Urban and Environmental Restoration Project

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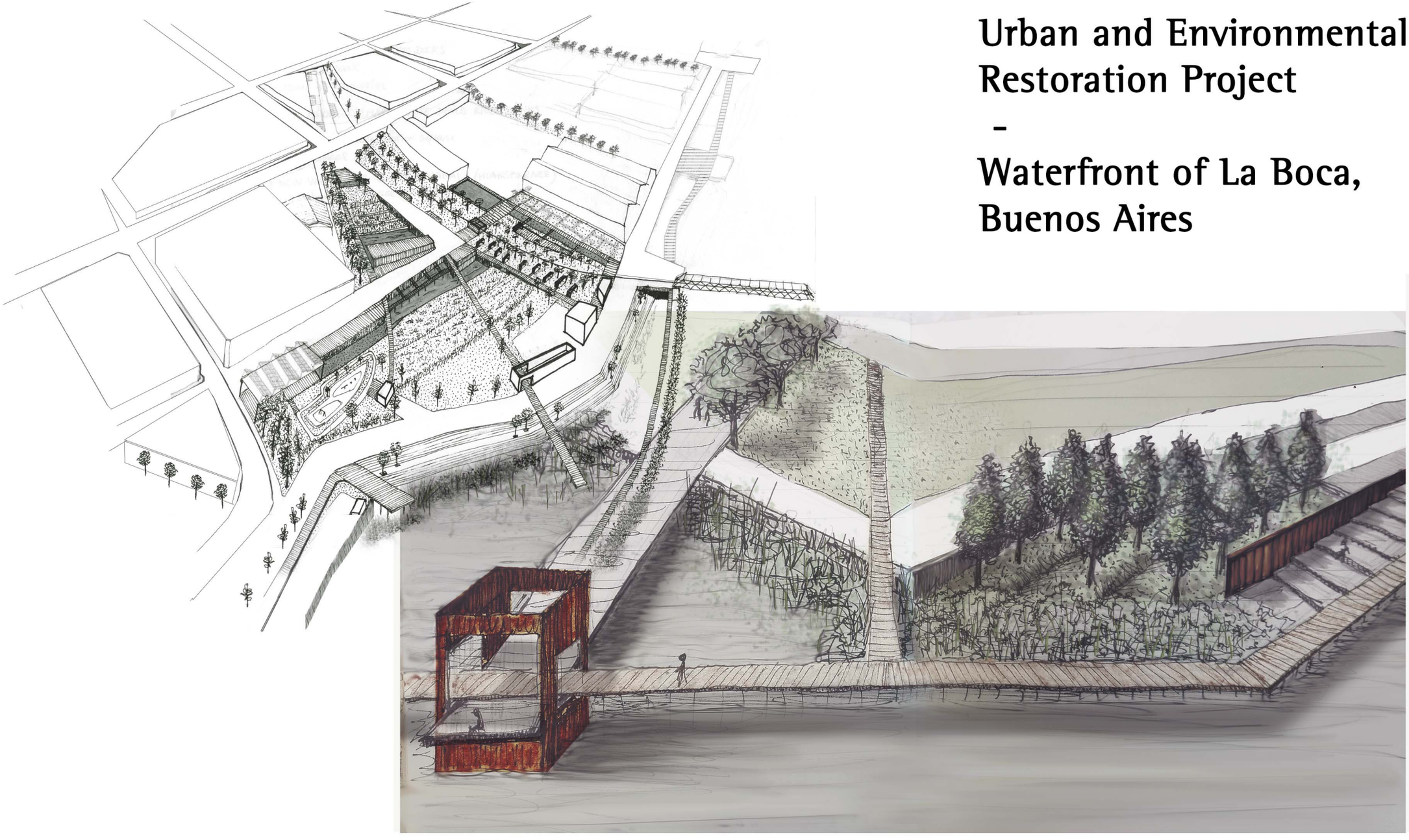
Waterfront of La Boca, Buenos Aires



