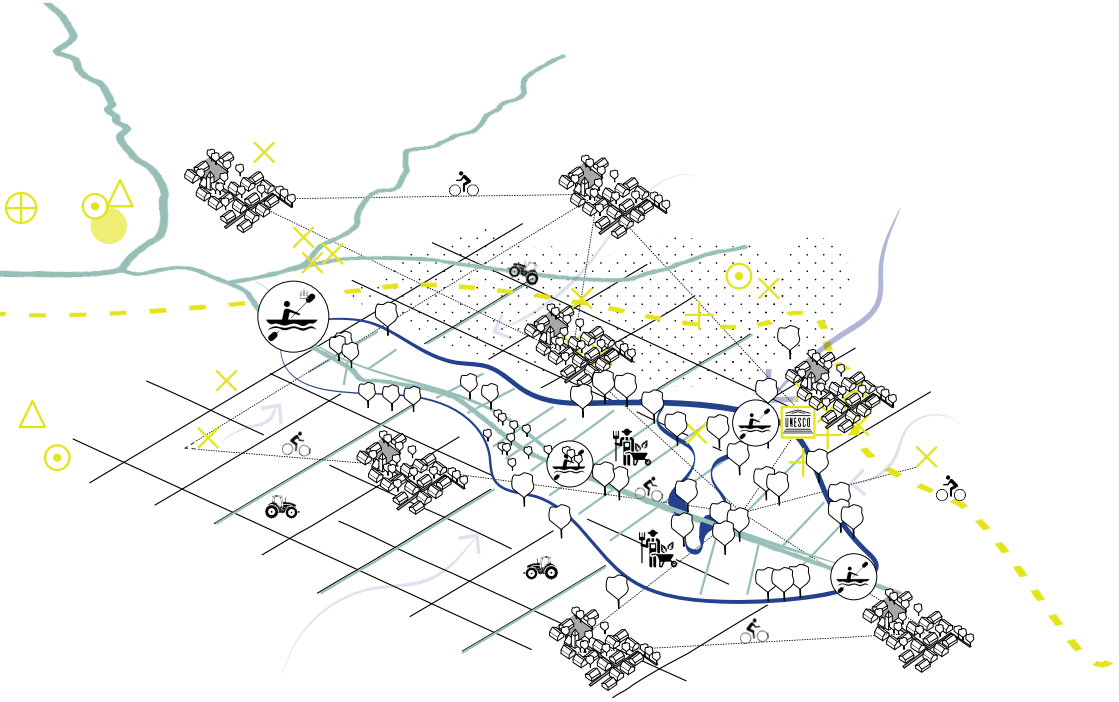
ECO-HUMAN SYMBIOSIS:

Revitalising the cultural & natural heritage
of Philippi Park.



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Landscape Architecture Msc

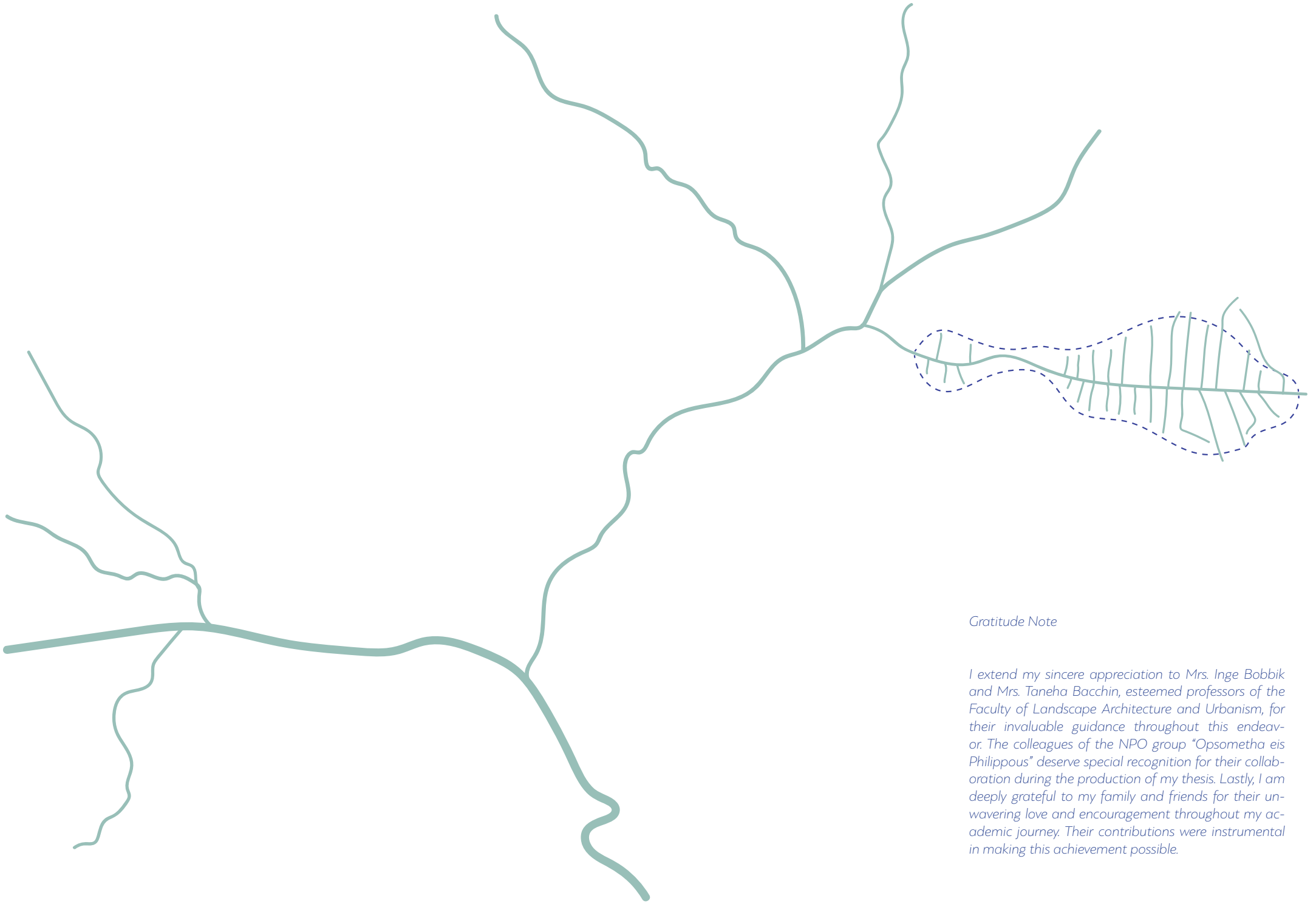
ECO-HUMAN SYMBIOSIS:
Revitalising the cultural & natural heritage
of Philippi Park.

CIRCULAR WATER STORIES LAB

First mentor: Inge Bobbink.
Second mentor: Taneha Bacchin.

Landscape Architecture track
Faculty of Architecture and the Built Environment –
Delft University of Technology.

Delft 2024



Gratitude Note

I extend my sincere appreciation to Mrs. Inge Bobbik and Mrs. Taneha Bacchin, esteemed professors of the Faculty of Landscape Architecture and Urbanism, for their invaluable guidance throughout this endeavor. The colleagues of the NPO group "Opsometha eis Philippous" deserve special recognition for their collaboration during the production of my thesis. Lastly, I am deeply grateful to my family and friends for their unwavering love and encouragement throughout my academic journey. Their contributions were instrumental in making this achievement possible.

CONTENTS

INTRODUCTORY SECTION

In the Greek scenery, Greeks don't just experience a cold beauty; each part of the landscape holds a name, a memory. Here, we feel shame; there, we bask in glory. Suddenly, the landscape becomes a complex tapestry of stories, with many hearts and many paths intertwined.

-Reference to Greco (Hardcover Edition), Nikos Kazantakis

INTRODUCTION

This thesis is structured into four sections.

The “Glossary” section serves as a valuable resource for familiarizing oneself with the terminology and fundamental principles frequently employed throughout the thesis.

The “introductory” section furnishes the reader with comprehensive details regarding the thesis subject, its objectives, utility, and the methodology employed.

The “Research” section delineates the broader identity of the study area, with a particular focus on Philippi Park and Philippi peatland. It encompasses a spatial analysis, documentation of research field challenges, and outlines research questions and methodologies. Additionally, it provides a historical examination of Philippi’s cultural landscape, followed by a comprehensive mapping of the natural environment and plant production within the Philippi peatland, alongside an analysis of the research landscape using maps. Subsequently, the section presents multi-tiered mapping coupled with spatial data analysis, along with a series of landscape planning and management proposals and strategies.

Moving forward to the ‘Landscape Architectonic Design’ section, it presents proposals for regenerating the area through landscape architectural interventions. This booklet encapsulates problems, proposals, and strategies from a landscape architectural perspective, all aimed at fostering a harmonious symbiosis between humanity and the unique landscape of Philippi Park.

AREA UNDER STUDY

Concerning the area under scrutiny, the heart of the Cultural Landscape of Philippi, it stands as an area of remarkable cultural significance and natural allure, characterized by peaty soil predominantly tended by local farmers from nearby settlements, while also grappling with various environmental hurdles. These encompass challenges such as soil subsidence, recurrent flooding incidents, spontaneous peat combustion, and a troubling decline in biodiversity. The primary aim of this study is to formulate landscape architecturally-driven proposals aimed at enhancing the landscape and transitioning a historically and nationally significant agro-cultural environment, such as the Philippi peatland, into a sustainable Green-Blue system intertwined with human activity. I delve into potential principles of spatial transformation and design, aiming to introduce a landscape infrastructure that fosters a harmonious balance between human activity and the natural environment.

The proposed interventions seek to enhance existing anthropogenic activities, yielding manifold benefits for both the natural and cultural landscape, as well as bolstering the social fabric interwoven with it.

LANDSCAPE SELECTION

The “Philippi peatland” area is chosen as a study site due to its unique natural and cultural conditions, representing a complex environment facing multiple interconnected environmental issues.

The overall design proposal helps the area regain its lost natural dynamism and habitat diversity, while also guiding cultural development in an ecological, multifunctional, and adaptive manner. It serves as the new framework guiding the future development of the geographical area and reveals the best characteristics of the natural landscape.

The Philippi Peatland is envisioned as a novel framework that not only directs the future development of the geographical expanse but also unveils the optimal characteristics inherent in the natural landscape.

OBJECTIVES

The Philippi Peatland area presents an opportunity for landscape architectural interventions and redevelopment proposals, primarily focusing on its water system. Acknowledging water as a fundamental life source, the aim is to establish a sustainable environment. Addressing issues like soil subsidence, flooding, biodiversity loss, and unsustainable farming practices requires the implementation of new blue-green infrastructure. By doing so, we strive for a comprehensive understanding of these challenges, laying the foundation for sustainable solutions. These initiatives aim to reshape the environment, promoting a greener landscape while preserving the unique natural and cultural heritage of Philippi Park. This thesis not only contributes to environmental conservation but also seeks to revitalize this culturally significant agro-cultural environment into a distinguished destination in line with EU standards of excellence.

Identify and document the intricate region encompassing the desiccated Prasiada Lake and present-day peatland through:

- Comprehensive data collection and
- On-site visits facilitated by expert scientists.
- Conduct a thorough site analysis employing advanced techniques such as G.I.S. (Geographic Information Systems), AutoCAD, and Satellite Imagery to unravel spatial data intricacies and associated properties.
- Develop a sustainable landscape infrastructure that harmoniously integrates natural and cultural processes, elevates ecological and social values, and exhibits adaptability to change.

SIGNIFICANCE OF THESIS

This endeavor marks a significant stride in the landscape architectural and spatial planning realms concerning the core of Philippi's cultural and natural landscape, specifically the Philippi Peatland.

THE SUSTAINABLE DEVELOPMENT GOALS (SDGS)

SDG 11: Sustainable Cities and Communities
Preserving and managing the water heritage in Philippi Peatland contributes to SDG 11 by fostering resilient urban and rural communities. Through initiatives that address challenges like flooding events and soil subsidence, we bolster the sustainability of settlements reliant on agricultural economies, promoting inclusive growth and ensuring the long-term viability of communities.

SDG 12: Responsible Consumption and Production
Effective management of water resources in Philippi Peatland aligns with SDG 12 by promoting responsible consumption and production practices. By implementing sustainable agricultural techniques and improving irrigation methods, we reduce water waste and minimize environmental degradation, advancing the goal of ensuring sustainable consumption and production patterns.

SDG 13: Climate Action
Effective management of water resources in Philippi Peatland is crucial for climate action. By preventing flooding events, mitigating soil subsidence, and reducing the risk of peat self-ignition, oxidation and expansion of gasses we contribute to climate resilience and adaptation efforts, aligning with SDG 13's aim of combating climate change.

SDG 14 Life Below Water
Preserving and managing the water resources in Philippi Peatland significantly contributes to SDG 14 by protecting aquatic ecosystems and ensuring the survival of endemic fish species. These species, unique to the area, rely on clean, well-maintained waterways for their survival. By implementing sustainable water management practices, such as improving canal systems and ensuring consistent water flow, we create an environment where these species can thrive. This not only supports biodiversity but also maintains the ecological balance essential for healthy aquatic ecosystems. Our efforts in conserving water and enhancing water quality directly contribute to sustaining life below water, promoting the long-term health of our planet's aquatic environments.

SDG 15: Life on Land
Preserving WPhilippi Peatland directly contributes to SDG 15 by protecting terrestrial ecosystems and biodiversity. By addressing challenges like soil subsidence, loss of biodiversity and peat preservation, we safeguard the habitat of numerous plant and animal species, enhance the agriculture practices and promote ecosystem resilience and supporting life on land.

WITH THIS WORK, I HAVE ACCOMPLISHED THE FOLLOWING:

- Documented the existing landscape from a landscape architectural standpoint.
- Produced tools essential for ongoing monitoring, such as layered maps, photographic material from field visits, axonometric and photorealistic plans aimed at enhancing comprehension of the area.
- Presented alternative modes of movement and utilization for the north-eastern part of the Philippi peatland region, including the creation of photo-realistic depictions and proposing actions and architectural constructions in selected areas.

THE REASONS THAT LED ME TO ENGAGE WITH THIS TOPIC

At first glance, the landscape of Philippi Park is painted with green and gray. The green symbolizes life, water, flora and fauna. The gray represents the isolation of people living and working in this privileged land, the lack of imagination, and creativity. This grayness provided me with a canvas to design my dreams. If the water - a source of life - ceases to positively impact the ecosystem and the soil collapses, what will happen next? This question sparked my imagination and ultimately led me to the subject of this thesis. In reality, the original landscape has been completely altered for the development of rural environment, and the power of nature has also been dramatically reduced to a point where development is almost impossible without creating a strategic plan for environmental utilization aimed at improving the quality of life and enhancing the income of farmers and residents.

Today, what matters is the possibility for people to live with nature, essentially in a harmonious relationship, on this earth where nature is being destroyed. And what does "nature" mean for this land in the future? I hope to find some possible answers to these questions.

Although the original natural landscape no longer exists, the power of nature remains. If this power could be used positively, perhaps nature could return in a new form. Perhaps in a form that could protect and support rather than harm human civilization.

As I mapped out the research field, I observed the details and carefully recorded the views of specialists, seeking assumptions and optimal proposals. From all the above, it became clear that the cannals traversing the peatland vertically and horizontally caught my attention. The cannals lie at the heart of the landscape of Philippi peatland in the place where until recently was covered by a swamp, which dried up between 1931 and 1940. It is a cultivated land, with multiple environmental issues, which urgently needs protection. Redevelopment proposals for parts the whole area will significantly upgrade the lives of residents of all surrounding settlements and create multiple economic benefits.

METHODOLOGY

The methodological framework employed in conducting this work comprises three main components:

BIBLIOGRAPHIC OVERVIEW

This involved a comprehensive review of Greek and English literature, publications, and studies, encompassing three primary aspects:
a. Essential comprehension of the research subject and enhancement of vocabulary with relevant terminology.
b. Identification of international examples featuring corresponding designs, to document both methodologies and techniques utilized.
c. Collection and analysis of studies and reports pertaining to the Philippi peatland from research bodies.

EMPIRICAL/EXPERIENTIAL RECORDING

This phase was structured around:
a. Field visits to the study area conducted with subject matter experts.
b. Informal consultations with experts from various fields to gather opinions and suggestions.
c. Photographic documentation of the landscape.

Specifically, after contacting relevant agencies operating within the area via email or phone to convey the intent of this specific work, initial visits were made to their facilities to procure any available archival study materials.

THE AGENCIES COLLABORATED WITH WERE:

- Association of Architects of Kavala
- Geotechnical Chamber of Greece (GEOT.EE) - Eastern Macedonia Branch
- Ephorate of Antiquities of Kavala, Drama & Serres
- French Archaeological School of Athens
- Fisheries Research Institute (INALE)
- TEI AMTH - Department of Forestry & Natural Environment Management
- NPO “Opsometha eis Philippous”

The landscape architectural interventions were developed utilizing research data as the foundation, drawing inspiration from international examples with corresponding designs, and incorporating continuous consultations with project supervisors.

DESIGN FROM RESEARCH

- data collected from literature, empirical records, and expert opinions
- Key qualitative characteristics of the field and expert suggestions were documented.
- A multi-level Geographic Information System (G.I.S.) was established to generate quantitative insights regarding specific elements such as canals, vegetation, facilities, arable land, and roads within the area.
- The designated area of Philippi peatland was mapped to create design maps for the proposed landscape.
- Numerous elements of flora, fauna, and the cultural landscape were photographed and documented.
- The design proposals were developed, including layers, axonometric views, and photorealistic representations, utilizing design programs.

LANDSCAPE ARCHITECTURE

Landscape
"'Landscape' refers to both a defined geographical entity and its perception by observers—a mental construction that selects, interprets, and reconstructs the unity's data. Our perception of the environment as a landscape mirrors our imaginative relationship with nature and ultimately defines our place in the world." (excerpt from the book "beautiful, horrible and unadorned landscape")

Park
A large public garden in a town used for recreation. A large enclosed piece of ground, typically with woodland and pasture, attached to a country house. A large area of land kept in its natural state for public recreational use' (Oxford English Dictionary).

Landscape Ecology
A fundamental tenet of landscape ecology revolves around preserving, restoring, or even creating the maximum possible biodiversity within a system. The concept of overall biodiversity considers ecosystems as composed of distinct areas, each hosting its sub-ecosystems.

EU Green-blue infrastructure
Green infrastructure is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation. This network of green (land) and blue (water) spaces can improve environmental conditions and therefore citizens' health and quality of life. It also supports a green economy, creates job opportunities and enhances biodiversity. The Natura 2000 network constitutes the backbone of the EU green infrastructure.

Genius loci
"The prevailing character or atmosphere of a place," as the Oxford English Dictionary. In redefining the concept of genius loci, Saskia de Wit argues that its basis lies in the particular location, which can only be understood as a place if there is a unity of sensory information beyond the visual.

HYDROLOGY

Confluence
In geography, a confluence (also: conflux) occurs where two or more watercourses join to form a single channel. A confluence can occur in several configurations: at the point where a tributary joins a larger river (main stem); or where two streams meet to become the source of a river of a new name (such as the confluence of the Monongahela and Allegheny rivers at Pittsburgh, forming the Ohio); or where two separated channels of a river (forming a river island) rejoin at the down stream end.

Watershed: A watershed, also known as a drainage basin or catchment area, is a land area where all the water under it or draining off of it goes into the same place. It acts as a funnel, collecting all precipitation and channeling it to a single point, typically a river, lake, or ocean.

Drainage Basin Limit (Hydrocrit): The drainage basin limit, or hydrocrit, refers to the boundary that defines the edges of a watershed or drainage basin. It is the geographical divide where precipitation collects into different basins, ensuring that water flows to different river systems.

Groundwater: Groundwater is the water that exists beneath the Earth's surface in soil pore spaces and in the fractures of rock formations. It is a crucial part of the water cycle and serves as a major source of water for drinking, irrigation, and industrial processes.

Aquifer Layer: An aquifer layer is an underground layer of water-bearing rock, sand, or gravel that can store and transmit groundwater. Aquifers are critical sources of fresh water and are tapped through wells for agricultural, industrial, and municipal use.

Sustainable Development

In line with the Brundtland Commission's definition, sustainable development refers to progress that satisfies present needs without compromising the ability of future generations to fulfill their own needs. It acknowledges the indispensability of development in meeting human needs and enhancing life quality, emphasizing efficient and environmentally responsible use of societal resources.

Integrated (Holistic) Development

Integrated development, dating back to 1963 (Rokos, Professor Emeritus, NTUA), is defined as simultaneous and progressive economic, social, political, cultural, and technically/technologically harmonious development. This approach, carried out with respect for human beings and their collectivities, integrates into and shapes the natural and cultural environment. It refrains from viewing humans as owners or exploiters but as integral parts of the environment, safeguarding it through peaceful, productive, and creative actions.

Destination of Excellence EU

The European Destination of Excellence strives to advance the values, diversity, and shared characteristics of European tourist destinations. Its primary objectives encompass the promotion of destinations where tourism development is pursued with a commitment to achieving social, cultural, economic, and environmental equilibrium.

EU Sustainable Development Strategy

The EU Sustainable Development Strategy aims to identify and implement actions fostering a continual, long-term enhancement in the quality of life. This involves the creation of sustainable communities proficient in efficient resource management, harnessing the social innovation potential of the economy, and ensuring prosperity, environmental protection, and social cohesion. The strategy delineates overarching objectives and specific actions addressing seven key priority challenges, emphasizing environmental concerns such as climate change, clean energy, sustainable transport, consumption and production, as well as the conservation and management of natural resources.

PHILIPPI PARK

To write the story of a man of our time who was cured of his suffering simply by gazing for hours at a landscape

-Albert Camus Notebooks, book two

IDENTITY OF THE WIDER AREA - "PHILIPPI PARK"
Source: 8000 YEARS OF CULTURE:
A HOLISTIC DEVELOPMENT MODEL
Strategic Feasibility and Sustainability Study

PHILIPPI PARK
8.000 YEARS OF HISTORY

ΟΨΟΜΕΘΑ
ΕΙΣ ΦΙΛΙΠΠΟΥΣ

What is Philippi Park?

As "PHILIPPI PARK" is characterized the native receptor of 8.000 years of history of the people of Marshlands and near the Marshlands area. Between the mountains of Paggaio, Falakro, Menoikio and Simvolo, where it was the old lake Prasiada, today is the fertile plain of Philippi, one of its kind, which hosted per centuries people and their activities, those that were written in history and make this place special.

This place of unique natural beauty is associated with the Orphic and Dionysian cult, the abduction of Persephone by Hades, Nysion field of Elefsina and at the end with the most profound mystic searches that are still guiding human soul which seeks them. It has become the cradle of prehistoric people and hosted the Thracian tribes and the wealth of auriferous PAGGAIO. It has seen battles at Roman times with Cassious and Brutus, battles that reflected in Shakespeare and later marked the passage to the new religion of Christianity with the baptism of Lydia by Saint Paul. In this place everyday people are sweating until today, producing food endlessly. Place mythical, mystical, fertile, both for spiritual and physical human existence that worth to be marked variously and established in human memory as World Heritage.

The Holistic Development Model "Philippi Park" aims to consolidate and promote the Cultural Landscape of Philippi under a unified identity (brand), fostering a common strategy, actions, and investments towards transforming this historically and nationally significant agro-cultural environment into a globally influential destination.

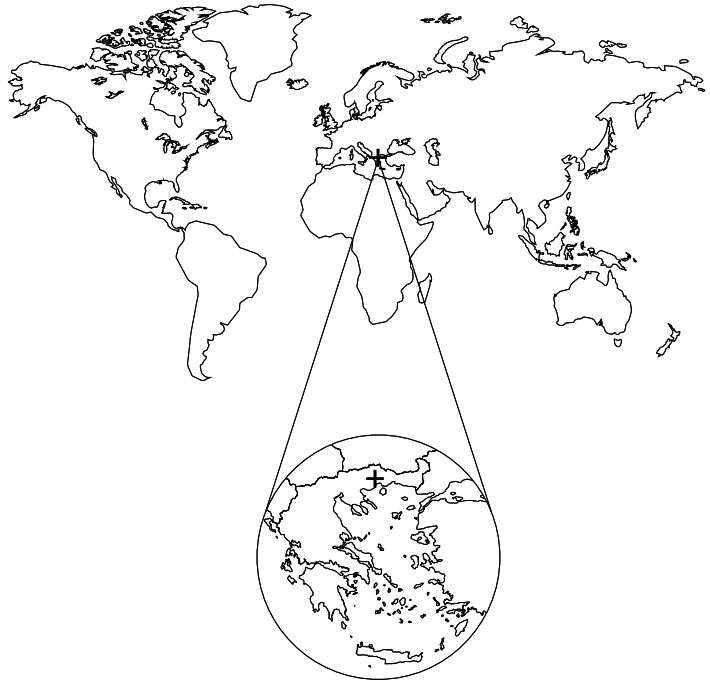
Its objective is to mobilize human resources, acknowledge, utilize, and promote the abundant environmental and cultural wealth of the region. It is recognized that for the Philippi Cultural Landscape area to evolve into a global destination of distinction, its competitive advantages, including its rich cultural heritage, tourism assets, and unique rural environment in Europe, must be leveraged.

What is "Opsometha eis Philippous" (we shall meet at Philippi)

The non-profit civil partnership "Opsometha eis Philippi" is a diverse organization of young professionals, researchers, active citizens and artists who act for the protection, utilization and promotion of the cultural landscape of Amphipolis - Philippi under the plan and the corporate identity "Philippi Park". It was established on 18 April 2017, World Heritage Day, under the legal form of a civil non-profit company, having previously acted as an informal youth group since 1 January 2015.Consisting of 50 professionals, with different specialties, such as tourism, cultural management, architecture, agricultural production, inter-regional development, education, economy, history and archaeology, "Opsometha to Philippi" employs with work contracts, scientists according to their respective activities, within a framework of interdisciplinarity. The aim of the initiative is to achieve a common identity through which, social cohesion, economic and tourism development and social, cultural, and environmental/economic balance can be achieved.

Website & Eshop: opsometha.org
Email: info@opsometha.org
Facebook: @opsometha

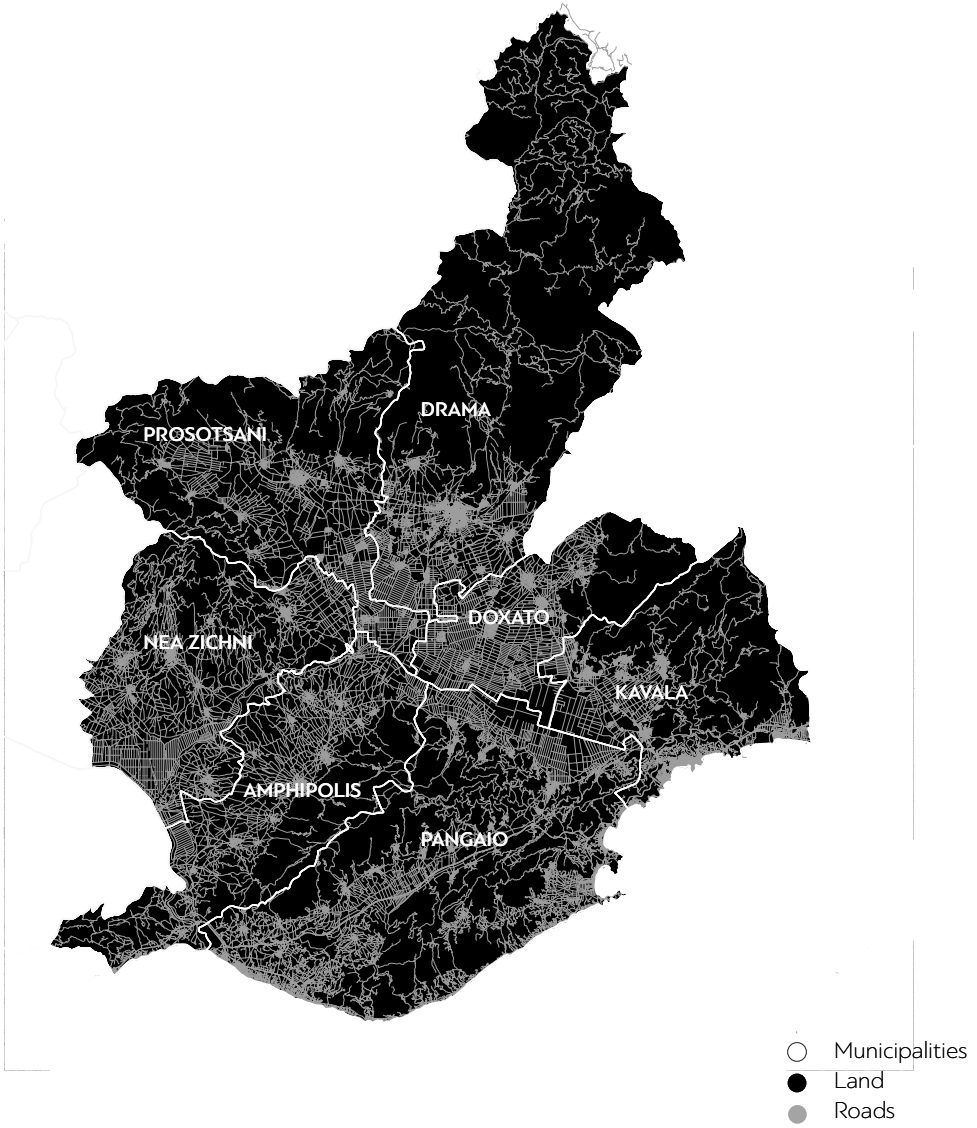
Location: Word Map - Greece

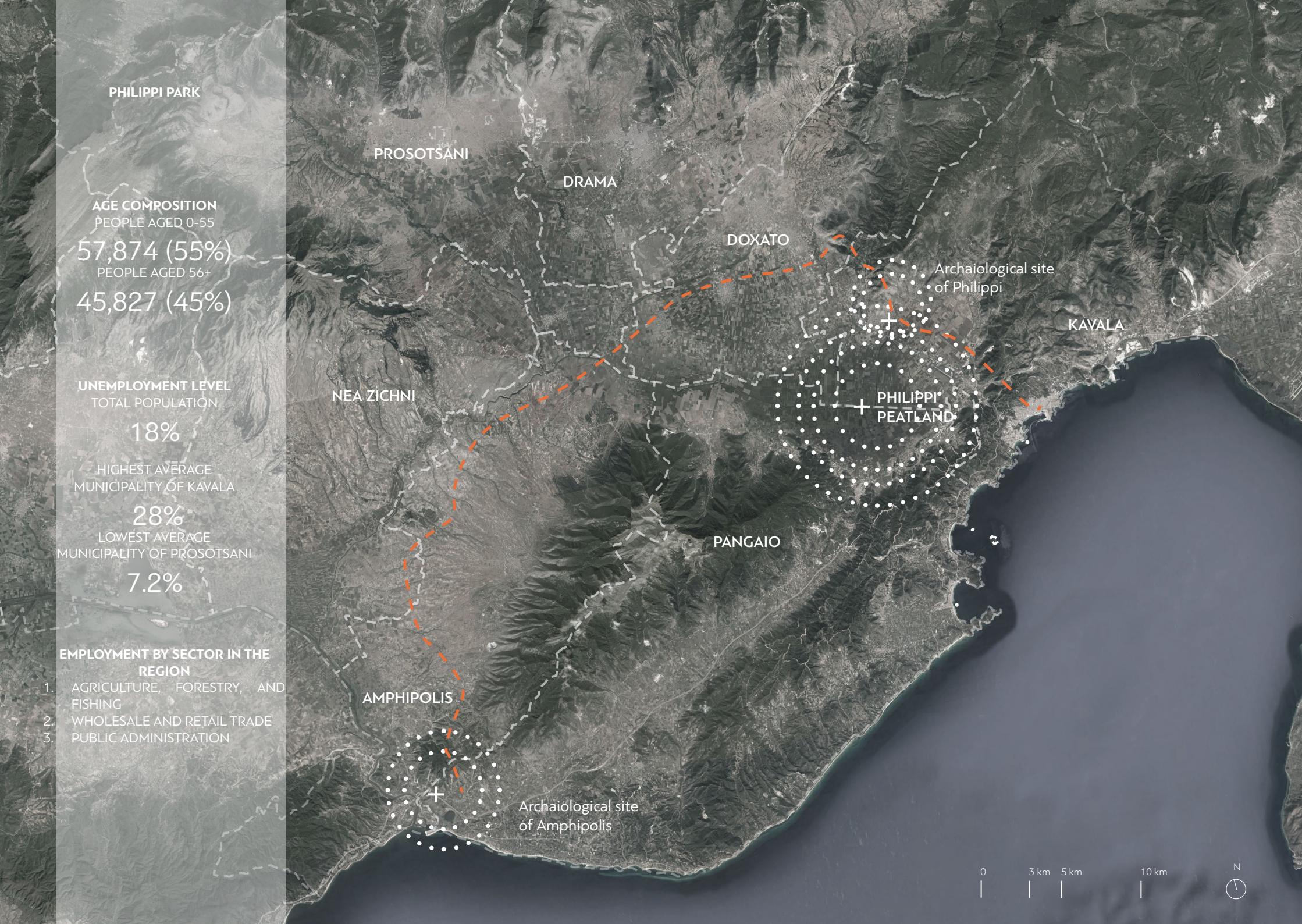


Data

PHILIPPI PARK REGION AREA
6 025 km²
POPULATION IN PHILIPPI PARK
127,238
SETTLEMENTS IN PHILIPPI PARK
85

SITE-LOCATIONAL
MUNICIPALITIES




PHILIPPI PARK
PROSOTSANI
DRAMA
DOXATO
Archaiological site
of Philippi
KAVALA
NEA ZICHNI
PHILIPPI
PEATLAND
PANGAIO
AMPHIPOLIS
Archaiological site
of Amphipolis
AGE COMPOSITION
PEOPLE AGED 0-55
57,874 (55%)
PEOPLE AGED 56+
45,827 (45%)
UNEMPLOYMENT LEVEL
TOTAL POPULATION
18%
HIGHEST AVERAGE
MUNICIPALITY OF KAVALA
28%
LOWEST AVERAGE
MUNICIPALITY OF PROSOTSANI
7.2%
EMPLOYMENT BY SECTOR IN THE REGION
1. AGRICULTURE, FORESTRY, AND FISHING
2. WHOLESALE AND RETAIL TRADE
3. PUBLIC ADMINISTRATION
0
3 km
5 km
10 km
N

PHILIPPI PARK
Source: MASTERPLAN PHILIPPI PARK
8000 YEARS OF CULTURE:
A HOLISTIC DEVELOPMENT MODEL
Strategic Feasibility and Sustainability Study

SOCIAL ENVIRONMENT

Demographic Characteristics

Population Level and Development (2011)
The area consists of eighty-five (85) settlements in total, with a population of 127,238 inhabitants according to the 2011 census. Generally, a decline in population is observed in most local departments, with a few exceptions.

Age Composition of the Population
An aging population is observed, with 57,874 (45%) people in the 0-55 years age category and 45,827 (35%) people in the 56+ age category.

Composition of the Population by Sex
The population in Philippi Park is approximately 49% male and 51% female. Although this estimate was made at the level of municipalities due to the lack of exact figures for each local department, it is considered to have a negligible error rate.

SOCIAL CHARACTERISTICS

Unemployment Rate

The unemployment rate is 18% of the population, with a higher average rate in the Municipality of Kavala (28%) and a lower average rate in the Municipality of Prosotsani (7.2%).

Employment at Philippi Park

At the regional level, employment of the active population is highest in Agriculture, Forestry, and Fishing, followed by Wholesale and Retail Trade, and Public Administration.

