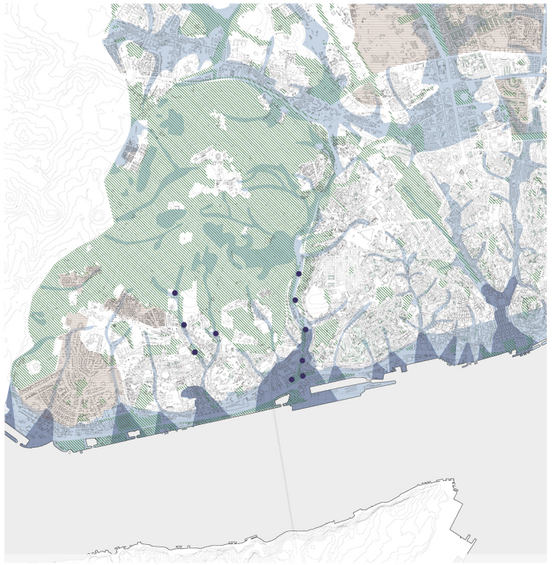
Hydroscape Lisbon

final thesis design project

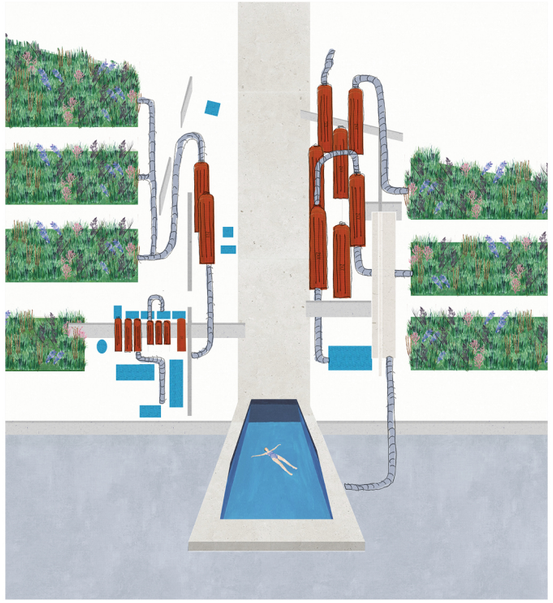
Lisbon, with its location on the Tagus River estuary, has always been a city open to the world. It is the country's main port, political and economic centre. For centuries Lisbon's harbour was used for industrialisation: the river used as means to facilitate transport of goods. The real challenge, is to reconnect the enormous linear platform of the industrial quay with the fragmented working-class neighbourhoods that have grown up on the hills behind it, thanks to centuries of maritime, commercial and manufacturing activity. Through an analysis of Lisbon's extraordinary landscape that characterises the morphology and urban development of Lisbon and the Tagus river, the aim is to recover the reciprocal relationship between these two entities, which is currently interrupted by the massive presence of the railway and road lines in the Lisbon metropolitan area. The project consists of two phases, the design of an urban park along the 14km harbour and the design of a water treatment center and public pools at the bottom of one of the valleys within the park.

