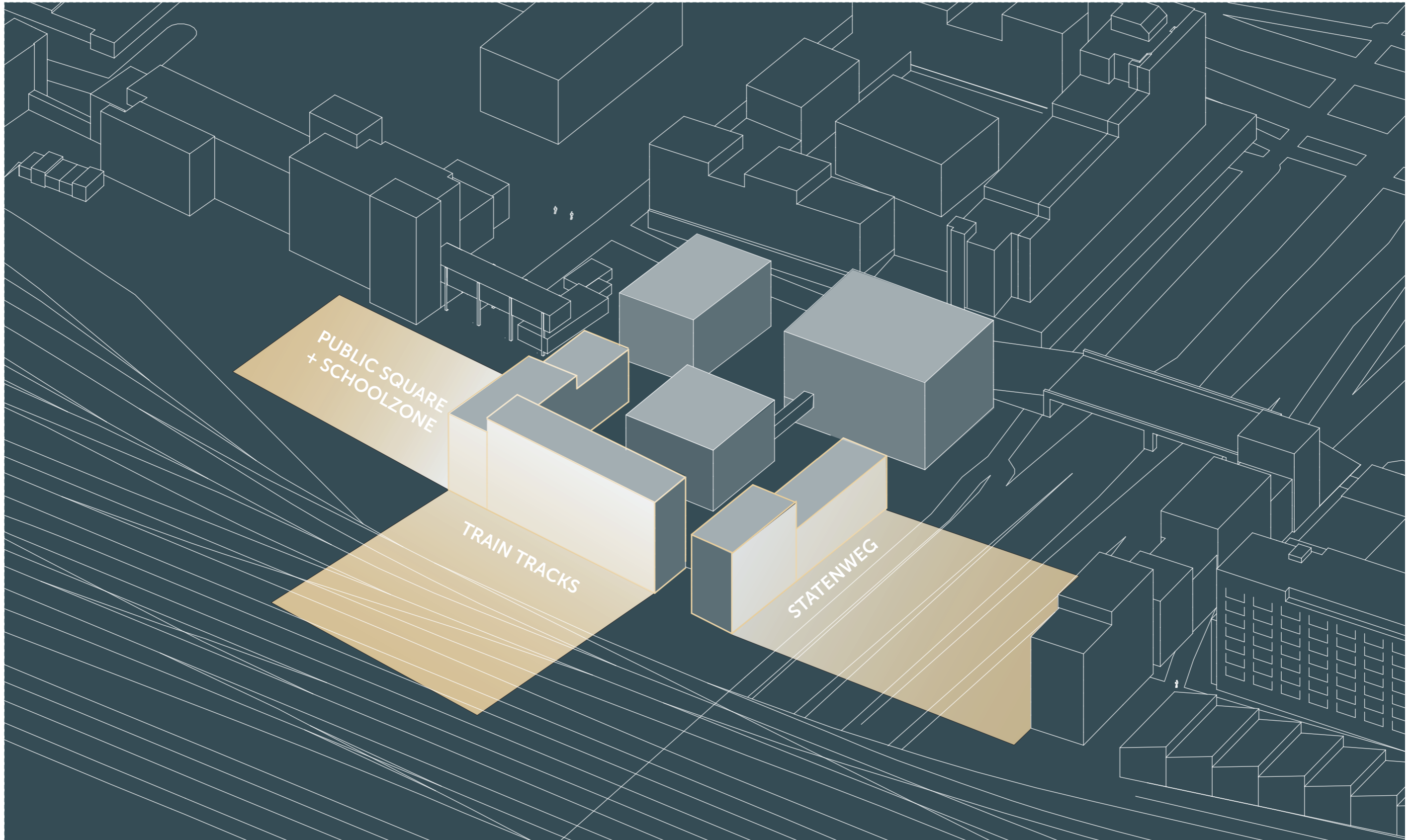
3. Healthy living

- Low noise pollution
- Resource-efficient
- Close proximity with water

4. Social sustainability

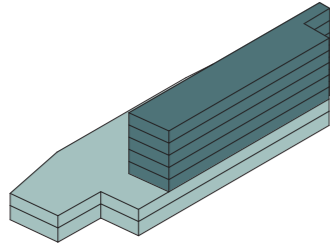
- Social mix of solo dwellers
- Different housing typologies (suited for solo dwellers)
- Collective spaces
- Enhancing social interaction

BIND BY WATER
environmental context



BIND BY WATER
design concept

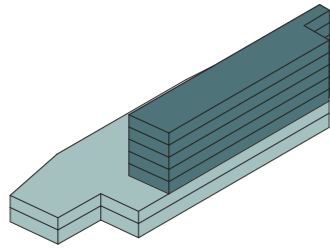
1



bathing infrastructure 'heart'

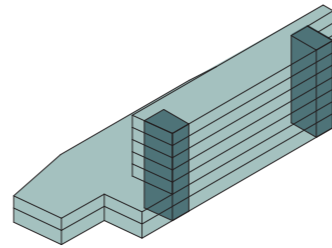
BIND BY WATER
design concept

1



bathing infrastructure 'heart'

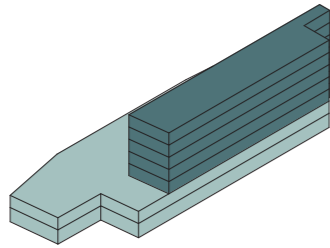
2



circulation cores on both sides

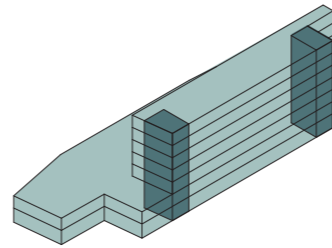
BIND BY WATER
design concept

1



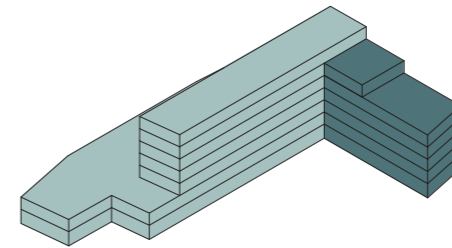
bathing infrastructure 'heart'

2



circulation cores on both sides

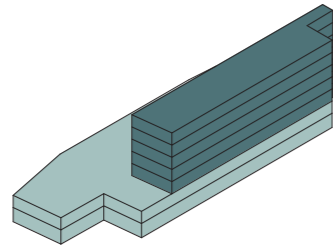
3



introduction of dwelling typologies with
no bathrooms + inner corridor

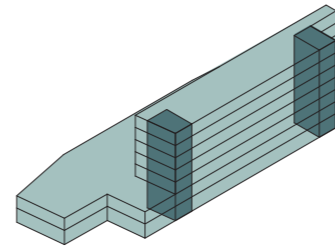
BIND BY WATER
design concept

1



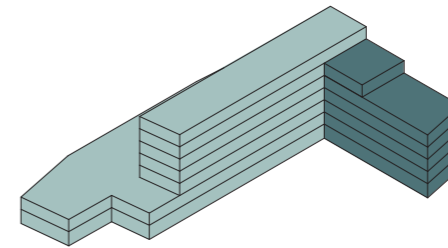
bathing infrastructure 'heart'

2



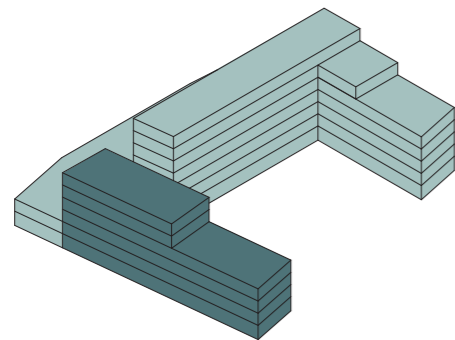
circulation cores on both sides

3



introduction of dwelling typologies with
no bathrooms + inner corridor

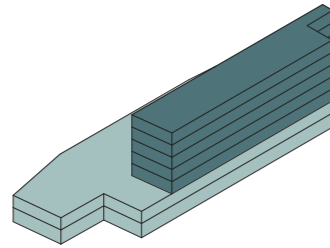
4



introduction of dwelling typologies with
limited bathrooms + inner corridor

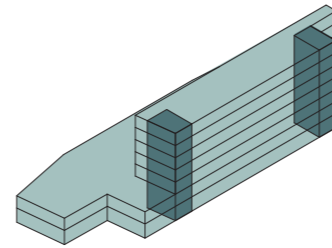
BIND BY WATER
design concept

1



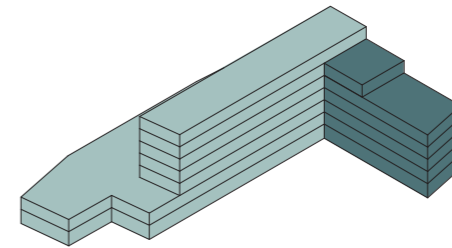
bathing infrastructure 'heart'

2



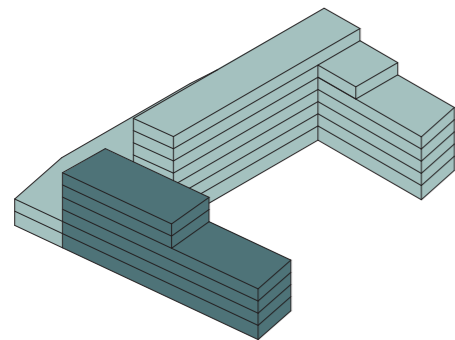
circulation cores on both sides

3



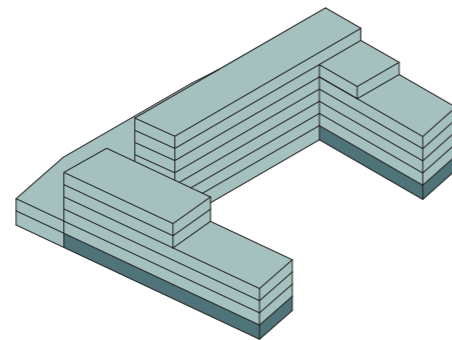
introduction of dwelling typologies with
no bathrooms + inner corridor

4



introduction of dwelling typologies with
limited bathrooms + inner corridor

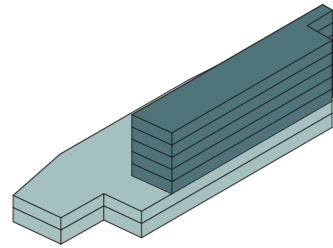
5



adding ground floor functions
stimulating healthy living

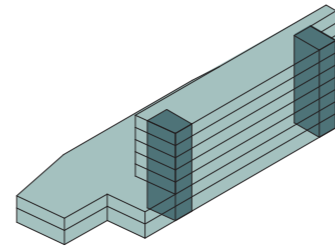
BIND BY WATER
design concept

1



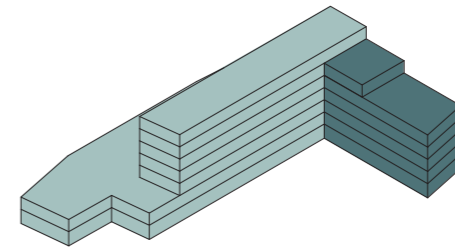
bathing infrastructure 'heart'

2



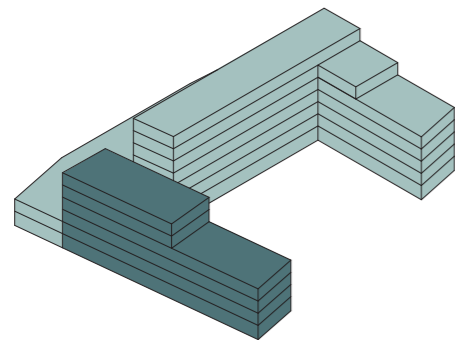
circulation cores on both sides

3



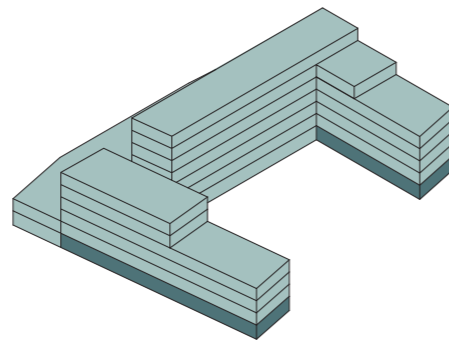
introduction of dwelling typologies with no bathrooms + inner corridor

4



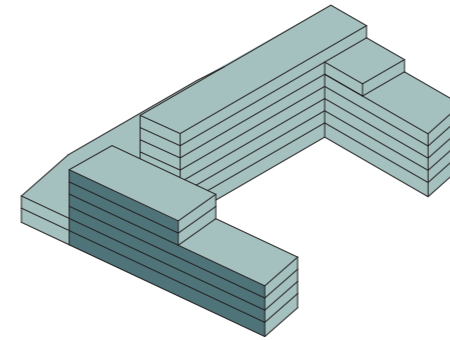
introduction of dwelling typologies with limited bathrooms + inner corridor

5



adding ground floor functions stimulating healthy living

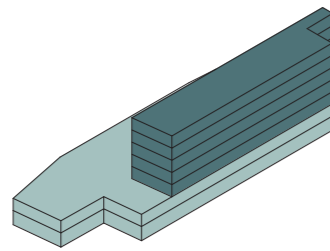
6



adding site specific design elements

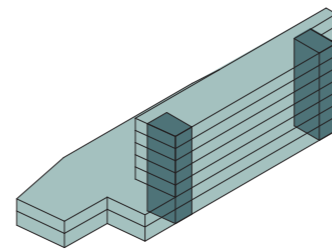
BIND BY WATER
design concept

1



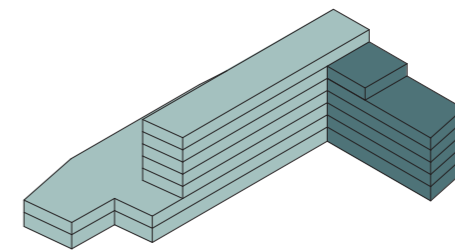
bathing infrastructure 'heart'

2



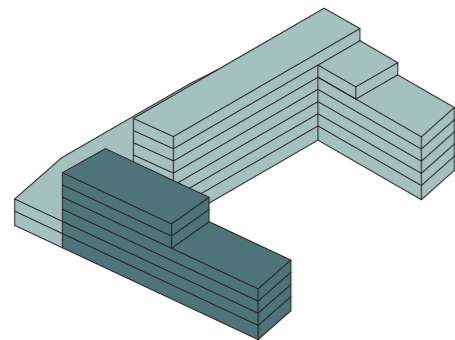
circulation cores on both sides

3



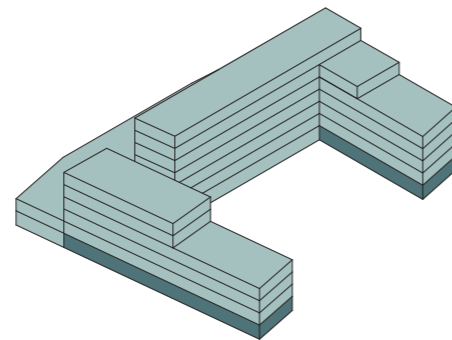
introduction of dwelling typologies with no bathrooms + inner corridor

4



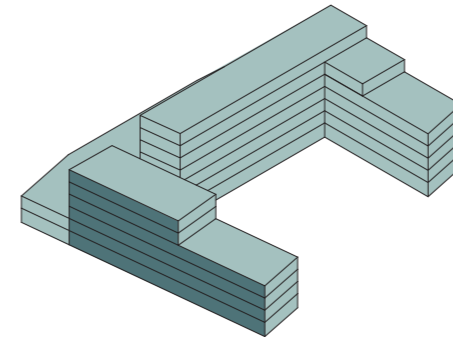
introduction of dwelling typologies with limited bathrooms + inner corridor

5



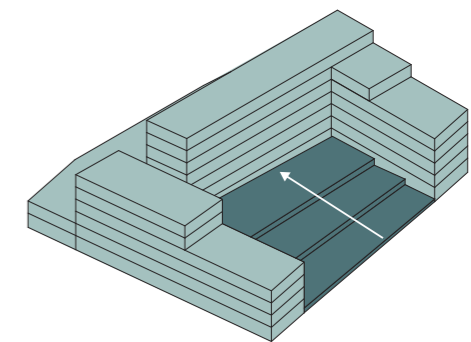
adding ground floor functions stimulating healthy living

