AMERICAN UNIVERSITY OF BEIRUT

RESTORING THE LANDSCAPE: AN ECOLOGICAL AND IMMERSIVE EXPERIENCE AT THE HEART OF NAHR EL KALB

by
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An Undergraduate Capstone Project
submitted in partial fulfillment of the requirements
for the degree of Bachelor of Landscape Architecture
to the Department of Landscape Design and Ecosystem Management
of the Faculty of Agricultural and Food Sciences
at the American University of Beirut

Beirut, Lebanon
May 2023

AMERICAN UNIVERSITY OF BEIRUT

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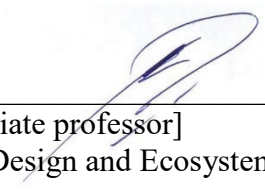

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Date of project presentation: [05/16/2023]

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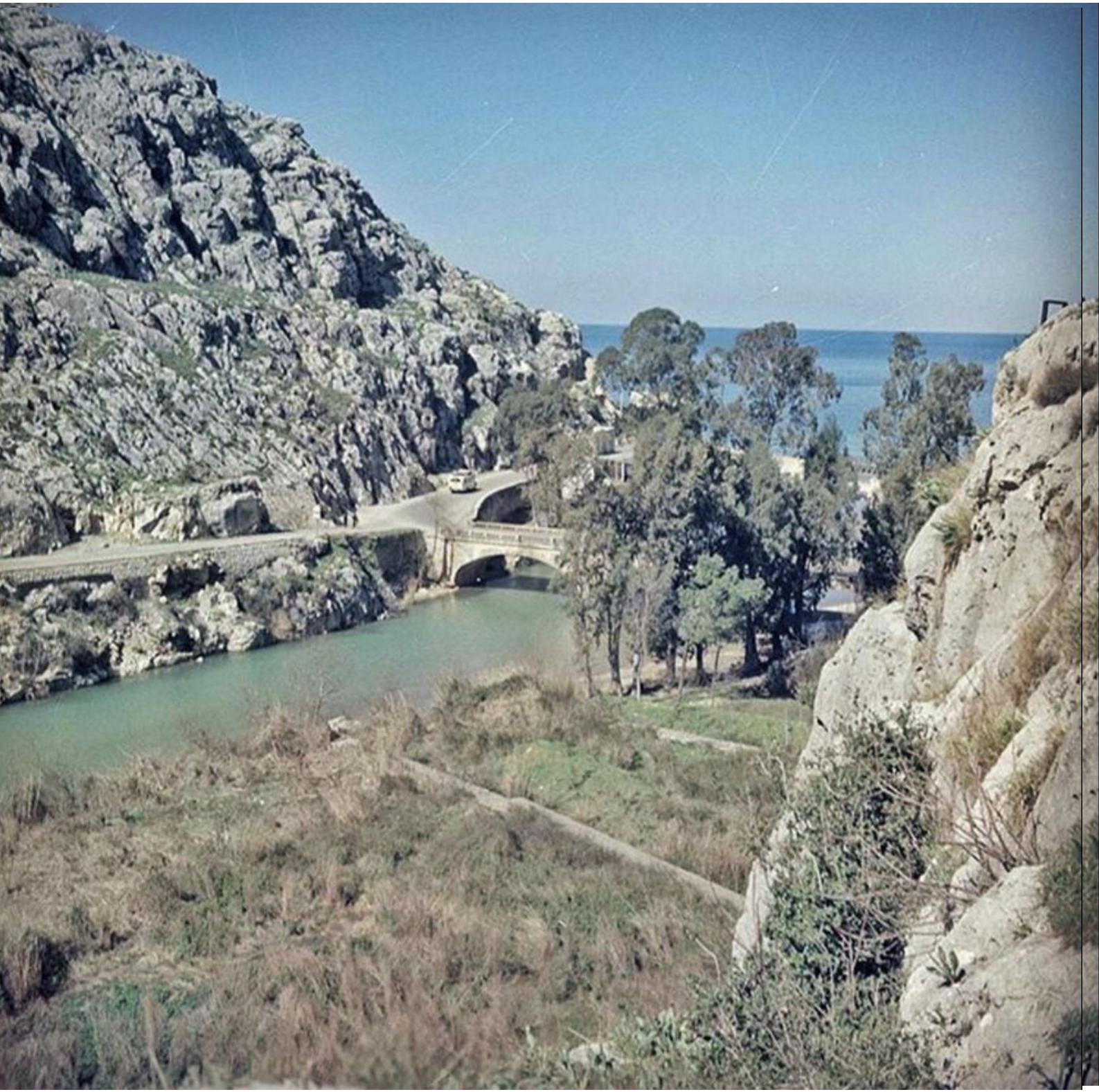

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DESIGN STATEMENT

The ambition of this project is to restore and reconnect the landscape of Nahr El Kalb back together.

Through a series of activation processes and restoration strategies, the three different layers of the landscape –river, trail and excavated area- will be physically and visually reconnected in order to create an immersive and ecological experience.

INTRODUCTION

01

FORGOTTEN RIVERS

Rivers play a crucial role for the ecosystem and people's lives and well-being. Indeed, the riparian landscapes provide a rich and diverse habitat for the fauna and flora, rivers are used for irrigation and provide water supply and they are spaces for recreational activities which help enforce the connection between landscape and community. However, anthropogenic systems got a debleating effect on rivers, which lead to the fragmentation of the riparian system, loss of heterogeneity and its physical change. All of these factors, and much more lead to the forgotten of some rivers.

Forgotten rivers have different meanings :

- Landscapes that lost their identity and historical value
- Spaces that shifted the practice they used to have
- Landscapes that no one notice anymore nor use, hence it is totally abandoned

Theses forgotten rivers can have different types :

- Underground rivers that are covered up completely
- Rivers that underwent severe changes through channelization
- Rivers that lost their meaning, usage and spatial qualities

Nahr El Kalb, a completely distorted landscape

02

CASE STUDIES

SAYNIQ RIVER: DISCOVERING THE HIDDEN WATERSCAPE

Why was the river forgotten ?

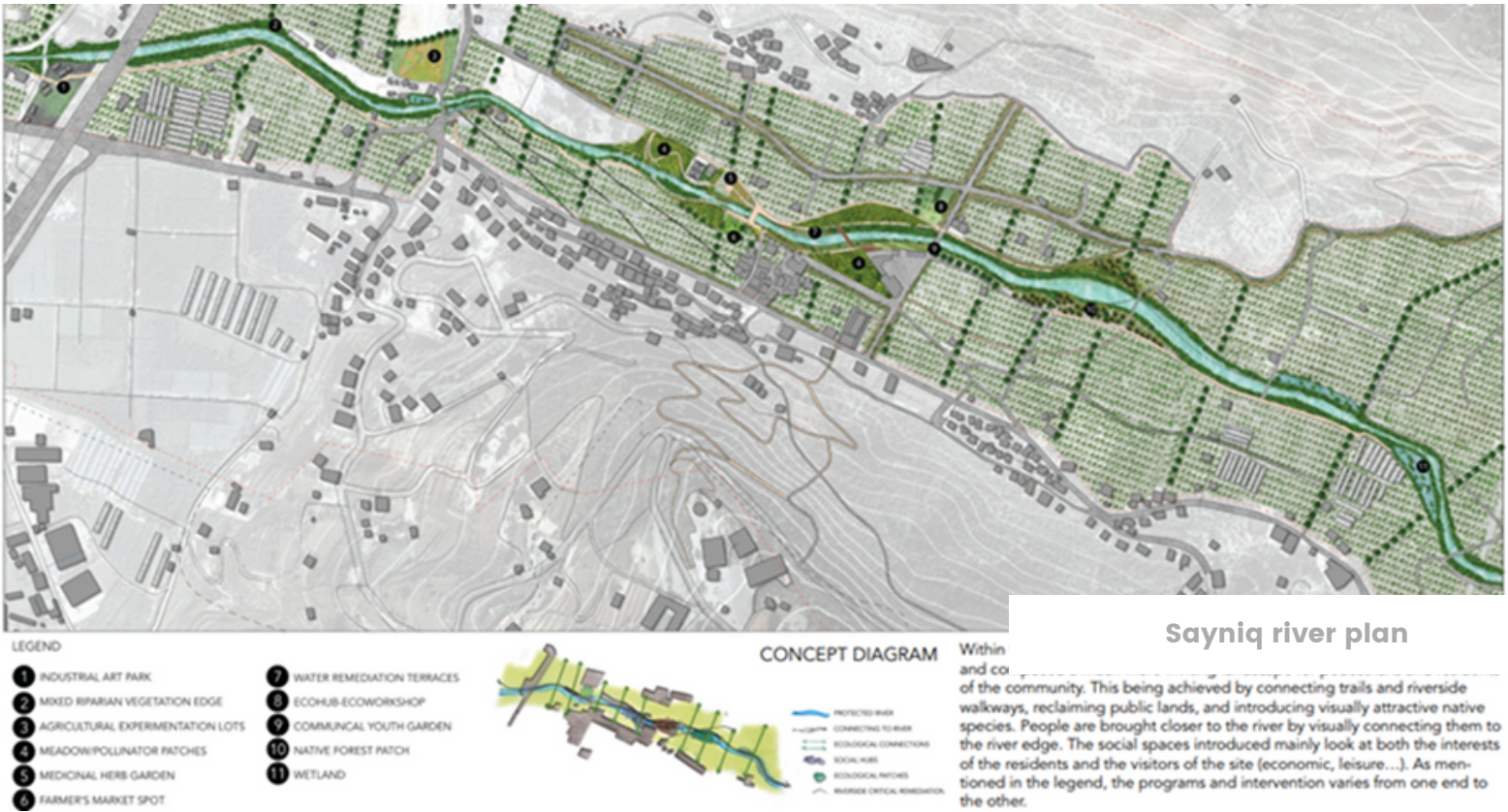
- Subjected to encroachment due to the absence of enforcing laws
- Sayniq is far from the urban development
- Poor management of river resources

What are the strategies to revitalize the river ?

Through natural based solutions and public engagement, the Sayniq river have been transformed into a green corridor that support the ecosystem and its local inhabitants.
Hence, through an ecological and activated long-term approaches, this once forgotten river have been revitalized and rehabilitated.

Assessment on the case study

This project deepened my understanding on the spatial and ecological rehabilitation of rivers, as I got exposed to new thinking methodologies, key terms and sustainable interventions.



Sayniq river plan

02

CASE STUDIES

ECO-CORRIDOR RESURRECTS FORMER BROWNFIELD

Why was the river forgotten ?

- River polluted by industry and domestic sewage
- Urban densification along the river edge
- High water flood risks

What are the strategies to revitalize the river ?

Improving the riparian habitat, restoring the river and reconnecting it to the community is the main essence of this project. This river is turned into a rich living filter that supports the aquatic wildlife through the diversification of habitats and habitat structures.

Assessment on the case study

This project shed light on the different strategies we could use to protect and conserve the aquatic biodiversity, as well as using and working with the existing (a more sustainable approach).

Project design

02

CASE STUDIES

DECONSTRUCTING HYDROLOGIES: REVIVING THE MEMORY OF WATER IN DUMBARTON OAKS PARK:

What are the strategies to revitalize the river ?

The Dumbarton Oaks Park has been endangered by storm water runoff for decades. Hence, through the implementation of strategies that focuses on history and preservation, this project promotes the use of history as a vital tool to creating landscapes of ecological resilience and cultural relevance.

Assessment on the case study

This case study shed light on ecological and sustainable ways we can overcome natural disturbances. In addition, the landform of this river is a valley, hence it makes echoes on my future site, Nahr el Kalb, who has the same morphology.

02

CASE STUDIES

The conclusion drawn from the literature review is that a successful attempt to revitalize a forgotten river requires:

- **River are living corridors and we need to recognize their intimate relationship with the community.**
- **Understand the river morphology, ecology, history and surroundings.**
- **Have a process-based approach (several phases and long-term planning).**
- **Establish a sustainable, natural-based approach in which the community take an active part in the revitalization of the river.**

LARGE SCALE ANALYSIS

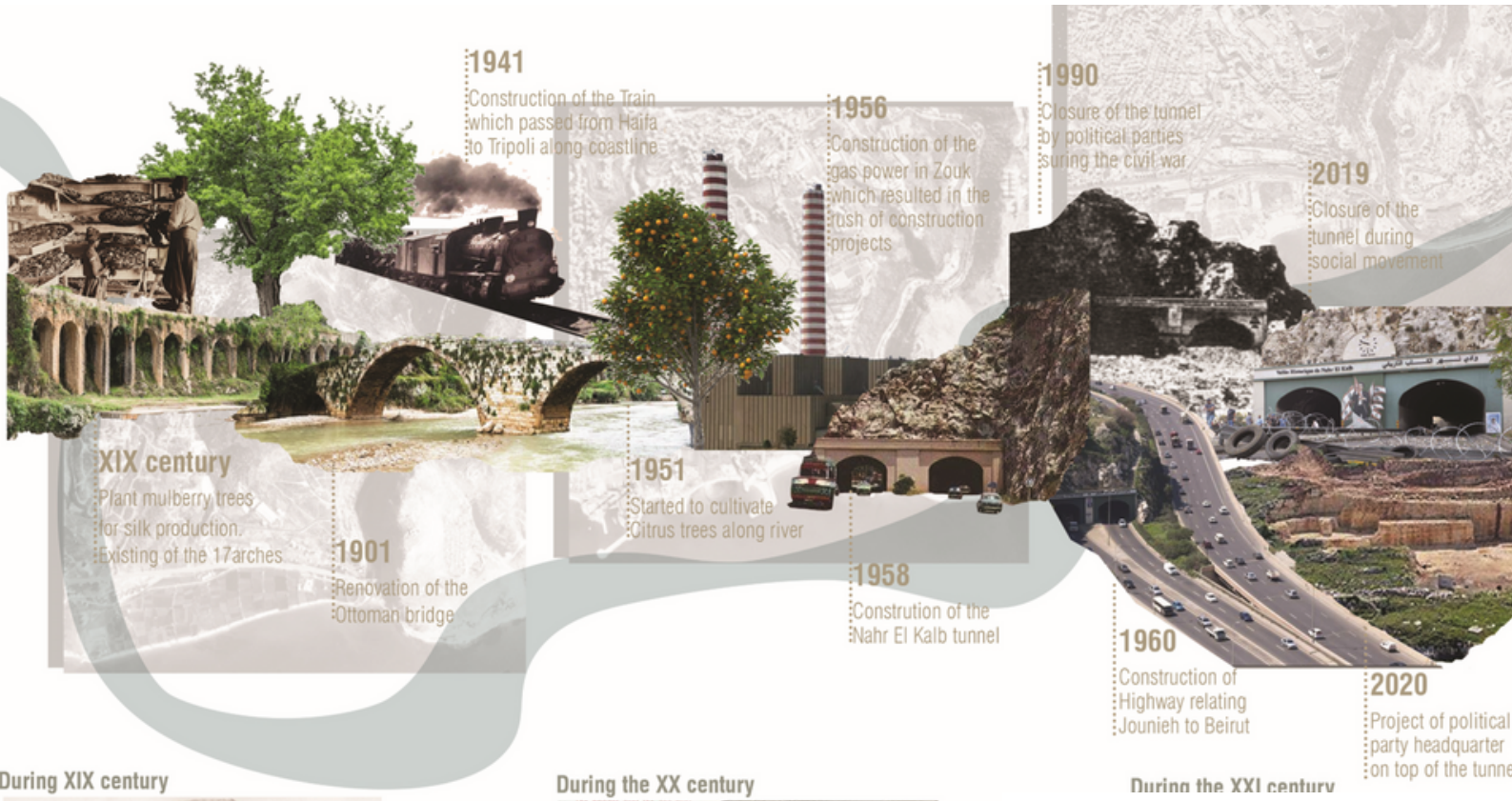
01

SITE LOCATION

The selected site is located in Nahr El Kalb, a river valley in the Northern part of Lebanon specifically Keserwan.

This river was historically known for its abundant flow of water, archeological inscriptions that dates back to Ramses II, its biodiverse habitats and its close relationship with the surrounded landscape.

However, due to urban densification, the construction of numerous highways, water pollution caused by quarries and industries, the natural landscape of Nahr El Kalb have been completely disfigured and forgotten. Indeed, these anthropogenic events lead to the disconnection between the natural, human and historical aspects of the site.



