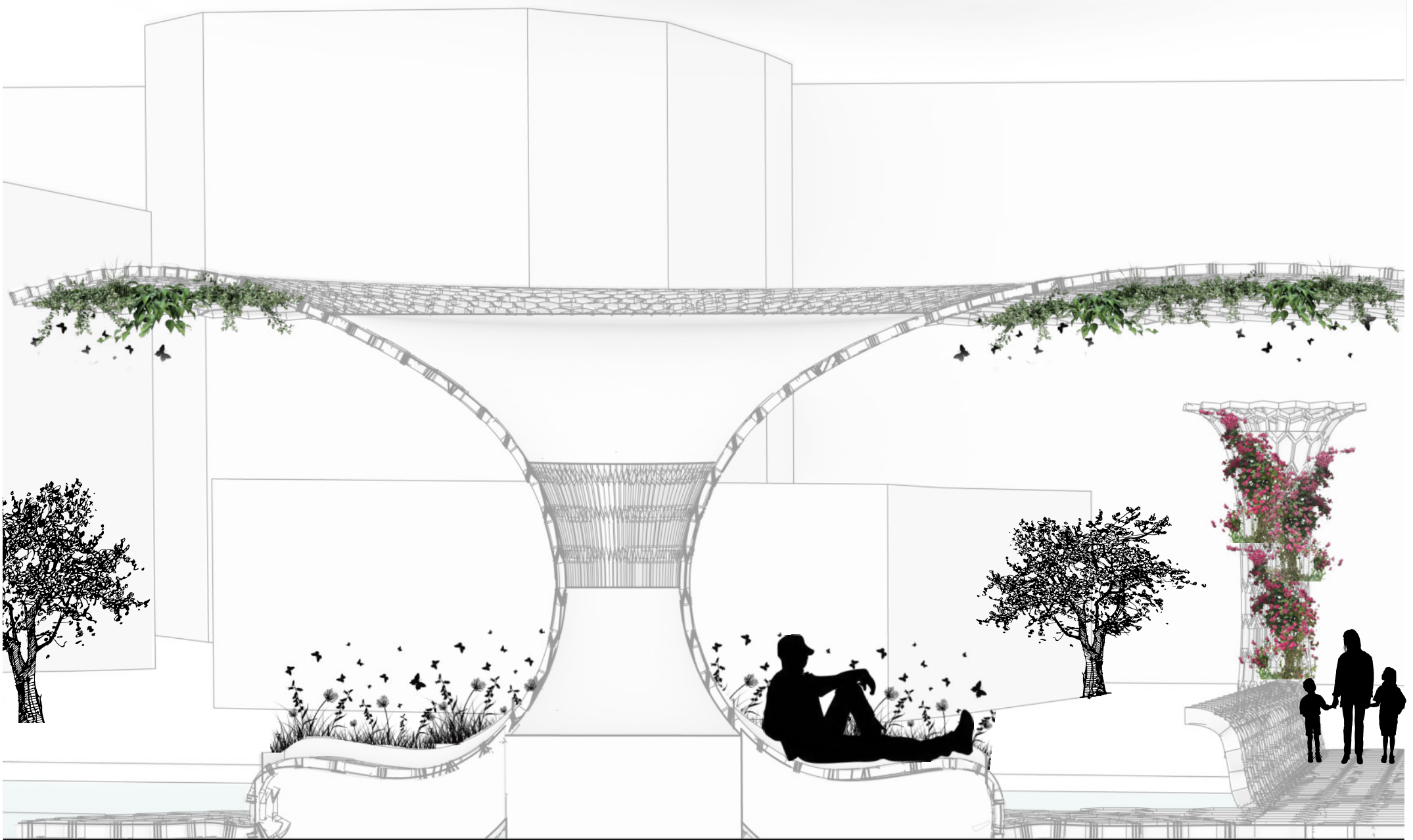




BEE GREEN



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22.

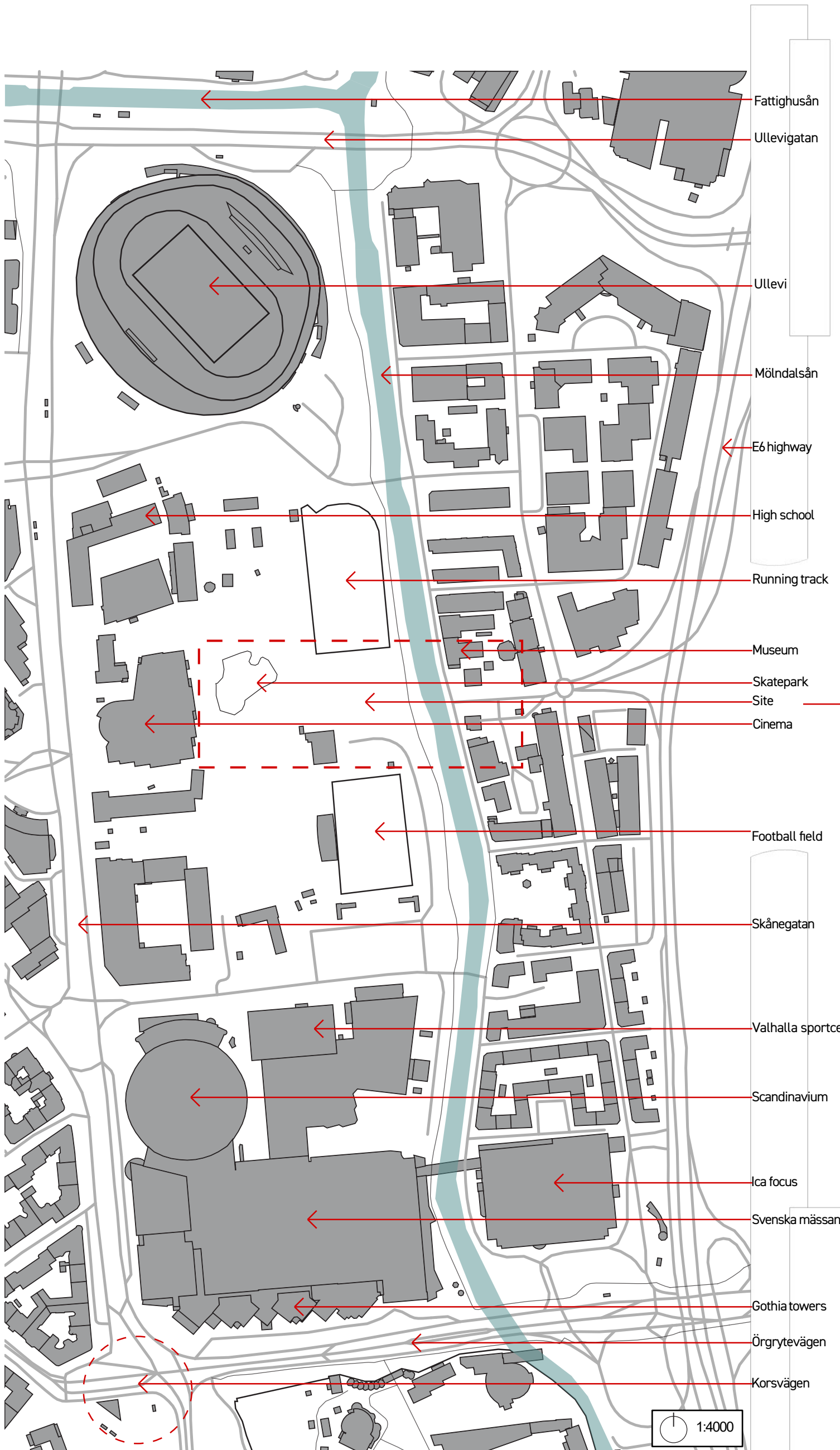
Photos of the process

23.

SWOT

CONTEXT

Mölnbalsån, in the area between Ullevi and Gothia towers.



Fattighusån

Ullevigatan

Ullevi

Mölnbalsån

E6 highway

High school

Running track

Museum

Skatepark

Site

Cinema

Football field

Skånegatan

Valhalla sportcenter

Scandinavium

Ica focus

Svenska mässan

Gothia towers

Örgrytevägen

Korsvägen

1:4000

This area by Mölnbalsån has great potential for improvement. On the western side of the river, there are large, underutilized areas. Most of them are also paved, which hampers the absorption of rainwater and further increases the risk of flooding. Since there isn't a bridge connecting the two sides within approximately 4-500 meters, Mölnbalsån serves as a barrier between the different sides, both for humans, animals, and nature. On the eastern side of the river, there are more buildings and fewer green areas.

TRANSECT BY GROUP, 1:500

A: Built environment: Skatepark

Local assets: Health and exercise.
Problematization: Max traffic noise: 45db.
Social challenges: Possibly a dark and hidden urban area during dark hours - may be perceived as unsafe.

Actors: 

B: Nature: Deciduous forest

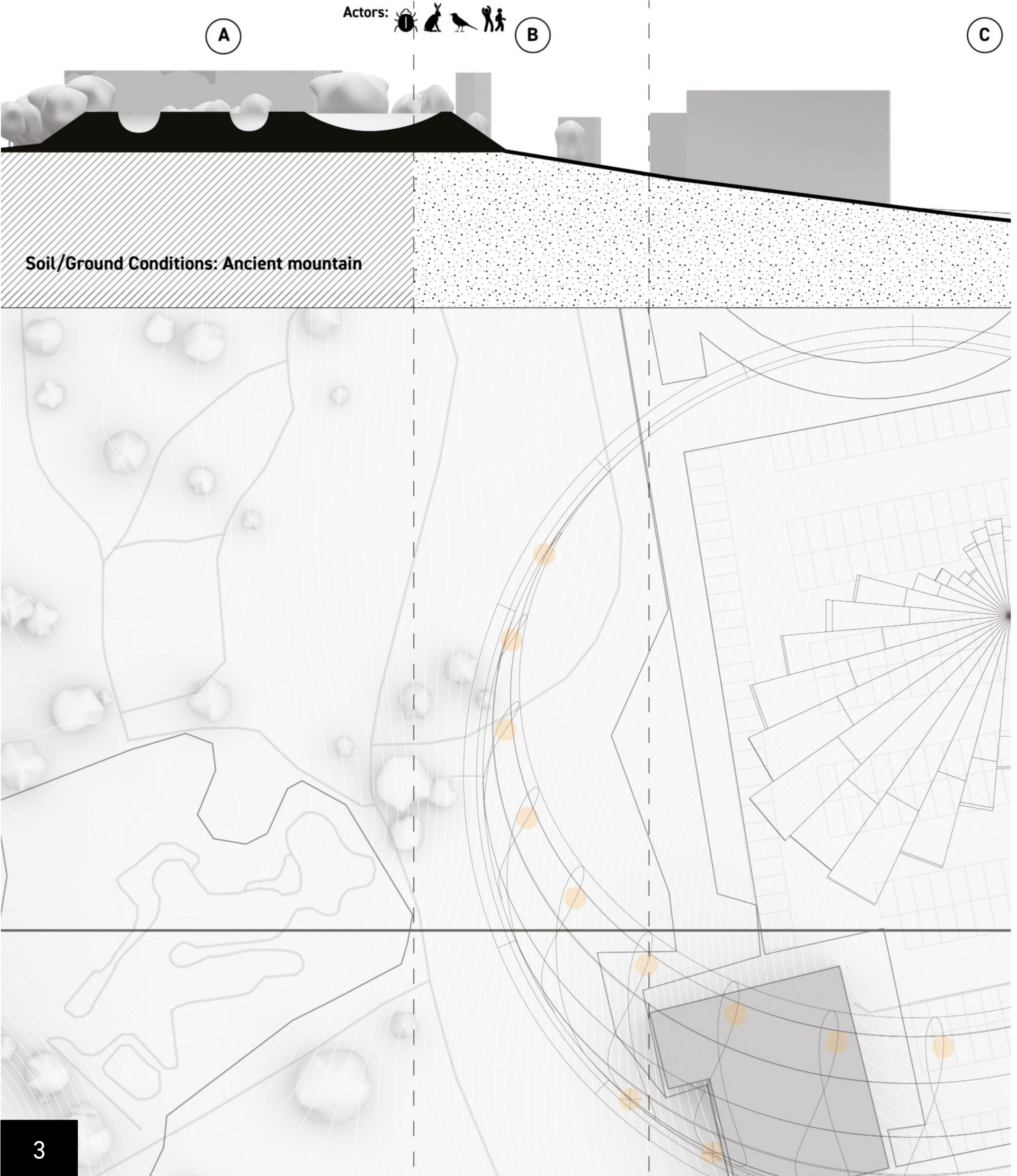
Local assets: Trees and nature contribute to biodiversity and clean air.
Problematization: Some parts have high flood risk. Air pollution.
Max traffic noise: 50db.
Social challenges: Possibly a dark and hidden urban area during dark hours - may be perceived as unsafe.