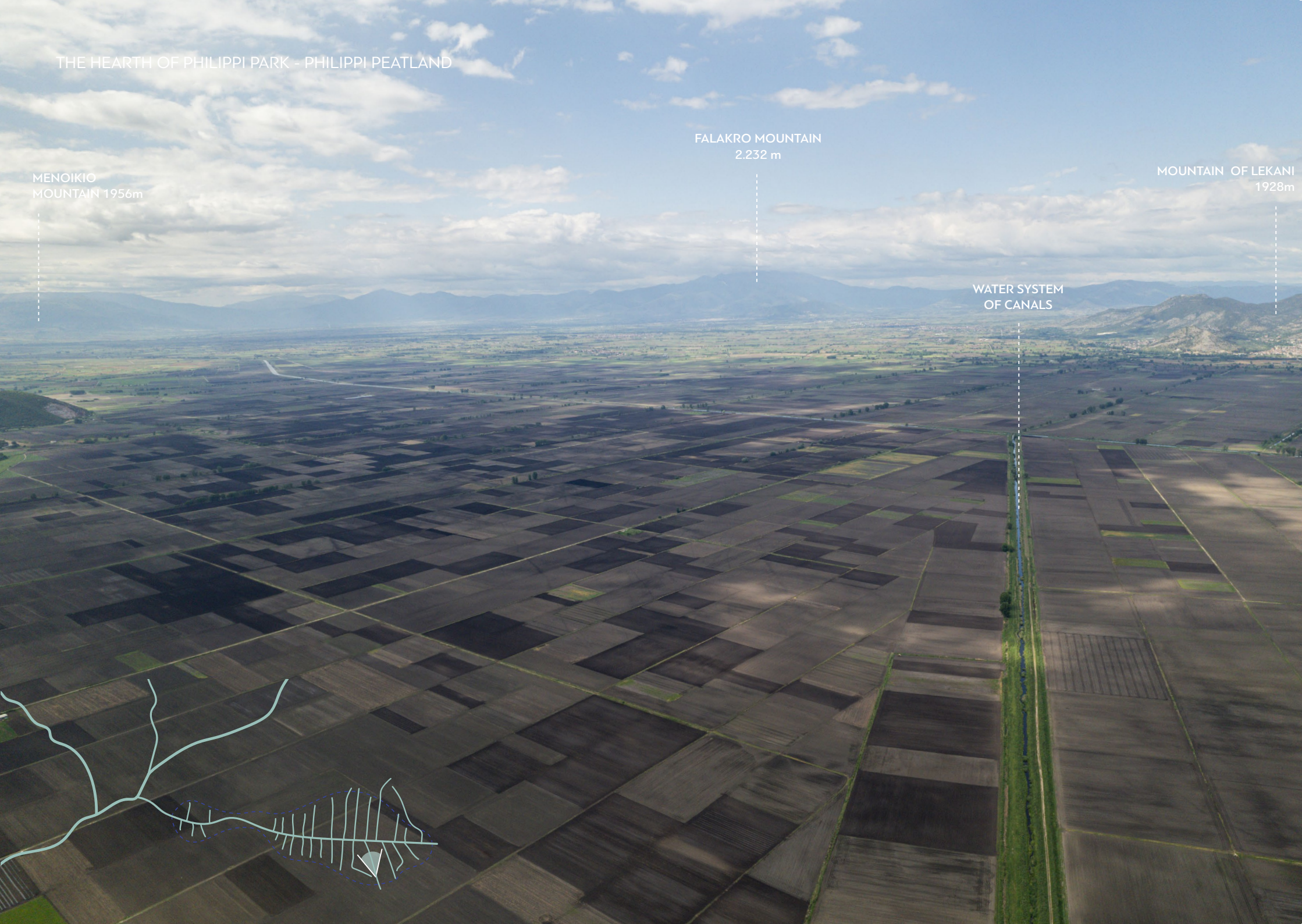
GEOGRAPHICAL LOCATION OF “PHILIPPI PEATLAND”

The “Philippi Peatland” area extend within the administrative boundaries of the Regional Units of Kavala, Drama, and Serres. The regional units of Kavala and Drama are administratively subordinated to the Region of Eastern Macedonia and Thrace, and the regional units of Serres to the Region of Central Macedonia, all falling under the Decentralized Administration of Macedonia – Thrace.
The project under study belongs within the administrative boundaries of the Municipal Units of Kavala and Filippi in the Municipality of Kavala, regional units of Kavala; Eleftheroupoli and Pangaio, Kalamaki, Doxato, Drama , Sitagron in the Municipality of Prosotsani, Kormista in the Municipality of Amphipolis, Serres.

The total area of the plain regions is estimated at 96,200 hectares (62,330 in the regional units of Kavala, 26,450 in the regional units of Drama, and 7,520 in the regional units of Serres).

Philippi Park, nestled within a community experiencing both decline and an aging populace, faces considerable challenges with unemployment and a workforce rooted in agriculture, trade, and public administration. Landscape architectonic innervation can breathe new life into this area, fostering community engagement, creating local employment opportunities, and enhancing the overall quality of life. I’ve chosen this endeavor to cultivate opportunities for the people of Greece and to revitalize the rich cultural tapestry of this landscape.

THE HEARTH OF PHILIPPI PARK - PHILIPPI PEATLAND



CULTURAL & NATURAL LANDSCAPE
OF PHILIPPI PARK

The greatest treasures and most admirable things are hidden underground, and not without reason

-Francois Rabelais, Gargantua and Pantagruel, 5.47 (around 1564).

CULTURAL LANDSCAPE OF PHILIPPI PARK
8.500 YEARS OF CIVILAZATION

The area of Philippi Park is a place of great national and international importance. It includes areas of significance for the natural environment but also it has historical and cultural richness. Starting back on 6.500 B.C

Prehistoric Era

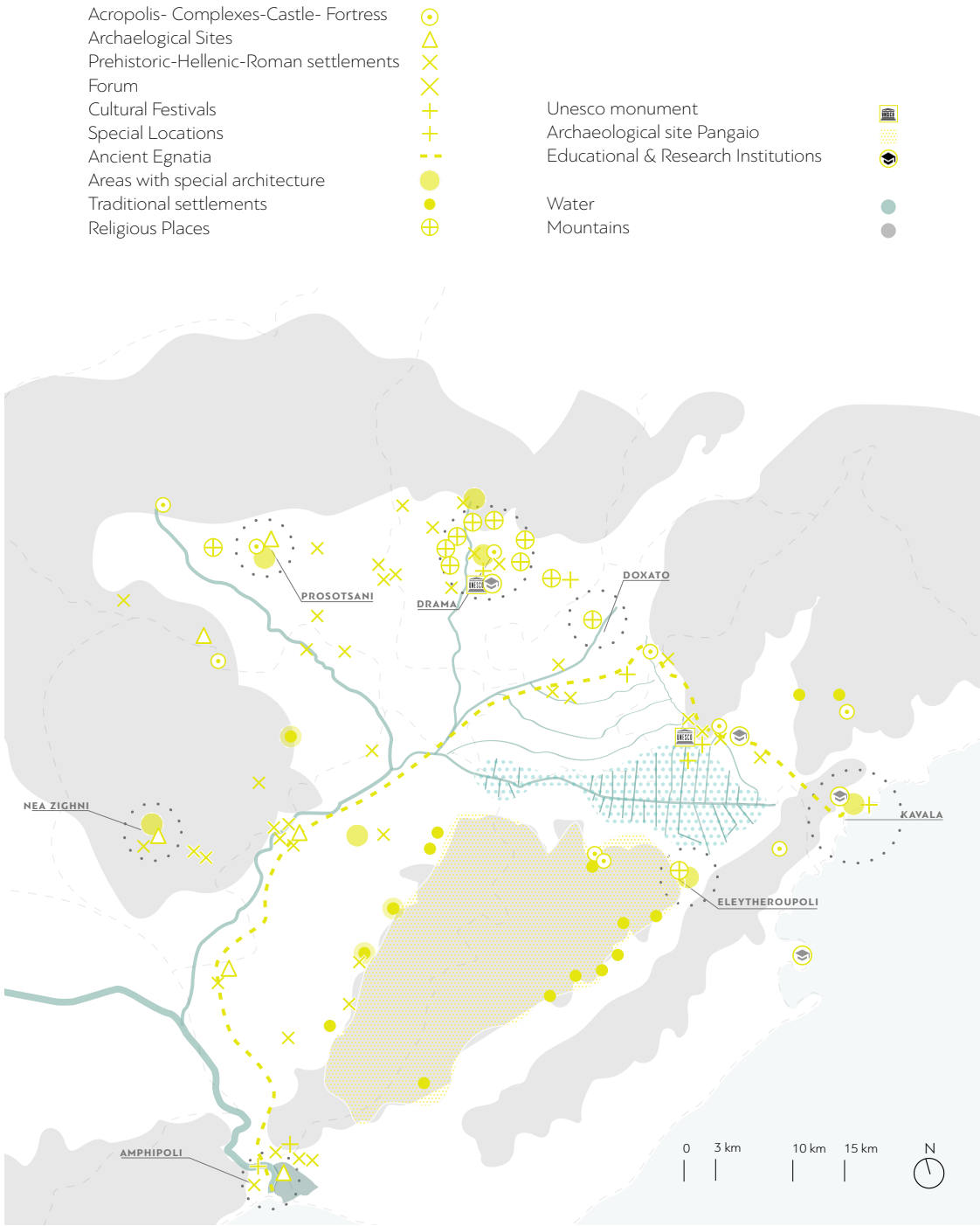
The remains from the Neolithic and Prehistoric periods are scattered throughout the area, beginning with the first settlement at Dikili in 6500 BC. Prehistoric settlements, their rich findings, and Neolithic petroglyphs illustrate daily life during these periods. The Ministry of Culture of Greece has identified and declared twenty-six prehistoric settlements as important for the history of this landscape. Noteworthy among these is the prehistoric settlement of “Dikili Tas,” where archaeologists have recently uncovered the oldest evidence of wine-making in the Eastern Mediterranean and Europe, dating to 4300 BC (Garnier, N. & Valamoti, S. M., 2016). Within the cultural landscape of Philippi, confirmed petroglyphs are found in eleven locations across the lowland and semi-mountainous areas.

Ancient Greece

During the Classical era, specifically in 360 BC, Greek settlers from Thassos, led by the exiled Athenian orator and politician Kallistratos, settled in the area then known as Krinides and Daton. The name Krinides reveals the presence of many springs on the hill where the city was built, derived from the Greek word “krini,” meaning fountain or source. Appianus noted that Philippi was formerly called Datos and Krinides before Datos (Civil Wars IV, 105). The name Daton indicates the fertility of the wider plain of Philippi. The Thasians valued the area for its fertile land and the gold and silver mines, which facilitated the circulation of new gold and copper coins.

In 356 BC, a significant transformation occurred when King Philip II arrived in Krinides at the request of the inhabitants, who were threatened by Thracian raids. Philip II, rushing from Amphipolis, took the city under his protection, significantly increased its population, constructed the fortress wall and theater, and renamed the city Philippi after himself. By controlling and enhancing the productivity of the Pangaeus gold and silver mines, Philip II secured a revenue of thousands of talents, which made him financially powerful.

Map: Cultural Landscape



This control over monetary policy led to the establishment of a royal parity between gold and silver coins, with Philippi and Amphipolis serving as models for this policy.

During the Hellenistic period, there was intense religious activity in Philippi. The Macedonians' favorite god, Dionysus, was believed to dwell on the Holy Mountain of Pangaeus. The myth and worship of Dionysus continue to influence modern society through customs, and the production of wine and tsipouro throughout the landscape of Philippi. Additionally, the myths of famous gods and demigods have woven the fabric of the region's culture, giving names to places in the cultural landscape. Examples include Orpheus, the founder of the cult of Dionysus, Boreus, the god of the winds, Persephone, daughter of the goddess Demeter, and the myth of her abduction, along with the river Zygactis, the river Strymonas, and Mount Pangaea.

Roman Times

During the Macedonian rule, Philippi was a city of the Macedonian kingdom with privileges. However, the population and importance of the city gradually decreased. By the Roman period, it had become a small city through which the Egnatia Road passed, connecting Rome and Constantinople. In 42 BC, the Battle of Philippi, later immortalized by William Shakespeare, made the city's name known throughout the ancient world. Specifically, in October 42 BC, two large Roman armies—one led by the republicans Brutus and Cassius, and the other by the triumvirate of Antony and Octavian—faced off, resulting in the defeat of the republicans, the abolition of the democratic state of Rome, and the rise of the first emperor, Octavian Augustus. Immediately after the battle, veteran soldiers from Rome settled across the plain of Philippi, and the city was renamed Colonia Iulia Augusta Philippensis. During Antony's time, Philippi acquired large and expensive buildings, including the forum, the commercial market, the palaestra, the baths, many sanctuaries, and a large aqueduct.

Early Christian Period & Byzantine Period

In 49 AD, the Apostle Paul landed in Neapolis with Silas, Timothy, and Luke. They took the Egnatian Way and reached Philippi. The Apostle Paul preached the new religion, Christianity, and was inspired by Lydia of Porphyropolida, who was baptized in the waters of the Zygactis River, becoming the first European Christian. Paul's visit resulted in the establishment of the first

Christian church in Europe, with which he remained closely associated throughout his life. His feelings for the Philippian Christians are evident in every word of the letter he sent in 55 AD, as well as in his two subsequent visits to the city.

During the Byzantine Empire, the Latin language of the Roman colonists was replaced by Greek. Philippi became a metropolitan seat with jurisdiction over the surrounding dioceses. New magnificent buildings were constructed, including three large basilicas with elaborate decoration, an octagonal basilica, and a cemetery basilica outside the walls. These buildings indicate both the economic strength and the significant Christian presence in the region.

From the 4th to the 9th century, Philippi experienced raids and a gradual decline. In the 6th century, a series of strong earthquakes destroyed several cities along the Egnatia Road, including Philippi. Despite this, in the 12th century, Philippi continued to be a commercial center with active trade due to its strategic position on the Egnatia Road. However, during the Ottoman period, the city was eventually deserted.

Recent History

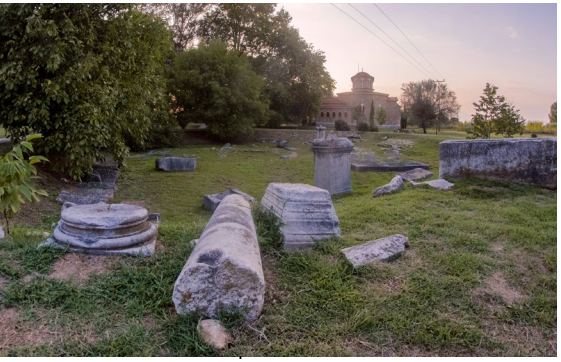
During the Ottoman Empire, the cultivation of the exceptional variety of "basmas" tobacco began in the Philippi region, marking a historical period that left indelible marks with emblematic buildings and customs. In the 18th and 19th centuries, a network of tobacco production and processing was created, centered in Kavala due to its port, but also in Eleftheroupolis (the Pravi), Prosotsani, Drama, Rodolivos, and Nea Zichni. The tobacco trade brought wealth and prosperity to the wider region.

In 1923, with the population exchange between Greece and Turkey, tobacco cultivation formed the basis for integrating the refugee population into the economy and local society. Over time, the inhabitants of the area adopted traditions related to the worship of Dionysus, celebrating holidays that symbolized the awakening of the earth for rich harvests. Vine and grain crops have been preserved over the centuries and have adapted to modern cultivation methods.

Finally, it is worth mentioning the reference to Philippi by one of the most important dramatists, William Shakespeare, in his work "Julius Caesar," which features the historical Battle of Philippi in 42 BC.

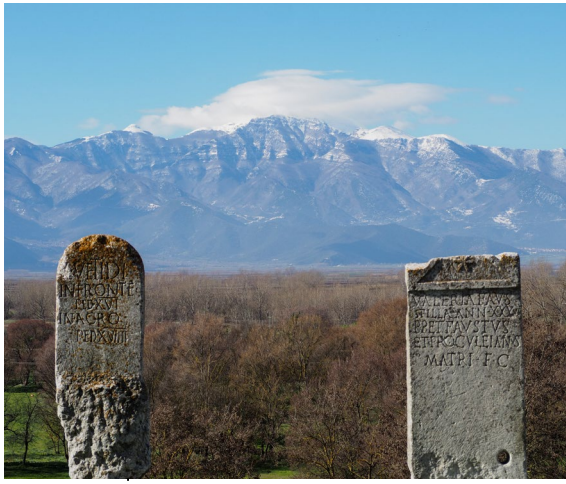
CULTURAL LANDSCAPE COLLAGE

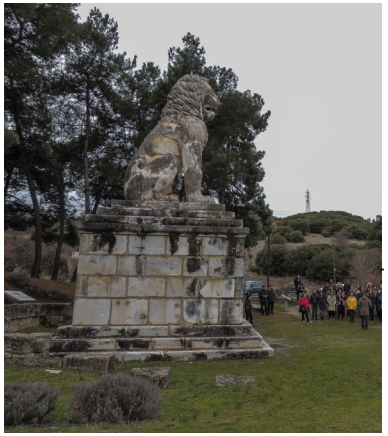
APOSTLE PAUL
Baptism of 1st European
Christian named Lydia
49 AD

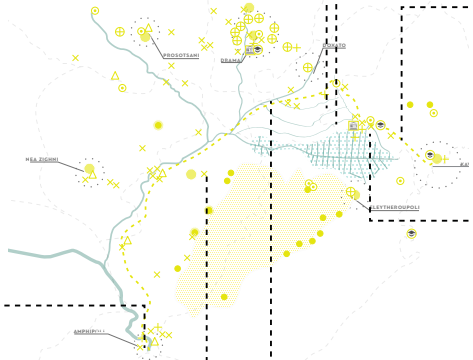


ARCHAEOLOGICAL SITE
OF PHILIPPI / UNESCO site
356 BC

ANCIENT EGNATIA ROAD
146 BC







TOBACCO ERA -
significant buildings

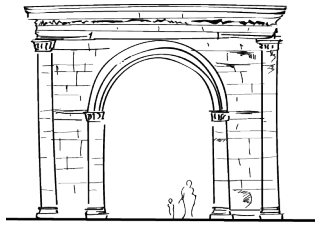
PREHISTORIC SETTLEMENT
OF DIKILI TAS
4300 BC

CAVE PAINTINGS
around the
3rd millennium BC

8500
YEARS OF HISTORY

THE EGNATIAN ROAD

In the cultural landscape of our study area, near the Philippi peatland, lies the ancient Egnatian Road. This historic marvel served as a crucial axis of the Roman Empire, spanning approximately 1,100 kilometers from the Adriatic to the Bosphorus. Over the centuries, the Egnatian Road has borne witness to the passage of armies, emperors, merchants, travelers, and immigrants, offering a captivating journey through time. Despite facing natural obstacles such as rivers, mountains, swamps, and challenging terrains, Roman engineers successfully navigated these hurdles during its construction.



Sketch: Arch of Egnatia

Sketch: Section of the cobbled road of Egnatia from the village of Stavros to Agios Silas Kavala

THE CULTURAL LANDSCAPE

The modern imperative for sustainability extends beyond rural areas to encompass urban environments. Urbanization often brings unchecked development and excessive building, leading to adverse environmental impacts. However, whether within cities or beyond, the environment is not merely a “natural” condition; it is a cultural and natural amalgamation, a “cultural environment.” This environment encompasses not only natural features but also agricultural practices, landscapes, infrastructure, buildings, and societal expressions, collectively shaping the landscape.

LANDSCAPE ARCHITECTURE IN THE CULTURAL LANDSCAPE

It’s crucial to recognize the pivotal role of landscape architecture in shaping the cultural landscape. Landscape Architects have long been instrumental in crafting places. Landscape architetcure and urban planning are about creating landscapes, integrating them into broader contexts, and actively participating in their construction. In essence, landscape architects are central figures in shaping the cultural landscape.

NATURAL ENVIRONMENT OF PHILIPPI PARK

Philippi Park features Landscapes of Special Natural Beauty, distinguished by their natural, environmental, historical, architectural, and archaeological elements. The unique natural environment includes caves, hiking trails, a Natura 2000 protection zone, an Aesthetic Forest, wildlife sanctuaries, mineral deposits, springs, rivers, and picturesque mountains.

The main characteristics of the morphology of the Philippi Park areas are the plains and the mountain masses, which feature steep slopes, high altitudes, and varied terrain.

Wildlife Refuges

Wildlife refuges exist primarily to protect the fauna of the area and improve habitats where game species reside and breed. In some cases, these refuges also protect the flora by taking appropriate measures to support and nutritionally sustain the fauna.

Aesthetic Forests

One aesthetic forest in our area has been designated for its special aesthetic and ecological interest, characterized by the harmonious interaction of people and land. It also provides opportunities for citizens and visitors to enjoy leisure activities and tourism.

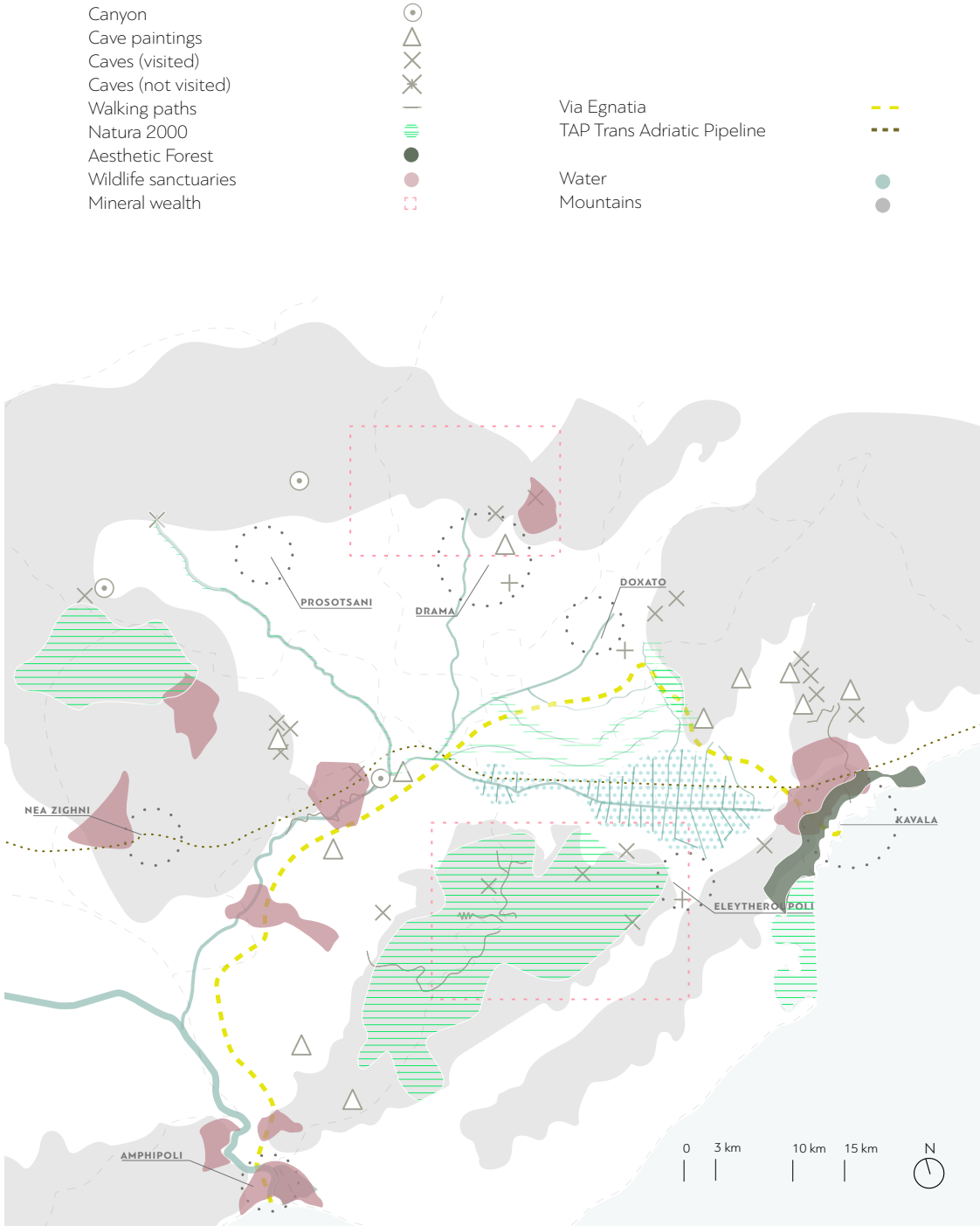
NATURA 2000 Network

To preserve the area's biodiversity and protect its natural landscapes, including flora and fauna habitats, many areas of Philippi Park have been included in the NATURA 2000 network of protected areas. Based on the latest revision of the national list of European Ecological Regions (Natura 2000 Network, 2017),

Quarry Fields

The Philippi Park area is notable for its mineral wealth, rocks, and marbles, featuring a wide network of quarries and over 133 exploitation licenses issued to private companies (Committee of Geologists, GEOTEE). The area is surrounded by five mountain ranges: Pangaeo, Falakro, Orvilos, Menoikio, and Symbol, adding to the rich natural landscape of Philippi Park. Recognized paths are better maintained and marked, while many other paths are not systematically maintained and are unsuitable for visitors.

Map: Natural Enviroment



Petroglyphs

Petroglyphs are defined as painted, engraved, or carved sets of representations, symbols, or letters created using various techniques on rock surfaces. In the Philippi Park area, confirmed petroglyphs are found in eleven locations across the lowland and semi-mountainous areas. There are also many unconfirmed petroglyph locations that can be explored and further studied (Prehistoric Rock Paintings in Northern Greece, Lazaros I. Hatzilazaridis, 2000).

Visitable Caves

Visitors can explore caves designed for easy walking without requiring any speleological expertise. In the region, two such caves draw high traffic and tourist interest, collectively attracting over 70,000 visitors annually.

Aggitis Gorge

The Aggitis Gorge has been shaped by millions of years of water flow through a karst basin, part of which includes the Alistrati Cave. It is traversed by the Aggitis River and holds significant ecological and aesthetic value, hosting a hiking and cycling route that starts from a local community.

Additionally, there are the Petrousa and Mikropolis gorges.

Aquaculture

Aquaculture in the Philippi park region has not shown significant growth in terms of the number of businesses. One registered company operates a trout production unit at the confluence in Serron, while another company operates a sturgeon production unit within Philippi Park in Kefalari, Drama. Sturgeon products are of high quality and are primarily processed for export. The area's natural waters, abundant springs originating from mountain masses, and water elements in the plains and semi-mountainous areas present a promising investment environment for the aquaculture sector. Furthermore, the presence of both endemic and non-endemic fish species enables the potential development of products with geographical indications or protected designation of origin (P.D.O.).

PHILIPPI PEATLAND

This landscape is harsh, like silence.

-Yannis Ritsos, Romiosini

WATER HERITAGE: CULTURAL, SOCIAL, AND ENVIRONMENTAL POTENTIAL

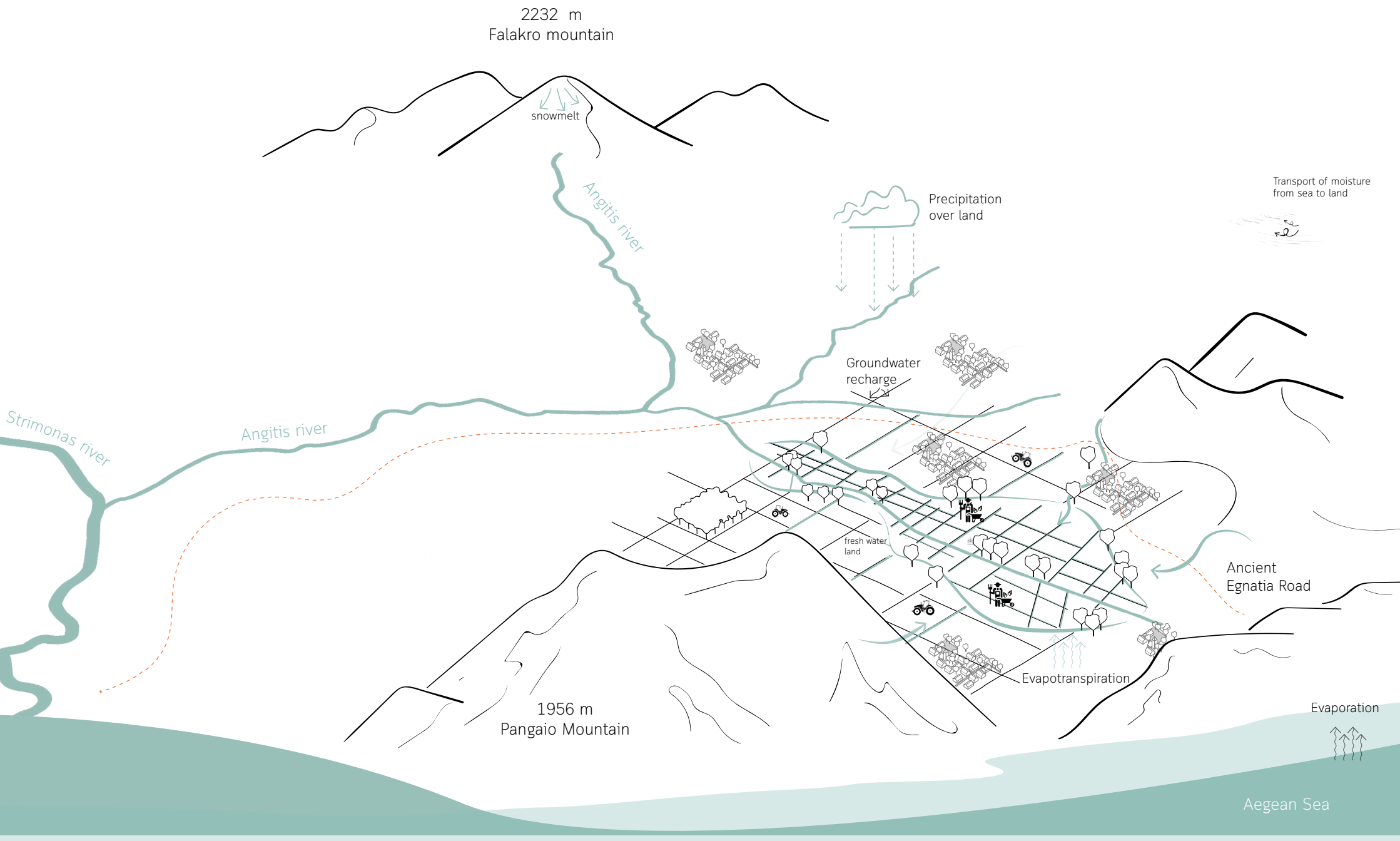
Water becomes a unique subject for the cultural, social, and environmental aspects of society and its potential. A “living heritage” is created by incorporating local participation for comprehensive development. Water is not only a vital element of our natural environment but also a significant source in cultural studies.

For this purpose, proposals of developmental nature are required, which will support agrotourism, ecotourism, sports, archaeological tourism, with actions such as canals not only for irrigation but also for small boat movement, facilities like conoe, water games, fish farming, etc., to strengthen the economic model of the area. It is important to take care of the protection of the ecosystem and the management of water resources, respecting the local biodiversity that is being destroyed, the great historical significance that the area bears as a silent witness to ancient Philippi and the Pangaion Mountain, Orvilos, Symbolos, and the other mountain ranges that enclose the basin of the Wetlands. A vulnerable land, recording the problems of the Philippi Peatland.

The heart of Philippi Park, known as the Philippi Peatland, is a unique natural formation for our country and worldwide. To conduct design in the Philippi Peatland, firstly, the basic issues that need to be addressed in order to redefine sustainable development will be identified.

The area is characterized by a system of canals where, historically before 1930, an extensive marsh existed in the place of the currently exploited area. The center of this marsh turned into a lake during the wettest periods, where huge deposits of peat and lignite accumulated. Within the area, organic soils have been seriously degraded by the introduction of industrial uses and crops, resulting in the loss of valuable components from the soil. The phenomenon of soil subsidence/shrinkage is observed, as well as a drop in productivity.

PHILIPPI PEATLAND
WATER CYCLE

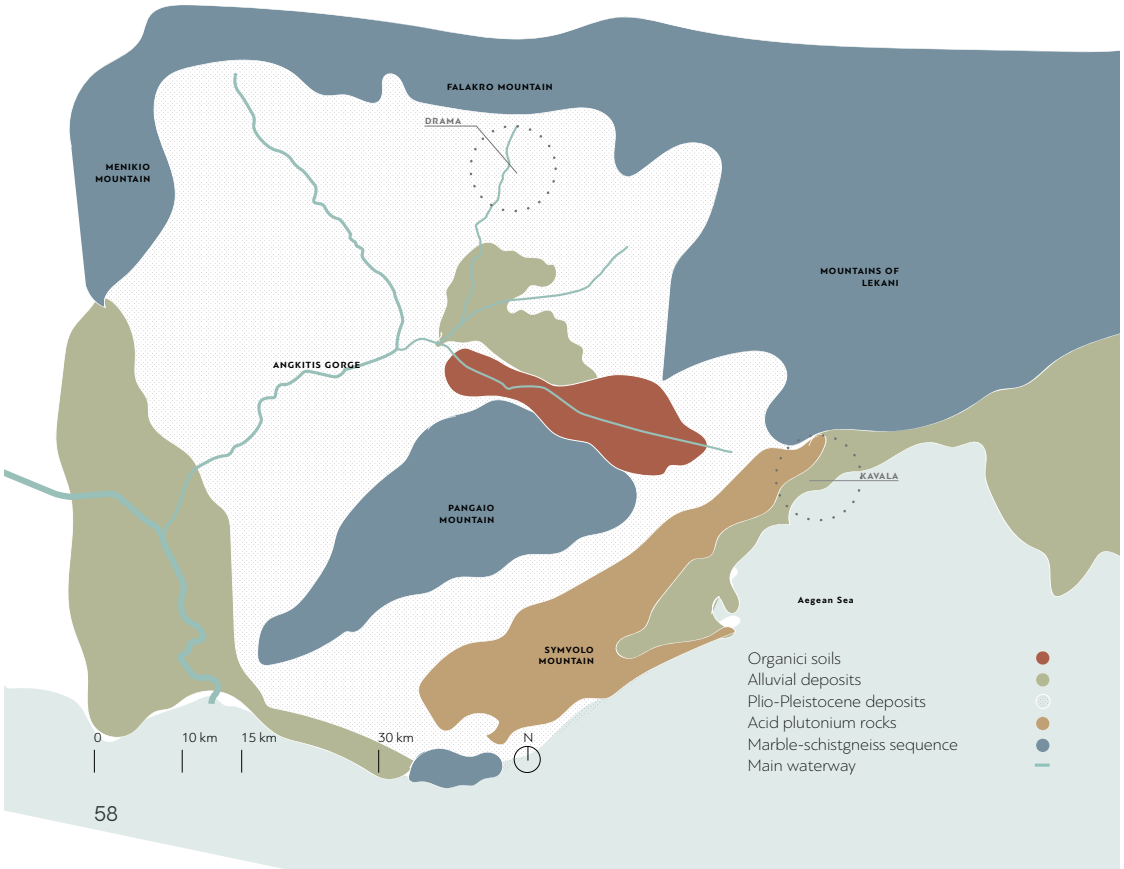


TOPOGRAPHY

Understanding the Philippi Valley's topography and drainage system is crucial for redesigning the canal system. Investigating the interdependence between the biotic and abiotic environment is key to achieving the project's objectives.

The area of Philippi peatland belongs to the wider Drama Basin, which is surrounded by the mountains of Pangaeo, Falakro, Symvolo, Menoikio, and Mountains of Lekani. Natural drainage of the basin was achieved only on the western side through the Aggitis River, which then flows into the Strymonas River. Over time, the area of hills crossed by the Aggitis gradually rose, leading to a gradual reduction in drainage capacity.

GEOLOGICAL SIMPLIFIED MAP



As a result of the topography and the slow rates of drainage reduction, lagoonal conditions prevailed, leading to the formation of a peat deposit in the lowest part of the plain.