During XIX century

During the XX century

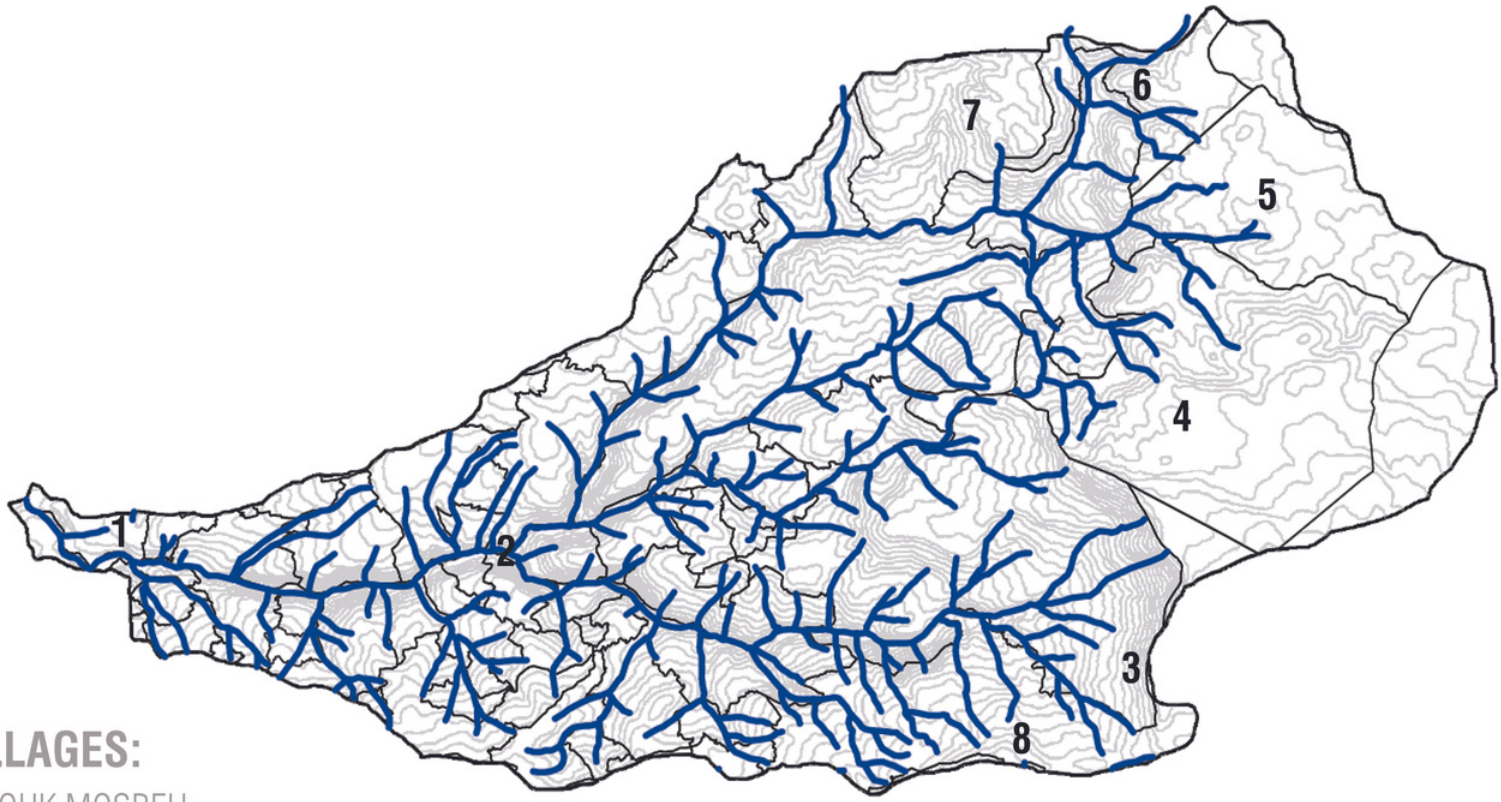
During the XXI century

Landscape transformation through time

02

WATERSHED ANALYSIS

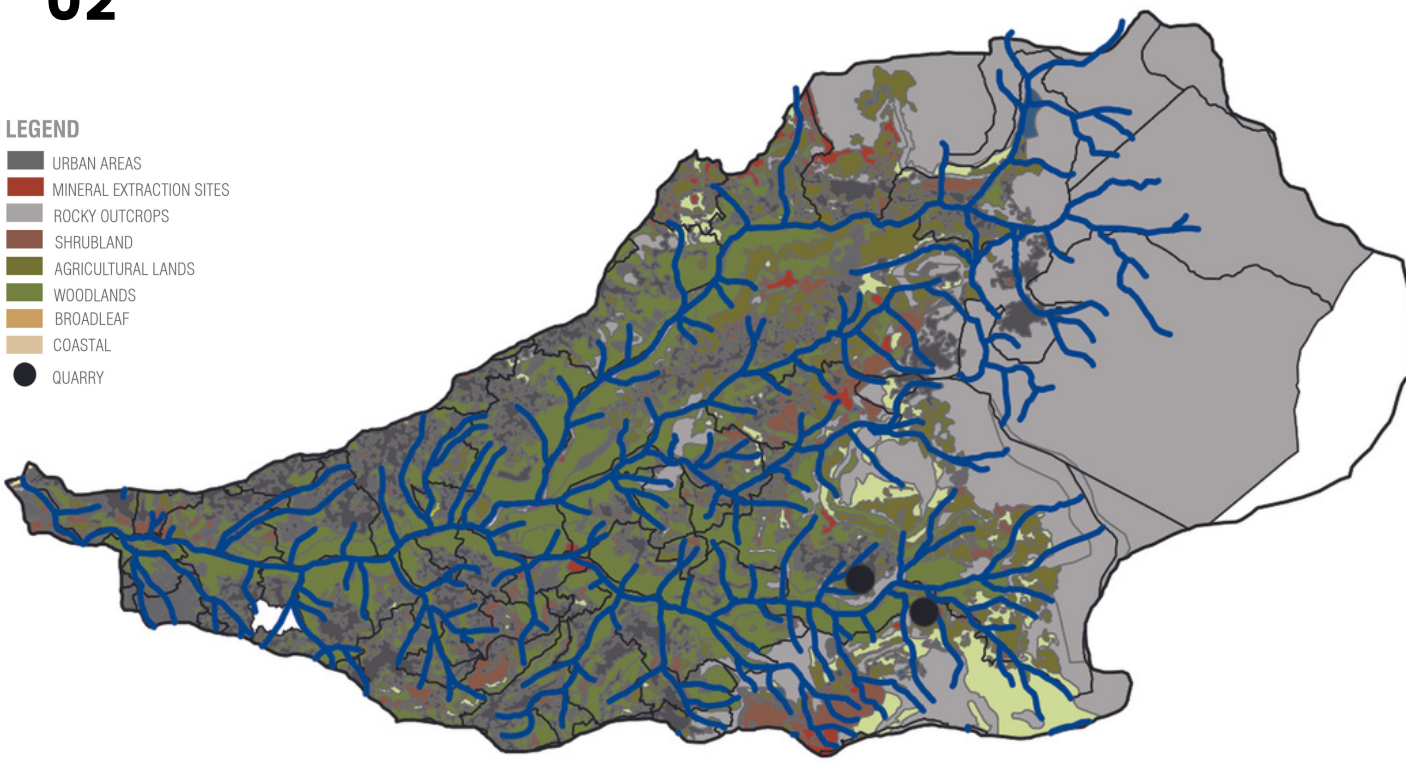
Nahr El Kaleb river rus for 31km from a spring in Jeita to the Meditteranean sea.
However, it starts from Faraya, Banskinta and Litige,
The topography is quite steep and the river edge is predominantly woodland

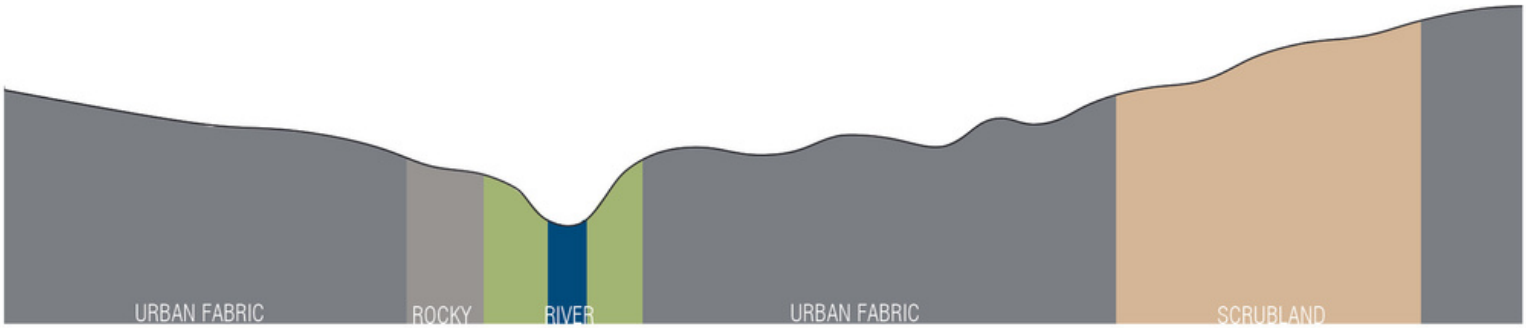


VILLAGES:

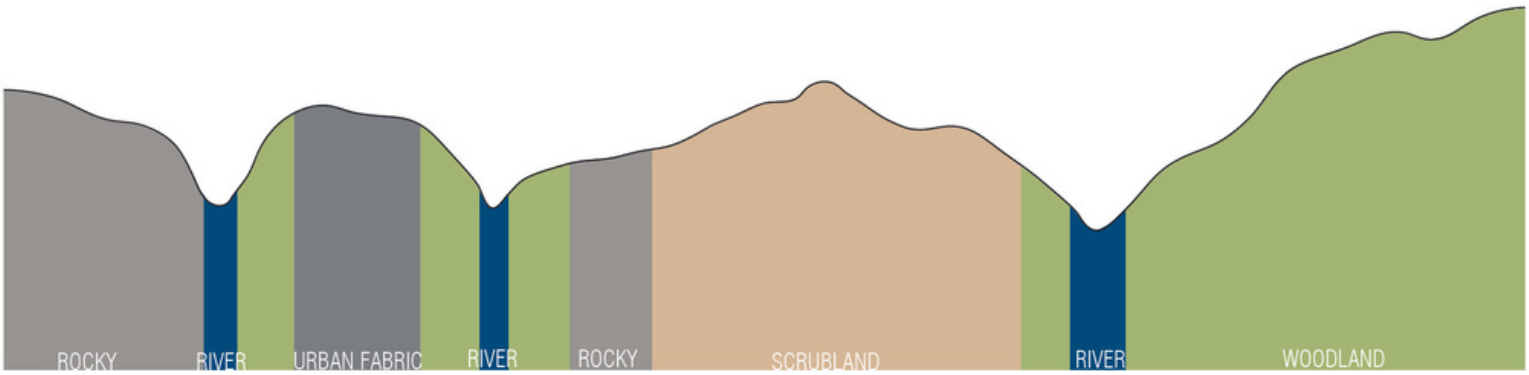
1- ZOUK MOSBEH
2- DARAYA
3- BASKINTA
4- KFARDEBIAN
5- LITIGE
6- FARAYA
7- HRAJEL

02

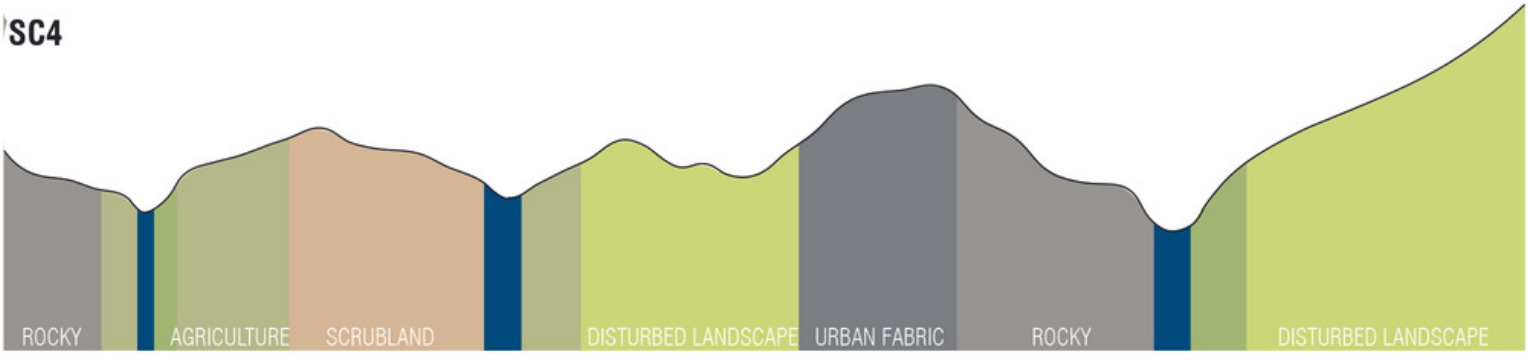

LEGEND
URBAN AREAS
MINERAL EXTRACTION SITES
ROCKY OUTCROPS
SHRUBLAND
AGRICULTURAL LANDS
WOODLANDS
BROADLEAF
COASTAL
QUARRY


