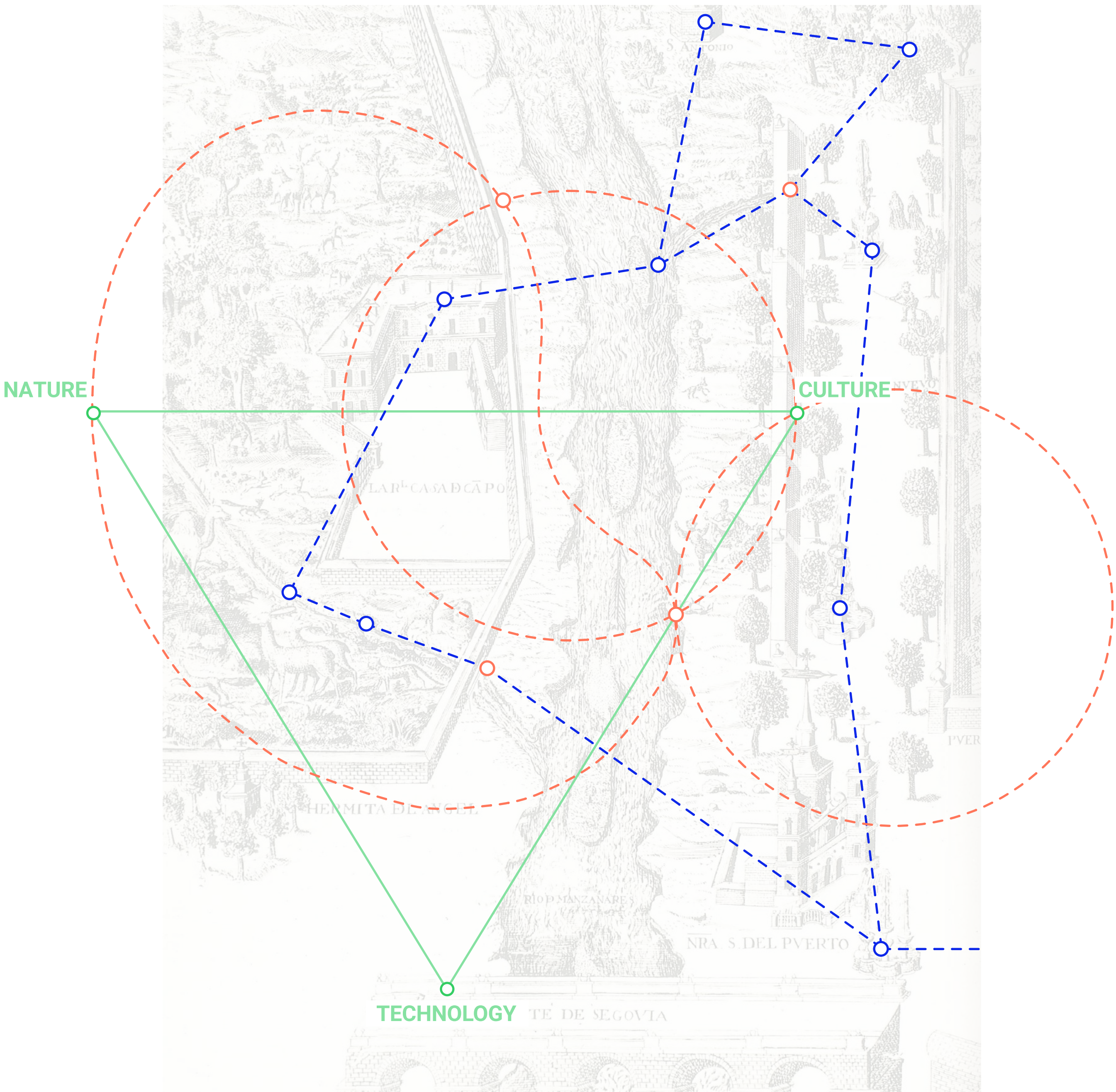
Temporal Constructed Refugia

Towards New Urban Imaginaries

Design Booklet

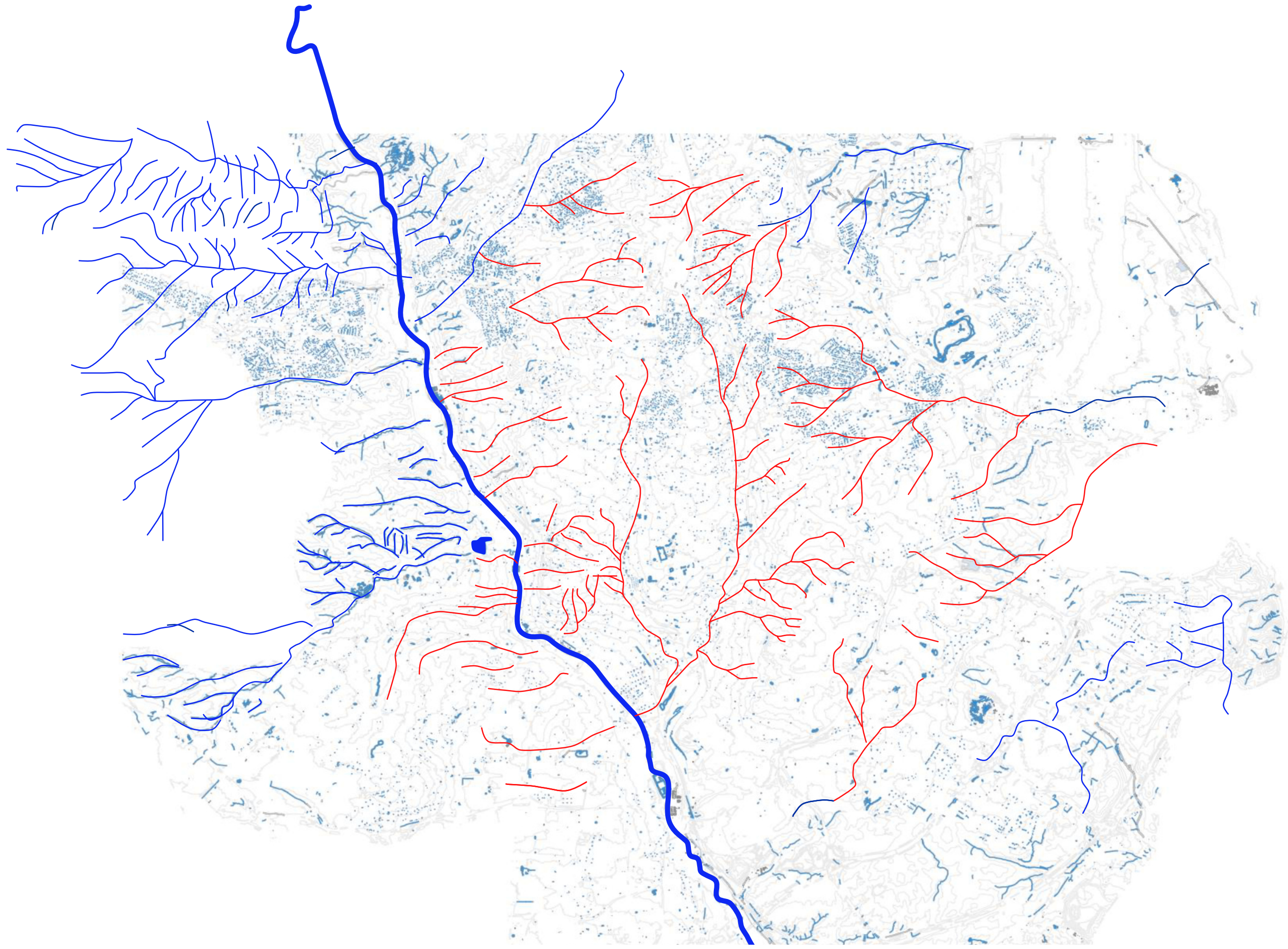


Alix von Knebel Doeberitz | 6079202

Tutors: Roberto Cavallo | Alper Alkan | Florian Eckhardt

Architectural Design Crossovers Graduation Studio 2024/25

TU Delft Faculty of Architecture and the Built Environment



Map created by author, with QGIS_ Information source: Portillo, T., Portillo, T., & Portillo, T. (2024b, November 23). Madrid y sus arroyos olvidados: . El País.

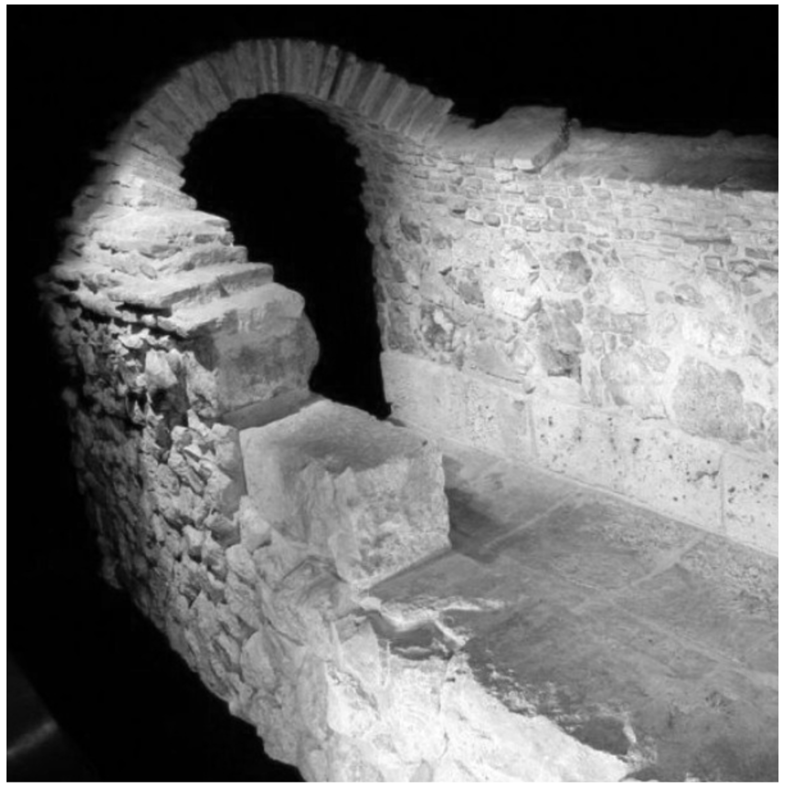
Historical Travel of Water through Madrid

Arab System of Qanats(closed channels) and Mayras(open channels)

Fountains serving as important social nodes

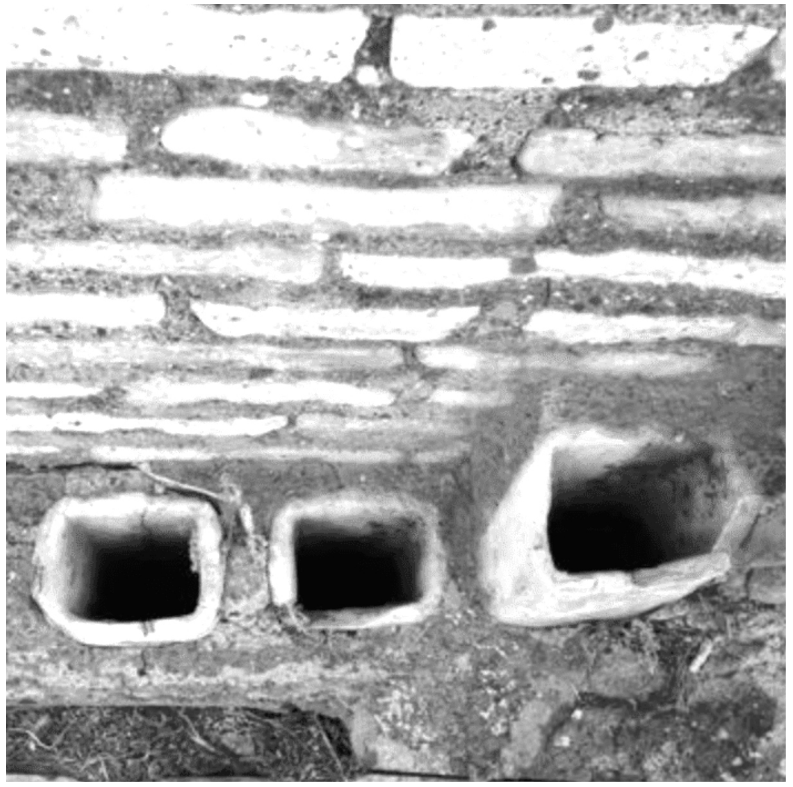
Fuente de Salud en El Parque de Oeste

Underground Channel



Iberian Qanat

Channel in the Wall

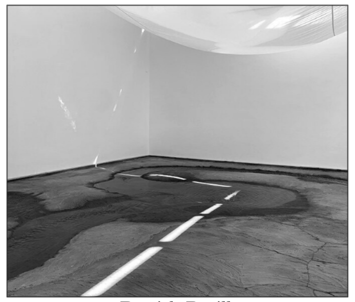


Water Transportation System in the Wall

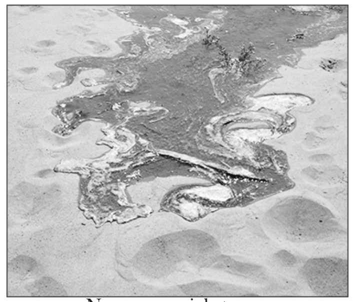
Open Channel

Water Transportation System Alhambra

Activation of Water



Danish Pavillon



Non-perennial stream

Stream Botanical Garden

City Stream Freiburg

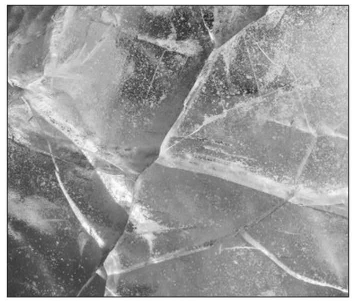
City Stream Freiburg

Scarpa

Non-perennial stream

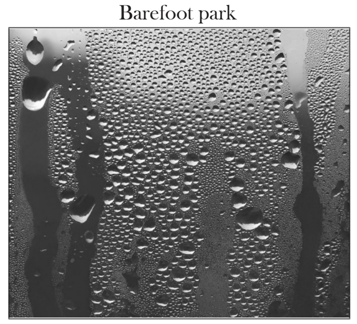
Non-perennial stream

Barefoot park



Frozen Water

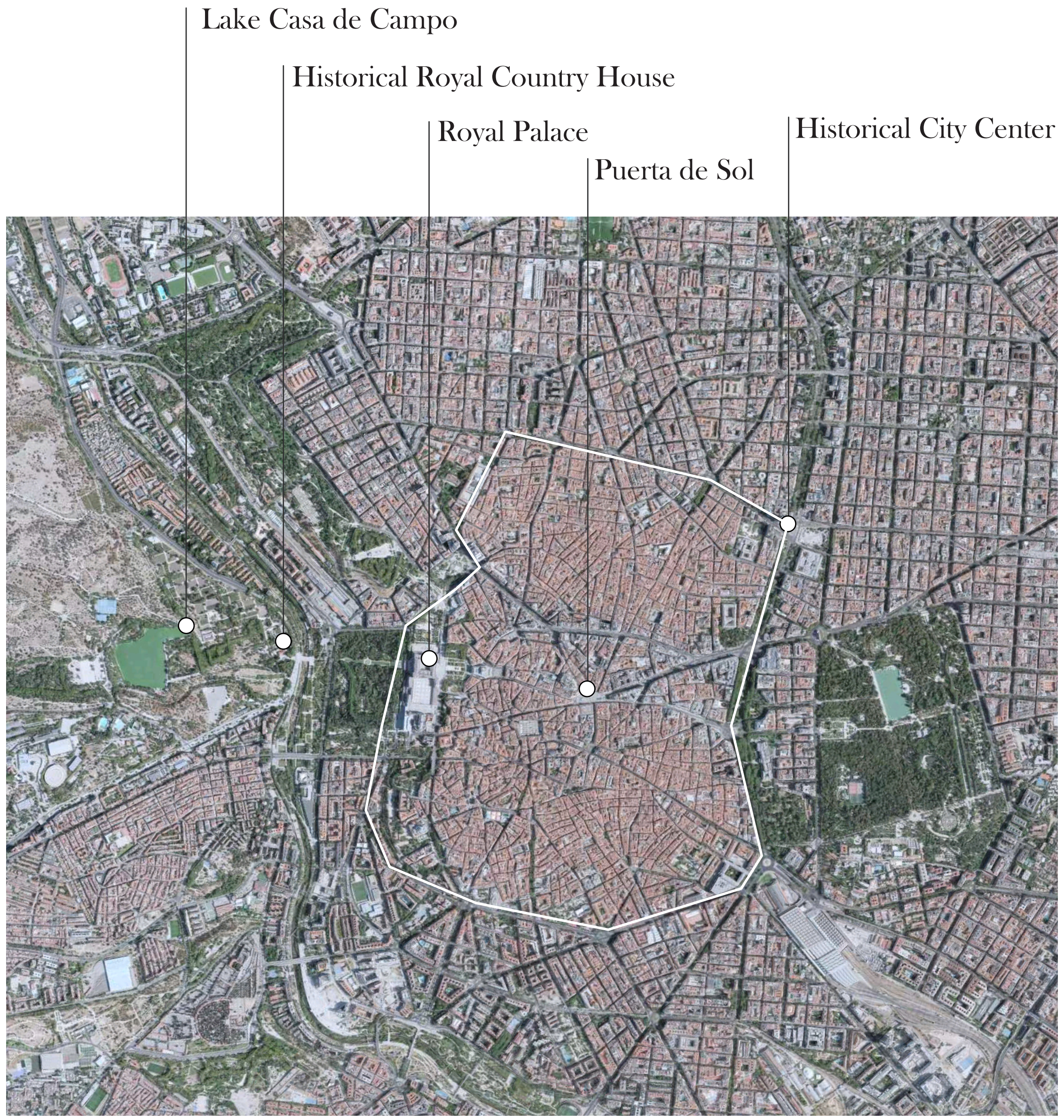
Danish Pavillon



Condensed water

Catalogue of Precedence, showing the affective qualities of water

Symbolic relationships on site

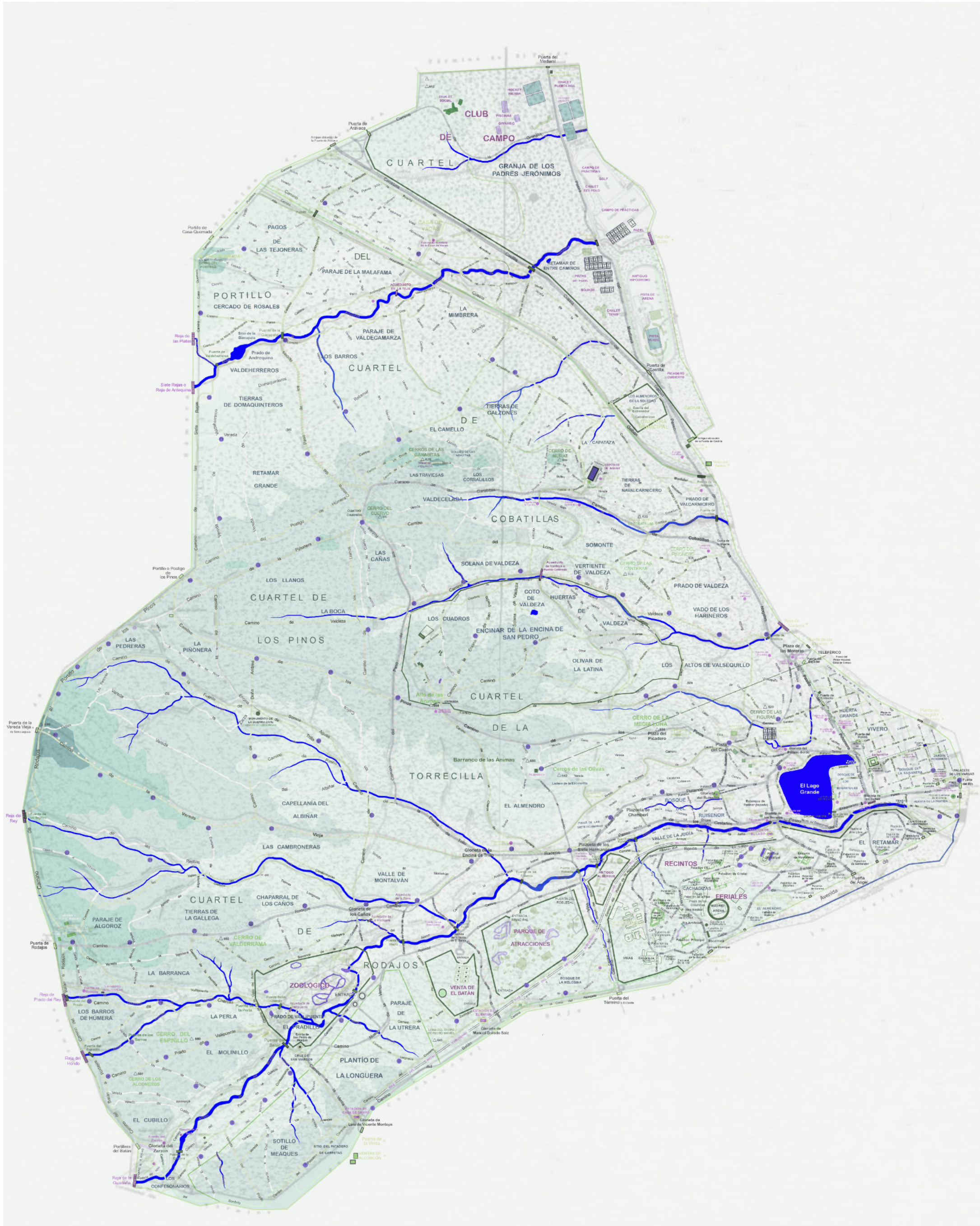


base map created with Google Satellite Images

Connection Casa de Campo to Royal Palace

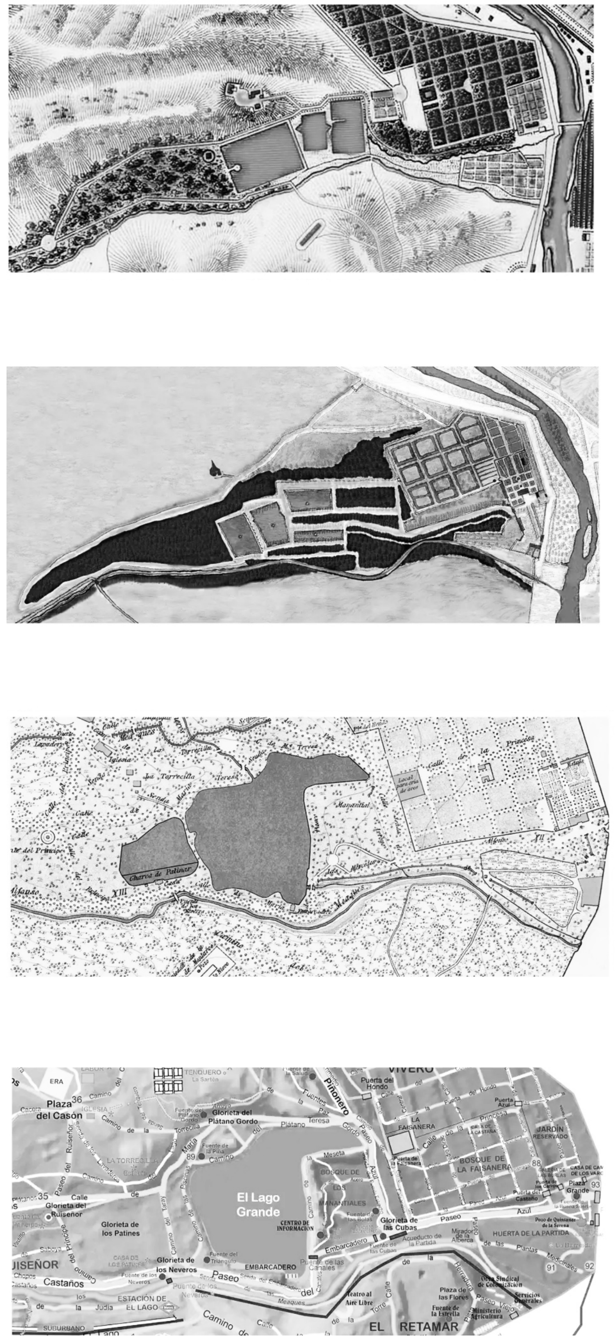
base map created with Google Satellite Images

