Country /City Greece / Ioannina

University / School University of Ioannina / School of Engineering / Department of Arhitecture

Academic year 2021-2022

Title of the project Delta

Authors Anna Gkoufa, Katerina Koulouri

TECHNICAL DOSSIER

Title of the project	Delta
Authors	Anna Gkoufa, Katerina Koulouri
Title of the course	Urban Design || - Metabolizing Scape Dynamics
Academic year	2021-2022
Teaching Staff	Yannis Zavoleas, Carolos Galanos, Eleni Sionti
Department / Section / Program of belonging	Department of Architecture / 5-year integrated master's (graduate and postgraduate) program
University / School	University of Ioannina / School of Engineering

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

With the inflow of sewage into the lagoon, there is an excessive concentration of bacteria and algae in the water. These organisms form a coating on the water surfaces, causing shading, and so without light, the photosynthetic organisms on the bottom are killed, providing more food for other bacteria, which continue to grow.
The proposal suggests the development of artificial islands with suitable plants that filter the water and purify it from bacteria and algae. The artificial islands absorb and remove nutrients thanks to their roots and leaves, using grasses and reeds, which feed on the nitrogen and phosphorus carried by the river. They then regulate water flow and enhance sedimentation and finally, they provide food and shelter for local fauna. The interventions consist of triangular individual structures with uneven ground and plants fighting eutrophication. These triangular units can be placed in various combinations in the water. They can be in the areas between Preveza and Aktion, the Louros delta and the Arachthos delta. These sites have been selected since they favour the creation of artificial islands while allowing them to either float or sink, as they reshape the seabed so that it can accommodate many organisms to restore the ecosystem's balance. These systems collect sediment from rivers and streams in the perforated walls of the triangular structures and thus over the years the accumulated material will create natural hills that will filter the water.

For further information

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COAC - Colegi oficial d´Arquitectes de Catalunya

Carrer Arcs, 1-3
08002 Barcelona - Spain

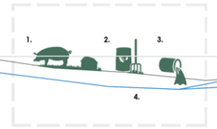
12th International Biennal Landscape Barcelona

Barcelona **October 2023**

SCHOOL PRIZE

Αιτίες ευτροφισμού

1. περιπτώματα ζώων από αγροτικές/γεωργικές περιοχές
2. γεωργικά λιπάσματα
3. ανθρώπινα λύματα
4. μεταφορά στοιχείων μέσω των ποταμών



το επικάλυμμα από φυτοπλαγκτόν εμποδίζει τις ακτίνες του ηλίου να εισέλθουν στο νερό

γλυκό νερό

αλμυρό νερό

οι φωτοσυνθετικοί οργανισμοί στον πυθμένα θανατώνονται και τα βακτήρια αυξάνονται

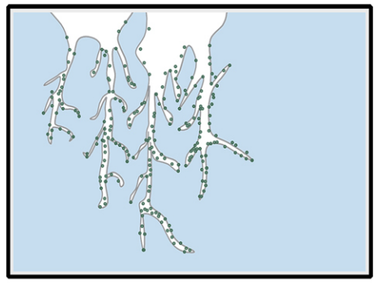
η αύξηση των βακτηρίων συνεπάγεται την αύξηση της κατανάλωσης του οξυγόνου στο νερό ενώ η παραγωγή του ελαττώνεται

ως αποτέλεσμα οι υδρόβιοι οργανισμοί μεταναστεύουν ή πεθαίνουν

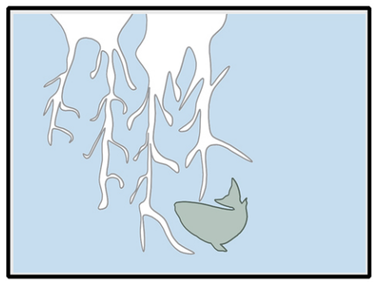
η ένδειξη οργανισμών έχει μειωθεί στον βυθό

Φυτοπλαγκτόν

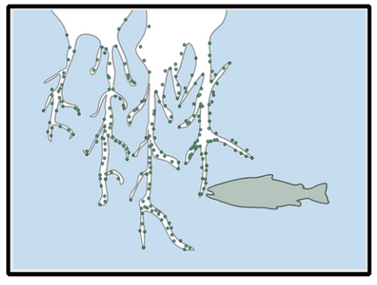
με την εισροή των λυμάτων στην λιμνοθάλασσα παρατηρείται υπερβολική συγκέντρωση φυτοπλαγκτόν στα νερά που σχηματίζουν επικάλυμμα στις υδάτινες επιφάνειες



ΣΤΙΣ ΡΙΖΕΣ ΤΩΝ ΦΥΤΩΝ ΥΠΑΡΧΟΥΝ ΘΡΕΠΤΙΚΕΣ ΟΥΣΙΕΣ



ΟΙ ΡΙΖΕΣ ΠΡΟΣΦΕΡΟΥΝ ΠΡΟΣΤΑΣΙΑ ΣΤΟΥΣ ΥΔΡΟΒΙΟΥΣ ΟΡΓΑΝΙΣΜΟΥΣ



ΟΙ ΡΙΖΕΣ ΠΑΡΕΧΟΥΝ ΤΡΟΦΗ ΣΤΟΥΣ ΥΔΡΟΒΙΟΥΣ ΟΡΓΑΝΙΣΜΟΥΣ

Αποτελέσματα ευτροφισμού

α. αυξημένη βιομάζα του φυτοπλαγκτού

β. τοξικά και μη βρώσιμα από τους θαλάσσιους οργανισμούς είδη φυτοπλαγκτού

γ. μειωμένη βιομάζα βενθικών

δ. αυξημένη θολερότητα του νερού

ε. αυξημένες περιπτώσεις θνησιμότητας των ψαριών

στ. απώλεια επιθυμητών ειδών ιχθύων

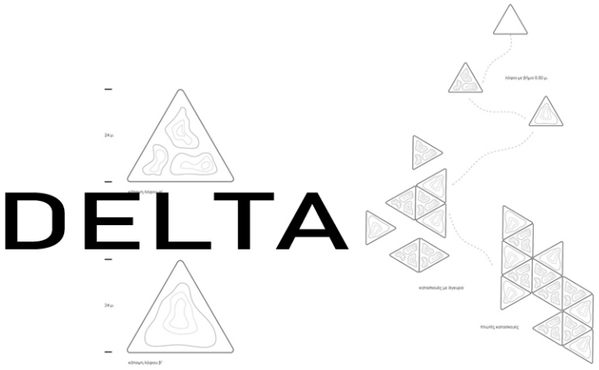
καταπολέμηση τον ρύπων της περιοχής που εισέρχονται στο νερό

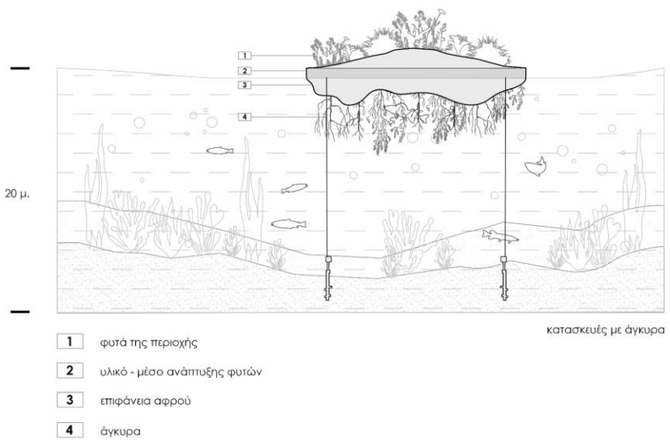
O_2 σταδιακή επαναφορά του O2

μείωση του φυτοπλακτόν που υπάρχει στην επιφάνεια του νερού

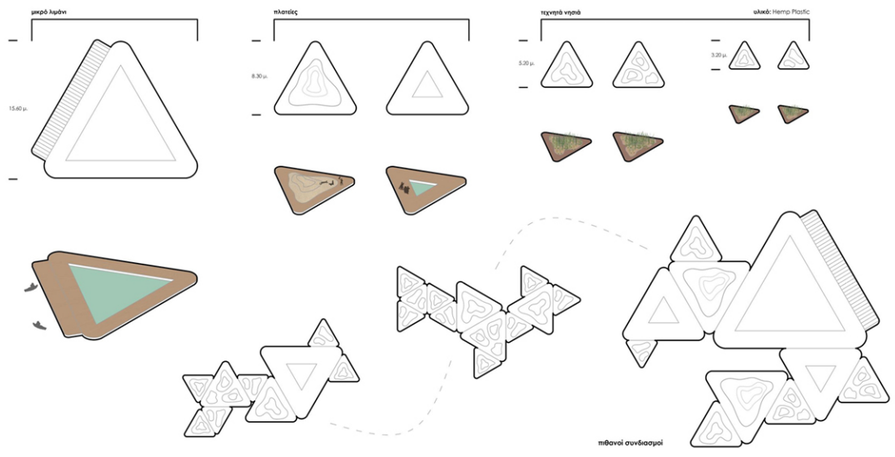
επαναφορά ζωής στον βυθό

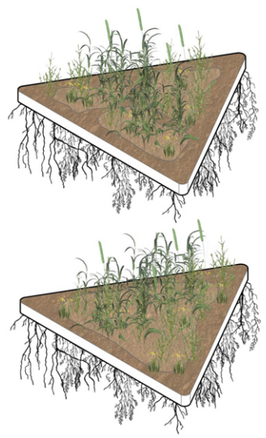
DELTA



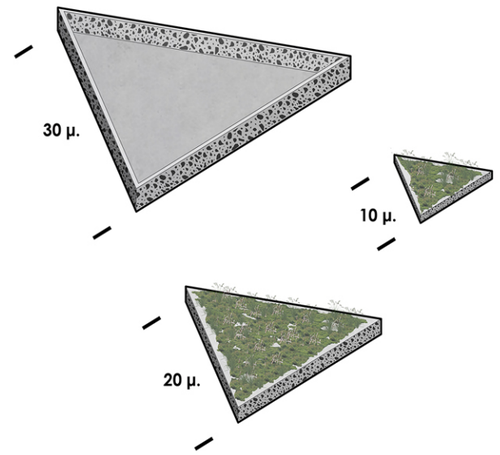


κατασκευές με άγκυρα

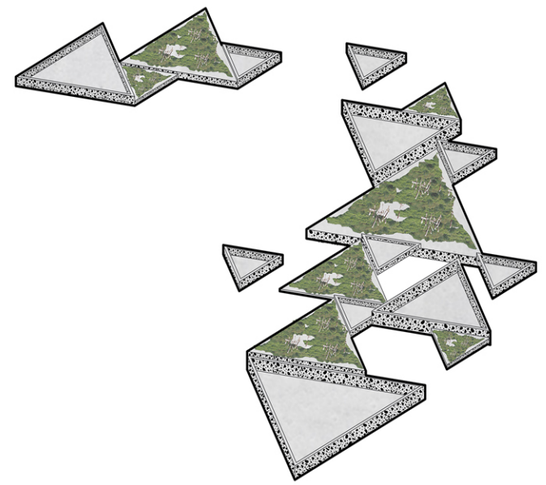


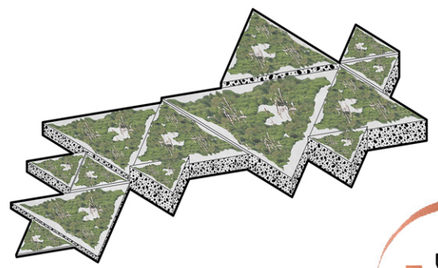


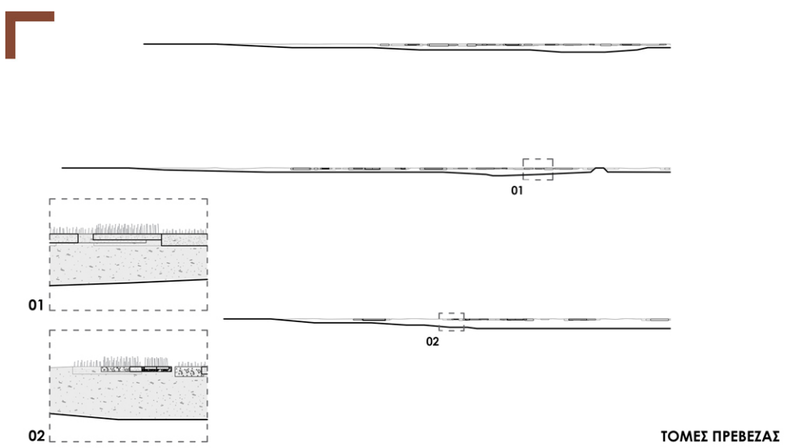
ΚΑΤΑΣΚΕΥΕΣ



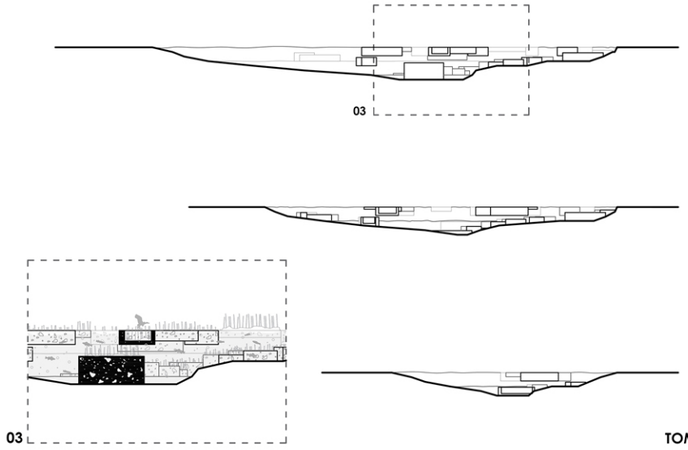
ΣΥΝΘΕΣΕΙΣ







ΤΟΜΕΣ ΠΡΕΒΕΖΑΣ



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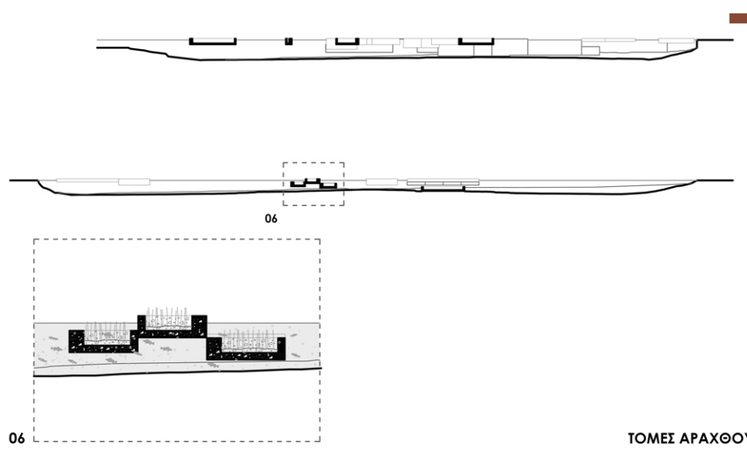

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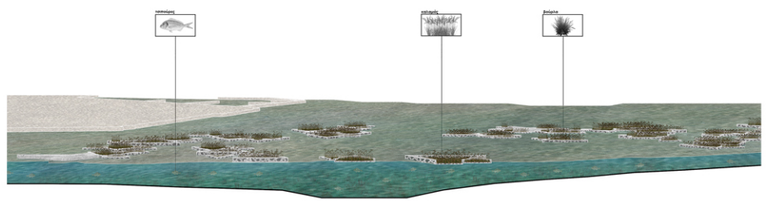

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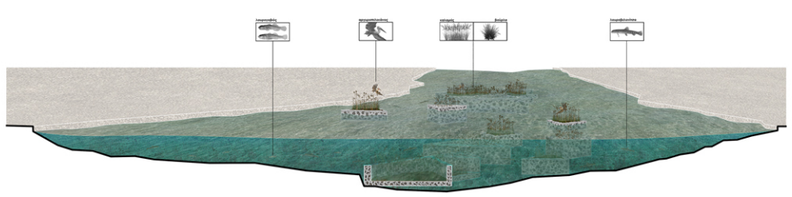

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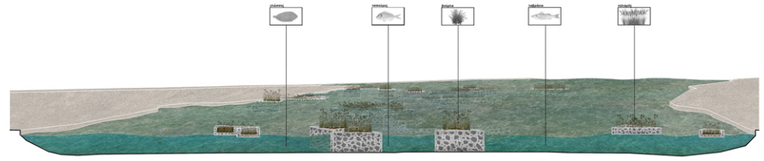

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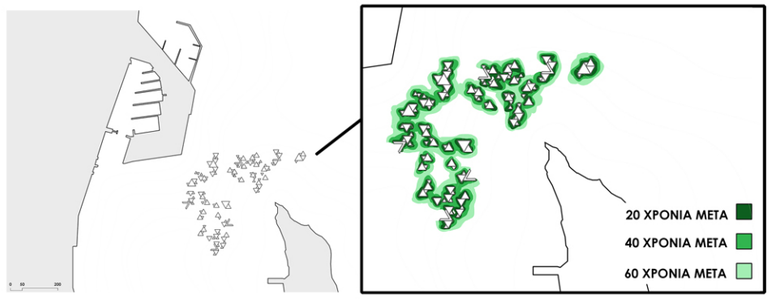
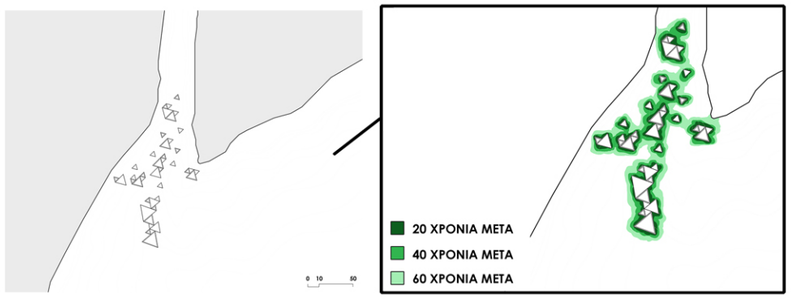
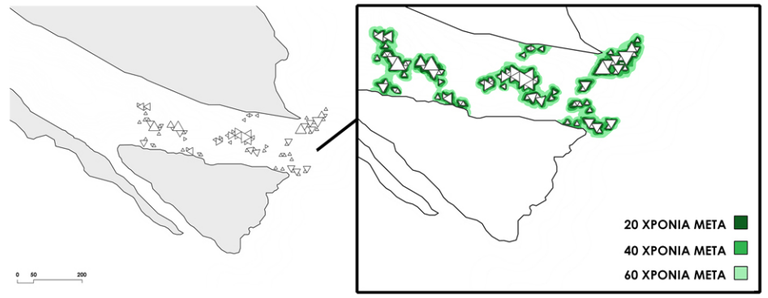