URBAN FABRIC
ROCKY
RIVER
URBAN FABRIC
SCRUBLAND

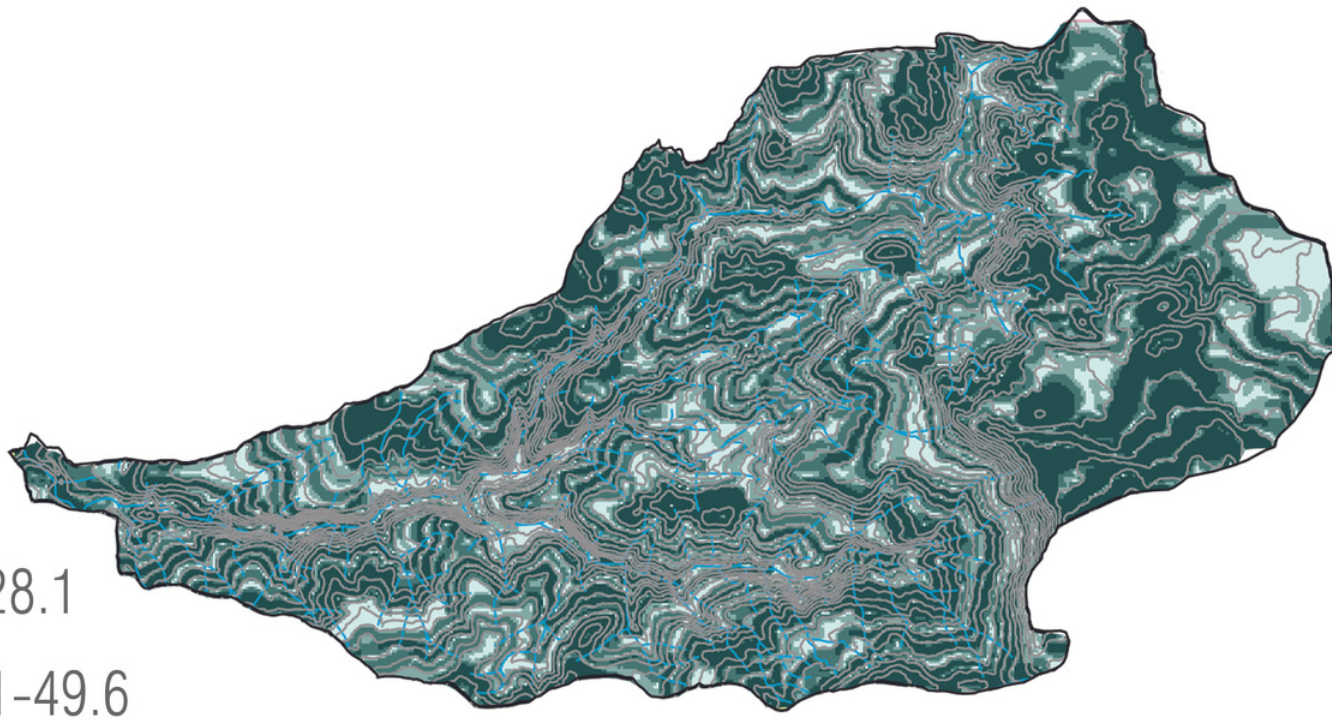
SC3


ROCKY
RIVER
URBAN FABRIC
RIVER
ROCKY
SCRUBLAND
RIVER
WOODLAND

SC4


ROCKY
AGRICULTURE
SCRUBLAND
DISTURBED LANDSCAPE
URBAN FABRIC
ROCKY
DISTURBED LANDSCAPE

02



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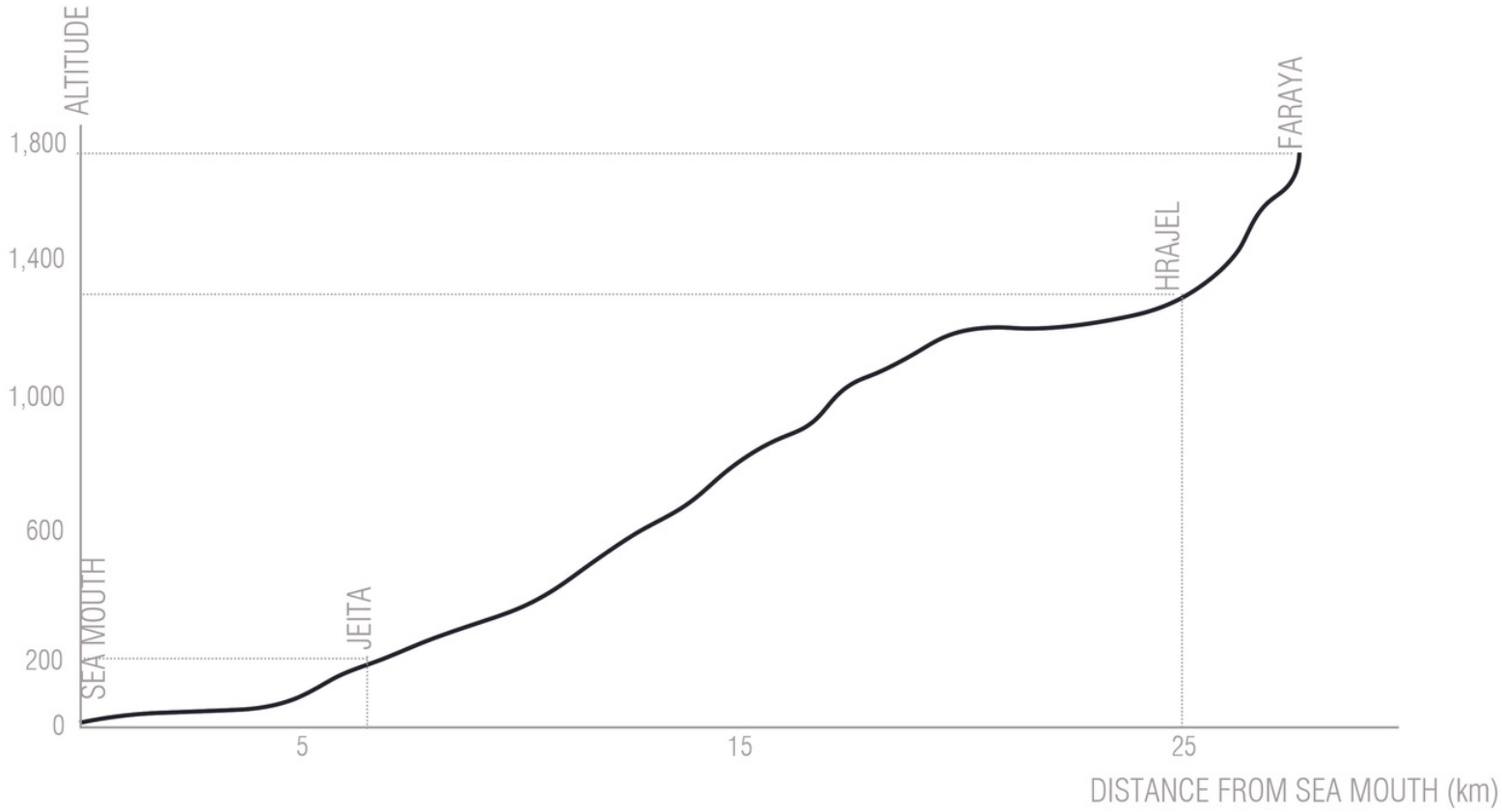
28.1-49.6

49.6-70.1

70.1-88.5



03

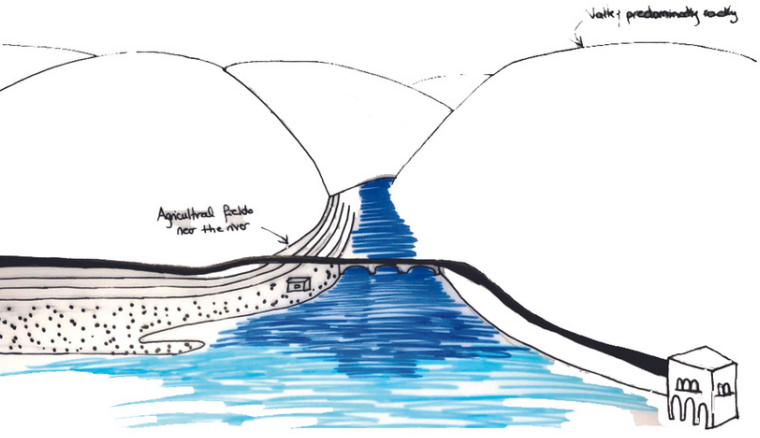
LANDSCAPE CHANGES

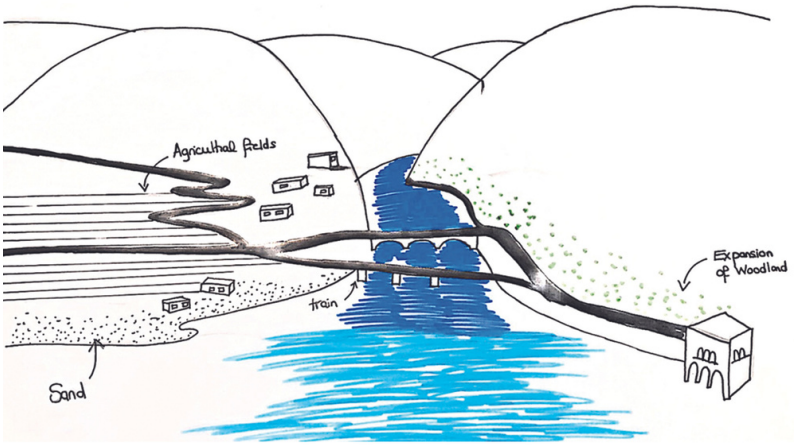
As pictured in the below sketches, the landscape has experienced a lot of changes over time which forged the disconnection between the land, water and heritage and changed the landscape perception completely.

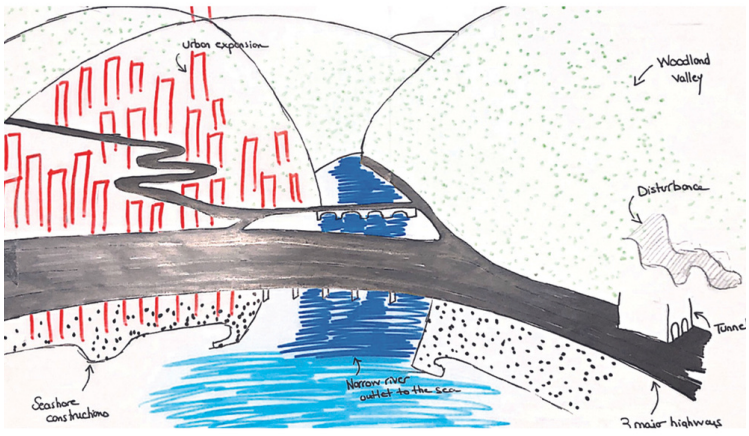
First, the land experienced a change in the **land cover**. Indeed, in the 1900, the valley was predominantly rocky and the agricultural fields were close to the river. With time, the valley became a woodland rich in Quercus species and the agricultural fields got replaced with urban settlements.

As for the **infrastructure and mobility**, in the early 1900 there was only one road with a bridge that lead to Jbeil, then a train got constructed in 1960 and later a tunnel was created under the valley with 4 different highways and ports. This change made the area as a high speed transit to get to Jbeil or Beirut and disconnected the people from their landscape to the point where they can't even see anymore the river.

All these disturbances affected the river edge as it got more and more narrower, especially when ports and resorts got constructed on the shore.







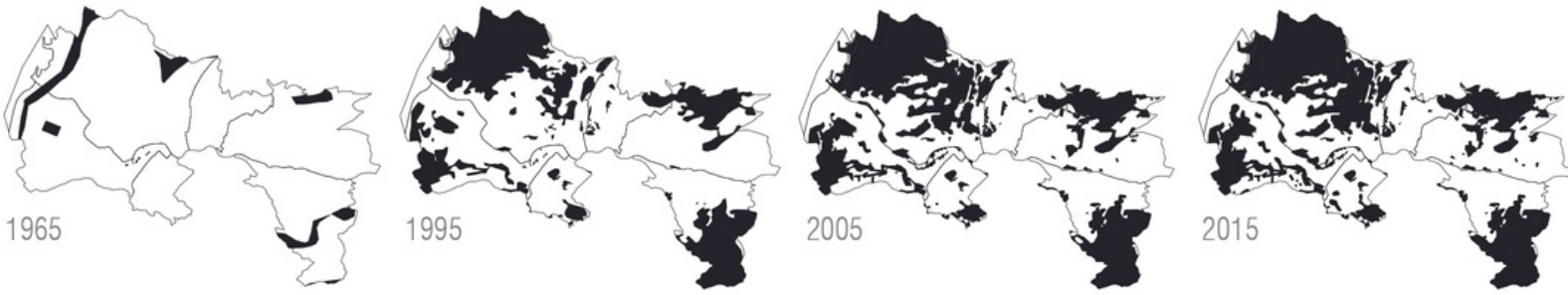
04

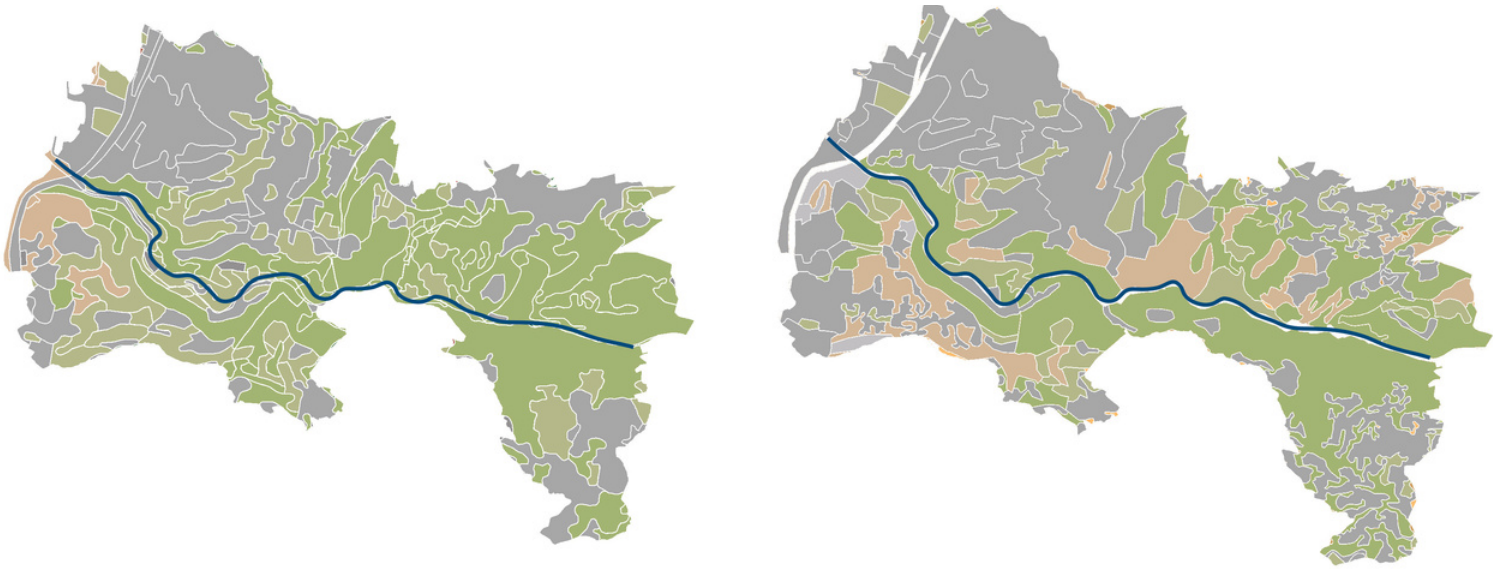
LANDSCAPE ISSUES

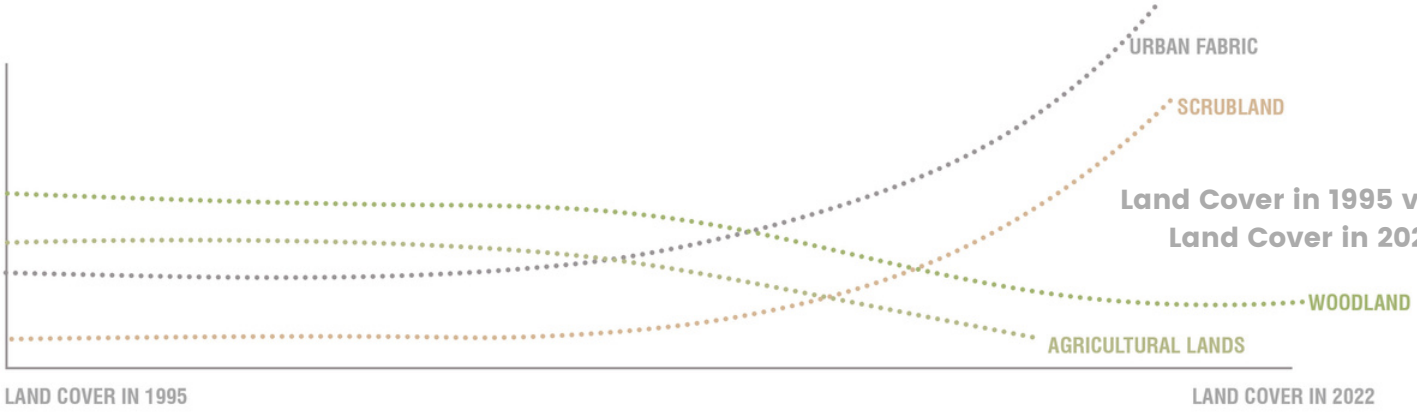
ISSUES IN THE LAND

First, the landscape is experiencing a rapid urban sprawl since 1900 due to the construction of highways, resorts and the booming of the industries notably in Zouk Mosbeh. This expansion resulted in the loss of tremendous areas of lands, notably woodland and agricultural fields.

Therefore, the woodland that once was a green belt that used to protect the river is now endangered due to anthropogenic disturbances. Whereas, the decrease of agricultural fields, notably near the river, showcases a shift in the practice, therefore disconnecting the people from the land.



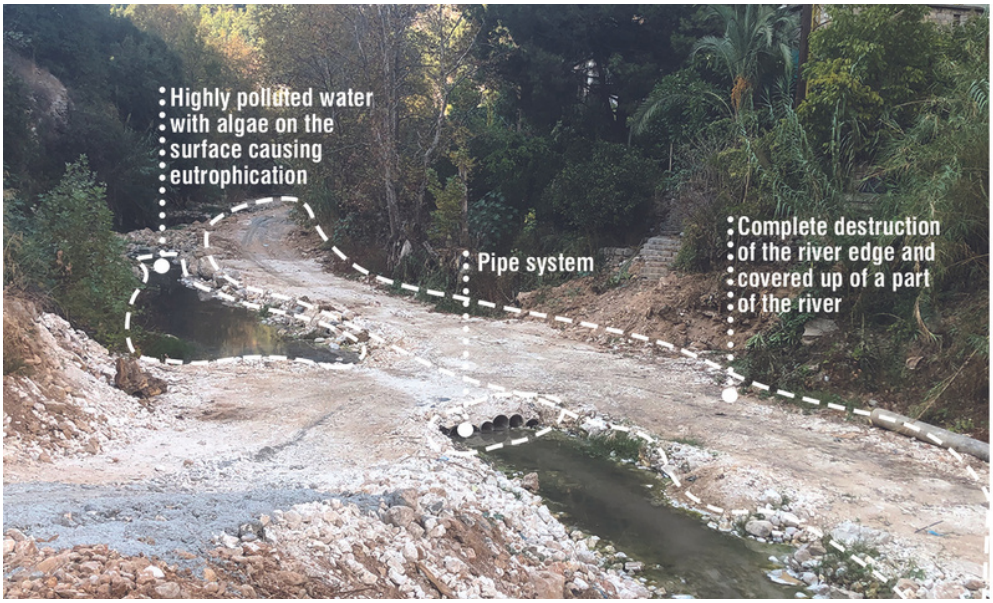




04

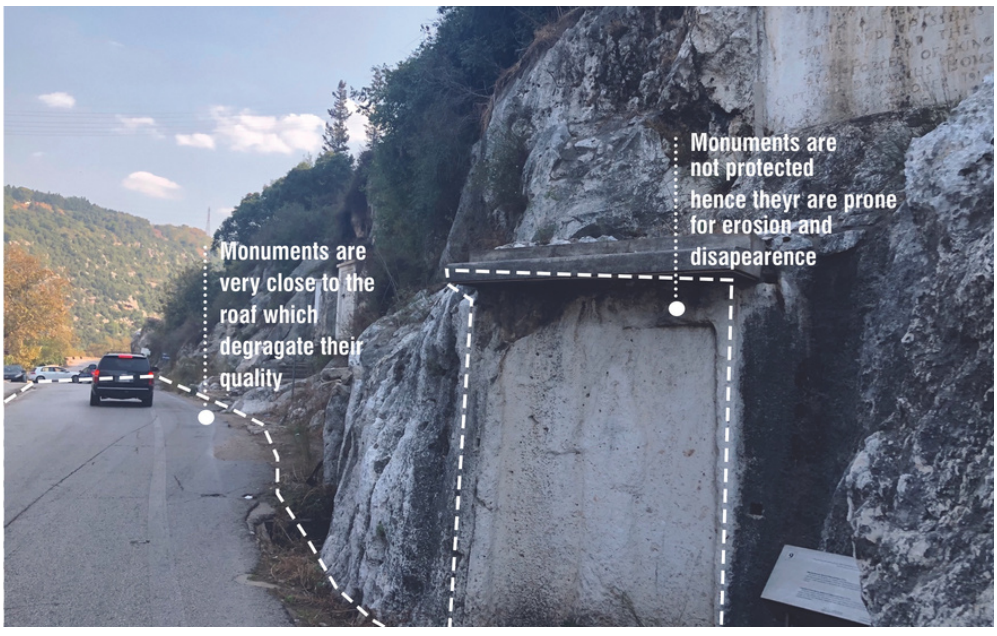
ISSUES IN THE WATER

The river in Nahr El Kaleb is extremely polluted with chemical and solid waste, creating unpleasant smells and prohibiting the creation of natural ecosystems and thrive of biodiversity. Furthermore, the river lacks in numerous area of a buffer, therefore people can access the river bed easily and there is nothing to protect the surroundings from inundations. Finally, in numerous areas, notably in the middle stream, the river is very dry and because of the threat of climate change, there is a possibility that the river becomes frequently drier in the future due to the decrease of rainfall and water discharge.