Mapping of surface water on site



Layering of several Maps of the casa de campo

Configuration of the Lake

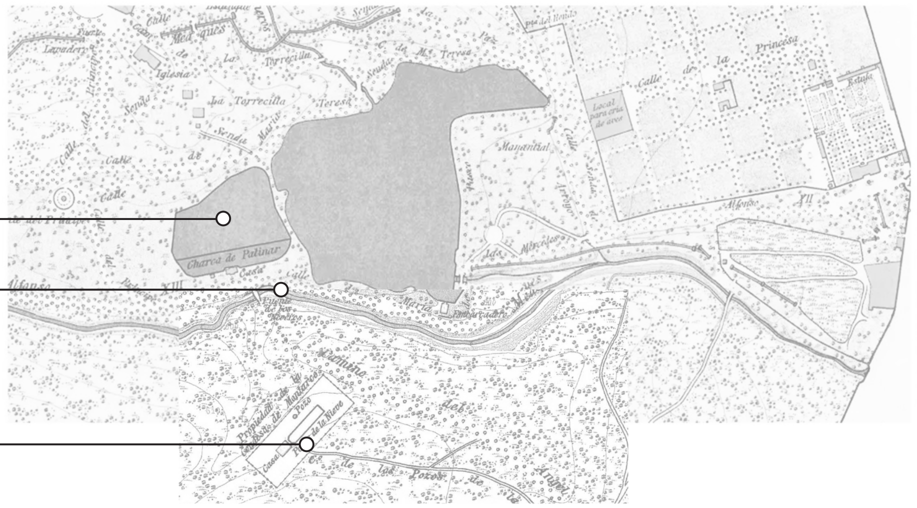


Evolution of ponds from 1562 to the present day

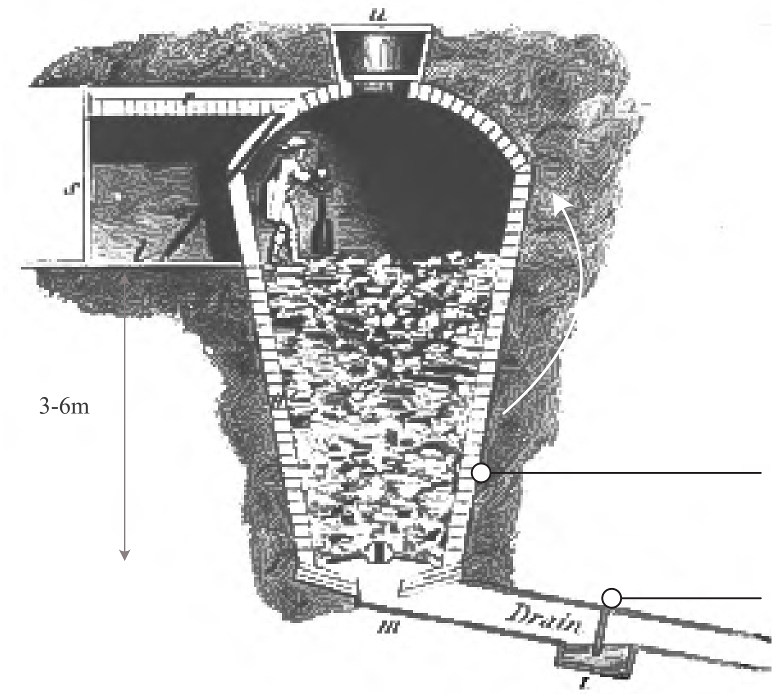
Figure adapted by author Original Source:

acasadecampo.es. (2024b, August 17). El LAGO

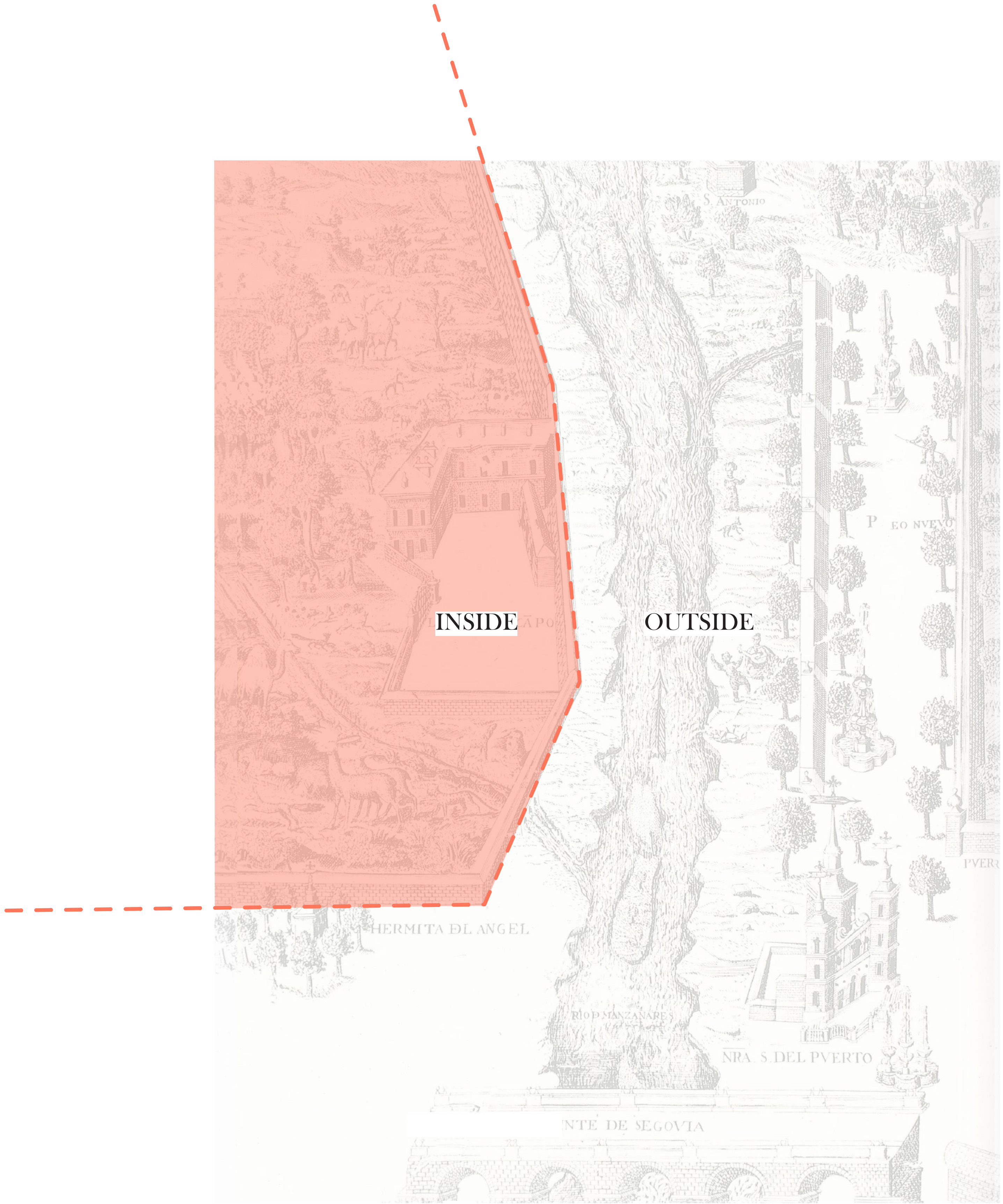
Historical Ice Pits in the Casa de Campo



Relationship Above-and Underground



Given Bounderies

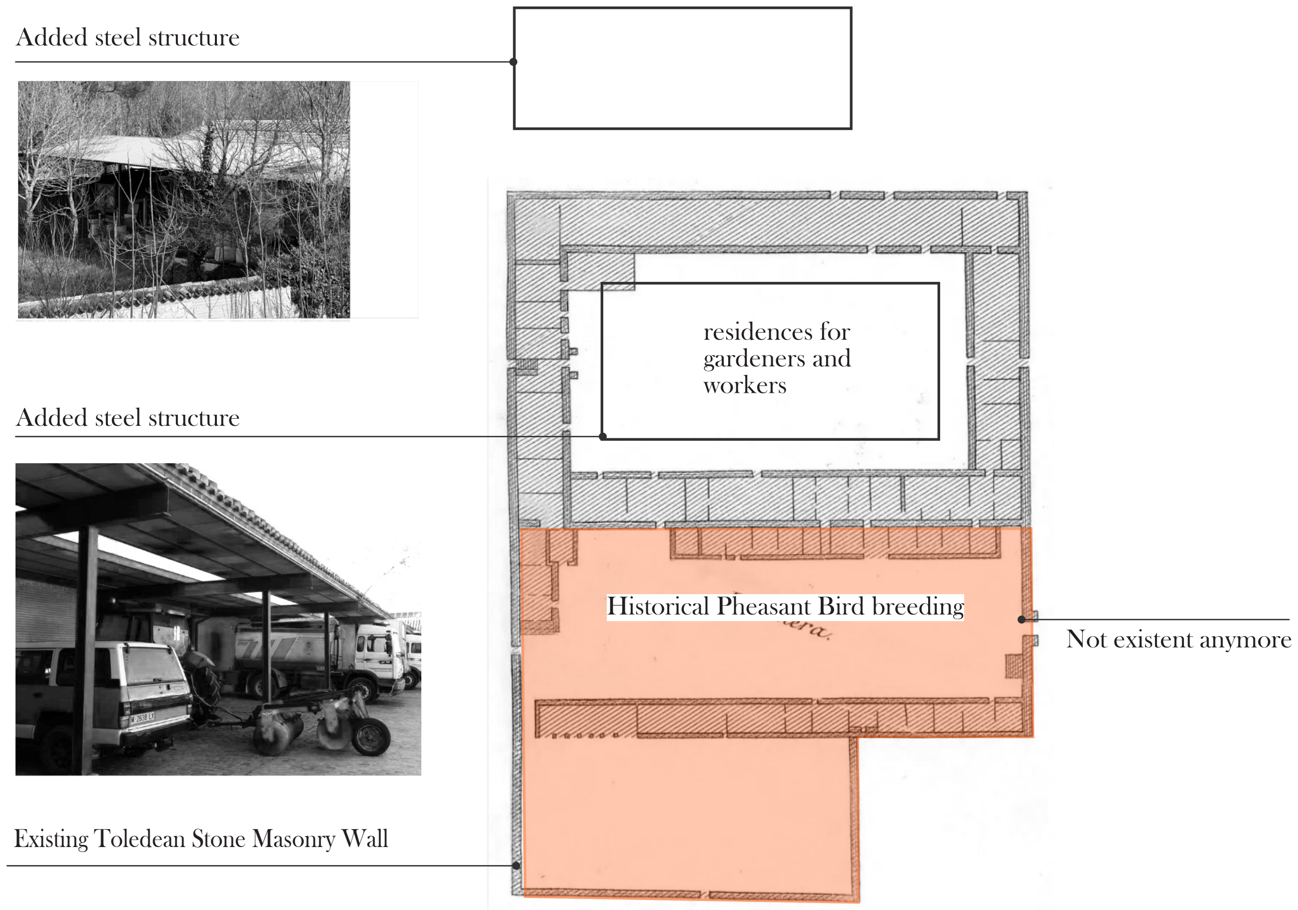


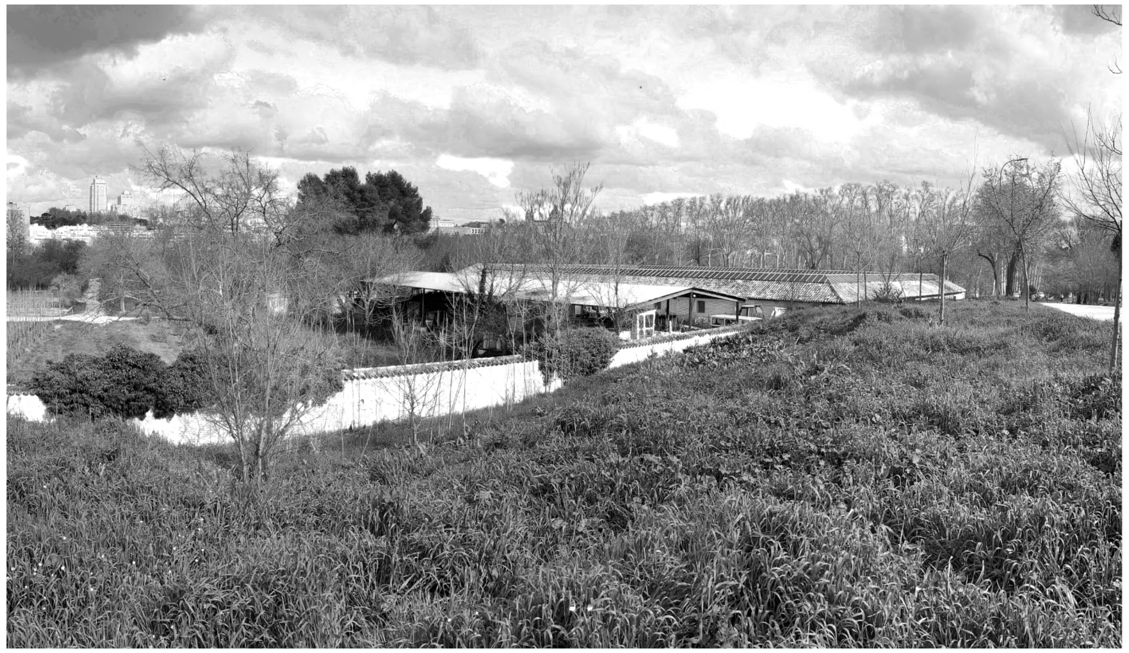
Boundery Inside-Outside

Historical Context

Boundery constituting the site of the former royal country house

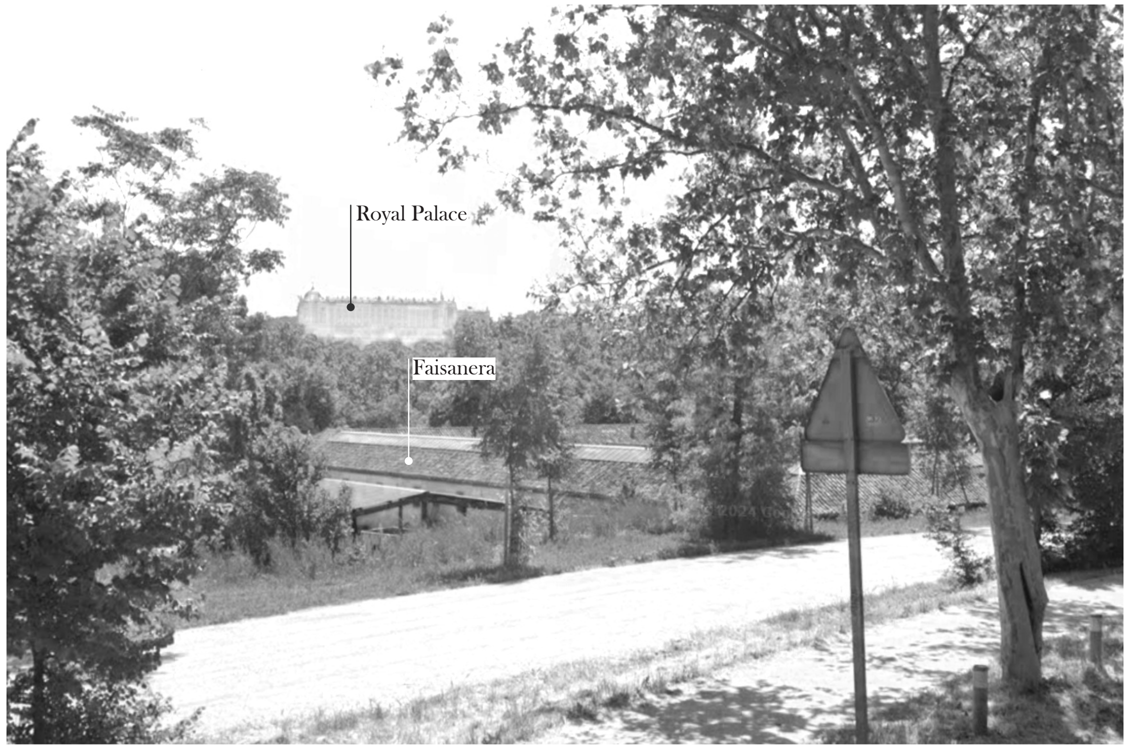
Existing Phaesantry





Existing Toledean Stone Masonry Wall

Existing Phaesantry



Visual Connection Lake-Palace

Existing Pathways

Existing Path along the Lake of the Case de Campo

Existing Boulevard crossing the Forest of the Phaesantry

Existing Phaesantry

East Fassade-Main Fassade

Its main façade faces east, where it has a large lintelled entrance topped with a pediment.

Its walls are made of exposed tile brick.

Historical

Today

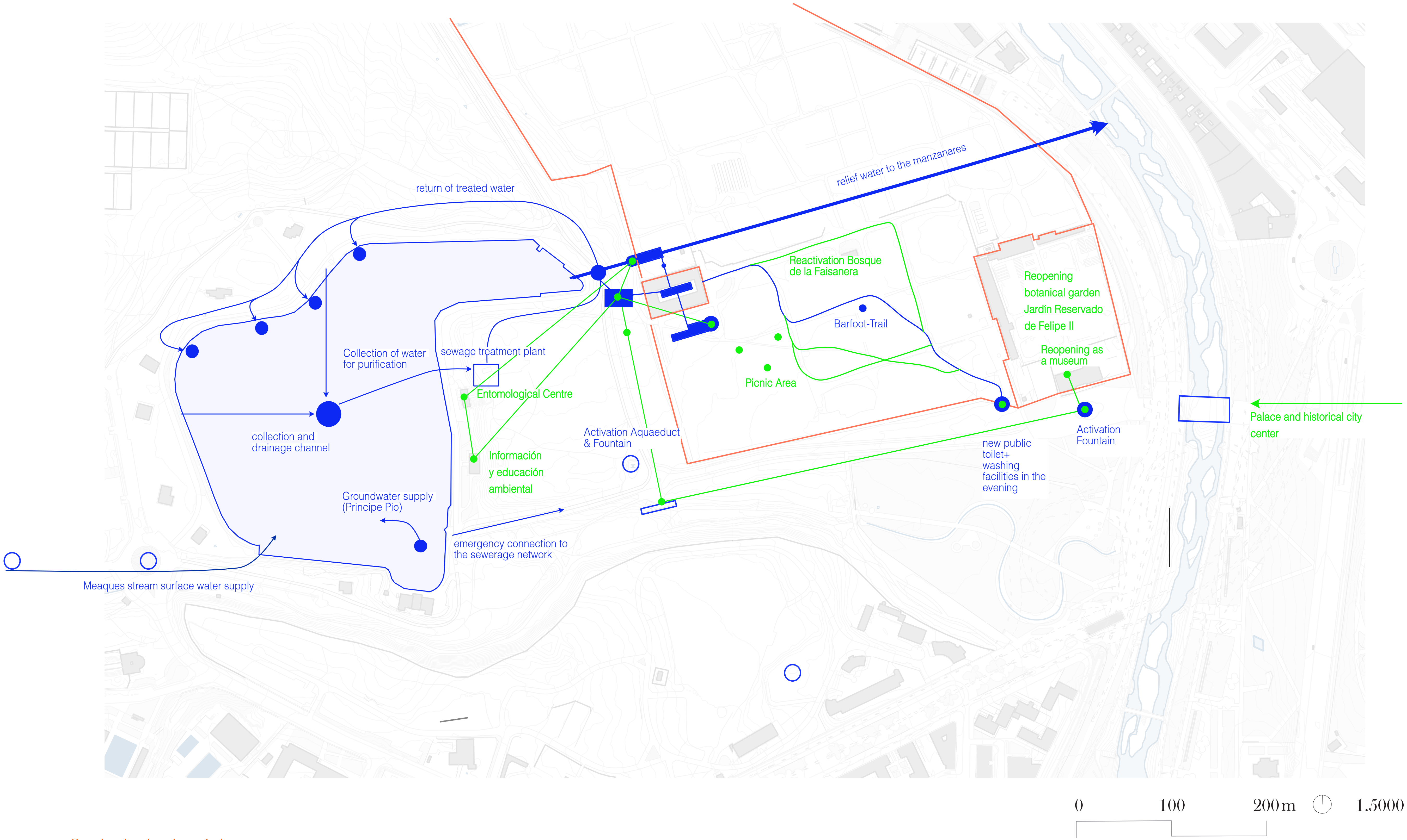
West Fassade

The west facade is made of brick and rubble walls, all on a perimeter masonry base of different heights depending on the wall.

South Fassade

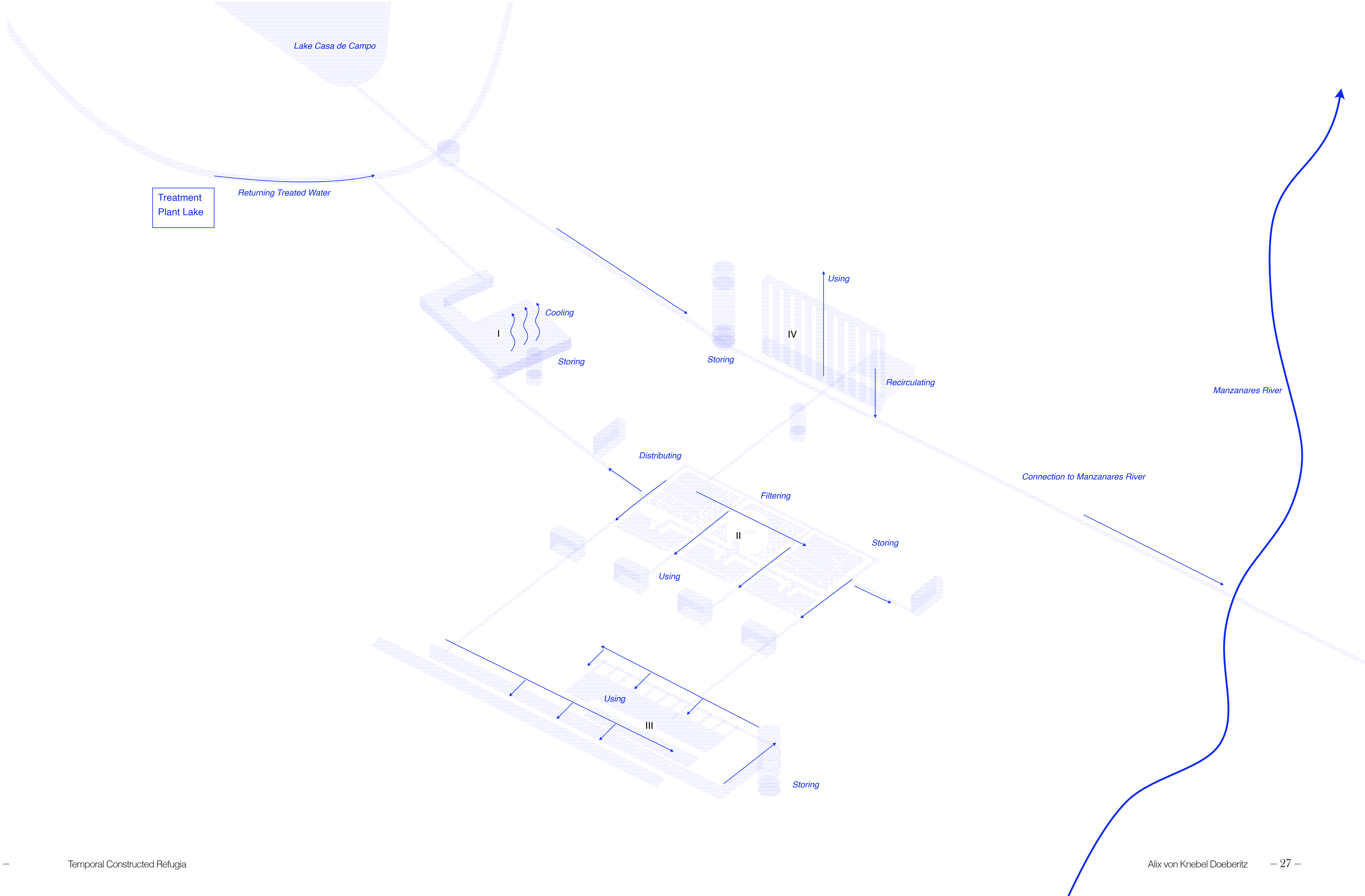
The roof is gabled, made of curved red ceramic tiles mixed with old tiles, on a bed of cement mortar and wood decking over metal purlins and trusses. The eaves are finished with wooden corbels resting on the exposed brick wall. It is topped with gabled skylights along the entire ridge, except for the main facade, which lacks them. The interior portico of the courtyard follows a similar approach.