TECHNICAL DOSSIER

Title of the project	Urban and environmental restoration project for the waterfront of La Boca, Buenos Aires
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Title of the course	Laurea Magistrale a Ciclo Unico - Architettura
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University/School	Sapienza Università di Roma

Written statement, short description of the project in English, no more than 250 words

In the city of Buenos Aires, La Boca has always had an important role in the global collective imaginary. Its historical and cultural relevance are, unfortunately, overshadowed by the criticalities regarding the security, housing crisis, lack of essential services and more generally by the poor quality of life linked to the critical environmental conditions of the Rio Matanza-Riachuelo; that is exactly the main issue addressed in this thesis, focused on the regeneration of waterfront's public spaces. The analysis has been carried out starting with a chronological cartographic synopsis of the city, proceeding with a detailed analysis of the neighbourhood, and a critical evaluation of its structure; the environmental matter has been studied with a diagnostic of the entire hydrographic basin. Drafting a masterplan project has led to the identification of 5 strategical macroareas along the waterfront, connected between them in order to realize a network of green-blue infrastructures. The specific design interventions that ensures the environmental sustainability of the project (applied to each macroarea) are showed in a detailed representation of the "Barraca Pena Park". The water is the main element. Starting from the will to use nature-based solutions for the environmental restoration, it is assumed a new water cycle management (grey water, rainwater and the Riachuelo's water), based on phytodepuration and integrated with the new design of public spaces, with the aim to create new naturalistic, agri-food, cultural and educational areas that contribute to improve the quality of life in the neighbourhood, respecting its hystorical and naturalistic identity.

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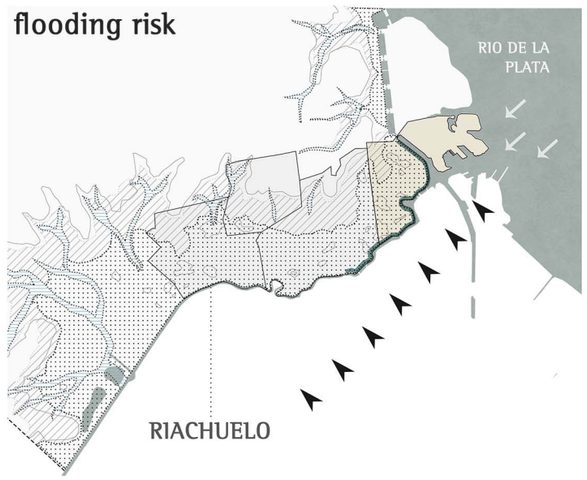
CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

Barcelona September 2020

SCHOOL PRIZE

BUENOS AIRES | LA BOCA - the riachuelo mouth into rio de la plata



comuna 4
LA BOCA

flooding risk
very high
high
medium

bodies of water
lakes and rivers

"sudestadas" wind
provoking abundants rains and floodings along the coast

water's current from rio de la plata
caused by the "Sudestadas", they resist the normal water flow of Riachuelo

elevation of the coastal walk of 1 mt
in the neighbourhoods of La Boca and Barracas

riachuelo river

one of the 10 most contaminated rivers in the world

causes

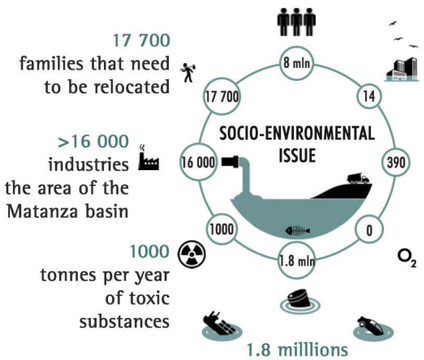
- Discharging industrial effluents
- Discharge of cloacal liquids
- Garbage depositated along the coast

effects

- Hight risk of respiratory, skin and intestinal diseases
- Absence of fishes in the river's water

without sewer system	without clean water	living in an unhealty environment	living in "villas miserias"
55%	35%	85%	10%

