



COASTAL

CHRONICLES

Restructuring Anfeh's
Salty Coast
With Salt



POLITECNICO
MILANO 1863

School of architecture urban
planning construction engineering

COASTAL CHRONICLES

Restructuring Anfeh's Salty Coast, With Salt

Msc. sustainable architecture and landscape design

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■ ABSTRACT

This thesis explores the regeneration potential of salt production in Anfeh, Lebanon, and proposes the development of a salt urban park as a catalyst for sustainable architecture and cultural revitalization. Anfeh's historical connection to salt production holds immense cultural significance, yet the once thriving salt Salinas have fallen into disuse, presenting an opportunity for regeneration. The aim of this research is to investigate the feasibility and design principles for revitalizing salt production, linking multiple Salinas into a cohesive salt urban park, and integrating salt pavilions and museums along the way.

Through a comprehensive literature review, the study delves into the history of salt production in Anfeh, exploring its cultural value and the challenges faced by the existing salt pans. The research adopts a sustainable framework, considering the socio-economic, environmental, and cultural aspects of the regeneration project.

The thesis presents design principles that highlight the integration of salt production with the concept of a salt urban park, emphasizing sustainable design strategies, accessibility, and public engagement. Through nature-based solutions and innovative urban planning, we seek to revive abandoned Salinas, restore coastal ecosystems, and integrate green spaces into the urban fabric. The planning and design phases focus on site selection, spatial organization, and guidelines for the creation of salt pavilions and museums within the park, ensuring harmonious integration with the natural and cultural landscape.

The proposed salt urban park not only serves as a catalyst for sustainable architecture but also contributes to the preservation of Anfeh's cultural heritage, promotes tourism, and offers a model for regenerative development in coastal areas.

■ ACKNOWLEDGMENTS

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I would like to thank the following people, without whom I would not have been able to complete the research, and without whom I would not have made it through my master's degree.

An immense thank you to my supervisor, Professor Fabiano Lemes. His support and guidance throughout the course of this thesis has been invaluable, your expertise and feedback have profoundly influenced our research. Your belief in us made all the difference, and I am truly thankful for your patience and encouragement.

I am also immensely grateful to my friends and family who have provided constant encouragement and understanding during this journey.

To Tiyana, who was my friend long before she became my colleague in this thesis, thank you for sharing both the good and tough times.

To my friends in San Vincenzo, your friendship, laughter, kindness, and your belief in me kept me going during the toughest times. I will always cherish the moments we shared and the strength you gave me.

To my Mom, thank you for everything, your love and support are the reason I am here today. I will forever be grateful for the countless ways you've stood by me, from your sacrifices to your endless encouragement.

Lastly, I want to honor the memory of my father, who passed away before he could see me achieve any of this. Dad, none of this would have been possible without you. Every page of this thesis is dedicated to your memory, and every word written is a tribute to the sacrifices you made, and I hope I made you proud.

This thesis is so much more than the research and the design presented here, it's every single person who helped me, supported me, and guided me.

Thank you all for everything and know that this achievement is as much yours as it is mine.

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I would also like to extend my appreciation to my friends, whose love and companionship have brightened my academic and personal life. And to my colleague and friend, Lynn Labaki, for being my unwavering anchor through the ups and downs of academia. You have been by my side through every challenge, every triumph, and every moment of doubt.

This work is a collective achievement, serving as a testament to the collaborative spirit of those who have contributed through guidance, opportunities, friendship, and love. It also stands as a tribute to my beloved hometown, Anfeh. I am grateful to all who have been an integral part of my academic journey, aiding me in reaching this significant milestone.

■ OUR TESTAMENT

Our beloved country, with its ancient cedars, historic sites, and resilient people, has always been a testament to the strength of our unity and the depth of our hope.

Lebanon means the world to us. It's not just a place on the map; it's where our roots lie, where our families have lived for generations. The struggles and hardships faced by the people there hit close to home. We ache for Lebanon, and it hurts to see it in such difficult times. But amidst the pain, there's a strong desire for change, a longing to witness its improvement. We don't want to be passive bystanders; we want to actively be part of the solution. We want to roll up our sleeves and work towards a better future for Lebanon because it's our home, and it deserves better. The emotional connection we have with Lebanon fuels our determination to see it thrive and prosper, and we'll do whatever it takes to contribute to its improvement.

Today, we present to you our thesis as a gift, not just to the academic community but as a testament to our enduring hope. It's a symbol of our belief that no matter how tough the road, we can and will improve Lebanon.

Thank you, and may Lebanon always thrive and flourish.

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01

INTRODUCTION

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In this chapter, we will delve into the fascinating history of salt production in Lebanon, focusing specifically on Anfeh. We will explore its evolution over the years, tracing its development from ancient times to its present status

■ INTRODUCTION

Located along the eastern coast of the Mediterranean sea, **Lebanon** is a country rich in cultural heritage and natural beauty with a diverse population comprising approximately 6.8 million people. Lebanon's history dates back thousands of years and its land is scattered with archaeological sites, ancient ruins, and historical monuments.

While Lebanon has a vibrant cultural scene, it has also faced significant challenges, including political unrest and economic difficulties. The country's resilience is reflected in its people's determination to preserve their heritage and move forward despite adversities.

One of Lebanon's unique gems is **Anfeh**. A charming coastal town with a rich tradition intertwined with the ancient practice of salt production. For centuries, its salinas, or salt pans, have played a major role in shaping the community's identity and cultural practices.

In the pages ahead, we explore Anfeh's historical significance in salt production and its contemporary revival. This thesis delves into the intricate relationship between humans and nature, aiming to create a sustainable future by rejuvenating traditional methods and connecting the salinas into a cohesive coastal park. Through this journey, we unravel the threads binding the past, present, and future of this enchanting town, envisioning a harmonious coexistence of tradition and modernity.

■ THESIS QUESTION

How Can Anfeh's Salinas Be Sustainably Revitalized, Preserving Cultural Heritage, Enhancing Biodiversity, Promoting Economic and Social Prosperity, and Integrating Innovative Salt-Based Construction, Amidst Urban Development Pressures?

H BIODIVERSITY
E SUSTAINABILITY
R I SALT LANDSCAPE NATURE
T S C HISTORICAL C R E G E N E R A T I O N
A A L T D E V E L O P M E N T O
G I U R B A N S A
E A E T R A D I T I O N A L T

LEBANON LOCATION MAP

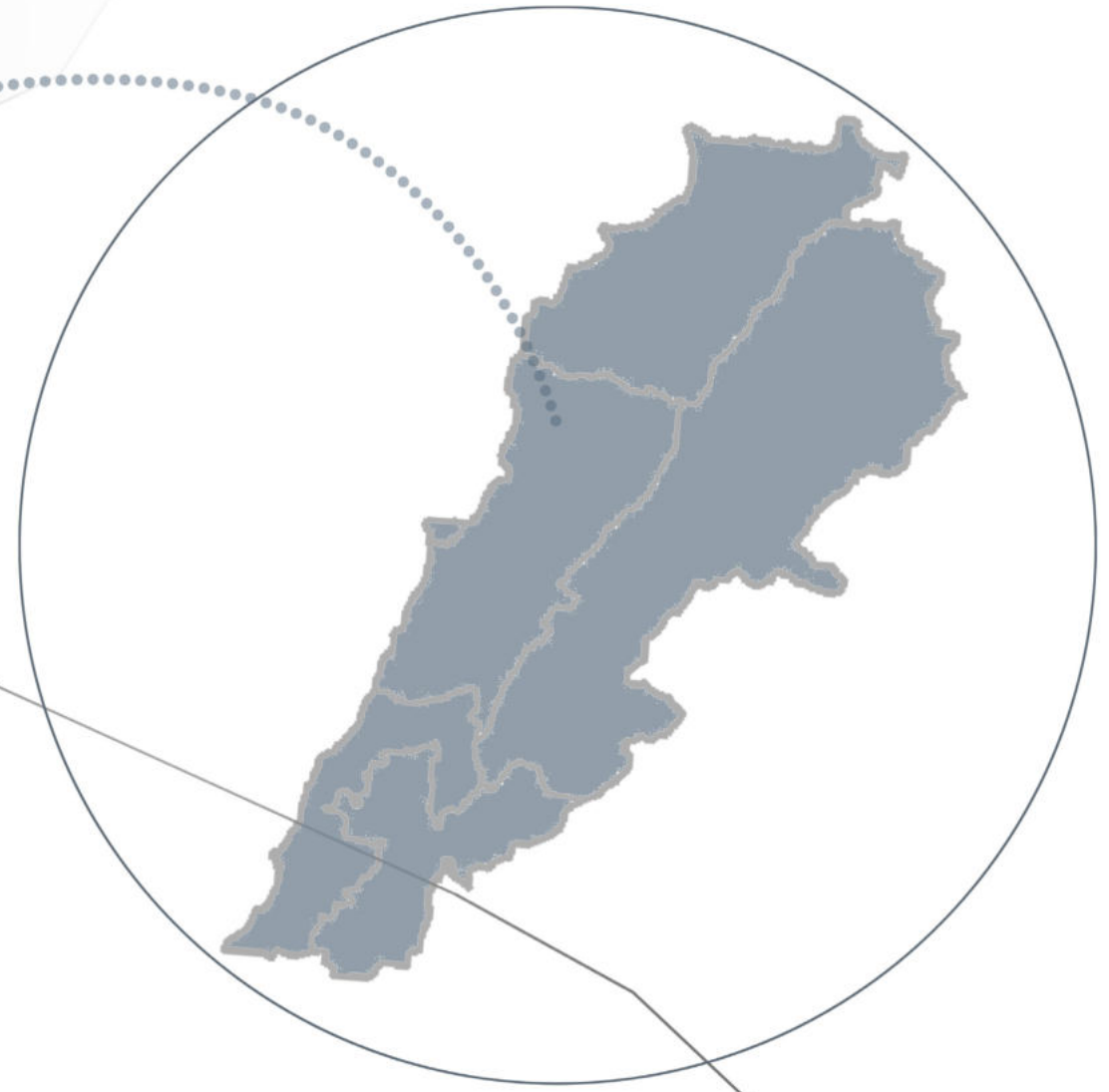
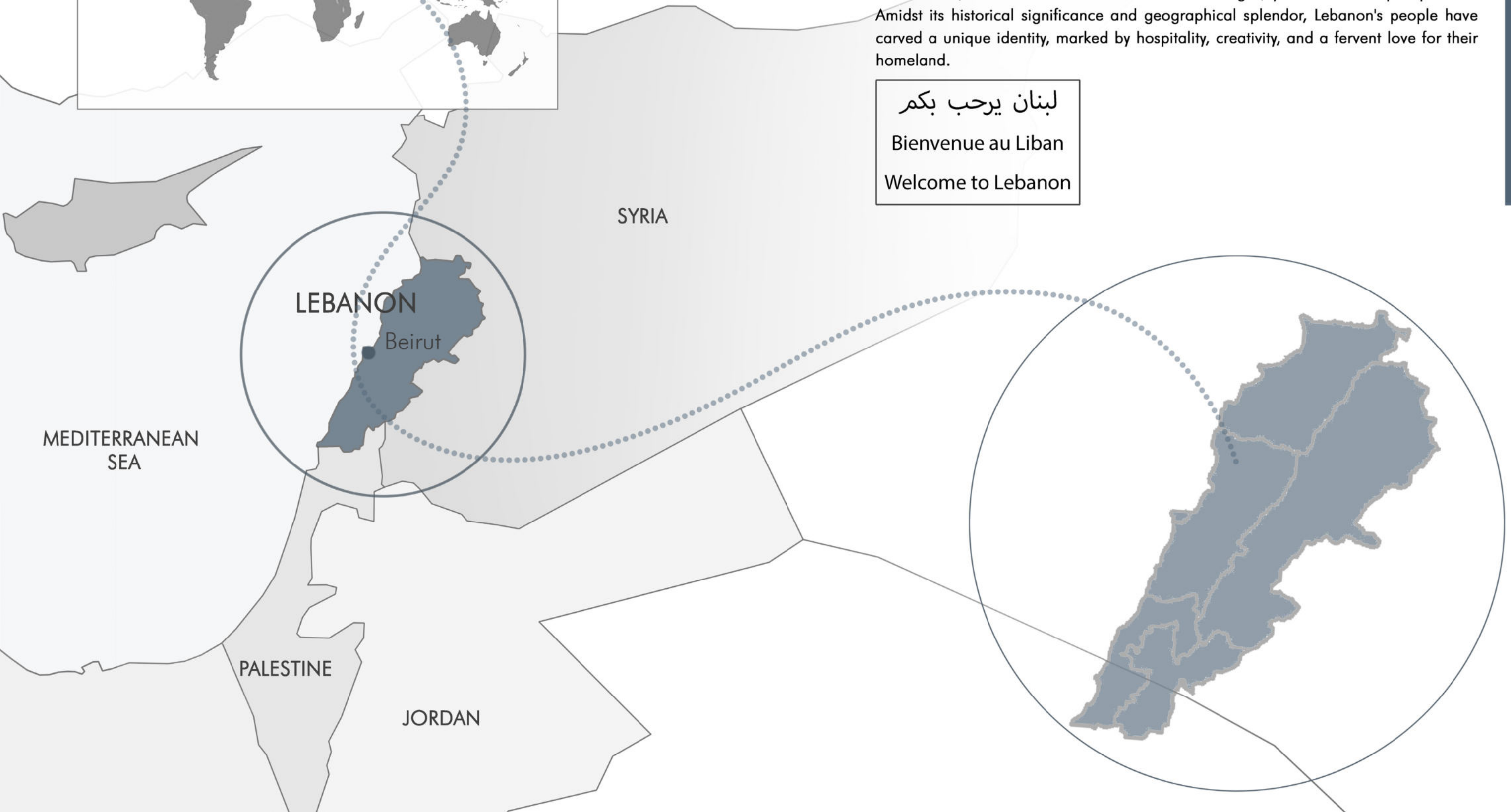


Lebanon is a small yet vibrant country, located on the eastern shore of the Mediterranean Sea. Bounded by Syria to the north and east, Israel to the south, and the azure Mediterranean Sea to the west, Lebanon boasts a strategic geographic position that has historically made it a diverse civilization.

Its story past dates back thousands of years, with archaeological evidence revealing the footsteps of Phoenicians, Romans, Crusaders, and Ottomans, among others. This nation, characterized by its cedar forests, vineyards, and ancient ruins, has long been a crossroads of cultures and ideas.

As a nation, Lebanon has faced numerous challenges, yet its resilient spirit prevails. Amidst its historical significance and geographical splendor, Lebanon's people have carved a unique identity, marked by hospitality, creativity, and a fervent love for their homeland.

لبنان يرحب بكم
Bienvenue au Liban
Welcome to Lebanon



IMPORTANCE OF SALT PRODUCTION IN LEBANON



Historical significance

Lebanon's salt production has a deep historical significance, dating back to ancient times. The Phoenicians, renowned seafarers and traders, were among the first to harness the salt pans along the Mediterranean coast. Salt was a valuable commodity, used for preserving food, trading, and religious rituals.



Natural salt pans

Lebanon's natural salt pans also called **salinas** are primarily located along its extensive coastline. The unique geographical features of these coastal areas, combined with the Mediterranean's natural evaporation process, create ideal conditions for salt production.

Traditional methods and modern techniques

Historically, salt production in Lebanon was carried out using traditional methods, with salt pans. In recent times, modern techniques have been incorporated, enhancing efficiency and yield. Mechanized equipment and advanced technologies have streamlined the process, allowing for larger-scale production while preserving the traditional methods' essence.



Economic importance

Salt production plays a vital role in Lebanon's economy. The salt industry provides employment opportunities and contributes to both local economies and the country's exports.

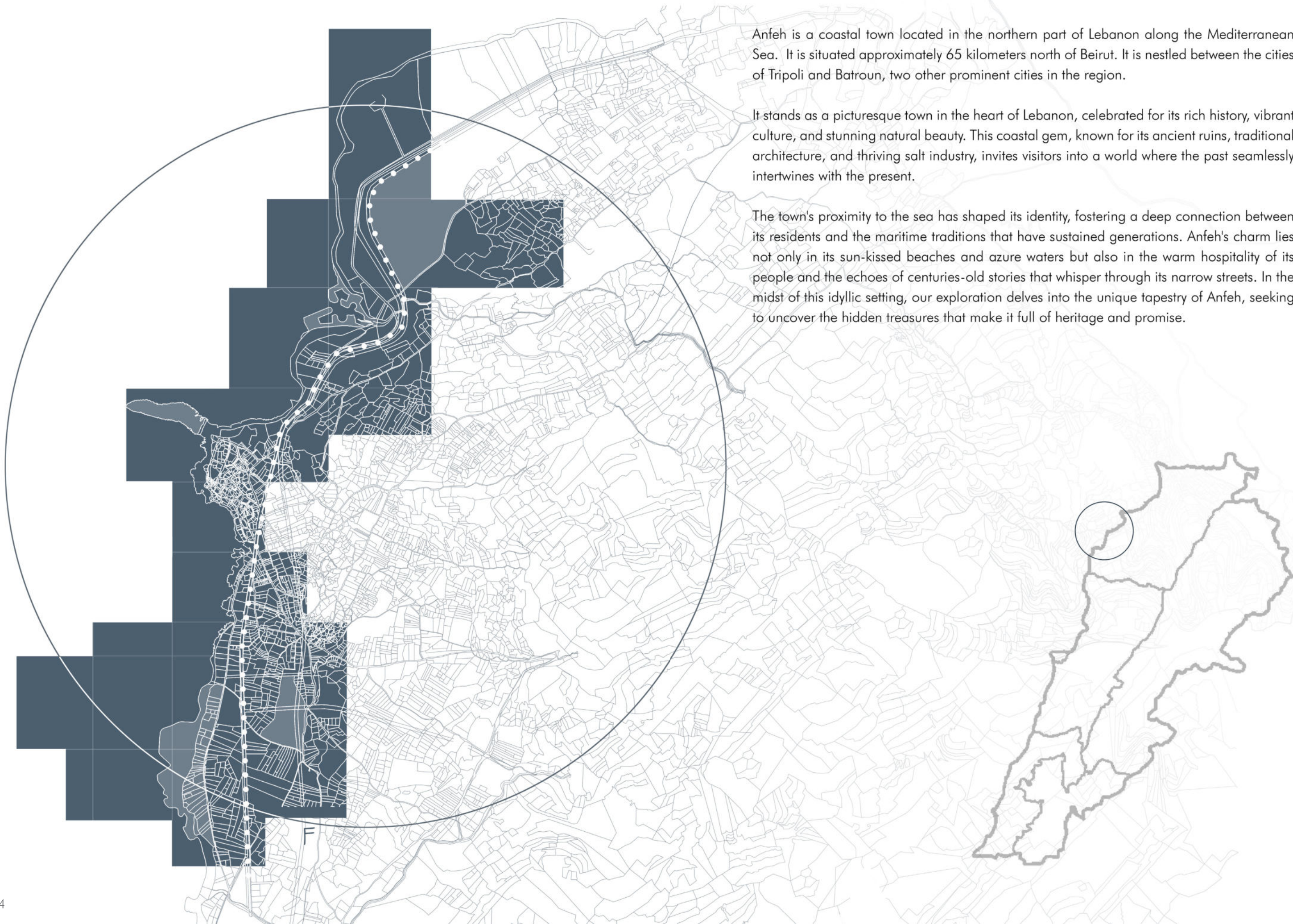
Challenges and sustainability

Salt production faces challenges such as environmental concerns, climate change impacts, and balancing the need for economic growth with sustainability. Efforts are being made to adopt eco-friendly practices, ensuring that salt production remains an essential and sustainable industry for Lebanon's future.

Current status

While salt production in Lebanon has a longstanding heritage, it faces challenges such as environmental concerns, climate change impacts, and balancing the need for economic growth with sustainability. Recent years saw a decline, with only 15 active salinas out of 44 in Anfeh village. Commercial resorts took over salt pond lands, and tax exemptions on imported salt, especially from Egypt, intensified local market competition.





Anfeh is a coastal town located in the northern part of Lebanon along the Mediterranean Sea. It is situated approximately 65 kilometers north of Beirut. It is nestled between the cities of Tripoli and Batroun, two other prominent cities in the region.

It stands as a picturesque town in the heart of Lebanon, celebrated for its rich history, vibrant culture, and stunning natural beauty. This coastal gem, known for its ancient ruins, traditional architecture, and thriving salt industry, invites visitors into a world where the past seamlessly intertwines with the present.

The town's proximity to the sea has shaped its identity, fostering a deep connection between its residents and the maritime traditions that have sustained generations. Anfeh's charm lies not only in its sun-kissed beaches and azure waters but also in the warm hospitality of its people and the echoes of centuries-old stories that whisper through its narrow streets. In the midst of this idyllic setting, our exploration delves into the unique tapestry of Anfeh, seeking to uncover the hidden treasures that make it full of heritage and promise.

WHY ANFEH?



Location and historical significance

Located 70 Km north of the capital Beirut and along a 400-meter-long peninsula, between archaeological wonders and the Mediterranean coastline, Anfeh's strategic location offers a microcosm of challenges and opportunities. Its proximity to historical sites and the sea provides a diverse landscape to study urban design, cultural preservation, and environmental sustainability.

Anfeh's historical legacy, echoing with the footsteps of ancient civilizations, adds depth to my research. Its rich cultural heritage offers a unique context to explore the preservation and revitalization of traditional industries.



Abundant salt pans

The presence of extensive salt pans in Anfeh, the town's unique geographical feature, presents an opportunity to delve into the revival of a once-thriving industry. Studying these salt pans allows for a detailed examination of sustainable practices within a historical trade. Locals refer to the salt produced in Anfeh as "white gold".



Real world challenges

Anfeh faces tangible challenges such as neglected heritage sites, environmental degradation, and economic stagnation. These challenges are not only pertinent to the town but also reflect global issues. By addressing these challenges, I aim to propose practical, sustainable solutions applicable in similar contexts worldwide.



Innovative urban solutions

The research seeks to create a blueprint for sustainable urban development that can be adapted to other communities facing similar issues.

Continuing this research will illuminate the significance of preserving our heritage, emphasizing the value of ancient architecture and the imprints left by our ancestors. Moreover, it will pave the way for innovative construction methods that harmonize with our surroundings, proving that progress can coexist with heritage, without compromising our legacy.

IMPORTANCE OF SALT PRODUCTION IN ANFEH



Historical heritage

Salt production in Anfeh is not merely an industry; it's a living testament to the town's historical heritage. The salt pans echo ancient practices, connecting the present generation with the customs of their forebears. Preserving this tradition honors the legacy of Anfeh's ancestors, ensuring their knowledge and skills are passed down through generations.

Economic livelihood

Salt production serves as a vital economic driver for Anfeh. The industry provides employment opportunities for locals, stimulating the local economy. Through the sale and export of salt, Anfeh sustains businesses, supports families, and contributes to the town's financial well-being.

Tourism and cultural exchange

The salt pans of Anfeh attract tourists and researchers interested in traditional industries and cultural heritage. Visitors bring not only economic benefits but also cultural exchange, enriching the town's social landscape. The interaction between locals and visitors fosters a spirit of openness and understanding, promoting Anfeh on the global stage.



Environmental balance

Salt pans often coexist with unique ecosystems. Preserving and managing these pans sustainably can enhance local biodiversity. The careful balance between industrial practices and environmental conservation in Anfeh showcases the town's commitment to harmonizing economic progress with ecological responsibility.



Cultural identity

Salt production serves as a vital economic driver for Anfeh. The industry provides employment opportunities for locals, stimulating the local economy. Through the sale and export of salt, Anfeh sustains businesses, supports families, and contributes to the town's financial well-being.

Sustainable future

In the face of environmental challenges, embracing sustainable salt production practices becomes imperative. Anfeh's commitment to sustainable methods not only ensures the industry's longevity but also sets an example for other communities.





Traditional craftsmanship persists

In Anfeh, the traditional art of salt production perseveres. Local salt producers, often employing age-old techniques passed down through generations, continue to harvest salt from the pans. This dedication to traditional craftsmanship adds a unique cultural flavor to the industry.



Preservation efforts

Efforts to preserve the heritage of salt production are underway. Local initiatives and cultural organizations collaborate to document traditional methods, ensuring that the knowledge is preserved for future generations.



Challenges and adaptation

The salt industry, crucial for locals' livelihoods, faces a threat from property developers eyeing the town's coast. Although Lebanese law designates the coastal region as public property, loopholes could allow vast areas for entertainment zones, hotels, and residences. Consequently, the future of the salt industry is uncertain. The last operational salinas risk being replaced by a private real estate project falsely marketed as natural and eco-friendly.



Challenges and adaptation

The local community actively participates in the preservation and development of the salt pans. Collaborative efforts between residents, government bodies, and non-profit organizations aim to address environmental issues, promote sustainable practices, and safeguard the unique heritage of Anfeh's salt pans.



The story of
the 'White Gold'

Hafez Jreije

Anfeh resident who has dedicated over 40 years of my life to working in salt production

What characterizes the salt produced in Lebanon, specifically in Anfeh? And why isn't it protected?

Salt production in most parts of the world is carried out using natural swamps on sandy coasts, where they are divided into squares, rectangles, and triangles. Then, the salt undergoes filtration, following the most common tradition. However, in Lebanon, our Salinas are situated on rocky lands where we use concrete for their construction. This results in the cleanest, most natural salt in the world, free from any chemicals, filtration machines, bacteria, or waste. This is why I like to refer to it as 'WHITE GOLD.'

In many other parts of the world, Salinas are designated as natural reserves and fall under the jurisdiction of the Ministry of Agriculture. Unfortunately, in Lebanon, we lack any laws or policies that protect the Salinas and salt production.

How and when did salt production begin?

Salt production has its origins with the Phoenicians, as documented by a German historian in his book translated into Arabic as 'The Old Lebanon.' The Phoenicians required salt for their commercial fleet to preserve food for the thousands of sailors on their ships. They sourced this salt from the Lebanese coast, specifically from the southern villages of Aadloun and the northern region of Anfeh and its surroundings, as the historian mentioned. The Lebanese coast was teeming with Salinas from north to south.

Initially, these Salinas were natural ponds, excavated into the rocks along the Lebanese coast. However, as the Phoenicians' need for salt increased, they began constructing them in various shapes such as squares, rectangles, and triangles, depending on the nature of the rocks and the coastline. All the Salinas were located near the coast because, at that time, there were no technologies available for pumping seawater other than using buckets.

Why do we have Salinas inland in the village, and how are they filled?

The golden period of salt production in Lebanon was between 1960 and 1974 when there was a high demand for salt due to the development of the nutrition and chemical industry. As you may know, almost every industrial activity requires salt in some form. To meet this demand, they expanded and constructed numerous new Salinas in the olive groves.

They used engines and steel tubes to pump water because, at that time, windmills were insufficient. This was due to the significant distance from the coast, which required higher pressure for water transfer. In Anfeh, 200 eco-friendly wind pumps were operational along the coast.



How can we justify the different patterns in the Salinas in Anfeh?

The shapes and forms of these patterns do not follow any specific rule or format. We can observe squares, rectangles, triangles, both regular and irregular shapes, or a mixture of all of them. All of this depends on the nature and shape of the land, the topography, the existence of roads, and many other factors. Some of the Salinas are flat, while others are steeper, due to the rocky topography in Anfeh with varying levels. This results in stepped Salinas on steep land.

It is noticeable that the newer and still productive Salinas today are somewhat larger in terms of area, reaching up to 100m². This is more economical because it requires fewer borders, less concrete, and provides a larger area for salt collection, thus yielding more salt.

In conclusion, I can say that the construction of these Salinas is a flexible process, adapted to the suitability and convenience of the land and its topography.

02

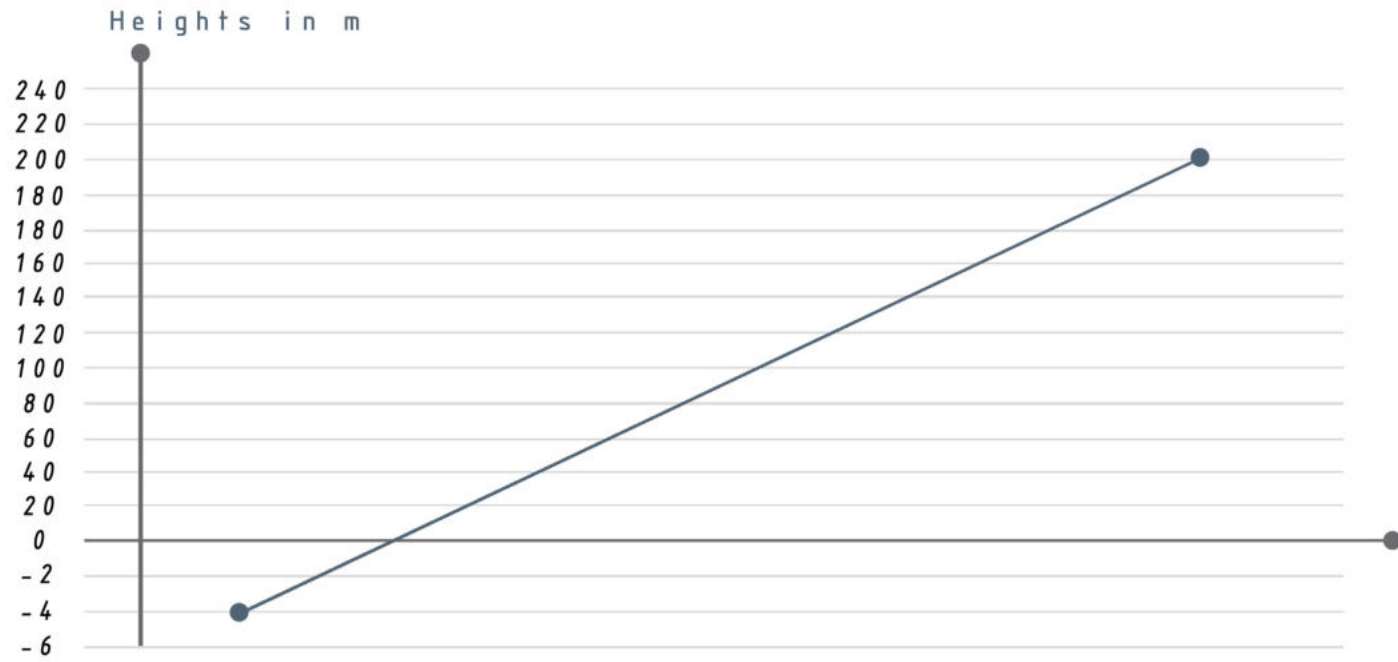
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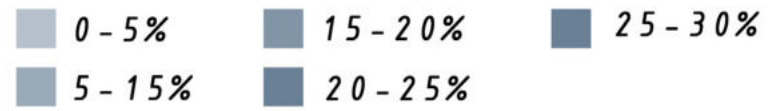
In this chapter, we conduct an analysis of Anfeh's region, examining various aspects. This exploration provides insights into the region's distinct features, helping us understand its unique dynamics and potential avenues for growth

TOPOGRAPHY

Referring to the topography map and the slope analysis it is noticed that the coastal mountains reach an elevation of 423 meters above sea level. This elevation variation results in a relatively flat landscape characterized by gentle slopes ranging from 0 - 10 % stretches along the coast. This expansive coastal plain widens as it extends, offering a broad canvas for diverse land uses and potential developments. To the east, these plains are demarcated by foothills that slope gradually, providing a transitional terrain. However, these foothills transform into steep slopes, ranging from 20-30 %.






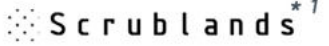
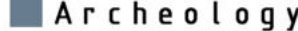


Slope Analysis Map






ZONING

In the zoning map of Anfeh, the town has been divided into natural, semi-natural, and cultural areas. These broad categories were later refined, taking into account specific characteristics of each zone. This detailed analysis provides a comprehensive understanding of the town's diverse landscape. This information is crucial for urban planning and conservation efforts, enabling us later on to make informed decisions about land use, environmental preservation, and the protection of cultural heritage within Anfeh.

LEGEND

-  Agriculture
-  Town
-  Salinas
-  Scrublands*1
-  Archeology
-  New expansions
-  Natural Coast



-  Natural (Coastline/Scrublands)
24.62 %
-  Semi-natural (Agriculture)*2
45.37 %
-  Cultural (Salinas, Old town, Urban Fabric)
30.01 %

*1 Scrublands: A scrubland is a land on which the natural vegetation is made of shrubs, herbs, grasses and geophytes

*2 Agriculture: Olive grooves, fruit trees, farmlands, field crops terraces, protected agriculture, green houses.

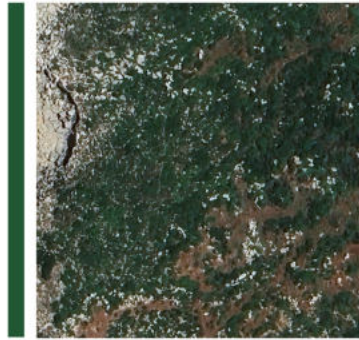


COMPONENTS OF THE LANDSCAPE



AGRICULTURE

Coastal Plain Scrublands

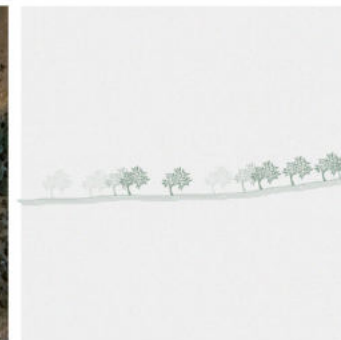


Hillside Scrublands

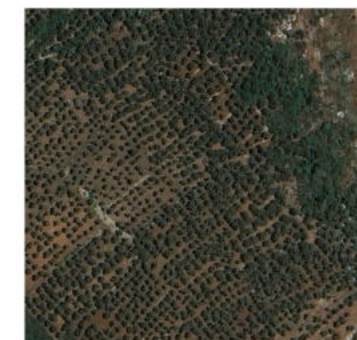


AGRICULTURE

Coastal Plain Olive Trees



Hillside Olive Trees

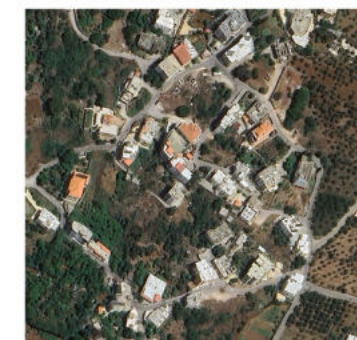


URBAN SETTLEMENTS

Coastline



Hillside



 Natural Landscape

 Semi-Natural Landscape

 Cultural Landscape

COMPONENTS OF THE LANDSCAPE



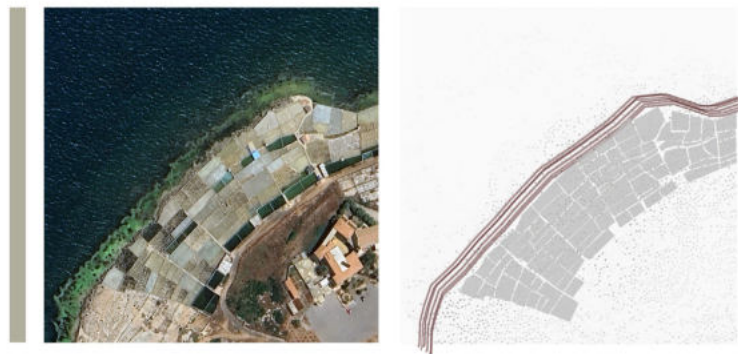
COASTLINE

Natural Coast



COASTLINE

Salinas



COASTLINE

Urban Fabric



Resorts



Natural Landscape
 Semi-Natural Landscape
 Cultural Landscape

ECOLOGICAL VALUES



Natural Coast

Salinas

Scrublands

Seaside Road

Scrublands

Train Railroad

Olive Trees

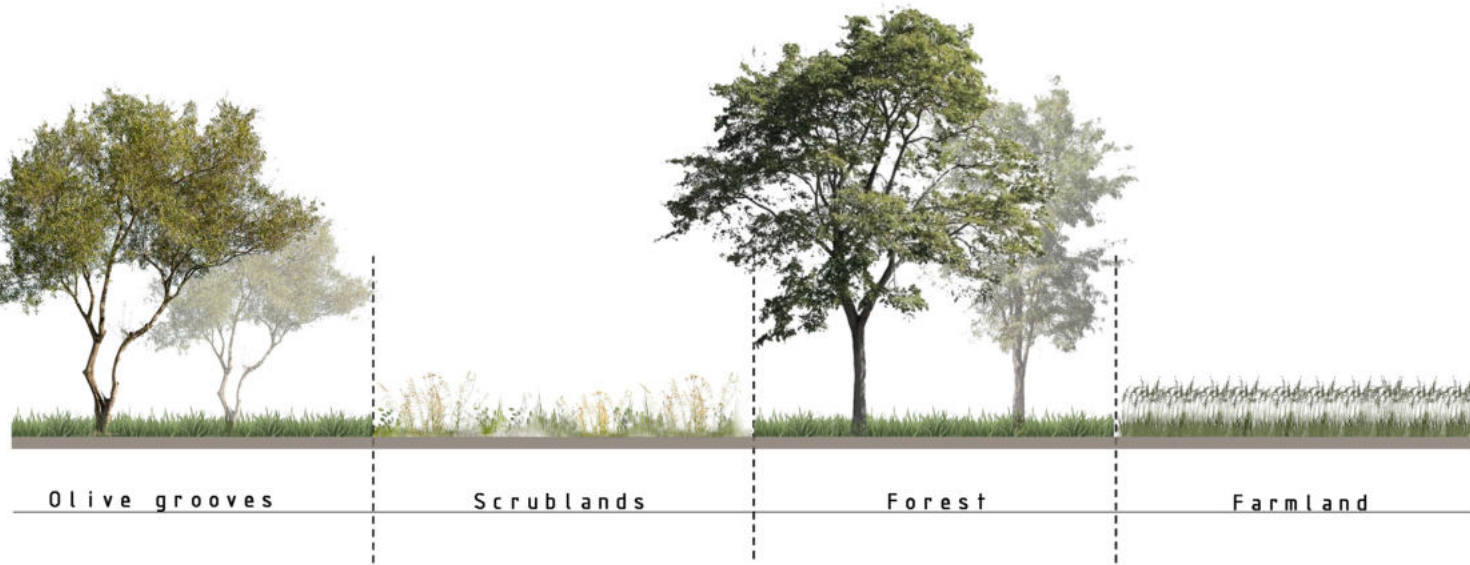


GREEN-BLUE INFRASTRUCTURE

This map shows Anfeh's natural treasures — scrublands, ancient olive groves, farmlands, forests, and diverse crop fields as well as its water corridors. Through this map, we delve into the essence of Anfeh's natural landscape, exploring the delicate balance between human habitation and nature's bounty. This initiative signifies our dedication to sustainable coexistence, honoring the town's past while paving the way for a greener, more harmonious future.

LEGEND







- Olive grooves
- Salinas
- Water corridor
- Scrublands
- Abundant farmland
- Underground Water corridor
- Dense forest
- Field crop in large areas

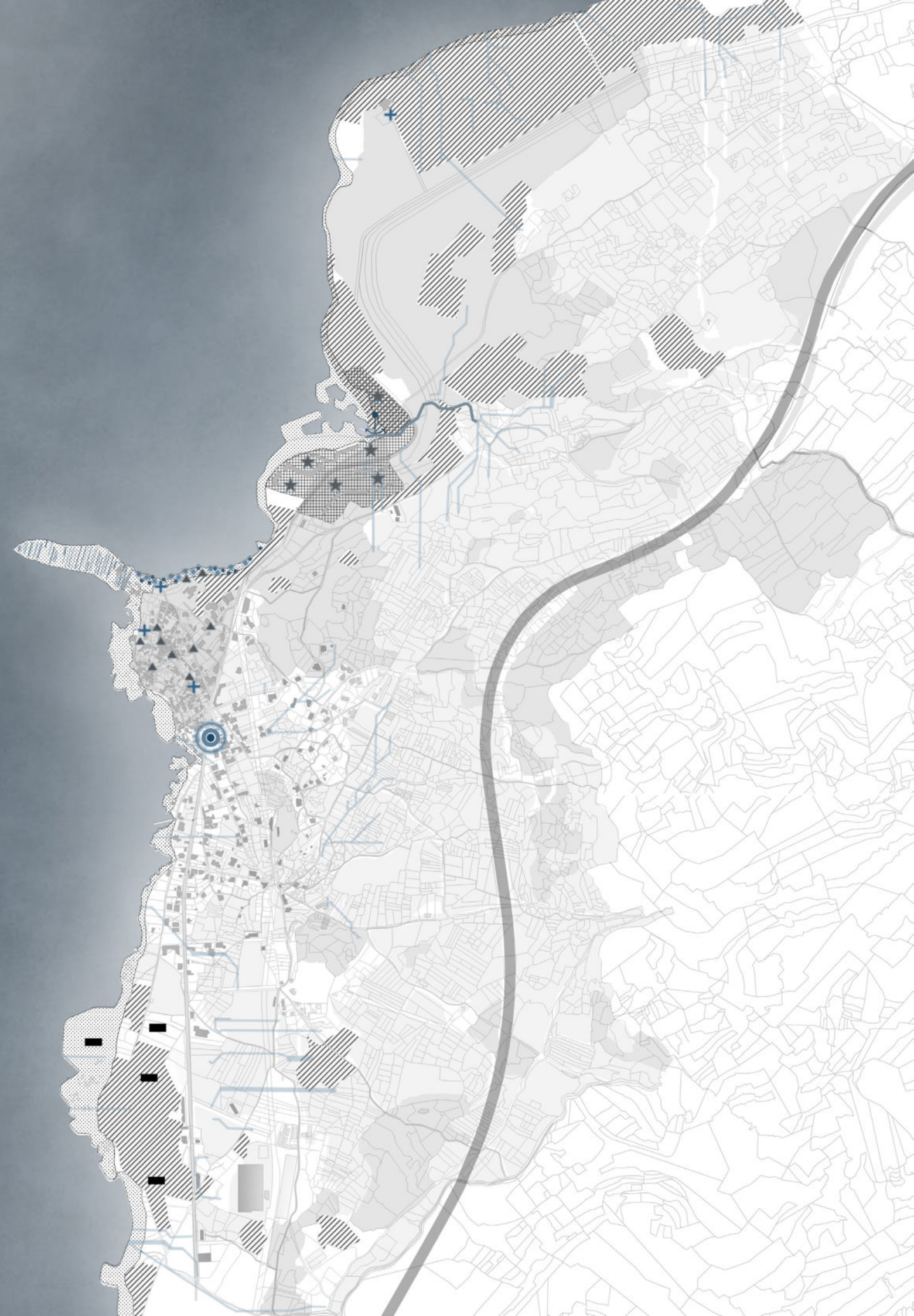
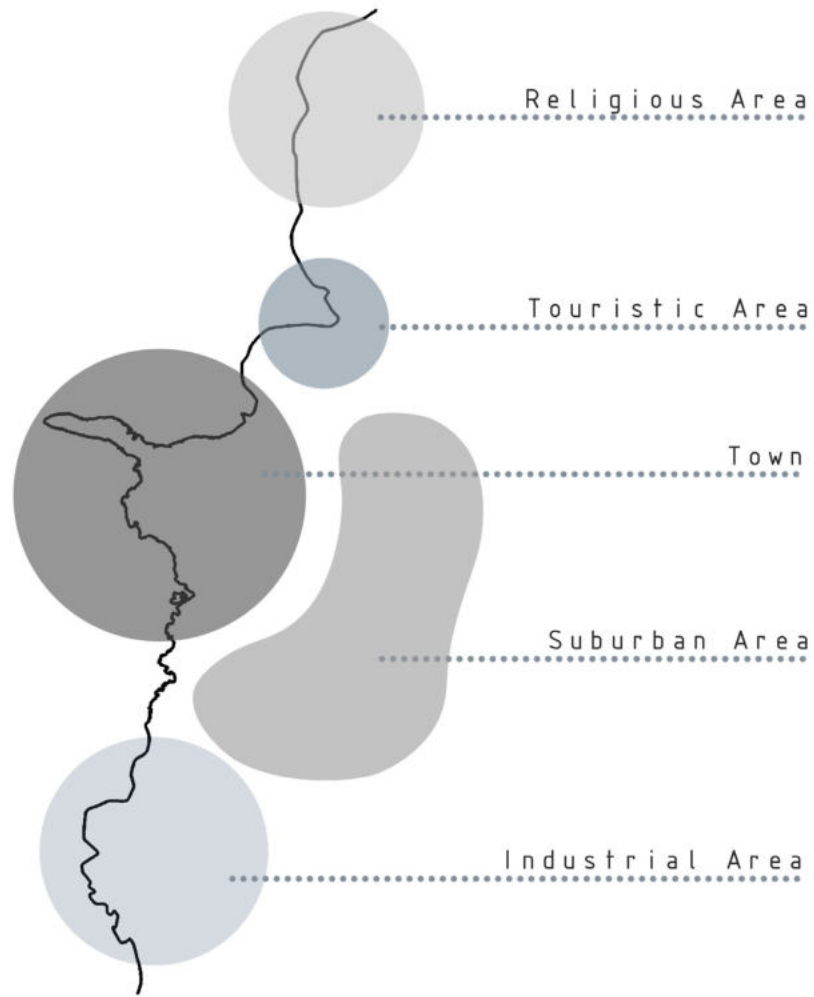


LANDUSE

We explore the diverse landscape of Anfeh through a comprehensive land use map that shows the town's various facets. Through this map, we aim to offer a comprehensive understanding of Anfeh's diverse landscape, serving as a valuable resource for future urban planning plans and cultural preservation initiatives.

LEGEND

- | | | |
|---|---|---|
|  Salinas |  Water corridors |  Resorts |
|  Coast |  Archeology |  Port |
|  Agriculture |  Industrial |  Guesthouses |
|  Old town |  Resort urbanization |  Churches |
|  Uncultivated area |  Underground water corridors |  Piazza |



ACTIVITIES IN ANFEH



SYNCHRONIC MAP

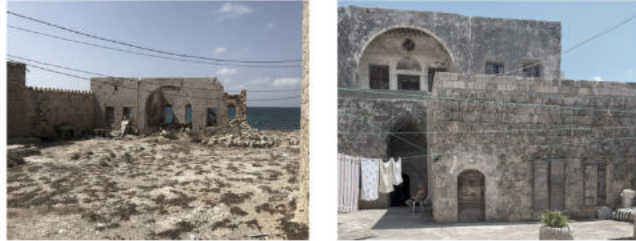
In this synchronic map, we are showing the evolution of Anfeh's built environment, tracing its transformation over time. This visual narrative offers a profound insight into Anfeh's historical and contemporary development. This map serves as a vital tool, offering a visual timeline of Anfeh's architectural evolution

LEGEND

- Built in 1300 BCE
- Built in 1962
- Built in 1980
- Built in 2000

1300

In the 1300s, Anfeh's architecture mirrored the elegance of the era, blending traditional craftsmanship with intricate detailing.



1962

In the 1960s, Anfeh's architecture embraced a modernist approach, reflecting the prevailing mid-century design.



1980

In the 1980s, Anfeh's architecture witnessed a blend of postmodern influences and regional aesthetics.



2000

In the 2000s, Anfeh's architecture showcased modernity and sustainability, blending innovative designs with eco-friendly practices.