ISSUES IN THE HERITAGE

The monuments in Nahr El Kaleb are found in the woodland hills, however they are not properly valorized and are prone to disappearance as they are not properly managed, hence the rain and wind really affects their quality. In addition, numerous monuments are located on the road level, making them unotocable for so many people.



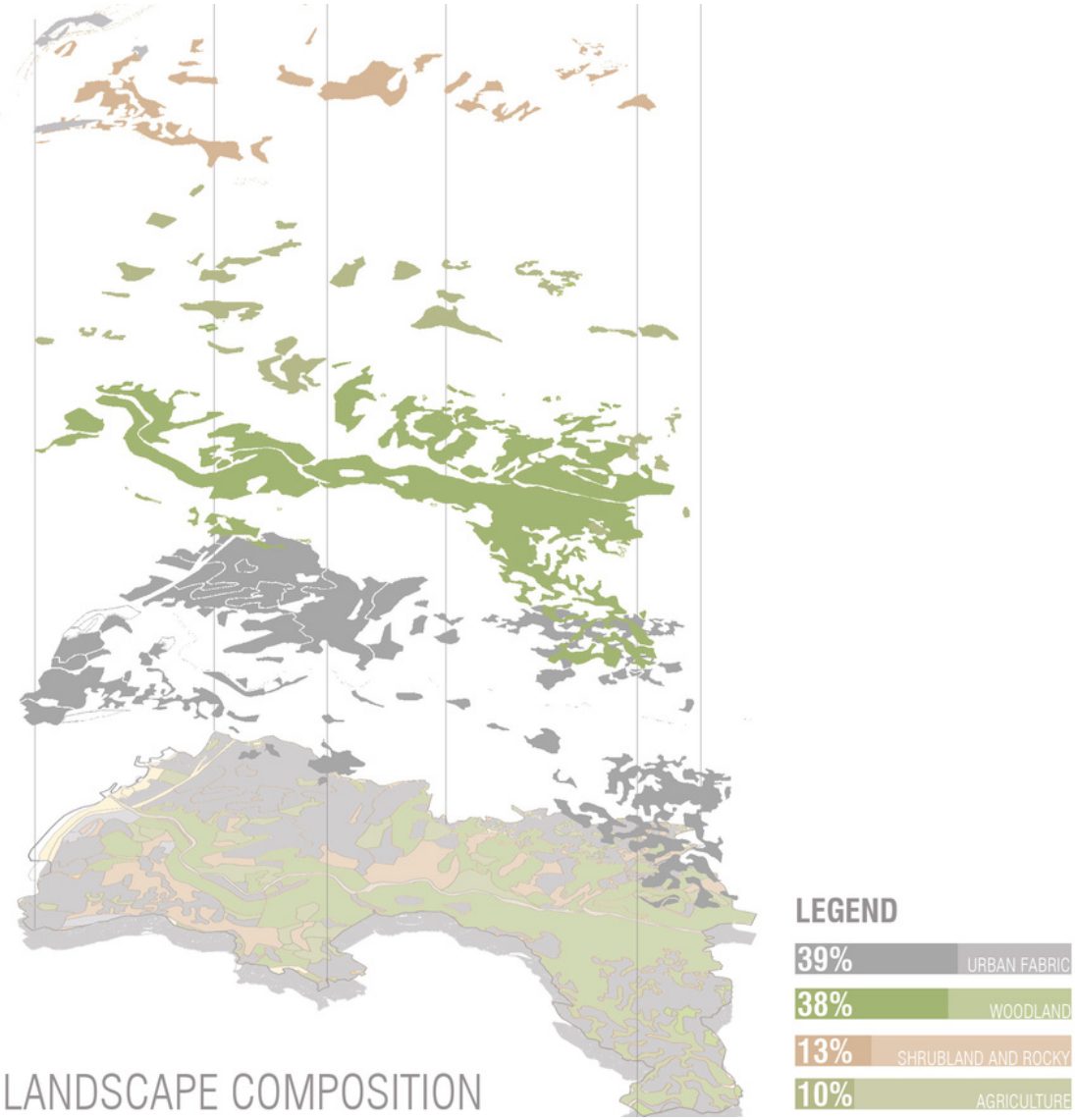
05

LANDSCAPE COMPOSITION

The landscape is mainly composed of Urban fabric with 39%, followed by the Woodlands with 38% and 13% of Shrubland and Rocky habitats, with only 10% of agricultural lands.

As for the biodiversity assessment, it is the Woodland habitat that has the richest and highest biodiversity, with more than 80% of evergreen trees and 40% which are edibles, like the *Pinus pinea* and *Ceratonia siliqua*. As for the riparian habitat, it is considered as a habitat with a minimum richness of biodiversity, indeed, it has been registered that 40% of these plants grow in the water.

However, these habitats are under threats, as they are subjected to natural threats (climate change, fires) and human disturbances (pesticides, waste, sewage systems).



AGRICULTURE

BIODIVERSITY EVALUATION

LOW

FLORA


Persea americana


Citrus sp.


Musa


Eriobotrya japonica


Phoenix dactylifera

TYPES OF PLANTS

80% NATIVE SPECIES

DISTURBANCES AND THREATS


Pesticides


Monoculture


Biodiversity loss

RIPARIAN

BIODIVERSITY EVALUATION

MEDIUM

FLORA


Ipomoea palmata


Equisetum palustre


Platanus orientalis


Poa persica


Arundo donax


Eupatorium adenophorum


Pteris vittata

TYPES OF PLANTS

40% GROW IN WATER

DISTURBANCES AND THREATS


Polluted water


Human disturbances


Solid waste


Dry river bed


Absence of riparian edge

WOODLAND

BIODIVERSITY EVALUATION

HIGH

FLORA


Pinus pinea


Acer syriacum


Rhamnus alatenus


Myrtus communis


Asphodelus microcarpus


Colchicum steveni


Quercus sp.