Masterplan



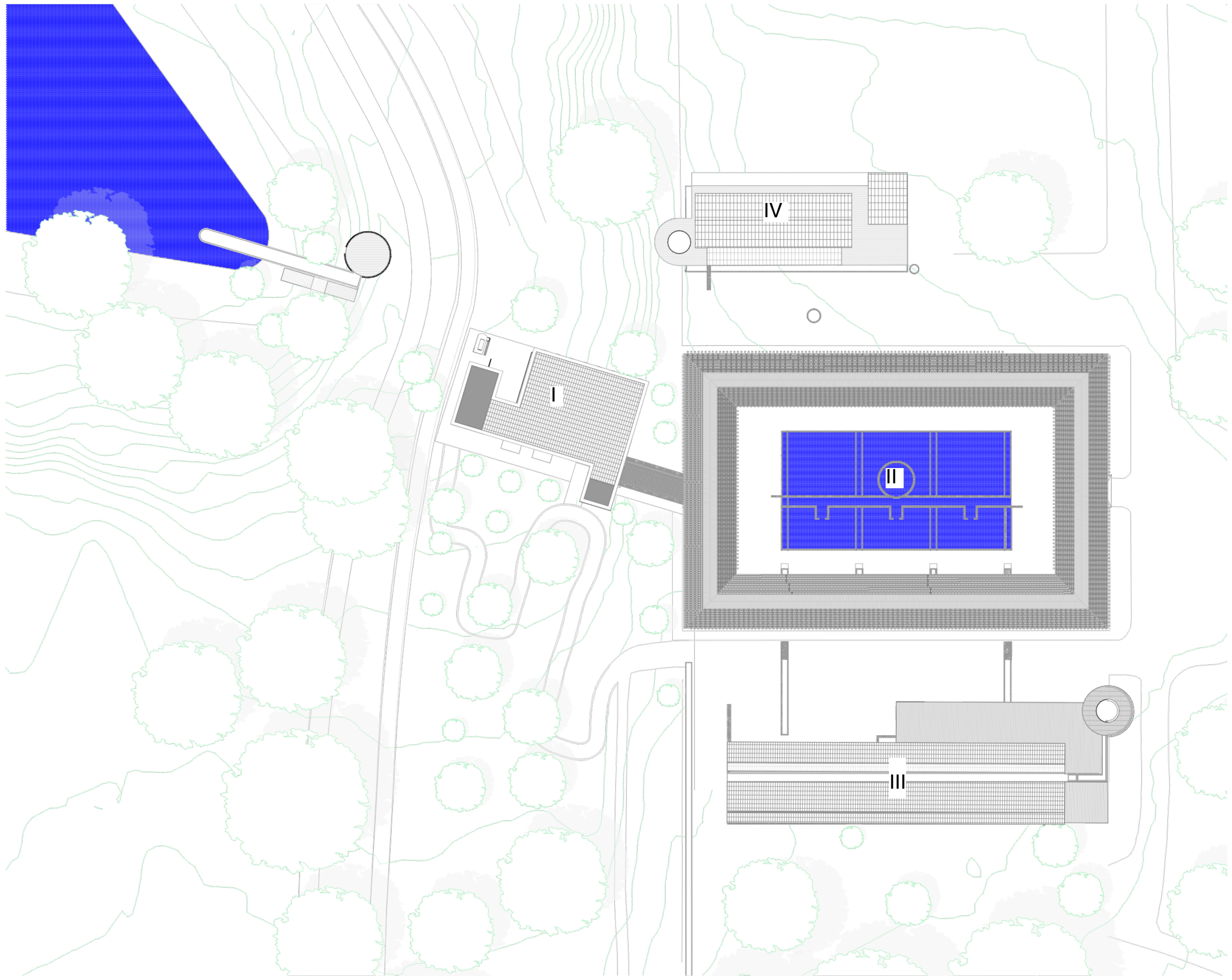
Crossing the given bounderies
(Re)activating existing buildings
Connecting and extending existing water network

Activating the Water throughout its travel

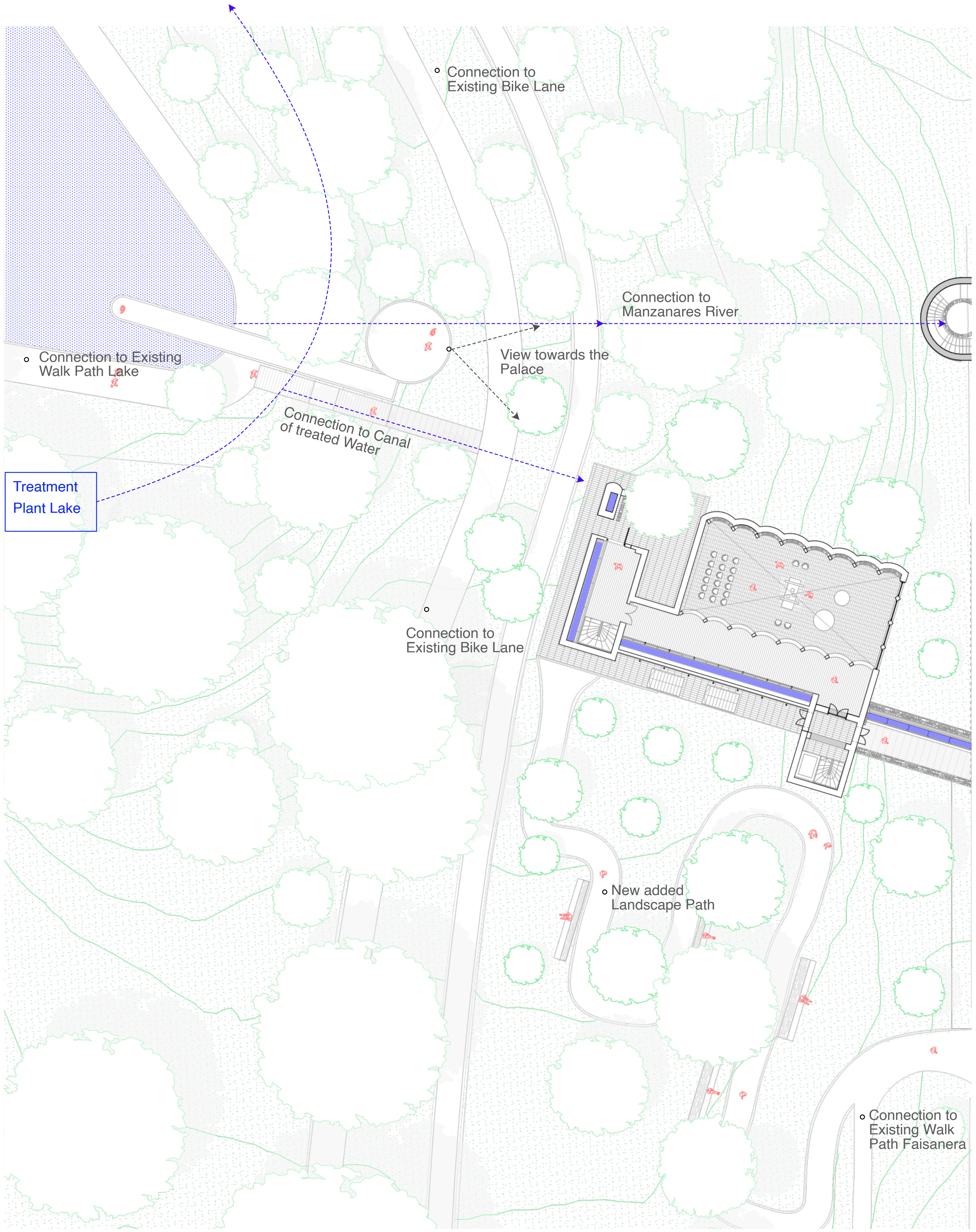


Site Plan 1.1000

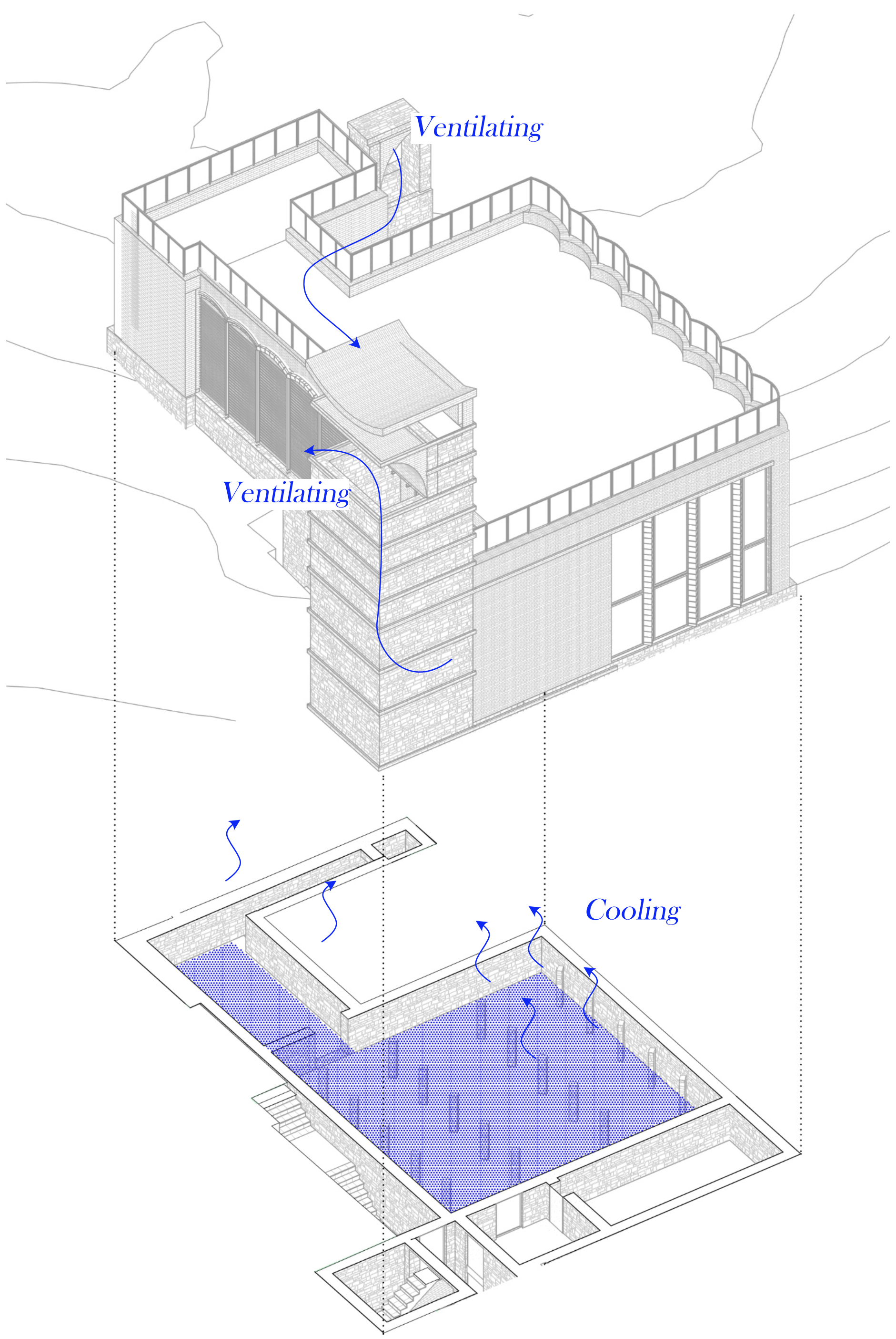
I Water Chapel



I Water Chapel
II Water Filtration Garden
III (Temporary Pools
IV Water Living Lab



Context_Water Chapel_1.400

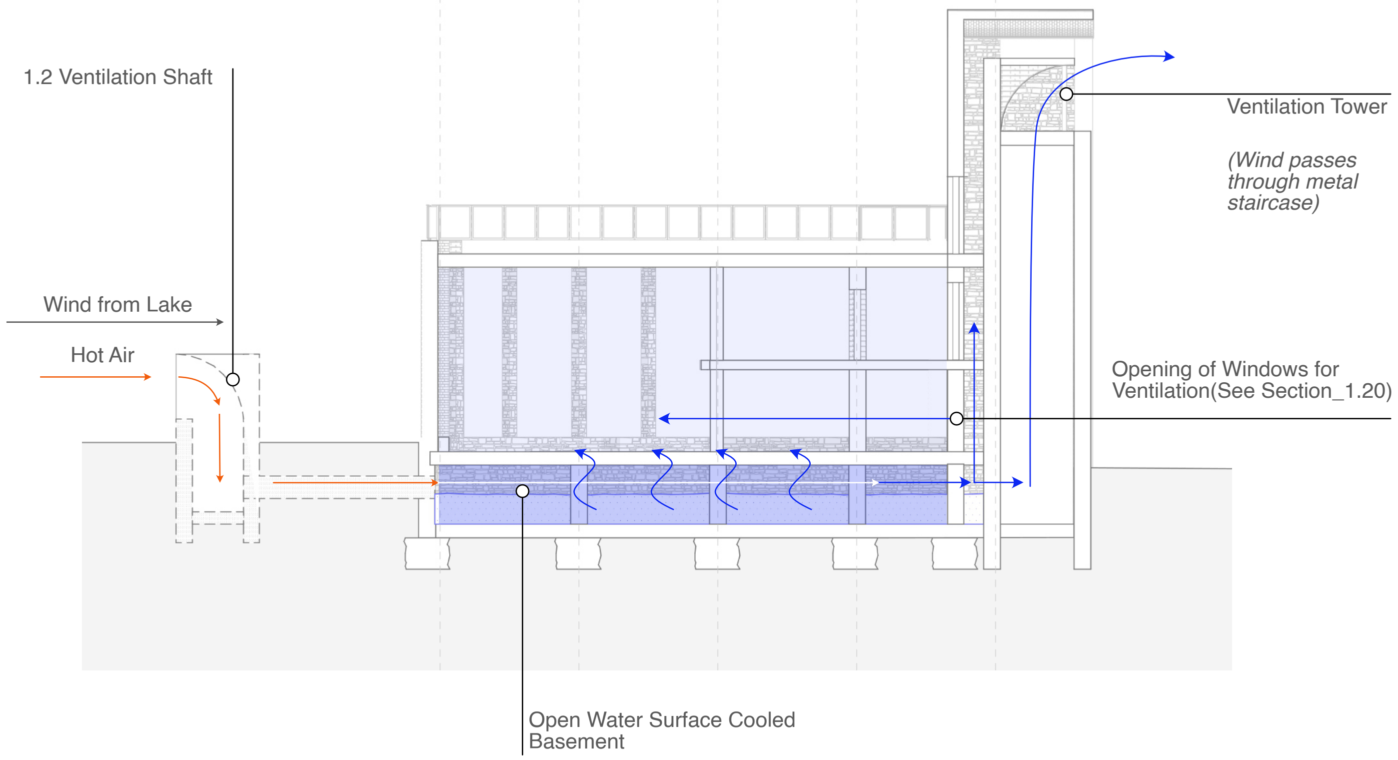


Axonometry

I Water Chapel

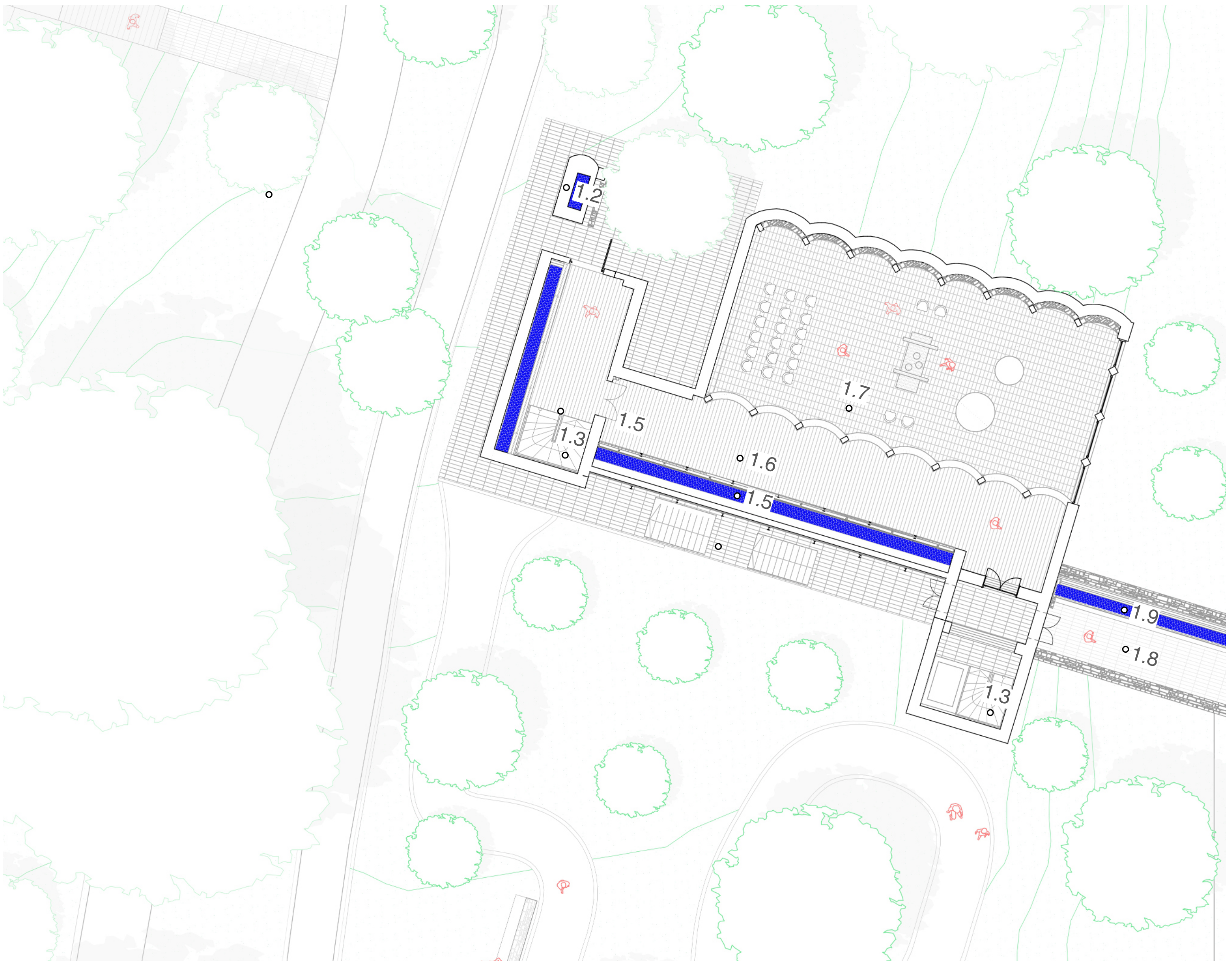
Historical Model of Storing and Cooling Water

An Ab Anbar („water reservoir") is a type of cistern historically used in Iran to store drinking water. It stands out as one of the most distinctive architectural features of ancient Persian engineering. Typically constructed underground and capped with a dome, these structures are especially common in arid cities like Yazd. There, they are often paired with windcatchers—ingenious ventilation towers that help cool and aerate the stored water.