Actors: 

C: Built environment: Parking space

Local assets: Possible space for intervening
Problematization: High flood risk. Air pollution. Max traffic noise: 45db.
Social challenges: "Dead area" dedicated to cars, rarely used.

Actors: 



D: Riverwalk-area , riparian or raised

Local assets: The promenade functions as connector, biodiversity

Nature: Planted deciduous trees

Problematization: High flood risk. Air pollution. Max traffic noise: 50db.

Social challenges: The promenade on the west side is a bit secluded.


Actors: 

E: Nature: River

Local assets: The water, biodiversity

Problematization: Air pollution. Max traffic noise: 50db.

Social challenges: The river is partly a barrier, a bridge would function as a connector.

Actors: 

F: Built environment: Public space - Museum "Göteborgs Remfabrik"

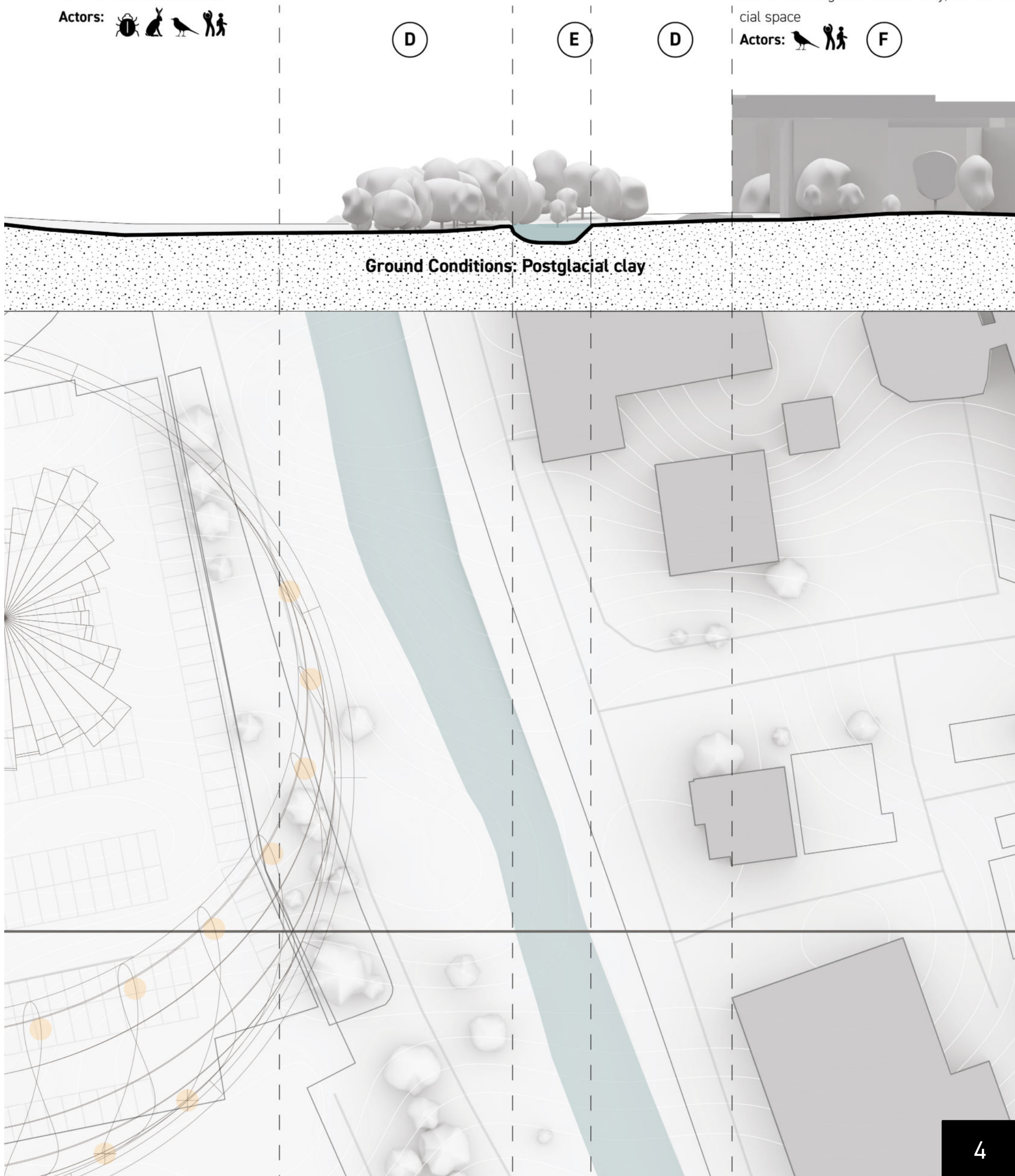
Local assets: Museum, lively area, riverfront promenade

Problematization: High flood risk. Air pollution. Max traffic noise: 55db

Prioritized high risk & moderate risk for contaminated land.

Social challenges: Inaccessibility, lack of social space

Actors: 



SITEPLAN

1:200 (A3)