6



adding site specific design elements

7



utilize adjacent outdoor space to create inviting atmosphere

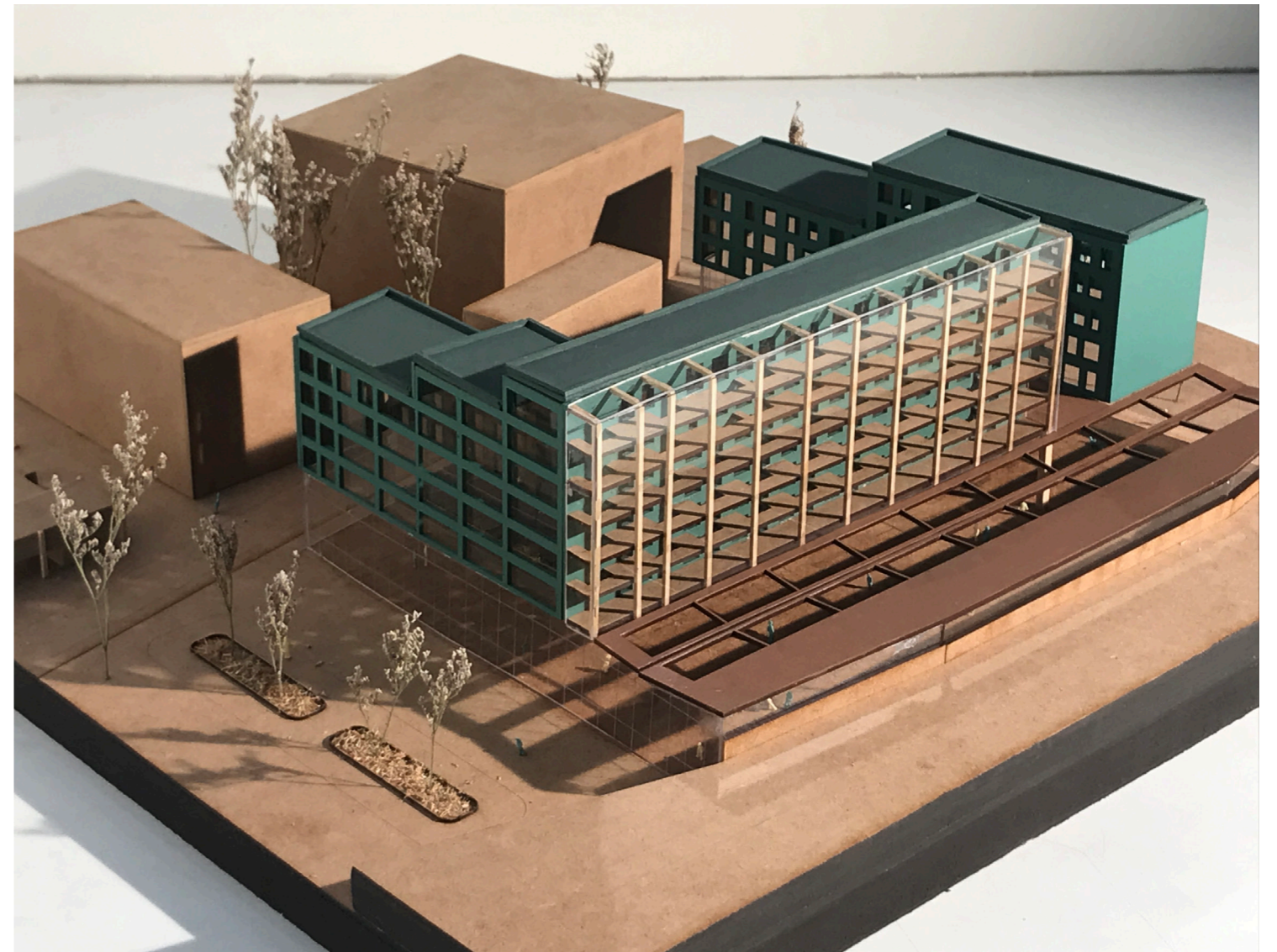
BIND BY WATER
building envelope



north facade

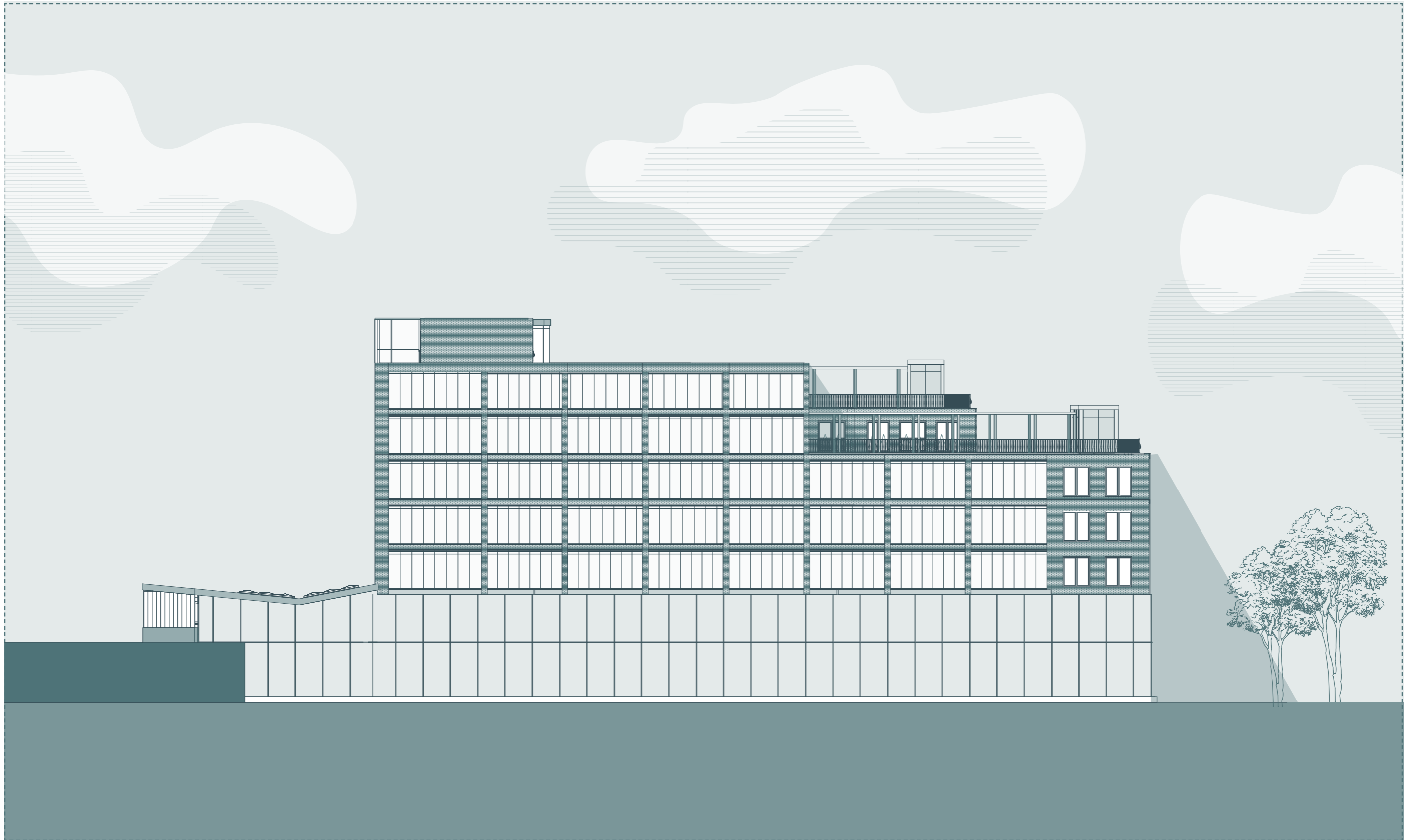


east facade



south facade

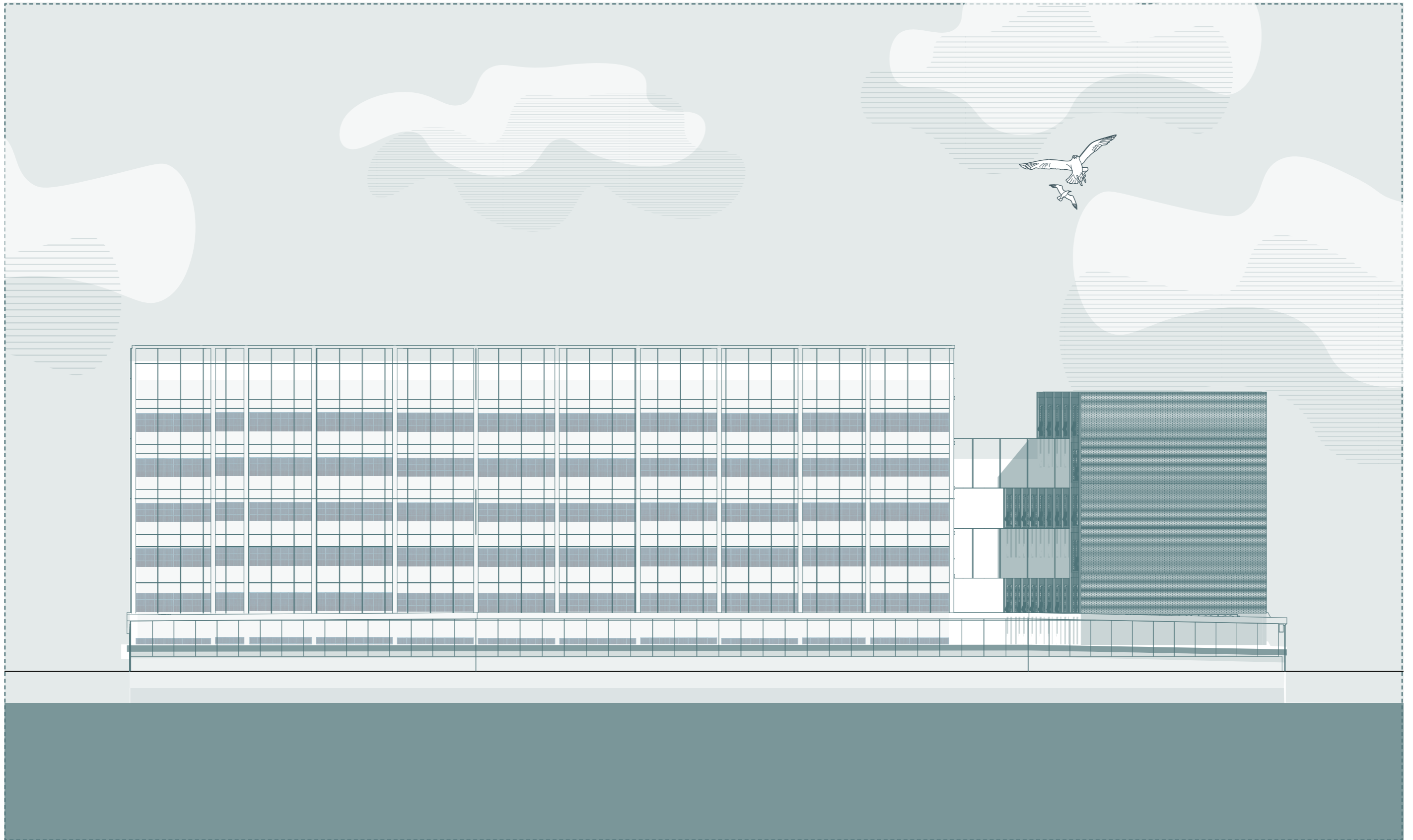
BIND BY WATER
east facade



BIND BY WATER
west facade



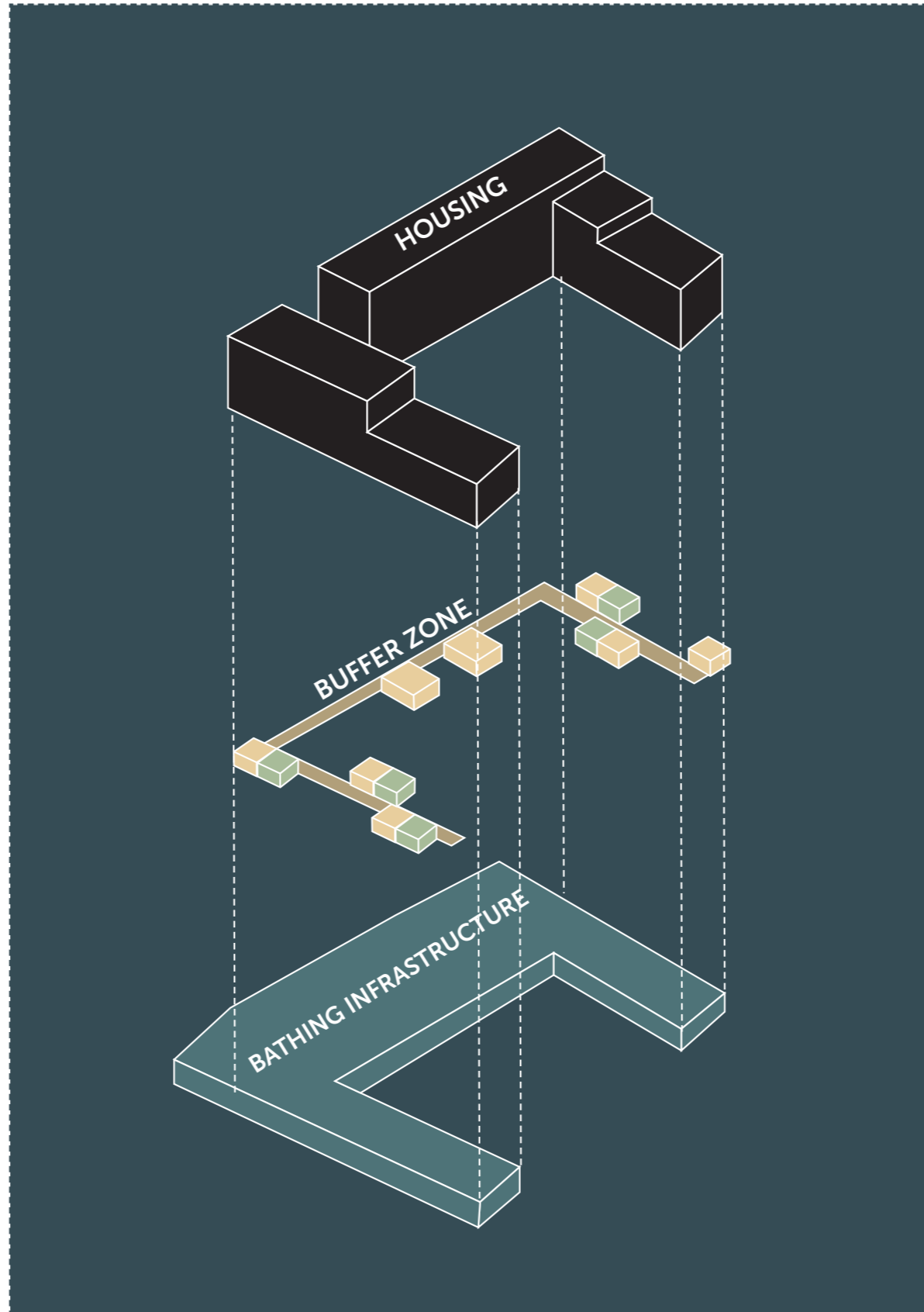
BIND BY WATER
south facade



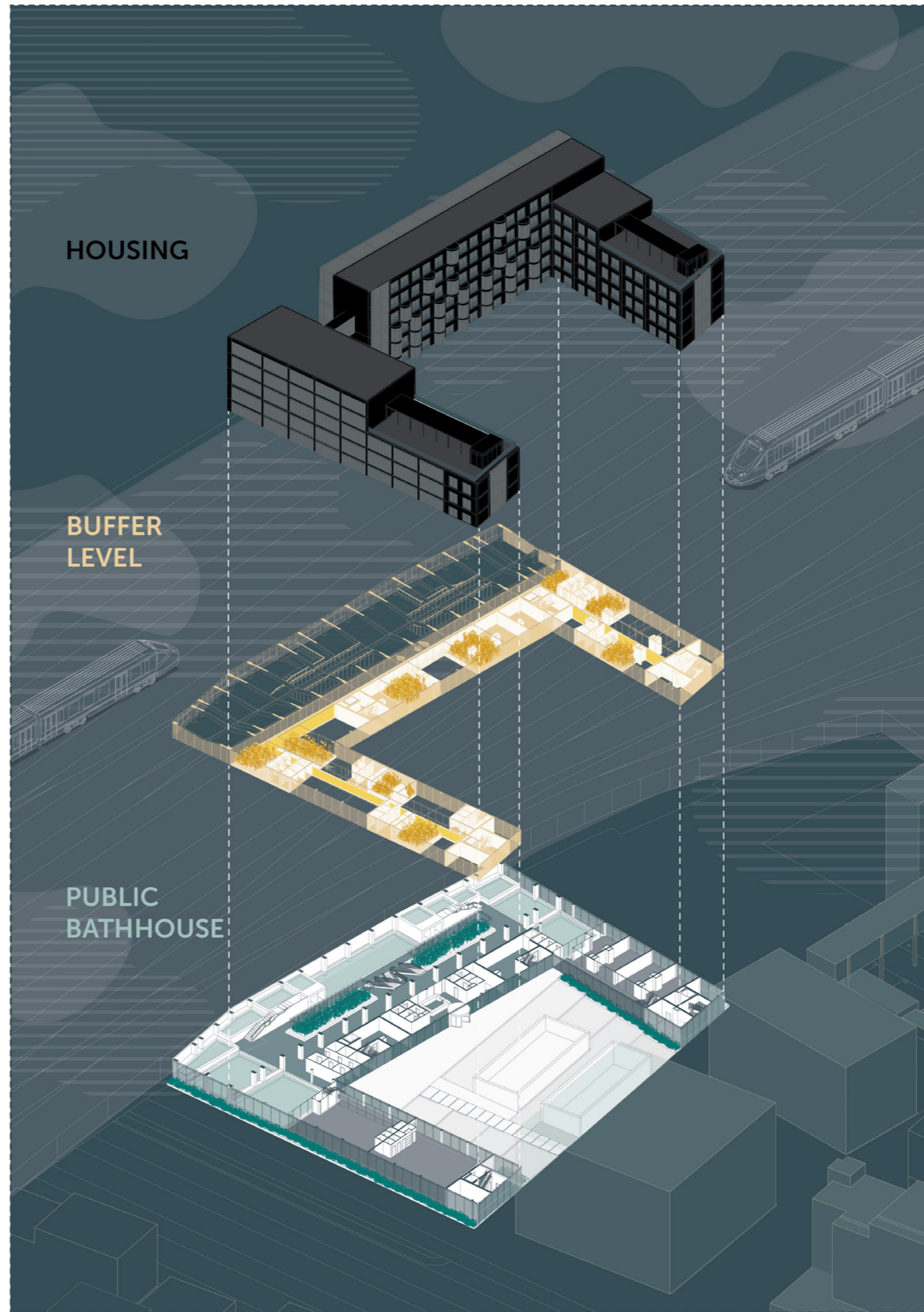
BIND BY WATER
north facade



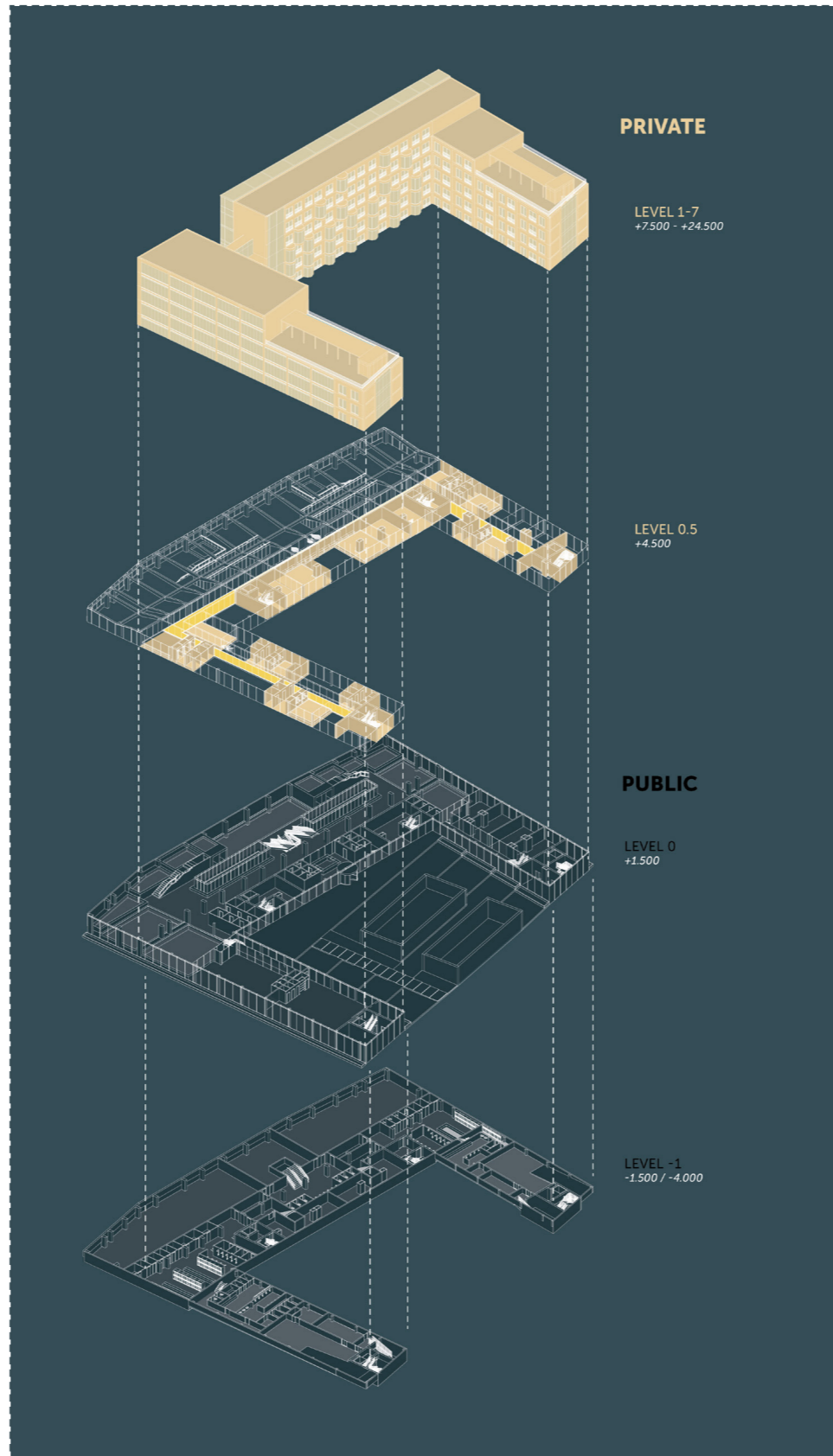
BIND BY WATER
project program



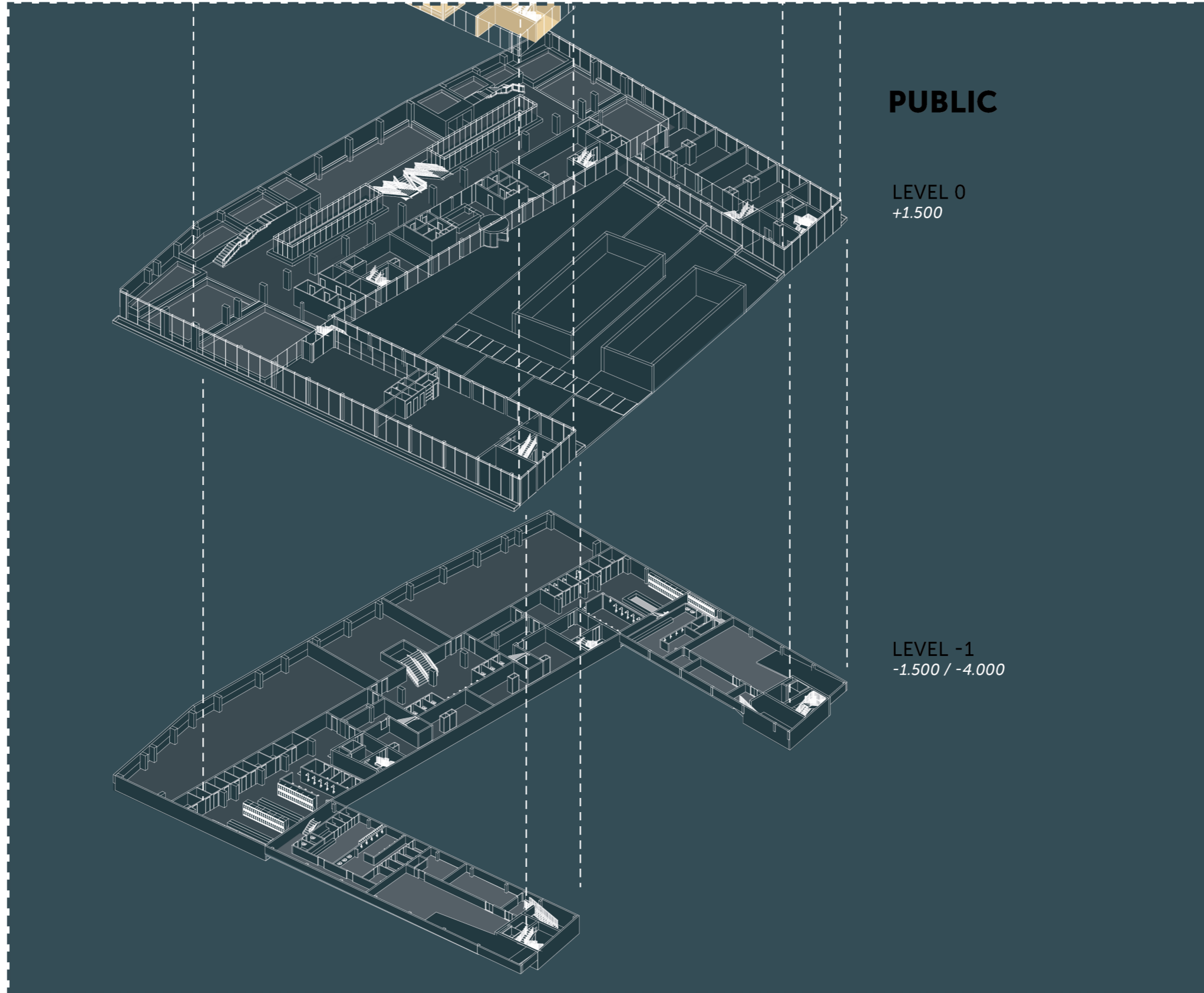
BIND BY WATER
project program



BIND BY WATER
public / private



BIND BY WATER
public program

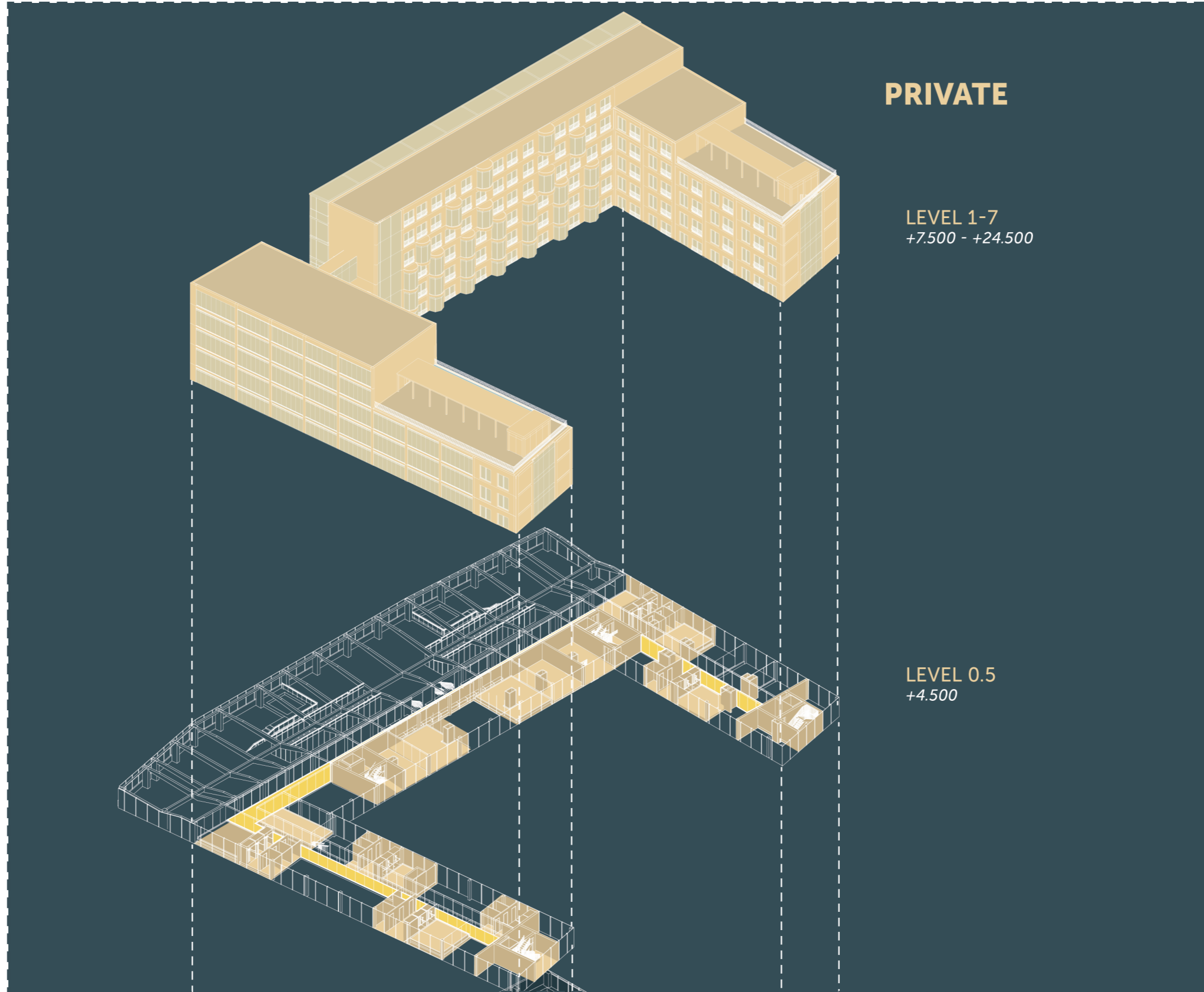


PUBLIC

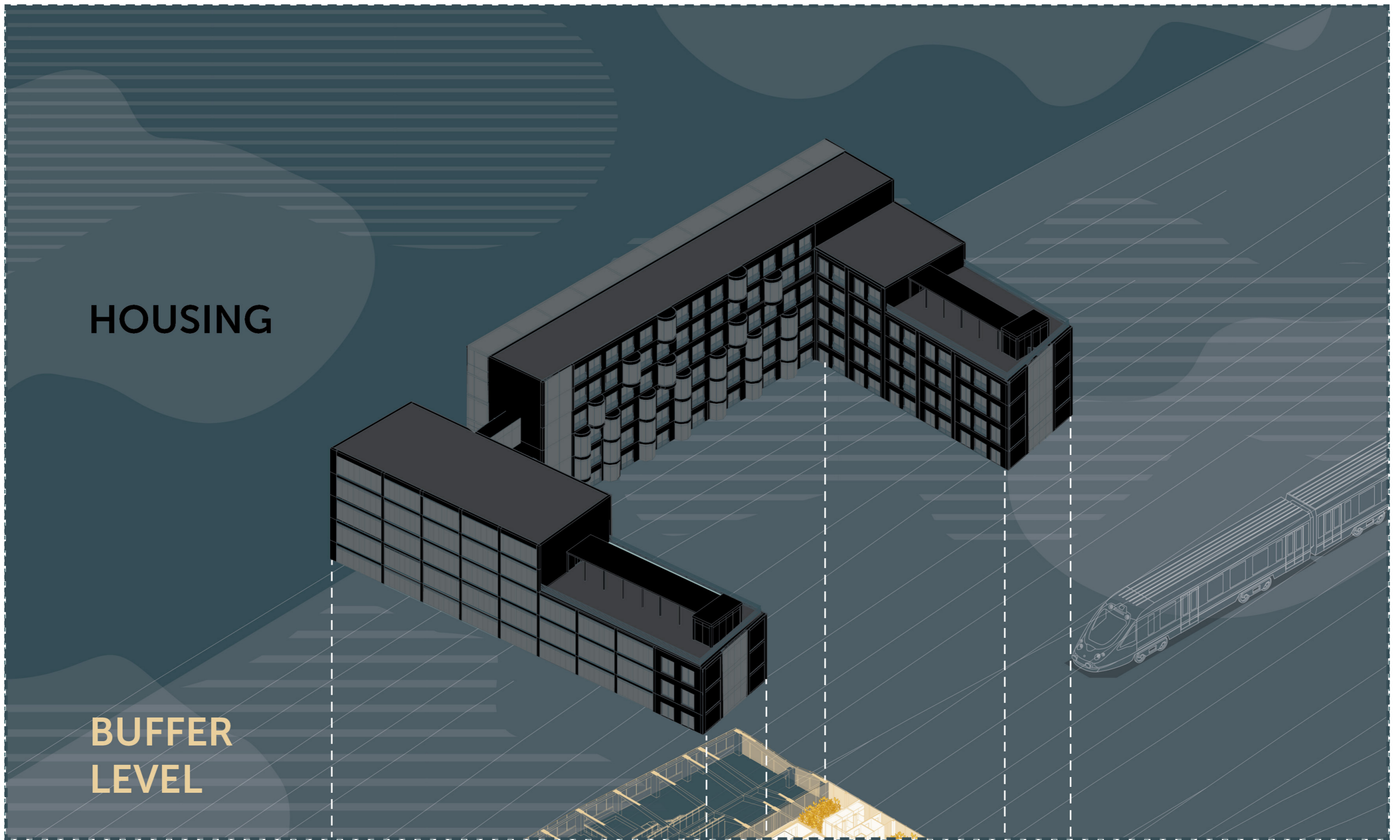
LEVEL 0
+1.500

LEVEL -1
-1.500 / -4.000

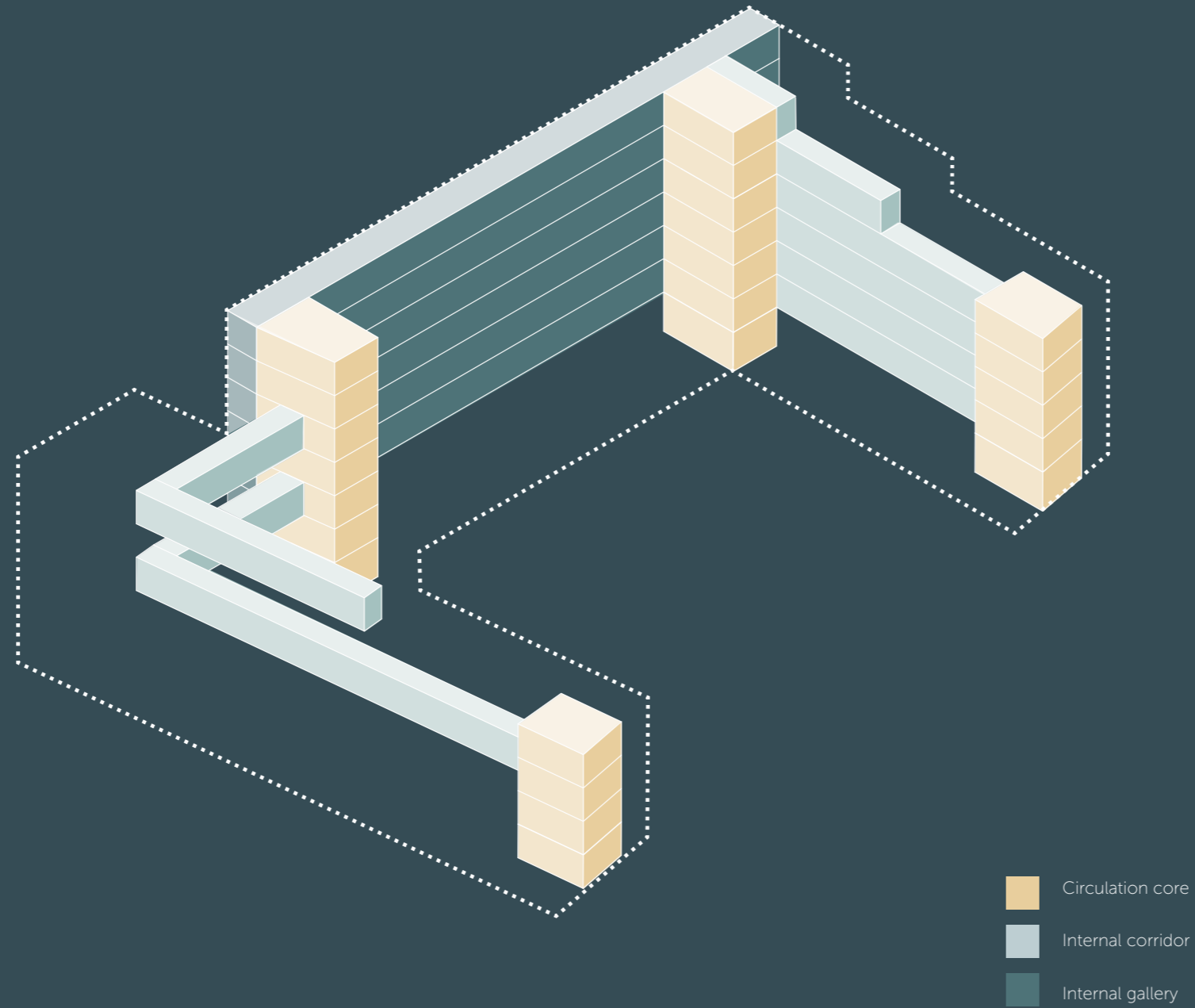
BIND BY WATER
private program



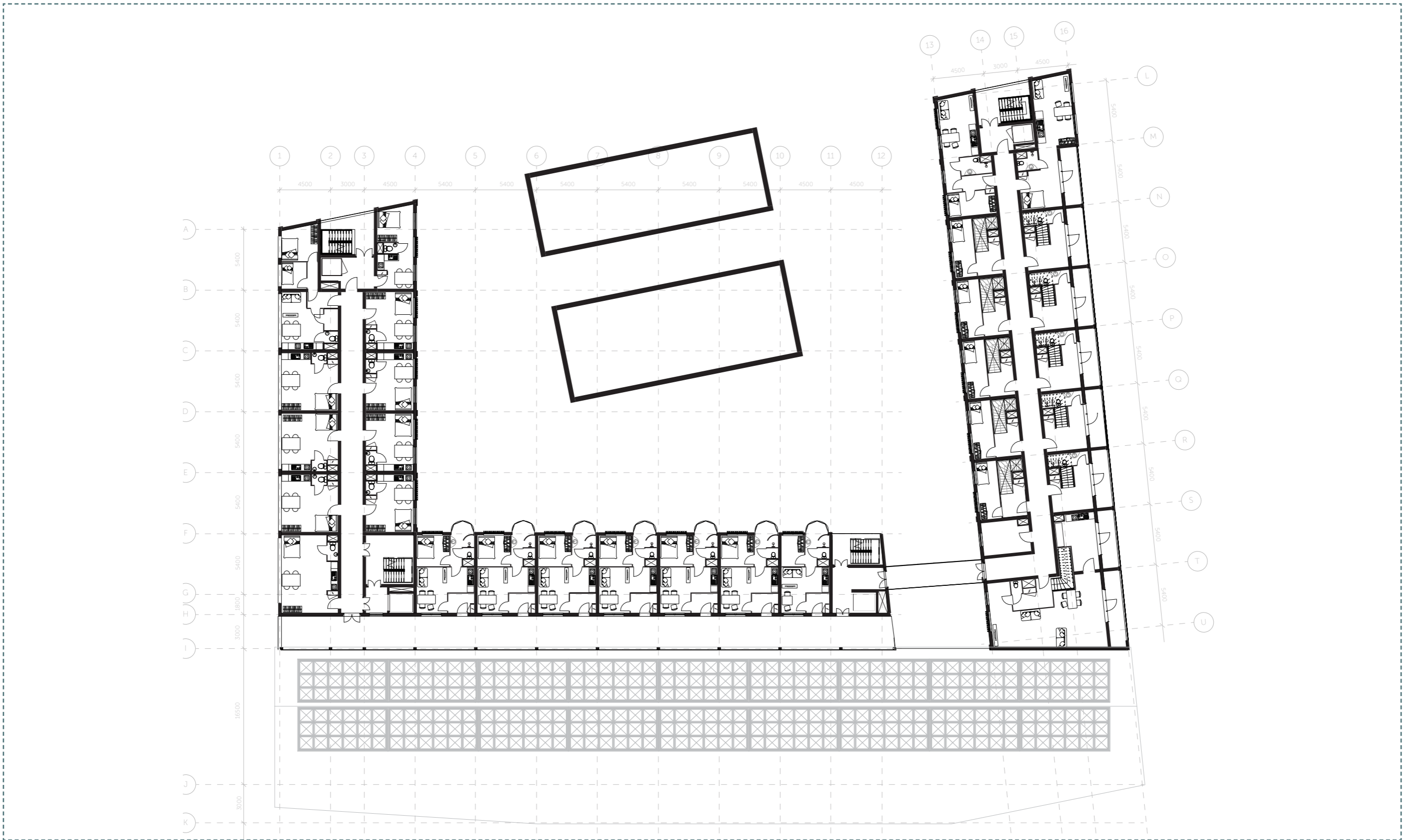
BIND BY WATER
housing



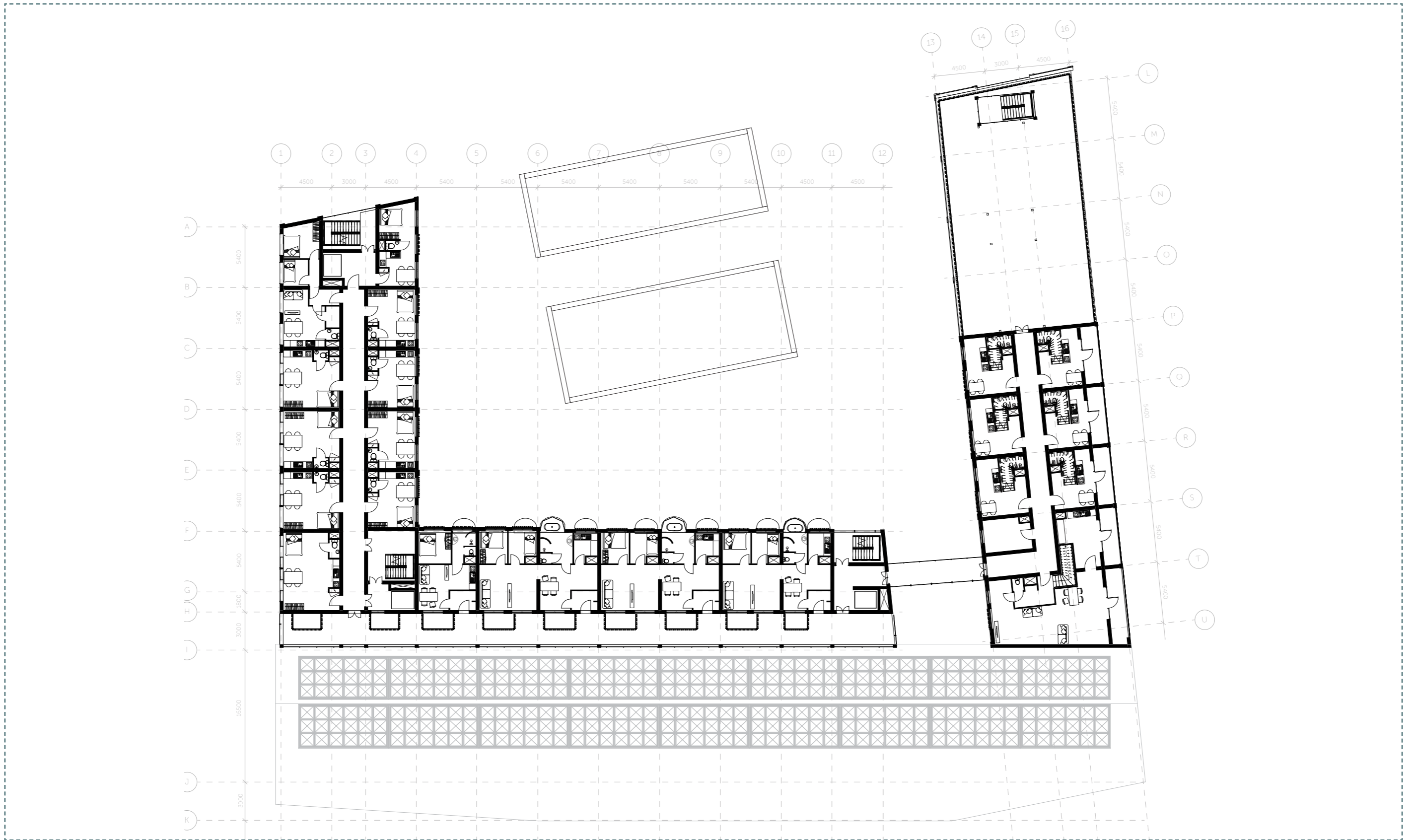
BIND BY WATER
housing - circulation



BIND BY WATER
floorplan - second floor



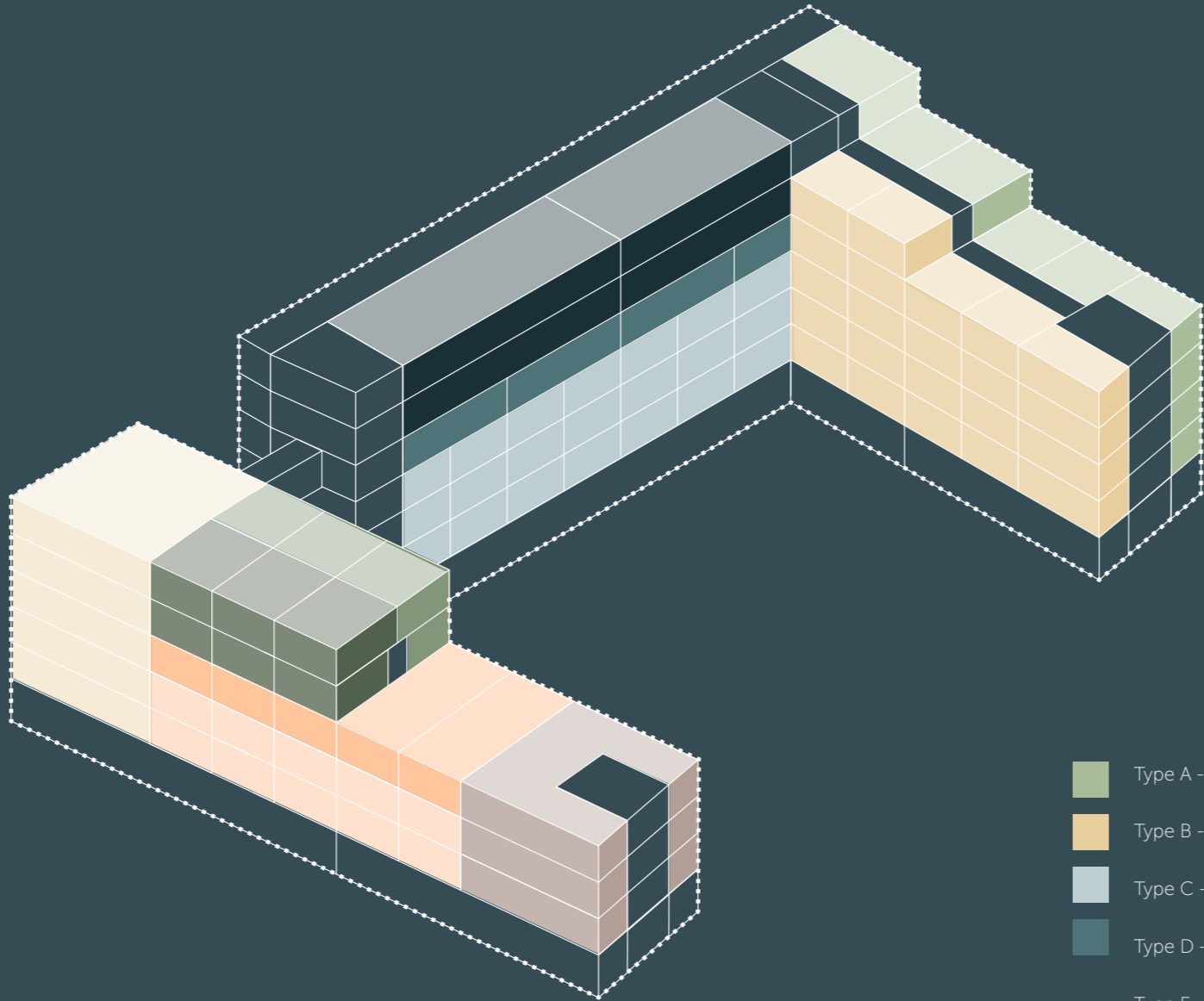
BIND BY WATER
floorplan - fourth floor



BIND BY WATER
gallery / space for social encounter



BIND BY WATER
housing - typologies



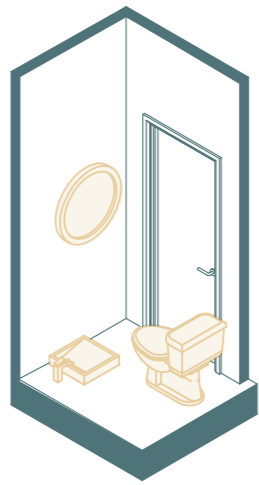
- Type A - studio
 - Type B - studio
 - Type C - 1-bed apt. *
 - Type D - 2-bed apt. *
 - Type E - cluster apt. *
 - Type F - duplex cluster apt.
 - Type G - duplex 1.5-bed apt.
 - Type H - duplex 1.5-bed apt.
 - Type I - duplex 1.5-bed apt.
 - Type J - duplex 2 -bed apt.
 - Type K - 2 bed apartment
- * with bathrooms