The topography played an important role in the creation of the high-quality peat deposit. The good quality of the peat is mainly due to:

a) The origin of the waters, which come primarily from rich limestone volumes high in calcium and magnesium.
b) The favorable climate of the region.

CATCHMENT AREA

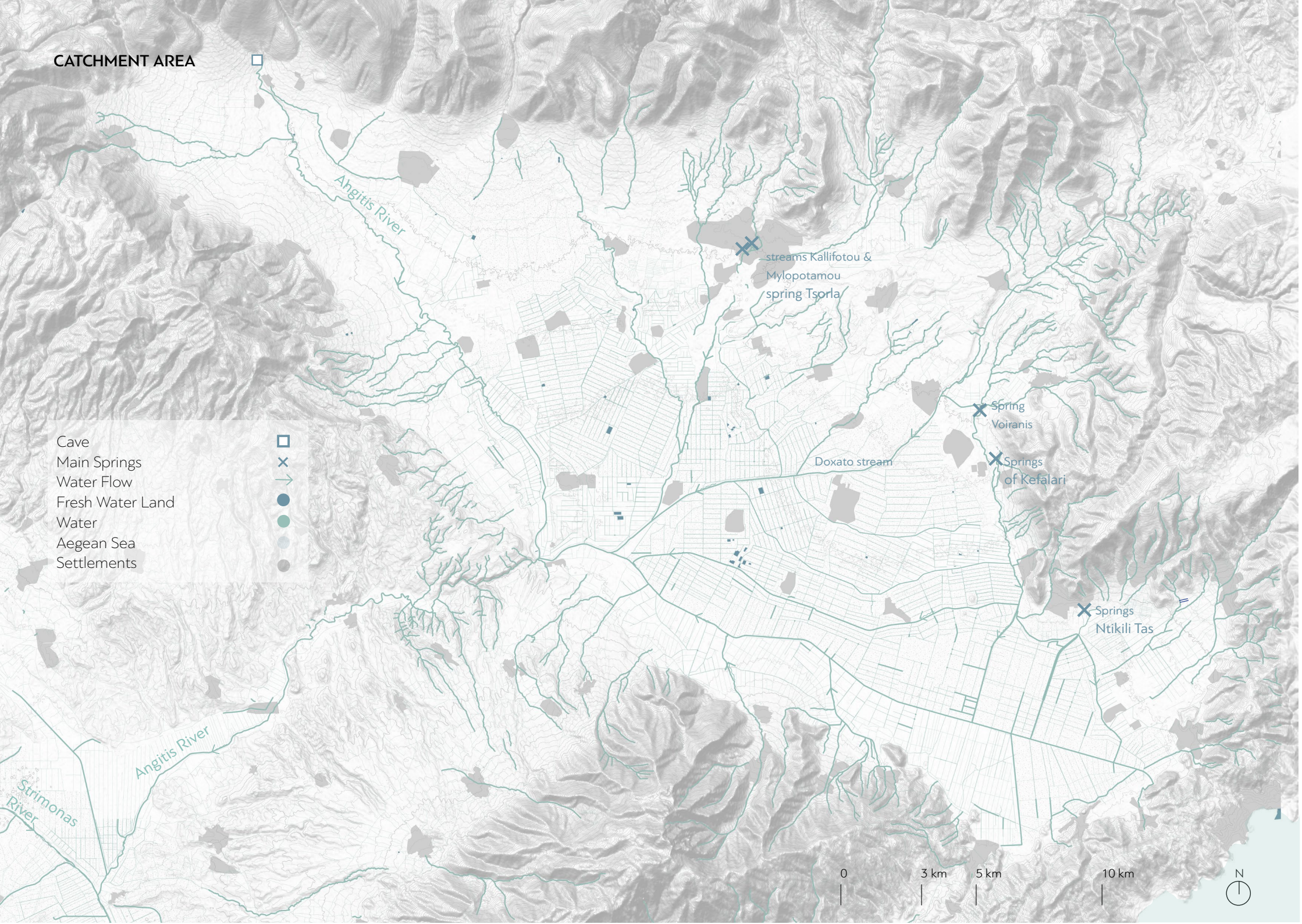
The water network in the region functions through a system of streams and rivers flowing from the north and northeast to the west. These watercourses do not flow steadily all the time, with significant changes occurring, especially during the rainy season.

The most significant river in the region is the Angitis River, known for its constant flow. It originates from the Aggitis Cave at the foothills of Falakro.

Agia Varvara, sourced within the city of Drama, ensures a steady supply of water that discharges into the Doxato basin. The Zigaktis River, with springs at Kefalari, also contributes to the Philippi basin's water supply, albeit to a lesser extent.

Some atmospheric precipitation infiltrates into the ground, replenishing underground aquifers and further enhancing the region's water resources.

For irrigation purposes, shallow wells are commonly used in the region. In recent years, there has been a significant increase in the use of underground water resources to meet agricultural needs and boost production. However, there are still problems because this water supply is not sufficient to meet all the needs.


CATCHMENT AREA
Angitis River
streams Kallifotou &
Mylopotamou
spring Tsorla
Spring
Voiranis
Springs
of Kefalari
Doxato stream
Springs
Ntikili Tas
Angitis River
Strimonas
River
Cave
Main Springs
Water Flow
Fresh Water Land
Water
Aegean Sea
Settlements
0
3 km
5 km
10 km
N

Philippi peatland

Is a place of remarkable beauty, deserving of admiration and conducive to the flourishing of both goods and people. The inherent potential of nature and humanity in this area has the capacity to enrich the lives of its inhabitants, ensuring its continued habitation and prosperity for generations to come, rightfully claiming its esteemed position.

LAND RECLAMATION:

The area known as Philippi Peatland, or locally referred to as “Balta” until 1935, was once an extensive marshland sustaining the livelihoods of fishermen and hunters in the region. Historically, this marsh was referred to as Prasiada Lake in ancient times and later as Philippi Lake. Over the years, the boundaries of the lake and subsequent marsh underwent frequent changes, impacting the surrounding area both positively and negatively

The first attempt to exploit the area occurred in 1919 with an initial drainage study, which, however, was not executed. Subsequently, the aftermath of the Asia Minor disaster led to a mass relocation of refugees to Macedonia and other regions, necessitating urgent rehabilitation efforts in a predominantly rural, economically struggling country. Moreover, the prevalent malaria problem in the area prompted immediate measures for marsh drainage.

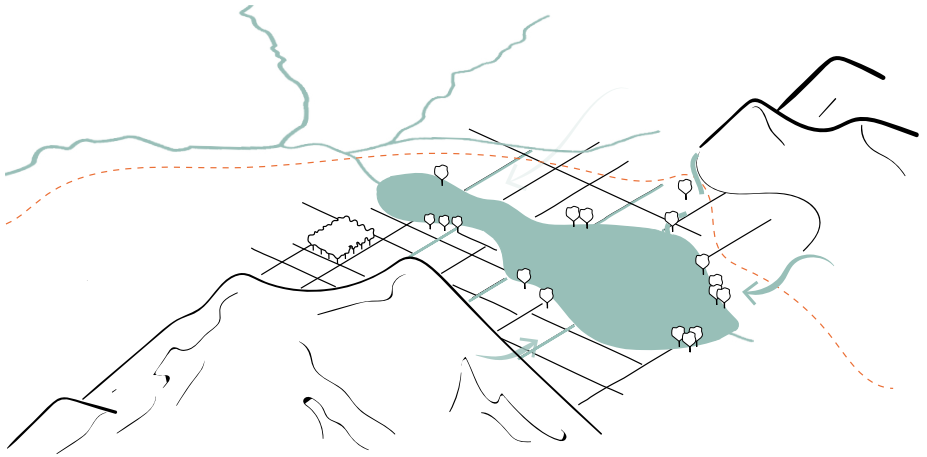
This led to the preparation of a new drainage study by the American company J.MONKS-ULEN, which was implemented in the 1930s and 1940s. The drainage projects included:

- Excavation of the Central Drainage canal, spanning 29 kilometers, serving both drainage and irrigation purposes for crops.
- Construction of secondary trenches flowing into the central Philippi canal.
- Construction of the sluice gate in the Symbolis Community, consisting of six large gate barriers.
- Further dredging of the Aggitis riverbed.

These projects ultimately achieved the drainage of the area. However, the outbreak of the Second World War disrupted operations, and land distribution to landless villagers in surrounding areas occurred in 1947.

Following the distribution of land for cultivation, the lands proved fertile and productive. Nonetheless, issues affecting the functionality of the land began to emerge, including sedimentation, oxidation, and soil subsidence, varying in severity across the area. In response, a Dutch company (Grontmij At De Bilt 1961) was commissioned in 1960 to conduct a soil study in Philippi Peatland, aiming to diagnose the causes of subsidence and propose mitigation measures.

BEFORE 1930:
LAKE



TODAY:
ARGICULTURAL LAND
WITH A SYSTEM OF CANALS

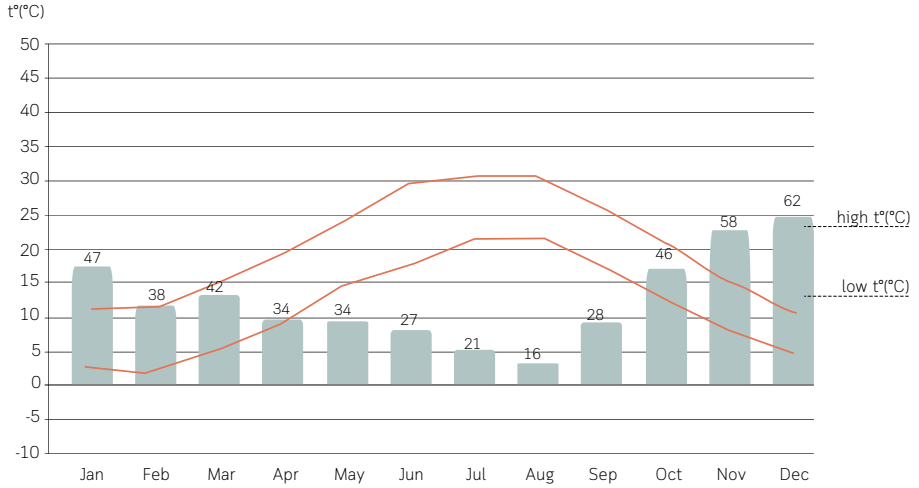
CLIMATE

The region's climate is continental, characterized by intense cold and wet winters and warm summers at low altitudes, with a decrease in temperature at higher altitudes. The coastal plain and coastal zones exhibit a Mediterranean climate, transitioning to a continental and mountainous type further inland, yet retaining Mediterranean elements.

Climate zone: Warm mediterranean (Csa)

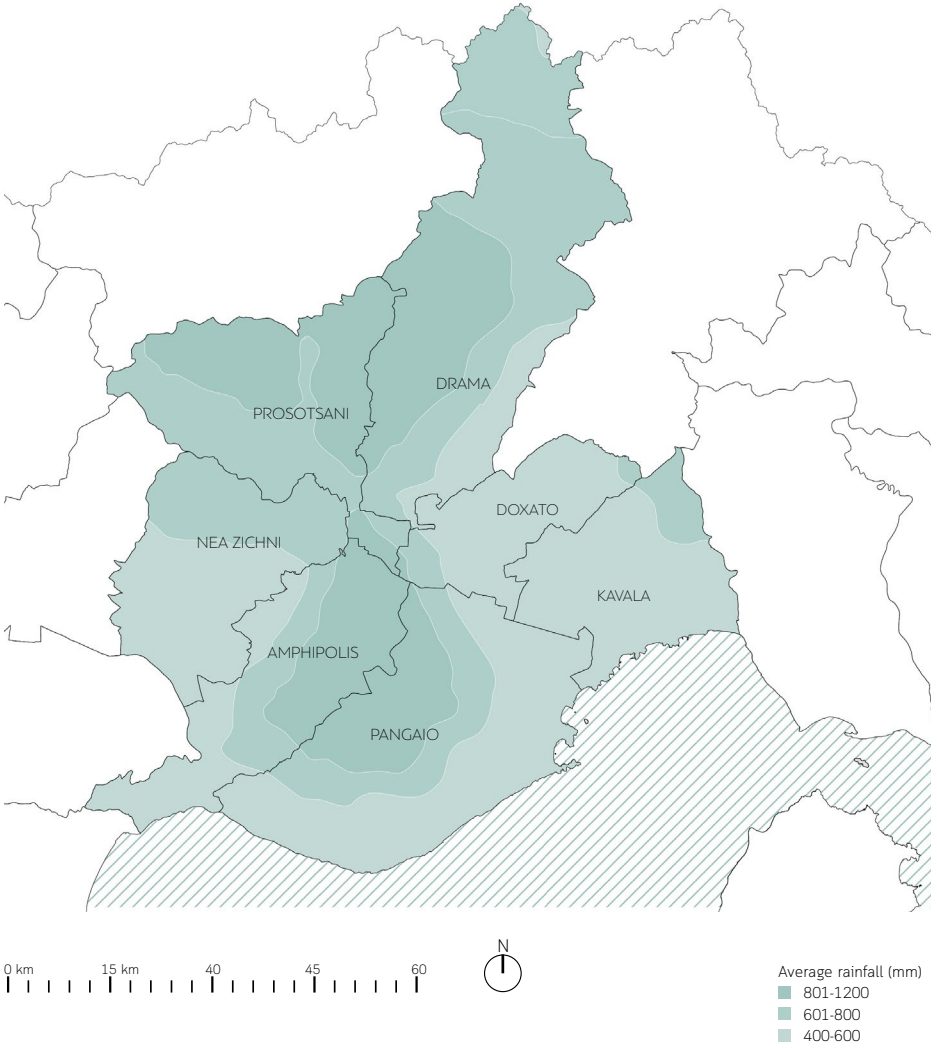
Climate & Weather Averages

High t°:	31.9 °C (July)
Low t°:	5.7 °C (Winter)
Mean t°:	15.6 °C
Precipitation:	508.6 mm annually
Humidity:	66.2% - 52.6%
Hottest Months:	June, July, August
Coldest Month:	January
Wettest Months:	Nov-Dec-Jan
Windiest Months:	March, April, September
Annual Rainfall:	508,6 mm per year



Annual precipitation and monthly average temperature

Map: Average Rainfall



PEAT

Peat, also known as black coal, is a mineral carbon formed in primarily temperate and wet environments. It originates from the gradual decomposition of plant residues under conditions of inadequate drainage, resulting in the accumulation of massive deposits, akin to those found in coal mines. This decomposition marks the initial stage of the carbonization process, which progresses with further burial of the strata, giving rise to a spectrum of coal types: lignite, sub-bituminous and bituminous coal, and anthracite.

Natural transformations occur during this process, notably the reduction of moisture and porosity due to compression from overlying layers (lithostatic pressure). Peat typically contains up to 50% carbon and exhibits a spongy, fibrous texture with a dark brown color. It is lightweight and soft to the touch, commonly found in coastal areas, marshes, lakes, barren lands, and forested regions, particularly prevalent in Europe, North America, and North Asia.

Peat forms at a rate of approximately 6.5 to 10 centimeters per century and has a remarkable capacity to hold water, equivalent to 8 to 9 times its weight. Its pH levels range from 4.0 to 8.5, and it ignites within a temperature range of 150 to 210 degrees Celsius. Peat moisture content typically falls between 67% and 88%, with lower levels observed in upper soil sections where oxidation begins as the water table recedes.

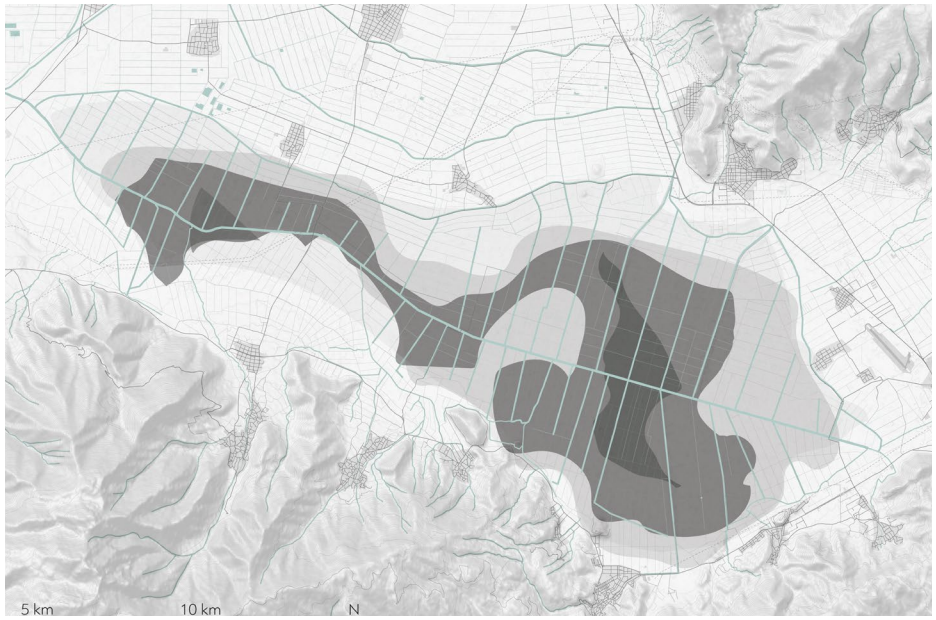
When peat dries out, irreversible changes occur, impacting its ability to absorb and retain water effectively. Once dried, peat does not fully regain its original water-retention properties. (GEOTEE An. Makedonias, 2016).

The **Philippi peatland** is the deepest deposit worldwide, with an average depth of 75 meters. According to the International Peatland Society (I.P.S.), the core of the Philippi Tenago Peatland (T.T.F.) covers an area of 55 square kilometers and reaches a depth of nearly 190 meters. The peat reserves are estimated at 4 gigatons (billion tons). In comparison, peatlands elsewhere in the world have an average depth of 4-17 meters.

An attempt was made to utilize this peat for electricity production by PPC, but it was halted due to local community opposition and the unsustainability of the investment (Stavroulias, 1994). The proven geological reserves of the Philippi peat amount to approximately 4,300,000,000 m^3, translating into around 125,000,000 tons of oil.

The Philippi Peat has undergone millions of years of biological and geological processes, but within a mere 80 years of drying, its destruction has accelerated significantly. Layers of peat, taking hundreds of thousands of years to form, have already been depleted in some areas. Urgent measures are needed to mitigate this disaster, but to do so effectively, a comprehensive understanding of the peat's characteristics, properties, and the factors driving its destruction is essential. Preserving this natural resource is paramount for future generations. Additionally, Philippi peat boasts unique properties, being the only light alkaline type beneficial for plants, making it valuable as a soil conditioner. Careful extraction methods are necessary to avoid damaging the turf, and further research and experimentation should be conducted to develop soil improvement programs, particularly in areas experiencing significant degradation. While some soil studies have been undertaken, they often overlook the specific challenges posed by peat destruction, focusing instead on its use as a substrate for crop growth. A more holistic approach to sustainable peat management is imperative to address these pressing concerns.

Spatial distribution of the organic substance in the soils
at depth of 0-90 cm



THE IMPORTANCE OF SAVING THE UNIQUE PHILIPPI PEATLAND

The Philippi Peatland stands as a rare and invaluable natural treasure, holding profound ecological, environmental, and cultural significance. Preserving this exceptional peat landscape is paramount for several compelling reasons:

1. Biodiversity Conservation: Home to diverse flora and fauna uniquely adapted to its environment, the Philippi peatland sustains a rich ecosystem crucial for regional biodiversity. Safeguarding this habitat ensures the survival of species dependent on its distinct conditions.
2. Climate Regulation: Serving as a potent carbon sink, the Philippi peatland stores vast carbon reserves, curbing their release into the atmosphere and mitigating global warming. Preservation aids in maintaining its carbon sequestration role, thus combatting climate change.
3. Water Management: Integral to water regulation, the peatland's hydrological functions help absorb and slowly release rainfall, preventing floods and sustaining water quality during dry spells. Preservation supports sustainable water management for agriculture and communities.
4. Cultural Heritage: With profound historical and cultural significance, the Philippi peatland reflects millennia of regional development. Its conservation honors the area's heritage, bridging past and present.
5. Scientific Research: Offering a unique site for studying climate change, ecology, and natural history, the Philippi peatland provides invaluable research opportunities. Its preservation ensures a vital resource for future scientific exploration.
6. Economic Benefits: Sustainable management can yield economic advantages through eco-tourism and responsible resource utilization. Preservation offers potential economic opportunities while upholding ecological integrity.
7. Environmental Education: Serving as a vital educational resource, the peatland fosters awareness of natural habitats and the imperative of conservation. It provides a tangible connection to nature, nurturing environmental stewardship.

In essence, safeguarding the unique peat landscape of Philippi transcends mere environmental concern, encompassing cultural and scientific imperatives. Its preservation contributes to global biodiversity conservation, climate resilience, and sustainable development, ensuring its manifold benefits endure for generations to come.

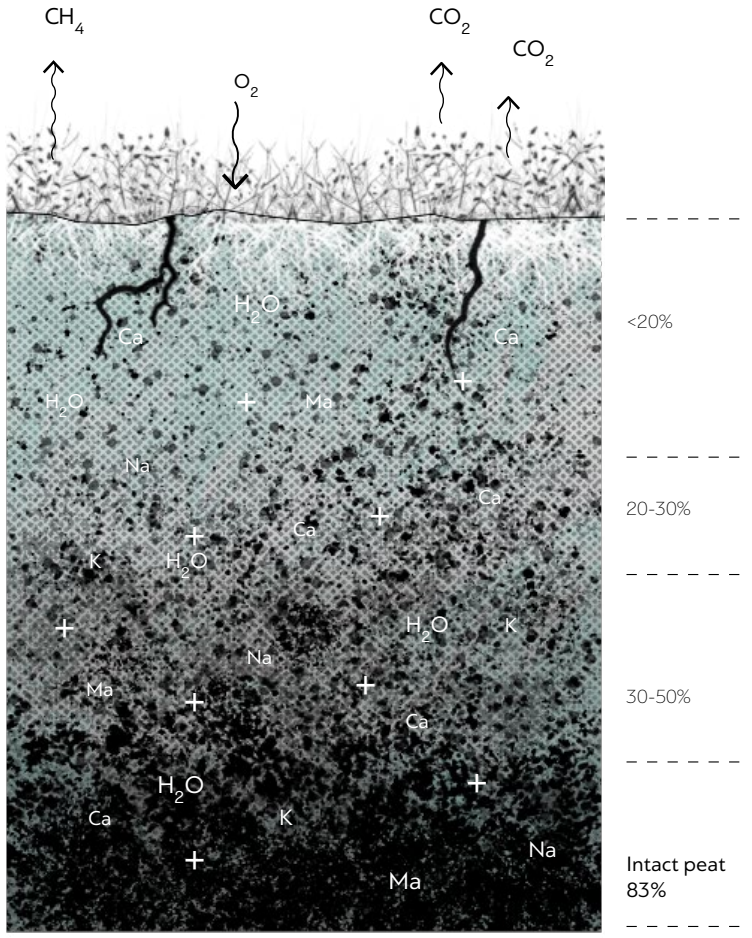
GLOBAL PEAT RESERVES
LIMITED, EVALUATED BY SURFACE AREA.
DEPTHS

7-18m

PHILIPPI PEATLAND DEPTH

AVERAGE 75m

MAX 300m



PHILIPPI PARK

PHILIPPI PEATLAND

PHILIPPI PARK

PHILIPPI PEATLAND

ECOLOGICAL ASSESSMENT

that which is perishable, desires to endure

-Albert Camus, The Summer

FLORA

PLANT PRODUCTION

The majority of cultivated areas in the region are irrigated, with percentages ranging from 53% (Province of Serres) to as high as 91% (Province of Drama, data from 2009). However, agricultural plots in the area are relatively small, hindering economies of scale and adaptation to the dynamic economic environment, thus resulting in low competitiveness. Annual crops dominate the cultivated lands, with cereals such as hard wheat and barley being the primary crops, followed by maize, cotton, alfalfa, sunflower, olive trees, sugar beet, industrial tomatoes, tobacco, vines, and energy crops.

Additionally, certain crops, while occupying a small percentage of the total area, play a significant role in the local agricultural economy. These include cherries traditionally grown in the TDs of D.E. N' Zichni, almonds characteristic of cultivation in DE Visaltias and Amphipolis, fruit trees in Kalos Agros, Amygdaleonas, and Datos, as well as pomegranates in Agios Athanasios and vineyards in Kyrgia, Mikropoli, Messolakia, Paleokomi, Prosotsani, Andriani, and Palaia Kavala.

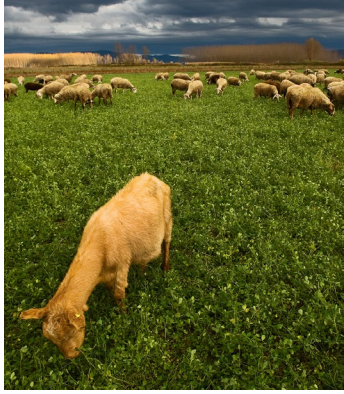
Furthermore, there is a recent trend among farmers to diversify into more efficient crops, some of which find their way into markets or are processed in small-scale vertical processing units. These include aromatic medicinal plants, aronia, blueberries, walnuts, pomegranates, blueberries, organic vines, olive trees, and other plant products.

FORESTS

The forests mainly consist of mixed stands of Fagus sp., Abies borisii-regis, Quercus sp. and Castanea sativa. Betula betula also stands out (the Pangaeo is the southernmost limit of this species in the Balkan peninsula).

OTHER SITE FEATURES

It is a large mountainous area with extensive beech and chestnut forests and meadows at high altitudes. In the rocky parts of the mountain there are cliffs with rare endemic plants or plants with a limited distribution in the Balkan peninsula. As far as wild plants are concerned it is indicated by the appearance of the other important species. Among them, 12 species are Greek endemic (among which 3 are local endemic), the two species are protected by the European Commission Environmental Legislation (1992).



Inula ensifolia, Rosa arvensis, Viola perinensis are included in the EU Red Book.

Arctostaphylos uva-ursi, Atropa bella - donna, Cephalanthera damasonium, Coeloglossum viride, Convallaria majalis, Dactylorhiza sambucina, Dianthus gracilis ssp. drenowskianus, Dianthus petraeus ssp. orbelicus, Gentiana asclepiadea, Gentiana cruciata, Lilium martagon, Orchis ustulata, Paronychia rechingeri, Saxifraga ferdinandi-coburgi are protected by Greek Legislation - Presidential Decree (67/1981).

CROPS & VEGETATION

The surrounding area adjacent to ditches primarily comprises agricultural land, predominantly cultivated with annual crops such as corn, cotton, and wheat, with perennial crops occupying a smaller, scattered area.

The ditches themselves are part of the broader "Azonian Vegetation and Wetlands" habitat, characterized primarily by reeds. Vegetation within these areas includes wetland vegetation and residual clumps of riparian vegetation along with scattered individual trees.

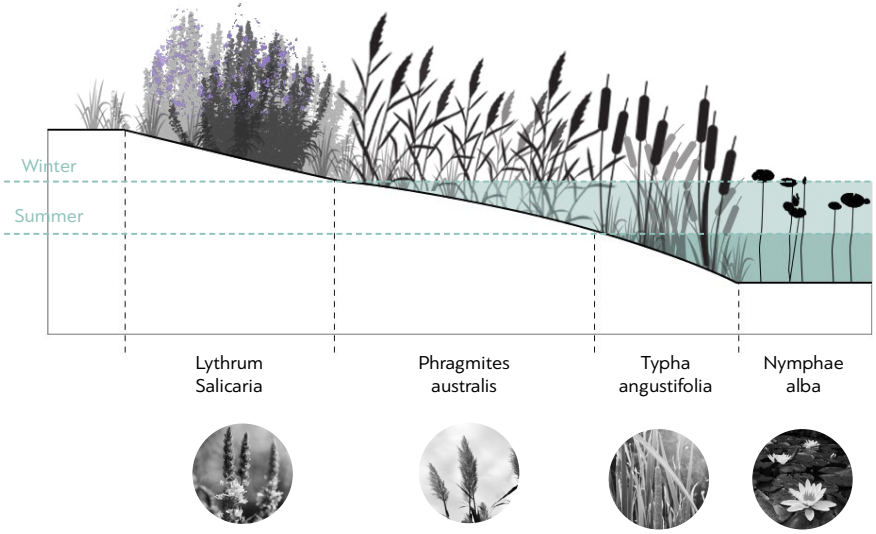
In areas with peat, various species are observed, including

- Phragmites australis
- Typha angustifolia,
- T. latifolia, members of the Cyperaceae genus,
- Cladium mariscus, various species within the Carex and Scirpus genera, the subspecies Alisma plantago-aquatica,
- Lythrum salicaria,
- Iris pseudacorus, species within the Sparganium genus, as well as
- representatives from the Equisetum,
- Eleocharis
- Salix genera.
- Aquatic plants such as Nuphar lutea, Nymphaea alba, and species from the Myriophyllum, Ceratophyllum, and Potamogeton genera are present

The remaining riparian vegetation is notably scarce and has been documented within the study area along the drainage ditches and the channels that feed into them.

RIPARIAN VEGETATION IT PRIMARILY COMPRISES:

- common reeds (Phragmites australis),
- clusters of rushes (Typha sp.), and reeds (Phragmiti
- Other species present include:
- Nasturtium officinale,
- Veronica anagallis-aquatica,
- Mentha spicata,
- Melissa officinalis subsp. officinalis, and Xanthium strumarium.
- Clusters of water lilies (Potamogeton nodosus) were also observed within the trenches.



TREES:

Linear tree formations such as:

- black poplar (Populus nigra),
- willow (Salix alba), although the latter does not typically form distinct-natural clusters.

Additionally, individual occurrences of:

- alder (Alnus glutinosa),
- silver poplar (Populus alba),
- upright poplar (Populus cv. thevestina),
- fraxes (Fraxinus pallisiae and Fraxinus angustifolia),
- various willow species (Salix triandra, Salix fragilis, Salix purpuraea),
- elm (Ulmus procera)

Along the streams in the area, sporadic sightings of **Platanus orientalis** were recorded, a species protected under P.D. 67/81 and Official Gazette 43/A/1981.

FLOWERS:

Images: Google search

Data provided by Botanist Zalidas Ioannis from Philippi Park, gathered during field visits.

01.Salvia, 02.Ficaria, 03.Viola, 04.Alkanna, 05.Myosotis06.Viburum, 07.Fumaria, 08.Muscari,09.Tragopogon, 10.Veronica11.Cistus, 12.Vinca, 13.Dracunculus14.Saxifraga, 15.Verbascum16.Cichorium, 17.Campanula, 18.Saponaria 19.Silene, 20.Hypericum21.Asyneuma, 22.Sempervivum, 23.Cichorium intybus, 24.Stempergia lutea, 25.Plumbago europaea

FAUNA

AMPHIBIANS - REPTILES

Most Greek reptile species are protected under National Legislation (Presidential Decree 67/1981) and the EU's Directive 92/43/EEC. Key species include terrestrial turtles (Testudo graeca, Testudo hermanni), the four-lined snake (Elaphe quatuorlineata), and the yellow-bellied toad (Bombina variegata). Additionally, these species are listed in the Bern Convention, which prohibits their collection, possession, and trade, and protects their habitats and breeding sites. No specific conservation measures have been proposed or implemented for the wider study area.

Based on these reports, the recorded species are as follows:

- Bufo bufo (Bufonidae) - Common Toad
- Bufo viridis (Bufonidae) - Green Toad
- Pelobates syriacus (Pelobatidae) - Spadefoot Toad
- Pelophylax kurtmuelleri (Ranidae) - Greek Marsh Frog
- Rana dalmatina (Ranidae) - Agile Frog
- Rana graeca (Ranidae) - Greek Frog
- Salamandra salamandra (Salamandridae) - Fire Salamander
- Lissotriton vulgaris (Salamandridae) - Smooth Newt
- Triturus karelinii (Salamandridae) - Balkan Crested Newt
- Testudo hermanni (Testudinidae) - Hermann's Tortoise
- Testudo graeca (Testudinidae) - Greek Tortoise
- Mauremys rivulata (Geoemydidae) - Stripe-necked Terrapin
- Emys orbicularis (Emydidae) - European Pond Turtle
- Pseudopus apodus (Anguidae) - European Legless Lizard
- Lacerta viridis (Lacertidae) - European Green Lizard
- Typhlops vermicularis (Typhlopidae) - European Blind Snake
- Dolichophis caspius (Colubridae) - Caspian Whipsnake
- Natrix natrix (Colubridae) - Grass Snake

BIRDS

The Birds Directive 2009/147/EU, integrated into Greek law, is the key framework for protecting wild birds in Greece. It mandates the conservation of species listed in Annex I and prohibits activities that threaten birds. Greece also follows the Important Bird Areas (IBAs) program to

protect vital bird habitats. In the Environmental Impact Assessment for the Trans Adriatic Pipeline, 141 bird species were recorded in Eastern Macedonia and Thrace, including protected raptors and common agricultural species. Key areas for birdlife include the Loutro pine forest, Kompsatos and Filiouris river valleys, and the Krinides-Fyllidos Wildlife Refuge.

In the broader Study Area, common species have been observed, which are found in wetlands as well as in agricultural areas and plains.

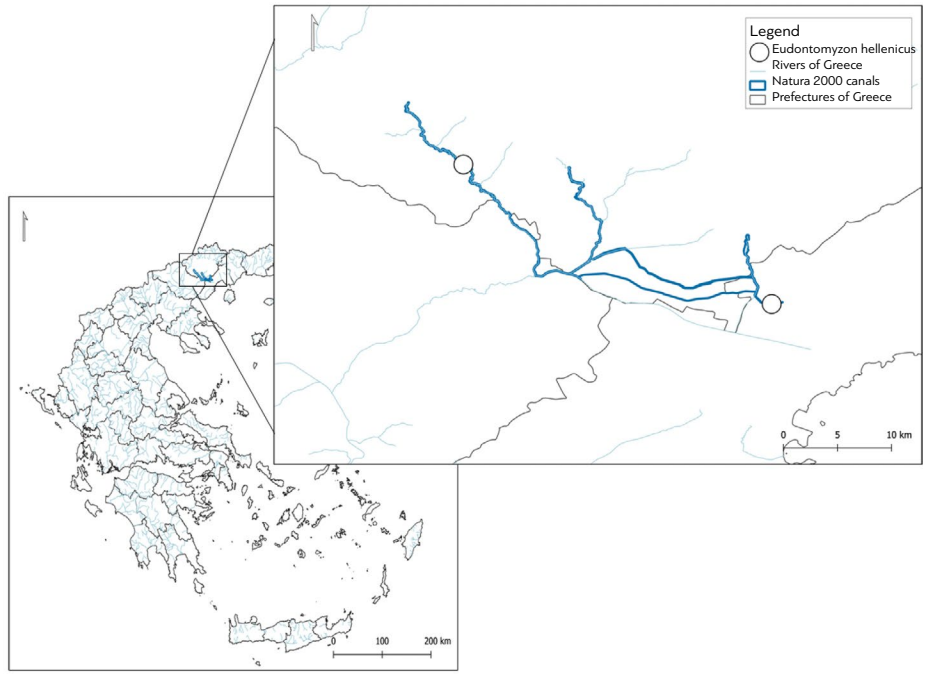
The following species have been observed:

- Ardeola ralloides,
- Egretta garzetta,
- Cuculus canorus,
- Galerida cristata,
- Hirundo rustica,
- Motacilla flava,
- Luscinia megarhynchos,
- Acrocephalus arundinaceus,
- Cettia cetti,
- Hippolais pallida,
- Miliaria calandra,
- Sturnus vulgaris,
- Oriolus oriolus,
- Passer domesticus,
- Falco vespertinus,
- Philomachus pugnax,
- Circus aeruginosus,
- Falco naumanni,
- Himantopus himantopus,
- Dendrocopos syriacus.

In the Study Area and the Special Environmental Protection Plan (SEPP), 4 species were observed: Ardeola ralloides (Squacco Heron), Egretta garzetta (Little Egret), Hippolais pallida (Olivaceous Warbler), and Falco vespertinus (Red-footed Falcon).