Trees

— Roads_non_motorized

— Roads_motorized

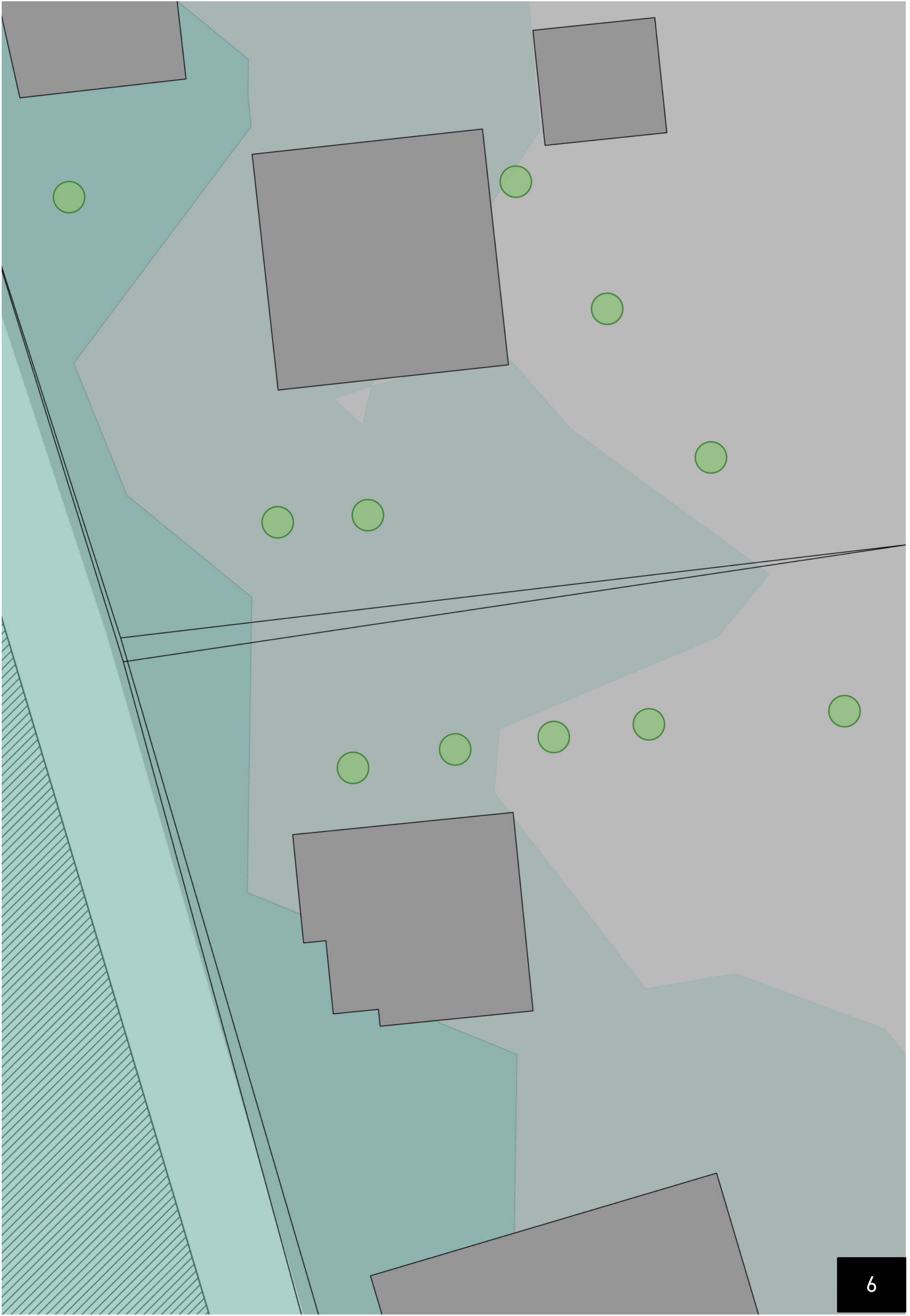
■ Buildings

▨ Mölndalsån

■ Flood_risk_20 dm

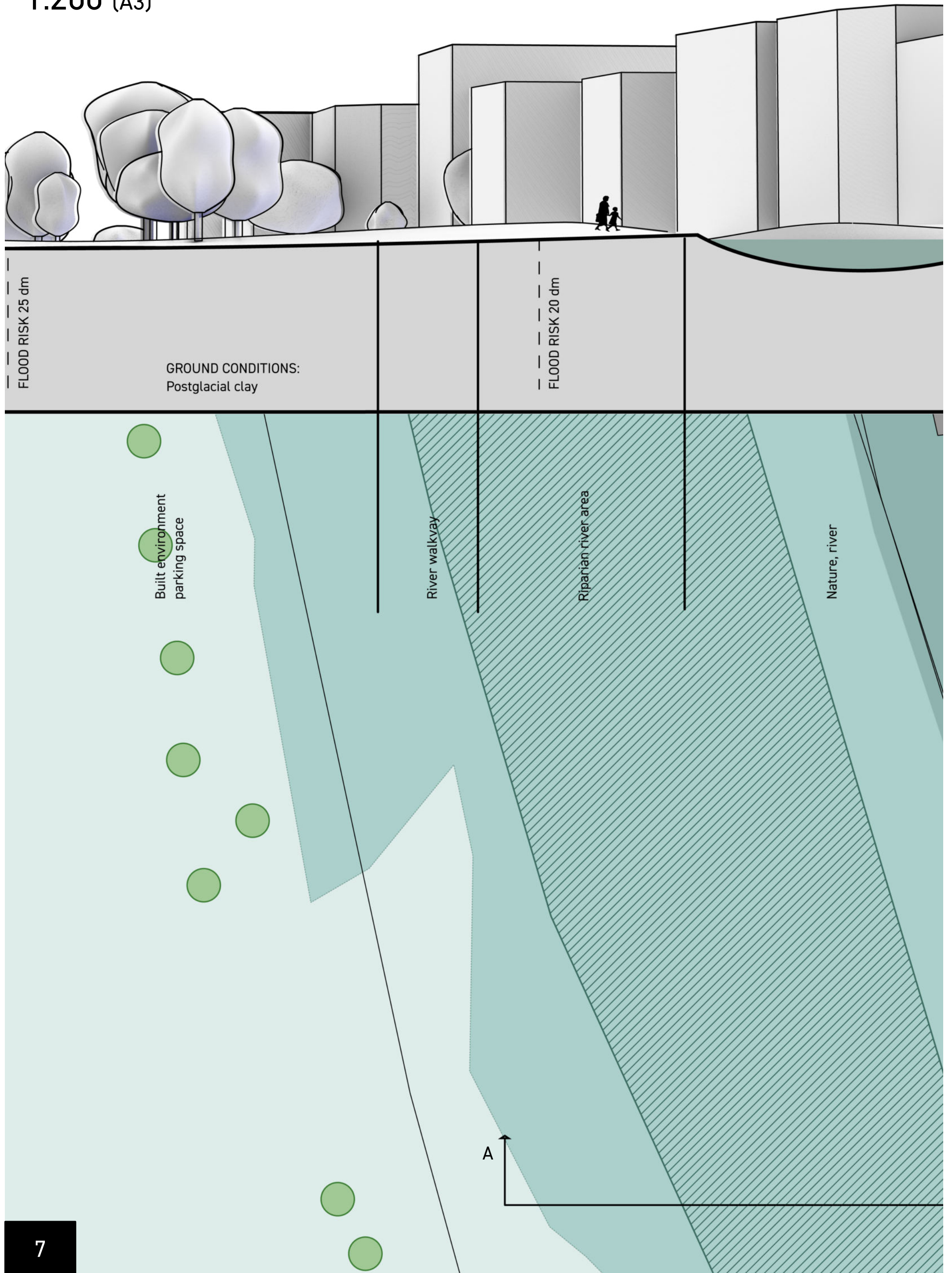
■ Flood_risk_25 dm

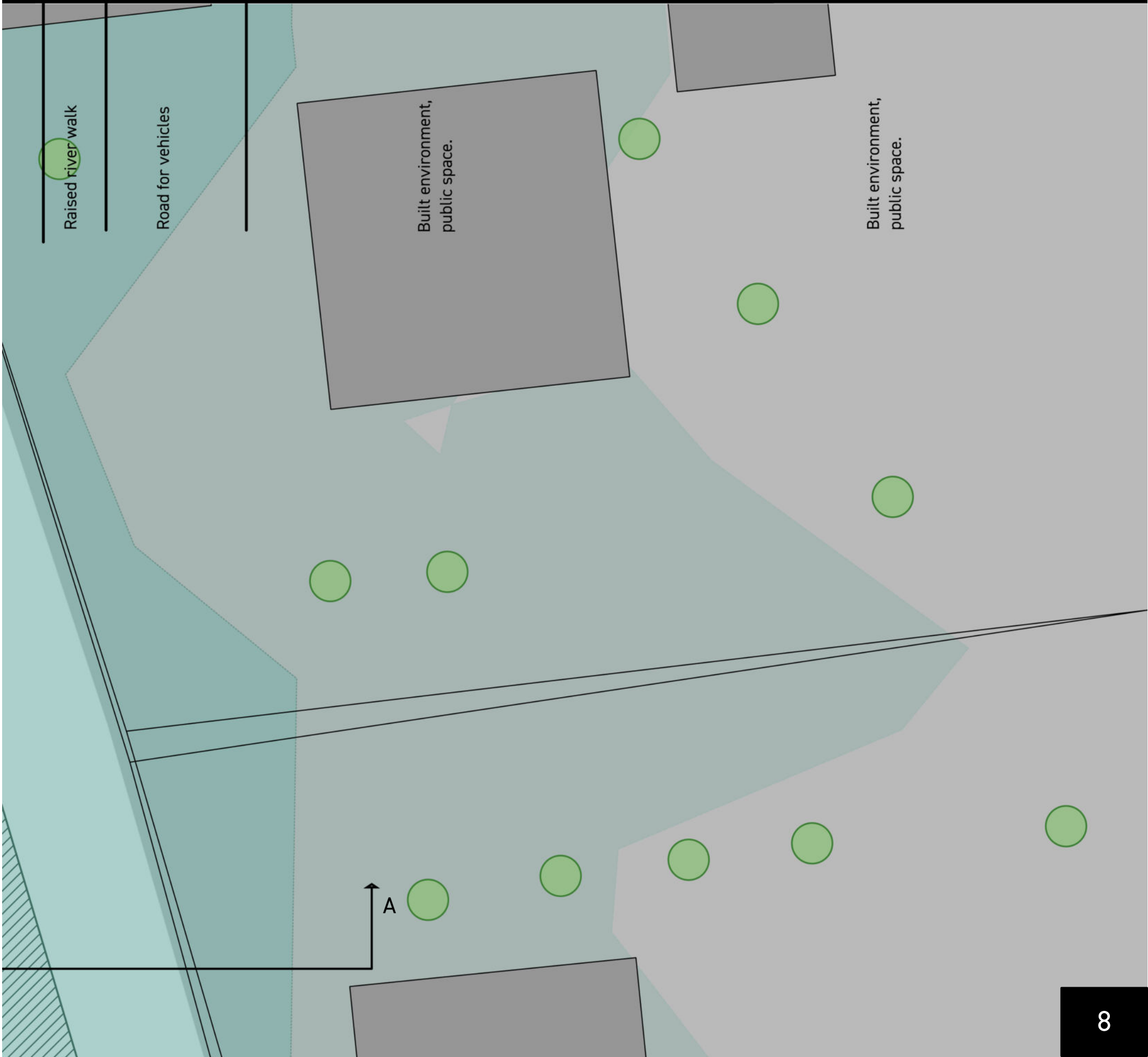
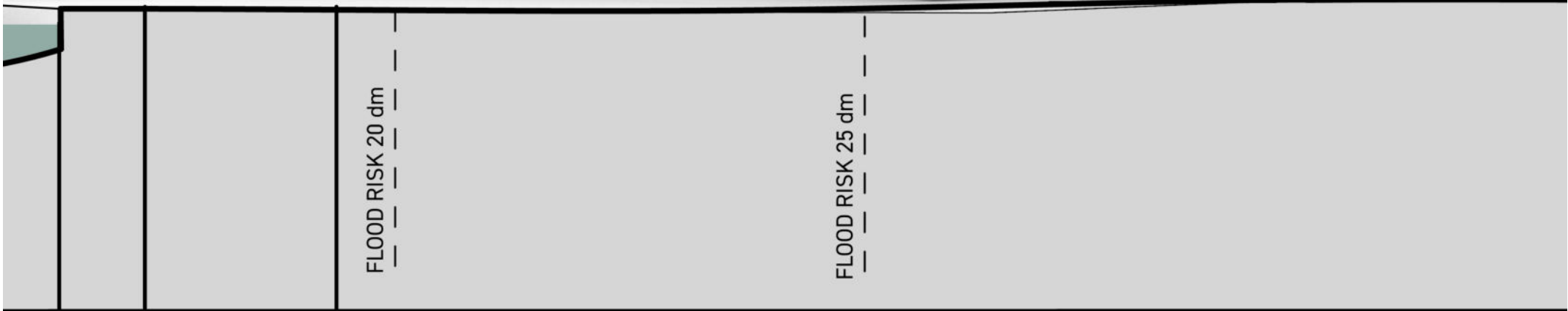
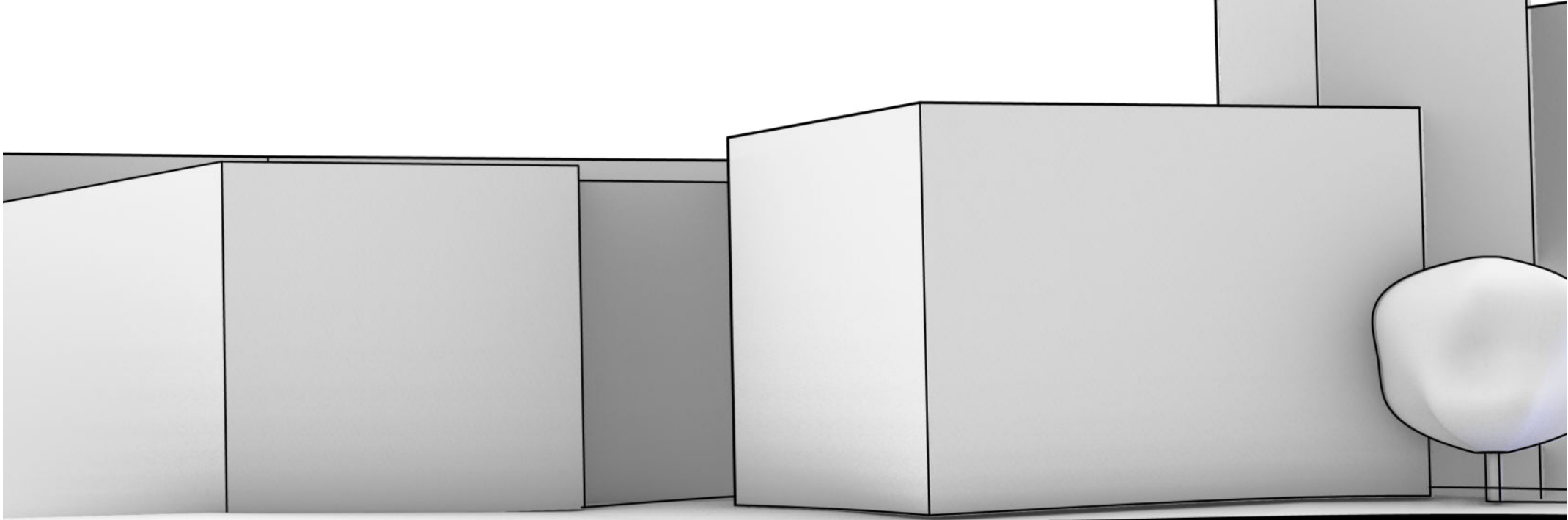
■ Landcover_built_up



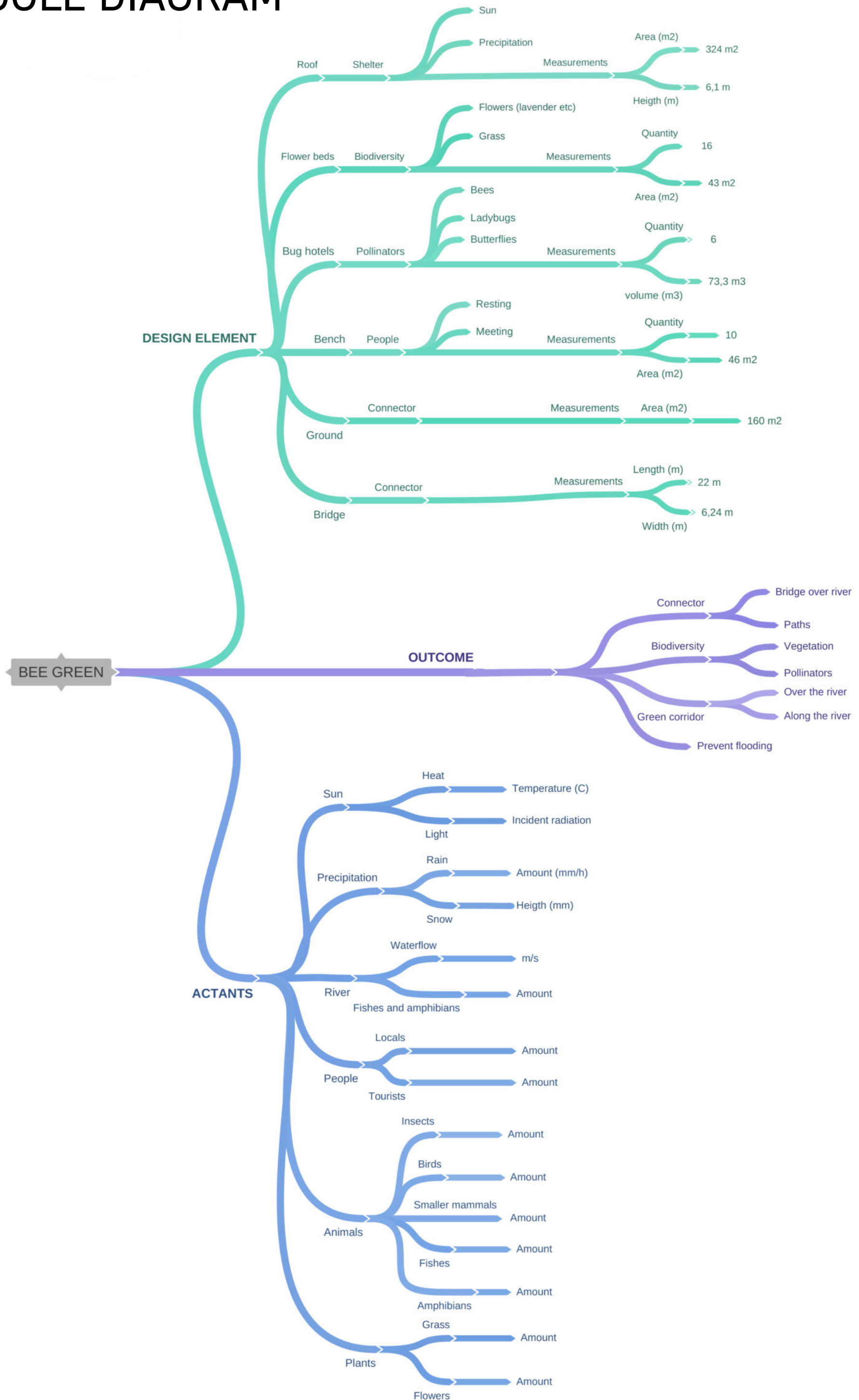
SITE SECTION

1:200 (A3)