urban park proposal site

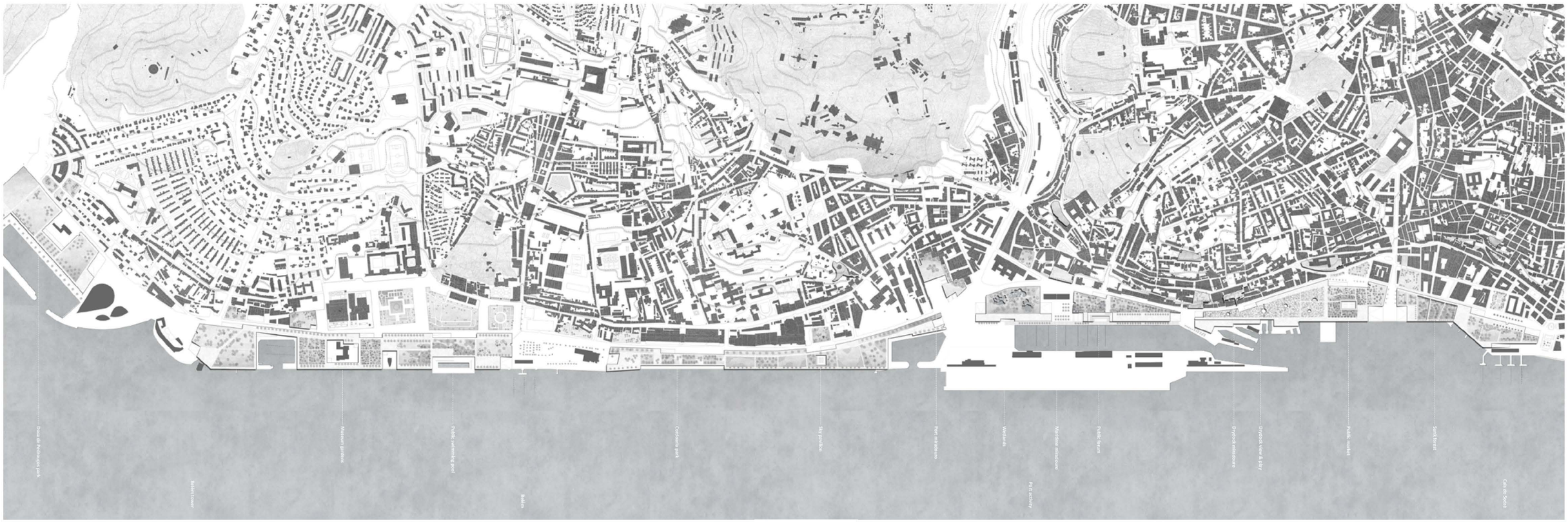


lisbon's ecological structure

water treatment proposal site



concept collage

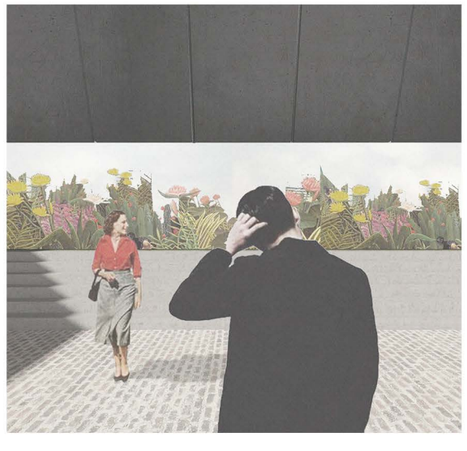


Urban park

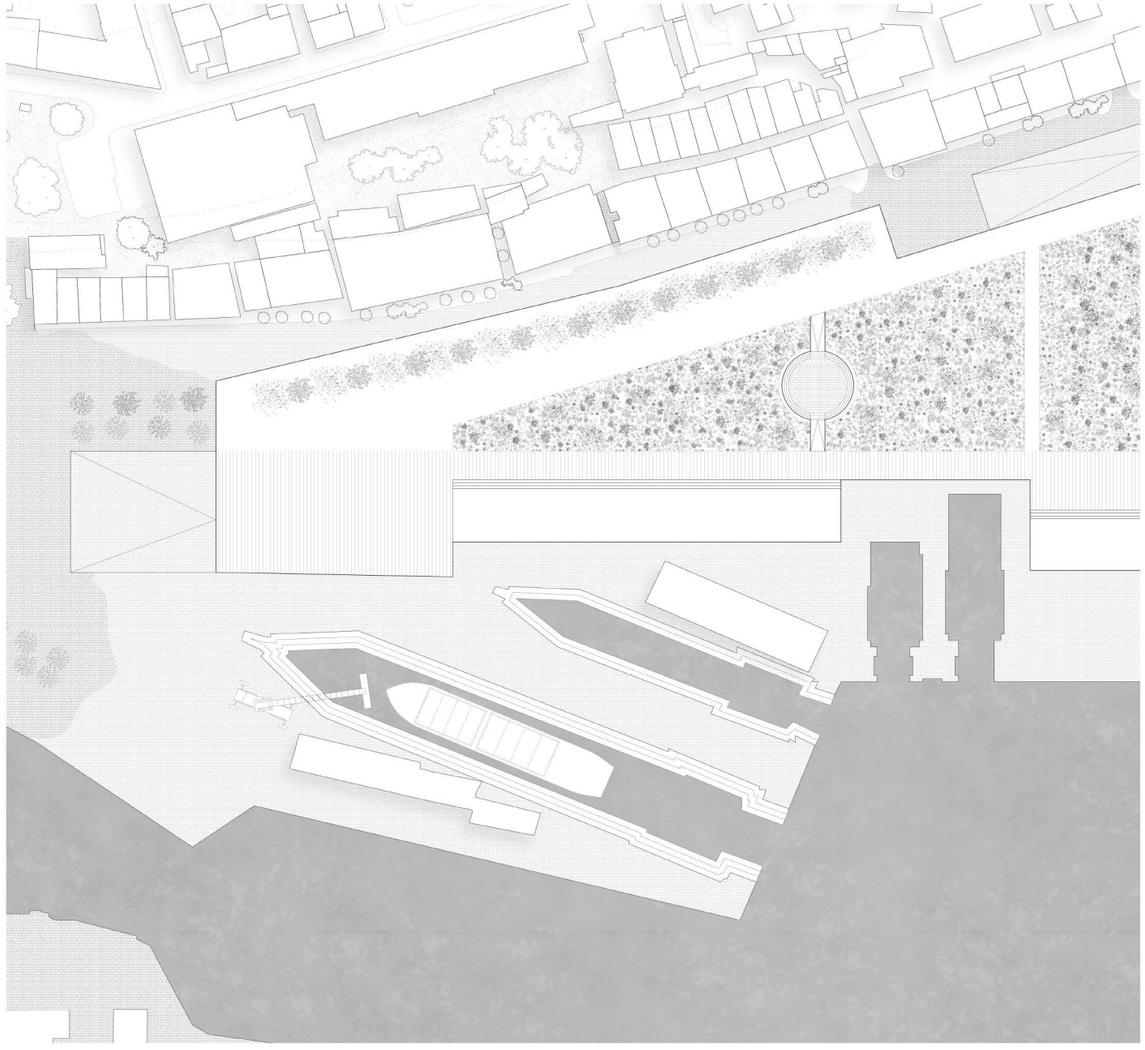
The first part of the project is looking at how the harbour can regain its public and recreational identity in accordance with existing natural elements. Experiential landscape, vegetation and public architectures that organise the settlement are developed, where the user can experience nature in different ways. The old visual connections with the historical monuments and urban morphological axes are restored , and an adequate access and use of the river platform as a collective space is re-established. Tagus River belongs to the city as much as the city of Lisbon is inexorably linked to the natural presence of the river and the hills it bathes. In the form of a new and existing urban platform the identity is renewd at the service of the population, determining the possibility of a new, lively and vibrant social sense, characterised by multiple public activities and collective gathering moments, and showing the practical side of living in respect of this landscape.

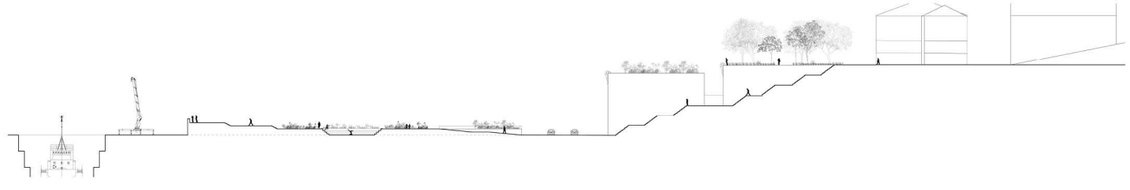
Top: Masterplan of park Right: exploded axonometric of park

sunken by 1,5 meters meeting the level of the existing platform the public market space is surrounded by a garden of different kinds of plants and vegetation. The user, when within the space experiences the vegetation around them in eye level .