BIND BY WATER

typologies - a big variety



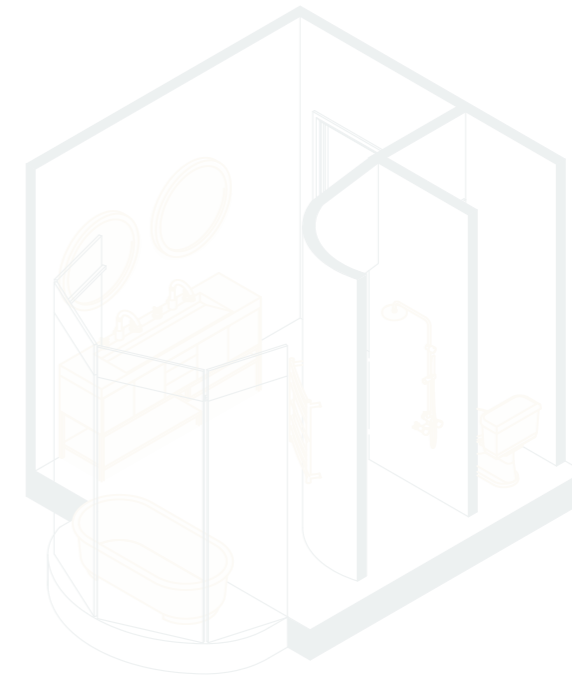
BIND BY WATER
bathroom typologies



1. no bathroom



2. limited bathroom

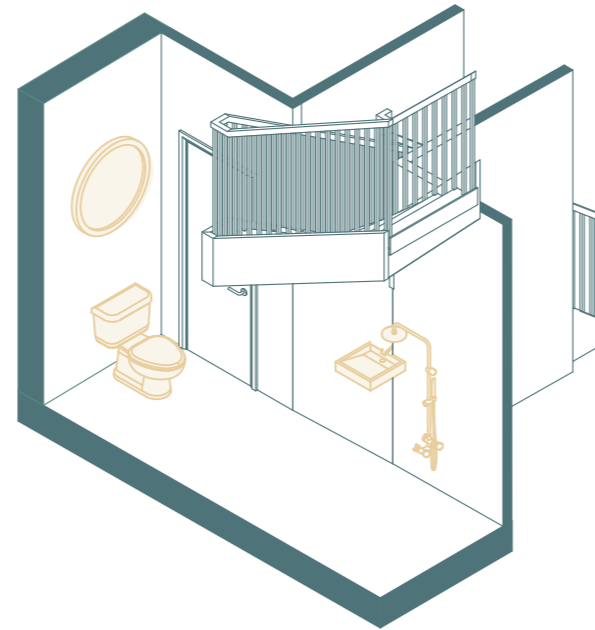


3. extravagant bathroom

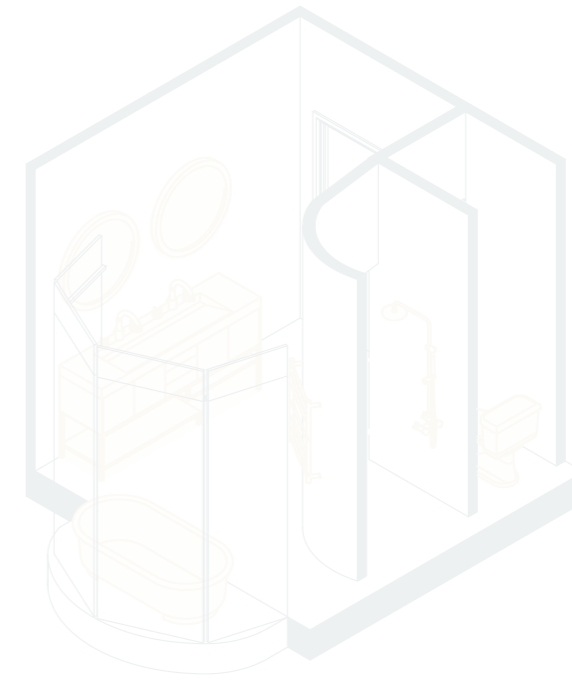
BIND BY WATER
bathroom typologies



1. no bathroom



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3. extravagant bathroom

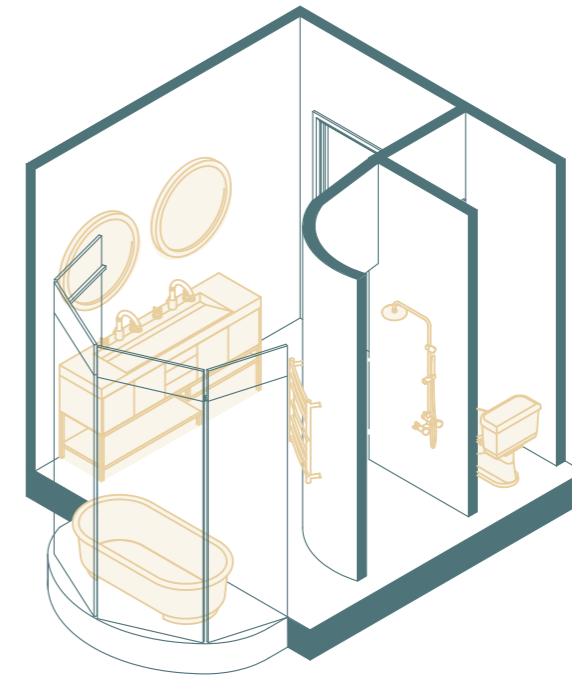
BIND BY WATER
bathroom typologies



1. no bathroom

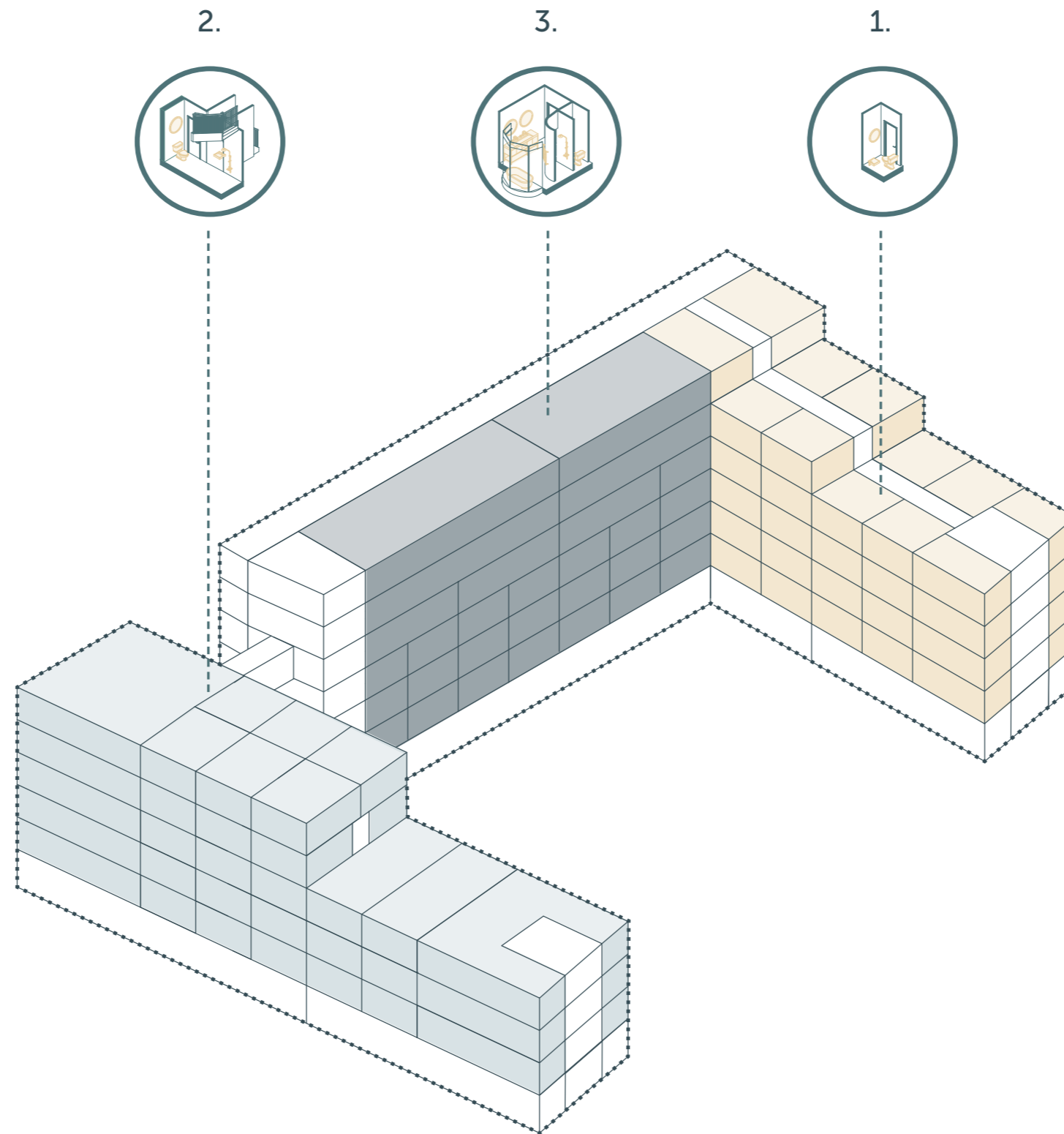


2. limited bathroom



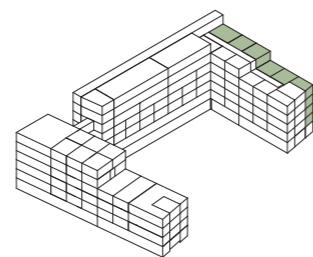
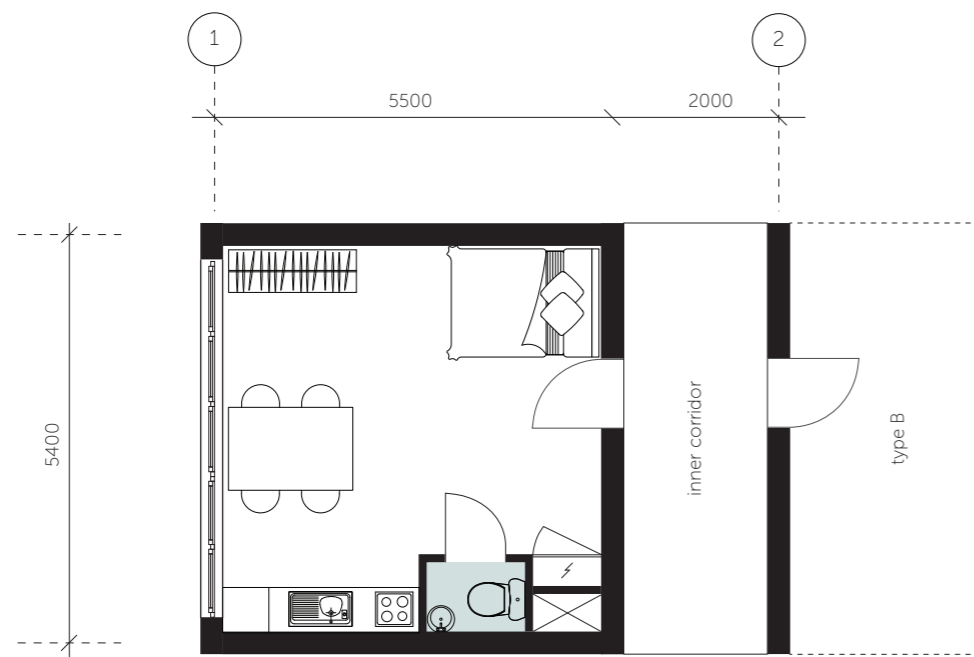
3. extravagant bathroom

BIND BY WATER
typologies building distribution

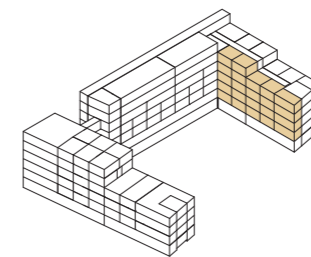
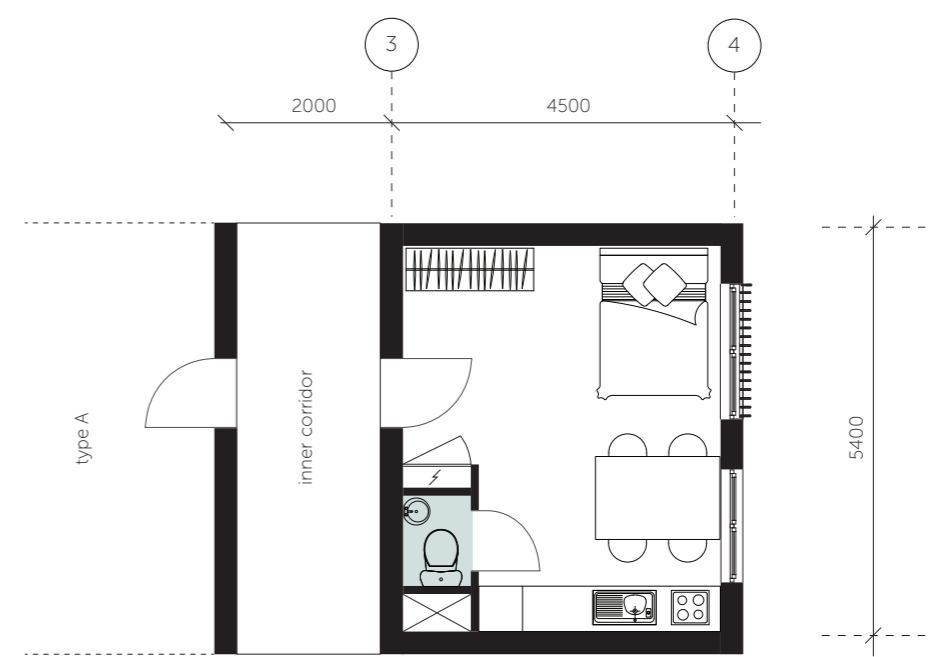


BIND BY WATER
typologies - no bathroom

TYPE A
studio



TYPE B
studio



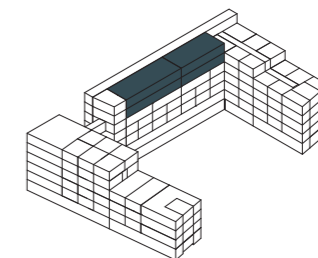
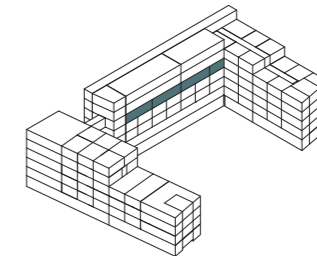
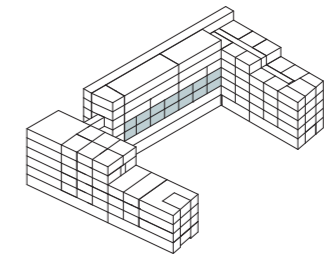
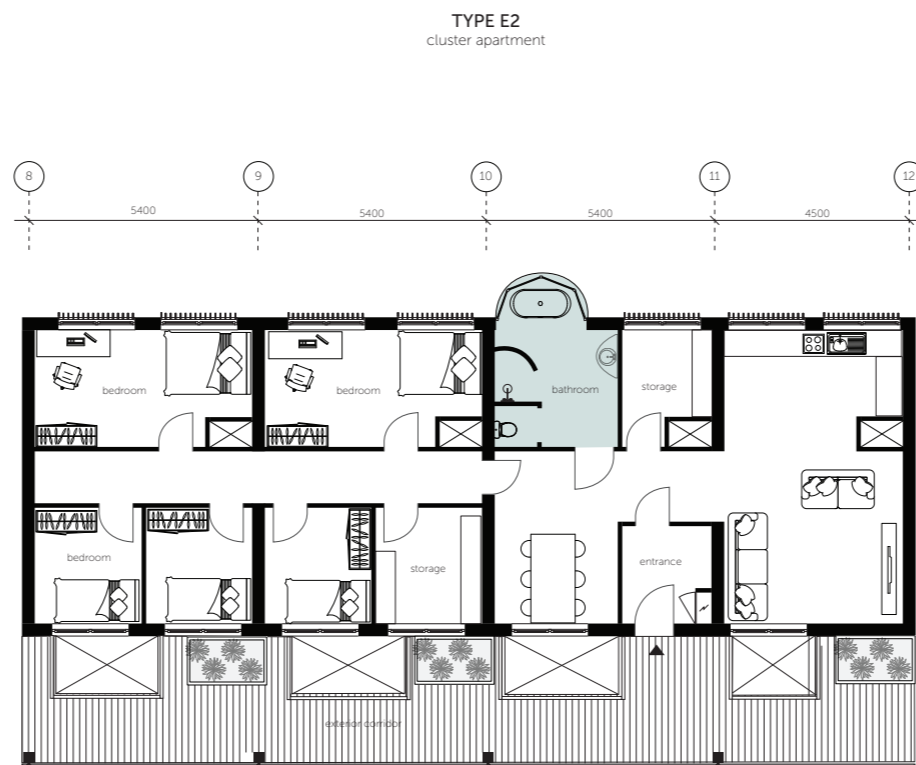
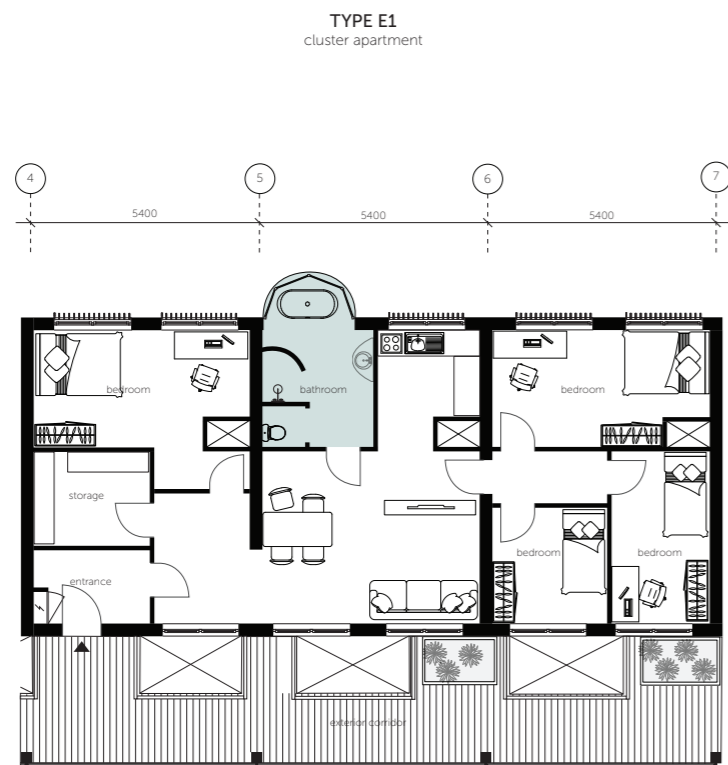
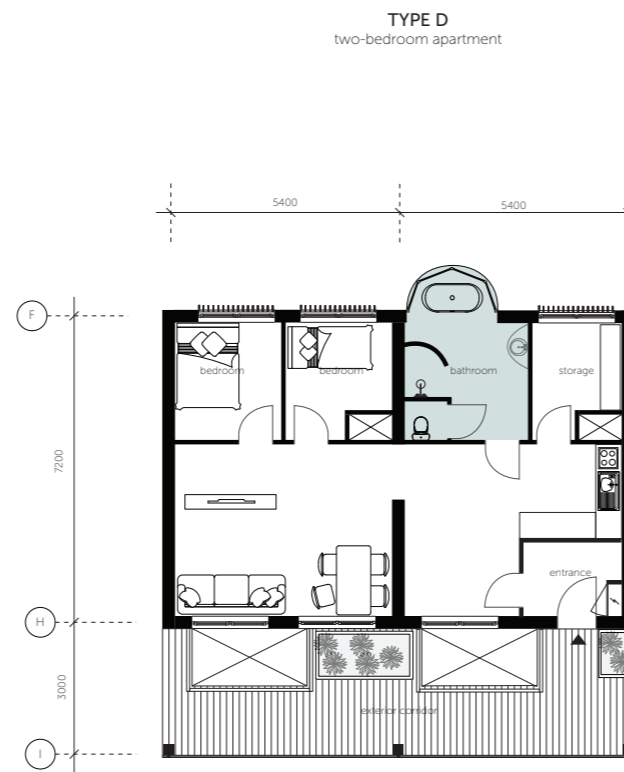
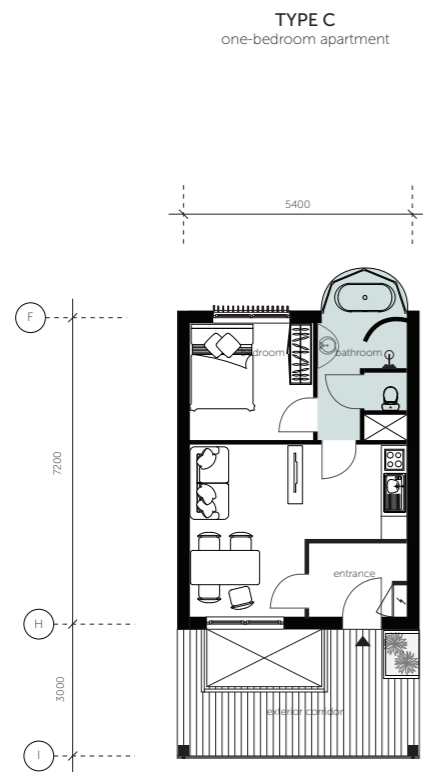
BIND BY WATER

typologies - limited bathroom



BIND BY WATER

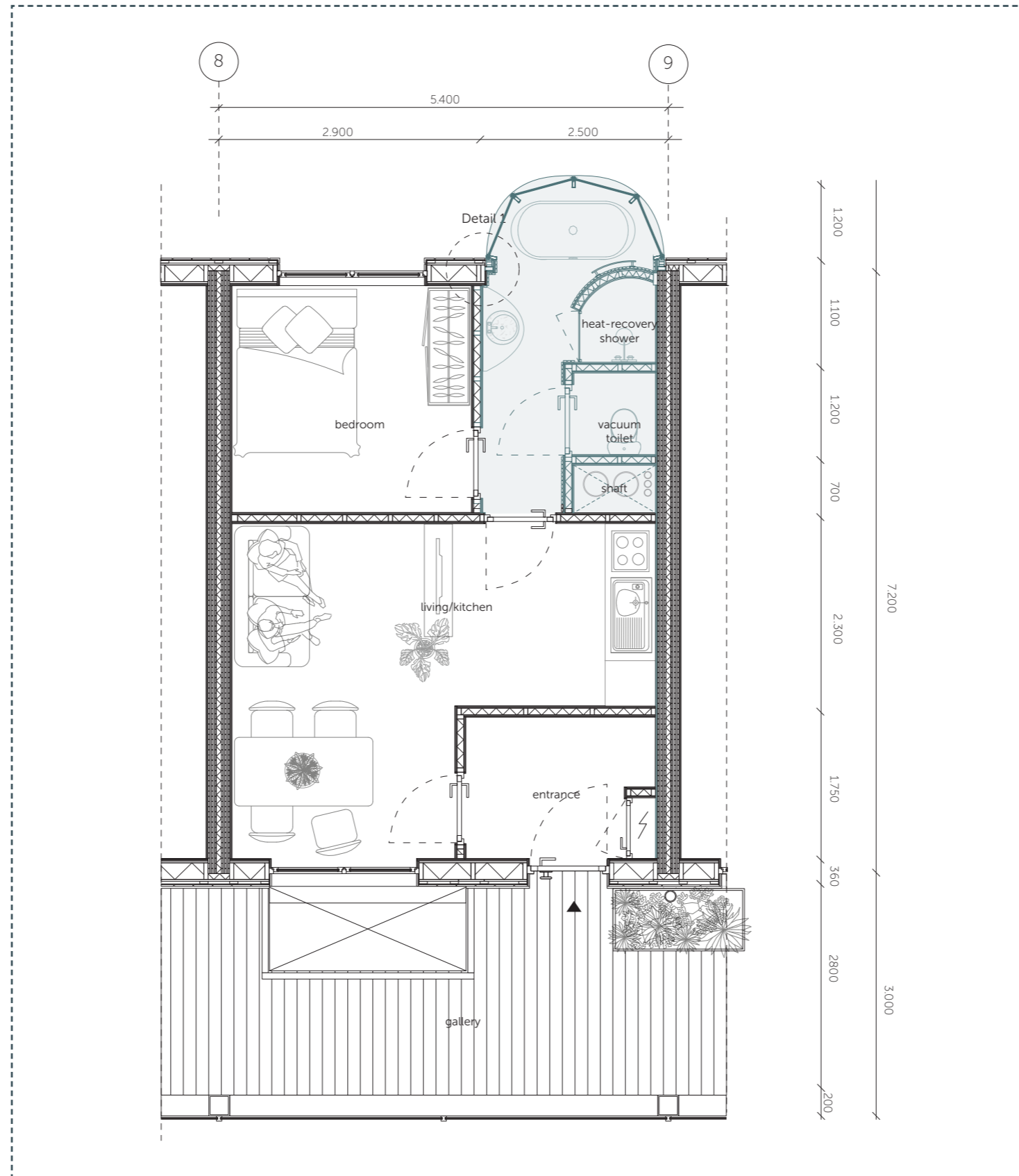
typologies - extravagant bathroom



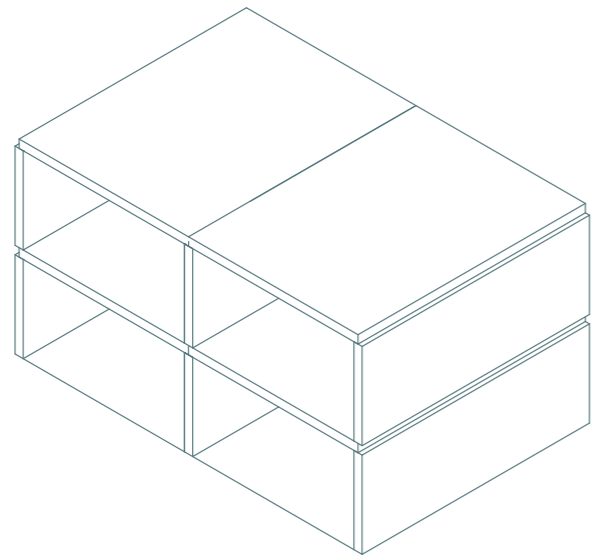
BIND BY WATER
impression extravagant bathroom



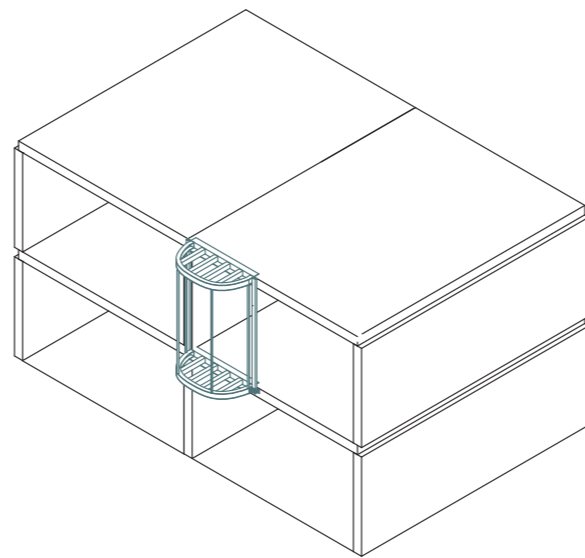
BIND BY WATER
type c - floorplan 1:50



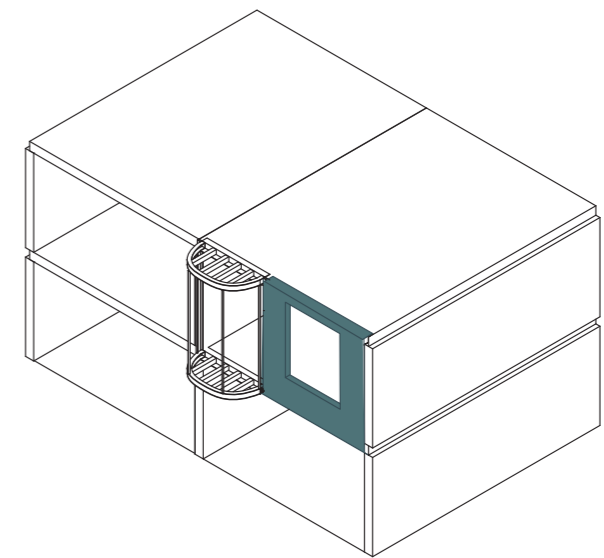
BIND BY WATER
bathroom assembly



load bearing CLT walls
+ kerto ripa slabs

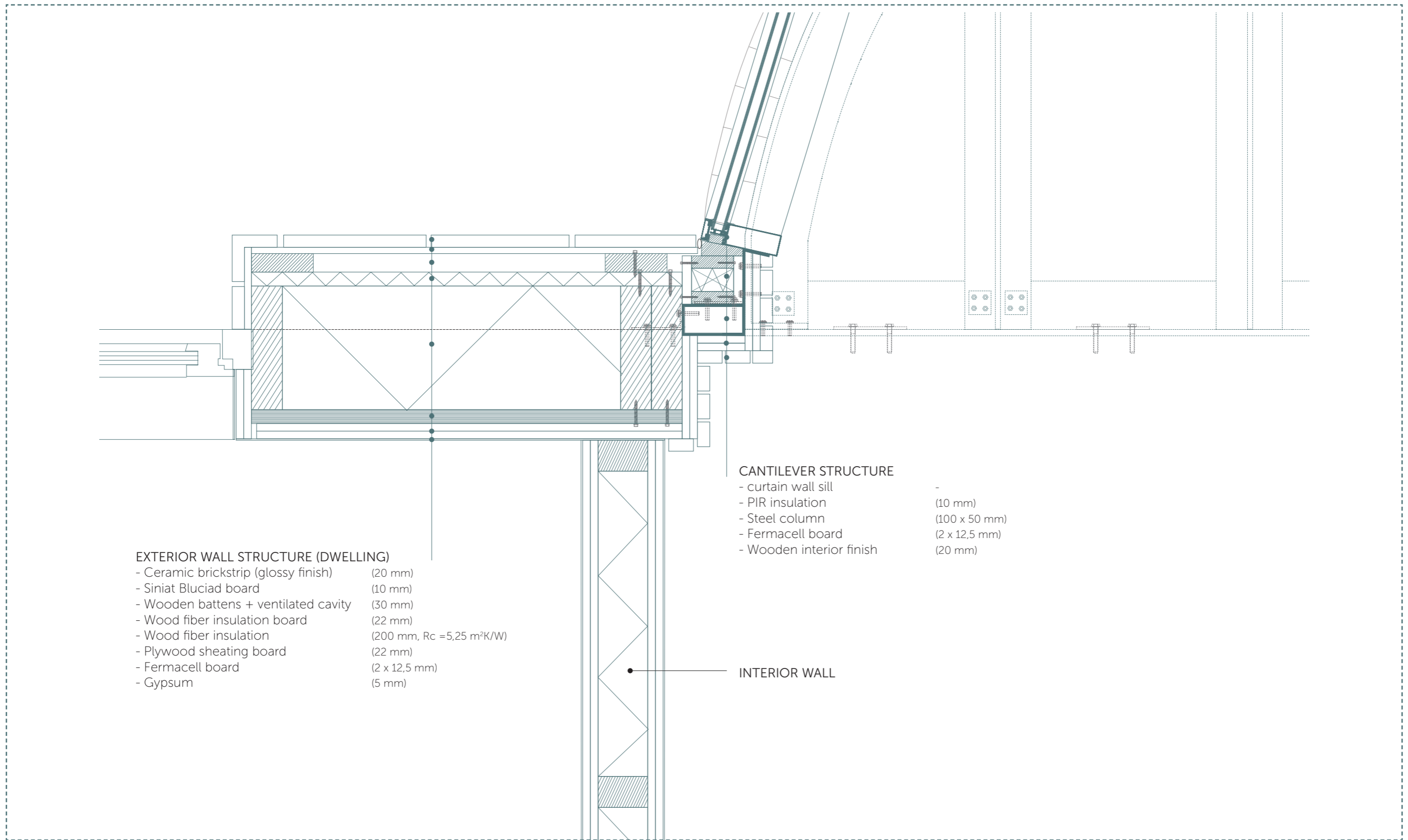


prefab bathroom
steel construction



prefab facade panels

BIND BY WATER
detail 1 - bathroom cantilever (hor)