FISH FAUNA OF THE CANALS OF PHILIPPI PEATLAND

In the last survey of the fish fauna in the area and surrounding areas, conducted under Directive 92/43/EEC, a total of 20 fish species were identified (Koutrakis et al. 2015). Commercial species in the area include Grivadi (Cyprinus carpio), Goulianos (Silurus glanis), and Pike (Esox lucius). Additionally, two rare **endemic** species, Ammokoitos or Gavochelo, and Grammovelonitsa were recorded (Koutrakis et al. 2015).



MAMMALS

Hedgerows with large hydrophilic trees and dense vegetation around the drainage ditches provide refuge for many mammals, including Foxes (Vulpes vulpes), Badgers (Meles meles), Otters (Lutra lutra), Stone Martens (Martes foina), Weasels (Mustela nivalis), and a few Jackals (Canis aureus). The presence of Otters and the reappearance of Jackals, which had disappeared in the late 70s, is particularly notable.

CHALLANGES IN THE PHILIPPI PEATLAND

We are out of joint with nature, and out of joint with our own natures as consequence.

-Elizabeth Kassler, Modern gardens and the landscape (1964)

CURRENT SITUATION

About 85 years have passed since the initial drainage works of the Philippi peatland area began, allowing for agricultural exploitation of these highly fertile soils. The rich organic matter in the soil, combined with a unique irrigation system, initially facilitated excellent crop growth and minimized water loss, resulting in improved yields and minimal irrigation costs. However, this favorable situation has not persisted.

Peat soils, rich in organic material, are prone to specific problems that have worsened over time. Today, subsidence in some areas exceeds 6 meters, posing a significant threat to the peatland's productivity. Intensive agriculture, often disregarding sustainable practices, has exacerbated these issues. Consequently, the future of the peatland as a productive area is in jeopardy.

The primary issue is the decreasing drainage capacity due to subsidence of the organic soils. Since 1932, the desiccation of these soils has led to their exposure to atmospheric oxygen, causing biological oxidation and a reduction in soil volume. Additionally, the lowering of the water table and groundwater has increased the load on the soil substrate, causing further subsidence. The use of agricultural machinery and the burning of plant residues after harvest have only worsened the problem.

Subsidence has severely impacted the drainage infrastructure. The surface soil layer has subsided over 6 meters in some areas, rendering existing drainage works nearly nonfunctional. Aerial surveys indicate that the minimum soil level is now at +41.90 meters, with the central trench's bottom level measured at +39.80 meters upstream of the Nikisiani sluice and +38.00 meters around the Symvoli sluice. The greater rate of subsidence in the plain's center compared to the sluice sites complicates efforts to deepen the central trench. Consequently, large parts of the plain area are flooded during winter, making cultivation impossible except in the summer, leading to annual income losses.

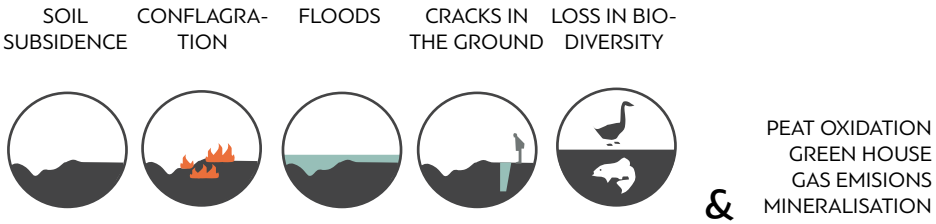
Data from the Hellenic ETHIAGE in 2001 and aerial photography from 2018 show significant further subsidence over 18 years, averaging 0.45 meters, with an average annual subsidence rate of 0.025 meters. Maintaining high water levels during summer for irrigation is beneficial, but the drainage network's inability to function properly during winter exacerbates the problem. Farmers in different areas have conflicting needs regarding drainage and irrigation, creating friction.

Each hectare in Philippi peatland generates approximately €200 in gross agricultural income, with a total potential annual production of €20 million. However, flooding-prone areas lose at least 50% of their income, missing out on one of the two growing seasons and facing inefficiencies in equipment use. Currently, annual income loss due to underutilized land is €2.5 million, projected to rise to €10 million within the next decade. **Without intervention, the peatland could flood throughout spring and summer by 2020, potentially halting cultivation by 2030, resulting in losses far exceeding €10 million annually.** (projections are detailed in the study "Flood Protection of Tenagon Philippi Area Kavala-Drama-Serres" -March 2022)

Urgent intervention is needed to address these issues. Without action, more than half of Philippi peatland's cultivation zone will be unusable during the winter months by 2030, leading to significant economic and social consequences, including population movements, abandonment of settlements, and deterioration of infrastructure.

ISSUES

The study area, after the drainage, faces significant problems due to a lack of knowledge in water management and organic soil management. The problems identified are many and interconnected. Issues include land subsidence, flooding phenomena, cutting down of the few trees that exist on their banks, indiscriminate use of pesticides, burning of reeds, as well as the lack of a strategic plan for environmental exploitation aiming at improving the quality of life and enhancing the income of farmers and residents.



&

PEAT OXIDATION
GREEN HOUSE GAS EMISIONS
MINERALISATION

1. Human interventions

Human interventions are primarily responsible for exacerbating the issues that have progressively worsened over time. Intensive agriculture in these areas has often been conducted without adherence to good agricultural practices or the principles of sustainable agriculture (e.g., burning of crop residues), resulting in a multitude of problems. These accumulated issues now threaten the very existence and productive use of the area as cultivated land.

An agricultural or rural ecosystem is inherently designed to meet human needs. With the advent of agriculture, humans transitioned from nomadic hunting and gathering to manipulating natural ecosystems to increase the yield of desired species. However, modern industrialized agriculture has led to soil degradation, erosion, reduced organic matter, decreased water capacity, diminished biological activity, increased salinity of soil and irrigation water, and ultimately desertification due to overexploitation. Thus, there is an urgent need to transition towards more environmentally friendly and sustainable agriculture to meet the needs of a growing global population.

2. Flood Phenomena

Within the area, the canals have undergone severe degradation due to industrial uses and cultivation. In recent years, the soil has lost its valuable components, leading to weather phenomena characterized by a high risk of flooding. These floods have had enormous effects on agricultural crops, resulting in soil subsidence, peat loss, and decreased productivity.

3. Fauna and flora of the area

The species of fish fauna face the greatest threat within the Philippi peatland area as they inhabit water areas that are constantly drained. Especially during the dry season, there is a risk of water areas disappearing along with some of these species. Human interventions that disregard the existence of these species, such as draining water areas or disrupting fish habitats, could have similar detrimental effects.

4. Deforestation of the wider area

A significant issue concerning the flora is the intense deforestation of the wider area, resulting in the loss of native vegetation patches year after year.

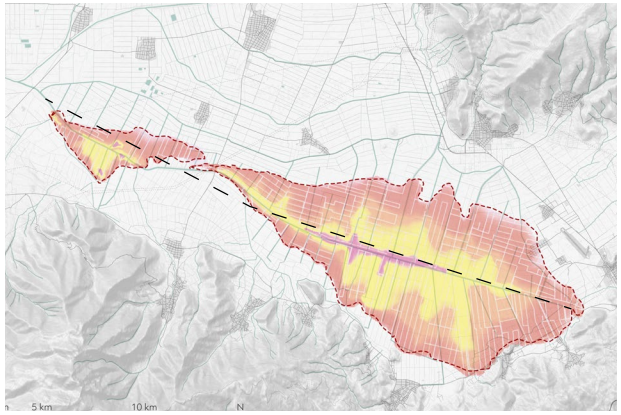
5. Subsidence and Oxidation

Since the initiation of drainage works for the surface, subsidence has been evident to a remarkable and alarming degree. According to a study by a Dutch company covering the years 1931-1959, subsidence began at zero at the perimeter of the area and exceeded 3.5 meters in central points near the central ditch. **Prior to subsidence, the area was nearly flat, but later became imbalanced.**

Subsidence primarily results from the compression of organic material during drying, and secondarily from volume reduction of colloidal constituents and biological oxidation. Its rate significantly decreases and stabilizes, influenced by the underground water level, agricultural exploitation systems, and environmental temperature (Polyzopoulos 1982).

Various factors contribute to soil subsidence, including systematic cultivation, heavy vehicle encroachment, and intentional burning of peat by cultivators themselves. Intentional peat burning during stubble field burning is particularly destructive, as it not only destroys useful natural material but also irreversibly burns peat, while simultaneously destroying soil microorganisms crucial for crop growth and degrading the ground surface. Consequently, areas subjected to burning become unsuitable for agricultural exploitation.

1959

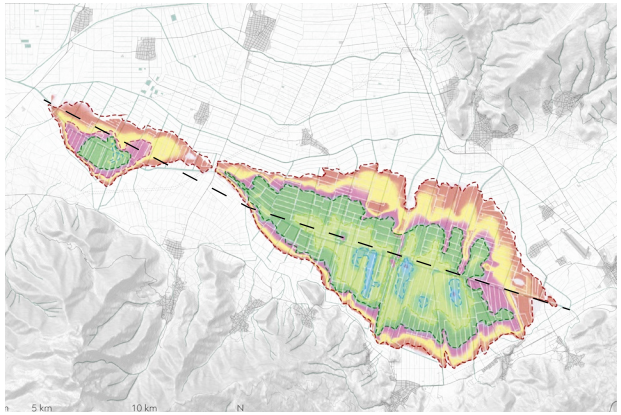


FACTORS THAT AFFECT THE SUBSIDENCE
of the organic soils of the Philippi peatland (Grontmij at de Bilt 1961)

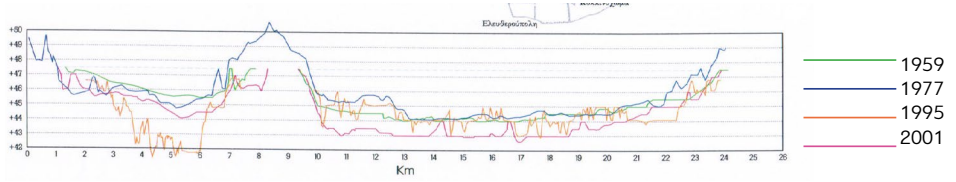
surface
- Shrinkage due to drying
- Biological oxidation
- **Burning of plant residues**

Underground
- Soil compaction by **heavy vehicles**
- Expansion of gases

2001



Subsidence Level in meters



Data for the maps given by: Ministry of Agriculture, 2001

6. Cracks in the Ground

The phenomenon of cracks and soil movements occurring over kilometers and at unknown depths pose additional problems and dangers, possibly due to compaction and changes in peat moisture content. Moreover, this phenomenon exacerbates peat oxidation.

7. Irrigation Problems

The issue of irrigating began with the formation of uneven areas in the Philippi Tenagos, which were initially flat. These uneven areas result from subsidence, which is less pronounced at the periphery and in areas with low peat content, but more significant in the center of the Philippi Peatland near drainage ditches and in areas with high peat content. As these altitude differences increase, the adverse effects on irrigation worsen.

8. Fires

Fires in the Philippi Peatland can be both human-caused, intentionally (such as burning reeds), or unintentional accidents, as well as caused by spontaneous ignition of peat during periods of severe drought and high temperatures. Peat burning is a peculiar phenomenon in which peat burns to a depth of at least 15-20 cm (depending on soil moisture and available oxygen). These fires destroy the surface layer of the peat and exacerbate the subsidence phenomenon. Extinguishing such fires is extremely challenging.

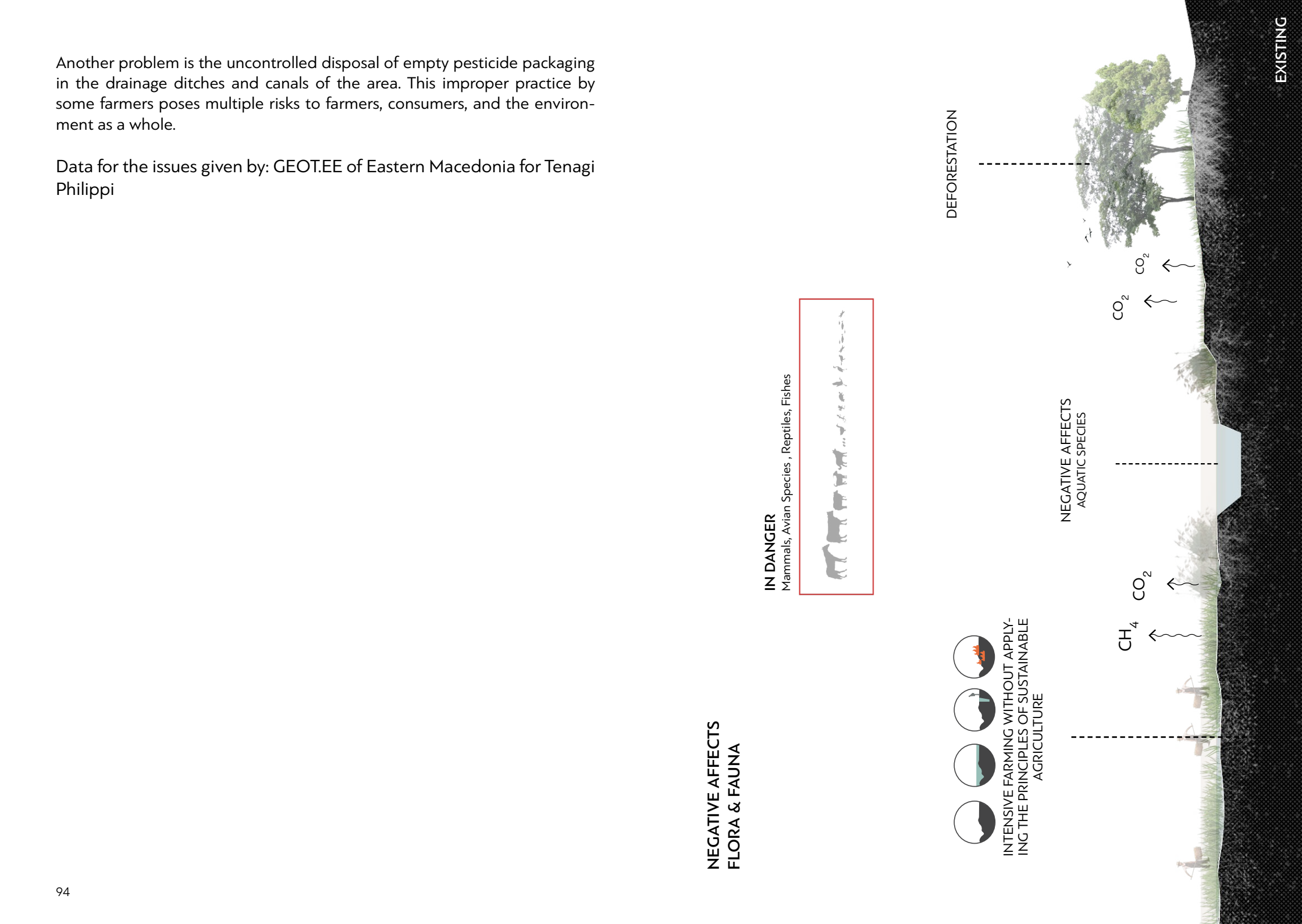
9. Other Environmental Problems

Human activities in the area create additional environmental problems. One of them is respiratory issues faced by inhabitants of neighboring areas due to the release of greenhouse gases into the atmosphere from the Philippi peatland area, such as carbon dioxide and methane, resulting from fires and peat oxidation (Bousmoukilia 2009, Former director of the 2nd Pulmonology Clinic of G.N. Kavala).

Eutrophication of the waters in the central Philippi ditch and secondary drainage ditches is another significant issue. Eutrophication, primarily of agricultural origin, stems from the use of fertilizers and inadequate drainage. Periodically, incidents of water toxicity have been observed in the canals due to individual pollution events, resulting in mass deaths of fish fauna.

Another problem is the uncontrolled disposal of empty pesticide packaging in the drainage ditches and canals of the area. This improper practice by some farmers poses multiple risks to farmers, consumers, and the environment as a whole.

Data for the issues given by: GEOT.EE of Eastern Macedonia for Tenagi Philippi

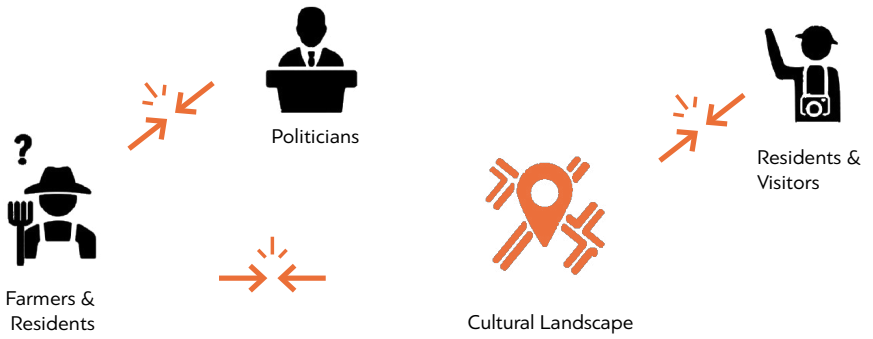


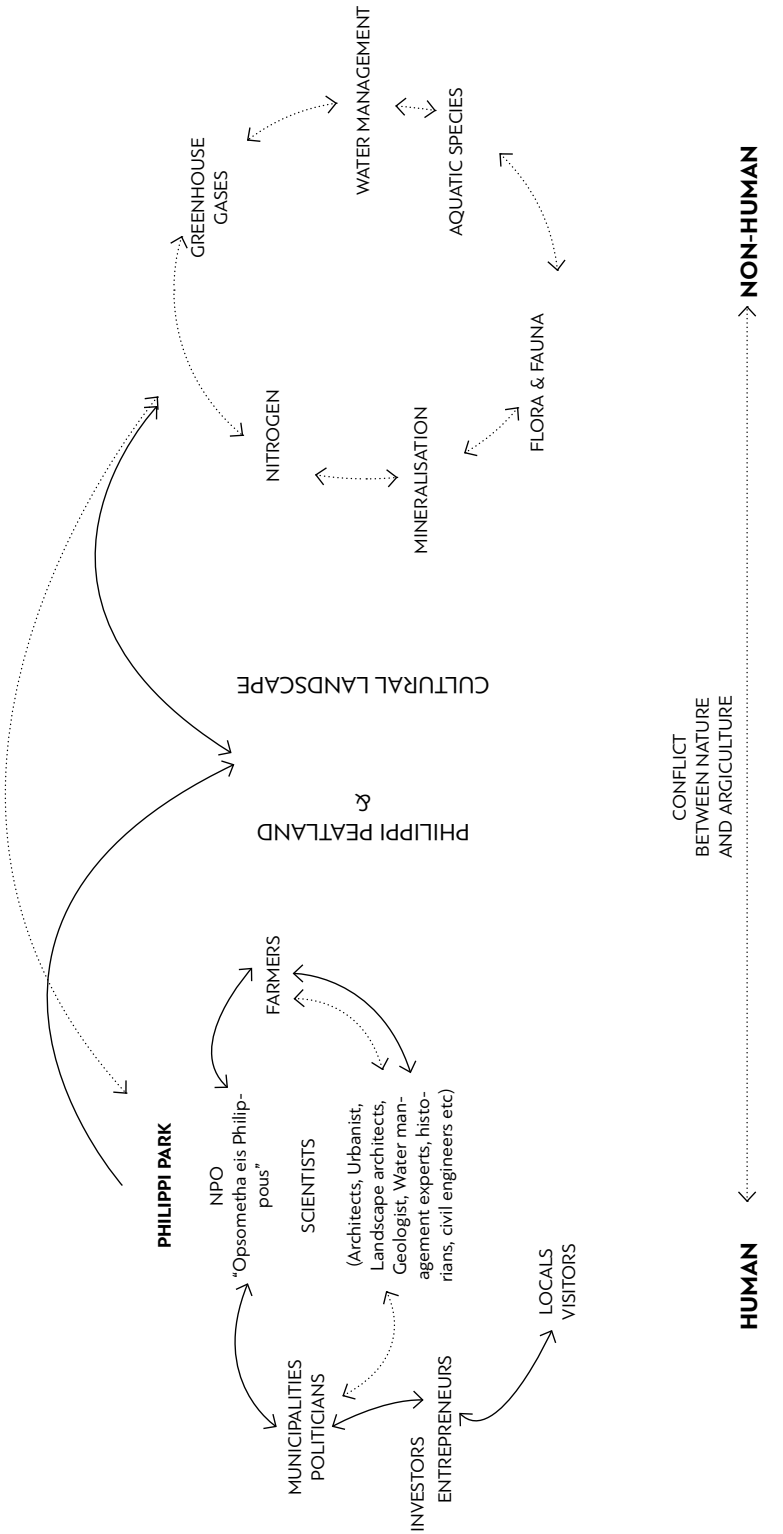
ACTORS

Based on observations and research, it is evident that there is a significant communication gap between farmers and municipalities in the Philippi peatland area. Communication tends to occur sporadically, primarily during emergencies like floods or during election campaigns held every four years. This irregular and reactive communication approach exacerbates the lack of holistic planning for the area, leading to ongoing issues for both the farmers and the environment, particularly the unique peat ecosystem.

The Philippi peatland, though a vast area, is primarily utilized by farmers. However, a significant lack of understanding and knowledge about peat soil and water management has led to numerous conflicts between human activities and the needs of the natural environment. Farmers often face challenges that are not adequately addressed by local authorities, partly due to this communication gap. The absence of consistent dialogue and coordinated planning efforts results in problems such as ineffective flood management, soil degradation, and conflicts over resource use.

Holistic planning and better communication are crucial for the sustainable development of the Philippi peatland. There is a pressing need for a comprehensive strategy that integrates the needs of farmers with environmental conservation efforts. This strategy should involve regular communication and collaboration between farmers, municipalities, and environmental experts to ensure that the unique characteristics of the peat soil and water systems are respected and maintained. Addressing these issues will help to mitigate conflicts and promote a more sustainable coexistence between human activities and the natural ecosystem.





FROM RESEARCH TO LANDSCAPE ARCHITECTONIC DESIGN

Where a landscape appears, we are already in place.

-Bernard Lassus, The Landscape Approach (1998)

PROPOSALS

The primary objective of all endeavors should be to maintain the peat soils and ensure the productivity and sustainability of the Philippi peatland area for many years. Over the preceding years, as highlighted in pertinent studies, the symbiosis of the Philippi peatland with humanity has been neither harmonious nor sustainable. Philippi peatland is a unique area and can be characterized as a natural wetland monument. However, due to continuous drainage and its accessibility to cultivators, it has transformed into a fertile cultivated plain. The peat of the area is slightly alkaline, unlike the acidic nature of most peat soils, rendering it ideal and fertile for numerous crops. Nonetheless, the area faces numerous challenges and threats.

To mitigate these threats and address the issues confronting the Philippi Peatland, while facing numerous challenges, my academic journey at TU Delft has allowed me to discover various approaches to landscape development and water management. Currently, water in the area is primarily used for irrigation. I firmly believe that water should play a more integrated role in daily life, providing significant benefits to both the peat and the natural surroundings.

LANDSCAPE ARCHITECTONIC DESIGN:

As a landscape architect, my plans extend beyond the technical aspects and prioritize the enhancement of the cultural landscape, particularly focusing on preserving and enriching the natural environment. Additionally, I aim to design landscapes that foster cultural appreciation while establishing a harmonious relationship with water.

My objective is to develop designs that seamlessly integrate technical innovation with recreational amenities. Ultimately, I aspire to contribute to the transformation of this agriculturally and culturally rich environment into a vibrant global destination.

The proposal I've crafted involves implementing a green-blue infrastructure. This approach allows us to address existing challenges while bridging the gap between different aspects of the landscape. By leveraging previous insights, mapping peat areas, identifying subsidence, and incorporating water as a central design element, the concept of the green-blue system emerges as a promising solution to enhance and enrich the entire landscape.

LANDSCAPE ARCHITECTONIC DESIGN

REQUIREMENTS

Prevent floods
Water reservoirs
Peat Protection
Nature reserve
Cultural Landscape

Technical &
Recreational

HOW?

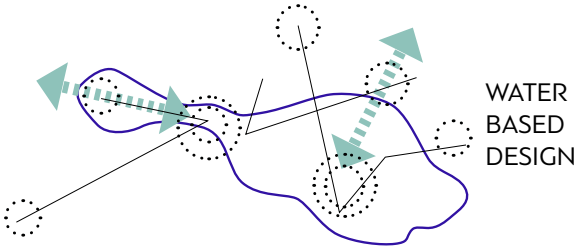
GREEN-BLUE
STRUCTURE

WHY?

DESIGN PRINCIPLES
CONCEPT

HYDROLOGY + ECOLOGY + HERITAGE + ARGICULTURAL ENVIROMENT

Soil type
Existing land uses
Land form



FLOOD PROTECTION

Hydrology plays a crucial role in the management of the Philippi peatland area, particularly concerning drainage works to combat flooding. In recent years, there has been a noticeable increase in flooding occurrences, leading to significant damage to farmers' production. To address this issue, and drawing from recommendations by flood management experts and thorough research, initial steps involve the reconstruction of a network of canals within the enclosed plain.

These canals serve a dual purpose:

- draining excess rainwater and
- irrigating the fields.

The system will collect water from surrounding streams and rivers, channeling it into the canals, where flow management within the plain area will be regulated using sluice gates. The project encompasses several key components:

1. Upgrading perimeter canals to enhance drainage capacity, effectively reducing flood risk.
2. Enhancing the internal network of drainage ditches within the plain to ensure efficient water movement.
3. Improving existing sluice gates and constructing new ones to facilitate precise control over water flow.

These measures are designed to address the diverse challenges and requirements of the area, aiming to mitigate flooding impacts and promote sustainable water management practices.

PEAT PROTECTION

Another objective is to safeguard the peatland and prepare the soil for agriculture. To achieve this, I suggest several steps. First, we should create a regional canal along the area with the deepest peat. Then, using maps showing how the land has changed, we can identify areas where the ground has sunk too much for farming and consider restoring part of the lake. This isn't just about restoring the environment but also about creating a 'reforming tank.' These tanks help deal with variations in water demand during the irrigation season by storing extra water near the irrigation networks.

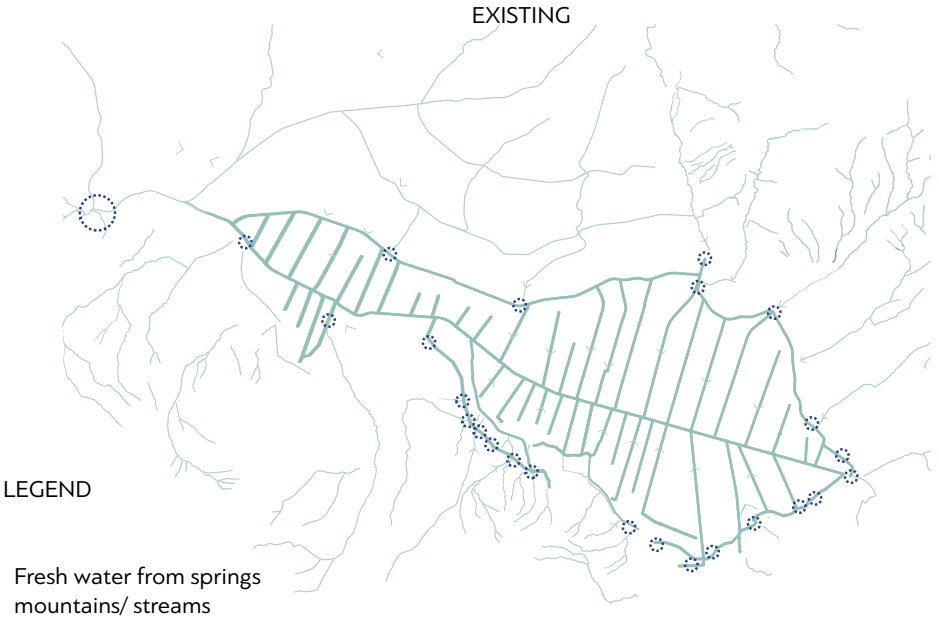
HERITAGE

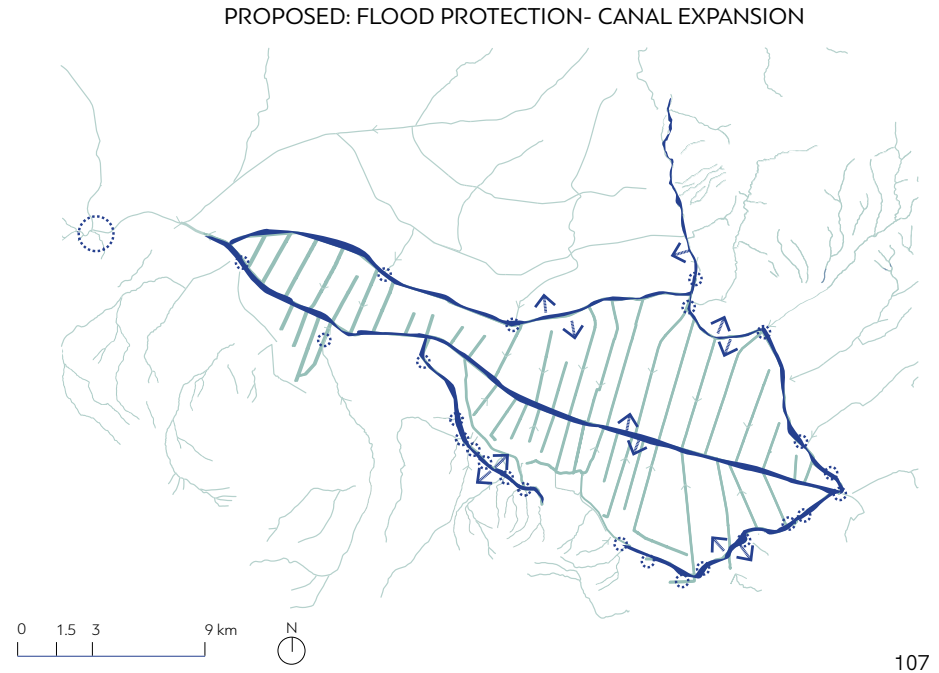
Additionally, the majority of cultural landmarks are concentrated in the northwestern part of the peatland. To enhance connectivity, I propose creating a new waterway that links these points with the central area, where a new lake will be situated.

ECOLOGY

By integrating these water systems with ecological considerations, we can develop the project's design concept. This approach transforms the infrastructure (such as the flood-protecting canal) into a more aesthetically pleasing and functional element woven into the landscape, embodying the idea of "Landscape as infrastructure." This ensures that the infrastructure not only serves its primary purpose but also enhances the ecological and visual quality of the landscape.

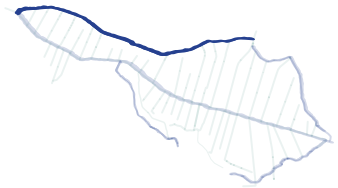
DESIGN
HYDROLOGY





HYDROLOGY
Technical

A1
Total Length 17.5 km



A2
Total Length 10.1 km

B1
Total Length 7.5 km

B2
Total Length 8.1 km

CENTRAL CANAL
Total Length 29 km

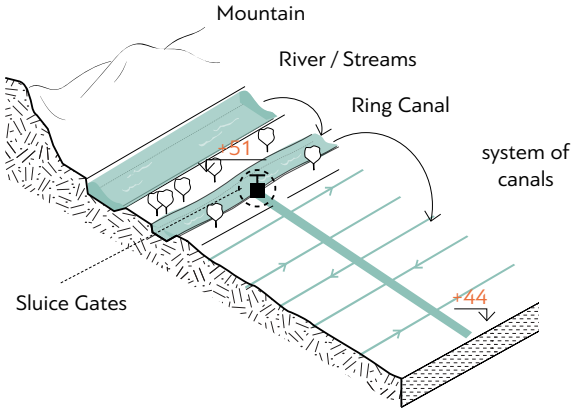
The new trench will begin receiving the stream of **Krinides,** with a design flow of **7.44m³/s**

At this point of the stream of **Philippi** contributes, increasing the design supply to **27.12m³/s**

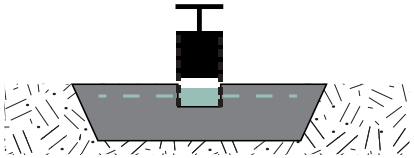
In the **Kryonerio-Amygdaleona (Datou)** stream contributes, raising the design supply to **74.23m³/s.**

X.Th. 0+885 contributes the stream of **Palaia Kavala** increasing the design supply to the estuary to **108.61m³/s.**

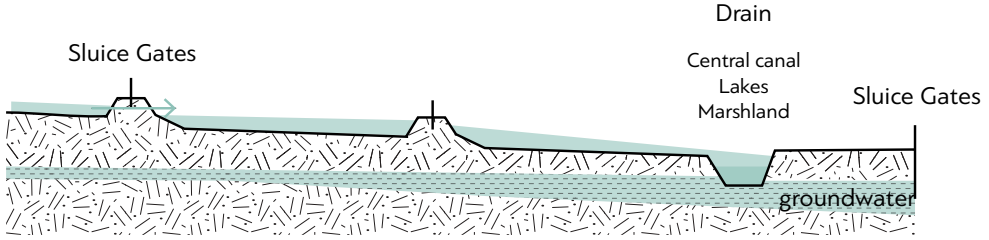
Water Flow & Sluices



Keep the peat wet as much as possiple
Control water with sluices



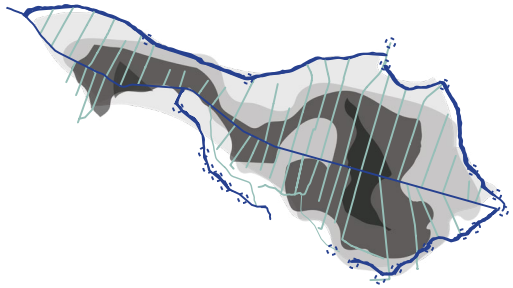
sluices in the vertical canals



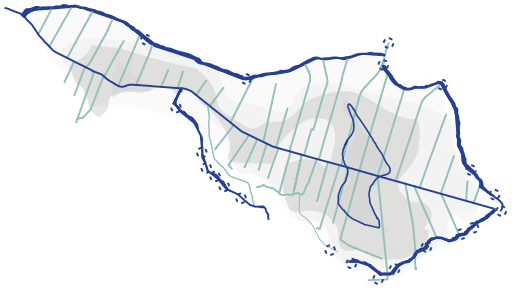
CONCEPT DESIGN

HYDROLOGY

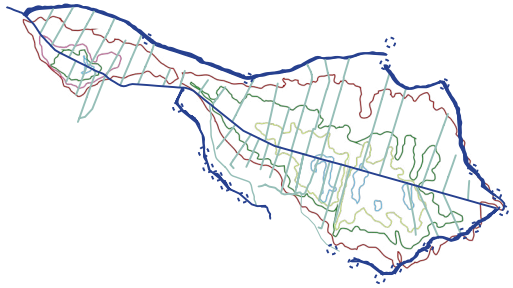
2. PEAT DISTRIBUTION



RING CANAL
AROUND THE DEEPEST
PEAT AREAS

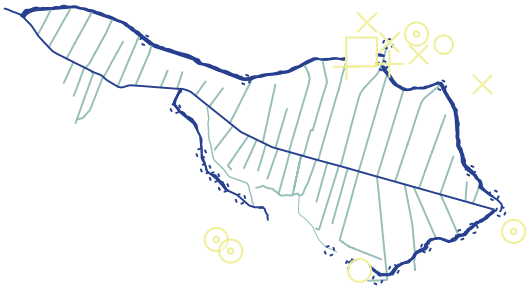


3. SUBSIDENCE



LAKES
IN THE DEEPEST
SUBMERGED AREAS

4. HERITAGE

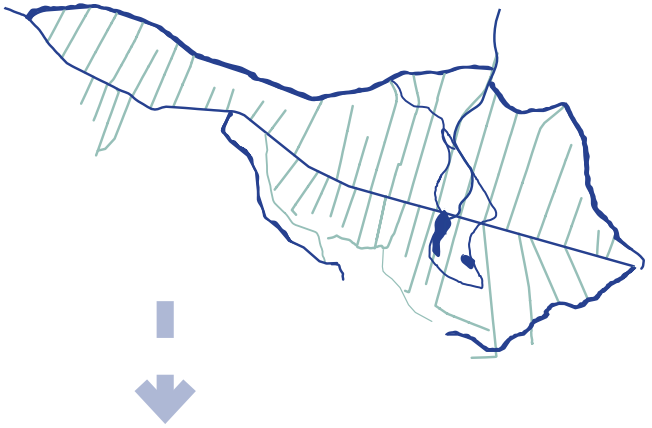


STREAMS
FOLLOWING SUBMERGED AREAS
AND CONNECT LAKES WITH LANDMARKS

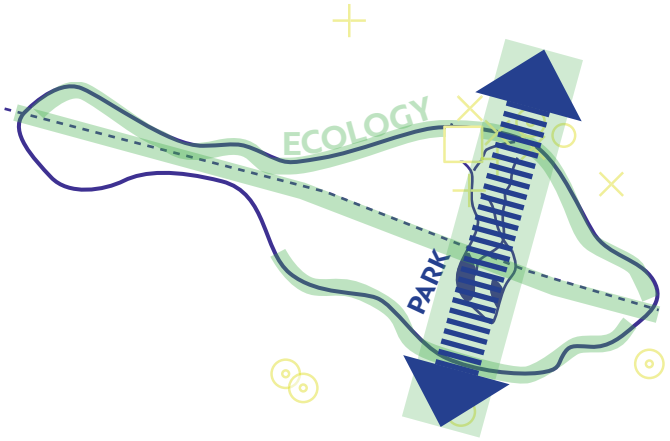
DESIGN

CONCEPT

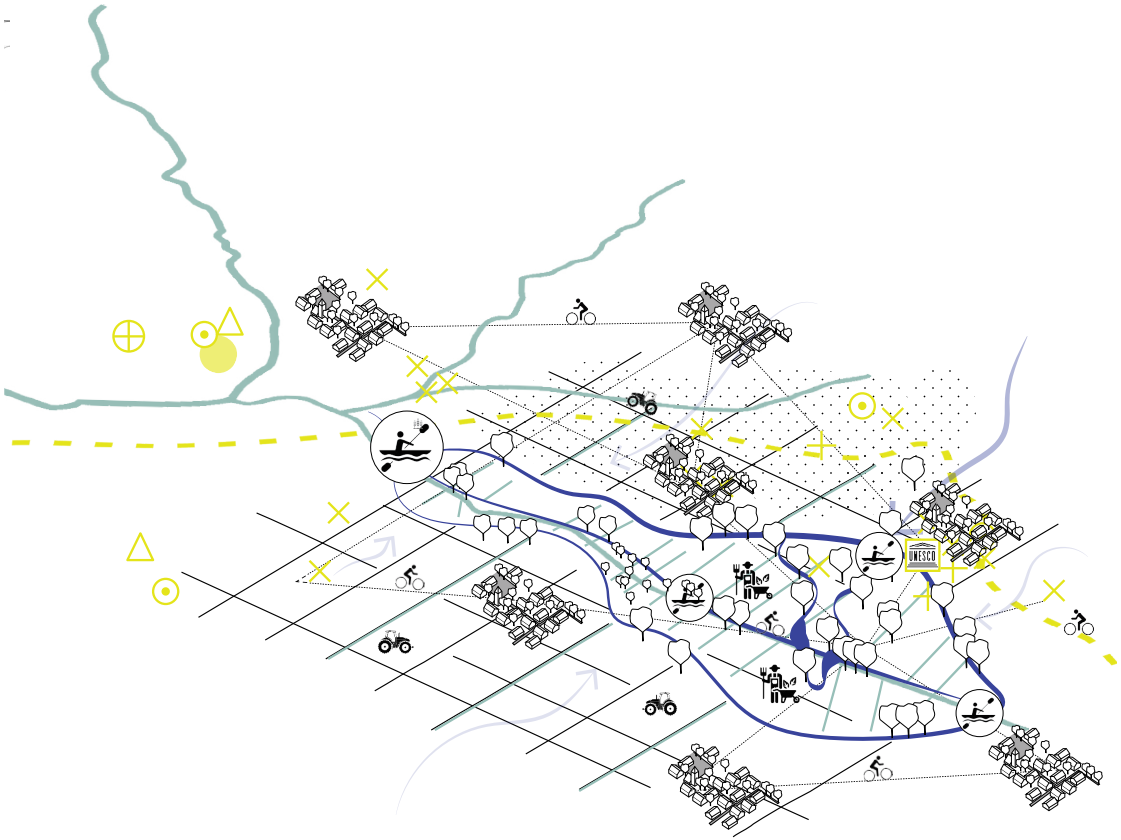
NEW WATER NETWORK



GREEN- BLUE STRUCTURE



LANDSCAPE
ARCHITECTINIC
DESIGN



LANDSCAPE ARCHITECTONIC DESIGN

we, along with all living things, are inseparable parts of the cosmic order.

