

ISTANBUL TECHNICAL UNIVERSITY • FACULTY OF ARCHITECTURE
Department of Landscape Architecture

2021 - 2022 • FALL SEMESTER
PEM 4902E • GRADUATION PROJECT

AQU(A)DUCT:

RE-THINKING THE HISTORIC WATERWAY LANDSCAPES OF ISTANBUL



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PEM 4902E GRADUATION PROJECT

final design studio

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01

ABOUT THE PROJECT

Water or AQUA, as it is known in Latin, is the foundation of life that is binding human spheres and nature while dynamically sculpturing civilizations and cultures. Shaped between water and terrain, Istanbul is an open book to read through thousands of years of these natural and cultural processes triggered by a wide network of rivers and streams covering the city's topography. However, this variable topography of the city had been an obstacle to reach water resources for many communities who tried to settle on these lands. As a response to these natural and cultural challenges and transportation problems, architects and engineers revealed a variety of design solutions through history, which are still present as architectural heritage and that are ahead of their time. Considering the contemporary urban landscape structure of Istanbul, Kırkçeşme Waters and Waterways stand alone as a unique representative of these attempts to bring clean water to the city yet; they struggle with deterioration within different parts of the system. On the edge of a Global Ecological Crises where Earth is struggling with water scarcity, interaction with water and contemporary design approaches became a vital topic for Landscape Architects.

Therefore, within the scope of this Graduation Project, the relationship between water and design will be discussed, considering historical and contemporary needs and design approaches through historic Kırkçeşme Waters and Waterways of Istanbul.

In this scope, the main design problematics and the questions of 2021-2022 Fall Semester Graduation Project will be;

- Why do we reactivate the historic water systems of Istanbul?
- How should we address this historic water system within the context of today's problems and design agenda?
- What can we learn from this historic system? And How does this "know-how" help us to create an ecologic and cultural recreation system in today's Istanbul?

The purpose of the graduation project is to demonstrate that the student has the critical knowledge and development in all the topics of education and training in Landscape Architecture. The goal is to put forth a design package that attained the desired professional level. This is the final project before the students earn their Bachelor's degree in Landscape Architecture.

ISTANBUL TECHNICAL UNIVERSITY
FACULTY OF ARCHITECTURE
DEPARTMENT OF LANDSCAPE ARCHITECTURE
2021-2022 FALL

GRADUATION PROJECT

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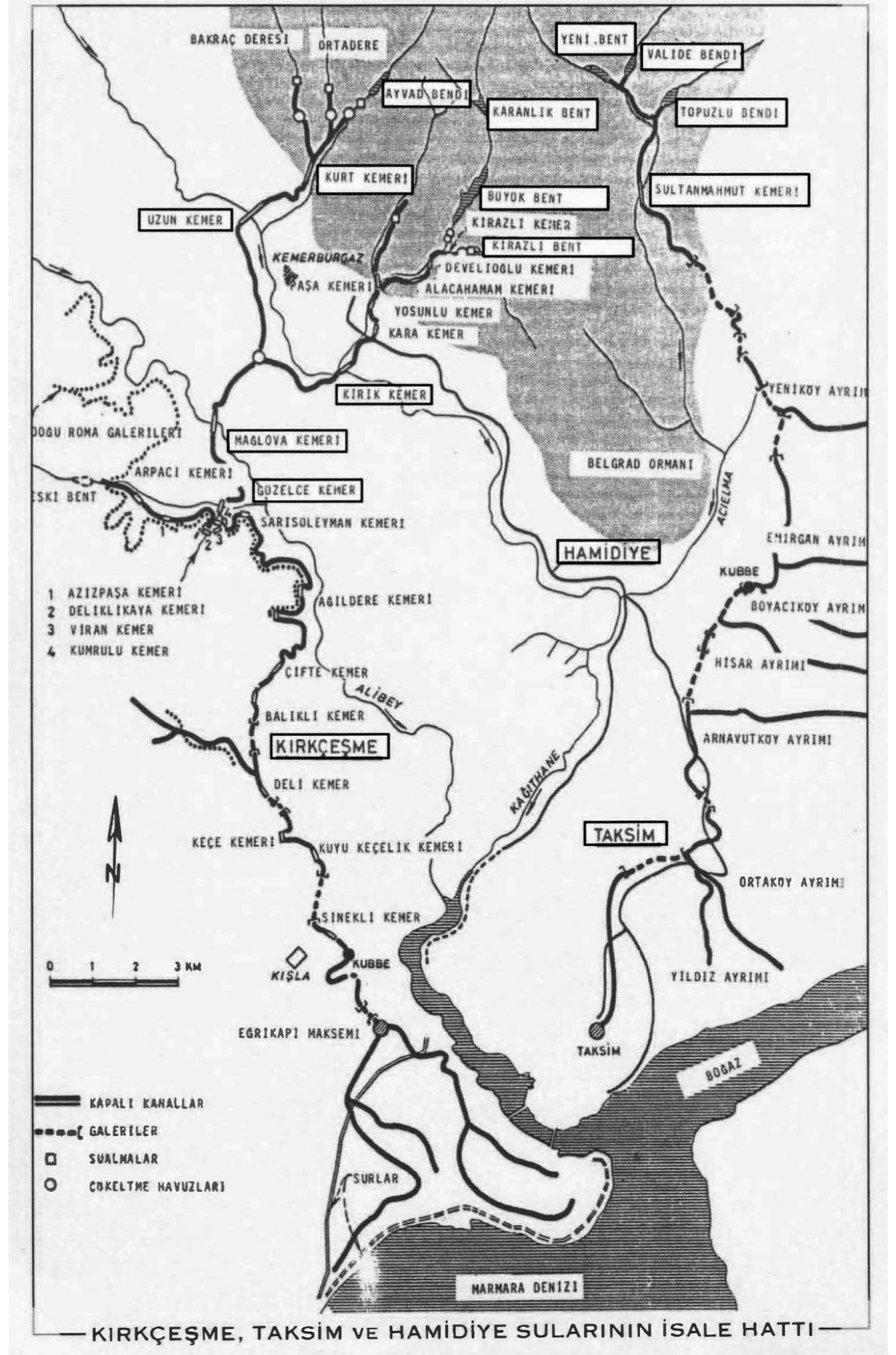
Reporters



Res. Assist. Başak Akarsu

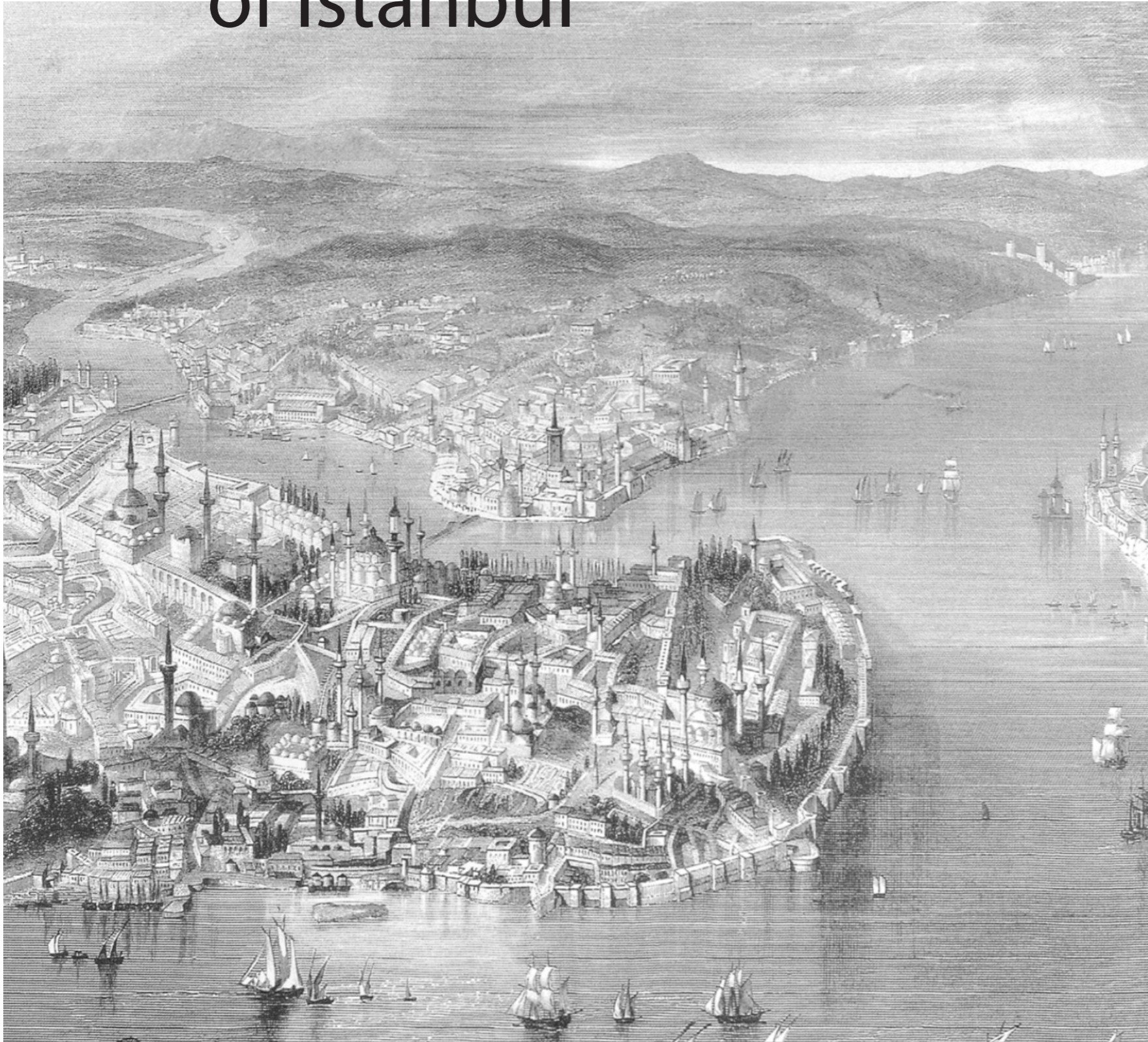


Res. Assist. Hüseyin Ögçe



Kırkçeşme, Taksim and Hamidiye Waterways transmission line (Istanbul Water and Sewerage Administration, n.d.)

Historic Waterway Landscapes of Istanbul



An engraving of the Historic Peninsula of Istanbul (Istanbul Metropolitan Municipality, n.d.)

Water is a vital substance for life, and its use has been important for many reasons throughout history (Karakus, 2019). Human beings have spent the colossal effort to somehow transport water to the region he lives in. Even today, reaching water and its transporting issue is one of the main topics (Kılıç, 2004). Namely, the obligation of finding new solutions for the co-existence of water and humans is a reality of our age. Water and its relative areas are handled with three central notions: (1) considering them as habitat environments, (2) addressing them as areas to adapt to climate change, (3) approaching them as an identity for collective memory (Ruban, 2018).

Throughout history, when a settlement was established or an existing territory was expanded, it was necessary to find new sources and bring water to the city centre, sometimes from very long distances, to meet the need for water as the population increased (Karatat, 2017). In order to meet this need of the people, where to get water, how to collect it, how to bring this water from rough lands, how to do the distribution and usage stages, etc. phases; this has been accomplished through significant planning work and the construction of a number of facilities. Hittite, Urartu, Roman and Byzantine civilisations constructed various waterway systems, revealing ancient and historical importance in Anatolia (Biçkici-Arkan, 2015; Özis et al., 2008). In the Ottoman period, the water systems built in Istanbul are Halkalı, Kırkçesme, Taksim, Üsküdar, Terkos and Hamidiye water systems, which contains precious works such as the Maglova Aqueduct in the Kırkçesme Water System, which was built by Mimar Sinan (Aygün, 2014; Çeçen, 2002; Özis & Arısoy, 1987).

Historic waterways mainly consist of catchment basins, aqueducts, cisterns and fountains. Catchment basins help gather water, and collected water is transported by open galleries and aqueducts between the first and target locations. In this stage, water is stored by cisterns (Ward et al., 2017) and drained off by fountains. Although these historic water systems, such as aqueducts, cisterns etc., are hardly noticed today, they are physical and social relics passed from past to present. Moreover, the waterway systems support the improvement of the flora and fauna's habitat quality. Thereby, these ecological lines have importance for the living organisms in cities. On the other hand, the social effect of the waterway system is indisputable due to the settled population in its surrounding areas. Water systems such as fountains, water pools etc., are put forth as a socialisation place for people. For this reason, it is one of the most up-to-date responsibilities for these structures and their surroundings to be re-functionalized physically and socially (Dumanoglu, 2020).

Kırkçeşme Waterways

It is estimated that the Kırkçeşme Waterway, which was destroyed by all the tribes besieging Istanbul from the 7th century and could not be repaired for many years, was built for the first time during the reign of Emperor Theodosius (379-395). Kırkçeşme Waterway was repaired starting from the Cebeciköy branch with the incorporation of Istanbul into the Ottoman Empire in 1453, and water was supplied to the rows of fountains called “Kırkçeşmeler” by the people due to their large number, located next to the Gazanfer Aga Madrasa on the Unkapani side of the Bozdogan Aqueduct (Aygün, 2018).

After the population of the city and, therefore the need for water increased, Kırkçeşme Water System was established to meet the water needs of Istanbul, some of which have survived to the present day. The construction of the Kırkçeşme Waterway system started in 1554 after Mimar Sinan was commissioned by Süleyman the Magnificent and was completed in 1564 (Karakus, 2019). The water resources in the north of Istanbul were collected from two separate regions, known as Kagithane in the northeast and Ayvad in the northwest, and were conveyed to Egrikapı Maksemi and from there to Topkapı Palace after they merged in Basha-vuz by Kırkçeşme Waterway system (Karakus, 2019; Arısoy, 2008).

The water structures designed for the Kırkçeşme Waterway System should be evaluated holistically within a system. While aqueducts were designed in the valleys where the topography is

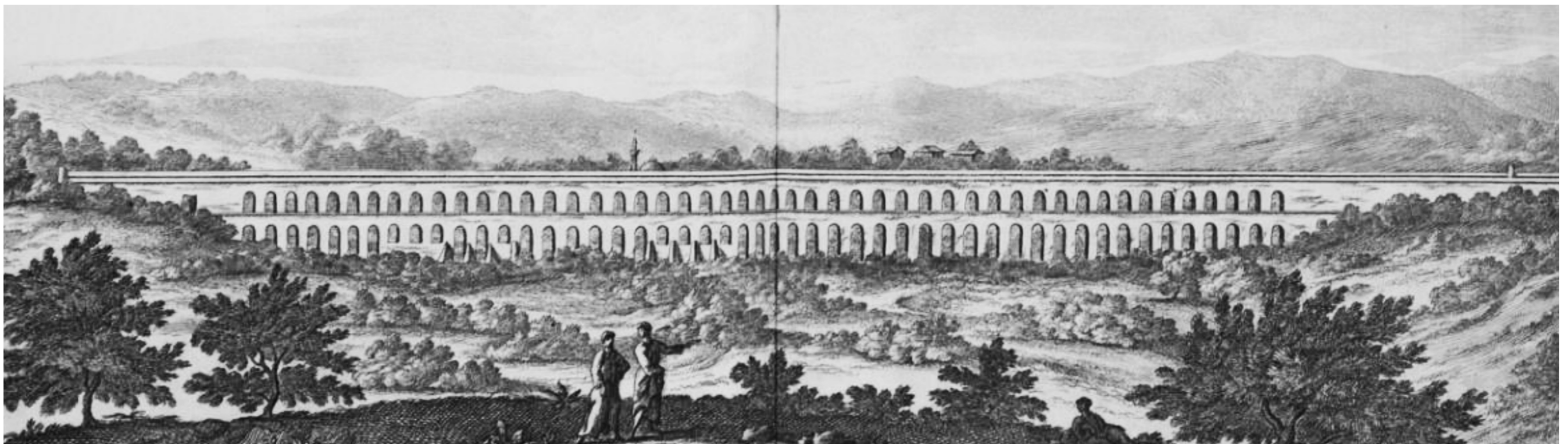
an obstacle, channels and tunnels were preferred to overcome the obstacles on the ridges (Karatas, 2017).

There are 33 aqueducts of varying sizes in Kırkçeşme Waterway: Kirazlı Kemer, Develioglu Kemer, Alacahamam Kemer, Çesnigir (Yosunlu) Kemer, Pasa Kemer, Kara Kemer, Egri (Kovuk) Kemer, Ayvad (Ortadere) Kemer, Kurt Kemer, Uzun Kemer, Maglova Kemer, Güzelce Kemer, Arpacı Kemer, Cebeciköy Kemer, Aziz Paga Kemer, Deliklikaya Kemer, Viran Kemer, Kumrulu Kemer, Sarı Süleyman Kemer, Çiftlikönü Kemer, Kirazdibi Kemer, Avludere Kemer, Uzunkoltuk Kemer, Bulakbası Kemer, Çiftekemer, Çiftekemer, Balıklı Kemer, Valide Kemer, Dolap Kemer, Keçesuyu Kemer, Koyungeçidi Kemer, Koyungeçidi Kemer, Sinekli Kemer (Aygün, 2018).

Kırkçeşme historic waterway systems are a collection of structures that continue along long routes, unlike individual architectural works. The fact that the historic water systems are outside the settlement and intertwined with nature in general causes them to stay away from people. Although this situation has given a good result in terms of protection, it can adversely affect awareness. Therefore, it should be ensured that these works are introduced to people by creating alternative travel routes. Students and researchers seeing these works closely and examining them in detail before starting their professional lives will substantially protect our cultural heritage (Aygün, 2018).



A View from the Bashavuz (Aygün, 2018)



Dereiçi Village

02

SITE VISIT

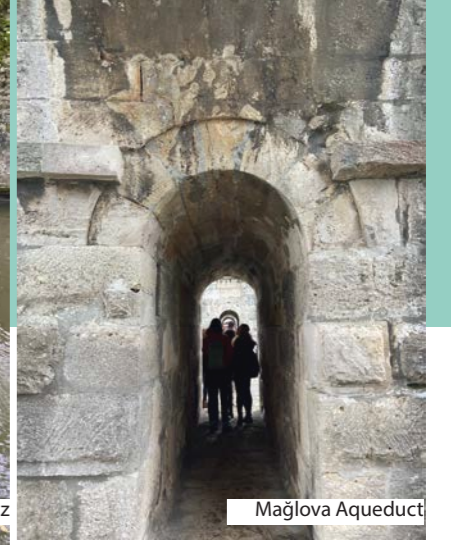
Various historical water structures built along Kırkçeşme historical waterways were visited during the field trip. We would like to thank Architect Ahmet Aygün for his support and guidance during the site visit.



Uzun Aqueduct



Çiftehavuz



Mağlova Aqueduct



Kirazlı Bent



Bashavuz



Kirazlı Bent



Çiftehavuz



Ayvad Bendi

03

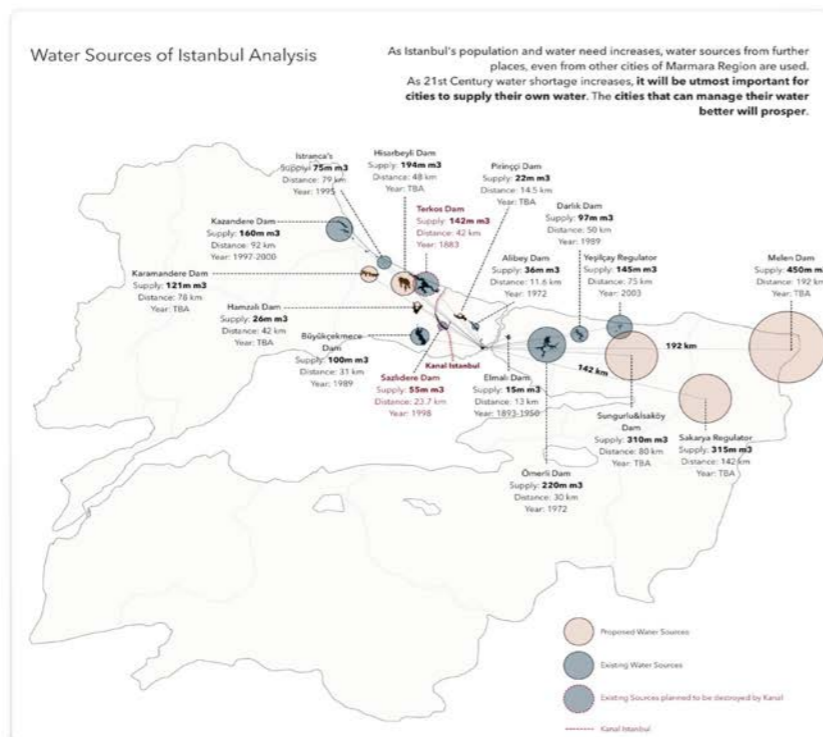
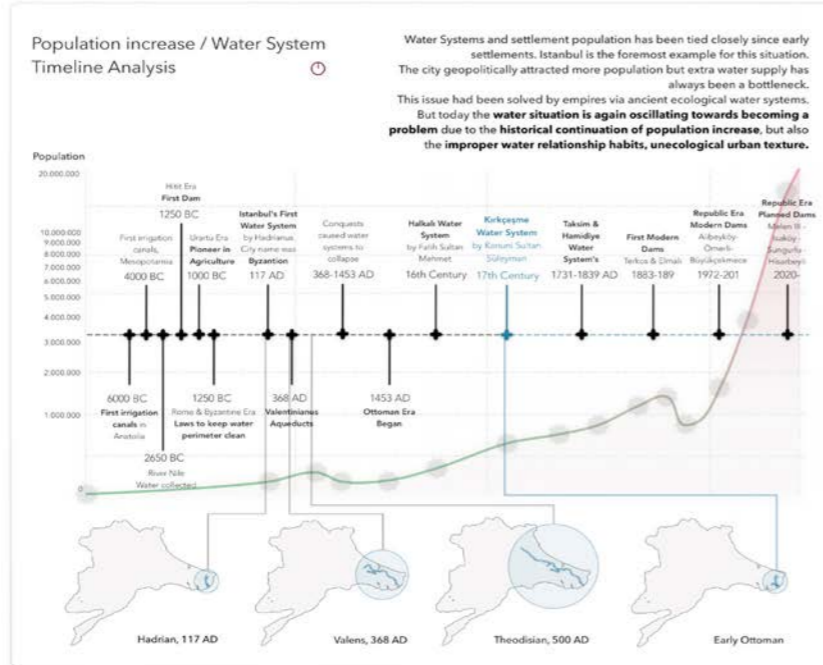
GRADUATION PROJECTS

Kırkçeşme Historic Park Batuhan Ünlü

“Kırkçeşme Historic Park” project aims to analyse, predict and act on Istanbul, Turkey’s relationship with water to eventually create value for the city and citizens.