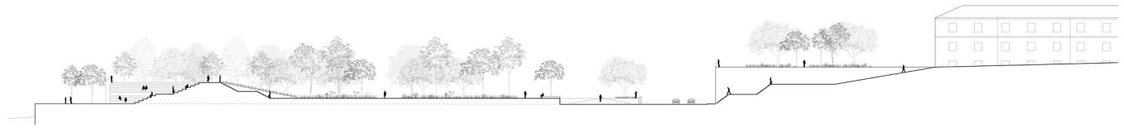
public market





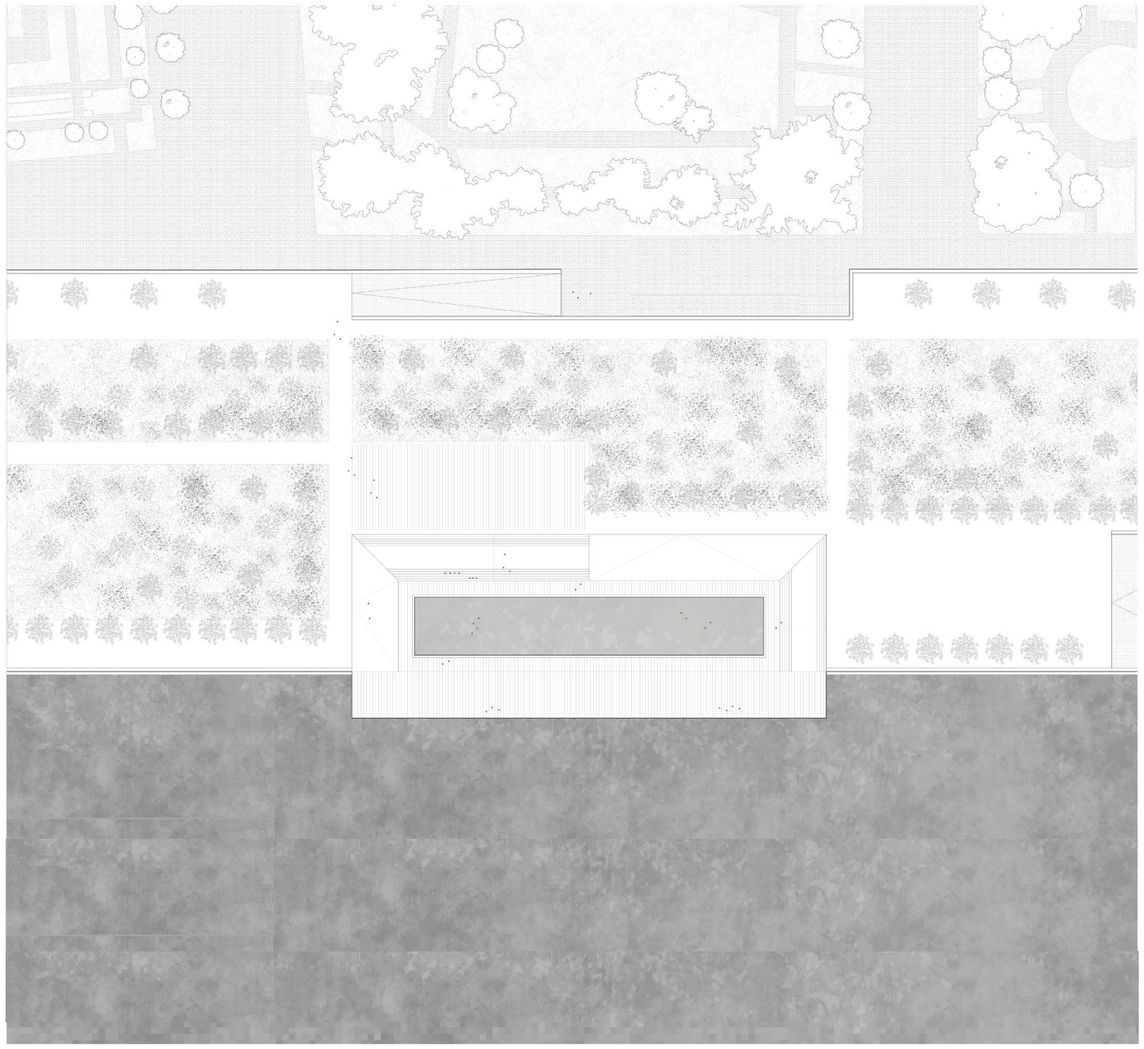
this part next to the existing is drydocks consists of various sunken points within a field of flowers. The user when enetering the spaces is surrounded by the flowers in eye level. The dense vegetation along with the industrial drydocks create an experience of contrast.

drydocks



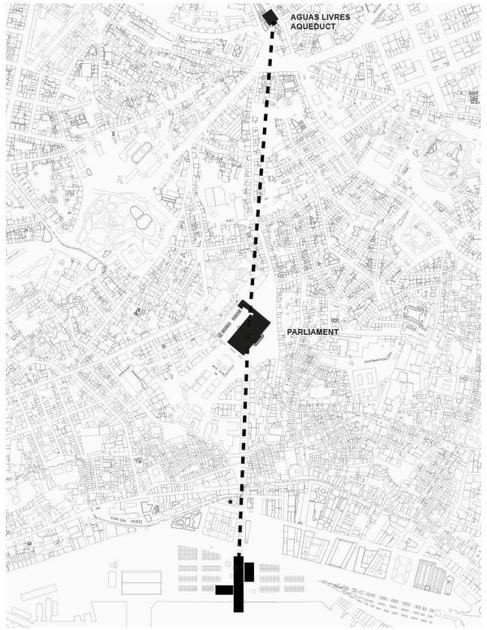
instead of sunken this part is raised further above the ground creating a theater like space with a view towards the river and the port. Contrasting the view, the space is surrounded by trees, enclosing the visitor in between the tree canopies.

public forum

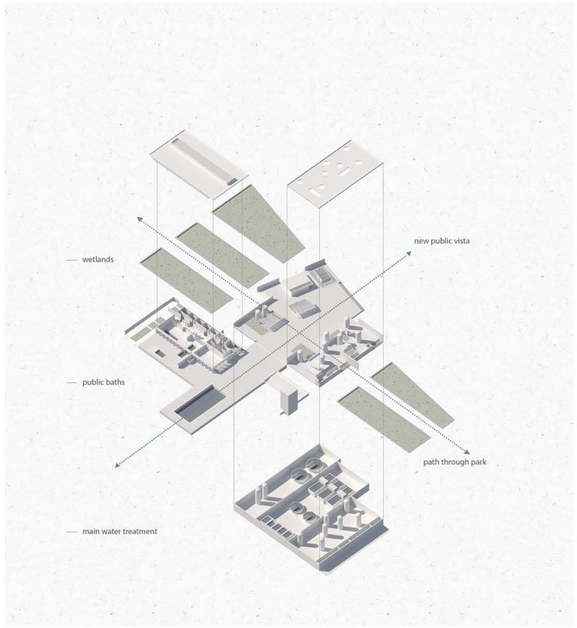


creates a public leisure space along the river, that brings the users next and in the same lever as the river while enjoying a swim. This spaces creates a public hub that is surrounded by nature and water.