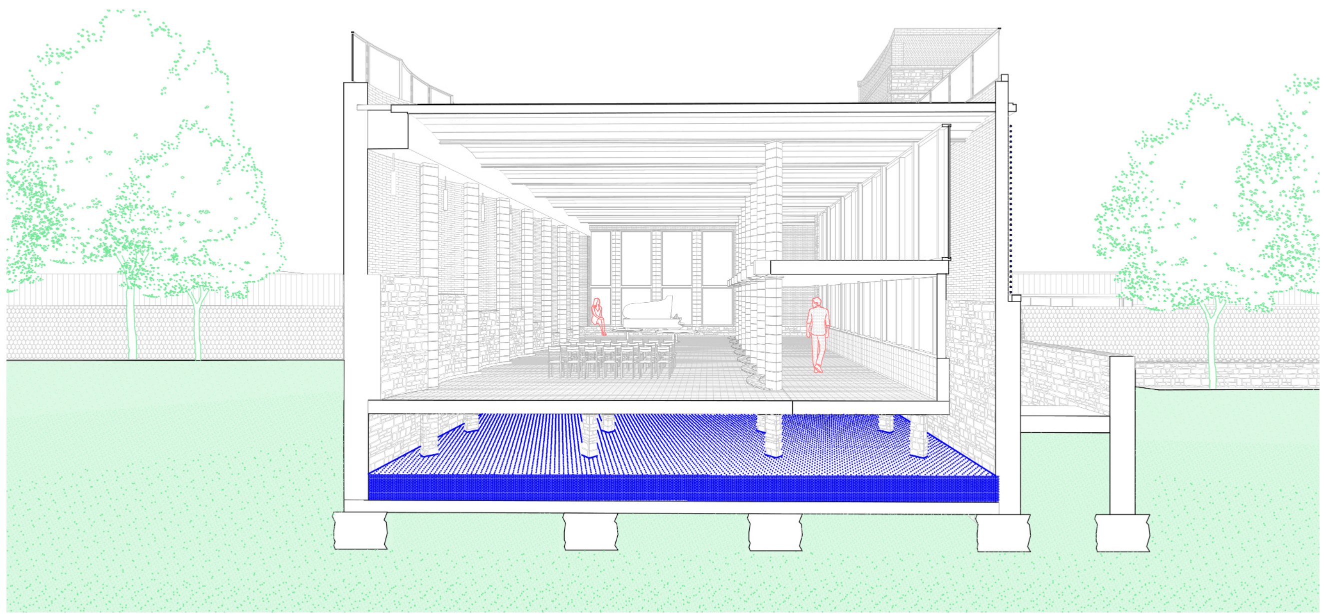


Adapted System of Storing and Cooling Water

I Water Chapel

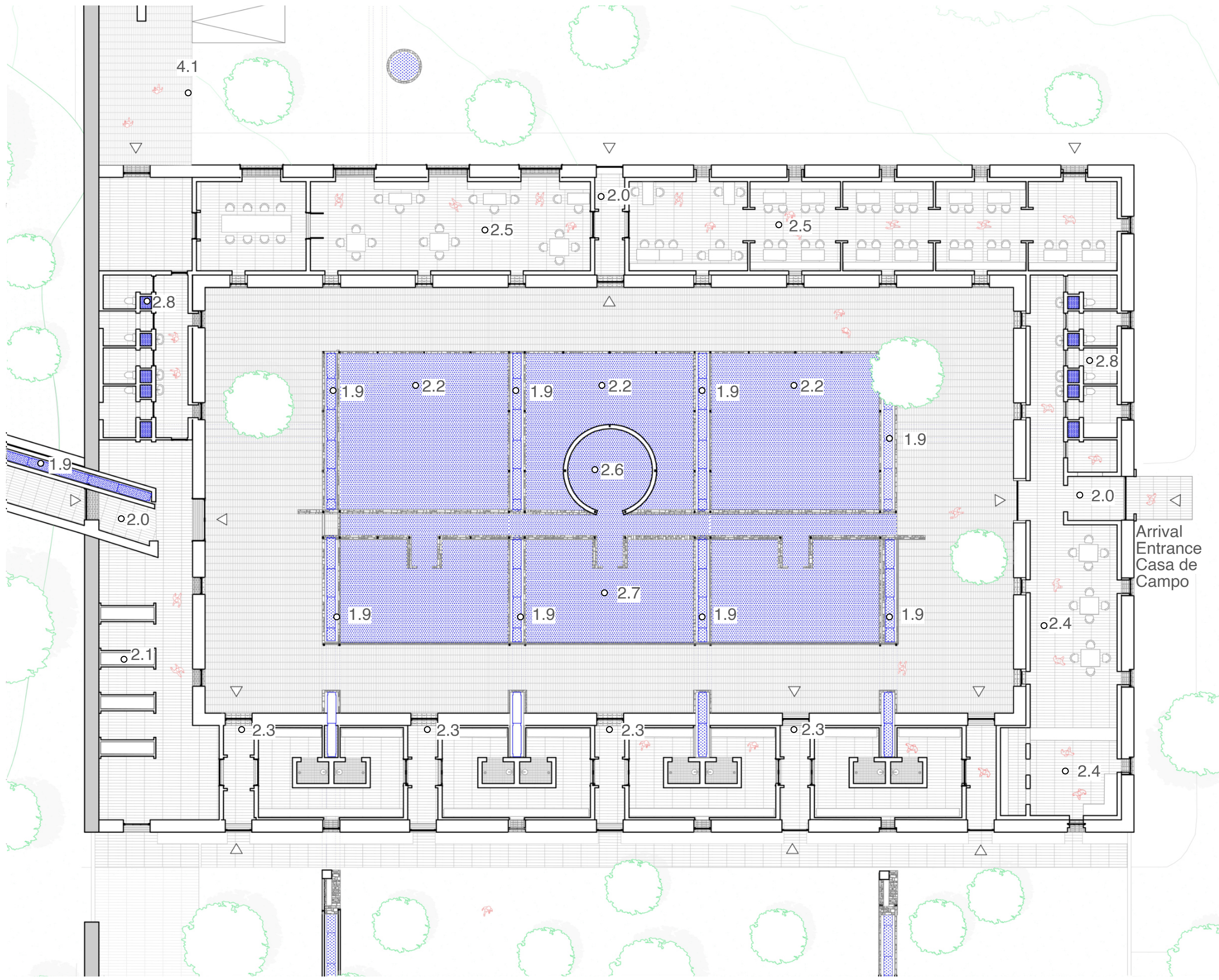


Floorplan_Water Chapel and connection Canal_1.200



Crossperspective_Section_Water Chapel

II Filtration Garden



Floorplan_Winter_Existing Faisanera and added structures_1.200

1. Water Chapel

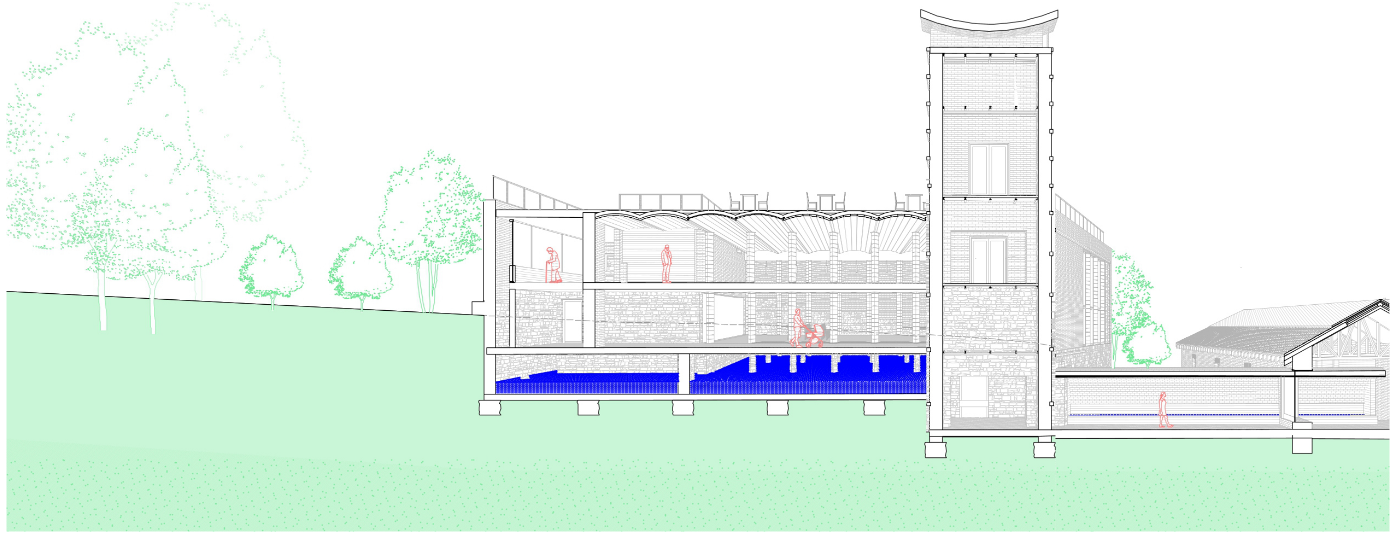
1.1 Viewing Platform towards the Royal Palace & Public Toilets
1.2 Ventilation Shaft
1.3 Main Circulation
1.4 Secondary Circulation
1.5 Connection Gap to Level -1
1.6 Gallery for Direct Connection
1.7 Main Space, Double Height Used for exhibitions, events
1.8 Connection Tunnel to Faisanera
1.9 Water Carrying Ceramic Pipes 2.0 Connection Air Log

2. Reactivated Faisanera

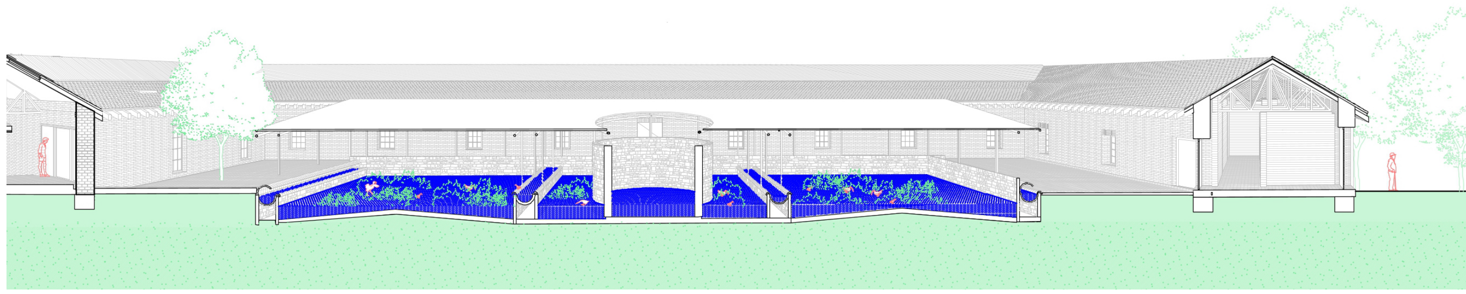
1.9 Water Carrying Ceramic Pipes
2.0 Connection Air Log
2.1 Lockers and Storage Space
2.2 Filtration Garden, Heliophyt Filter
2.3 Connection to Shower, Changing Rooms, Pools/ Restaurant
2.4 Cafe with Outside Service
2.5 Coworking Space
2.6 Water Pit, only accesible in summer(See Diagram below)
2.7 Sunken Garden in Summer, in Winter filled with Water
2.8 Public Toilets
2.9 Community Garden
Growing of Vegetable and Fruit for Restaurant

II Filtration Garden

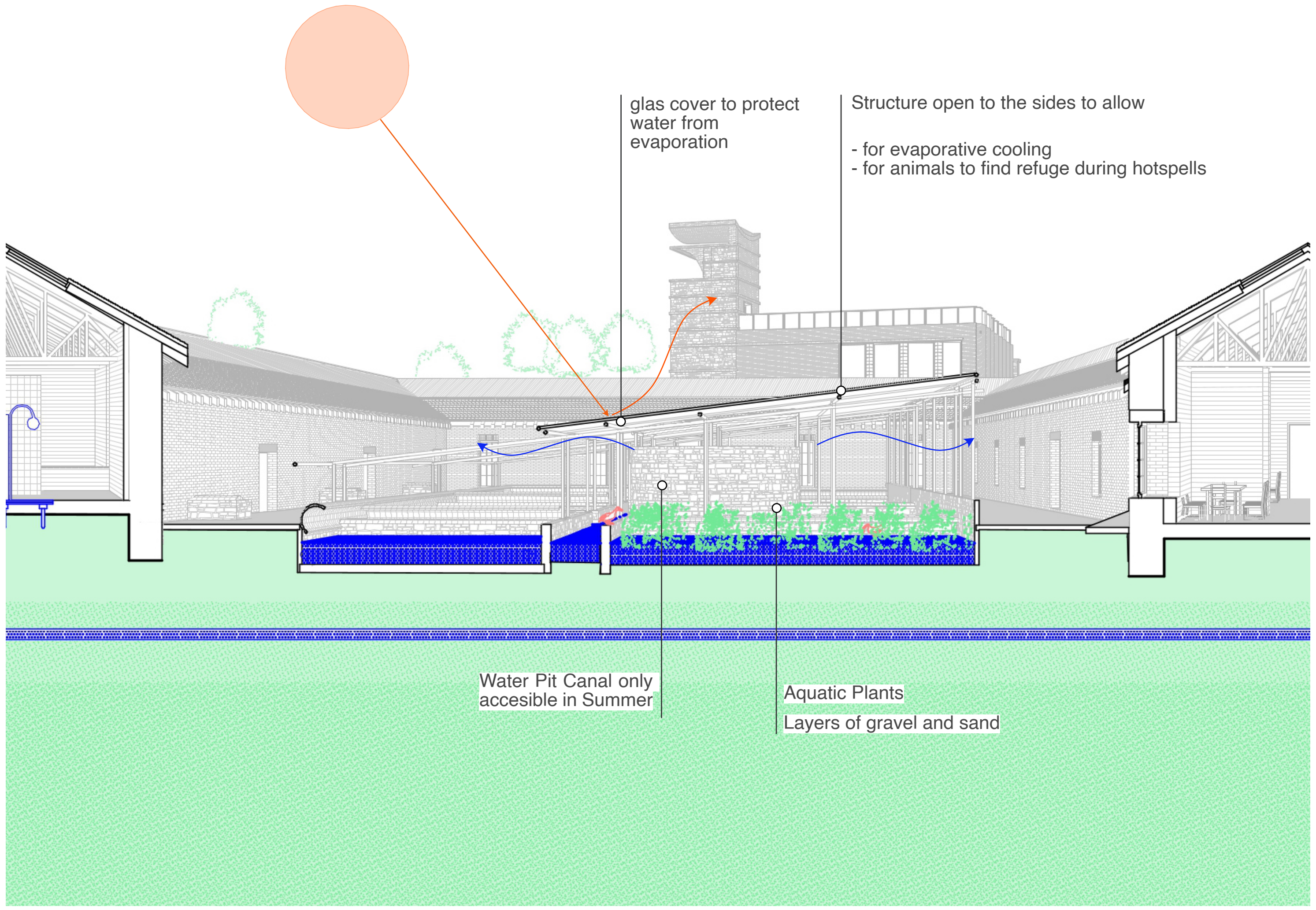
II Filtration Garden



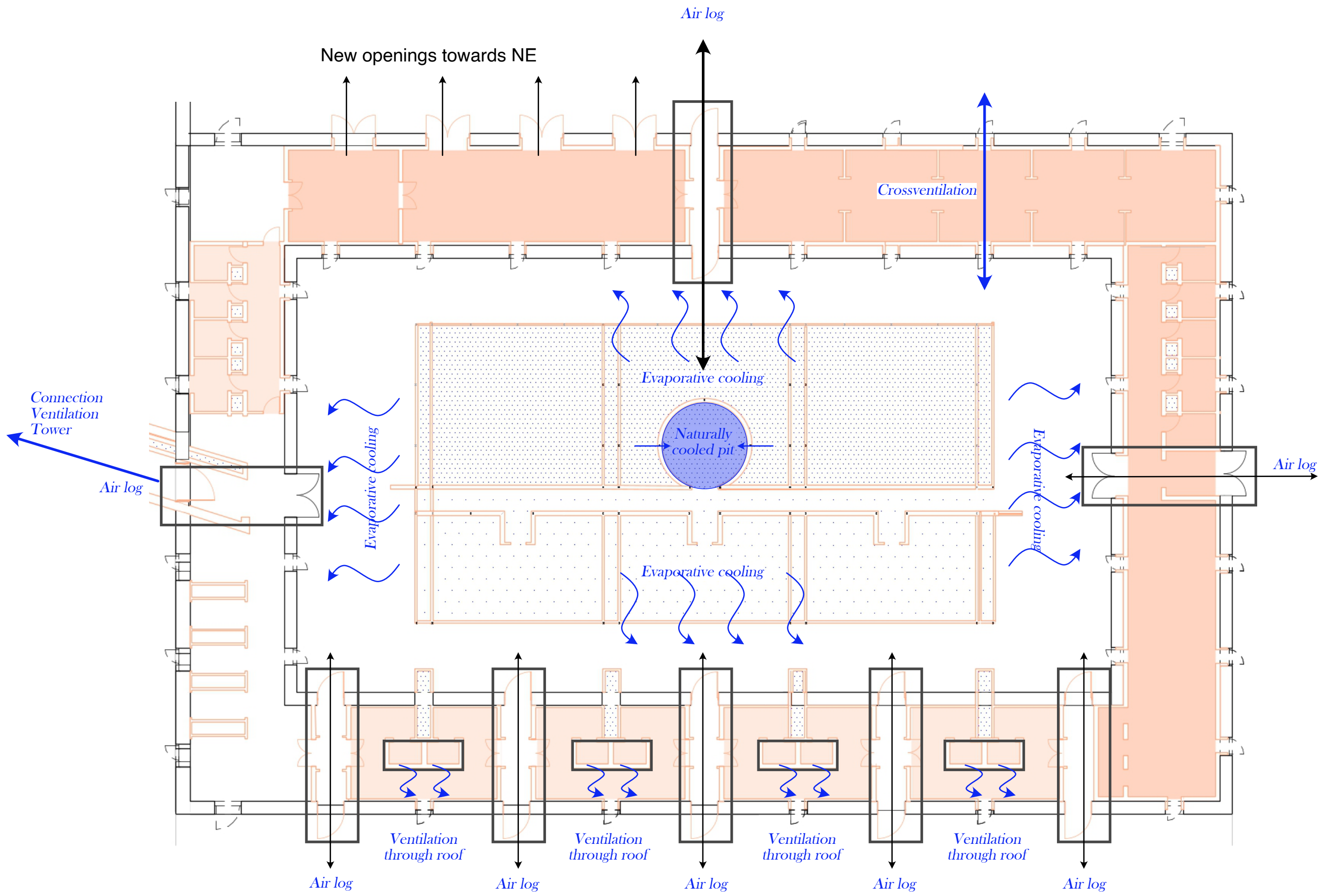
Perspective_Section_Connection_Water Chapel to Faisanera



Perspective_Section Filtration Garden



Section_1.100_Filtration_Garden



Full insulation

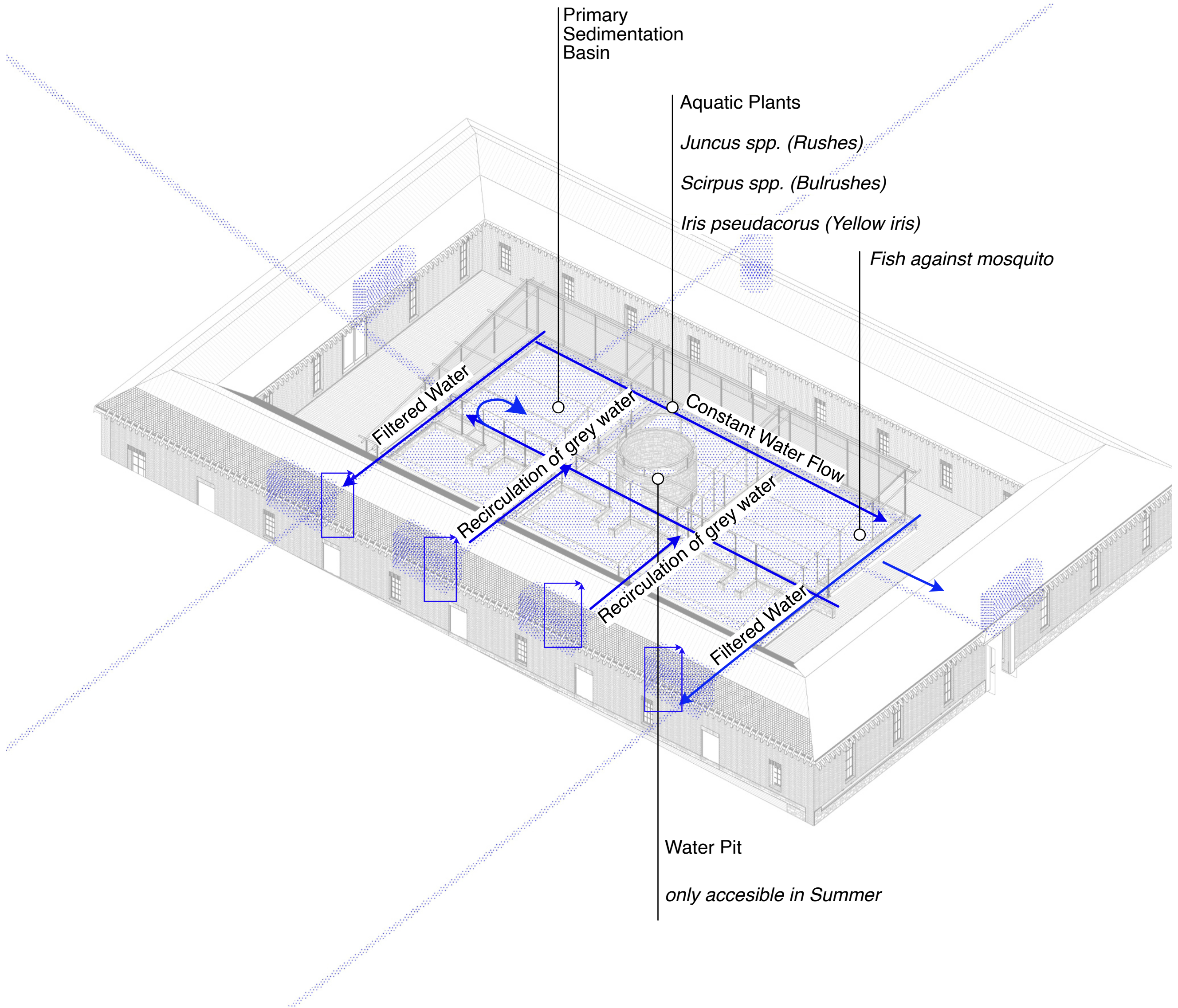
Insulation of existing walls with hemp crete; Box in the box principle

Medium insulation

No additional insulation

Climatization and Ventilation Strategy

II Filtration Garden

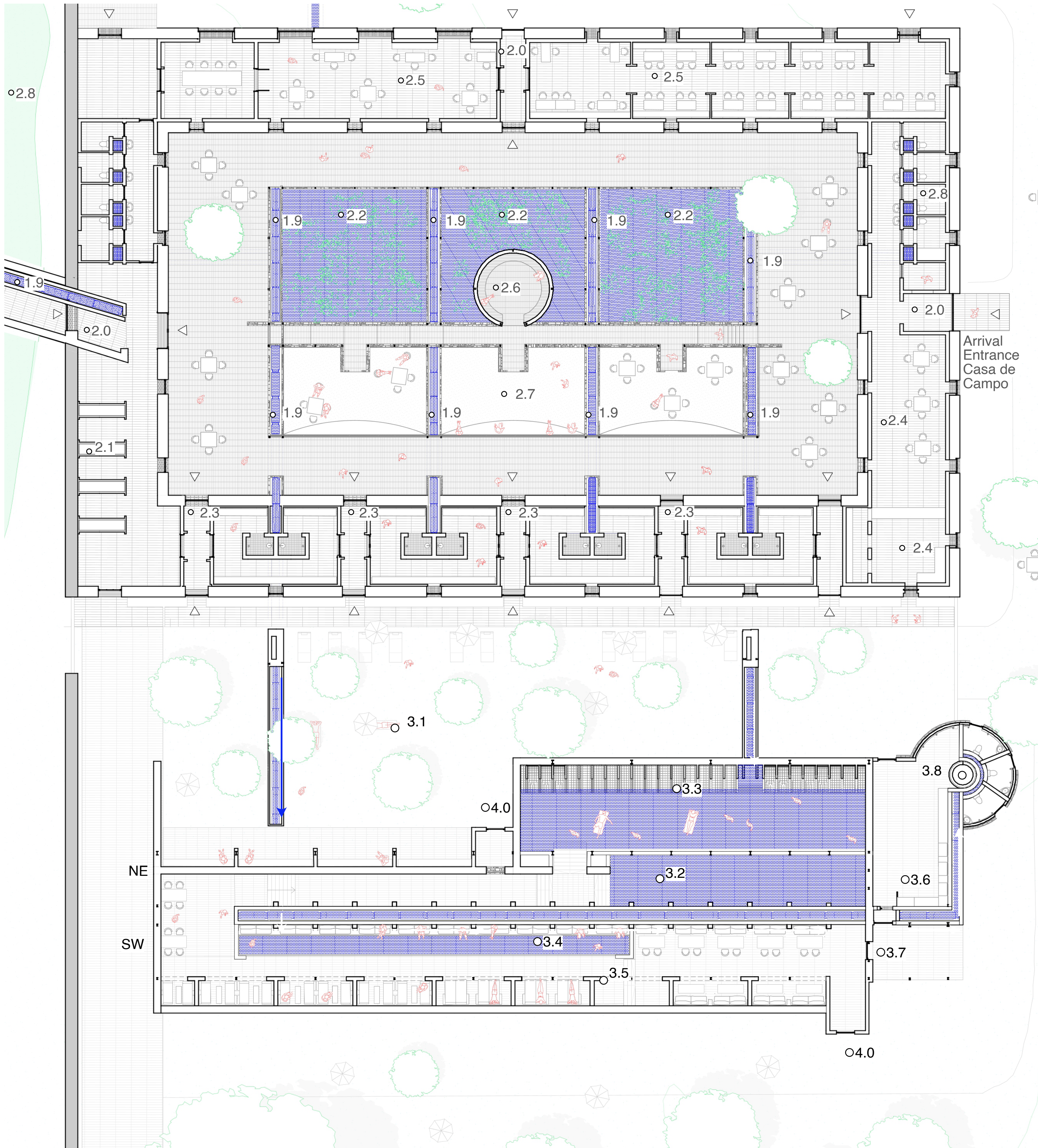


Axonometry Horizontal Flow bed and Water Pit

3. (Temporary) Pools

3.1 Outside Area Pools/ Restaurant
3.2 Deep Pool
3.3 Wet Relaxation Area
3.4 Covered Shallow Pool in Summer, Restaurant Space in Winter
3.5 Dry Relaxation Area
3.6 Kitchen
3.7 Access Point Pools from Kitchen
3.8 Oven (heating Space in Winter) Warmwater Storage underneath
3.9 Public Toilets
4.0 Public Entrance Service Space and Water Pump underneath