COGGLE DIAGRAM



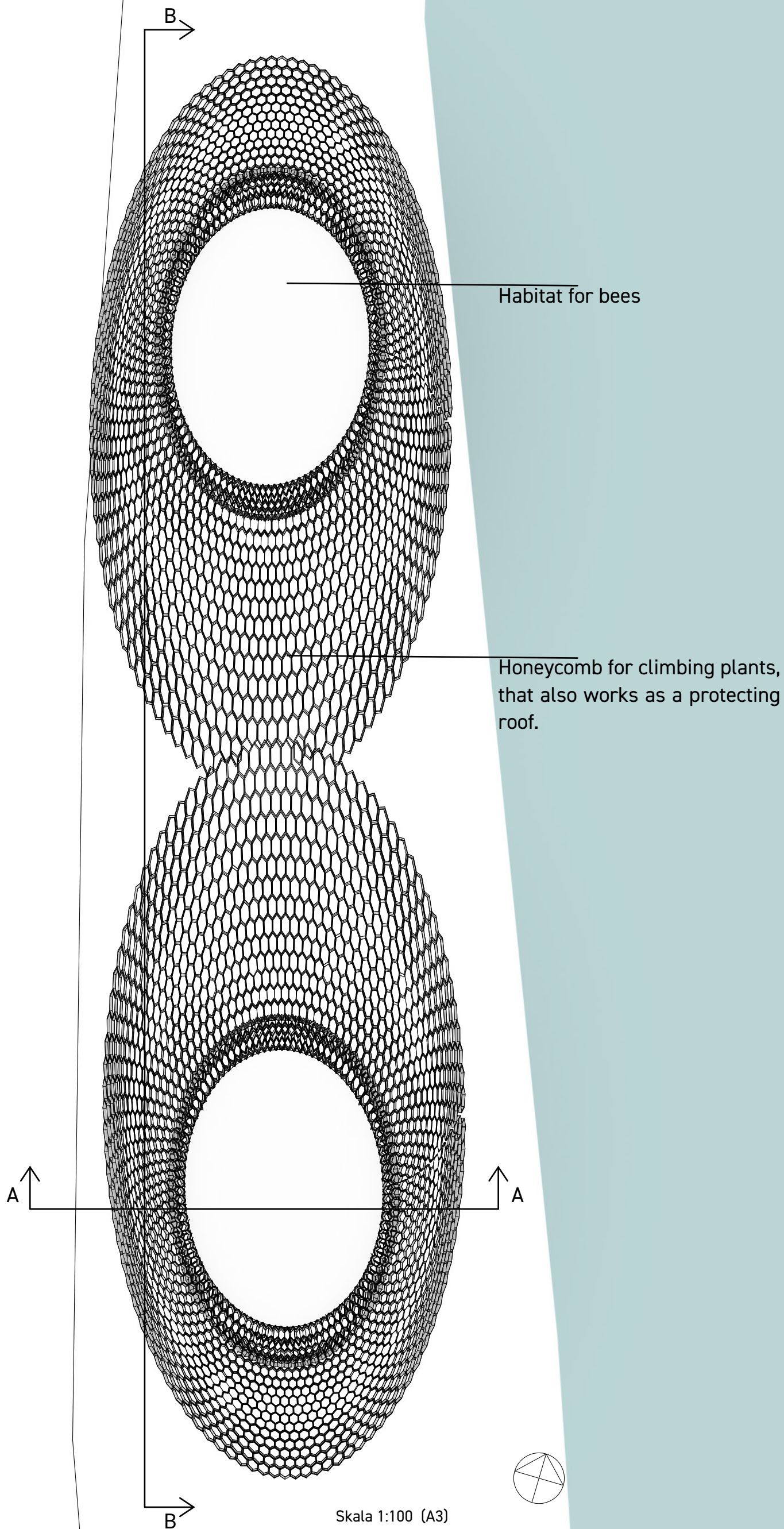
CONTEXTUAL MODEL

1:200



PROTOTYPE PLAN

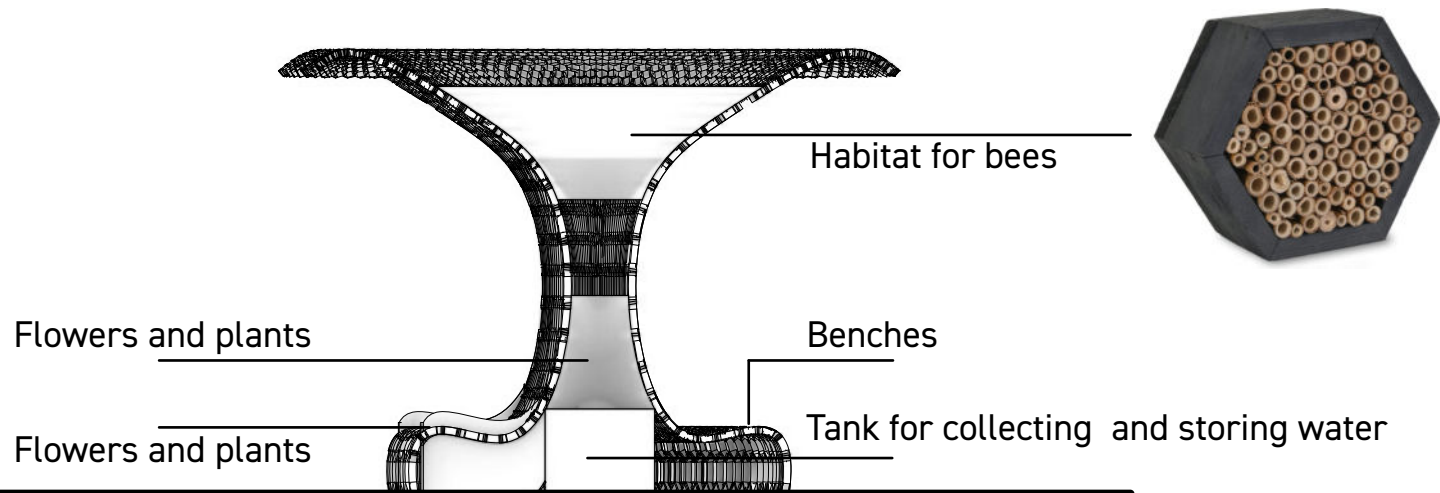
1:100 (A3)



PROTOTYPE SECTIONS

1:100 & 1:120 (A3)

SECTION A-A 1:100



Bee Habitats

Pollinators and pollination are of great importance for biological diversity, functioning ecosystems, and our food supply. Most plants rely to some extent on pollinators for their pollen transfer.

Wild bees are a diverse group of insects, which includes bumblebees. In Sweden, there are about 300 species of wild bees, among which approximately 40 are bumblebees. Wild bees are among the most effective pollinators in the insect world, with bumblebees being considered among the most important.

Bumblebees are social insects and live together in colonies. A new colony begins each spring when the overwintering and fertilized bumblebee queen awakens. The bumblebee queen then begins to search for food on spring-flowering plants such as willow and sallow.

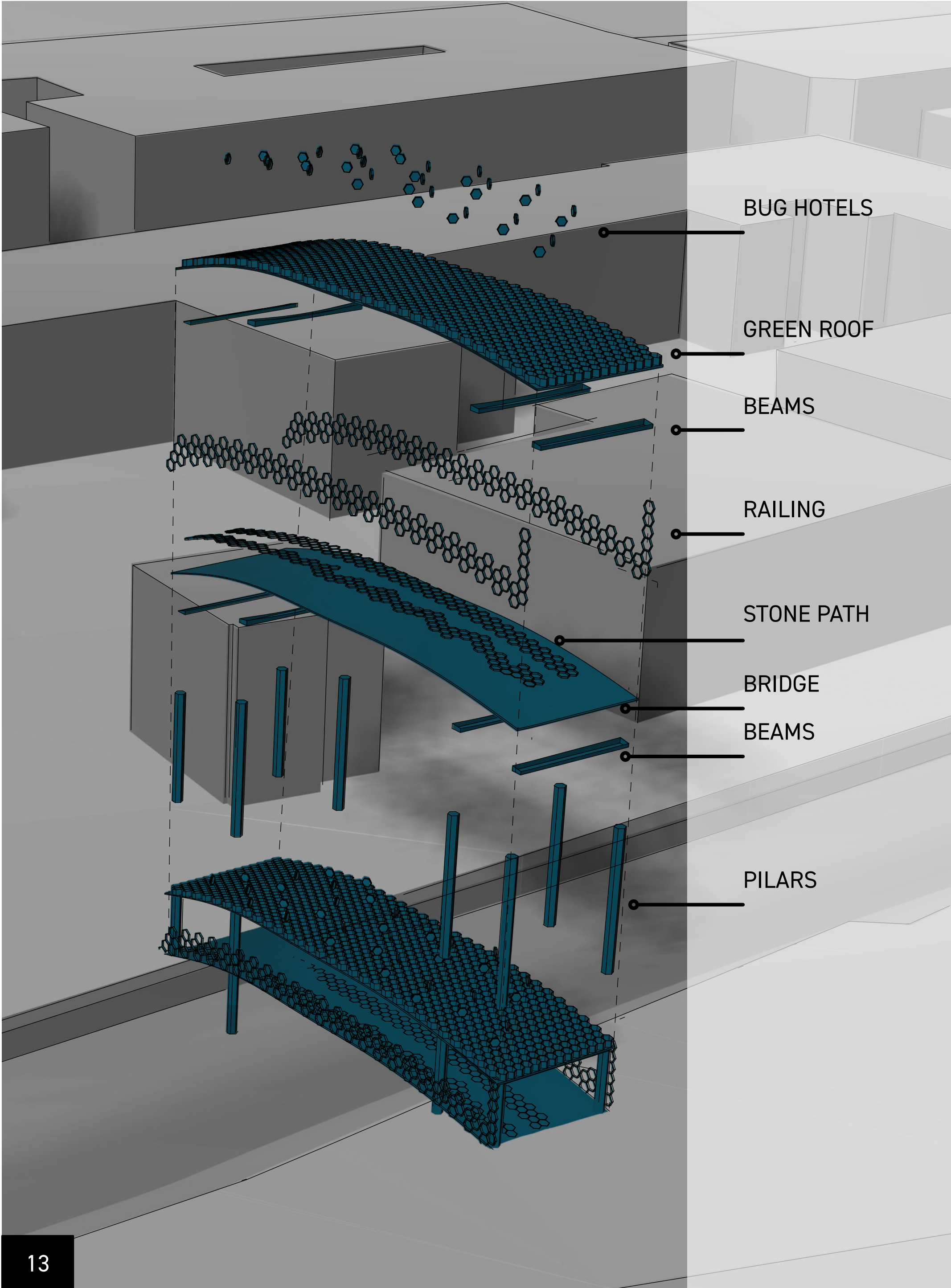
Many of the bees build nests in a variety of aboveground cavities or tunnels. These can be beetle holes in wood, hollow or pithy plant stems, brush piles, standing snags, or cavities in human-made structures. The holes should be between 0,16 cm till 1,3 cm.