- EXTERIOR WALL STRUCTURE (DWELLING)**
- Ceramic brickstrip (glossy finish) (20 mm)
 - Siniat Bluciad board (10 mm)
 - Wooden battens + ventilated cavity (30 mm)
 - Wood fiber insulation board (22 mm)
 - Wood fiber insulation (200 mm, $R_c = 5,25 \text{ m}^2\text{K/W}$)
 - Plywood sheathing board (22 mm)
 - Fermacell board (2 x 12,5 mm)
 - Gypsum (5 mm)

- CANTILEVER STRUCTURE**
- curtain wall sill -
 - PIR insulation (10 mm)
 - Steel column (100 x 50 mm)
 - Fermacell board (2 x 12,5 mm)
 - Wooden interior finish (20 mm)

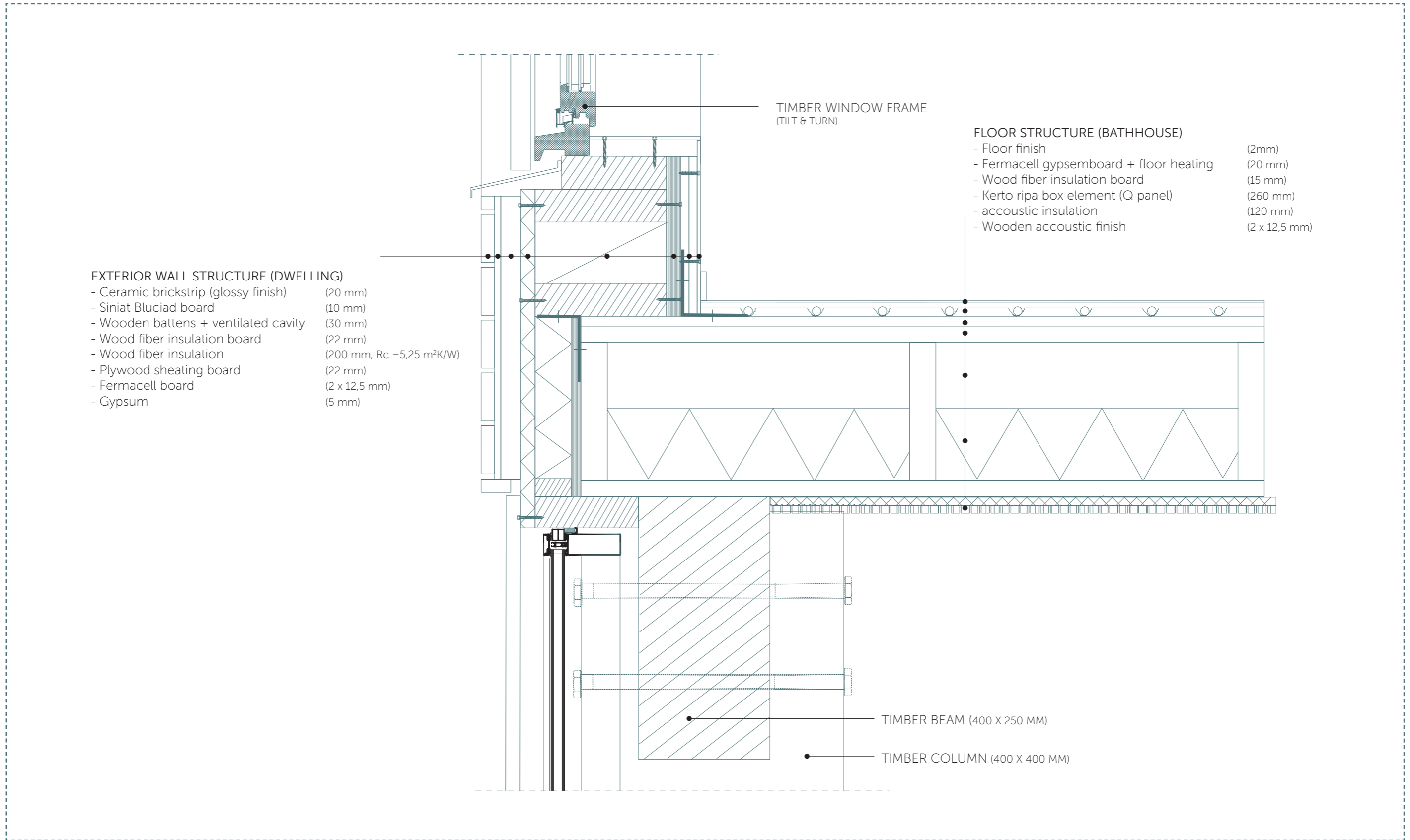
INTERIOR WALL

BIND BY WATER
facade fragment 1:50

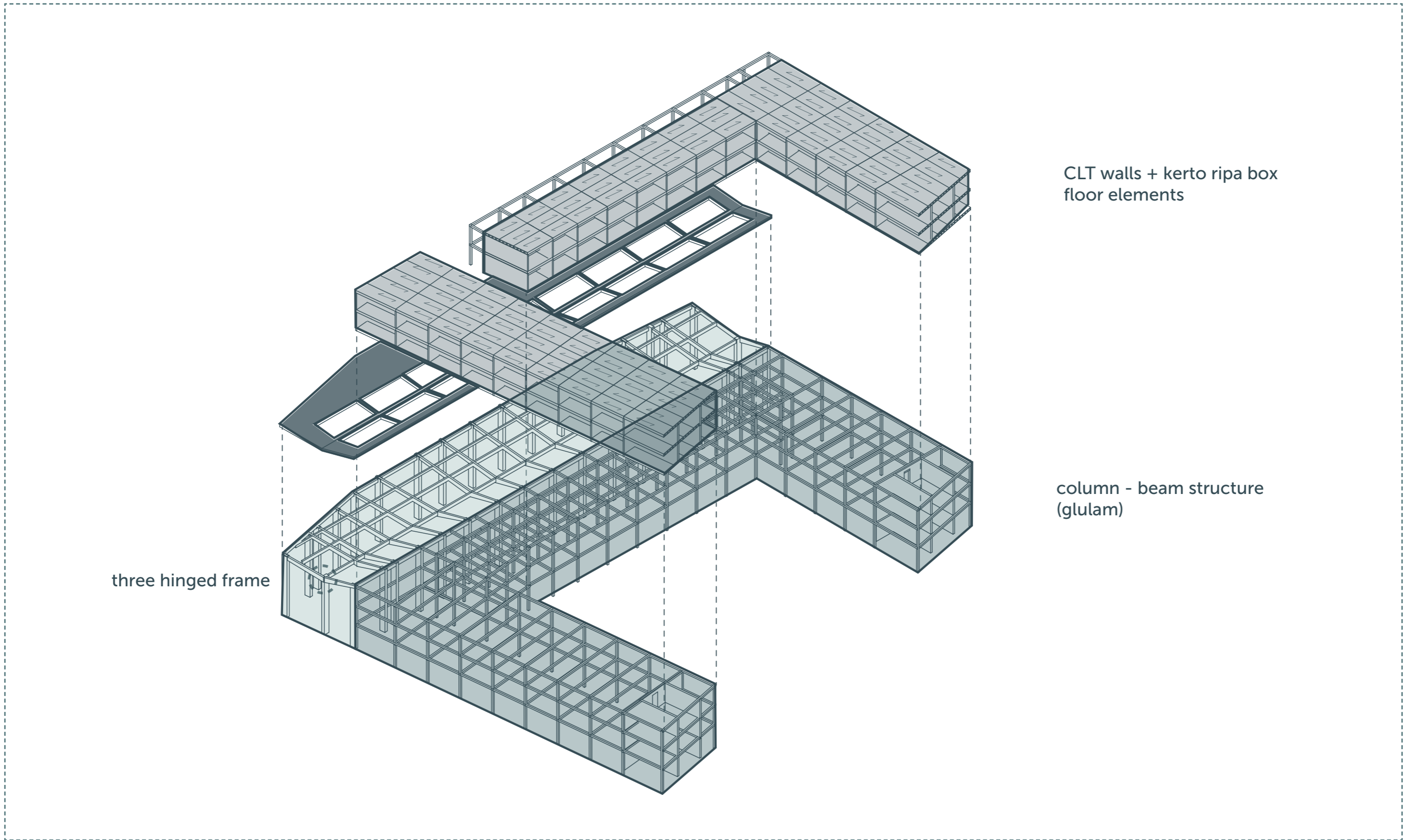


BIND BY WATER

detail 3 - transition housing / bathhouse (ver)



BIND BY WATER
building structure

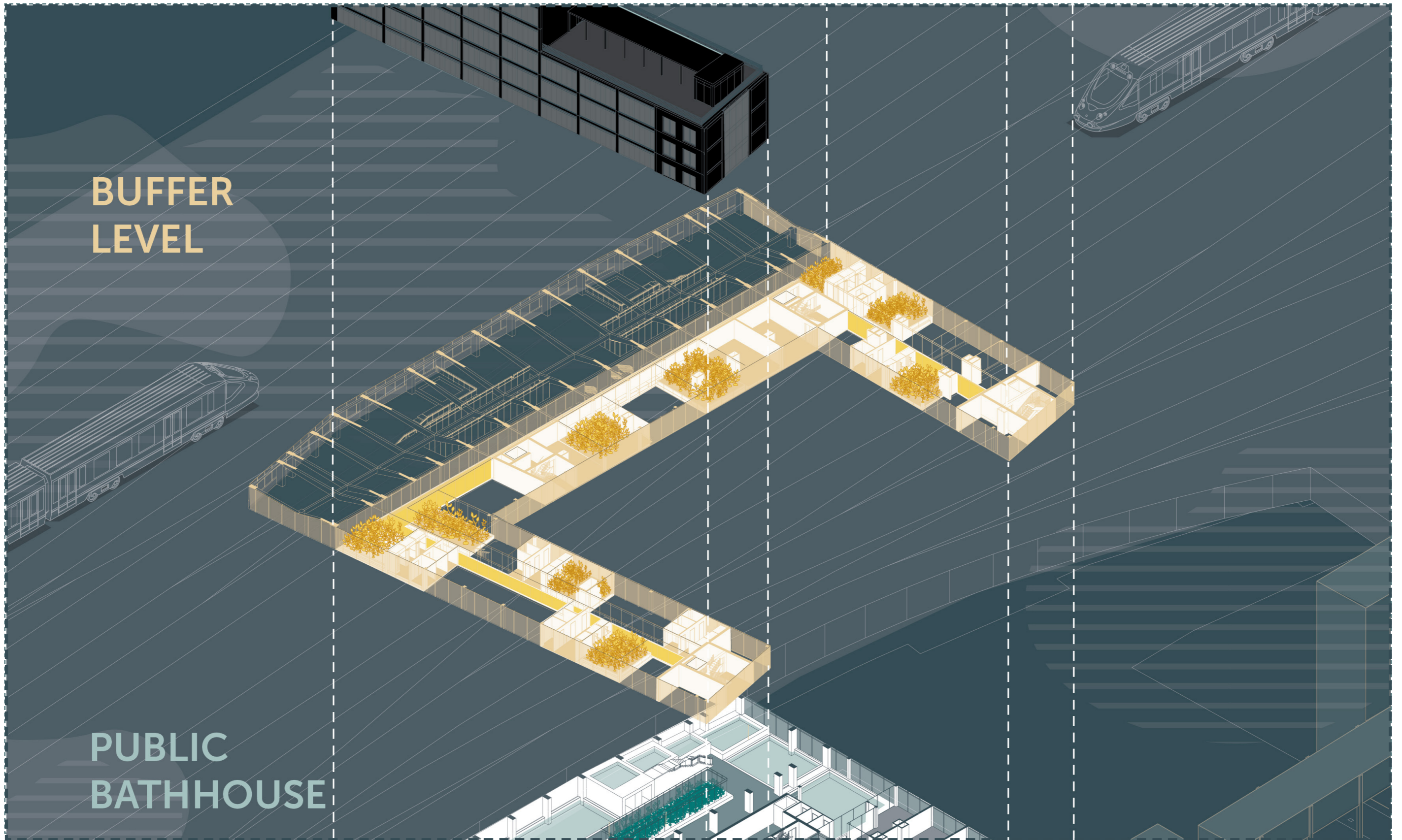


three hinged frame

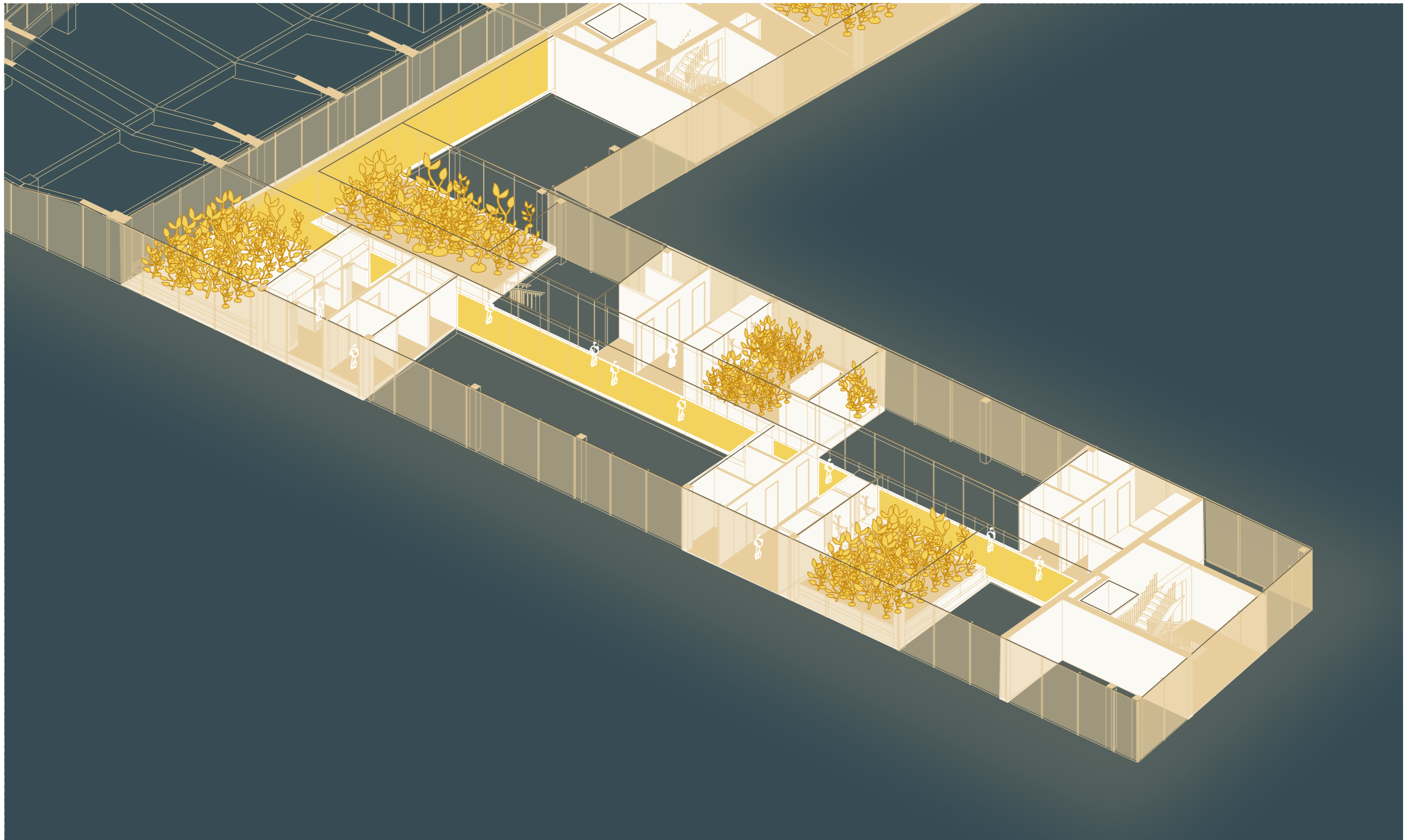
CLT walls + kerto ripa box
floor elements

column - beam structure
(glulam)

BIND BY WATER
the buffer zone

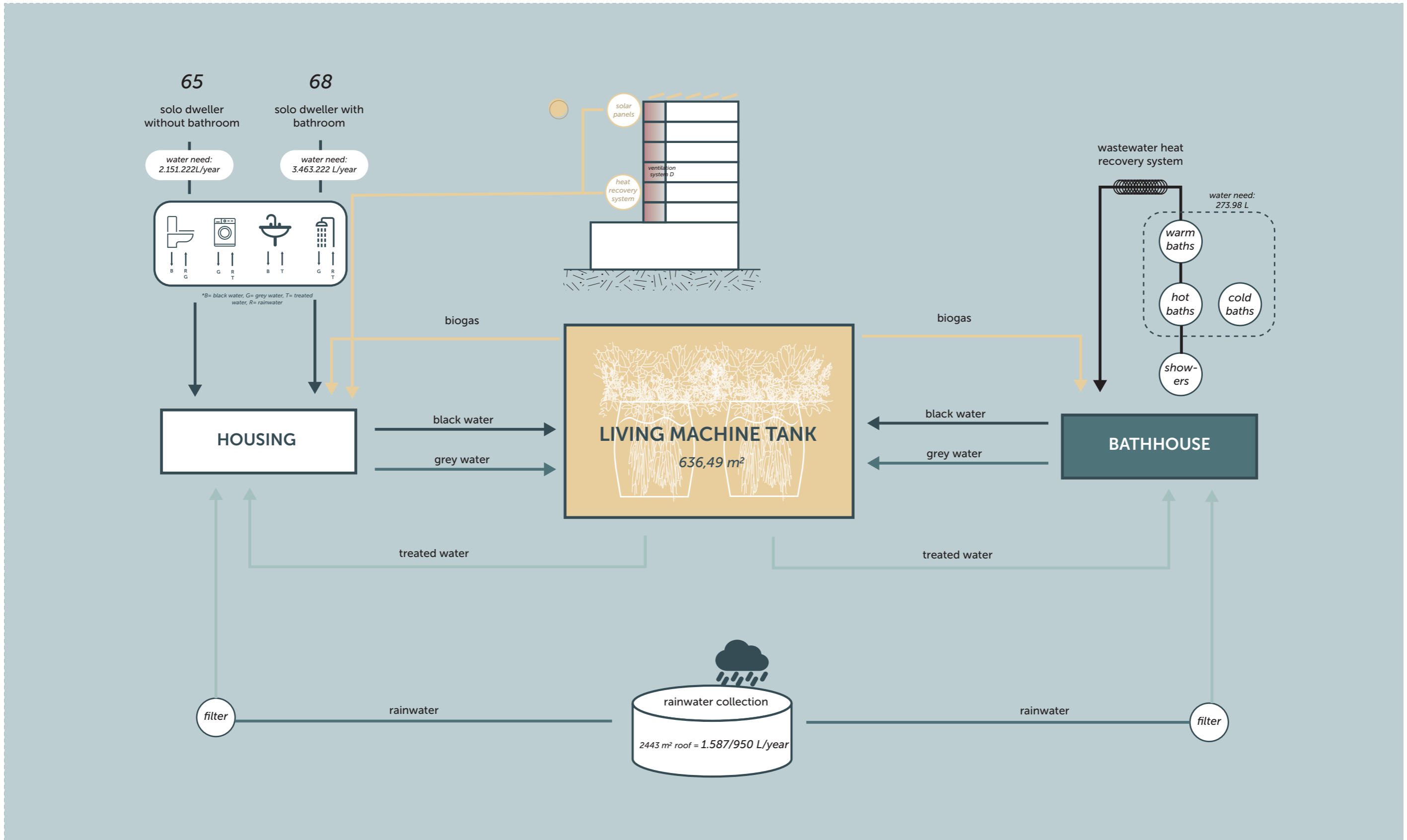


BIND BY WATER
private bathing infrastructure in nature



BIND BY WATER

water + energy concept

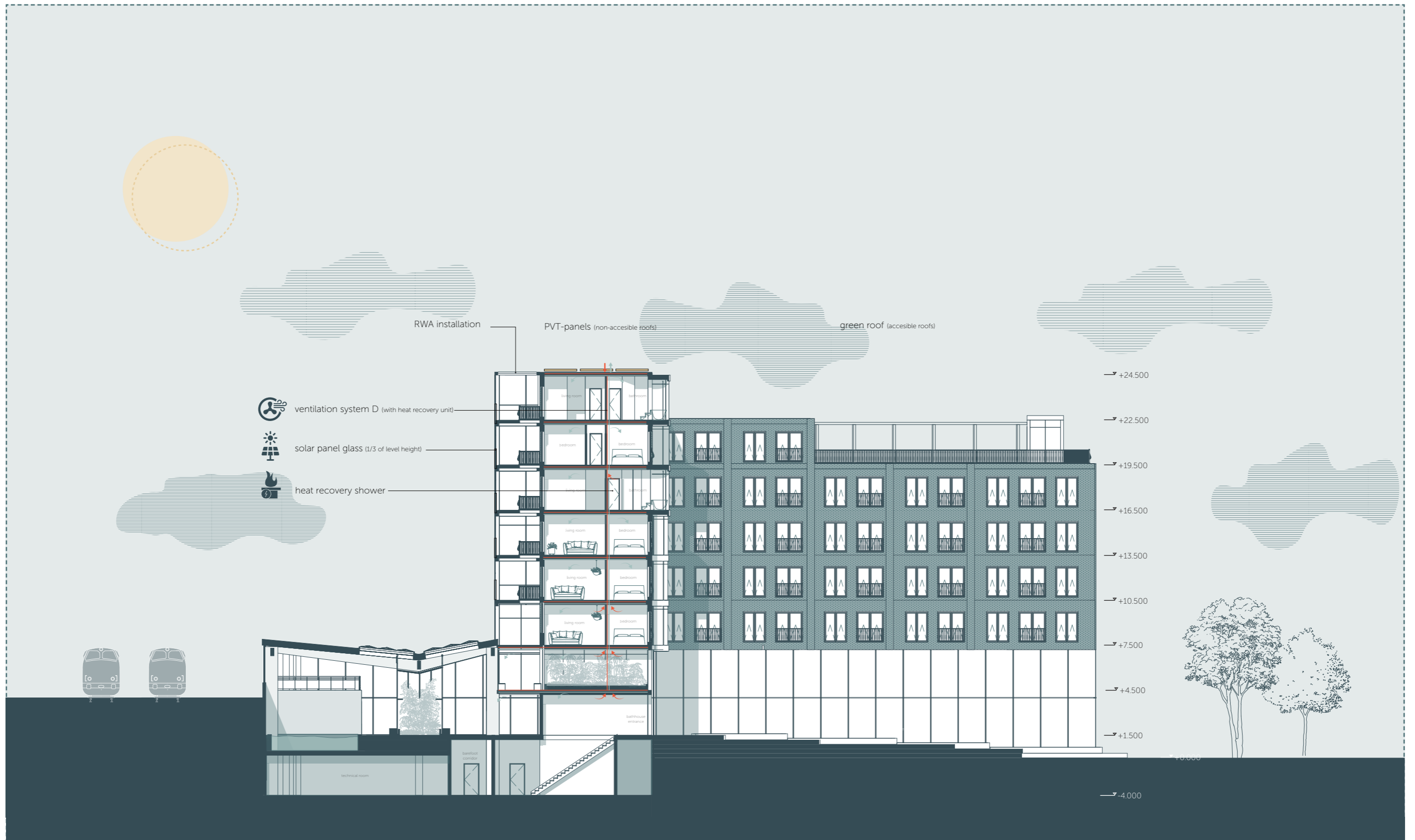


BIND BY WATER
section BB



BIND BY WATER

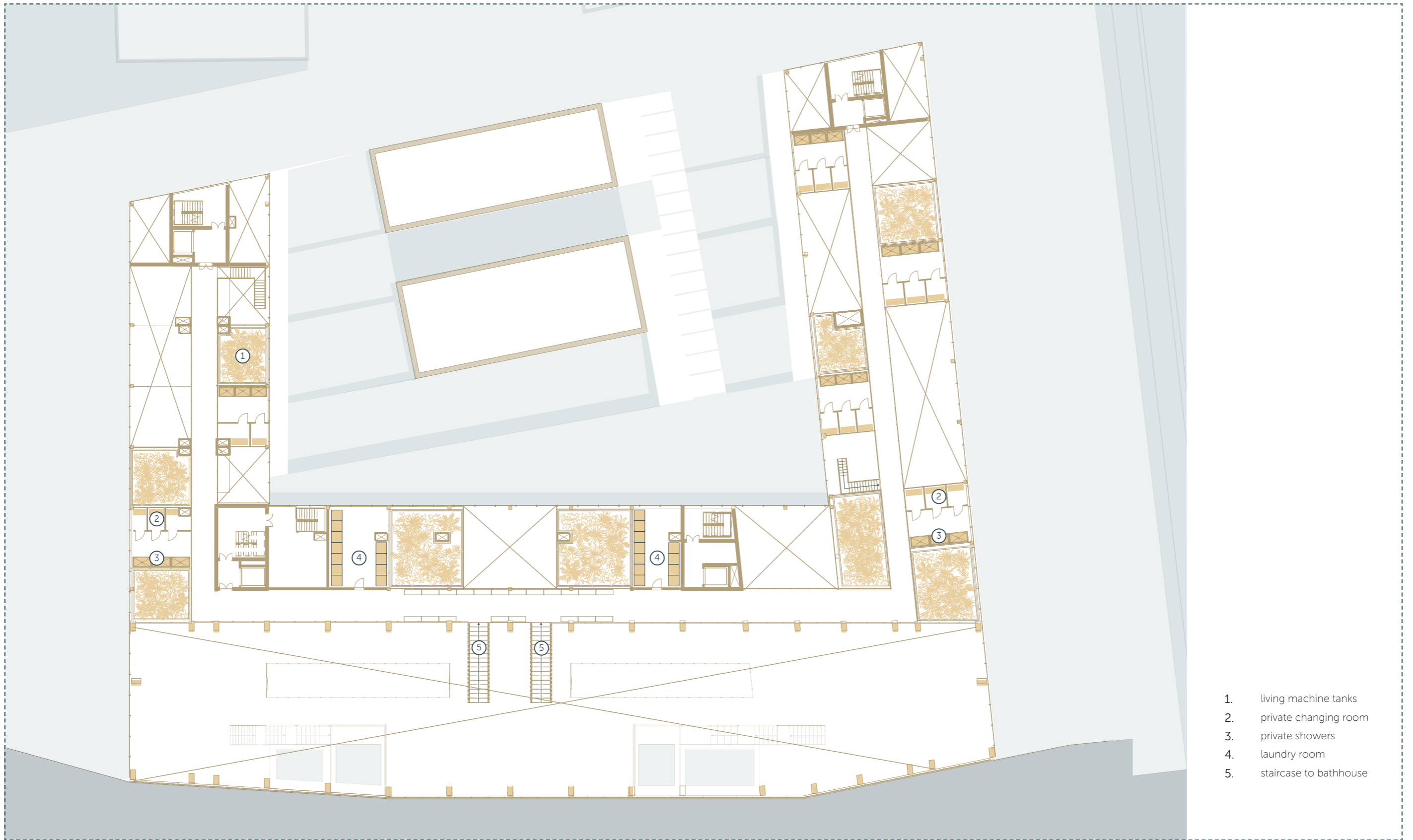
climate section



BIND BY WATER
section CC

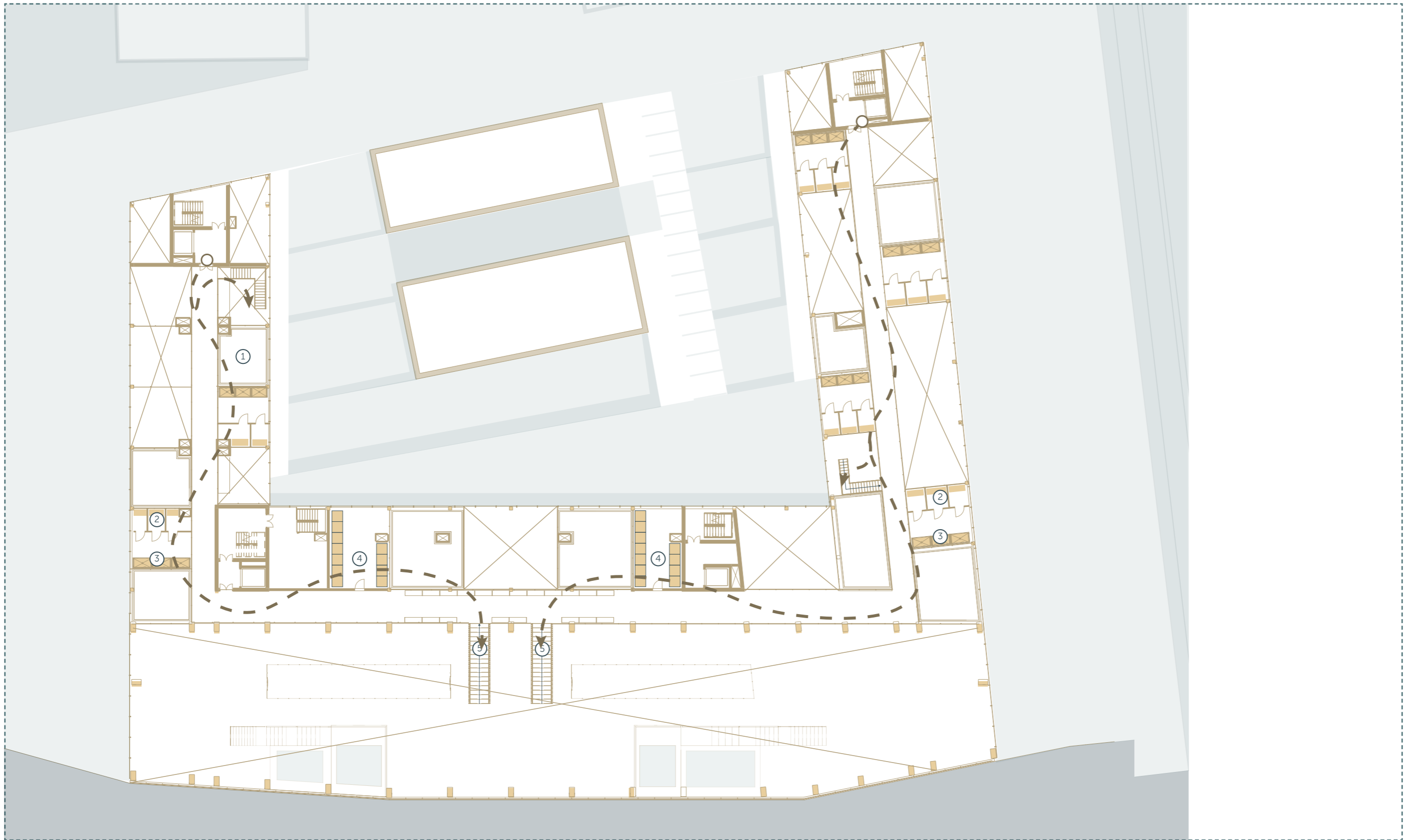


BIND BY WATER
floorplan - level 0.5

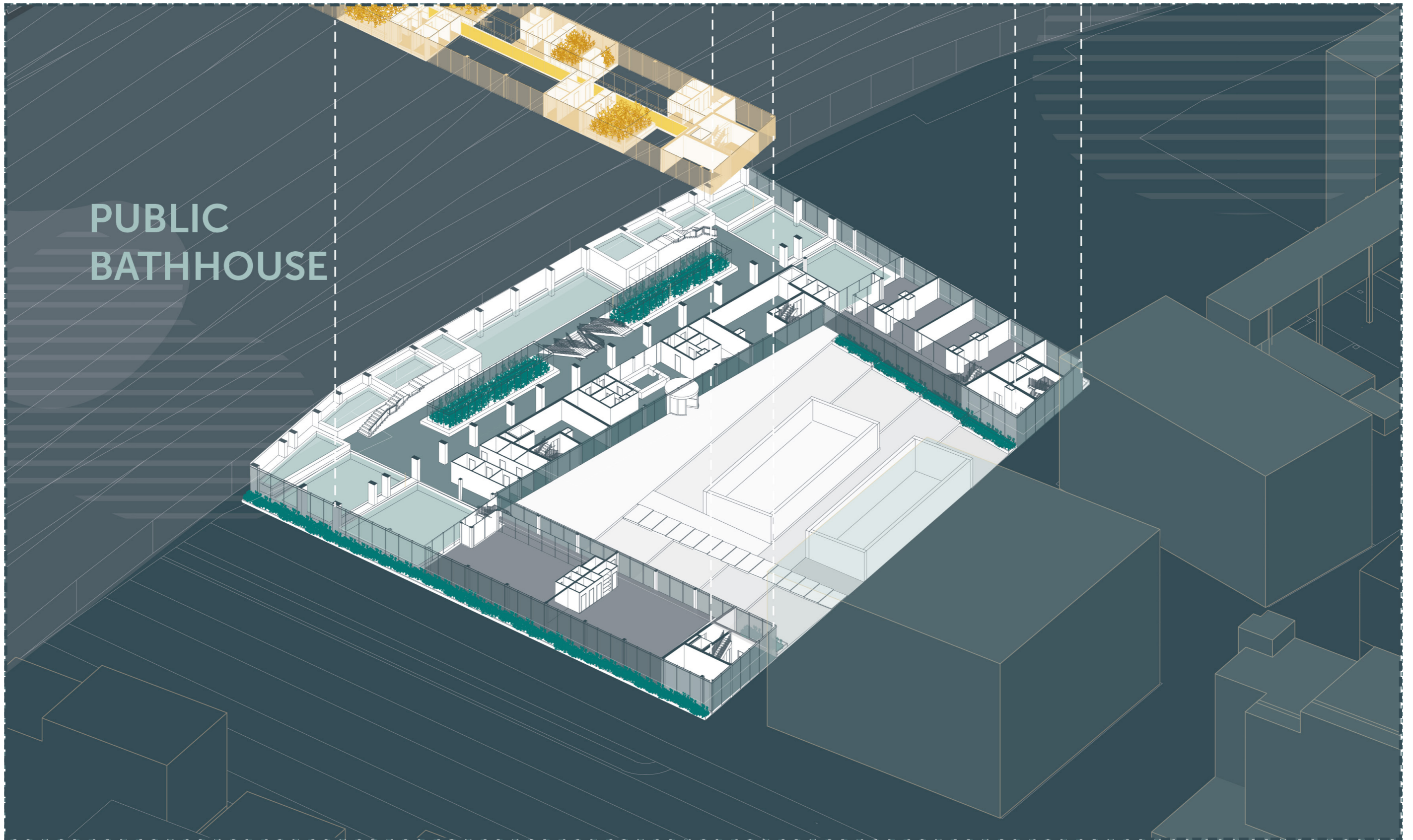


1. living machine tanks
2. private changing room
3. private showers
4. laundry room
5. staircase to bathhouse