ANFEH THEN AND NOW
1962



ANFEH THEN AND NOW
2021



MENTAL MAP

LEGEND

- ▲ Landmarks
- ▨ Salinas
- Secondary road
- Nodes
- ▨ Threats
- Rupture
- Old town
- ⋯ Main road

Landmarks

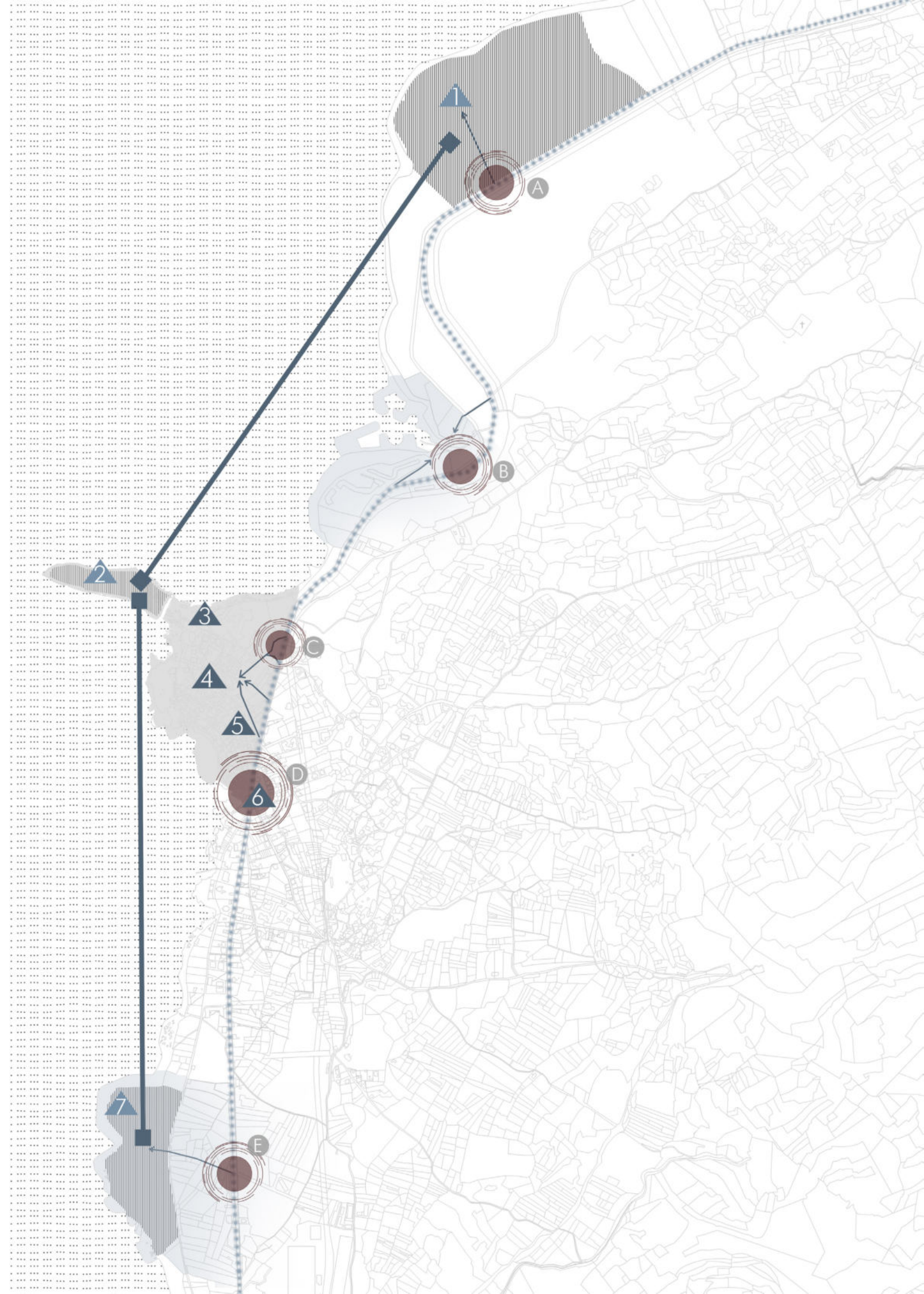
UNESCO Protected Sites



- 1- Der el Natour
- 2- Peninsula archeological ruins
- 3- Church of our lady of the Wind
- 4- Church of Saint Katherine
- 5- Monastery of Saint Georges
- 6- Gebran Makari Square
- 7- Ras el Mlelih

Nodes

- A- Monastery access
- B- Port entrance
- C- Municipality roundabout
- D- Piazza
- E- Industrial access



03

SALT PRODUCTION IN ANFEH

Salinas historical evolution	60
Pattern evolution	62
Causes of salt production decrease	64
Impact of new constructions	66
Salt production procedure	68
Pattern analysis	70
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Biodiversity and vegetation	74
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In this chapter, we explain the different aspects of the salt production in Anfeh. We explore the evolution of salinas and their patterns throughout history which offers a comprehensive understanding of the region's salt production industry.

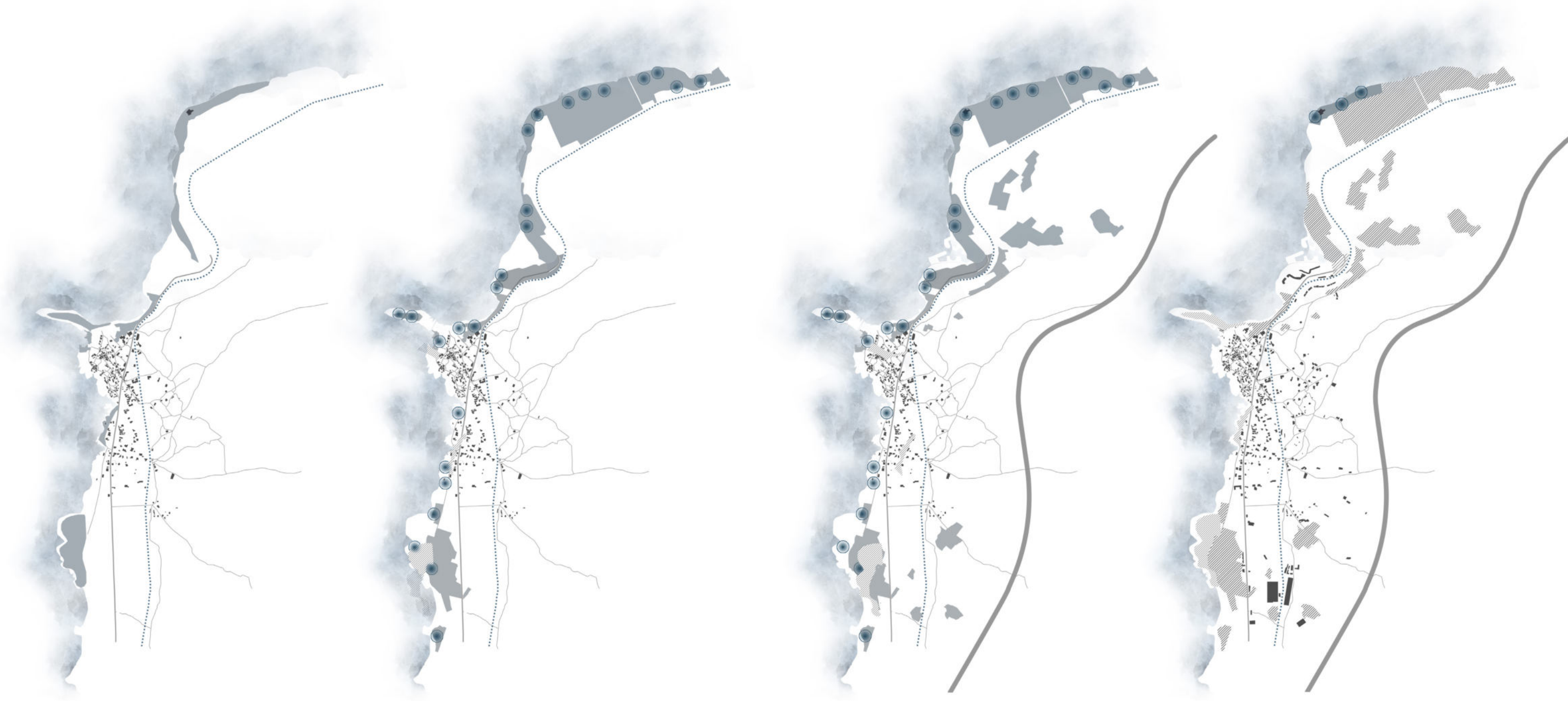
SALINAS HISTORICAL EVOLUTION

1400

1940

1990

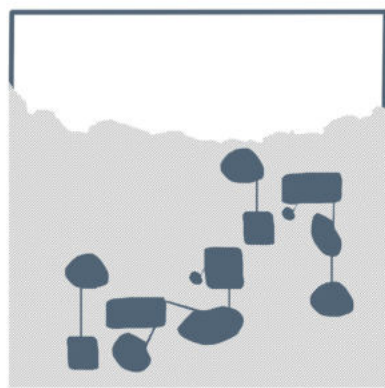
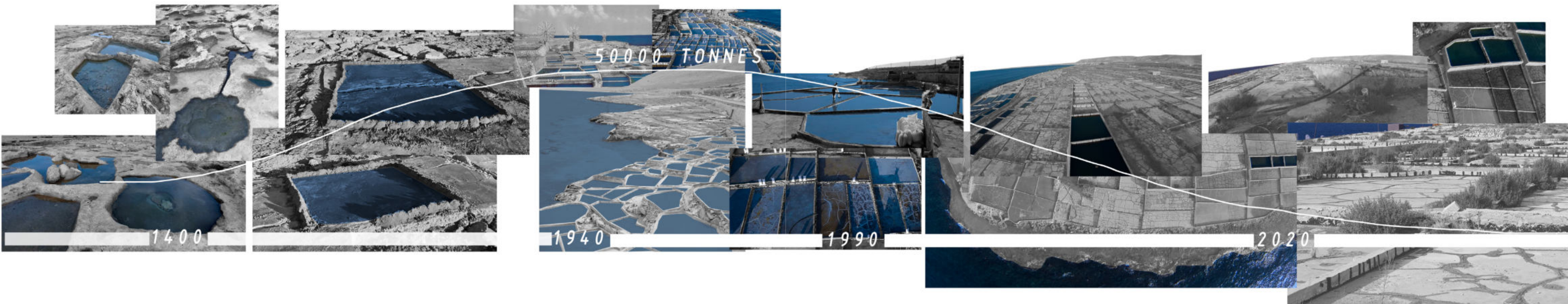
2021



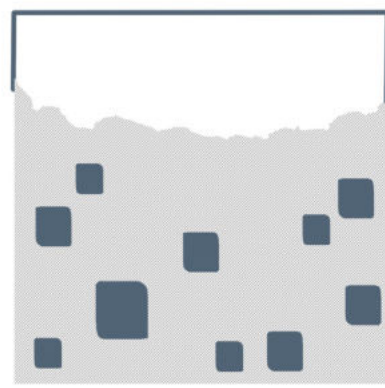
In this section, we have maps from 1990, 1940, 1400, and 2021 that show how the salinas changed over time. Until 1990, we can clearly see them expanding, reflecting the thriving salt industry. However, in 2021, most of them became non-functional, some disappearing due to new buildings taking their place. These maps tell a story of how the landscape shifted, showing the impact of modernization on Anfeh's traditional salt pans.

- Olive grooves
- Functional salinas
- Town
- Wind turbines
- Non-functional salinas
- Roads
- Highway
- Train track

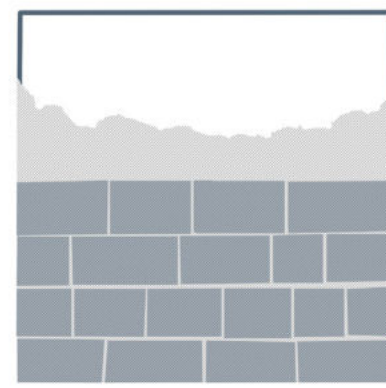
PATTERN EVOLUTION



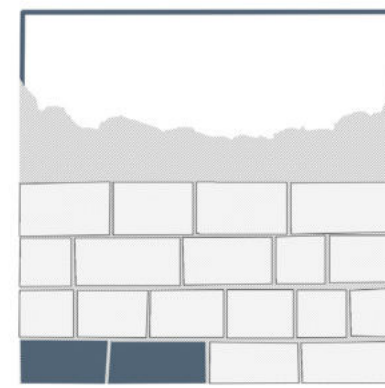
1400



1940

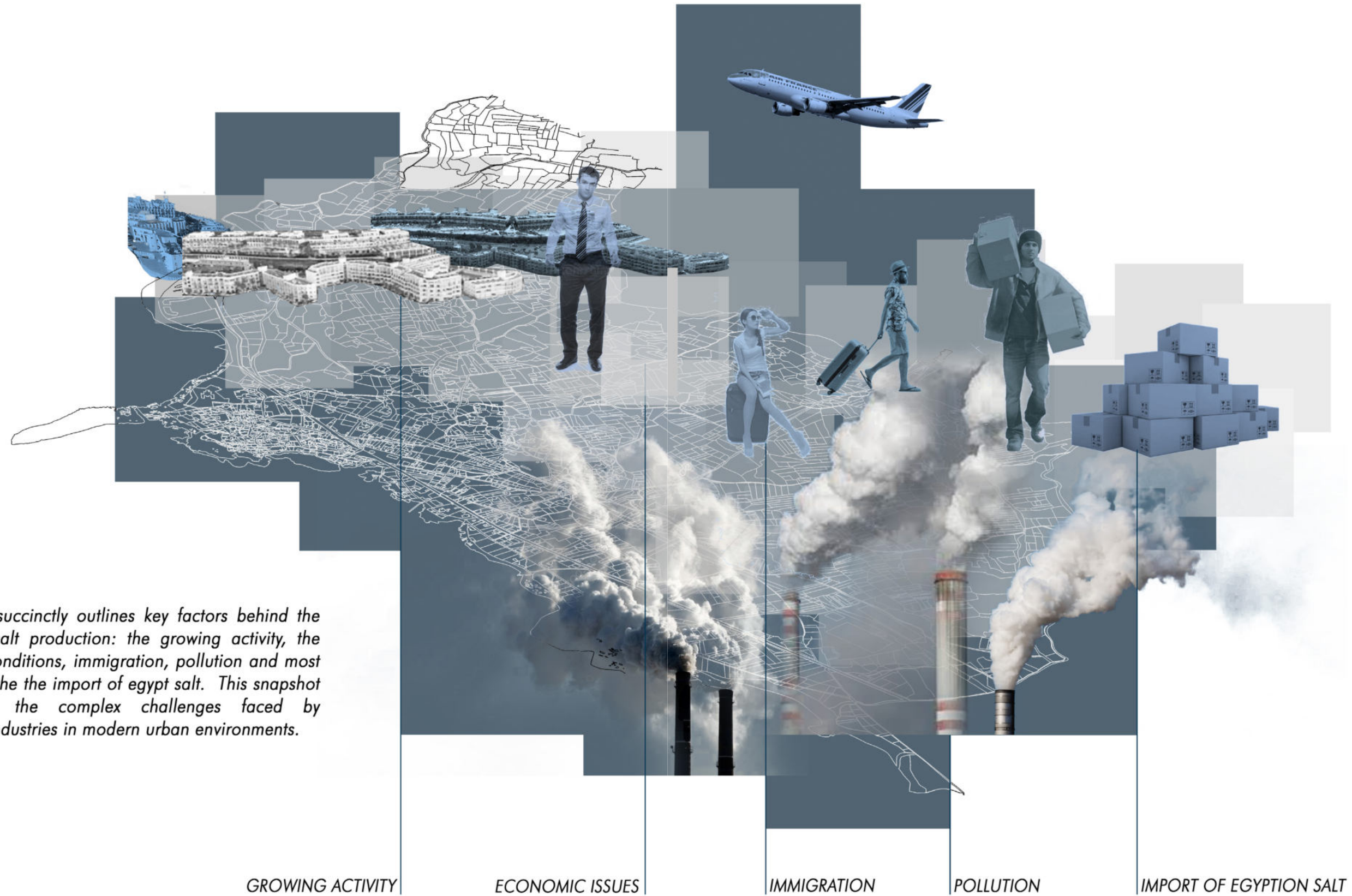


1990



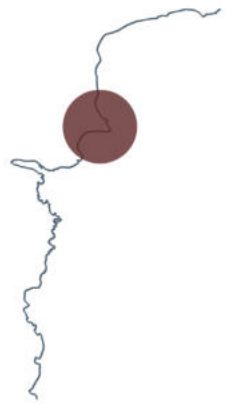
2020

CAUSES OF SALT PRODUCTION DECREASE



The image succinctly outlines key factors behind the decline in salt production: the growing activity, the economic conditions, immigration, pollution and most importantly the the import of egypt salt. This snapshot underscores the complex challenges faced by traditional industries in modern urban environments.

IMPACT OF NEW CONSTRUCTIONS



We can see here the encroachment of urban development on Anfeh's historical salt production sites. The map vividly captures the evolving landscape, showcasing the delicate balance between preserving heritage and accommodating the needs of a growing community. It serves as a poignant reminder of the challenges faced by traditional industries in the face of rapid urbanization.



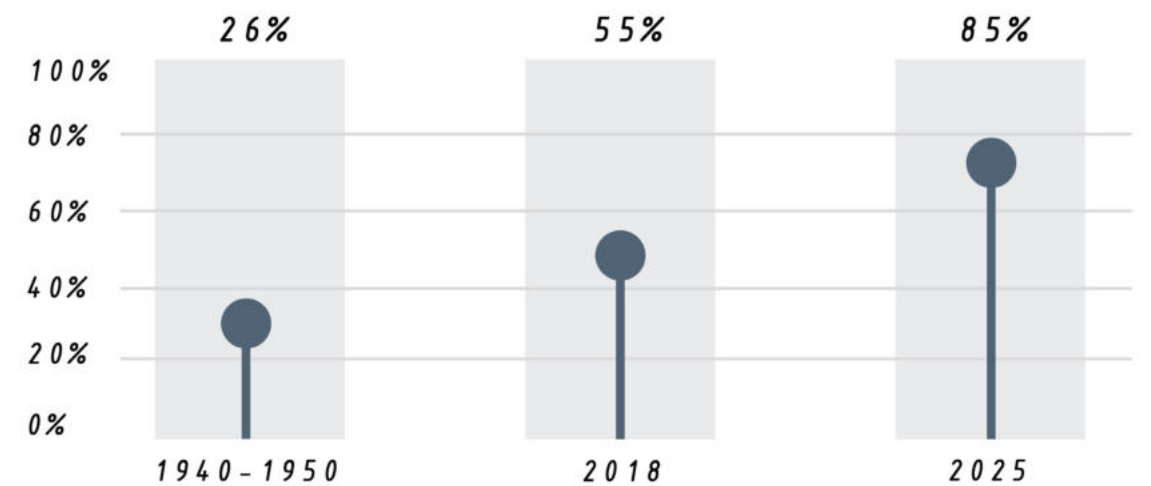
MARCH 2023



JULY 2023



According to the United Nations Environmental Program (UNEP), this chart represents the percentage of total build up area in along the coastal zone.



SALT PRODUCTION PROCEDURE

EVAPORATION IN BIG BASINS

EVAPORATION IN SMALL COMPARTMENTS

STIRRING THE SALT

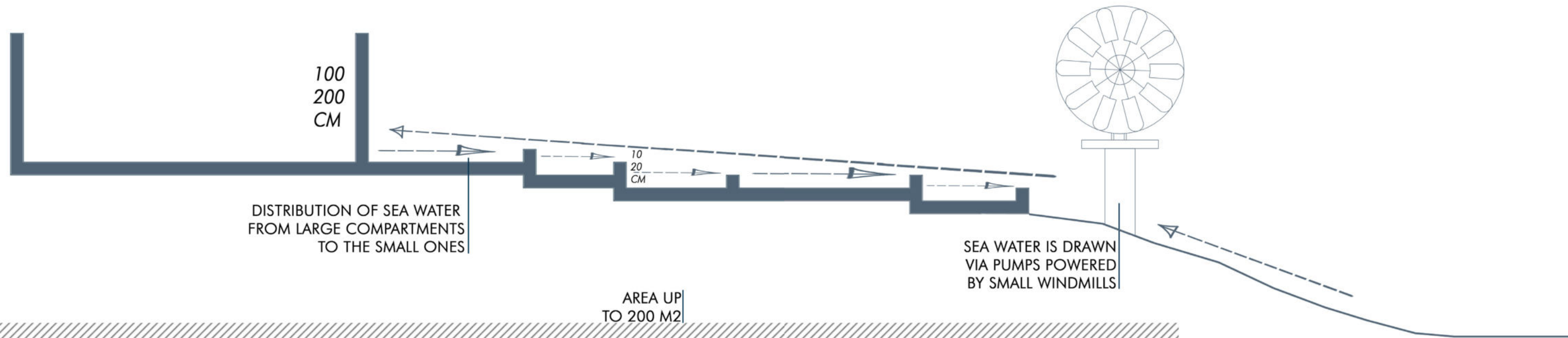
STORING AND COLLECTING IN BAGS

20 DAYS

30 DAYS

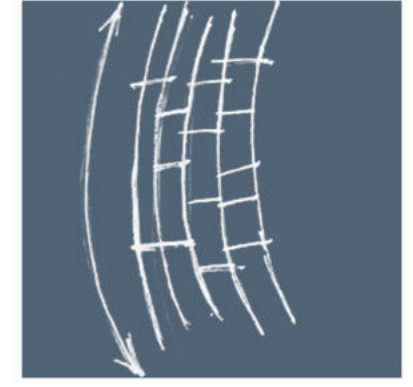
40 DAYS

45 DAYS

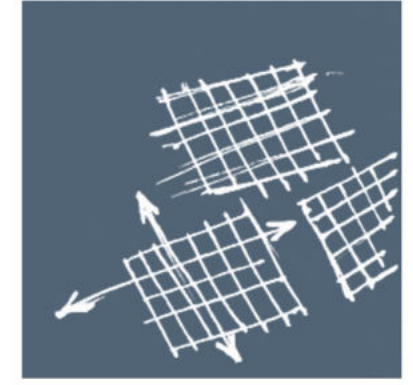
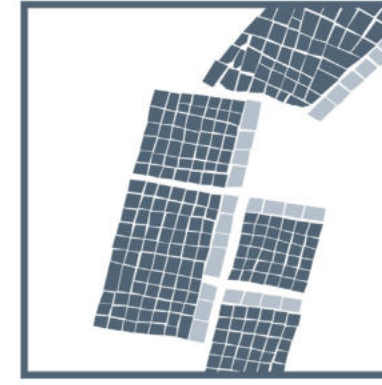


The wind turbines extract seawater and channel it through an underground tube to the primary saline reservoir. Once the primary reservoir is adequately filled, it dispenses seawater to the lower reservoirs, initiating the evaporation process.

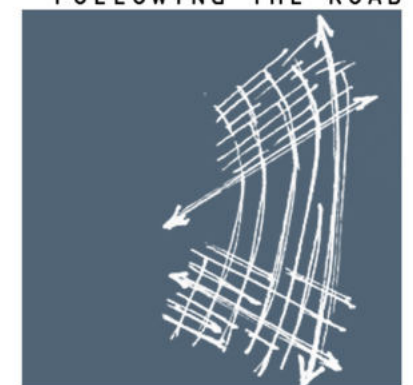
PATTERN ANALYSIS



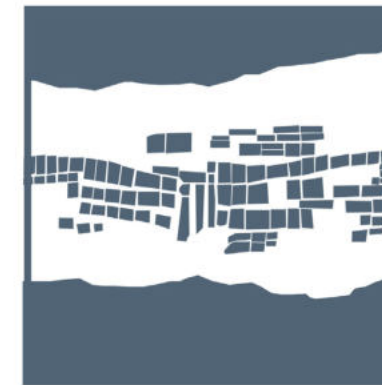
FOLLOWING THE COASTLINE



SHORTEST DISTANCE TO THE SEA



FOLLOWING THE ROAD



RANDOM ORTHOGONAL GRID

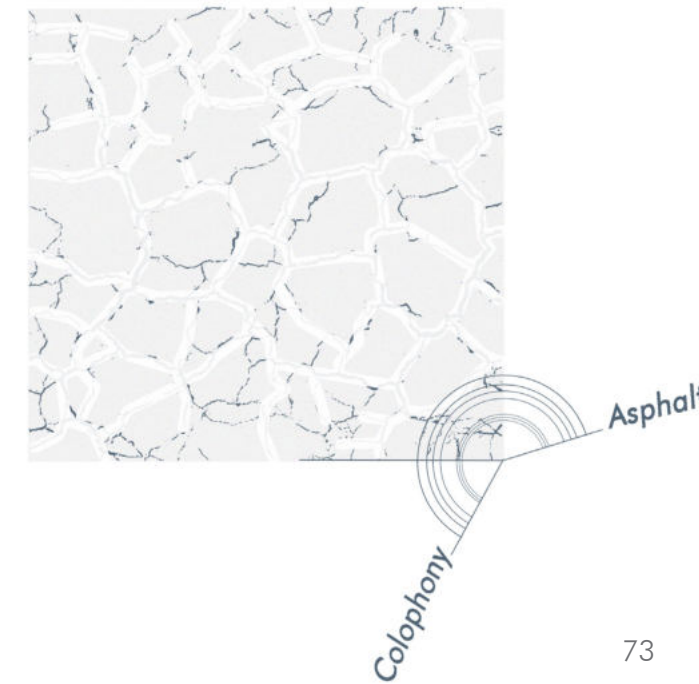
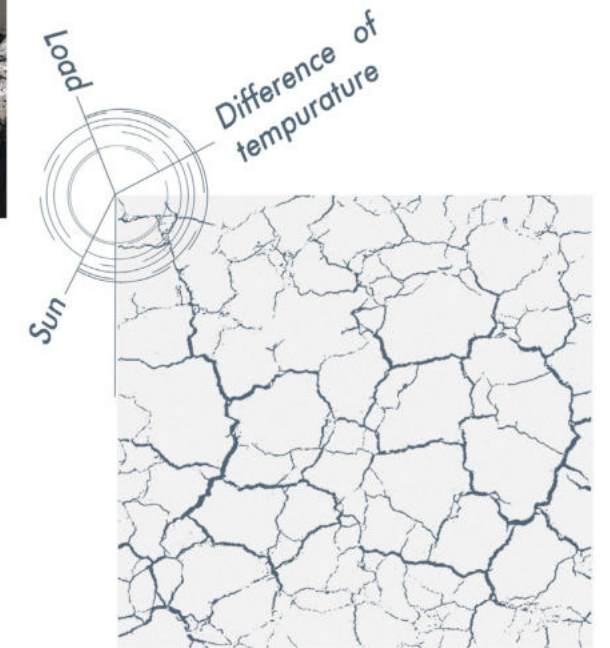
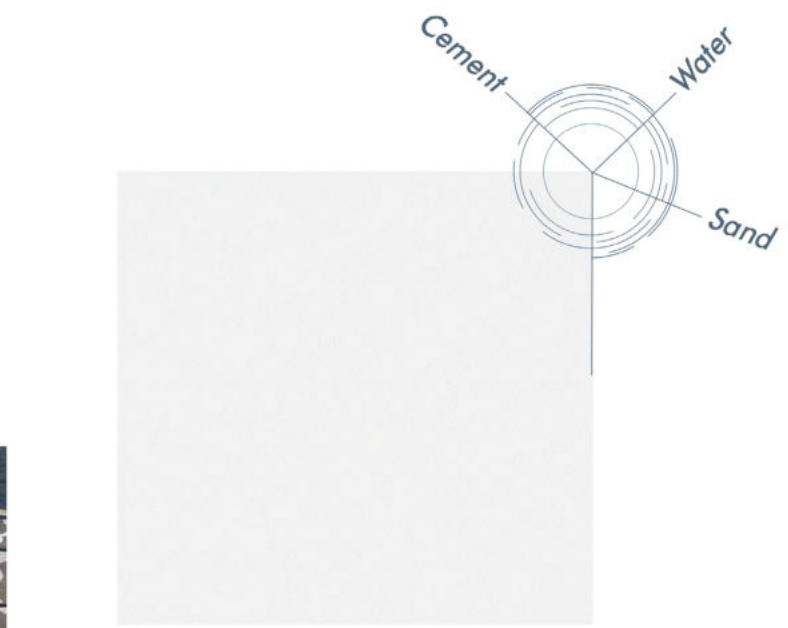
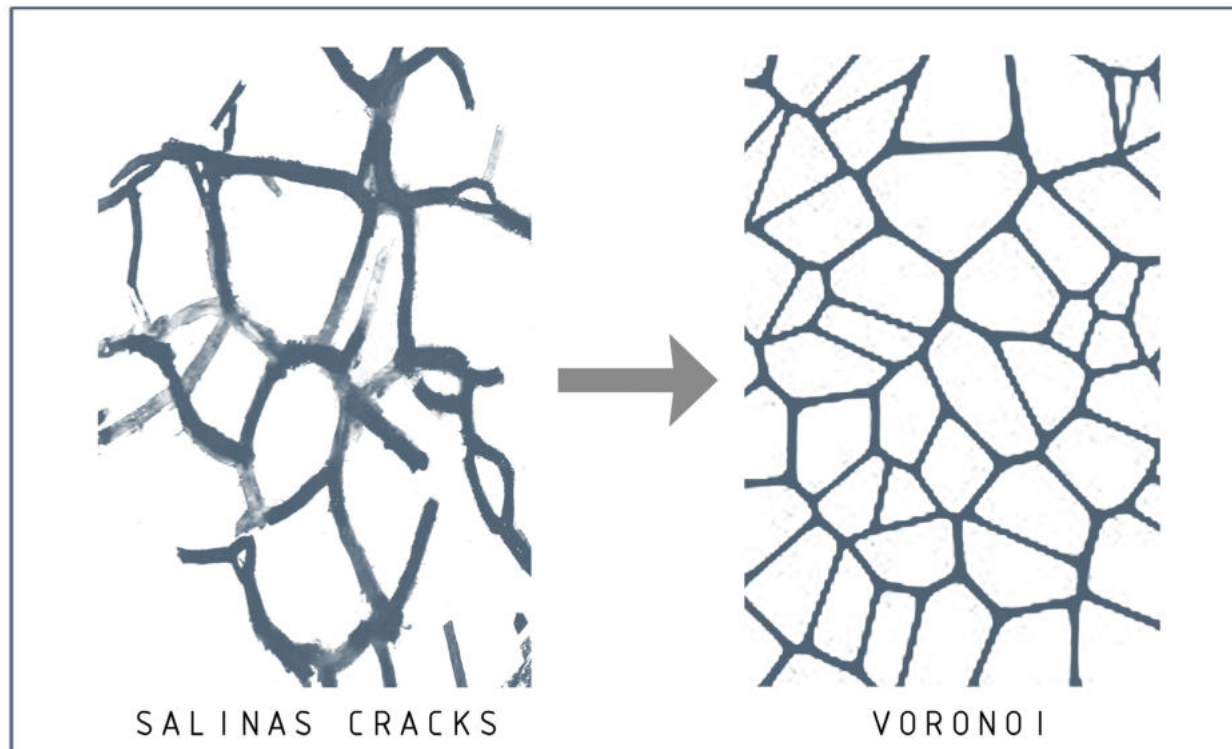


PERPENDICULAR TO THE SEA

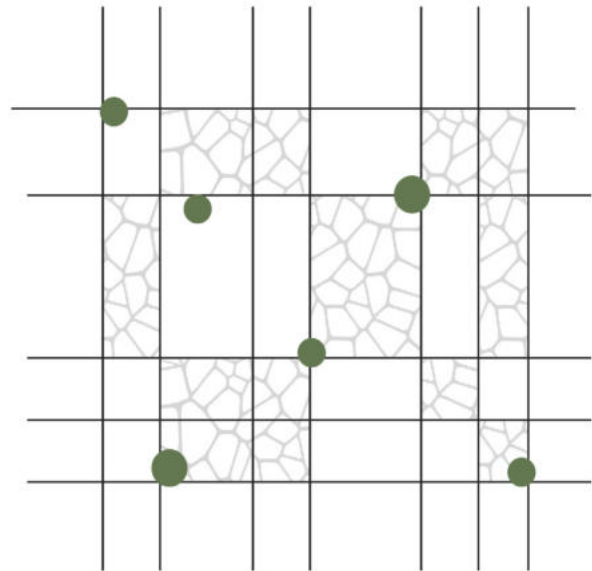
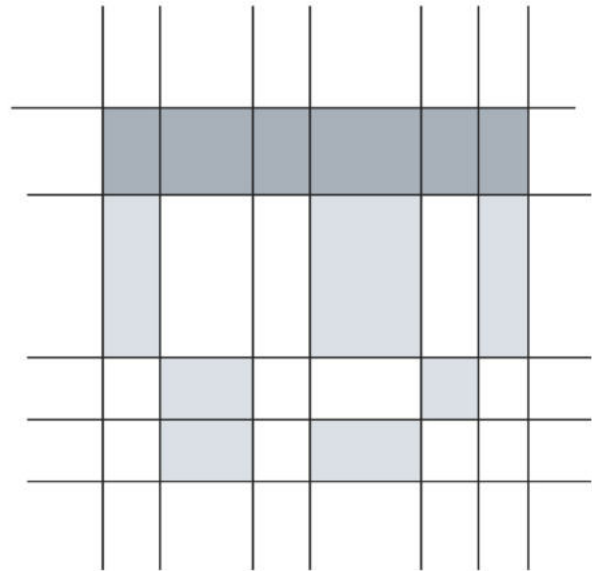
FRACTURE ANALYSIS

We observed cracks within the salinas and conducted a detailed analysis, revealing that since they are constructed using cement, water, and sand, over time, the load, sunlight, and temperature variations caused them to crack.

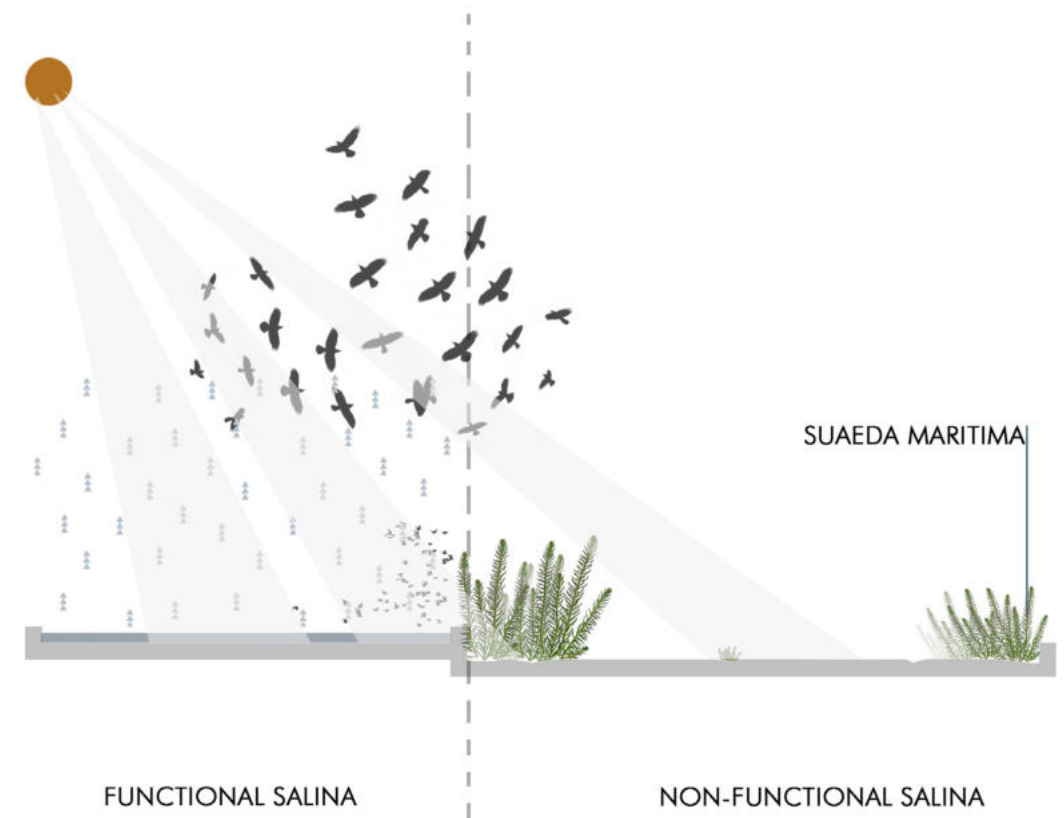
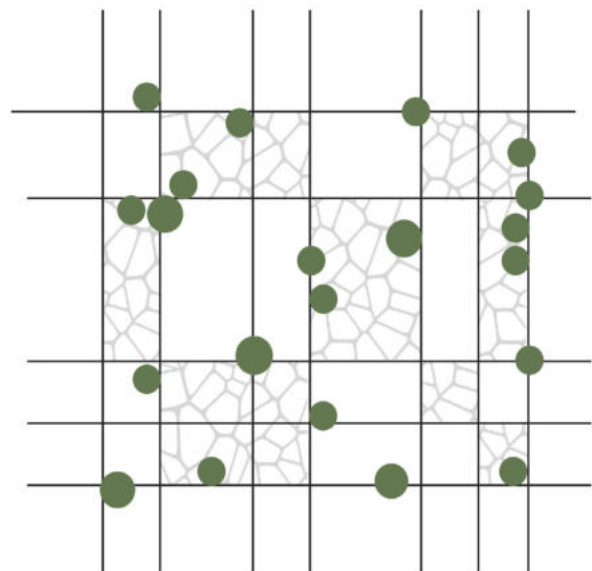
To remedy this, cement was applied into these fissures, creating distinct patterns inside the salinas. We later compared these patterns to Voronoi diagrams.









BIODIVERSITY AND VEGETATION



Over time, the abandonment of the salinas has allowed nature to reclaim its domain. Nature's resurgence is evident in the flourishing vegetation and the formation of intricate cracks on the surfaces of these abandoned salt pans, showcasing the captivating power of natural reclamation.



CHALLENGES

-  **NEGLECTED SALINAS**
and its refunctionalization along the coast
-  **ABANDONED GREEN SPACES**
along the coastline
-  **ACCESSIBILITY LIMITATION**
between the center and the salinas
-  **COUNTINUAL RESORT EXPANSION**
That should be addressed as soon as possible
-  **PRESERVATION OF LANDMARKS**
and its integration with the surrounding area
-  **POLLUTION**
towards the south of the city



04

CASE STUDIES

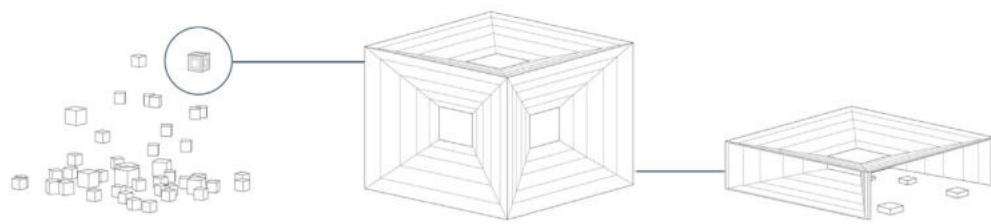
'Cristal' - The dead gem	80
Salt formation center	82
Wieliczka salt mines	84

In this chapter, we explore practical examples through insightful case studies, gaining valuable perspectives and deepening our understanding of the subject matter

'CRISTAL' - THE DEAD GEM



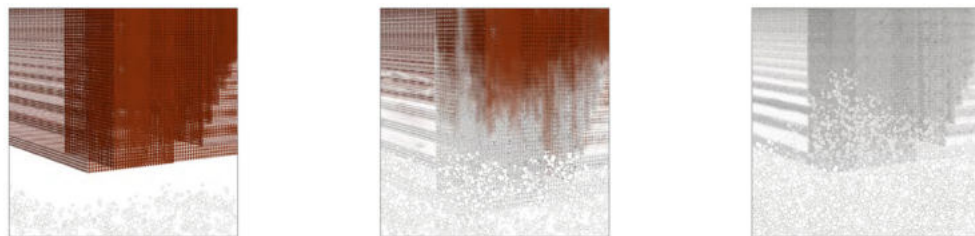
Concept Diagram



Like a sculpture, its volume is inspired by the salt cube structure, symbol of the Dead Sea



The project can be mounted in six days



Telescopic frames in metal are unfolded then fixed and entirely covered with salt
This way, the structure gets salinized until reaching a total white pristine

Designed by: Sitbon Architectes
Location: Dead Sea
Function: A Leisure Center

1. Inspired by nature

2. Easy to install

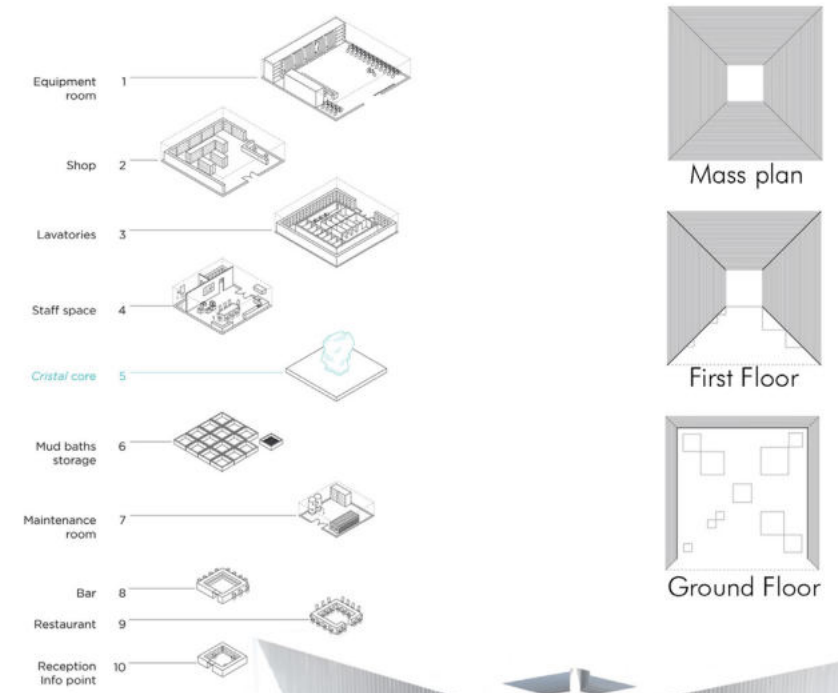
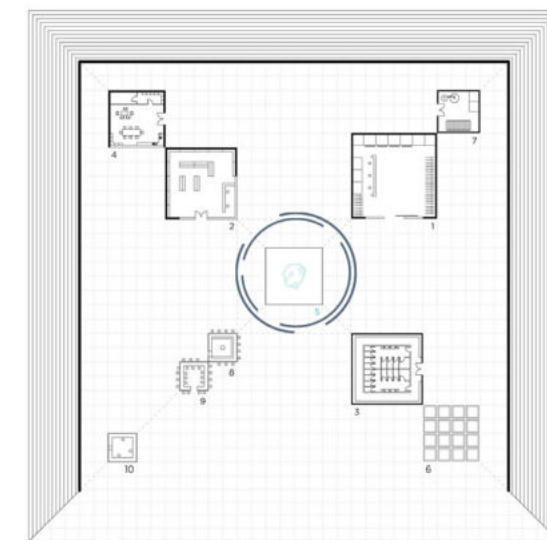
3. A white crystal

Mass Plan

Place at north canal's mouth, it crystallizes the void of a sleeping region to wake it up. Close to an old small airstrip and to an easy access zone, the project provides a leisure center offering various services. Space surrounding the project are landscape into several zonings such as bike rides, camel's promenades, walks and paddle.



Detailed Plan



Mass plan

First Floor

Ground Floor



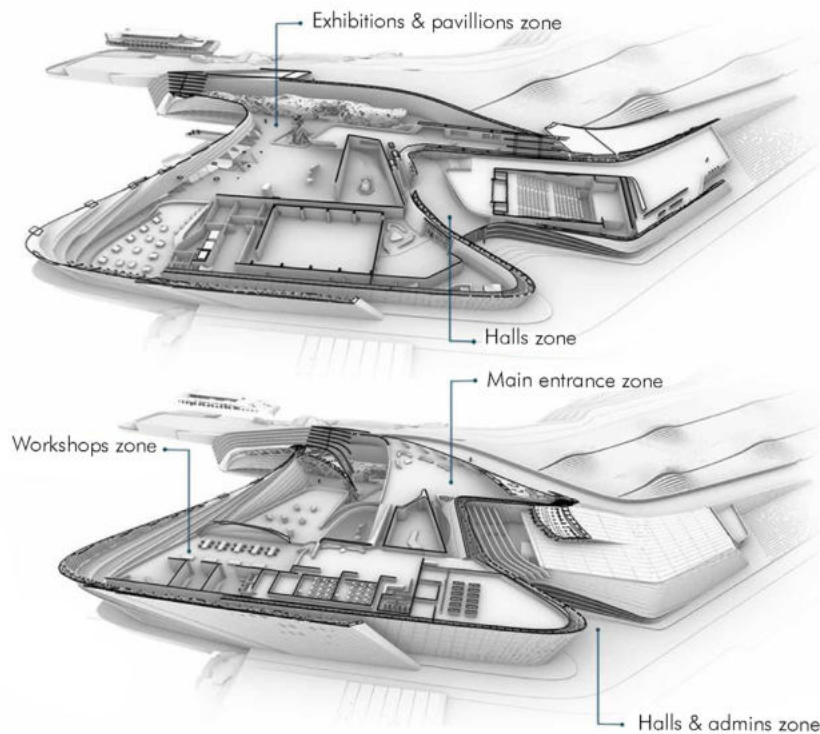
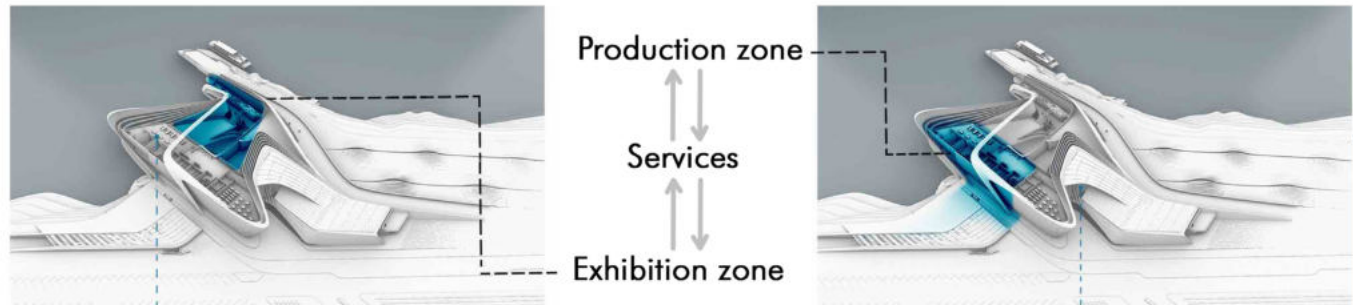
This pavilion, inspired by nature, its location, and topography, can be defined as vernacular architecture. It responds to the climate change crisis, addresses the needs of the locals, and harmonizes with the elements of nature: The salt crystals. At the same time, it is very easy and simple. That's why it is crucial to study this project.