Tunnel-nesting bees are often solitary, meaning that each female uses an individual nest. Unlike honey bees, there is no colony with workers, there are no swarms, and they do not produce honey. Solitary bees are nonaggressive; they rarely sting unless they are grabbed or caught in clothing.

SECTION B-B 1:120



EXPLODED AXONOMETRIC (OLD)



PROTOTYPE PHYSICAL MODEL

1:50



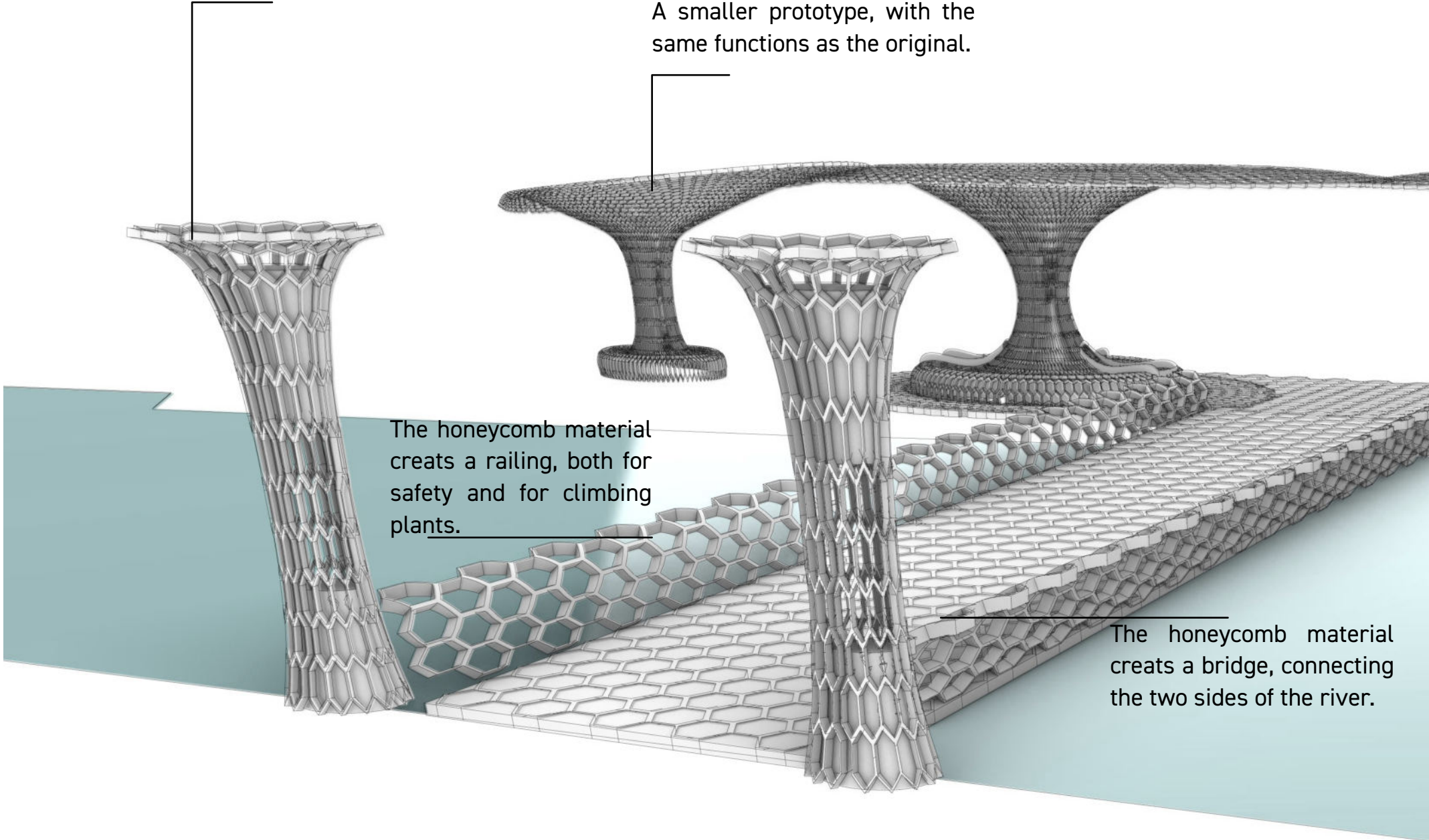
GROWTH

A smaller prototype without the roof, due to less space on this side of the river.

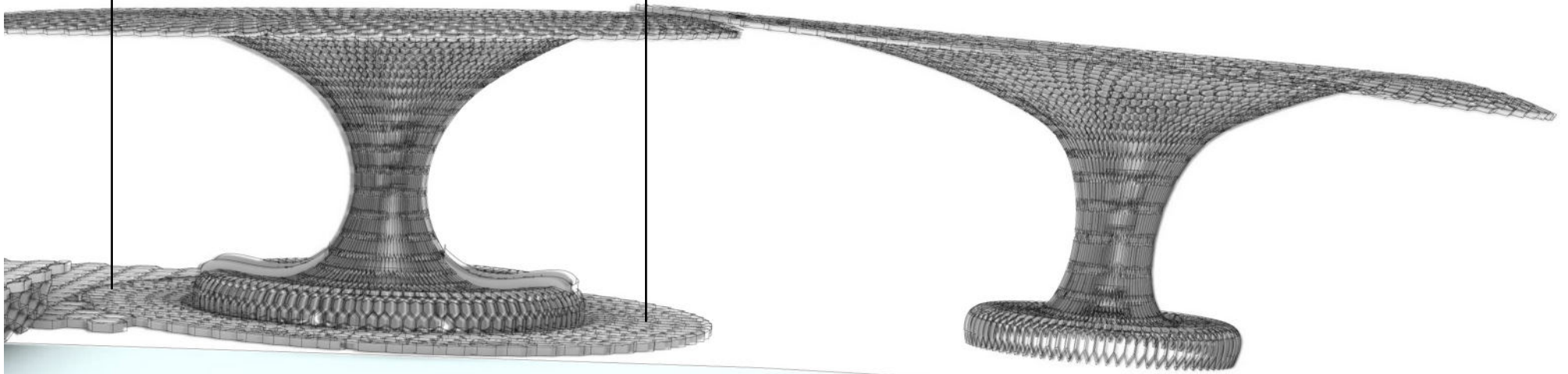
A smaller prototype, with the same functions as the original.

The honeycomb material creates a railing, both for safety and for climbing plants.

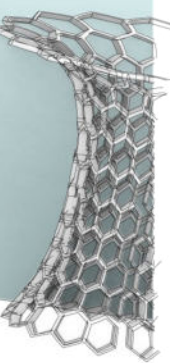
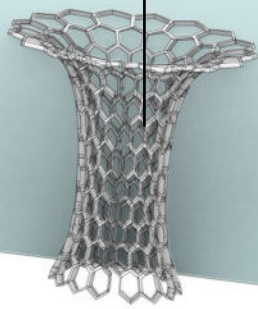
The honeycomb material creates a bridge, connecting the two sides of the river.



The honeycomb-shaped material grows out over the ground, creating a ground-covering surface with small holes for soil-dwelling insects, while also helping to reduce the risk of flooding.

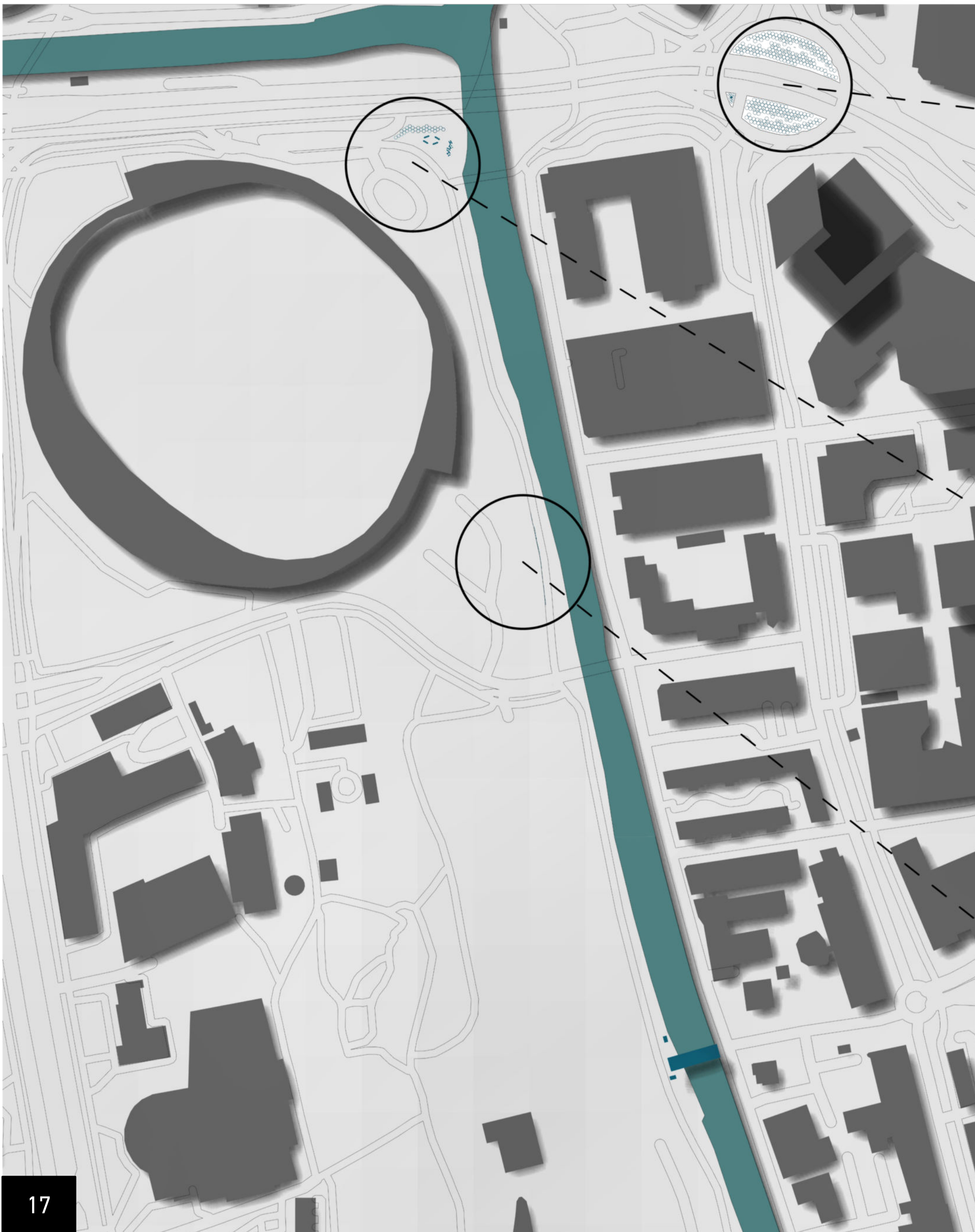


Smaller prototypes, for flowers and plants.