To reach this goal, three main pillars of goals are defined; Ecological, Urban Memory, Socio-Cultural. These 3 goals are assigned with 3 shapes throughout the project.

Historical, spatial analysis and future projections about Istanbul’s ecological, memorial and socio-cultural relationship with water has been made. Then, respective strategies to achieve these goals are defined. Example international case studies has been analysed. Kırkçeşme was mapped analytically and analysed holistically.



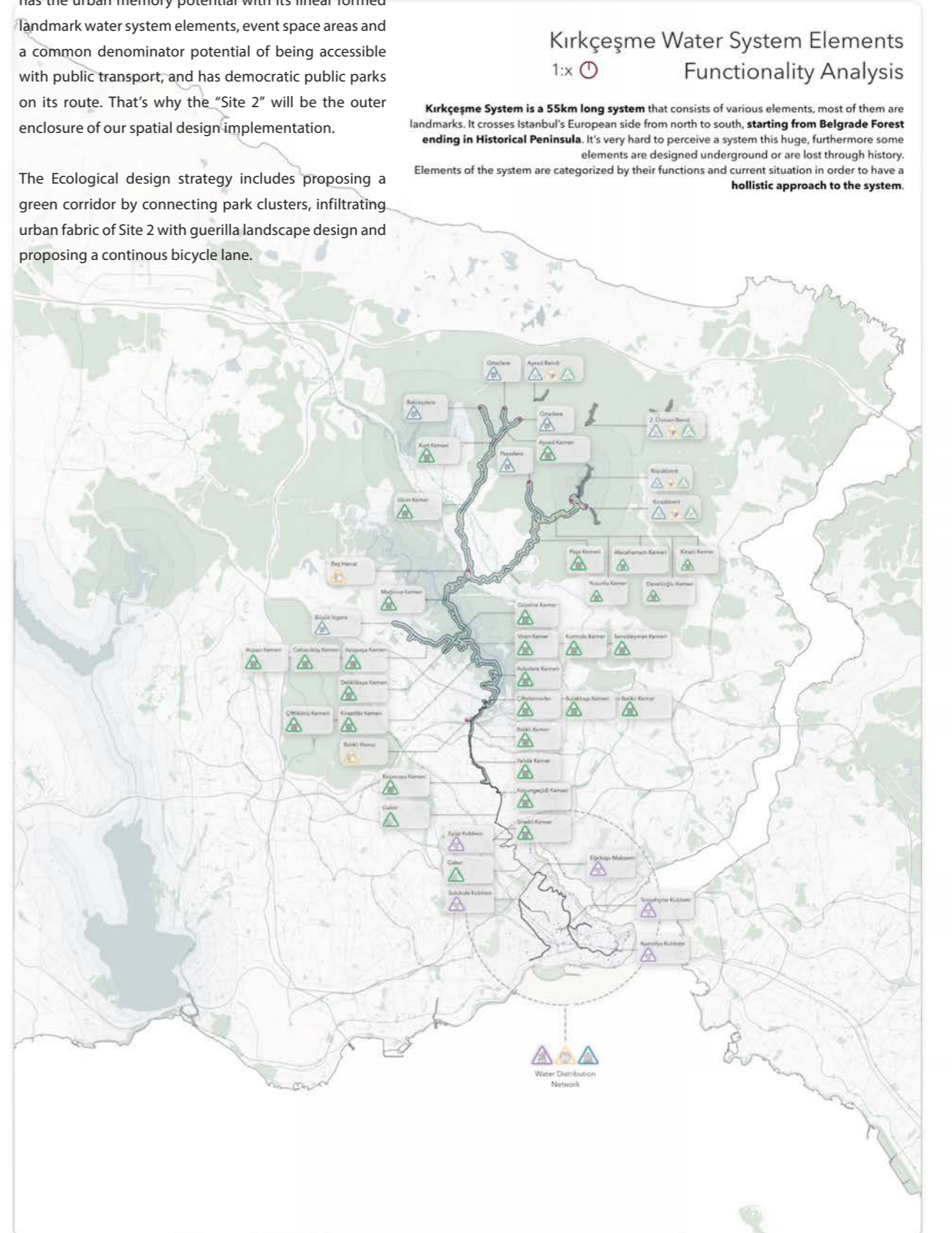
Then, the findings are mapped to create spatial awareness. Posters are designed to have 3 visual comprehension layers. Looking from far to near: Point cloud, Text information, Spatial arrangement. The problems of Kırkçeşme has led us to spatial potentials that contribute to 3 main goals of our project. This potentials are mapped with their respective shapes and logos to illustrate a point cloud and show us the perfect spot to implement the design strategies that will aid us in achieving our goals.

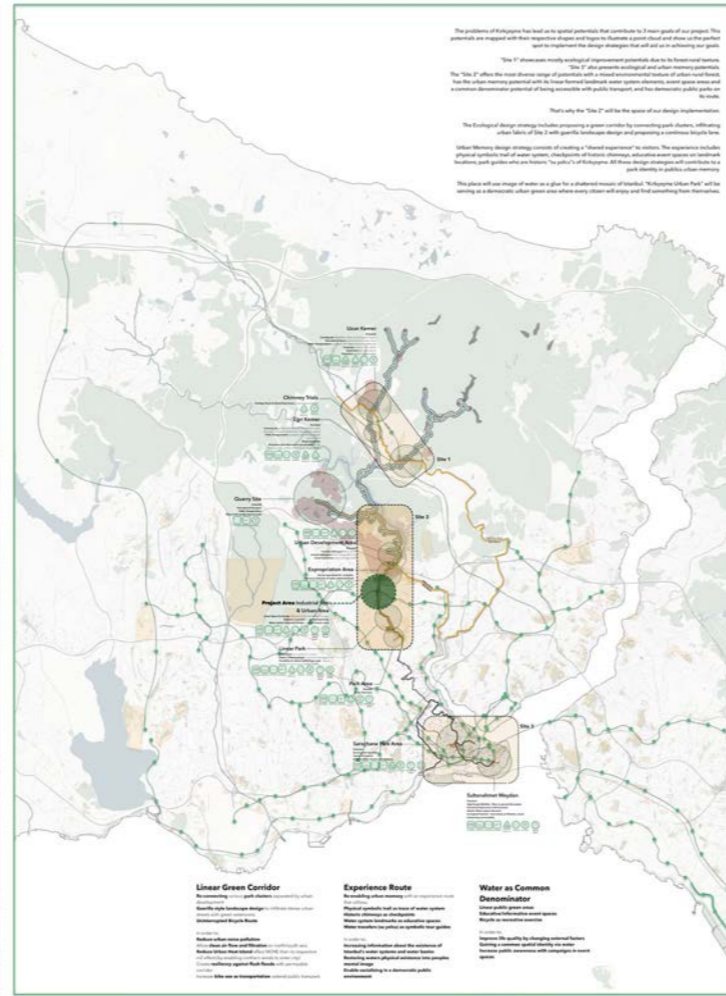
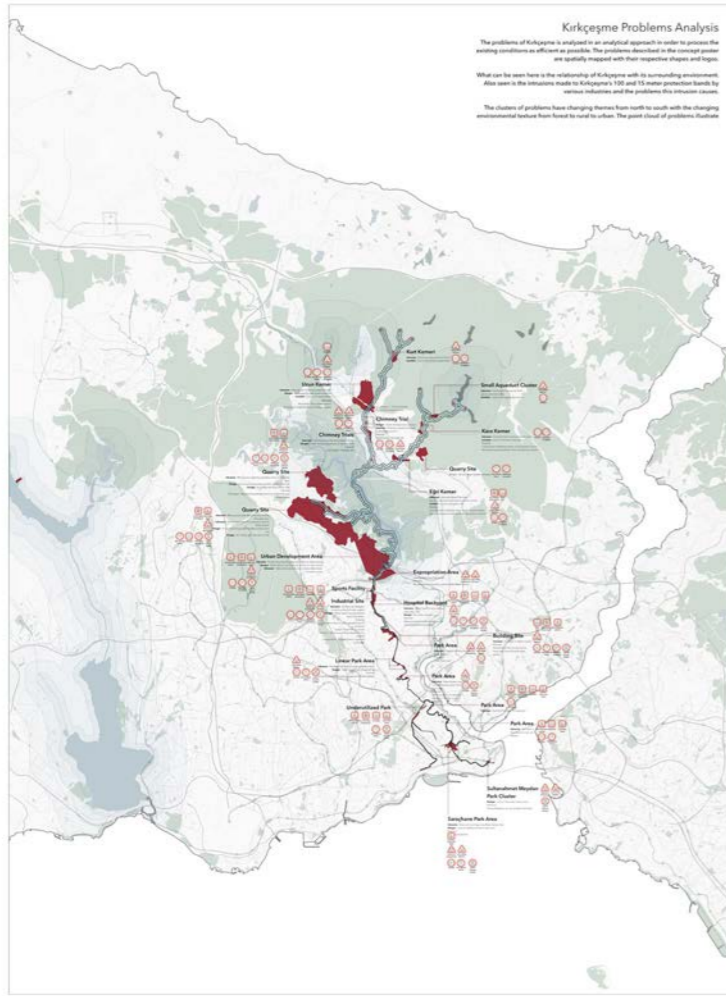
“Site 1” showcases mostly ecological improvement potentials due to its forest-rural texture.

“Site 3” also presents ecological and urban memory potentials.

“Site 2” offers the most diverse range of potentials with a mixed environmental texture of urban rural-forest, has the urban memory potential with its linear formed landmark water system elements, event space areas and a common denominator potential of being accessible with public transport, and has democratic public parks on its route. That’s why the “Site 2” will be the outer enclosure of our spatial design implementation.

The Ecological design strategy includes proposing a green corridor by connecting park clusters, infiltrating urban fabric of Site 2 with guerilla landscape design and proposing a continuous bicycle lane.



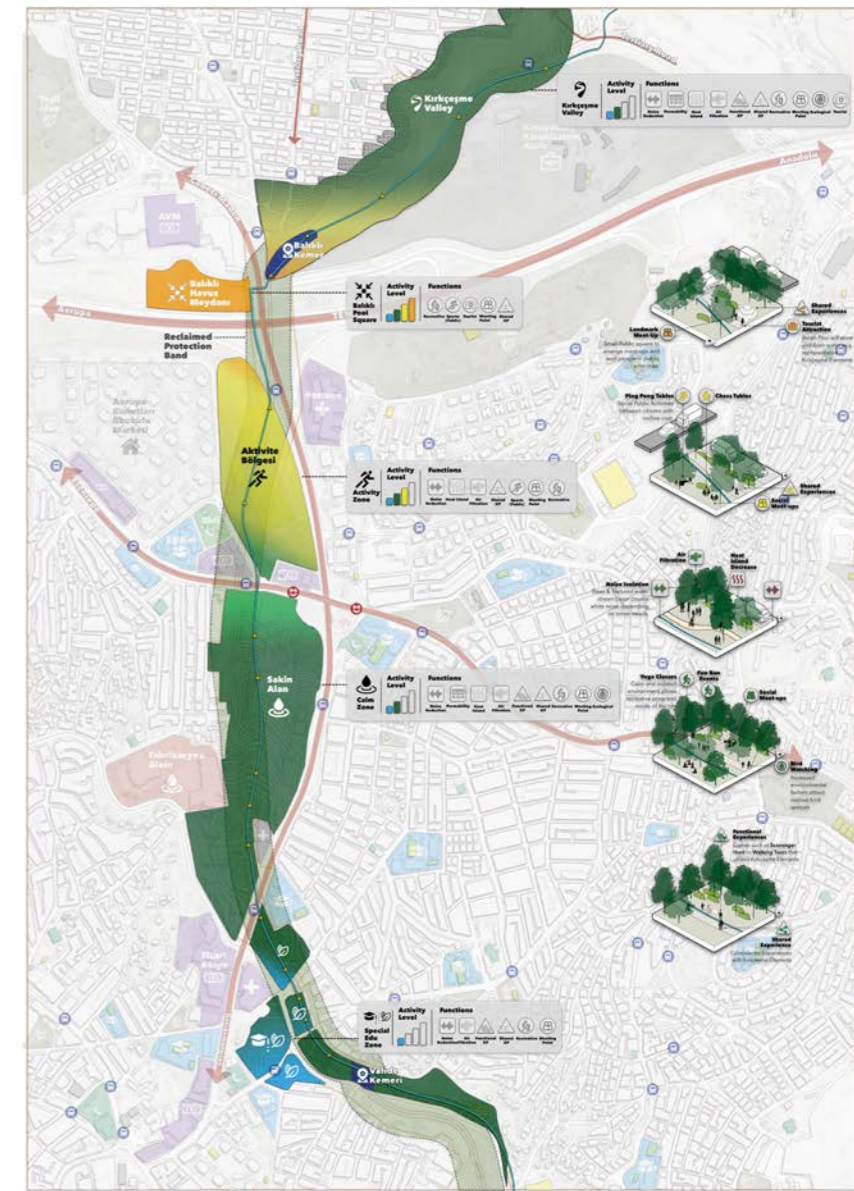


1:50000 Kirkçesme Water System // Problem Analysis
 Istanbul Technical University // Graduation Project / Instructor: Assoc. Prof. Dr. Ebru Erbayrak Güler / Assoc. Prof. Dr. Melis Akay / Course Assistant: R.A. Başak Akar / R.A. Hüseyin Ögür // by Batuhan Ünlü

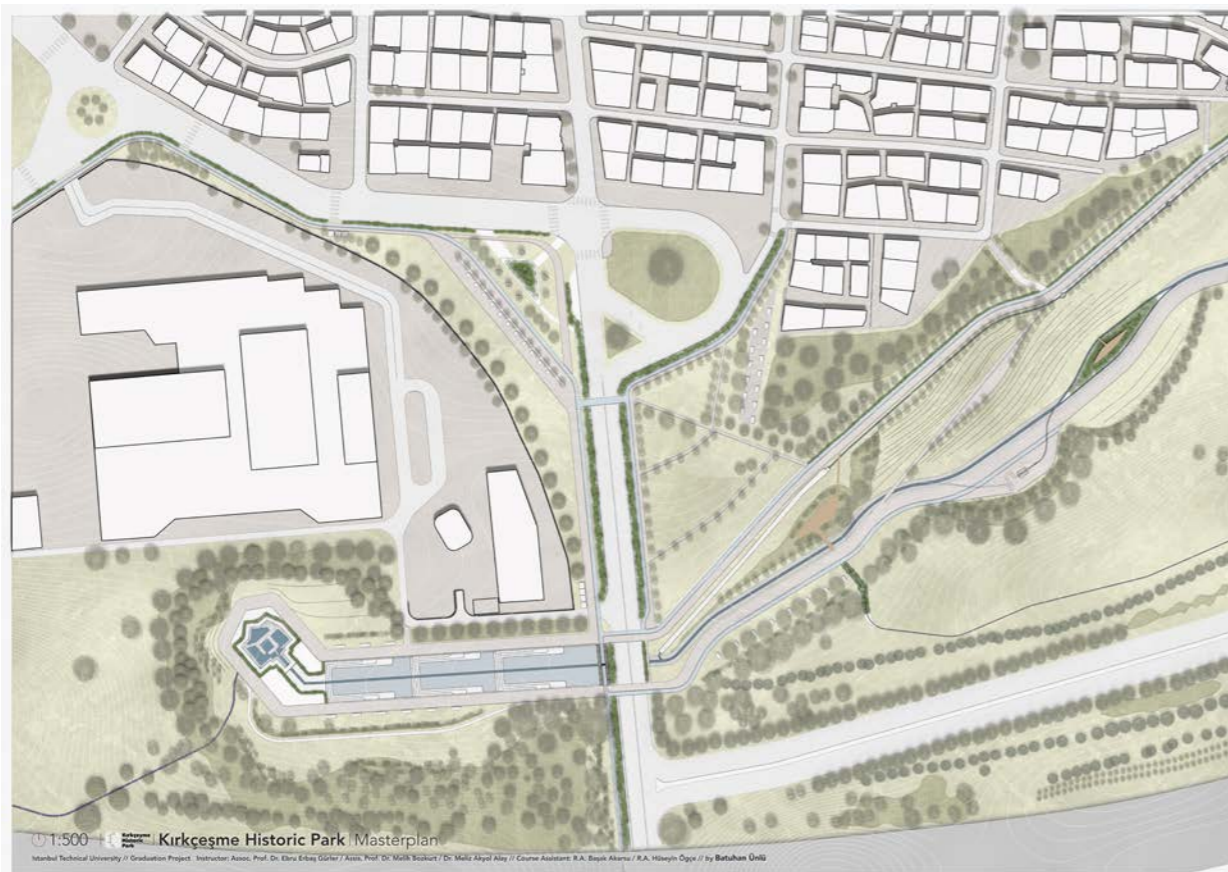
Kirkçesme Water System // Potentials & Strategic Proposals
 Istanbul Technical University // Graduation Project / Instructor: Assoc. Prof. Dr. Ebru Erbayrak Güler / Assoc. Prof. Dr. Melis Akay / Course Assistant: R.A. Başak Akar / R.A. Hüseyin Ögür // by Batuhan Ünlü

The ecological strategies are implemented by revealing the Balıklı Zone and transforming an old tertiary road to Kirkçesme Valley, "Calm Zone". Kirkçesme Valley is isolated from urban fabric visual and auditory barriers. Vegetation and Water Sound is used. Balıklı Pool is the main focal point of human flow, but it is revitalised and used that potential.

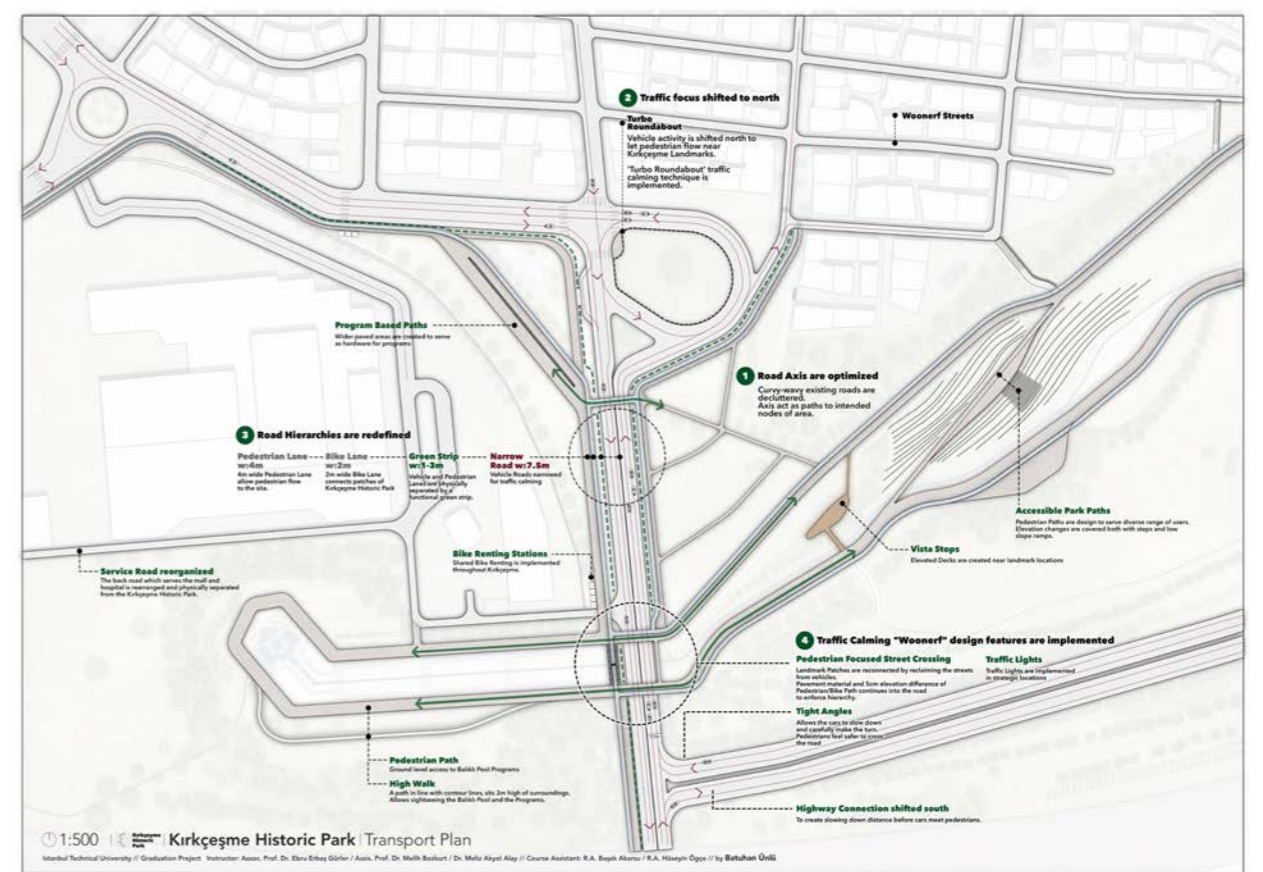
Urban Memory design strategy consists of creating a "shared & functional experience" to visitors. The experience includes physical symbolic trail of water system, checkpoints of historic chimneys, educative event spaces on landmark locations, educative park guides who are historic "su yolcu"s of Kirkçesme. All these design strategies will contribute to a park identity in public urban memory. Urban Memory goal is implemented throughout Kirkçesme Historic Park with inclusive experiences. Functional Experiences are intended programs about Kirkçesme. Shared Experiences are coincidental. Experiences invite both locals and outsider users.