II Filtration Garden Connection



Floorplan _Connection_Pools

Scenario: Filled Pools of II Filtration Garden

Temperature Outside

- +

Water Availability Park

- +

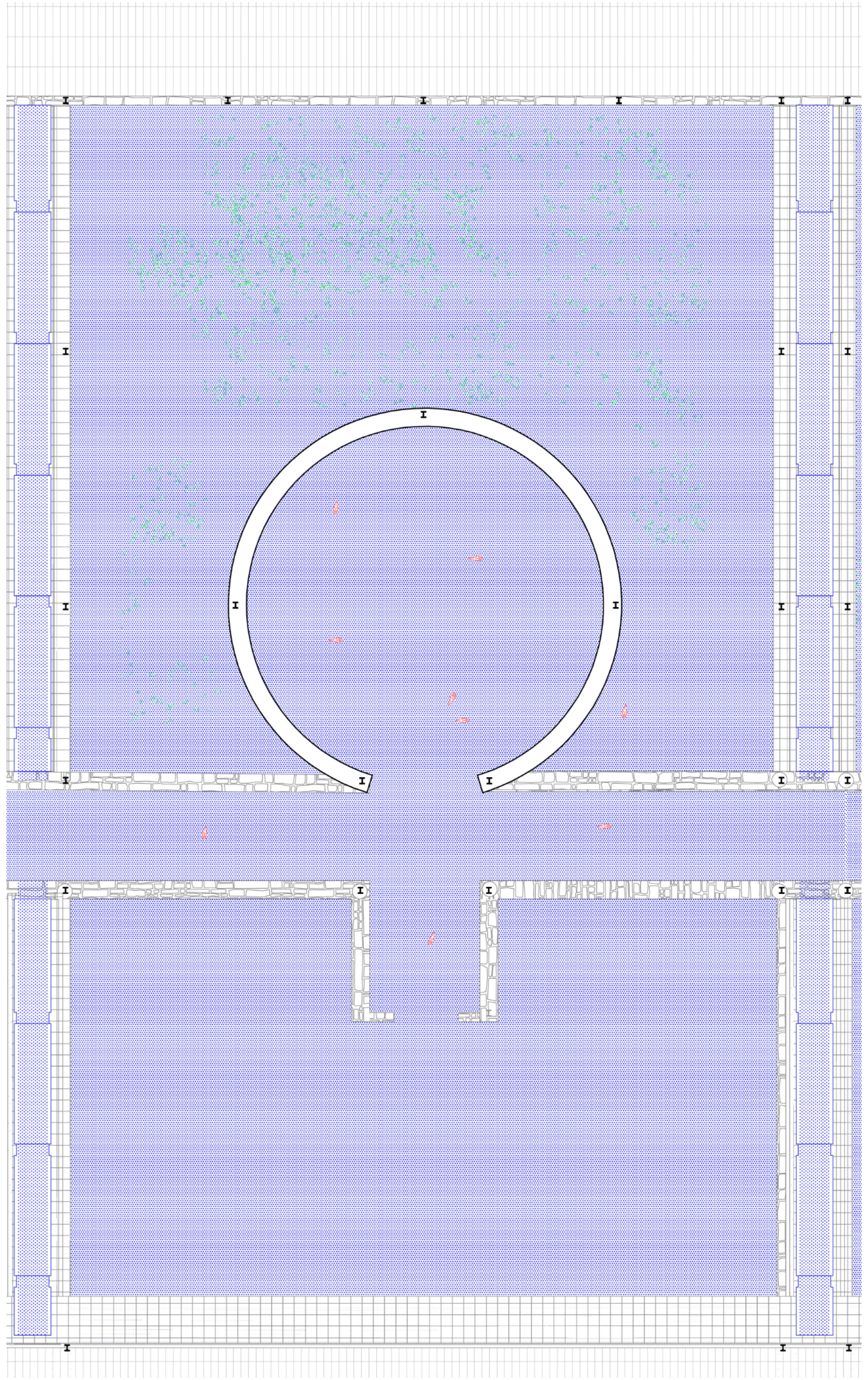
Day Time

9am 9pm

Regeneration

Non-human human

- Water buffer storages are recharging
- Finding refuge in indoor spaces



Scenario: Hot summer day in the II Filtration Garden

Temperature Outside

- +

Water Availability Park

- +

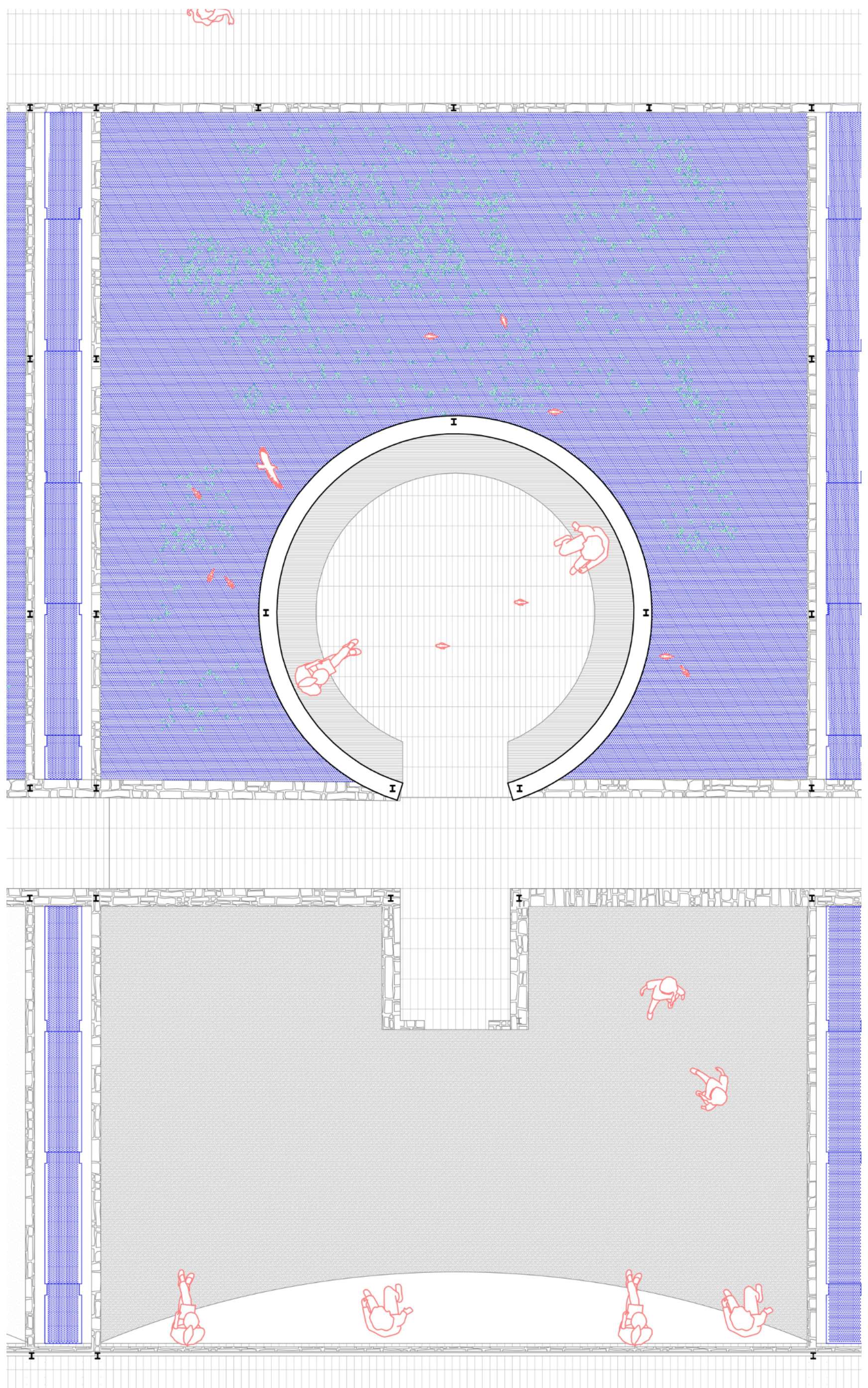
Day Time

9am 9pm

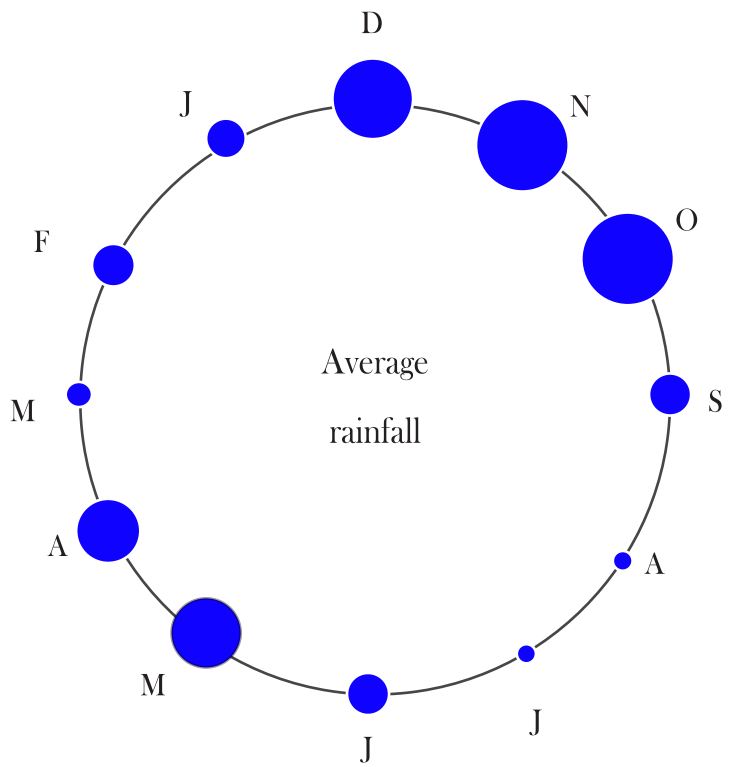
Regeneration

Non-human human

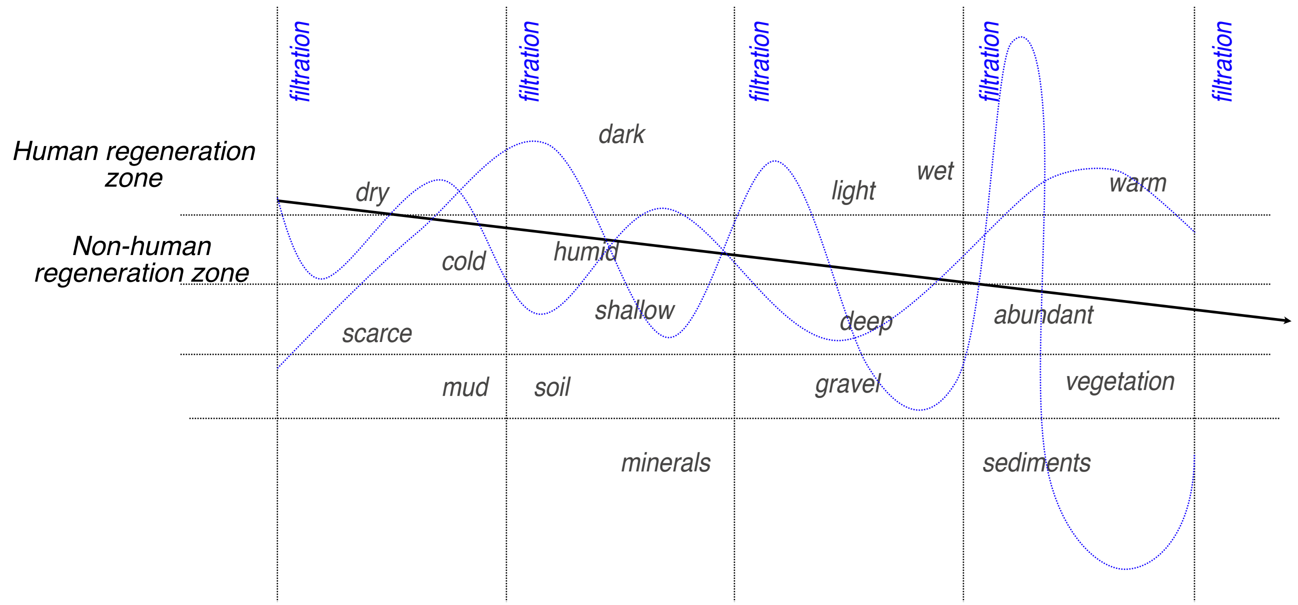
- Finding refuge in filtration garden also during hotspells
- Water is protected from evaporation
- Finding refuge in naturally cooled water pit and sunken garden