Pinus halepensis


Mosses


Ceratonia siliqua

TYPES OF PLANTS

85% EVERGREEN TREES

40% EDIBLES

DISTURBANCES AND THREATS


Erosion


Wild fires


Logging


Urban expansion

SCRUBLAND

BIODIVERSITY EVALUATION

MEDIUM

FLORA


Narcissus syriacus


Ferula tingitana


Bellis perrennis


Muscari pinardi


Colchicum steveni


Ficus carica

Lygodesmia juncea

Cyclamen persicum

Gentiana alba

TYPES OF PLANTS

100% WILDLIFE FRIENDLY

DISTURBANCES AND THREATS

Habitat fragmentation

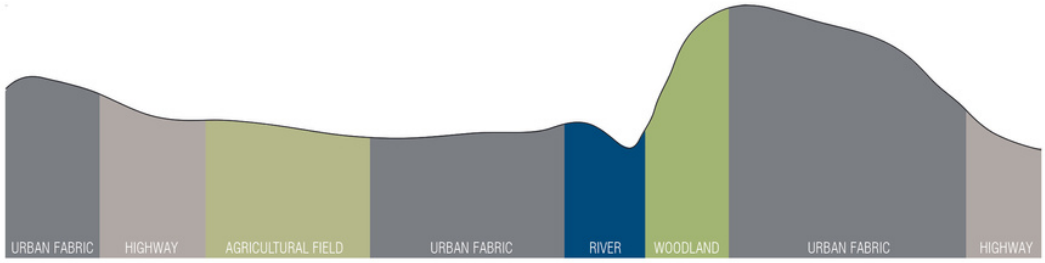
Wildfires

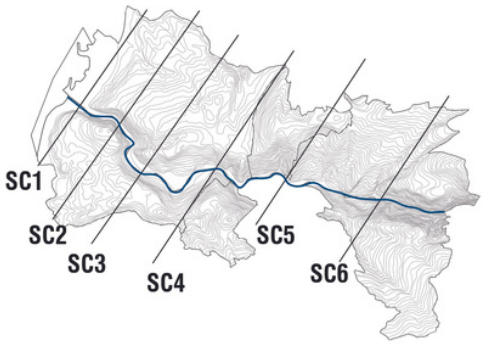
Habitat loss

06

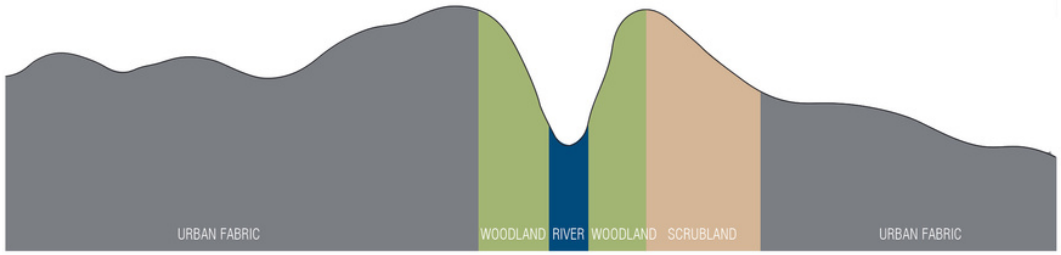
LANDSCAPE TYPOLOGIES

SC1





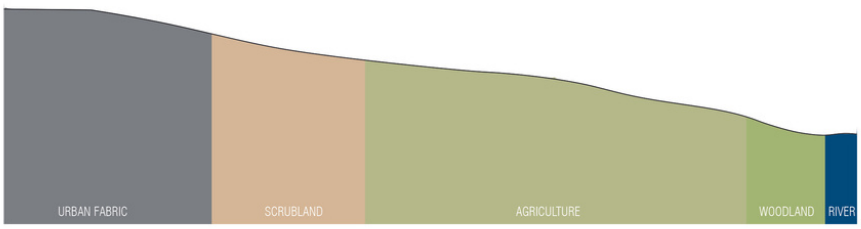
SC2



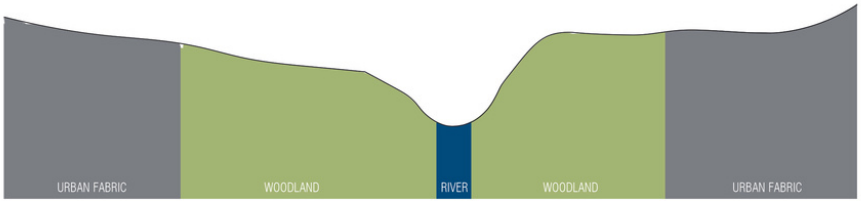
SC3

SC4

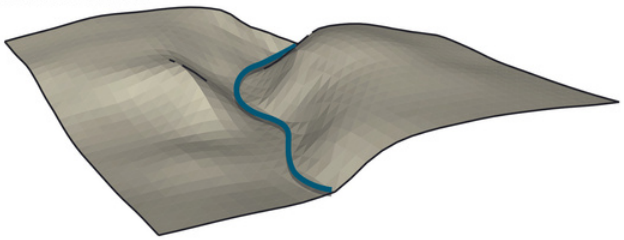
SC5



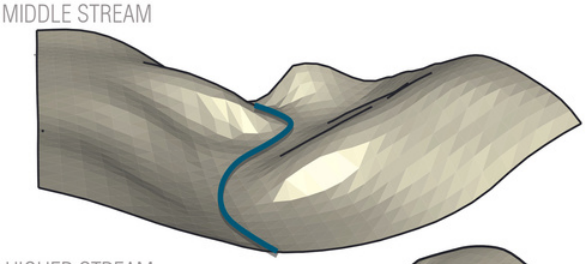
SC6



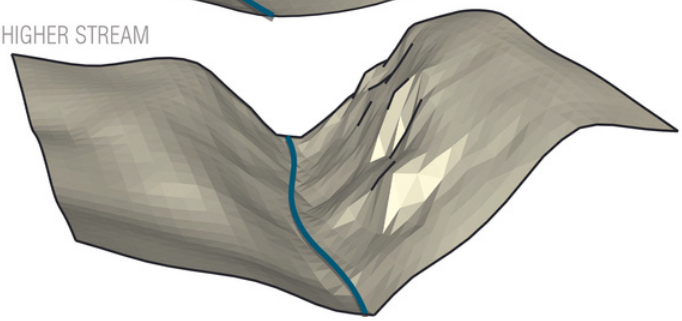
LOWER STREAM

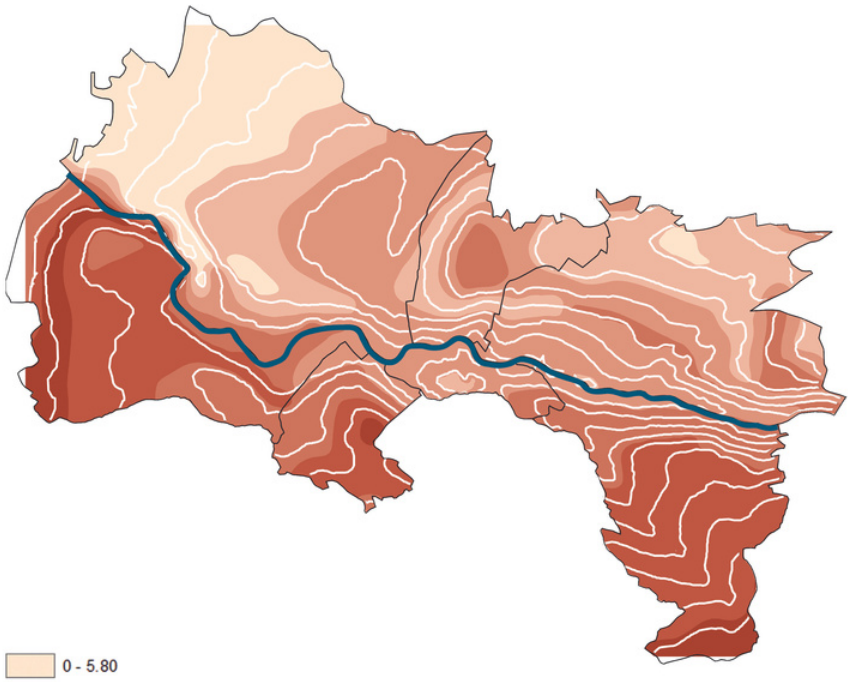


MIDDLE STREAM



HIGHER STREAM





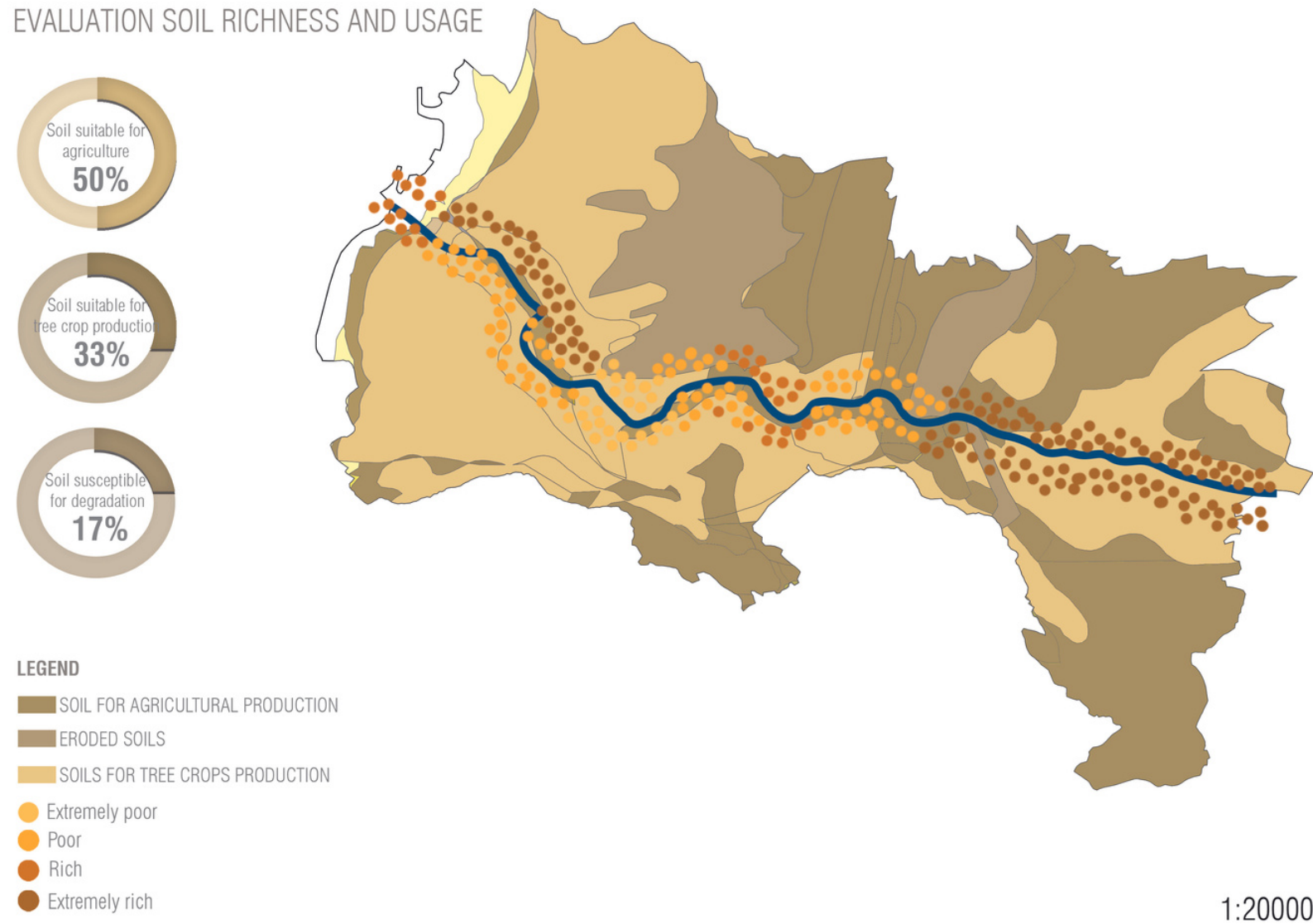
07

RAINFALL AND SOIL ASSESSMENT

Soil quality and usage assessment:

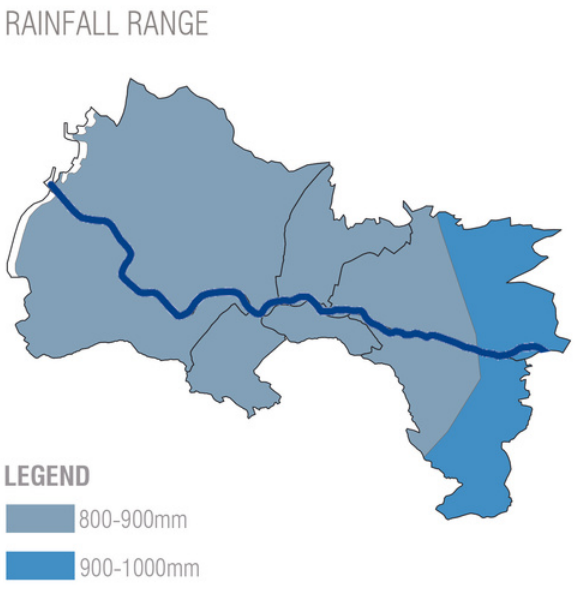
Based on the GIS map provided by the CNRS, the majority of the soil in the edges of the river is rich in organic matter and suitable for agriculture. However, we do have some areas that are under threat due to erosion and soil deterioration, these spaces made up of 17% of the total site area.

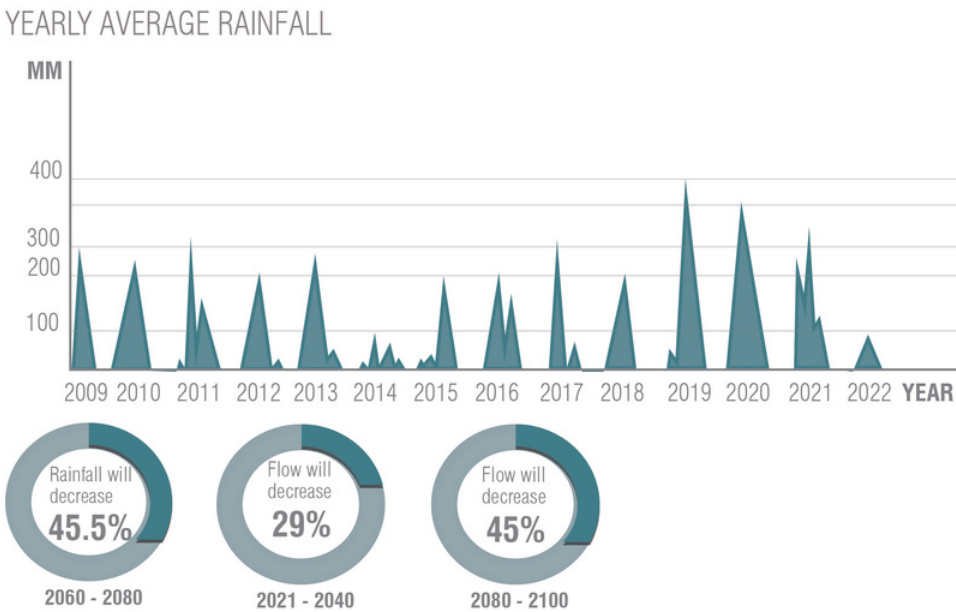
Assessing the soil quality, richness and usage is essential for my design intervention later on so I'll know what are the opportunities and strengths of the site.

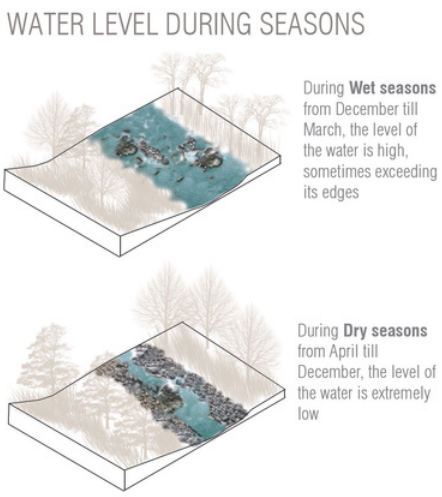


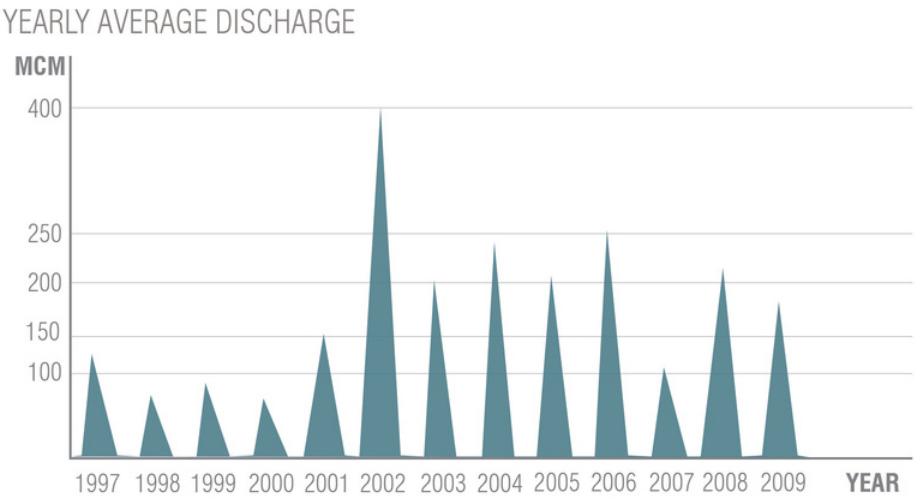
Water and Rainfall range in Nahr El Klab:

Based on the report conducted by the council of development and reconstruction in Lebanon and the federal institute of Geosciences and Natural resources in Berlin, the water level in Nahr El Kaleb is prone to decrease, as the rainfall will decrease by 45.5% by 2080 due to climate change. As for the rainfall range, it is higher in the cada of Jeita. This rainfall will ensure the increase of the water level during the wet seasons, where it reaches sometimes the level of the street provoking inundations.









08

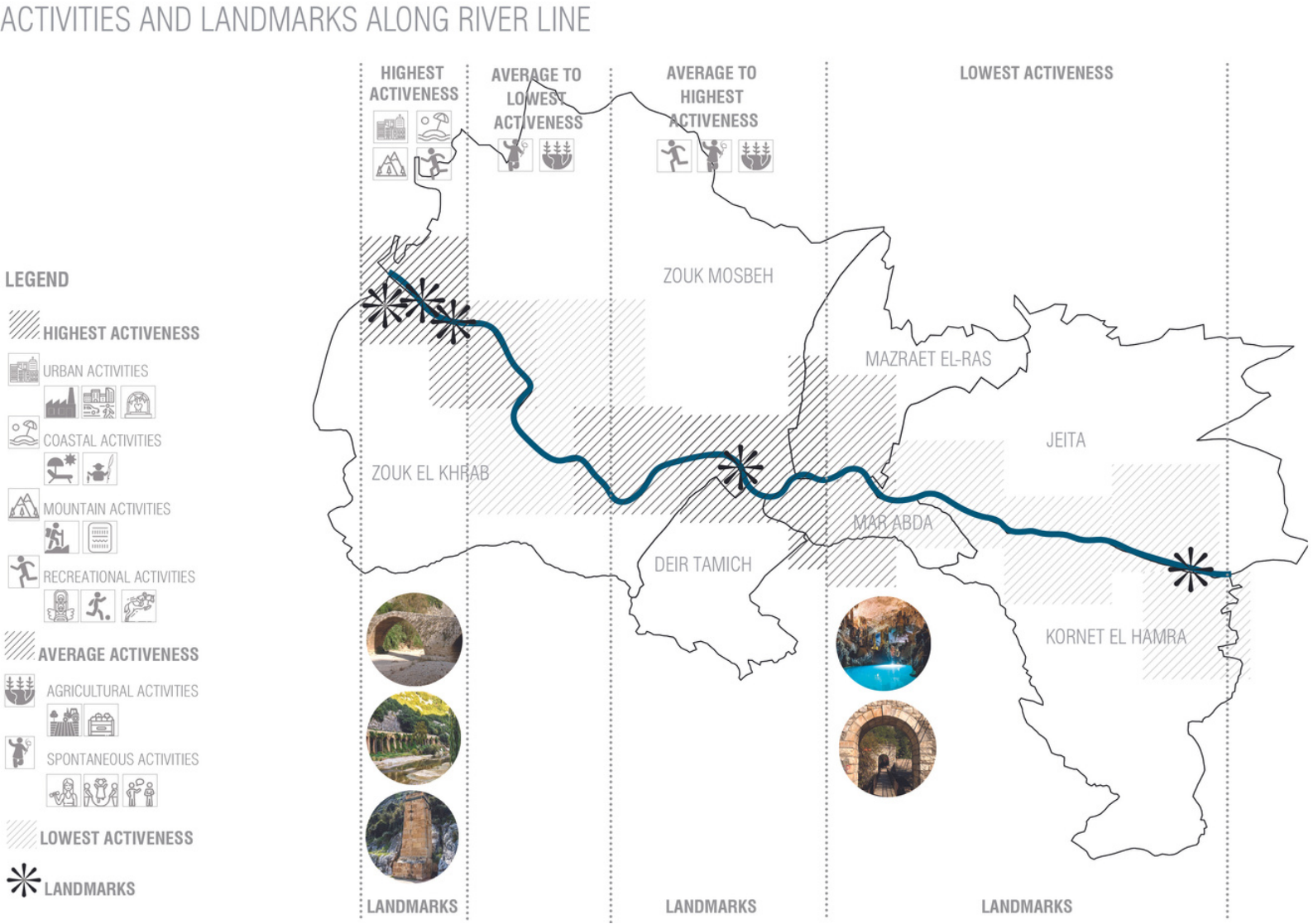
CONCENTRATION OF SOCIAL ACTIVITIES

Based on the land cover and site visits, I was able to conduct this analysis.

The highest activeness is found in the lower point of the river (coast, highway to the ottoman bridge), it is dominants with urban, recreational, coastal and mountainous activities (like fishing, hiking etc...).

On the other hand, the lowest activeness is found notably in the upper part of the site, Mazraet El Ras till Jeita, the lands are predominantly covered with woodlands and agricultural fields, urban activities and houses are inexistent.

As for the landmarks, they are mostly found in the lower to middle part of the site. They include the stelas, ottoman bridges and arcades.



09

ROAD TYPOLOGIES

Primary roads include highways and coastal roads.

Secondary roads are in the inner part of the site, some roads lead directly to the river which makes its accessibility easier. The majority of the secondary roads are very narrowed and poor maintained compared to the primary ones which encourage the massive flow of mobility.

LEGEND

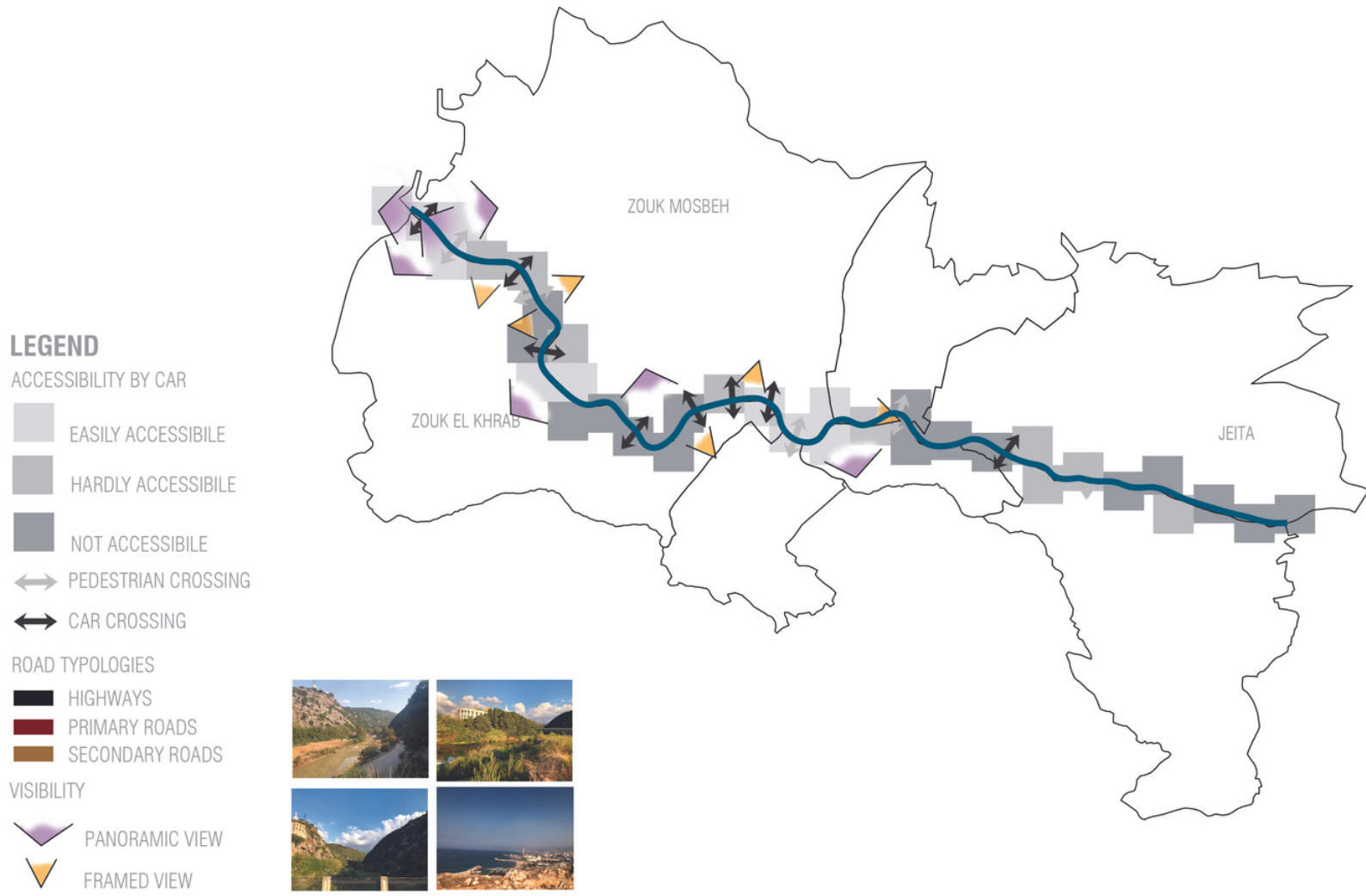
PRIMARY ROADS

SECONDARY ROADS

10

ACCESSIBILITY AND VISIBILITY

The lower part of the river is very accessible by car, however, as we got more towards Jeita, the accessibility becomes very hard and people can not longer see the river.
We also have pedestrian bridges (like the ottoman bridge) and vehicular ones which pose a are not environmentally friendly and change the aspect of the site.
As for the visibility, toward the coast we have interesting panoramic viewsheds of the landscape (mountains, coast, river and infrastructures), in addition, framed views are also found through windows and balconies of the surrounded houses and restaurants.