- Jackson, A sense of place

LANDSCAPE ARCHITECTONIC DESIGN FOR PHILIPPI PEATLAND

The design is tailored specifically for the unique characteristics of the Philippi Peatland area. Recognizing the significance of this environment, the approach prioritizes the conservation and sustainable management of its peat soils and natural resources.

Hydrology:
By incorporating the existing water network and introducing new waterways, the design for Philippi Peatland aims to create a landscape that efficiently captures clean water from springs, streams, and stormwater. This approach mitigates flooding risks while promoting ecological balance within the peatland ecosystem.

Argiculture/ Transitional Landscapes:
The design caters to the diverse agricultural needs of the area, including new crop production, experimental agriculture, wet agriculture, and restoration efforts. By establishing new plots, transitional agricultural zones, and areas for revegetation and palludiculture, it supports sustainable agricultural practices while preserving the peatland's natural integrity, with the aim of eventually incorporating the results of the crops and proposed interventions into the entire area of 96,200 acres. Its purpose is to protect this unique peat that is beneficial for crops, to find suitable crops for the specific soil, to strengthen the economy of the area with the production of unique products, and to avoid compaction of the soil by heavy vehicles in order to minimize subsidence.

Ecological Landscapes:
Ecological sustainability takes precedence in the design for Philippi Peatland, leveraging proposed water system enhancements to bolster environmental resilience. By establishing diverse habitats including forests, marshlands, lakes, and new streams, and implementing extensive tree planting along the central canal and various routes (both old and new), the goal is to offer ecological advantages for both human inhabitants and wildlife. Simultaneously, the design seeks to facilitate the restoration of degraded areas and the establishment of a new natural park.

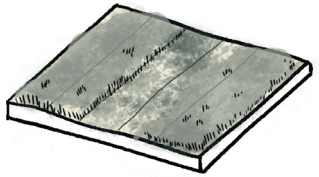
Heritage & Community Spaces:
Community engagement and cultural appreciation are central to the design philosophy for Philippi Peatland. Through enhanced connectivity with surrounding villages and archaeological sites via pedestrian paths, bike routes/ greenways, and viewpoints, the design aims to foster a sense of belonging and pride among local residents while preserving the area's rich heritage and biodiversity.

Additionally, the design integrates the rich cultural heritage of the region by highlighting historical sites and events, such as Philippi and the Battle of Philippi, as well as prehistoric settlements. This is achieved through the establishment of museums and information points and the creation of cultural routes connecting these monuments with biking, walking paths, or boating experiences.

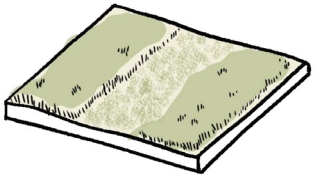
Furthermore, the design promotes the development of alternative forms of tourism, such as ecotourism, to diversify the area's visitor offerings. This includes the creation of a natural park dedicated to peat protection and the establishment of a research center aimed at safeguarding the natural environment.

TOOLBOX
Masterplan

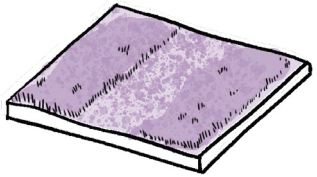
ARGICULTURE



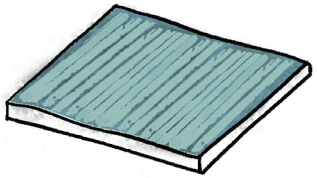
new crops - transition argiculture



new crops - transition argiculture

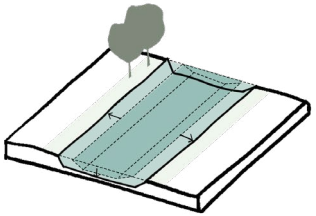


new crops - transition argiculture

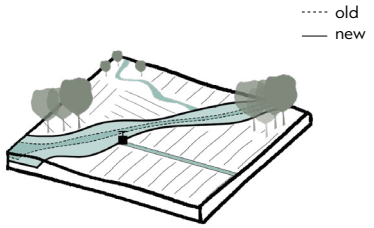


palludiculture

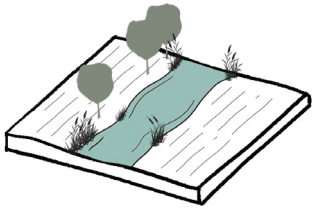
HYDROLOGY



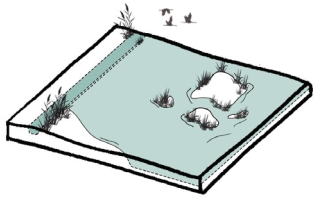
expand central canal & enhance existing vertical canals



expand perimetrical canals to collect fresh water

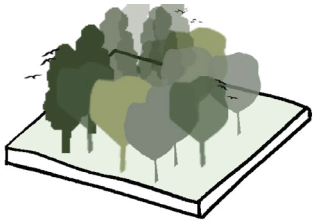


new waterways

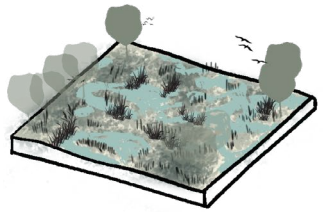


Lakes - water reservoirs

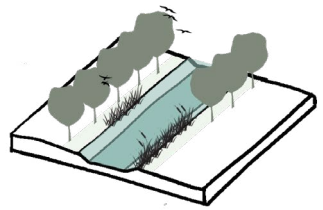
ECOLOGY



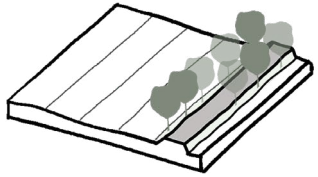
forest areas



marshland

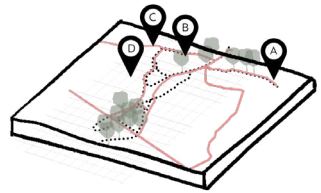


reforestation of central canal

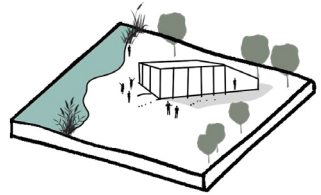


tree planting along routes

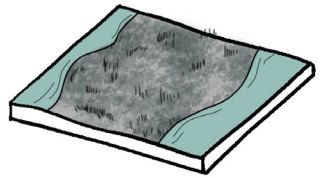
HERITAGE



Connecting



museums & info points



protection of peatland

MASTERPLAN LAYERS

Ian McHarg's seminal "layer cake" theory has profoundly influenced landscape architecture and urban planning. McHarg's approach, detailed in his groundbreaking book Design with Nature (1969), involves overlaying various environmental and social factors as layers to understand the landscape comprehensively. This method allows planners to see the interactions between different elements and make informed, sustainable decisions.

McHarg's theory posits that every landscape is composed of multiple layers of natural and human-made elements, each with its unique characteristics and functions. By examining these layers individually and in combination, planners can identify the optimal uses for different areas of the landscape, ensuring that development is both environmentally sustainable and socially beneficial.

McHarg's approach typically involves the following steps:

- Mapping Existing Conditions: Detailed maps of natural features (such as topography, hydrology, soil types, vegetation) and human elements (such as land use, infrastructure, and cultural sites) are created.

- Overlaying Layers: These maps are overlaid to reveal patterns and relationships between different landscape elements. This helps identify areas suitable for various uses, such as conservation, agriculture, urban development, and recreation.

- Analyzing Interactions: The interactions between layers are analyzed to understand how changes in one element might affect others. For example, how tree planting might impact soil erosion or how new infrastructure might influence water flow.

- Designing with Nature: Based on these analyses, planners can design interventions that work with natural processes rather than against them, promoting sustainability and resilience.

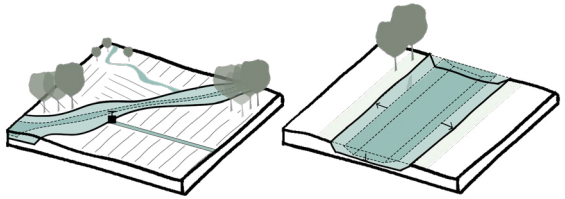
Application in Masterplan Design

Drawing inspiration from McHarg's theory, I have structured my masterplan using distinct layers, each addressing critical aspects of the landscape. These layers are hydrology, ecology (tree planting), commuting (network), and cultural landscape. In the following chapters of this report, each layer will be analyzed in detail, demonstrating how they interact and contribute to the overall masterplan.

MASTERPLAN LAYERS
Hydrology

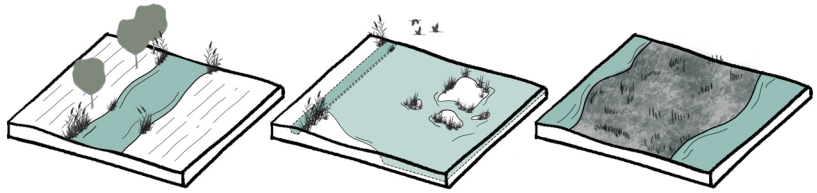
EXISTING

EXISTING - EXPANDING



Ring canals to collect fresh water & expand existing canals

NEW WATER WAYS & WETLANDS



New water ways, Lakes -water reservoir & protection of peat

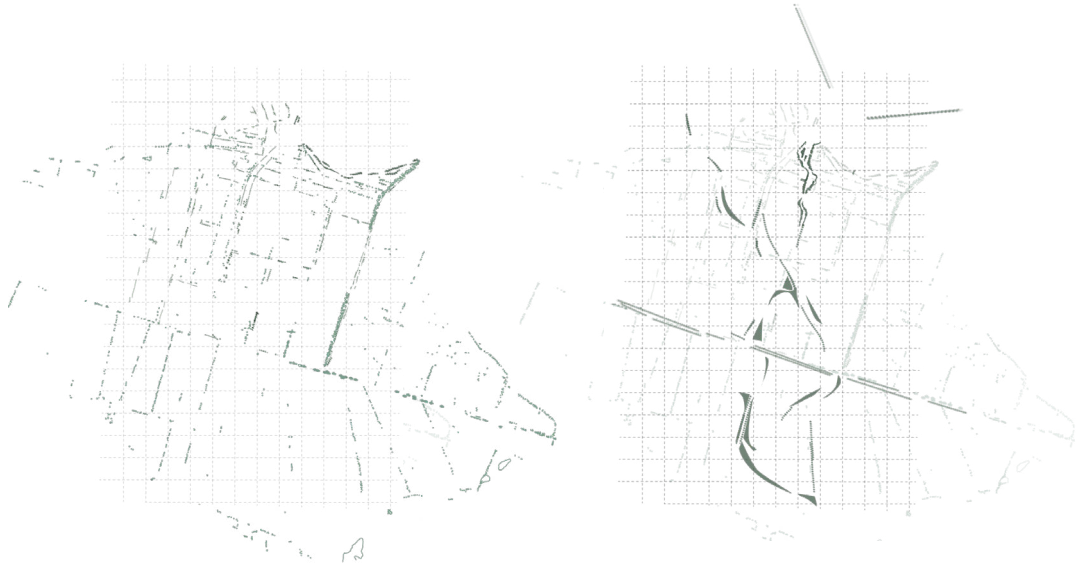
In addressing the recurrent floods impacting agricultural productivity, a comprehensive flood protection strategy is proposed for the water system as mentioned above in the chapter 'From Research to Landscape Architectonic Design'. A central element of this plan is the reconstruction of the regional network of canals within the area. These regional canals serve as the primary collectors of clean water from the springs and streams, fulfilling a dual purpose of draining excess water and irrigating the fields. Consequently, water collected in these canals will be directed to the vertical canals, with flow regulation facilitated by sluice gates. The central canal, which serves as the primary outlet for the vertical canals, is extended to handle a larger volume of water, ultimately directing it out of the system to the Angitis River.

Furthermore, the plan seeks to protect the peatland by constructing a peripheral canal around the deepest peatland areas. This canal will restrict movement through these areas, allowing nature to reclaim them and transform the interior into a marshland. Based on research identifying regions of excessive subsidence, I propose restoring part of the lake to create a reservoir, which will help manage water demand during irrigation seasons. Additionally, to improve connectivity, a new waterway is proposed to link the cultural landmarks in the northwest of the Philippi Peatland area with the central of the area, where the new lakes will be established.

MASTERPLAN LAYERS
Tree planting

EXISTING

NEW TREE LINES & FOREST AREAS



DESIGN

EXISTING
middle areas

perimeter areas

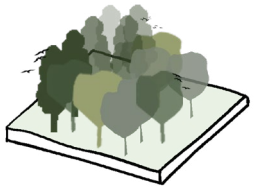
PROPOSED
middle areas

perimeter areas

FOREST TYPE

COMBINATION OF TREES:

- black poplar
- various willow species
- silver poplar
- upright poplar
- alder
- fraxes
- elm



DENSITY OF EXISTING TREES

LESS dense
in the middle areas

MORE dense
in the perimeter areas

In the current situation, after conducting on-site research and mapping the area using aerial photographs, I observed that most trees are concentrated in the northern part, primarily near the regional canals. In this region, there are clusters of trees, including fruit-bearing species like carpus. Additionally, there are more trees along the canal banks and a few scattered throughout the area. However, as we move towards the center, the landscape becomes nearly barren, with few trees and large areas dedicated solely to cultivation.

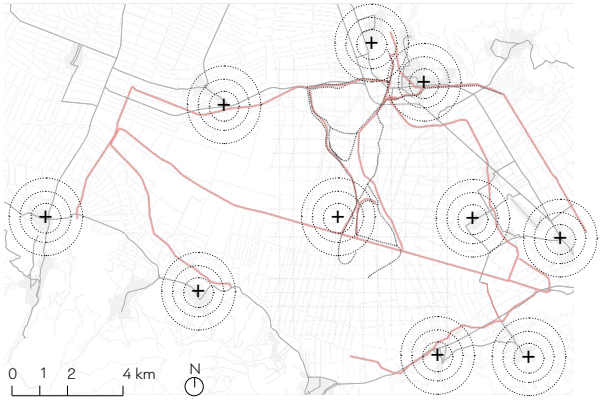
The design suggests reforesting the central canal and enhancing the environment with additional tree planting and forest areas along the perimeter canals and new waterways. This tree planting transforms the landscape and creates a new ecological balance, while also strengthening the cental areas. Trees help stabilize soil and reduce erosion, which is crucial for maintaining canal banks, and they sequester carbon, aiding in climate change mitigation—a key concern for the area due to the peat bog. Additionally, the design boosts biodiversity, primarily supporting birds that use the area as a stopover during their journeys. Overall, the new proposal fosters a more resilient and sustainable agricultural environment.

MASTERPLAN LAYERS

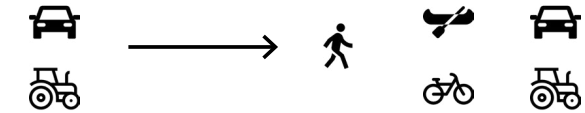
Commuting

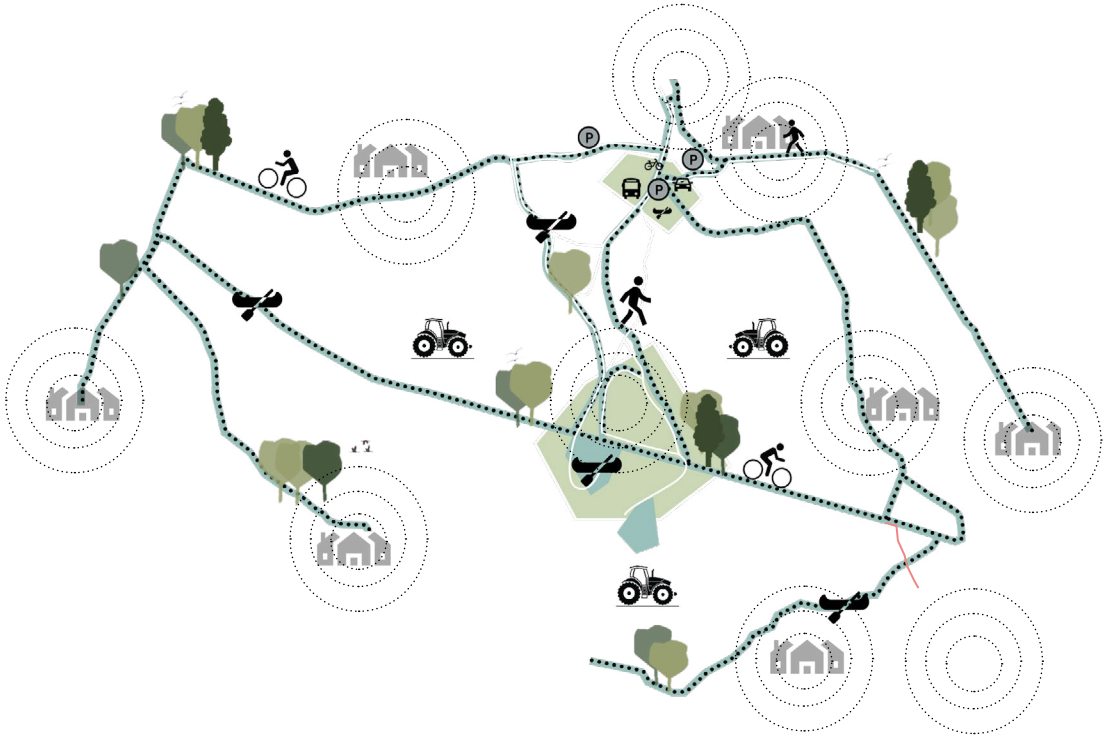
Mapping the transportation system, we observe that the landscape is predominantly surrounded by secondary roads , while the interior of the Philippi peatland area features only rural unpaved roads. This existing infrastructure, although functional to some extent, poses significant challenges and limitations. Our proposal introduces a comprehensive enhancement by implementing a new model of movement that promotes pedestrian pathways, cycle paths, and alternative transport methods such as canoes. By focusing on these sustainable and low-impact transportation options, we aim to foster a more eco-friendly environment. Additionally, we plan to significantly reduce heavy vehicle traffic to protect the sensitive organic soils in the area. This reduction is crucial for maintaining the ecological balance and preventing further degradation of the peatland. Our approach not only addresses current transportation inefficiencies but also prioritizes the preservation of natural habitats and encourages a shift towards more sustainable modes of travel.

EXISTING
Road network & villages



NEW BIKE LANE &
WALKING PATH CONNECTING
COMMUNITIES





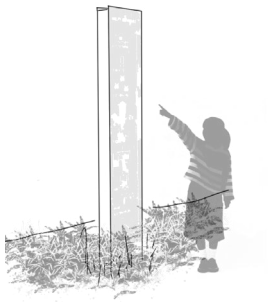
MASTERPLAN LAYERS
Cultural Landscape

The proposed design aims to create a stronger connection between culture and the natural environment, enhancing the landscape for recreation and social life. This initiative focuses on establishing links between surrounding villages and landmarks through various infrastructural enhancements.

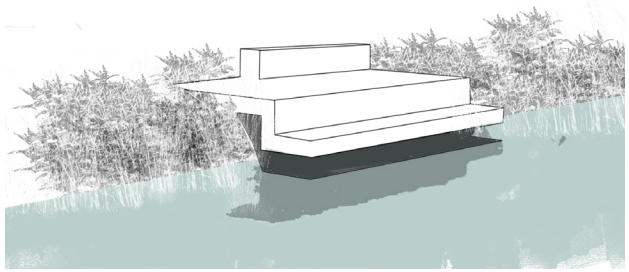
Key elements of the design include:

- Routes: The design introduces a network of interconnected routes encompassing pedestrian paths, bike routes, and canoe routes. These pathways are intended to facilitate easy access and exploration, linking different villages and historical sites. The pedestrian and bike routes will traverse scenic landscapes and cultural landmarks, promoting eco-friendly transportation and encouraging walking and cycling tours. Similarly, designated canoe routes along the canals will provide opportunities for water-based activities, complemented by strategic viewpoints for enjoying picturesque views and engaging with the natural surroundings. This comprehensive network of routes aims to create a seamless and immersive experience for visitors, integrating recreational activities with cultural and natural exploration
- Information Points and Relaxation Stops: To enrich the visitor experience, information points and relaxation stops will be installed next to the canals. These points will provide educational content about the area's history, culture, and natural environment. Additionally, these stops will serve as rest areas, offering a place for visitors to relax and immerse themselves in the serene landscape.

info points



decks



DR AM A

Landscape for recreation & social life
Connection with surrounded villages & archaeological sites, pedestrian paths, Bike routes/ Greenways, view points,

5. Holy Shrine – Baptistery of Saint Lydia of Thyatira

4. Ancient Acropolis of Philippi

2. Archaeological Site of Philippi- UNESCO

6. Battle of Philippi 42 bC

2. Prehistoric settlement of "Dikili Tas"

8. Proposed Museum

1. Research Center

9. Paludiculture fields

10. Lakes

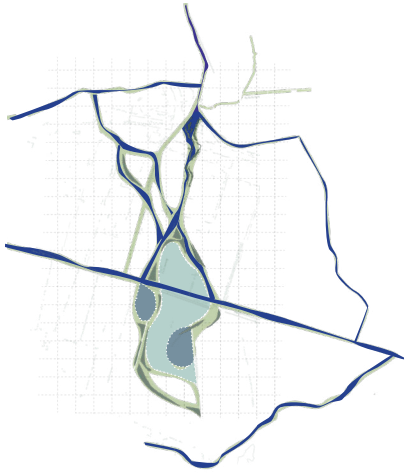
11. Marshland

KAVALA

MASTERPLAN LAYERS
Program & Habitats

PROGRAM

HABITATS



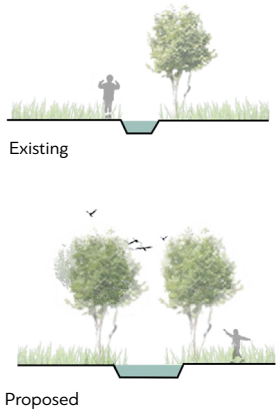
- NATURE
- HERITAGE
- EXPERIMENTAL ARGICULTURE
- RESIDENTIAL

- SREAMS-EXTENDED CANALS
- LAKE - RESERVOIR
- GRASSLAND WITH SCAT-TERED TREES
- FOREST
- MARSHLAND

The design proposal, based on multi-level mapping for a comprehensive understanding of the landscape, its historical and cultural background, and its ecological, economic, and social systems, culminates in a new topography. This new topography integrates new programs that continue the spatial quality and cultural identity of this complex and fascinating environment, promoting a harmonious coexistence between people and nature.

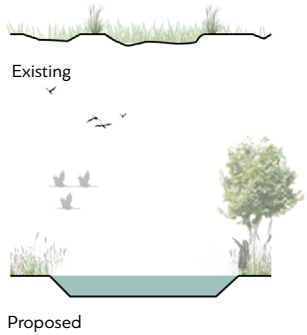
The revised topography enhances the existing system by introducing a variety of environments, including extended streams and canals, a lake-reservoir, grasslands with scattered trees, forest, and marshland. The diverse habitats collectively enhance biodiversity, support ecological balance, and provide essential services like water filtration, carbon storage, and flood control.

SREAMS-EXTENDED CANALS

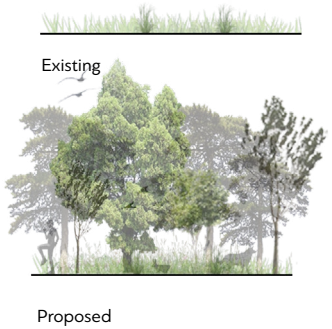


GRASSLAND WITH SCAT-TERED TREES

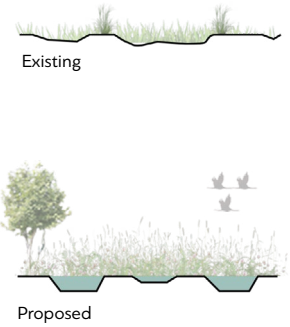
LAKE - RESERVOIR



FOREST



MARSHLAND



MASTERPLAN

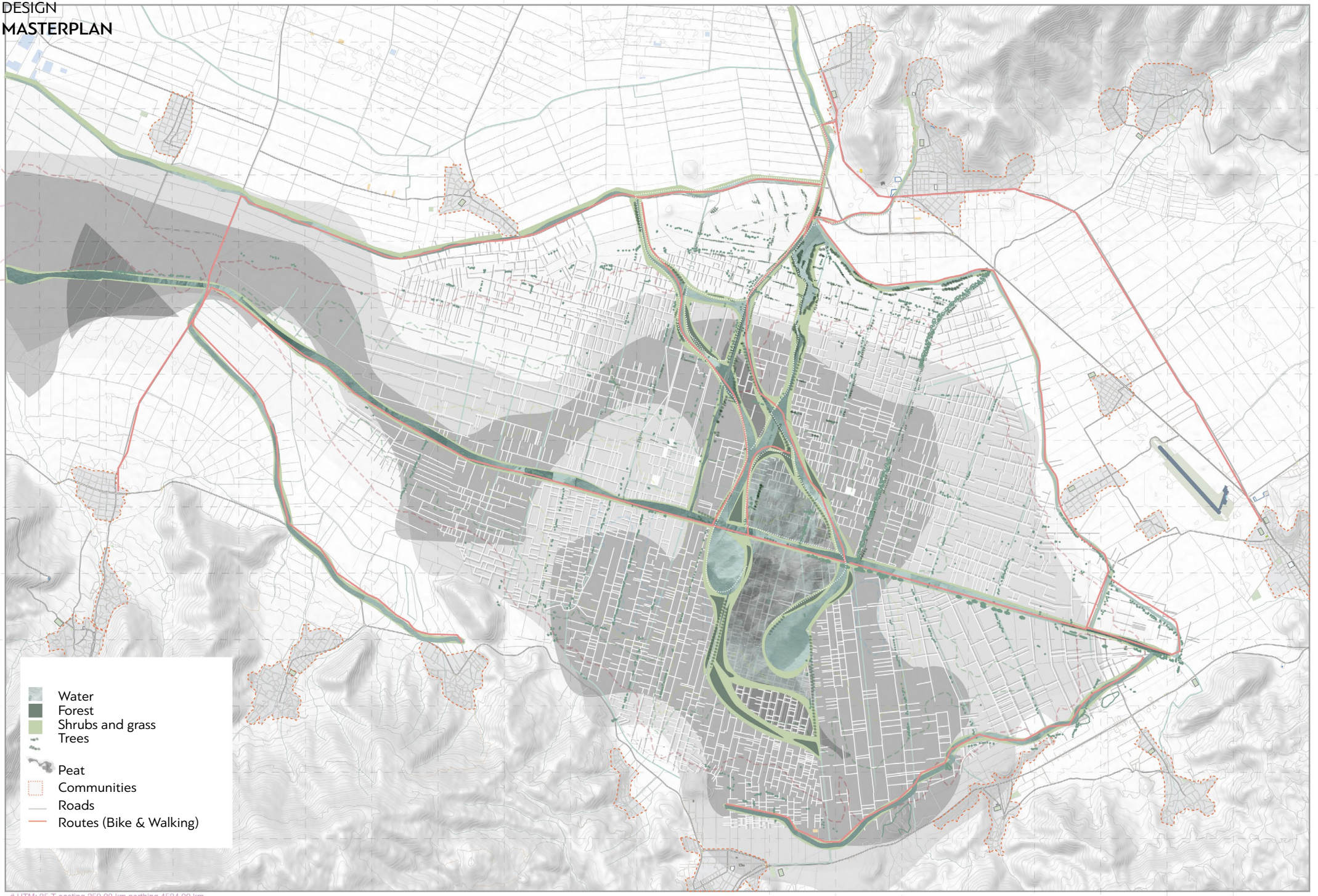
The Philippi peatland, a rural environment, has undergone a transformative masterplan rooted in geomorphological studies, landscape ecology, landscape biography, and environmental philosophy. This transformation has redefined its spatial identity, merging natural and cultural processes to create a cohesive landscape.

The new landscape framework integrates multiple aspects of rural life including nature, recreation, work, food production, water management, and environmental sustainability. It's not merely a physical reconfiguration but a cultural reinvention, incorporating elements that enhance both the ecological and recreational value of the area.

Key components of the redesigned landscape include an increase in planted trees and vegetation along banks, serving dual purposes of ecological balance and recreational enjoyment. The revamped environment contributes significantly to reducing CO2 emissions and the greenhouse effect. It fosters a richer biodiversity which in turn increase the populations of insects and birds.

Additionally, the masterplan emphasizes mitigation of natural risks like floods and droughts, while improving living conditions for various fauna such as insects, soil life, birds, sheep, and fish. Enhancements also include increased public access, promoting a more inclusive and interactive relationship between the community and the landscape. This holistic approach marks a significant step forward in blending environmental stewardship with cultural enrichment, ensuring a sustainable and vibrant future for Philippi Peatland.

DESIGN
MASTERPLAN

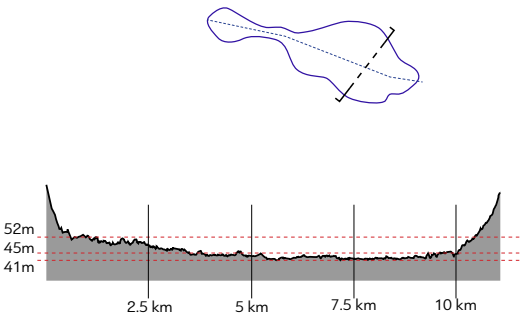


UTM: 35 T easting 259.00 km northing 4534.00 km
UTM-Grid-width = 1000m

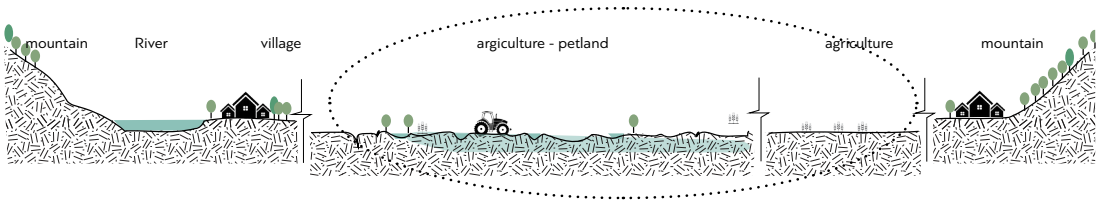
MASTERPLAN
Activities diagram

SECTIONS

In these sections, we can observe a notable 6-meter elevation difference from the edges to the center, creating a distinct curved profile. This gradient in elevation significantly impacts the overall landscape and its functional dynamics.



Existing Landscape:



This section illustrates the current landscape, encompassing a diverse range of geographical features, from the surrounding mountains and flowing rivers to the agricultural peatland situated at the center. This visual representation provides a comprehensive overview of the terrain's natural and man-made elements.

Section A-A:

The existing sections detail various components such as agricultural zones, areas affected by subsidence, and the central and ring canals. These elements depict the current state of the landscape, highlighting areas that require attention and improvement.