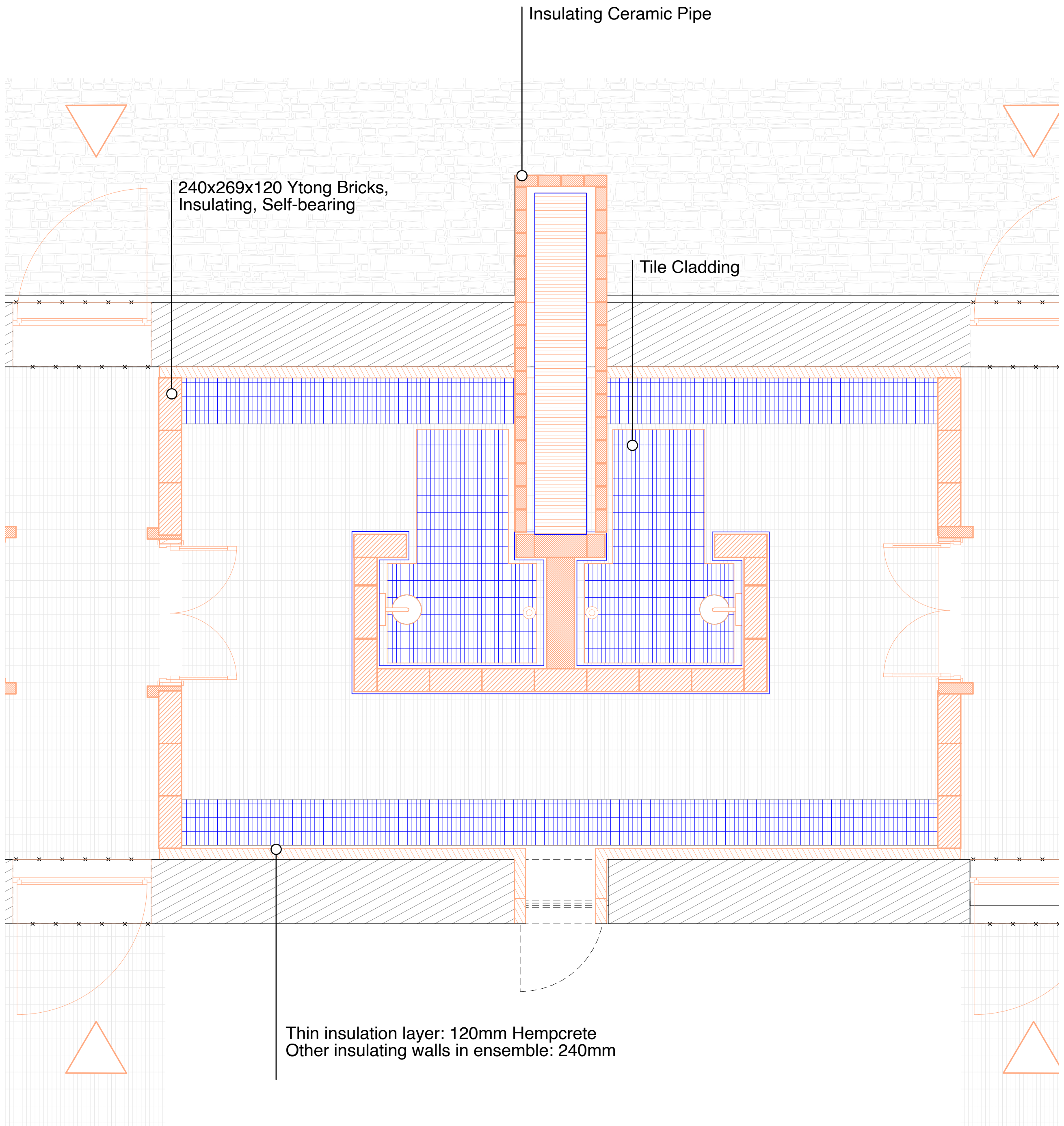


Water Availability in Madrid

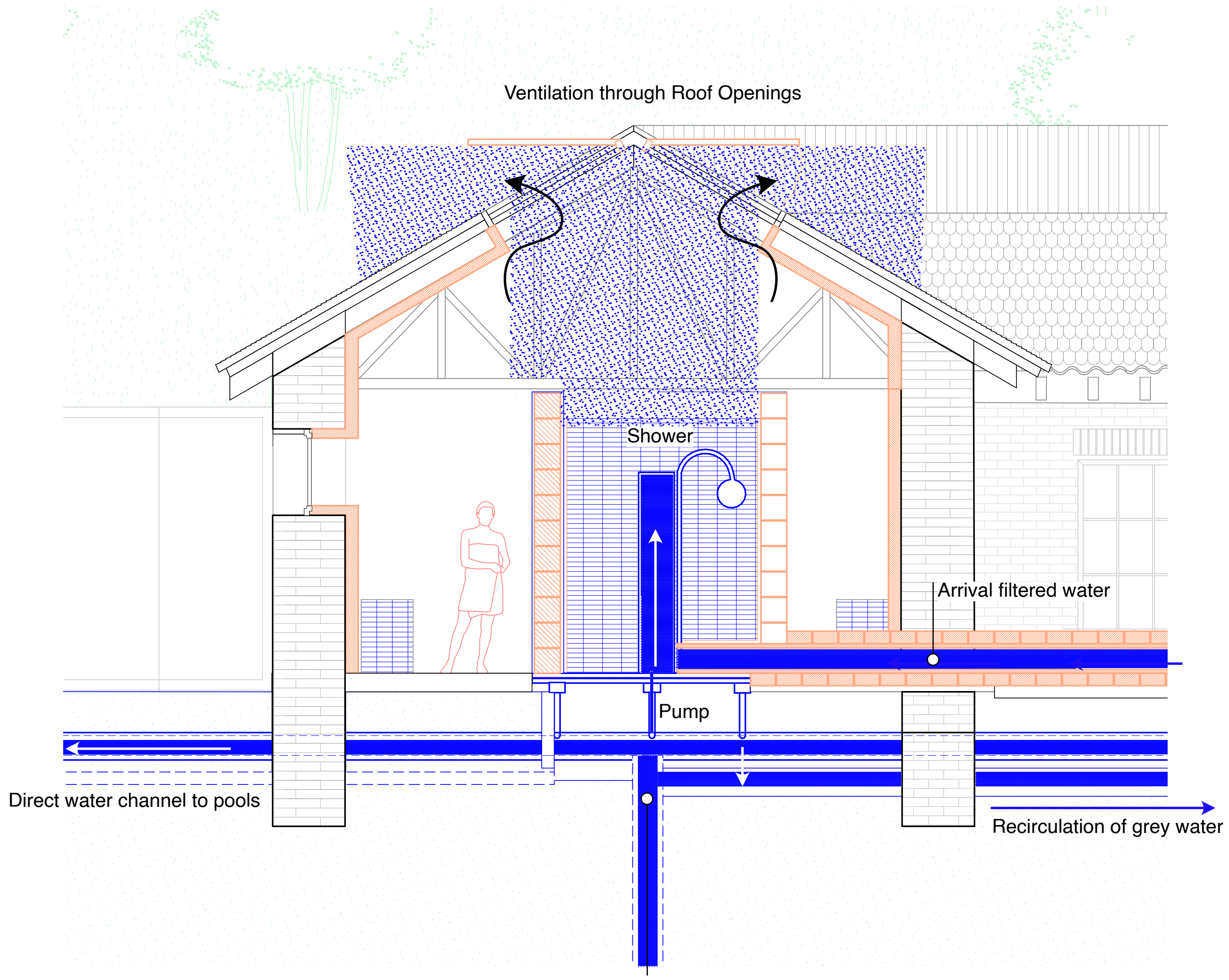


Concept of Filtration



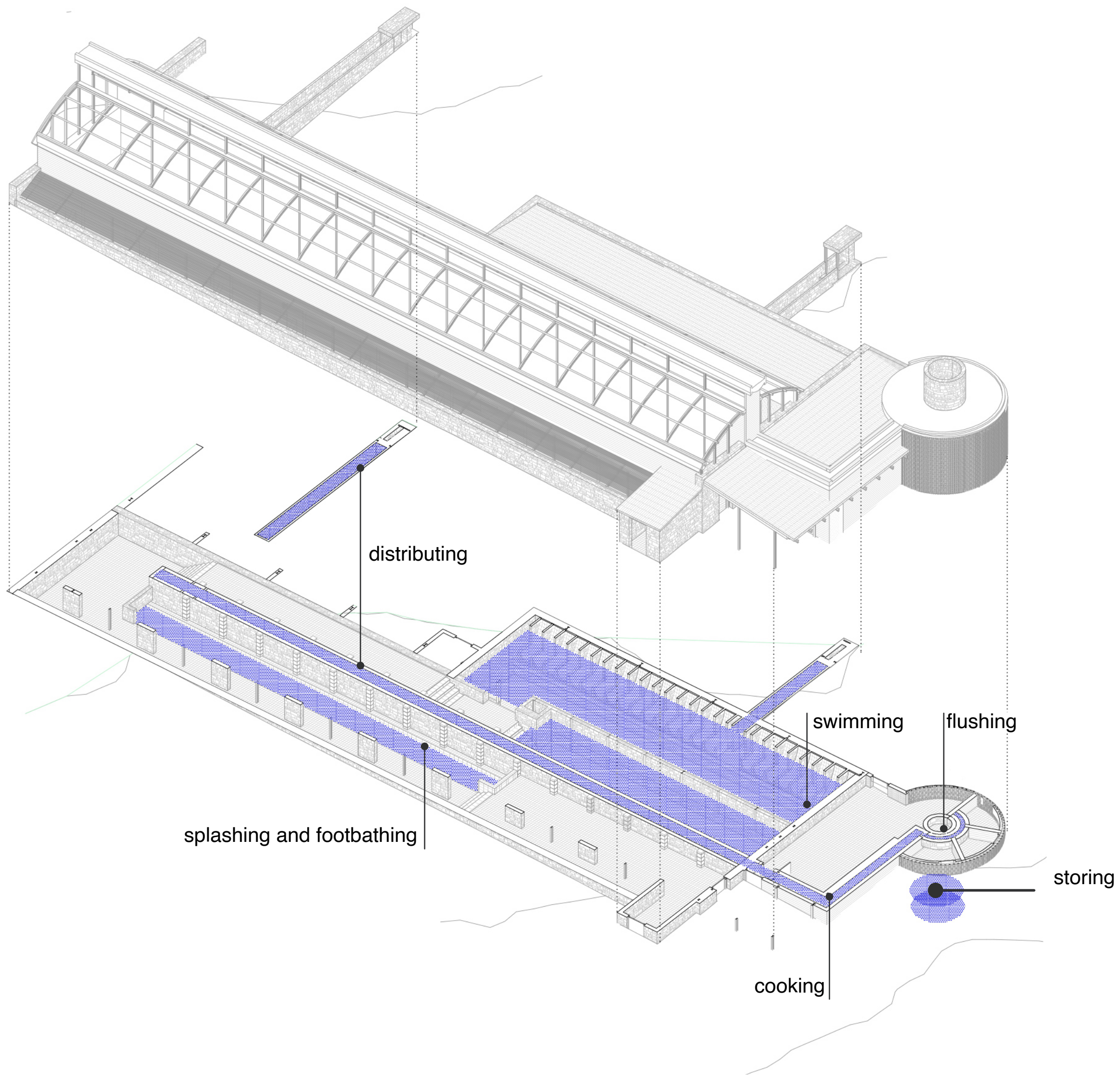


Floorplan 1.50

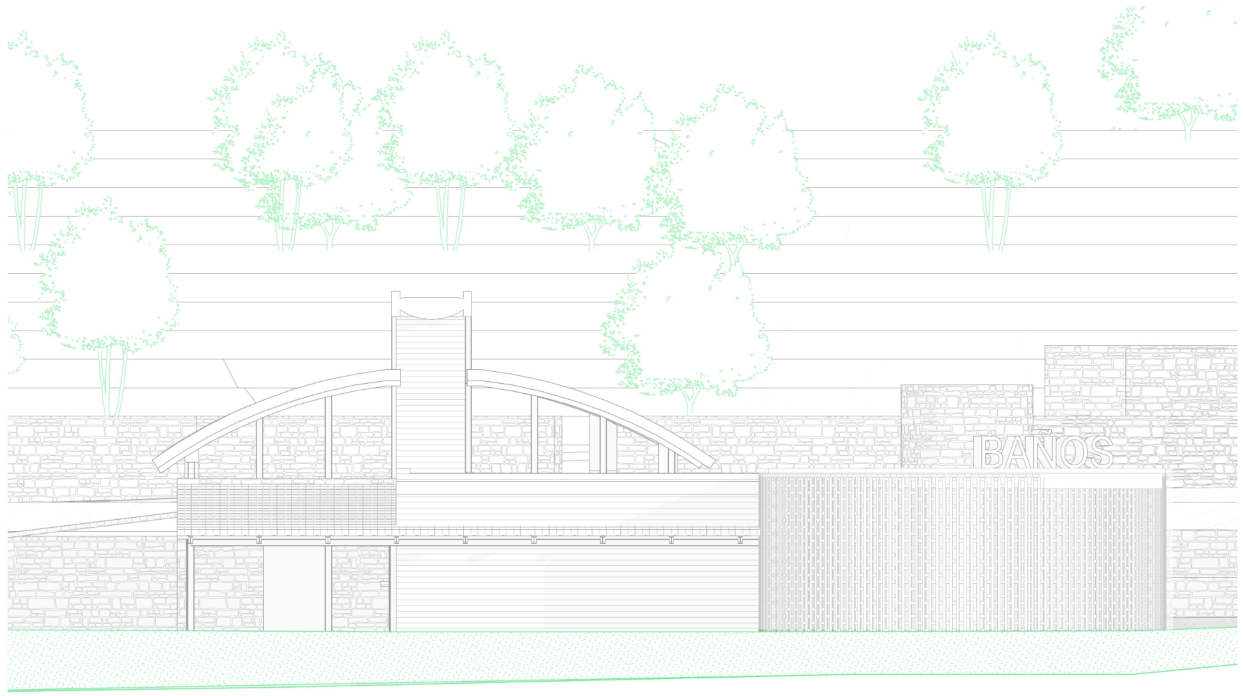


Section 1.50

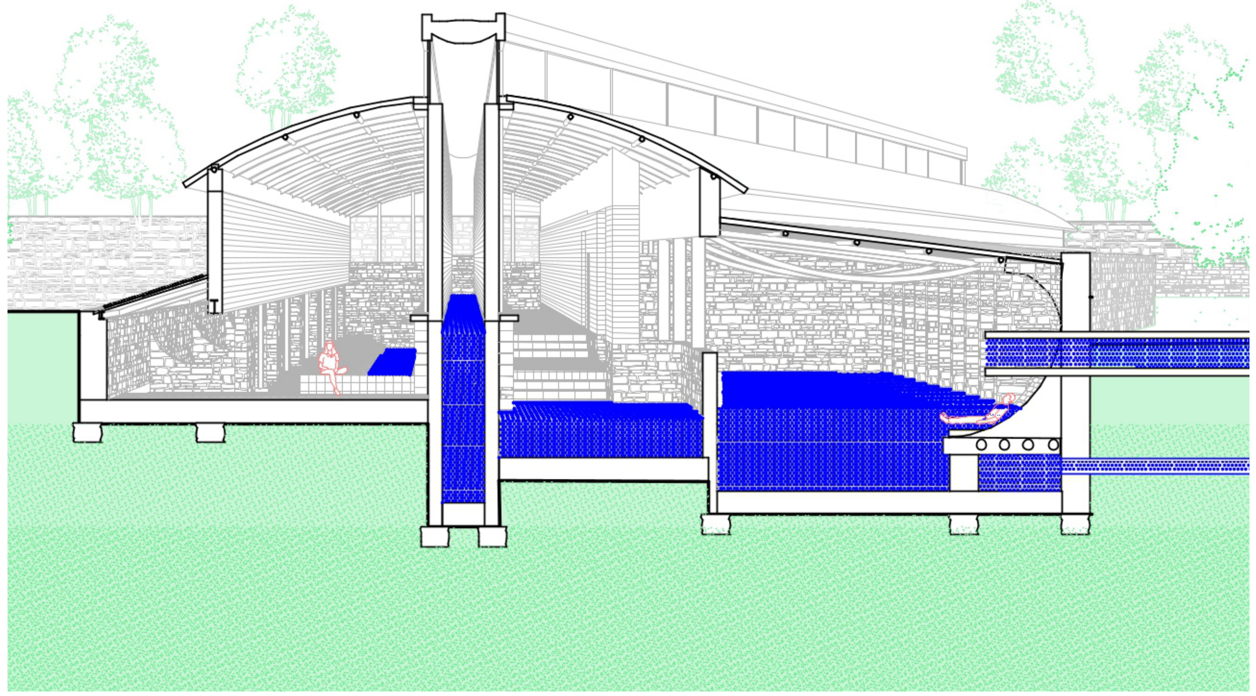
III_(Temporary) Pools



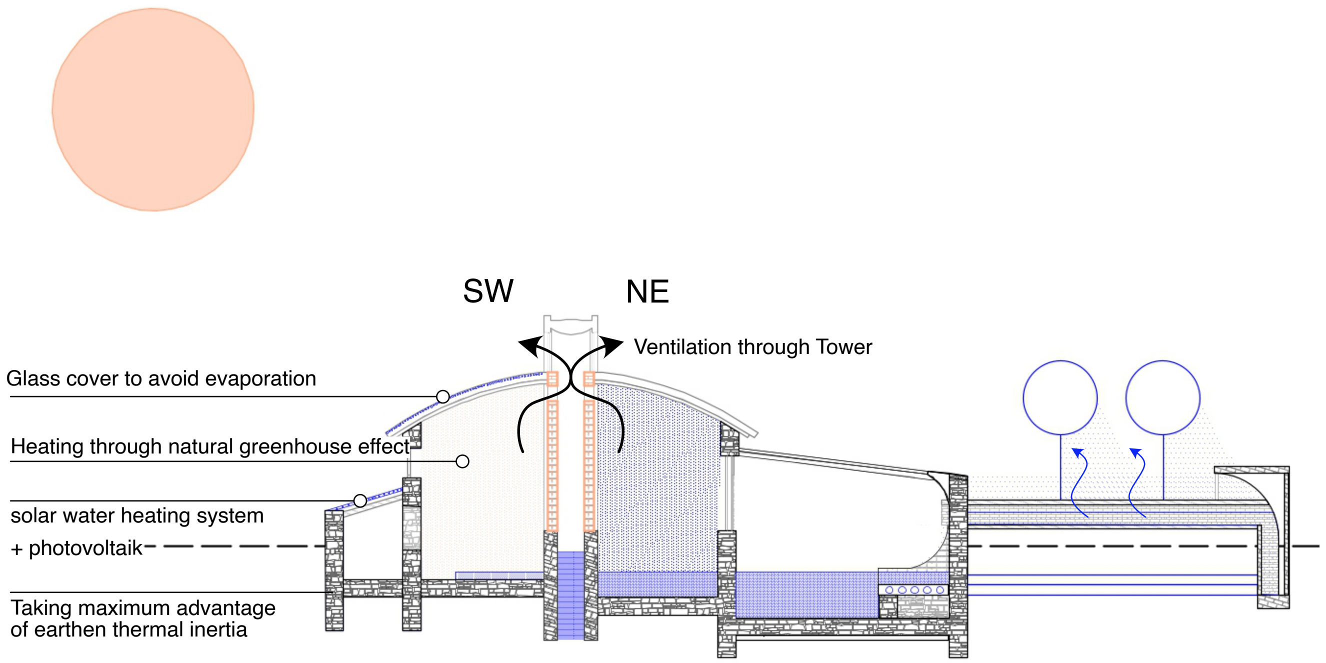
Axonometry (Temporary) Pools



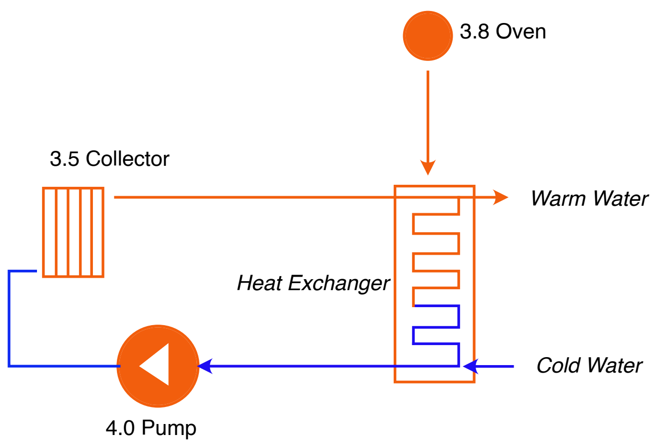
Elevation_1.100



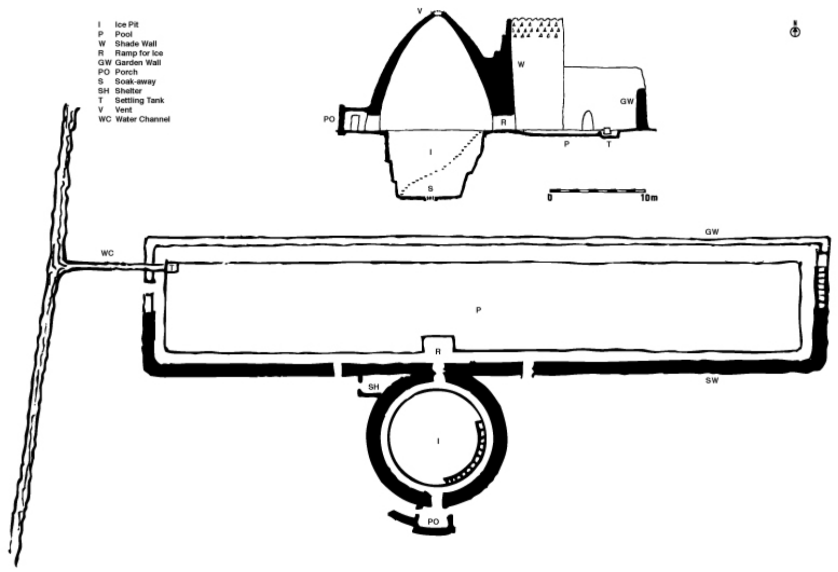
Perspective Section_1.100



Climatization and Ventilation Strategy

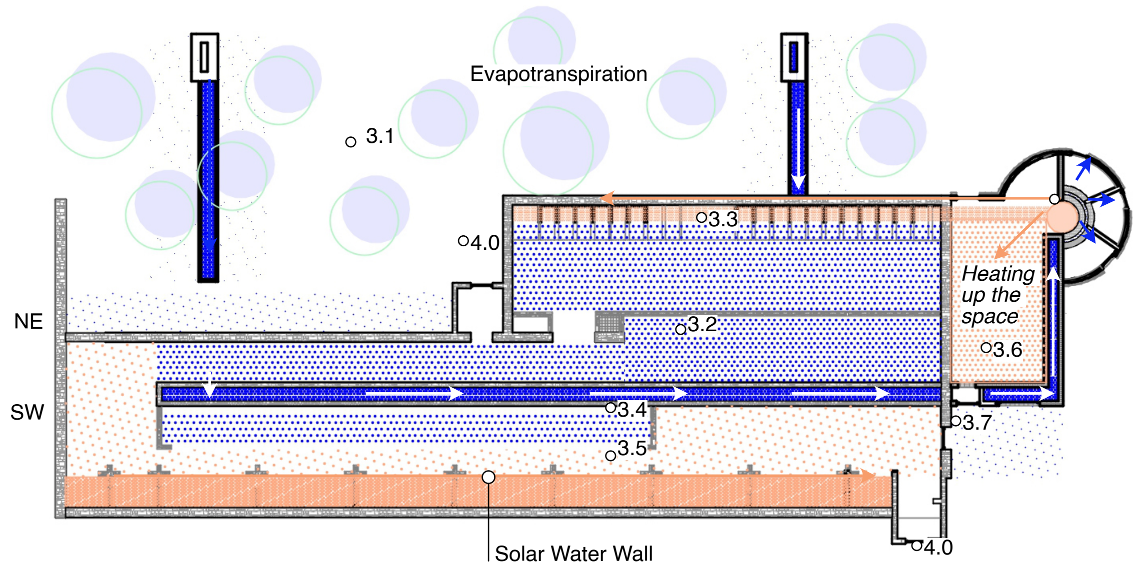


Heat Generation System



Historical Iranian Model of an Ice Pit connected to a shade wall

The connection of a shadewall to an ice pit provides a passive cooling system that regulates temperature and preserves ice in hot environments. Typically made from stone or heat-reflective materials, the shadewall blocks direct sunlight and reduces ambient heat, creating a cooler microclimate.



Adapted Climatization and Ventilation Strategy

Scenario: Hot day in summer

Temperature Outside

- +

Water Availability Park

- +

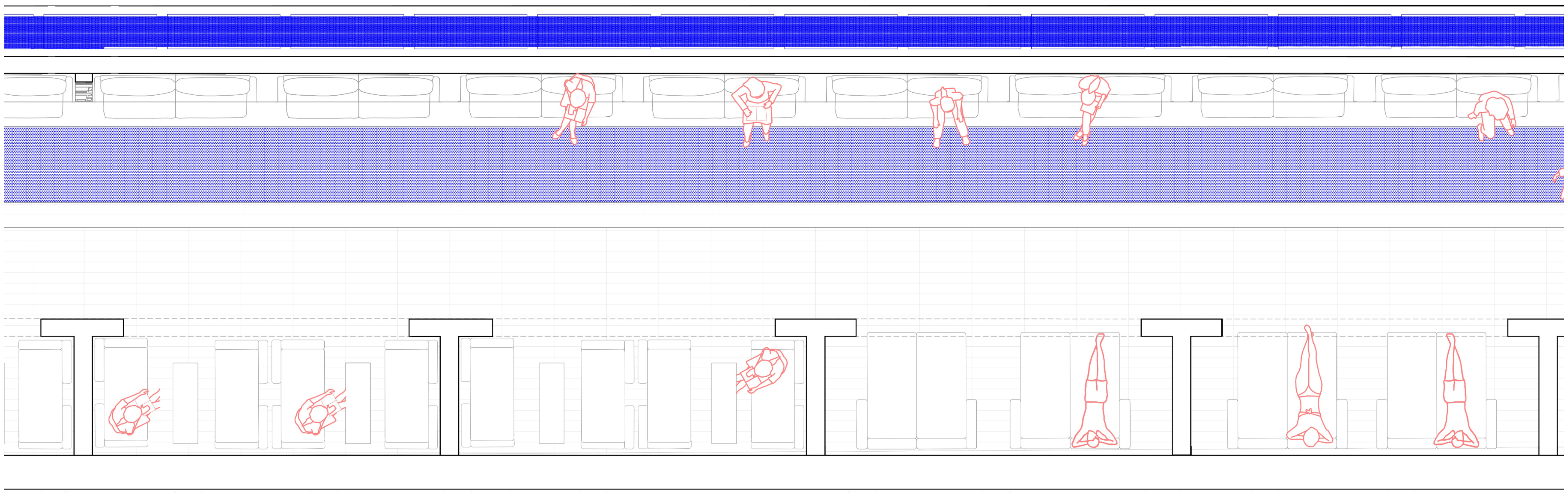
Day Time

9am 9pm

Regeneration

Non-human human

- Finding refuge in naturally cooled water garden
- Finding refuge in naturally cooled indoor space
- Adults relaxing, Children playing



Scenario: Cold and rainy evening in autumn

Temperature Outside

-

Water Availability Park

-

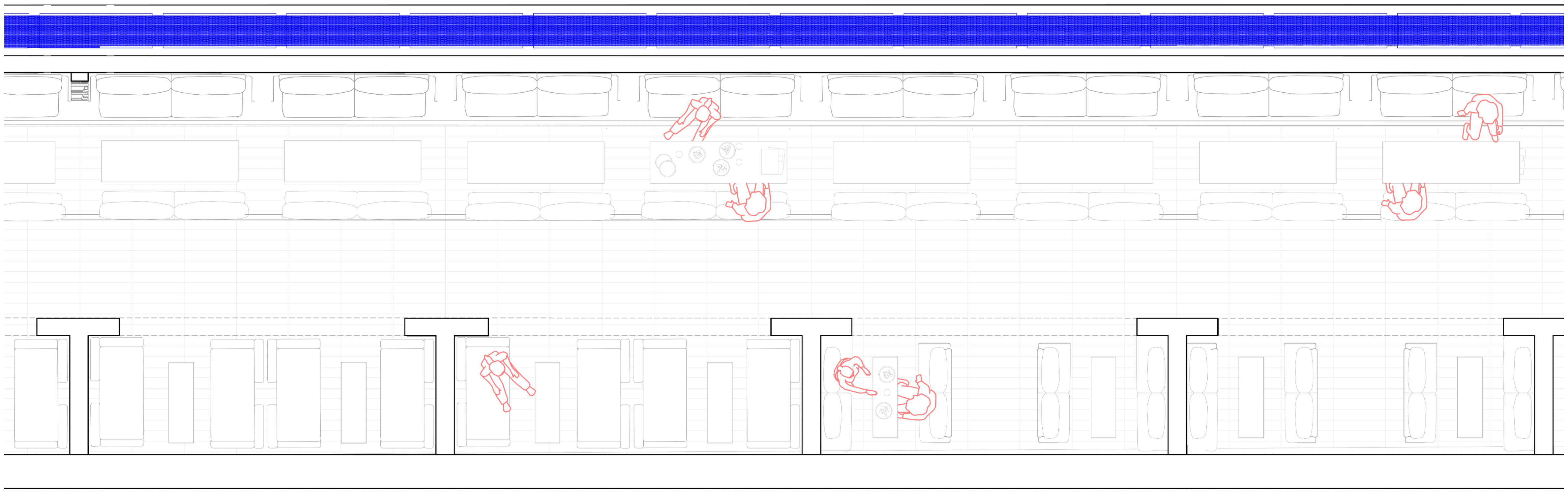
Day Time

9am 9pm

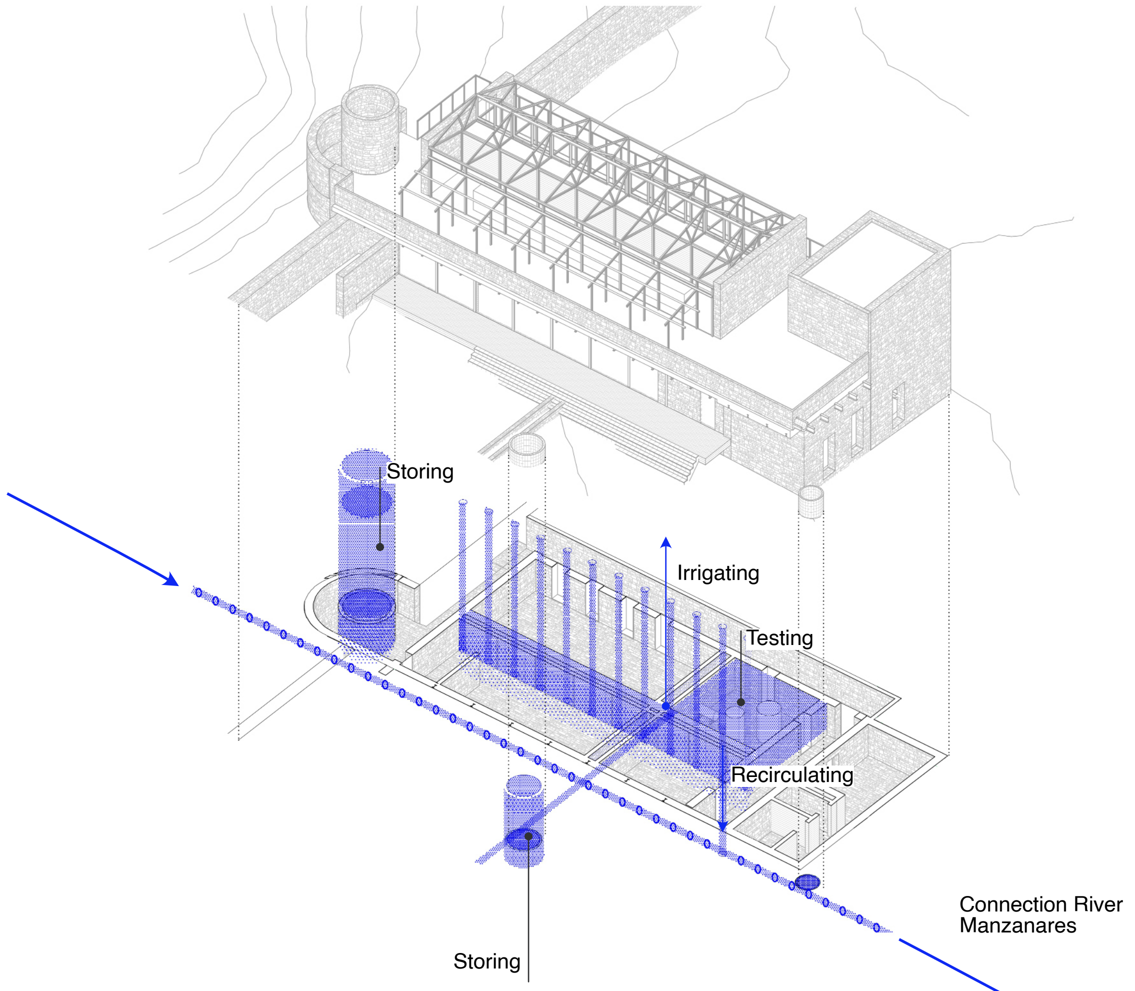
Regeneration

Non-human human

- Water buffers in the park and the filter system are recharching
- Finding Refuge in Heated Indoor Space
- Restaurant attracts more visitors