PLAN OF PREVEZA

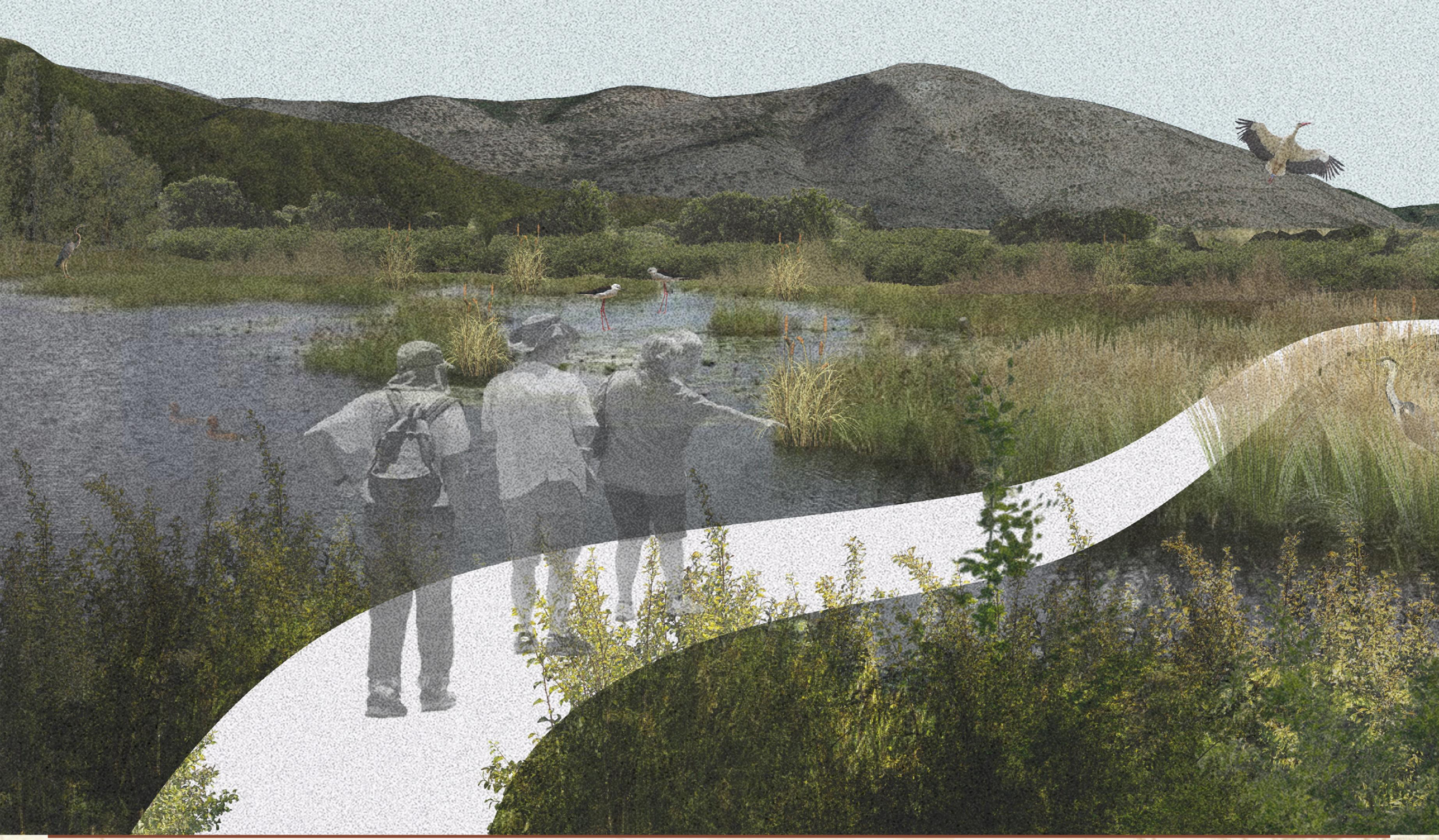


PLAN OF LOUROS



PLAN OF ARACHTHOS

--------AFTER 10 YEARS----------



Country /City	Greece / Ioannina
University / School	University of Ioannina / School of Engineering / Department of Arhitecture
Academic year	2021-2022
Title of the project	XeroPotamos [DryRiver]
Authors	Sofia Kalakou, Maria Patmanidou

TECHNICAL DOSSIER

Title of the project	XeroPotamos [DryRiver]
Authors	Sofia Kalakou, Maria Patmanidou
Title of the course	Urban Design || - Metabolizing Scape Dynamics
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Teaching Staff	Yannis Zavoleas, Carolos Galanos, Eleni Sionti
Department / Section / Program of belonging	Department of Architecture / 5-year integrated master's (graduate and postgraduate) program
University / School	University of Ioannina / School of Engineering

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

At first, we studied the biodiversity of Preveza Region, and we identified the specific characteristics of the area. We analysed the variety of flora and fauna by a SWOT strategy (Strengths, Weaknesses, Opportunities, Threats). Then, we spotted at one rare species named Lourovelonitsa, who lives in the waters of Louros river; also, the mammal Otter, in special spots and the Plane Tree, which suffers from Metachromatic Ulcer infection. By comparing the information, we focused on a special zone known as the Riparian Forest of Saint Varnava, a small area with great importance for the biodiversity of the region. The Riparian Forest of Saint Varnava is spread in the wetlands next to one of Louros River's tributaries. It is surrounded by crops and is close to the small town of Louros. The wetlands are divided into four main zones: river, swamp, reeds, and crop fields. The waters next to it are polluted due to the fertilizers, causing eutrophication and Metachromatic Ulcer. In response, we developed our scheme, being to create a pathway into the rich natural habitat, where humans can have access to certain points to observe the flora and fauna. The strategy also involves the development of an arcade-type forest, to protect the riverbank. Five systems are used: water, riparian forest, also urban, low and hydrophilic plantation. A reed forest is considered for the hydrophilic zone and it will include pathways and connections. The root of reeds has the ability to clean the water and so their presence is critical.

For further information

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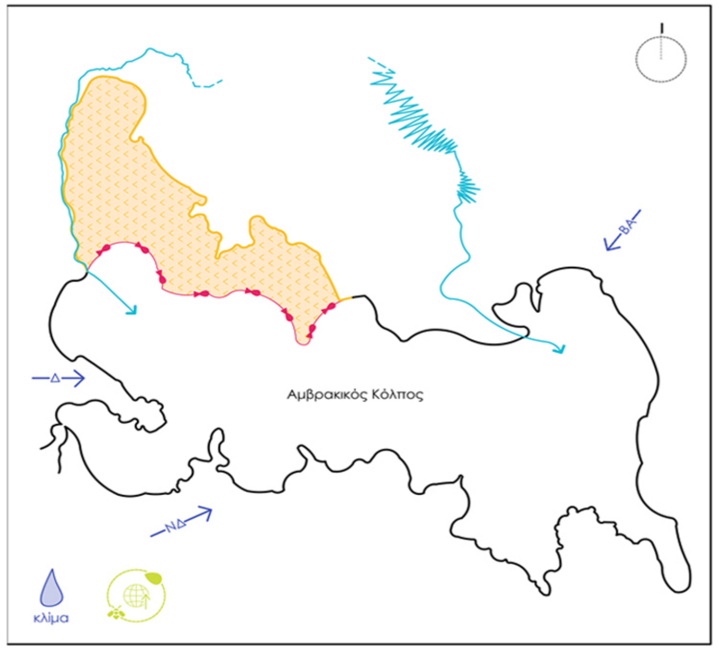
12th International Biennal Landscape Barcelona

Barcelona **October 2023**

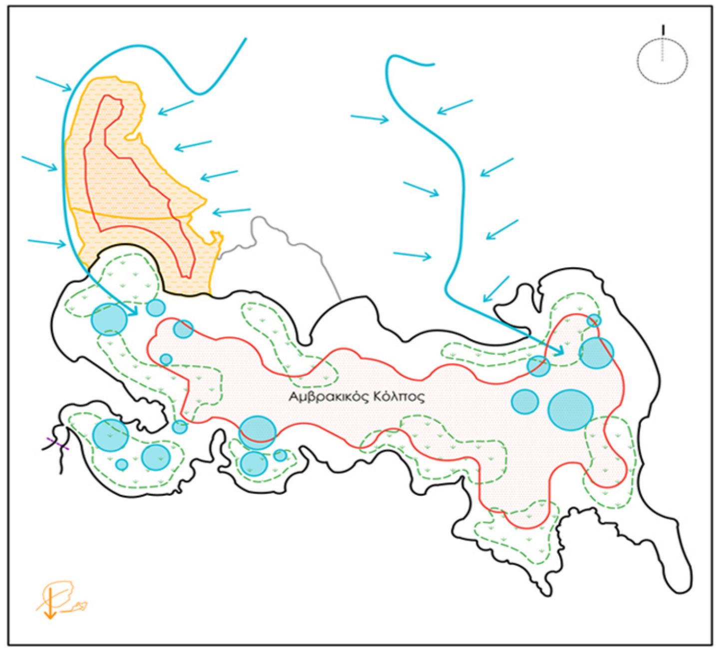
SCHOOL PRIZE

ΣΟΦΙΑ ΚΑΛΑΚΟΥ (249), ΜΑΡΙΑ ΠΑΤΜΑΝΙΔΟΥ (269)
ΔΙΔΑΣΚΟΝΤΕΣ: ΚΑΡΟΛΟΣ ΓΑΛΑΝΟΣ, ΓΙΑΝΝΗΣ ΖΑΒΟΛΕΑΣ, ΛΕΝΑ ΣΙΟΝΤΗ



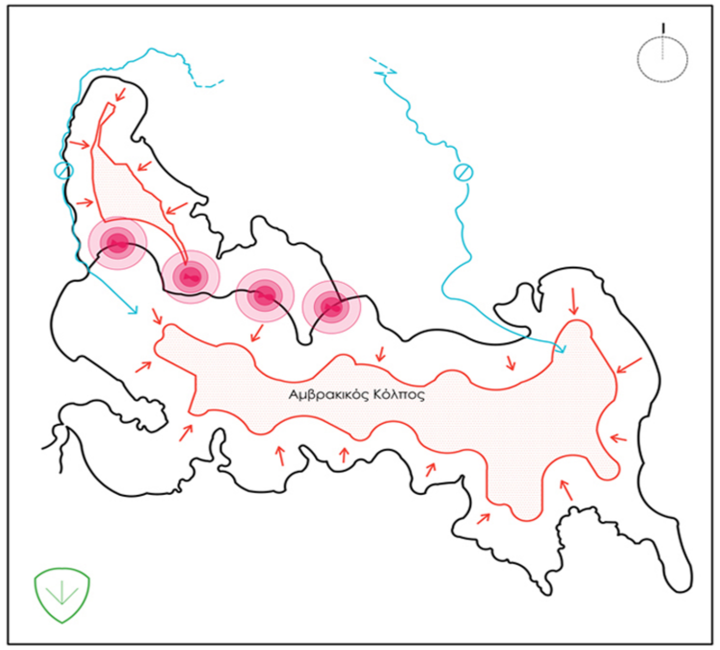
S.W.O.T.

1. περιοχή με τις λιγότερες ανθρώπινες συνέπειες
2. παραποτάμια δάση
3. μεσογειακό κλίμα
4. φυσικό ιχθυοτροφείο
5. πλούσιος βιότοπος



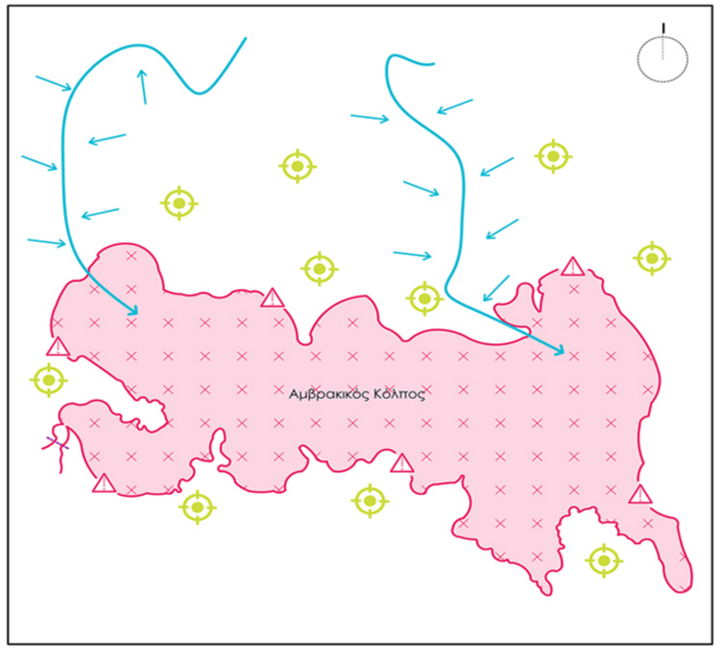
S.W.O.T.

1. ολιγότροφες λιμνοθάλασσες
2. μειωμένη ικανότητα αποσύνθεσης οργανικής ύλης
3. ευτροφισμός
4. περιορισμός θαλάσσιων λιβαδιών
5. σημεία ρύπανσης



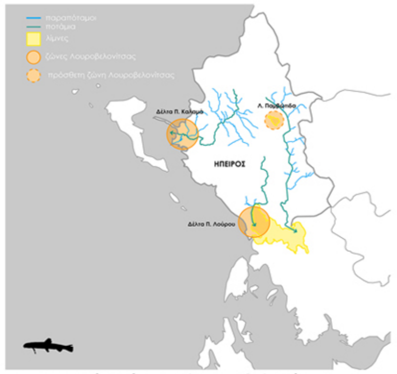
S.W.O.T.

1. ανάδειξη και εμπλουτισμός ιχθυοτροφικής παραγωγής
2. ανάπτυξη στρατηγικής μείωσης του φαινομένου του ευτροφισμός
3. ανάπτυξη στρατηγικής προστασίας θαλασσιού οικοσυστήματος
4. άναπτυξη στρατηγικής συστήματος επεξεργασίας αποβλήτων των ζωοτροφικών εγκαταστάσεων που βρίσκονται στην περιοχή.

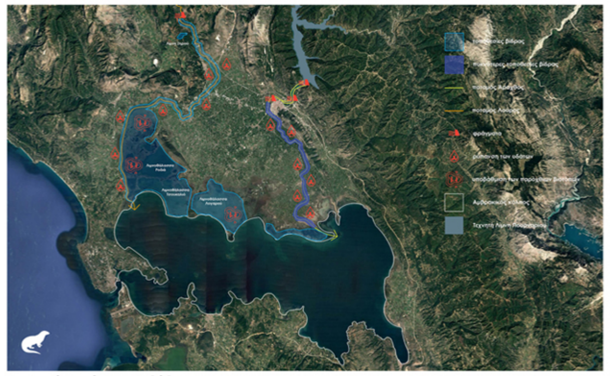


S.W.O.T.

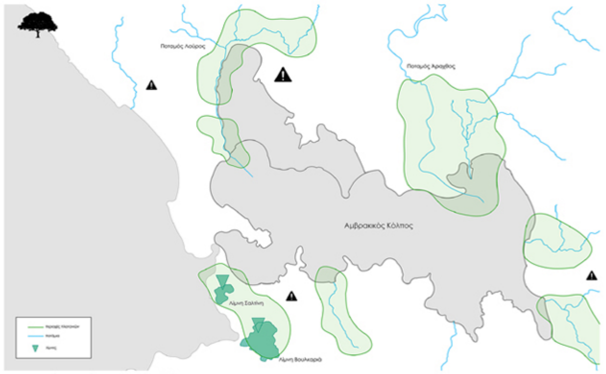
1. κυνήγι
2. ρύπανση νερών - φυτοφάρμακα
3. ζεύξη Άκτιου - Πρέβεζας
4. ανοξικό φαινόμενο



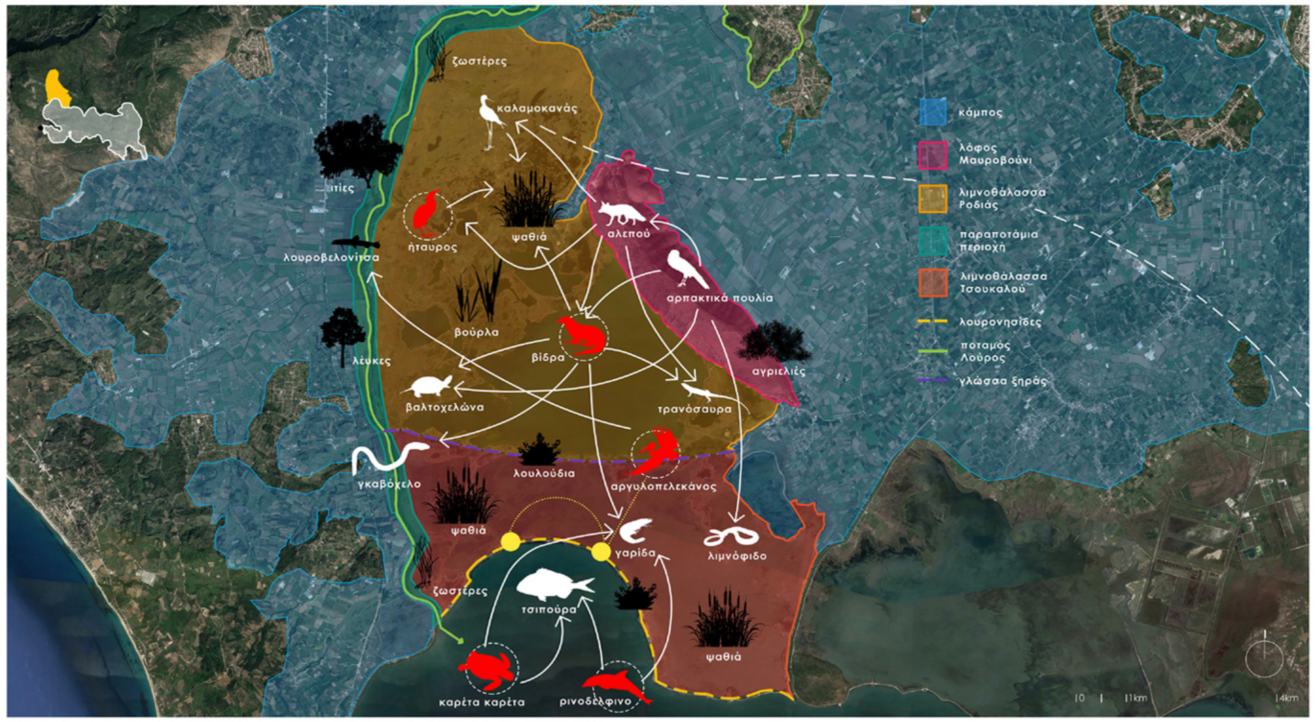
υπερτοπικός χάρτης λουροβελονίτσα



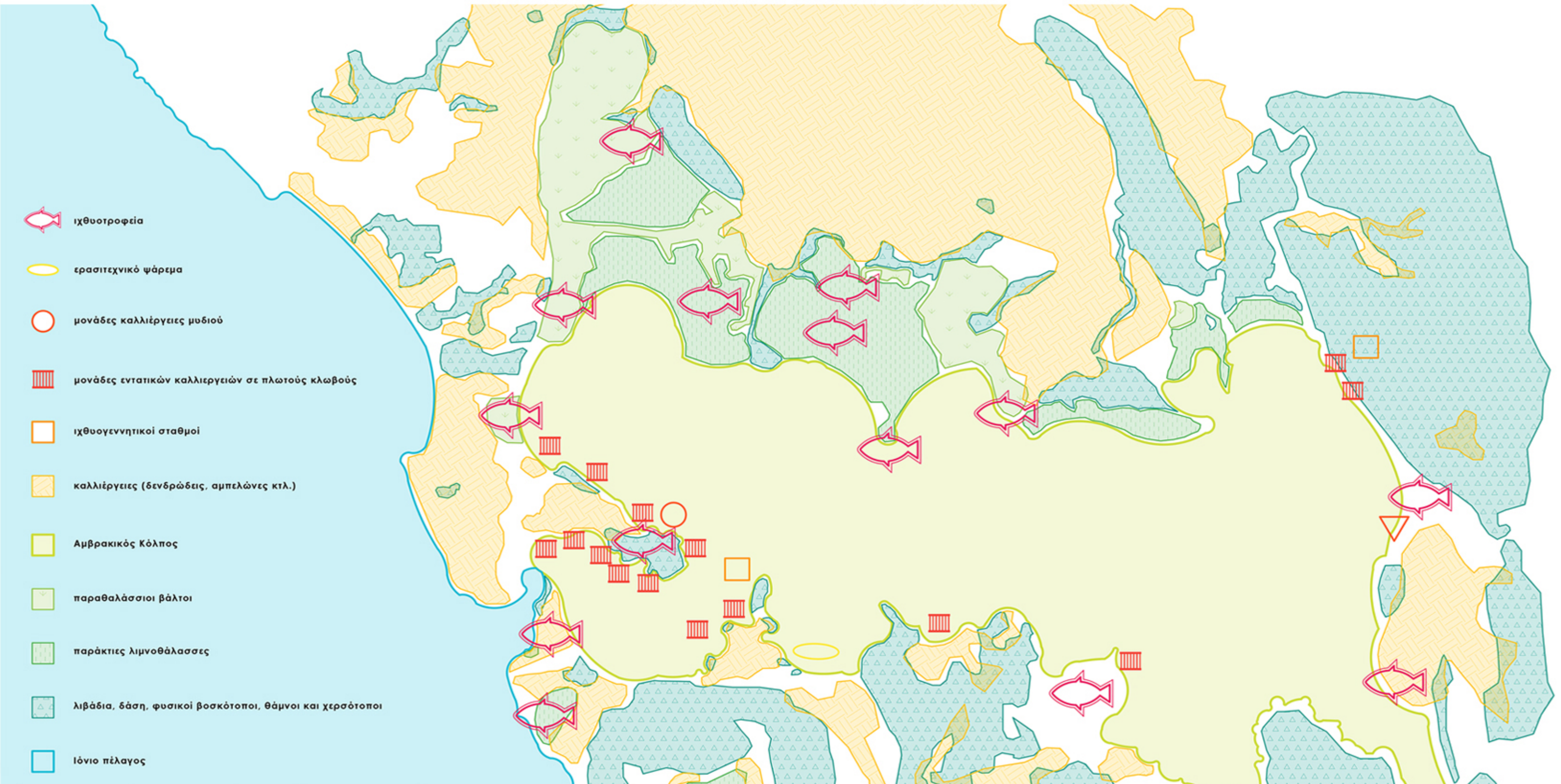
τοπικός χάρτης βίδρας



τοπικός χάρτης πλάτανου



χάρτης βιοποικιλότητας της περιοχής του Ροδιά και του Τσουκαλιού



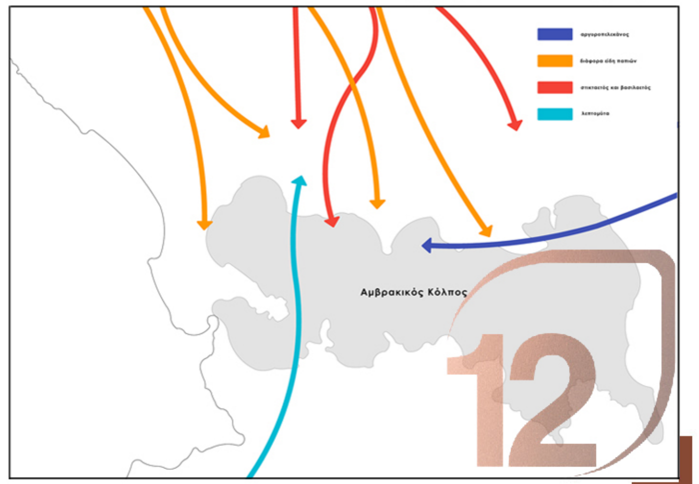
χάρτης φυσικής και τεχνητής πανίδας και χλωρίδας