Proposed Enhancements:

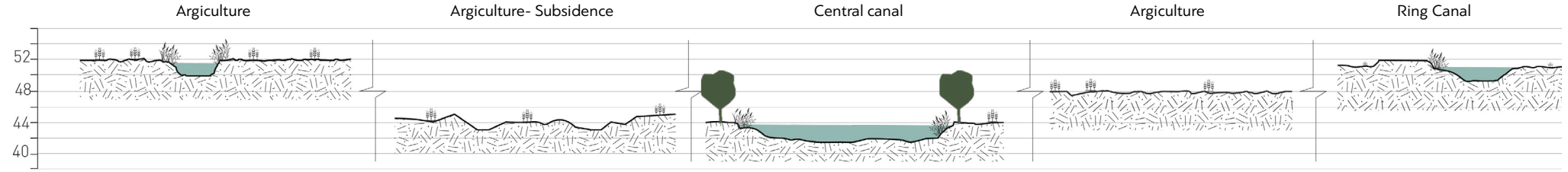
The proposed sections illustrate a transformative approach to the landscape. Key changes include the introduction of new wetlands, which play a crucial role in enhancing biodiversity and ecological balance. Additionally, the central canal is expanded to improve water management and connectivity. The agricultural areas are also improved to increase productivity and sustainability.

These modifications aim to address the subsidence issues effectively while simultaneously enhancing the landscape's ecological and agricultural functions. By implementing these changes, we aim to create a more resilient and sustainable environment that supports both natural ecosystems and agricultural activities.

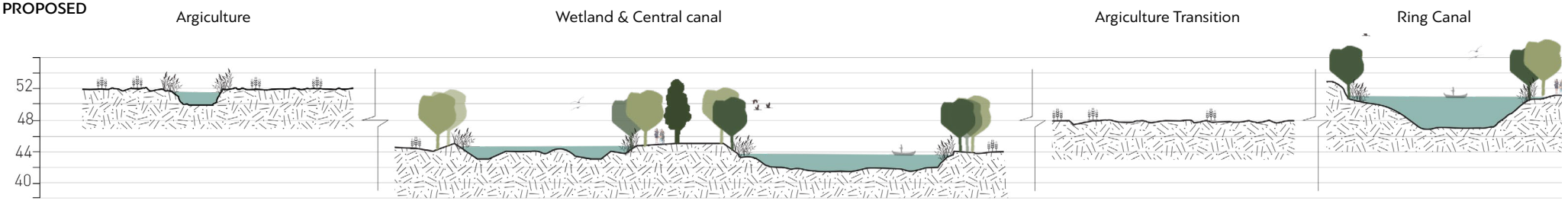
SECTION A-A

EXISTING

Scale 1:500



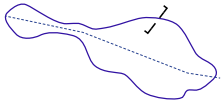
PROPOSED



RING CANAL
Recreation-Ecology

This section highlights the transformation of the peripheral canal system, demonstrating significant improvements from the existing setup to the proposed design.

EXISTING



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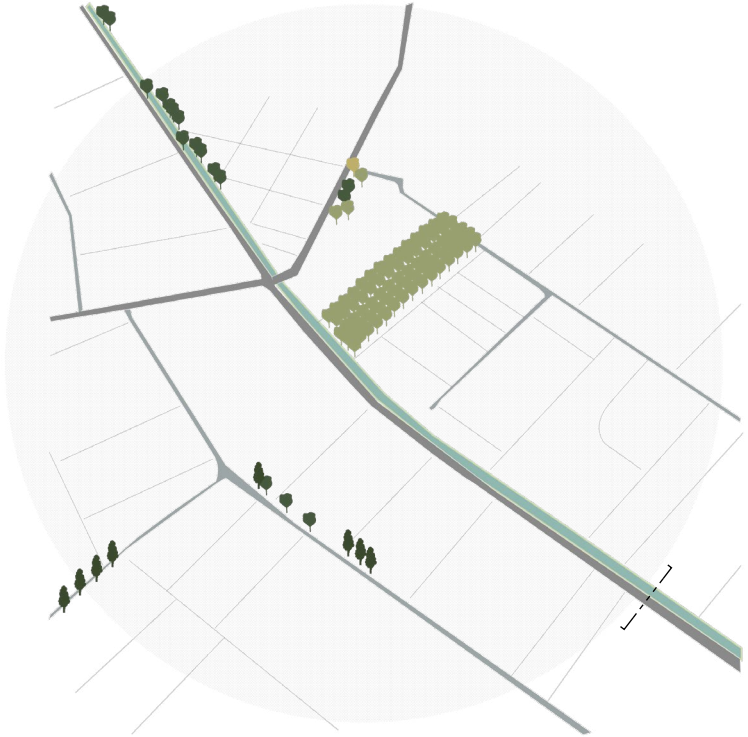
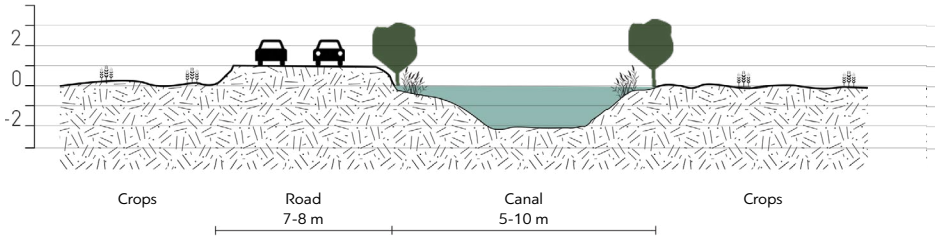
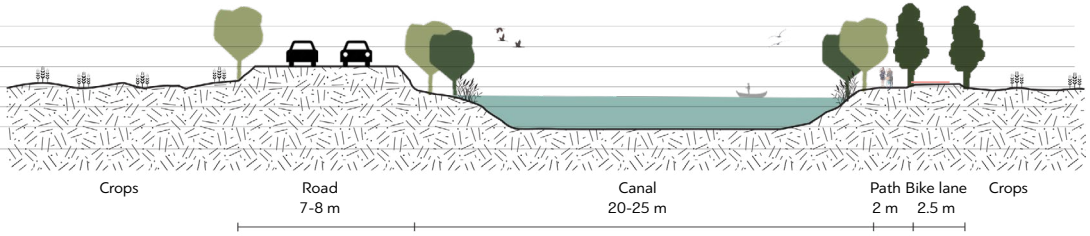


SECTIONS
Scale 1:250





CANALS

RING CANAL

Impact of the Transformation:

The proposed changes are designed to address current limitations while significantly enhancing the recreational and ecological value of the area. By expanding the canals and incorporating pathways for cyclists and pedestrians, the redesign promotes a more sustainable and enjoyable environment for the community. Furthermore, the inclusion of canoeing areas introduces a new recreational activity that aligns with the region's natural landscape, fostering a deeper connection between the residents and their environment.

Overall, this transformation not only improves water management efficiency but also enriches the area's ecological diversity and recreational opportunities, contributing to a more vibrant and resilient landscape.

CENTRAL CANAL

Issues and Proposed Improvements for the Central Canal

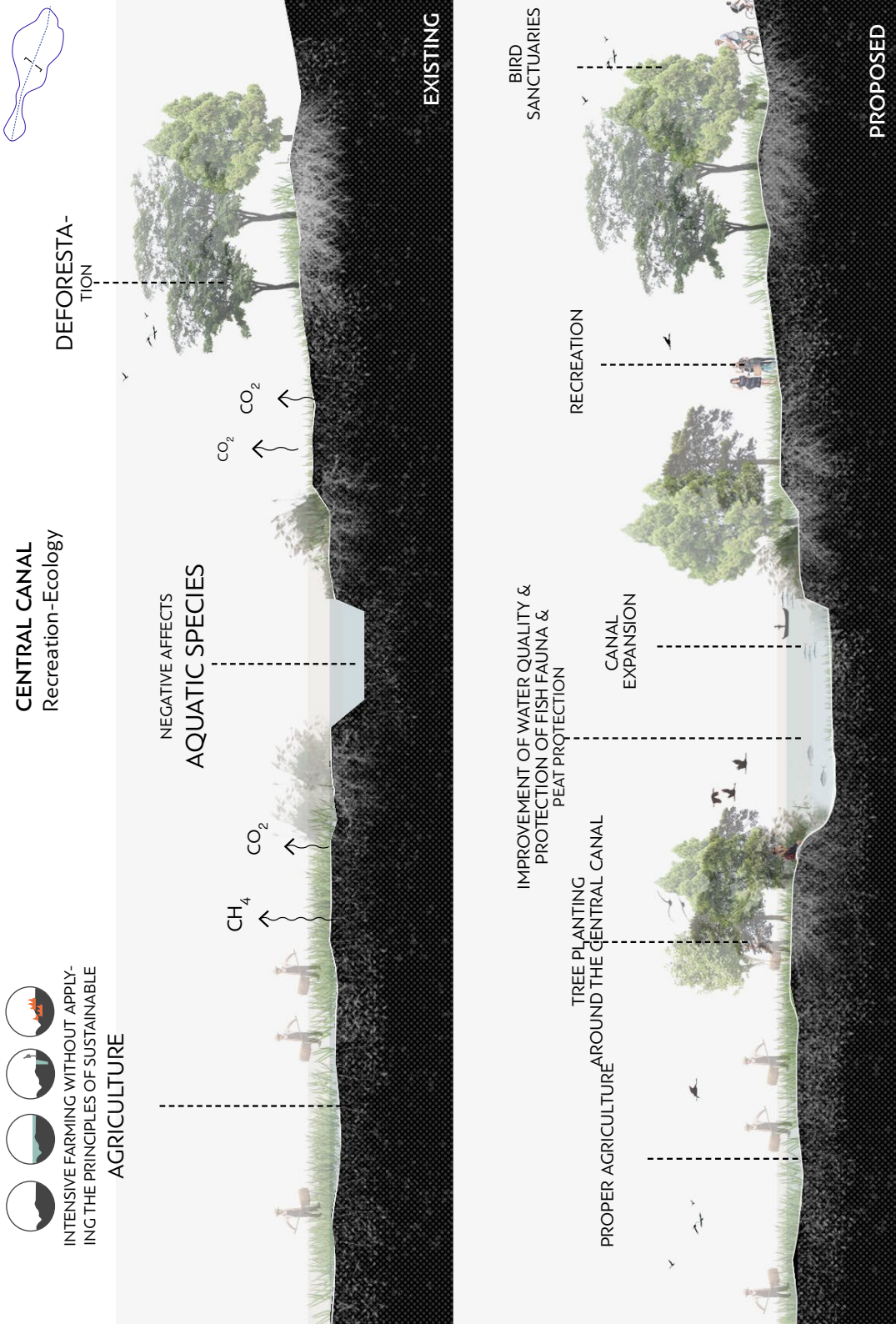
This section highlights the current issues associated with the central canal, focusing on the detrimental effects of intensive, unsustainable farming practices, deforestation, and their negative impact on aquatic species. These activities contribute to the release of harmful greenhouse gases, including methane and carbon dioxide, exacerbating environmental degradation.

Current Issues:

The central canal is currently burdened by intensive farming practices that are not sustainable in the long term. This unsustainable agriculture leads to soil depletion and the contamination of water sources, adversely affecting the surrounding ecosystem. Additionally, deforestation in the area further exacerbates these problems by reducing habitat availability and contributing to erosion. The combined effect of these practices severely impacts aquatic species, disrupting their habitats and reducing biodiversity.

Proposed Improvements:

The proposed design addresses these issues through several key improvements:



1. Expansion of the Central Canal:
Expanding the canal will enhance its capacity to manage water more effectively, reducing the risk of flooding and improving water quality.

2. Creation of Recreational Areas:
Introducing recreational areas along the canal will provide spaces for community activities such as walking, cycling, and canoeing. These areas will foster a greater connection between residents and their environment, promoting outdoor activity and well-being.

3. Promotion of Sustainable Agriculture:
Implementing sustainable agricultural practices will help mitigate the negative impacts of current farming methods. Proper agriculture techniques will reduce soil erosion, enhance soil fertility, and minimize chemical runoff into the canal, protecting water quality and aquatic life.

4. Enhancement of Biodiversity:
By promoting reforestation and creating new habitats, the proposed design aims to restore and enhance biodiversity in the area. This includes planting native vegetation and creating buffer zones to protect the canal from pollutants.

Overall, these proposed improvements will transform the central canal into a more sustainable, biodiverse, and recreationally valuable area. This holistic approach not only addresses the environmental challenges but also enhances the quality of life for the community, creating a resilient and vibrant ecosystem.

ROUTES

In the proposed design, locals and visitors can choose from different routes to explore. I have outlined two models for the design experience.

First Route: Historical Journey

The first route focuses on the northwestern main part of the Philippon Peatland and offers a journey through the history of civilization. Visitors will experience a narrative starting from the prehistoric era and culminating at the proposed museum, strategically located at the site of the famous Battle of Philippi. Here, they can learn about the 8,000-year history of civilization within Philip's Park. This route provides an immersive historical experience, linking significant historical events and milestones with the physical landscape.

Second Route: Ecological Exploration

The second route emphasizes the various ecosystems integrated into the rural environment through thoughtful planning. Visitors will walk past fields, explore new crops, and observe the lake, trees, plants, and animals, immersing themselves in the natural surroundings. This route showcases the rich biodiversity of the area, highlighting sustainable agricultural practices and the harmonious coexistence of human activity and natural habitats.

Route Features

Both routes are marked with small signs that explain the environmental context and provide information about various plants, trees, and birds. These educational markers enhance the visitor experience by offering insights into the local ecology and history. The paths run mainly parallel to the canals and include resting spots, such as decks shaded by the proposed trees, offering visitors a comfortable place to pause and enjoy the scenery.

Depending on their preferences, visitors can traverse these routes on foot, by bicycle, or by canoe, allowing for a flexible and personalized exploration of Philippon Peatland.

CULTURAL ROUTE EXAMPLE

For example, visitors can follow a path based on the ancient Egnatia road that highlights key cultural landmarks, improved with upgraded pedestrian walkways and bike paths.

Key Stops:

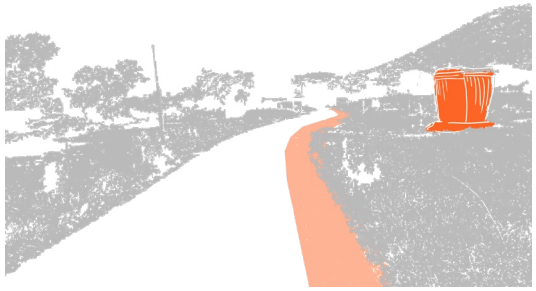
Dikili Tas Prehistoric Settlement:
Linked by a bike lane to the Philippi UNESCO site, this path passes through the village where new tree plantings serve as reference points, providing shade and enhancing the aesthetic value of the area.

CULTURAL ROUTE

Holy Baptistery of Saint Lydia of Philippi:
This significant historical site is accessible along the route, offering visitors a glimpse into the area's rich religious history.

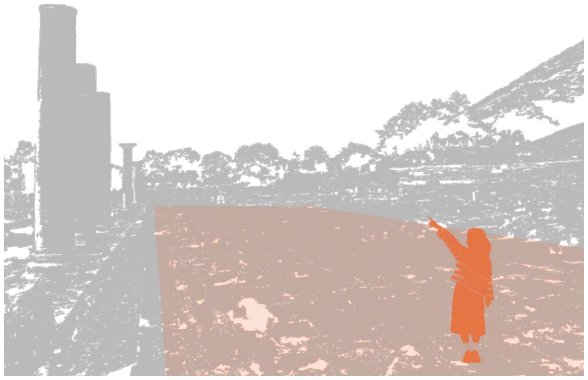
New Museum:
The museum is easily reached via connected bike paths, making it a convenient stop for visitors interested in the cultural and historical artifacts of the region.

This route enhances accessibility and the overall visitor experience by seamlessly integrating cultural and natural elements. Upgraded walkways and bike paths not only improve the ease of movement but also enrich the journey with scenic and educational stops, fostering a deeper appreciation of the area's heritage.



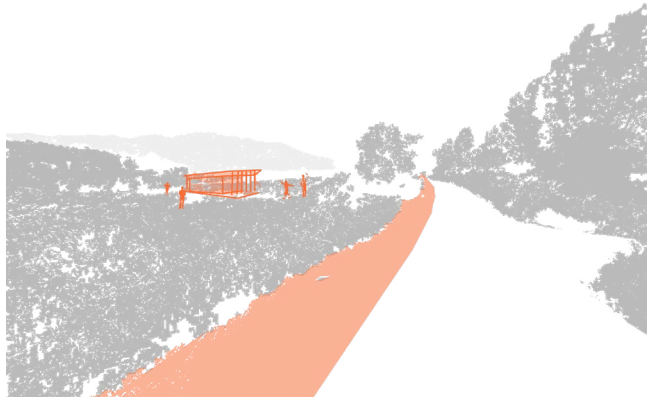
1. Dikili tas-Prehistoric settlement linked by bike lane to Philippi UNESCO site.

2. Tree planting on road leading to UNESCO site, converting to pedestrian/bike path.



3. Archeological Site of Philippi (UNESCO)

4. Zigaktis stream at the Holy Baptistery of Saint Lydia of Philippi



5. New museum & bike path

ECOLOGICAL EXPLORATION ROUTE

Key Features:

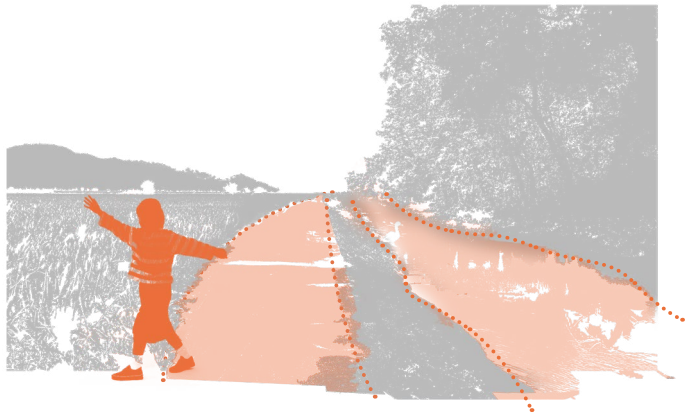
New Walking Paths:
We have introduced new walking paths along the waterways, enhancing accessibility and enabling closer interaction with nature. These paths provide visitors with an immersive experience of the landscape's natural beauty.

Paludiculture Fields:
The views of the paludiculture fields showcase sustainable wetland agriculture, maintaining ecological balance. This integration highlights the coexistence of productive land use with environmental conservation.

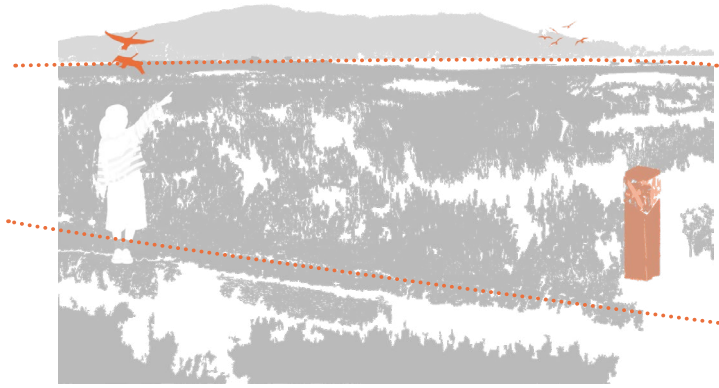
Recreational Lake and Decks:
Continuing along the route, visitors will reach a lake with recreational decks, adding multifunctionality and enjoyment to the landscape. These decks provide spots for relaxation and recreational activities, enhancing the overall visitor experience.

Scenic Tree-Lined Pathways:
The pathways surrounded by trees create scenic routes, enhancing natural beauty and providing shade. These tree-lined paths offer a comfortable and aesthetically pleasing environment for walking.

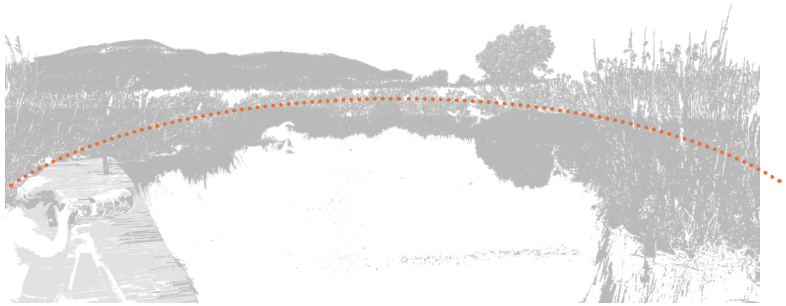
This route demonstrates our integration of agricultural and ecological features, promoting environmental sustainability and enhancing the visitor experience. By blending these elements, we create a harmonious landscape that supports both human activity and natural ecosystems, fostering a deeper appreciation and connection to the environment.



6. New walking path and waterway



7. paludiculture fields



8. lake- reservoir & decks

9. tree lines

ROUTES
Visualitaztion

CENTRAL CANAL
Visualitaztion

AGRICULTURE IN PHILIPPI PEATLAND

In the Philippi peatland, it is crucial to transition from conventional agriculture, such as maize cultivation, to crops better suited for peatland conditions, like those used in paludiculture. This shift is essential to preserve the unique peat landscape, which forms at a rate of 6.5-10 cm per century, and to address issues stemming from inadequate agricultural practices previously employed in these lands.

Carbon Storage and Emissions Reduction: The peat ecosystem in Philippi stores large amounts of carbon. Traditional drainage for agriculture, particularly corn farming, exposes peat to air, leading to oxidation and the release of significant amounts of carbon dioxide and other greenhouse gases. By introducing crops compatible with wet or flooded conditions, the peat remains moist, reducing these emissions.

Soil Integrity and Sustainability: Conventional farming in the area has led to soil degradation, including subsidence and loss of soil organic matter. This degradation threatens the long-term viability of the land for agricultural purposes. Cultivating crops that help maintain the structural integrity of peat by keeping it saturated is crucial for sustaining these soils.

Economic and Environmental Benefits: Adopting crops suitable for peatlands can foster more sustainable agricultural practices. This transition not only has the potential to lower maintenance costs and reduce environmental impact but also offers long-term economic advantages, including stable crop production and access to new markets for bioenergy crops and other specialized products.

Climate Change Adaptation: With the intensifying effects of climate change, managing water levels in agricultural peatlands is becoming increasingly challenging. Paludiculture, an agricultural approach that adapts to increased rainfall and flooding, provides a resilient solution to these challenges, which are expected to worsen under future climate scenarios.

The ultimate objective is to implement these sustainable practices throughout Philippi Peatland. By fully adopting paludiculture and other suitable crops across the area, the region can become a model of ecological and agricultural harmony. This extensive strategy aims not only to rectify past damages but also to enhance the ecosystem's resilience.

Successfully achieving these goals in Philippi Peatland could serve as a template for converting traditional agricultural lands into sustainable systems worldwide. This would demonstrate the substantial benefits of such transformations in preserving biodiversity, peatlands, supporting sustainable agriculture, and mitigating climate change through significant reductions in greenhouse gas emissions.

EXISTING

PEAT FORMATION RATE

6.5-10cm / century

HOLDS WATER 8 TO 9 TIMES ITS WEIGHT

ALKALINE PEAT-
BENEFICIAL FOR PLANTS

SUBSIDENCE

CROPS

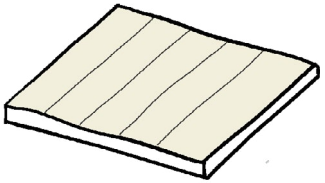
65% maze

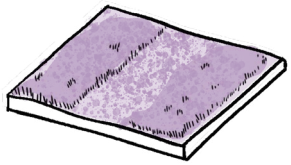
25% sugar beet

10% crops like industrial tomato, cotton, sunflowers, tobacco, wheat

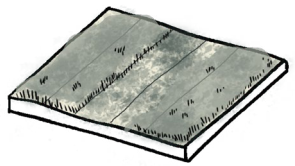
CONVENTIONAL ARGICULTURE **TRANSFORMED TO:**

Conventional Argiculture
92.000 Acres

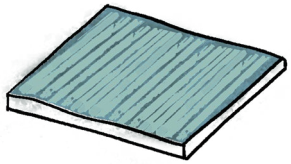




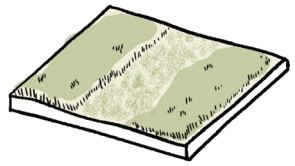
new crops - transition argiculture



new crops - transition argiculture



new crops - paludiculture



new crops - transition argiculture

CROP INNOVATION TIMELINE: FROM RESEARCH TO FIELD ADOPTION

The development of new crop varieties encompasses a series of meticulously planned stages, extending over a considerable timeframe before reaching farmers' fields. The entire process ensures that the resulting crops possess the desired traits while being safe and effective for agricultural use.

Research and Development (3-10 years):
This initial phase is dedicated to the creation of new crop varieties that exhibit specific beneficial traits. It can take anywhere from three to ten years, during which scientists focus on genetic selection, breeding, and initial testing to develop these varieties.

Testing (2-5 years):
Following research and development, the new crop varieties undergo extensive testing, which lasts between two to five years. This critical stage evaluates the crops' performance in various conditions and ensures their safety and quality for both the environment and consumer use.

Regulatory Approval (2-5 years):
Concurrently with testing, the process of gaining regulatory approval is undertaken. This also spans between two to five years and involves rigorous scrutiny by regulatory agencies to ensure that the new varieties comply with all applicable safety and quality standards.

Scaling Up Production (1-3 years):
Once approved, the focus shifts to scaling up seed production. This stage takes one to three years and is essential for meeting the anticipated market demand, ensuring that adequate quantities of the new seeds are available for distribution.

Adoption in the Fields (2-5 years):
The final phase involves the adoption of the new crop varieties by farmers, which can take another two to five years. During this time, farmers integrate these crops into their existing agricultural practices, adjusting management strategies and techniques as necessary to optimize crop performance and yield.

CROP INNOVATION TIMELINE:

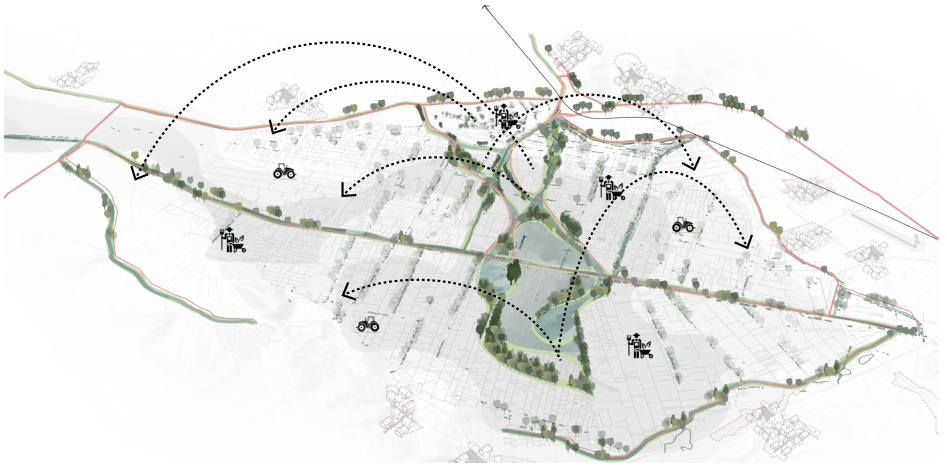
Research & Development:
3-10 years
Develop new crop varieties with desired traits.

Scaling up Production:
1-3 years
Increase seed production to meet demand.

Testing:
2-5 years
Evaluate performance and ensure safety and quality.

Adoption in the Fields:
2-5 years
for farmers to adopt and integrate new crops into their practices.

Regulatory Approval:
2-5 years
for regulatory agencies to approve the new varieties.



PROPOSED

CROPS

65% PALUDICULTURE

35% NEW CROPS

TRANSITIONAL AGRICULTURE
Visualitaztion

MARSHLAND

Transforming the cultivated areas within the Philippi peatland into marshlands, specifically targeting regions with the deepest peat deposits, has led to the creation of a specialized habitat aimed at preserving peat. This decision to maintain the area in a continually wet state and ban cultivation is tailored to protect the peat's integrity, crucial for the ecological health of Philippi.

In Philippi Peatland, this transformation bolsters biodiversity by providing a critical habitat for a variety of plant and animal species, some of which are rare and endangered. This not only enhances the local ecological tapestry but also plays a significant role in maintaining ecological balance, vital for the sustainability of local wildlife and plant species.

Moreover, the area now serves as an effective natural flood defense. By absorbing and storing excess water during periods of heavy rainfall or storms, the marshland mitigates the risk of flooding in nearby agricultural plots. This capacity to control floodwaters is particularly valuable in safeguarding the surrounding farmlands, which are vital to the local economy.

The transformation of this area into a marshland also contributes significantly to carbon sequestration, a critical factor in climate change mitigation. The wetlands capture and store large quantities of carbon, thus preventing it from being released into the atmosphere. This function is essential in the broader efforts to combat global warming and maintain climatic balance.

Additionally, the restored area has acquired cultural and educational significance. It is now considered a natural heritage site, offering valuable opportunities for educational initiatives focused on wetland ecosystems, biodiversity conservation, and sustainable land management practices. These educational efforts help to cultivate a deeper understanding and appreciation of wetland environments among community members and visitors.

In conclusion, the restoration of part of the Philippi peatland area as a marshland delivers numerous specific benefits. It not only contributes to the ecological and hydrological stability of the region but also supports sustainable development and biodiversity conservation. This transformation enhances both the environment and the local community, ensuring a robust and resilient ecosystem for future generations in Philippi.

LAKES- RESERVOIR

The establishment of a reservoirs in the areas of the Philippi peatland experiencing significant subsidence will yield numerous benefits for both agricultural practices and the broader environment.

Irrigation Supply: A primary benefit is a consistent water source for irrigation, particularly valuable in arid regions or during drought conditions. The reservoirs will ensure that water is available to sustain crops, potentially leading to increased yields.

Flood Control: The reservoirs can help manage water flow and mitigate the risk of flooding. By regulating water discharge, it protects crops and infrastructure from water damage during periods of heavy rainfall.

Wildlife Habitat: The creation of the lake-reservoirs will foster new habitats for diverse wildlife species, including birds, fish, and other aquatic organisms. This increase in biodiversity will be advantageous for the ecosystem.

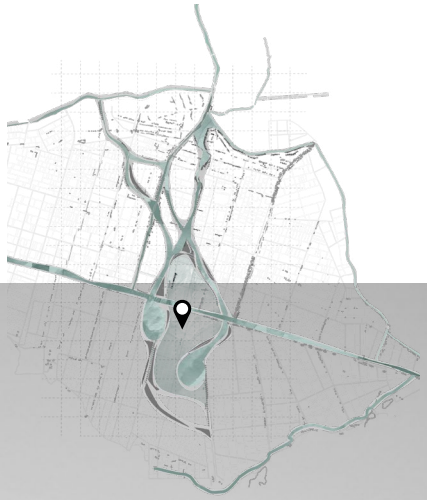
Recreational Opportunities: Beyond agricultural advantages, the lake-reservoirs will provide recreational activities such as fishing, boating, and swimming. These activities can enhance the quality of life for local communities and generate additional revenue through tourism.

Climate Resilience: By storing water, the reservoirs will equip the argicultural land to adapt to climate change impacts, such as unpredictable rainfall and prolonged droughts. This resilience is essential for maintaining consistent crop production as weather patterns shift.

The integration of these reservoirs is poised to support sustainable agriculture, environmental conservation, and community well-being.

HUMAN ⟵ CONFLICT BETWEEN NATURE AND ARGICULTURE ⟶ **NON-HUMAN**

MARSHLAND
Visualitaztion



BENEFITS

BIODIVERSITY CONSERVATION

FLOOD CONTROL

CARBON SEQUESTRATION

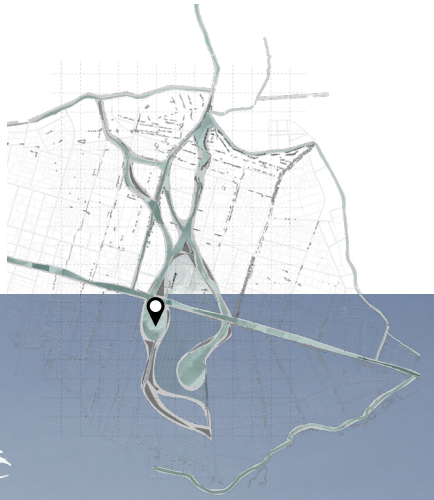
LAKES- RESERVOIR
Visualitaztion

BENEFITS

BIODIVERSITY CONSERVATION

FLOOD CONTROL

RESERVOIR



PHASES OF THE DESIGN PROCESS OVER A 10-YEAR PERIOD

The design process we are detailing unfolds over a decade and involves a series of strategic phases, each critical to the successful completion of the project. This comprehensive timeline ensures thorough planning, execution, and development of the infrastructure and ecological systems involved.

Phase 1: Finalization and Approval
The project kicks off with finalizing detailed drawings in collaboration with experts. This phase also includes securing necessary approvals and funding. The duration of this phase is variable, as it depends on the complexity of the drawings and the speed of the approval processes.

Phases 2-3: Ground Preparation and Initial Planting
These phases involve significant groundwork that sets the foundation for the project's ecological aspects. Initially, we focus on the excavation and expansion of perimetrical canals. Once a new canal is ready, tree planting begins simultaneously, a process estimated to take 1-2 years. Similarly, we dig alternative water routes and create lakes, followed by parallel tree planting, also within a 1-2 year timeframe.

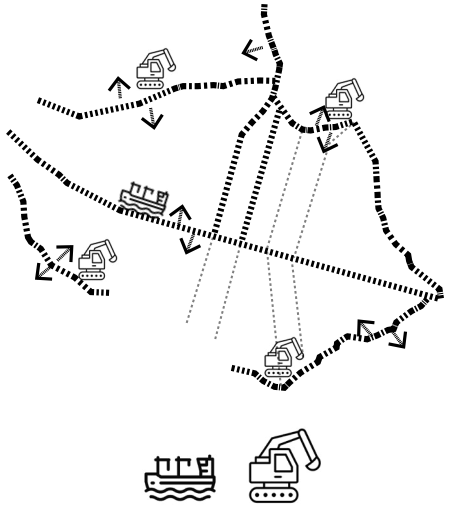
Phase 4: Construction of Wooden Structures
The fourth phase spans 2-3 years and is dedicated to the development of wooden architecture. This phase involves constructing the necessary structures that complement and support the project.

Phase 5: Ecological Maturation
The final phase is the most prolonged, taking anywhere from 2 to 30 years. This period is crucial for the complete growth and flourishing of the flora and fauna within the newly developed ecosystem. It allows for the natural processes to fully integrate and stabilize, culminating in a richly biodiverse environment.

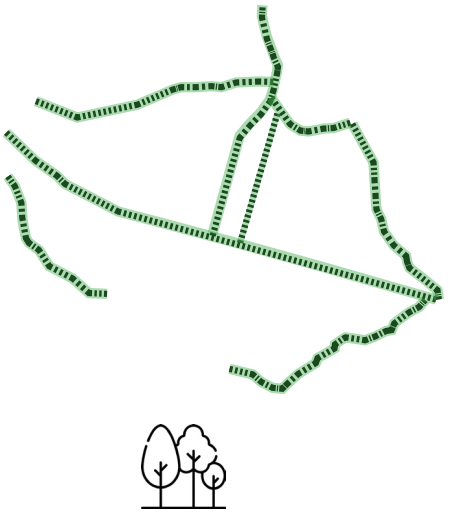
Each of these phases is structured to ensure a methodical approach to ecological and structural development, leading to a sustainable and thriving project.