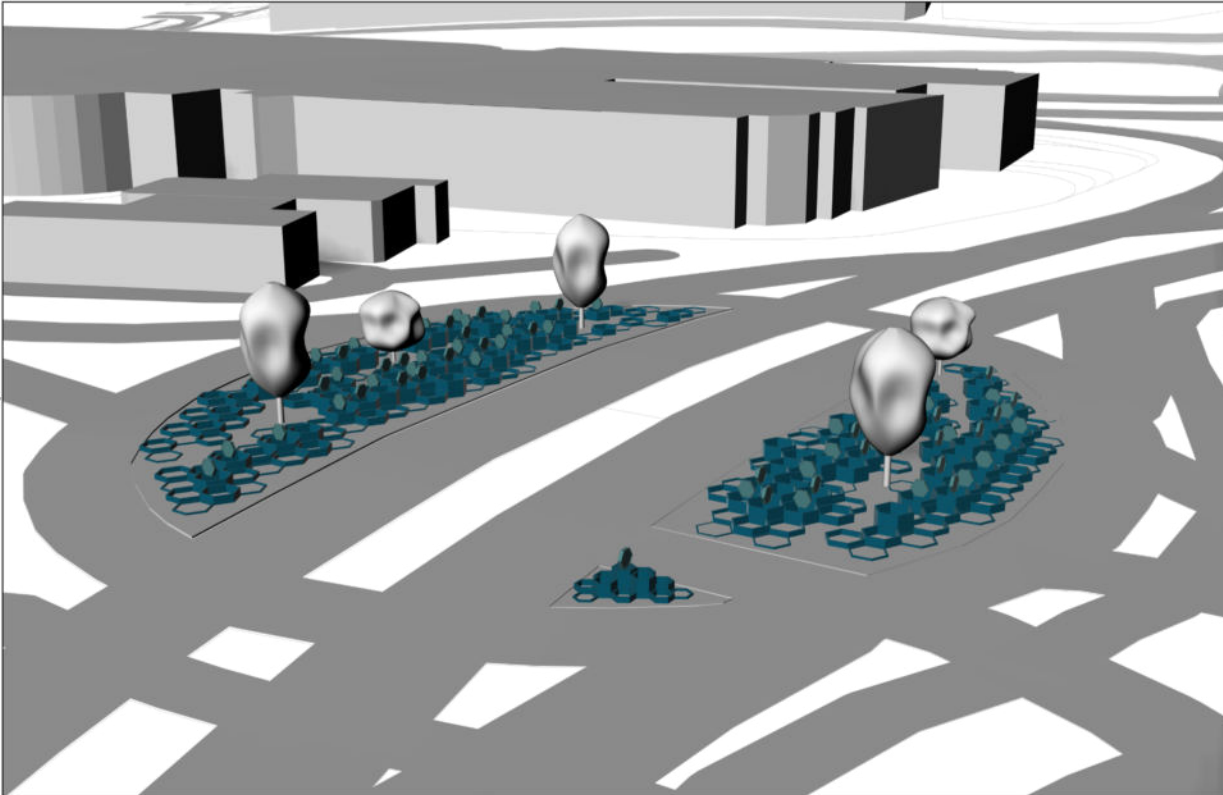


GROWTH (OLD)

From an earlier version of the prototype, but the principle can be used for the newer version also

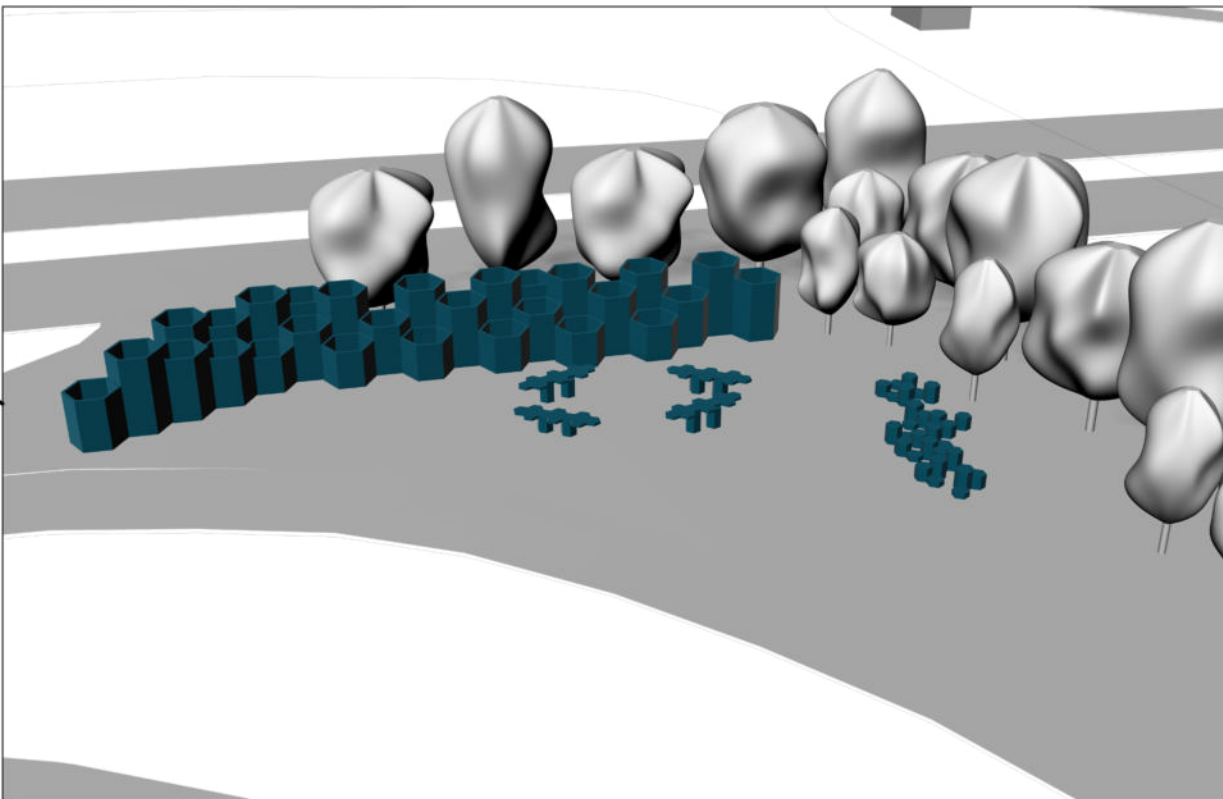


Roundabout



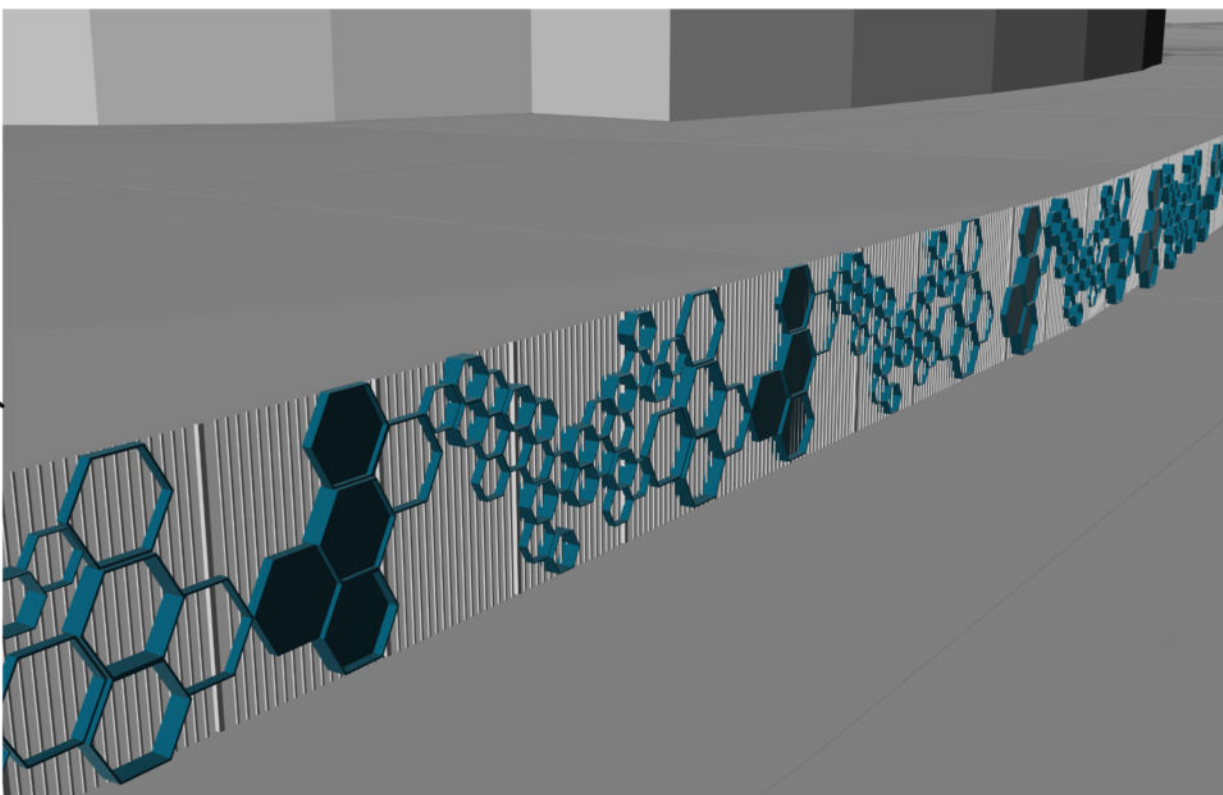
The nearly unused area at the roundabout can be utilized to create more biodiversity, through flowers, plants, and bug hotels.

Small park



Outside Ullevi, there's an unused area by the riverbank. To shield from traffic noise and exhaust fumes, tall flower boxes can be placed here. This creates a more secluded space where one can take a break and let children climb on an obstacle course.