BIND BY WATER
flow of dwellers

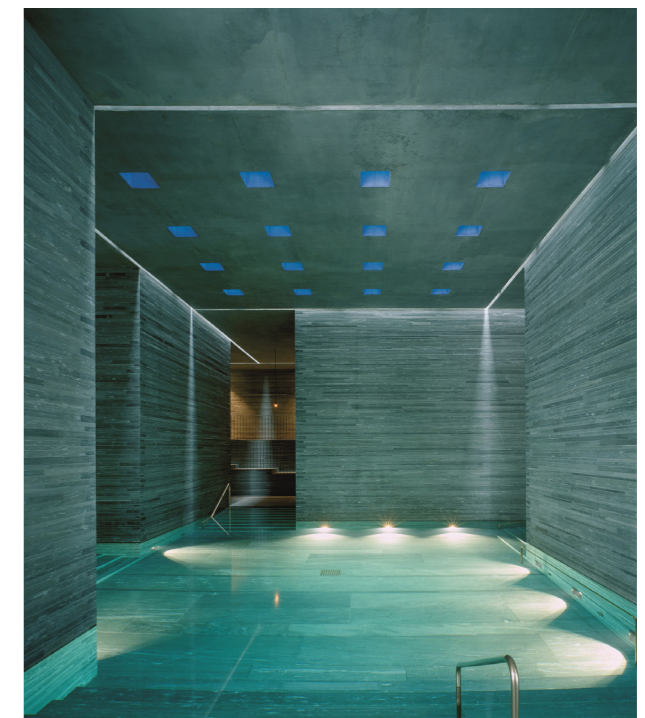
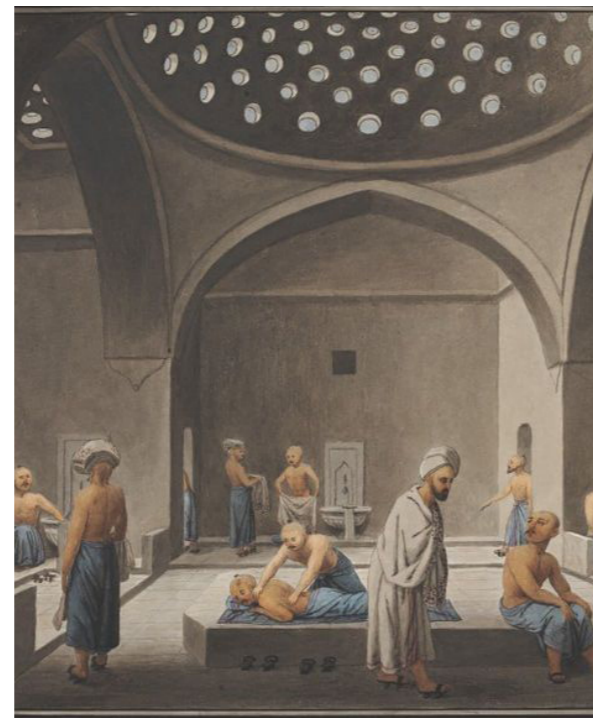
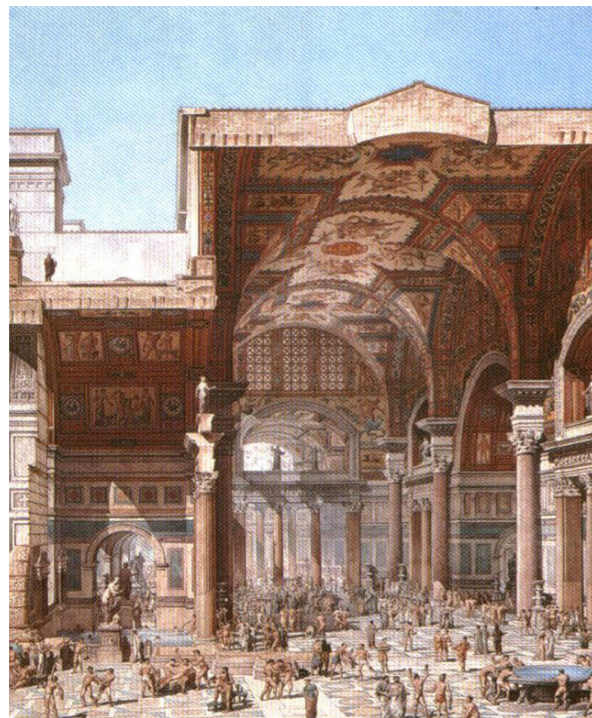


BIND BY WATER
the bathhouse

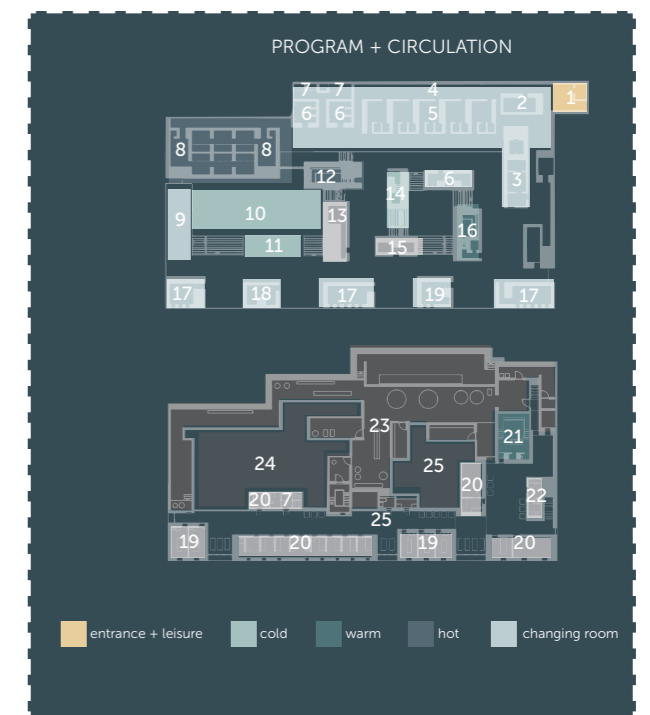
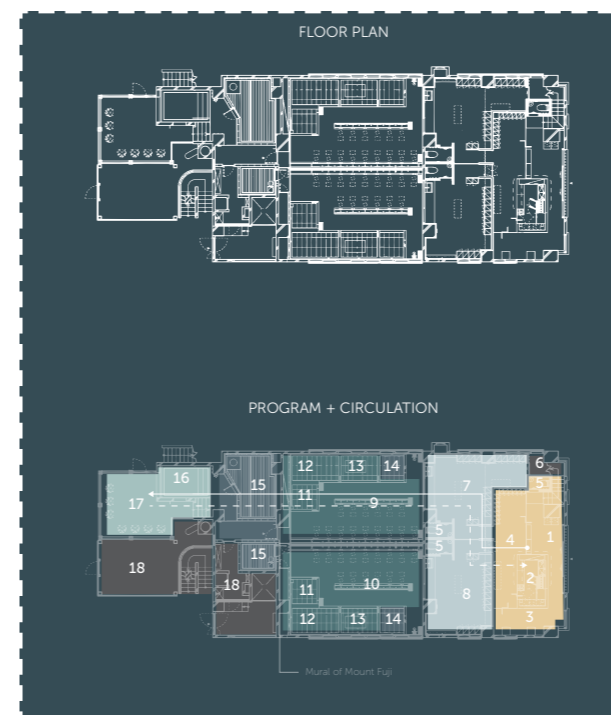
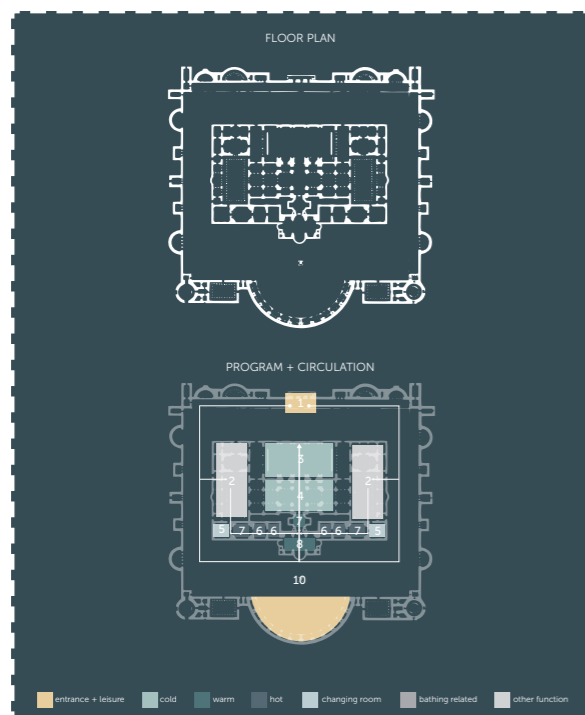


PUBLIC
BATHHOUSE

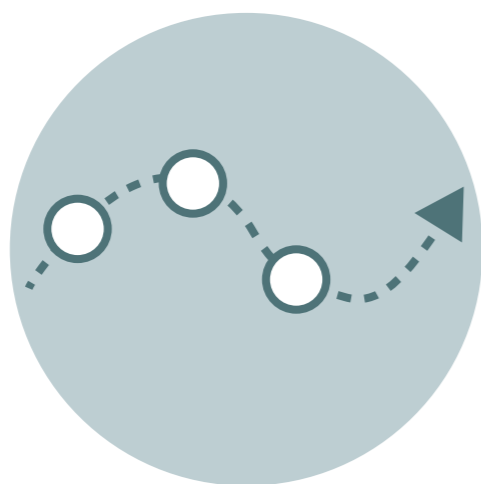
BIND BY WATER
research - the bathhouse



BIND BY WATER
research findings - program + routing



BIND BY WATER
design principles bathhouse



ROUTING

clear routing through bathhouse



SEQUENCE

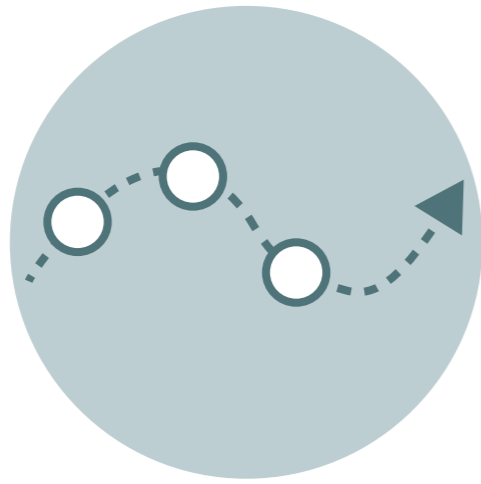
from warm-hot-cold baths



HYBRID PROGRAM

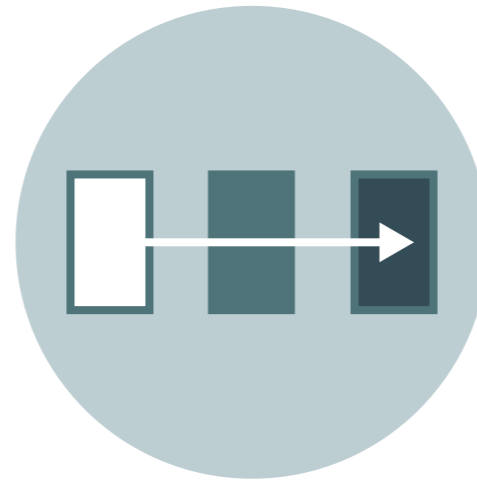
to attract broader audience

BIND BY WATER



ROUTING

clear routing through bathhouse



SEQUENCE

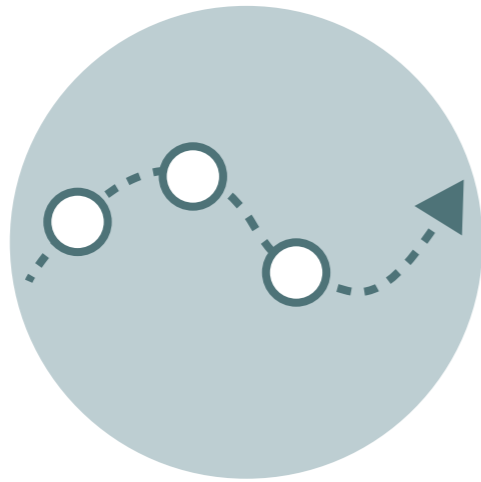
from warm-hot-cold baths



HYBRID PROGRAM

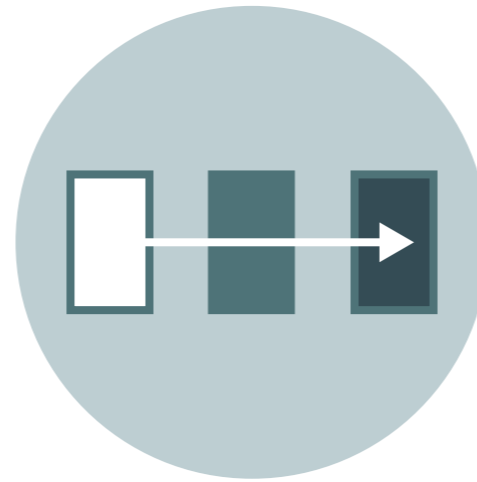
to attract broader audience

BIND BY WATER



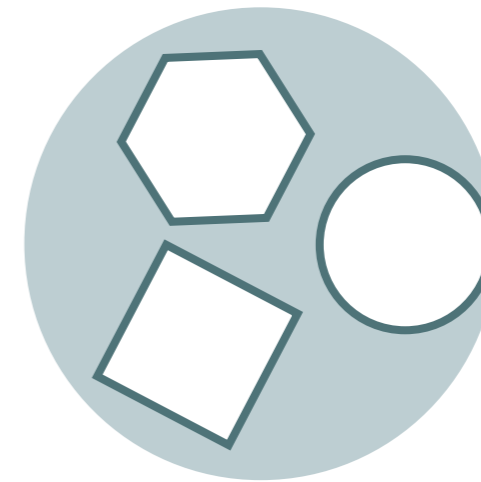
ROUTING

clear routing through bathhouse



SEQUENCE

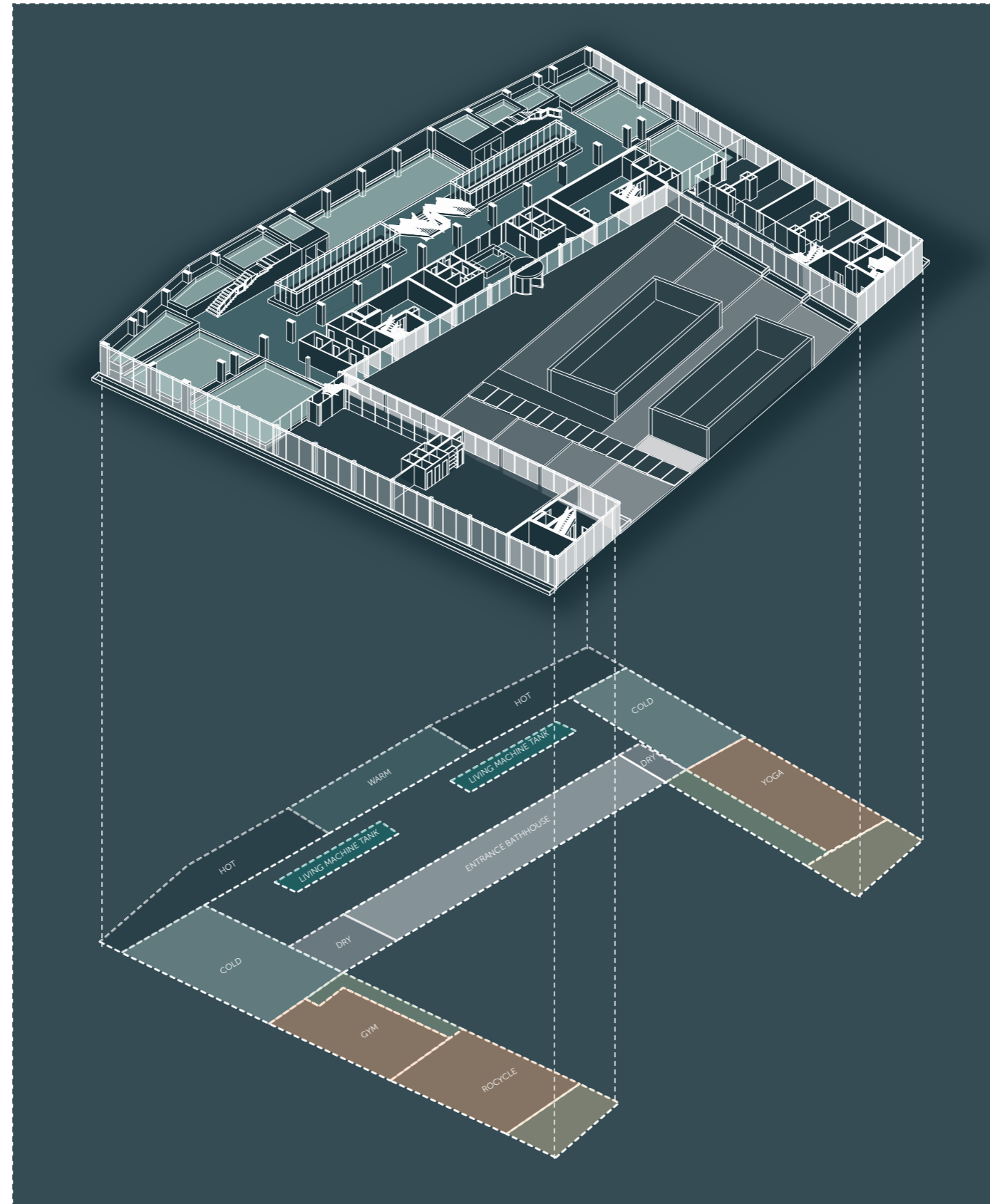
from warm-hot-cold baths



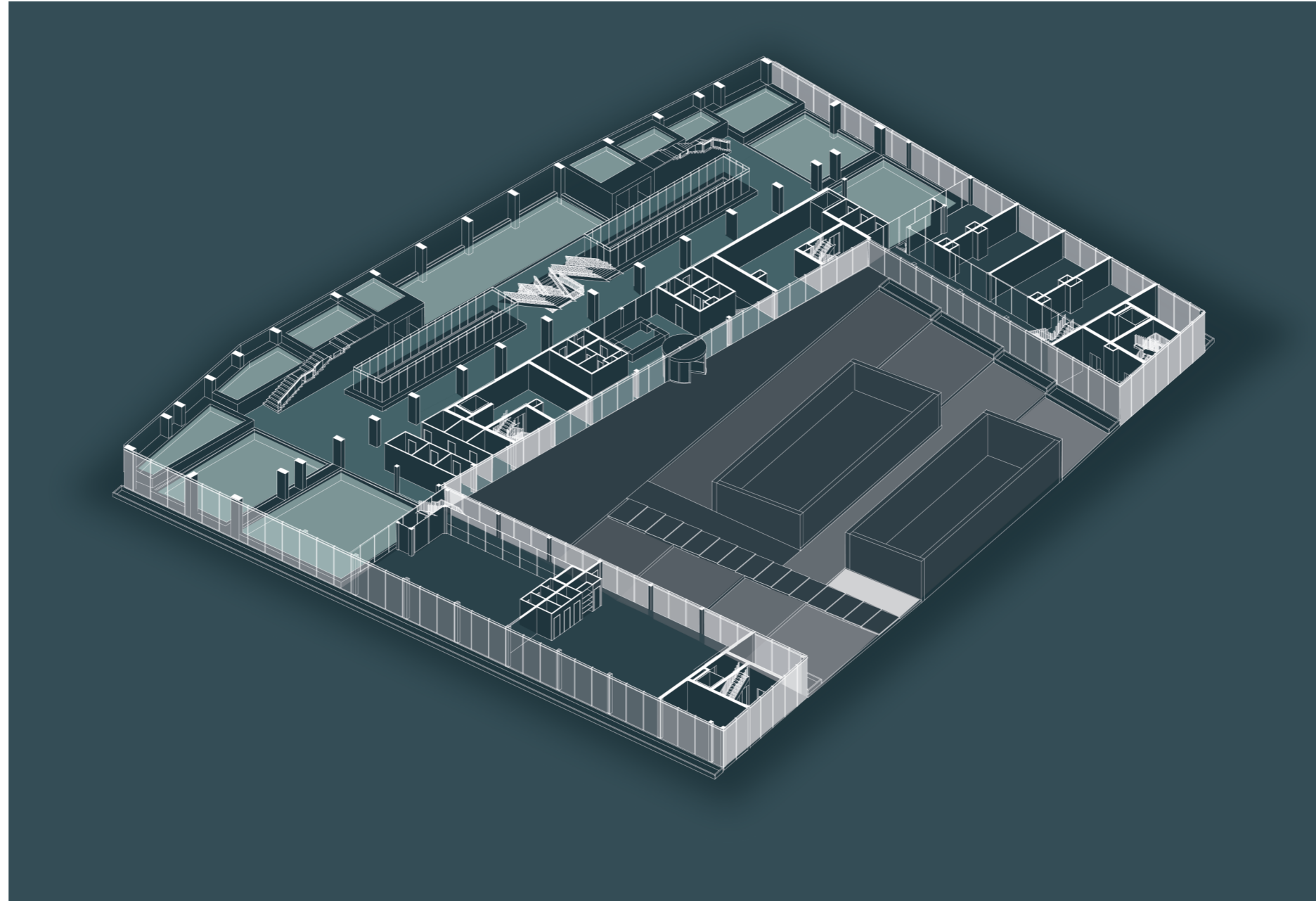
HYBRID PROGRAM

to attract broader audience

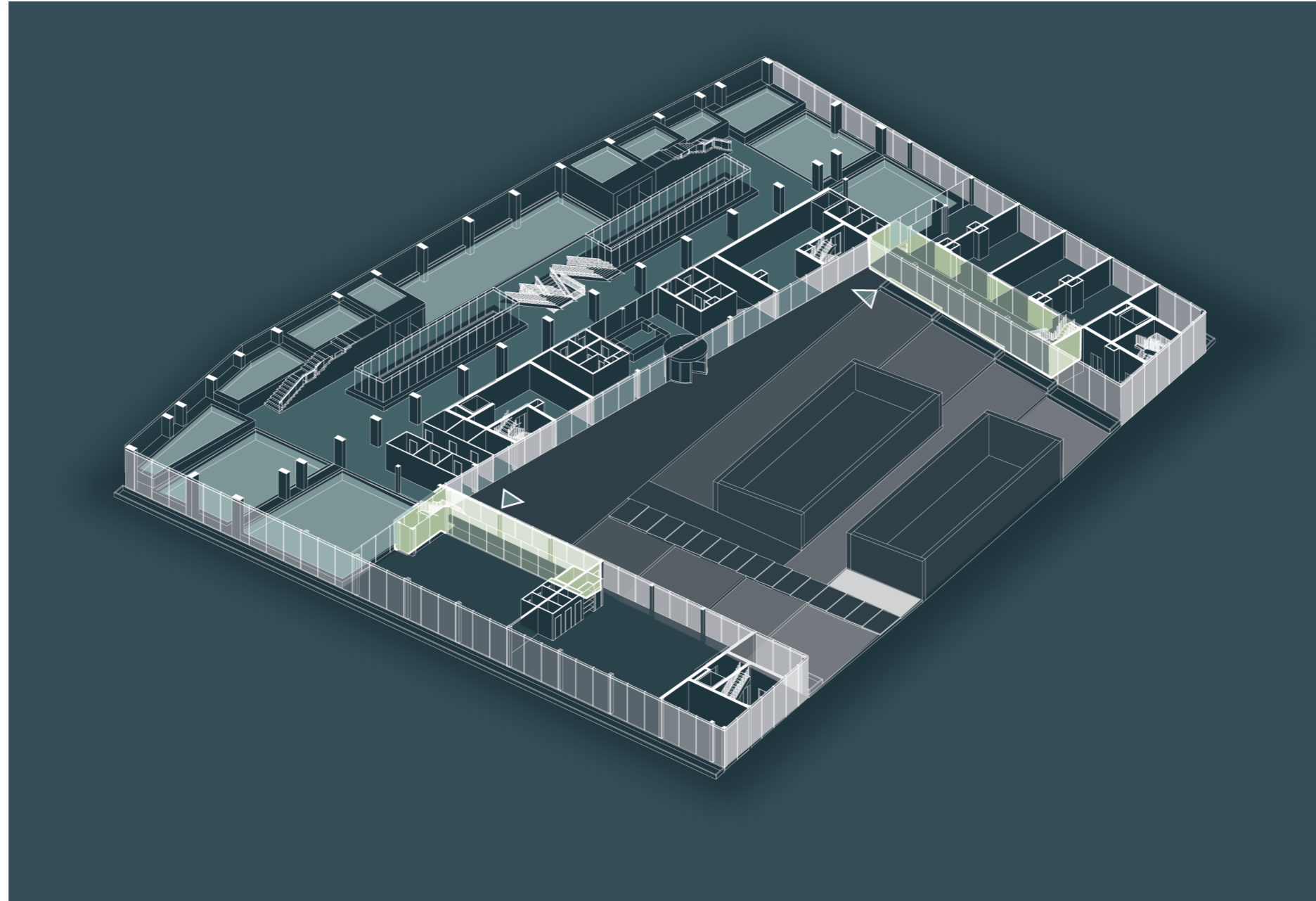
BIND BY WATER
bathhouse program



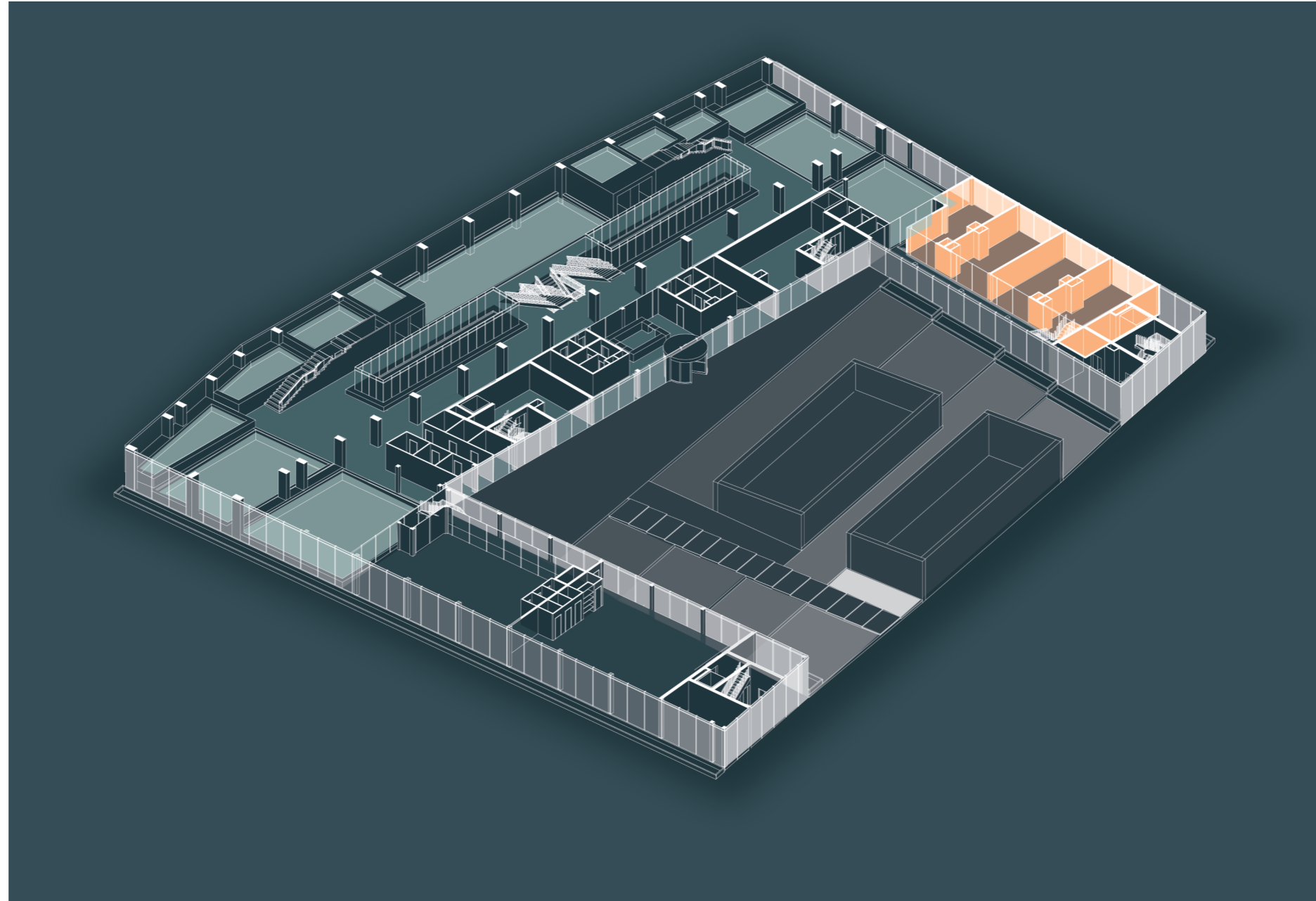
BIND BY WATER
program sequence



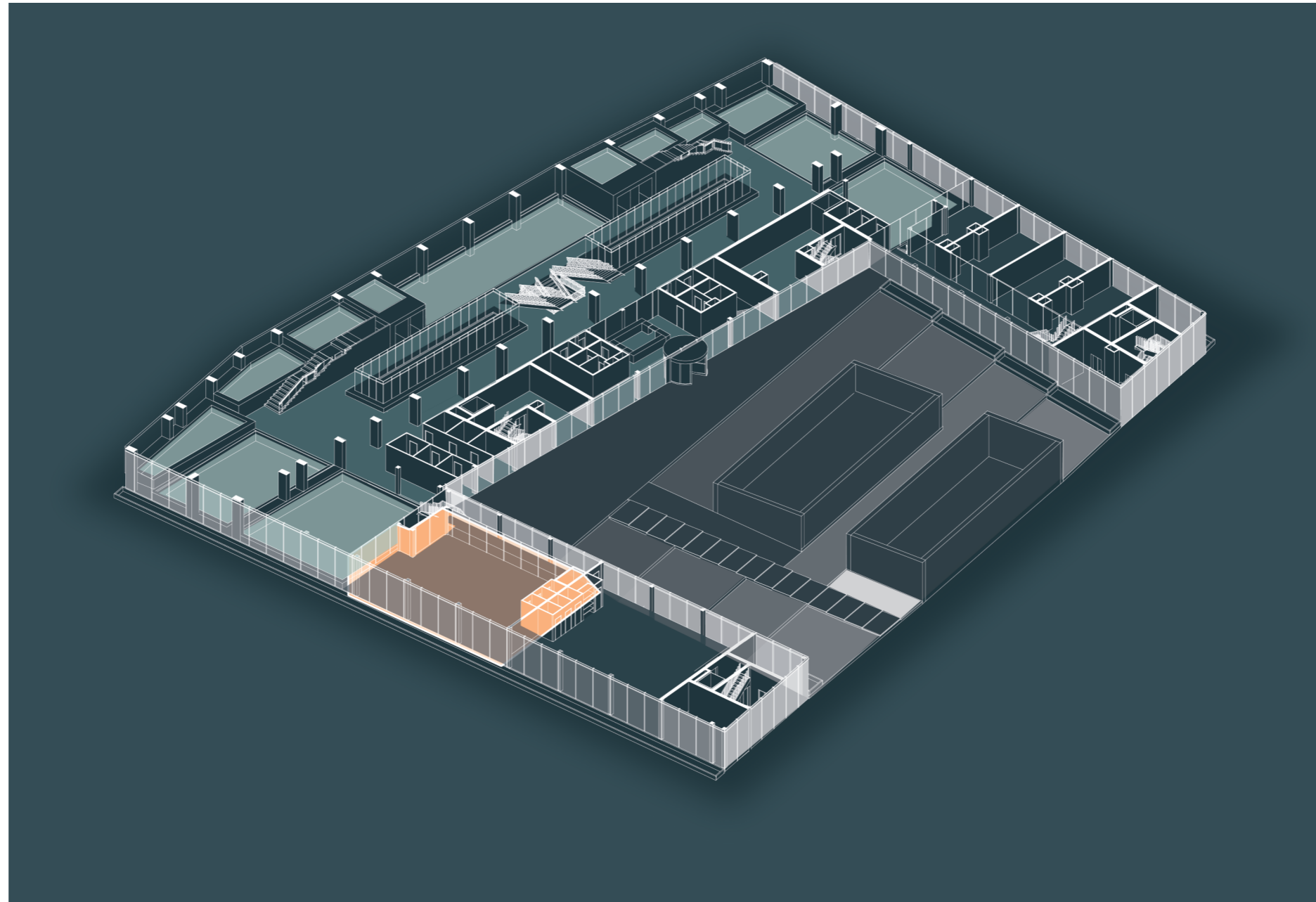
BIND BY WATER
program sequence - entrance