DIAGRAM PHASE 2-4

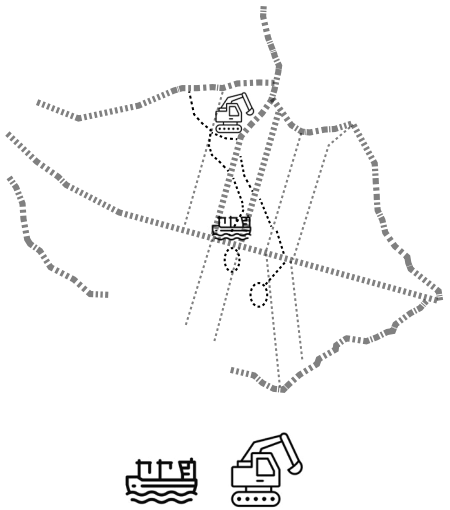
Expanding perimetrical canals
1y



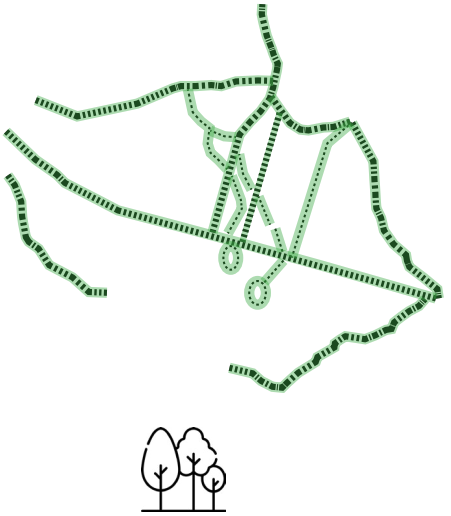
& Tree planting
In parallel



New water ways & Lakes
1 year



Tree planting & forest area
6months



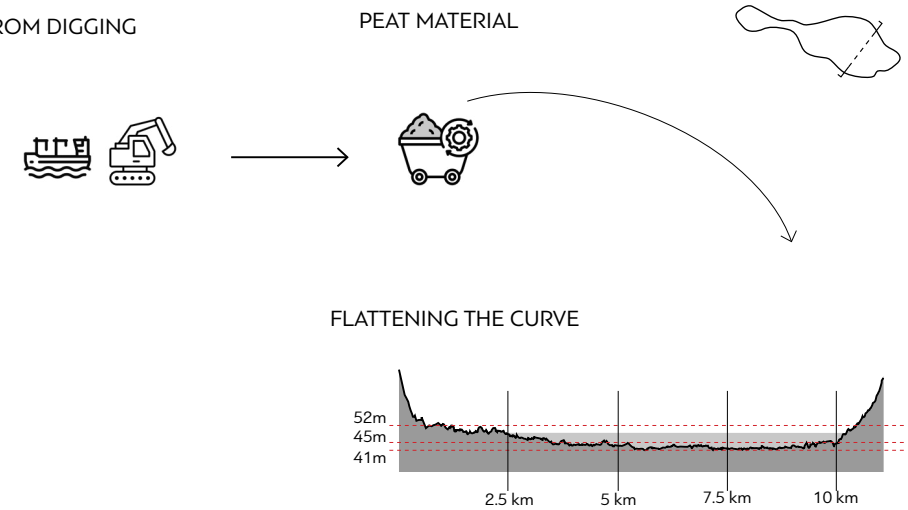
LAND AND WATER MANAGEMENT STRATEGIES

Excess Material:
During the excavation process, we repurpose the excess peat material to level the land. This method enhances water flow and land stability, resulting in a more balanced and sustainable terrain.

Approximately more than 15,800,000 cubic meters of material will be mined.

To consider this strategy for alternative peat management as a soil conditioner on local plots, a research project should be proposed. This project will evaluate the quality of the material and its suitability for this specific application.

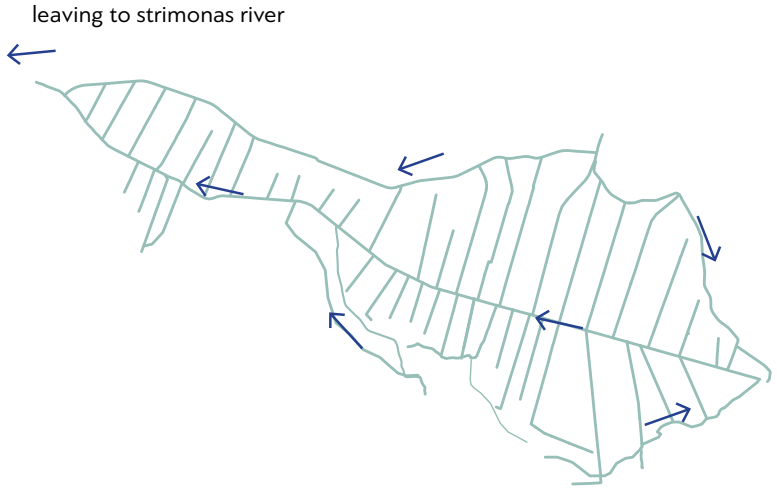
EXCESS MATERIAL



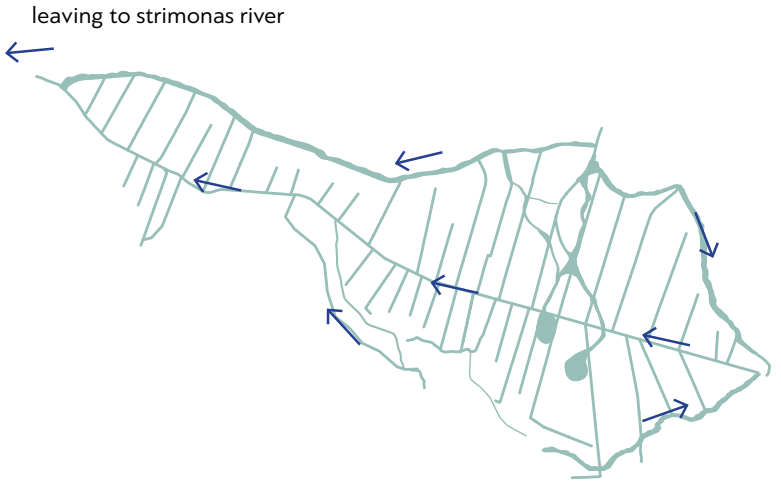
Water Network:
We manage water flow from the ring canals using sluices, which control the amount of water entering the plain. Additionally, sluices installed in the vertical canals help maintain the moisture of the peat, ensuring the system functions effectively by keeping optimal water levels. This careful management of water resources is crucial for preserving the ecological integrity of the peatland and supporting its diverse habitats.

WATER NETWORK

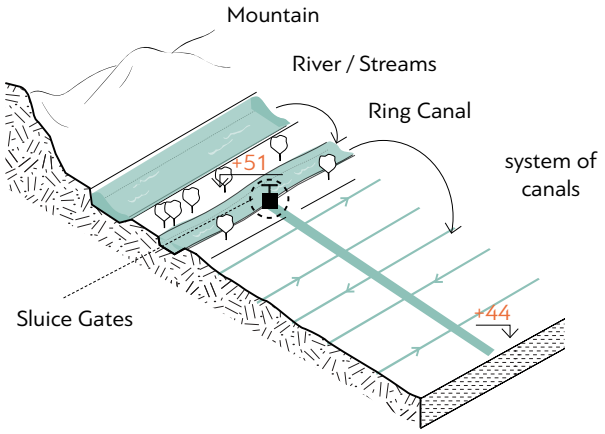
Existing



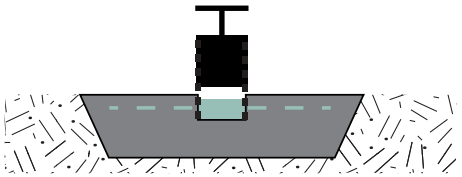
Proposed



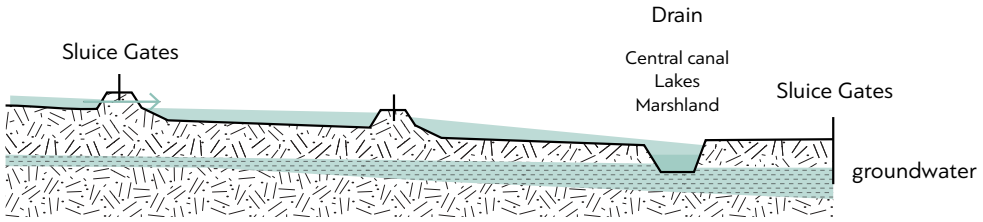
Water Flow & Sluices



Keep the peat wet as much as possiple
Control water with sluices



Sluices in the vertical canals



CHANGE IN TIME
External forces- weather

These plans and corresponding sections demonstrate the influence of time and external factors on the landscape.

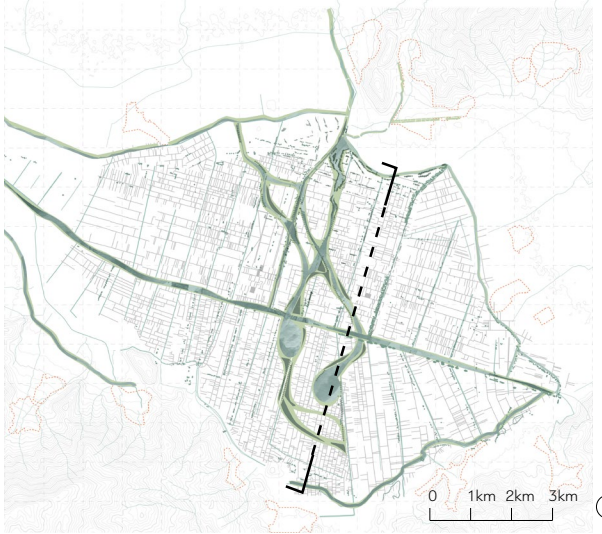
Existing Conditions:
The current state, depicted in the top section, shows a landscape primarily used for agriculture.

10 Years - No Intervention:
If no interventions are made, extensive flooding is predicted based on the research of "Flood Protection of Tenagi Philippon area Kavala-Drama-Serron" and the map of subsidence. The lowest parts of the area, as illustrated in the plans, will be affected. This illustrates the landscape's vulnerability to adverse conditions.

Without intervention, the area will continue facing current problems, potentially worsening over time. Continued soil subsidence and ineffective drainage will lead to more frequent flooding, reducing cultivable land and affecting local agriculture. The null solution is unattractive due to ongoing flooding and loss of agricultural viability. The proposed projects aim to provide flood protection and irrigation support.

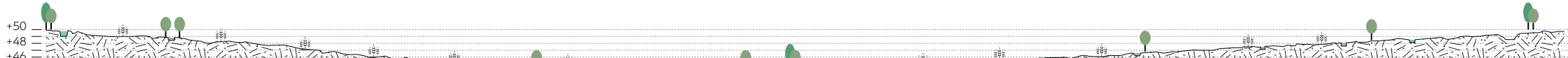
10 Years - With Intervention:
The bottom section presents the landscape with our proposed interventions, including new canals, marshlands, and reservoirs. These changes are designed to manage water flow, prevent flooding, and enhance ecological diversity.

By implementing these landscape architectural designs, we can mitigate the adverse effects of external forces and promote a more resilient environment.



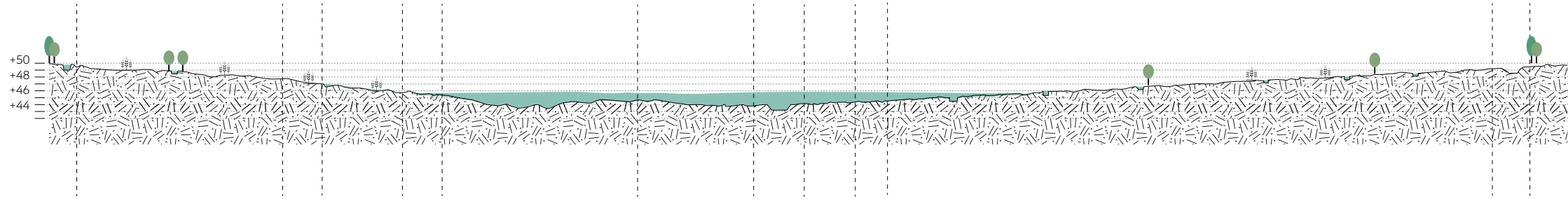
CHANGE IN TIME - sections
External forces- weather

EXISTING

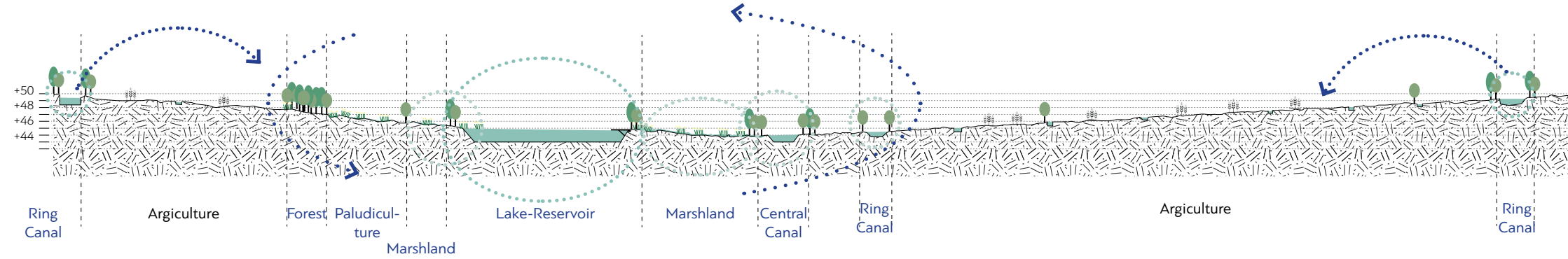


Argiculture

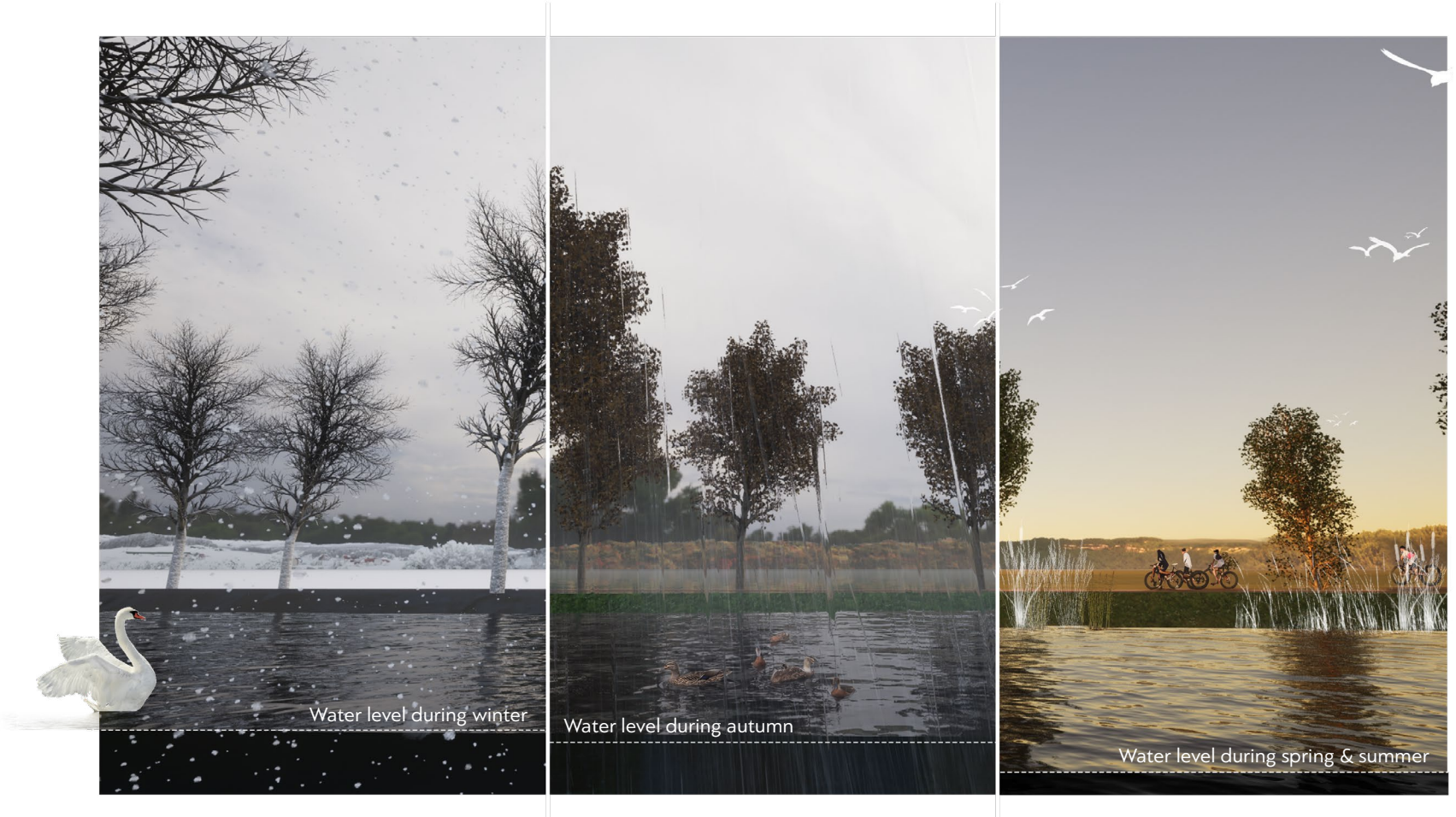
10 YEARS
NO INTERVENTION
Floods



10 YEARS
WITH INTERVENTION
Landscape Architectonic Design



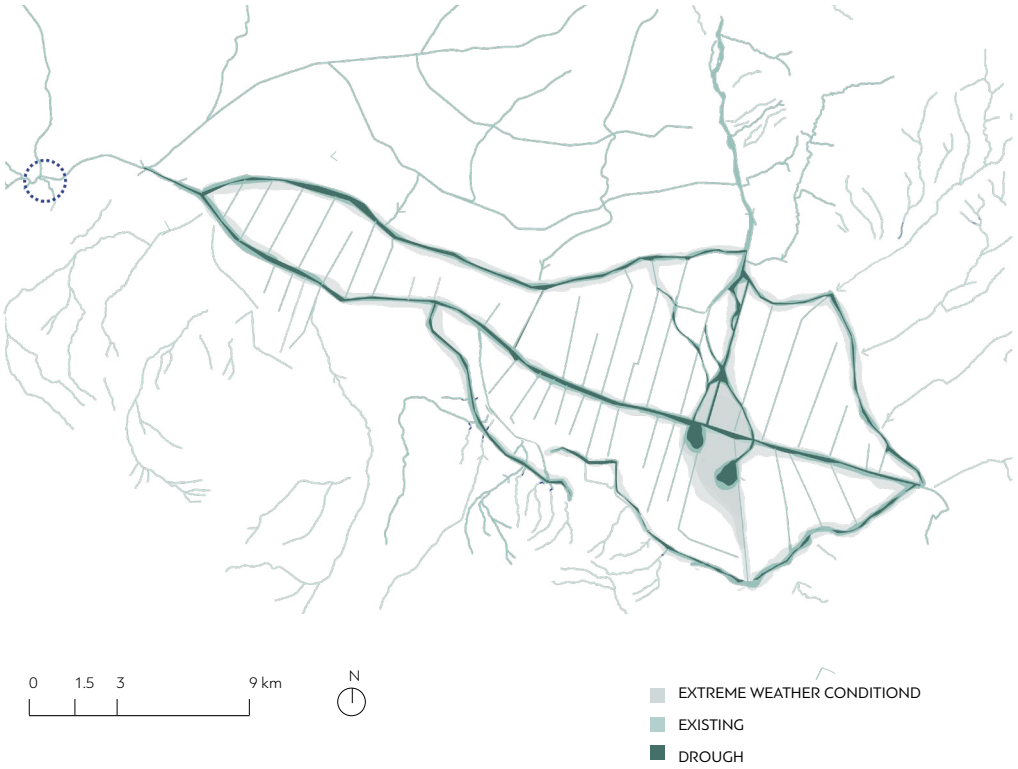
CHANGE IN TIME
SEASONAL VARIATIONS



The seasonal variations significantly influence both the natural environment and visitor activity. During the summer, the canals exhibit reduced water capacity, whereas they experience elevated levels during the rainy seasons.

Additionally, visitor activity intensifies markedly in the spring and summer months.

CHANGE IN TIME
external forces



The implementation of the new intervention creates additional space for water and designates specific areas, such as the extension of perimeter canals and the central canal, as well as lakes and marshlands, to retain and manage water during extreme weather conditions. This approach plays a crucial role in protecting agricultural fields from flooding, thereby preventing crop destruction and ensuring sustained production.

Moreover, this strategy significantly enhances the landscape's resilience and sustainability by incorporating these specific areas into the water management plan. The inclusion of perimeter canals, central canals, lakes, and marshlands contributes to long-term environmental stability and agricultural productivity.

FLORA AND FAUNA
Enhancing Local Flora and Fauna through Landscape Design Intervention

The landscape design intervention significantly enhances the local flora and fauna in the Philippi peatland area. For the flora, the design incorporates a variety of tree species such as Salix Alba (White Willow), Fraxinus angustifolia (Narrow-leafed Ash), Alnus glutinosa (Black Alder), Populus Nigra (Black Poplar), Populus Alba (White Poplar), and Ulmus procera (English Elm). These trees are complemented by mixed-height shrubs and groundcover plants like Phragmites australis (Common Reed), Typha (Cattails), and Watercress. This diverse vegetation supports biodiversity, stabilizes the soil, and improves water retention, creating a healthier and more resilient ecosystem.

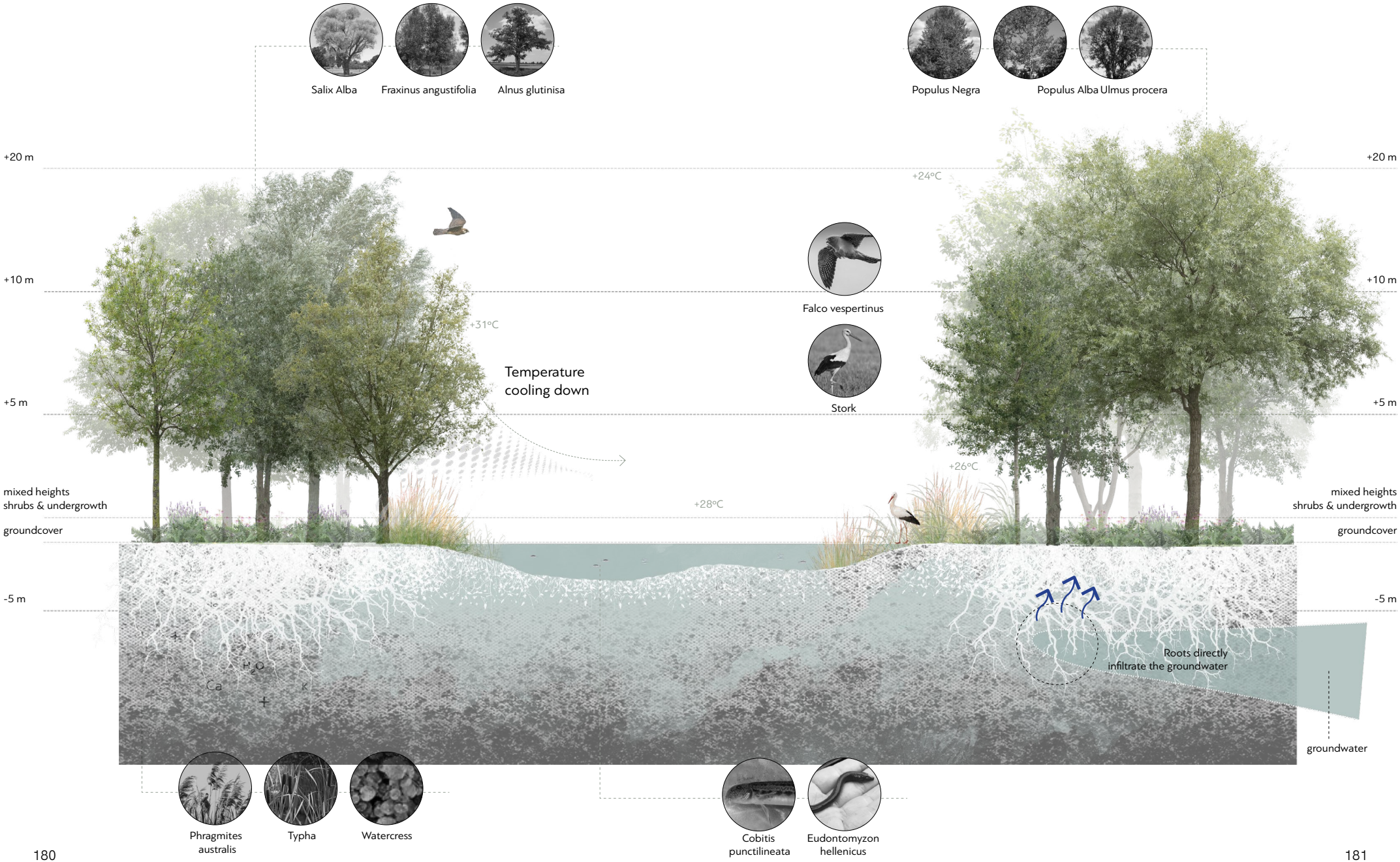
The diagram further illustrates the layered planting strategy, showing different heights and types of vegetation that contribute to temperature regulation and soil stability. The roots of these plants directly infiltrate the groundwater, enhancing water retention and soil health.

For the fauna, the proposal supports various species, including birds like the Falco vespertinus (Red-footed Falcon) and the Stork. By improving habitats and food sources, the design fosters a conducive environment for these birds, encouraging their presence and aiding in their conservation. The illustration shows how the new vegetation structure provides suitable nesting and feeding environments for these bird species, contributing to a more balanced ecosystem.

Additionally, the intervention benefits endemic fish species by creating a stable aquatic environment. The design ensures adequate water levels and quality, which are essential for the health and sustainability of fish populations. The proposed wetland habitats, as depicted in the diagram, support increased fish and amphibian populations by offering ample breeding and feeding grounds.

Overall, the landscape design not only enhances the aesthetic and ecological value of the area but also promotes a balanced and thriving ecosystem. This holistic approach addresses both plant and animal needs, fostering a sustainable coexistence between human activities and natural processes. The detailed illustration effectively communicates the various elements and benefits of the proposed design, emphasizing the integration of flora and fauna to achieve ecological harmony.

FLORA & FAUNA
Diagram



ECOLOGICAL SUCCESSION

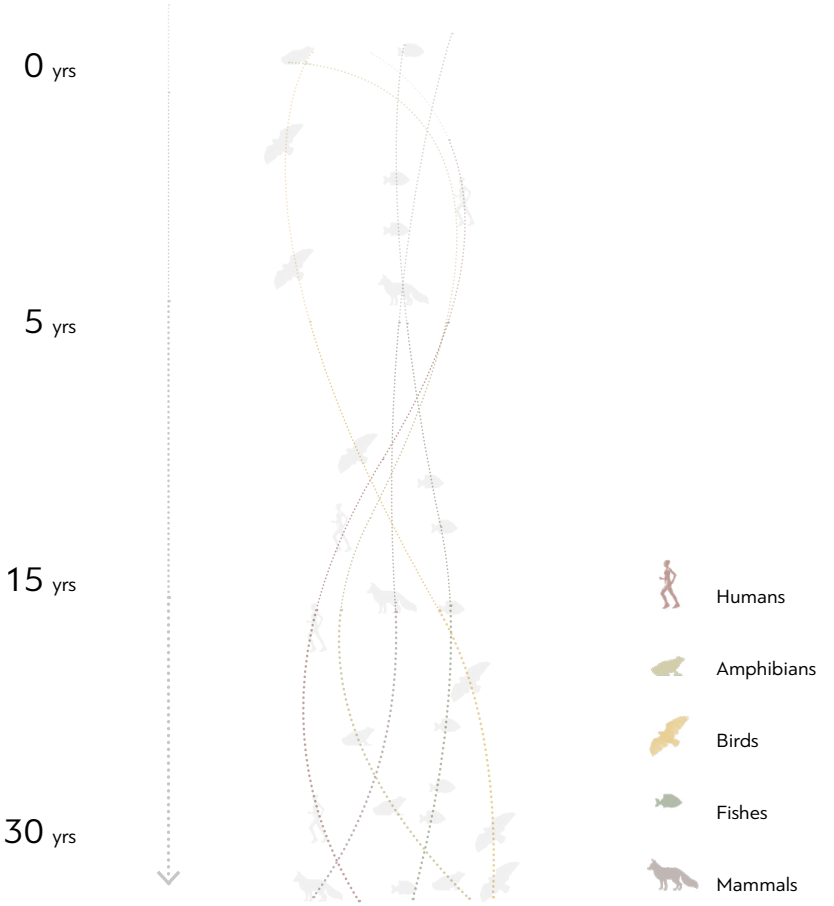
Ecological succession refers to the process by which natural ecosystems change and evolve over time towards a steady state. These changes result in shifts in plant and animal distributions. The co-evolution of different species leads to the formation of ecosystems through the gradual maturation of bio-communities, influenced by water, air, and temperature fluctuations.

Initially, micro-organisms and plants become established, which contributes to soil formation. Subsequently, new plant species (herbaceous vegetation followed by shrubs) invade the area.

Their roots and interactions with the soil create more stable ground. Finally, rich plant life, such as forests, is established, attracting herbivores and then carnivores, until a complete ecosystem is formed.

This process involves continuous changes in both the plant and animal communities. These changes occur rapidly at first but slow down over time, until the biocommunity (plants and animals) reaches a stable state in terms of composition and productivity, known as climax.

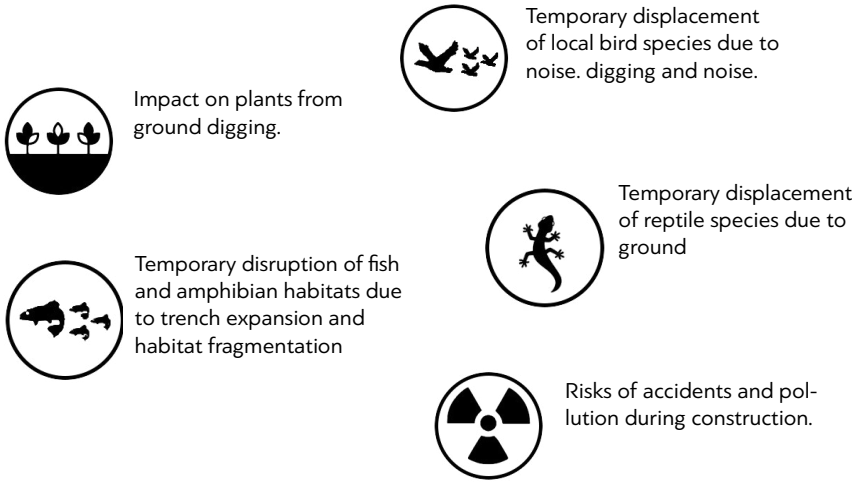
ATTRACTIVENESS TO SPECIES



PHASES OF THE DESIGN

Effects on the ecosystem

NEGATIVE EFFECTS



- **Impact on Plants from Ground Digging:** The initial phase of the project involves extensive ground digging to reconstruct and expand the canal network. This activity can significantly disturb the existing plant life, especially those with shallow root systems. The removal of soil and alteration of land contours may lead to the destruction of native plants and disruption of the local flora.
- **Temporary Displacement of Local Bird Species Due to Noise:** The construction activities, particularly the noise generated from machinery and human presence, can temporarily displace local bird species. Birds that rely on quiet environments for nesting and feeding may abandon their habitats due to the increased noise levels.
- **Temporary Disruption of Fish and Amphibian Habitats:** Expanding trenches and canals will temporarily disrupt the existing habitats of fish and amphibians. These species are highly sensitive to changes in water quality and habitat structure, and construction activities can lead to habitat fragmentation, altering their living conditions and breeding grounds.
- **Temporary Displacement of Reptile Species Due to Ground Disturbance:** Reptiles, which often rely on specific ground conditions for basking and nesting, may be displaced due to the digging and alteration of their habitats. This disturbance can lead to a temporary decline in their population as they relocate to less optimal areas.

- Risks of Accidents and Pollution During Construction**: The construction phase poses risks of accidental spills and pollution, which can adversely affect the local ecosystem. Contaminants from machinery, construction materials, and accidental fuel spills can degrade soil and water quality, impacting various species and their habitats.

POSITIVE EFFECTS

More than doubling of wetland habitat area leading to increased fish and amphibian populations.

Maintaining adequate water levels to support fish and amphibian species conservation.

- **Doubling of Wetland Habitat Area:** The project will more than double the area of wetland habitats, which is expected to significantly benefit the local ecosystem. Wetlands serve as crucial breeding and feeding grounds for many species, and their expansion will lead to increased populations of fish and amphibians. This enhancement of habitat availability and quality supports greater biodiversity and ecological resilience.
- **Maintaining Adequate Water Levels:** One of the key objectives of the project is to ensure adequate water levels in the canals and surrounding areas. This is essential for the conservation of fish and amphibian species that depend on stable and suitable aquatic environments. By carefully regulating water flow and levels, the project will create a sustainable habitat that supports these species throughout their life cycles.

In conclusion, while the construction phase of the design will inevitably cause temporary disturbances and negative effects on the local ecosystem, the long-term benefits significantly outweigh these impacts. The careful planning and implementation of the project aim to enhance and expand critical habitats, ensuring the conservation and growth of local biodiversity. By maintaining water levels and creating new wetland areas, the design fosters a more resilient and sustainable environment for various species.

ZOOM-INS

locus amoenus (literally "delightful place"): a glittering field of flowers, surrounded by trees and graced with a limpid stream

- Virgil, Eclogues (42-37 BC)

ENTRY PAVILION

Conceptual Design

Overview:

The Entry Pavilion serves as a gateway to the Philippi Park research center and visitor's starting point. Strategically located near the highway, this landmark provides a seamless transition from the main driving axis into the park. Visitors can easily reach the site within two minutes of exiting the highway and find ample parking spaces for their cars. From the parking lot, they have the option to take a bicycle and begin their journey into Philippi Park or proceed to the research center for their visit.

Architectural and Functional Features:

Information Center:

- Location and Accessibility: The first building visitors encounter in the research center is the information center. Positioned for easy access, it provides all necessary information about the park.
- Design and Structur: Elevated on piles due to the soft peat soil, the building features wooden decks that connect to other structures, offering an immersive experience through the riparian vegetation.

Research Facilities:

- Facilities and Resources: The other buildings within the research center serve as a base for ongoing studies and projects. These structures are equipped with state-of-the-art facilities and resources to support research activities.
- Design Continuity: Like the information center, these buildings are also elevated on piles and connected by wooden decks, maintaining a cohesive architectural style that respects the unique peatland environment.

Building G - Canoe Journey:

- Unique Experience: Building G offers visitors a unique opportunity to start a canoe journey through the canals of Philippi Peatland. This feature allows visitors to explore the area's natural beauty and biodiversity firsthand.
- Proximity to Waterway: Some decks extend closer to the waterway in front of Building G, enhancing the connection with the natural surroundings and providing an ideal launch point for canoe trips.

Environmental Integration:

- Elevation and Soil Consideration: All buildings are slightly elevated on piles to address the challenges posed by the soft peat soil, ensuring stability and minimal environmental impact.
- Wooden Decks and Riparian Vegetation: The use of wooden decks not only provides easy access through the vegetation but also integrates the built environment seamlessly with the natural landscape.