11

LANDSCAPE CONSTRAINST

The landscape has many constraints such as:

- Seasonal river, hence it stays during the majority of the time and depends on the rainfall rate.
- Disturbed river edge, there is nothing to protect the river and its surroundings from natural or anthropogenic disturbances. Moreover, the absence of edge prohibits the growth of riparian ecosystems.
- Extensive highway and vehicular road crossing on top of the river alters the natural character of the site.
- Fragmented vegetation that are prone to disappearance especially due to the dominance of the urban fabric
- High proximity of agricultural fields and erosion have an effect on water quality.
- Water pollution is more intense in the coastal part, hence this is where we have the deposit of solid waste.

12

LANDSCAPE OPPORTUNITIES

Nevertheless the landscape do have some opportunities like:

- Viewsheds that will enhance the visual connection between land, water and heritage.
- People can easily access the shore, hence we can create a synergy between the river and the sea.
- Numerous landmarks and monuments in the site, it is a potential to attract tourists and locals more frequently.
- Woodland valley could be protected from the urban sprawl so that the river can still be preserved.
- Pedestrian bridges that are crossing the river can become more porous in order to fit more in the natural landscape.

LARGE SCALE STRATEGY

STRATEGY

As mentioned earlier, the main purpose of this project is to reconnect the land, water and the heritage together.

Hence, for this scale, this strategy will be illustrated in three layers:

The Green system, includes the woodland and agricultural fields

The Blue system, includes the river and the coast

The Social system, includes people and heritage

01

GREEN SYSTEM STRATEGY

The green strategy includes:

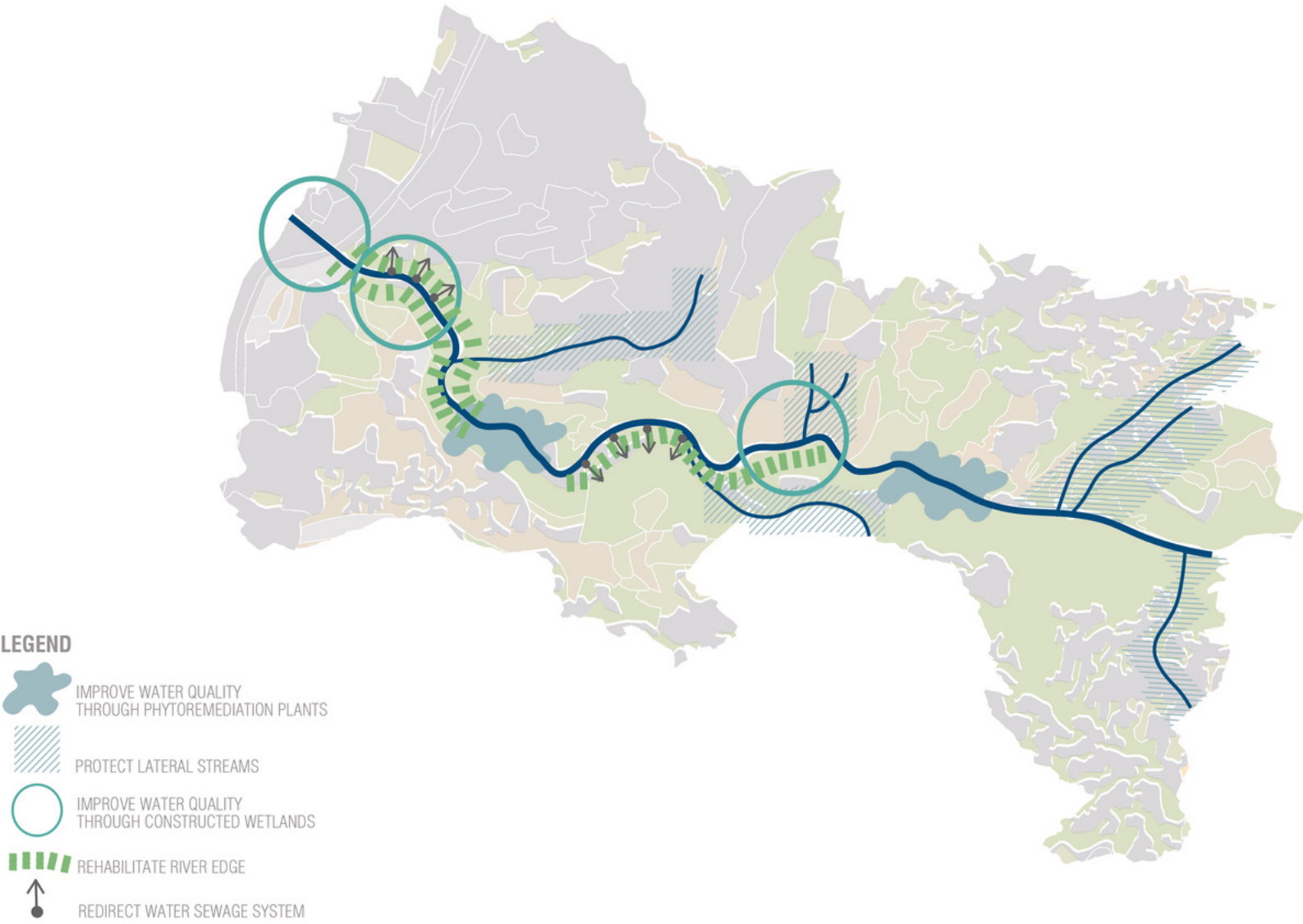
- Use the woodland as a green belt
- Create a prairie strip to link the fragmented patches, this will help create a continuity for the biodiversity movement.
- Instore agroforestry, a strategy that support agricultural production and help improve water quality and air quality, soil health, and wildlife habitat.
- Identify the areas that are prone to erosion and find a way to avoid it by changing the topography.

02

BLUE SYSTEM STRATEGY

The blue strategy includes:

- Lateral water sources have been identified, hence they will be protected through policies and by installing a natural buffer.
- Phytoremediation, a cost-efficient and environmentally technique which plants will be used to reduce the concentrations or toxic effects of contaminants in the river.
- Wetlands that will also improve the water quality, create recreational spaces, foster habitats and ecosystems.
- Rehabilitate the river edge through planting grasses and other riparian plants.
- Redirect the sewage system of nearby urban fabrics so they do not discharge the sewage water in the river.

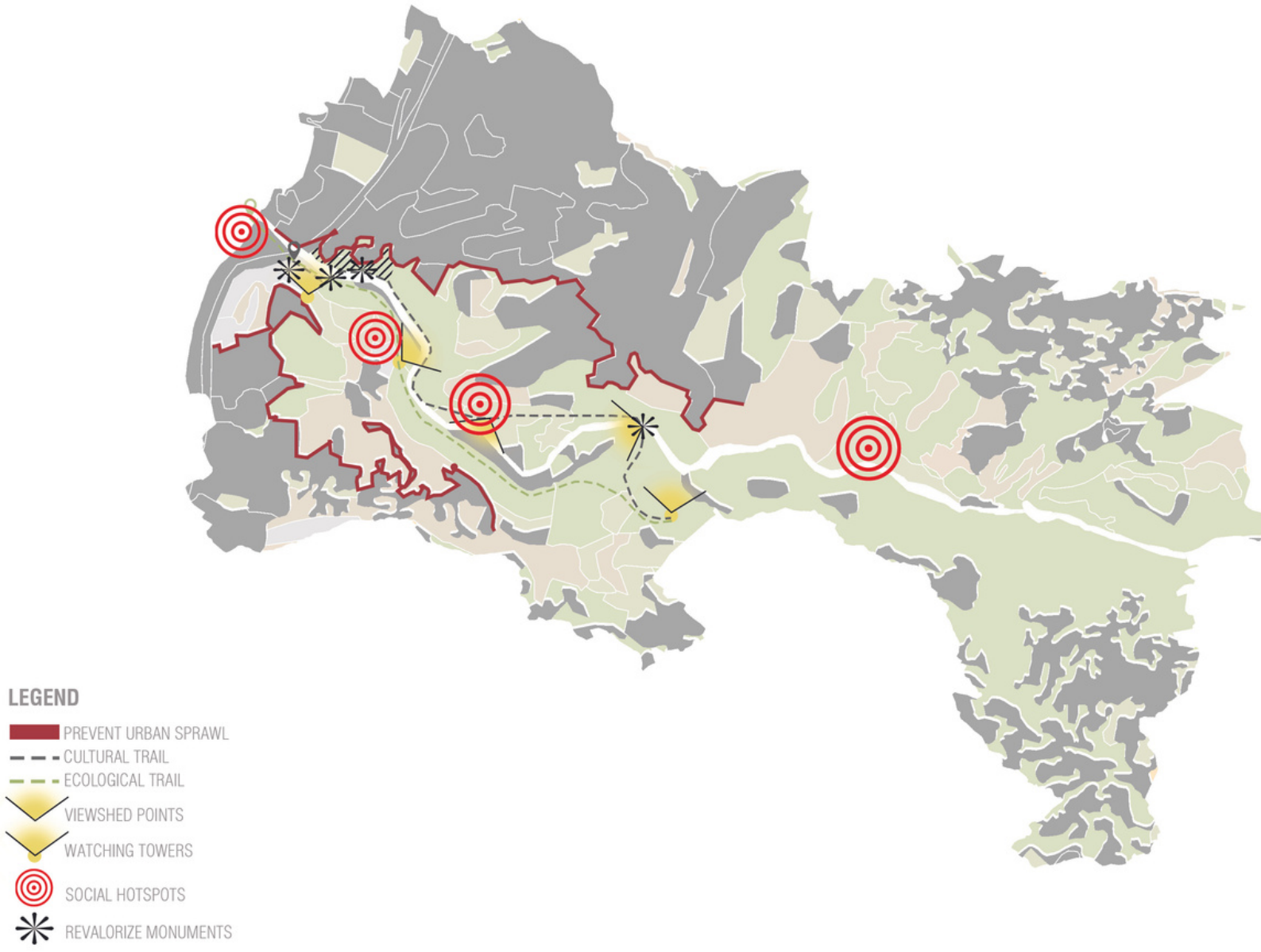


03

SOCIAL SYSTEM STRATEGY

The social strategy includes:

- Creation of social hotspots for people to gather and foster activities related to heritage, land and water.
- Implementation of a cultural and ecological trail that will pass by the landmarks, river and woodland. It will help ensure the physical connection between people and their landscape.
- Improve the viewsheds through watching towers and decks.
- Revalorize the setla hills and monuments.



DESIGN STRATEGY AND LARGE SCALE INTERVENTION

01

LANDSCAPE CHARACTER ASSESSMENT

In order to choose my site of intervention, I have conducted a landscape character assessment analysis. Based on this analysis, it has come o my attention that the lower part of Nahr El Klab (from ottoman bridge to the estuary) has the highest severity and challenges related to water, heritage and land .

Therefore it is their that I will have my design intervention.

TYPOLOGIES	TYPOLOGY PICTURES	CURRENT FEATURES WATER	CURRENT FEATURES HERITAGE	CURRENT FEATURES LAND	SEVERITY RANGE 1 TO 5
TYPO 1		Water pollution Low water level Risk of flooding in winter Very low biodiversity Absence of riparian edge	Stelae hills unoticed Risk of disaperence Prone to vandalism Numerous monuments dating back to BC	Rapid urban sprawl Pressure on valley and woodland Quarry Soil erosion Noise and Visual pollution Highway and complex mobility	5
TYPO 2		Water pollution Extremely low water level Pipe systems in the river Very low biodiversity Absence of riparian edge High chemical pollution from surrounding industries	N/A	Moderate urban sprawl Soil erosion Fragmented woodland patch	3
TYPO 3		Low water pollution High water level Minimal human intervention Hard accessibility to river Riparian edge Rich biodiversity	N/A	Moderate urban sprawl Agriculture expansion Fragmented woodland patch	1
TYPO 4		Very low water pollution High water level Minimal human intervention Microclimate Riparian edge Rich biodiversity	N/A	Large woodland patches Few urban settlements Rich biodiversity and habitats	1

02

MASTER PLAN DESIGN

Nahr El Kalb is renowned for its embedded history, rich riparian biodiversity and majestic valley. However, due to several anthropogenic events, all the different features of the landscape -river, history and valley- changed considerably and got disconnected from one another.

The ambition of this project is to restore and reconnect the landscape of Nahr El Kalb back together.

Through a series of activation processes and restoration strategies, the three different layers of the landscape –river, trail and excavated area- will be physically and visually reconnected.

The design will tackle three different levels of the landscape:

- Level 1: Focuses on the River and its edge
- Level 2: Focuses on the Stelae hill
- Level 3: Focuses on the destroyed area of the Valley, located on top of the tunnel.

The three landscape will be physically reconnected to one another through a spontaneous trail that will start on the river edge, passing by the stelae hills and ending in the excavated area.

The following will address in depth the design intervention that we will have in each level.

- Level 1 RIVER:

Currently, the river is polluted with solid and chemical waste, a proper riparian edge is inexistant, riparian biodiversity is rare and during winter the river experience flooding.

Hence, the idea is to revitalize the river as a living system. Therefore, the restoration strategy capitalizes on ecological and natural processes. The passive meadow on the edge will direct people's movement , sitting areas will be placed under the trees to maximize the microclimate effect. In the water, phytoremediation plants and habitat logs will be placed to recreate the river as a hotspot for biodiversity.

- Level 2 STELAE HILL:

Currently, the monuments engraved in the valley are mismanaged and prone for disappearance. In addition, very few people are aware of that trail.

So, the strategy for this second level aims to revalorize the stelae hill and its archeological monuments. This includes design interventions, during the day and night, such as creating a proper entrance to the trail, providing recreational, educational and cultural facilities, elaborating a well-planned path with resting/contemplation points and the usage of lighting poles along the path to make it visible from far during the night.

- Level 3 VALLEY:

Currently, the site is completely disfigured and lost its ecological and natural features.

Hence, the strategy is to restore and revitalize the site through an ecological approach. Elevated piers, platforms and deck integrated in the existing rocks will be designed to maximize the different experiences.


MASTER PLAN
EXCAVATED AREA
STELAE HILLS TRAIL
RIVER AND ITS EDGE
1:1000
MAISSA EID


PHYTOREMEDIATION


SITTING AREA


WETLAND
RESTORATION

01

ECOLOGICAL RESTORATION

Ecological restoration is the core of my project, in order to reconnect and revitalize the landscape, the site will undergo two types of ecological restoration:

River restoration:

- Nature based solutions, two faces that will last 6years.
- Phase one include the process of using phytoremediation plants that will clean naturally the river from chemical pollutants.
- Phase two is the implementation of nature based solutions, through the constructed wetland and the introduction of habitat logs and perch trees that will foster the fauna and flora.

Woodland restoration:

- Based on natural interference and structures, three faces that will last 10years.
- Phase one includes on adding soil and planting herbaceous plants that will hold on to the soil and avoid erosion or water loss.
- Phase two consists on planting different species, layers and density of plants in the landscape, as well as habitat logs and perch trees that would foster fungi, birds and other fauna.
- Phase three consists on having a multiage woodland with different microclimate.