λίστα με τα πιο αντιπροσωπευτικά παρόχθια δάση στην Ελλάδα

ΛΙΣΤΑ ΜΕΤΑΝΑΣΤΕΥΤΙΚΩΝ ΠΤΗΝΩΝ ΕΛΛΑΔΑ

ΛΙΣΤΑ ΜΕΤΑΝΑΣΤΕΥΤΙΚΩΝ ΠΤΗΝΩΝ ΑΜΒΡΑΚΙΚΟΣ

χάρτης μετανάστευσης πτηνών



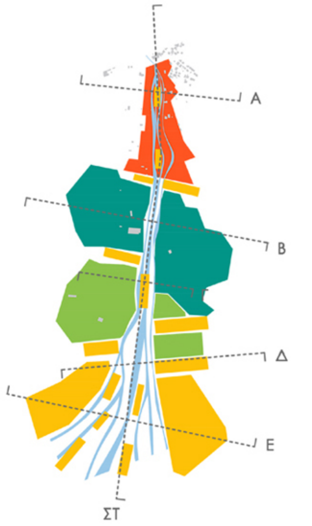
XERΟPOTAMOS

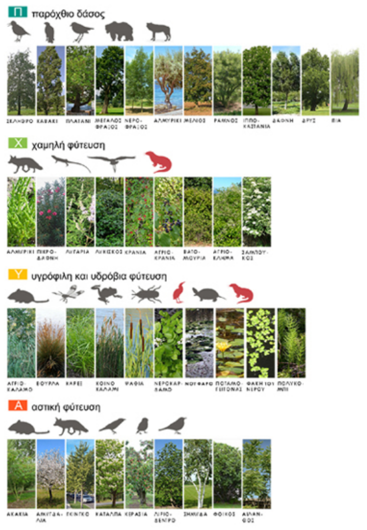
ΑΣΤΙΚΟΣ ΣΧΕΔΙΑΣΜΟΣ ΙΙ

ΣΟΦΙΑ ΚΑΛΑΚΟΥ (249), ΜΑΡΙΑ ΠΑΤΜΑΝΙΔΟΥ (269)

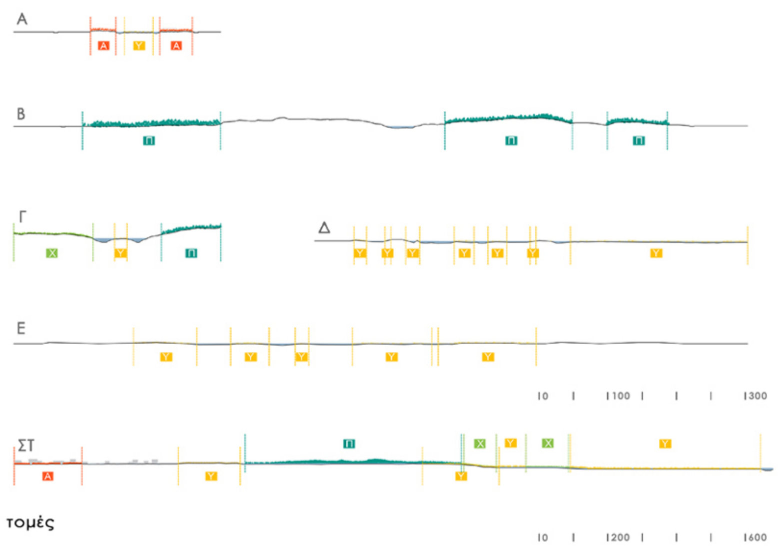
ΔΙΔΑΣΚΟΝΤΕΣ: ΚΑΡΟΛΟΣ ΓΑΛΑΝΟΣ, ΓΙΑΝΝΗΣ ΖΑΒΟΛΕΑΣ, ΛΕΝΑ ΣΙΟΝΤΗ

2022

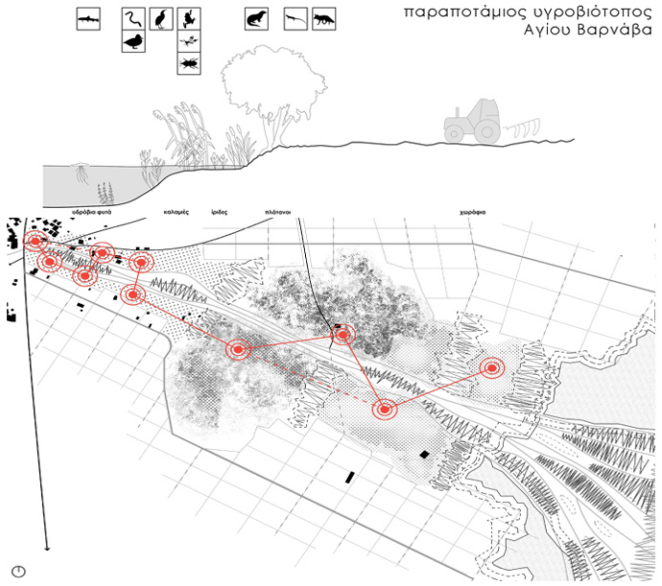




διάγραμμα φυτεύσεων



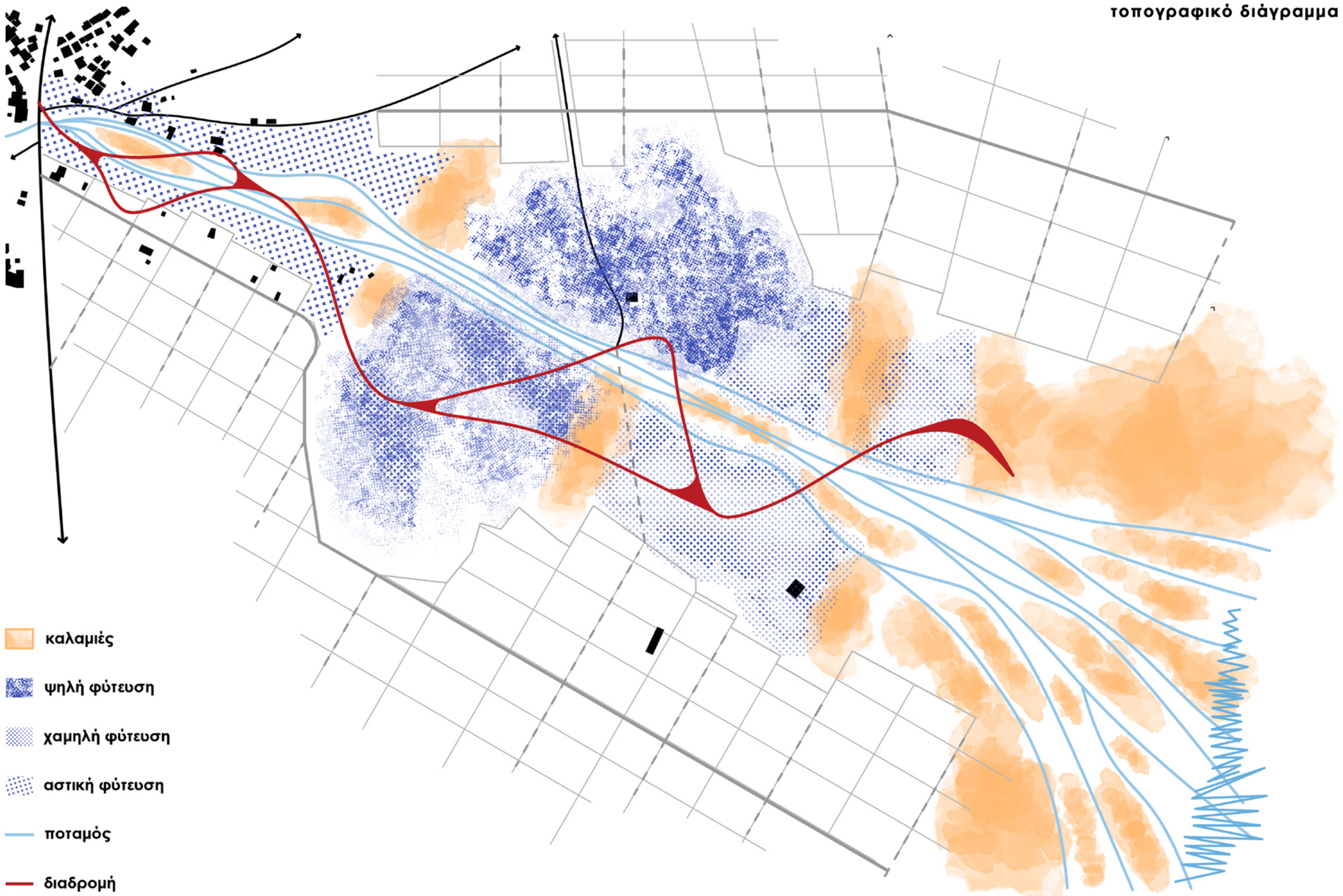
τομές

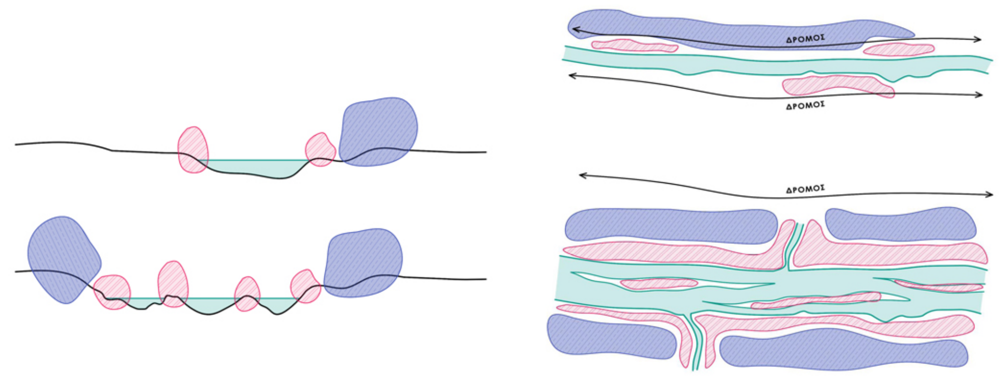


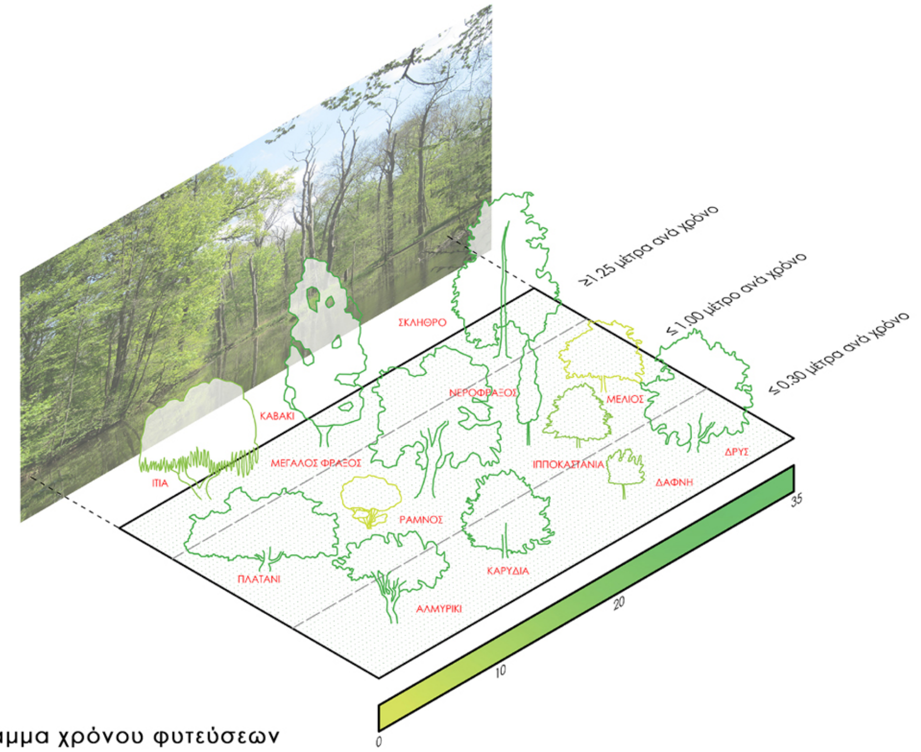
παραποτάμιος υγροβιότοπος Αγίου Βαρνάβα

υφιστάμενο τοπογραφικό

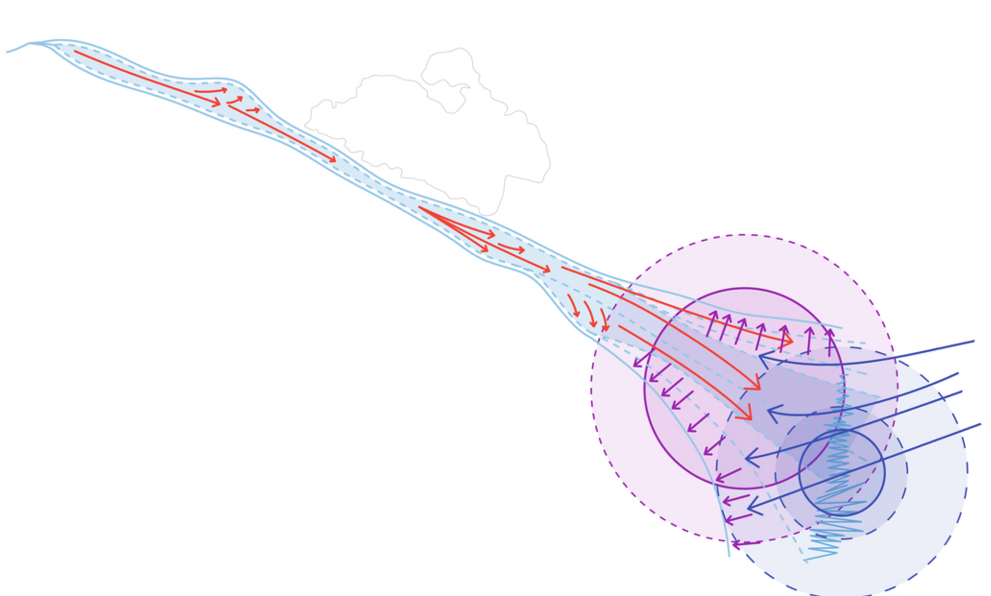
τοπογραφικό διάγραμμα



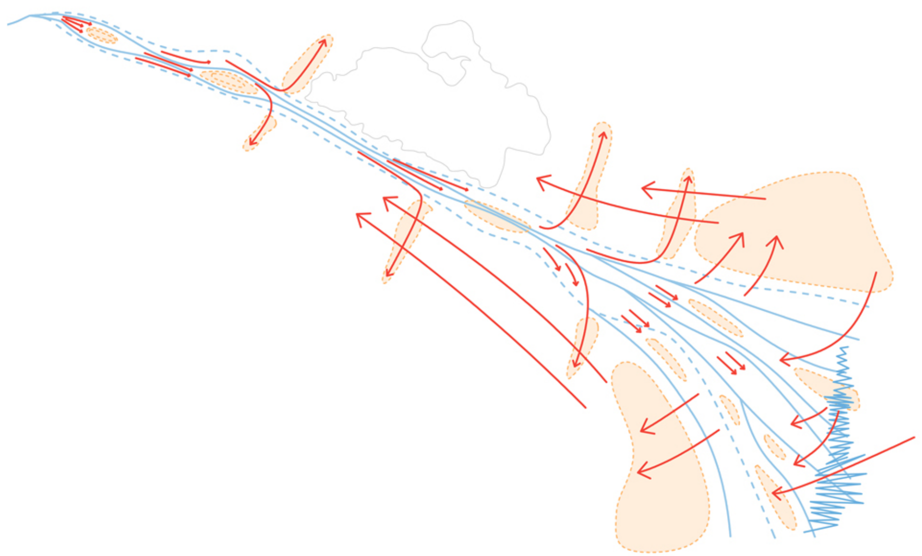




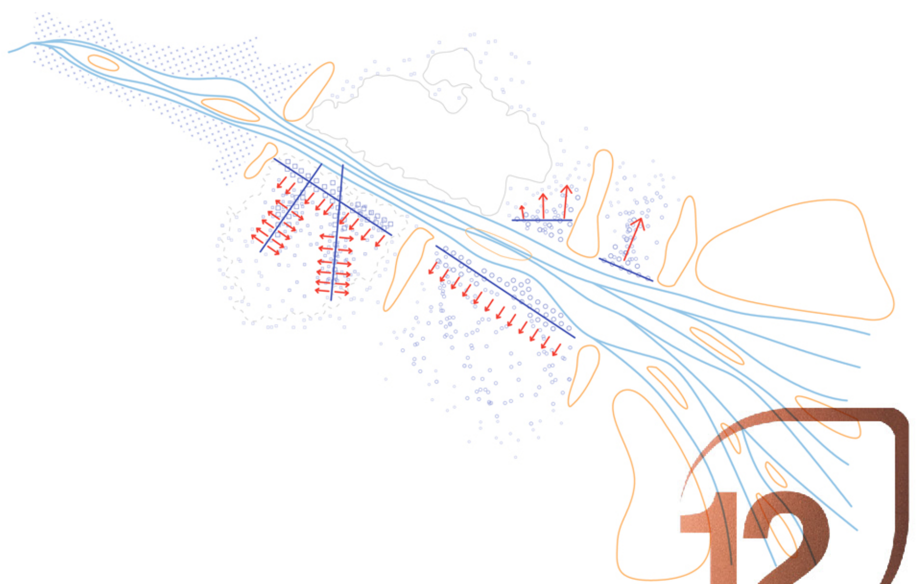
διάγραμμα χρόνου φυτεύσεων



άνοιγμα καινούργιας κοίτης – αλλαγή των ροών



δημιουργία νησίδων με την πάροδο του χρόνου



γραμμικές φυτεύσεις – δημιουργία νέου δάσους

Country /City Greece / Ioannina

University / School University of Ioannina / School of Engineering / Department of Arhitecture

Academic year 2022-2023

Title of the project Nature En-force

Authors Katerina-Ariadni Koliou, Theofilos Chondromatidis

TECHNICAL DOSSIER

Title of the project	Nature En-force
Authors	Katerina-Ariadni Koliou, Theofilos Chondromatidis
Title of the course	Urban Design II - Metabolizing Scape Dynamics
Academic year	2022-2023
Teaching Staff	Yannis Zavoleas, Carolos Galanos, Eleni Sionti
Department / Section / Program of belonging	Department of Architecture / 5-year integrated master's (graduate and postgraduate) program
University / School	University of Ioannina / School of Engineering

12

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

This project, having studied the water around Ioannina (aquifers, natural, artificially supported flows, wet zones), draws data from pre-existing scientific research and in-situ observation of the lake boundaries. Alongside data collection, a series of diagrams were produced, helping to understand and to correlate data with each other, then underpinning the design proposal. The proposal revisits the lake's outline and especially the shape of the dikes. Three points were chosen as the sites of intervention, where the mild urban character, the agricultural crops and the natural landscape are equally present. These points meet on the lakeside route and correspond to the three wooden bridges on the lake's southeastern boundary. The aim is not to create an instantaneously constructed artificial landscape that will come to overlay on the existing natural environment, but a constantly changing scheme, whose form may be anything but expected. It will result from natural operations (sedimentation, erosion, ecosystem creation) expressing a minimal design intent. The proposal suggests a new route, which cannot be precisely defined, but will be decided as time will leave the landscape at times empty at other times full, displaying the paths that it will be possible to follow. Thus, we propose three new constructions (bridges) that will not only constitute a passage between levels, but a path from which to observe the silent natural mechanisms. It is hoped that this proposal will help to understand that nature is not an inert system, but a dynamic one that always finds ways to balance itself.