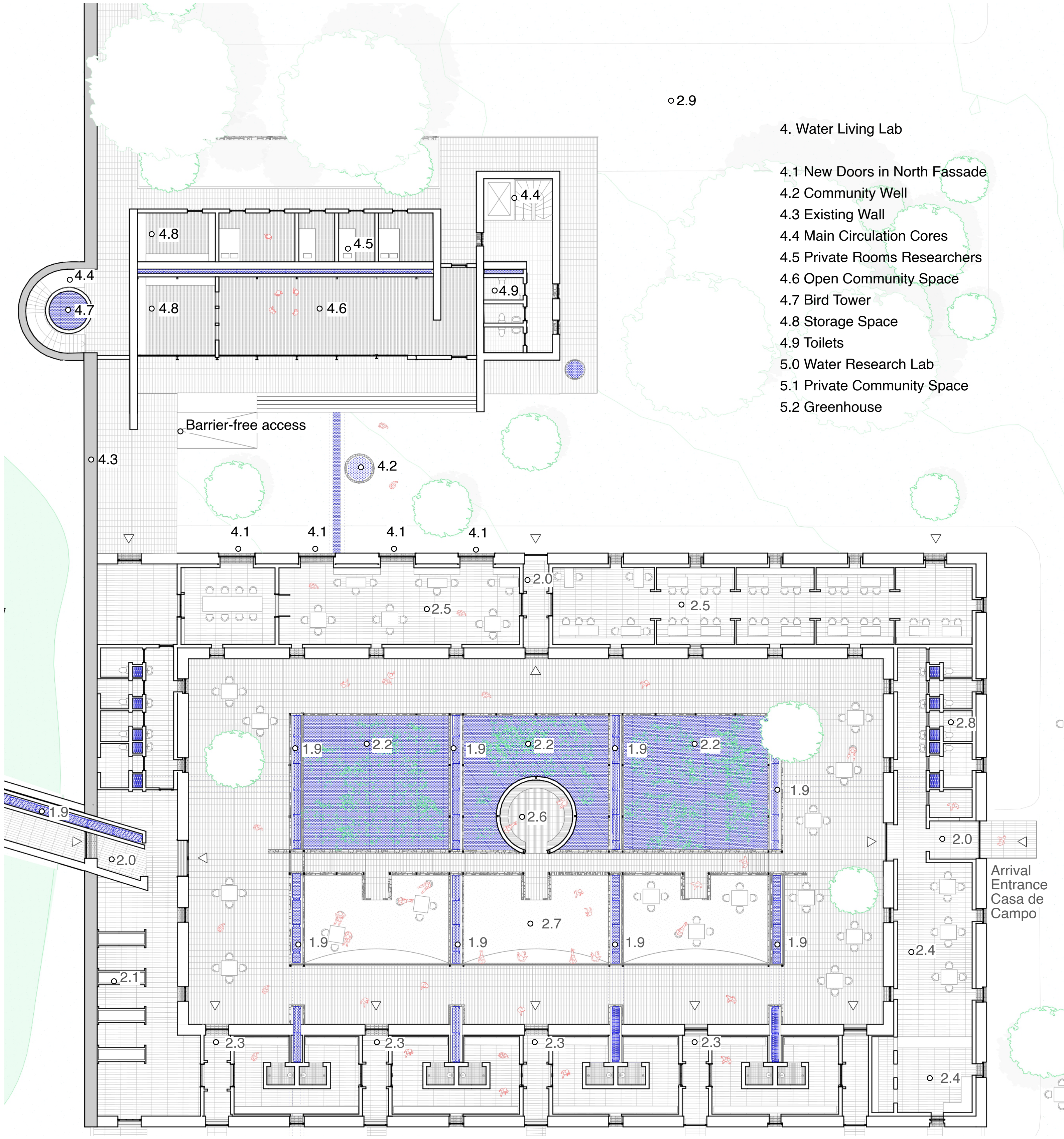


IV Water Living Lab



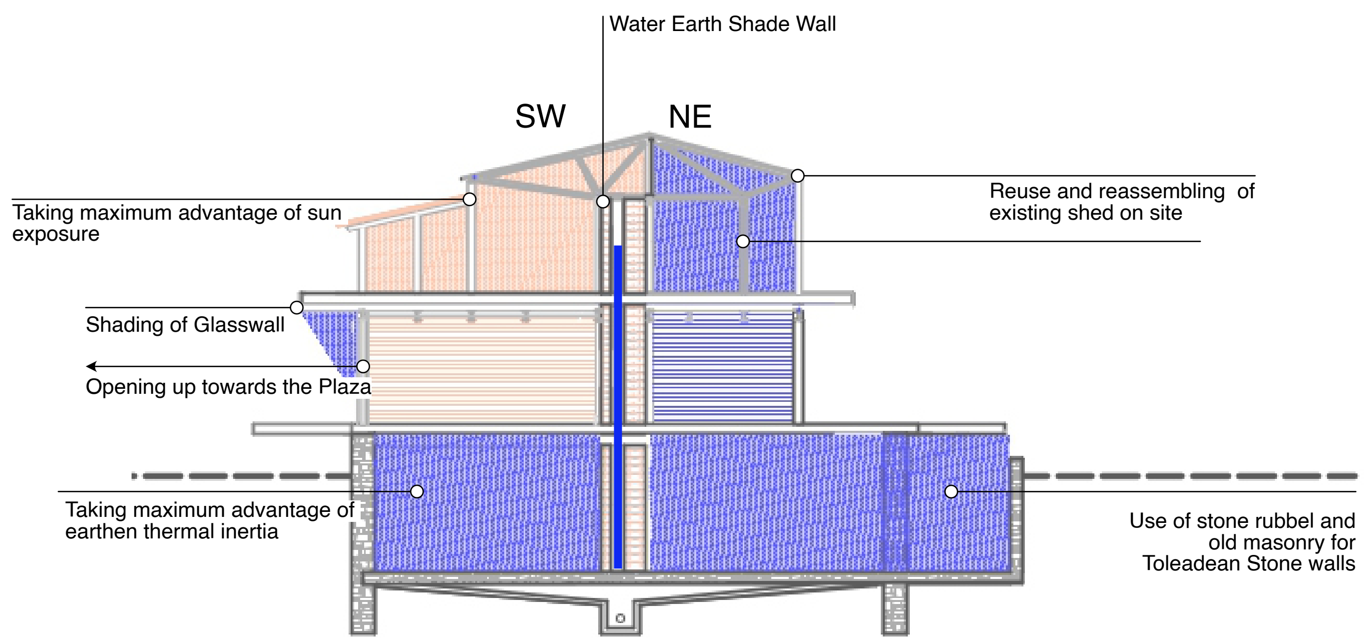
Axonometry Water Living Lab

IV Water Living Lab



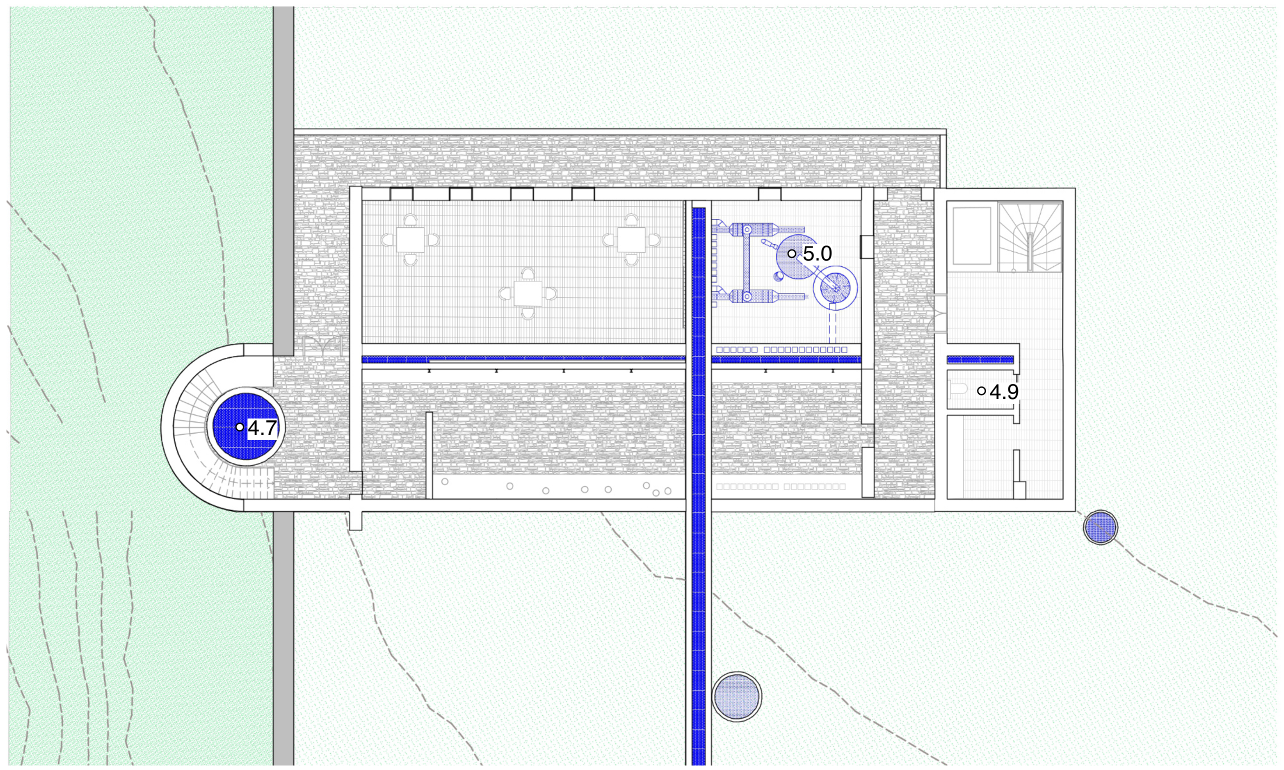
Flooplan_Connection Faisanera

IV Water Living Lab

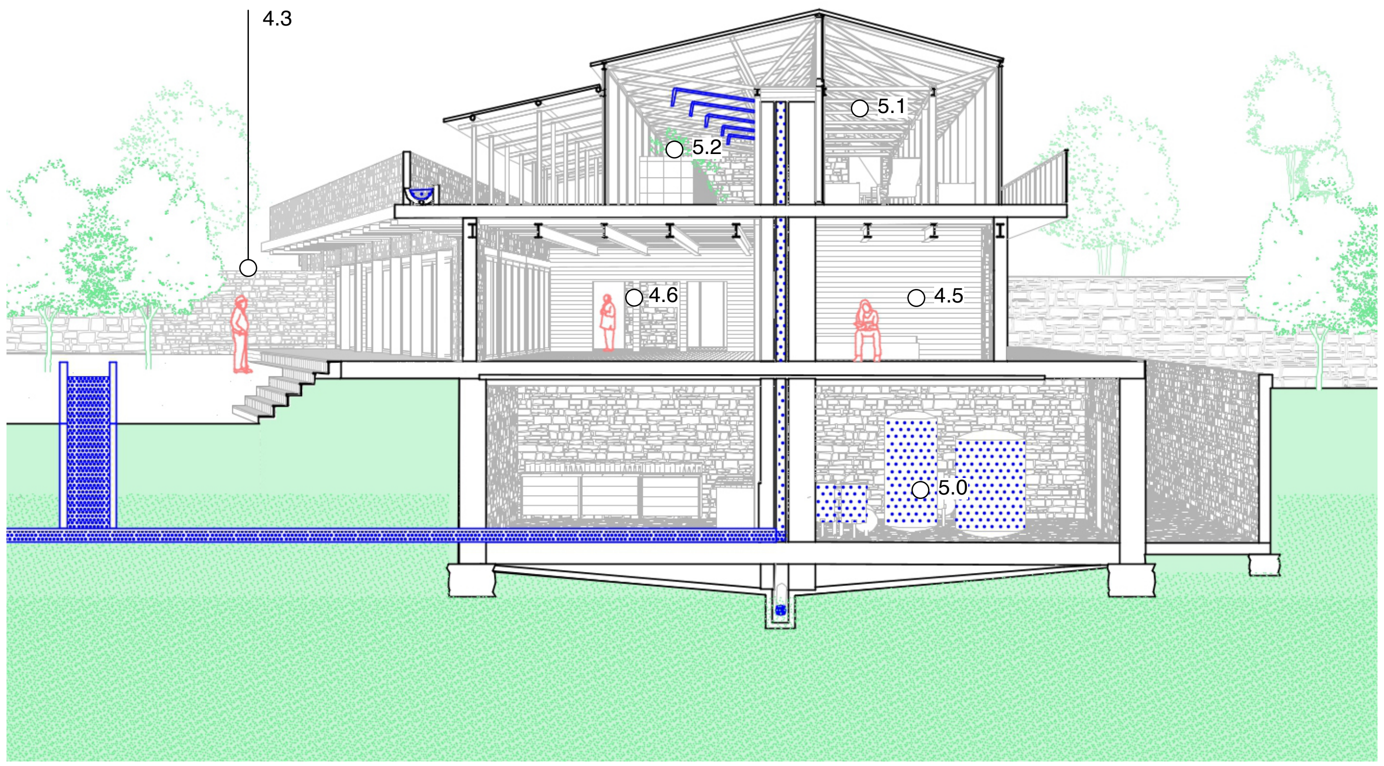


Climatization and Ventilation Strategy

Elevation_1.100

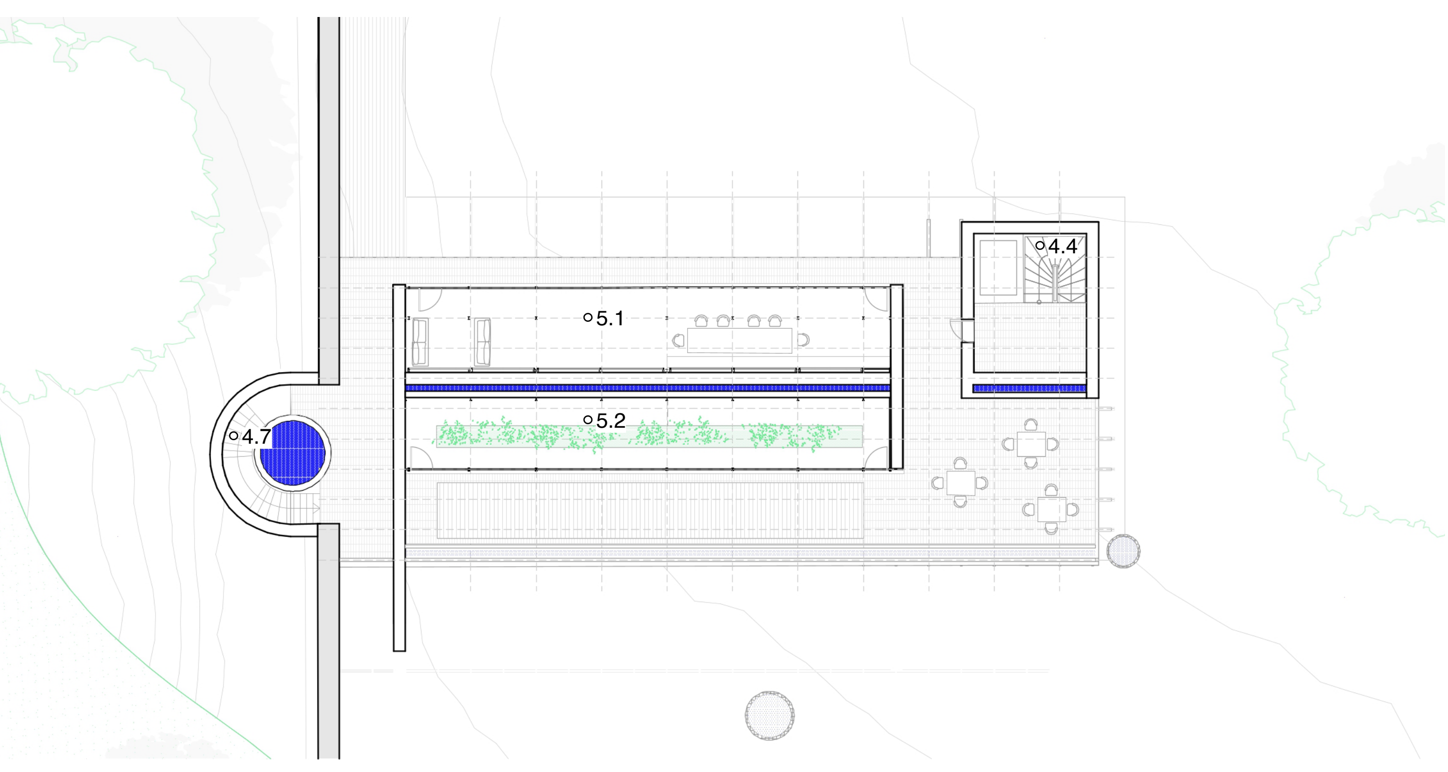


Floorplan 1.200_Level_-1



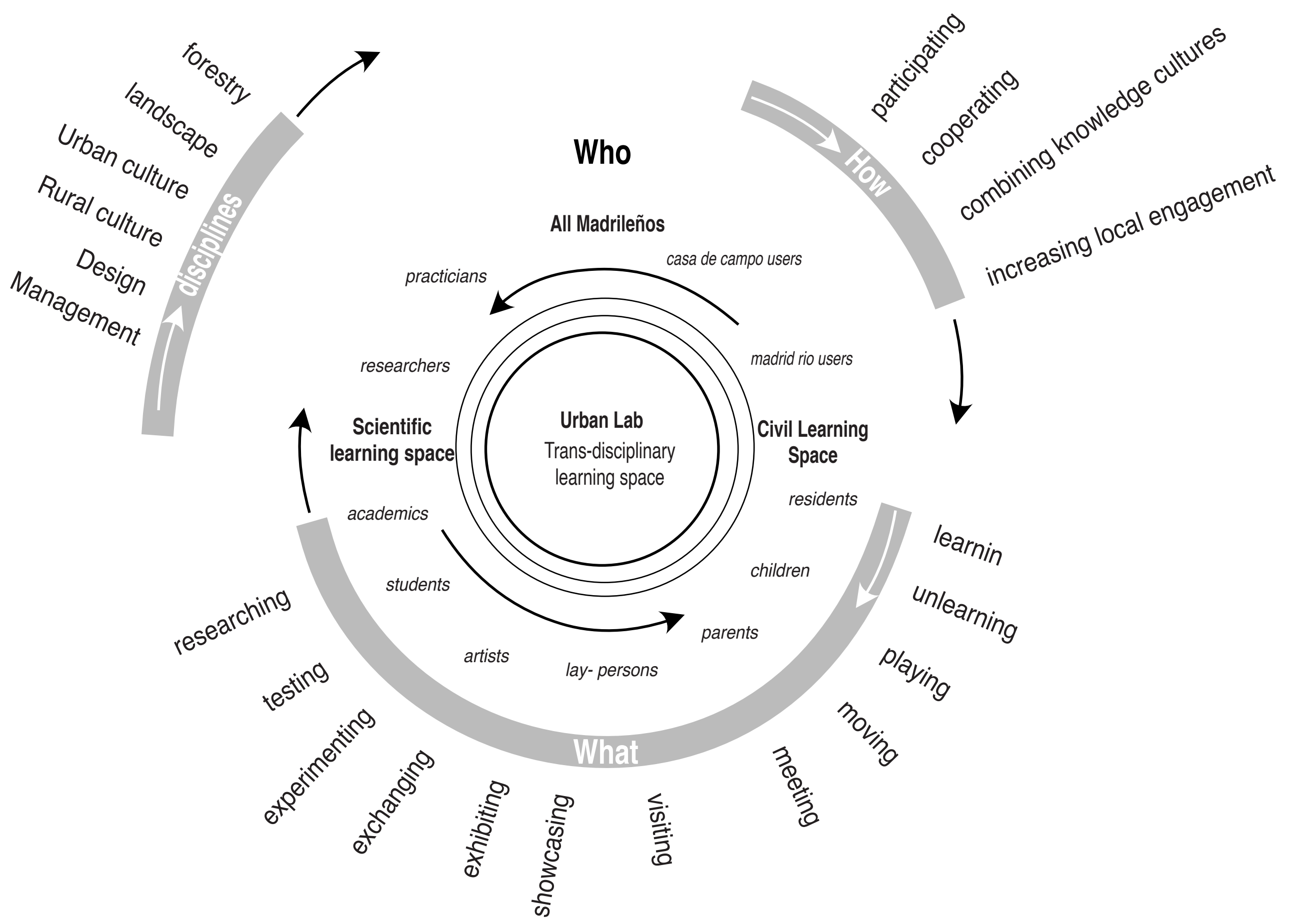
Perspective Section_1.100

IV Water Living Lab

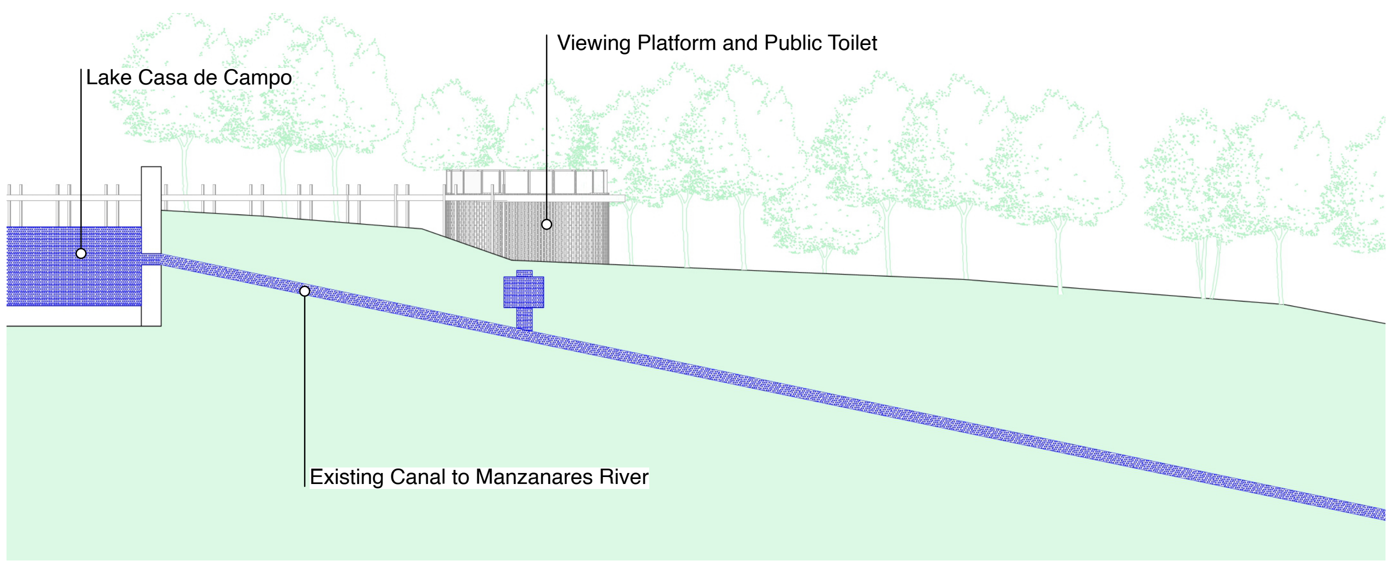


Floorplan 1.200_First_Floor

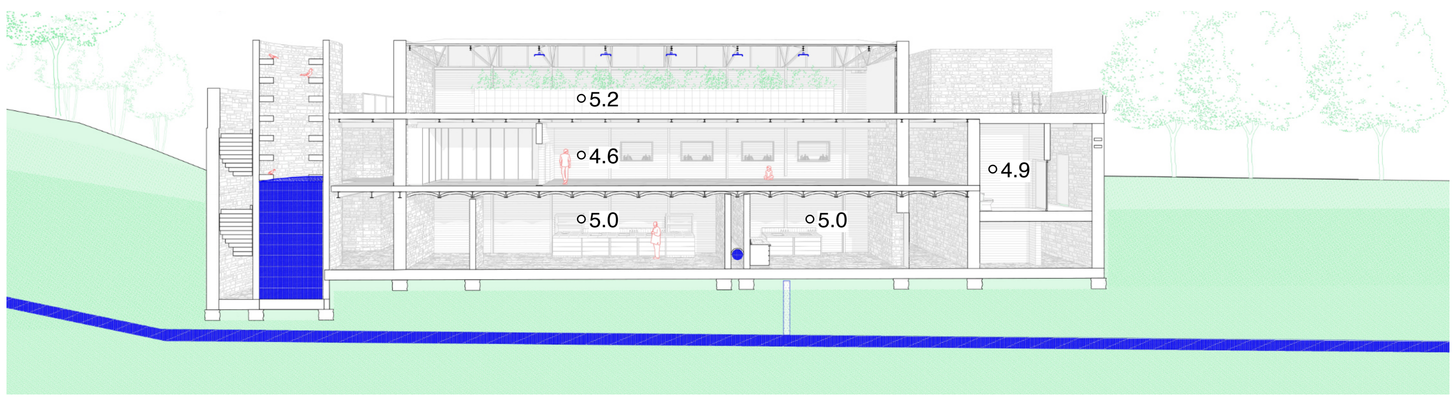
IV Water Living Lab



Programm Research_Lab



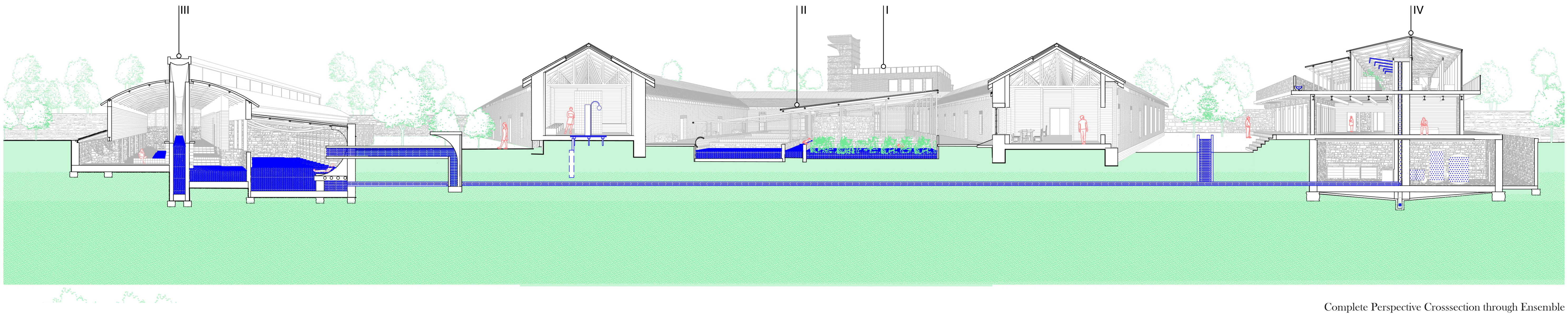
Section_Connection_Lake_1.200



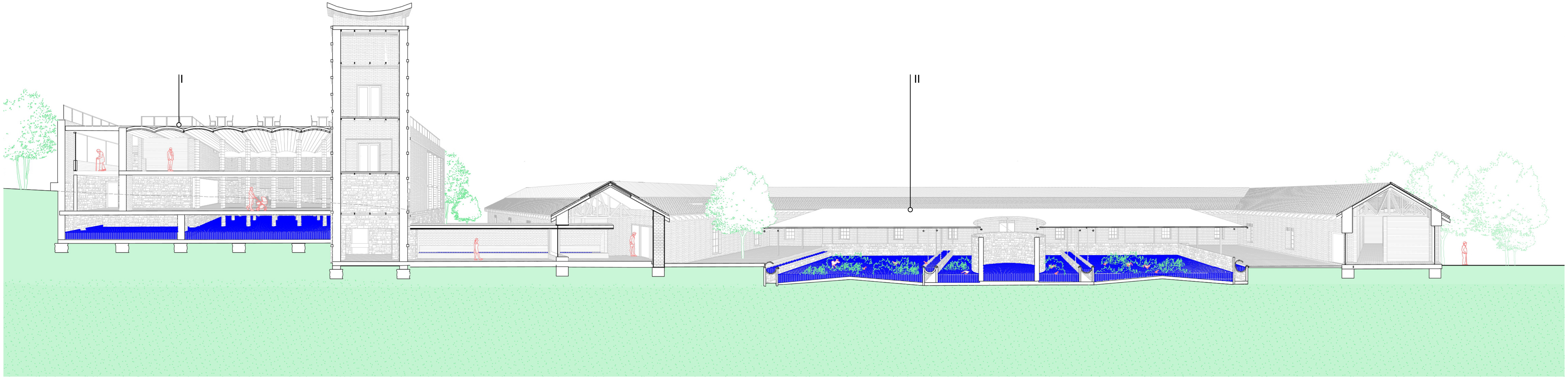
Perspective_Section_1.200


BAÑOS

Whole Ensemble

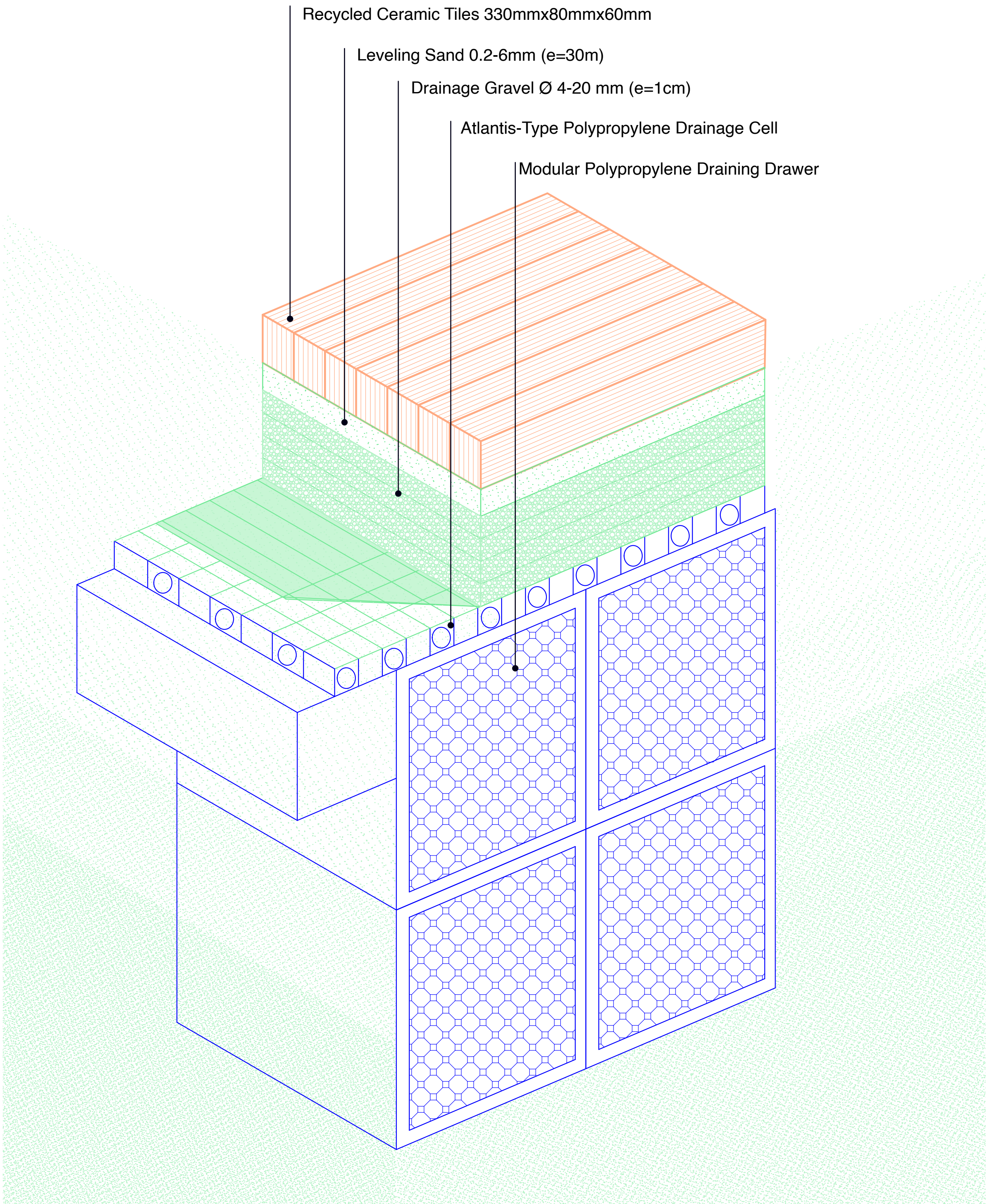


Complete Perspective Crosssection through Ensemble



Complete Perspective Longitudal Section through Ensemble

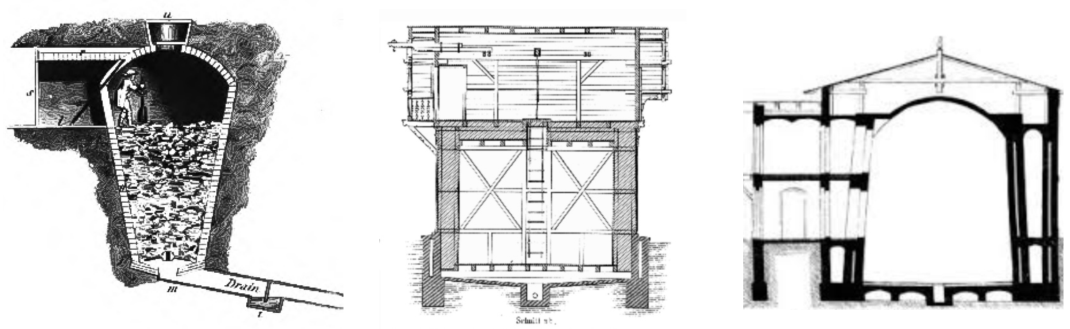
Modell 1.500_Whole_Ensemble



Detail_1.10_ ceramic as a recycled permeable paving material; used for path leading through the ensemble

Referring to spanish research project Life Cersuds_
Sistema Cerámico de Drenaje Urbano Sostenible

Material Pallette_depending on Water and Soil Exposure, Durability and Availability



Typology of Icepits, varying in their Materiality regarding their function and location

Material Ecology

Harvesting materials from underused and abandoned buildings of the Casa de Campo

Restauration of the Retaining Wall on the Casa de Campo

Material Catalogue

	Area of use	Origin	Further Information
Reused steel structures	I Roof catalan vaults+ Water Wall	Harvested from the disused Feria de Campo area	Design with conventional steel profiles (maximum span length 6m (except Building I ceiling with 10m)
Double T-Profile 120mm + 240mm	II+III+IV Load Bearing Structure and Roof	Reuse of Shed Structure On Site	All Buildings based on Structural Grids(260x240cm) +
Compressed Earth Blocks 240mm+480mm	III+ IV Central Water Walls	Excavated Earth on site	Providing Thermal Mass
			Minimal CO2 Emissions
Recycled Concrete	I Floor Slabs Underground	Precasted	Due to the limited accessibility for maintenance and feasibility
Burnt Bricks 240mm	I Catalan Vaults	Fabricated	Reinterpretation of a traditional building technique, less material-intensive than e.g. Roman vaults and easier to carry out without extra structure during construction
Hempcrete	I+II+III+IV Inner Insulation Layer		II Applied to existing masonry wall
			III+ IV Applied to Stone Walls
Ytong Bricks 240mm	I Outer Insulation Layer	Fabricated	Self carrying, insulating and easy to carry out on site
	II Seperating Walls		