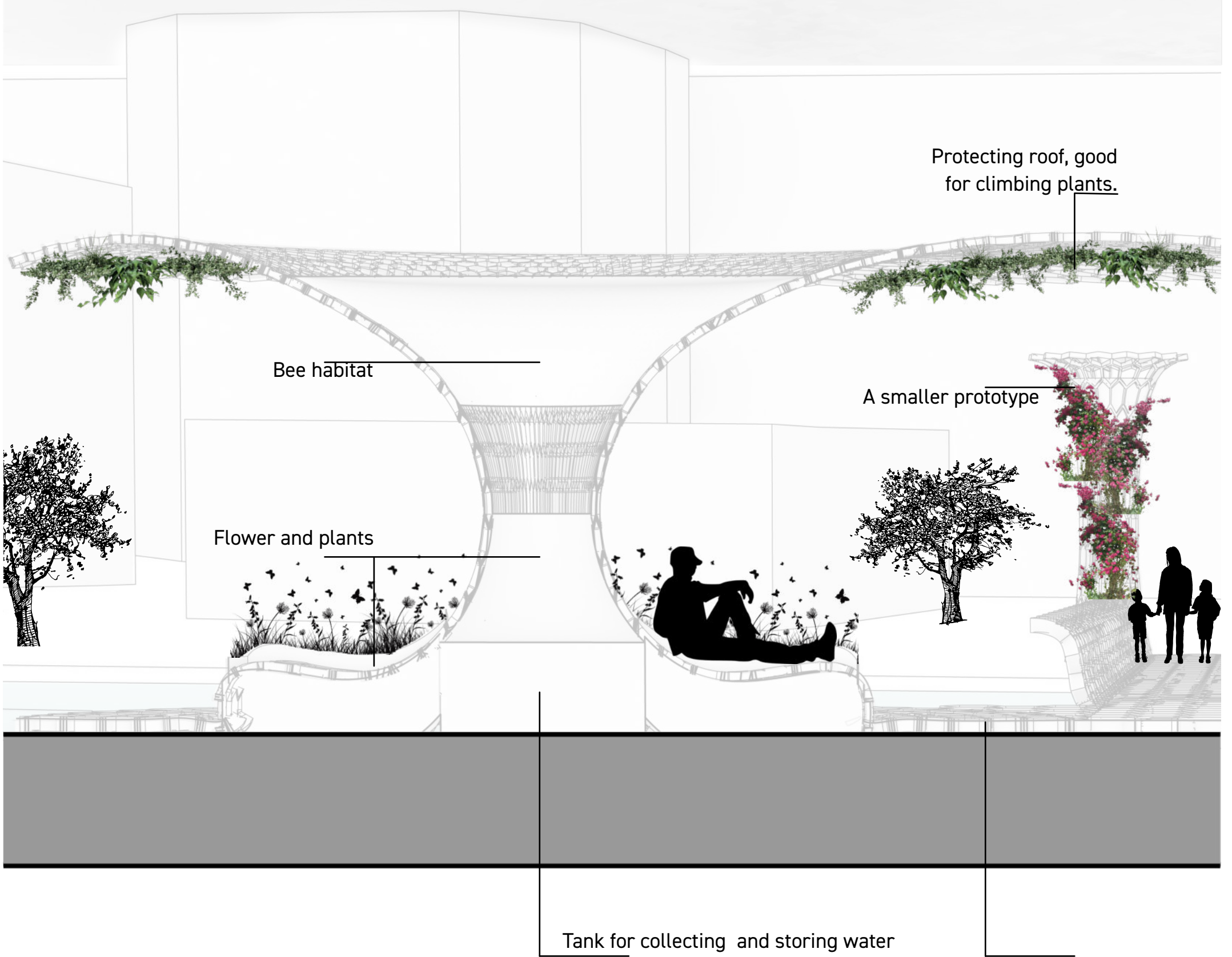
Fence

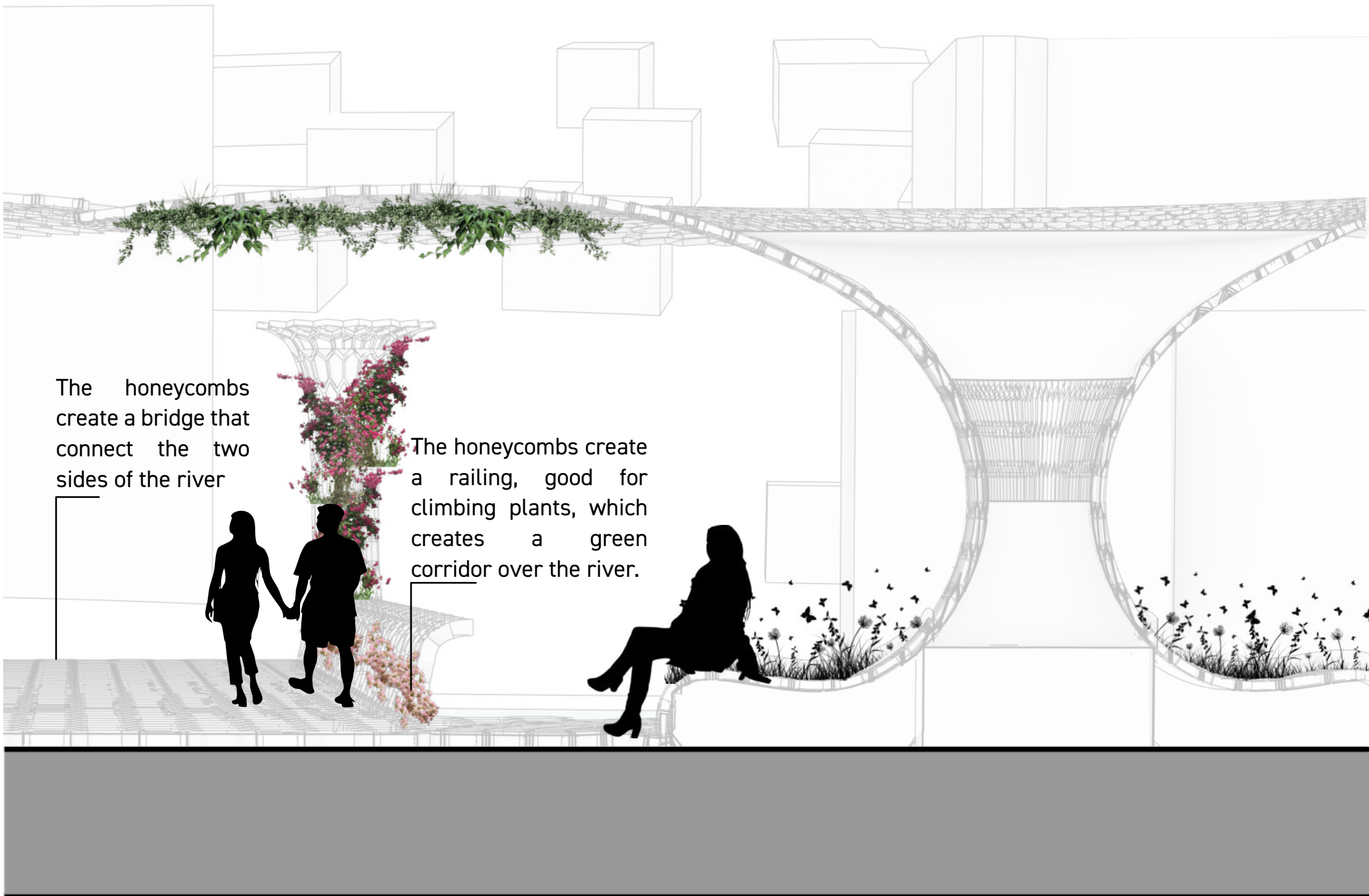


On the fence surrounding Ullevi, hexagons can be placed. These can function as flower boxes, insect hotels, and air purification through moss.

TECHNICAL SECTION

1:50 (A3)

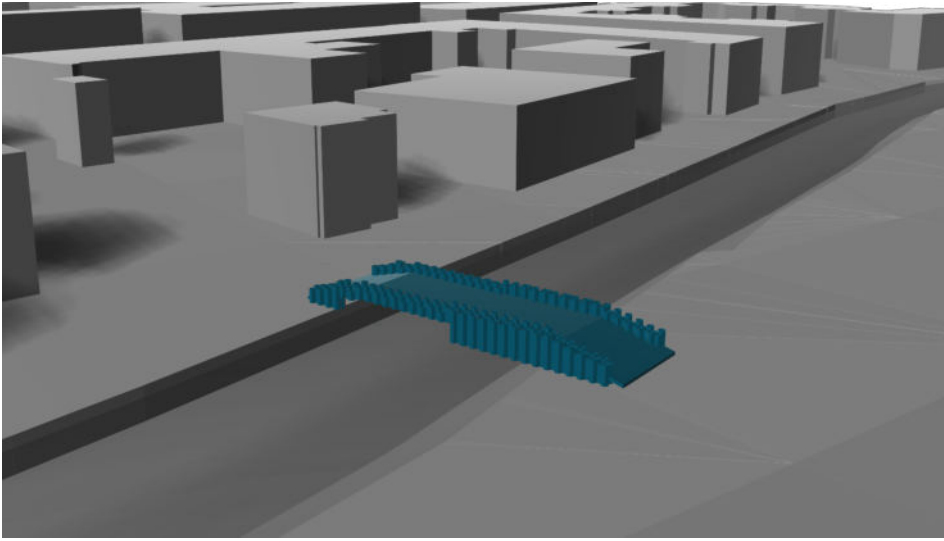




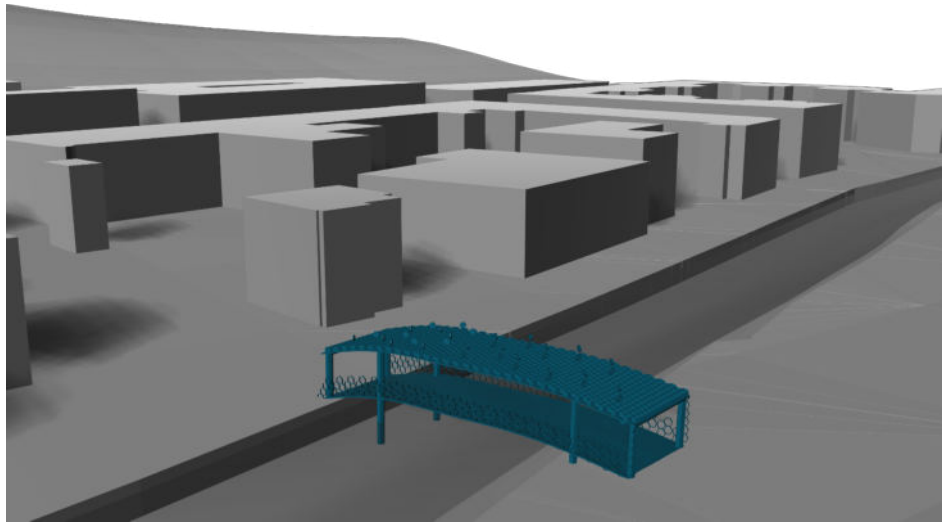
The honeycombs create a bridge that connect the two sides of the river

The honeycombs create a railing, good for climbing plants, which creates a green corridor over the river.

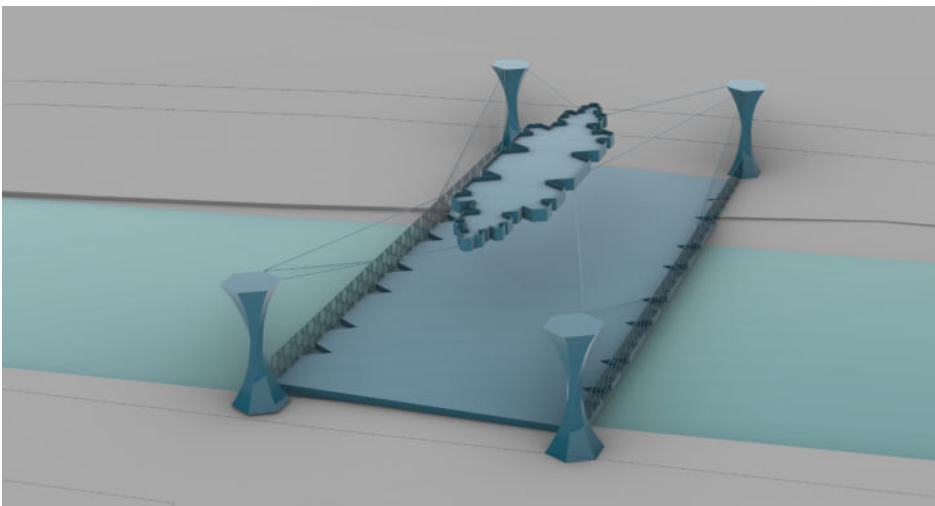
EVOLUTIONARY TREE



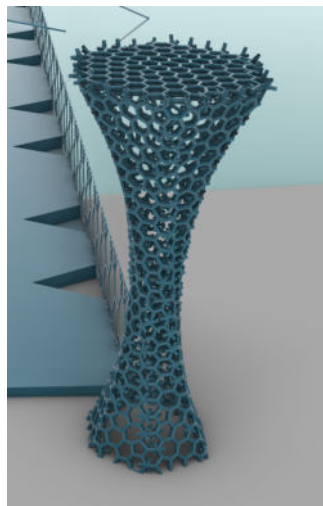
Version 1: I found it a bit big and bulky though.



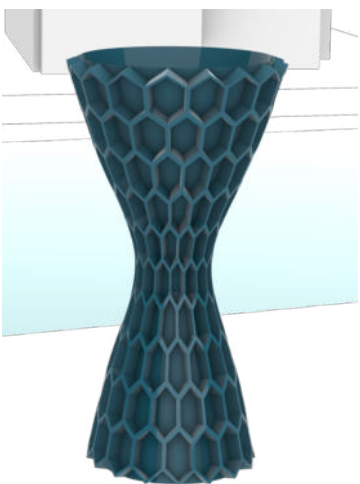
Version 2: I liked this one more than the previous ones, but it wasn't a clear prototype, so I decided to rethink what I wanted to do, and how!