8 mln
inhabitants affected



17 700 families that need to be relocated

14 municipalities wet by putrid waters

>16 000 industries in the area of the Matanza basin

390 opend dumps

1000 tonnes per year of toxic substances

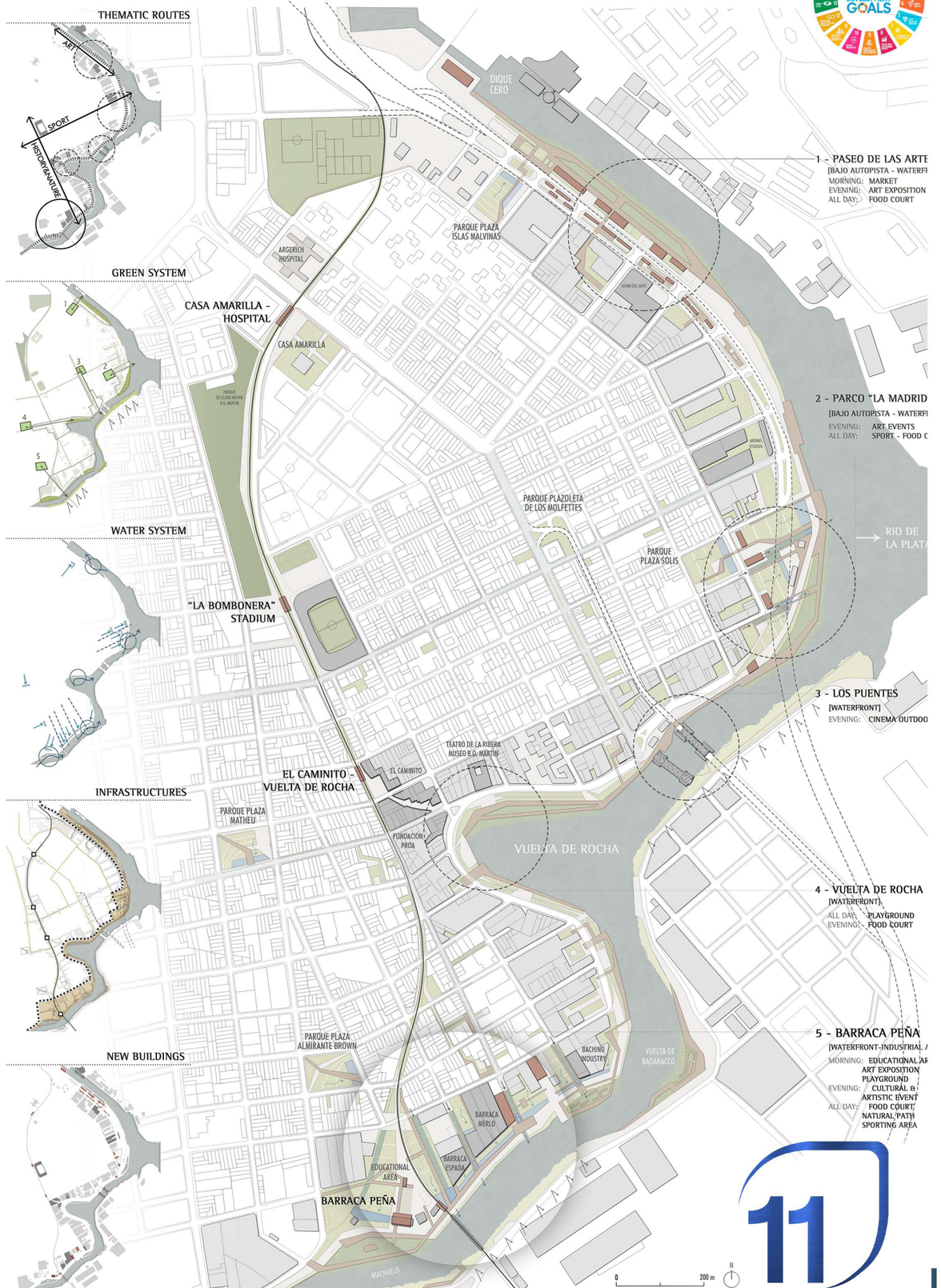
0 mg/l concentration of oxygen dissolved in water