Designed by: Ahmed Darwish
 Location: Mariott lake in Alexandria Egypt
 Function of the project: Art center that relies on Salt physical reactions as an artistic raw material



The building is divided into two main sections in addition to their services



It is of utmost importance to study this salt museum, as we analyze and understand the various strategies and experiments for using salt as a raw material. Additionally, we should examine the materials used, the required time, and the significance of sunlight in expediting salt production

3 different strategies applied in this project to use salt as a raw material

First Strategy: Manual salt carving strategy



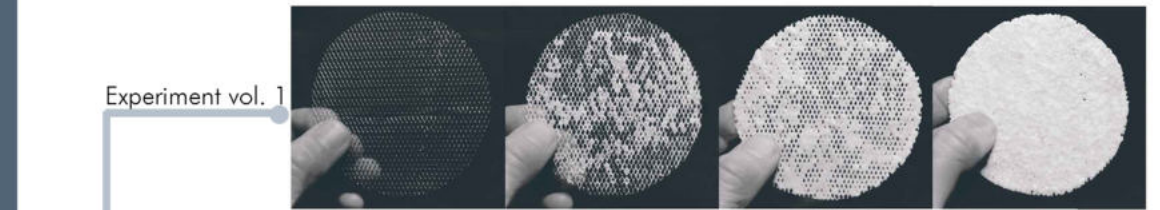
Salt is compressed to a block ready for carve

Second Strategy: 3D printing and computer-aided design using local salt



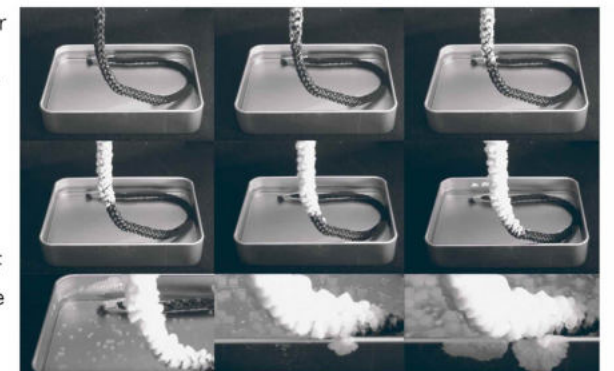
Salt mixed with glue to be ready for 3D printing

Third Strategy: The natural crystallization of salt strategies

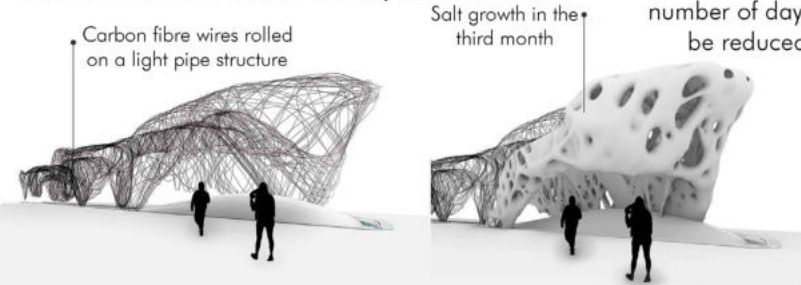


Testing experiment for crystallization of salt by adding "methanol"

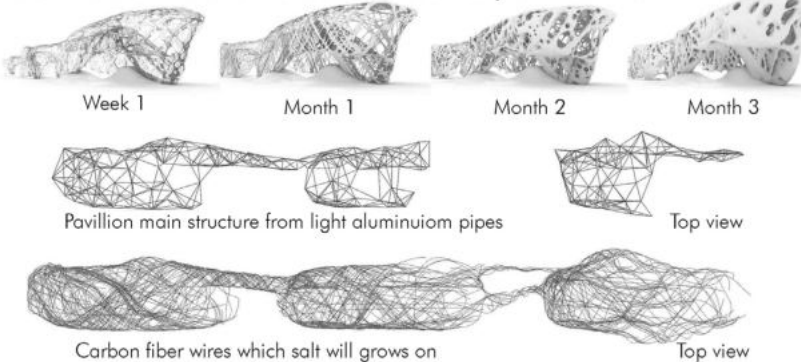
Testing experiment for crystallization of salt on a structure a part of which is submerged in a salt solution. "Methanol" and "Sunlight" acts as a catalyst that doubles the speed of crystallization, So the number of days will be reduced.



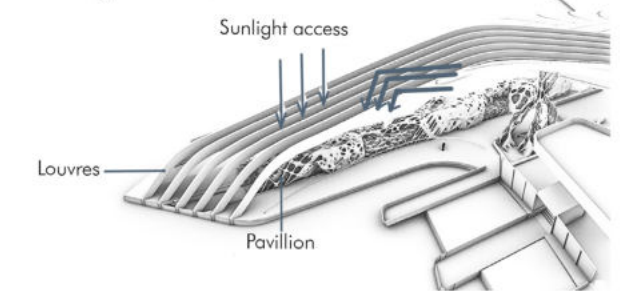
Indoor Pavillion based on experiment vol.2



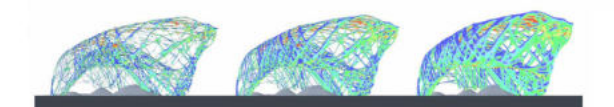
Software Simulation based on Salt experiment vol.2



Sunlight Effect



The density of the part facing the sunlight is more than other parts and the density gradually decreases according to the amount of sunlight



one of the World's Biggest Adaptive Reuse Projects



- One of the seven miracles of Poland
- One of the world's oldest and continuously operational salt mines
- It was known as the largest salt producer in Poland
- It was renowned for their intricate underground salt chambers and chapels entirely carved from salt
- A UNESCO World Heritage Site

From a naturally-healing health center to a secluded church and an underground bungee jumping platform, this colossal adaptive reuse project is the Wieliczka Salt Mine

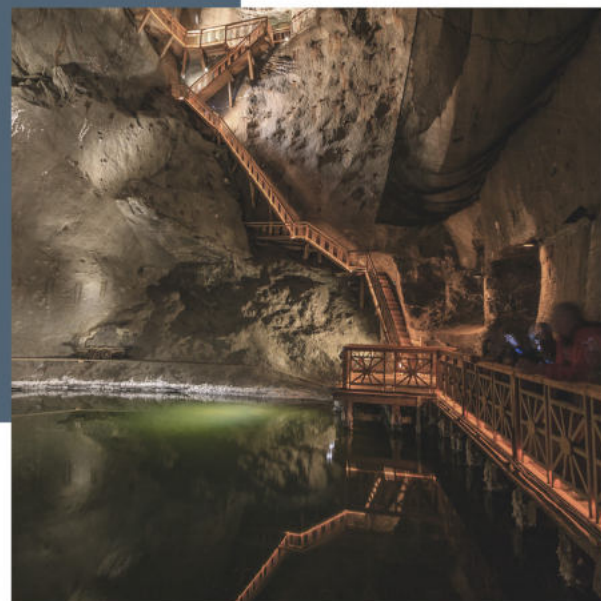


The church

Some are used as venues with lavish chandeliers, while others have been transformed into extraordinary chapels or taverns

The health resort

A distinctive underground microclimate for Patients with respiratory conditions who benefit from the clean, salt-filtered air in the mines



The bungee Jumping

A 36-meter high chamber is now used as the world's first underground bungee jump and hot air balloon



Crystal chandeliers

Wooden flooring

The walls and ceilings of chambers used as banquet halls, event venues, and chapels are left in their raw, natural state.

Tourist Route ●

● Miner's Route

In fact, the labyrinth is so colossal that visitors only have access to %2 of the site

The tourist route takes you on a journey through the chambers.

The miners' route, allows you to wander through underground salt labyrinths and perform mining activities.



It is crucial to study a project with significant historical value and understand how they transformed it into a tourist attraction by repurposing the salt mines, ultimately turning it into a salt sculpture.

05

ZOOMED ANALYSIS

Focal points	88
Zone 1 introduction	90
Landuse map	92
SWOT	94
Challenges	96
Zone 2 introduction	98
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Landuse map	108
SWOT	110
Challenges	112

In this chapter, we dive deep into our chosen zones, illuminating their strategic selection and unique features. Through this exploration, we dissect industrial integration, delve into historical significance, and appreciate the natural beauty that informs our revitalization strategy.

ZONE 1

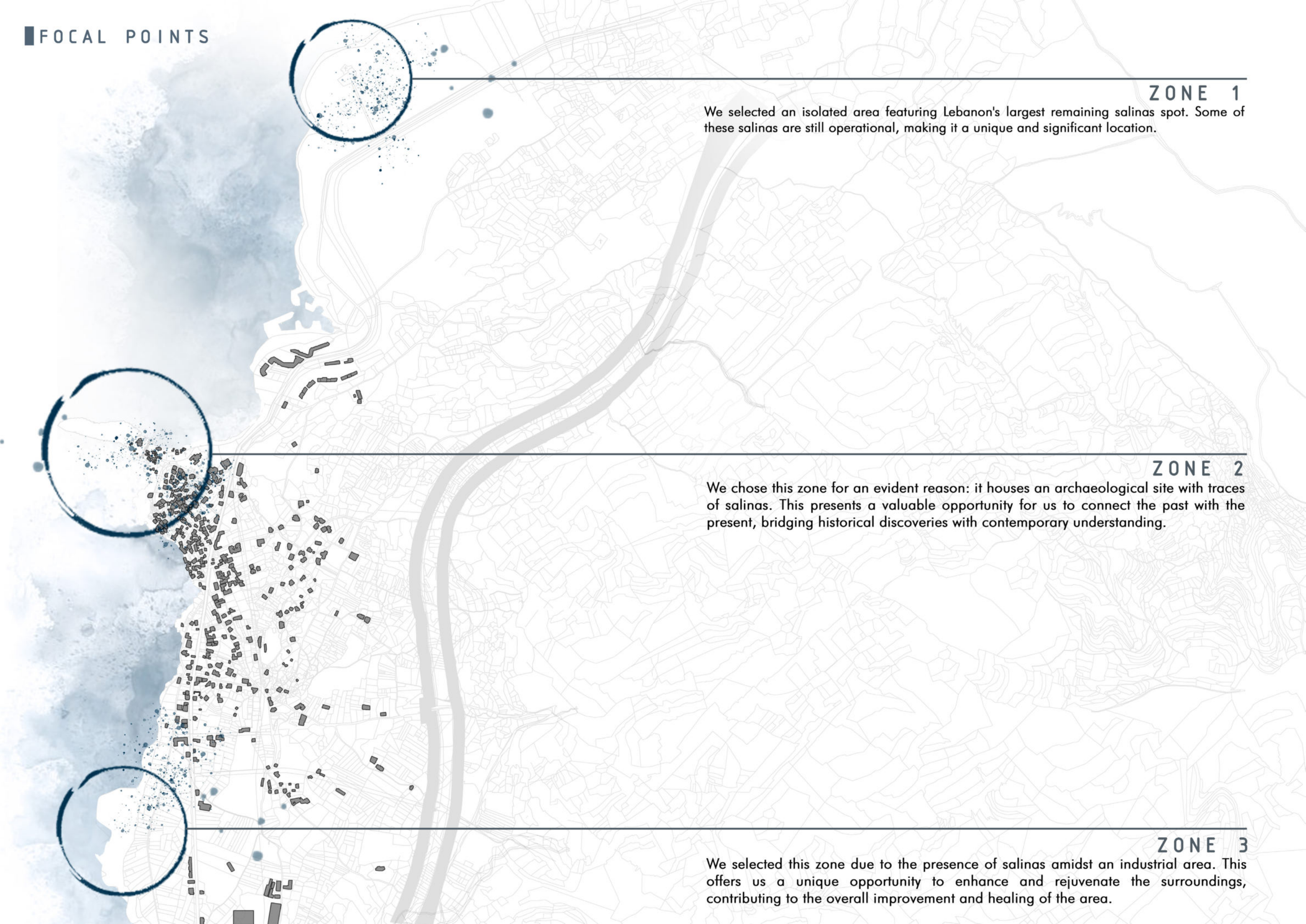
We selected an isolated area featuring Lebanon's largest remaining salinas spot. Some of these salinas are still operational, making it a unique and significant location.

ZONE 2

We chose this zone for an evident reason: it houses an archaeological site with traces of salinas. This presents a valuable opportunity for us to connect the past with the present, bridging historical discoveries with contemporary understanding.

ZONE 3

We selected this zone due to the presence of salinas amidst an industrial area. This offers us a unique opportunity to enhance and rejuvenate the surroundings, contributing to the overall improvement and healing of the area.



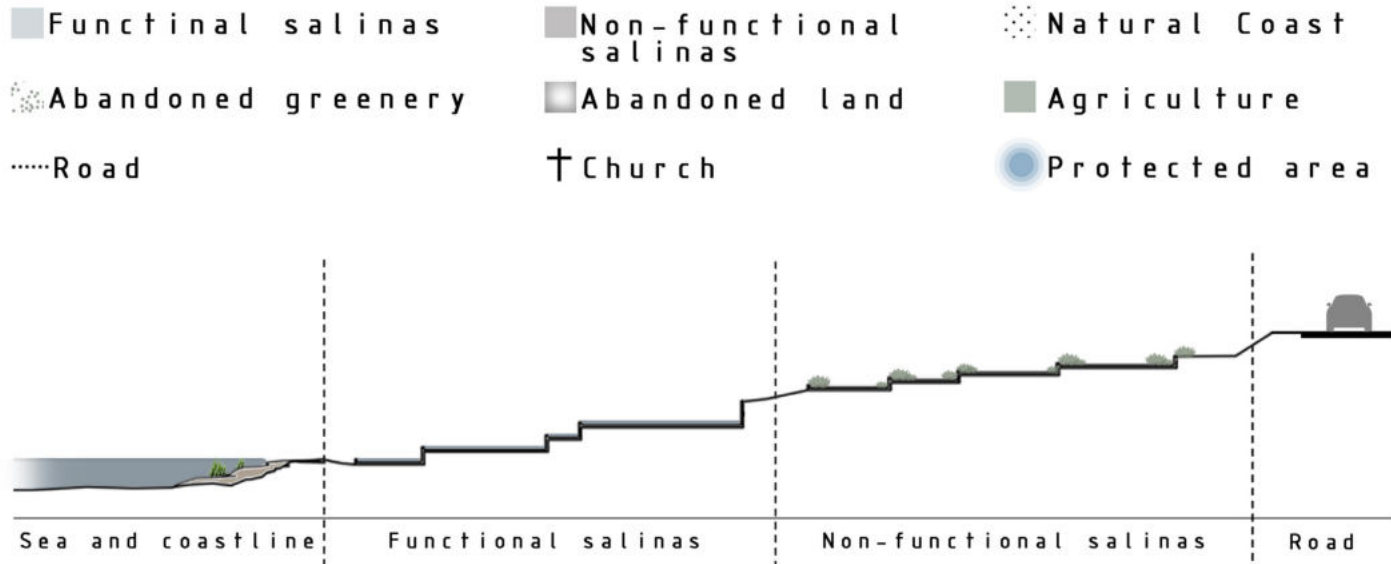
■ ZONE 1

This specific zone represents a unique blend of historical significance and untapped opportunities. Within its boundaries, a combination of functional and non-functional salinas, alongside abandoned green spaces, creates a complex landscape rich in potential. The primary objective here is clear: to breathe new life into these neglected spaces, transforming them into practical and vibrant hubs. This revitalization effort is not isolated; it's part of a broader vision to link this zone with its surrounding areas, eradicating its current state of isolation and enhancing its connectivity. Achieving this involves repurposing abandoned sites into functional cultural and ecological centers, serving as focal points for community engagement. This multifaceted approach not only preserves the area's heritage but also fosters its integration into the larger community fabric, contributing significantly to a sustainable, interconnected future for the region.



LANDUSE

The land-use map of Anfeh shows a picture of contrasts between functional and non-functional salinas, as well as abandoned spaces. Its goal is to reimagine these spaces, forging connections between these elements. This map embodies the vision of revitalization, transforming forgotten areas into thriving cultural and ecological area, ensuring a harmonious coexistence between heritage, nature, and community.

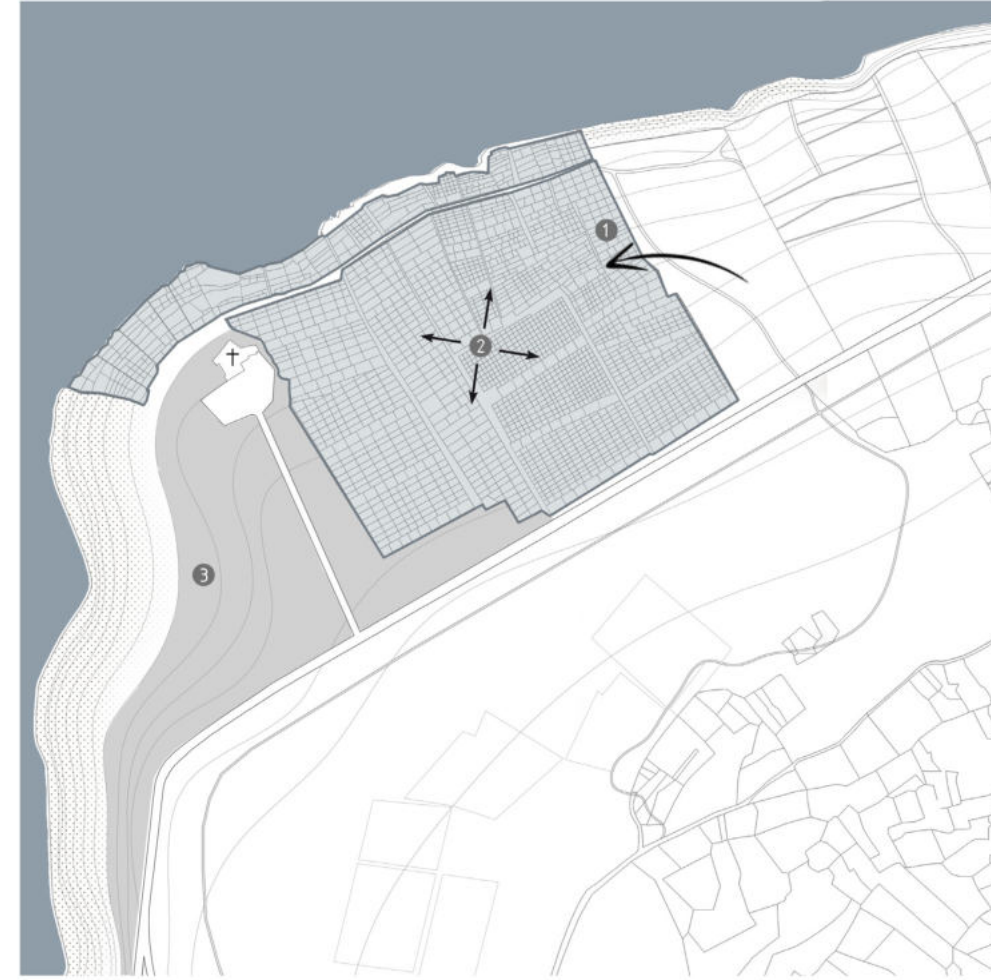




Strengths

- 1 Rich salt production history**
The presence of existing functional salinas showcases a historical and cultural significance
- 2 Natural Coastlines**
Attracts tourists that are interested in nature-based activities
- 3 Abandoned lands**
It offers the possibility of re-functionalizing the land and implement eco-friendly activities

→ Attraction
— Salinas



Opportunities

- 1 Tourism and Education**
Reviving salt production can be turned into an educational and touristic attraction
- 2 Diversification of salt products**
Exploring the production of salt can develop into selling them in markets, increasing the economic viability
- 3 Environmental Conservation**
Rehabilitating abandoned green areas could be an opportunity for environmental conservation efforts

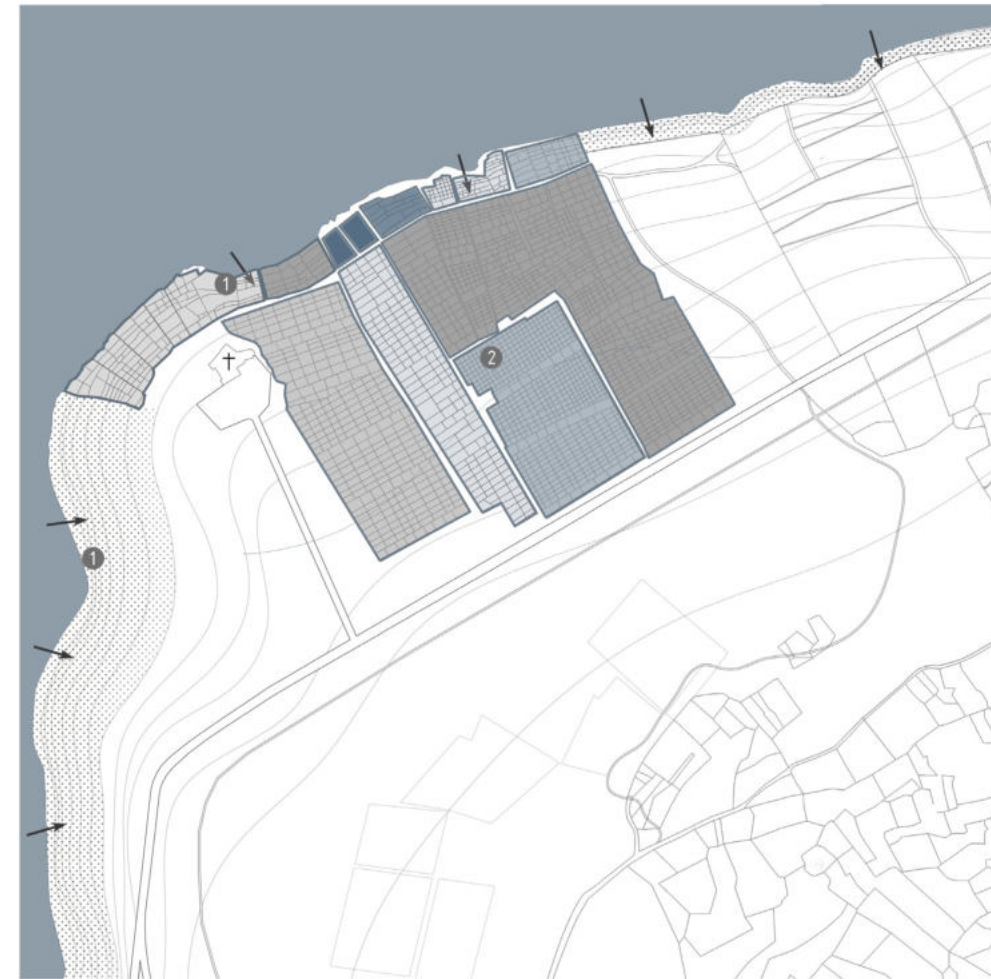
→ Attraction
— Salinas
- - - Growth



Weaknesses

- 1 Limited Infrastructure**
Reliance on a single main road for connectivity indicates potential transportation limitation, which could impact the productivity of salt-related activities
- 2 Abandoned Green Areas**
While abandoned green areas can be seen as an opportunity, their current state might require extensive re-adaptation and refunctioning

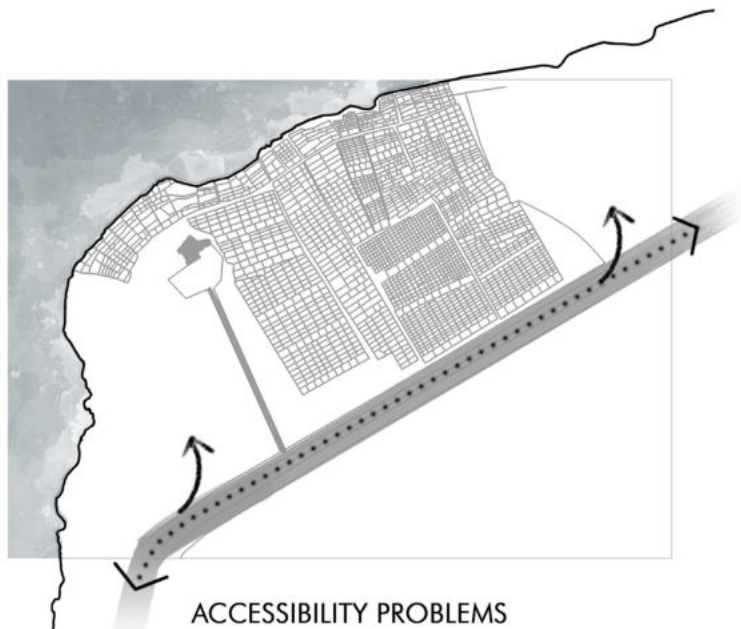
..... Weak connection
— Salinas



Threats

- 1 Climate change**
Change in climate patterns, such as rising sea levels or extreme weather events could threaten both salt production and the natural coastline
- 2 Market Competition**
The salt production decreased in the past for a reason, which mean we should approach salt production in a different logic

→ Climate change threats
— Salinas



ACCESSIBILITY PROBLEMS

Weak road connectivity in this zone poses a challenge for enhancing accessibility and connecting with the center.



RESTORE NEGLECTED AREA

Revitalize the abandoned area to attract visitors and make it a desirable destination



RESTORE THE SALINAS

Creating a stronger connection with the surrounding



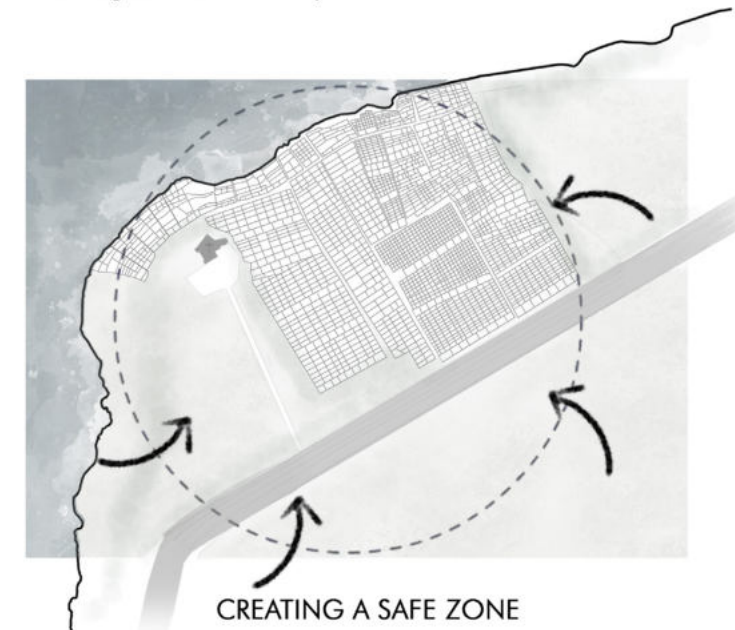
WILDLIFE PROTECTION

Integrating natural habitats to attract and protect wildlife while enhancing biodiversity.



CULTURAL PRESERVATION

Revitalize the salinas while preserving the cultural importance by balancing modern and history



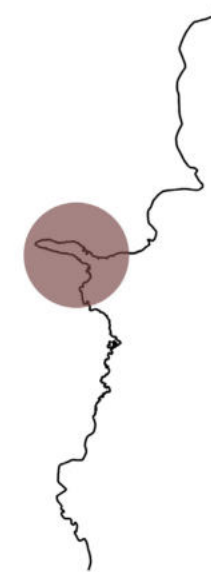
CREATING A SAFE ZONE

The area being isolated, one of the challenges is creating a safe area that is inviting for both humans and animals .

■ ZONE 2

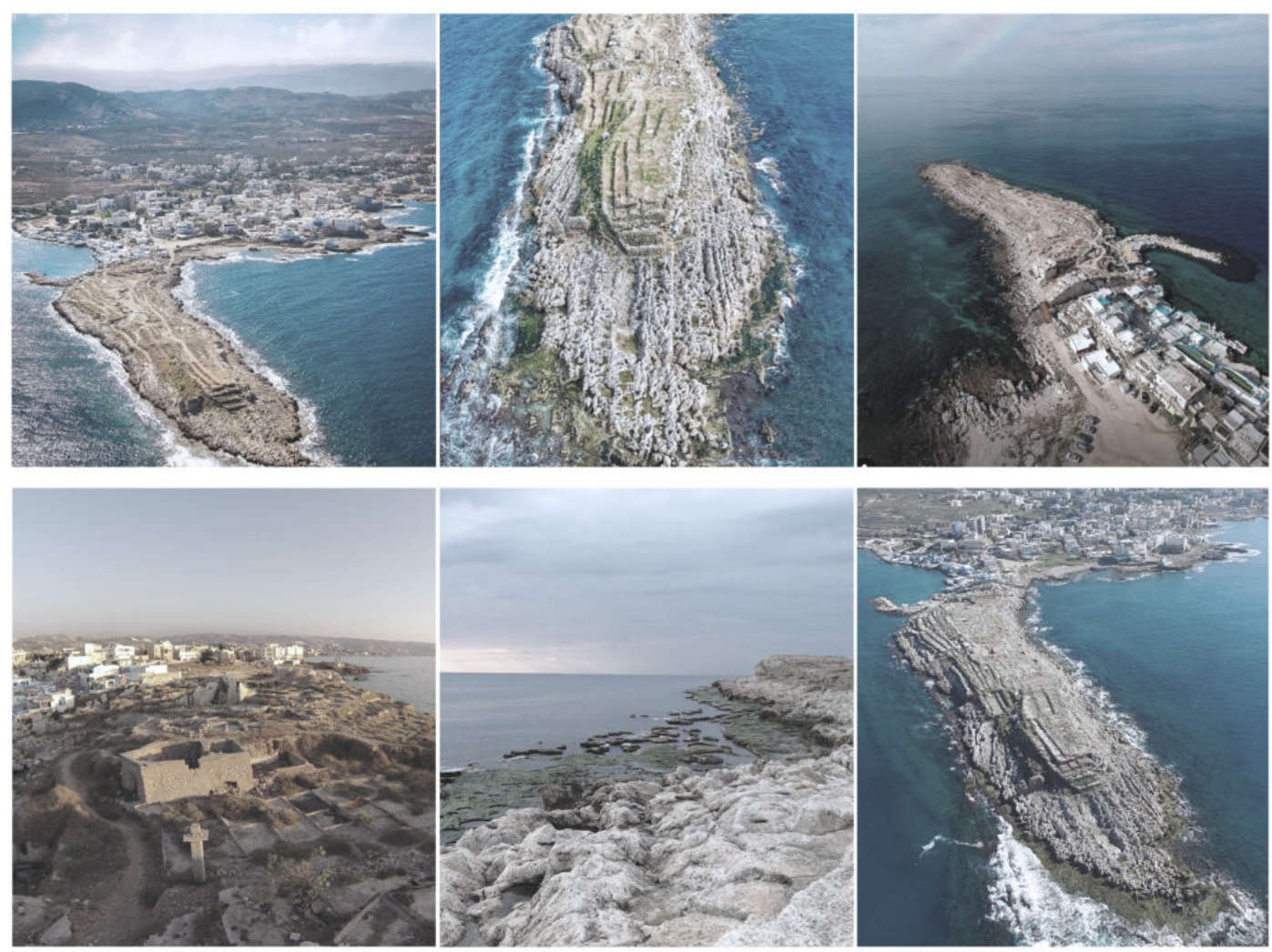
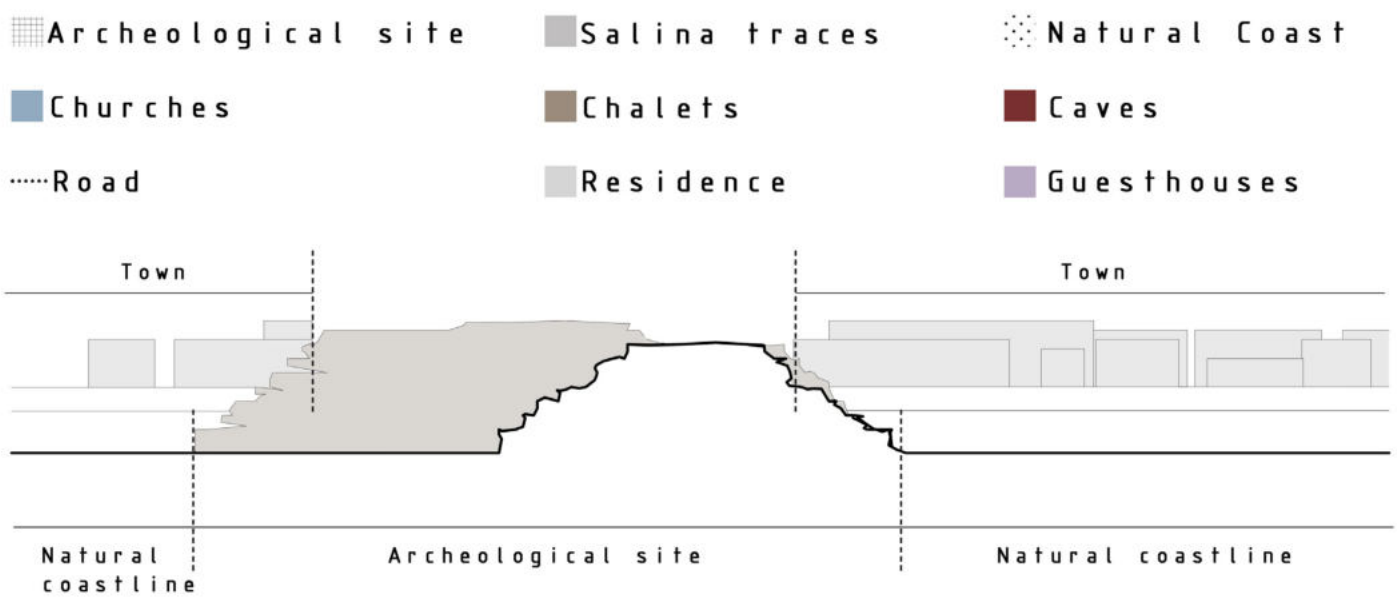
This zone is a unique blend of historical significance and contemporary potential. Located proximately to the heart of Anfeh, this region holds archaeological marvels, including traces of ancient salinas and remnants of civilizations long past.

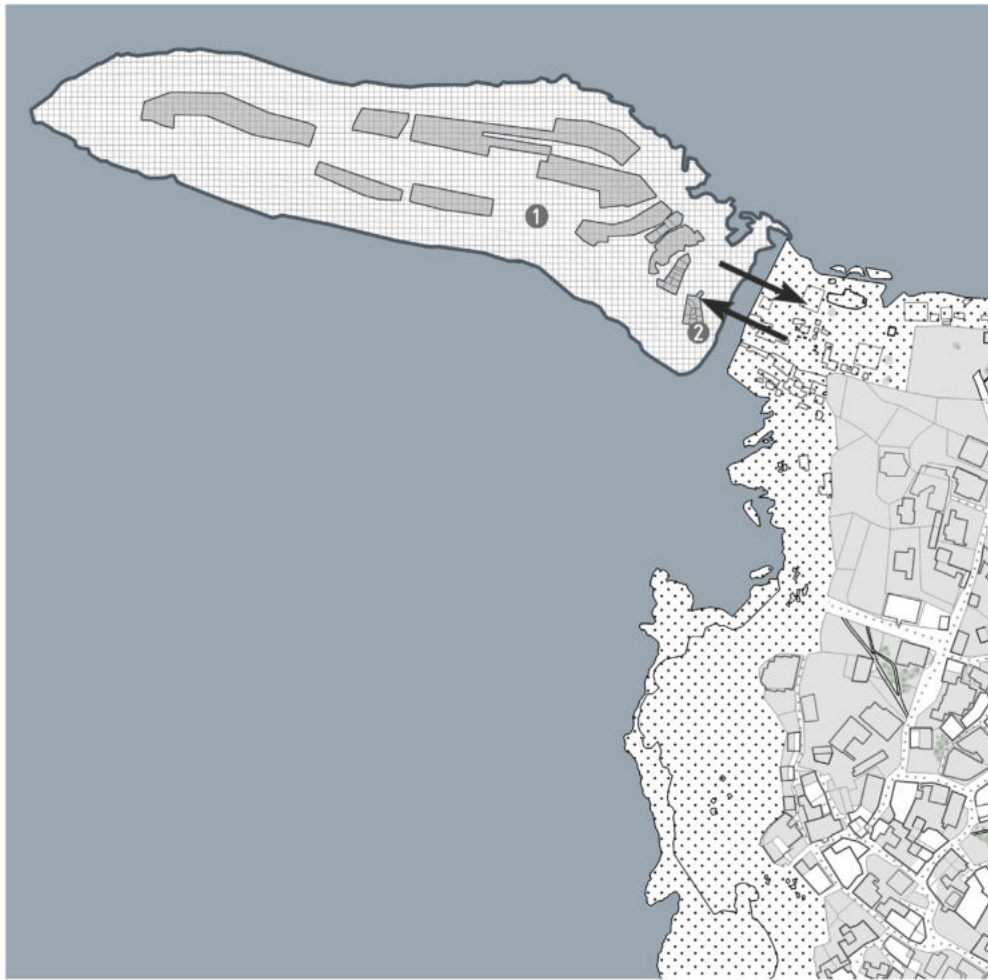
Navigating through narrow yet crucial pathways, this area presents both challenges and opportunities. Preserving its historical integrity while accommodating modern needs stands as a core challenge. However, within these challenges lie numerous prospects for sustainable tourism, community engagement, and economic growth. Our examination will delve into the practical strategies, including urban design initiatives and community partnerships, aimed at harmonizing the preservation of Anfeh's historical legacy with its evolution into a vibrant, economically viable space.



LANDUSE

This land-use map provides a practical overview of the region, spotlighting the unique blend of archaeological remnants, including salinas, and the modern developments that coexist here. This map serves as a comprehensive guide, outlining the area's historical importance and potential for sustainable growth. It navigates the challenges of preserving heritage while promoting responsible tourism and community engagement.





Strengths

1 Historical significance

The presence of an archeological site with traces of salinas adds historical and cultural value to the areas, attracting historians, archeologists and tourists.

2 Touristic Appeal

The immediate connection to the center of Anfeh, a known tourist destination, provides an opportunity for increased foot traffic from tourists

→ Modern-historical connection
 — Archeological site



Opportunities

1 Heritage Preservation

Opportunity to conserve and showcase the remaining traces of salinas, preserving the area's unique historical identity

2 Cultural tourism development

Leveraging the historical and archeological significance, there is an opportunity to develop guided tours, educational programs and interactive experiences to attract cultural tourists.

● Points of interest
 — Archeological site



Weaknesses

1 Limited accessibility

The narrow and the tight roads within the village can create accessibility challenges, potentially limiting the number of visitors

2 Infrastructure limitations

Owing to the village's reputation, it consistently experiences an overwhelming influx of visitors, exacerbating the challenge associated with its lack of organization and giving rise to numerous issues

~ Influx of visitors
 — Archeological site



Threats

1 Cultural Erosion

Rapid urbanization and modernization might pose a threat to the preservation of local traditions and historical practices

2 Tourism Overload

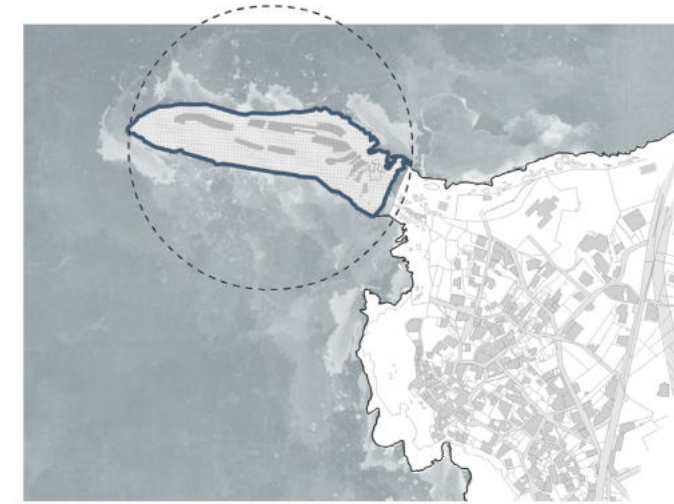
While tourism is an opportunity, an influx of tourists, if not managed properly, could lead to overcrowding, environmental degradation, and strain on local resources

⊖ Cultural erosion
 — Archeological site



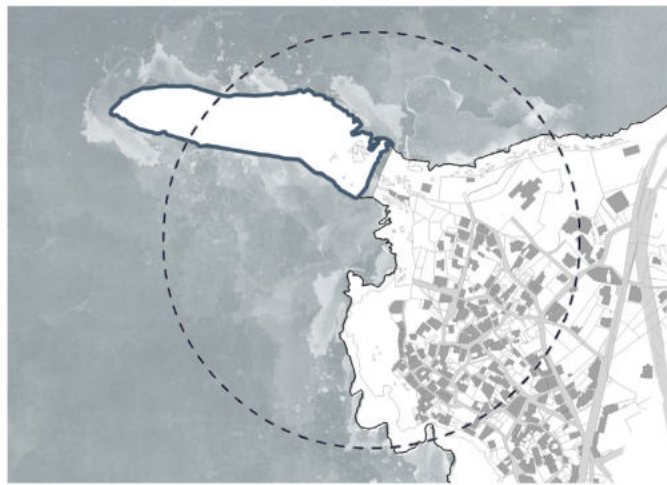
INFRASTRUCTURE DEVELOPMENT

Improve accessibility and create a connection between the archeological site and the center with the surrounding



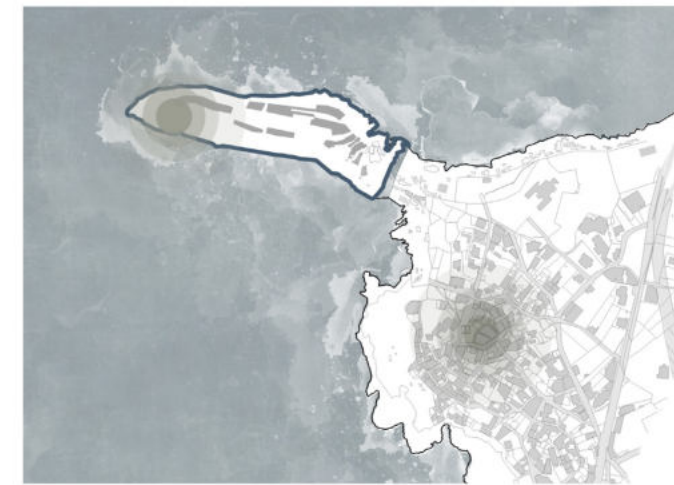
ARCHEOLOGICAL CONSERVATION

Implementing conservation measures to protect the archeological artifacts and structures



CULTURAL PRESERVATION

Safeguarding local traditions and cultural heritage while promoting tourism



EDUCATIONAL INITIATIVES

Inform visitors about the historical significance of the archeological site and try to stop their destruction



TOURISM MANAGEMENT

Developing a sustainable tourism management plan to prevent overcrowding



ZONING AND LANDUSE REGULATIONS

Implementing appropriate zoning regulations to prevent uncontrolled development around the archeological site

■ ZONE 3

Situated near an industrial hub, this area presents a unique set of challenges and opportunities. Abandoned lands, non-functional salinas, and a picturesque coastline define its landscape. Our task is to navigate these complexities professionally, aiming to strike a balance between industrial growth, environmental preservation, and community development. This revitalization project focuses on pragmatic solutions, aiming for sustainable progress while conserving the area's natural heritage.

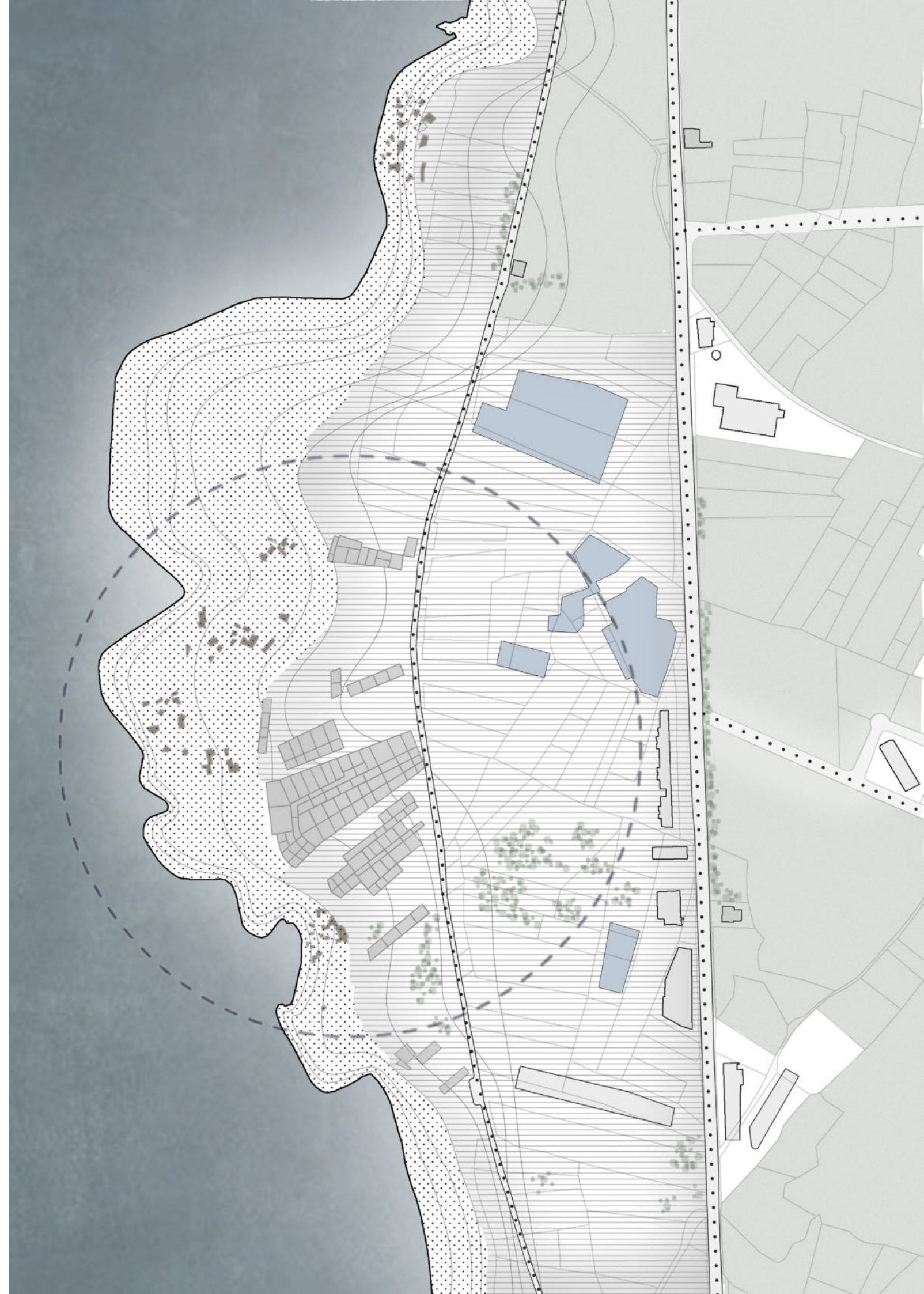
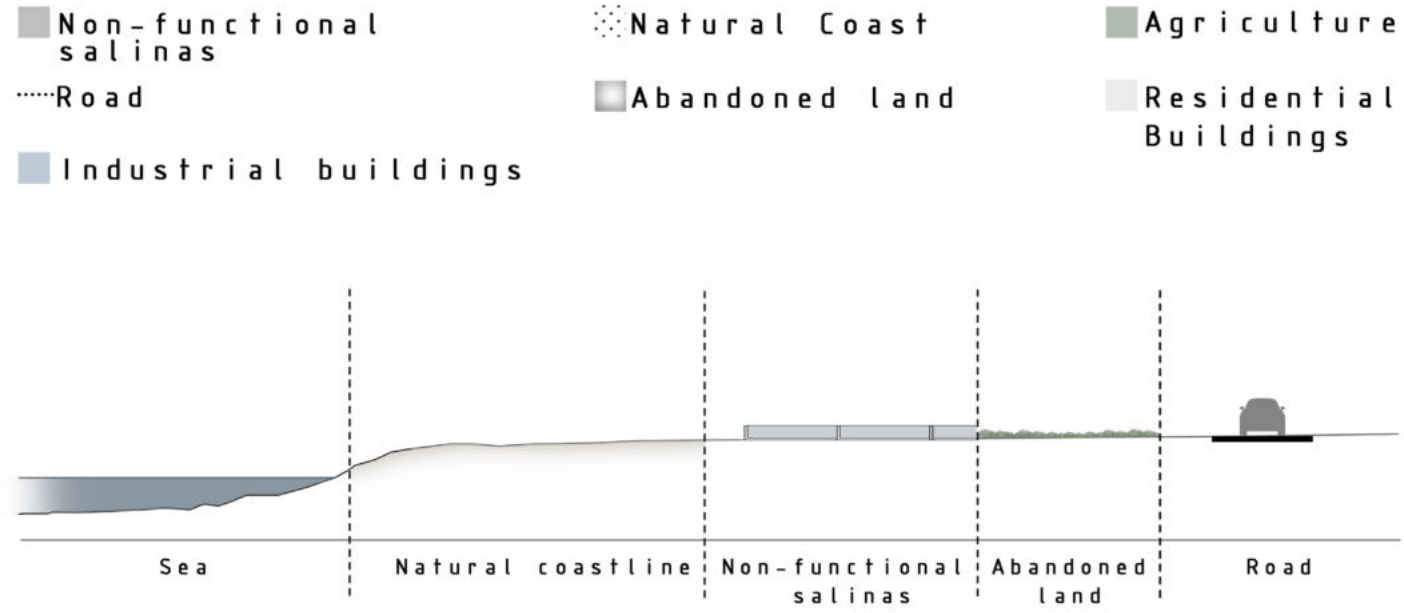
We aim not just to transform neglected spaces into functional ones but to do so in a manner that is environmentally sustainable and socially responsible. By leveraging our expertise, we seek to foster economic development while safeguarding the natural ecosystem and wildlife habitats.