Limestones, different sizes	I+ III+IV Used for Plinthes and Layers of Material Change; Used for Lime Plaster	Limestone Quarries around Madrid	If possible utilisation of unused stones
Toledean Masonry Wall, different sizes	I+ III +IV Foundation		Use of rubble Stone from Park , acommodating different sizes
Ceramic Pipes	Water Carrying Pipes, with different gradients of exposure to the environment	Manufactured	Connecting to Madrid´s cultural heritage
Recycled Floor Tiles	Paving Material	Harvested Tiles	Connecting to Madrid´s cultural heritage
		Tiles with faulty execution of factories	
Reused Roof Tiles	I Reuse in Roof for connection tunnel to Faisanera	Roof of disassembled shed structure	Connecting to Madrid´s cultural heritage

...

Ongoing and adapating Material Catalogue depending on Availability

Material Ecology

1 Flat Roof:
Roof Tiles
130mm Insulation
curved brick vaulting with in-situ concrete covering
140mm Steel I-beam Profile
reused from site
brick wall: 240/110/50mm bricks
80mm wood fibreboard insulation
brick wall: 240/110/50mm bricks

2 20 mm lime plaster
170 mm vertically cored brickwork
240 mm vertically cored brickwork
240x569x120mm Ytong Bricks, Insulating, self-bearing
20mm clay plaster
Water tromb wall
heated water stored in water storage and used when needed
Gallery structure: 14mm reused Steel beams

3 exposed Lime Stone linthel
240 mm Toledoean Masonry Wall with lime mortar joints
used rubble stones from the excavation, the park and
Lime Stone Quarries around Madrid

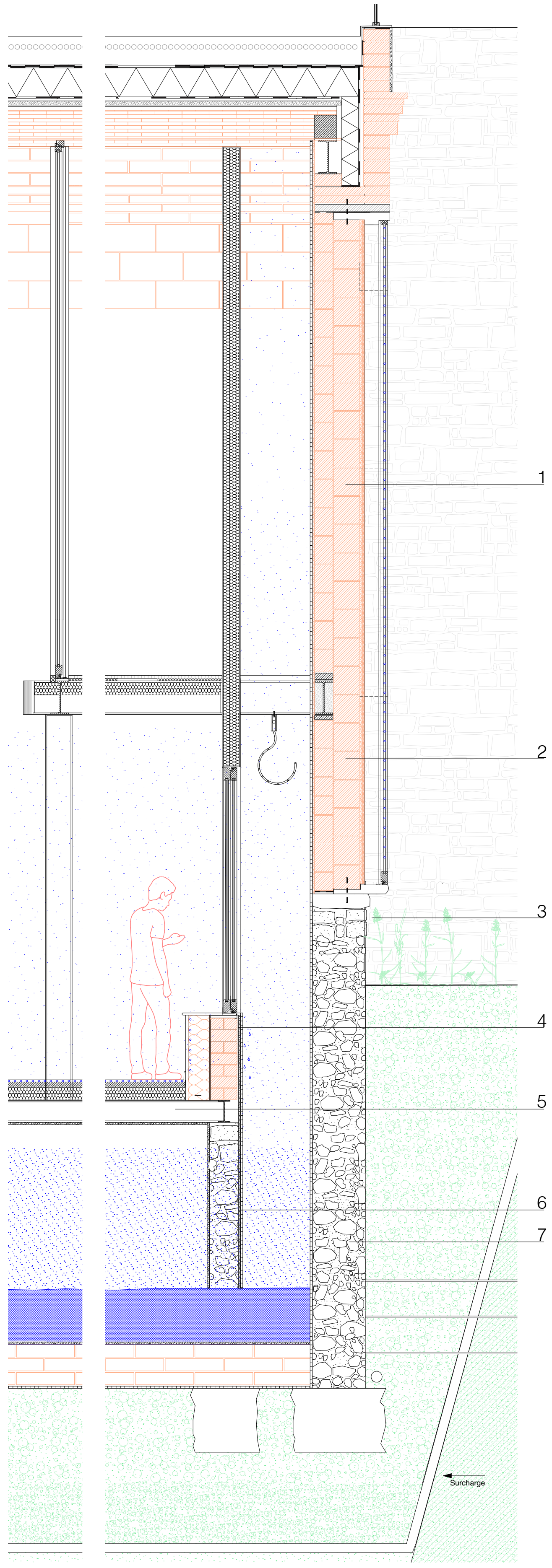
4 80mm reused steel beams from site
sliding window double glazing in pine frame
120mm clay hemp Insulation
located inside to let condensation run back down to the water
storage underneath
wall heat pipe
using primarily the heated water from the Tromb Wall
120mm Masonry
20mm Limeplaster

5 <u>inner chamber:</u>
tiles
(produced by Manufactures in Madrid)
floor heating
using the stored water from the water tromb wall
40mm subfloor layer
120mm insulation
200mm coated reused steel beam

6 Rising and falling water level
depending on the availability
Toledean Masonry Column
400mm Brick floor
waterproofed with cocciopesto plaster(referencing roman cement model)
Fired Bricks+ LimeStone(Cocciopesto) Plaster to cover
Lime Stones as Foundation

7 480mm Toledean Masonry Wall
used rubble stones from the excavation,
the park and Lime Stone Quarries around Madrid

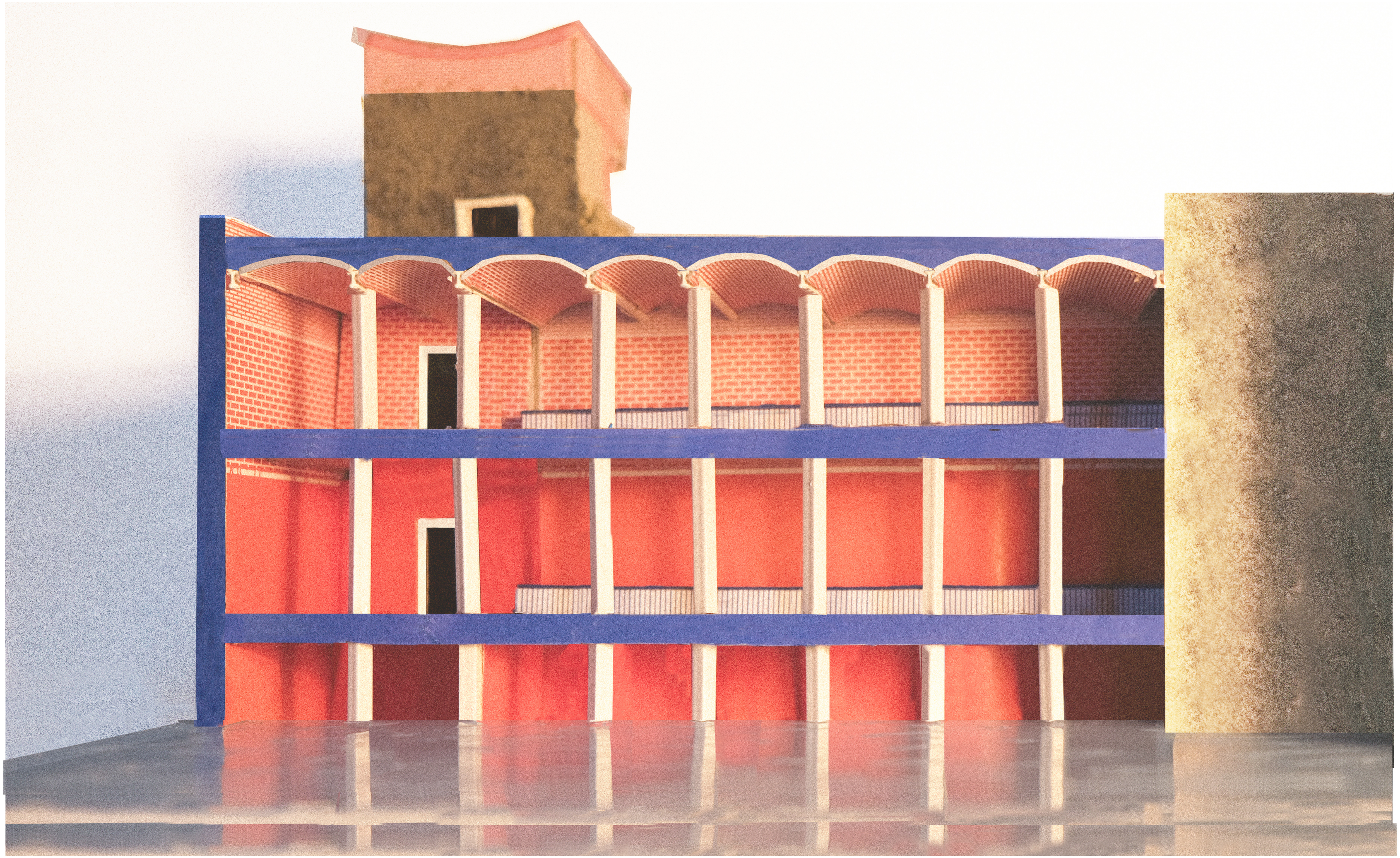
Geogrid
Drainage Blanket
100mm Perforated Pipe
Compacted Subsoil



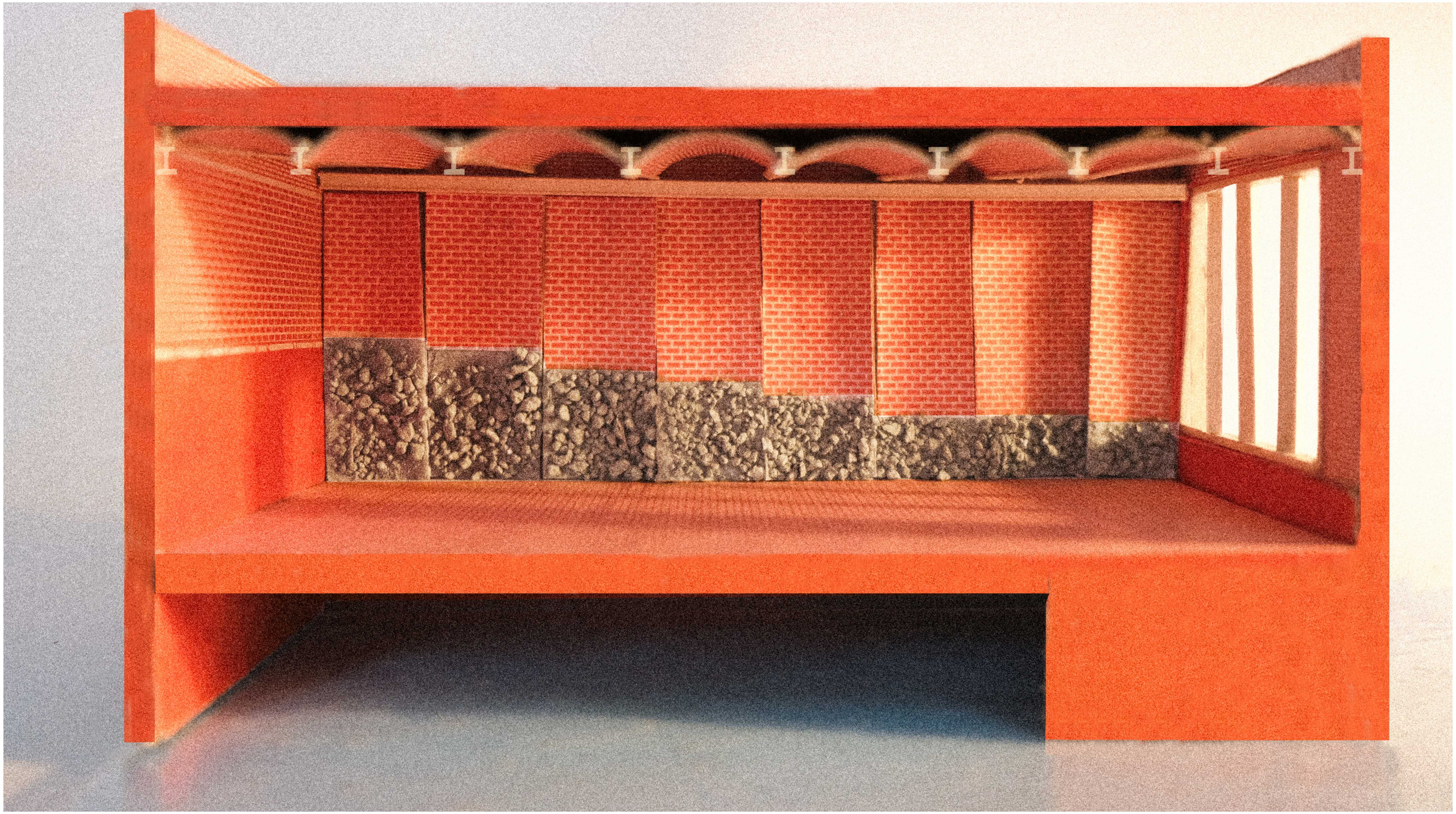
Wall Section Water Chapel 1.20

Modell 1.100_ I_ Water Chapel_Exterior

Modell 1.100_ I_ Water Chapel_ Interior



Modell 1.100_ I_ Water Chapel_ Interior



Temporal Constructed Refugia

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Architectural Design Crossovers Graduation Studio 2024/25

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