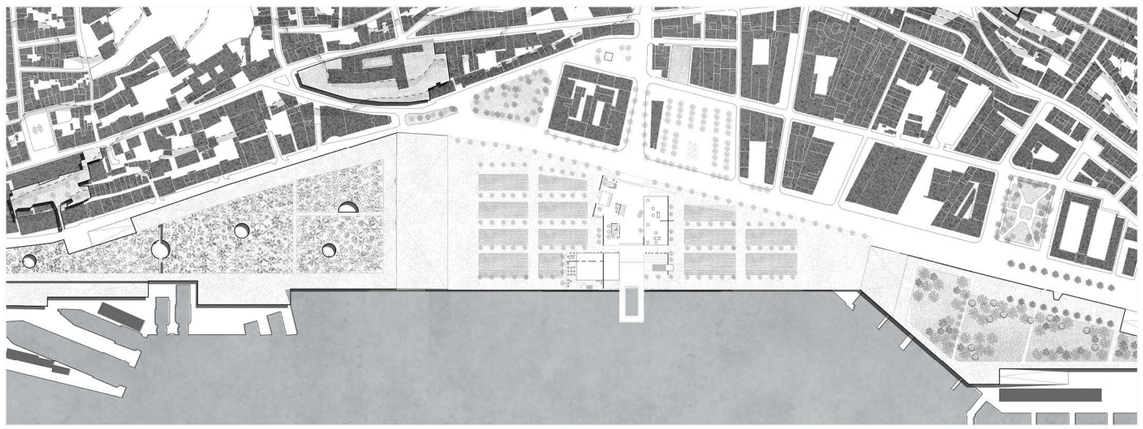
public swimming pool



new axis



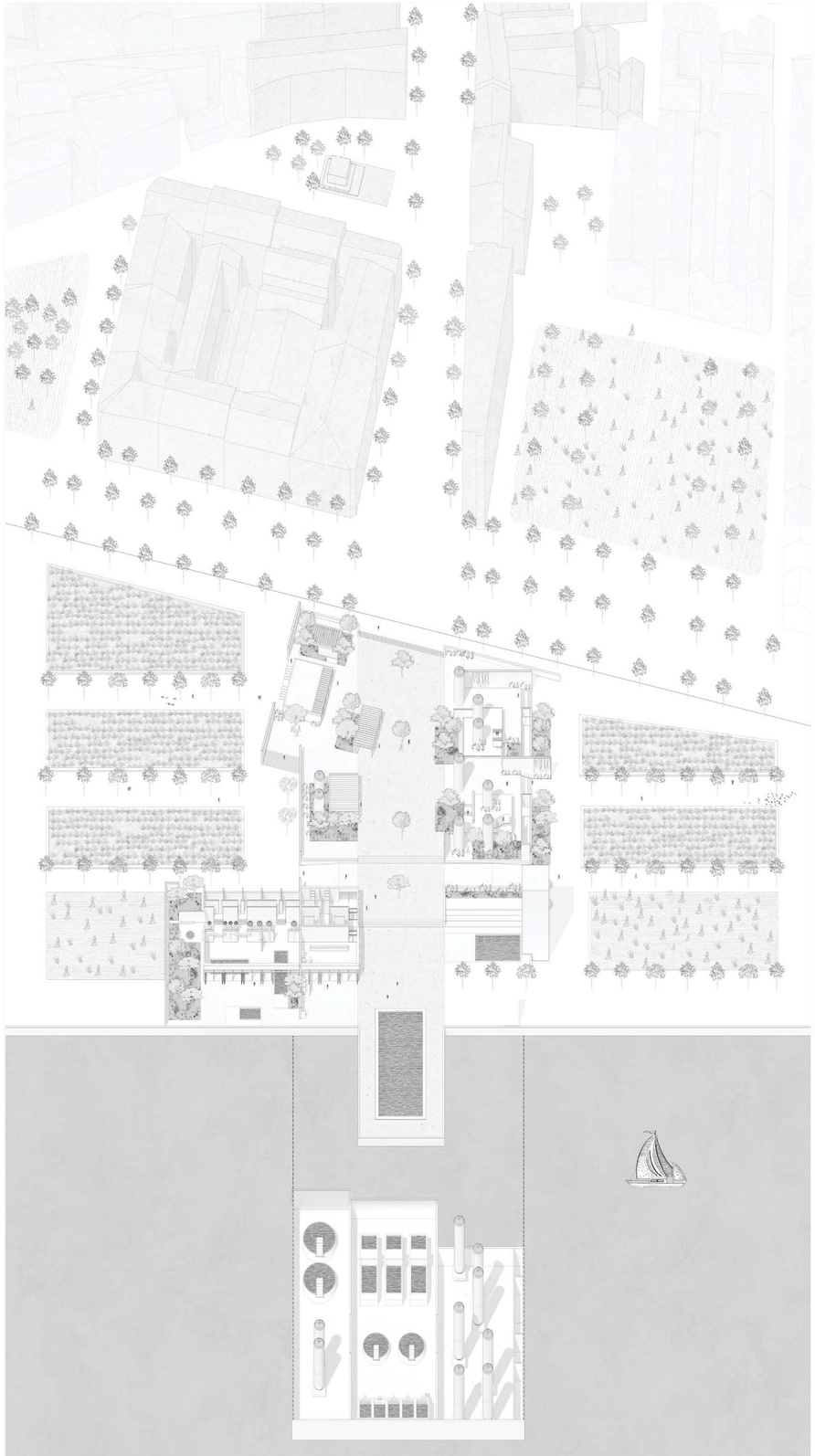
public, water treatment, nature



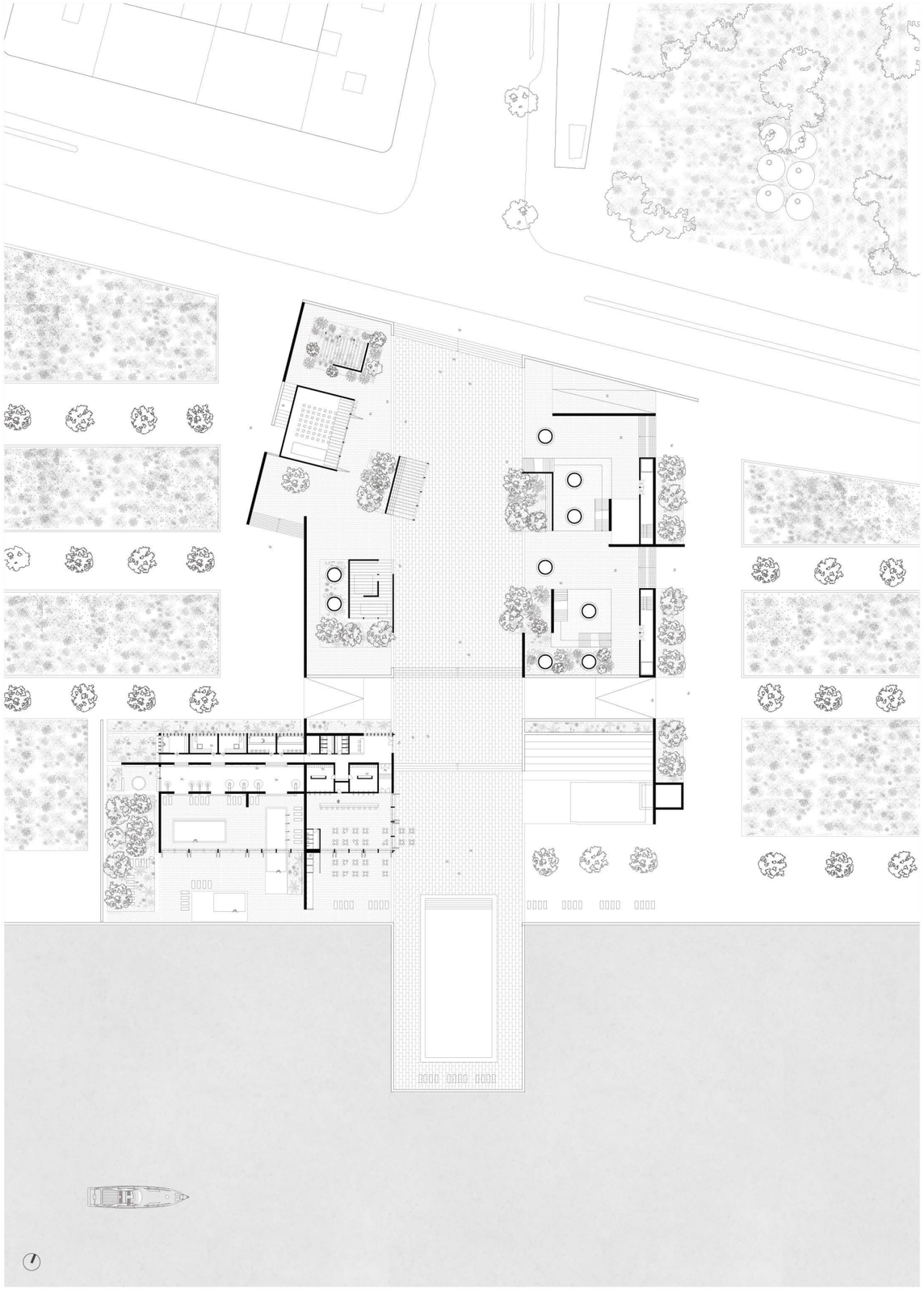
proposal within park masterplan

Water treatment & public pools

The design proposal, sitting at the bottom of one of the valleys - where underground water flow meets the river - explores the local phenomena of water conceiving them as a natural machine of flows. Following a collect-treat-enjoy approach, water from the valley is collected, treated through mechanical treatment and wetlands and used by the public bath house, as well as for irrigation for the landscape surrounding it. The proposal