This project represents a bridge between the pragmatic demands of urban development and the imperative of preserving the area's environmental integrity.



LANDUSE

This Land Use Map encapsulates our mission: preserving nature while enhancing communities. It's a visual representation of our commitment to ecological preservation, minimized pollution, and thoughtful urban planning. The goal here is transforming abandoned spaces into vibrant hubs, all while safeguarding the area's unique wildlife and habitats.





Strengths

1 Natural Beauty

The area has a stunning natural coastline, presenting an opportunity for eco-tourism and nature-oriented activities.

2 Untapped Potential

Abandoned lands and salinas provide a canvas for creative development projects, allowing for innovative landuse.

— Salinas



Opportunities

1 Tourism Development

Exploiting the natural beauty, the area can become a magnet for tourists seeking serene coastal experiences.

2 Land and salina reclamation

Rehabilitating abandoned lands and salinas into recreational areas, parks, or cultural spaces and use them as a tool to heal the area

~ Influx of visitors
— Salinas



Weaknesses

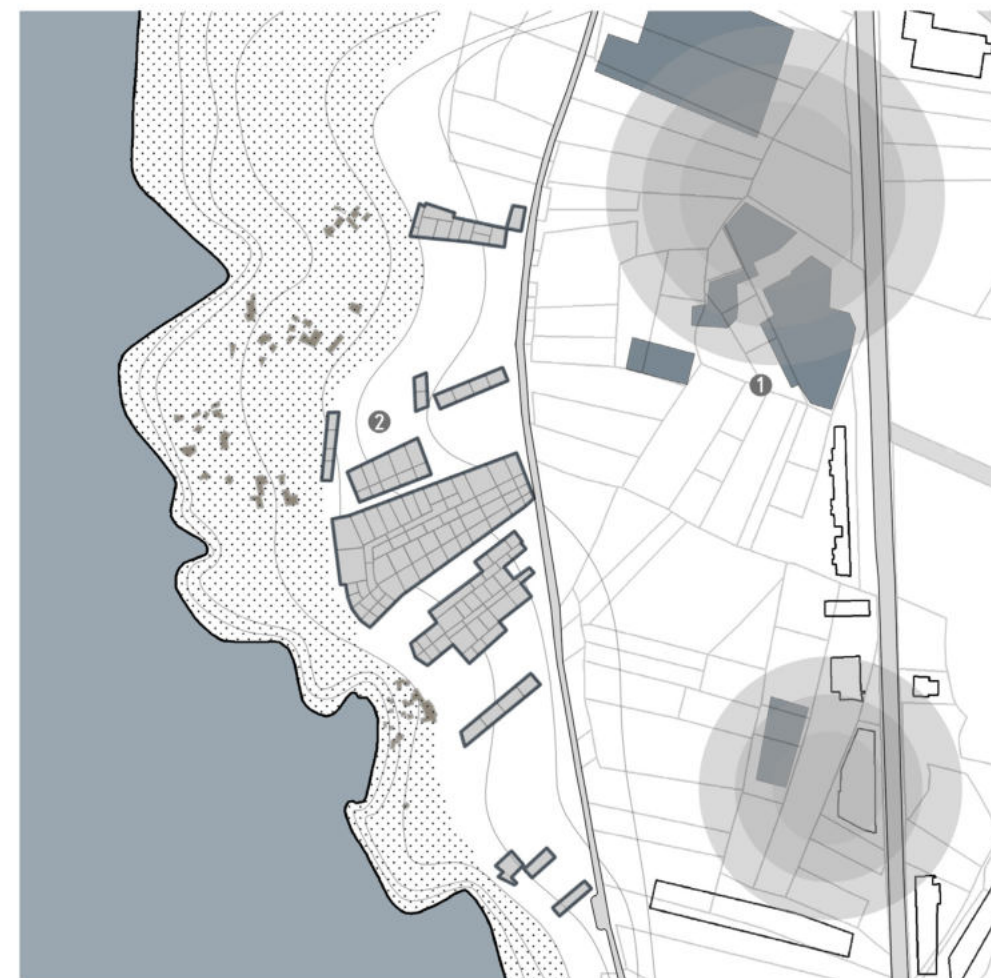
1 Proximity to industrial zone

The close proximity to the industrial area may lead to environmental concerns, such as pollution and noise.

2 Poor connectivity

Limited transportation infrastructure hampers accessibility, discouraging visitors and hindering economic activities.

— Salinas



Threats

1 Environmental Pollution

The proximity to the industrial zone poses a threat of pollution, necessitating strict environmental regulations and proactive measures to protect the ecosystem.

2 Negative Perception

Overcoming the negative image associated with the area, by showcasing its natural charm and potential, to attract visitors.

● Pollution
— Salinas



ABANDONED LAND RECLAMATION

Developing innovative strategies for repurposing abandoned lands, transforming them into functional spaces



SALINAS RESTORATION

Restoring the abandoned salinas to their functional state, preserving their historical and cultural significance



CONNECTIVITY ENHANCEMENT

Being an industrial area, it lacks appeal to visitors, resulting in limited accessibility



PERCEPTION CHANGE

Overcoming the negative perception associated with the area, emphasizing its natural beauty and potential



POLLUTION MINIMIZATION

Implementing pollution control measures across the zone



WILDLIFE PROTECTION

Implementing measures to protect local wildlife, ensuring their natural behaviors are undisturbed

06

GENERAL STRATEGY

Our vision	116
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In this chapter, we outline our objectives, vision, and core strategy for revitalizing Anfeh's salinas and surrounding areas. Our approach blends heritage preservation with modern development.

OUR VISION

Our primary objective revolves around strategically targeting key areas in Anfeh profoundly influenced by the salinas. Central to our mission is the seamless integration of these zones, weaving them together through a unique, salt-based urban design concept.

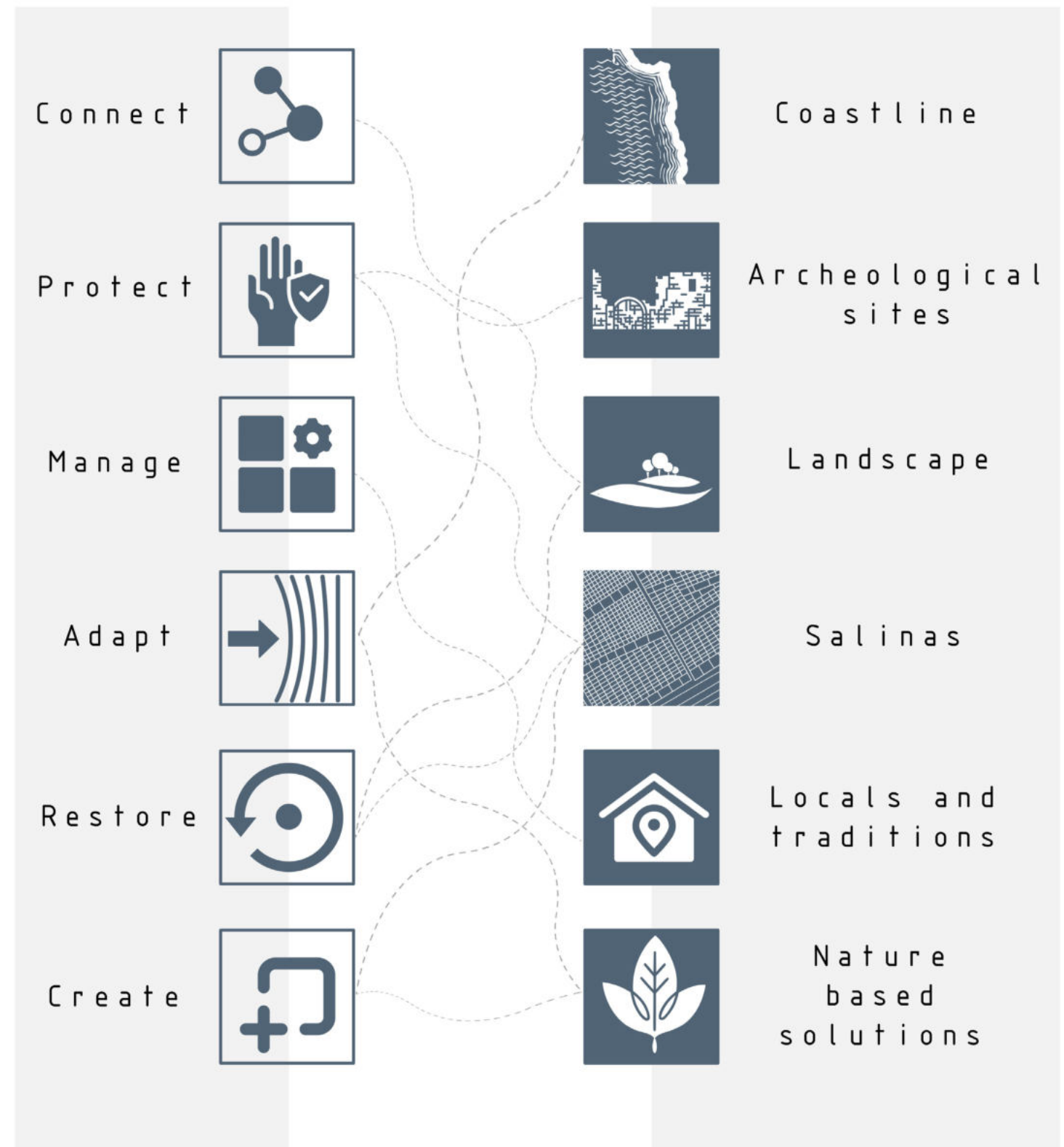
This innovative approach involves not only incorporating the existing salinas into our design but also ensuring their preservation and enhancement. By harnessing the inherent potential of salt as a foundational element, we aspire to redefine Lebanon's architectural landscape, introducing a fresh perspective where salt becomes the cornerstone of sustainability.

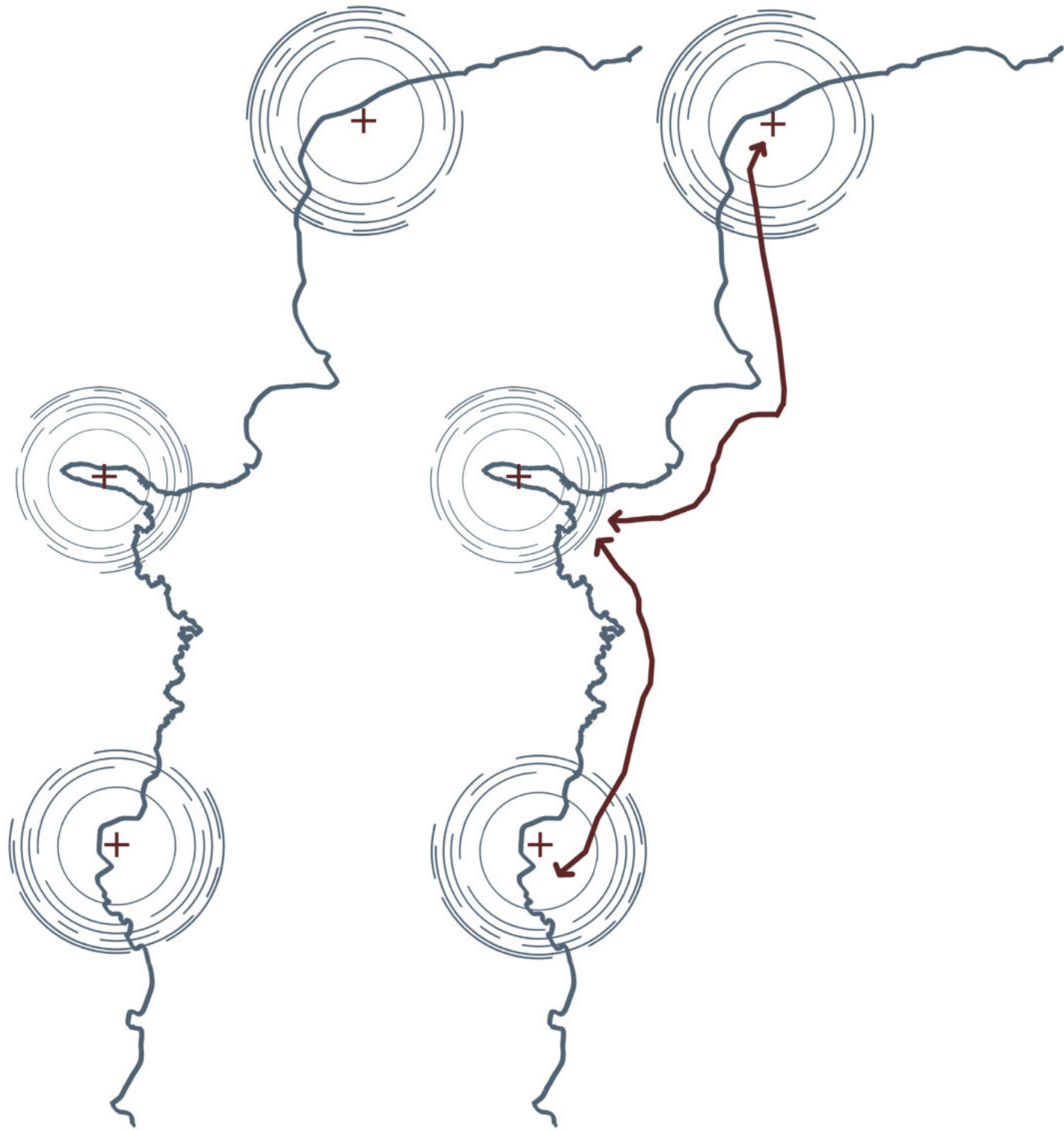
Our endeavor is not merely about urban development; it's a cultural renaissance, reshaping perceptions and demonstrating how embracing heritage, in this case, the salt pans, can lead the way to a more environmentally conscious and harmonious future.



OBJECTIVES

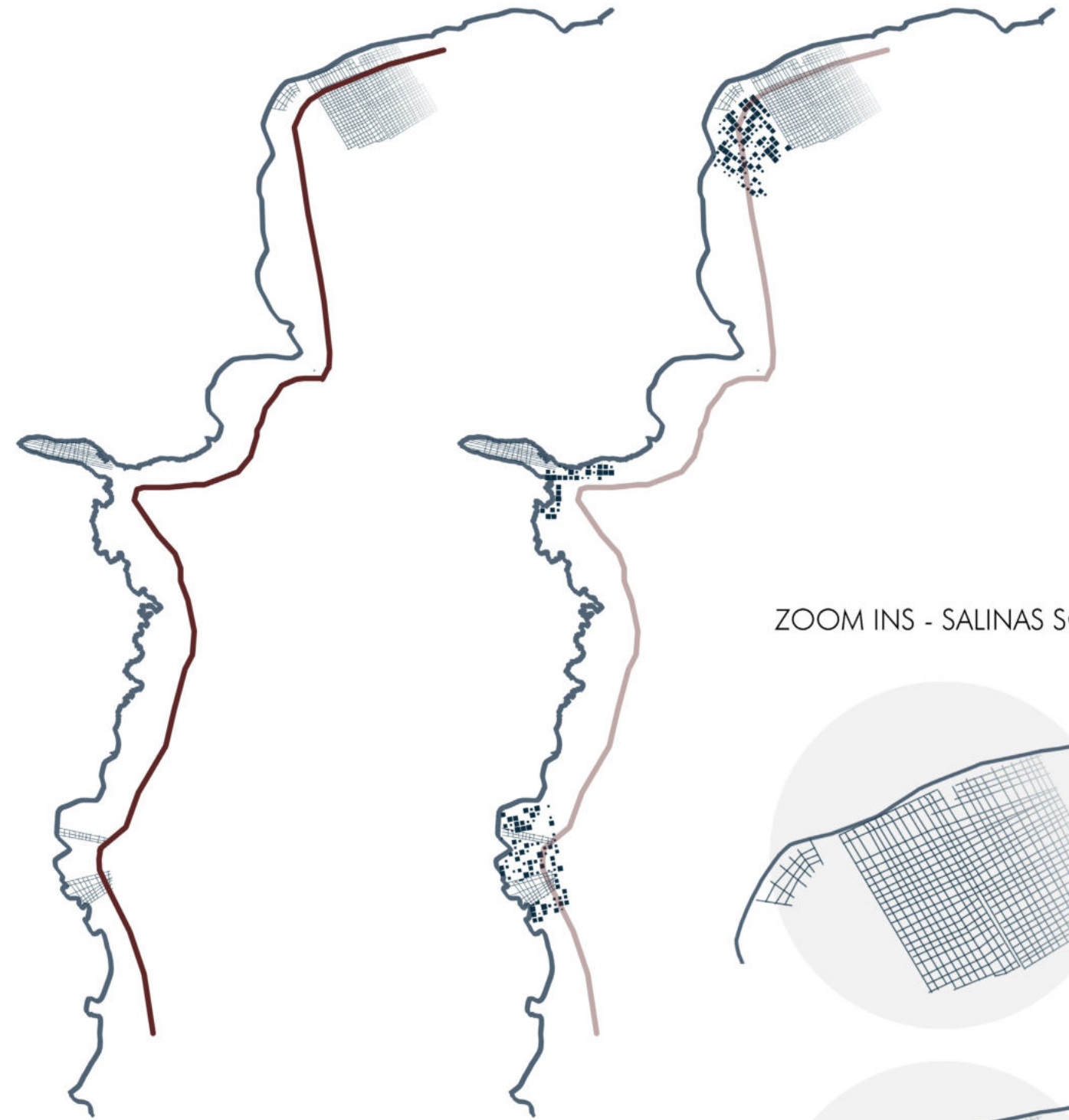
Directly connected to and affected by





1- Highlighting the 3 zones of our focus

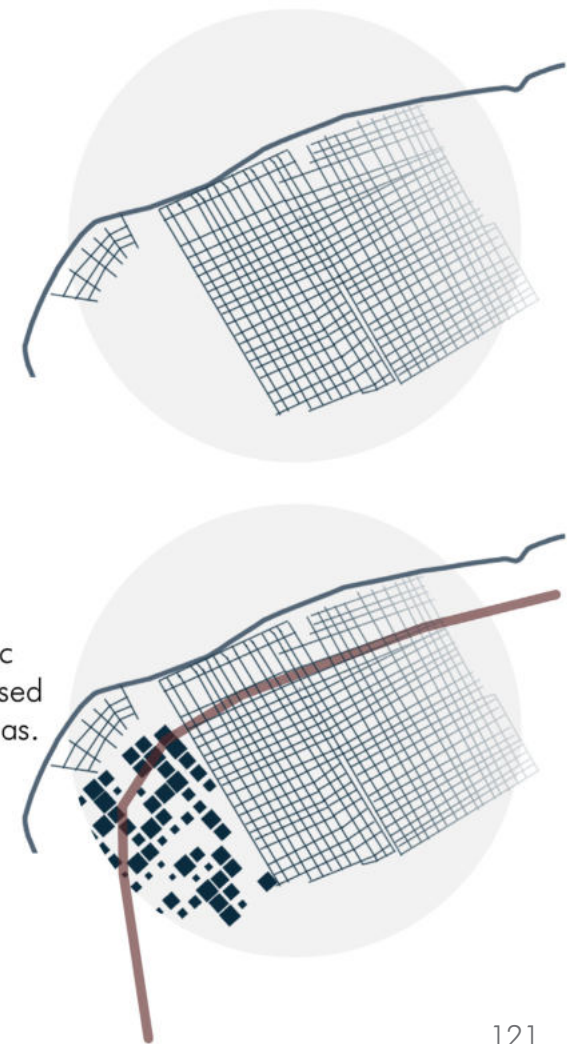
2- Connecting the zones together by a path

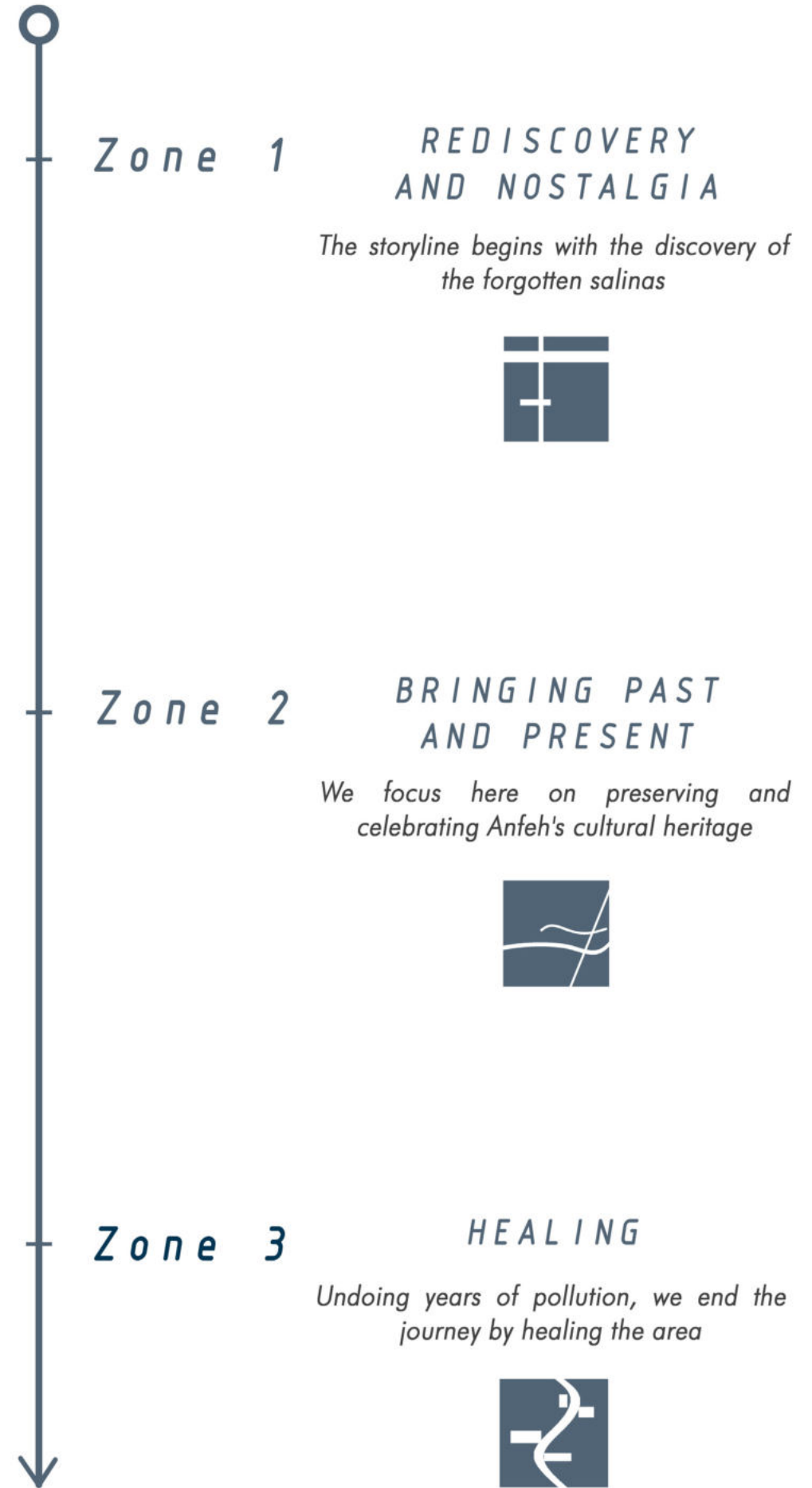


3- Analyzing the different patterns of the salinas in the 3 zones

4- Implementing a mosaic pattern for our functions based on the direction of the salinas.

ZOOM INS - SALINAS SCALE





07

ZOOMED STRATEGY

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Strategy zone 3	132

In this chapter, we will discuss the strategies implemented in each zone, providing a detailed overview of the unique approaches adopted for every area.

STRATEGY

In unifying Anfeh's diverse zones, our common strategy revolves around preservation, connectivity, and sustainable integration. To address common challenges like weak infrastructure and disconnection, we're creating pathways that link these areas seamlessly.

A key focus lies in improving accessibility through thoughtfully designed pathways, ensuring that each zone is connected to its surroundings.

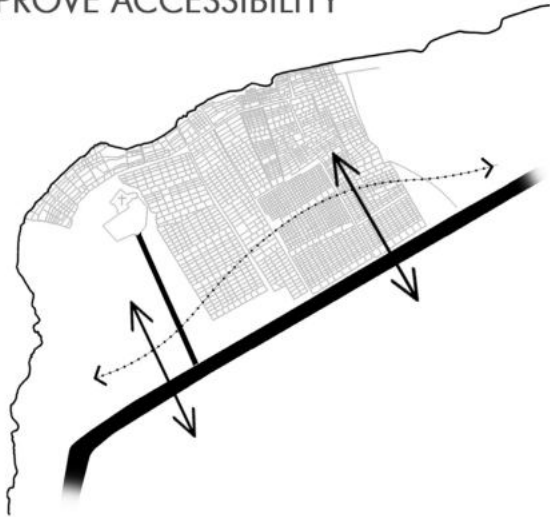
Our approach emphasizes the preservation of local heritage, with the regeneration of salinas at its core. By repurposing these historic sites and integrating them with green spaces, we create not just physical pathways but also cultural and ecological bridges.

Embracing nature-based solutions, our strategy prioritizes biodiversity, employing greenery not only for aesthetics but also as buffer zones to combat pollution.

This unified strategy aims for a more connected, green, and harmonious Anfeh.

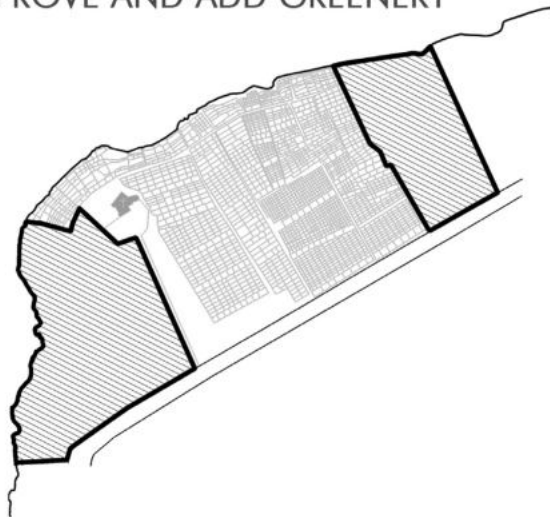


IMPROVE ACCESSIBILITY



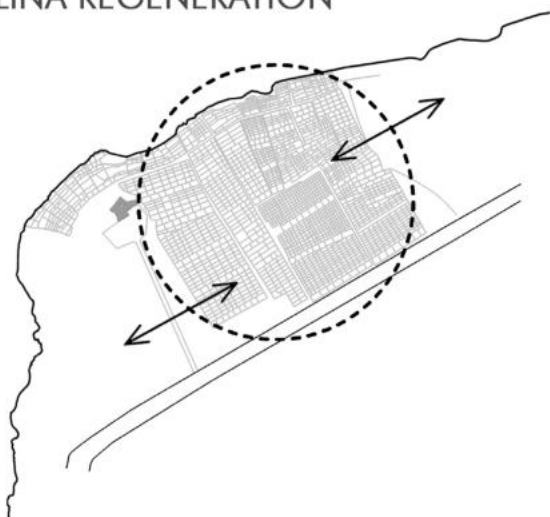
Our initial strategy focuses on improving the accessibility to enhance the site's welcoming atmosphere

IMPROVE AND ADD GREENERY



We aim to enhance and expand the green spaces in this area.

SALINA REGENERATION



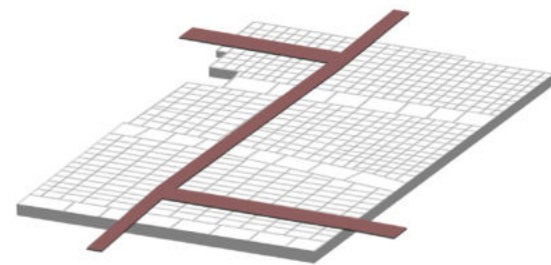
We aim to regenerate and refunctionalize the salinas restoring them for salt production in a manner that is both appealing and inviting.



The main goal is to be able to link the three zones together and eventually also the salinas

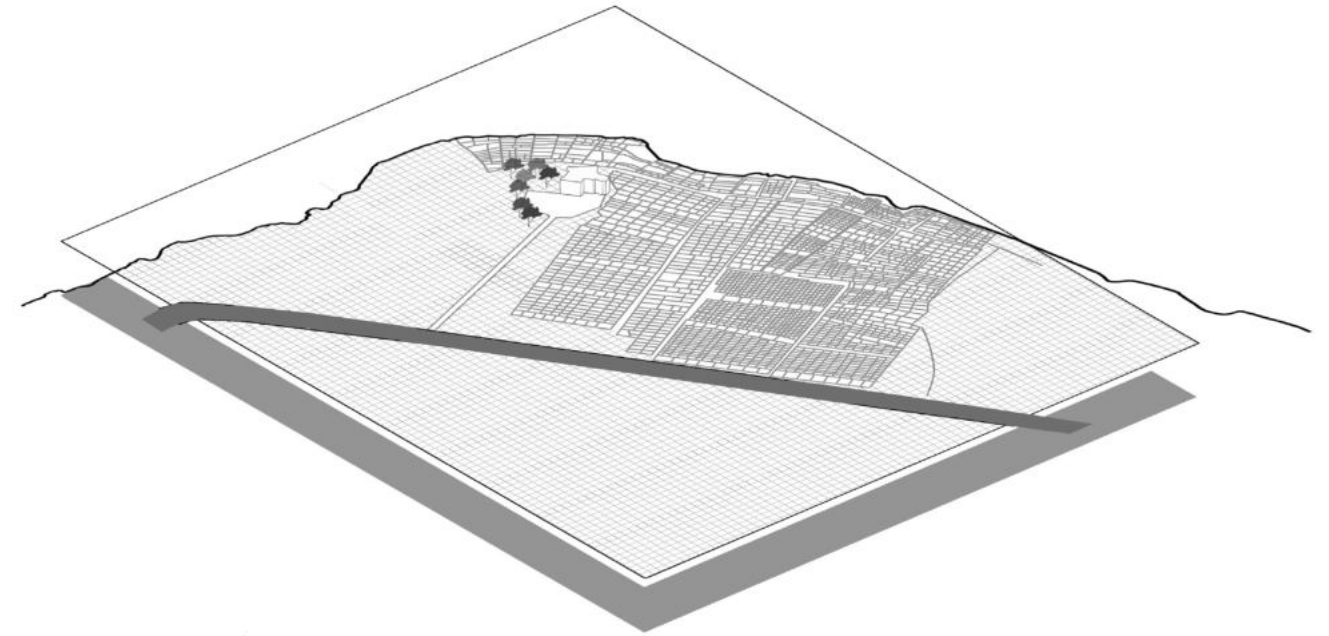


As we enhance the green spaces, our goal is to establish a biodiverse environment that welcomes wildlife.

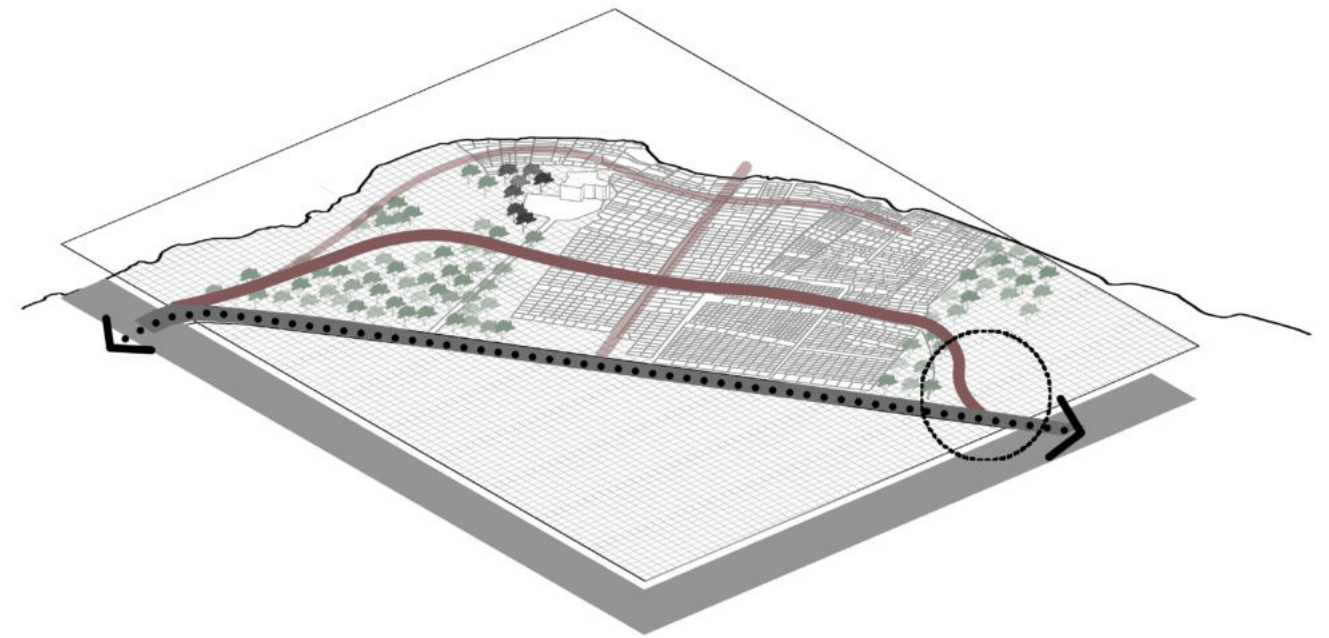


We are creating a connection between the salinas and their surroundings by incorporating the main pathway through them.

BEFORE



AFTER



LEGEND

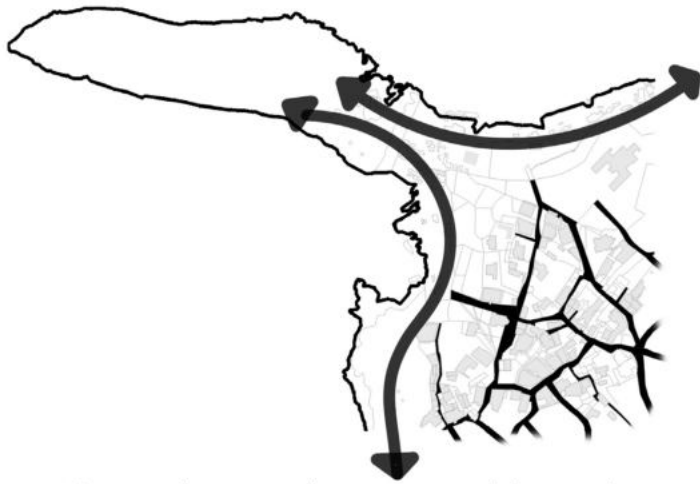
- Old trees
- New trees

- Proposed path
- main road
- Added bus stop

ZONE 2 - STRATEGY



IMPROVE ACCESSIBILITY



Our goal is to enhance accessibility to the archaeological site, making it more convenient.



The main path would be passing by the archeological site making it one of the destinations in our journey

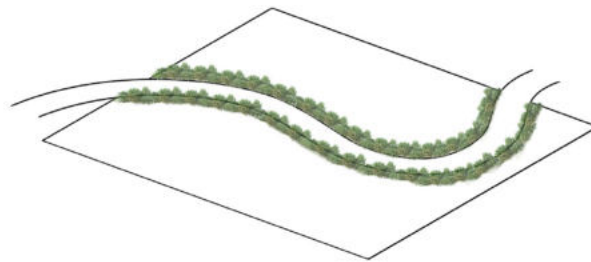
BEFORE



ADD GREEN AREAS

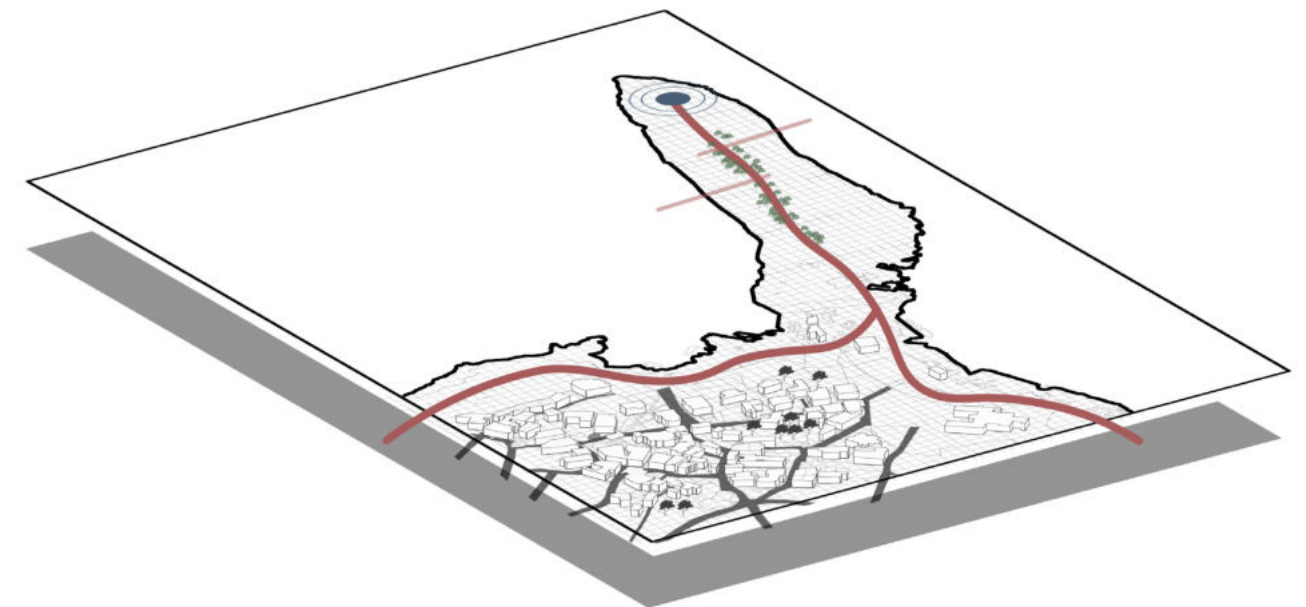


We are incorporating greenery into the site as a means of preservation.



The incorporation of greenery also serves the purpose of accentuating the main pathway.

AFTER



ARCHEOLOGICAL CONSERVATION



We are implementing interventions to enhance the visitor experience without compromising the site's integrity.



We are implementing elevated bridges, providing a panoramic view of the site while serving as vertical circulation for access to all levels.

LEGEND

-  Old trees
-  New trees

-  Proposed path
-  Area of interest
-  Secondary road



IMPROVE ACCESSIBILITY



the aim in this zone is to improve the accessibility to make the area more welcoming

IMPROVE AND ADD GREEN AREAS

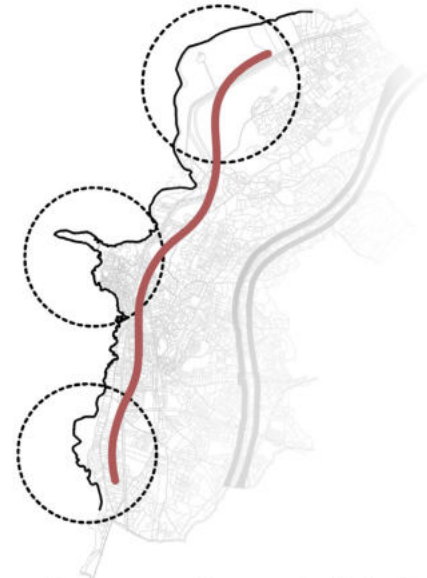


We aim to revitalize the neglected green spaces, transforming this area into a more inviting environment.

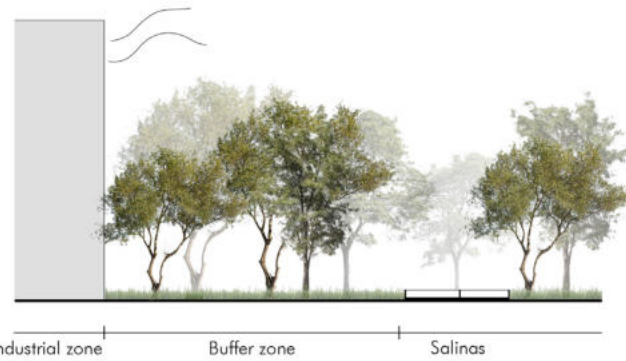
REGENERATE AND REFUNCTIONALIZE SALINAS



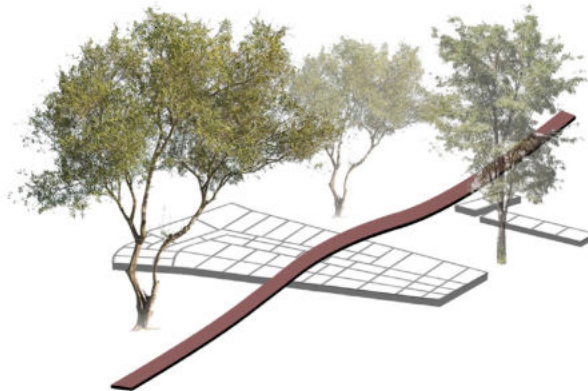
We aim to revive and repurpose the salinas, to make them more appealing and inviting.



Like the other zones this area is linked to the main proposed path to make it one of the main destinations.

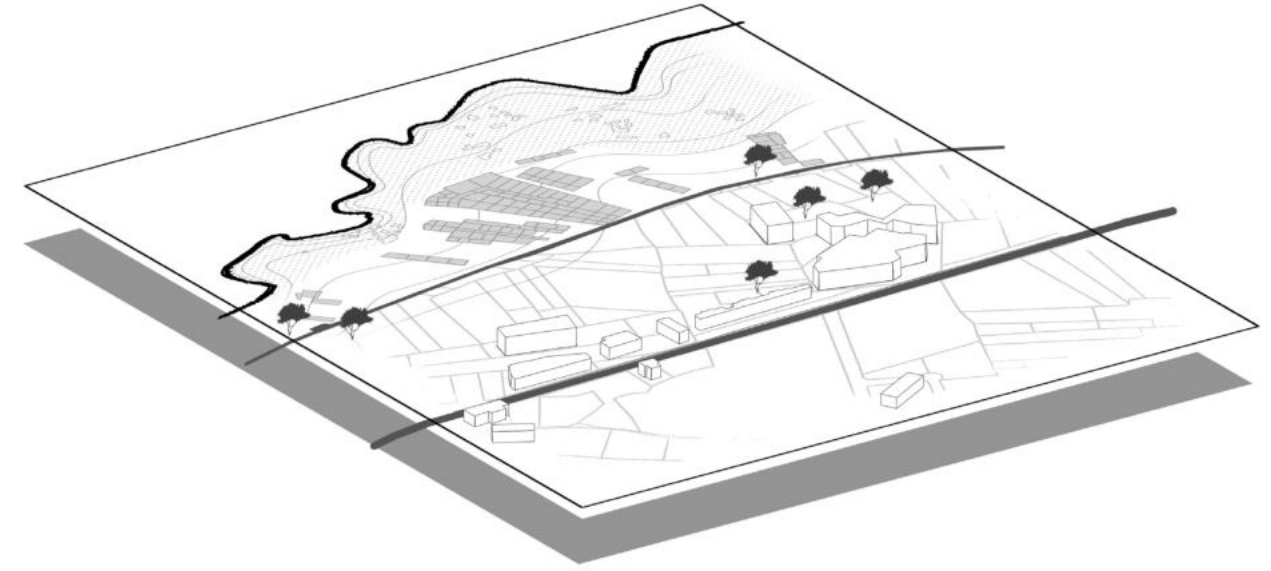


One of the main purposes of the green spaces is to act like a buffer zone to filter the pollution.

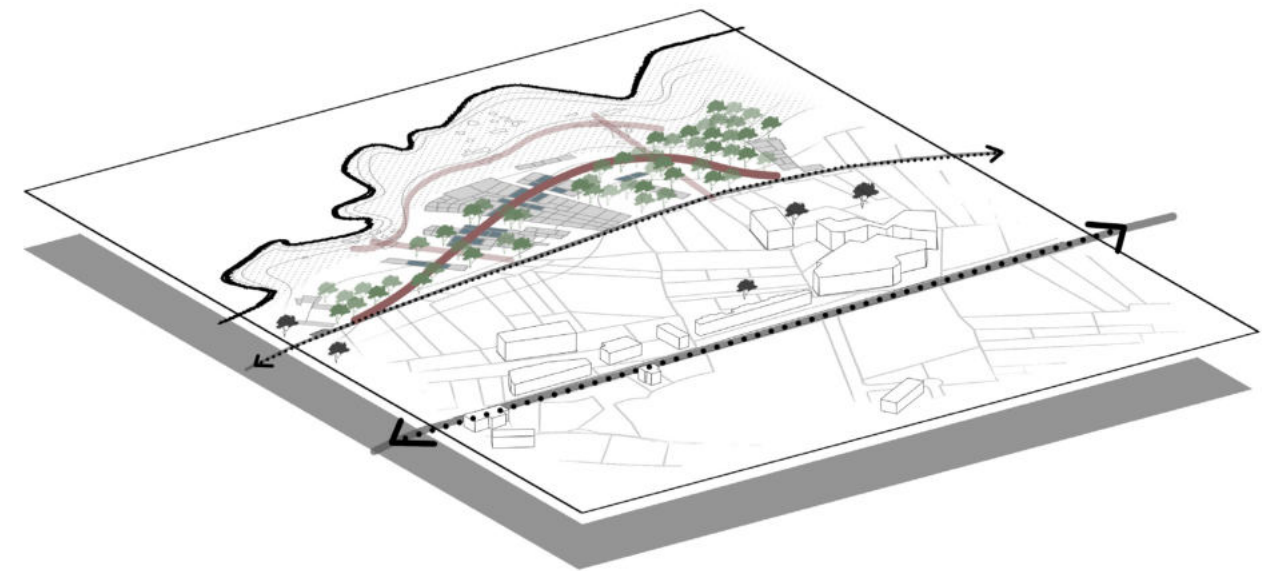


The main path would pass through them to make them part of the whole journey.