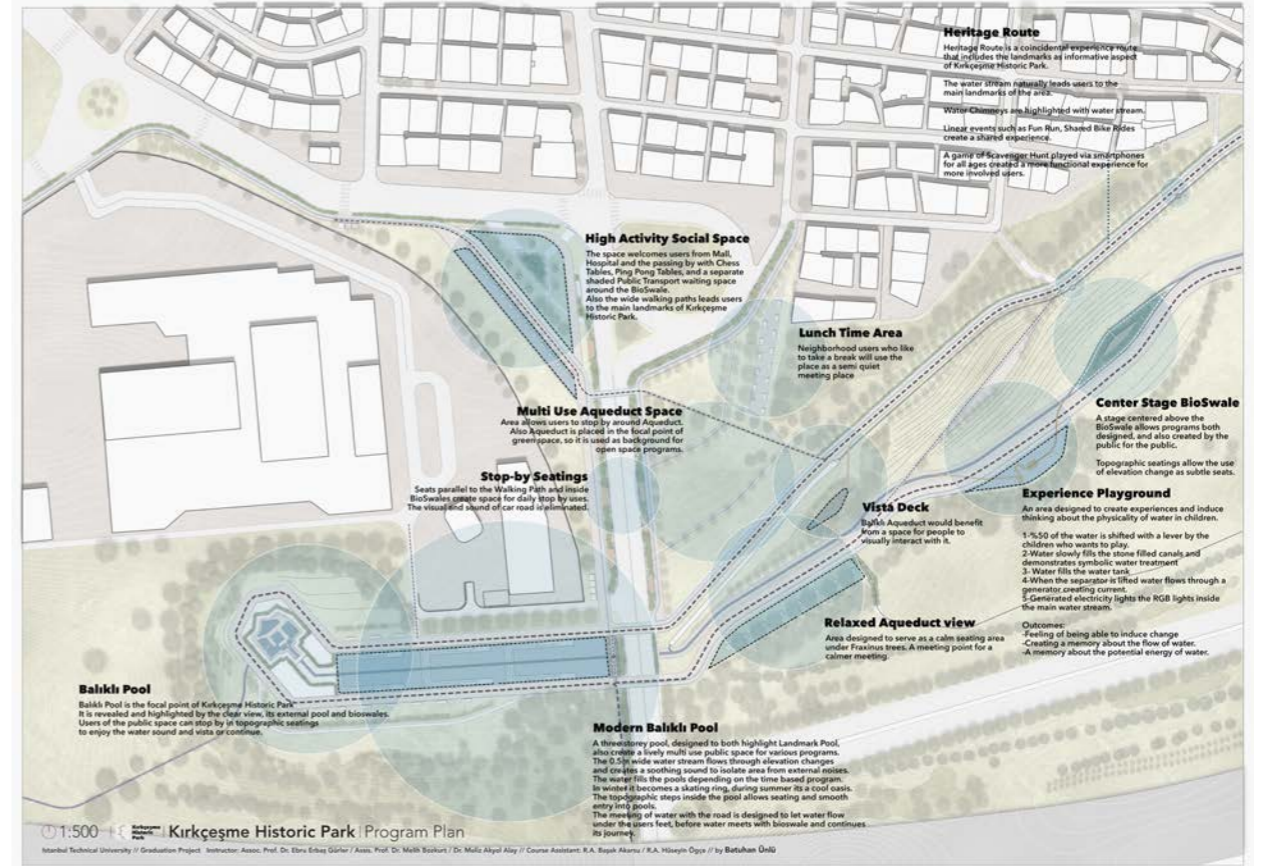
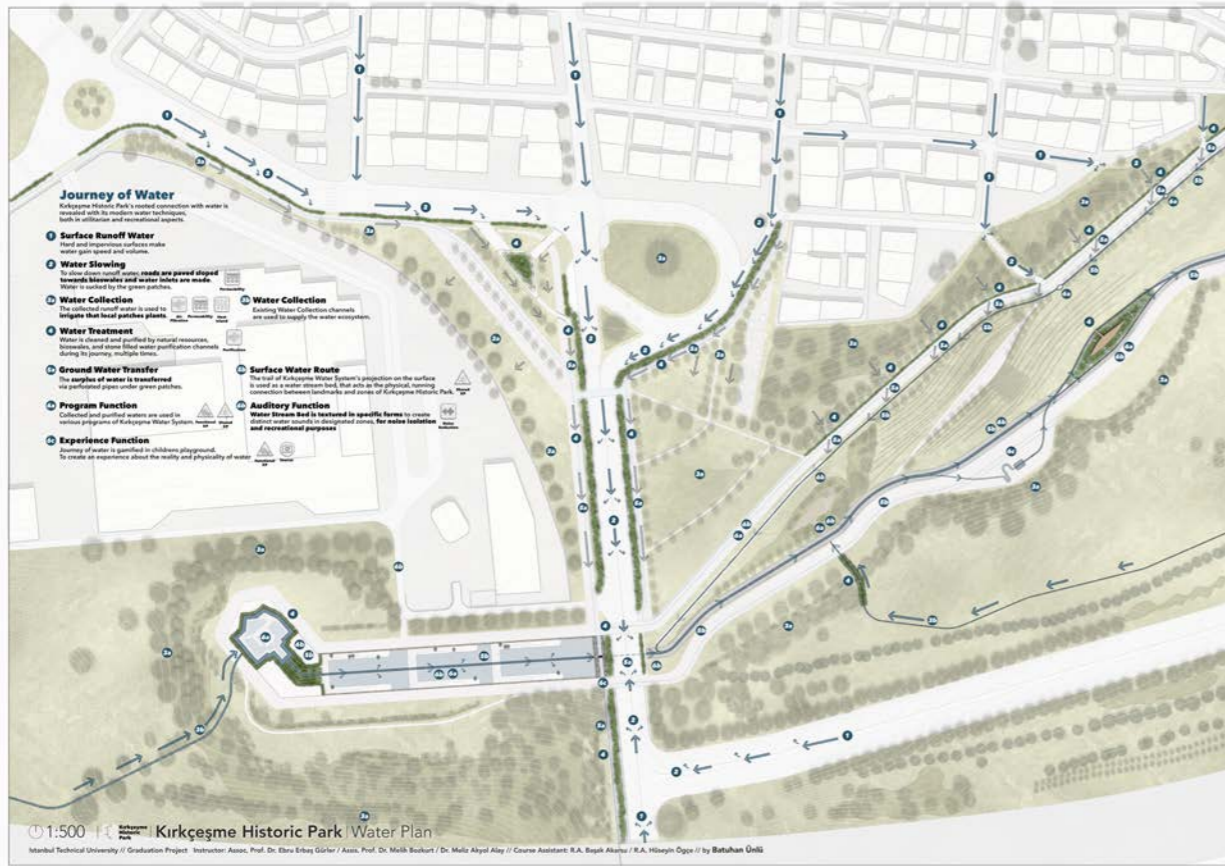
1:2500 Kirkçesme Historic Park | Program Proposal
 Istanbul Technical University // Graduation Project / Instructor: Assoc. Prof. Dr. Ebru Erbayrak Güler / Assoc. Prof. Dr. Melis Akay / Course Assistant: R.A. Başak Akar / R.A. Hüseyin Ögür // by Batuhan Ünlü



1:500 Kirkçesme Historic Park | Masterplan
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1:500 Kirkçesme Historic Park | Transport Plan
 Istanbul Technical University // Graduation Project / Instructor: Assoc. Prof. Dr. Ebru Erbayrak Güler / Assoc. Prof. Dr. Melis Akay / Course Assistant: R.A. Başak Akar / R.A. Hüseyin Ögür // by Batuhan Ünlü



This park will use image of water as a glue for a shattered mosaic of Istanbul. "Kırkçeşme Historic Park" will be serving as a democratic urban green area where every citizen will enjoy and find something from themselves.

Inside the Balıklı Pool there is a 3 storey public space pool is created as the main focal point. It serves various programs throughout day, week and year by public for the public. Landmark Balıklı Pool is revealed by cleaning intruders and creating a protected separate path.

Landmark Balıklı Aqeduct is revealed by urban transformation techniques and protected from external harms by making it owned by the public.

Kırkçeşme Valley separates into two sections, an upper Heritage Route and lower Calm route. These routes incorporate a real flowing water, one is the real route of Kırkçeşme Galleries and one is representative. This water flows leads people to the program zones of the Kırkçeşme Historic Park and thus creates a naturally flowing park area.



Planting Plan

The programs serve every user of public, from a child to an elderly person. Children will have memories rooted deep inside by thought inducing playgrounds and elderly can find peace near Balıklı Pool. An office worker can find 1 hour free time around the lunch area of park. Also, the human flow of Mall and Hospital also supplies the square area.

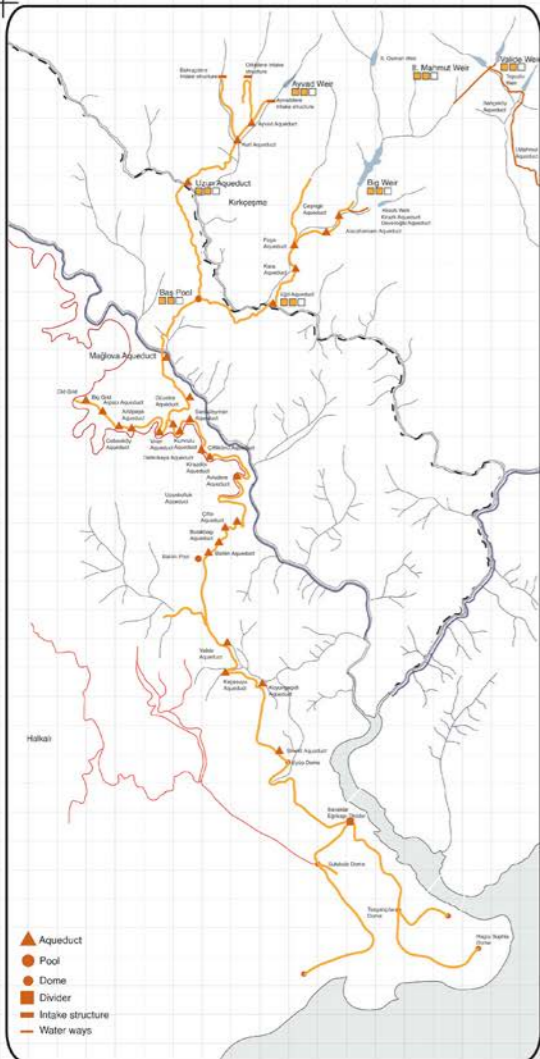
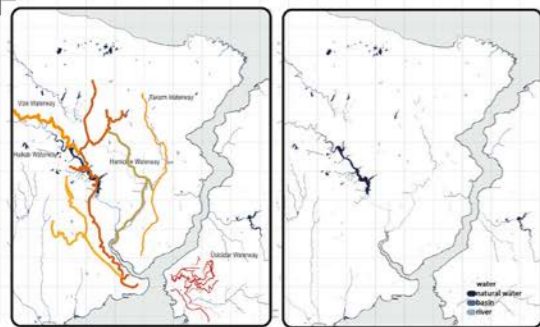
Symbol	Abbreviation	Botanical Name	Height	Width	Trunk Dia	Spk Dia	Spk	Quantity
	PRACB	Fraxinus excelsior	15m	2m	0.2m	0m	par	8
	POPALB	Populus alba	15m	4m	0.2m	2m	par	11
	CYRREC	Cyrtus acerifolia	2m	0.5m	-	-	par	4
	POPSM	Populus tremula	1.5m	1.5m	0.2m	1.5m	par	8
	AUCAP	Rosa rugosa	0.5m	1m	-	-	par	24
	PLVACH	Platanus orientalis	0.5m	0.5m	-	-	par	18
	STYOP	Styracis officinalis	0.5m	0.5m	-	-	par	18
	LOBOP	Lonicera xylosteum	1m	1m	-	-	par	18
	HELAME	Helianthus annuus	0.5m	0.5m	-	-	par	18
	PRALN	Prunella lauro-coccinea	0.5m	0.5m	-	-	par	20
	CRACAR	Crataegus arvensis	0.5m	0.5m	-	-	par	20

Planting Legend

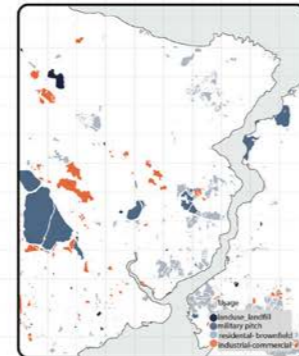
ReGathering

Amine Yazar

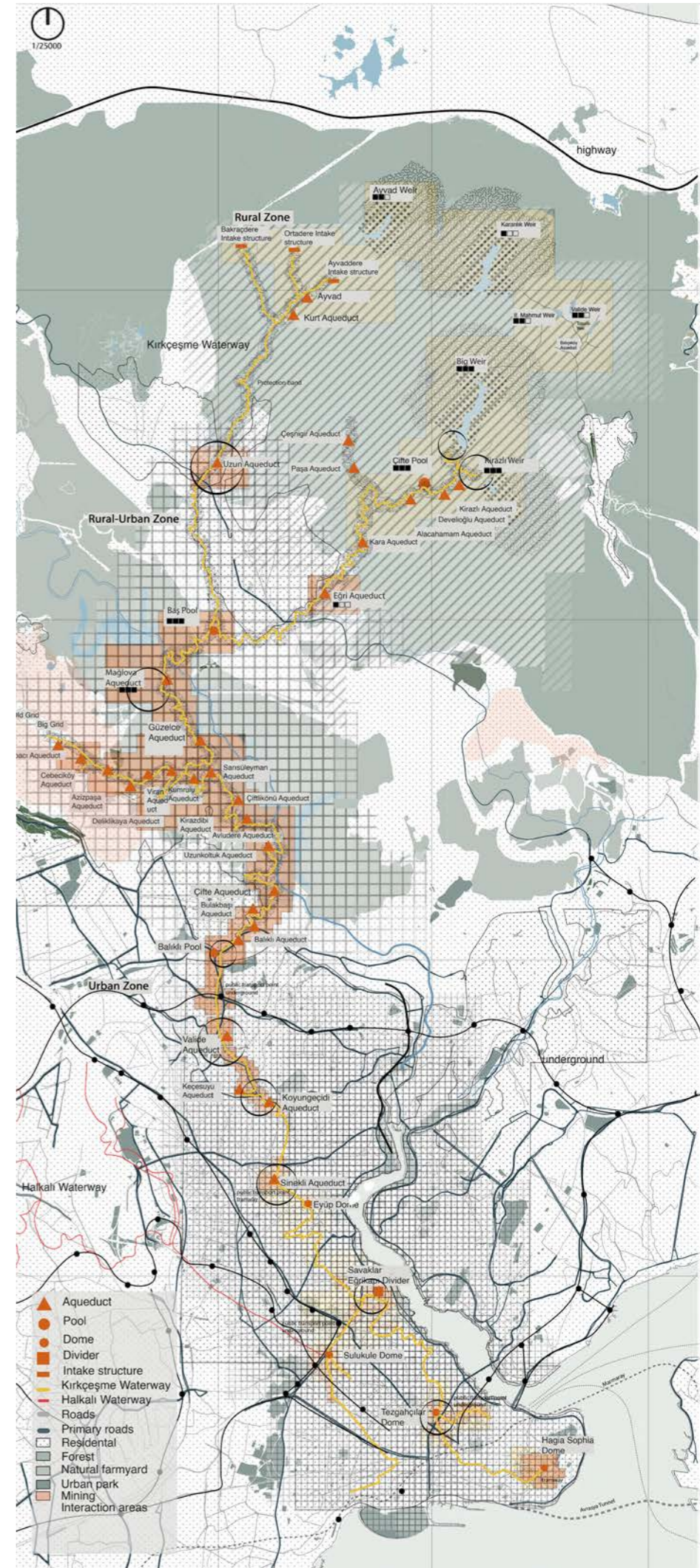
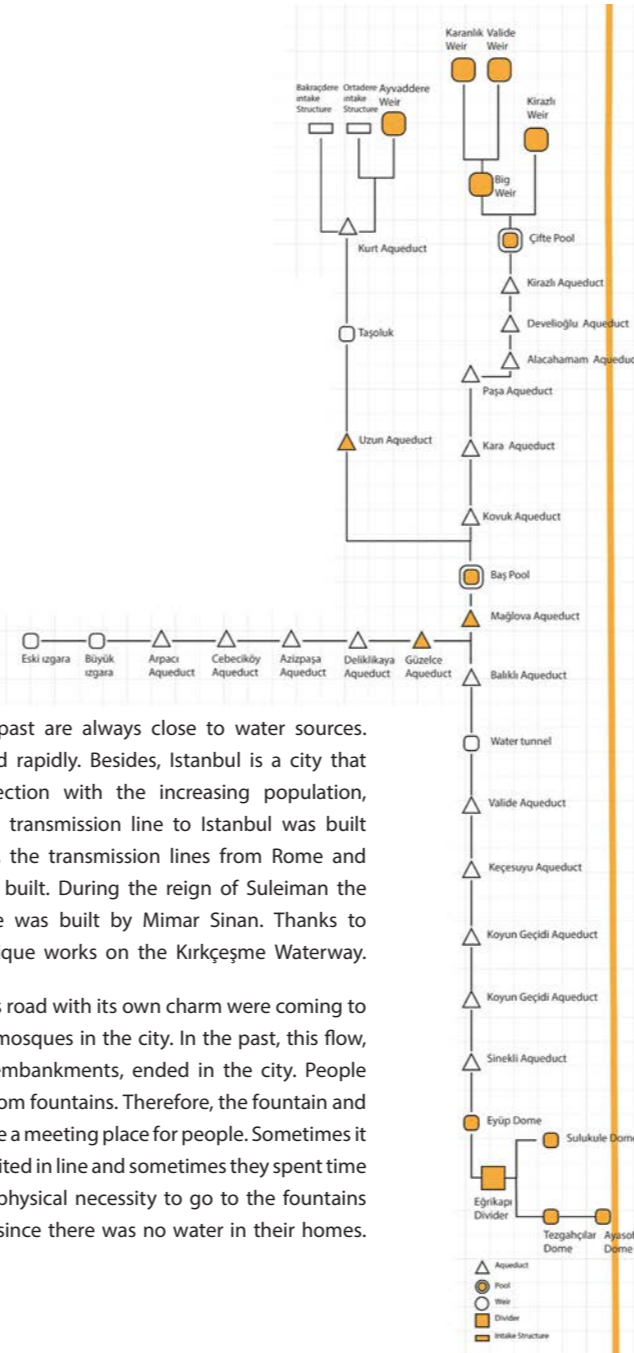
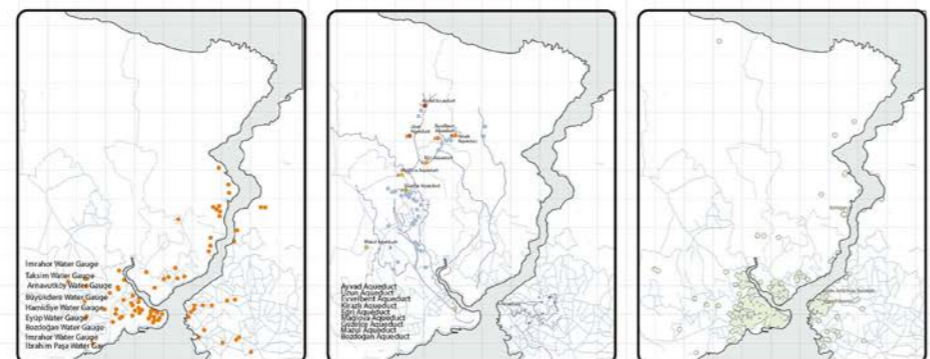
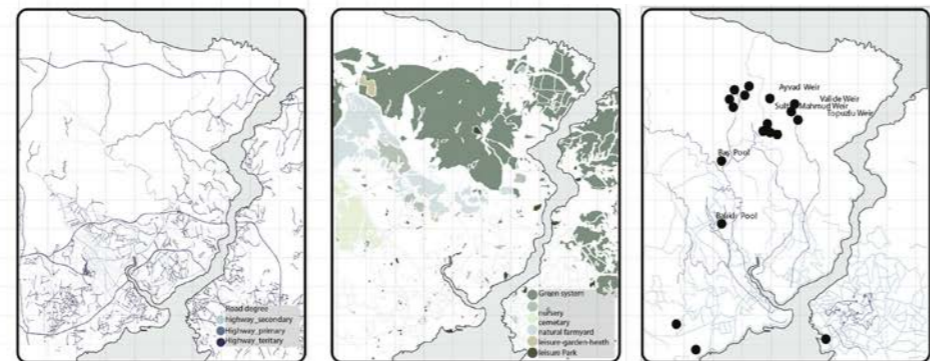
Within the scope of this project, it is aimed to make the traces of Kırkçeşme Waterways more prominent in the city and to connect the urban fabric with green corridors, which is stuck with the stains of this permission (fountain, dam, aqueduct, etc.).

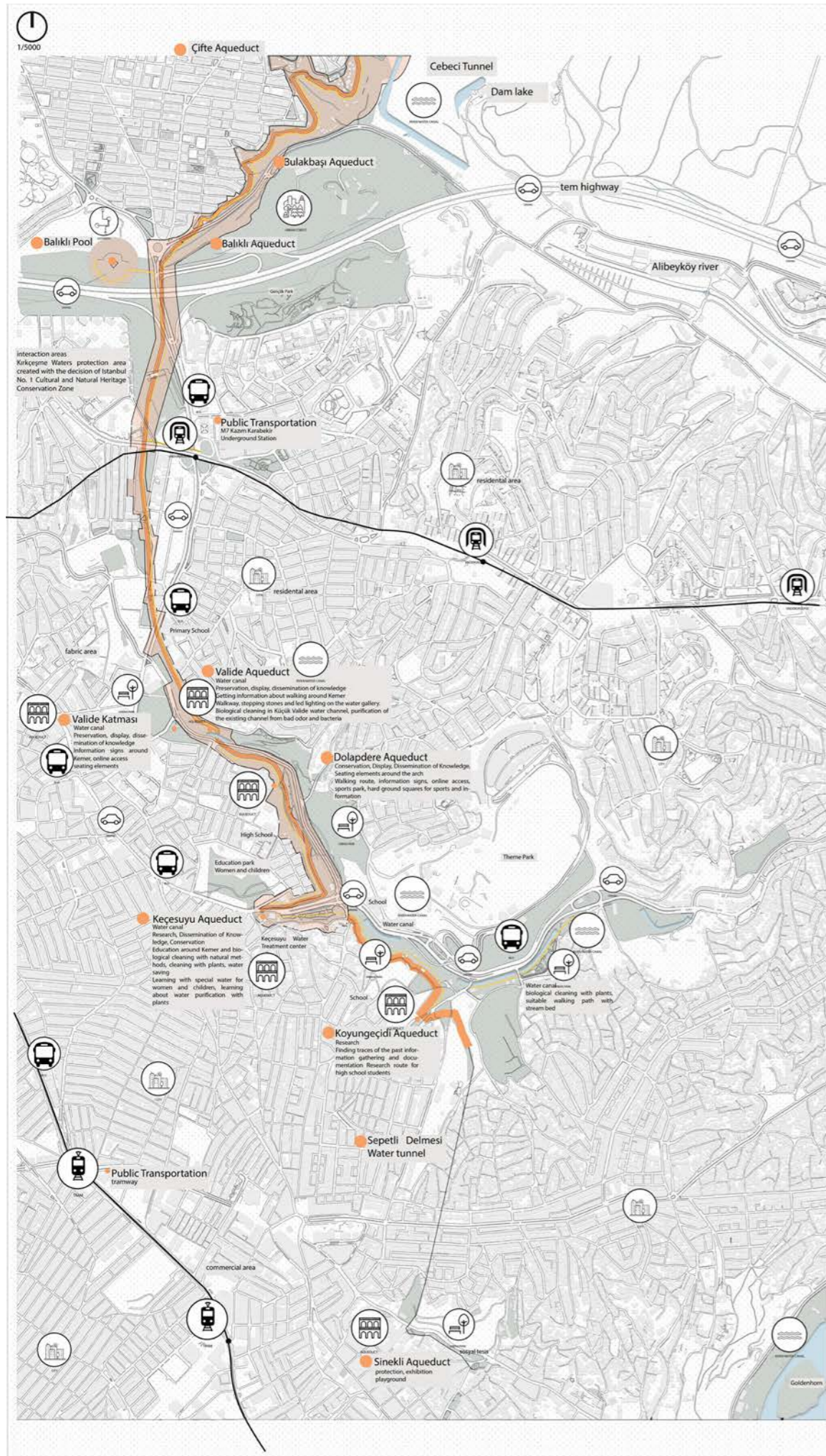


Water is our source of life. The settlements built in the past are always close to water sources. With the transition to settled life, the population increased rapidly. Besides, Istanbul is a city that has been receiving immigration for centuries. In connection with the increasing population, the need for water has also increased. The oldest known transmission line to Istanbul was built during the Roman period. After the Conquest of Istanbul, the transmission lines from Rome and East Rome (Byzantine) were repaired and new roads were built. During the reign of Suleiman the Magnificent, the 55 km long Kırkçeşme Transmission Line was built by Mimar Sinan. Thanks to this transmission line, the people got water. There are unique works on the Kırkçeşme Waterway.