explores how such infrastructures can be incorporated into Lisbon's dense urban fabric while creating a new public space reclaiming their harbour and river Tagus. How can the most evident limit, the water, act as a future tool for climate change, a binder, a natural link and public space for Lisbon? The aim is to change and reformulate the relationship with water in a territorial as well as human scale.



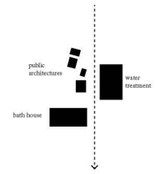
Oblique axonometric



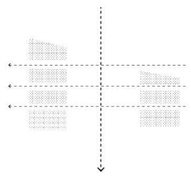
Ground floor plan & sections

existing valley & underground water course

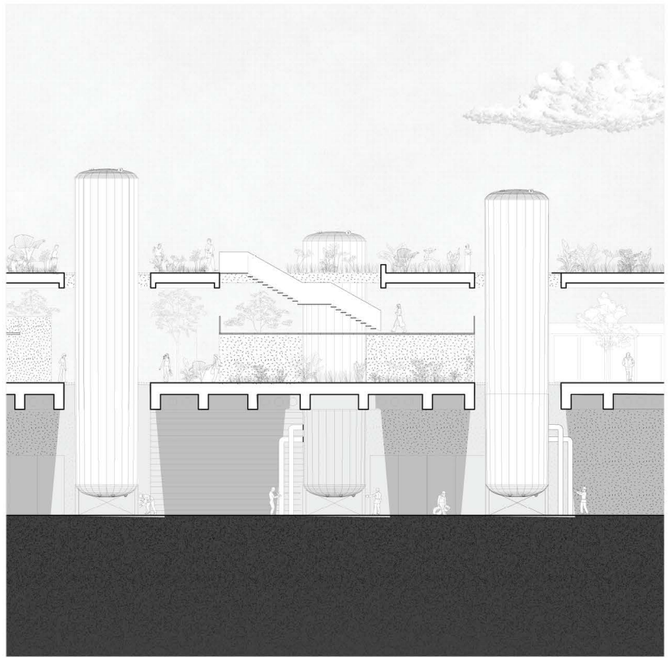
a walk through the city to the new public path to the river edge