BEFORE



AFTER



LEGEND

- Old trees
- New trees

- Proposed path
- main road

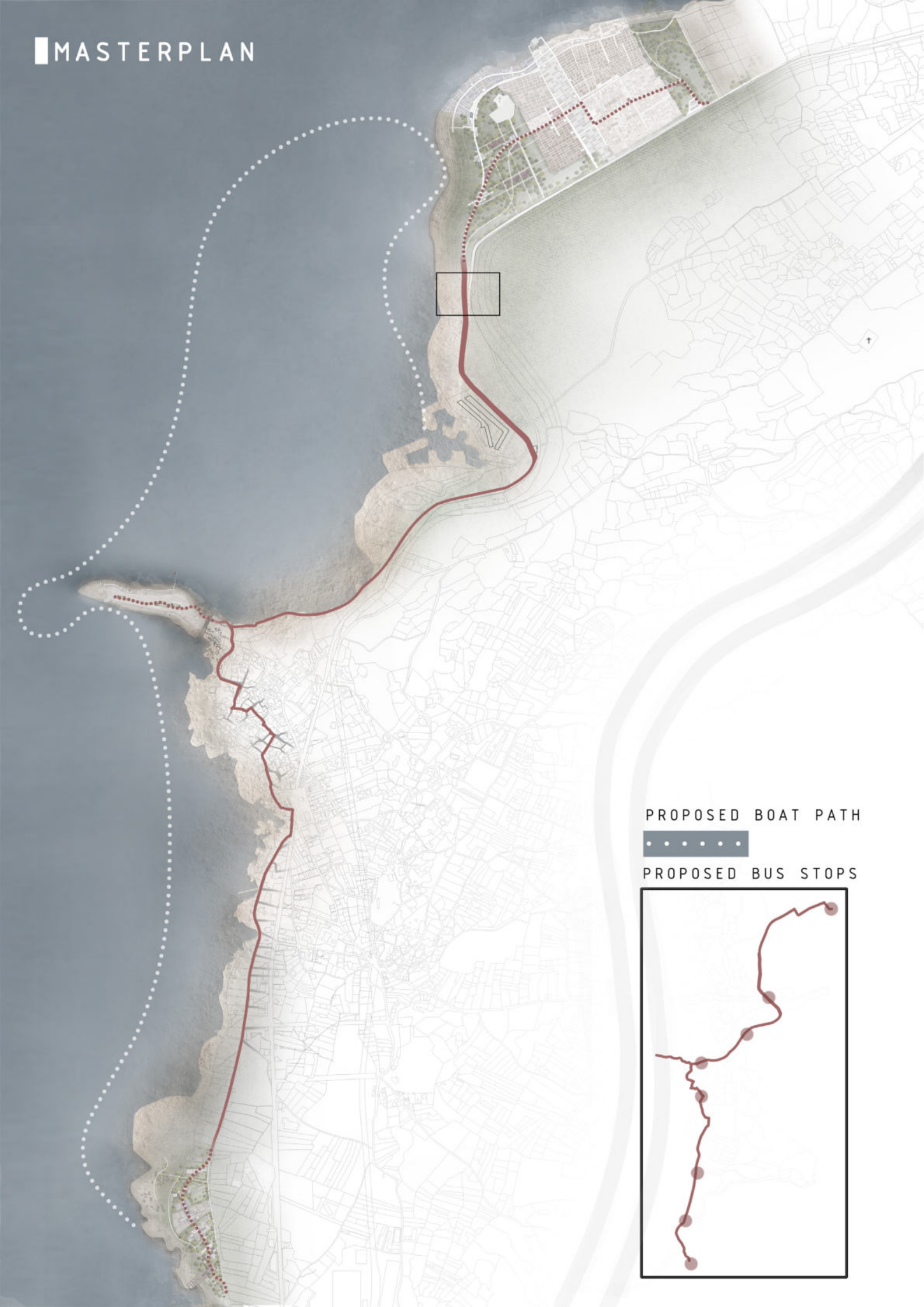
- Re-functionalized salinas

08

DESIGN

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In this chapter, we explain in details our design plans and demonstrate them from different points of view through different representations



MAIN ROAD



MASTERPLAN - ZONE 1

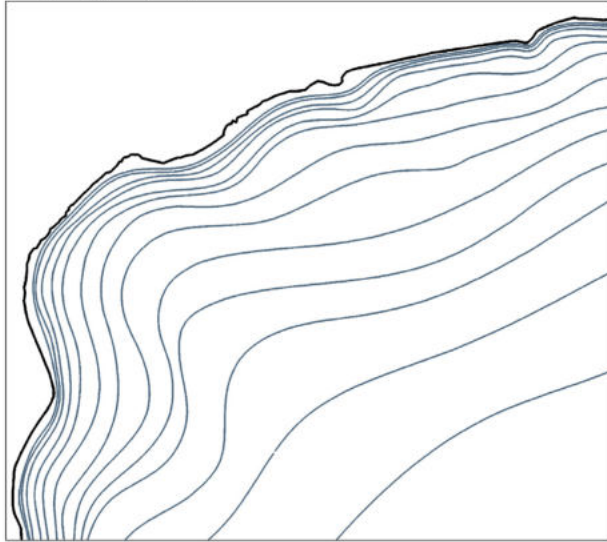
LEGEND

- 1- Entrance
- 2- Pedestrian/bike path
- 3- Lighting element
- 4- Abandoned salinas
- 5- Traditional salinas
- 6- Modern salinas
- 7- Research salinas
- 8- Research center
- 9- Artistic salinas
- 10- Workshop salinas
- 11- Private salinas
- 12- Rentable salinas
- 13- Old salinas
- 14- Market
- 15- Seating area
- 16- Salt water pond
- 17- Playground
- 18- Workshop
- 19- Exhibition
- 20- Observation Platform



LAYERS

Topography



The topography layer serves as the foundation, showing the natural contours and features of the landscape.

Proposed path



The proposed path layer charts follows the direction of the salinas, creating a flow that connects points of interest.

Greenery



The introduced greenery helps enhance existing green spaces and expanding them, all while promoting biodiversity within the area.

Existing lines



This layer highlights the existing elements, preserving the historical essence of the site, that shape the narrative of the area's past.

Pixels



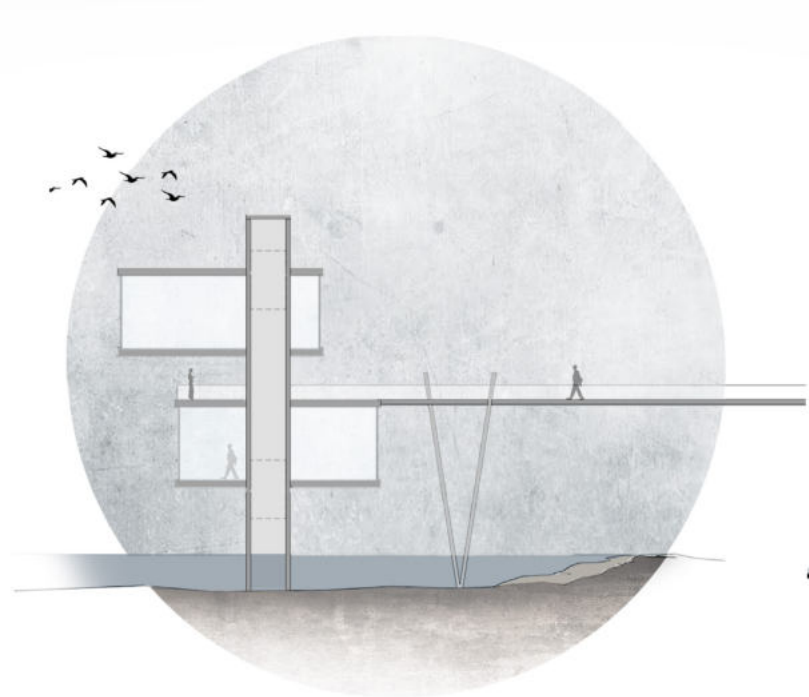
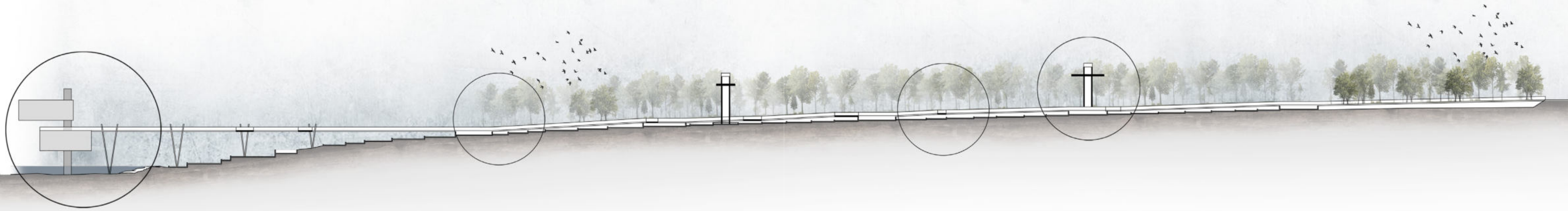
Integrated functional pixels following the salinas' trajectory, that introduce diverse functionalities.

Interventions



The intervention layer introduces key elements like the observation platform and research center.

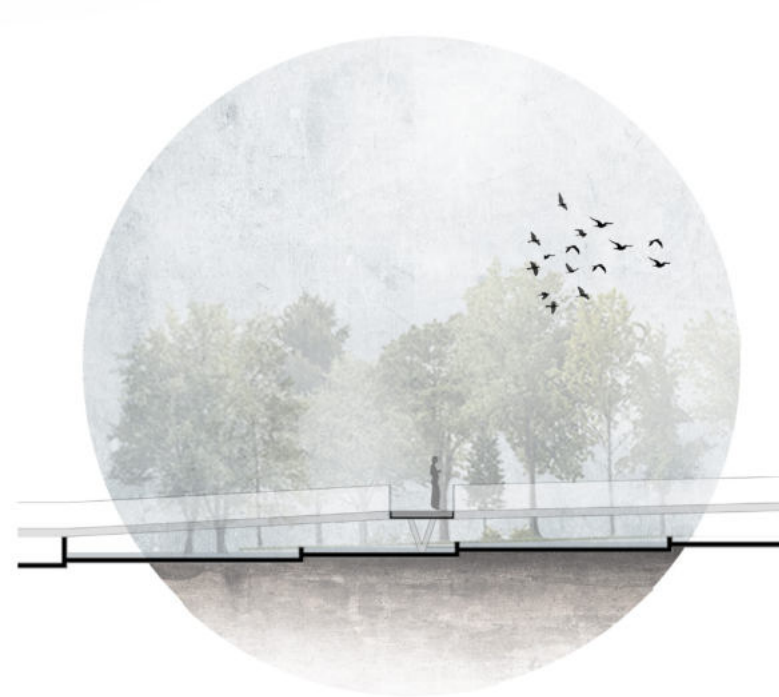




This section highlights the research center, accessible via a lightly structured bridge. The center is strategically positioned with direct waterfront connectivity, facilitating convenience for researchers .



This section highlights how a portion of the pathways originates from pre-existing ones that we have enhanced for better accessibility.



Here we can see that pathways passes above the salinas, providing visitors with a clear view while ensuring their preservation.

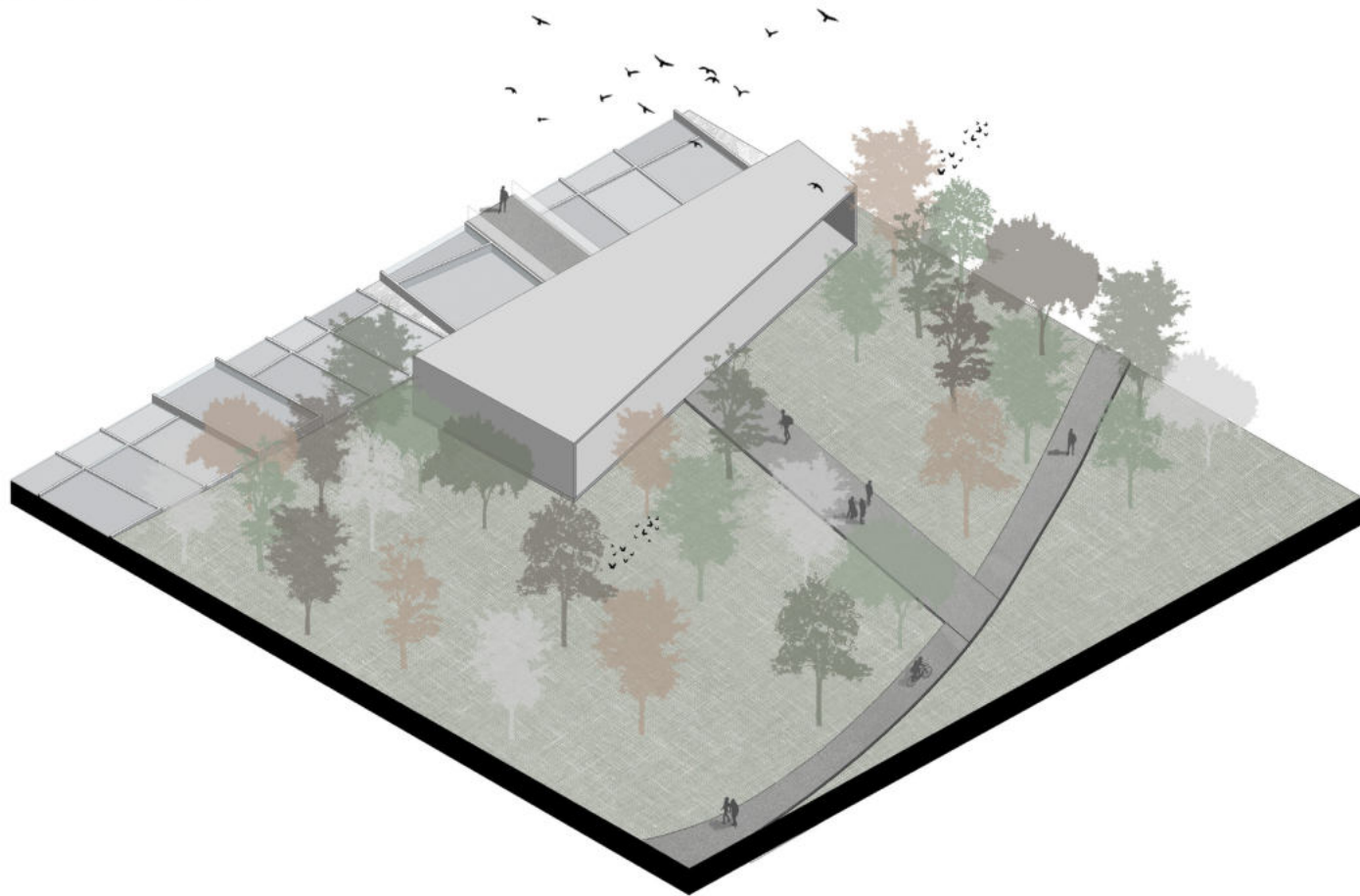


Presented here are the observation platforms; strategically positioned within this zone, we have two of them, each carefully situated to offer visitors specific a views based on our objectives.

AXONOMETRIC VIEWS



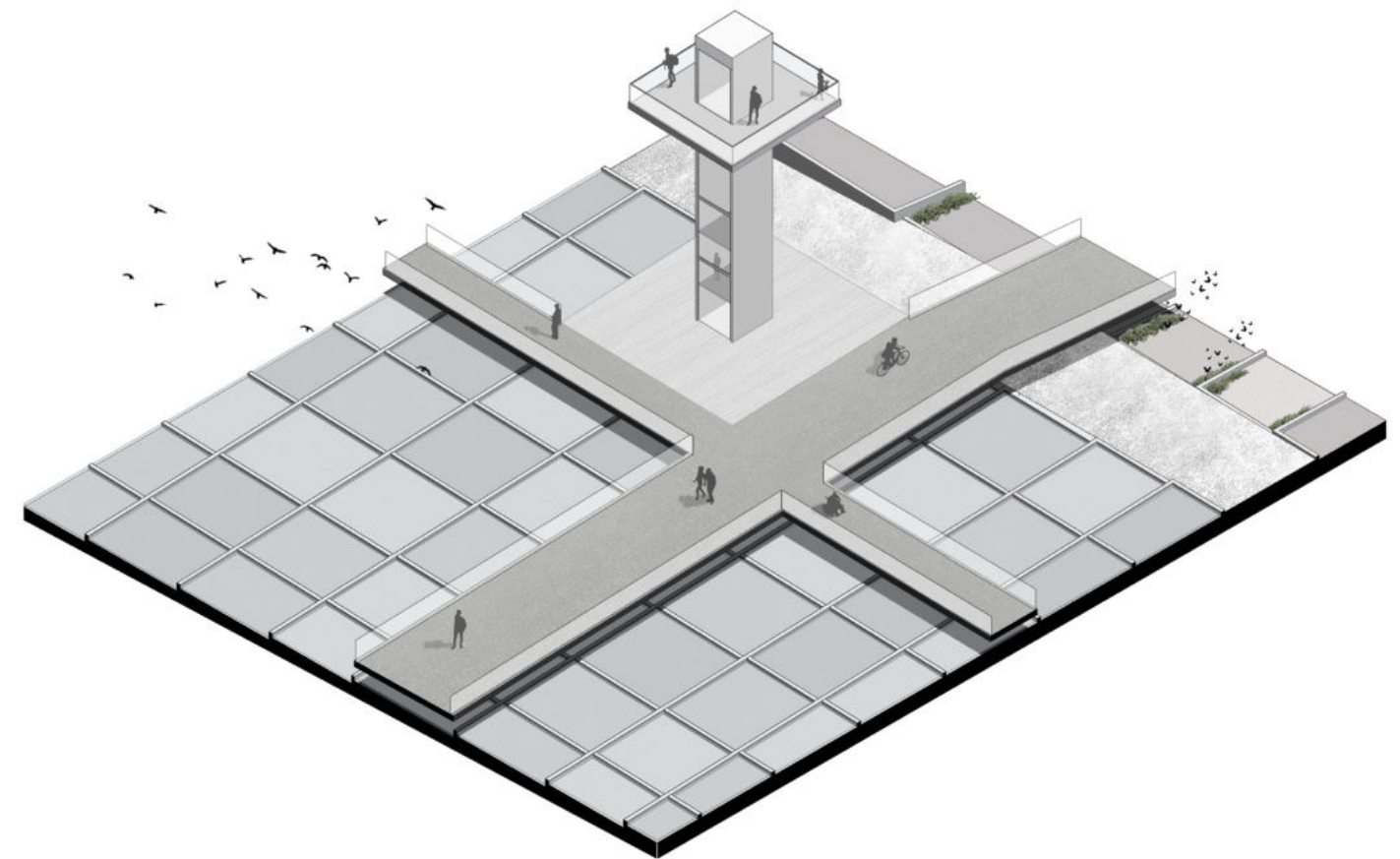
ENTRANCE



At the start of our project in the first zone, we created a simple entrance that marks the beginning of our journey in Anfeh. This entrance isn't just a door; it's an introduction to a place where we want to bring back the past and create something new. It's the starting point for exploring Anfeh's unique features and turning neglected spaces into something special.



OBSERVATION PLATFORM

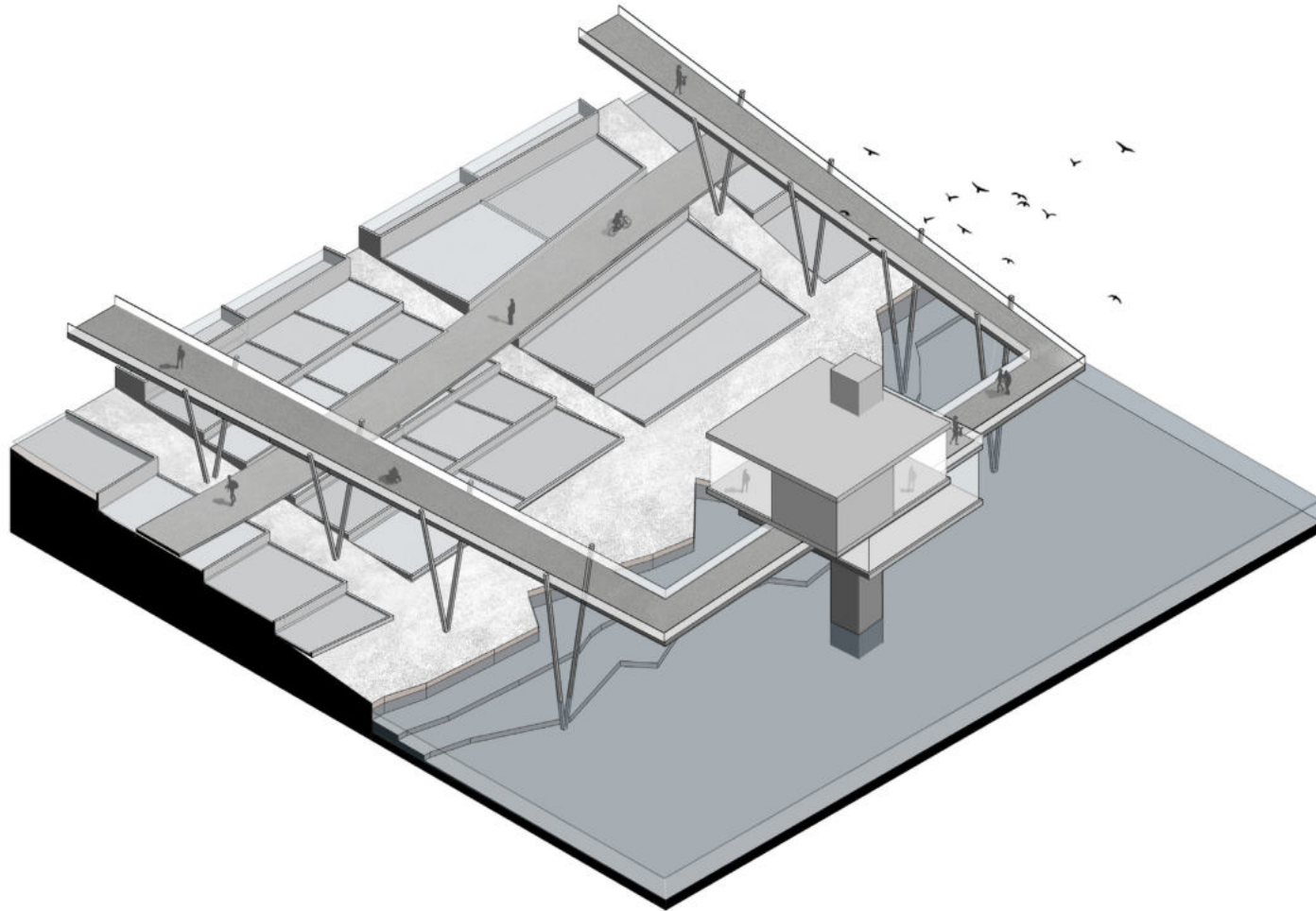


Strategically positioned within the project are two observation platforms, thoughtfully designed to offer visitors a panoramic view of Anfeh's distinct zones. These platforms serve as elevated vantage points, allowing observers to gaze towards two different zones with unique characteristics.

AXONOMETRIC VIEWS



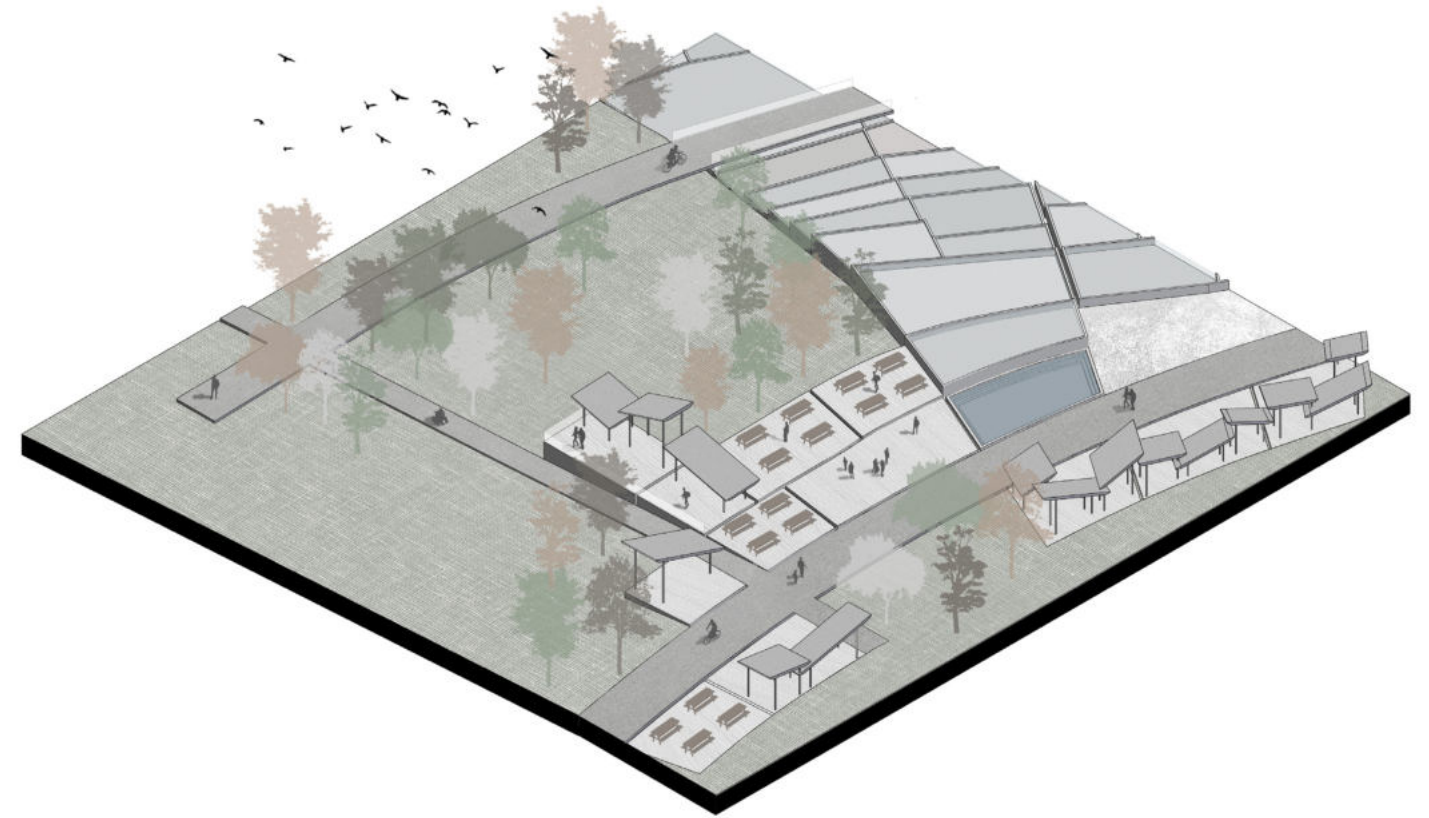
RESEARCH CENTER



Located close to the coastline, our research center emerges as a distinctive feature in Anfeh's landscape. Positioned strategically in the sea and integrated into the project, this research center serves as a hub for exploration and discovery. As the path passes through it, visitors have a unique opportunity to engage with the research while walking around the project.



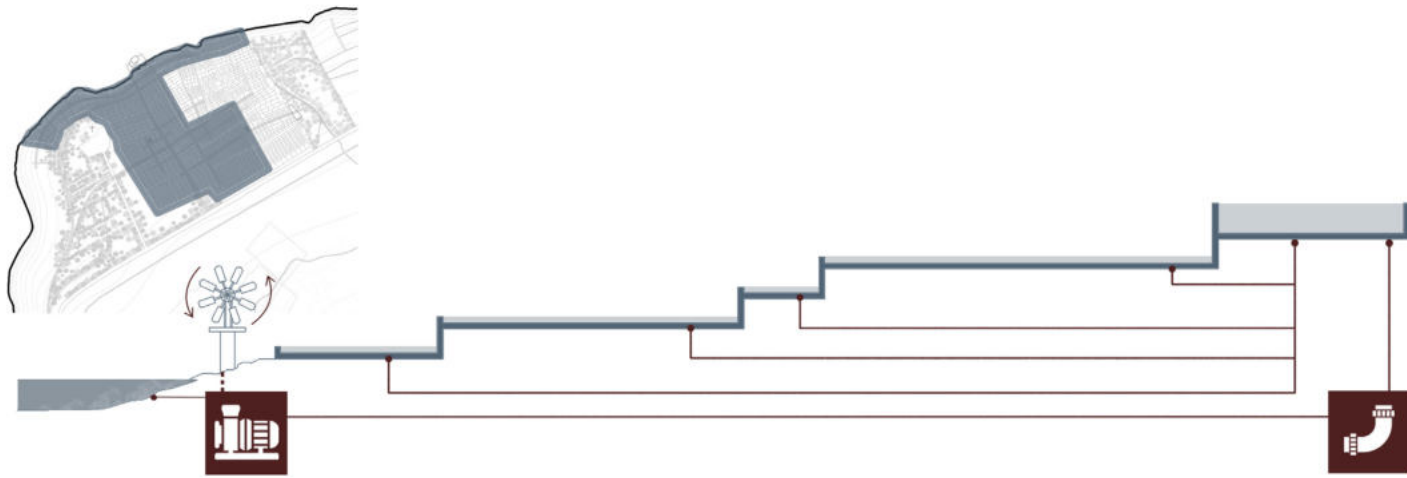
MARKET



Situated right after the salinas, our market is dedicated to showcasing the diverse range of exquisite salts meticulously crafted from the region's renowned salt pans, surrounded by seating areas situated close to the natural coast line with a view towards the sea.

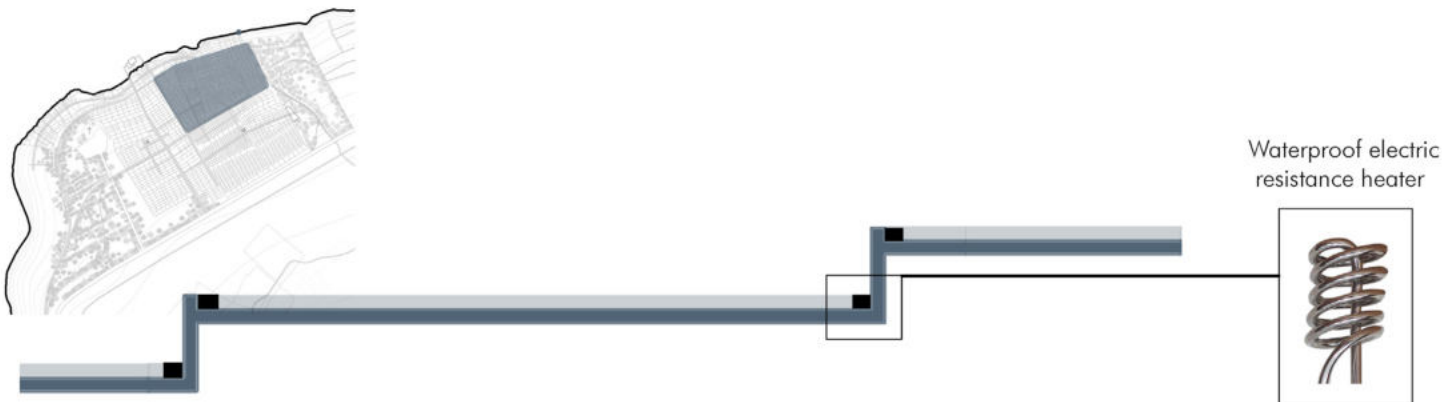
TECHNICAL PROCESS

TRADITIONAL WATER PROCESS



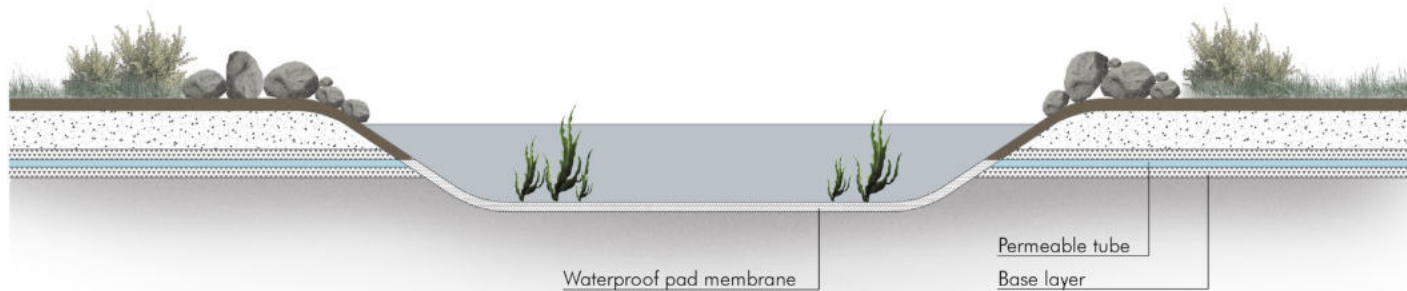
In this area, we adhere to the traditional method of salt production. A wind turbine pumps seawater through an underground tube that leads to the primary salinas. The water is then distributed to the lower salinas once the main ones reach capacity, initiating the evaporation process.

MODERN SALT PRODUCTION PROCESS



In this area, we have introduced more modern methods to streamline salt production, prioritizing sustainability. While the water arrival process remains unchanged, we have integrated waterproof electric resistance heaters around the periphery of each salt pond which will expedite the vaporization process.

WATER POND SYSTEM



In our design, we implemented water ponds to , allowing sediments and pollutants to settle before the water is discharged. This will help improve water quality. Those water ponds will attract and support diverse wildlife as well. They will serve as habitats for aquatic plants, insects, amphibians, and various bird species, contributing to overall biodiversity.



MASTERPLAN - ZONE 2

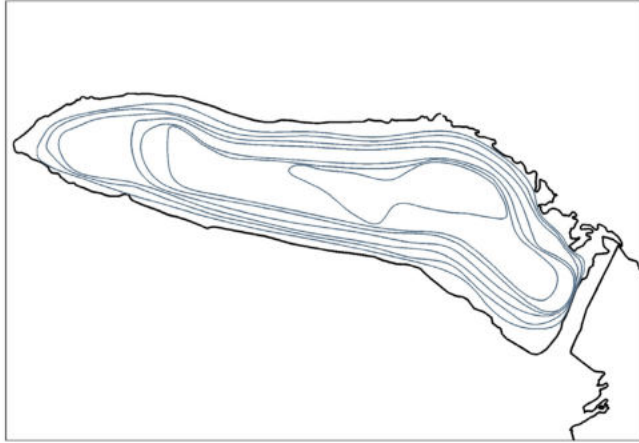
LEGEND

- 1- Historical caves
 - 2- Vertical transportation platform
 - 3- Observation platform
 - 4- Seating area
 - 5- Green raised beds
 - 6- Museum
- (Details on page 00)



LAYERS

Topography



The topography layer serves as the foundation, showing the natural contours and features of the landscape.

Existing lines



This layer accentuates the present components, safeguarding the historical core of the location that contributes to the storytelling of the region's history.

Proposed path



The main pathway consists of a primary route mirroring the existing path and secondary pathways distributed across various levels of the site.

Vertical transportation



The purpose of the platforms is to vertically connect the main path and the secondary ones.

Greenery



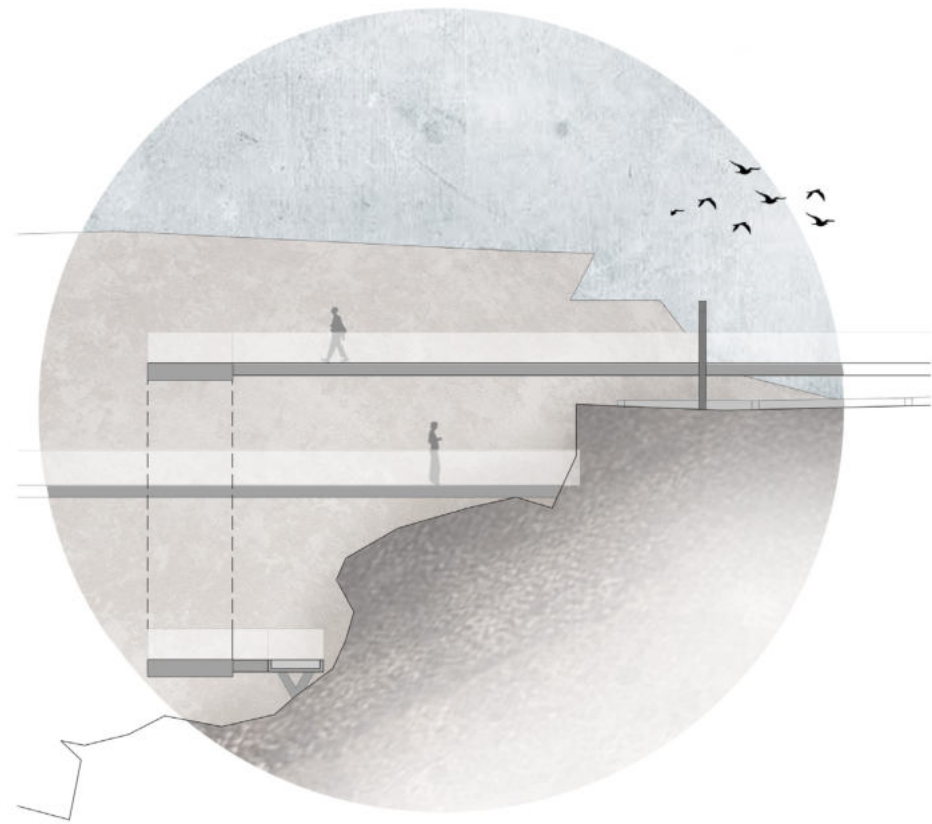
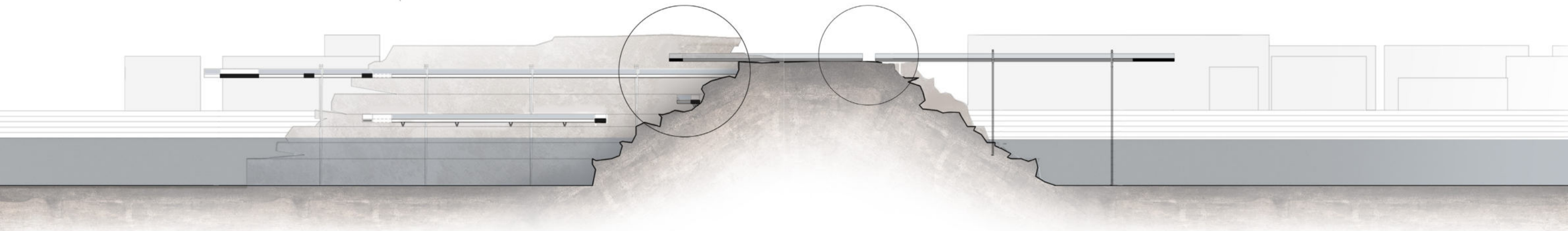
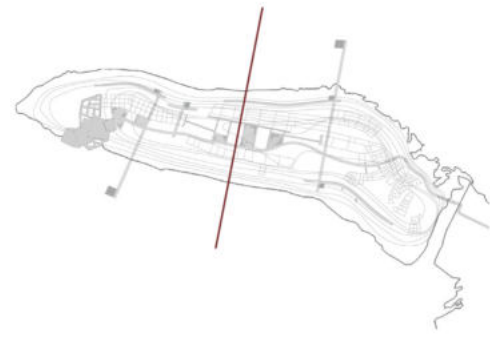
The green parts are consisted of raised bed to protect the ground underneath.

Intervention



At the end of the pathway, we implemented a museum where we will elaborate on its details in the final chapter.



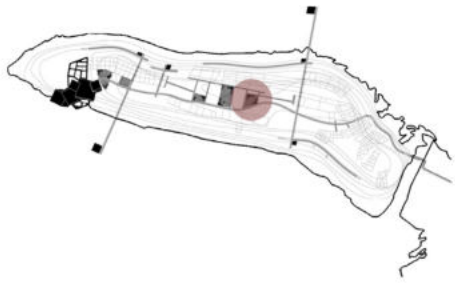


In this section we are showing our focus on the preservation of the archaeological site, emphasizing the use of elevated pathways for minimal ground contact. Additionally, we've incorporated a vertical transportation system facilitated by platforms to enhance accessibility and reduce direct impact on the historical grounds.

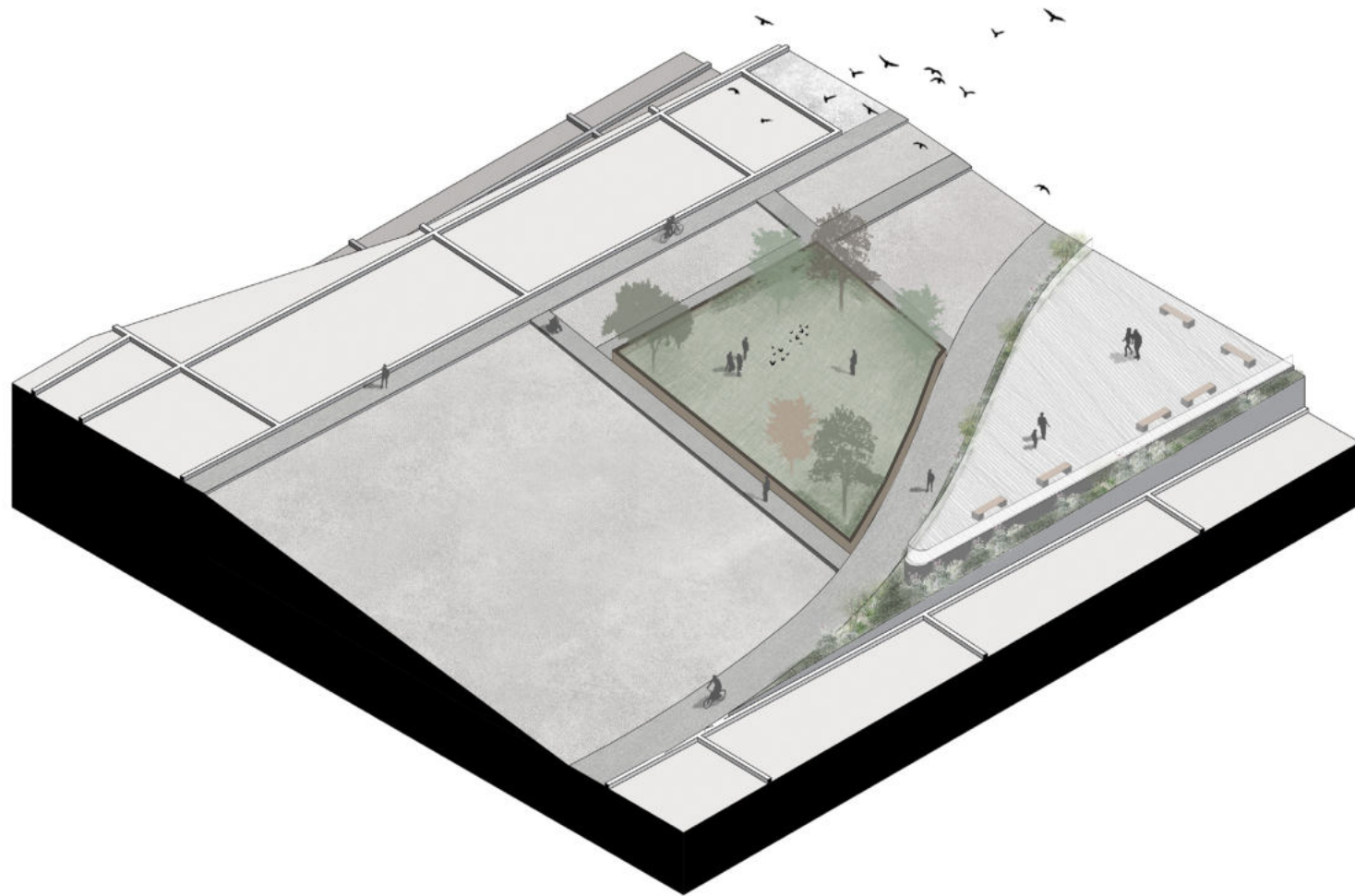


In this section, we are showing a gravel pathway and an elevated route going on top of the salina traces, designed to protect these historical traces. This configuration allows people to appreciate the salinas without causing any direct impact through physical contact.

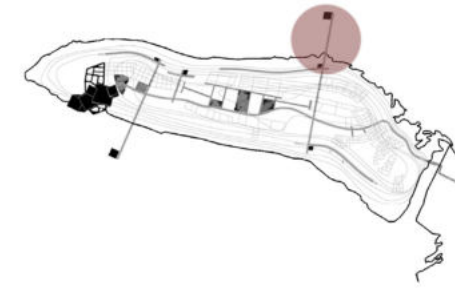
AXONOMETRIC VIEWS



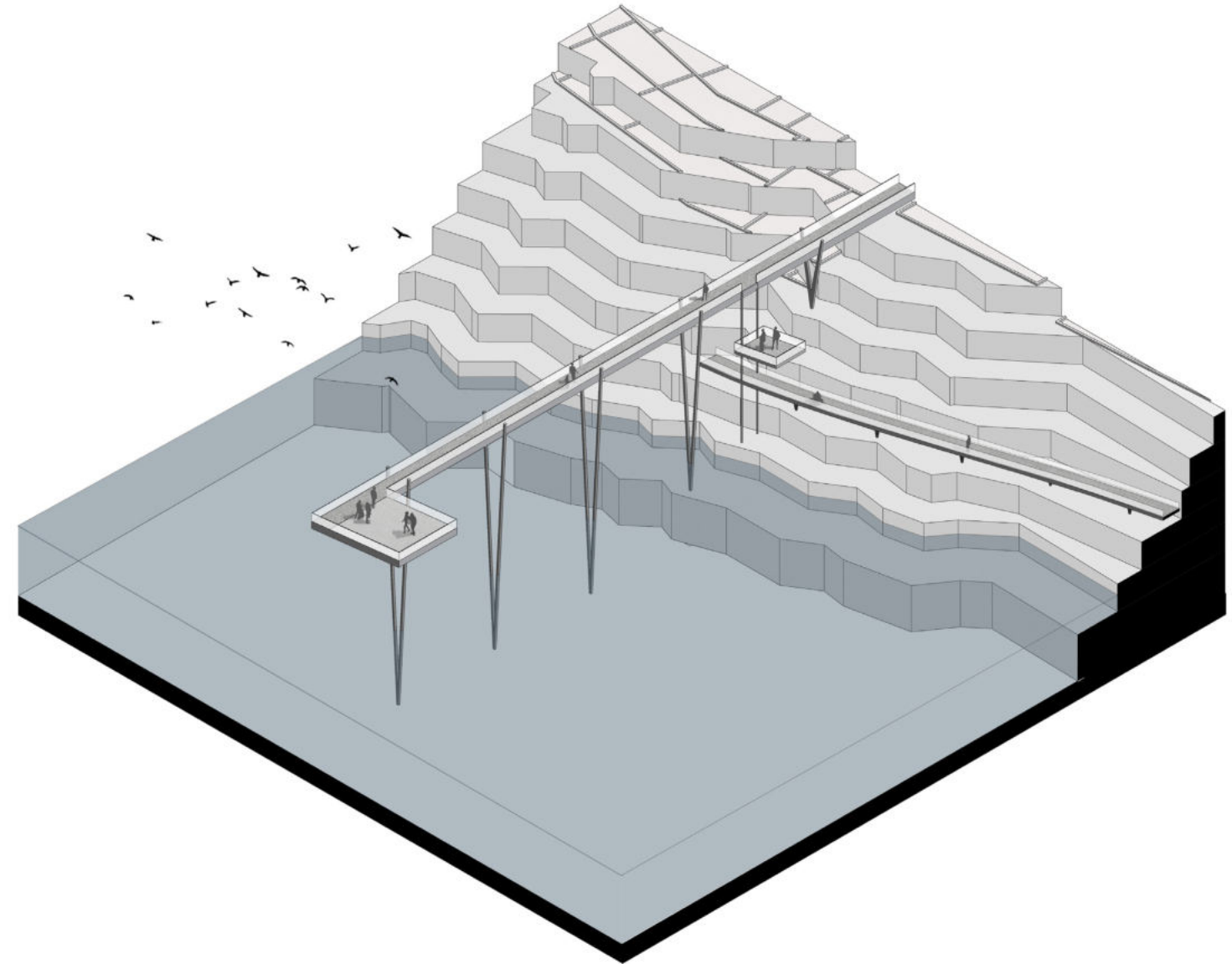
RAISED GREEN BEDS



These elevated green beds serve a dual purpose: firstly, as a protective shield against potential environmental threats, ensuring the preservation of the site's integrity. Secondly, they introduce a harmonious blend of nature into the archaeological landscape, enhancing its aesthetic allure.