For further information

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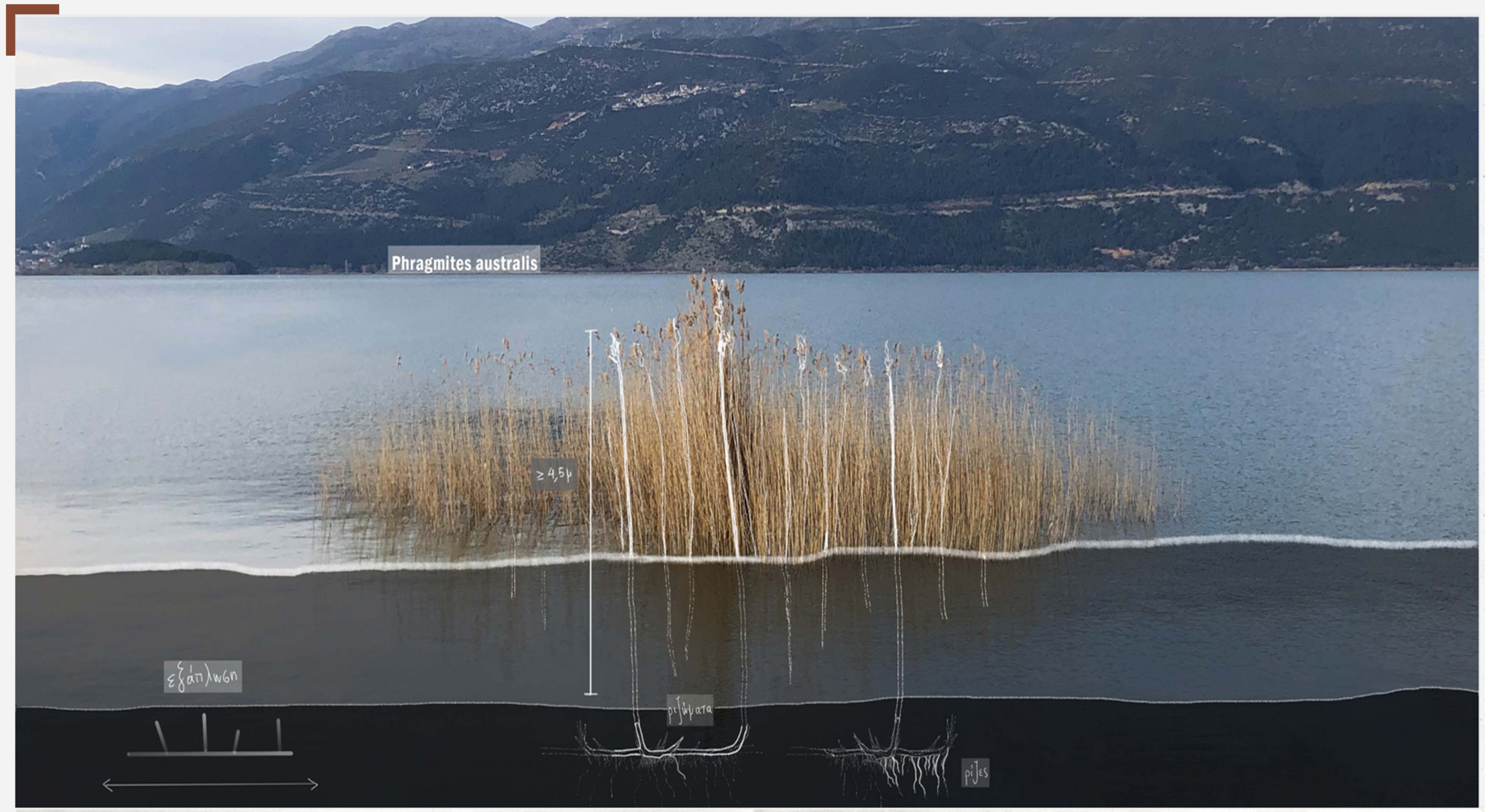
COAC - Colegi oficial d´Arquitectes de Catalunya

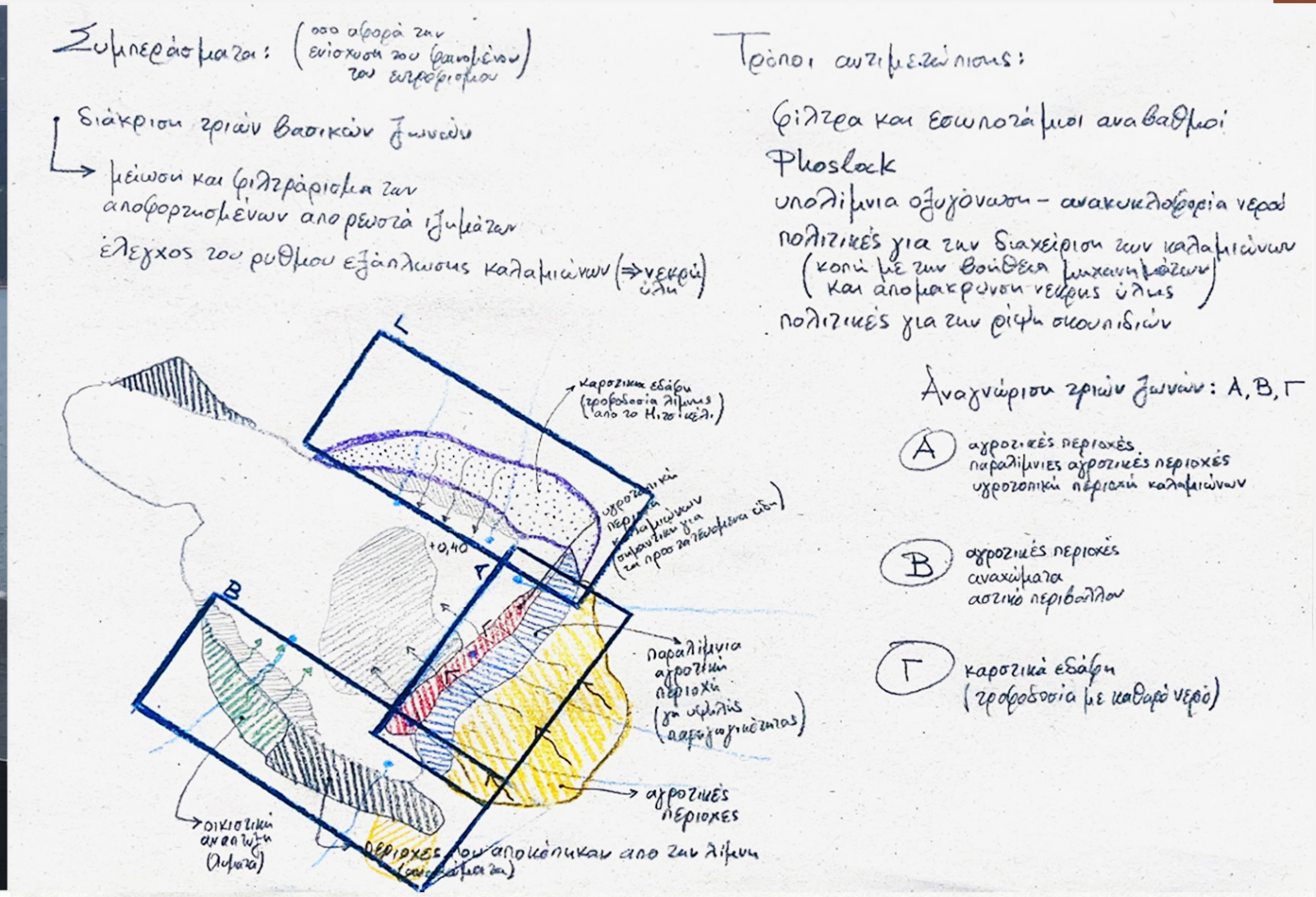
Carrer Arcs, 1-3
08002 Barcelona - Spain

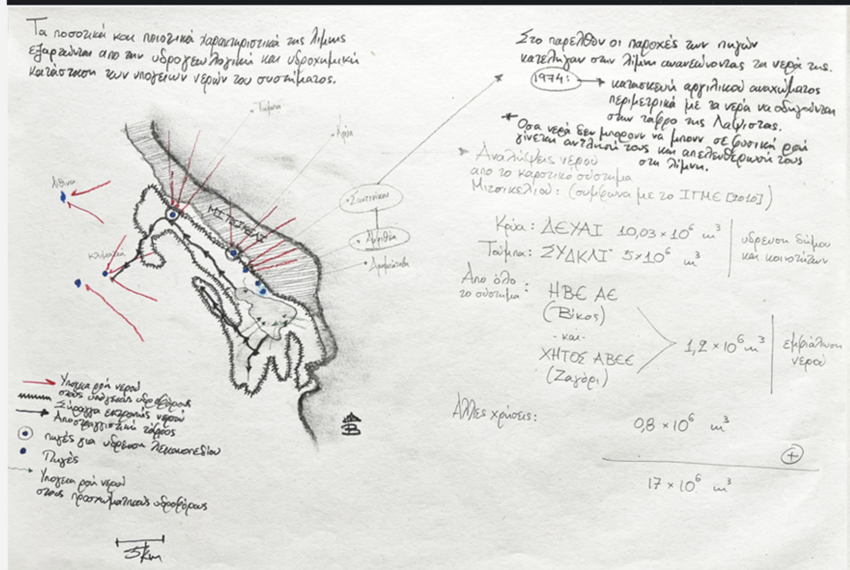
12th International Biennal Landscape Barcelona

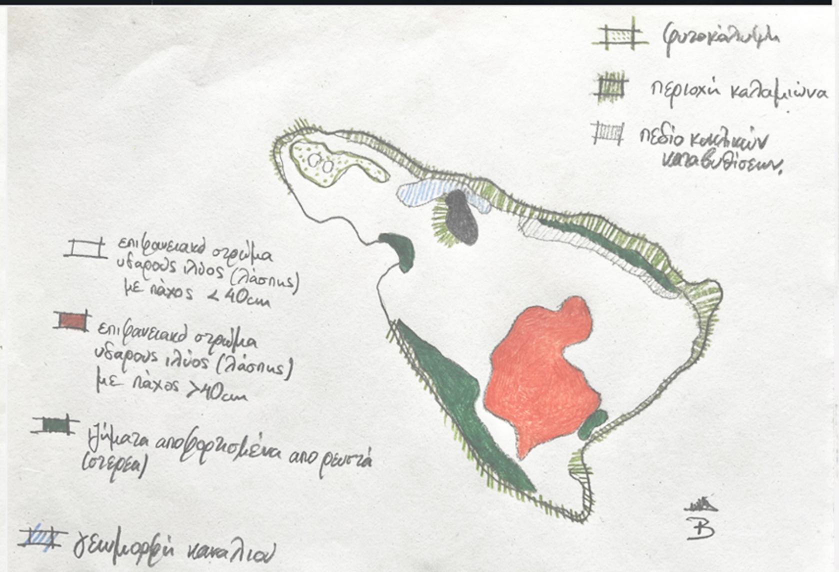
Barcelona **October 2023**

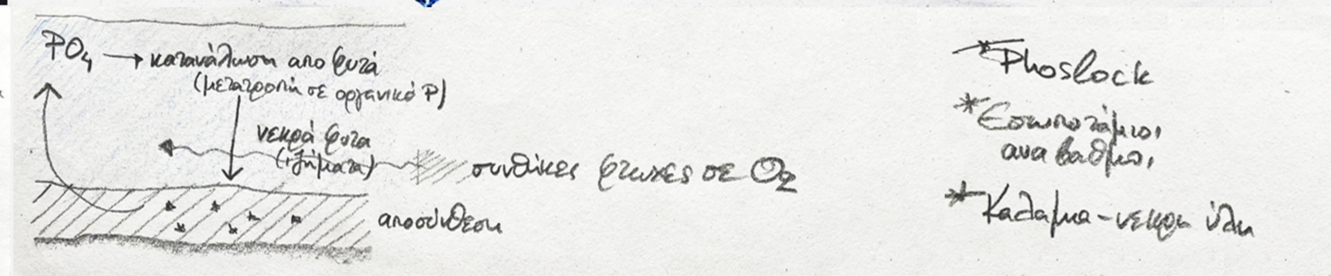
SCHOOL PRIZE

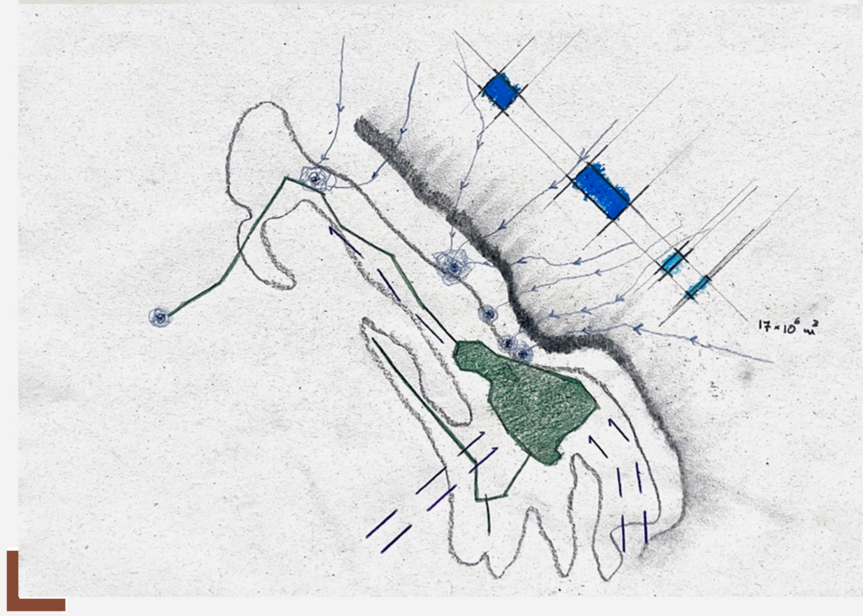

Phragmites australis
≥4,5μ
εξάπλωση
ριζώματα
ρίζες


Συμπεράσματα: (όσο αφορά την ενίσχυση του φαινομένου του ευτροφισμού)
διάκριση τριών βασικών ζωνών
μείωση και φιλτράρισμα των αποφορτισμένων απορευστά ιζημάτων
έλεγχος του ρυθμού εξάπλωσης καλαμιώνων (⇒ νεκρή ύλη)
Τρόποι αντιμετώπισης:
φίλτρα και εσωποτάμιοι αναβαθμοί
Phoslock
υπολίμνια οξυγόνωση - ανακυκλοφορία νερού
πολιτικές για την διαχείριση των καλαμιώνων (κοπή με την βοήθεια μηχανημάτων και απομάκρυνση νεκρής ύλης)
πολιτικές για την ρίψη σκουπιδιών
Αναγνώριση τριών ζωνών: Α, Β, Γ
Α αγροτικές περιοχές, παραλίμνιες αγροτικές περιοχές, υγροτοπική περιοχή καλαμιώνων
Β αγροτικές περιοχές, αναχώματα, αστικό περιβάλλον
Γ καρστικά εδάφη (τροφοδοσία με καθαρό νερό)
καρστικά εδάφη (τροφοδοσία λίμνης από το Μιτσικέλι)
παραλίμνια αγροτική περιοχή
αγροτικές περιοχές
οικιστική ανάπτυξη (Λίμνη)
περιοχές που αποκόπηκαν από την λίμνη