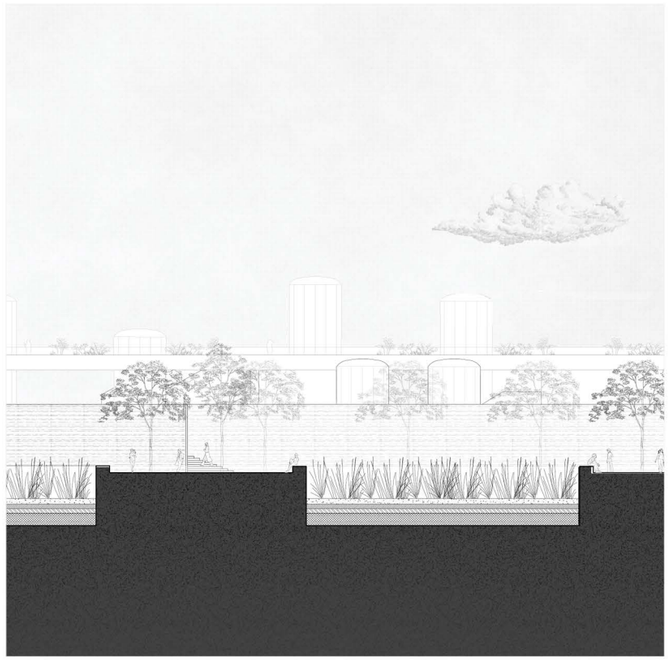
buildings



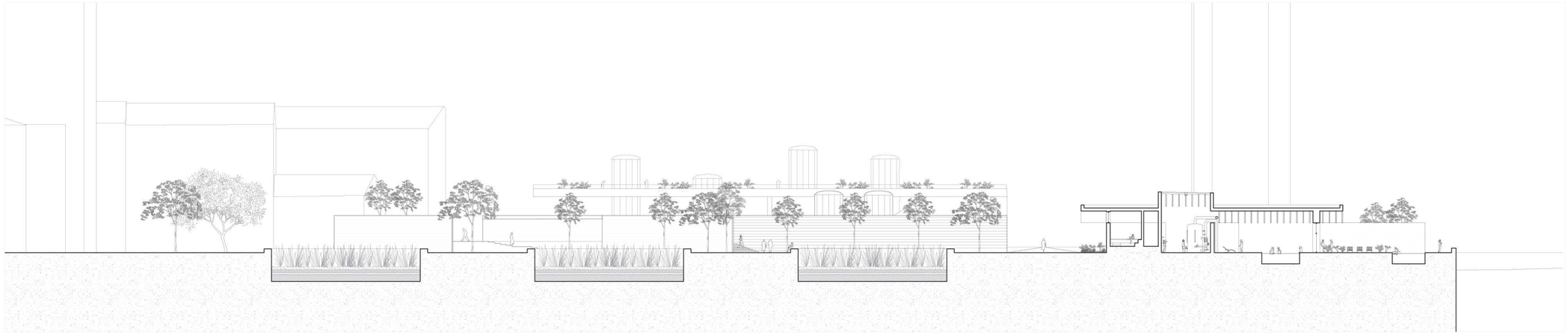
wetlands & horizontal circulatic through park