The waters flowing on this road with its own charm were coming to the fountains, baths and mosques in the city. In the past, this flow, which started from the embankments, ended in the city. People could only obtain water from fountains. Therefore, the fountain and the surrounding areas were a meeting place for people. Sometimes it was a place where they waited in line and sometimes they spent time in conversation. It was a physical necessity to go to the fountains in order to obtain water, since there was no water in their homes.





With the development of technology, Kırkçeşme water structures, especially fountains, lost their physical importance. After the water was supplied to the houses, empty fountains took the place of that deep conversation. Arches and dams, like fountains, no longer matter. The cultural and historical value of these structures, which have lost their physical importance, is significant. Today, however, these structures have become invisible. Within the scope of this project, it is aimed to make the traces of Kırkçeşme Waterways more prominent in the city and to connect the urban fabric with green corridors, which is stuck with the stains of this permission (fountain, dam, aqueduct, etc.). In this direction, in response to the disintegration and decrease of the green tissue in the Northern Forests in the city;

+ It is recommended that the green system/corridor be moved into the city by following the trail of Kırkçeşme Waterways and a homogeneous urban texture. +It is recommended to divide the city into 3 separate zones as Forest, Forest-City, and Urban. These three separated zones have different problems and therefore different answers. At the intersections of these 3 zones, specific answers are given for the place and the area. While Urban Parks were recommended for the Urban Zone and Rural-Urban zone, a neighborhood park was suggested for the Urban Zone and a nature park for the Rural Zone. ++In these 3 zoning, it is suggested to give answers according to the structural and spatial conditions of the existing water structures, especially the zone where they are located. In order for the system to function as a part of it, its zone, structural and spatial conditions were examined in detail in the sub-scale decisions and the answer was given. +++For some water structures (such as weirs) full protection is recommended, while for others integrated use with humans and animals (such as the Valide Aqueduct).

-It is a major conservation problem that some of the monumental or culturally valuable water structures are destroyed by neglect and some are subject to vandalism due to inadequate security measures.

+ In line with the green system and gray system decisions, the city has been considered as an open-air museum. ++Just like in museums, it is aimed for the user to follow a certain route and to emphasize the historical and cultural importance of these existing water structures. It is aimed to attract the attention of the user and to ensure that these existing structures are supervised and protected. These water structures and roads located in the +++3 zone should serve the public interest as in the past. It responds to basic problems such as insufficient green in the city, which is one of today's problems.

- Perhaps the most important of these works, which are made with the public interest in mind, are the fountains because they meet the user. Fountains were vital in the past. (However, losing its vital importance with the development of technology has caused it to disappear over the years.)

+ These fountains, which used to be gathering places, were the end point of the water coming from the Belgrad forests. Reverse flow is suggested for these structures, which is the end point of this flow. The fact that fountains were a gathering point in the past was intended to ensure the reverse flow of the water of the people who came together for the gathering but for the reverse flow. -There are many problems such as wrong planning decisions, unplanned urbanization, uncontrolled migration wave, and irregularities. One of

the consequences of such problems is that the life in the city is doomed to concrete. Therefore, we are doomed to unhealthy cities, avenues, streets, lives. There is an obligation and difficulty to breathe with concrete in the city.

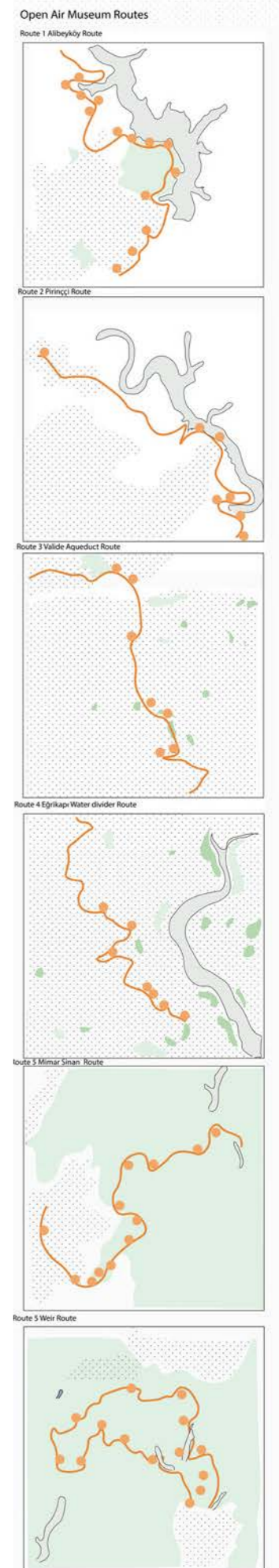
+ As we learned from the Kırkçeşme waterways built by Mimar Sinan, It has been suggested that the plants to be used in the project should vary according to the zone in which the building is located, due to the damage caused to anyone or the environment. C4 plants are suggested for the urban zone. Especially around the Valide Aqueduct, the design was made with a plane tree and plants that clean the water.

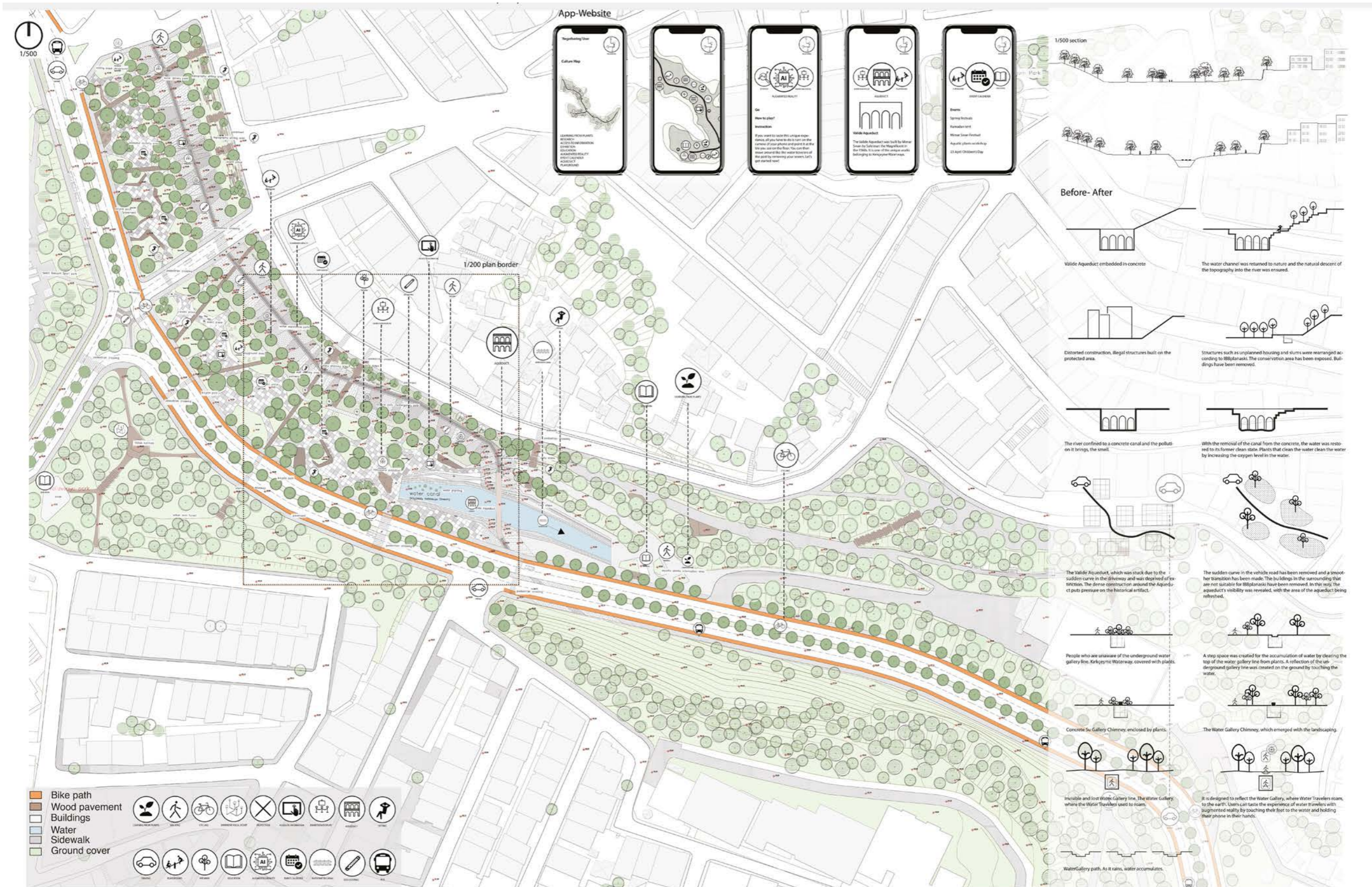
The project program is shaped around the concept of 'open air museum'. The topics that occur in this context are as follows. 1) Historical Continuity 2) Sustainable Transportation 3) Sustainable Green Corridor 4) 'Kırkçeşme Waterways' for all (giving back what belongs to the public to the public) Before coming to the concept of an open-air museum, what is a museum? What kind of actions are taken?

museum noun, (museum), French musée A place or structure where works of art or science or objects of art and science are stored or displayed for public display.

open air museum noun Ethnographic works, houses, workshops, etc. that will not be affected by the open air. It is an open-top museum established in an area where civil structures are exhibited.

Kırkçeşme waterways and the historical artifacts on this Waterway were exhibited, protected, shared with the public and various activities were organized for the public benefit. In this context, a detailed environmental plan was made around the Valide Aqueduct. A detailed plan has been made around it, which includes activity areas, tree-lined roads, children's playgrounds, cultural and experience paths.





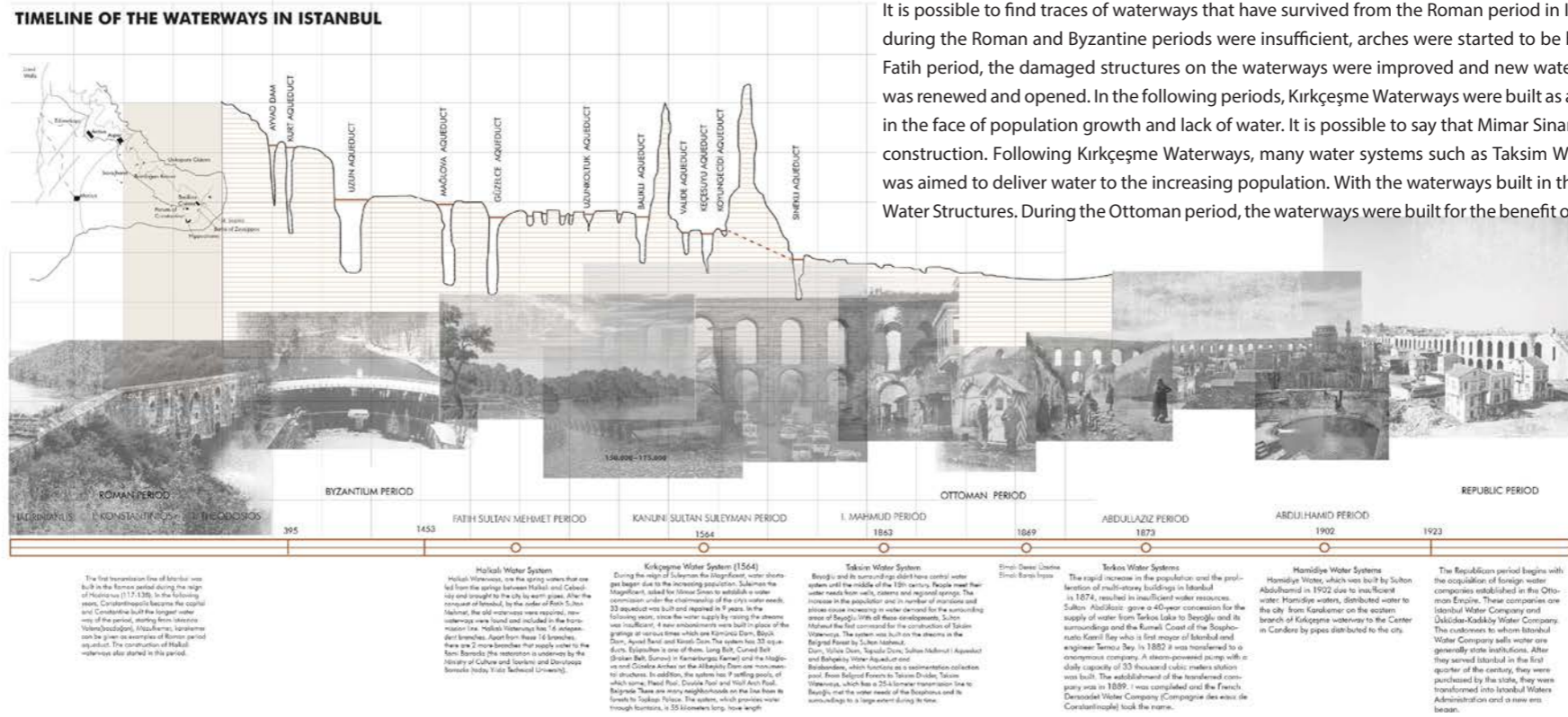
With the rearrangement of the Valide Aqueeduct and its surroundings, the aqueduct and the water gallery line were unearthed. According to the Law on the Protection of Cultural and Natural Assets, there should be no construction in the conservation area. The existing structures were demolished and the conservation area became a part of the green system. A culture and experience route/route has been created in the context of the open air museum in and around the Valide Aqueeduct. An environmental arrangement has been made including the exhibition and playground areas as well as the training areas. A 250 m long augmented reality path has been built in the park. This road was created with a width of 15 m in order to attract the attention and interest of the users, and a water area of 1 m width was added in the middle. Users who want to taste the experience of water travelers in the past will have the opportunity to taste this experience with augmented reality technology on a 15 cm deep pond. Users who access the website by scanning the QR code in the park will be able to taste the experience of water travelers

with their feet touching the water with their phone in their hands. At the same time, the floor in the waterway has been made remarkable at night thanks to the LED lighting. Steps were built around the Valide Aqueeduct, giving users the opportunity to go down to the water and sit around it. Areas have been created around the water and aqueduct where they can watch the scenery and have a good time for the local people, who witness the cleaning of the dirty water with plants day by day. There is also an open-air exhibition describing other works in Kırkçeşme Waterway. Thanks to the led lighting on the memory wall, the names of the water structures belonging to the Kırkçeşme Waterway have been clarified. In plant selections, plants such as water hyacinth, which clean the water for the water channel, were placed. In addition, since Kırkçeşme Waterways is an Ottoman work, the Eastern Plane Tree was used in the park. The eastern plane tree is famous for defining the greatness of the Ottoman state.*

AQU(A)DUCT

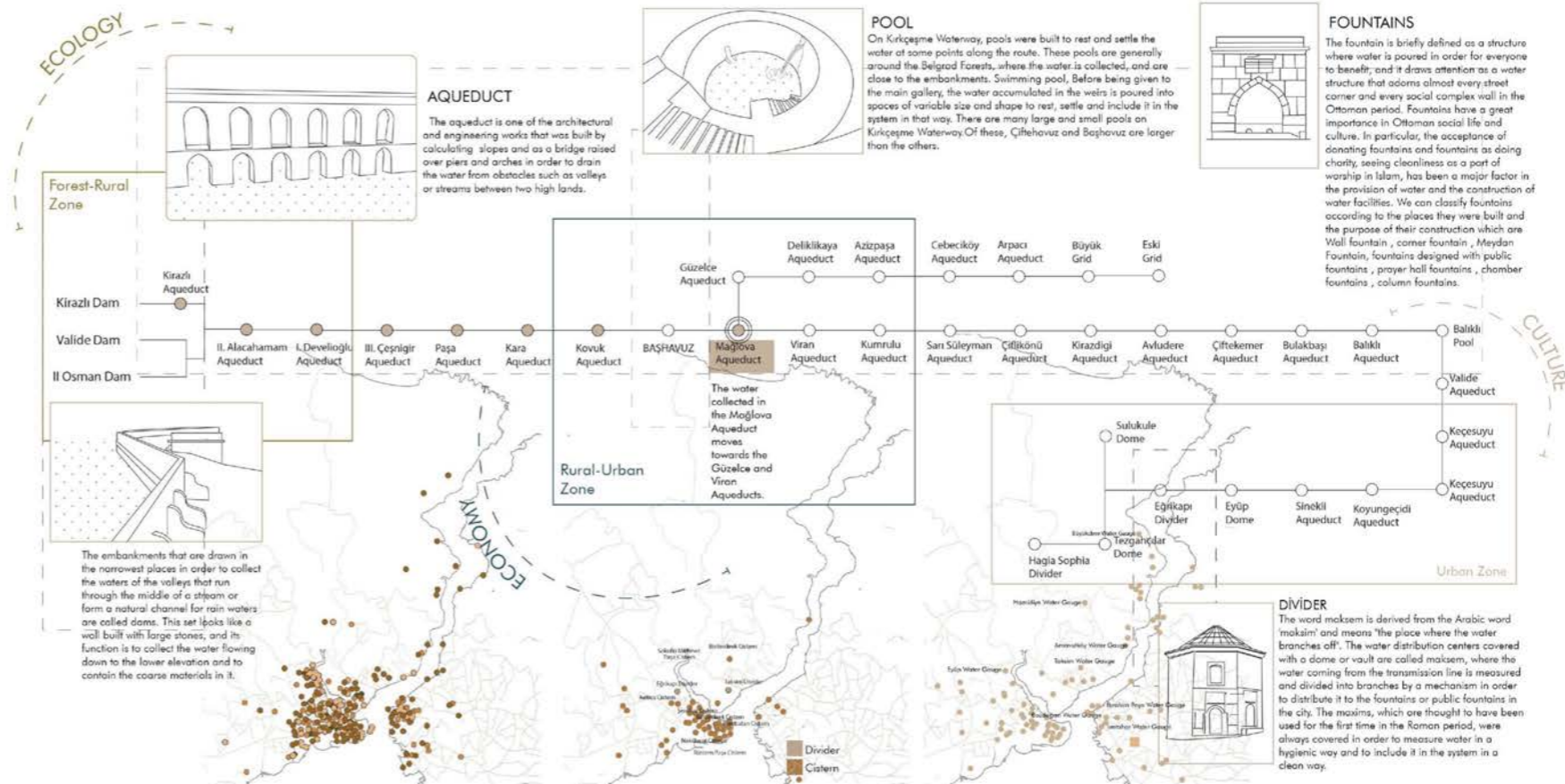
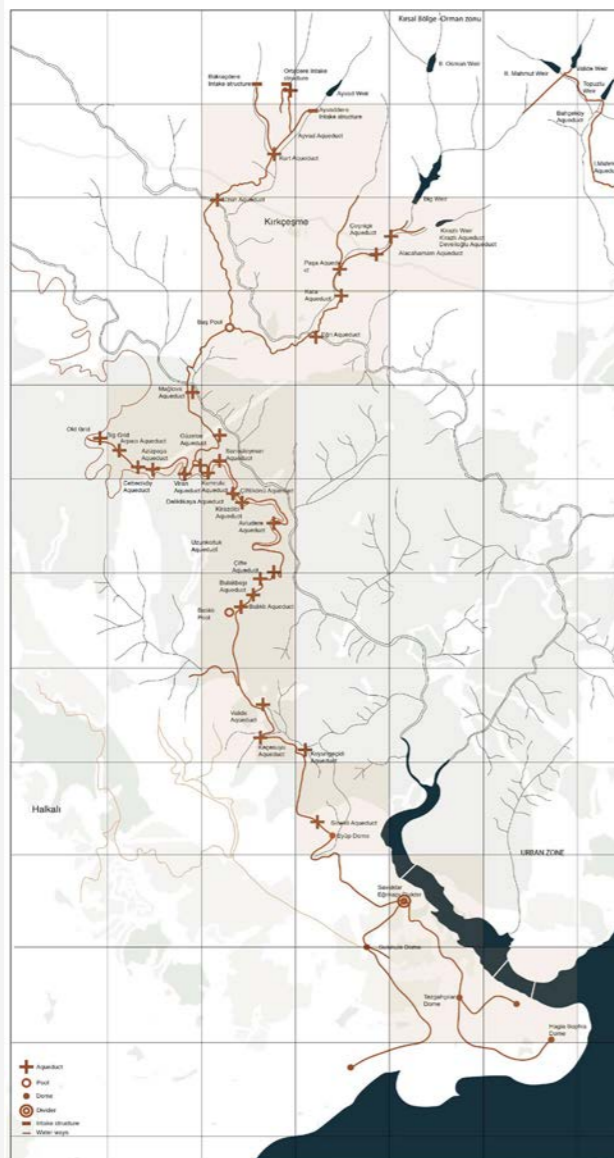
Ecem Torun