OBSERVATION PLATFORM

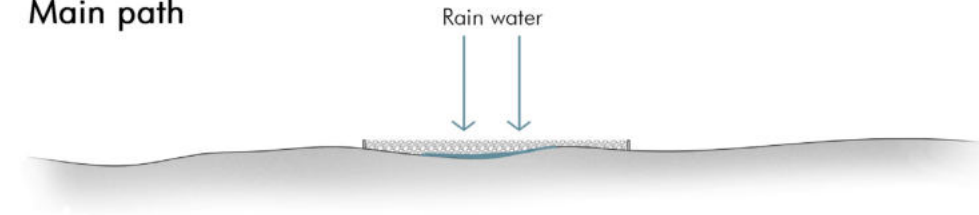


We implemented observation platforms strategically positioned along the path. These platforms offer a panoramic view. With a keen focus on accessibility, we integrated a vertical transportation system into the path's design. This facilitates effortless movement between different levels, ensuring a smooth and inclusive journey for all.

PATHWAYS

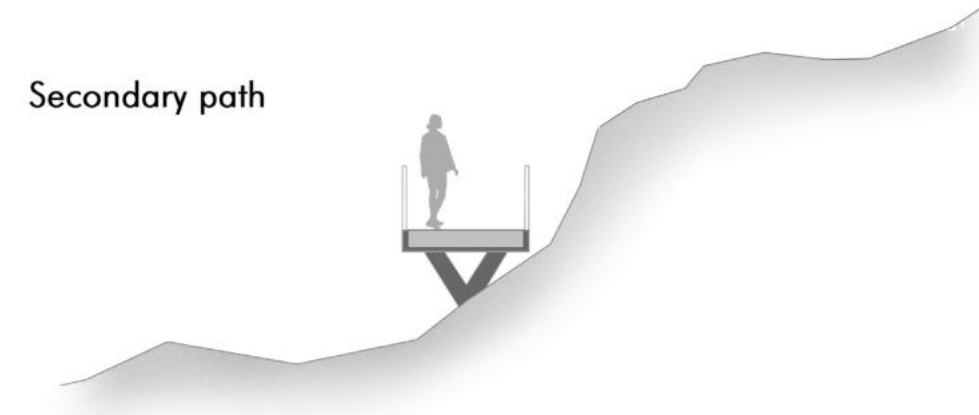


Main path



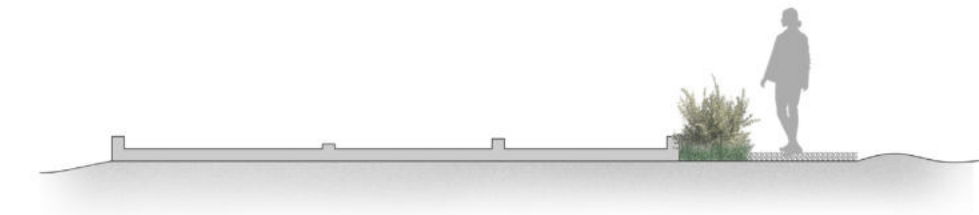
The main path is made of gravel since its permeable, meaning it allows water to penetrate and drain through easily. This helps maintain natural drainage patterns in the soil

Secondary path



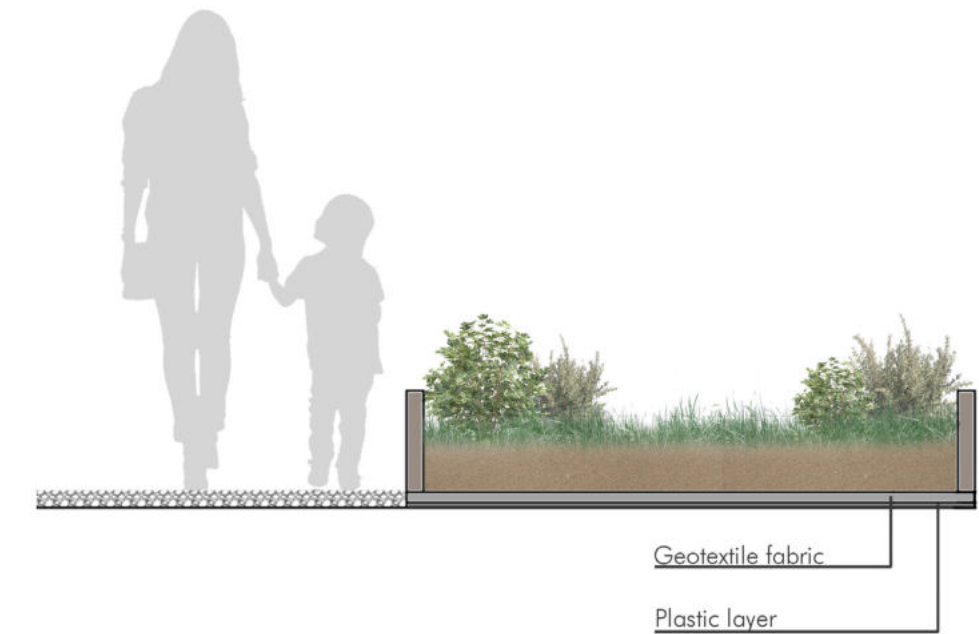
For the secondary pathways, we are implementing V-shaped structures to elevate the path, to preserve the archeological site

GREEN BUFFER ZONES



Buffer zones around sensitive areas to protect them from any potential damage.

GREEN AREAS



The green areas in this zone are placed on raised beds to protect the archeological site from any disturbance.

MASTERPLAN - ZONE 3

LEGEND

- 1- Entrance
- 2- Seating area
- 3- Jacuzzi
- 4- Natural pond
- 5- Sauna
- 6- Salt room
- 7- Yoga and meditation
- 8- Platform



LAYERS

Topography



The topography layer serves as the foundation, showing the natural contours and features of the landscape.

Proposed path



The proposed path follows the topography while passing through the salinas to integrate the salinas with the design.

Greenery



The introduced greenery is used as a filter to help reduce the pollution in the area.

Existing lines



The existing lines help us in creating a design that seamlessly integrates with the surrounding environment.

Pixels



Integrated functional pixels following the salinas' trajectory, that introduce diverse functionalities.

Interventions



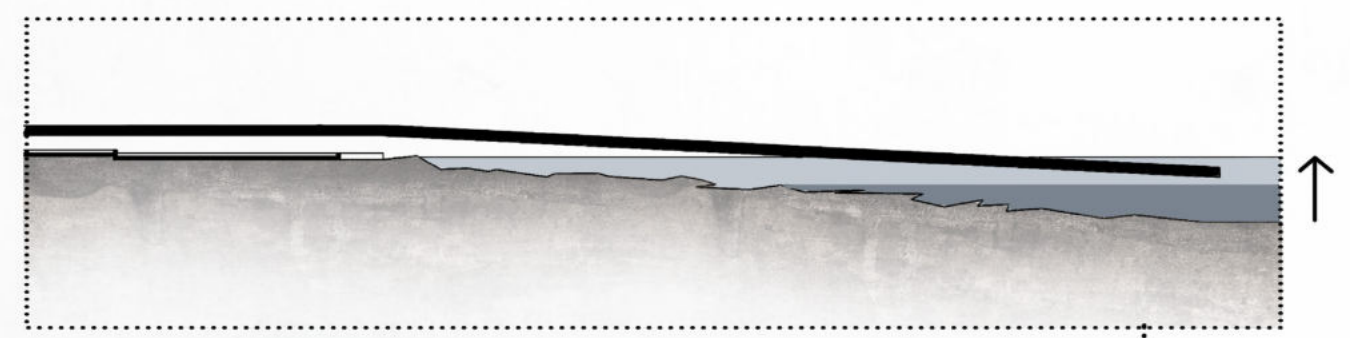
Other than the pavilion that indicates the entrance, we added a platform that goes through the water to indicate the end of the journey.



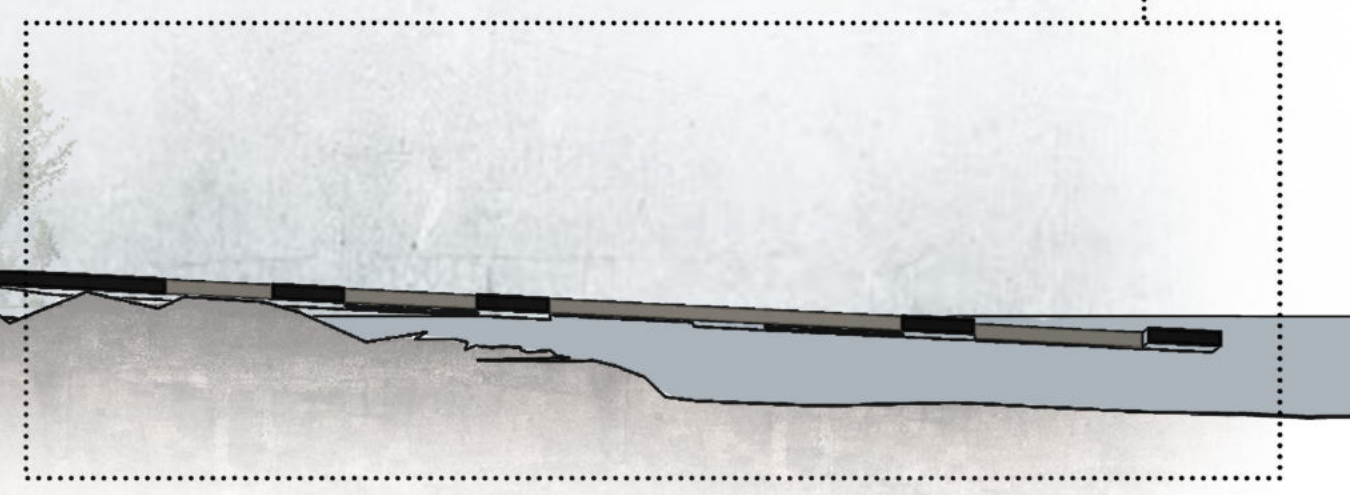
SECTIONS



Section A-A

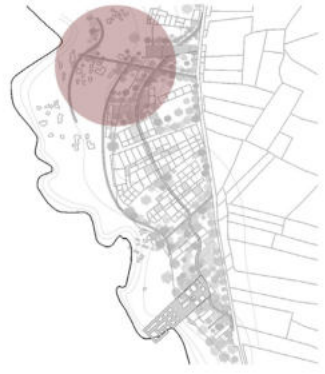


The accessibility of the platform depends on the level of the water

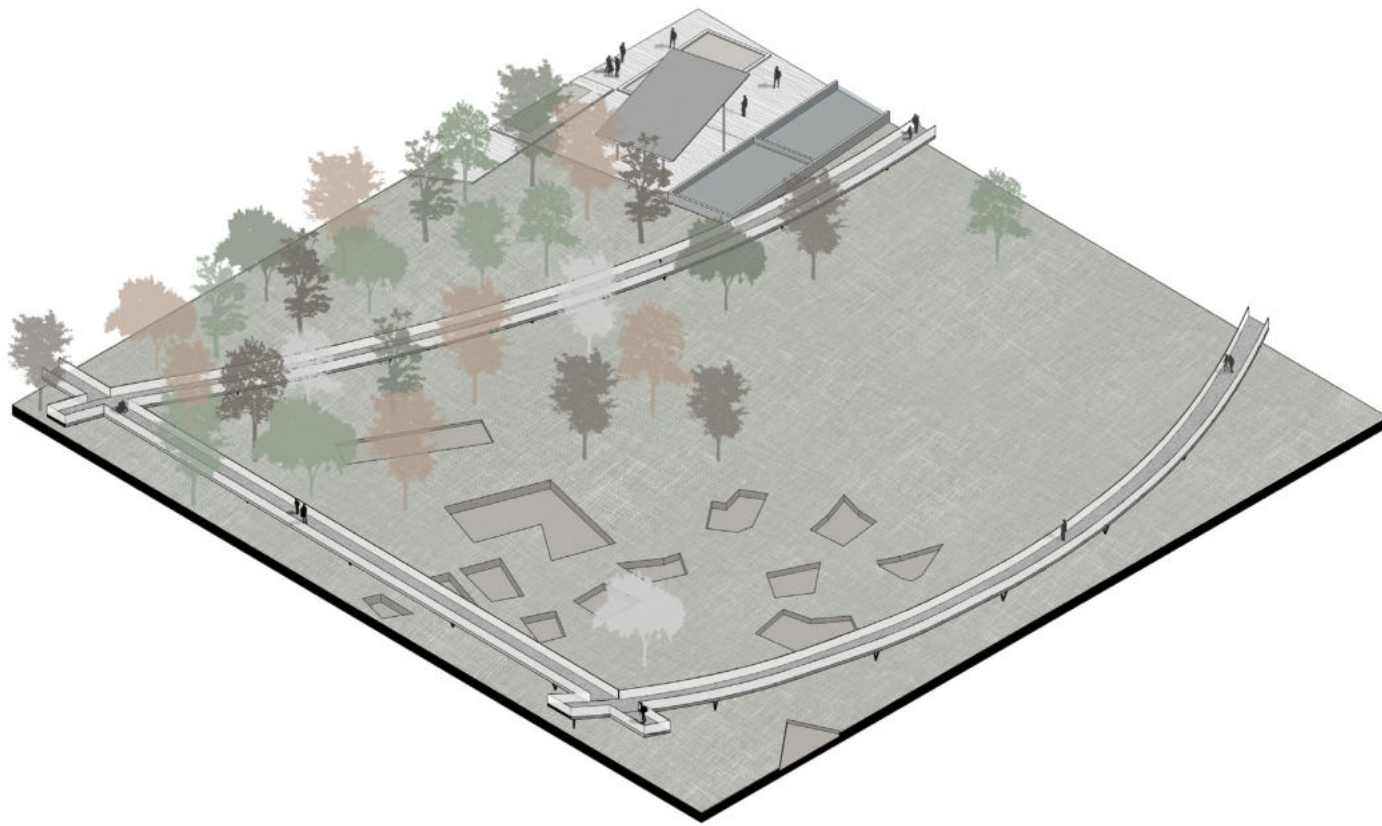


Section B-B

AXONOMETRIC VIEWS



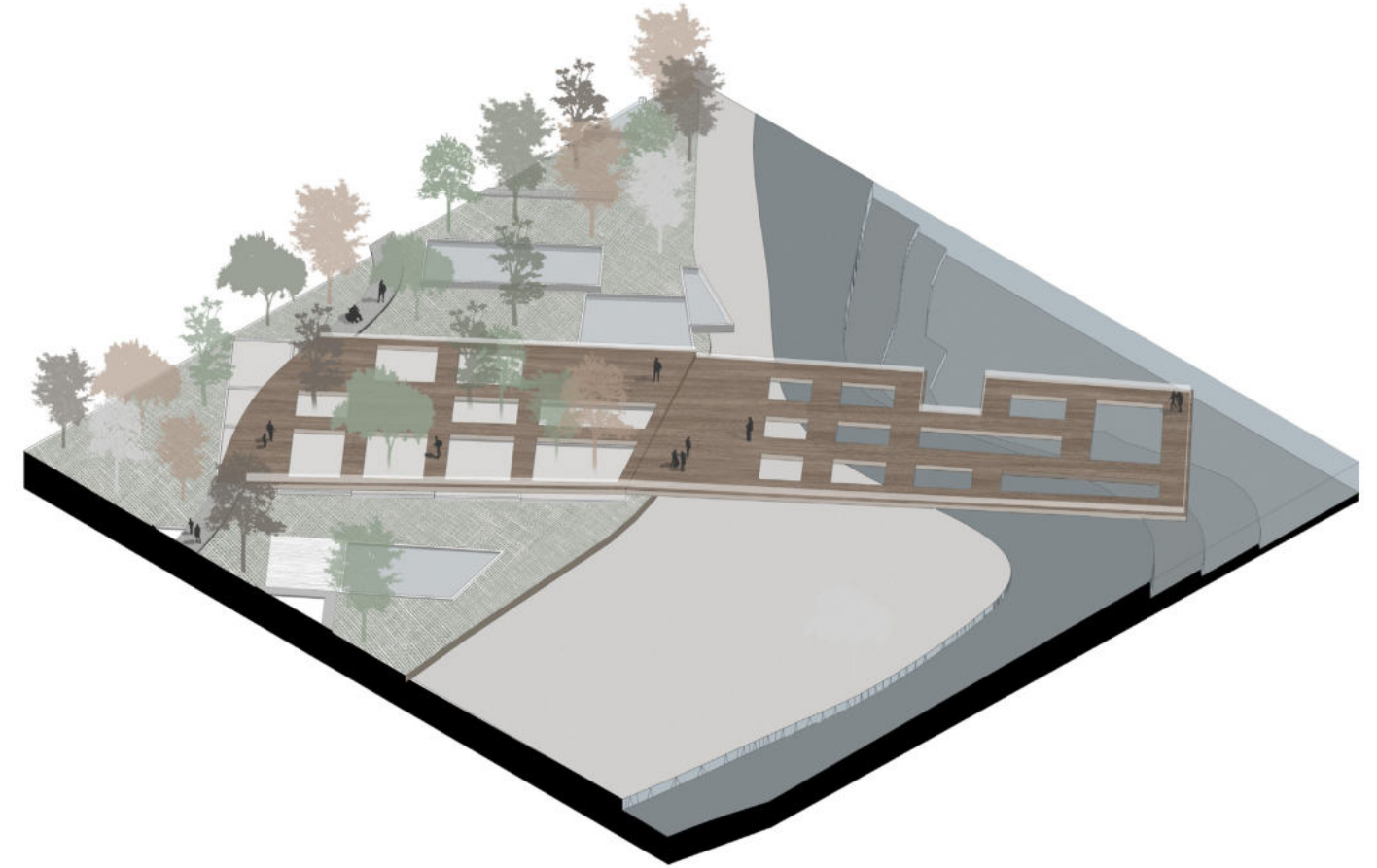
COASTAL PROMENADE



We integrated into our main path, a practical walkway that runs along Anfeh's coastline. This functional feature allows residents and visitors to enjoy a pleasant stroll while experiencing the natural beauty of the shoreline. The coastal promenade is designed to enhance accessibility and provide a straightforward connection to Anfeh's maritime surroundings.



PLATFORM



We end our journey with a platform, where accessibility is intricately linked to the sea's level. This structure adapts to the natural flow of the sea, offering a unique vantage point dependent on the water's coverage of the path. The platform provides an opportunity for visitors to engage with the dynamic interplay between land and sea, ensuring an experience that evolves with the changing tides.

ECOLOGICAL INTERVENTIONS

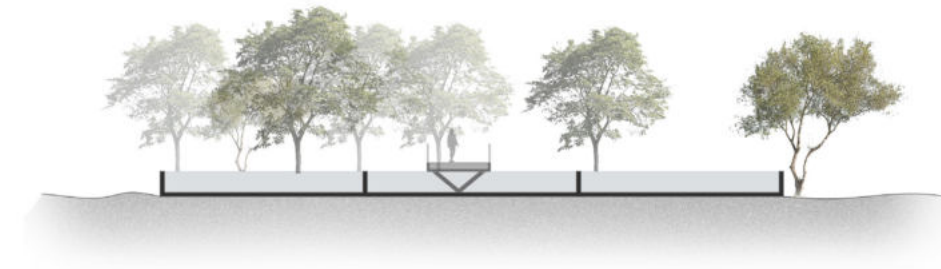
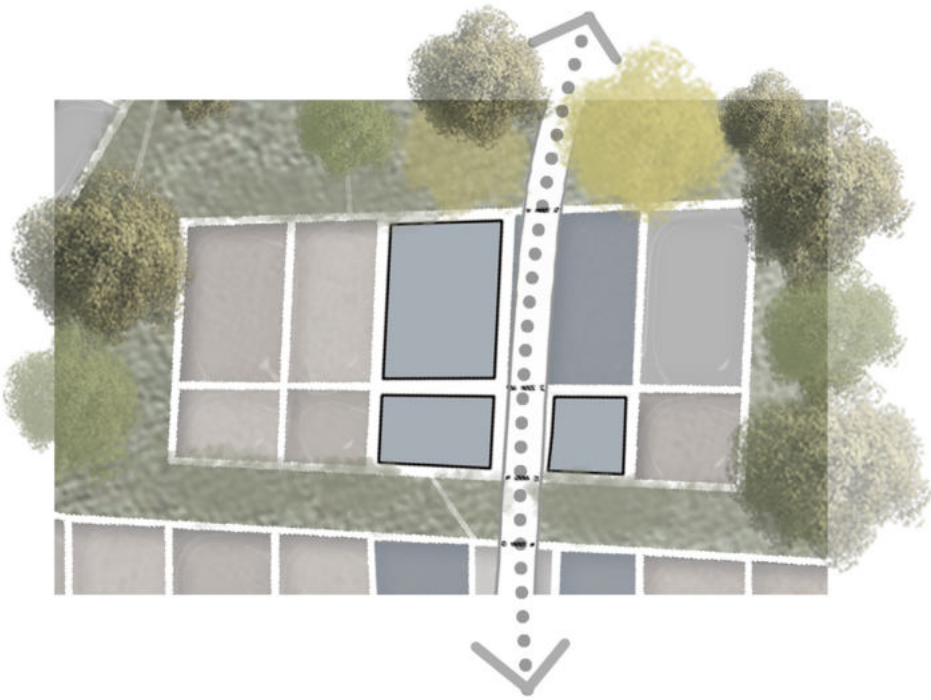
GREEN BUFFER ZONE



Industrial zone

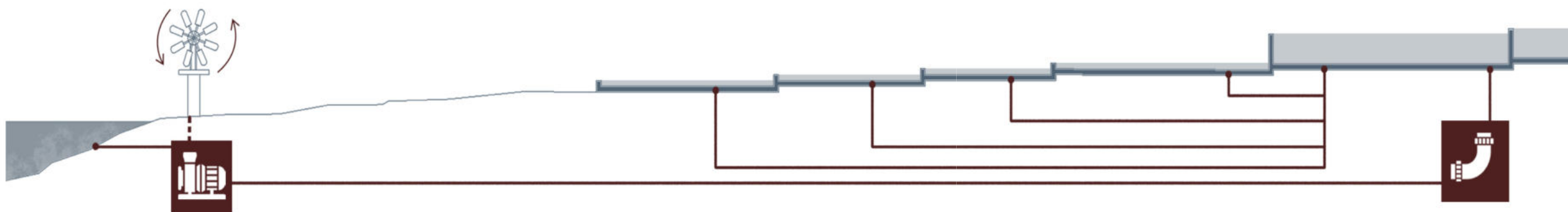
We established an urban forest as a buffer zone between the industrial area and our zone, serving as a natural filter to decrease the pollution and heal the area

ELEVATED PATHWAYS



The pathway passes over the salinas using a lightweight structure, ensuring minimal intervention to preserve these historical features.

SALT PRODUCTION SYSTEM

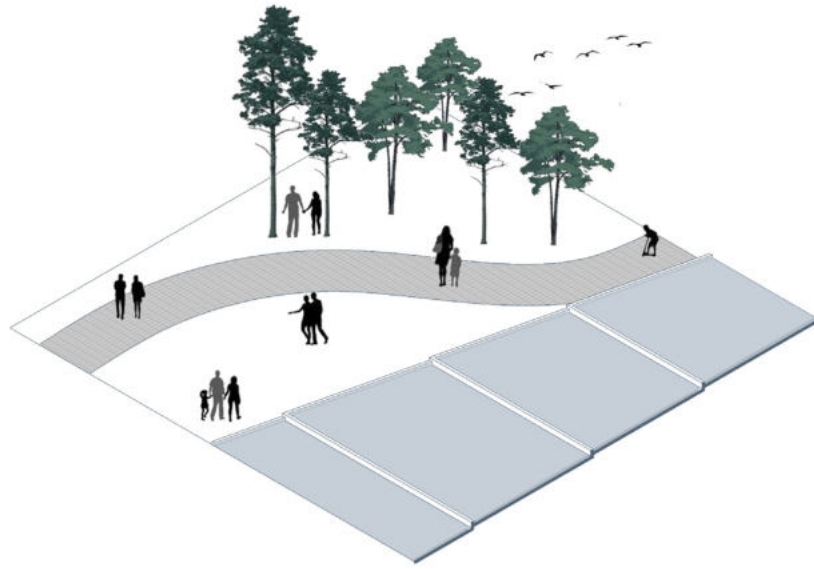


In this zone, wind turbines efficiently pump seawater to the salinas via an underground tube running beneath the coastline. The main and higher salinas act as a hub, distributing water to the lower salinas once they reach their full capacity. This system ensures a sustainable and efficient water supply, harmonizing with the natural environment.

NATURE-BASED SOLUTIONS

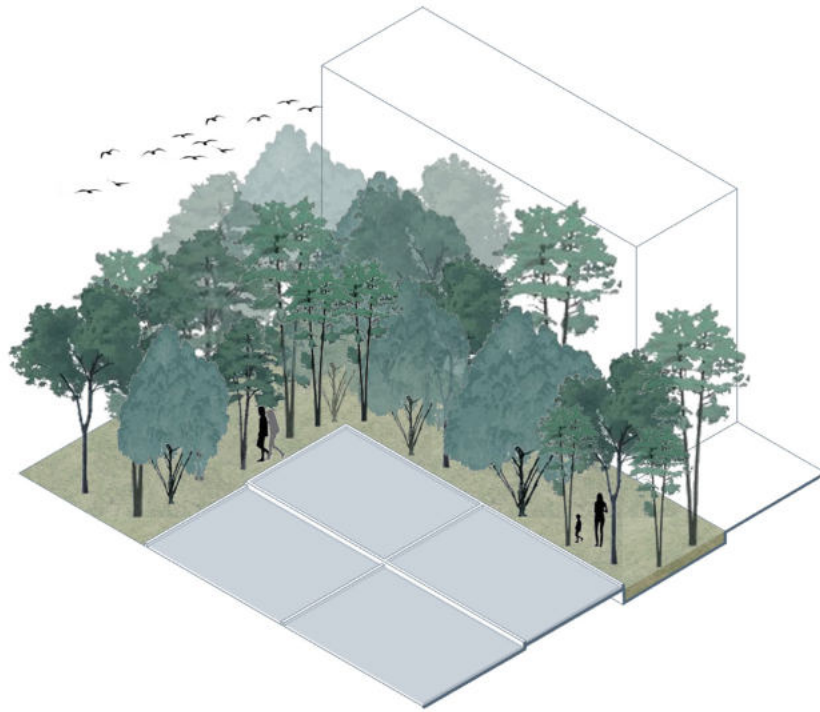
PERMEABLE PAVEMENTS

Permeable pavements can be used in commercial sites in spaces that are usually resistant to water like parking lots, pathways. Permeable pavements excel in stormwater control, environmental filtration, and urban resilience by reducing runoff, purifying water.



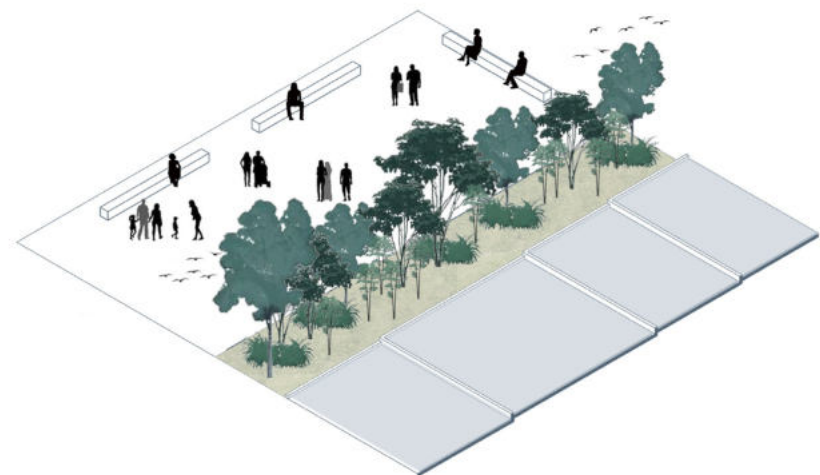
REFORESTRATION

Reforestation will help enhance biodiversity, prevent soil erosion, and provide numerous ecosystem services in the needed areas like abandoned, polluted, as well as abandoned green spaces.



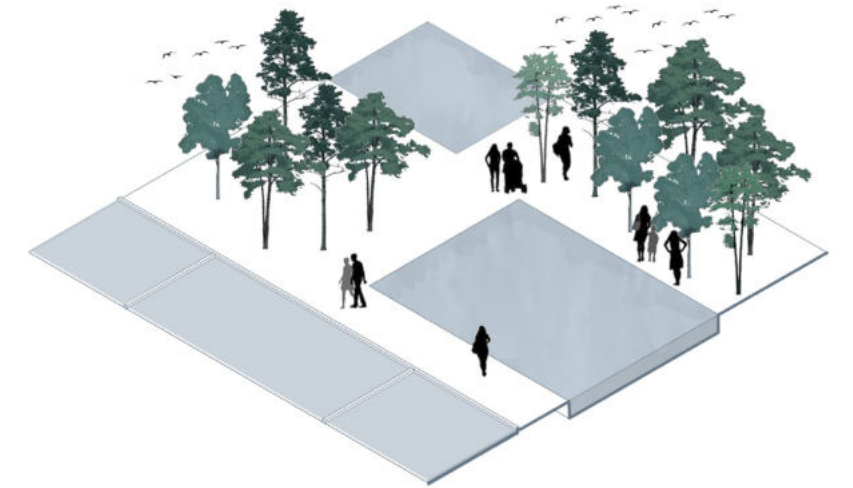
GREEN BUFFER ZONES

Green buffer zones are strategically used in sensitive areas to safeguard against unauthorized access and serve as a natural filter for pollutants, contributing to the restoration and healing of the environment.



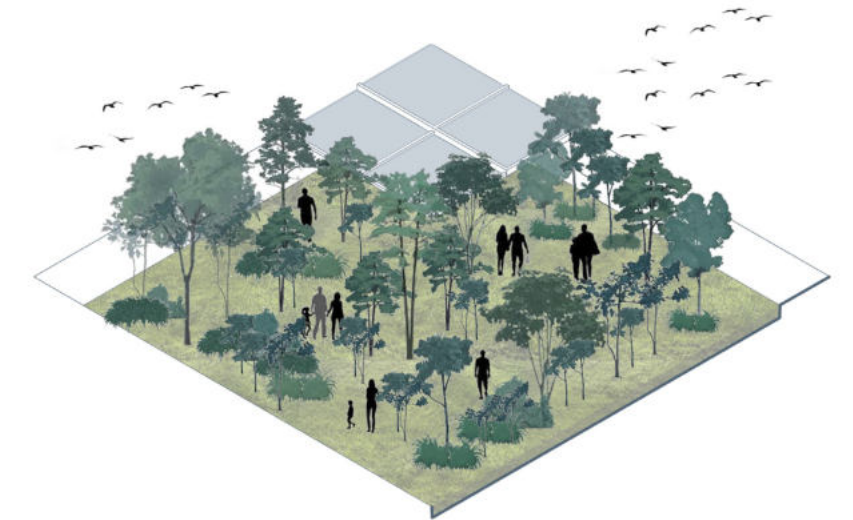
WATER PONDS

Water ponds are beneficial in various ways, serving as reservoirs for irrigation, wildlife habitats, and sources of recreational activities. They contribute to water conservation, support ecosystems, and enhance the overall environmental quality.



NATIVE SALT RESISTANT SPECIES

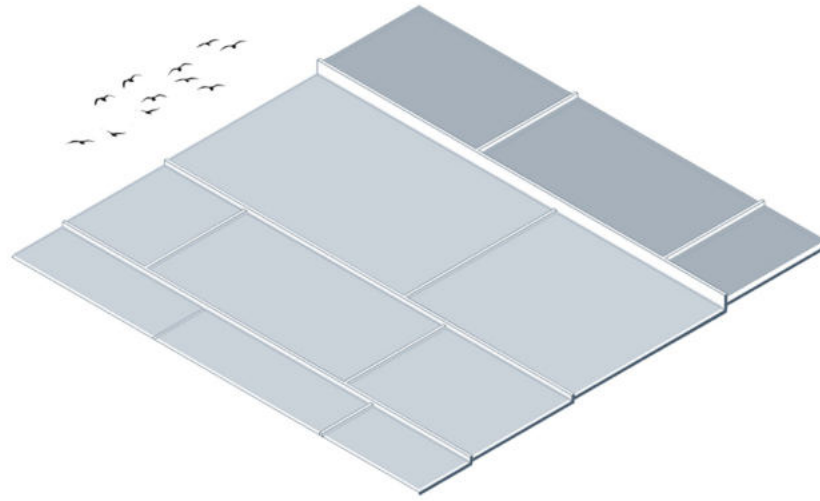
Native salt-resistant species are plants adapted to thrive in salty environments, offering benefits like soil stabilization, erosion prevention, and support for biodiversity in saline conditions.



NATURE-BASED SOLUTIONS

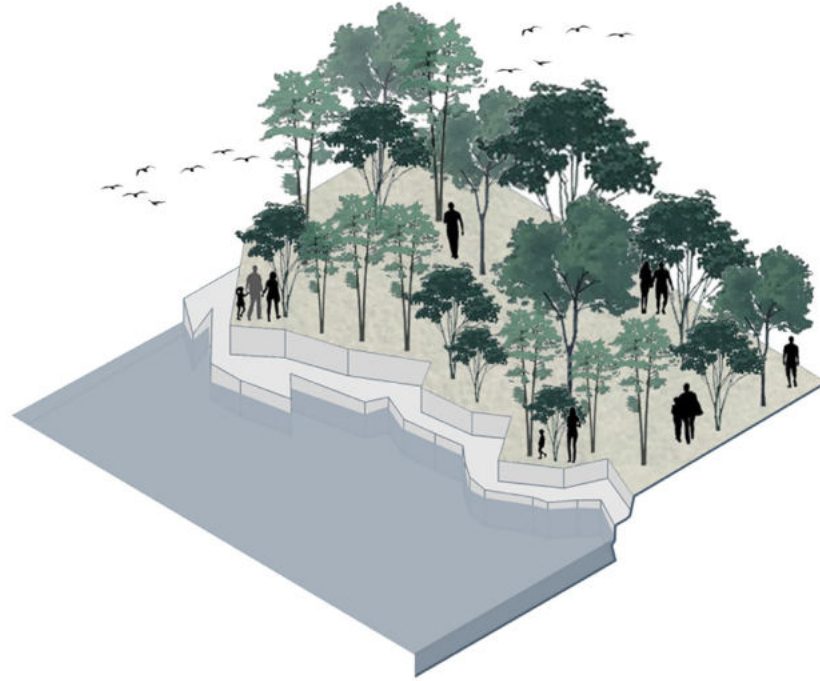
TRADITIONAL SALT PRODUCTION

Traditional salt production, using methods like solar evaporation, offers natural and sustainable processes, preserves cultural heritage, supports local economies, and has a lower environmental impact.



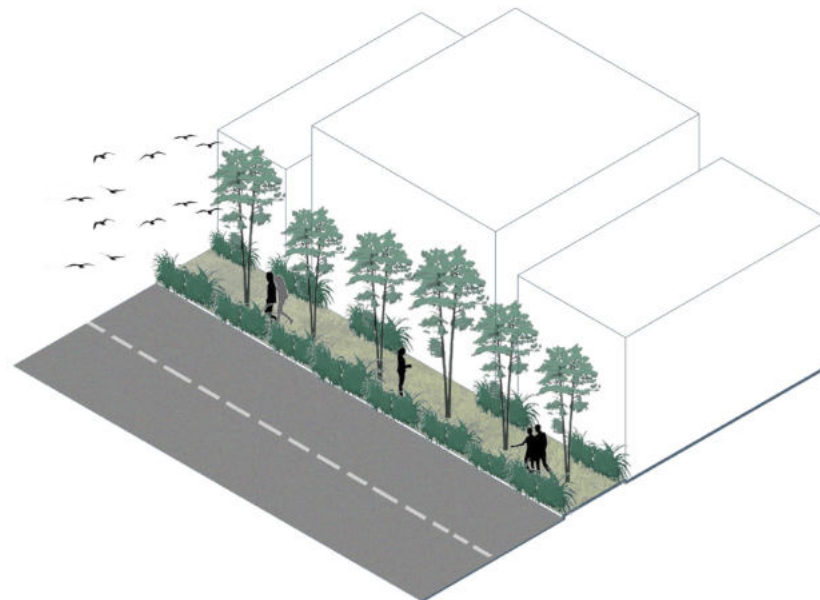
COASTAL PLANTING

Coastal planting, like mangroves and dune grasses, helps control erosion, supports biodiversity, sequesters carbon, offers economic opportunities, and improves water quality.



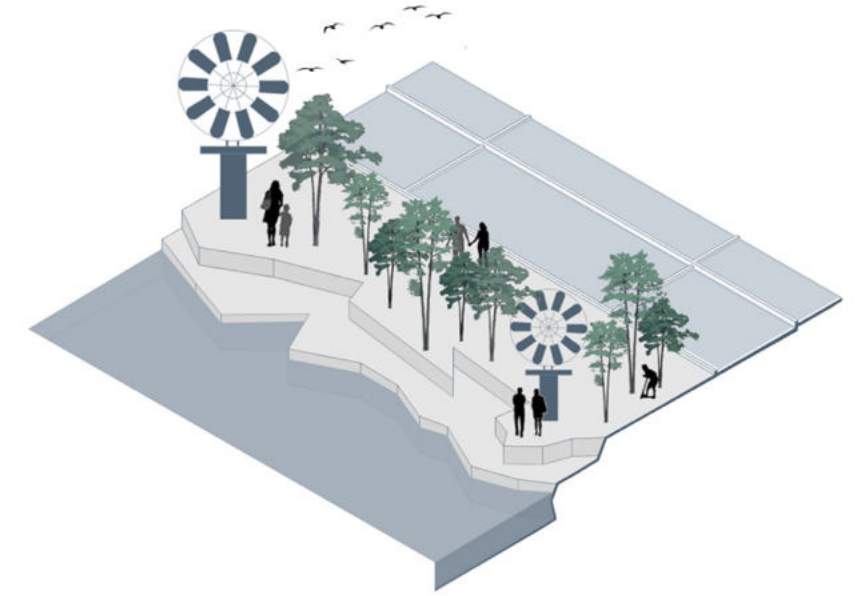
GREENING OF STREETS

Introducing greenery to urban streets not only promotes urban cooling, cleaner air, and effective stormwater management but also enhances aesthetics and boosts biodiversity. Additionally, it can function as a green corridor, connecting different zones and further supporting biodiversity.



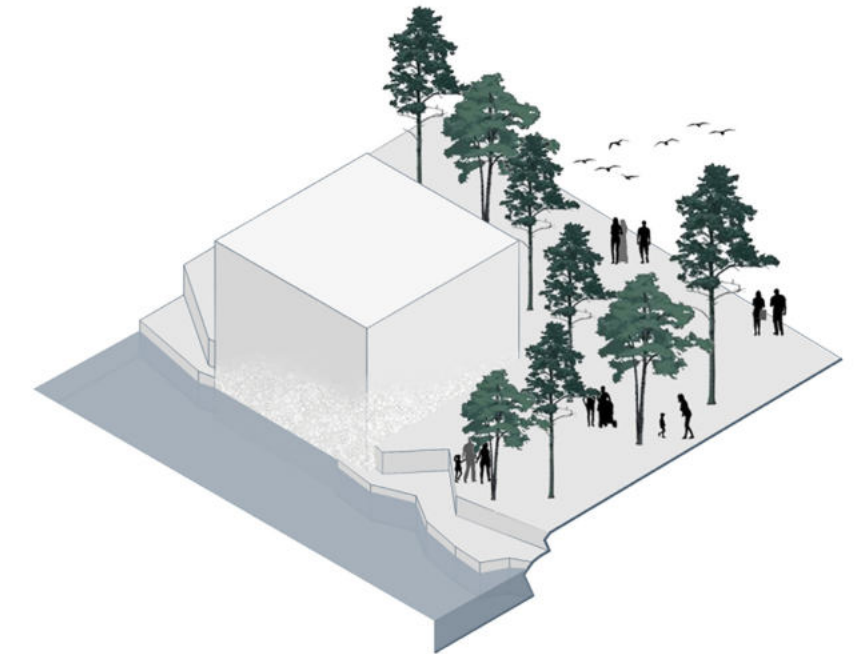
WIND WATER PUMPS

Wind water pumps use wind energy for sustainable water pumping. They're off-grid, cost-effective, eco-friendly, and is one of the main reasons why traditional salt production is sustainable.



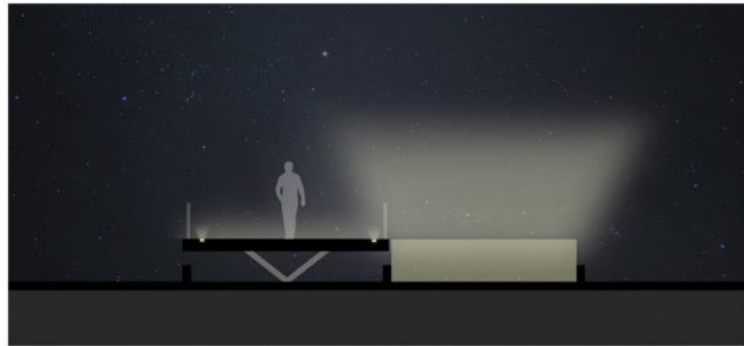
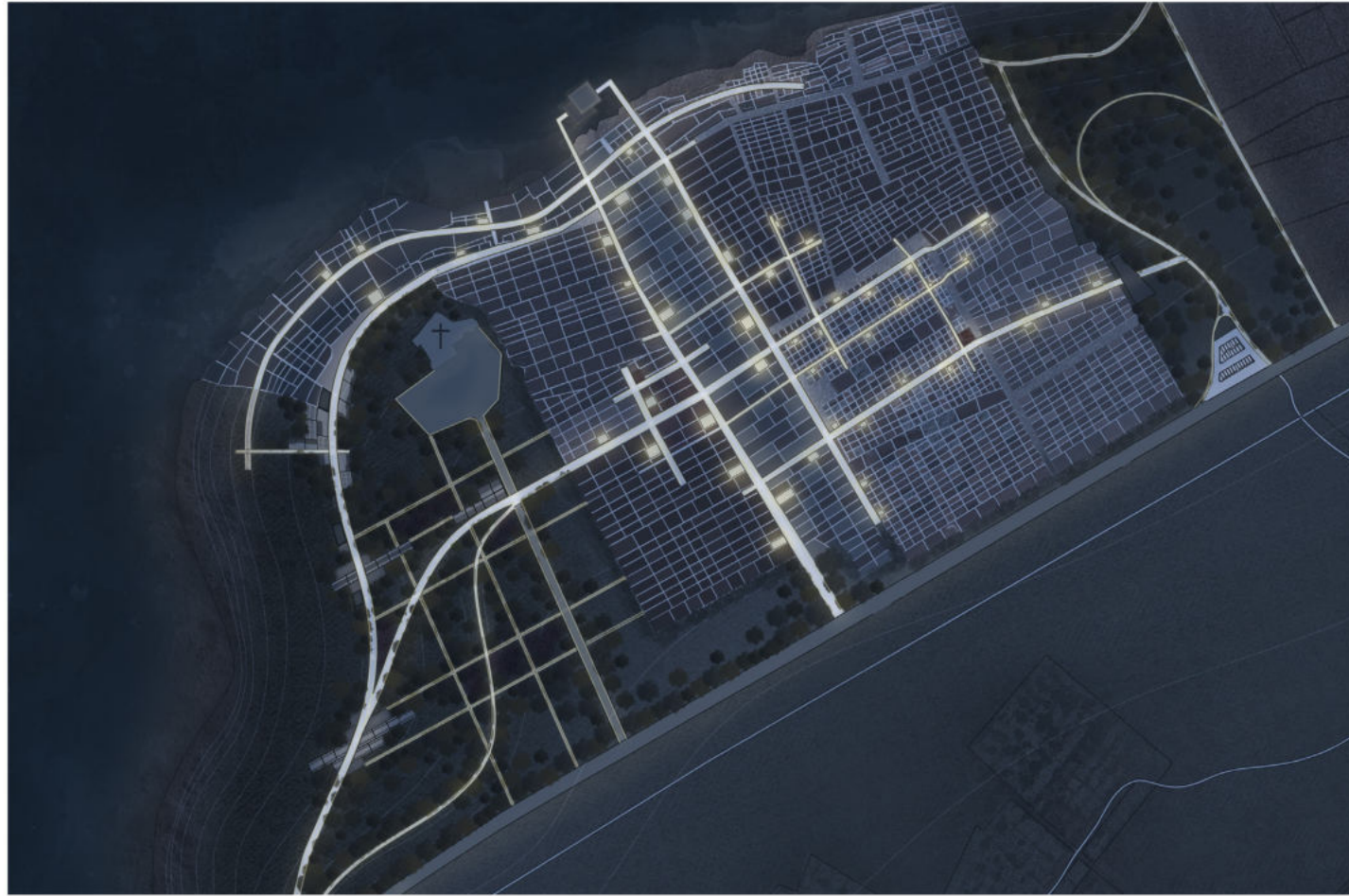
SALT CONSTRUCTIONS

Salt constructions use salt as a sustainable building material, providing natural insulation, unique aesthetics, potential health benefits, and cultural significance.