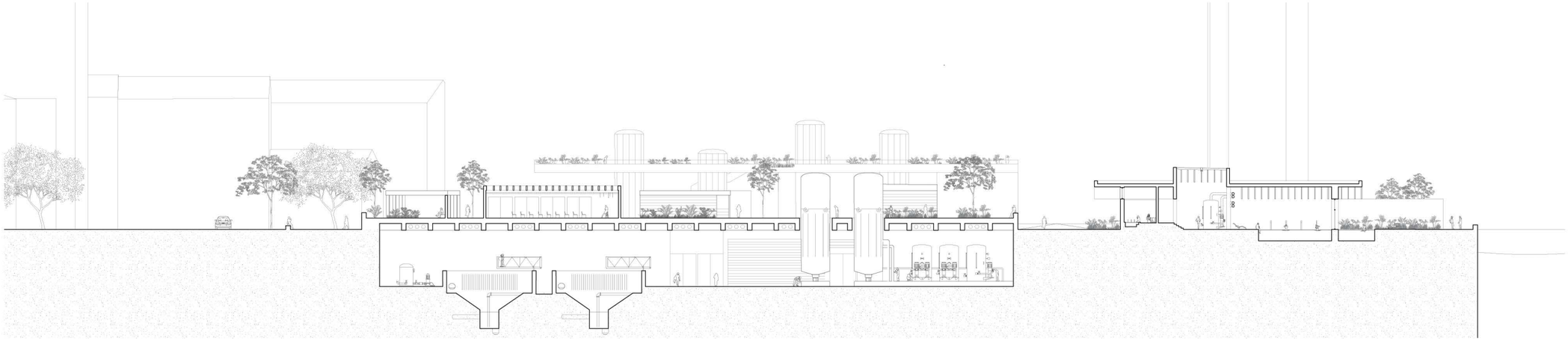
water treatment: underground and public



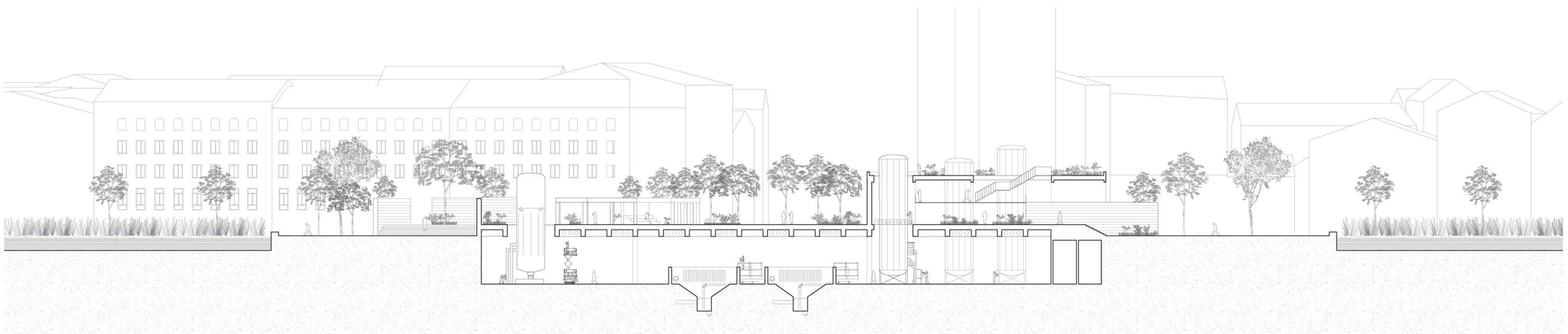
landscape and wetlands



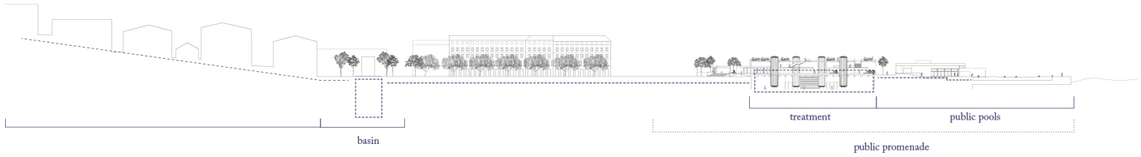
long section: wetalnds & bath house

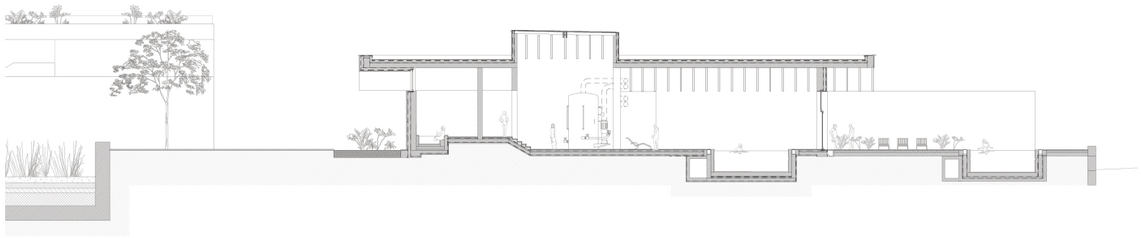


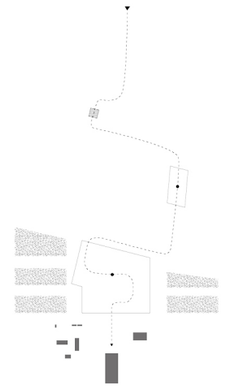
long section: treatment & bath house



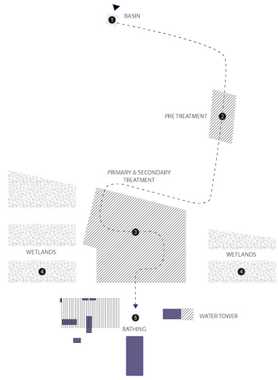
cross section: water treament & wetlands



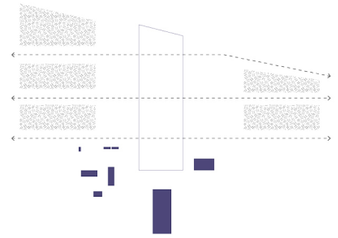




water path



treatment processes

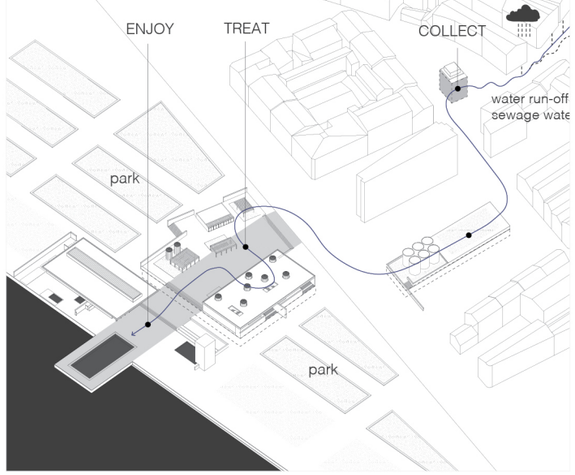


wetlands

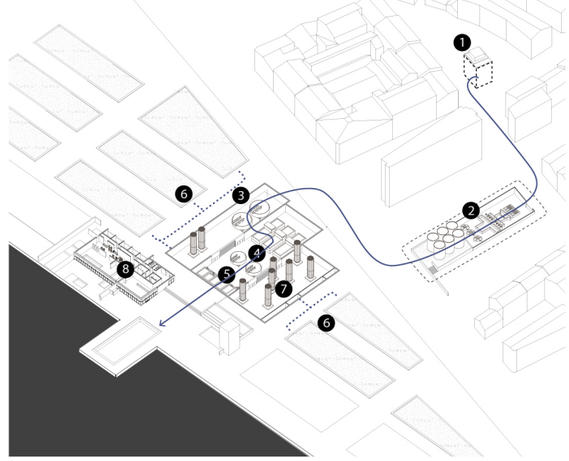
Technology & sustainability

The proposal follows a collect - treat - enjoy principle. The water treatment center treats water runoff from the valley and sewage, firstly through mechanical processes and secondly through constructed wetlands that also form the landscape. The treatment wetlands are used as a secondary treatment system that refine water that has been already treated through the engineered system chemically. When used as secondary systems, wetlands remove the remaining contaminants or sediments from the water. The clean water is then used in the public bath house and swimming pools, as well as irrigation for the public park along the harbour. Produced energy from the processes is used for the treatment plant and for heating the bath house. The treatment processes are made aware to the public.