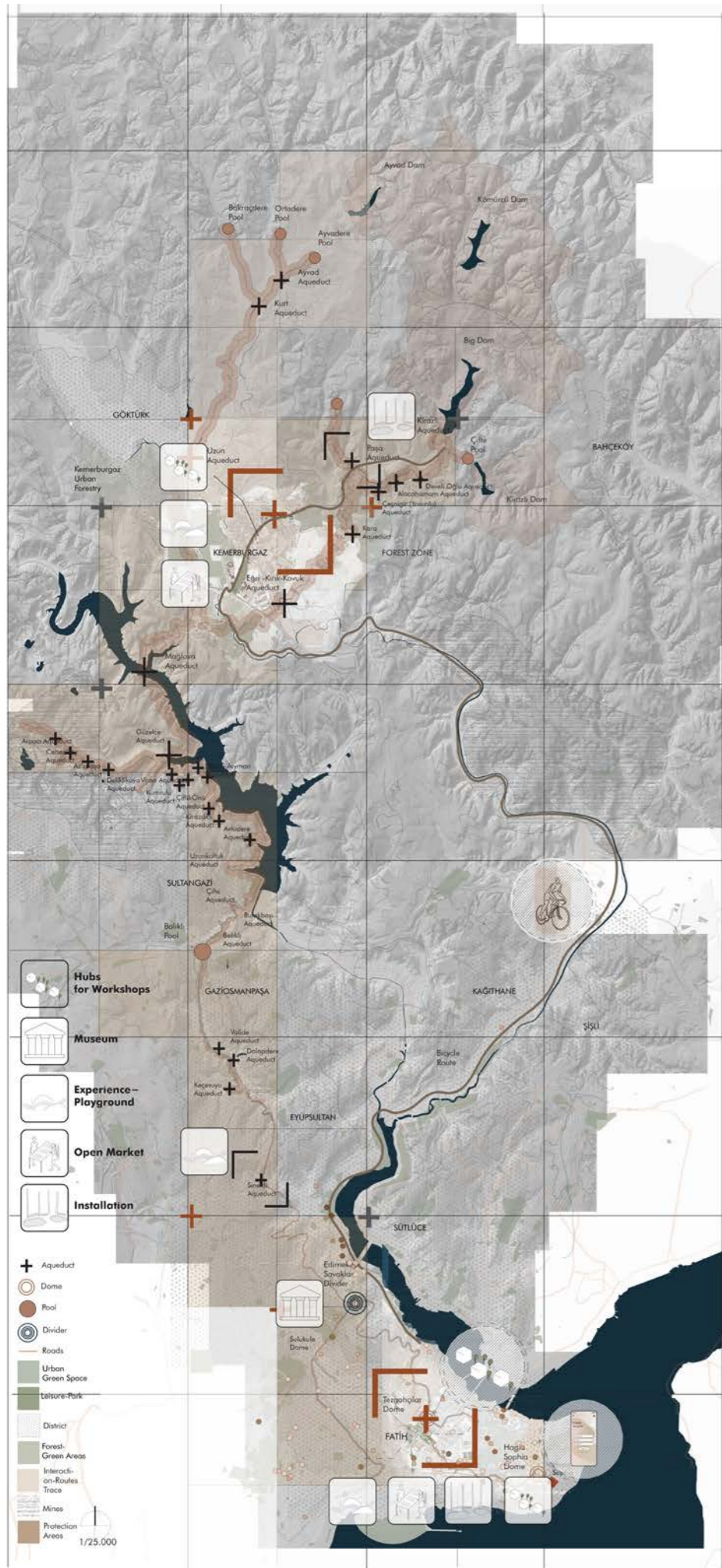
Water has the power to manage culture, economy and environment from past to present. People who settled down began to live around water. With the increase in population, they spread over a wider area and started to move away from the water. With the move away from water, solutions have started to be produced in order to bring water to the living places.



It is possible to find traces of waterways that have survived from the Roman period in Istanbul. When the Halkalı waterway and cisterns built during the Roman and Byzantine periods were insufficient, arches were started to be built. After the conquest of Istanbul, starting from the Fatih period, the damaged structures on the waterways were improved and new waterways were tried to be opened. Halkalı Water System was renewed and opened. In the following periods, Kırkçeşme Waterways were built as a result of Sultan Süleyman's request from Mimar Sinan in the face of population growth and lack of water. It is possible to say that Mimar Sinan was inspired by old buildings and waterways during construction. Following Kırkçeşme Waterways, many water systems such as Taksim Waterway and Hamidiye Waterway were created and it was aimed to deliver water to the increasing population. With the waterways built in the Ottoman Period, Istanbul has become a Museum of Water Structures. During the Ottoman period, the waterways were built for the benefit of the people and monuments (kitabe) with informative

writings were placed on the water dams. It is observed that the water structures on the Waterways were built in different periods and have different architectural structures. The lifestyle of that period was reflected in technology and shaped the daily life of the city. It passes through the aqueducts and sedimentation pools conveyed by dams and reaches the peaks, and from there it is distributed to people by fountains.



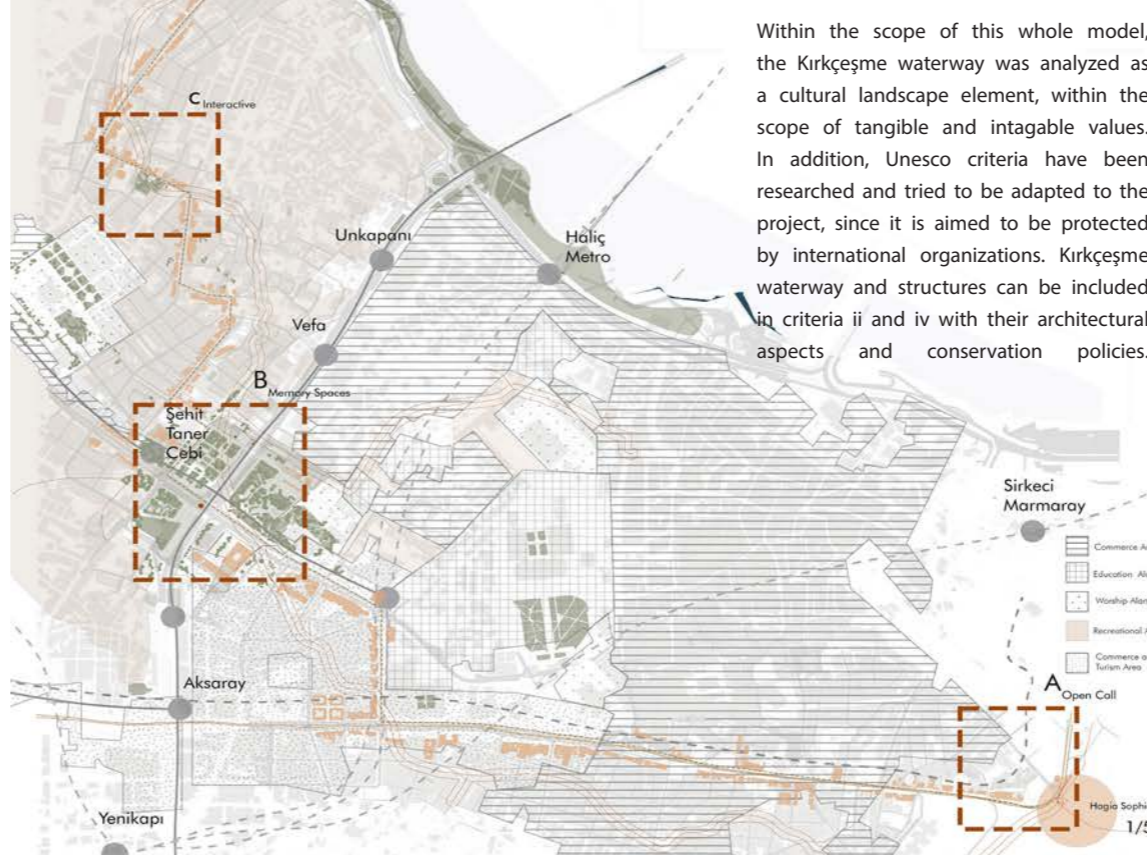
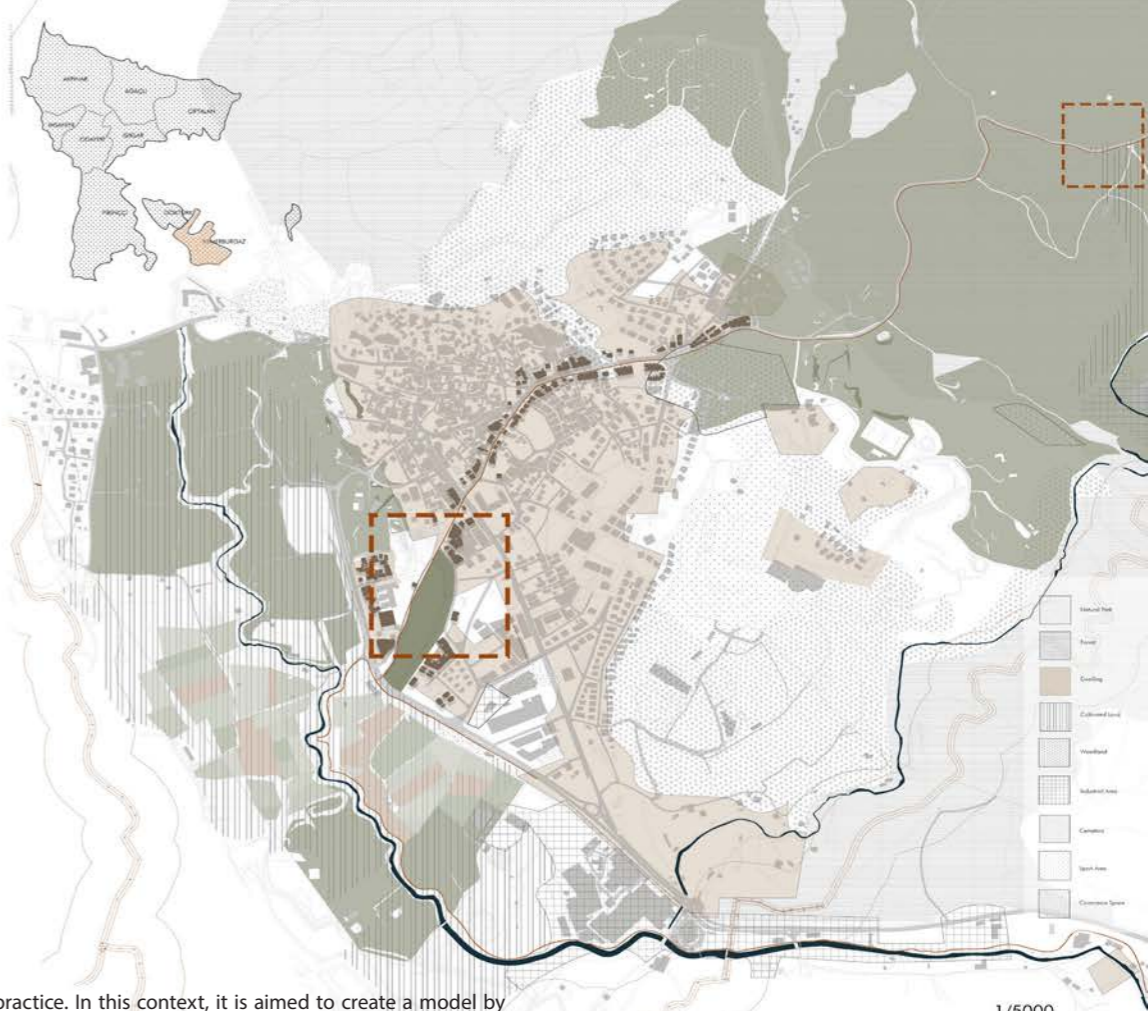


Fountains are where water meets people. Fountains, over time, have become a place where people gather along the water lines. These water structures, which have an important place in the urban identity of Istanbul, are on the verge of being forgotten today. In this century, when the water crisis is at the door, it is thought-provoking that waterways with environmentally friendly solutions are ignored. Water structures remained neglected and became invisible in the city.

With the analysis, Water structures are classified according to their locations and included in the phases. Kırkçeşme waterway is divided into three different zones as of its location; Forest-Rural, Rural-Urban and Urban zone. The embankments are located in the Belgrad Forest within the borders of the nature park. In addition, Kırkçeşme Waterway passes over Kemerburgaz and Gökçük, which are between the countryside and the city, whose village status has been removed and changed to the status of neighborhood. The road passing through the region between the city and the countryside gathers at the top with arch and gallery lines and disperses to the fountains. Some maksems and square fountains are located in areas where crowds of people are concentrated.

The Kırkçeşme waterway line and the historical structures on the line were considered as cultural landscape elements, and planning was made for the purpose of protection and promotion. At this stage, KAP theory was used as a methodological approach. The KAP theory was considered as an approach model and tried to be applied to planning. The main goal is to protect and maintain the waterway line and surrounding structures by international organizations in the future.

The KAP theory consists of three concepts: knowledge, attitude and practice. In this context, it is aimed to create a model by combining the concepts. Respectively, Knowledge represents learning pre-existing cultural values while Attitude constituted examination of the existing pre-disposition towards cultural values. Finally, the concept of practice was the testing phase of the first two concepts. In the model created, these concepts were associated with the concepts of memory, experience, awareness and education, and the concepts were tried to be spatialized. At this point, the concept of knowledge is associated with the concepts of memory, experience and education, and it is aimed to create experience and installation spaces. The concept of Attitude has been associated with experience and awareness, and collective production spaces have been proposed by associating it with the sense of belonging and economy. At the last stage, the concept of Practice is associated with the concepts of memory, awareness and education, and exhibition areas and some games are suggested to test the learned knowledge.



Within the scope of this whole model, the Kırkçeşme waterway was analyzed as a cultural landscape element, within the scope of tangible and intangible values. In addition, Unesco criteria have been researched and tried to be adapted to the project, since it is aimed to be protected by international organizations. Kırkçeşme waterway and structures can be included in criteria ii and iv with their architectural aspects and conservation policies.

A Open Call

Hagia Sophia square is one of the areas where the crowds of tourists and people are the most intense. It is aimed to use the water dome in the square as a call to the waterway and historical experience. With the QR codes placed around the square, it is aimed to provide the user with access to the designed application.

B Memory Spaces

As analyzed in these areas where the gallery line passes, the selected areas contain the layers of culture and history that the water contains. In these areas, which constitute the stopping points of the route, it is aimed to bring the gallery line to the surface, while at the same time, it is aimed to bring usage suggestions that are compatible with the history and structure of the area.

C Interactive Spaces

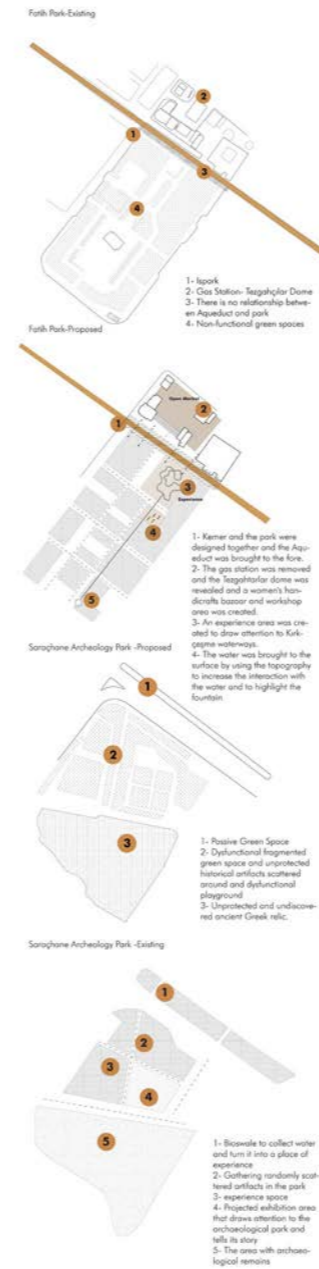
One of the areas where the gallery line passes is around the Yarihsar mosque. There are historical ruins from the Ottoman period in this area. On the route, the old city image was tried to be revived through the application using augmented reality in this area.

In addition, in the project, the criterion of vi was tried to be taken into account and the ideas and traditions of the period involved in the construction of Kırkçeşme waterways were investigated. In this context, the banning activity was researched and tried to be mapped. The history of 'Banilik' activity dates back to the ancient Greek and Byzantine periods. The women of the empire tried to provide the public discourse that they could not do with words with the monuments they set up. The form of public communication provided by statues and monuments in the Roman period and Early Christian period was continued by the patronage of monumental structures in the Byzantine period. The activity, which is a form of public discourse and communication, continued in the Ottoman period, and many buildings were built. Kırkçeşme waterways, which were built by Sultan Süleyman for the benefit of the people, also includes the 'banilik' activities.

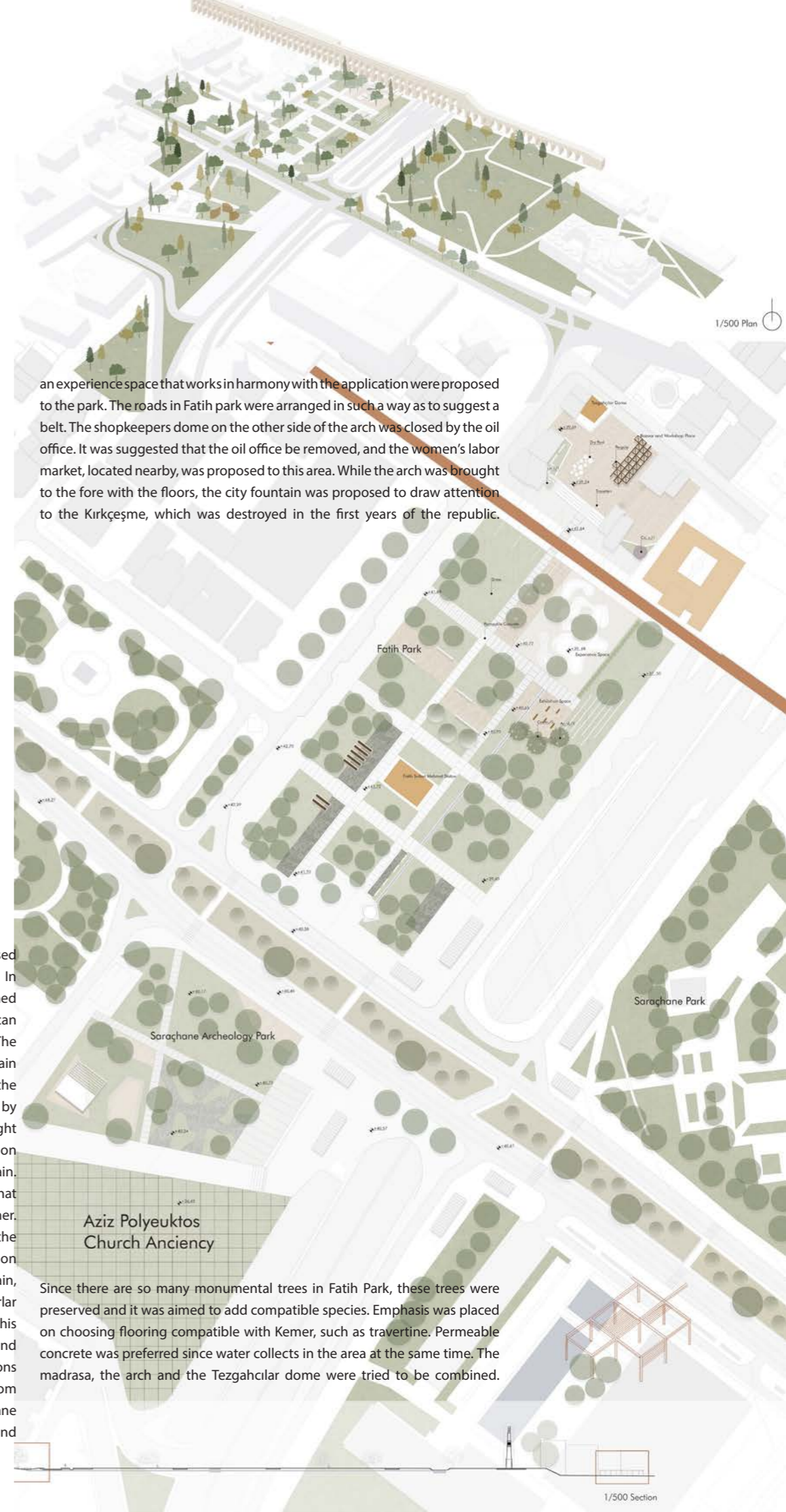
After the Kırkçeşme waterways were analyzed with cultural landscape layers, strategies were determined based on the model created with the Container theory. Identified strategies;

- Designing physical experience spaces to raise awareness about Kırkçeşme Waterways
- Suggesting an alternative route to the historical peninsula
- To protect and bring to light the historical structures on the Kırkçeşme waterway
- Creating open markets and socializing spaces to increase the sense of belonging and collective production
- To protect the 'banilik' structures and the krikcesme waterway determined as a result of the researches, to expand the areas under protection by international organizations in Istanbul.
- Combining selected areas with applications and applications, offering activities and designing areas where they can work together

In line with the determined strategies and researches, a new route including old recreation areas was created and the areas on the route were connected with a bicycle path and application. It is aimed that the route, which includes the structures of the banilik, starts from the historical peninsula and extends to the belgrade forest. It has been tried to ensure continuity with the application and the bicycle path. In this context, two centers were selected; Saraçhane and Kemerburgaz. Kemerburgaz has been chosen as an alternative to the historical peninsula with a focus on tourism and rural development. The route leads the user from Kemerburgaz, located between the two aqueducts, to the pasha aqueduct and the gallery.



An organic market has been proposed for the selected area in Kemerburgaz. In addition, a playground has been designed in the selected area where the user can physically experience the water. The playground formed by the collection of rain water is thought to be an area where the user can move the water interactively by using the force of gravity, and it is thought that these areas can be used for information purposes on days when there is no rain. The second center, Saraçhane, is an area that contains many historical layers together. When examined within the scope of the banilik activity, there are many structures on the Mese road such as the historical fountain, the St. Polyeuktos church, the Tezgahtlar dome and the Valens aqueduct. In this context, Saraçhane Archeology Park and Fatih Park were discussed and new functions were proposed. There are church ruins from the early Byzantine period in the Saraçhane archaeological park. An exhibition area and



an experience space that works in harmony with the application were proposed to the park. The roads in Fatih park were arranged in such a way as to suggest a belt. The shopkeepers dome on the other side of the arch was closed by the oil office. It was suggested that the oil office be removed, and the women's labor market, located nearby, was proposed to this area. While the arch was brought to the fore with the floors, the city fountain was proposed to draw attention to the Kırkçeşme, which was destroyed in the first years of the republic.