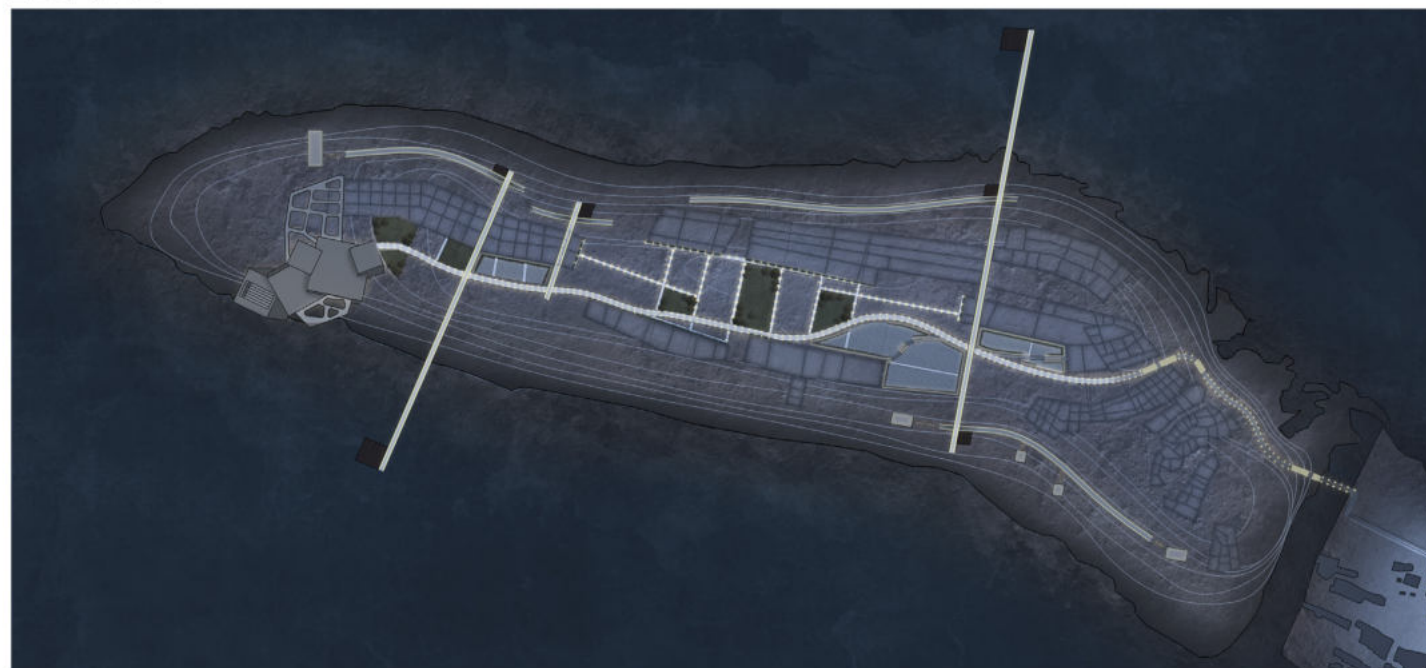
LIGHTING PLANS

ZONE 1



In the first zone, we integrated lighting elements that we inserted in some of the salinas. These elements are strategically dispersed along the entire pathway.

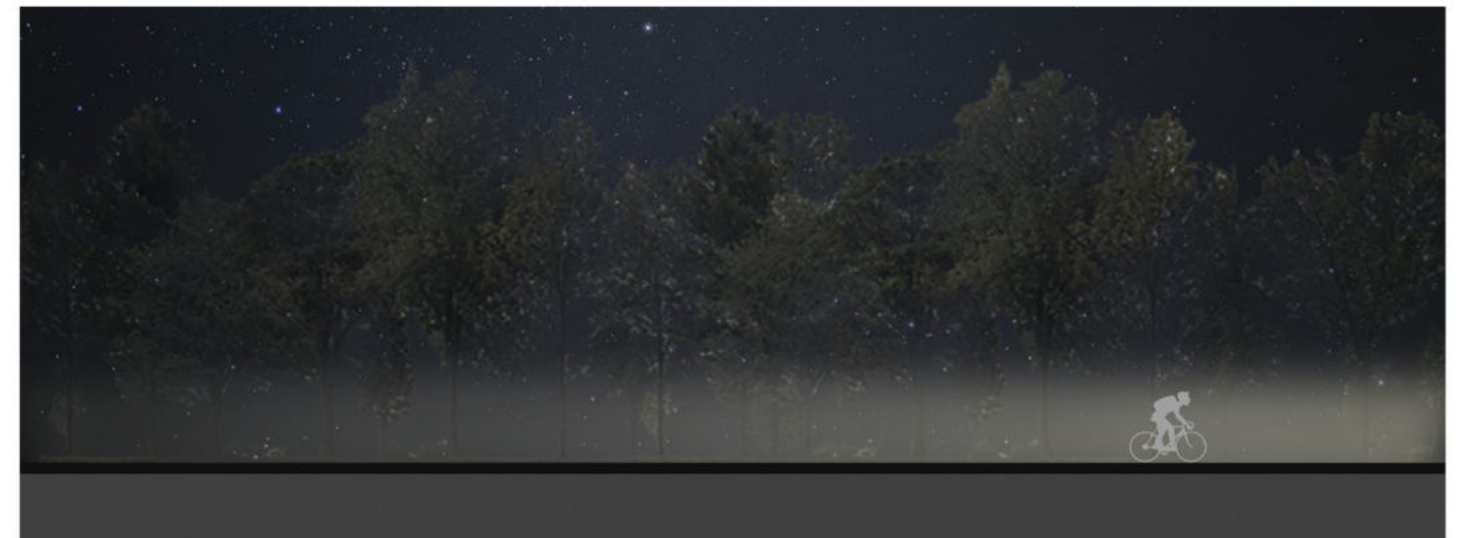
ZONE 2



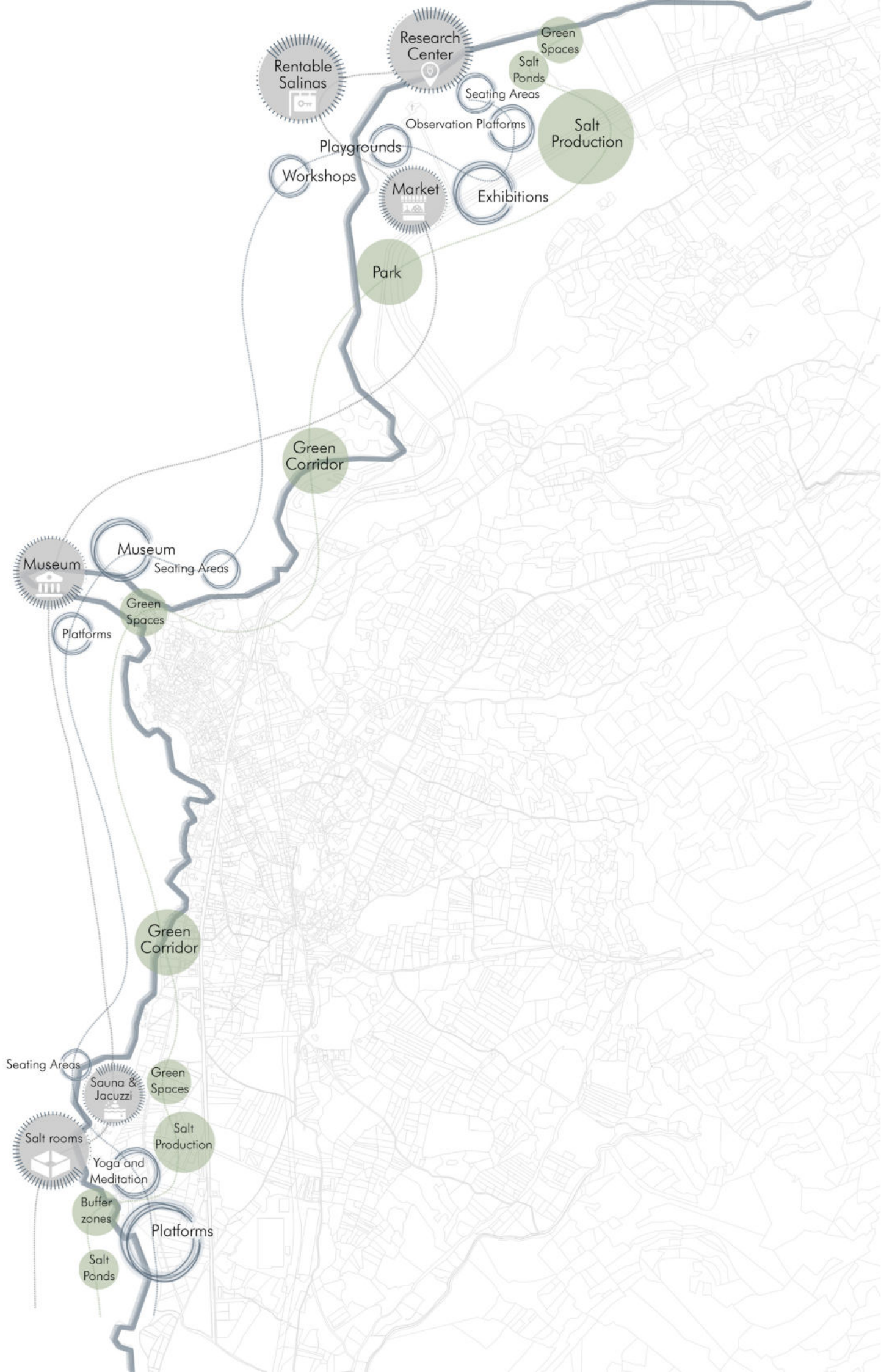
ZONE 3



LIGHTING SYSTEM



The comprehensive lighting system throughout the project employs warm-colored lights to ensure minimal disruption to the surrounding wildlife. The lights maintain a gentle, continuous glow, activating at a low intensity. Upon detecting human movement through sensors, a gradual transition occurs, intensifying the illumination to prevent abrupt changes and minimize disturbance.



CONCLUSION

In conclusion, our journey in exploring and improving Anfeh has been filled with both challenges and exciting possibilities. The mix of old salt pans, unused lands, and green areas creates possibilities for positive changes.

Taking into consideration all the issues of the area, we've come up with creative solutions. Our focus on nature and salt-based ideas aims to bring the old salt pans back to life and make them part of the town.

Looking ahead, we see Anfeh becoming a place where salt production isn't just a job but a way to build a sustainable community. Our proposals, centered on nature and local culture, hope to show that Anfeh can be a great example of how a town can grow while keeping its roots intact.

In essence, this thesis is about using smart design to make Anfeh a better place. We want to save the old, bring in the new, and create a town that's not just a home for people but also for nature and history.

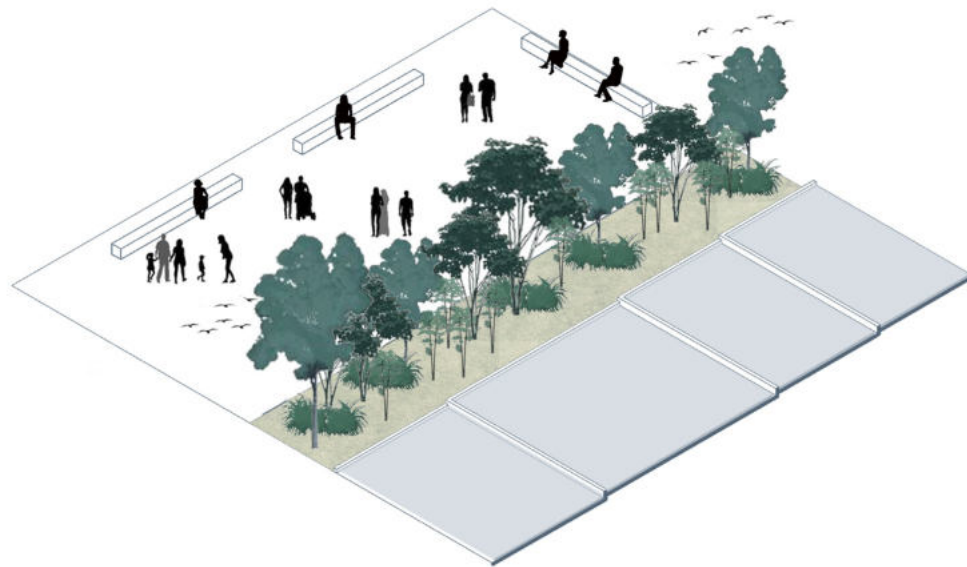
09

ECOLOGY

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In this chapter, we are exploring the various plants utilized across different sections of the project.

BUFFER ZONES



Buffer zones, in the context of pollution, are strips of vegetation strategically placed to mitigate the impact of pollutants. They act as a natural filter, trapping and absorbing pollutants, and slowing down the movement of contaminated water. These vegetative barriers help protect sensitive ecosystems by reducing the amount of pollution that reaches them.

BENEFITS

- 
Noise reduction
Vegetation helps mitigate noise pollution by absorbing sound.
- 
Wildlife habitat
Creating a buffer zone with diverse plants encourages wildlife, further enhancing biodiversity.
- 
Temperature regulations
Plants provide shade and contribute to cooling effects, mitigating the urban heat island effect.
- 
Air quality improvement
Plants act as natural air filters, absorbing pollutants and particulate matter
- 
Job creation

Top layer



Cuprocyparis leylandii
(Leyland cypress)



Genys pinus
(Pine tree)



olea europaea
(Olive tree)

Mid layer



Arundo donax

Intermediate layer



Euonymus fortunei
(Hedge shrub)



Laurus nobilis
(Laurel)

Ground layer



Salicornia
(Samphire)



Achnatherum Calamagrostis
(Needlegrass)

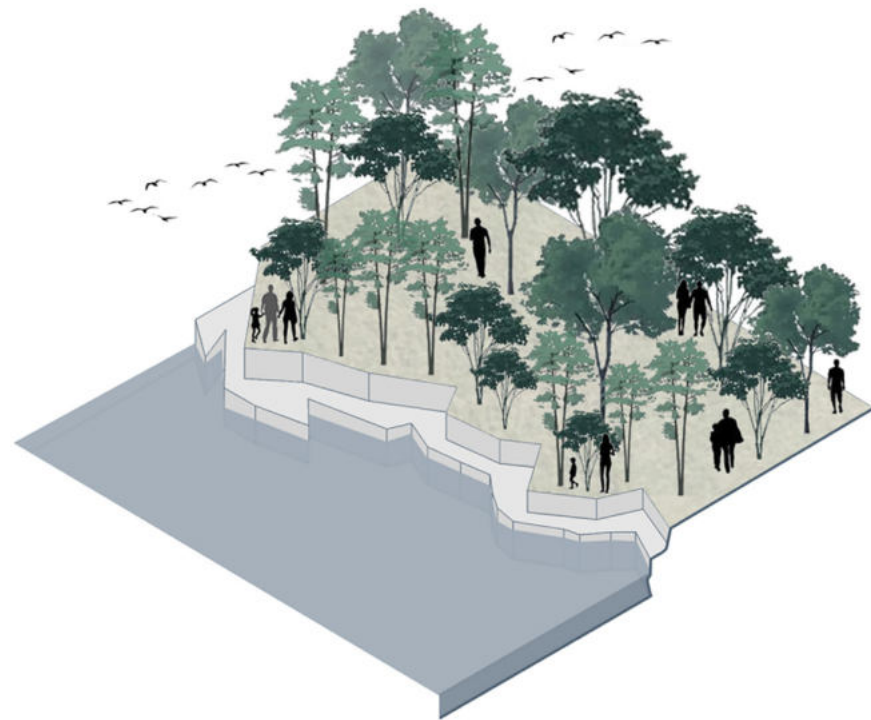
Top layer: Tall trees in the top layer act as a protective canopy, offering shade and habitat for wildlife. They also help filter air pollutants and provide a visual screen, reducing the impact of industrial emissions on the surrounding environment.

Mid layer: Plants in the mid-layer, contribute to noise reduction, air purification, and aesthetic enhancement.

Intermediate layer: Shrubs in the intermediate layer form a continuous barrier, effectively absorbing pollutants and creating a sense of enclosure

Ground layer: Plants at ground level, including ornamental grasses, contribute to air quality improvement by absorbing pollutants.

COASTLINE PLANTING



Coastal planting in Anfeh focuses on selecting and arranging vegetation along the shoreline that would accommodate the conditions of the coastal environment. This approach aims to harness the benefits of salt-tolerant plants, contributing to ecological health and enhancing the village's aesthetic appeal. Choosing native plants adapted to the coastal climate, presents an opportunity to enhance the resilience and the ecological value of the coastal areas.

BENEFITS



Erosion control

Coastal vegetation, with its deep-rooted systems, helps stabilize soil, preventing erosion caused by wind and waves.



Wildlife habitat

Coastal plants provide habitats and food sources for various wildlife. This contributes to the overall biodiversity of the area.



Water quality management

Plant roots trap sediments and filter pollutants, contributing to improved water quality along the coastline.

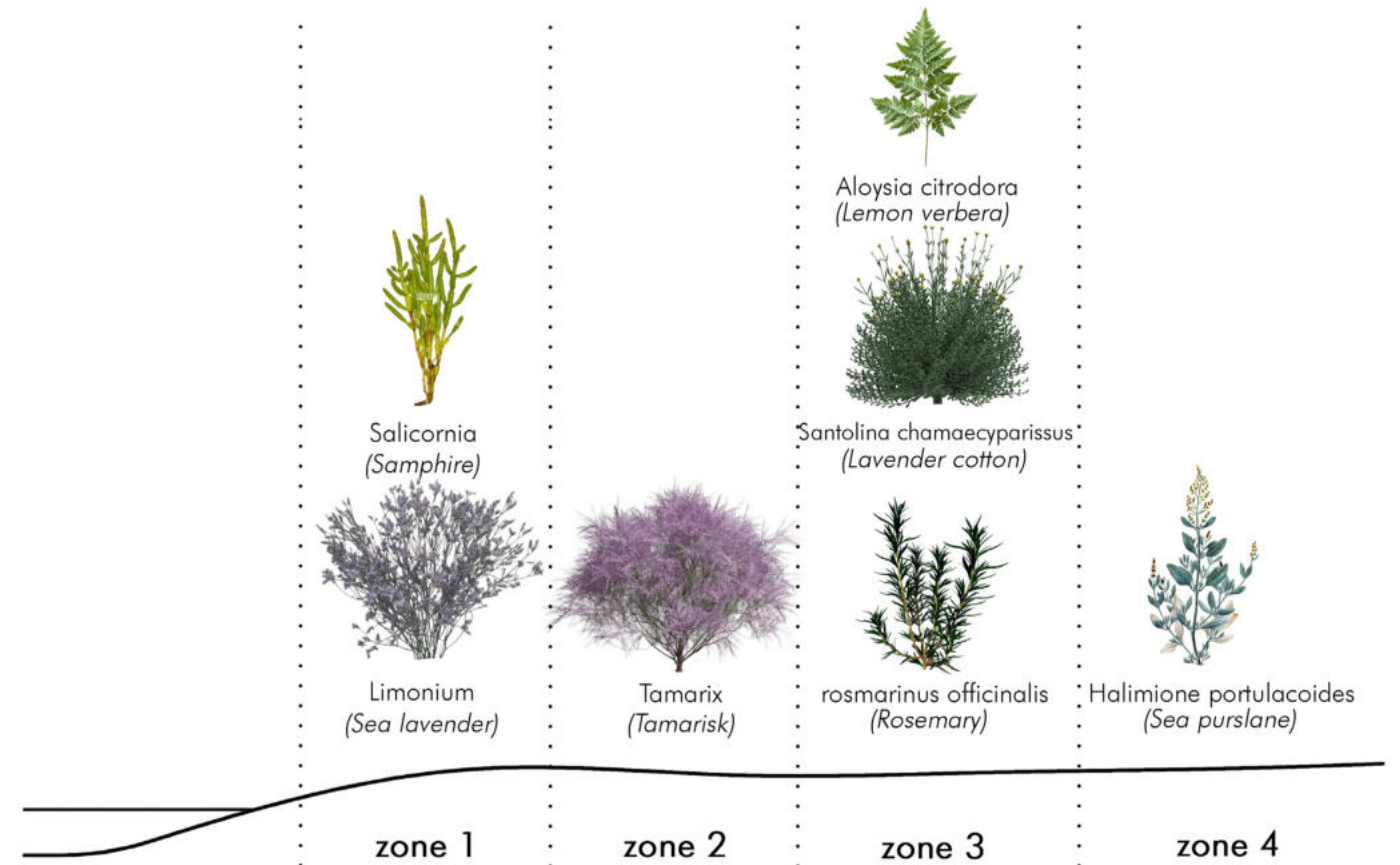


Sea level rise adaptation

Coastal planting can act as a natural buffer against the impacts of rising sea levels, providing both environmental and community benefits.



Job creation



zone 1, Closest to the sea

Salt-tolerant and adapted to periodic salt spray, drought-resistant and able to withstand occasional inundation, deep-rooted for soil stabilization and erosion control.

zone 2, Midway between salt and inland

Tolerant to salt exposure but offering a more diverse landscape, adapted to the transitional conditions between the coastal and inland areas.

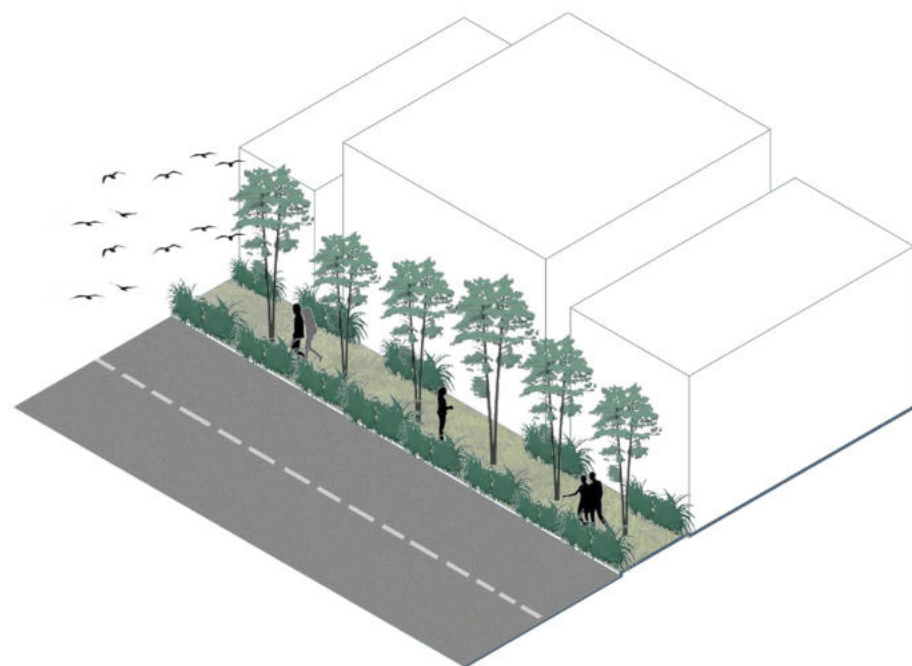
zone 3, Further inland

Less salt-tolerant but still adapted to coastal conditions, supports a mix of native shrubs and grasses, serves as a transition into the broader green areas of Anfeh.

zone 4, Furthest from the sea

Least salt-tolerant, suitable for areas furthest from direct salt exposure, diverse plant species for aesthetic appeal and ecosystem diversity.

GREENING OF STREETS



The "Greening of Streets" refers to incorporating vegetation into urban street environments for ecological and aesthetic benefits. This involves strategic landscaping, including trees, shrubs, and green infrastructure, to create more sustainable and visually pleasing urban spaces.

BENEFITS



Temperature regulations

Greenery helps cool the urban environment, providing shade and reducing the heat island effect.



Air quality improvement

Plants and trees filter pollutants from the air, enhancing air quality and creating a healthier atmosphere.



Biodiversity support

Selecting a variety of plant species attracts pollinators and supports local biodiversity.



Job creation

Street trees



Jacaranda mimosifolia
(Jacaranda)



Callistemon
(Bottlebrush)

Shrubs



Nerium oleander
(Oleander)

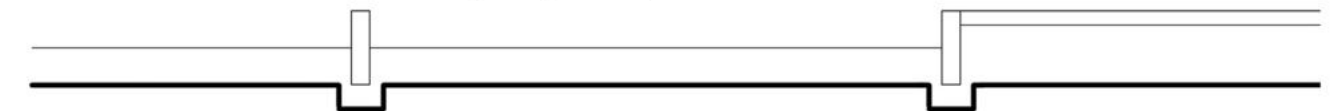


Myrtus communis
(Myrtle)

Ground covers



Lantana montevidensis
(Trailing lantana)



Ground covers

Ground covers help prevent soil erosion by stabilizing the soil with their root systems as well as they can moderate surface temperatures by providing shade and reducing heat absorption.

Shrubs

Shrubs contribute to the overall aesthetics of the street, providing a variety of shapes, sizes, and colors, they also offer shelter and food sources for birds, insects, and other wildlife, promoting biodiversity and they absorb pollutants from the air, contributing to improved air quality in urban environments.

Street trees

Trees provide shade, reducing the urban heat island effect and cooling the surrounding area, they also absorb pollutants and release oxygen, contributing to improved air quality.

BENEFITS



Soil conservation

Reforestation helps prevent soil erosion, especially on slopes and hilly terrains.



Climate change mitigation

Trees sequester carbon, helping mitigate the effects of climate change.



Water quality enhancement

Tree roots contribute to water filtration, improving the quality of nearby water bodies.



Biodiversity enhancement

Native trees support diverse ecosystems, providing habitats for various species.



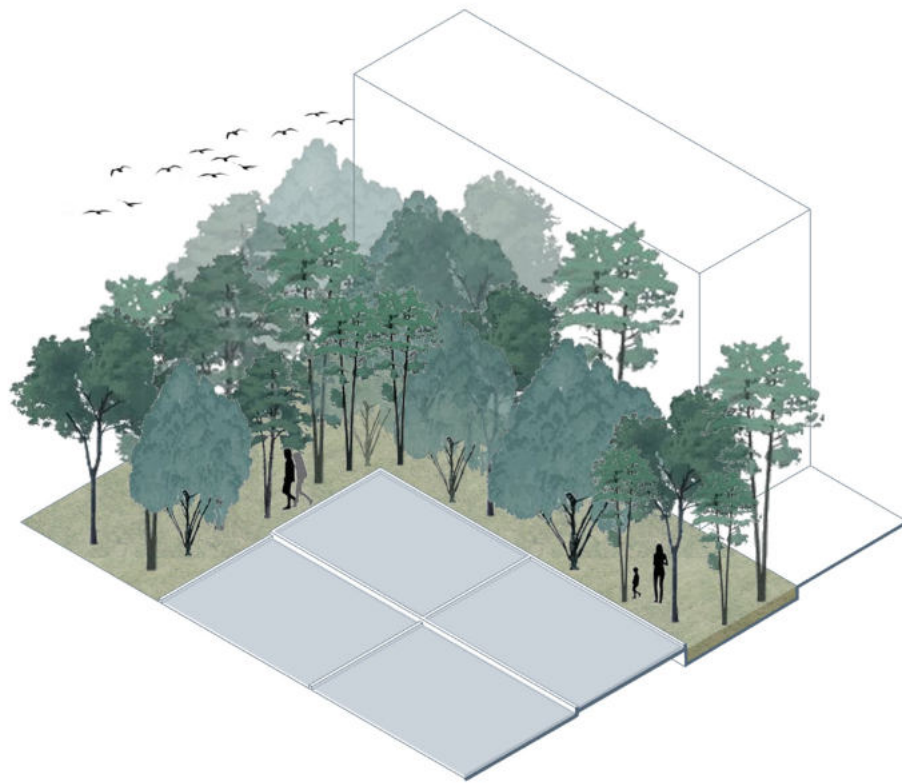
Air quality improvement

Trees act as natural air filters, absorbing pollutants and releasing oxygen.

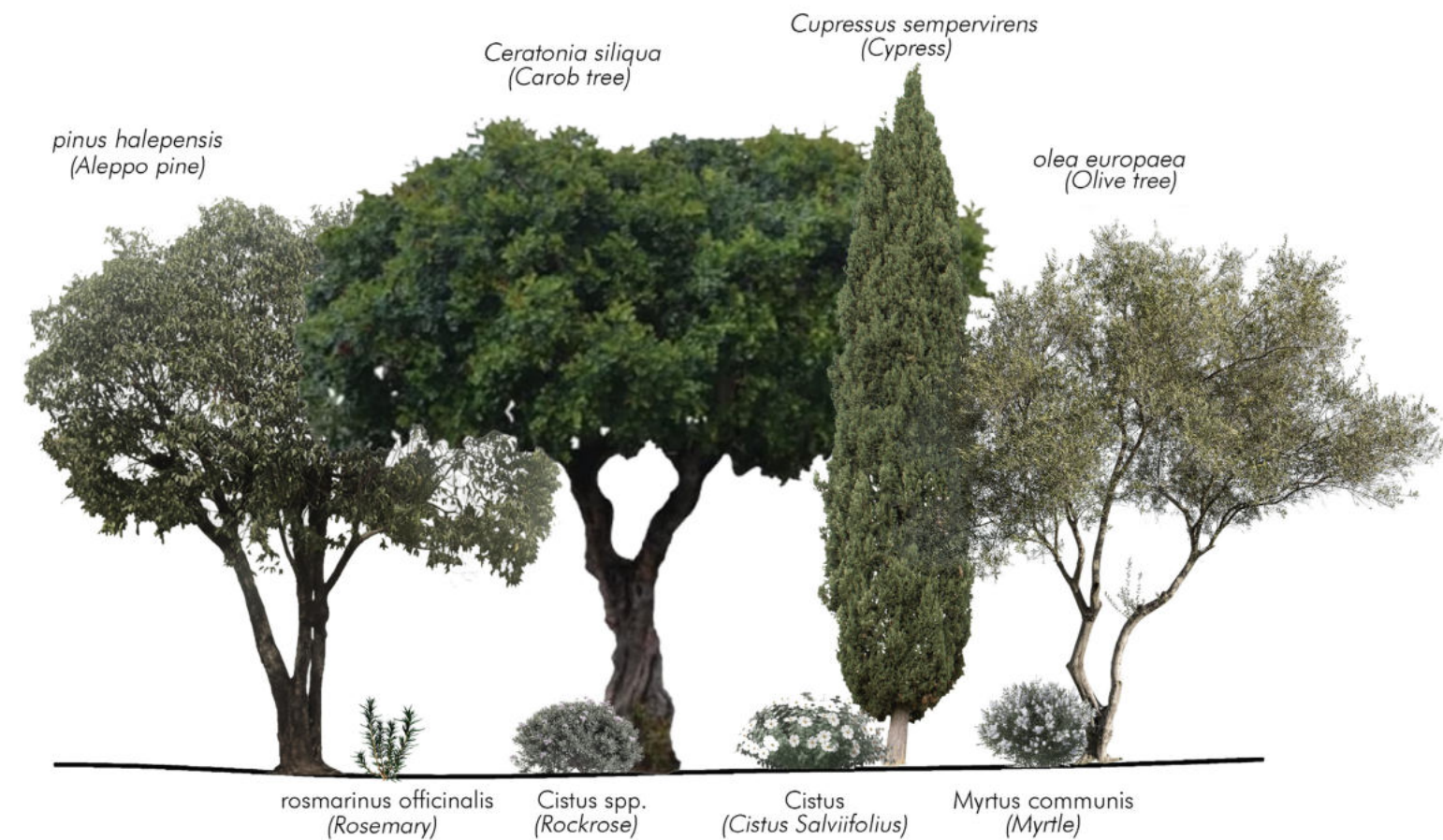


Job creation

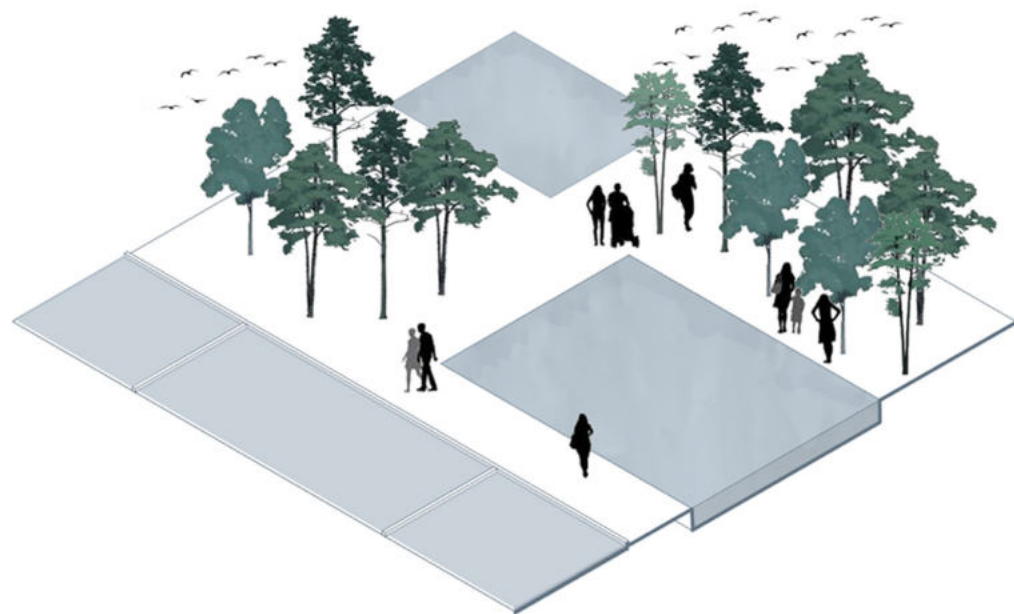
REFORESTRATION



Reforestation is the process of replanting trees in areas where they have been removed or depleted, with the goal of restoring or creating a forest. This practice is essential for environmental conservation, biodiversity restoration, and mitigating the impacts of deforestation. Reforestation efforts are often undertaken to counteract the loss of forested areas due to logging, urbanization, or natural disasters.



WATER PONDS



Ponds are bodies of standing water, natural or man-made, that contribute to biodiversity, water management, and recreation. They enhance landscapes, support wildlife, and act as natural filters, improving water quality. In urban settings, ponds assist in stormwater management and temperature regulation.

BENEFITS



Stormwater management

Water ponds act as natural stormwater management systems, helping to control and mitigate the impact of heavy rainfall, reducing flooding risks.



Water filtration

Ponds act as natural filters, trapping sediments and pollutants, improving water quality before it enters natural water bodies.

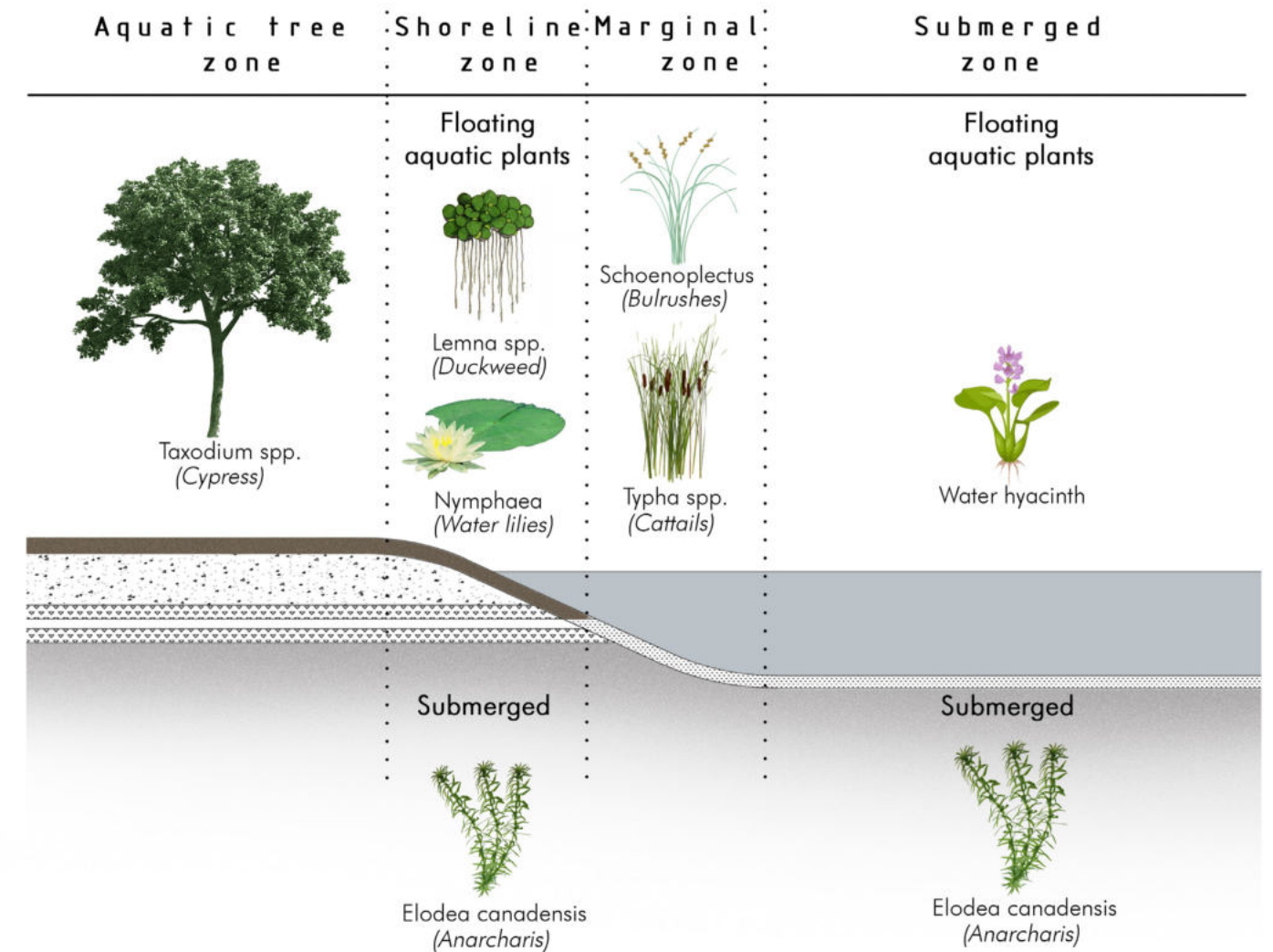


Biodiversity enhancement

Ponds provide habitat for aquatic plants and animals, contributing to increased biodiversity and supporting the local ecosystem.



Job creation



10

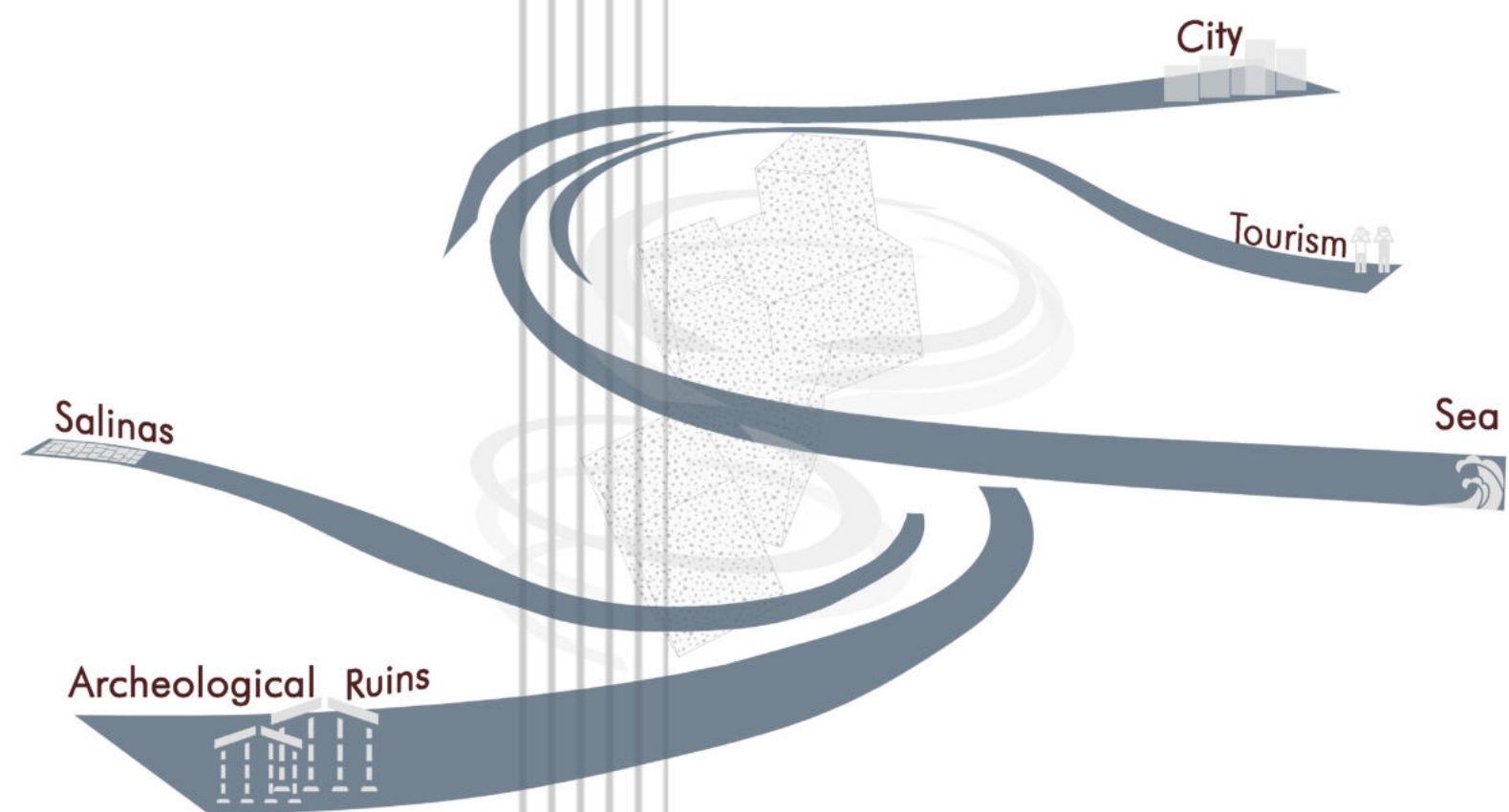
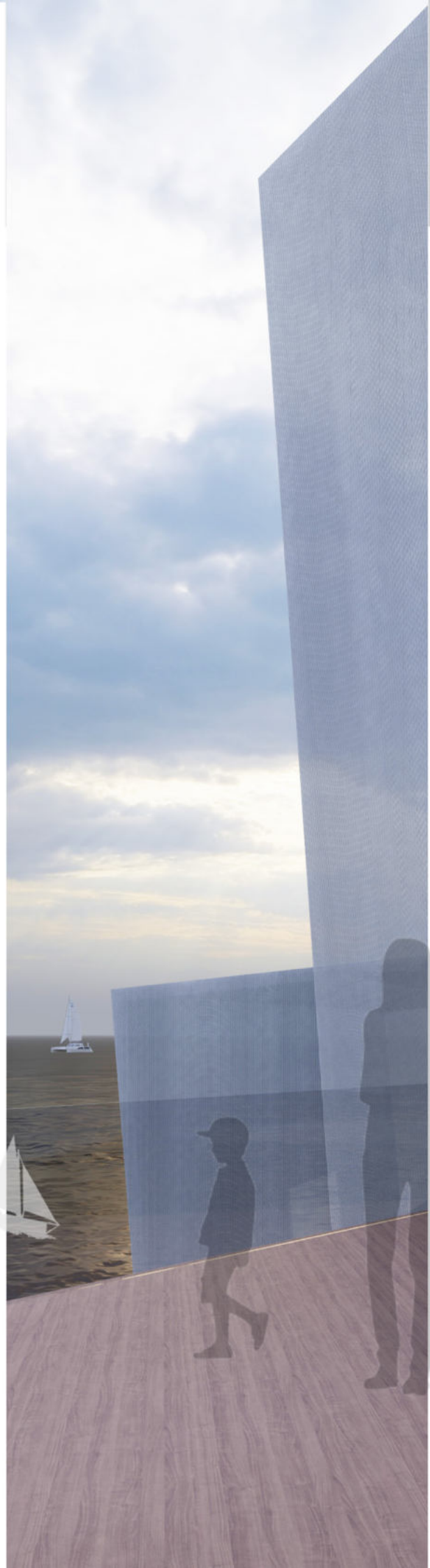
THE MUSEUM

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Mass plan	194
Concept diagram	196
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Exploded diagram	206
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Salt growth	212
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In this concluding chapter, we delve into a detailed exploration of the museum implemented in Zone 2.

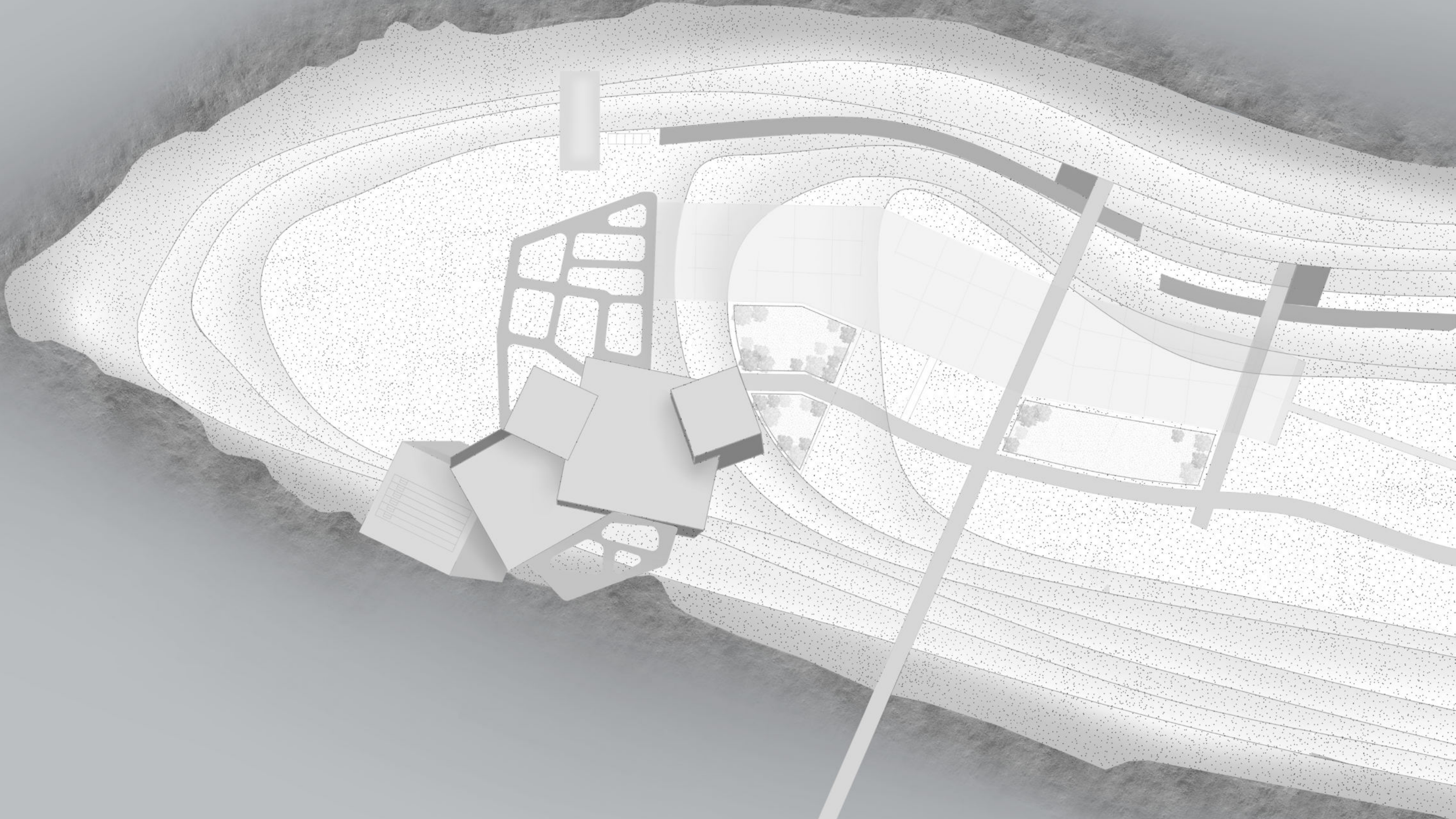
SALTSHIFT

Beyond the Crystal



Terrain

■ MASS PLAN



CONCEPT DIAGRAM

The museum's concept diagram began with interlocked crystal shapes—rotated cubes that echo the village settlement while introducing a dynamic tilt. This intentional tilt serves as a contrast, highlighting the architectural relationship with the UNESCO-protected site's archaeological significance.