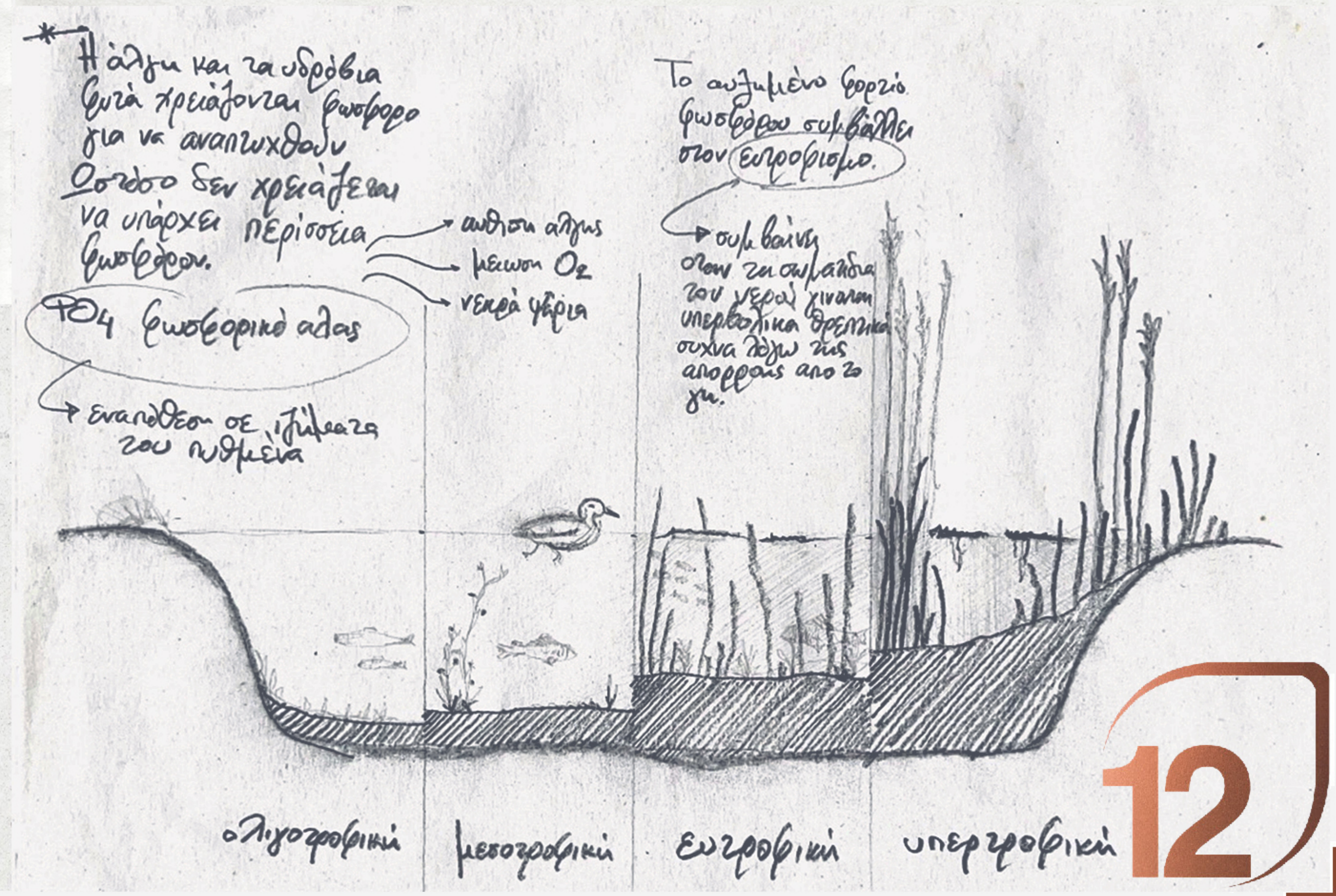


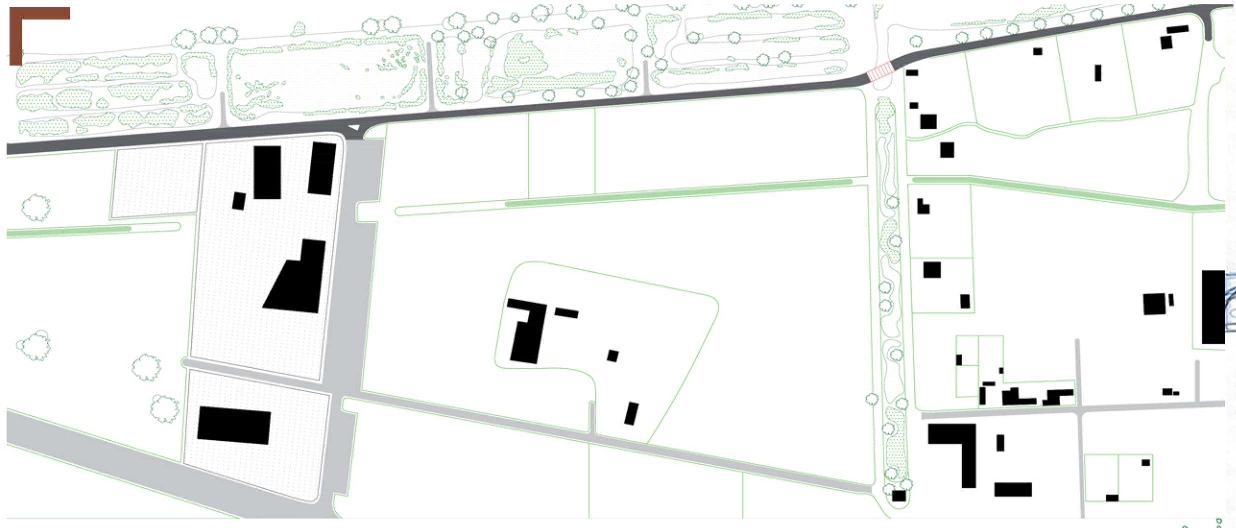

φυτοκάλυψη
περιοχή καλαμιώνα
επιφανειακό στρώμα υδαρούς ιλύος (λάσπης) με πάχος <40cm
επιφανειακό στρώμα υδαρούς ιλύος (λάσπης) με πάχος >40cm
ιζήματα αποθορτισμένα από ρευστά (στερεά)
Β

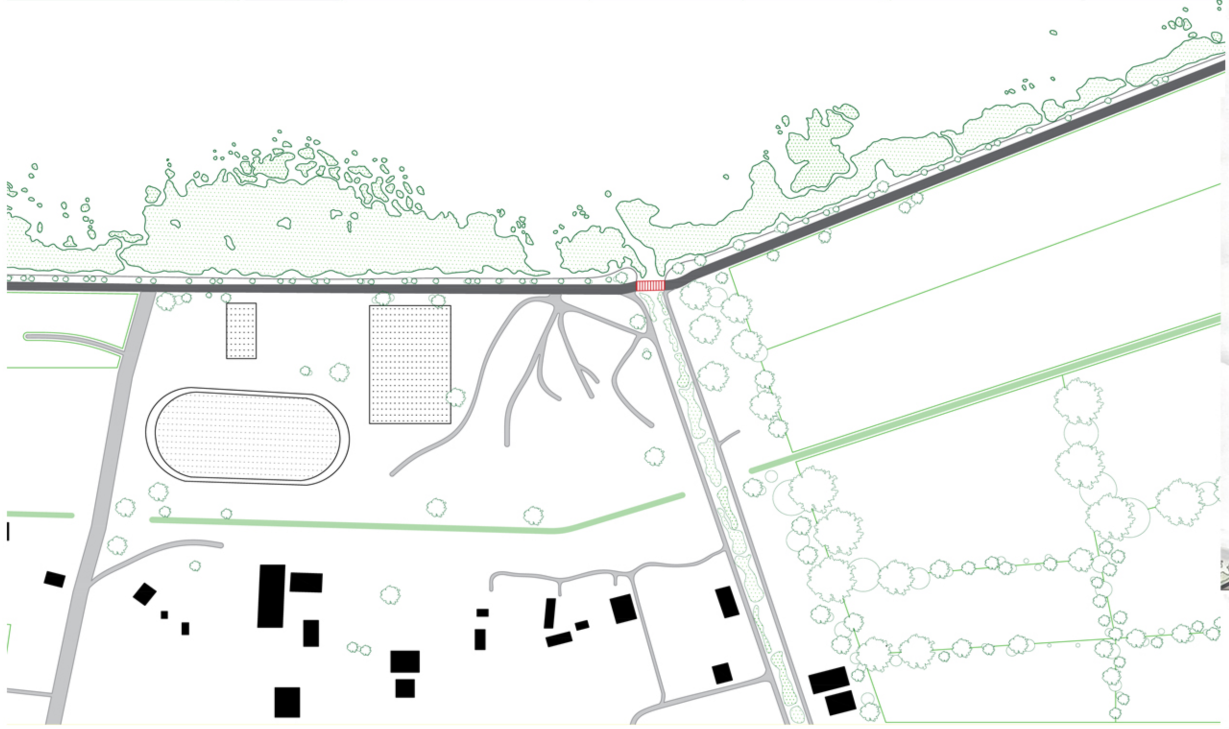

PO_4 → κατανάλωση από φυτά (μετατροπή σε οργανικό P)
νεκρά φυτά (ιζήματα)
συνθήκες φτωχές σε O_2
αποσύνθεση
*Phoslock
*Εσωποτάμιοι αναβαθμοί
*Καλάμια - νεκρή ύλη

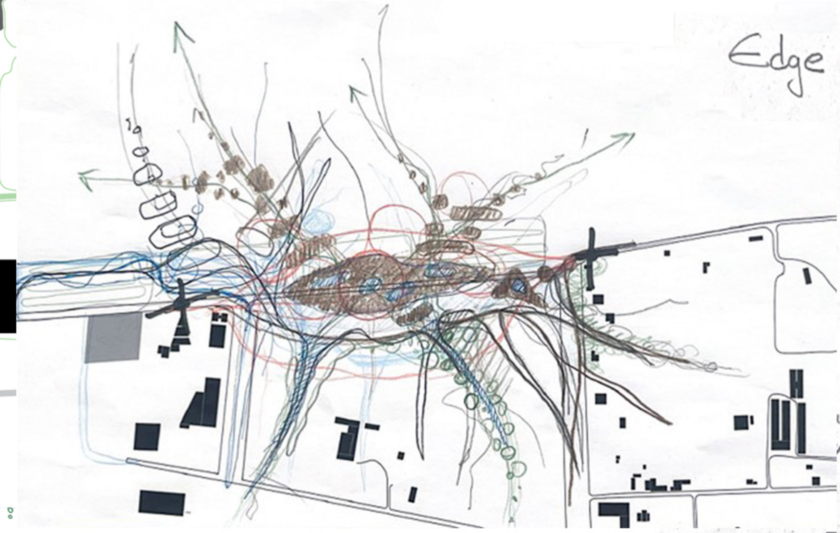

17×10^6 m³

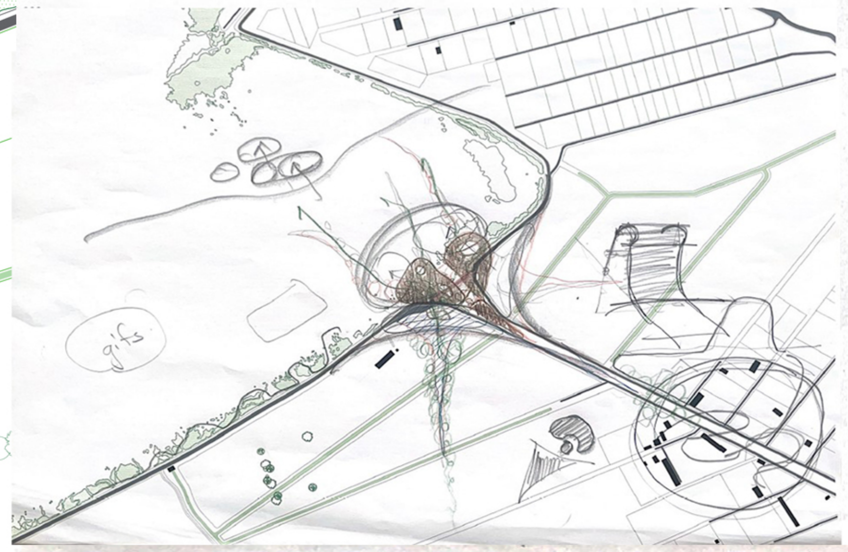

PO_4
κατανάλωση
συνθήκες φτωχές σε O_2
αποσύνθεση

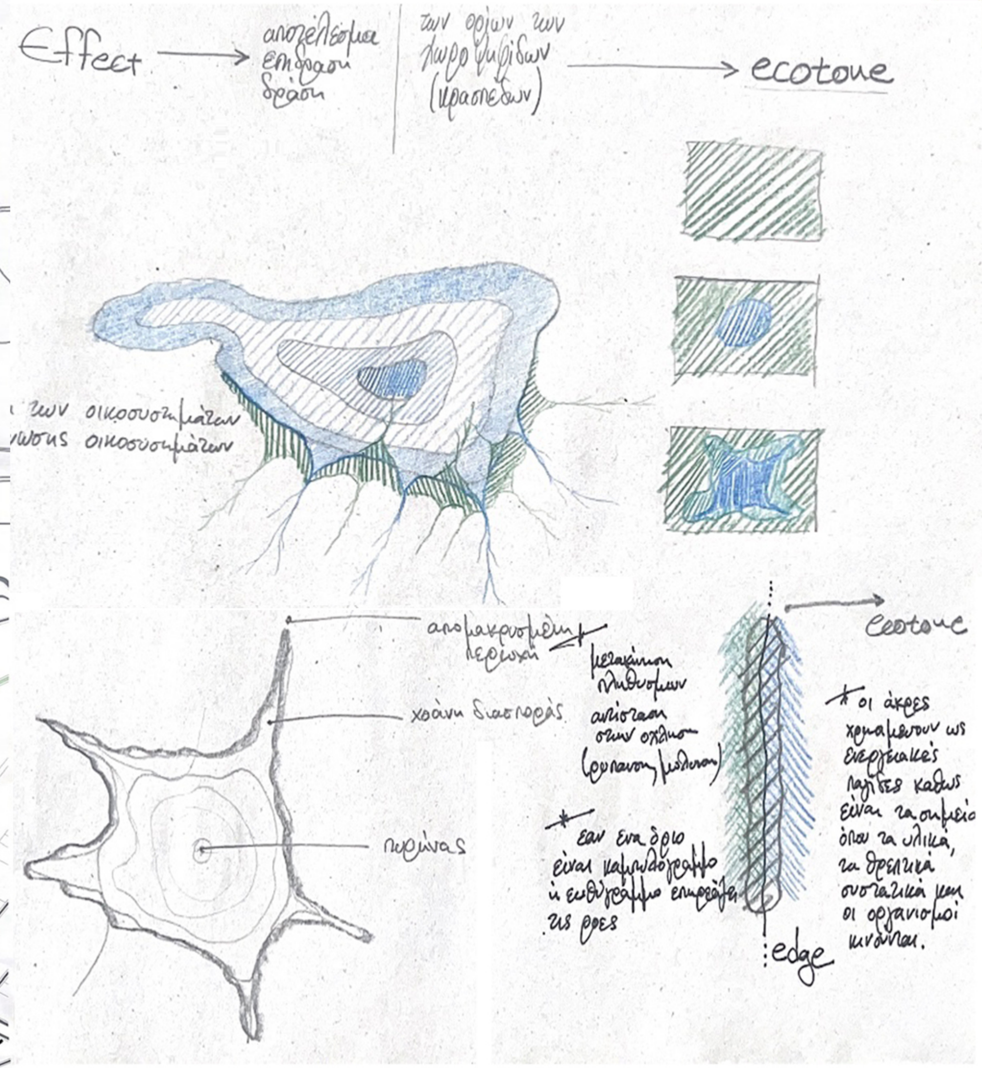

* Η άλγη και τα υδρόβια φυτά χρειάζονται φώσφορο για να αναπτυχθούν. Ωστόσο δεν χρειάζεται να υπάρχει περίσσεια φωσφόρου.
αύξηση άλγης
μείωση O_2
νεκρά ψάρια
PO_4 φωσφορικό άλας
εναπόθεση σε ιζήματα του πυθμένα
Το αυξημένο φορτίο φωσφόρου συμβάλλει στον ευτροφισμό.
συμβαίνει όταν τα συστατικά του νερού γίνονται υπερβολικά θρεπτικά συχνά λόγω της απορροής από τη γη.
ολιγοτροφική
μεσοτροφική
ευτροφική
υπερτροφική