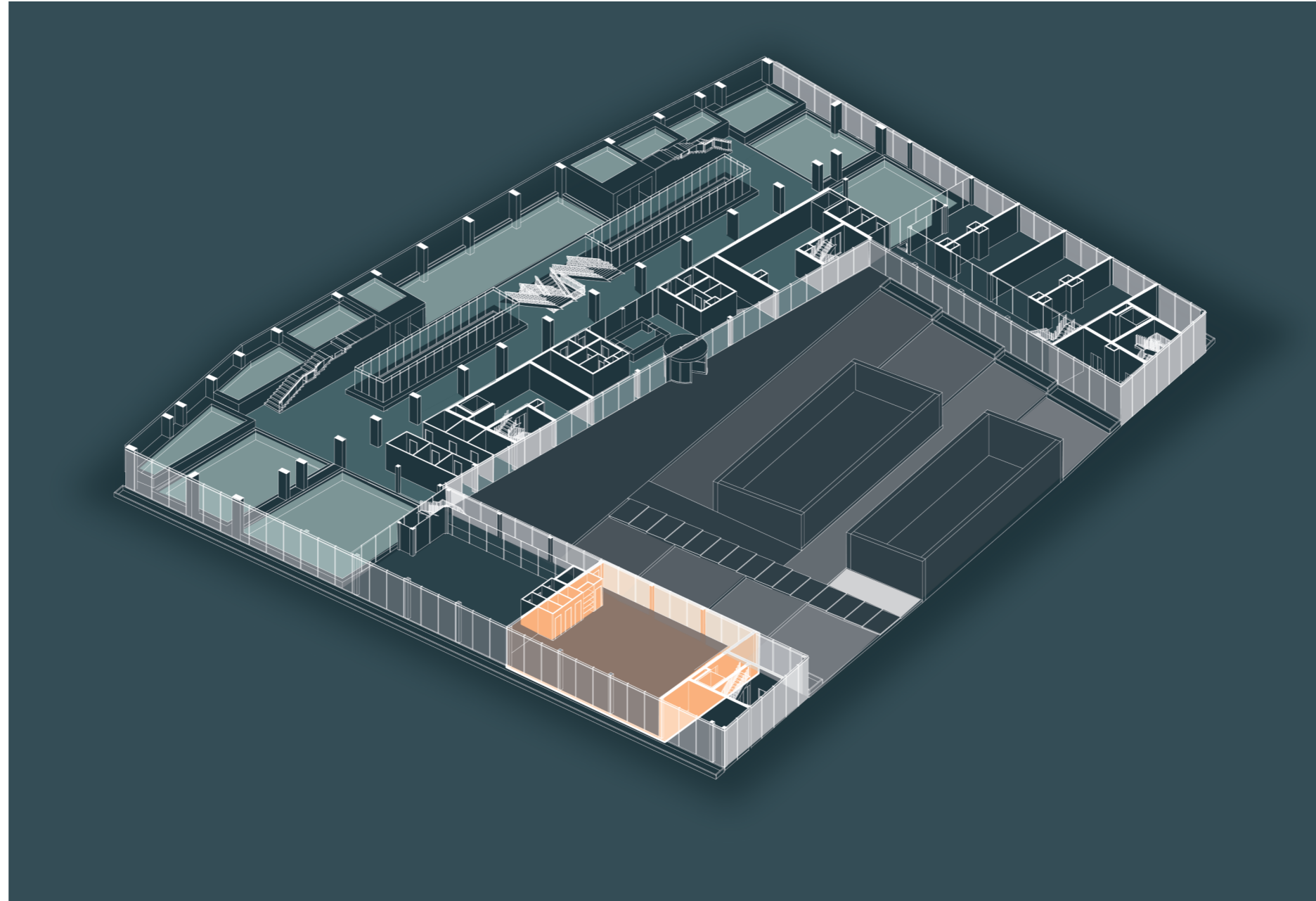
BIND BY WATER
program sequence - yoga



BIND BY WATER
program sequence - gym

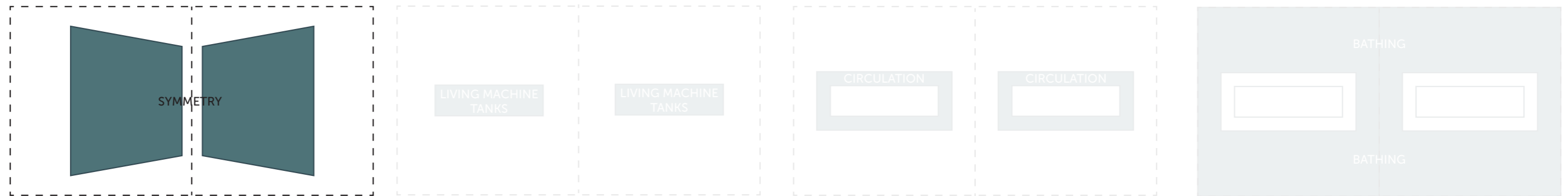


BIND BY WATER
program sequence - recycle

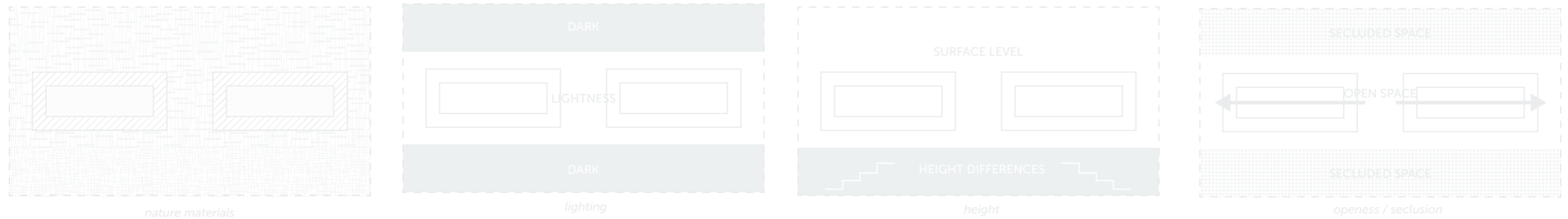


BIND BY WATER
bathhouse design

FLOORPLANNING

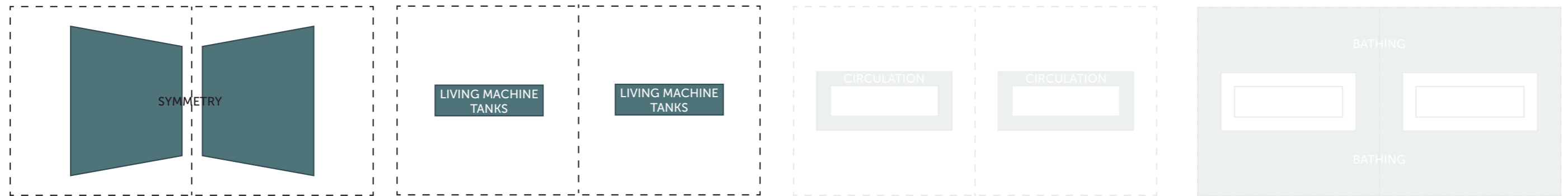


MULTI-SENSORY SPATIAL EXPERIENCE

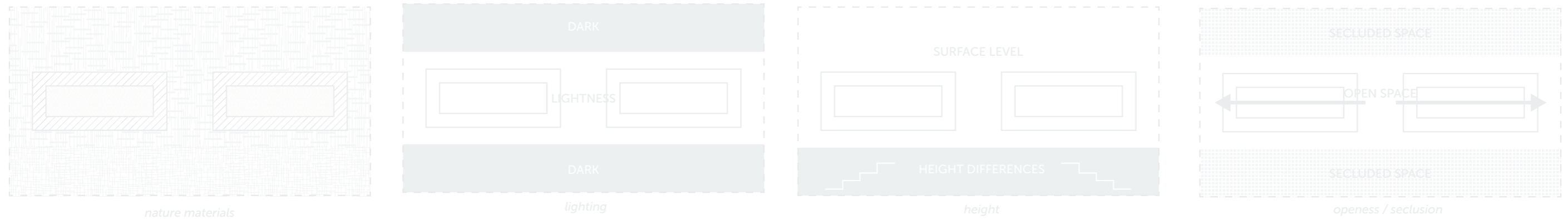


BIND BY WATER
bathhouse design

FLOORPLANNING

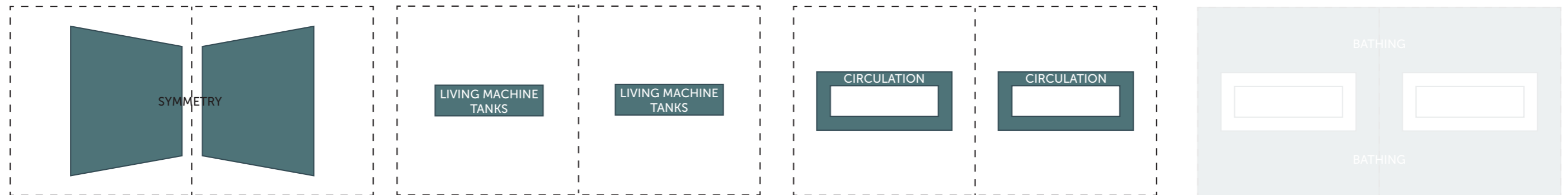


MULTI-SENSORY SPATIAL EXPERIENCE

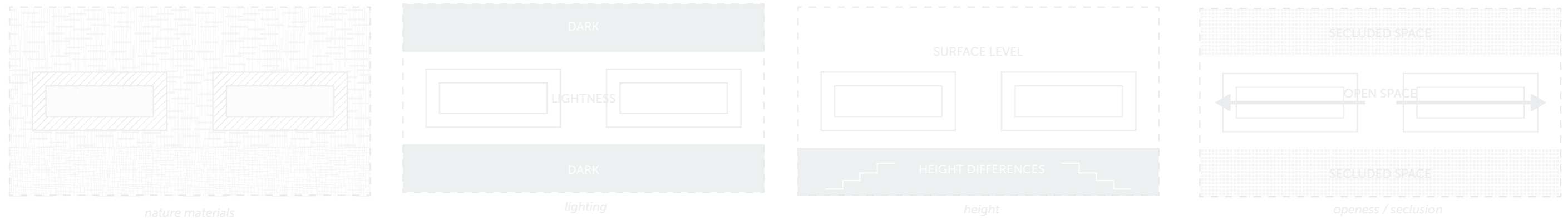


BIND BY WATER
bathhouse design

FLOORPLANNING

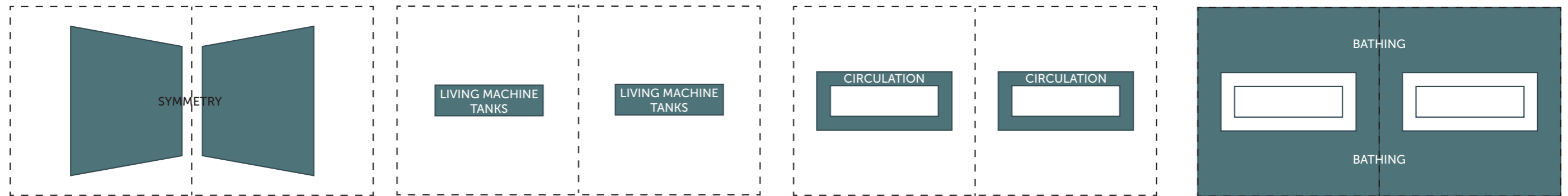


MULTI-SENSORY SPATIAL EXPERIENCE

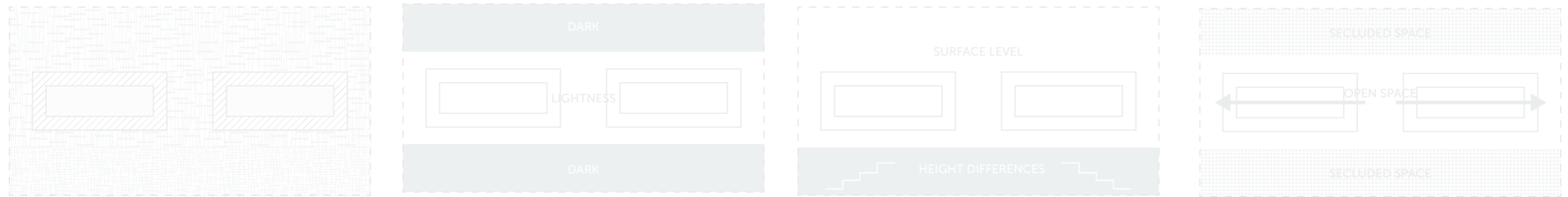


BIND BY WATER
bathhouse design

FLOORPLANNING

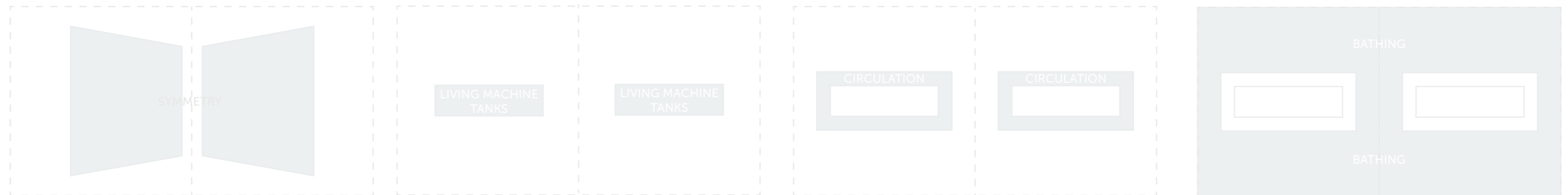


MULTI-SENSORY SPATIAL EXPERIENCE

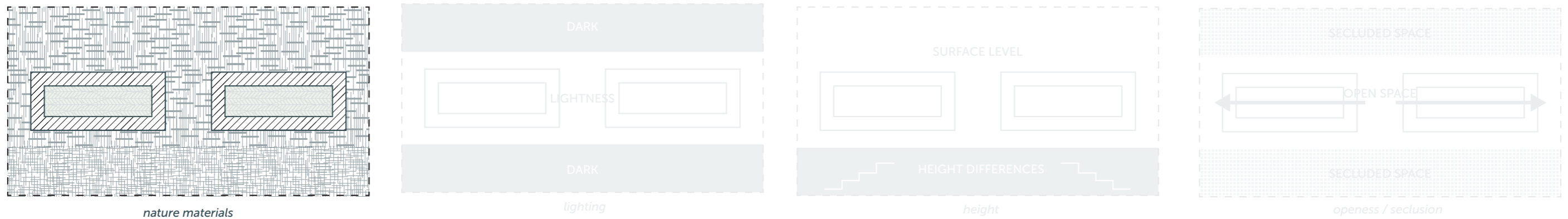


BIND BY WATER
bathhouse design

FLOORPLANNING

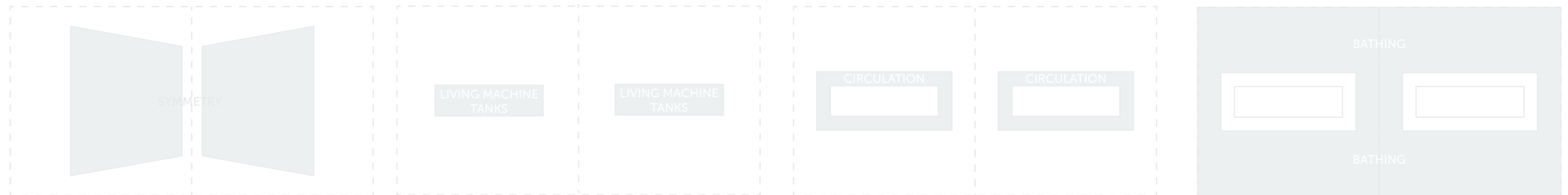


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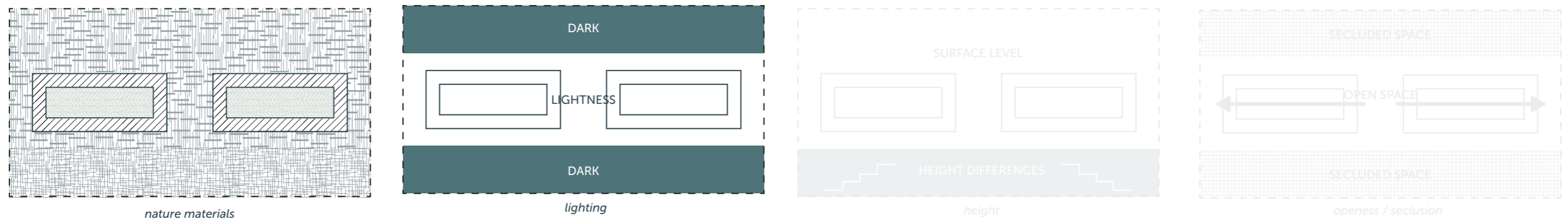


BIND BY WATER
bathhouse design

FLOORPLANNING

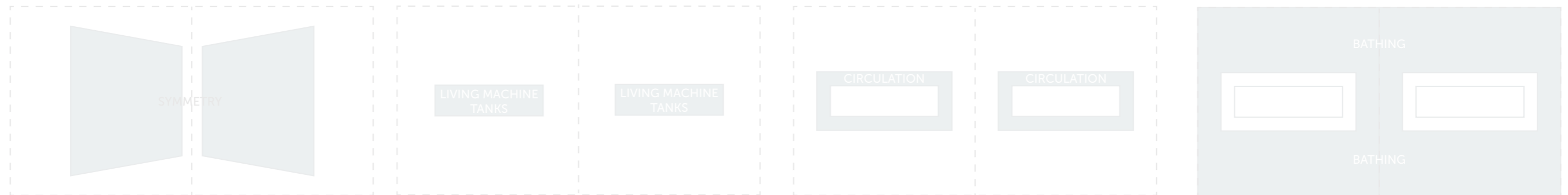


MULTI-SENSORY SPATIAL EXPERIENCE

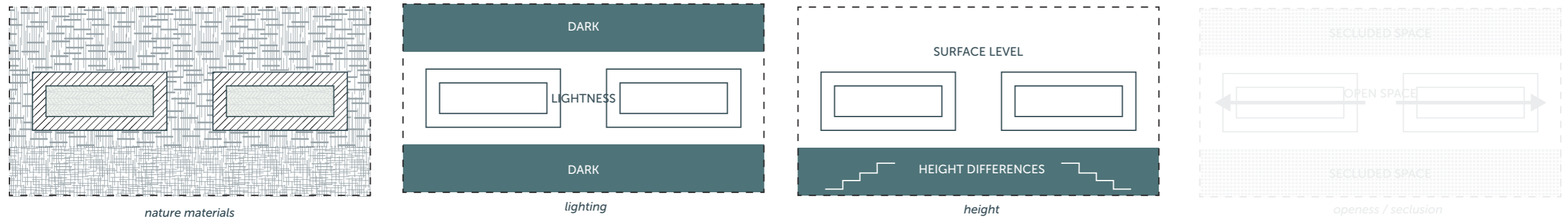


BIND BY WATER
bathhouse design

FLOORPLANNING

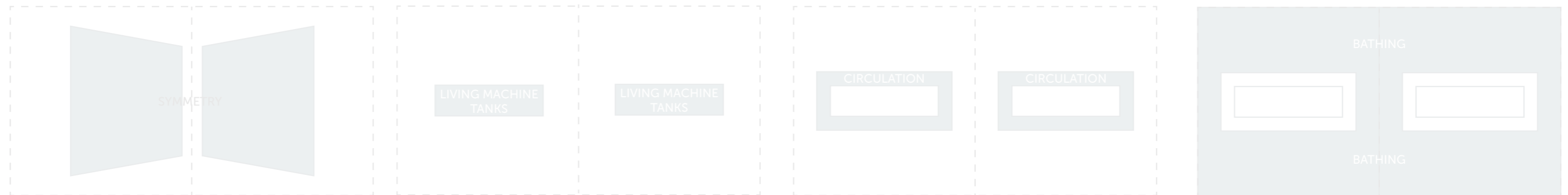


MULTI-SENSORY SPATIAL EXPERIENCE

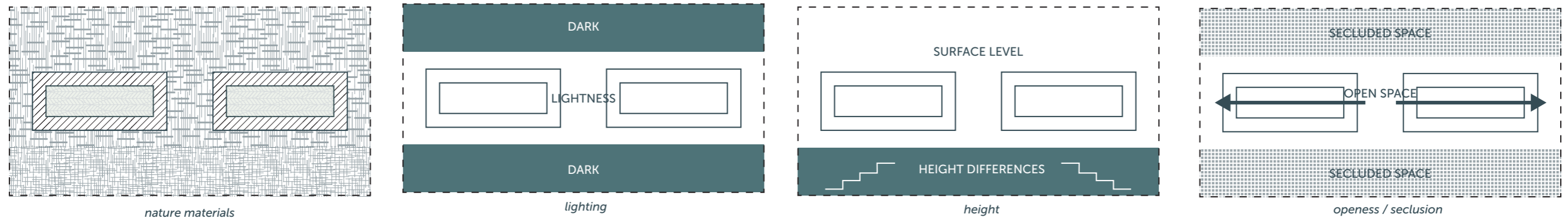


BIND BY WATER
bathhouse design

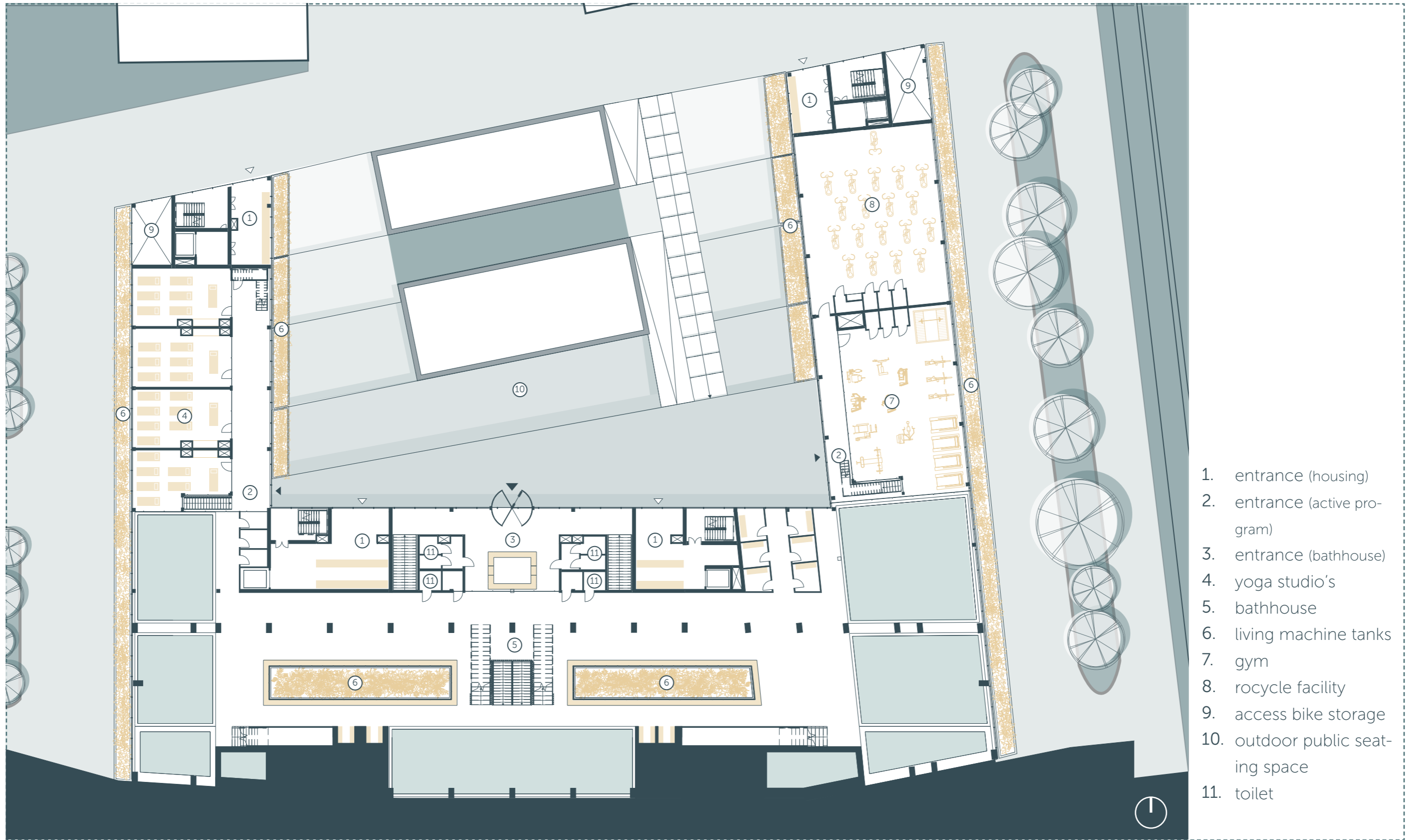
FLOORPLANNING



MULTI-SENSORY SPATIAL EXPERIENCE



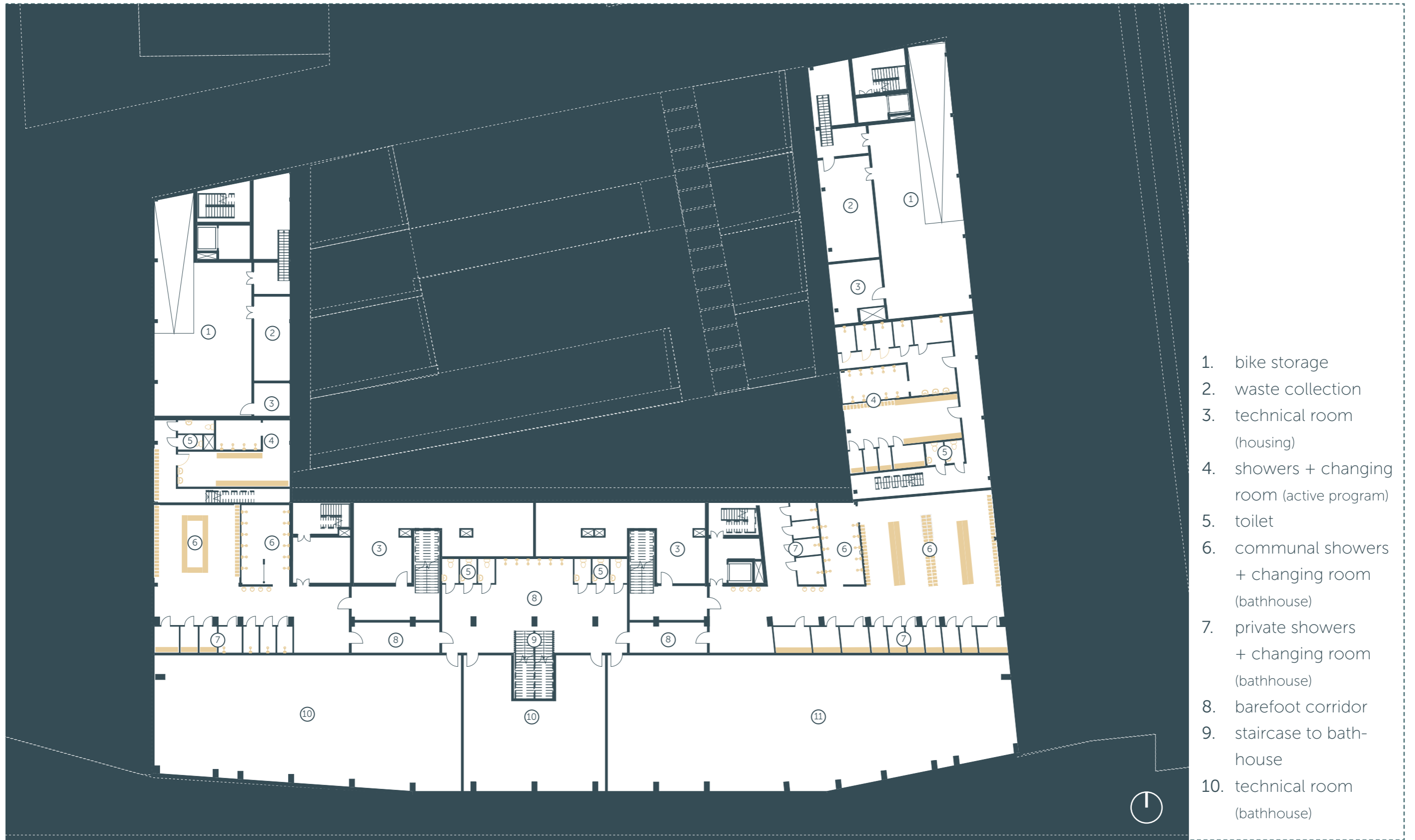
BIND BY WATER
 floorplan - ground floor (+1.500)