RIVER RESTORATION PHASING

Natural-based solution

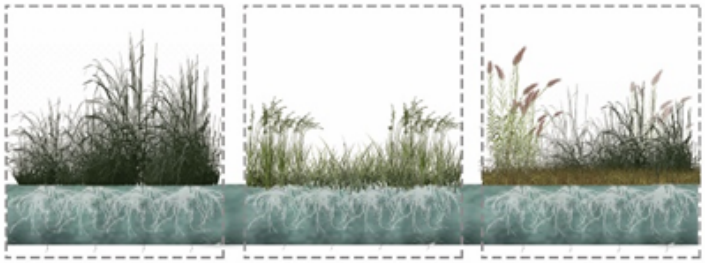
PHASE 1 0 - 2 years

Treat the water

Removal of solid waste

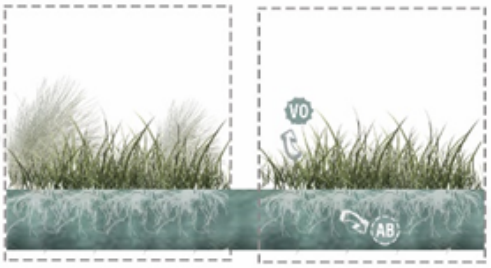
PHASE 2 2 - 6 years

Natural based solution



Constructed wetlands | Different species | Different layers

Clean the water



Phytoremediation plants | Clean water from chemical pollutants

Habitat structure

Perch trees for birds | Habitat log for aquatic fauna

QUARRY RESTORATION PHASING

Based on natural interference and structures

PHASE 1 0 - 5 years

Soil preperation

Add 20cm of soil

PHASE 2 5 - 7 years

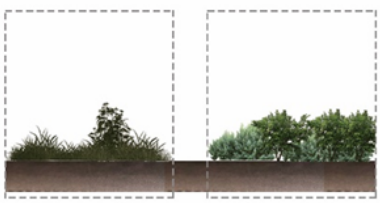
Spread seeds

PHASE 3 10 years

Mature multi-aged

Old trees with young trees

Nurse plants



Herbaceous plants to hold water | Woody plants to attract species

Irregular planting

Different density | Different species | Different layers

Soil nutrient cycle

Scrubland | Woodland | Grassland

Habitat logs

Bird habitats | Introducing insects and fungi

Micro habitats

Rich Soil

DESIGN OF SITE INTERVENTION

01

DESIGN PLAN AND PROGRAM

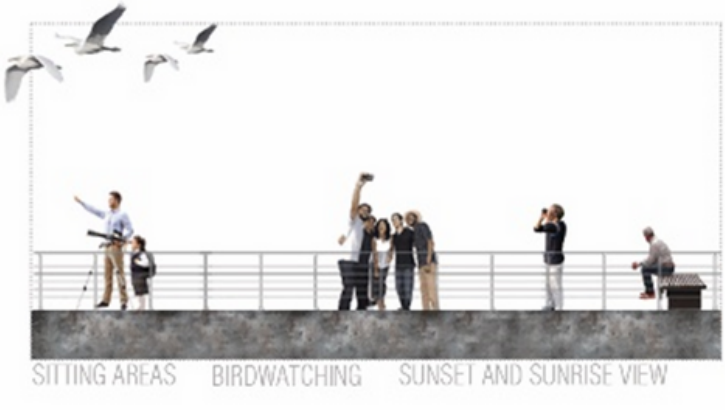
The site is all about creating different experiences for the visitors.

Overlooking platforms, decks and elevated piers will be designed in order to maximize and diversity the types of experiences.

To begin with, on the ground level, a common space will be designed and it will provide sitting spaces, an F&B area and activities such as acrobranching.

Then, elevated piers and overlooking platforms will be provided in order to maximize the experience on the upper level of the site.

The purpose of the overlooking platform is to help people reconnect with the surrounding landscape, therefore, we will have one opened platform and another platform that will be enclosed by the canopies of the trees and it will help the users reconnect visually with the valley and its fauna.



DESIGN PLAN

LEGEND

1. RESTING AREA
2. MULTIFUNCTIONAL BENCH
3. PINE STAND AND F&B AREA
4. RAMP
5. PIERS
6. OVERLOOKING PLATFORM
7. RESTING POINT
8. CONTEMPLATION DECK

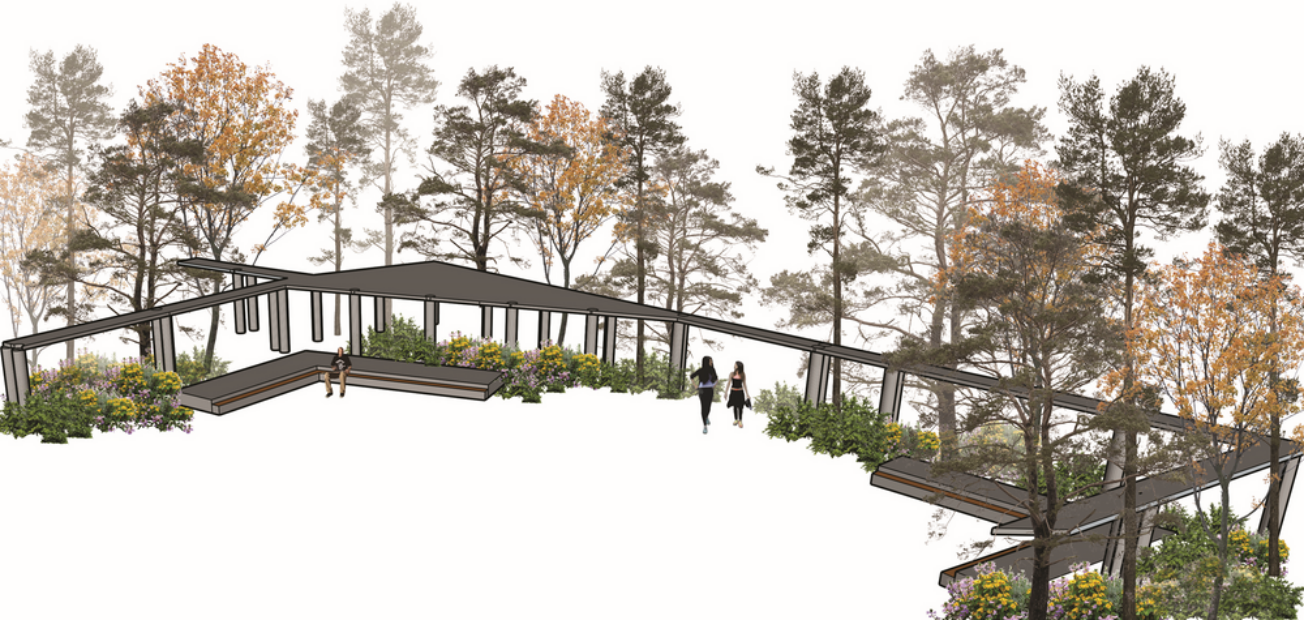
ENTRANCES TO THE SITE

CHANGE OF LEVEL

Stele of King Assarhaddon

Assyrian stele

Stele of Ramses II



CROSS SECTION

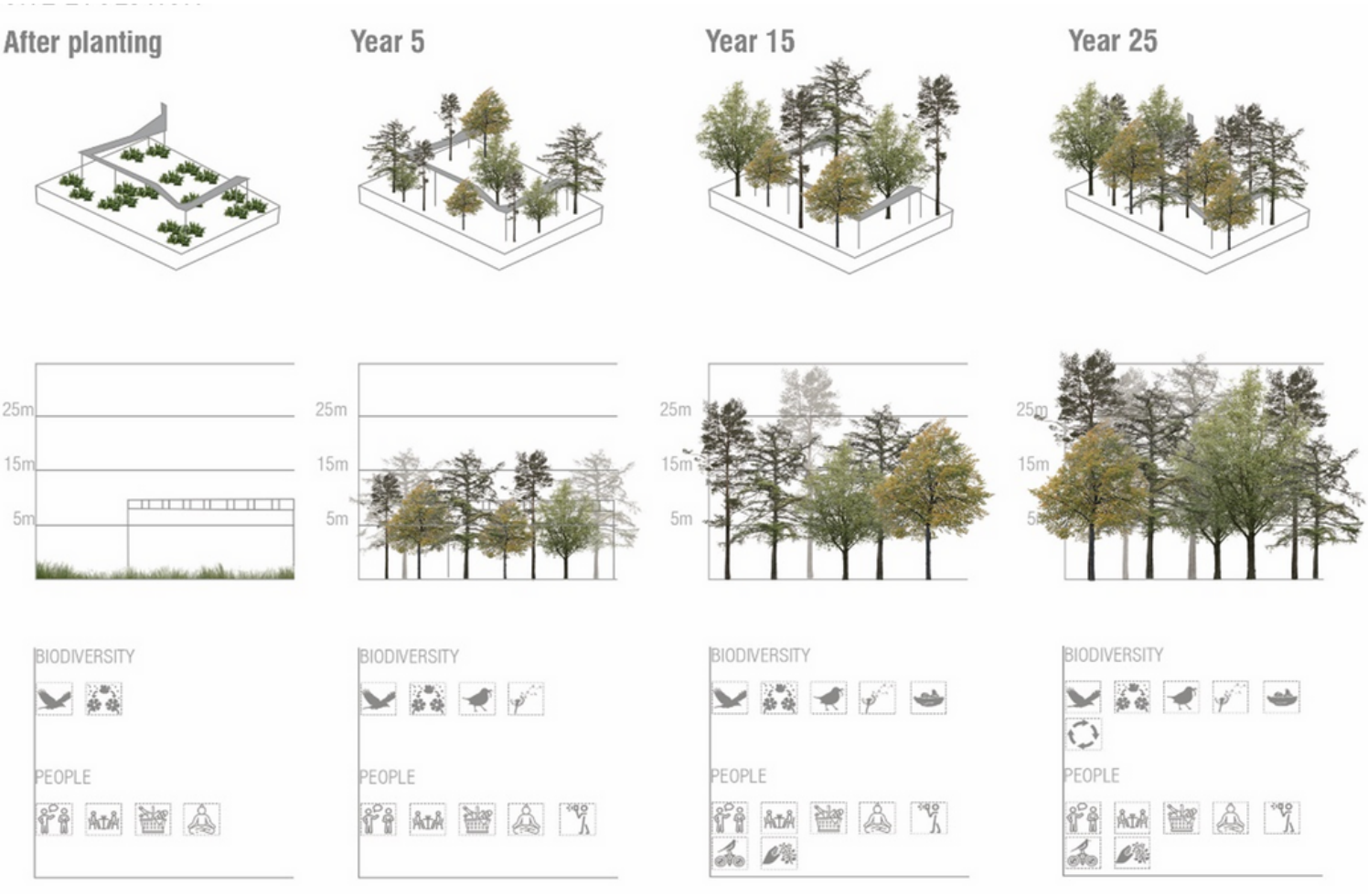
02

SITE THROUGH THE YEARS

As illustrated in the below diagram, the design will grow slowly with nature, so will the activities of the people and the fauna.

For instance, after conducting the woodland restoration, minimal activities from the biodiversity will be experienced. However, five years later, the fauna will start to settle on site, pollinate, eat and even nest.

As for human activities, outdoor sports and meditation will be conducted in the first two years, 5 years later, activities such as bird watching, picnicking and fruit picking will be included.

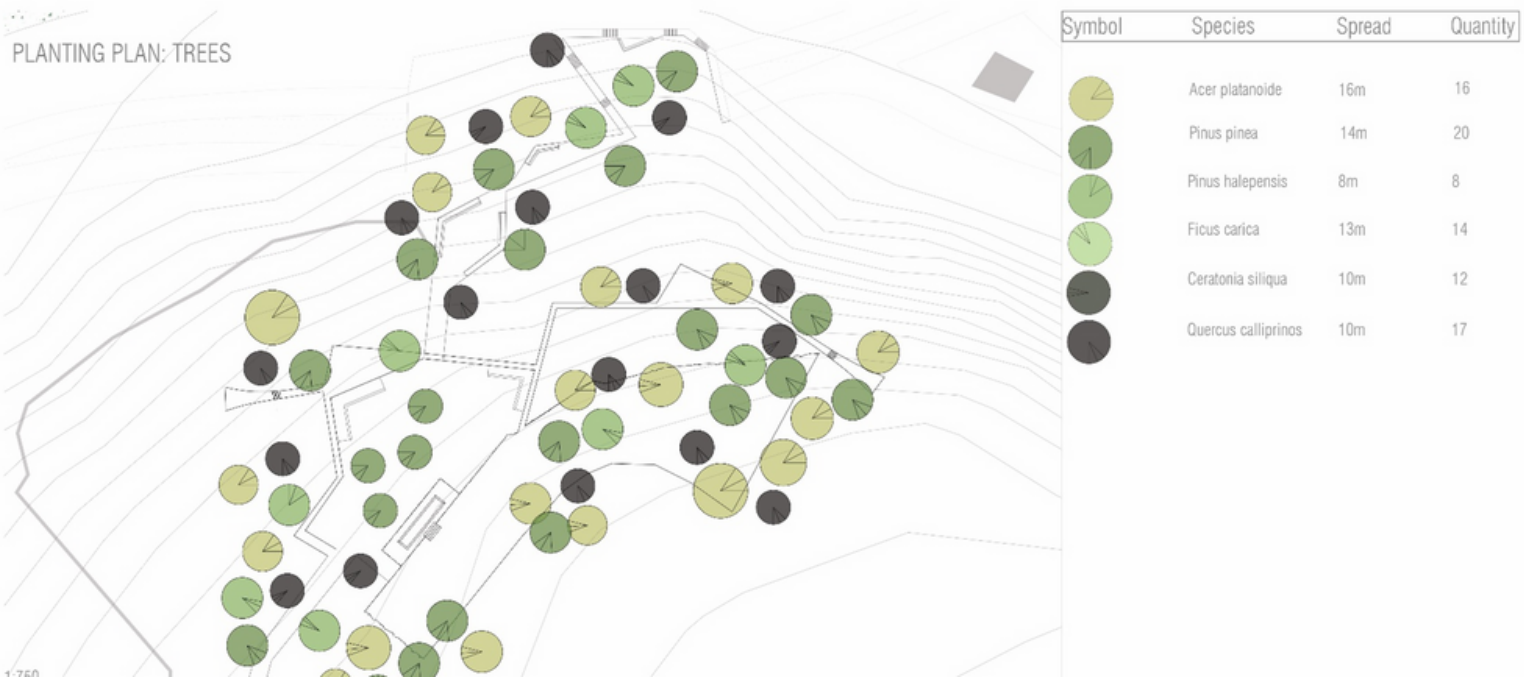


03

PLANTING STRATEGY

The planting strategy focuses on using a variety of native plants already found on site that would foster the existing biodiversity.

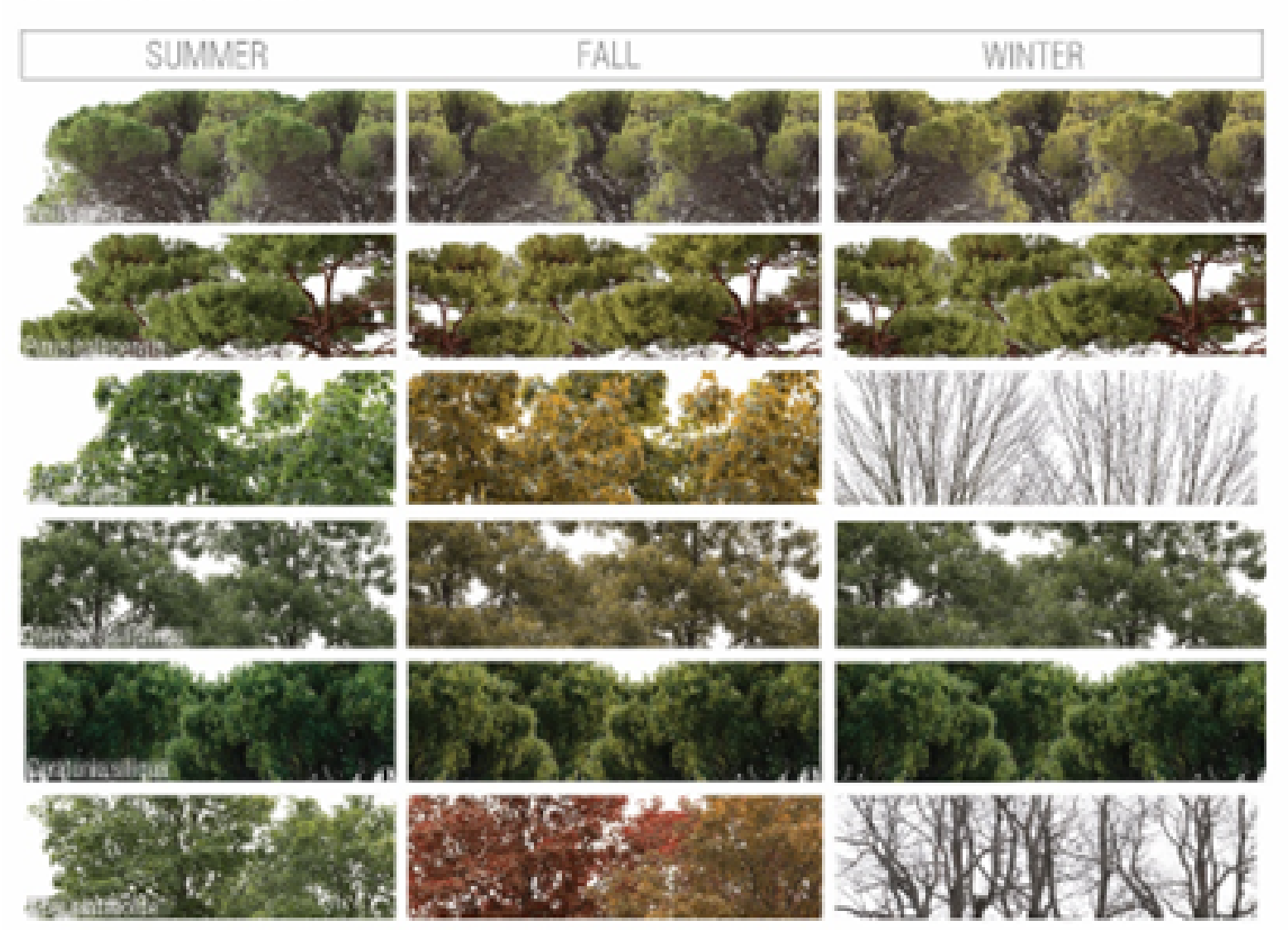
Hence, the planting design capitalizes on using different layers, species, diversity and density of shrubs, grasses, evergreen and deciduous trees.