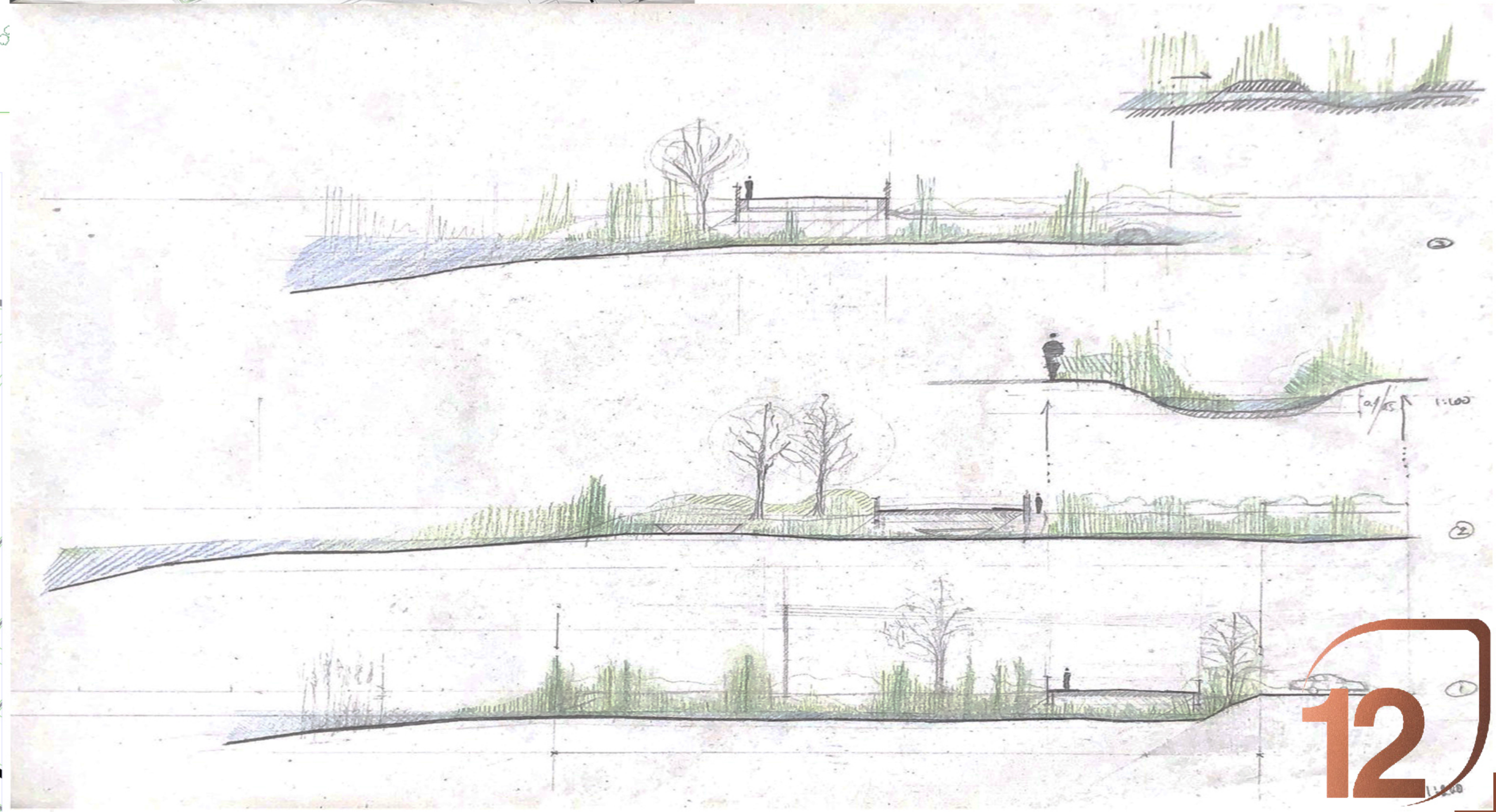


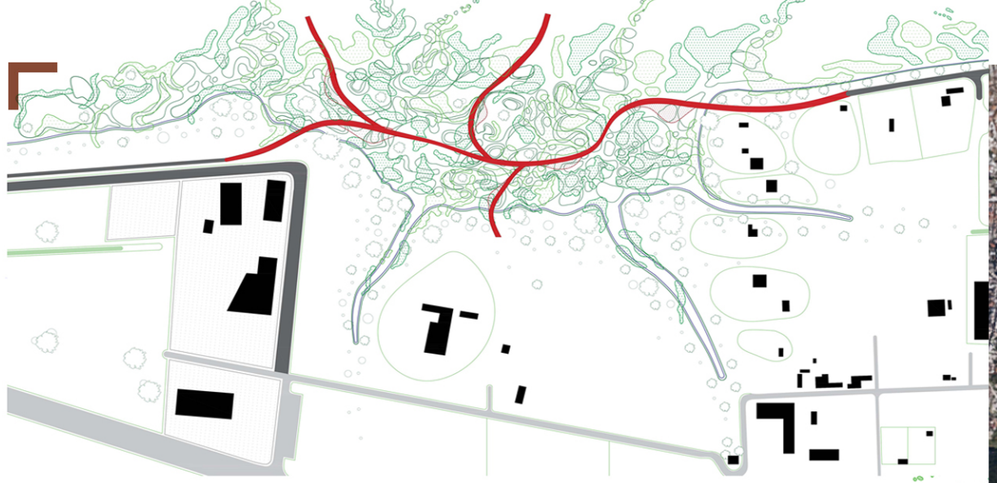


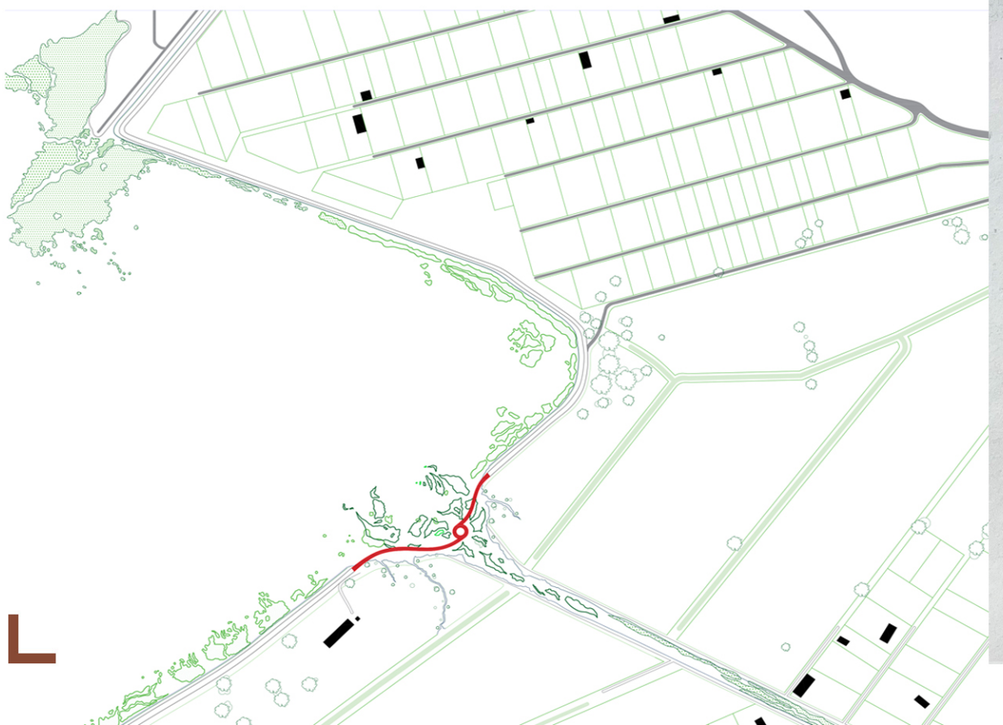


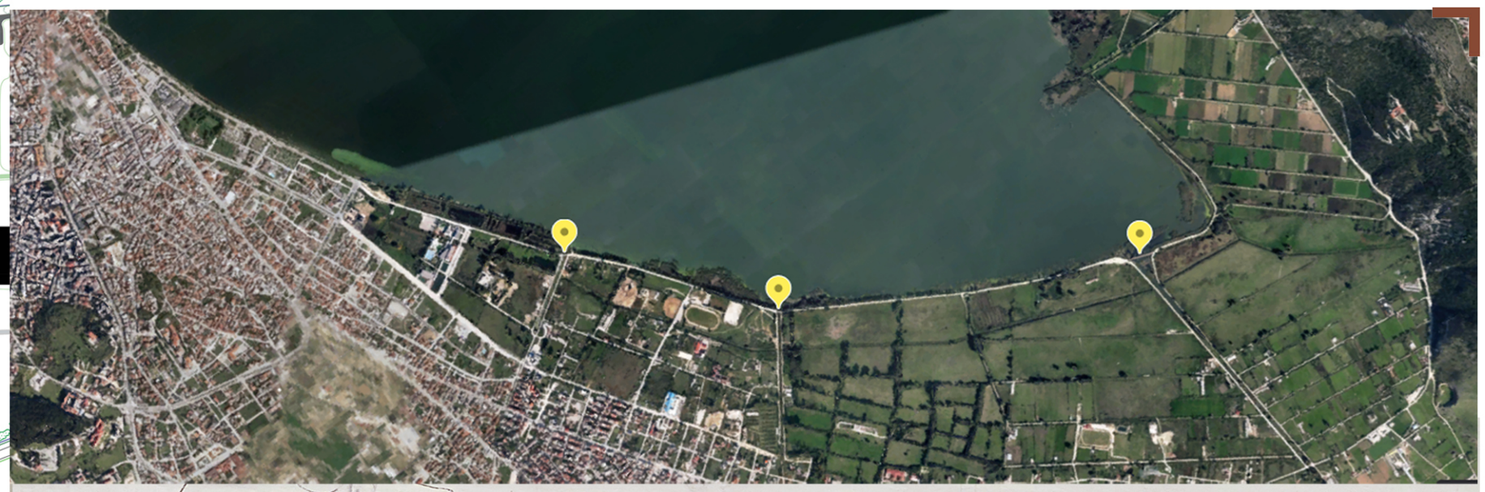


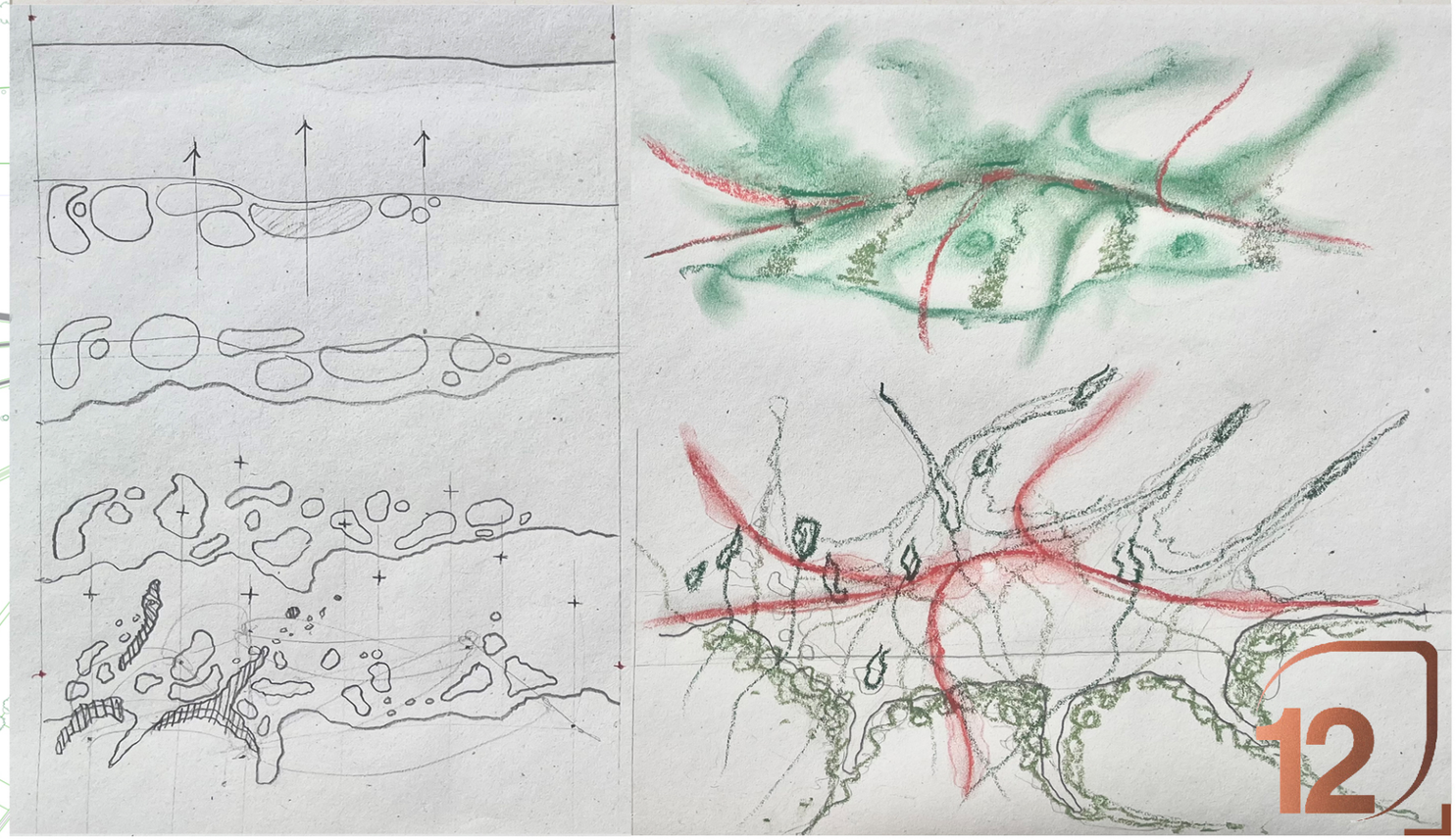

Edge Effect
αποτέλεσμα επίδραση δράση
ecotone
απομακρυσμένη περιοχή
χοάνη διασποράς
πυρήνας
edge











Country /City Greece / Ioannina

University / School University of Ioannina / School of Engineering / Department of Arhitecture

Academic year 2022-2023

Title of the project Interactive Platforms

Authors Antonis Simelis, Zoi Chaskou

TECHNICAL DOSSIER

Title of the project	Interactive Plaftorms
Authors	Antonis Simelis, Zoi Chaskou
Title of the course	Urban Design || - Metabolizing Scape Dynamics
Academic year	2022-2023
Teaching Staff	Yannis Zavoleas, Carolos Galanos, Eleni Sionti
Department / Section / Program of belonging	Department of Architecture / 5-year integrated master's (graduate and postgraduate) program
University / School	University of Ioannina / School of Engineering

12

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

As a site, we chose the lakefront area of Lake Pamvotida, between the end of the pedestrian and cycling path in Matsikas and the sports facilities of Limnopoula. The aim was to design a route, but also various gathering hubs, while focusing on human activity. Through this intevention, we wanted to bring people closer to the lake and nature, without disturbing it. Our intervention consists of various routes for walking and cycling, both on the border of the lake and beyord it. The intevention is complimented by platforms for activities such as fishing, swimmingt, picknicking or just observation of the landscape. All of these interact with nature and the habitats of the area, leading the user to experience the lake and the nature from different heights and perspectives.

For further information

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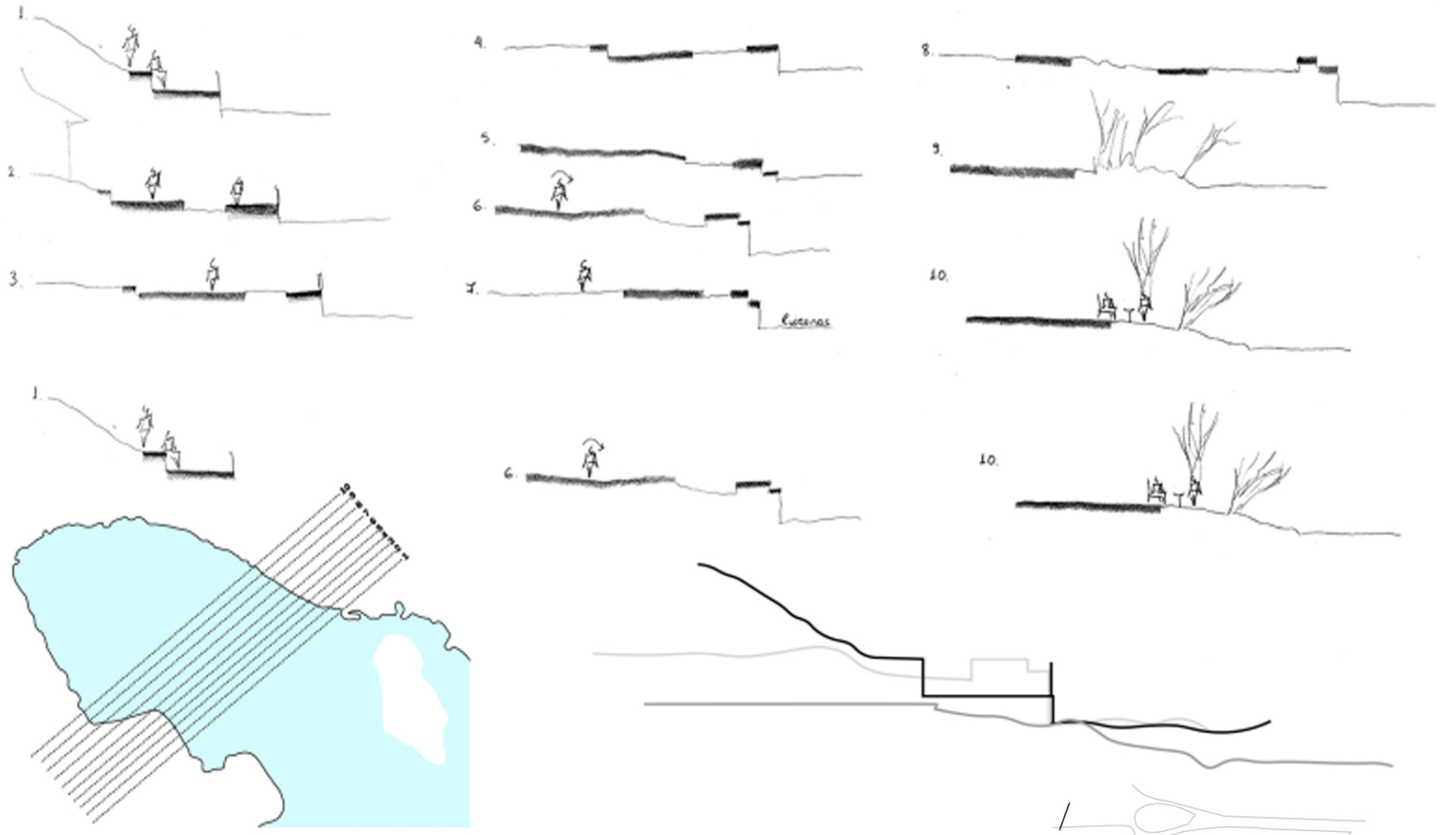
08002 Barcelona - Spain

12th International Biennal Landscape Barcelona

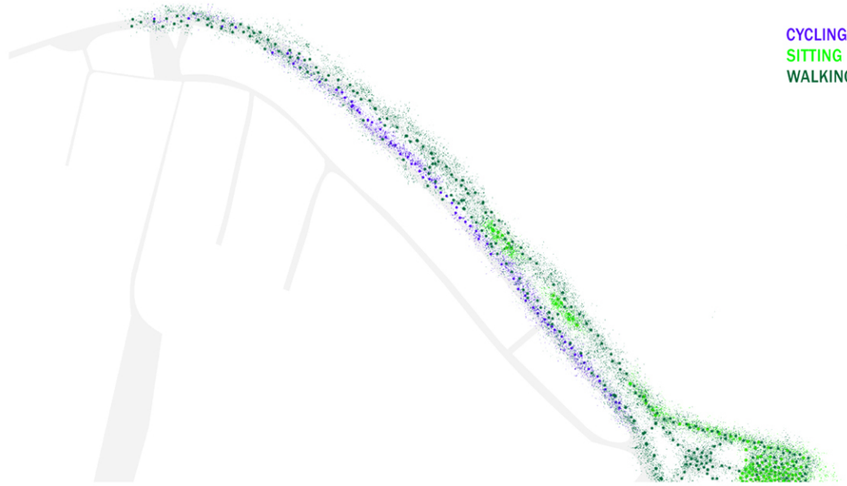
Barcelona October 2023

SCHOOL PRIZE

LAKE WATERFRONT

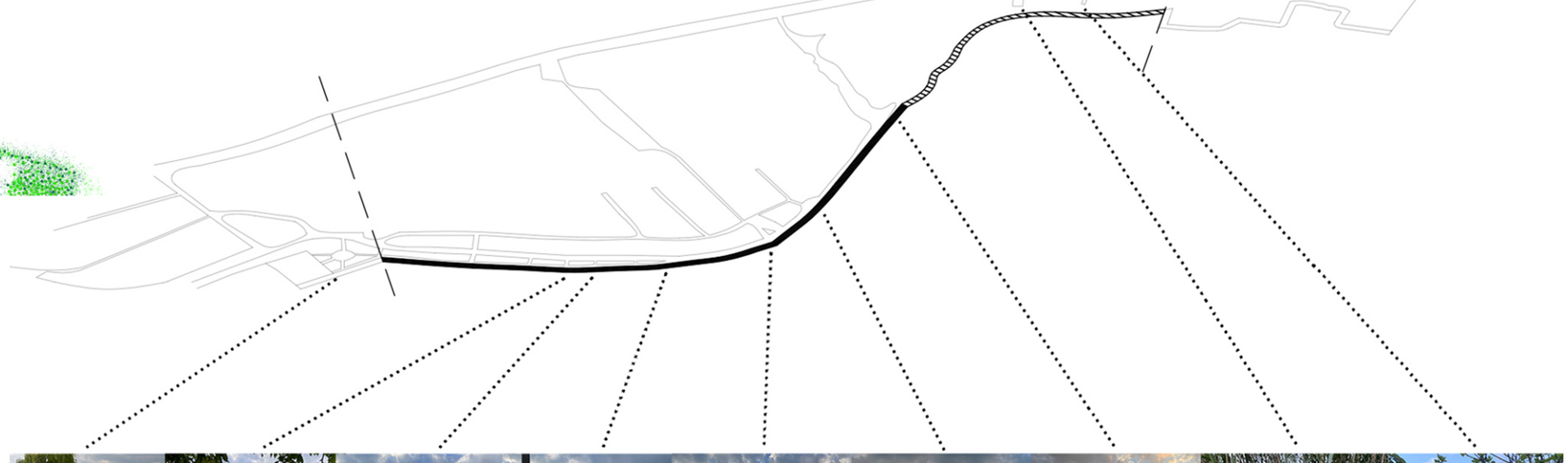


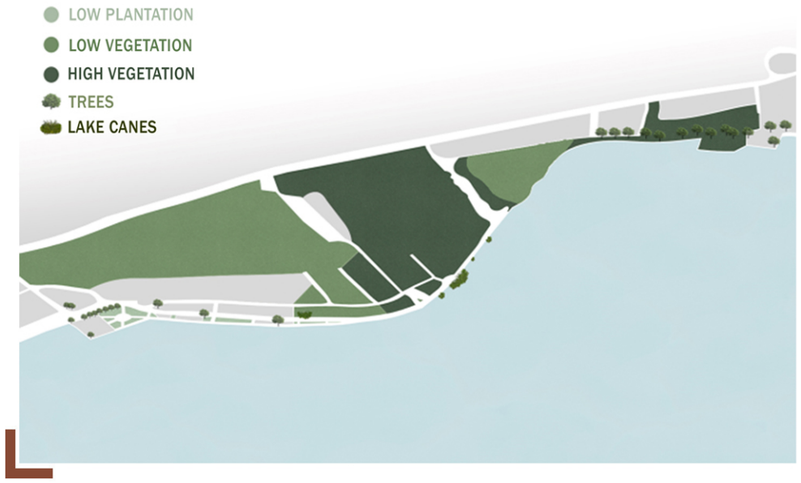
INTERACTION ZONE

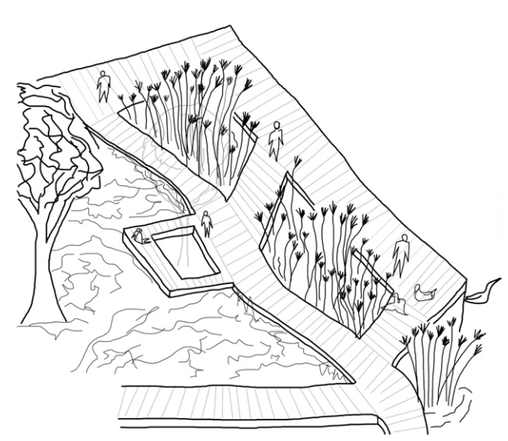


CYCLING
SITTING
WALKING

hard border (66%) soft border (34%)