- 1. entrance (housing)
- 2. entrance (active program)
- 3. entrance (bathhouse)
- 4. yoga studio's
- 5. bathhouse
- 6. living machine tanks
- 7. gym
- 8. recycle facility
- 9. access bike storage
- 10. outdoor public seating space
- 11. toilet

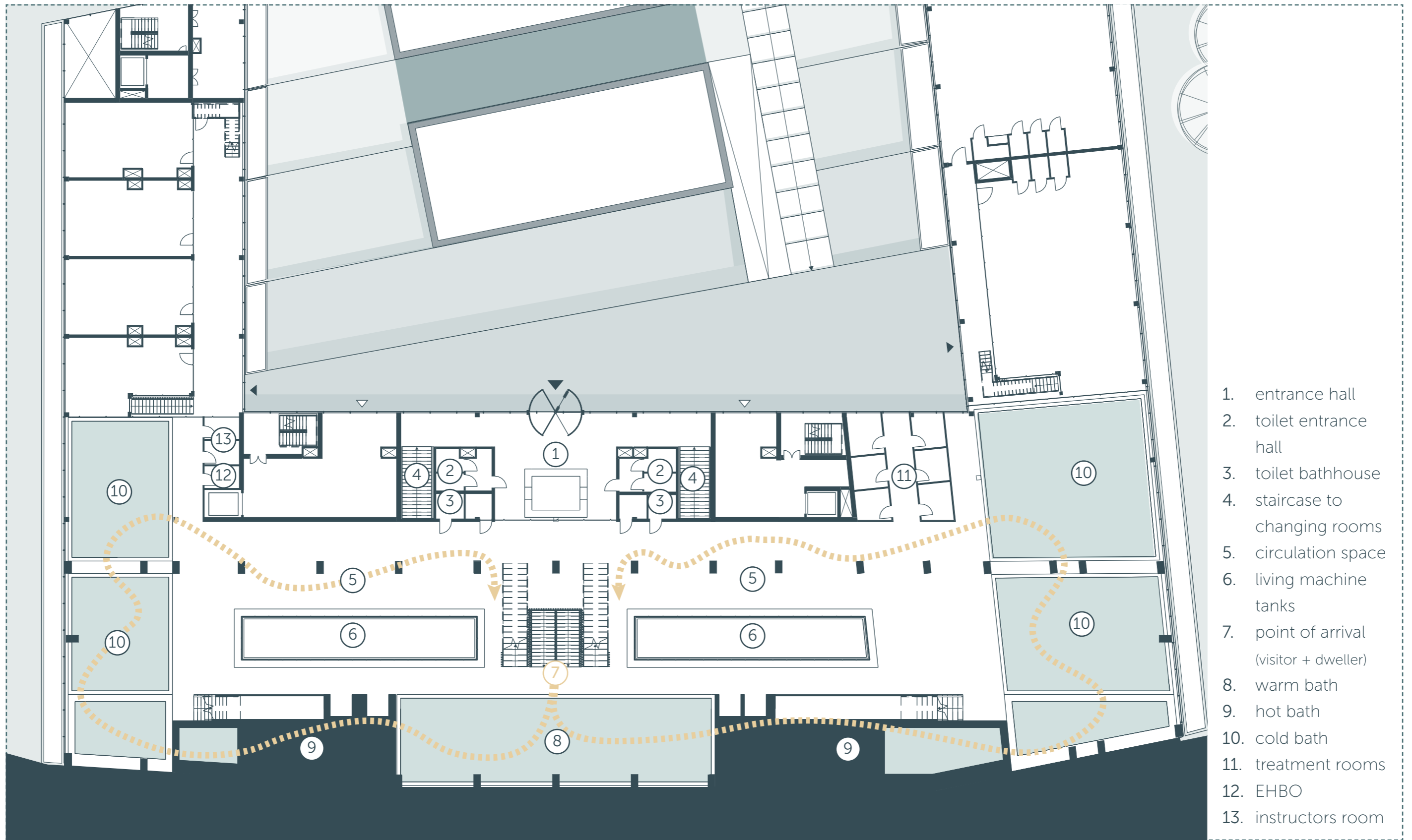
BIND BY WATER

floorplan - basement (-1.500 / - 4.000)

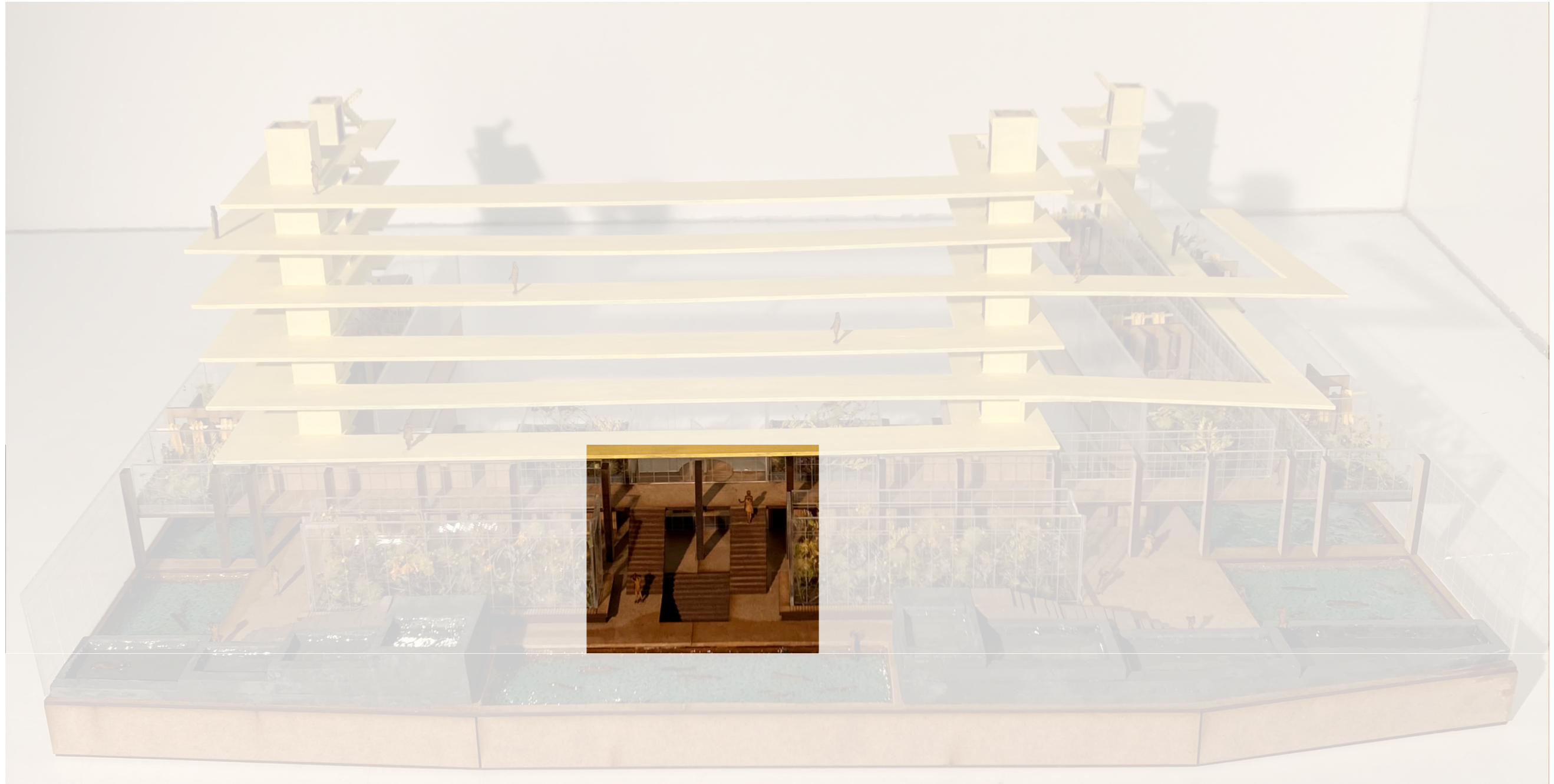


- 1. bike storage
- 2. waste collection
- 3. technical room (housing)
- 4. showers + changing room (active program)
- 5. toilet
- 6. communal showers + changing room (bathhouse)
- 7. private showers + changing room (bathhouse)
- 8. barefoot corridor
- 9. staircase to bathhouse
- 10. technical room (bathhouse)

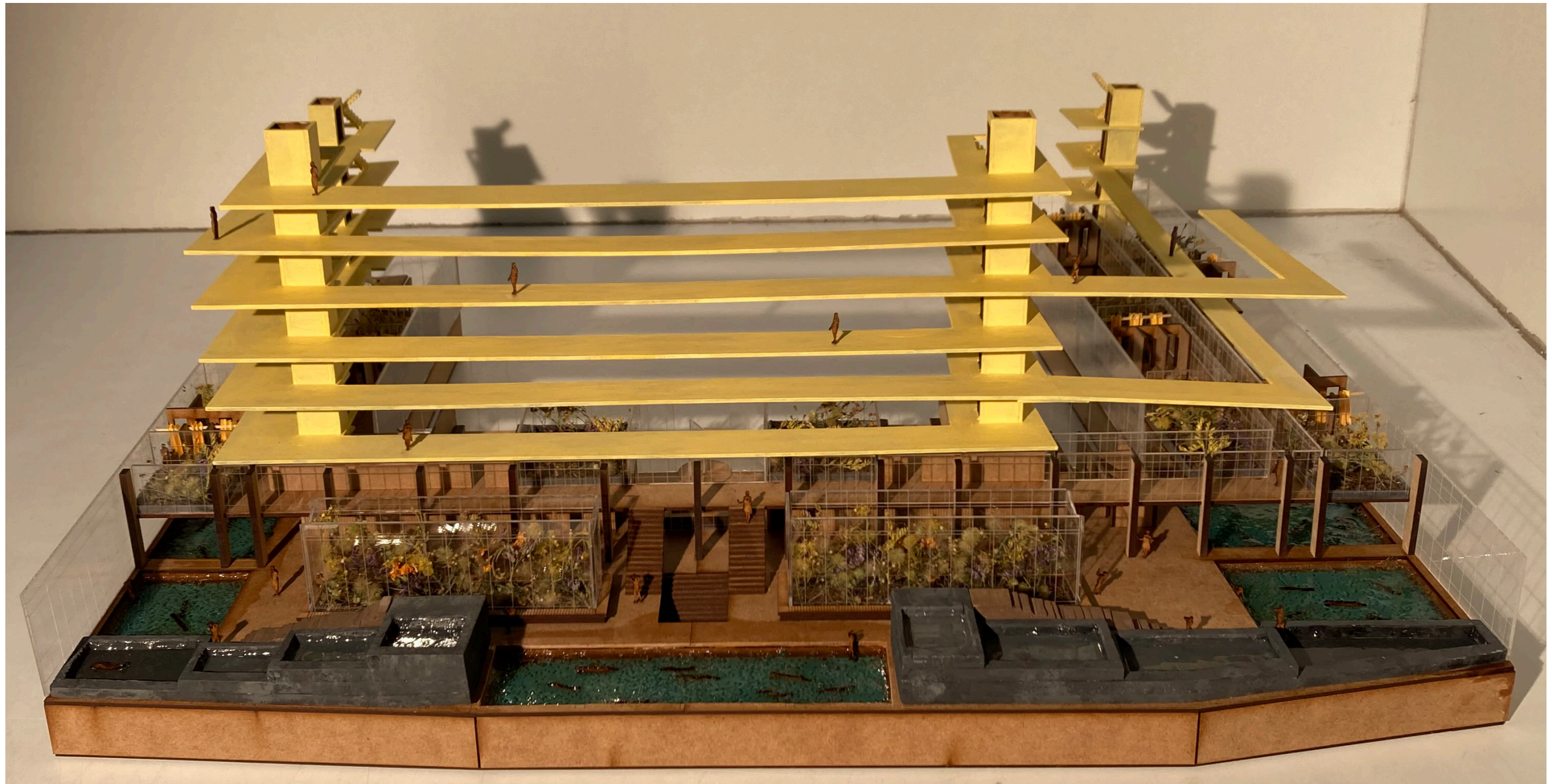
BIND BY WATER
bathhouse routing



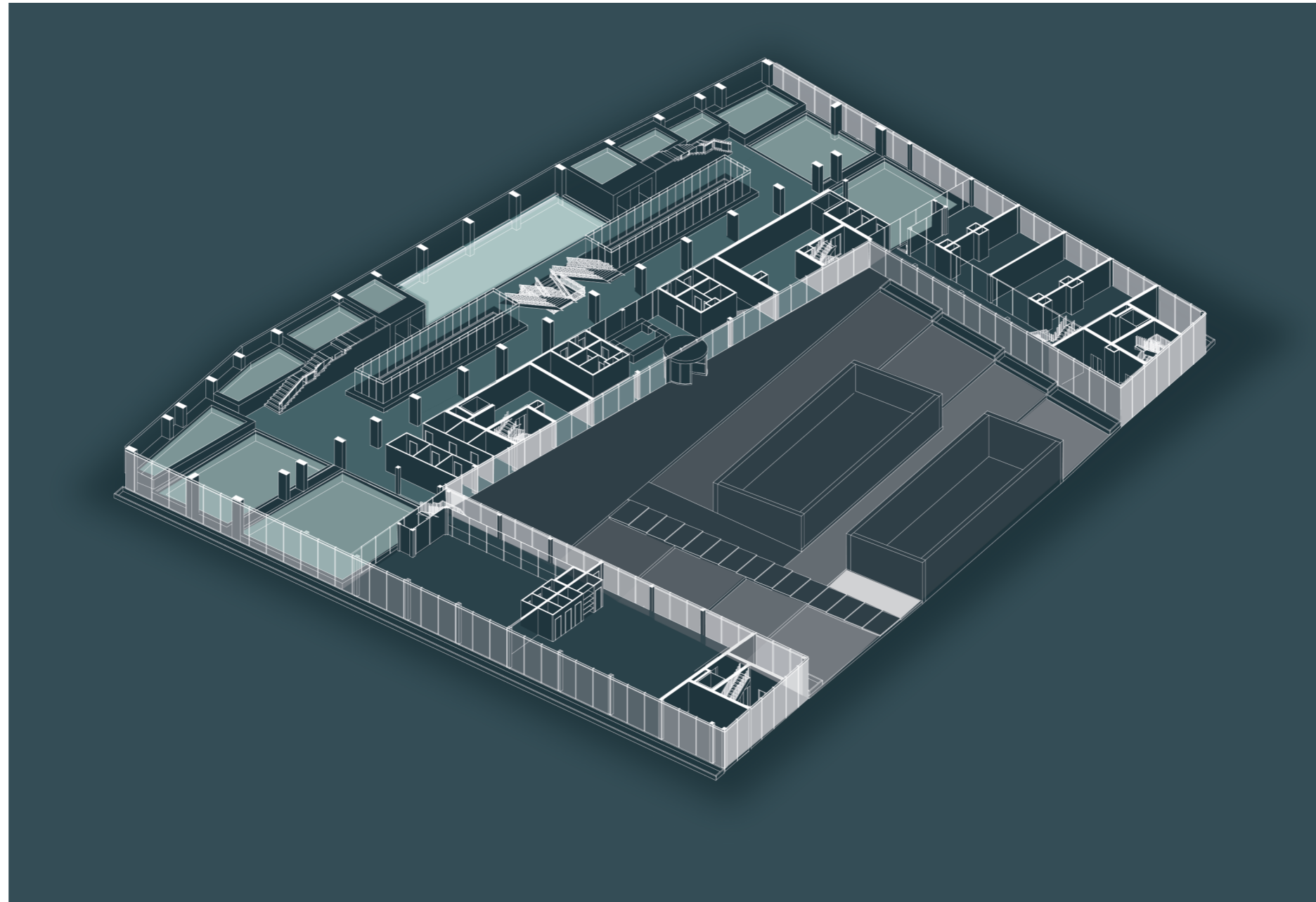
BIND BY WATER
point of arrival



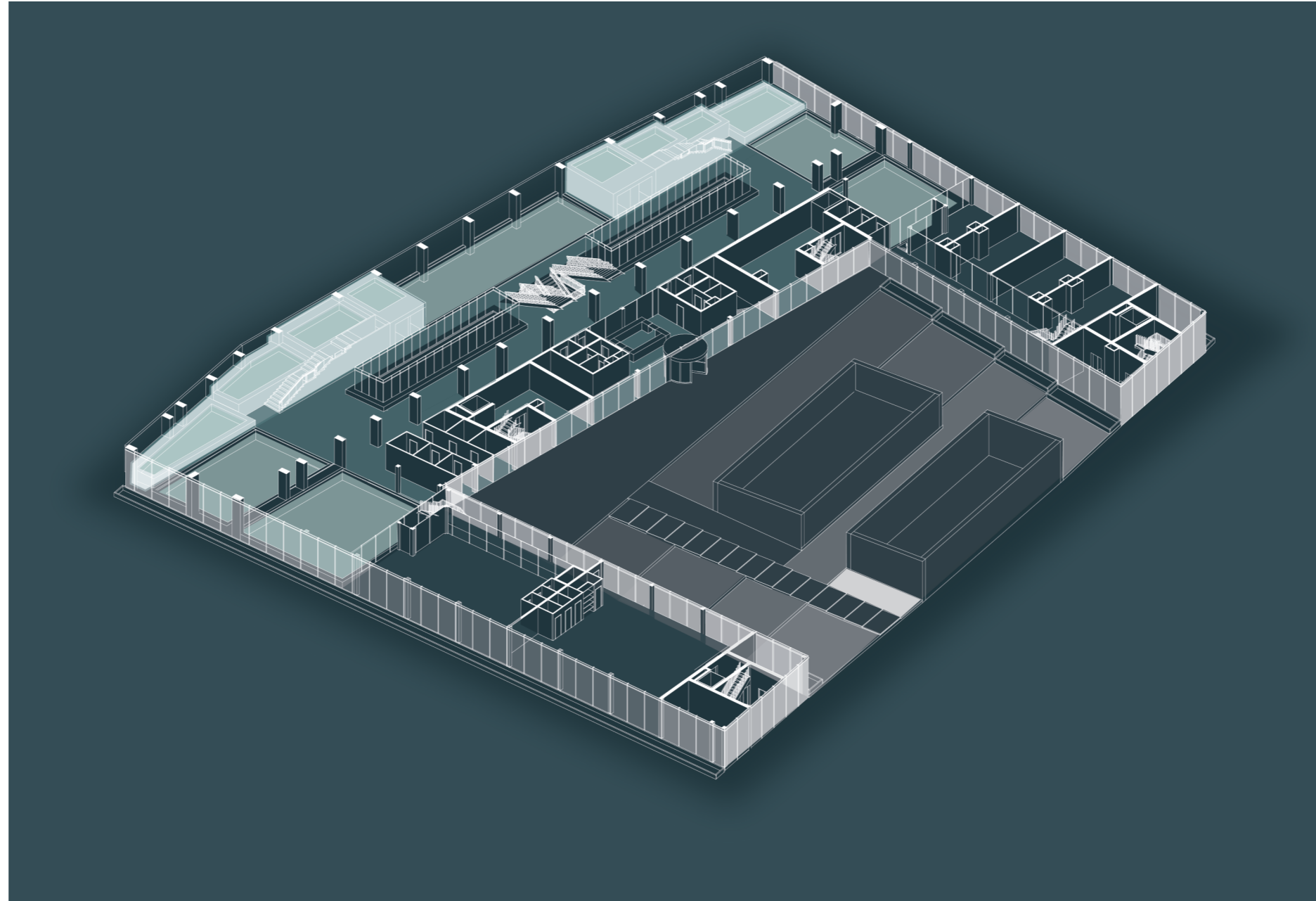
BIND BY WATER
point of arrival



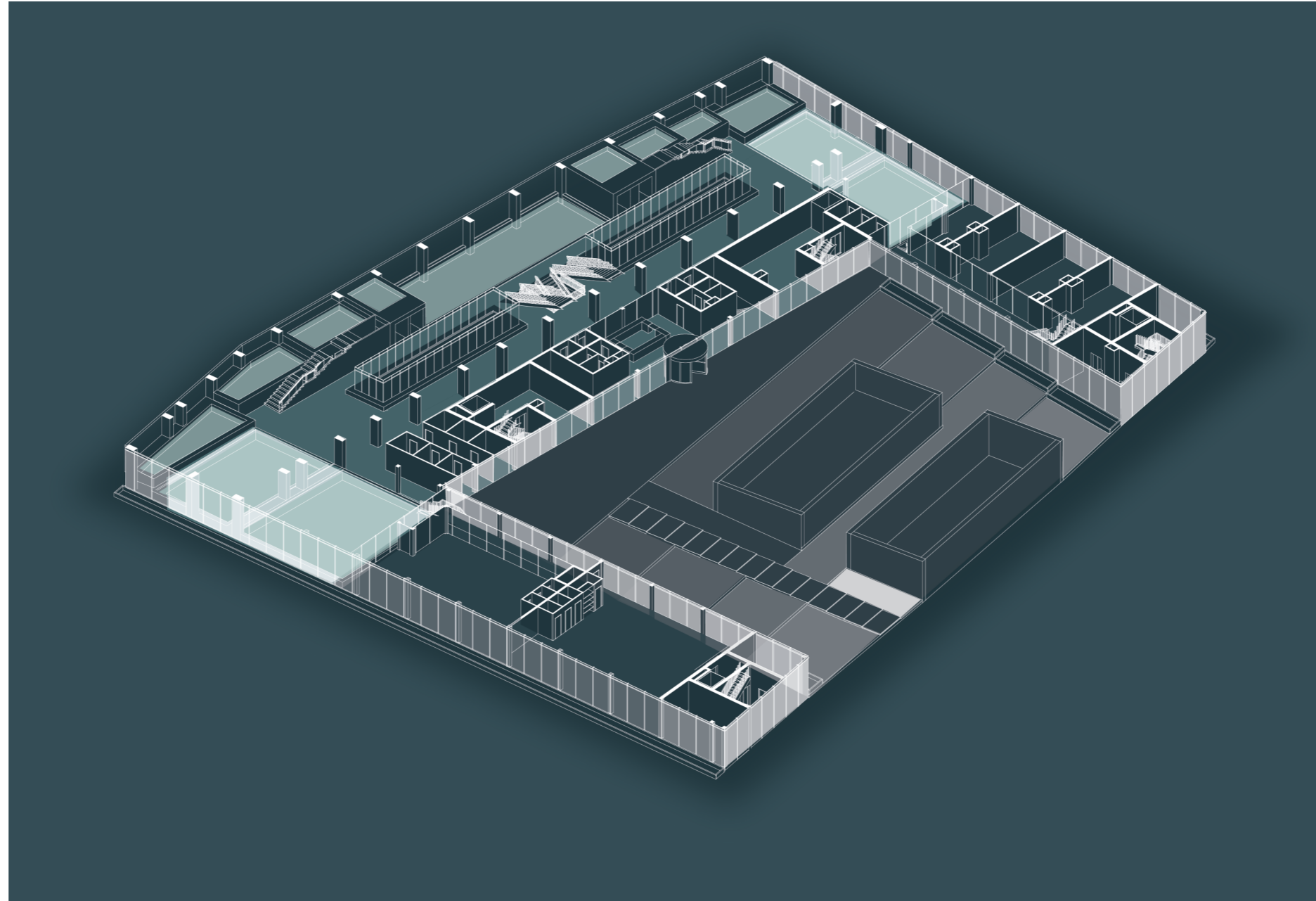
BIND BY WATER
program sequence - warm bath



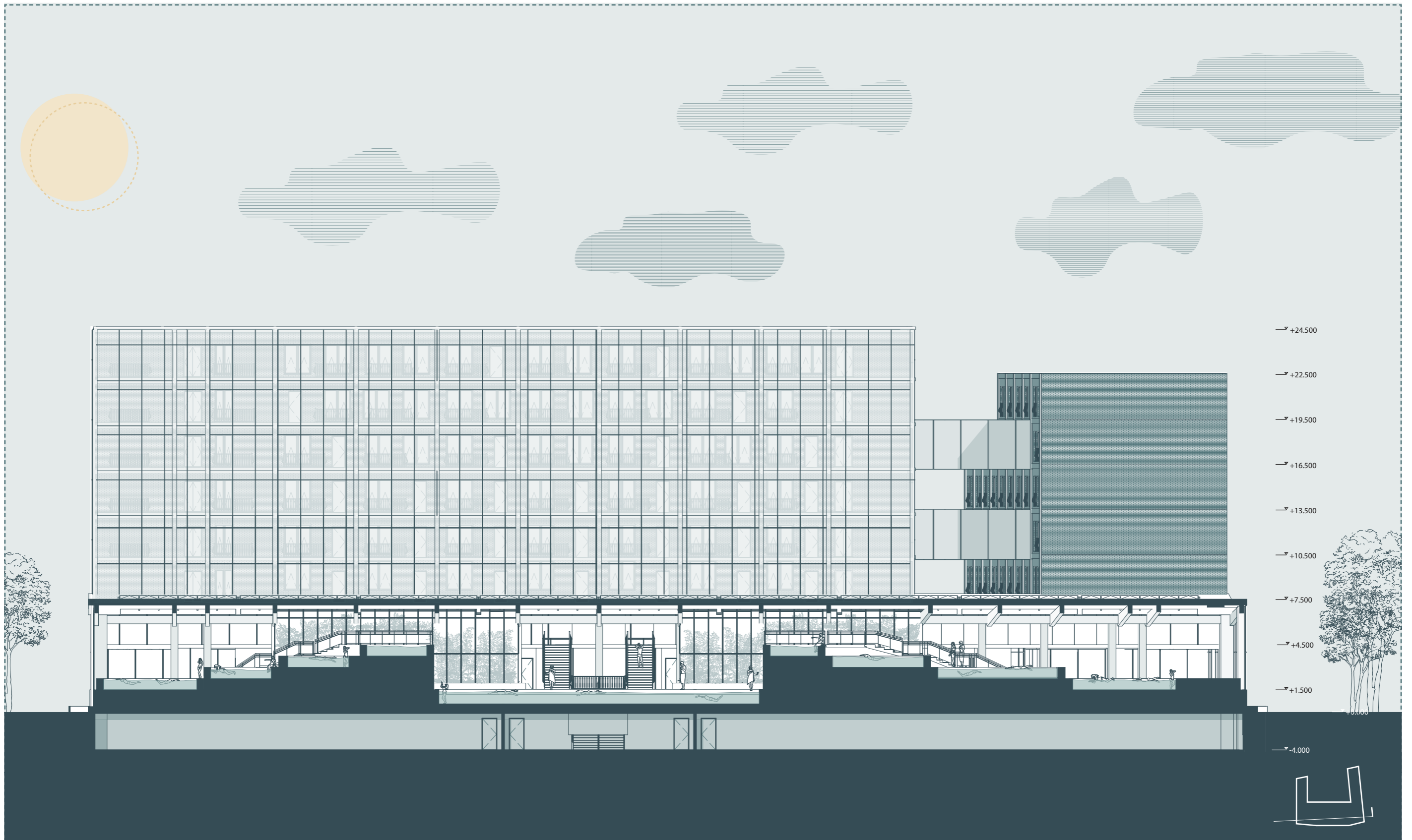
BIND BY WATER
program sequence - hot baths



BIND BY WATER
program sequence - cold baths



BIND BY WATER
section AA



BIND BY WATER
 graphic novel (recap)

BADHUIS

BUILDING A COMMUNITY AMONGST SOLO DWELLERS
 THROUGH WATER INFRASTRUCTURE

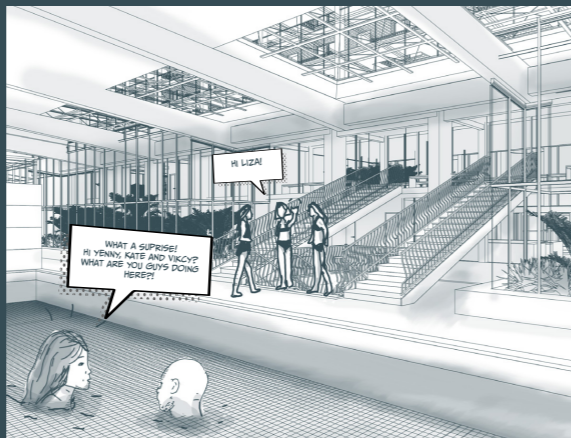
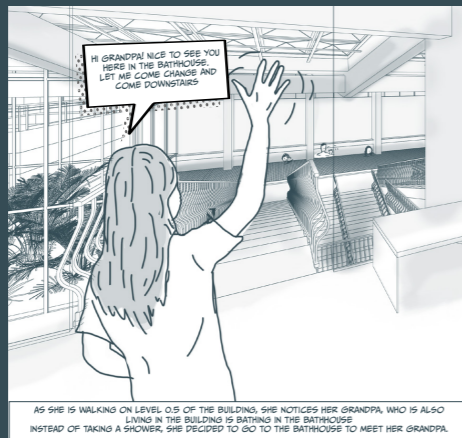
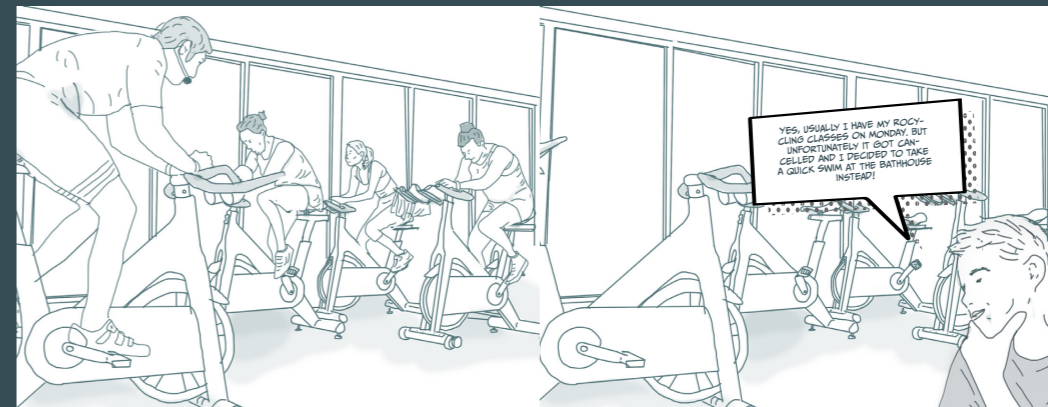
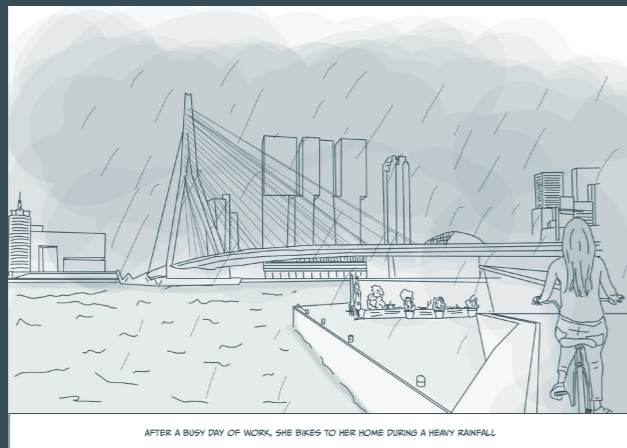
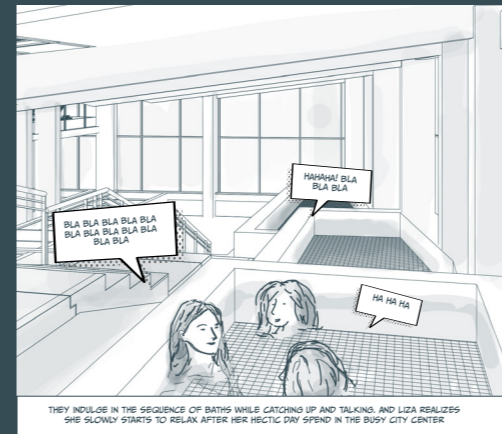