Aziz Polyeuktos Church Ancieny

Since there are so many monumental trees in Fatih Park, these trees were preserved and it was aimed to add compatible species. Emphasis was placed on choosing flooring compatible with Kemer, such as travertine. Permeable concrete was preferred since water collects in the area at the same time. The madrasa, the arch and the Tezgahtlar dome were tried to be combined.

AQUA - NODE

Aylin Önal

The system is a set of parts that interact with each other and work for the same purpose. In the past, Kırkçeşme Water System was built as a system consisting of many components in order to meet the water needs of the city and was used for many years. However, over time, under the pressures of developing technology and increasing population, it lost its adequacy and function and became unusable. Today, especially the parts of the city area have undergone serious deterioration.



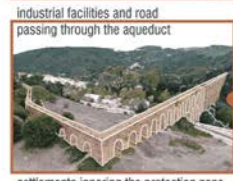
site & problems



The system is a set of parts that interact with each other and work for the same purpose. In the past, Kırkçeşme Water System was built as a system consisting of many components in order to meet the water needs of the city and was used for many years. However, over time, under the pressures of developing technology and increasing population, it lost its adequacy and function and became unusable. Today, especially the parts of the city area have undergone serious deterioration. Abandonment caused by loss of function has brought vandalism with it. These serious losses in some parts make it impossible to reuse the system today.



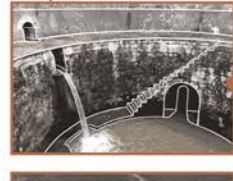
On the other hand, historic water systems are remarkable examples of the effort of our ancestors to reach water. Today we do not have such awareness since it became easier to reach water, and since the water structures are far away than being in people's daily life. Re-including the structures to today's people's life is an opportunity that comes in both ways:
-creating a balance of protection and use
-having a symbolic place to generate awareness for climate change



industrial facilities and road passing through the aqueduct



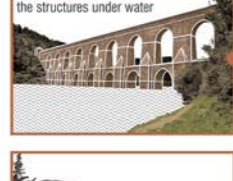
settlements ignoring the protection zone



some parts are still in use



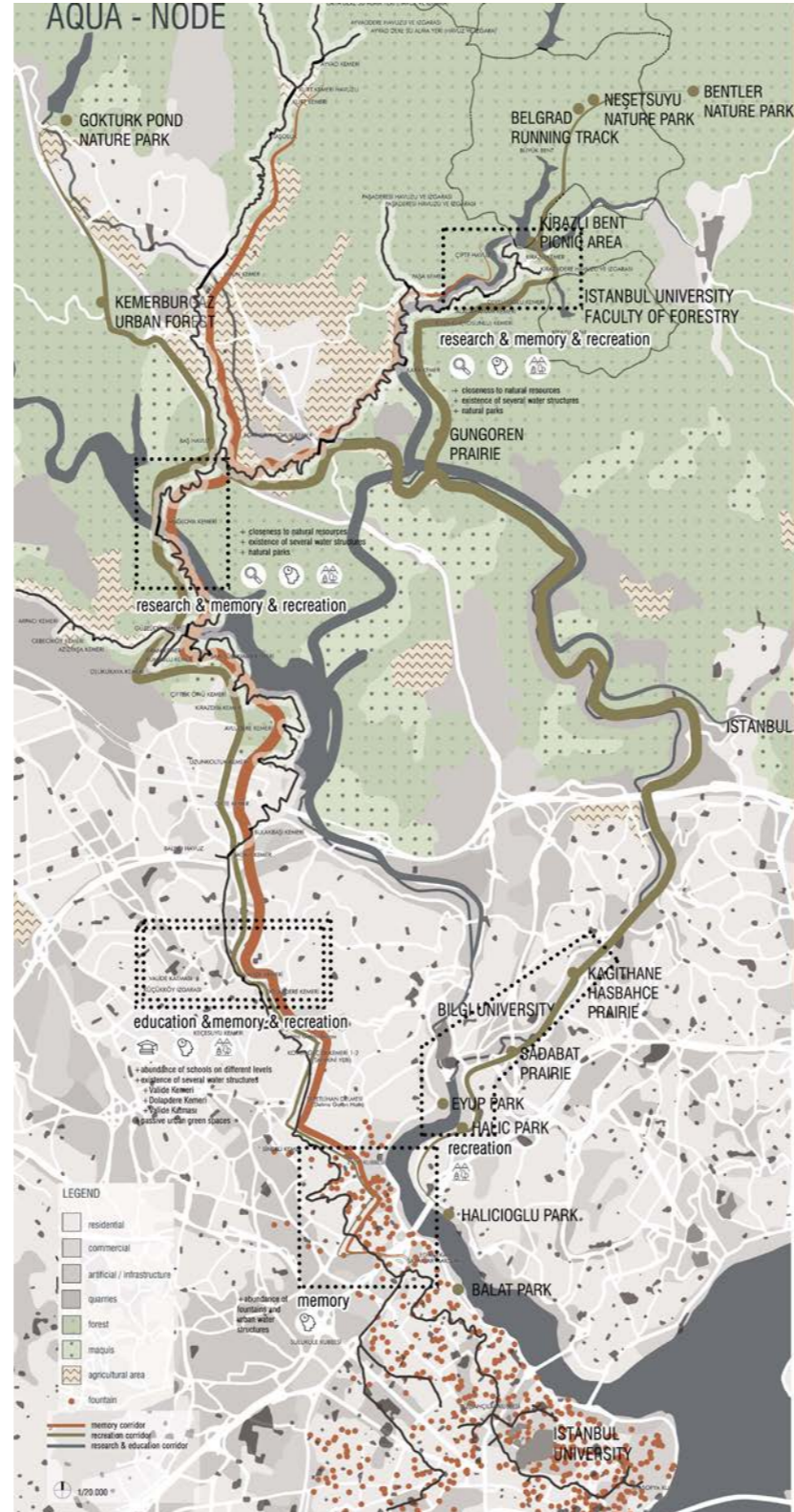
public works (dam) leaving some parts of the structures under water



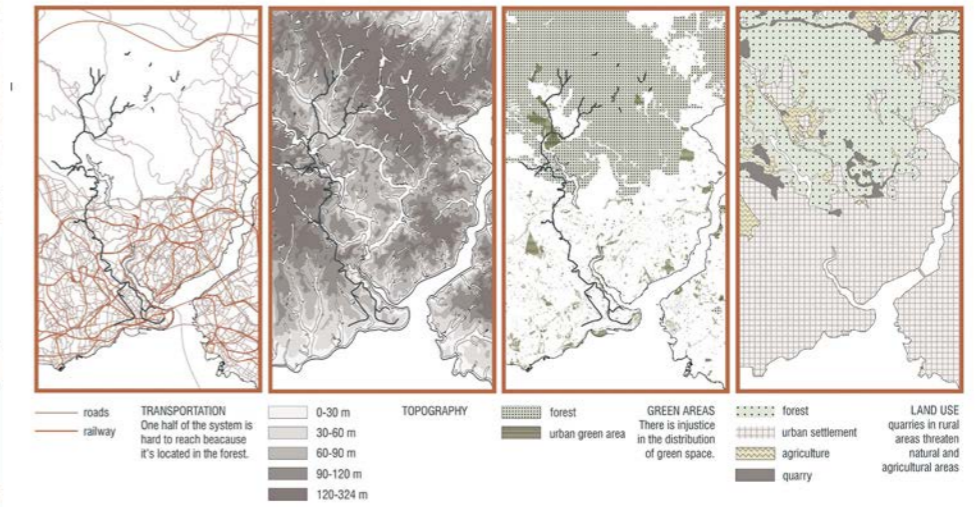
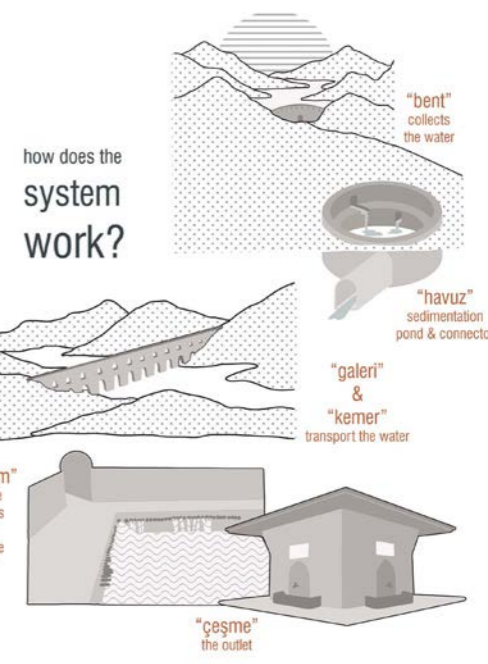
settlements ignoring the protection zone



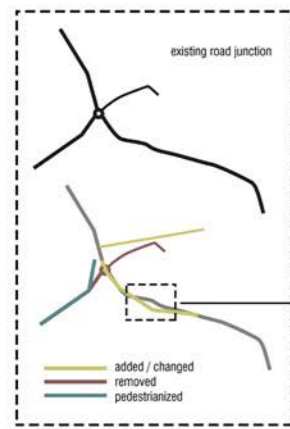
settlements ignoring the protection zone



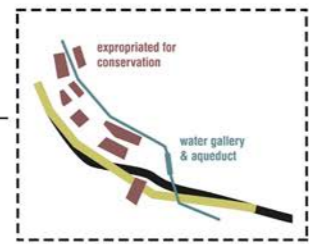
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-creating a balance of protection and use
-having a symbolic place to generate awareness for climate change



AQUA-NODE



It is aimed to make this place a recreational memory area by expropriation around the Valide Aqueduct and in the 15-meter conservation zone.



+ collect via bioswales

The nearby schools are connected to the Kirkeşme Waters via bioswales, so that the rain water collected in the schools can be gathered in the center. Since the waterway is placed on a valley, the water from the schools uphill comes naturally to the area. Therefore creating a bioswale system with this topography is a mimic of the Kirkeşme Water System.

+ connect via green system & increased walkability

The bioswales create a connective green system between the schools and the Kirkeşme Waterway. This system is enhanced by increased walkability along these routes, so that the accessibility of the people, mainly students, would be easier and incentive.

+ conserve via education

The Kirkeşme Waterway is turned into a memory area as well as an education opportunity for both the visitors and the people living there.

ACTIVITY CORRIDOR

- increasing the nature sports activities and recreational areas around the water structures in the forest in a way that will not harm the ecological integrity
- improving the existing ones

RESEARCH & EDUCATION CORRIDOR

- establishing observation points and science centers on the route where Kirkeşme Waters pass, where scientific data that can be used in research on climate change can be obtained
- carrying out educational and awareness-raising activities with the participation of the public

Design strategies are gathered in three topics:

MEMORY CORRIDOR

- restoring the ruined structures in the city
- transforming them into memory parks
- creating a green corridor connecting the rural and the urban matrix

RESEARCH & EDUCATION CORRIDOR

- establishing observation points and science centers on the route where Kirkeşme Waters pass, where scientific data that can be used in research on climate change can be obtained
- carrying out educational and awareness-raising activities with the participation of the public

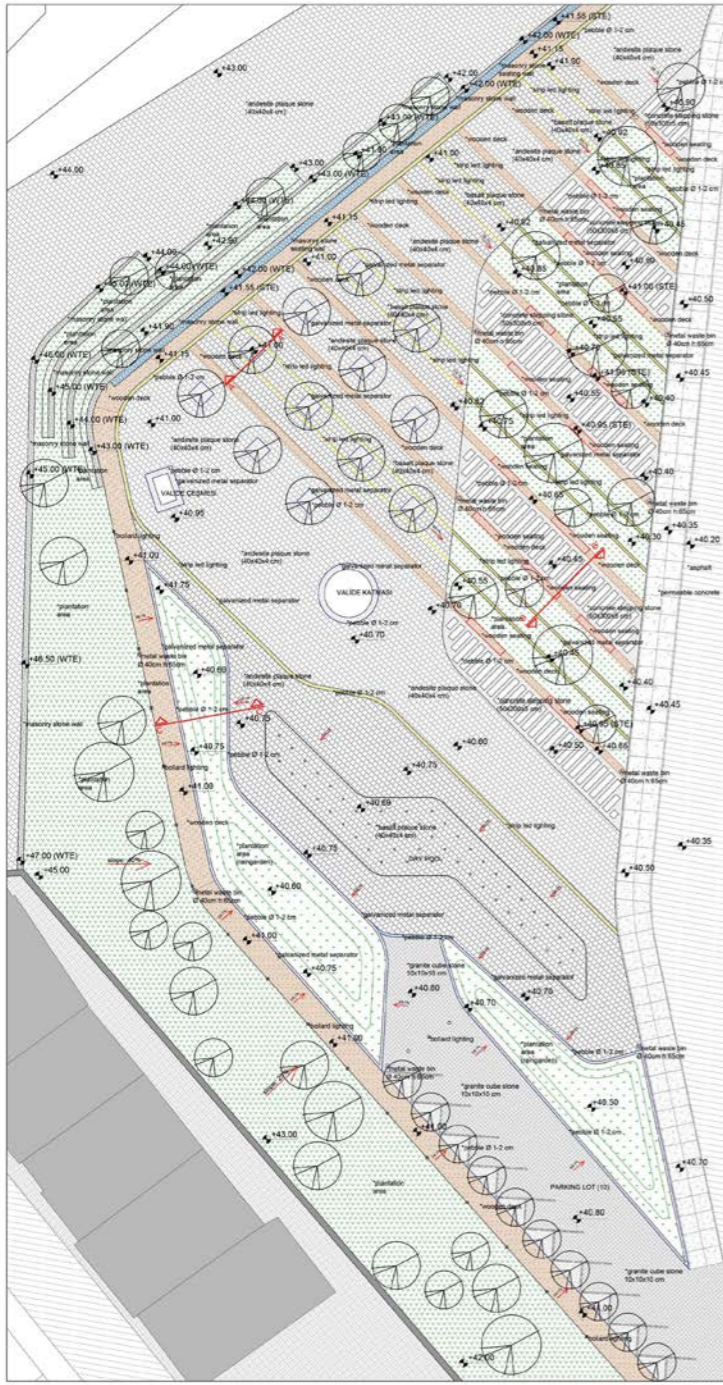


NATURE SPORTS & ACTIVITY CORRIDOR

- increasing the nature sports activities and recreational areas around the water structures in the forest in a way that will not harm the ecological integrity
- improving the existing ones

In the upper scale, focal areas are determined at the intersection points of the corridors above. Among them, the field that meets both education, memory and recreation functions has been studied.

1/200 CONSTRUCTIONAL PLAN



Primary, secondary, and high schools are concentrated in the selected region. At the same time, three of the Kirkçeşme Aqueducts are in this area. Memory parks to be created in the area are connected to schools with green corridors, so that the school gardens are included in the system.

There main strategies are developed:

+collect
via bioswales

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+connect
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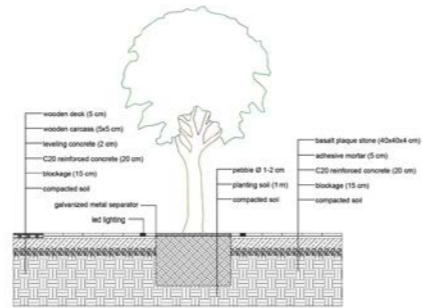
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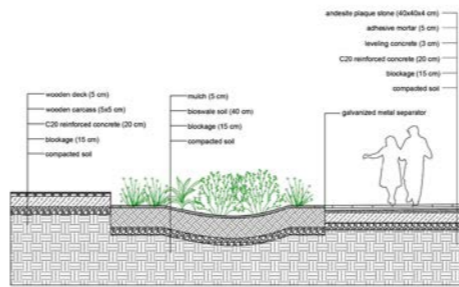
The Kirkçeşme Waterway is turned into a memory area as well as an education opportunity for both the visitors and the people living there.

scale: 1/200

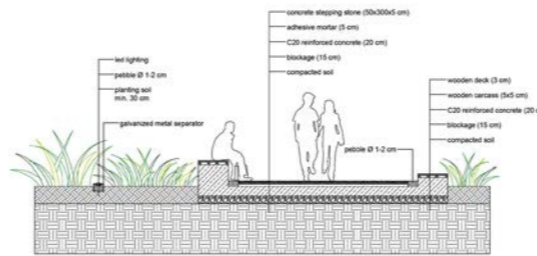
	andesite plaque stone (40x40x4 cm)		galvanized metal separator
	basalt plaque stone (40x40x4 cm)		strip led lighting
	pebble Ø 1-2 cm		bollard lighting
	granite cube stone 10x10x10 cm		metal waste bin Ø 40cm h.65cm
	concrete stepping stone (50x300x5 cm)		trees
	wooden deck wooden seating		plantation area (raingarden)
	permeable concrete		plantation area
	asphalt		plantation area
	masonry stone wall masonry stone seating wall		DRY POOL
	land slope		wall top elevation
	drainage slope		seating top elevation
	section line		



section AA' 1/50

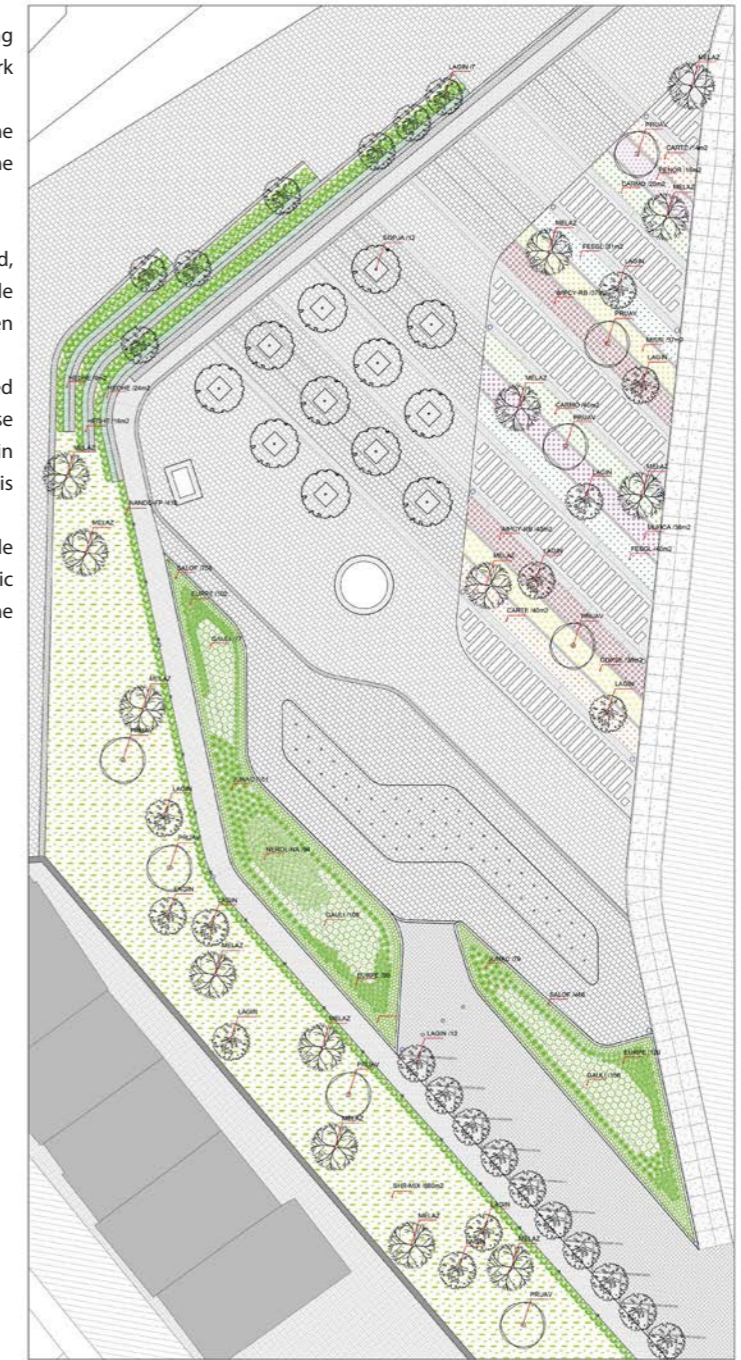


section CC' 1/50



section BB' 1/50

1/200 PLANTATION PLAN



Decisions on 1/500 scale

In the park there are noise-free co-working spaces to encourage students to work outside, rather than home or school. Bioswale areas are located on the schoolyards, which are connected to the Kirkçeşme Waterway site.

The area, on which Valide Katması is located, designed as a main square that leads people to the Valide monument and fountain, then to the aqueduct.

Two sides of the road is visually connected with roads between grassland plots. These plots connect Valide Katması & Fountain to the Kirkçeşme Water Gallery, which is excavated and protected with a top cover. The concrete stream bed, where the Valide Aqueduct is located, planted with aquatic plants, in a way that doesn't harm the structure.

scale: 1/200

TREES					
Symbol	Abbreviation	Botanic Name	Trunk Diameter	Height (cm)	Unit Quantity
	SOPH	Sophora japonica	25.00	300-350	12 piece
	MELAZ	Melia azadirachta	23.00	200-300	14 piece
	PEHU	Platanus orientalis	22.00	300-350	8 piece
	LADN	Lagerströmia indica	18.00	200-250	28 piece

SHRUBS					
Symbol	Abbreviation	Botanic Name	Trunk Diameter	Height (cm)	Unit Quantity
	BARDOP	Nandina domestica 'Fire Power'	40.00	40-60	410 piece
	JUNC	Juncus acuminata	40.00	40-60	180 piece
	MERULAN	Nerium oleander 'Nara'	40.00	40-60	36 piece
	SILU	Clusia indica	40.00	40-60	341 piece
	EURPE	Eucalyptus globulus	30.00	30-40	321 piece
	SALOP	Salvia officinalis	30.00	30-30	1024 piece

GRASS					
Symbol	Abbreviation	Botanic Name	Trunk Diameter	Height (cm)	Unit Quantity
	CARMO	Carex monnina	20.40	40-60	#2 40
	CARTE	Carex lasiocoma	40.40	60-80	#7 54
	CORSE	Coriaria laurina	40.40	100-150	#3 36
	FESOL	Festuca ovina	30	30	#2 71
	MPCYNE	Impatiens noli-tangere 'Red flower'	30	30-40	#2 77
	MSSI	Muscivora arvensis	40.00	40-60	#2 37
	MCHCA	Molinis caerulea	40.00	60-100	#2 38
	PENCR	Pennisetum ciliatum	40.40	40-60	#2 16

GROUNDCOVERS					
Symbol	Abbreviation	Botanic Name	Trunk Diameter	Height (cm)	Unit Quantity
	SPPM	Sedum spectabile 50% (variegated yellow-white 50%)			#2 800

CLIMBING PLANTS					
Symbol	Abbreviation	Botanic Name	Trunk Diameter	Height (cm)	Unit Quantity
	HEDE	Hedera helix	40.00	40-60	#2 48

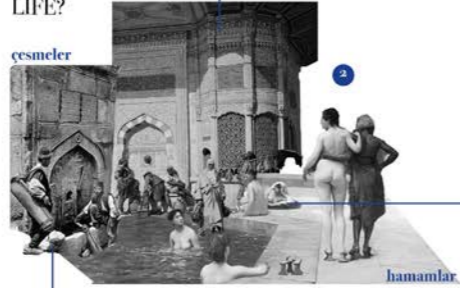
STRATIS
Eyşan Yazıcı

Istanbul is a city that was once to home Byzantine, Ottoman, and Latins. Its importance in history cannot be denied. It was ruled by the greatest of emperors of all times, it is fall was the reason for a century to close and another one to open. If you see Istanbul on a map, you will quickly realize its uniqueness. It connects two continents, separated by Bosphorus. The city is surrounded by water on 3 sides, can be seen as a luck. Throughout the history, the city lacked the water resources it needed. People flooded into the city from other cities, in every emperor's time, but resources were not sufficient to maintain the supply. Every empire builds its own system to provide drinkable water to their citizens. We know parts of these systems "cisterns", "aqueducts", "fountains". The most famous one, that is built by the Mimar Sinan on the request of Kanuni Sultan Süleyman is known as "Kırkçeşme Waterways." The strategical design of the peninsula aims increase human connection with water, and its historical footprint while experiencing all the cultures that is shaped the city. Our design neither will bring more sources, nor increase the existing ones: we will only optimize what we have.