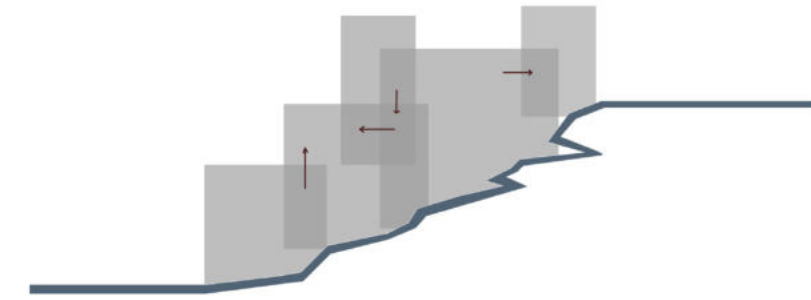
To preserve the ground's integrity, suspended slabs reveal rocks within, creating a harmonious in-out relationship for visitors to explore both internal and external spaces.

Furthermore, the outdoor promenade takes inspiration from the Voronoi pattern, mirroring the cracks within the salinas. This design element adds an organic and unique dimension to the open spaces, aligning seamlessly with the overall concept.

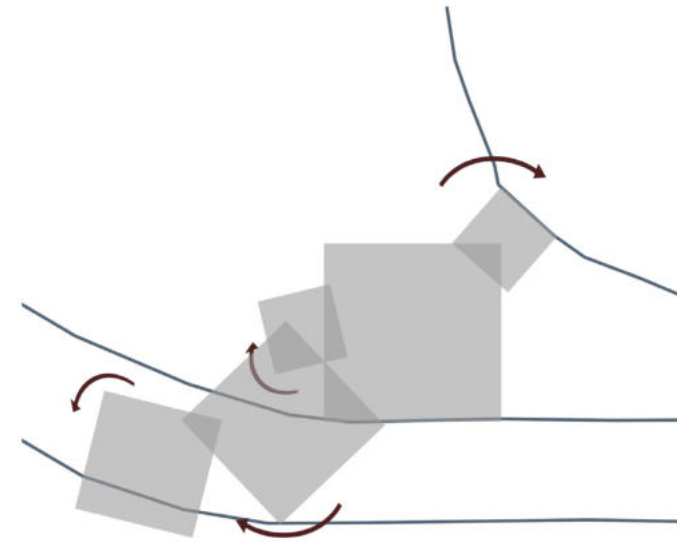
As a nod to the strength of salt as a building material, the structure will gradually develop a salt covering over the years, enhancing its ability to withstand the forces of the surrounding waves.



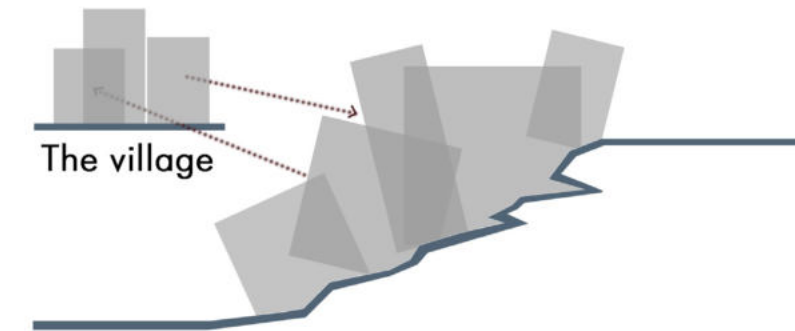
The Salt Crystal shape



Interlocking cubes

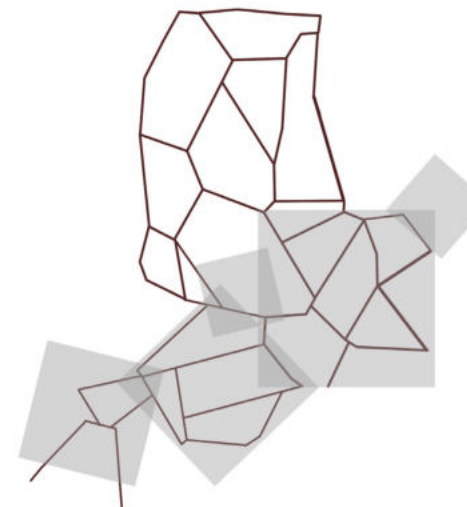


Rotation of cubes following the contour lines

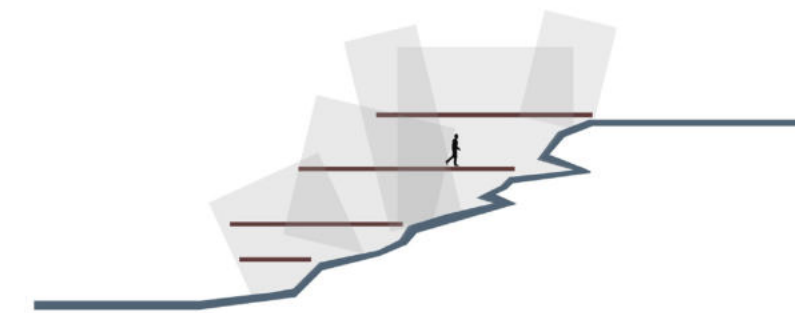


The village

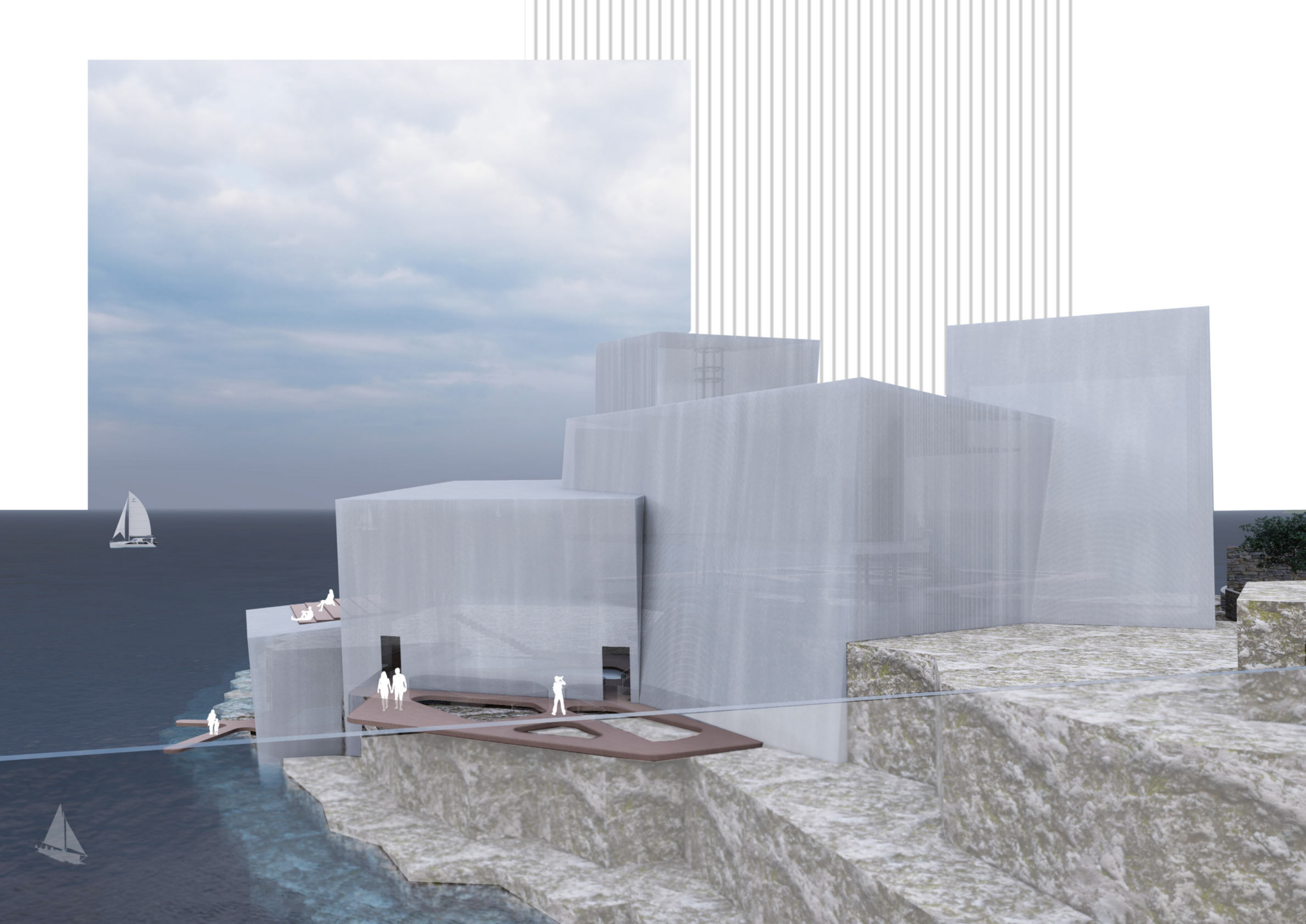
Contrast and similarity with the existing settlements



Voronoi Pattern for the circulation



Keeping the ground intact with suspended slabs



PLANS

LEGEND

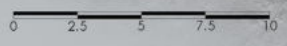
- 1- Reception
- 2- Exhibition
- 3- Administration

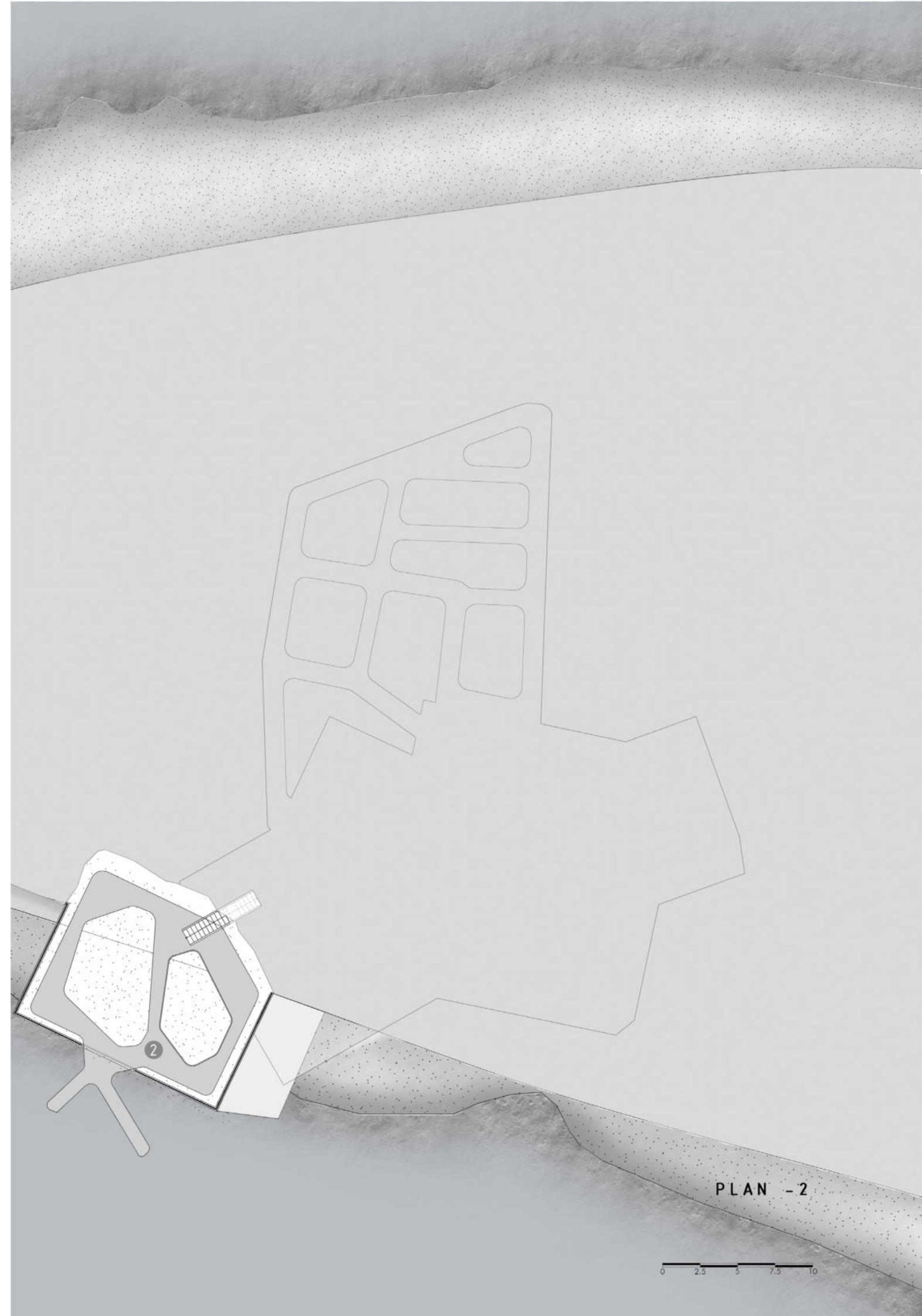


FIRST FLOOR



GROUND FLOOR

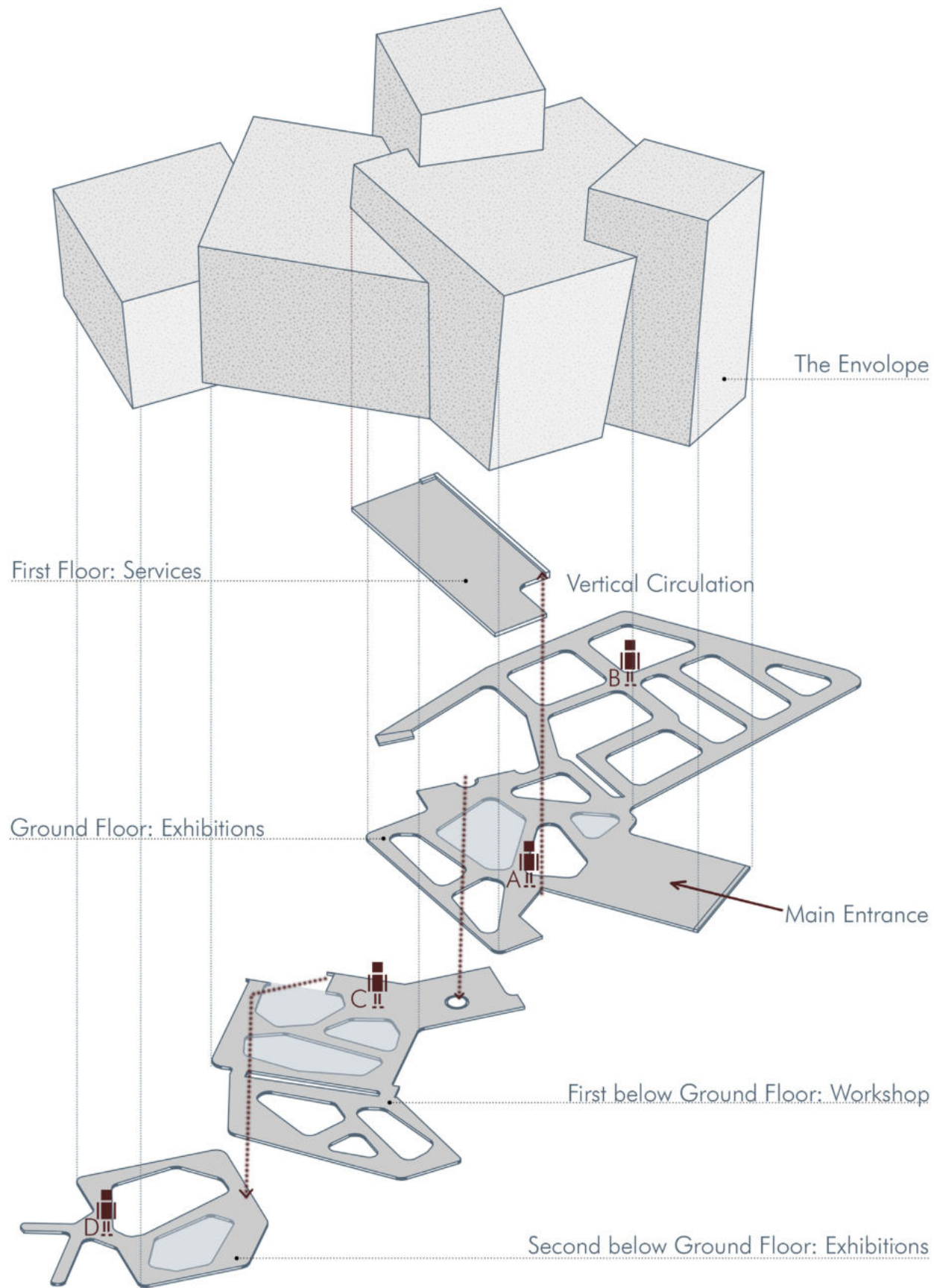




SECTION



EXPLODED DIAGRAM



Step outside to explore the traces of the salinas, and then strap on your virtual reality headset for an immersive journey deep into the heart of a salt mine. Experience the sights and sounds of the area as it once was with salinas, and delve into the intricacies of salt extraction



B | Virtual Reality Exhibition



C | Interactive Workshop



D | Art Installations

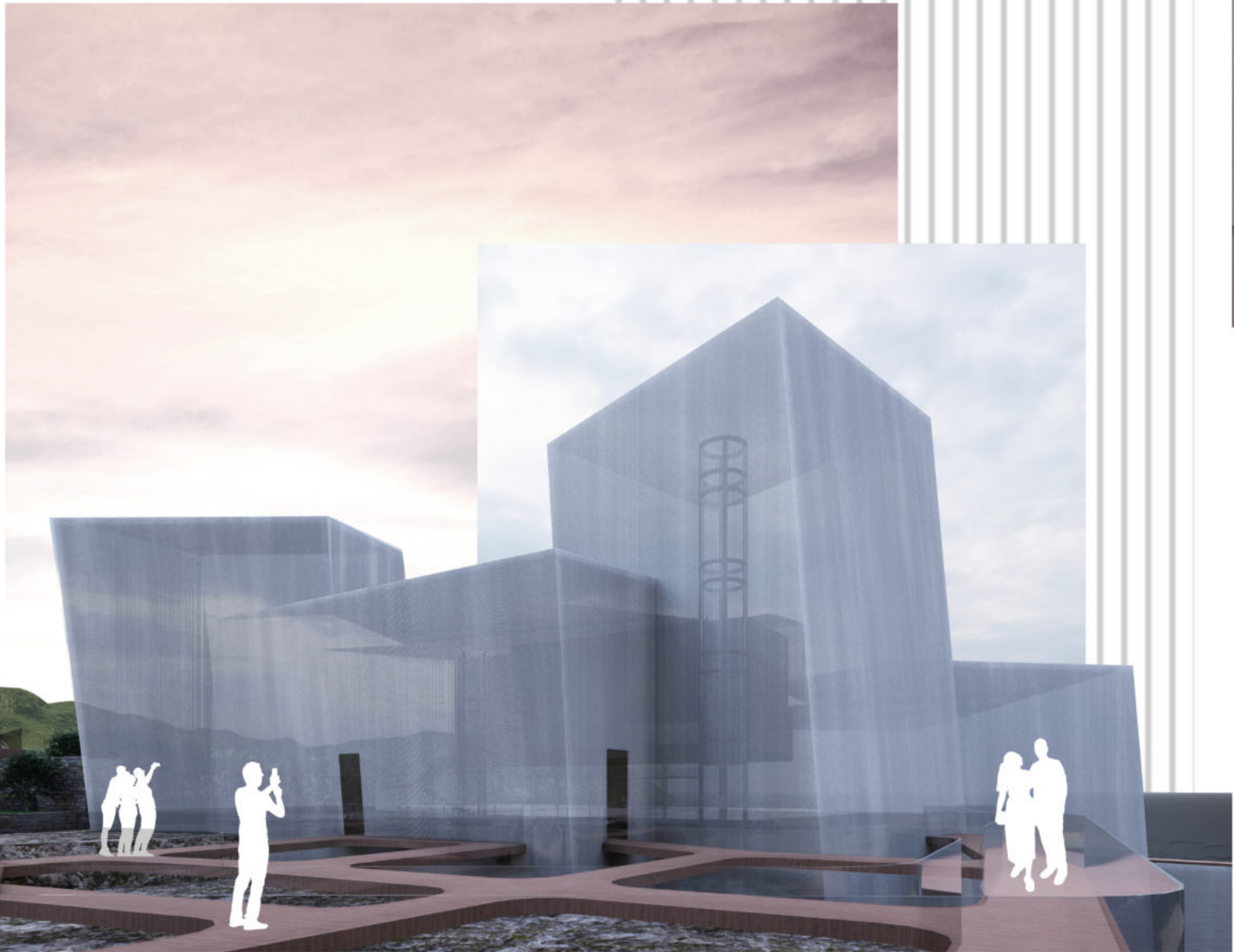


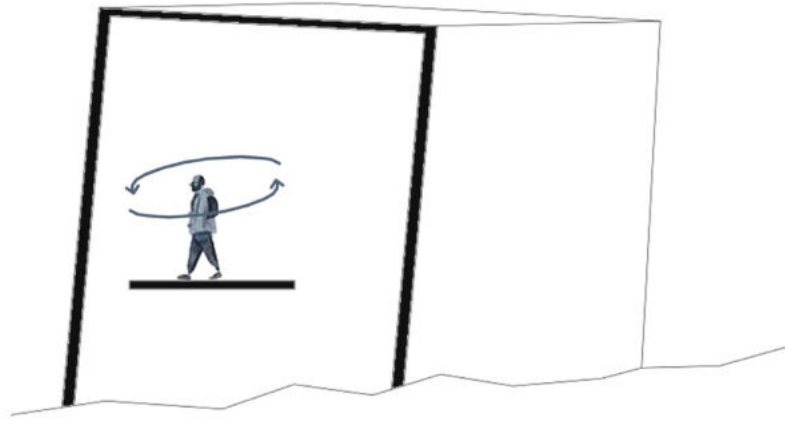
A | Holographic Images

As you enter, a massive holographic exhibition welcomes you, showcasing the evolution of salt production throughout history. It also guide you through ancient salt mines and trade routes.

Create your own holographic salt crystal formations or design virtual recipes using different types of salt. Engage your senses as we present the diverse smells, textures, and tastes of salts from around the world.

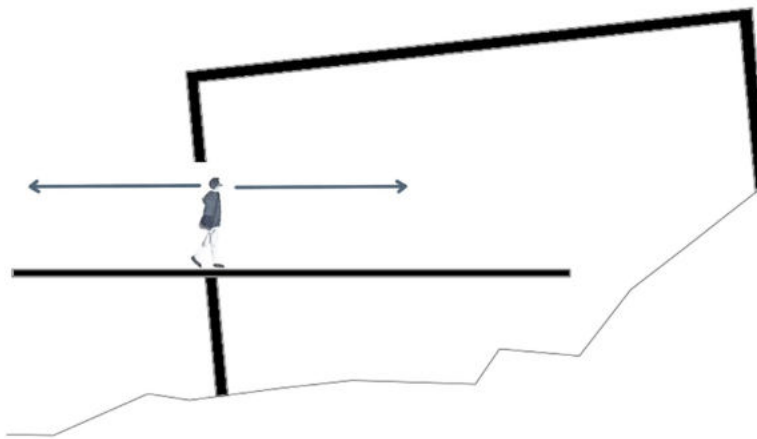
Step into a space where artists have crafted mesmerizing art installations inspired by salt. These dynamic artworks shift and change, creating a fusion of technology and creativity. Conclude your journey with a glimpse into the future of salt.





360° VIEWS

Because the building is constructed with semi-transparent polycarbonate sheets, people can enjoy a 360-degree view of the village on each level



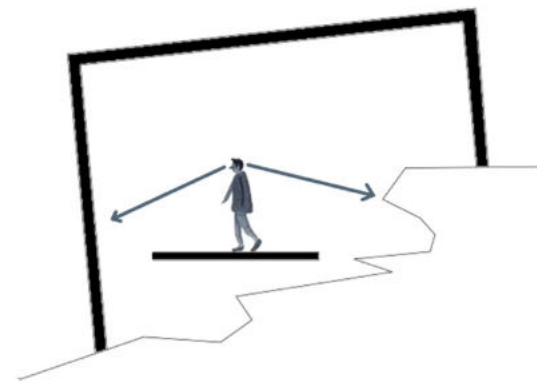
IN/OUT

People can seamlessly enjoy both outdoor and indoor spaces, as the design fosters a harmonious relationship between the inside and outside environments, creating a fluid and inviting experience for visitors



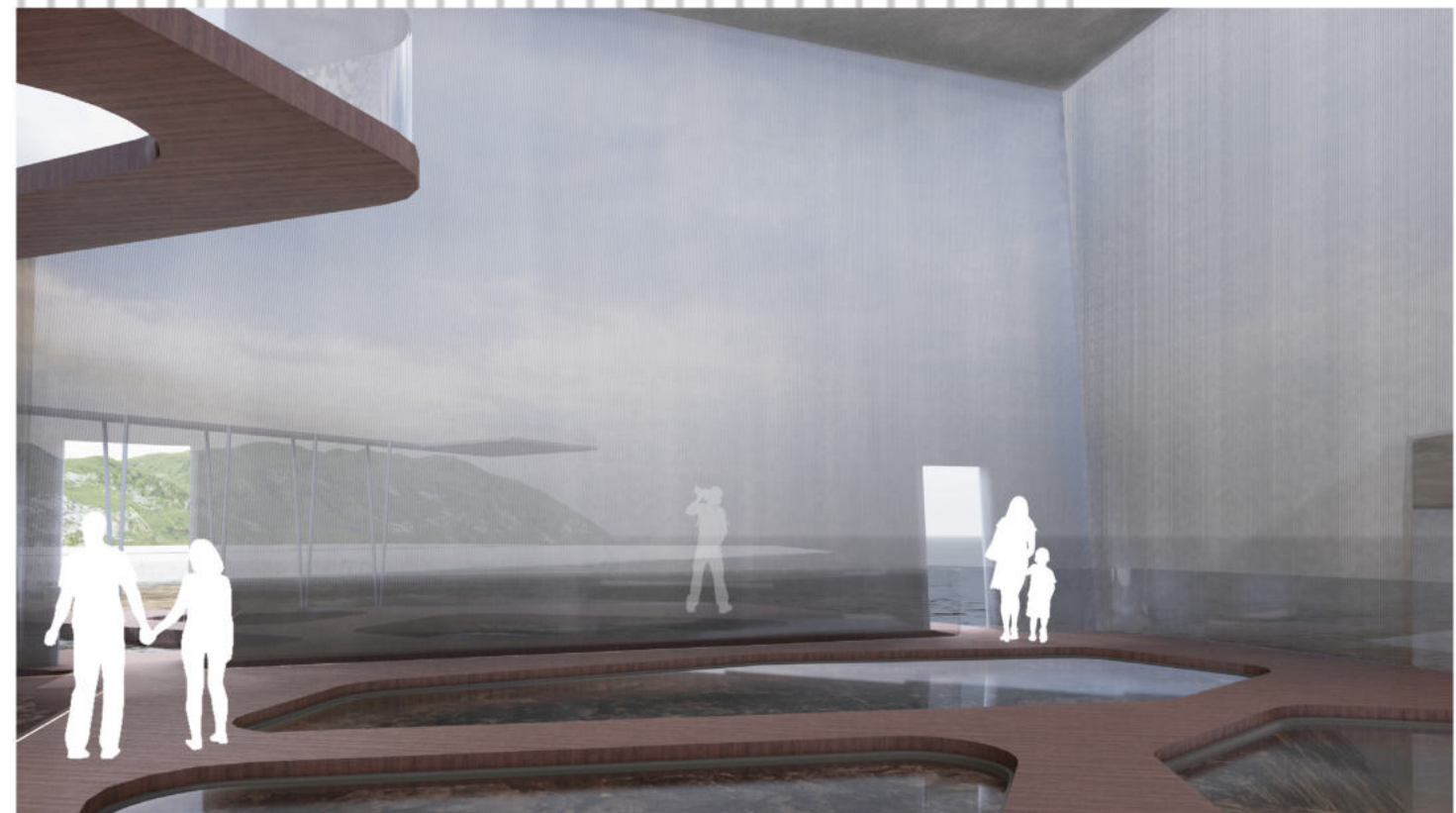
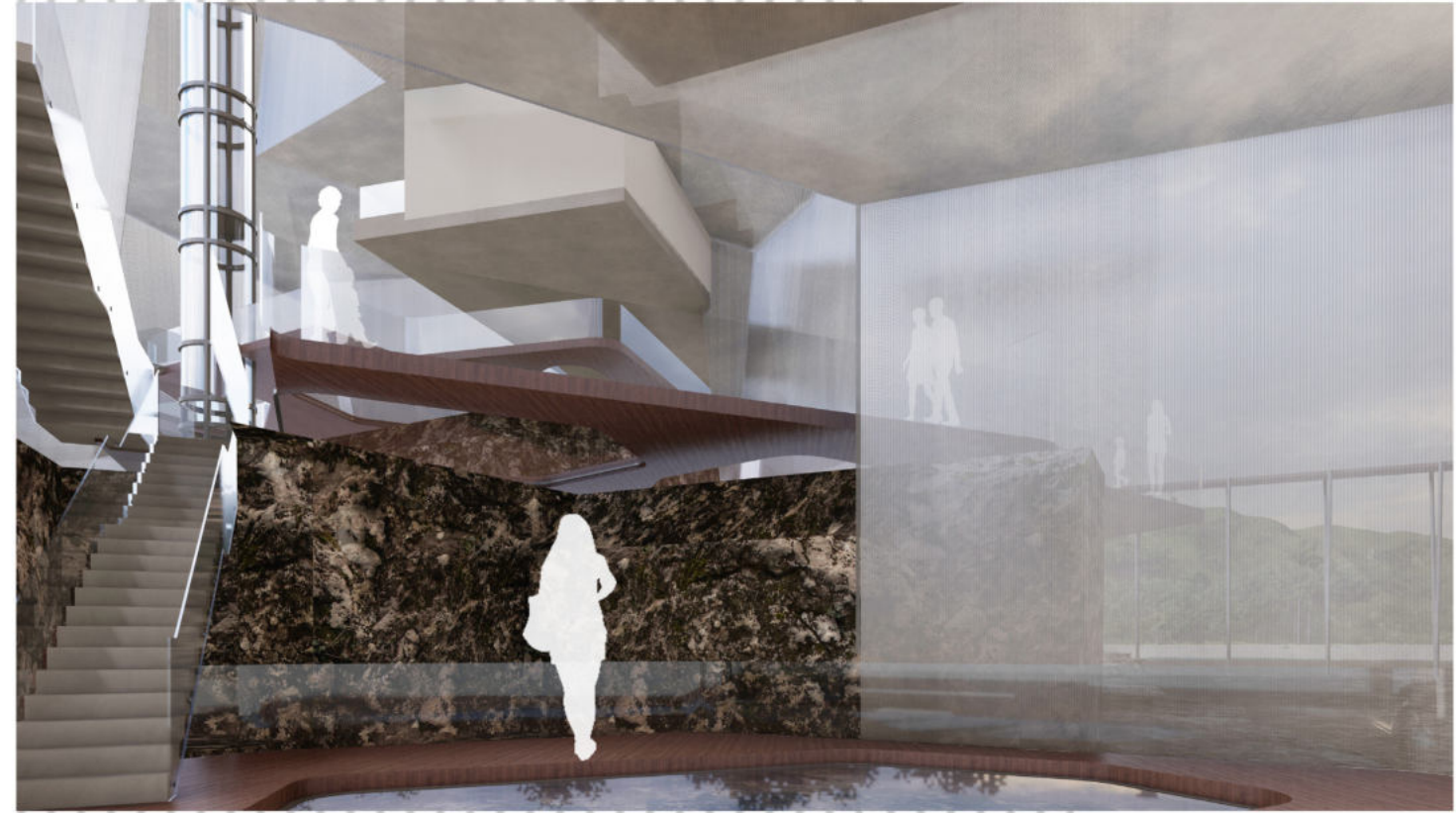
PEAK PANORAMA

Perched atop the bleachers, individuals can enjoy a 360-degree panoramic view of the entire village



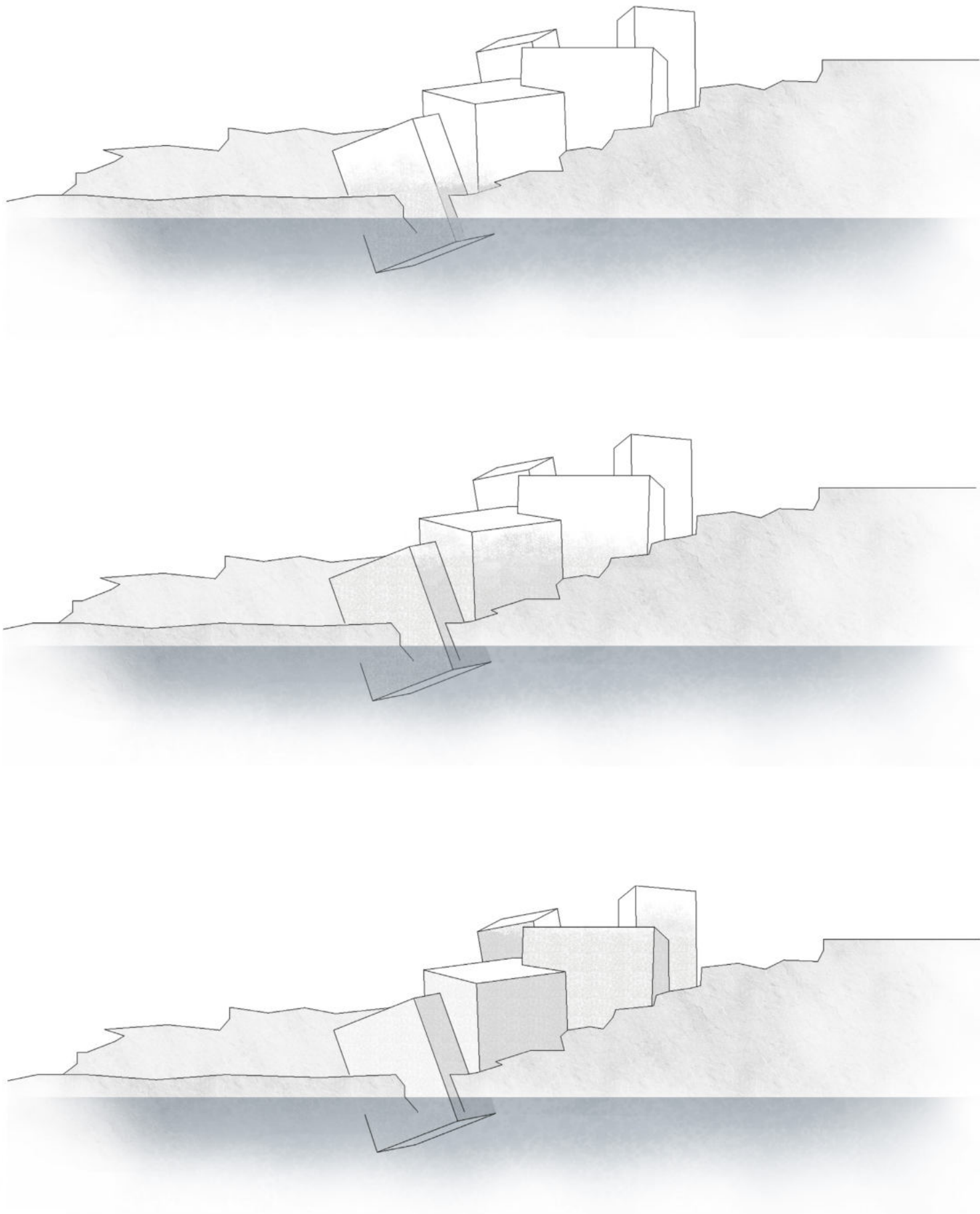
DUAL SCENERY

People can relish a captivating experience with a 180-degree view of the existing rocks, complemented by an equally stunning 180-degree panorama of the sea



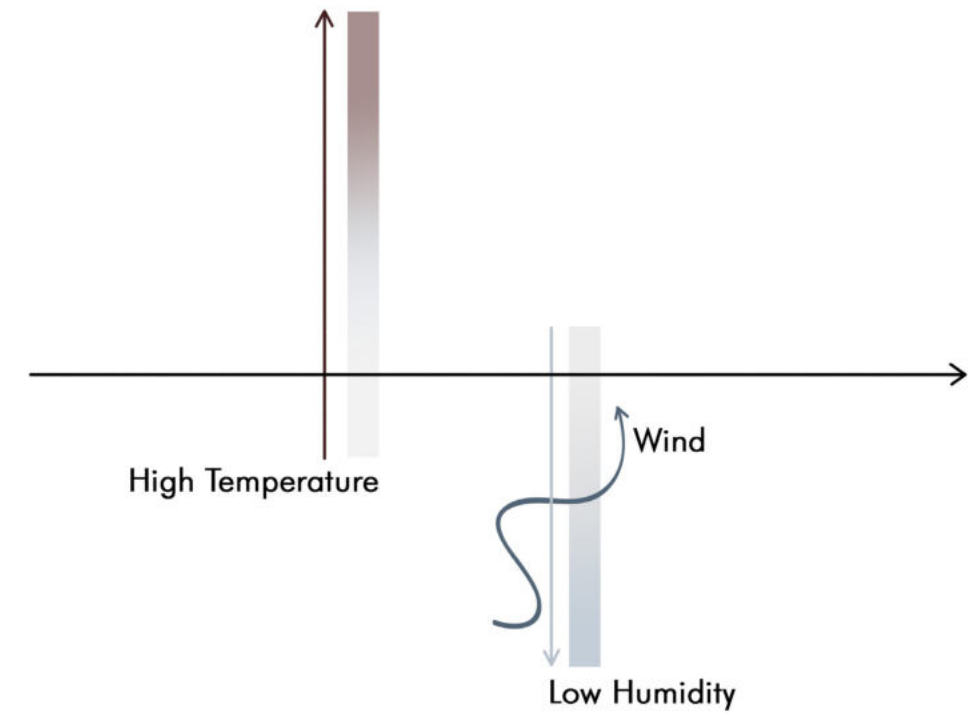
SALT GROWTH

South elevation

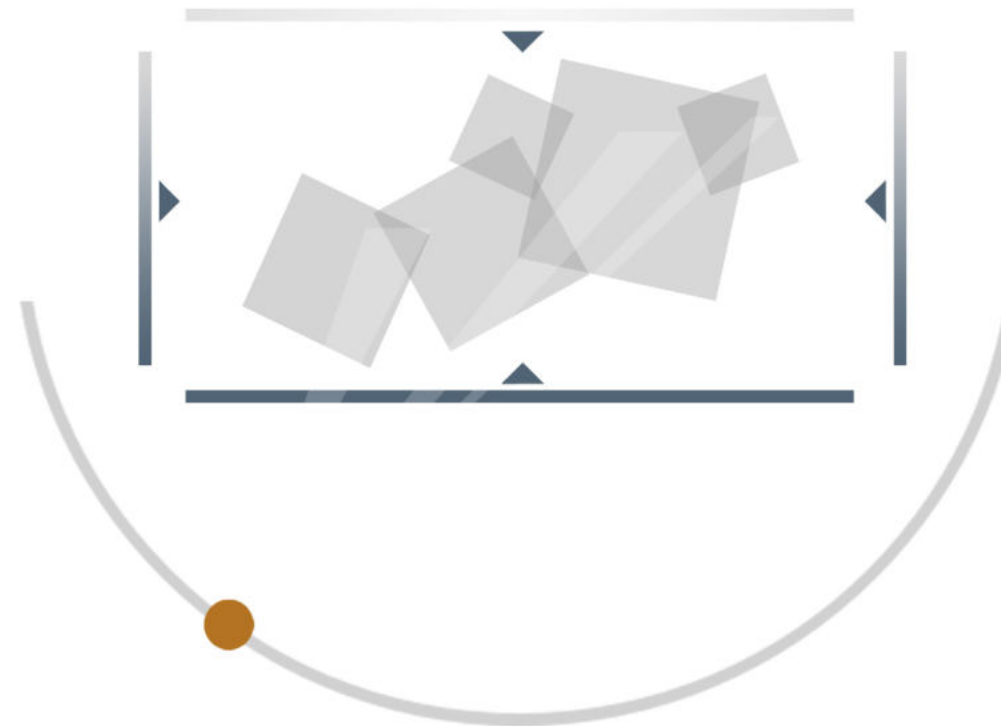


Environmental conditions

The crystallization of salt is influenced by factors like temperature, humidity, and impurities in the solution. Higher temperatures and lower humidity generally promote faster crystallization. Wind can indirectly influence the process as it can accelerate evaporation by removing the humid air above the solution.

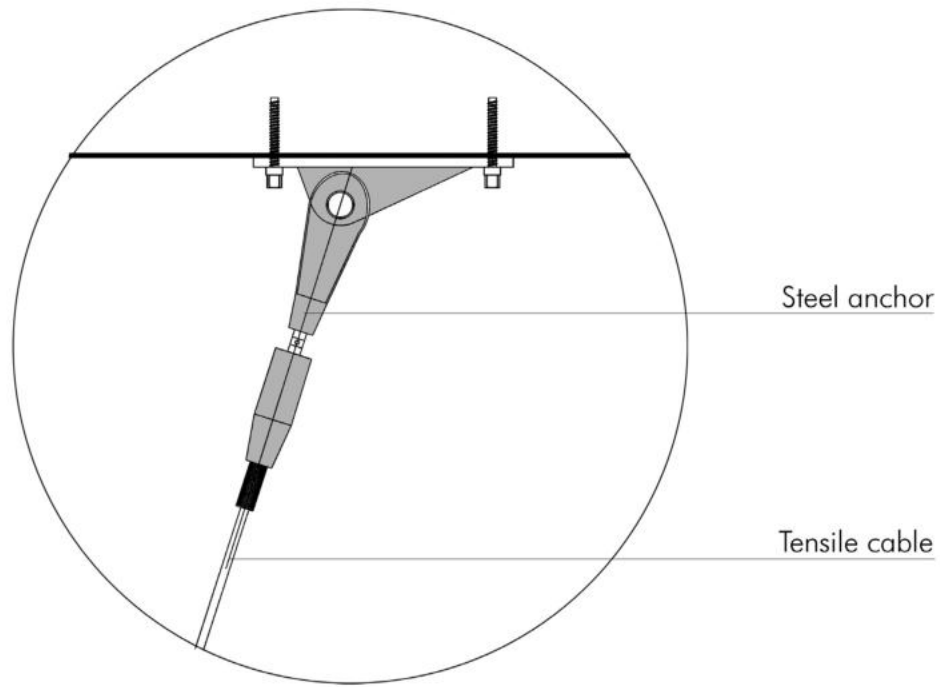


The impact of the sun

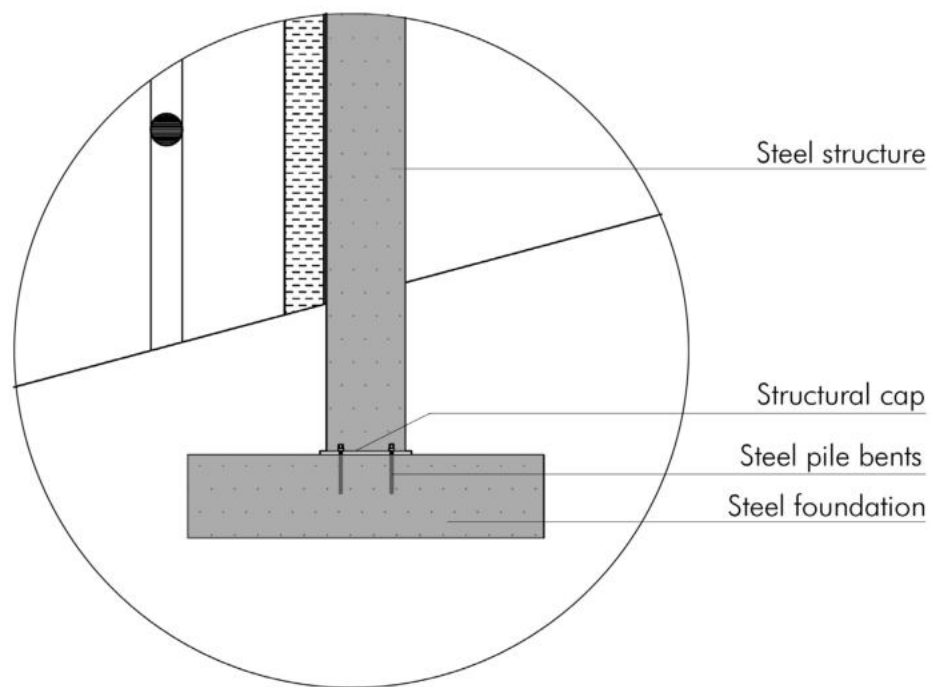


Sunlight plays a crucial role in salt formation, showcasing its impact on the four elevations of our museum. The south elevation experiences the most significant impact, followed by the east and west elevations at a moderate level, and the north elevation being the least affected

SECTION DETAIL 1
Cable structure



SECTION DETAIL 2
Foundation



Wood

For the interior flooring of the museum we picked wood which we think would give a natural atmosphere.



Polycarbonate

We used polycarbonate sheets into the museum facade, ensuring that the exterior showcases a luminous effect when the museum lights are switched on.



Aluminum

We employed aluminum pipes to facilitate the crystallization of salt, forming a distinctive salt facade.



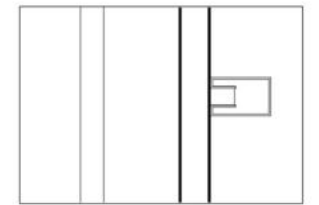
Carbon fibre

We incorporated carbon fiber within the aluminum pipes to enhance the overall structural resilience of the entire framework.



Steel

The overall structure of the museum is constructed with a steel framework, allowing for an open-space design without the need for bulky structural elements.



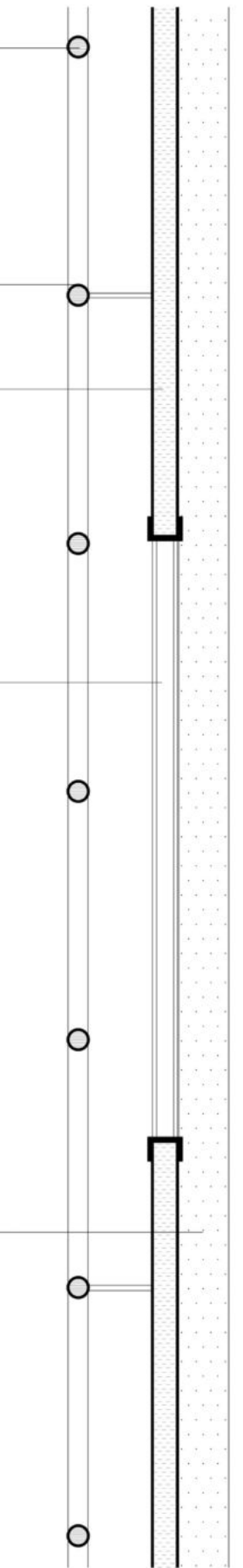
Carbon fiber wires

Aluminium pipes

Polycarbonate sheets

Opening

Steel structure







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