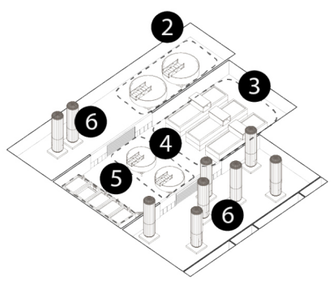
What is the relation between water treatment and the bath house? The bath house receives clean water from the final treatment stage, the wetlands. The bath house is the final destination , the place to where the water is celebrated. The idea is to store the clean water in tanks in the core of the bath house where the main circulation occurs and have exposed pipes through the walls to expose the water processes to the visitors. The visitors will have to go through the “plant room” with the water tanks in order to reach the main swimming pools.



collect - treat - enjoy



water treatment process

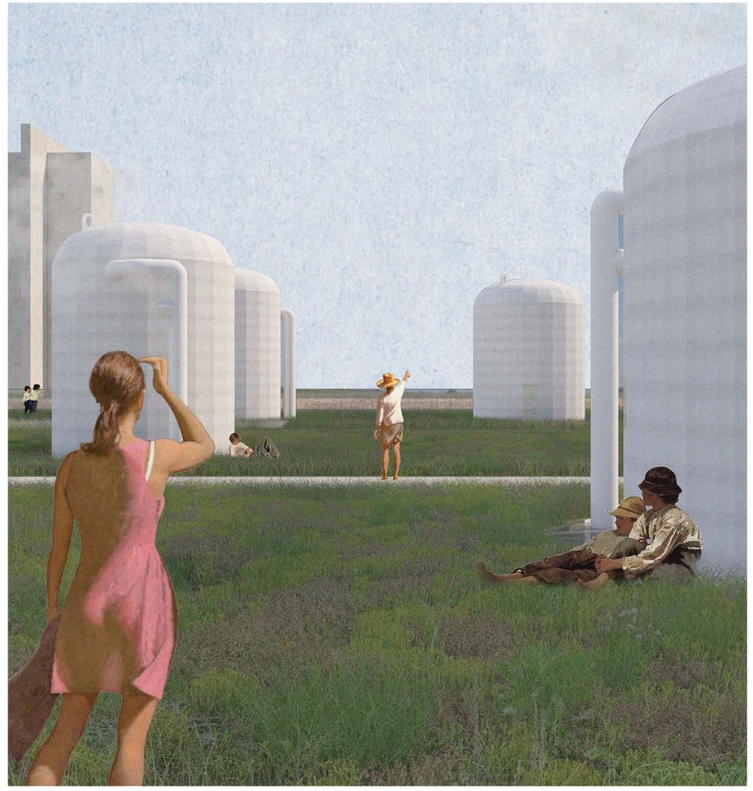


1. collection basin
2. pre - treatment
3. primary treatment

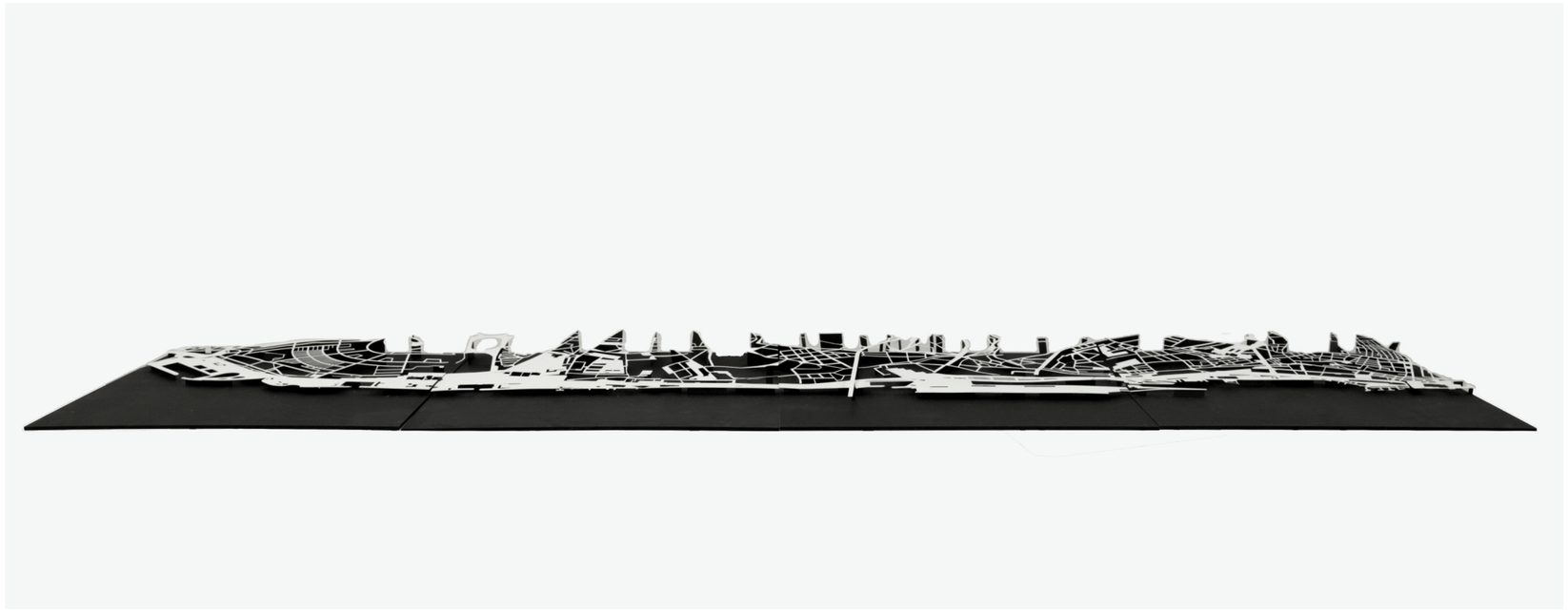
4. secondary treatment
5. disinfection
6. wetland treatment

7. storage - water tanks
8. use: baths & swimming pools

bath house & water tower



public and water treatment & roof



1:2000 Model of lisbon's 14km harbour with streets

1:7000 model of Lisbon's topography and proposal

1:250 model of proposal within context

1:2000 model of urban park

Models