History - from past to present- how our relationship has been changed with water

HOW WATER IMPACTED SOCIAL LIFE?

çesmeler



hamamlar

there were approximately 800 fountains were only in the historical peninsula in Ottoman empire. The fountains were excessively important not only because people needed them but also, they became social places. Ottoman empire did not have "city squares" necessarily but their 4 sided fountains defined the most beautiful squares. After Terkos Dam started its duty, the use of the fountains started to die off.

Istanbul is home to 237 hammams. Hammams were very important cultural elements. People, especially women socialized there. Also hygiene was/is extremely important for Turkish.

since the water was not present at homes, carrying water to homes became a line. People who carry water known as "sakalar" or "sebçiler". It was forbidden to sell water that is taken from

WATER AND CITY AGRICULTURE



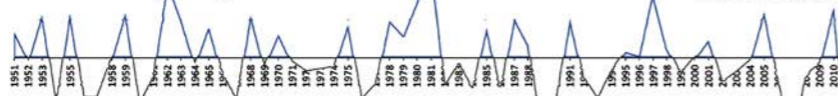
Bostans

outside of the Walls, there are "bostans" They are destroyed, and their importance and presence are forgotten by many. Not only they are sources of income for the people who lived there, they are also important in terms of protecting the Wall and showing people that water that once there, is still there. The Valens Aqueduct,

Aqueduct of the Valens is one of the few Aqueducts that is located at the heart of the city. Even though it is something we see every day, we are not able to experience or understand its importance.

SYSTEMS

Water Capacity and Water Consciousness



Today Istanbul has a precipitation rate of **820mm per year**. The city's total **water capacity** stands at **868.6 million m³**, and its citizens uses **2.9million m³** water daily. Due to Climate change it is expected Istanbul to receive less and less rainfall.



maksems

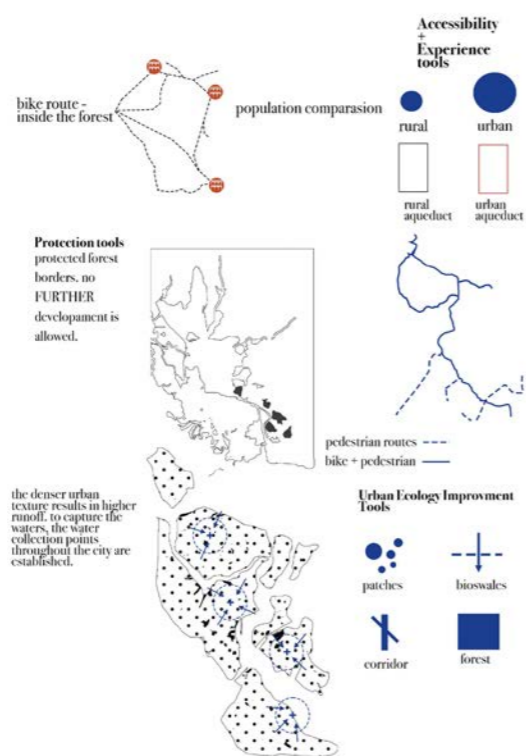
maksem's were the last stop before they distributed into the city. nowadays, they are completely unseable by the people.

Our strategy around Kırkçeşme Waterways?

water as a

- 1. SCARCITY: the waterless life try with us. walk of constaninopolis çukurbostan
- 2. COMMUNAL: Breath the cultures, exhale the awariness. meet with us. valens- maksemler - route
- 3. CONNECTION: Where water meets technology. connect with us. tech hub, fountains, community gardens
- 4. EXPERIENCE: art, history and water; the golden trio. see with us. cisterns, aqueducts, walkpaths
- 5. INTELATIVE: volunteer with us. everynebers. GÖNÜLLÜLERİ

SYSTEM DESIGN



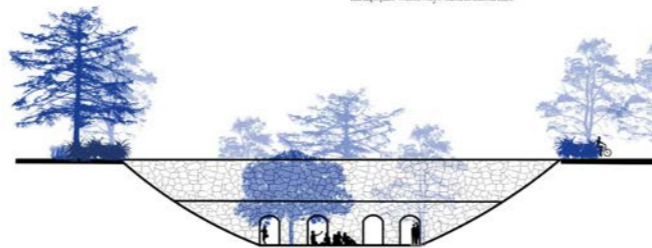
protection

ecological corridors are created to connect the Belgrad Forests to the city. Corridors, patches and stepping stones are supporting the ecological wholeness of the city.

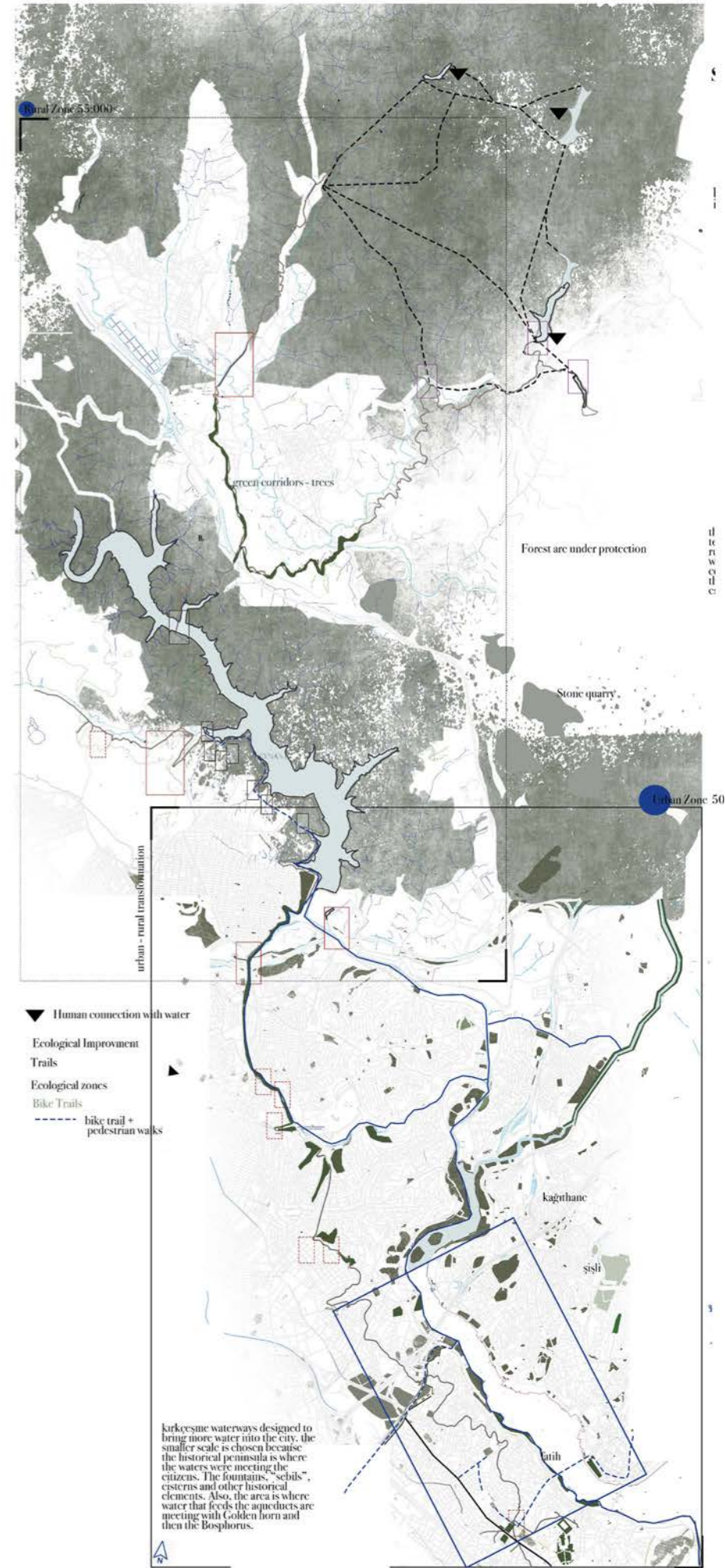
connection accessibility

Green corridor follows the underground distribution line to make unseam seable. Awareness will be increased since people will be able to see what is underground.

unseable to seable



the Aqueducts that are connected with the green systems and routes, will be open to public. Though there will be a protection zone around the Aqueducts due to vandalism.



Human connection with water

- Ecological Improvement Trails
- Ecological zones
- Bike Trails
- bike trail + pedestrian walks

Kırkçeşme waterways designed to bring more water into the city. the smaller scale is chosen because the historical peninsula is where the waters were meeting the citizens. The fountains, "sebçis", cisterns and other historical elements. Also, the area is where water that feeds the aqueducts are meeting with Golden horn and then the Bosphorus.

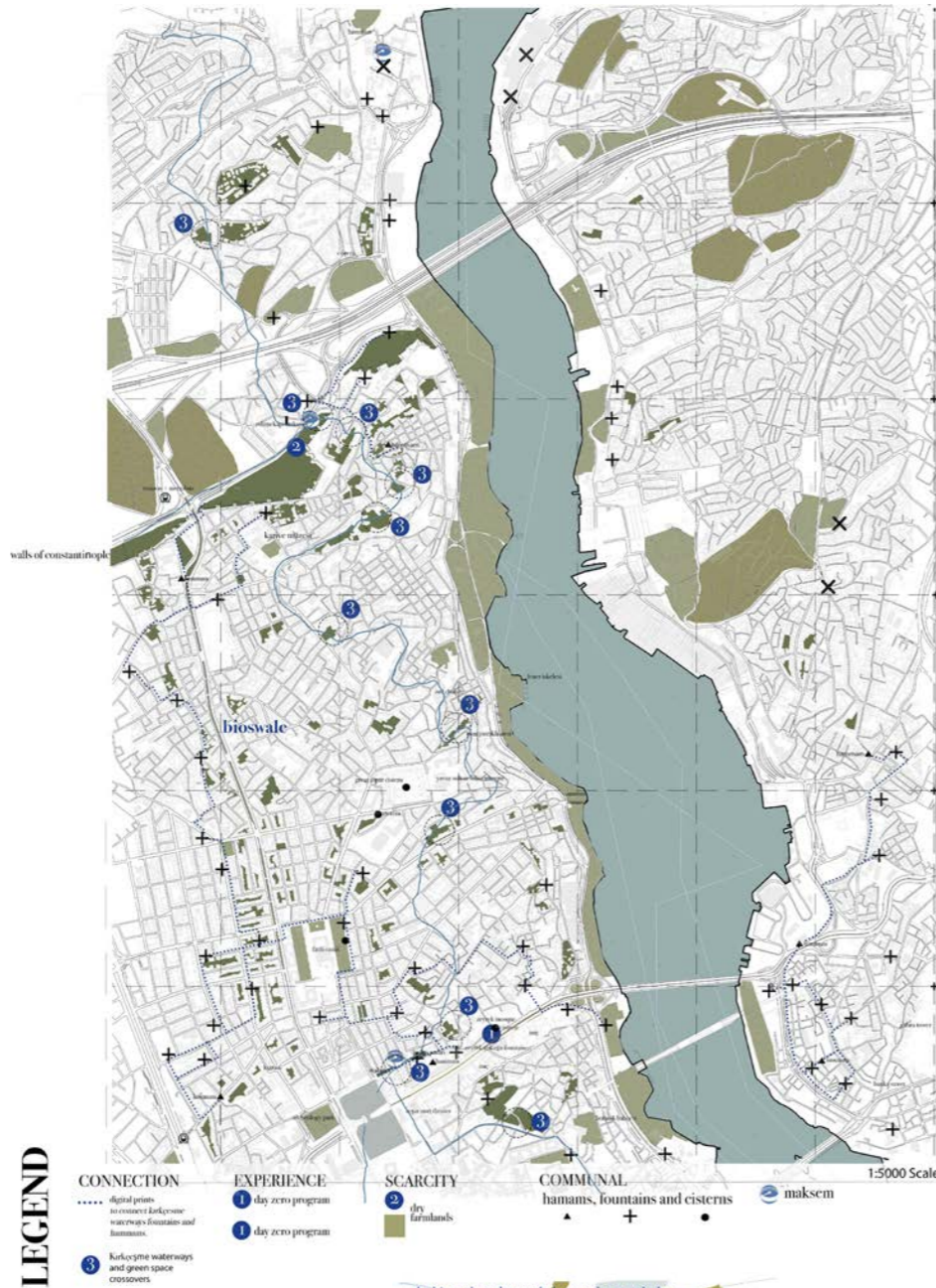
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In the five thousand scale plan routes are connecting Walls of the city and dry farmlands inside through historical neighborhoods, while stopping by to the cultural landmarks and hammams of the Peninsula.

The green belt, also helps the routes and also proposed green area is to increase the connection between human and the aqueduct to make them experience it. Public pool and sea sitting area aims to make people experience the golden horn and see the irony of being surrounded by water, which is salty, and still lack of water. Day Zero aims to create awareness about the water, by showing them how scarce it is. Open Air theater will merge art and history together, and will be the experience part of the whole system.

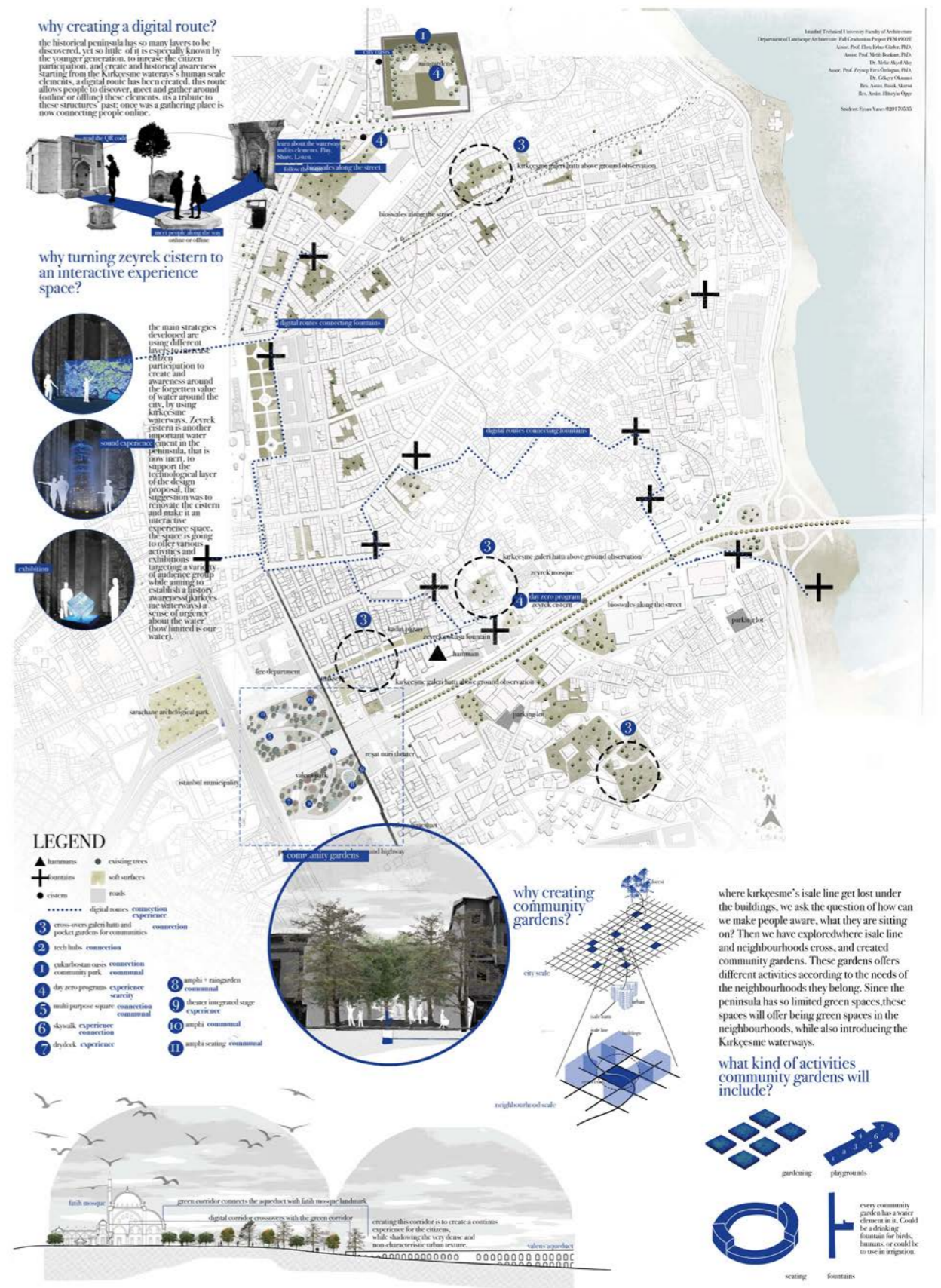
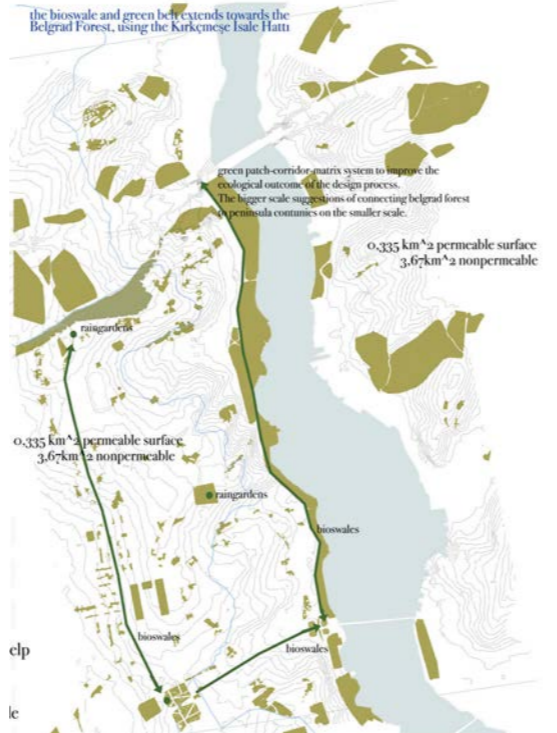
The whole proposition is about combining Kirkçeşme waterways with the history of the Peninsula, and create awareness amongst people. After the readings, and analyses it can be seen that main problem is not having enough sources but having so many people, lacking of water and history consciousness.

The city has many waters around, but cannot reach it. People suffered from water shortages, and they still do. The connection between human and water is lost. Water lost its social importance, since reaching to it became relatively easier (even though we still have shortages). So, on the bigger scale, strategy was developed which was essentially aimed to increase the human consciousness about the water while also creating ecological patch matrix corridor systems. These patches are superposed with Kirkçeşme isale hattı, and then little community gardens are created. On the smaller scale, we focused on the historical peninsula because this is the place where once Kirkçeşme Waterways built for, where the original Kirkçeşme was also located, and most of the historic fountains, hammams and cisterns are present. Even on the smaller scale, the chosen site's focus is Valens Aqueduct and Çukurbostan.



The patch-corridor-matrix system helps the connect the systems as a whole and supported the ecological unity of the city. Some roads are elevated, to abstract people from the high traffic. Digital routes are connecting fountains, hammams and cisterns and showing us that landscape design can be easily integrated with technology.