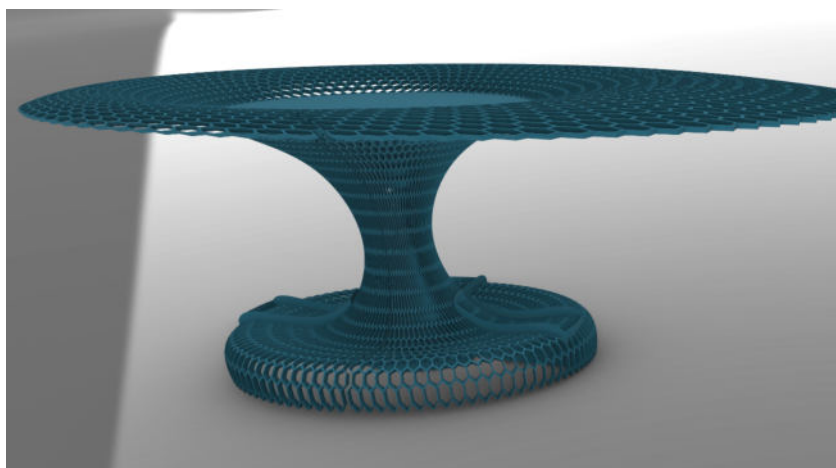
Version 3: I tried to rethink and made this one, but it didn't feel like what I really wanted to do.



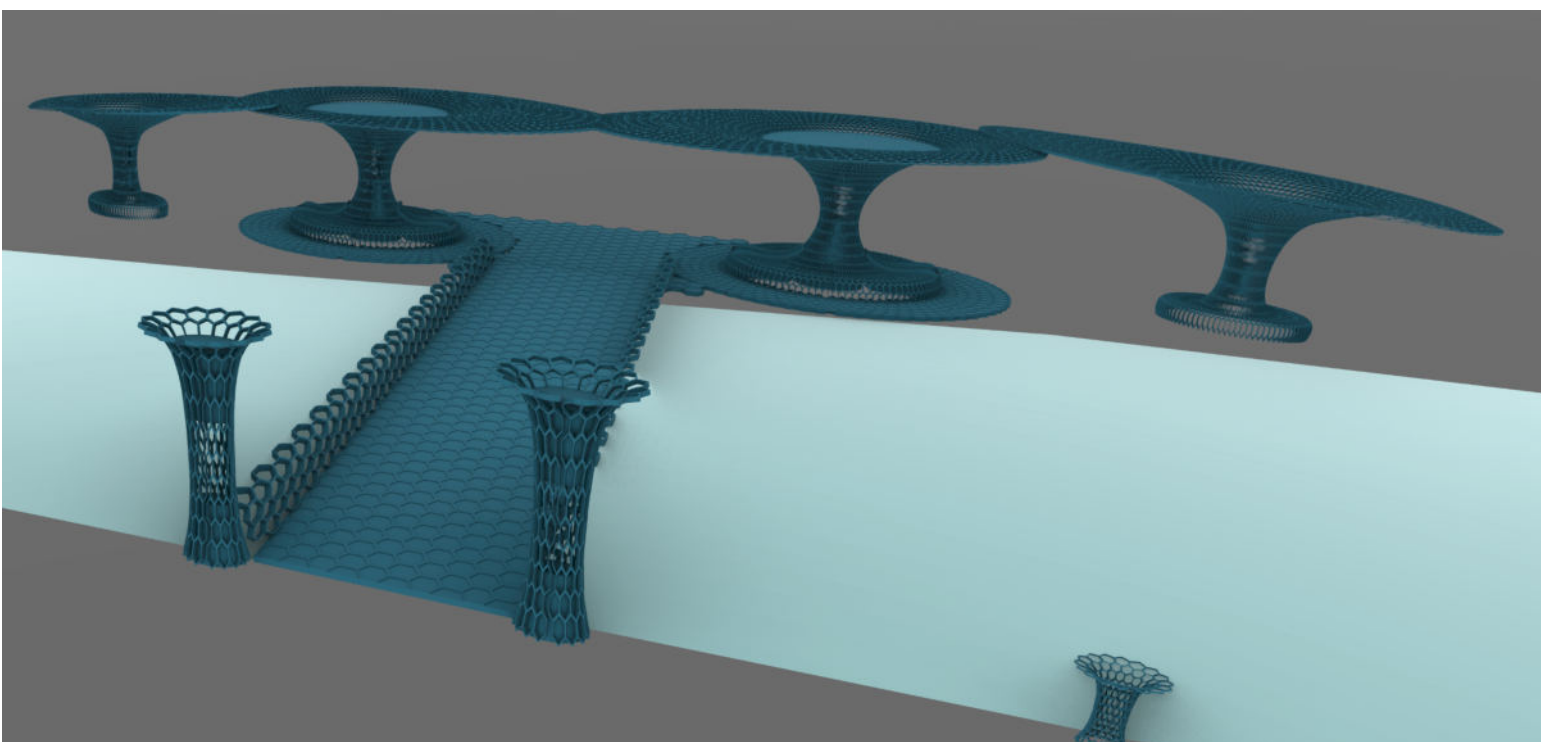
Version 3.5: I tried to add a net of hexagons on the prototype, with grasshopper. It wasn't exactly what I wanted, but it started to be more like it.



Version 4: I found a way to add a material made of honeycomb to the prototype. Now I just needed to decide how I wanted to implement it.

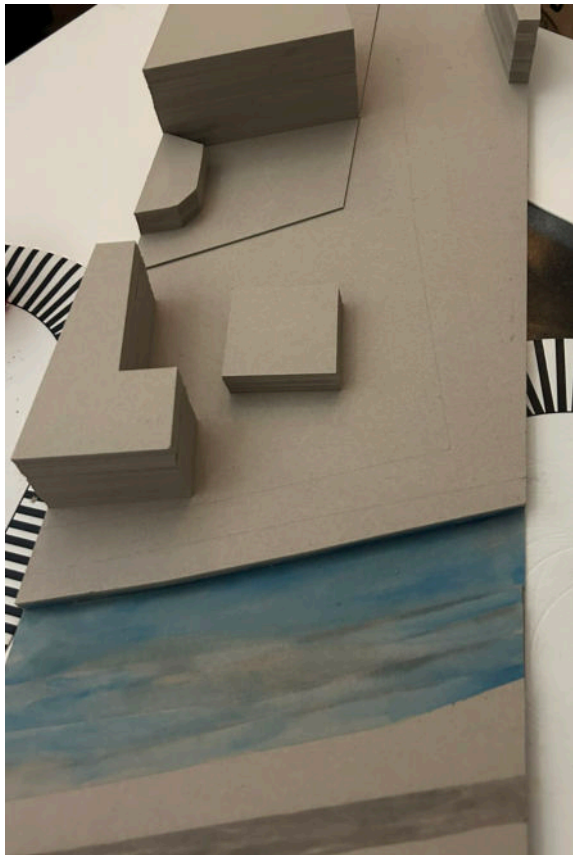


Version 5: I implemented the honeycombs to the prototype, and let it create a protecting roof, and benches.

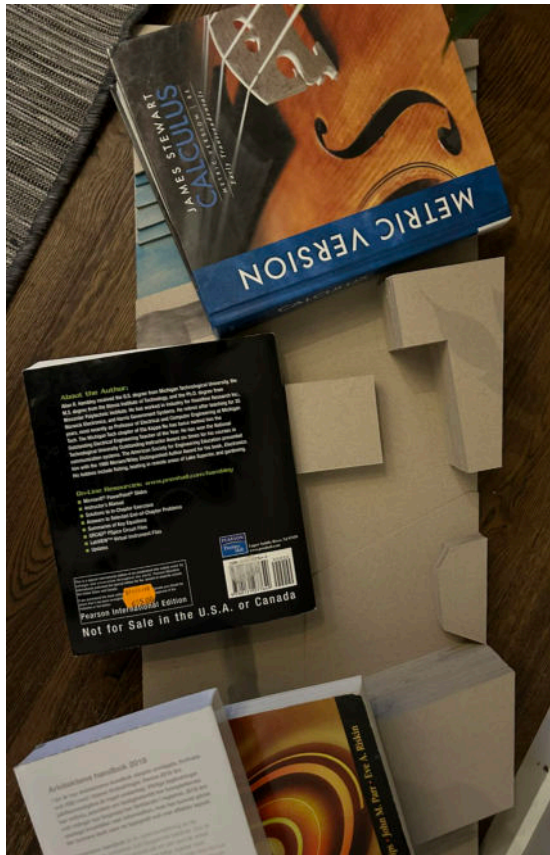


Version 6: I let the honeycomb material expand out on the ground, and also let it create a bridge and railing. On the east side off the river the prototype is smaller, due to less space.

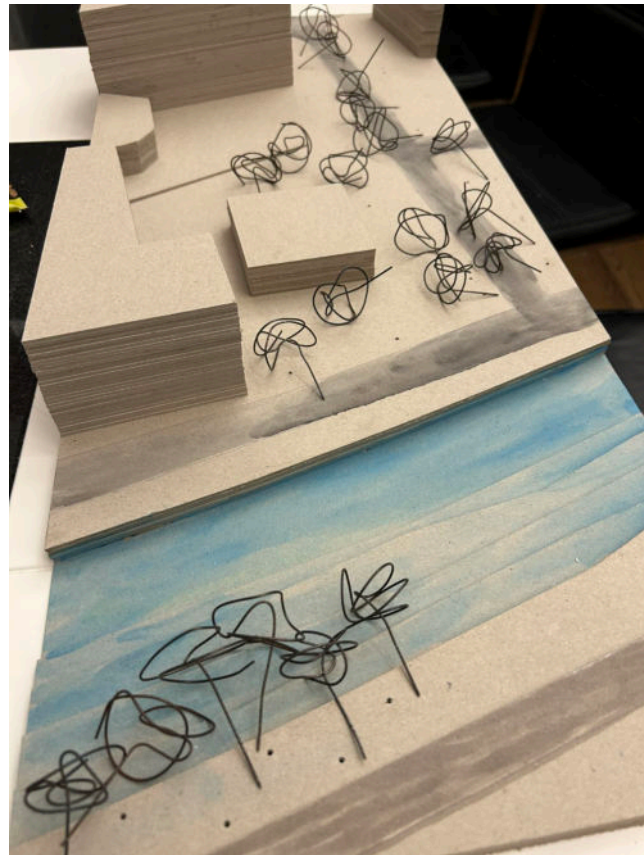
PROCESS PHOTOS



Painting



Some extra glue needed.



Placing out the trees.



Prototypes made in clay.



Placing out some "people" for scale.



Putting the bigger prototype together.



Almost finished.

SWOT

S

STRENGTHS

- Biodiversity Enhancement: The incorporation of flower planting and bee habitats contributes positively to biodiversity, creating a healthier ecosystem.
- Innovative Design: The parametric tower based on honeycombs shows an interesting architectural design, potentially drawing attention and becoming a landmark.
- Multi-Functional: The prototype serves multiple purposes, offering spaces for socializing, resting, and providing shelter, which can attract many different users.
- Connection and Accessibility: The creation of a bridge over the river helps connect the different sides, enhancing accessibility and connectivity within the area.

W

WEAKNESSES

- Maintenance: The complexity of the design, particularly with climbing plants and the roofs, might require high maintenance and upkeep costs.
- Structural Stability: The structural integrity of the honeycomb extension as a bridge might need further assessment for safety and stability, but this can be solved by a concrete foundation under the honeycombs if needed.
- High Material Usage: The design's complexity and scale, particularly the parametric tower and the bridge, might require a substantial amount of materials, potentially leading to high construction costs and environmental impact.

O

OPPORTUNITIES

- Community Engagement: The prototype offers opportunities for community involvement in maintaining flower planting, biodiversity, and potentially adopting bee-friendly initiatives.

Educational Aspect: It could serve as an educational space to raise awareness about biodiversity, sustainability, and the importance of pollinators.

Adaptability: The design could be adapted for other urban areas, contributing to sustainable and environmentally friendly infrastructure in different locations.

T

THREATS

- Environmental Impact: The impact of the structure on the surrounding environment, such as altering natural habitats or disrupting the ecosystem, needs consideration.
- Cost and Funding: The construction, maintenance, and continuous upkeep of such an unusual structure might require substantial financial resources and ongoing funding.