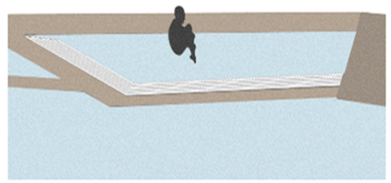




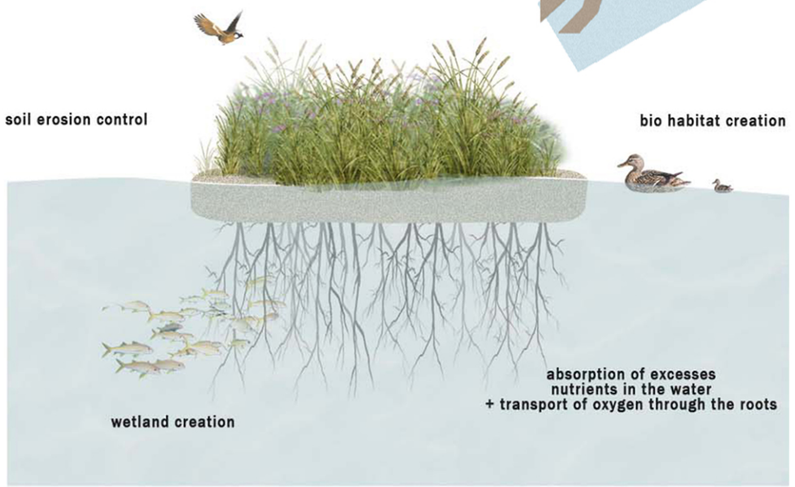
CONNECTION OF HUMAN - NATURE

BIO HABITAT

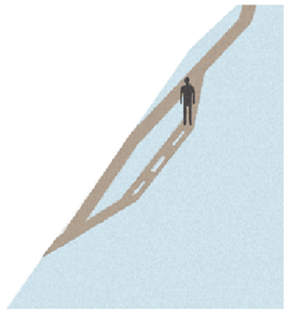
1. PLATFORM-POOL



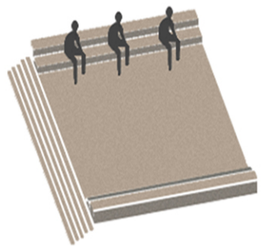
2. BEACH



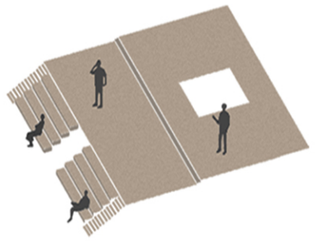
3. OBSERVATION PLATFORM



4. PIC-NIC PLATFORM



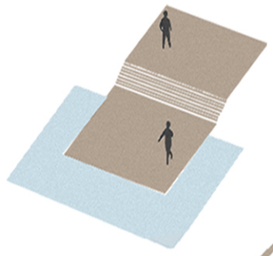
5. OBSERVATION PLATFORM



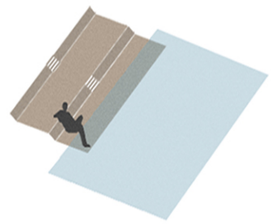
6. PIC-NIC PLATFORM

7. FISHING PLATFORMS

8. LAKE PLATFORM NO.2

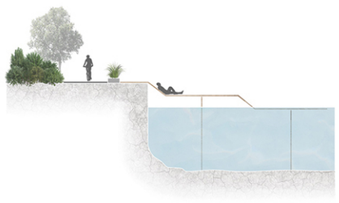


9. LAKE PLATFORM

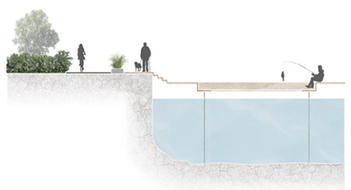


10. AMPHITHEATRE

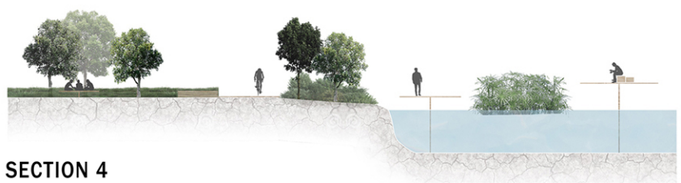
SECTION 1



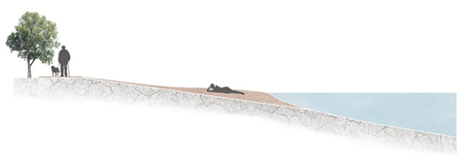
SECTION 2



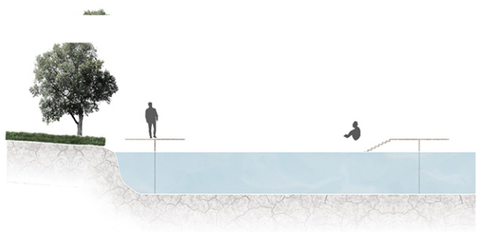
SECTION 3



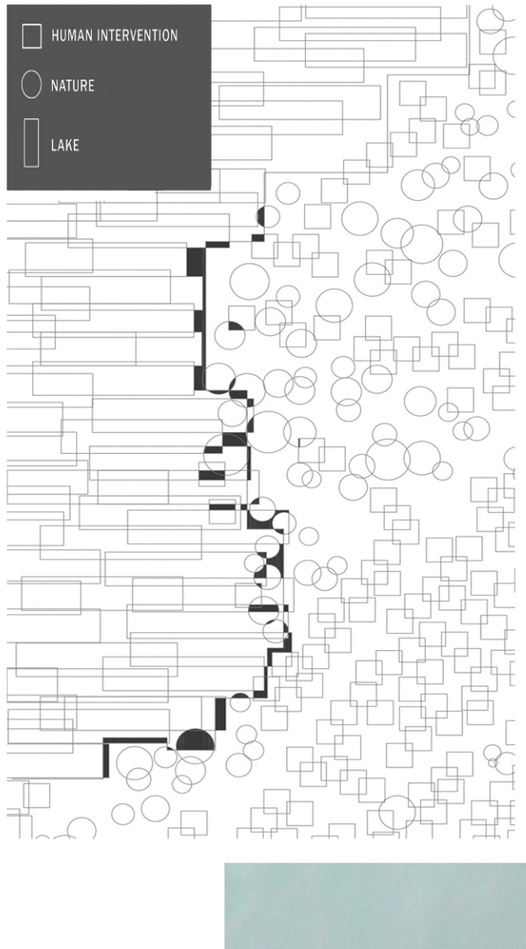
SECTION 4

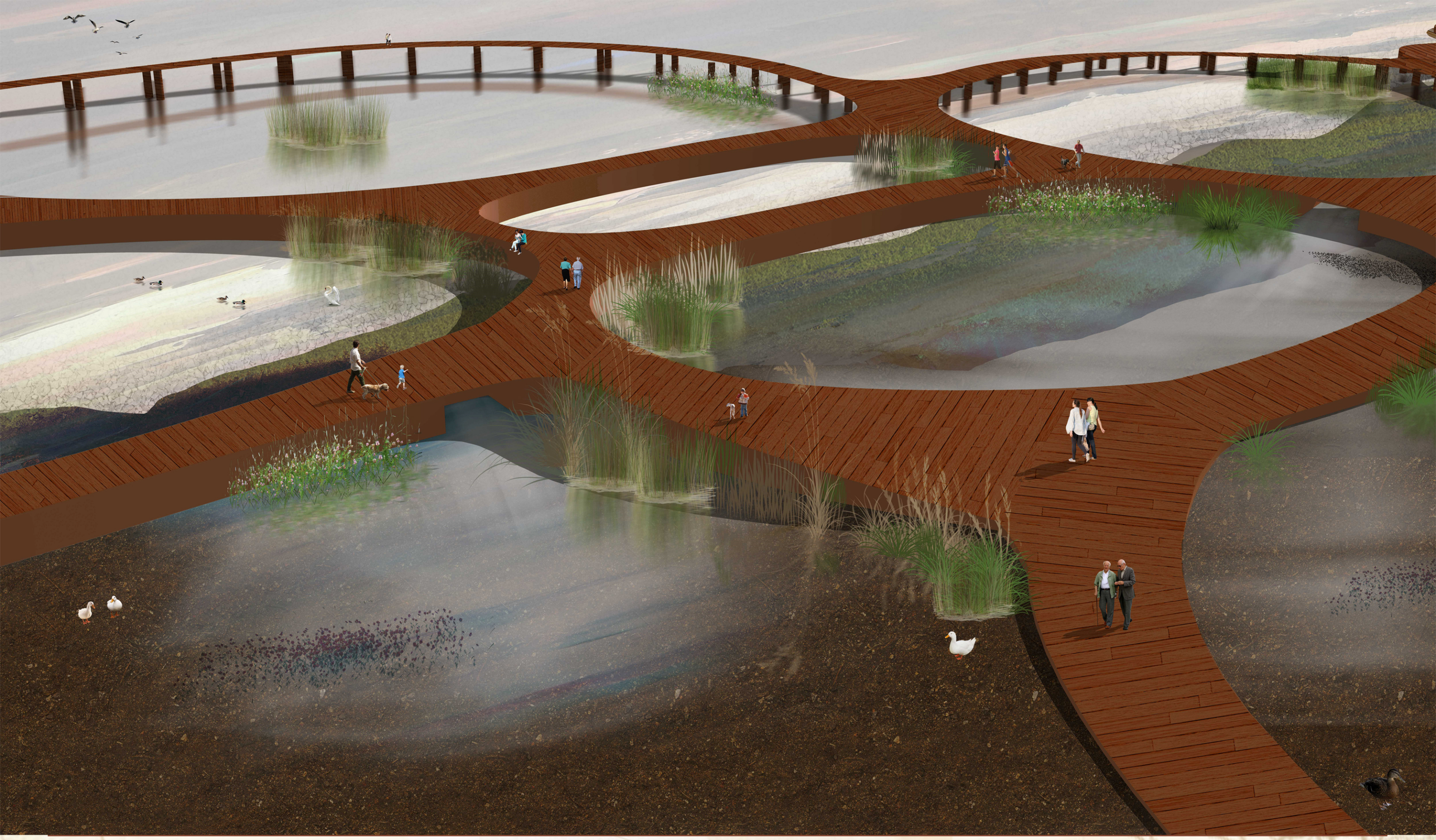


SECTION 5



SECTION 6





Country /City	Greece / Ioannina
University / School	University of Ioannina / School of Engineering / Department of Arhitecture
Academic year	2022-2023
Title of the project	From Lake to River
Authors	Maria Tyers, Katia Tzora, Anastasia Rapti

TECHNICAL DOSSIER

Title of the project	From Lake to River
Authors	Maria Tyers, Katia Tzora, Anastasia Rapti
Title of the course	Urban Design II - Metabolizing Scape Dynamics
Academic year	2022-2023
Teaching Staff	Yannis Zavoleas, Carolos Galanos, Eleni Sionti
Department / Section / Program of belonging	Department of Architecture / 5-year integrated master's (graduate and postgraduate) program
University / School	University of Ioannina / School of Engineering

12

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

Pamvotida Lake of the greater region of Ioannina, Greece is home to many species of the fauna. Migrating birds use the lake as a stop, while fish as a shelter for breeding. The spread of reed beds in the lake creates incubation areas for both birds and fish. Drabatova and Sendeniko are two main springs of Pamvotida. Two embarkments were built in the 1950s to manage flooding, which have resulted in stagnation. Moreover, the combination of spring inactivity and plant fertilizer being dumped in the lake have caused excessive phosphorus and nutrient levels. Consequently, algae reproduction rises, and oxygen levels drop making it a deadly environment. A series of experiments were conducted to alleviate the ecosystem's decaying status. The proposed design scheme introduces three elements to assist the lake's natural cleaning and to provide bird and fish shelters. The first element is a path walk acting as a fragmented embankment. Its height ranges, letting the pedestrians get close to the water, while at other areas it reaches higher viewpoints. Its arches let water flow while incubation areas are created in other spots. The second element is a group of artificial islands that boost water movement. Site-specific moulds capturing sediments are placed in the lake. New islands emerge gradually, acting as guides that divert water towards all areas. The last element acts as a filter that blocks fertilizers. Two kinds of islands are created using the natural mechanism of reed bed rhizome, providing rafts for people reachable by boats and shelters for nesting.

For further information

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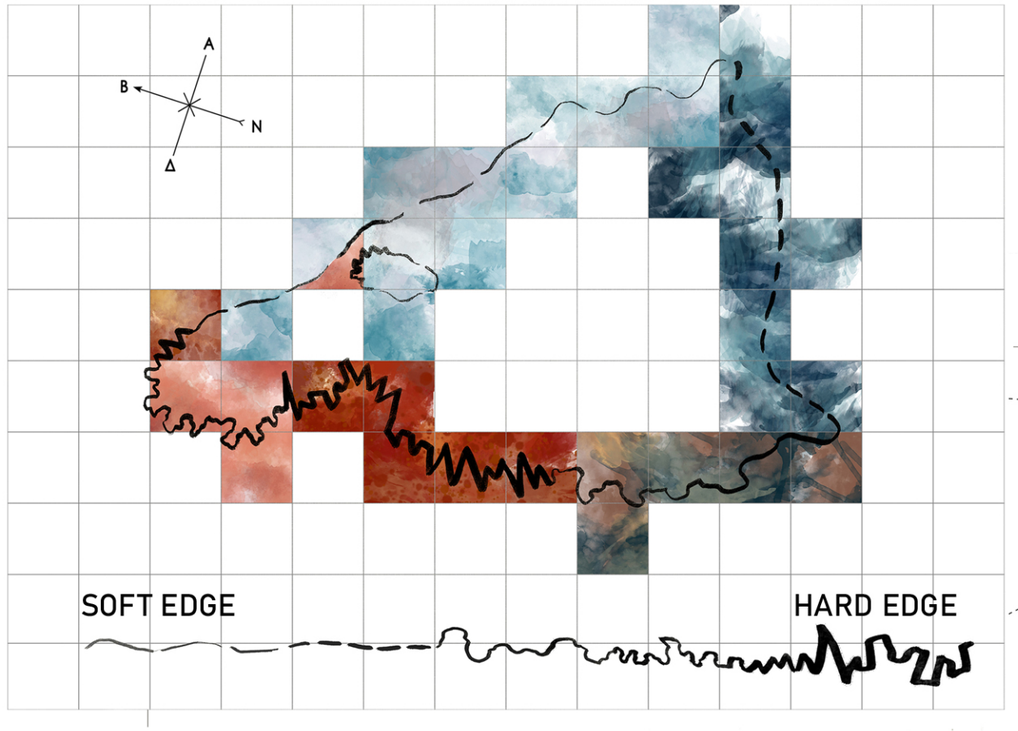
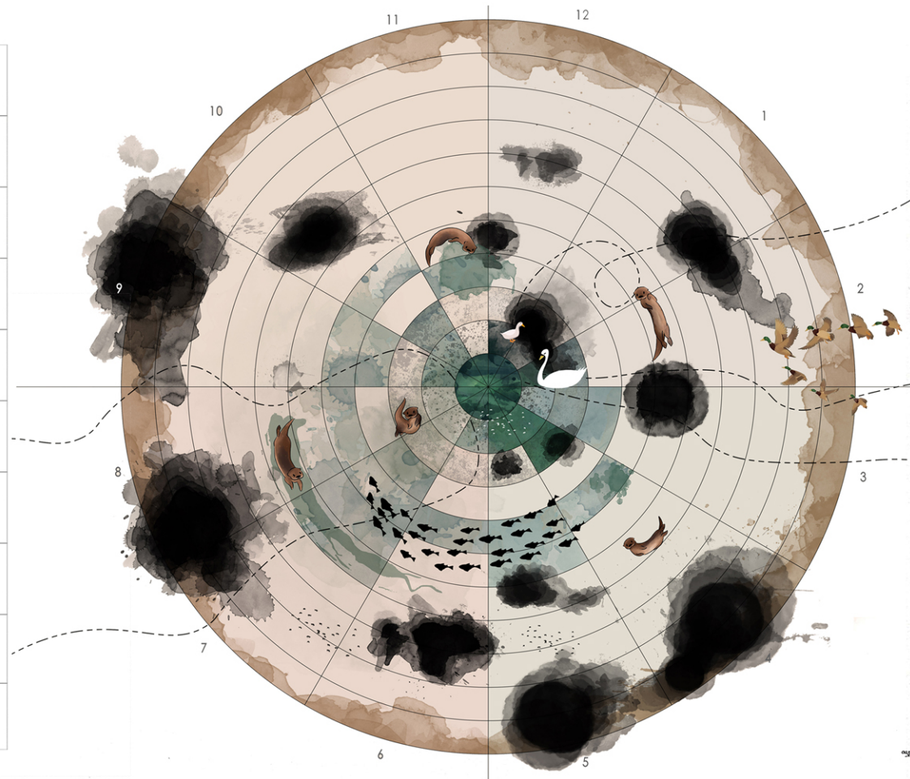
12th International Biennal Landscape Barcelona