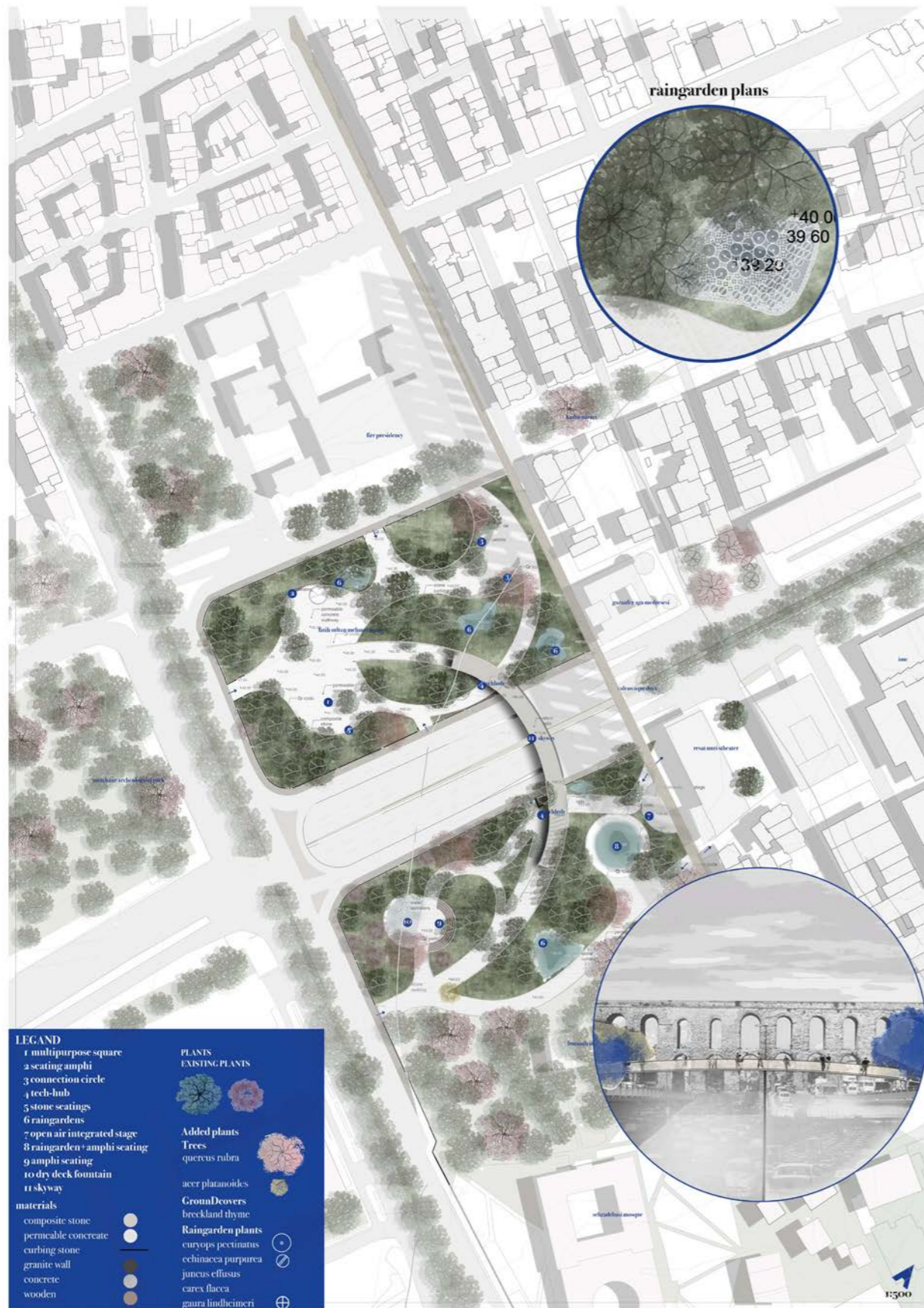
Community parks are created since we are trying to create a consciousness in people through using Kirkçeşme waterway's old strength of bringing people together. So on the bigger scale, a strategy was developed which was essentially aimed to increase the human consciousness about the water while also creating ecological corridors and respecting and using the elements of the history.



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Here we can show our programs, designs, and Kirkçeşme Waterways connection with water better. There are few decisions made through the 1:1000 plan. Few existing roads are changed that is closed to the

Aqueduct in order to increase the interaction with humans. Some pavements are changed to emphasize the routes better for humans, that also supported by technology adaption. bioswales are created to avoid of losing the rainwater and as well as use it on the dry season.

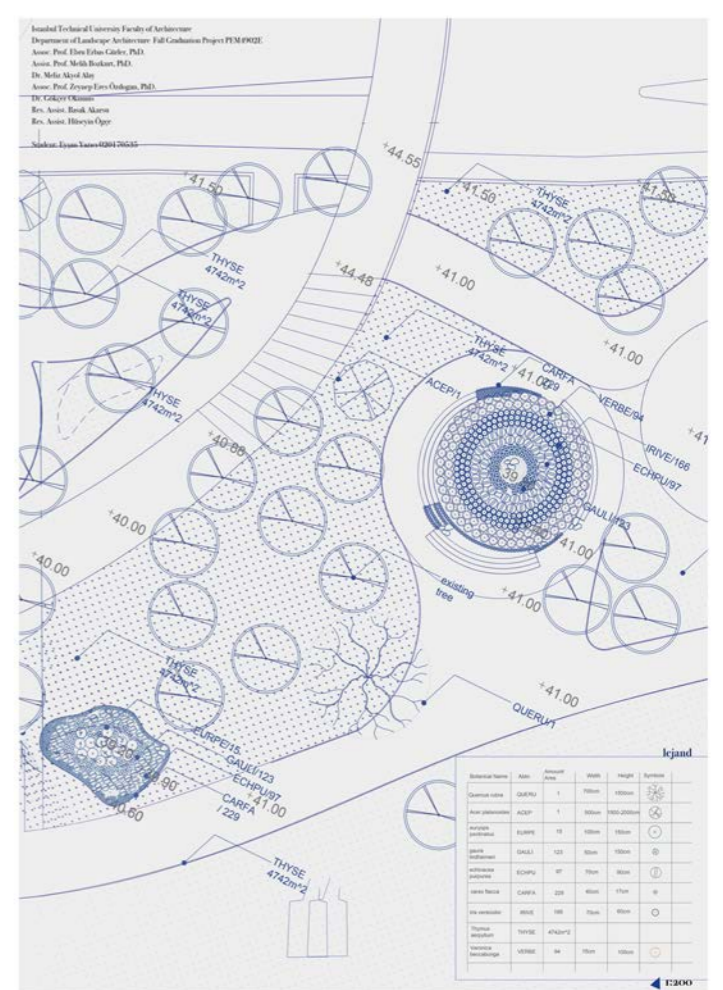
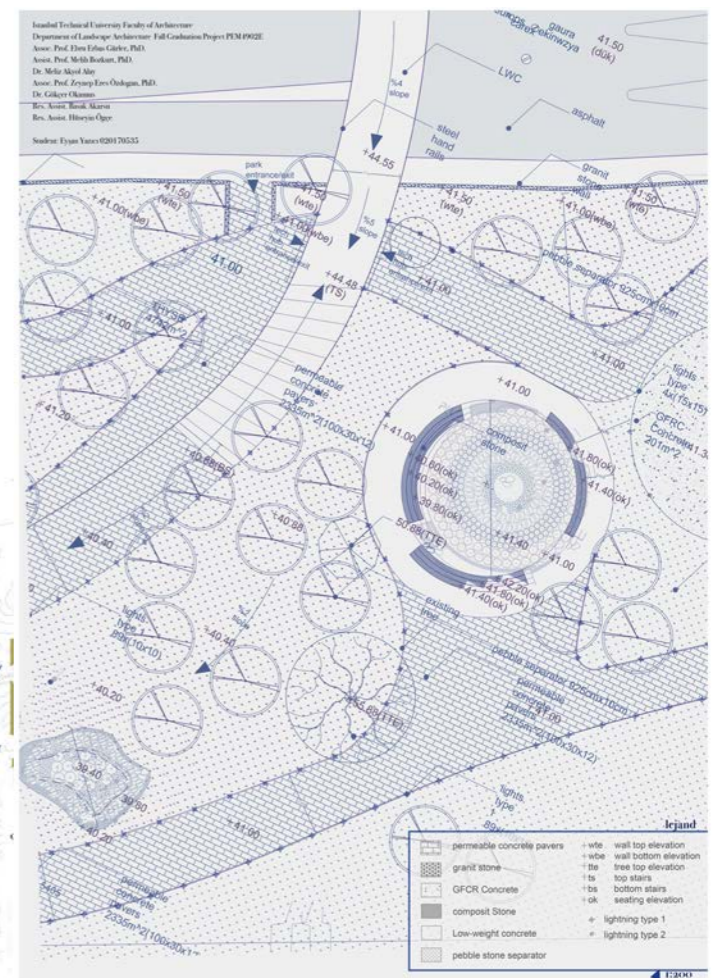
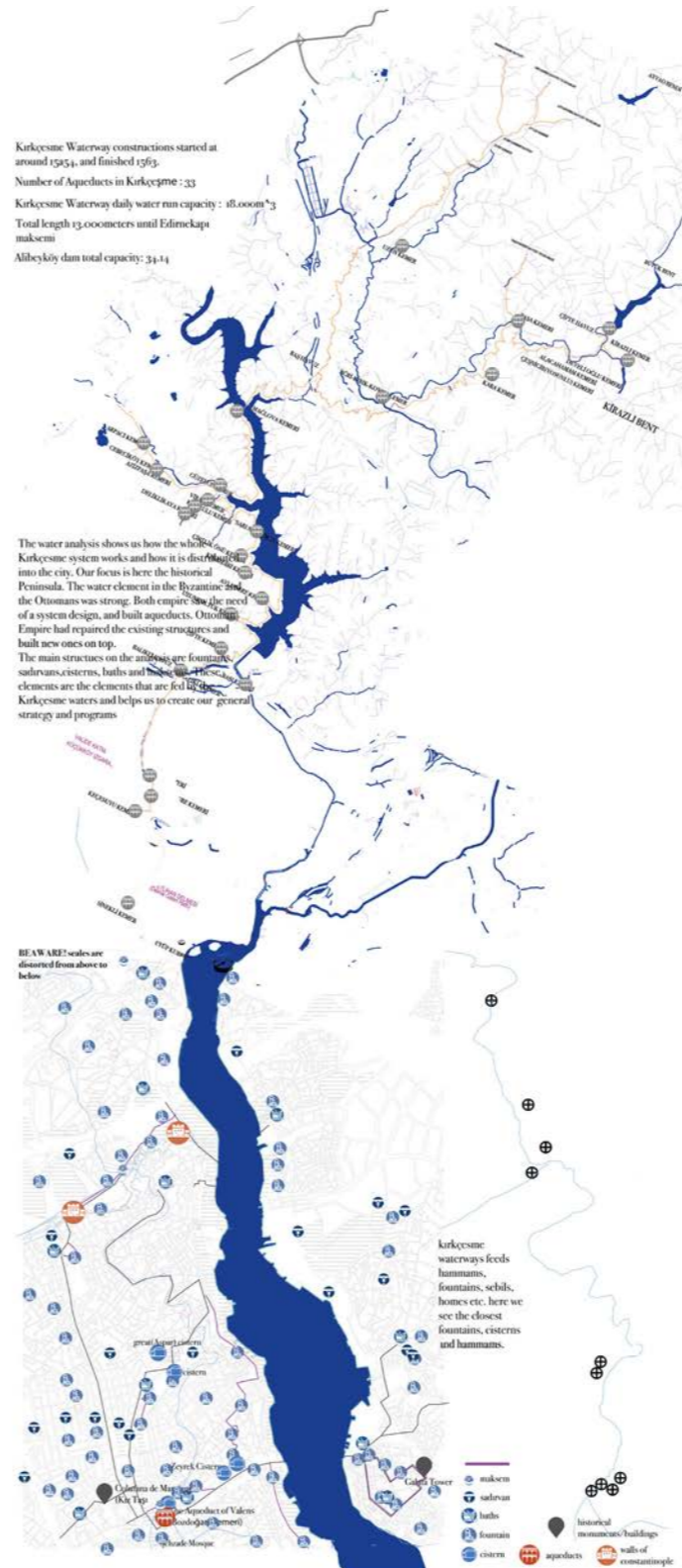


In Istanbul, throughout the time people suffered from water shortages, and they still do. The connection between human and water is lost. Water lost its social importance, since reaching to it became relatively easier (even though we still have shortages). So on the bigger scale, a strategy was developed which was essentially aimed to increase the human consciousness about the water while also creating ecological patch matrix corridor systems. These patches are superposed with Kirkçeşme isale hattı, and then little community gardens are created. On the smaller scale, we focused on the historical peninsula because

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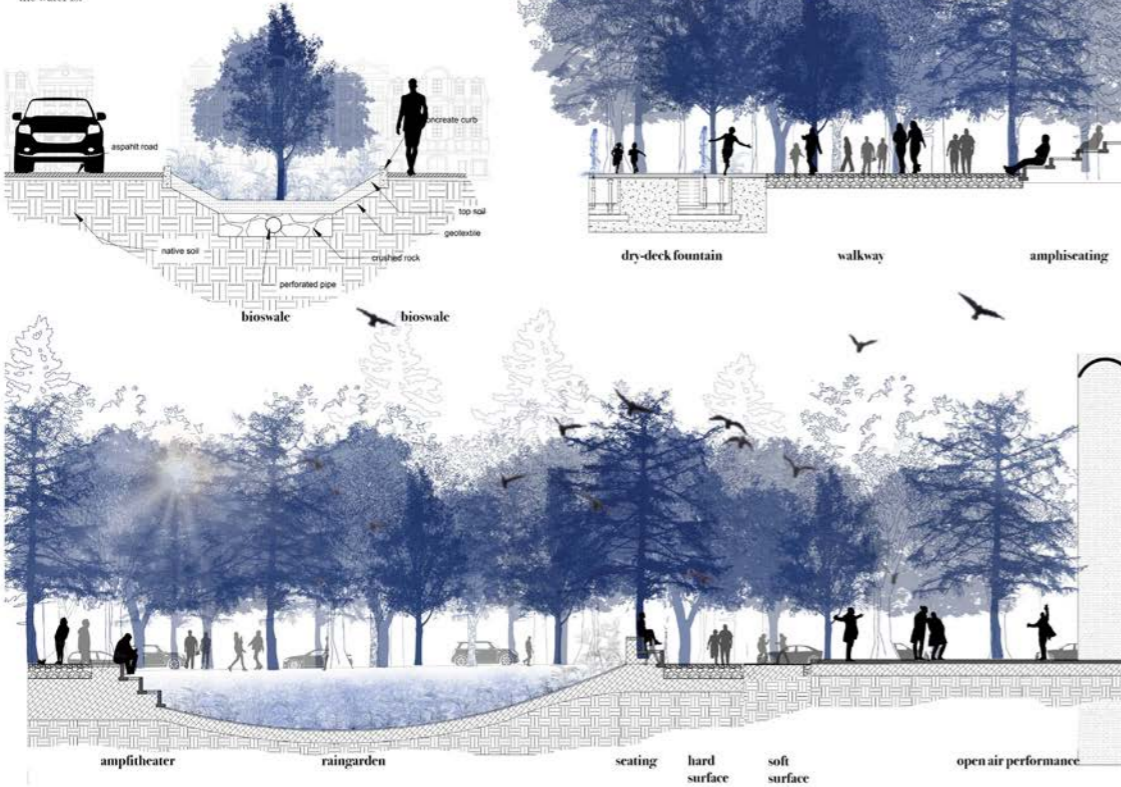


The 500 scale area, which is the Valens Aqueduct and its surrounding. Here, we create spaces according to our bigger scale strategies which was: communal, experience, scarcity and connection. The areas where we impose the communal strategy is squares, and seating areas. Here people are expected to meet, spend time and in the meantime experience our cultural heritage "valens aqueduct". The whole includes QR codes and two technology hubs, located below "the arch". The digital routes we have created have a digital center here, meaning all roads lead to Rome! So in urban scale, you can follow the various roads by the app, and in neighborhood scale, you can interact more. The QR codes is to connect the arch app, and also connect with nearby people and read about the history of the peninsula and the Kirkcesme waterways. The tech hubs will include interactive plays, exhibitions and workshops. People can follow the calendar through "the arch" app. This design also aims to attract younger people into their cultural heritage. On the experience side, we have two major designs, one is the elevated skywalk, which designed with stages into the future, and the second is the integrated stage. The stage is integrated with the theater behind the aqueduct, which resembles the old Roman theaters, and acts as a landscape behind while people experiencing a cultural activity.

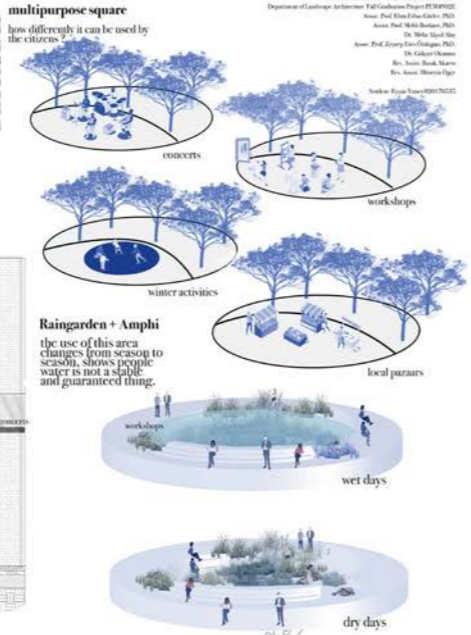
ELEVATIONS



The last design decision is the raingardens, on the urban scale we have used water collection points and bioswales. These raingardens are the neighbourhood correspondence of these design decisions, and shows people the scarcity by making them see both "filled with water" and "empty" versions through the seasons. The whole park acts as a sponge, since the peninsula has so little green spaces, it needs every inch to emit the water to prevent flooding. All of these 4 design decisions are serving one thing: bringing people together by using water's unifying power and Kirkcesme's cultural importance and make them realize how valuable of a source the water is.



DIAGRAMS



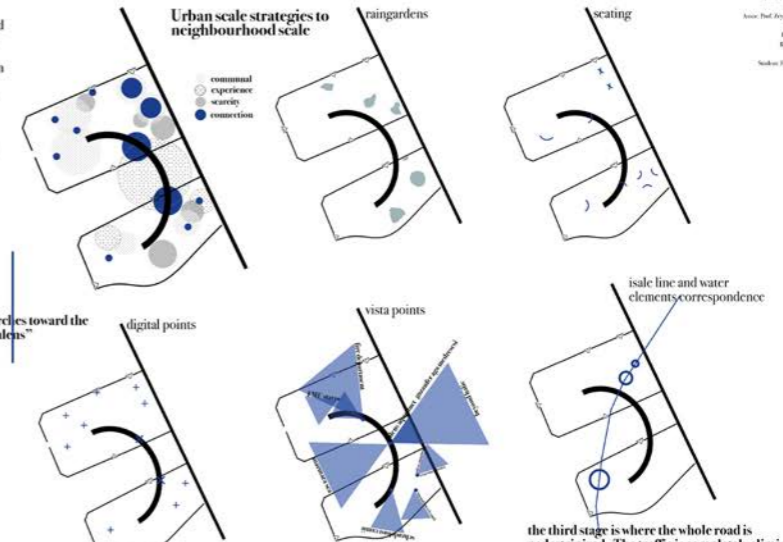
Istanbul Technical University Faculty of Architecture
Department of Landscape Architecture Fall Graduate Program (2023) (MSc)
Assoc. Prof. Elvan Ersoy (MSc, PhD)
Assoc. Prof. M. Hakan Karadas (MSc, PhD)
Dr. Merve Karadas (MSc, PhD)
Assoc. Prof. Zeynep Yildirim (MSc, PhD)
Dr. Gulseren Ozdemir (MSc, PhD)
Res. Assoc. Burcu Kocak (MSc, PhD)
Res. Assoc. Hacer Aydin (MSc, PhD)
Nispetiye Campus (2023) (MSc)

valens park diagrams

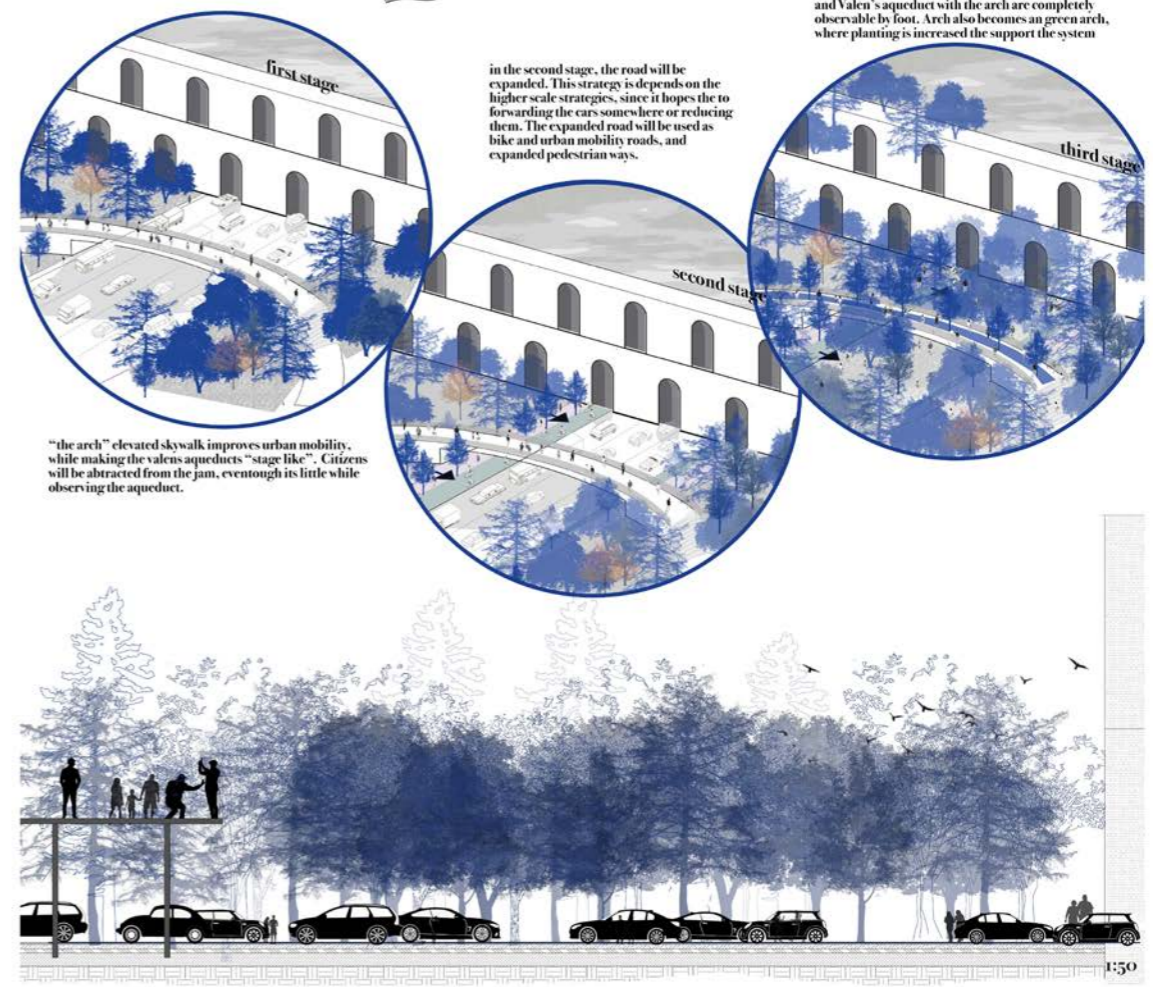
The most dramatic touch, which is the elevated walkway, inspired by the Kirkcesme "bents", aims to be an attraction site as well as improving urban mobility without interruption of the jam. This elevated skyway takes the Aqueduct and uses it as a stage this time. The top point of the arch is bended towards the Aqueduct so it takes people one step closer while abstracting them from outside interruptions. In the future, this skywalk will become a green walkway, where both underneath and beneath of it will be pedestrianized.



One of the bents in the Beğazlıdere. The starting point of the Kirkcesme waterways.



what about future?



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