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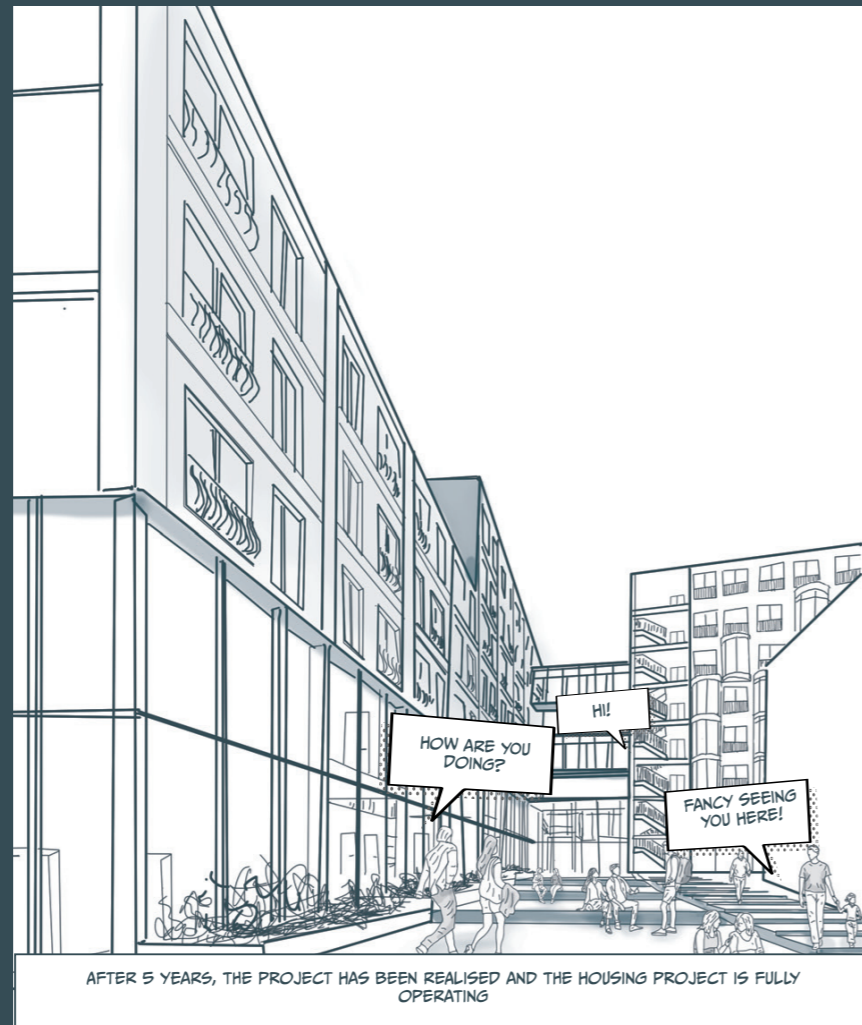
graphic novel (recap)



BIND BY WATER
living in BIND BY WATER



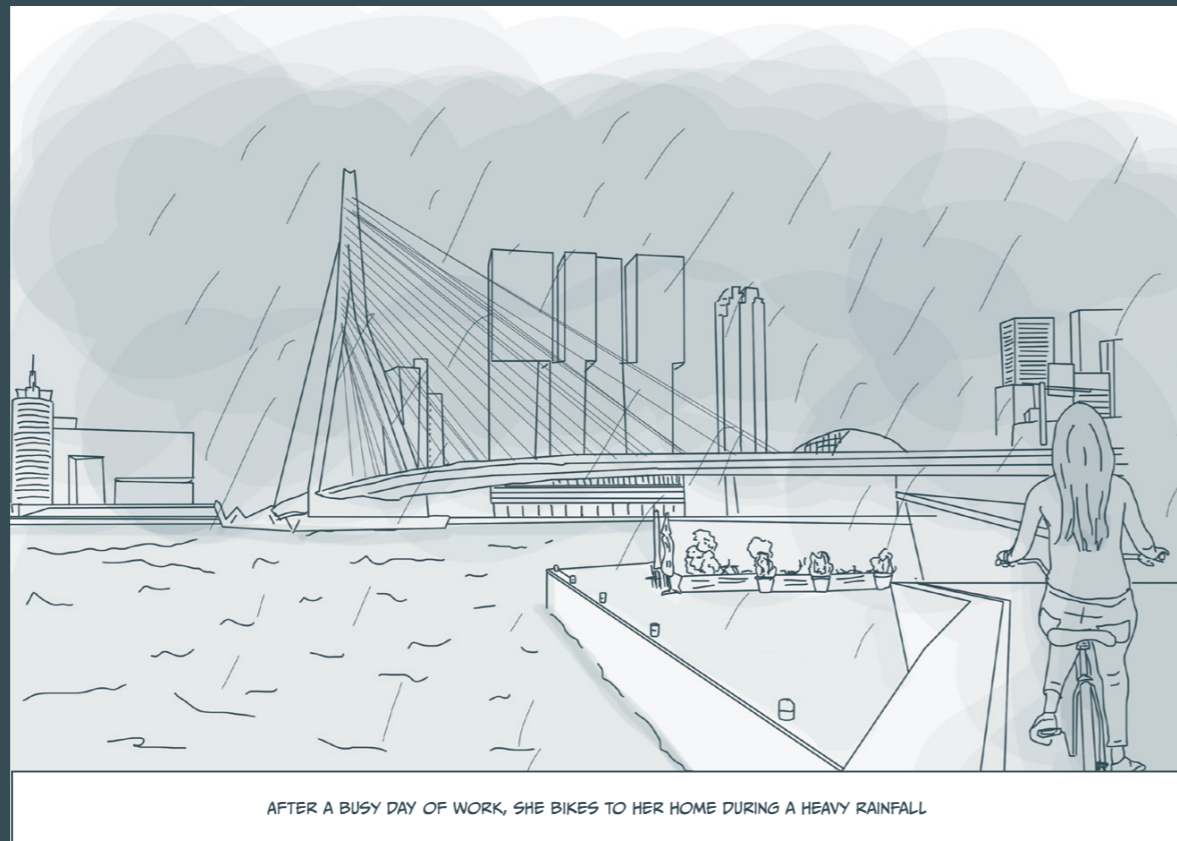
BIND BY WATER



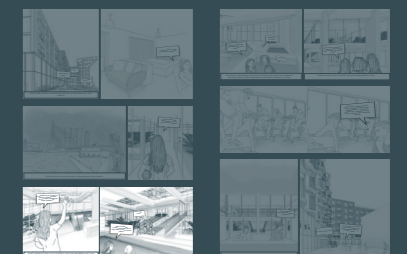
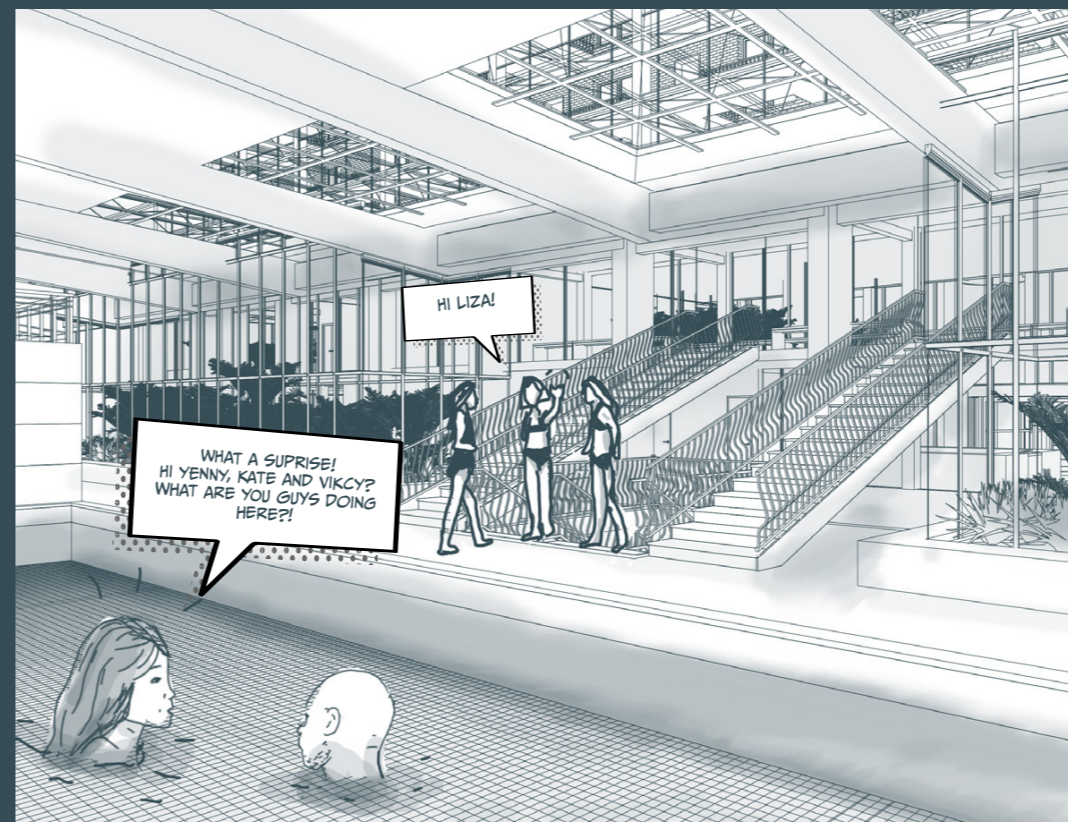
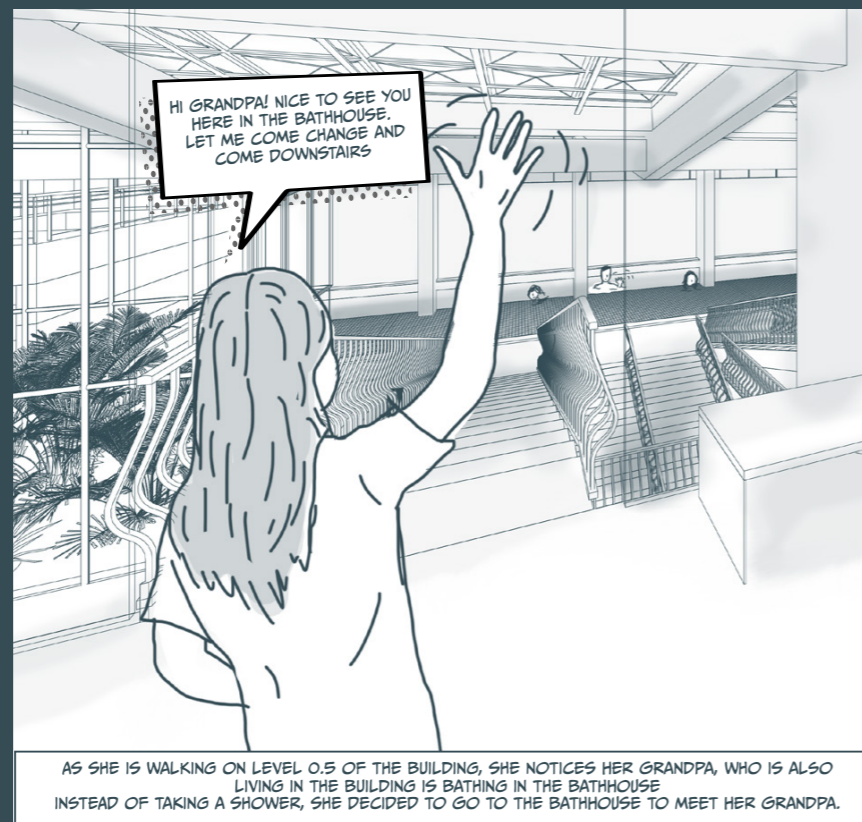
BIND BY WATER
impression exterior + landscape



BIND BY WATER



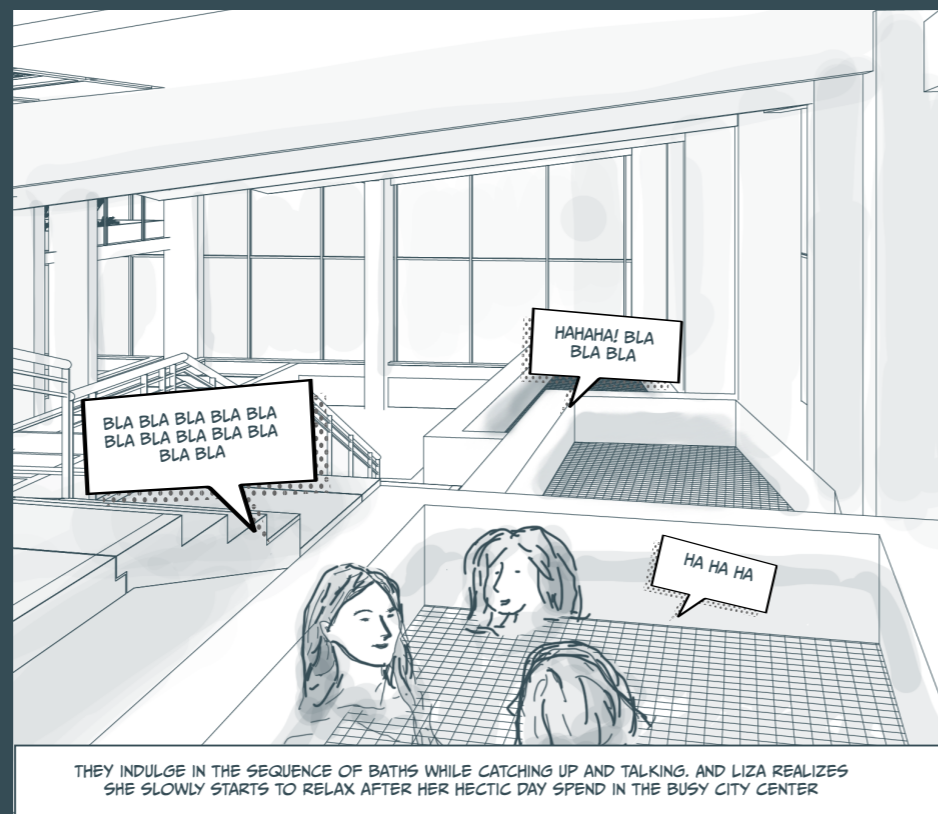
BIND BY WATER



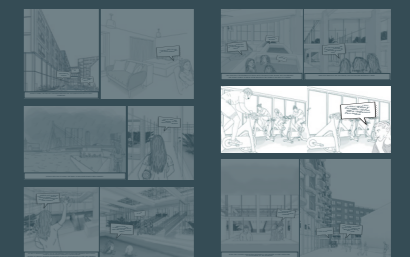
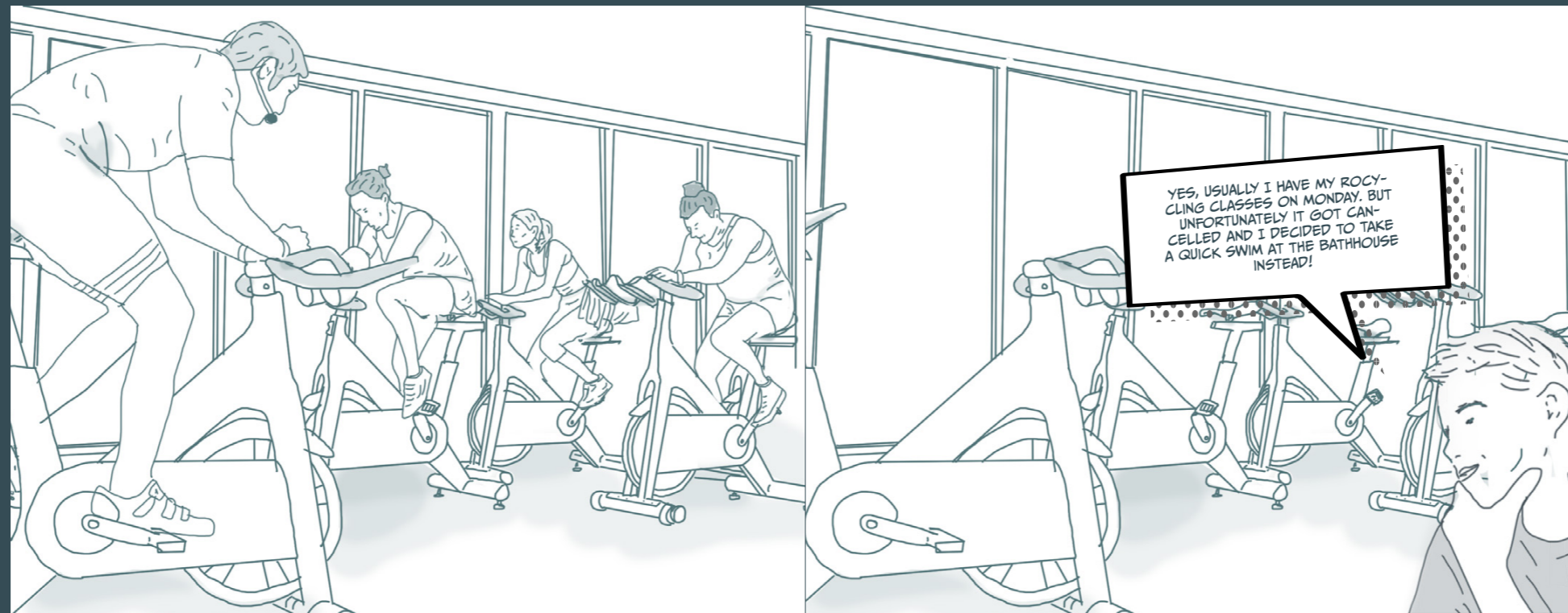
BIND BY WATER



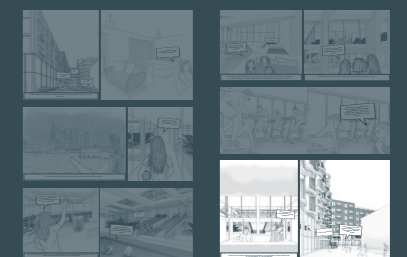
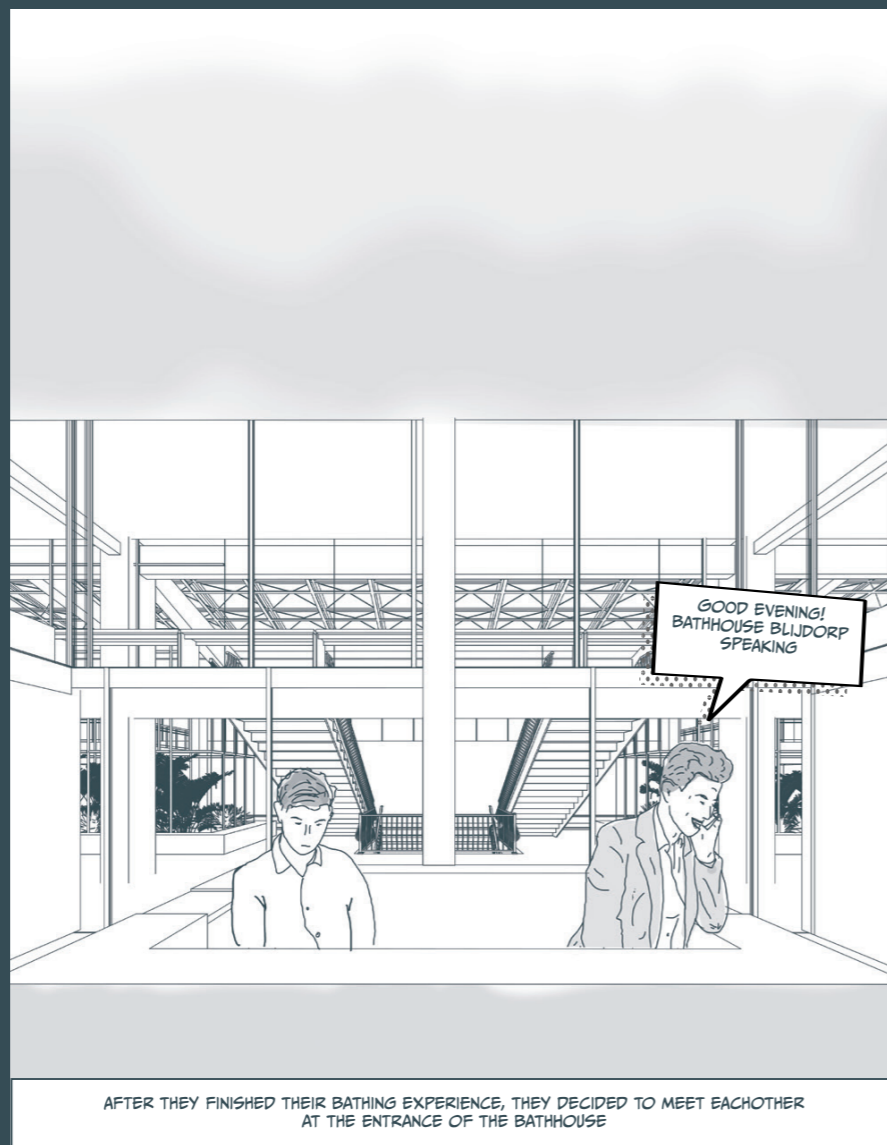
BIND BY WATER



BIND BY WATER



BIND BY WATER



BIND BY WATER

impression north facade + landscape

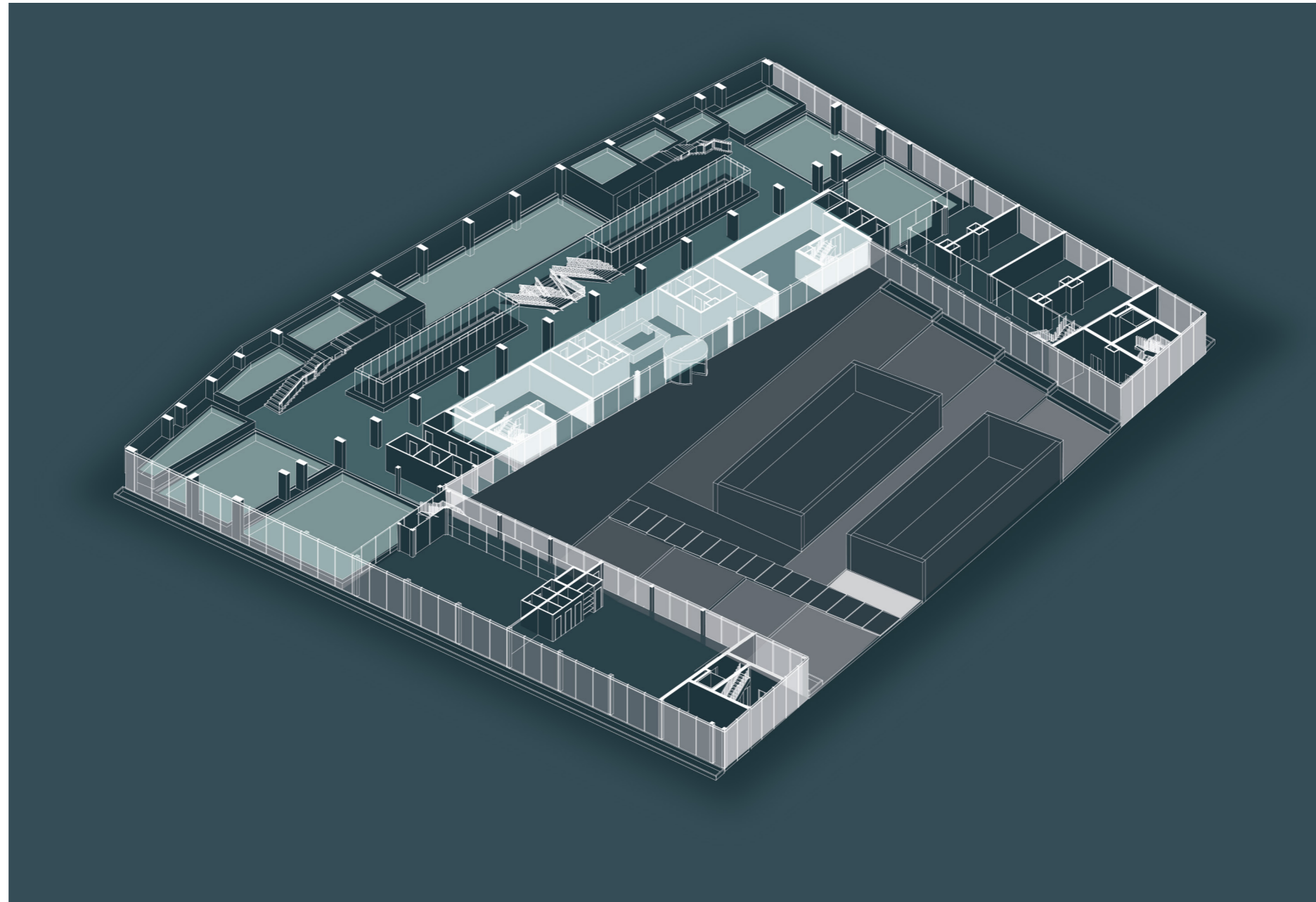


BIND BY WATER

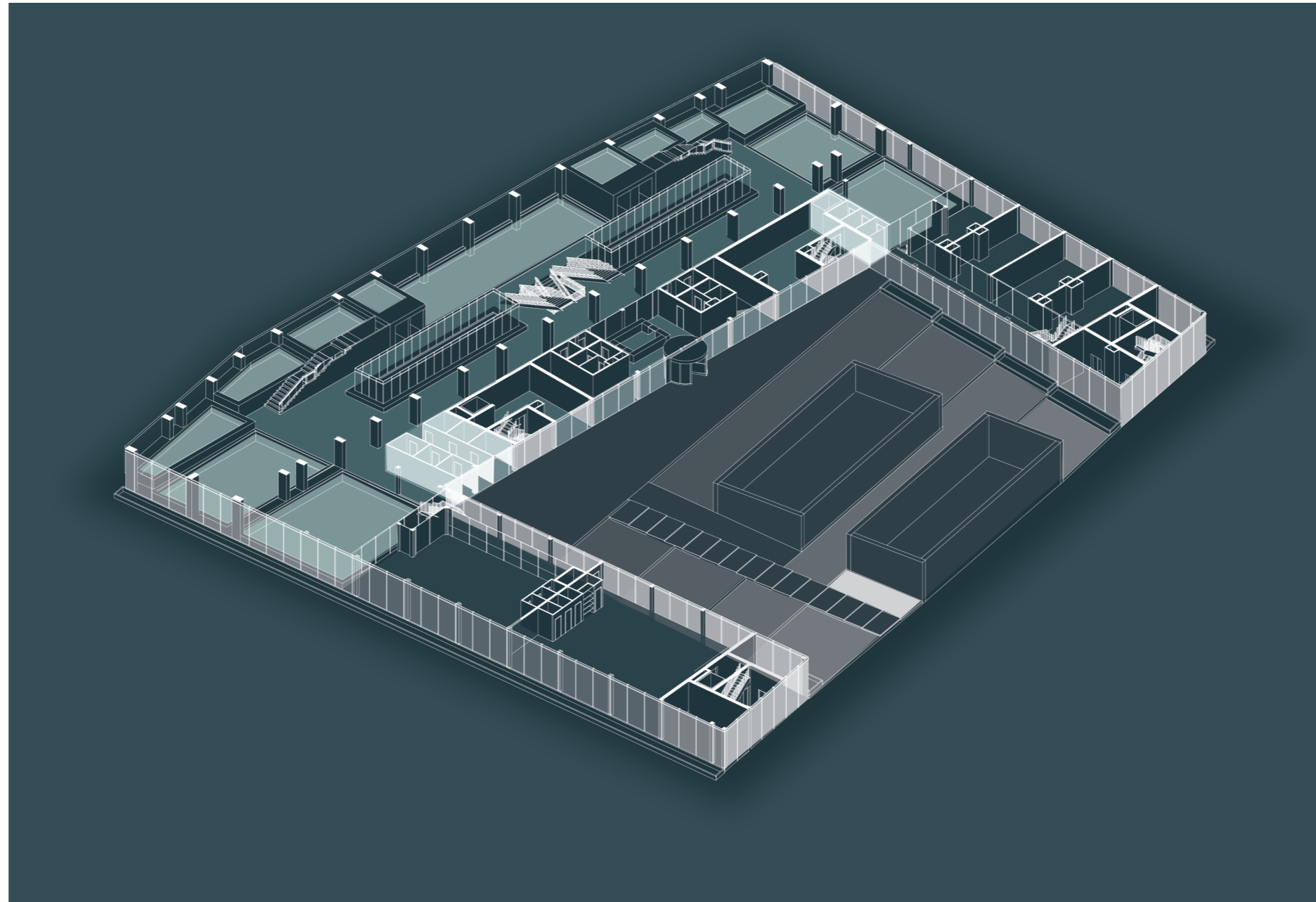
BUILDING A COMMUNITY AMOGST SOLO DWELLERS
THROUGH WATER INFRASTRUCTURE



BIND BY WATER
program sequence - entrance

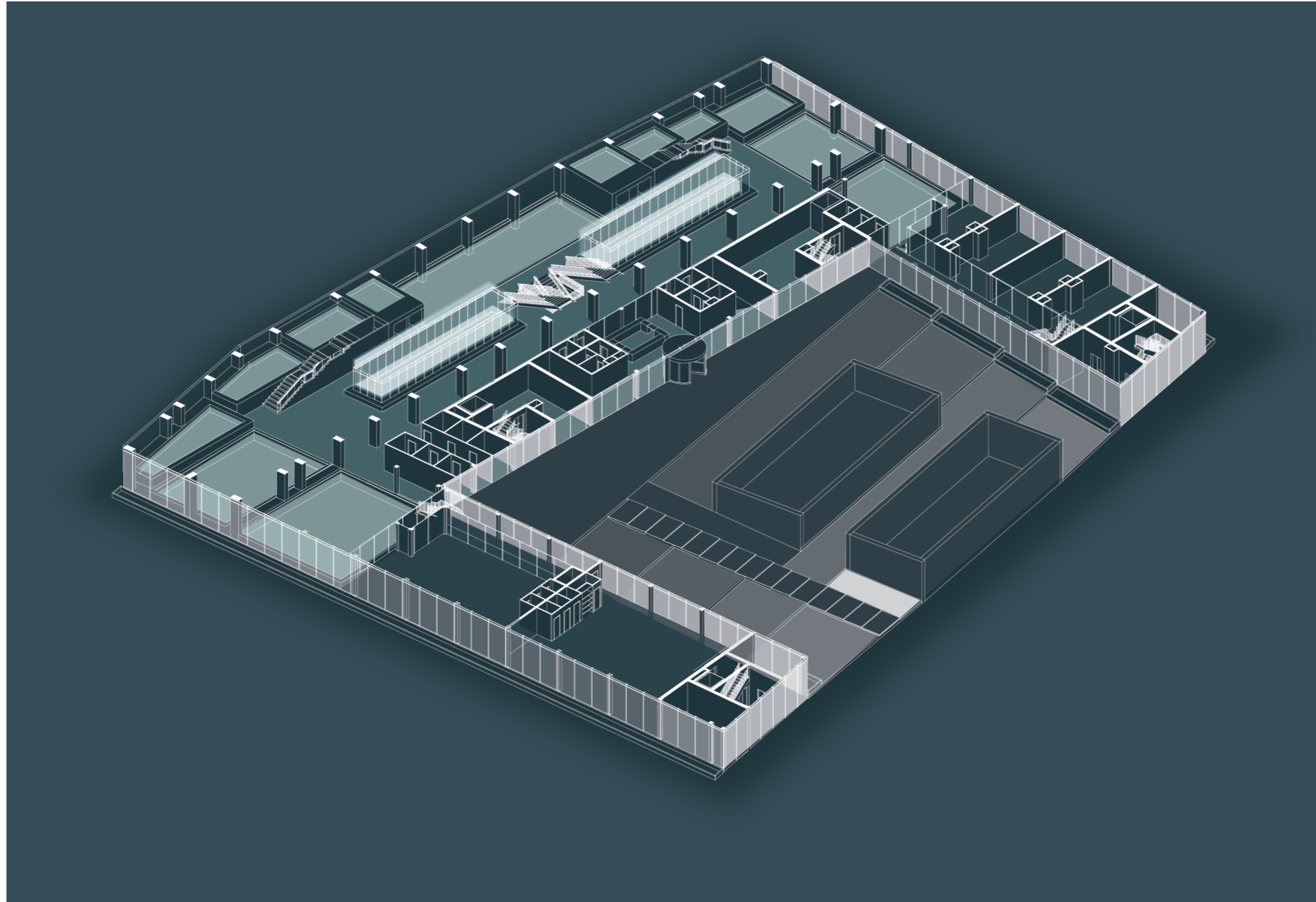


BIND BY WATER
program sequence - dry functions



BIND BY WATER

program sequence - living machine tank



BIND BY WATER
program sequence - circulation space