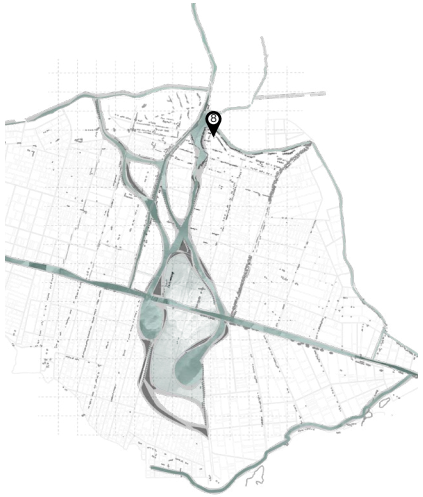
Accessibility and Visitor Experience:

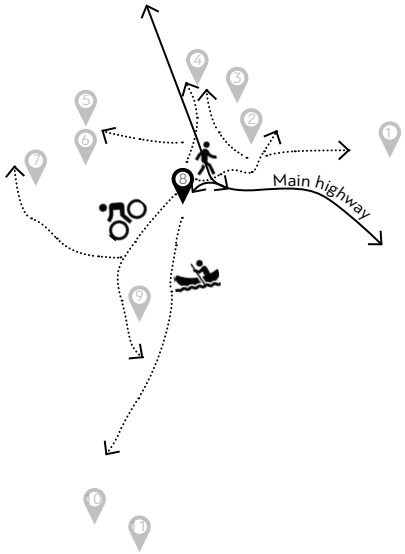
- Bicycle Pathways: From the parking lot, visitors can choose to take a bicycle, promoting eco-friendly transportation within the park.
- Enhanced Connectivity: The wooden decks and strategically positioned buildings enhance the connection between the research center, the waterways, and the surrounding natural environment.

Conclusion:

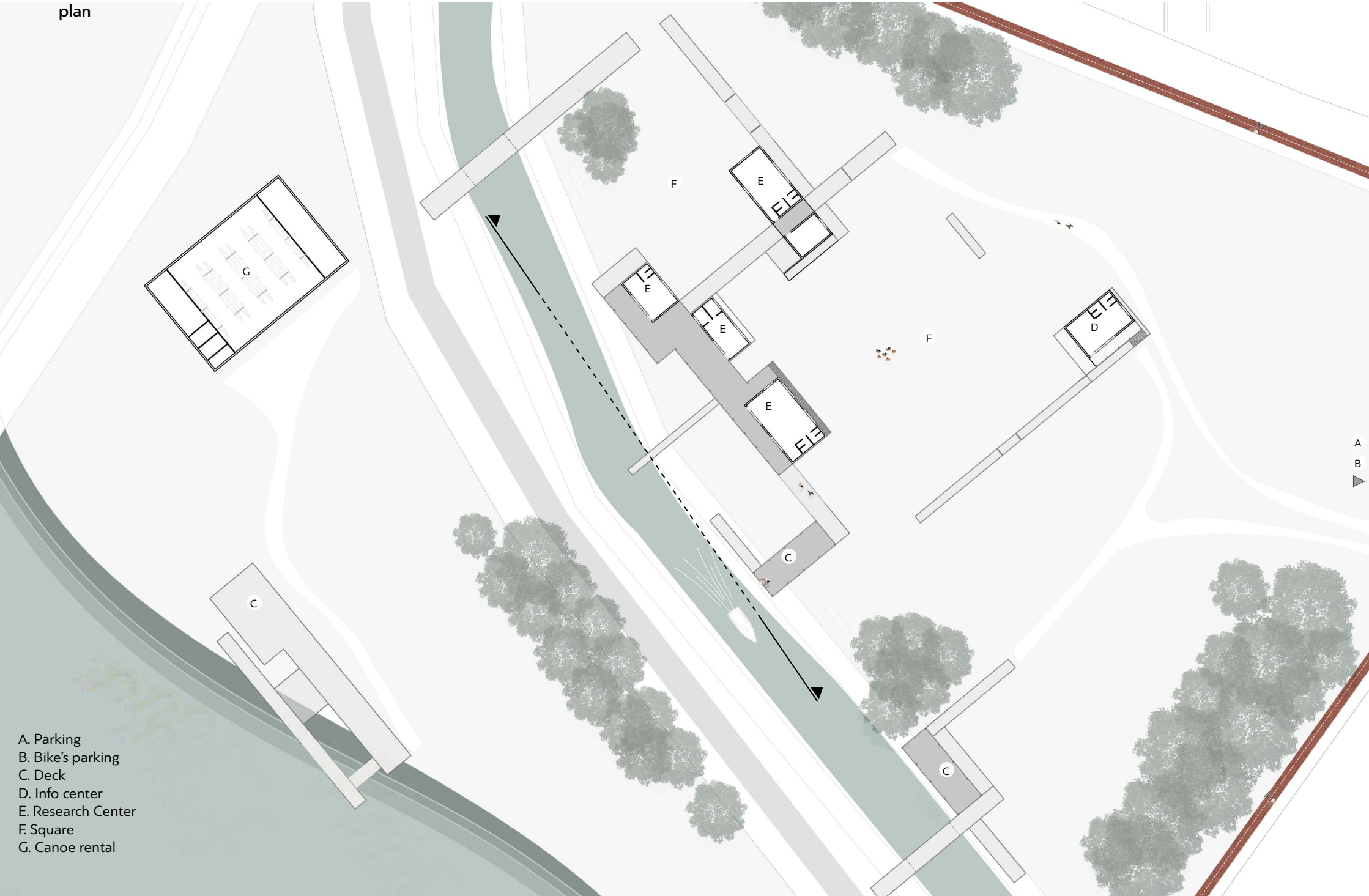
The Entry Pavilion and associated buildings at Philippi Park are thoughtfully designed to blend with the unique peatland environment. By providing essential information, research facilities, and a starting point for canoe journeys, this landmark enhances the visitor experience and promotes the exploration of the area's natural beauty and biodiversity. The strategic location, combined with environmentally sensitive design, makes the Entry Pavilion a crucial element in the overall landscape architecture of Philippi Park.

ZOOM IN
Entry pavilions



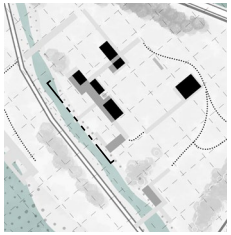


ZOOM IN
plan



A. Parking
B. Bike's parking
C. Deck
D. Info center
E. Research Center
F. Square
G. Canoe rental

ZOOM IN
Section



PEATLAND TOWER
Conceptual Design

Overview:

The Peatland Tower Landmark is designed to symbolize the depth and vitality of the world's deepest peatland. It features a central vertical tower in the water, accessible via a wooden path. Once at the tower, visitors can choose to descend and experience the underwater level, where they can view the peat, or ascend to enjoy panoramic views of the surrounding landscapes, including distant mountains, ancient paths, and ruins.

The design emphasizes the connection between the peatland, agricultural landscape, and cultural environment. Strategically located next to the lake, the tower is precisely where the deepest peat, with a core depth of 300 meters, is situated, marking the heart of the landscape and highlighting its unique geological and ecological significance.

Inspired by the Aqua Magica Park by Agence Ter Landscape Architects and the Acropolis of Philippi, the tower's design integrates cultural and historical context, offering a panoramic view of the Philippi peatland landscape.

Key Features:
Height: The tower stands 20 meters tall, with 4 meters underwater.
Material: Constructed from sustainable materials such as corten steel.

2. Wooden Path:
Dimensions:The wooden path extends 18 meters wide and 0.5 meters tall.
Material: Made of wood, the deck connects the tower to the surrounding environment.
Function:Allows visitors to walk from the peatland area to the lake and into the tower, enhancing the sensory experience with views of the surroundings.

3. Educational Stations:
Stations: Along the pathway, there are educational stations with interactive displays and information about the peatland ecosystem, local agriculture, and historical connections to the UNESCO site.
Themes: Each station focuses on aspects such as peatland biodiversity, traditional agricultural practices, and the historical significance of the area.

4. Viewing Platforms and Rest Areas:
Above Ground: Two points offer small viewing platforms and rest areas with panoramic views of the agricultural landscape. One platform provides a stunning view of the nearby mountain, while the other offers a distant view of the Acropolis of Philippi and the UNESCO site.

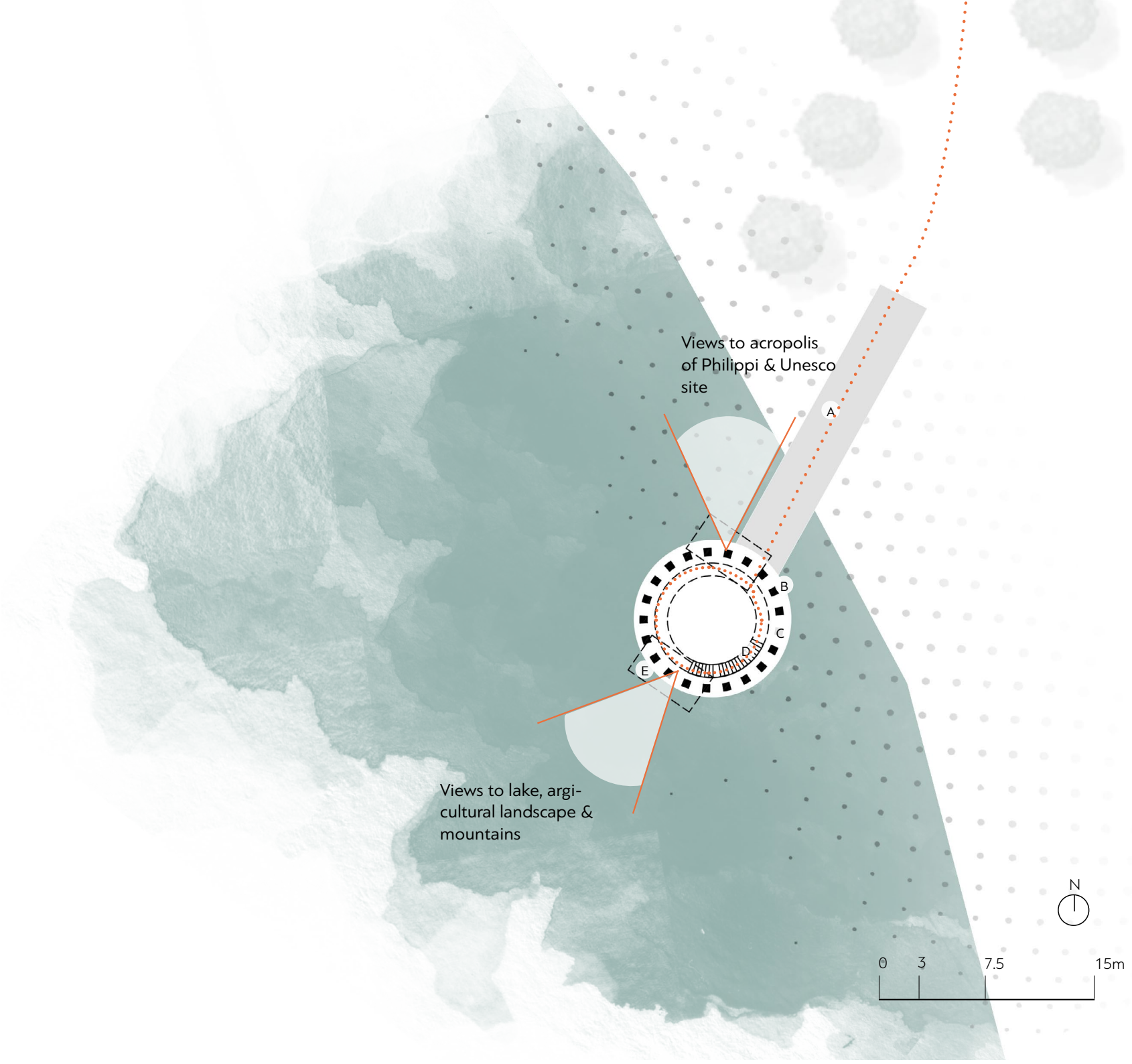
5.Underground Experience:
Lighting: Underwater lighting allows visitors to see inside the water, highlighting the dark, ancient colors of the peat. The eyes must adapt to the narrow, curved space that only a few people can visit at a time.
Design: The underwater section is shaped like a cone descending underwater. Only those inside the tower can access and experience this unique underwater environment.

Sustainability:
Native Plantings: The use of native plant species ensures minimal maintenance and supports local biodiversity.

This conceptual design for the Peatland Water Tower Landmark offers a unique and engaging way to highlight the depth and significance of the peatland while connecting visitors to the cultural and historical context of the agricultural landscape and the nearby UNESCO site.

ZOOM IN II
Peatland Tower

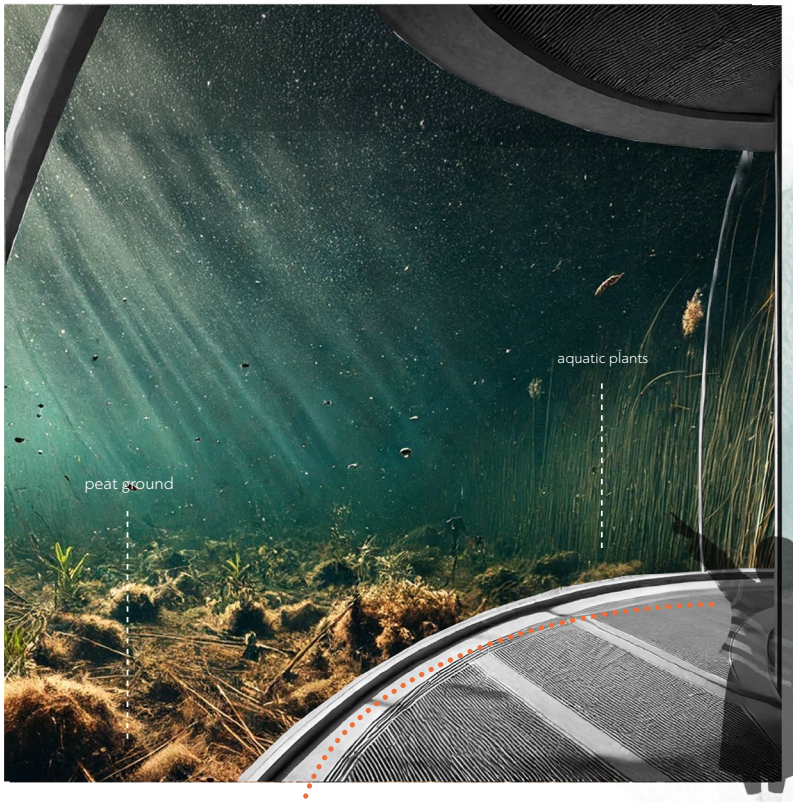
ZOOM IN II
Peatland Tower



GROUND FLOOR

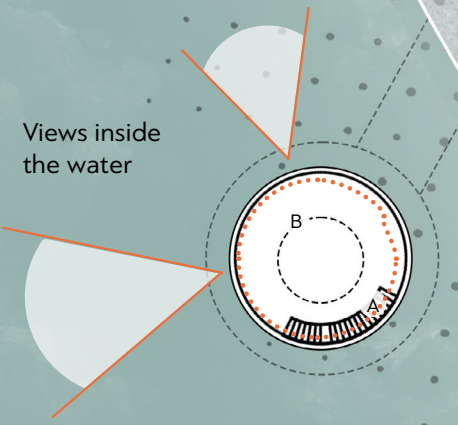
A. Promenade
B. Wooden deck
C. Steel construction
D. Stairs
E. Viewing Platform (projection)

ZOOM IN II
Peatland Water Tower



UNDERWATER
A. Stairs
B. Open floor

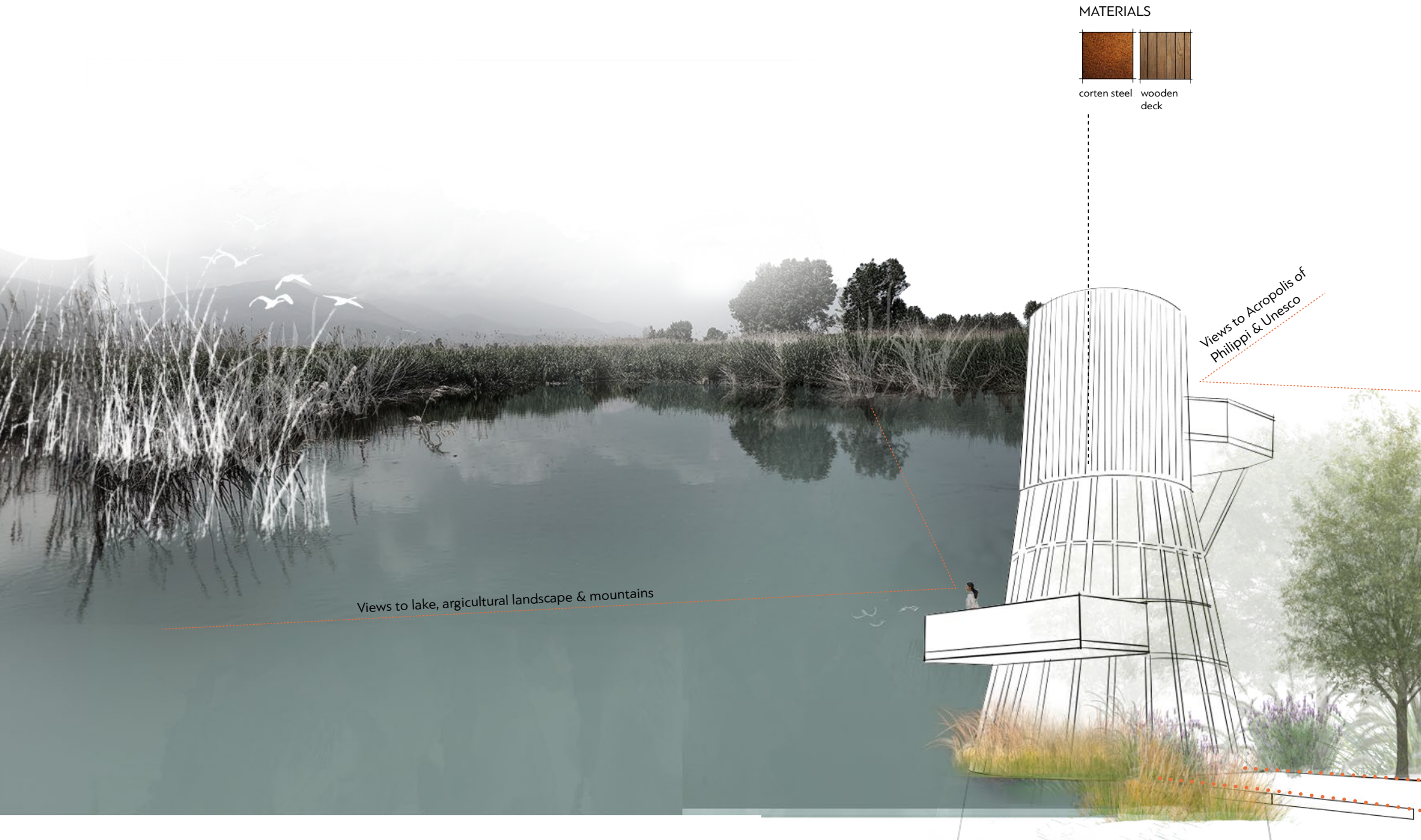
Views inside
the water

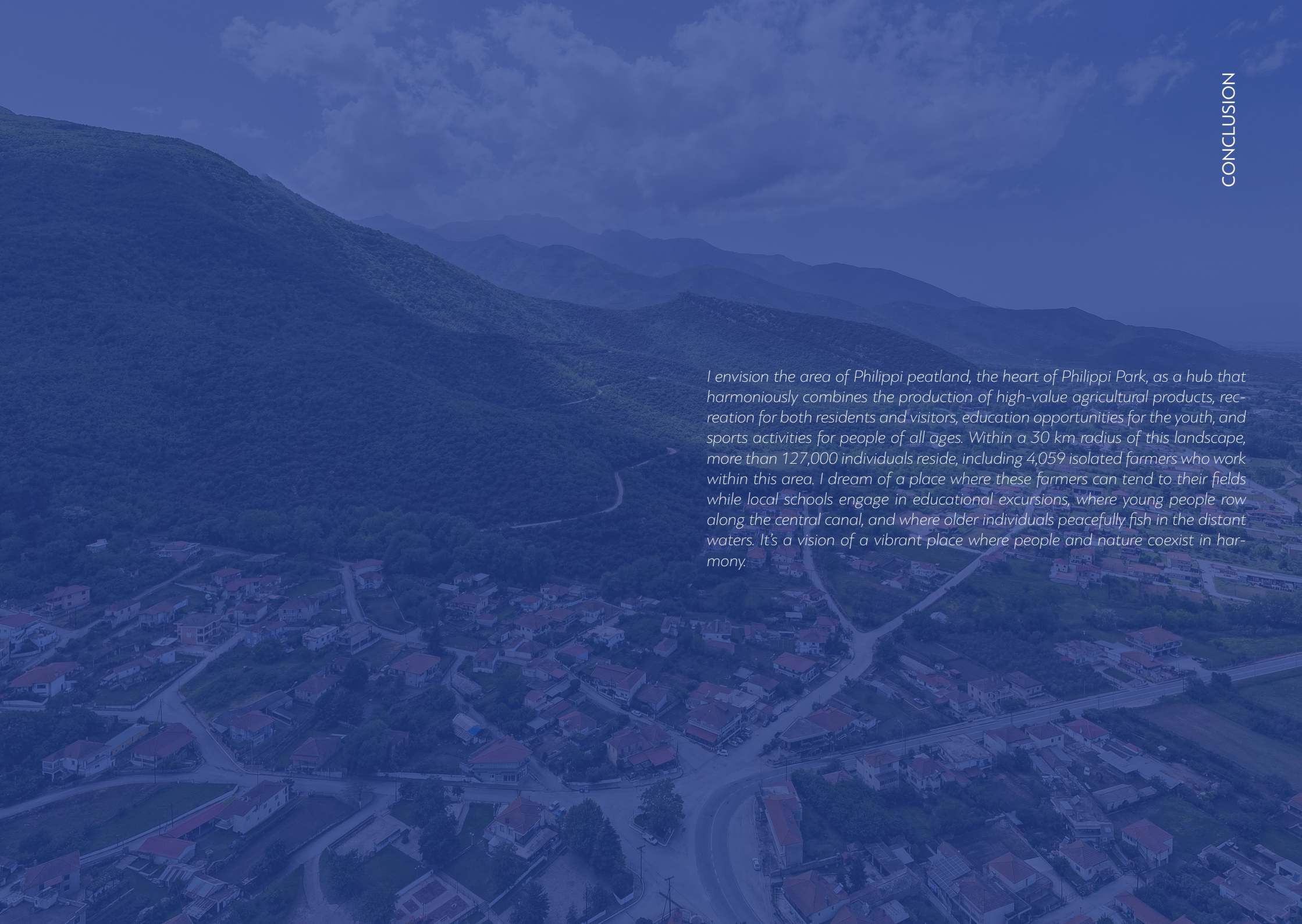


N

0 3 7.5 15m

ZOOM IN II
Collage





I envision the area of Philippi peatland, the heart of Philippi Park, as a hub that harmoniously combines the production of high-value agricultural products, recreation for both residents and visitors, education opportunities for the youth, and sports activities for people of all ages. Within a 30 km radius of this landscape, more than 127,000 individuals reside, including 4,059 isolated farmers who work within this area. I dream of a place where these farmers can tend to their fields while local schools engage in educational excursions, where young people row along the central canal, and where older individuals peacefully fish in the distant waters. It's a vision of a vibrant place where people and nature coexist in harmony.

Design Proposals for the Heart of Philippi Park

My design proposals for the heart of Philippi Park focus on several key aspects:

Sustainable Water Management: This aspect not only supports local farming communities but also protects the peatland ecosystem. By integrating advanced water management techniques, we ensure the sustainability and health of both agricultural practices and natural habitats.

Biodiversity Conservation: Promoting ecological balance is paramount. Our design fosters biodiversity, creating opportunities for eco-tourism and educational activities. These initiatives will help in raising awareness and appreciation for the park's unique ecological assets.

Community Engagement: Enhancing social cohesion and fostering a sense of ownership and pride among community members are critical components of the design. Through participatory planning and inclusive activities, we aim to strengthen the community's bond with the park.

Cultural Heritage Preservation: Our design aims to preserve and celebrate the rich cultural heritage of the area. By creating a multifaceted experience that attracts visitors, scholars, and tourists from around the world, we ensure that the cultural significance of the park is recognized and cherished.

In summary, my design ensures that Philippi Park not only meets the current needs of the community but also preserves its natural and cultural heritage for future generations. This holistic approach guarantees that the park remains a valuable asset for both present and future stakeholders.

Limitations of my proposals

In this thesis, I have presented a comprehensive landscape architecture proposal aimed at transforming the designated area into a sustainable and aesthetically pleasing environment. While the design offers innovative solutions and thoughtful integrations with the existing landscape, it is important to acknowledge the limitations and further steps required for the successful implementation of the project.

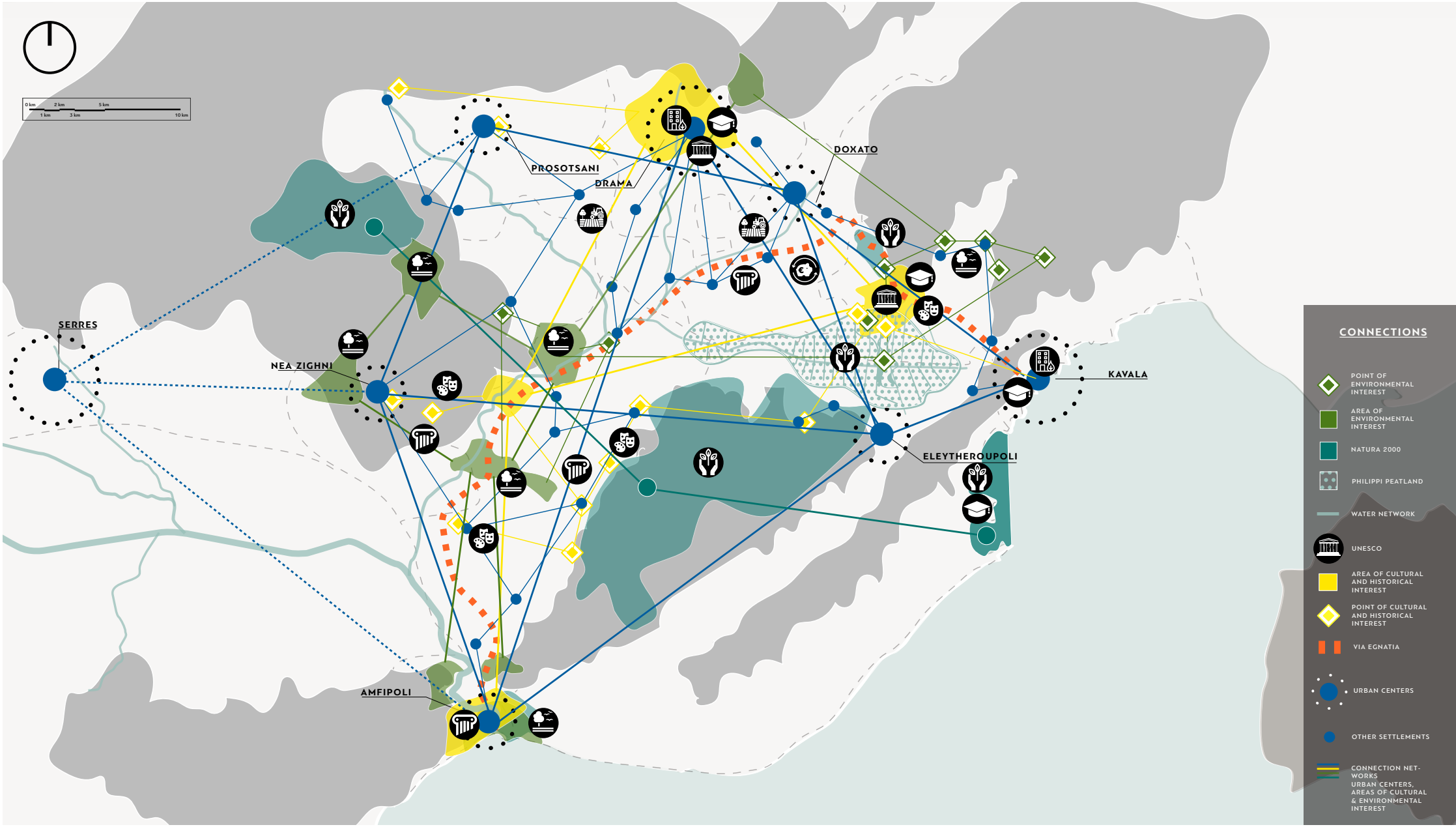
First and foremost, detailed economic calculations are essential to ensure the financial viability of the proposed design. A thorough cost analysis, including initial investment, ongoing maintenance expenses, and potential funding sources, is necessary to provide a clear financial roadmap for stakeholders.

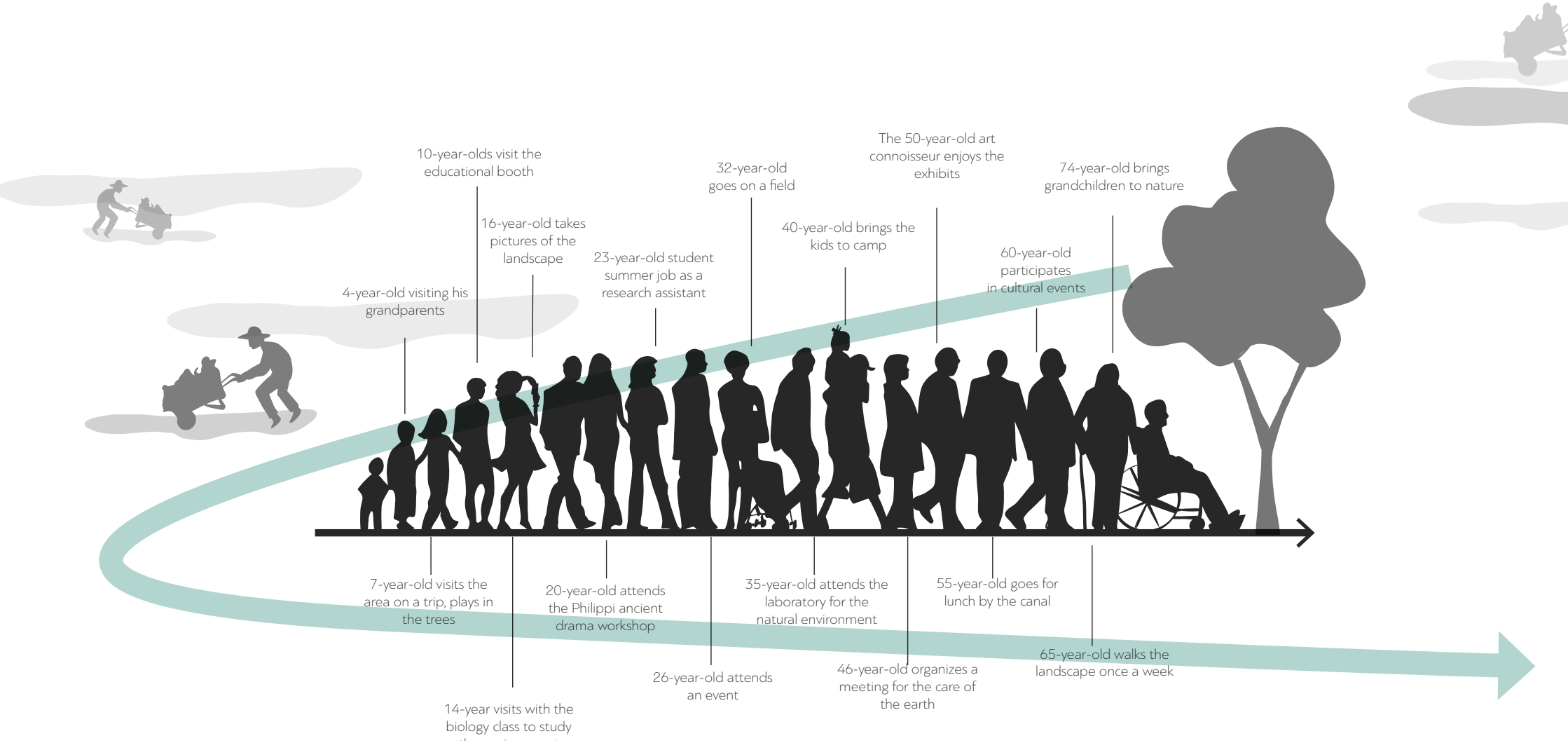
Identifying and engaging with all relevant stakeholders is another critical step. This includes local government bodies, community groups, potential investors, and environmental organizations. Their input and support will be vital in refining the design, securing funding, and ensuring the project meets the needs and expectations of all parties involved.

Clarifying the maintenance requirements of the areas is also crucial for the long-term success of the project. A detailed maintenance plan needs to be developed, outlining the responsibilities, frequency of upkeep, and necessary resources. This plan should address both routine maintenance and any specific needs arising from the unique elements of the design.

Moreover, the technical aspects of water management within the landscape require further exploration. This includes detailed studies on irrigation systems, drainage solutions, and sustainable water usage practices. A comprehensive water management plan will not only support the health of the landscape but also contribute to the overall sustainability of the project.

In conclusion, while the proposed design presents a visionary approach to landscape architecture, its realization depends on addressing these key areas: economic feasibility, stakeholder engagement, maintenance planning, and advanced technical solutions for water management. By tackling these challenges, the project can move from concept to reality, ultimately achieving its goals of environmental sustainability and community enrichment.


0 km
1 km
2 km
3 km
5 km
10 km
PROSOTSANI
DRAMA
DOXATO
SERRES
NEA ZIGHNI
KAVALA
ELEYTHEROUPOLI
AMFIPOLI
CONNECTIONS
POINT OF ENVIRONMENTAL INTEREST
AREA OF ENVIRONMENTAL INTEREST
NATURA 2000
PHILIPPI PEATLAND
WATER NETWORK
UNESCO
AREA OF CULTURAL AND HISTORICAL INTEREST
POINT OF CULTURAL AND HISTORICAL INTEREST
VIA EGNATIA
URBAN CENTERS
OTHER SETTLEMENTS
CONNECTION NETWORKS URBAN CENTERS, AREAS OF CULTURAL & ENVIRONMENTAL INTEREST


10-year-olds visit the educational booth
16-year-old takes pictures of the landscape
4-year-old visiting his grandparents
23-year-old student summer job as a research assistant
32-year-old goes on a field
40-year-old brings the kids to camp
The 50-year-old art connoisseur enjoys the exhibits
60-year-old participates in cultural events
74-year-old brings grandchildren to nature
7-year-old visits the area on a trip, plays in the trees
14-year visits with the biology class to study
20-year-old attends the Philippi ancient drama workshop
26-year-old attends an event
35-year-old attends the laboratory for the natural environment
46-year-old organizes a meeting for the care of the earth
55-year-old goes for lunch by the canal
65-year-old walks the landscape once a week

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All the drawings are created by the author. All the photos, except those on pages 45 and 79, are taken by Seinatoudis Petros.

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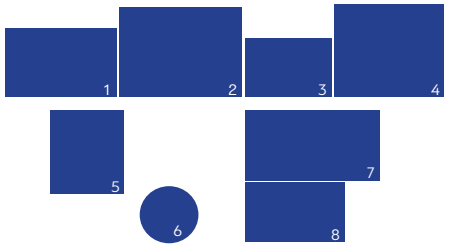

1 Miliadis Ioannis
2. Seinatoudis Petros
3. Seinatoudis Petros
4. Archives of Opsometha eis Philippous
5. Archives of Opsometha eis Philippous
6. Archives of Opsometha eis Philippous
7. Archives of the French School of Archaeology
8. Archives of Opsometha eis Philippous

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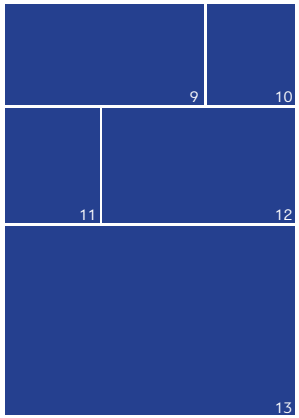

10. Periklis merakos
11. Archives of Opsometha eis Philippous
12. Archives of Opsometha eis Philippous
13. Archives of Opsometha eis Philippous