05

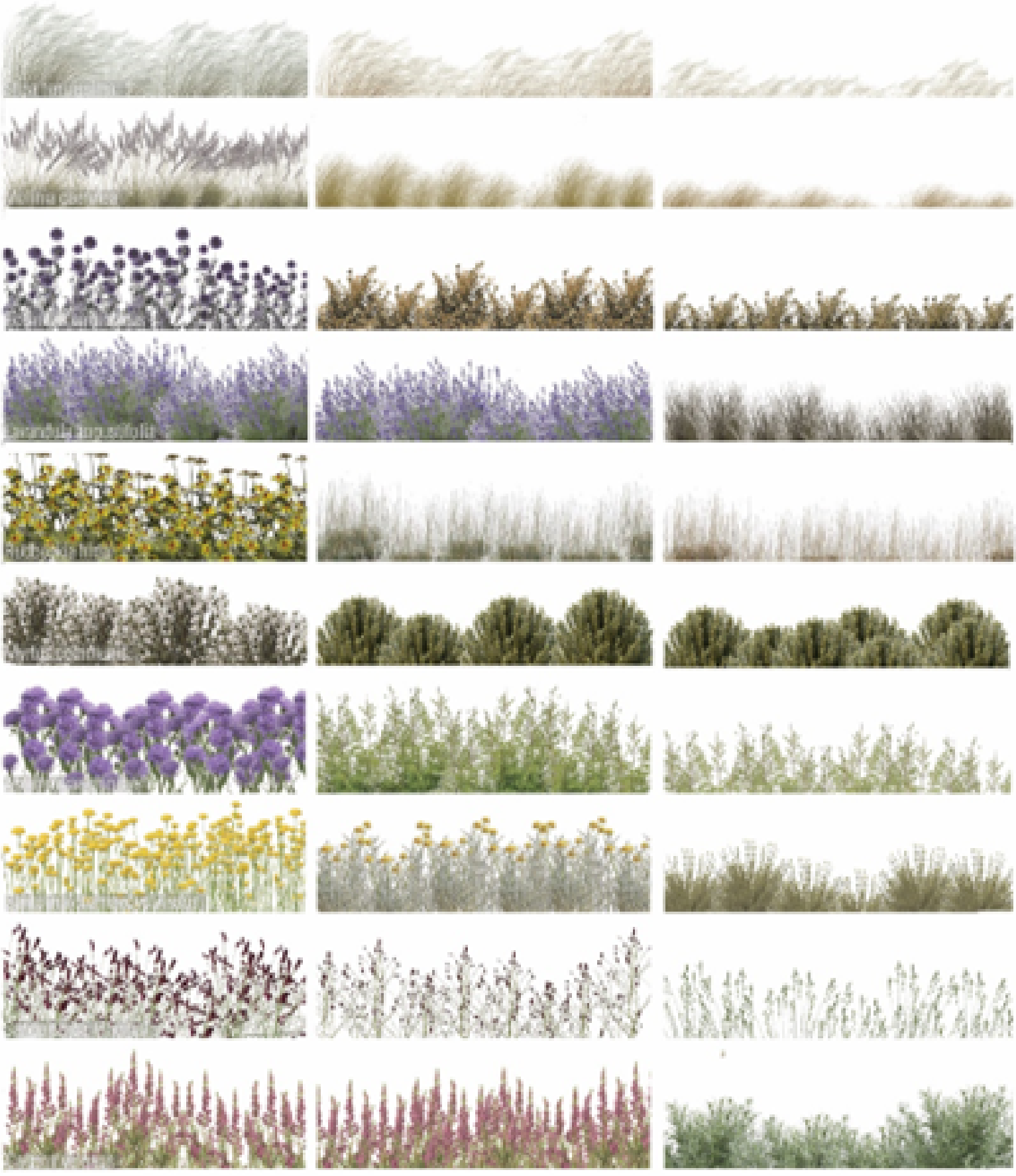
SEASONALITY

Following Piet Oudolf planting design strategy, the aim is to use plants that would flower in different seasons, as well as having different colors, textures and leaf persistence. By adapting this strategy, the landscape will look alive in all three seasons as pictured in the following renders.



SHRUBS AND GRASSES SEASONALITY

SUMMER	FALL	WINTER




Pine tree
Blackbird
Stipa
Butterflies
Aster
Echinops
Ladyb
Earthworms
Millipede
Fibrous root system

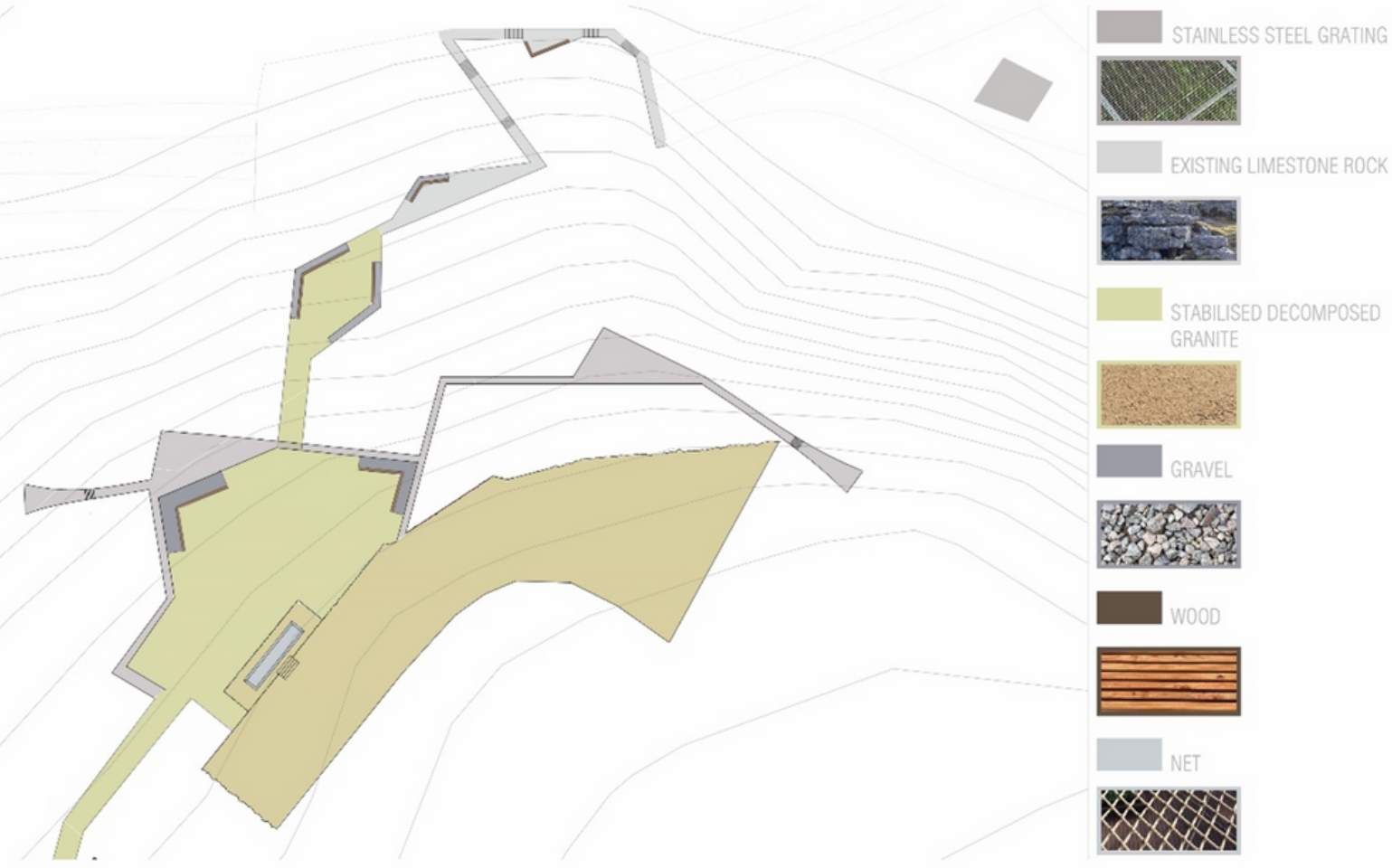

Oak tree
Raptor
Pennisetum
Dragonfly
Santolina
Calluna
Ants
Beetles


Robin
European greenfinch
Myrtus
Turtle
Sanguisorba
Hedgehog
Snake
Taproot system

06

HARDSCAPE

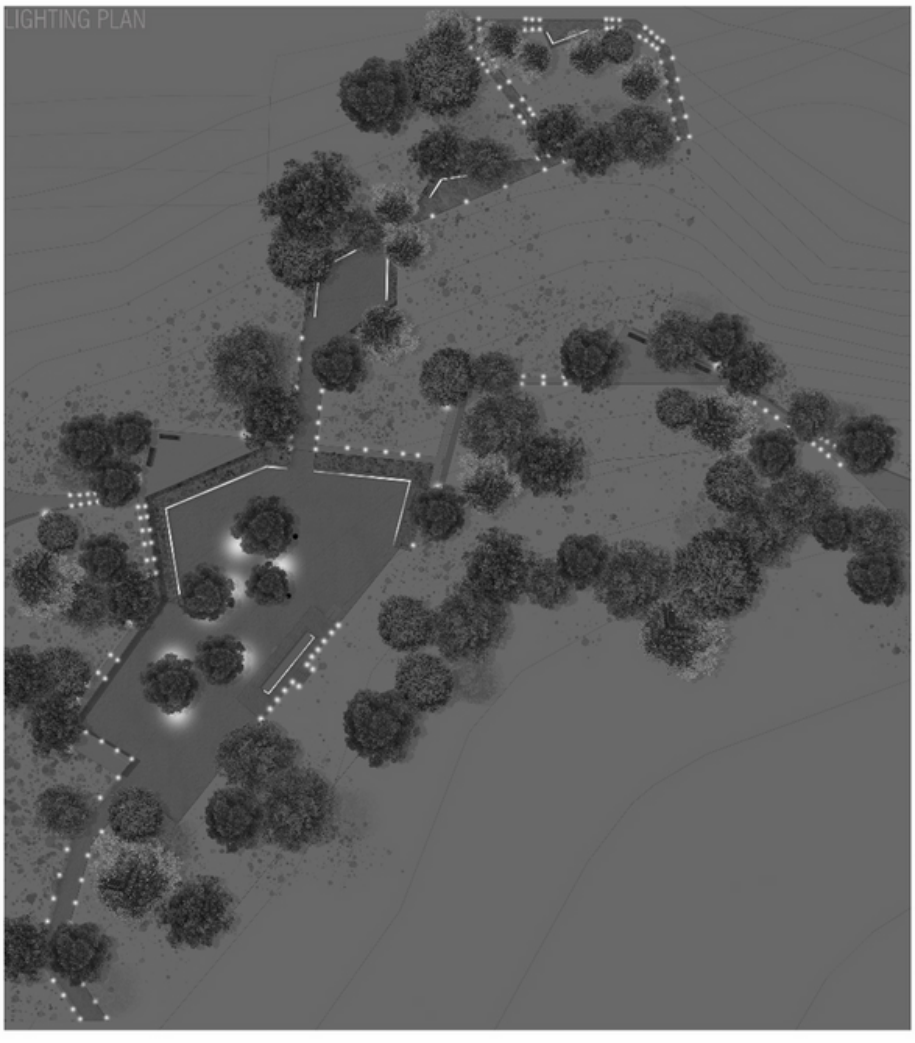
All materials selected are sustainable and affordable.



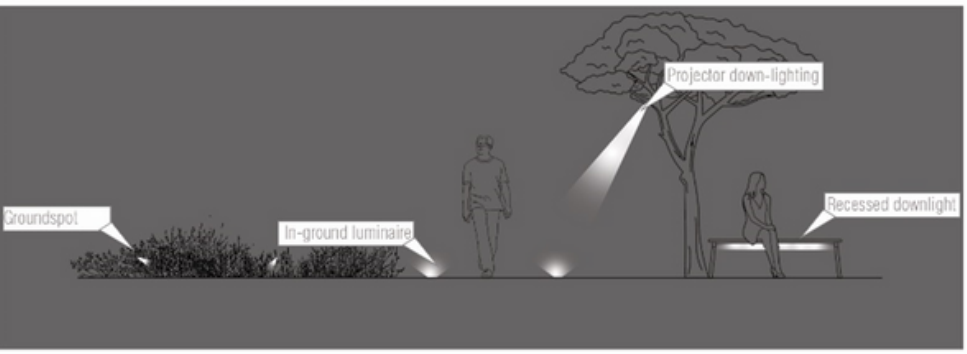
06

LIGHTING STRATEGY

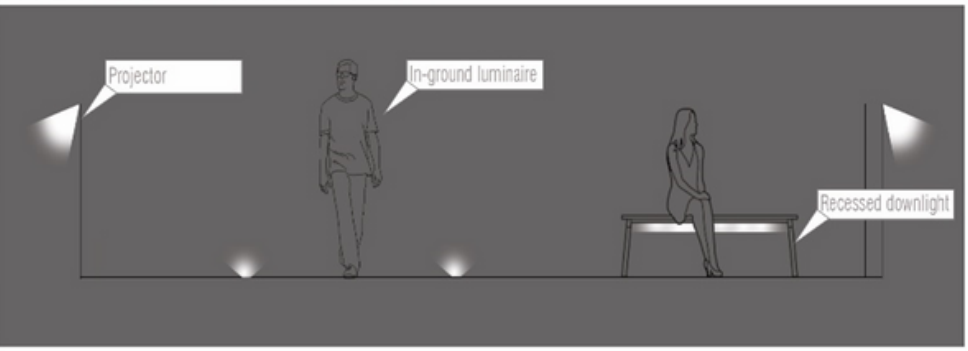
To avoid the issue of lighting pollution and respect the natural landscape , lighting will be used only on the edges of the paths -with inground luminaire-, under the benches -recessed lighting- and in the F&B area -downlighting projector-. The purpose of the lighting strategy is to ensure safety and security on site.

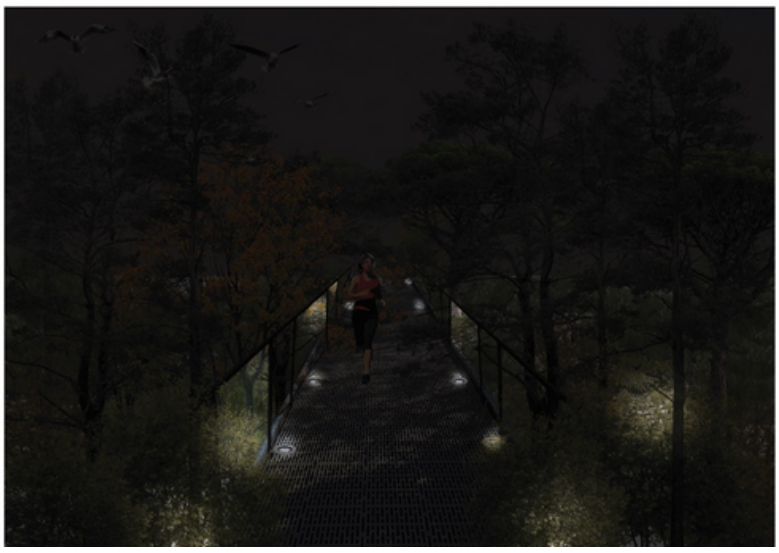


GROUND LEVEL LIGHTING STRATEGY



UPPER LEVEL LIGHTING STRATEGY





06

RENDER

From a forgotten river to an ecological and social hub.

From an unnoticed trail to a historical landmark

From a fragmented landscape to a restored and reconnected landscape

CONCLUSION

To conclude, not only does this project responds to all the different challenges found on site, but it really goes beyond it. This project, in its sensitivity, creates a harmonious landscape where people could reconnect with the site, the surrounding landscape and its ecology.