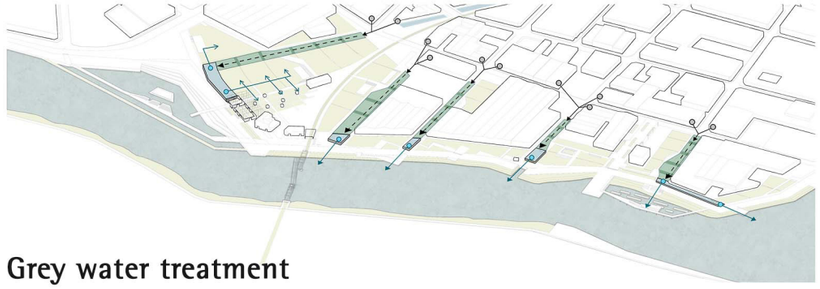
1.8 milllions m³ of solid waste (cars and boats' wrackage)

+

high concentration of
heavy metals

	Zn	Cr	Pb	Cd	Cu	
measured values	0,5	0,1	0,04	0,005	0,2	mg/L
excess	(x16)	(x5)	(x400)	(x10)	(x200)	





Grey water treatment

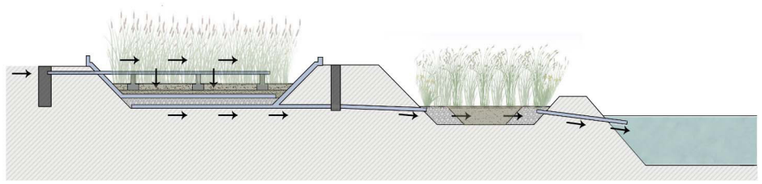
Collection of buildings' grey water and streets' runoff water

Depuration water process through phytoremediation terraces

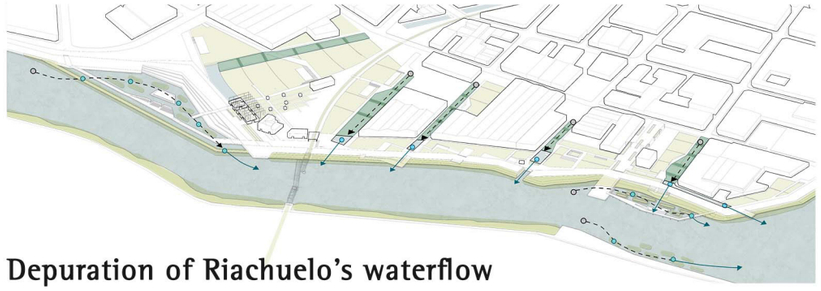
Collection basins of depurated waters and rainwater

Treated waters input into Riachuelo

Water collected in the basins re-used to irrigate agricultural areas



Existing roadways are reconverted into phytoremediation canals, allowing to treat the contaminated water coming from the buildings (grey water) and the sidewalks (runoff water).



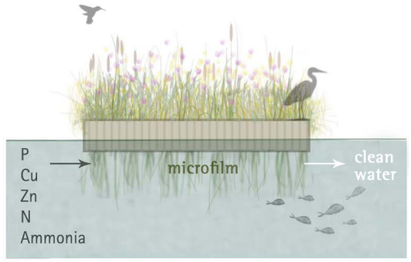
Depuration of Riachuelo's waterflow

Riachuelo's contaminated water flow, rich in heavy metals [Zn - Cr - Pb - Cd - Cu]

Natural depuration process of water through floating wetlands [P-Cu- Zn- Cr- Cd- N- Ammonia]