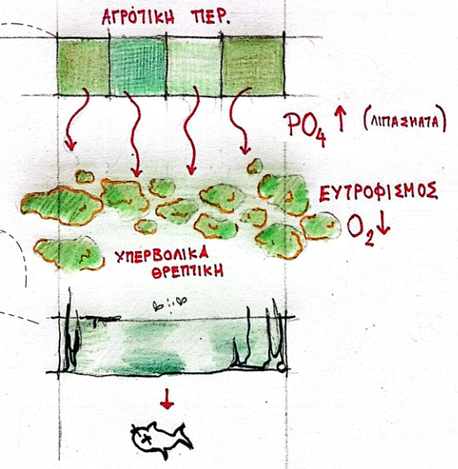
Barcelona **October 2023**

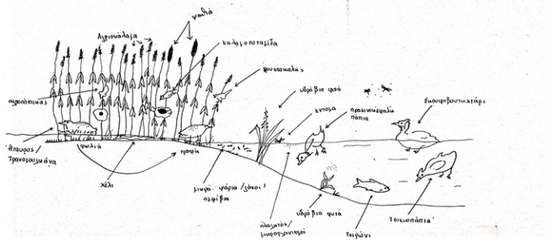
SCHOOL PRIZE

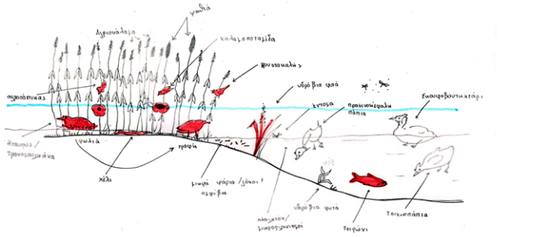


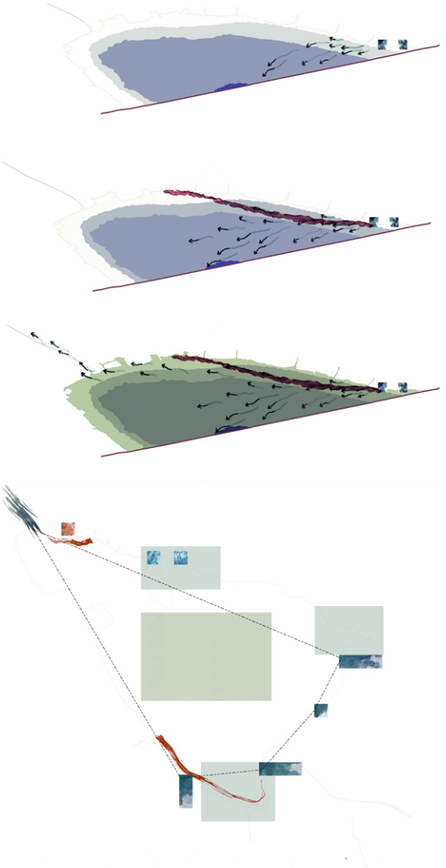


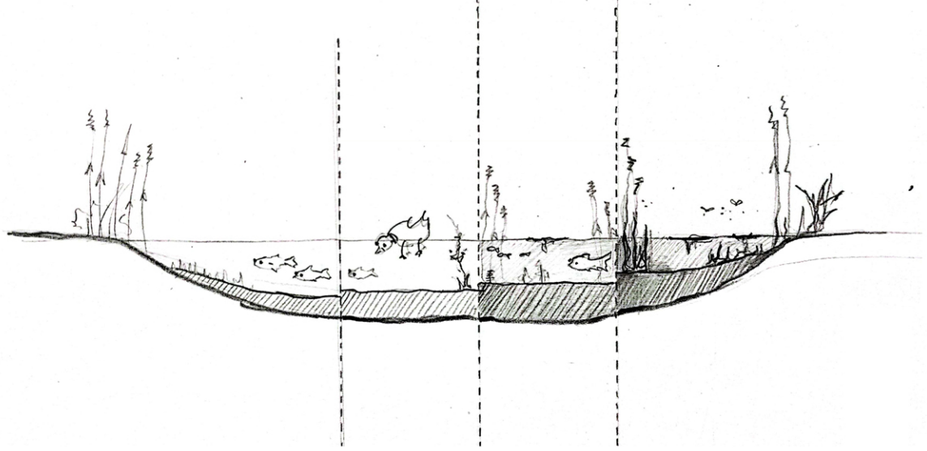
Supralocal linking
Aquifer axis

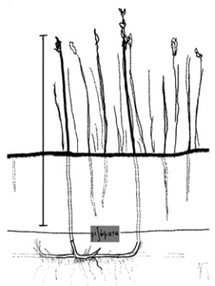


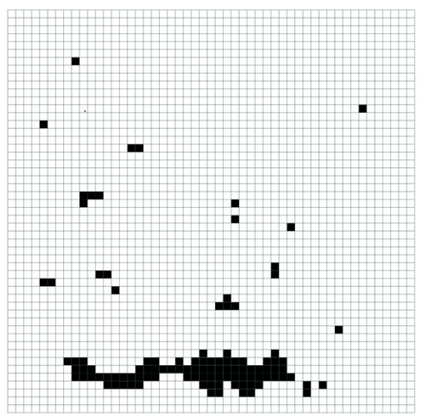


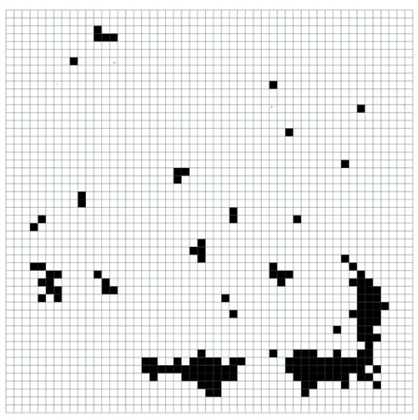


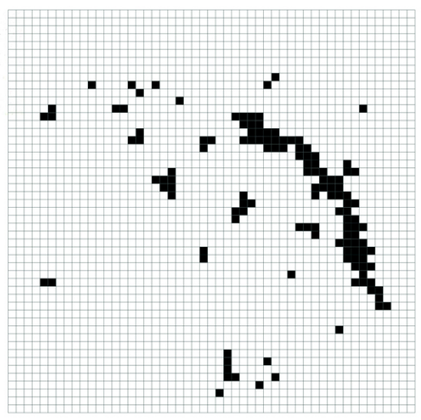


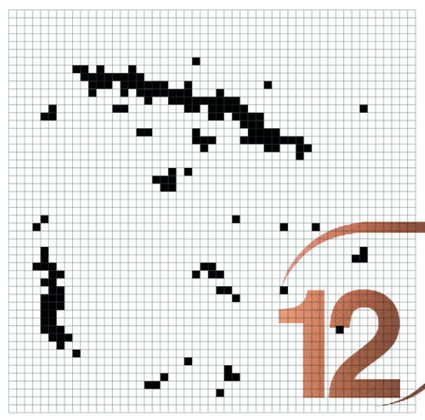


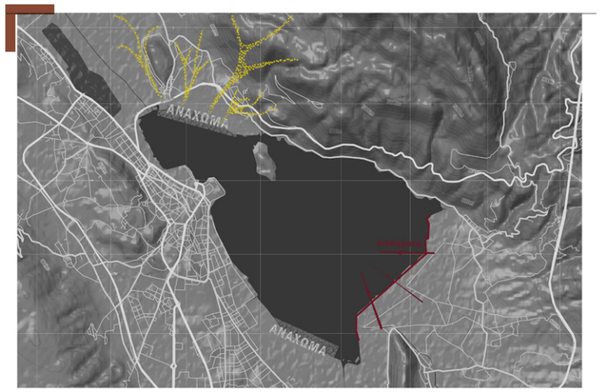








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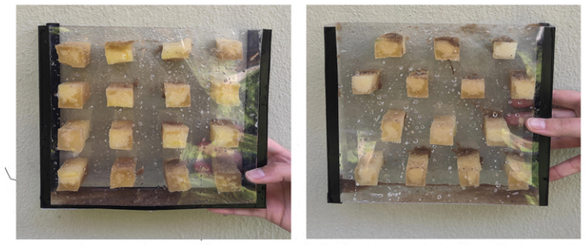

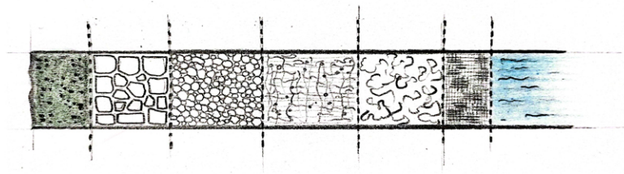

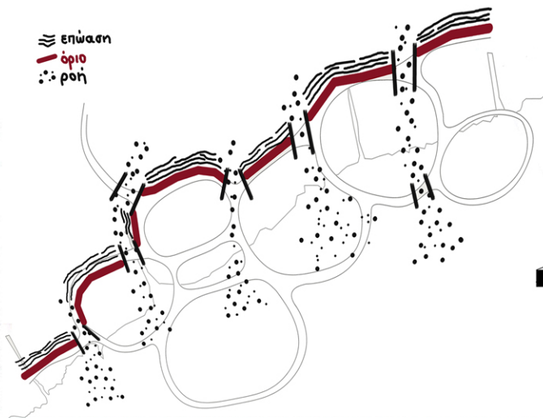
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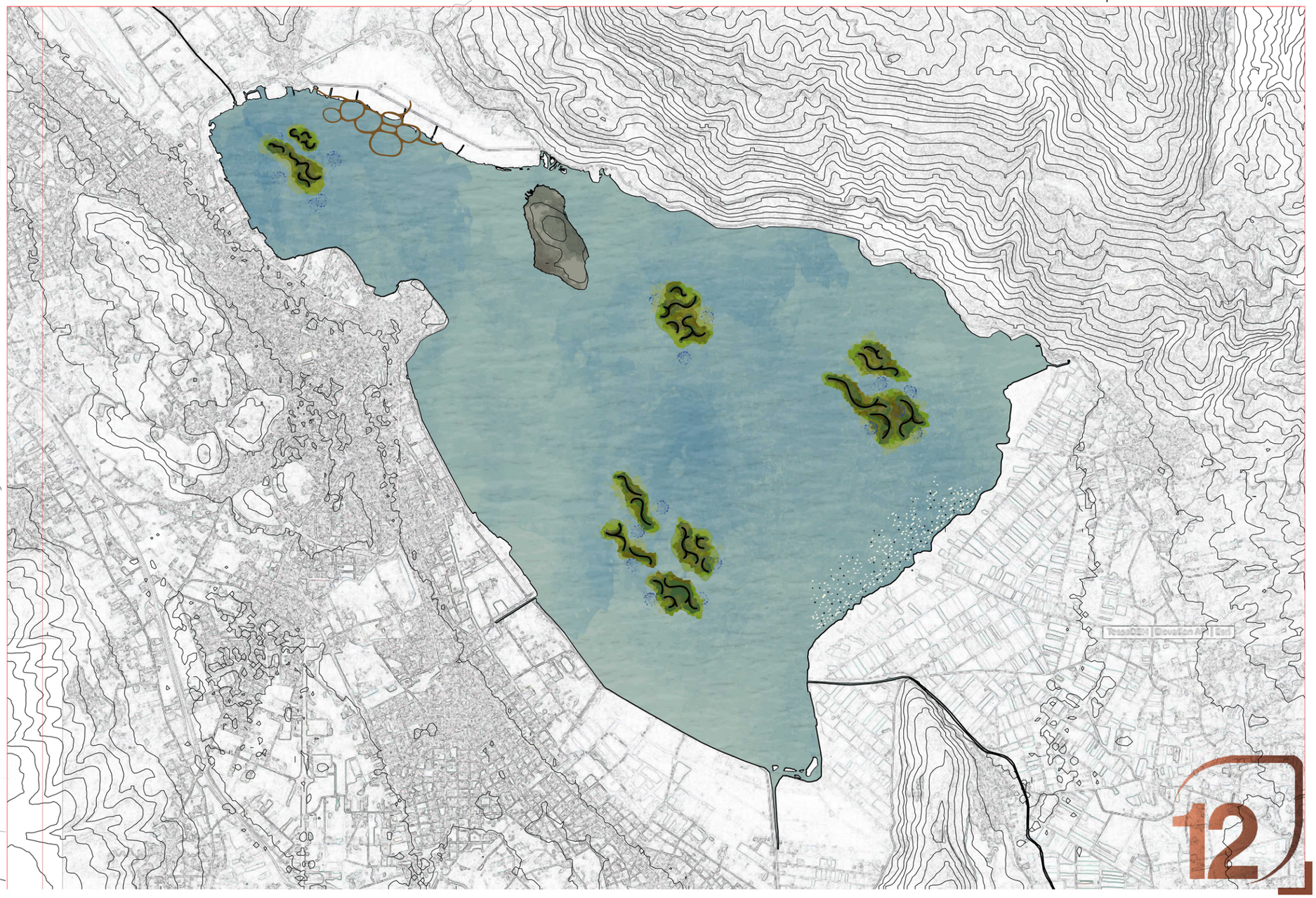
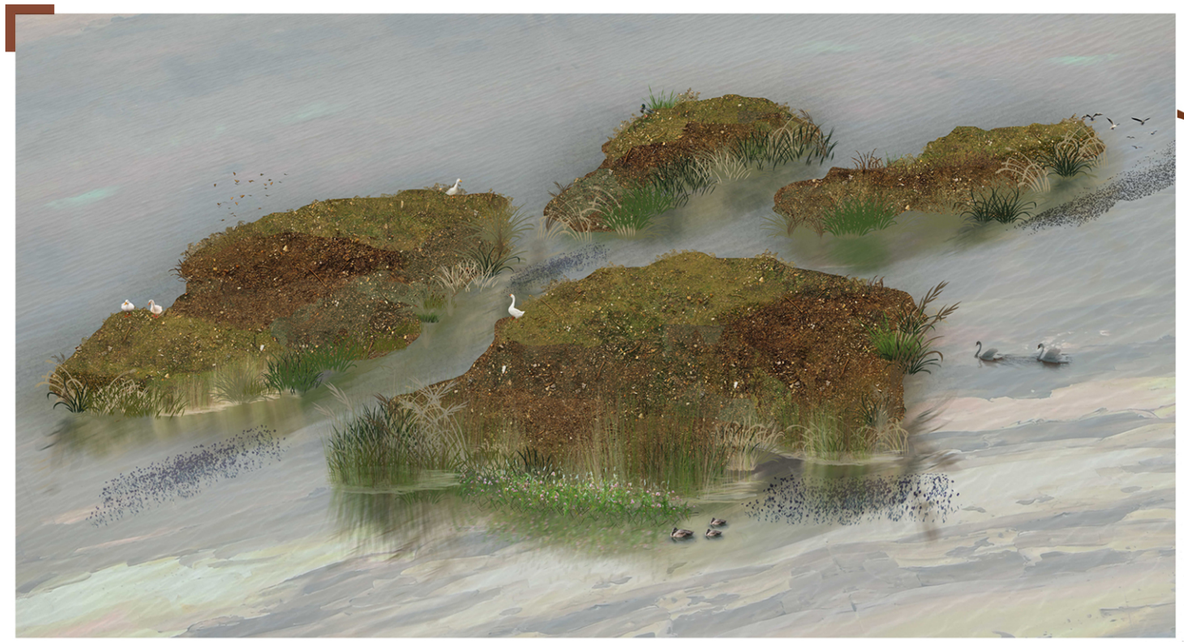
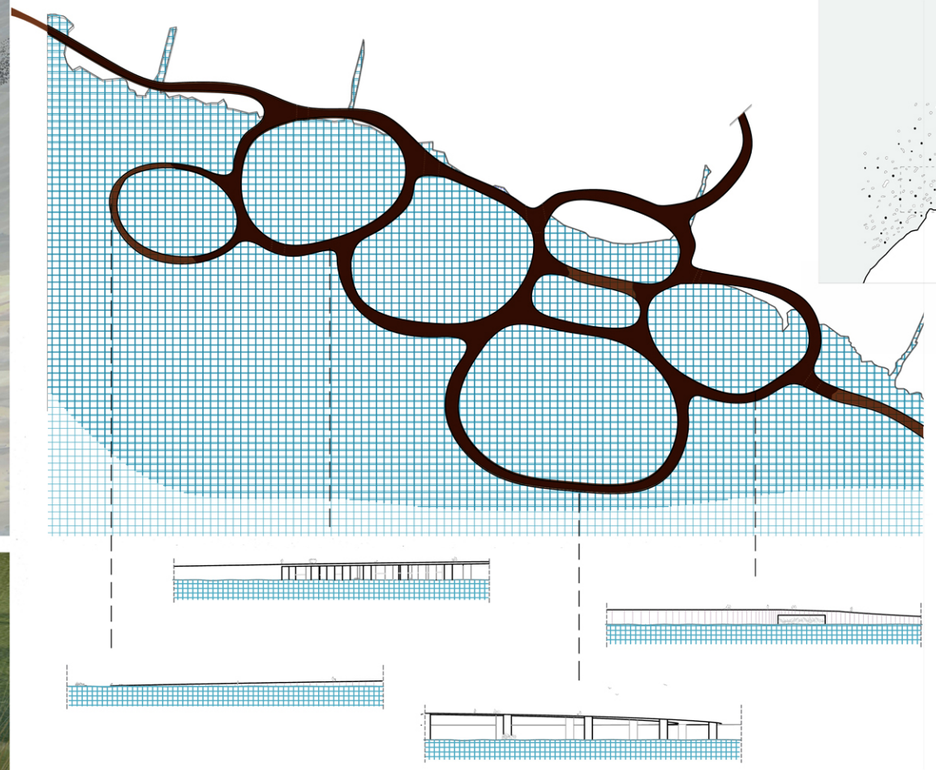
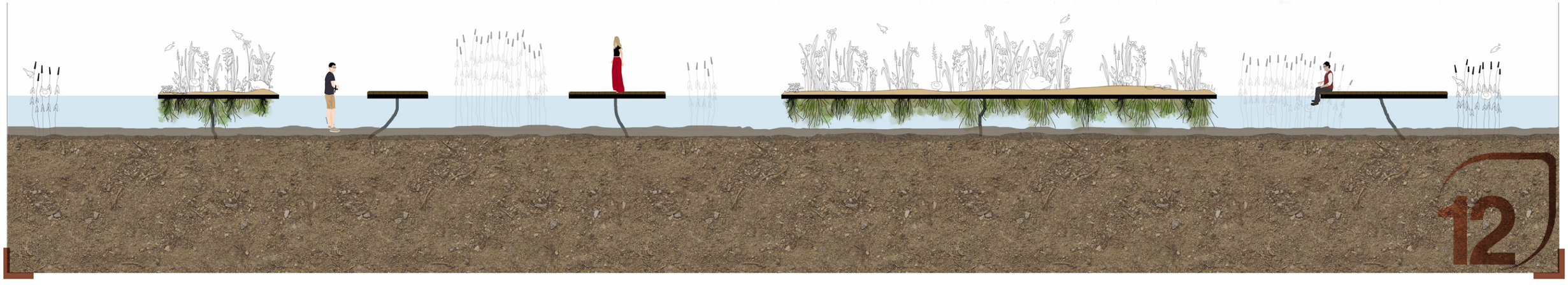


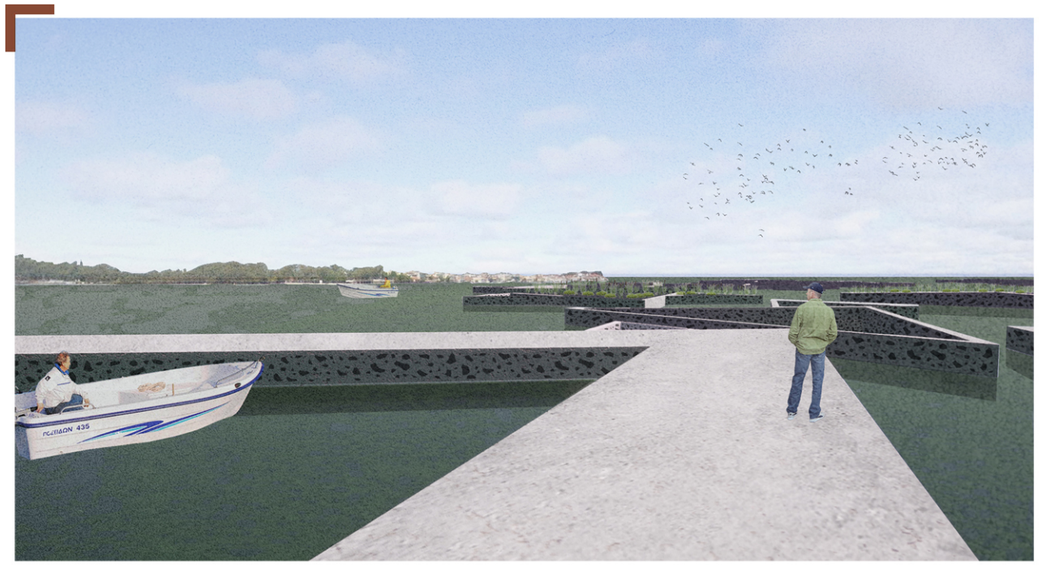


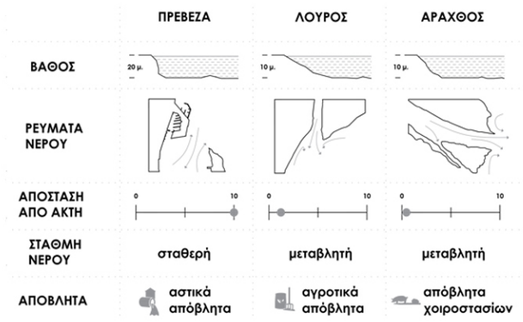


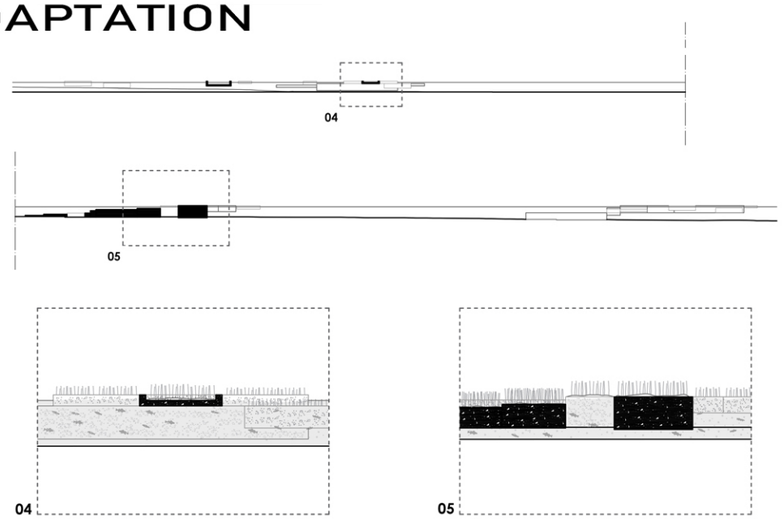
SYSTEM
EVOLUTION
PHASES



DELTA SITE ADAPTATION







VIEW FROM ABOVE (TOP) AND FROM BELOW (BOTTOM) THE SEA LEVEL