Depurated river water coming out of the floating wetlands

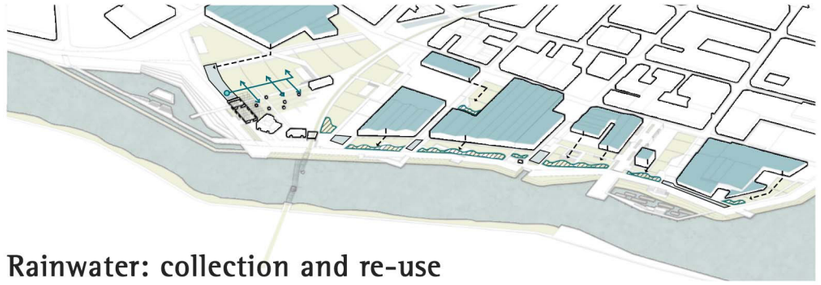
Restoration of riparian vegetation along the coast



Schoenoplectus californicus
Eichhornia craassipes
Pistia stratiotes

The design of "Floating treatment wetlands" (FTWs) permits:

- Restoration of native flora and fauna
- Mitigation of water flow
- Aesthetic quality



Rainwater: collection and re-use

Roof surfaces that from wich we can collect rainwater

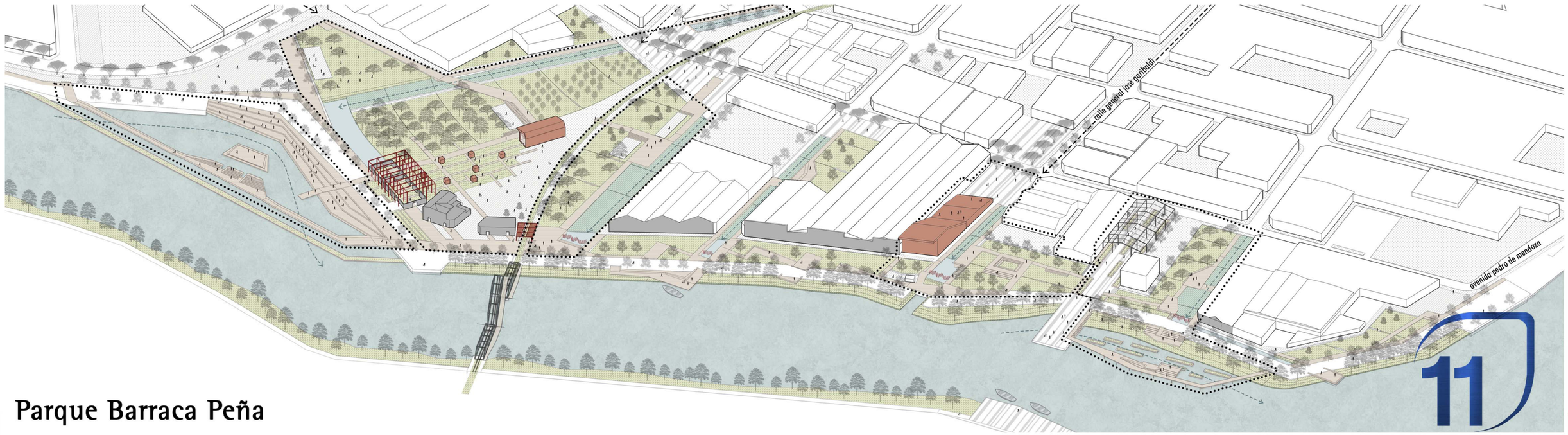
Water conveying toward water storage

Wetland for collecting rainwater

Waterproofed basins for runoff rainwater (treated in the terraces)

Collected rainwater can be reused to irrigate agricultural areas

Creating natural basins for the storage of rainwater allows to create temporary wetland areas connected to the wooden elevetad paths.The water collected can be reused for external or interior uses.



Parque Barraca Peña

Phytoremediation terraces and wetlands

phytodepuration terraces SFS-Vertical

inspection wells

wooden seat h: 43 cm

boardwalk with steel structure and wooden planks

phytodepuration terraces SFS-Horizontal

basin for collecting treated water

bike parking with steel rack

Salix humboldtiana

Cortaderia selloana

Schoenoplectus californicus

floating gardens: Eichhornia crassipes

wooden terrace