OSUMI PANORAMAS

research by design

Osumi Island in Berat, Albania

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with
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OSUMI PANORAMAS

introduction

Islands are mythical places, subject of many tales, timeless literature, at times philosophy and eventually design. The Osumi Island appears to have been lost in time and neglected for centuries – we envisage this competition as an opportunity to study what the island has been, what it is and what it may become: one of Berat's main focal points with a restored dignity and renewed importance.

The geography of Berat offers distinct views of the island – observed from the city centre it is a vague definer of the river's width, a measuring instrument of the water flow and an imaginary step stone to the other margin. When seen from above from the neighbouring dramatic hills it becomes a clearly defined shape, although with a scale which is difficult to ascertain and which changes daily, slowly mapping time in a peculiar manner. One may imagine the island as a barometer of sorts, one which albeit neglected it is still of the utmost utility.

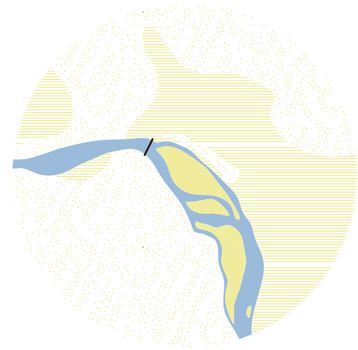
The seasonal floods and their consequences to the nearby urban spaces and peoples may suggest an intervention with a defensive character, a machine of sorts which would be able to regulate and conform nature: design intervening in the epic struggle for the defining of territories. However the focus may be on the resilience of a re-imagined ecosystem, the timeless character of this struggle has already shaped Berat's citizens to endure a cyclical change. There is an opportunity to experiment various solutions, from the tempting recreation of nature to the defining of an exciting urban space.

Approaching the challenge from a landscape, if not quasi utopian perspective suggests that the island can possibly become a 'natural' central park for the city: a pilot project for the re-naturalisation of the Osumi river ecosystem and a new sanctuary of nature and biodiversity. One can imagine the return to a time where children wade through the stream and chase fish and birds, towards a garden which actively participates in the cleaning of the water and performs an educational function to transform how the river is treated upstream.

The proposed connectivity between city and island can be enacted in a variety of manners: as the arms of a pivotal geographic centre between the two banks, as a transitional, almost processional and non-invasive route from the city, through the river while observing this new oasis, onto the park on the other side – but it could also suggest permanence, extending its social function and possibly adding programme.

Without necessarily establishing a mundane functional anchor, architecture can perform at an urban level creating spaces of opportunity: one may be able to stop and rest, pause to observe, eventually stay. The Osumi island may become a new gateway, a miniature panorama of the river's ecology and an urban space with a novel character. It may also become a landmark and take an important social and cultural role, properly adjusted to both the immediate surroundings and the city at large.

The perceptual transformation of what has mostly been a scenery to a what may become a place of permanence presents an incredible challenge, and one which has to address a multitude of factors which are unique to Berat; the methodology implied by the innovative call to research by design will allow us to build a toolset which will be valuable to the region and beyond.



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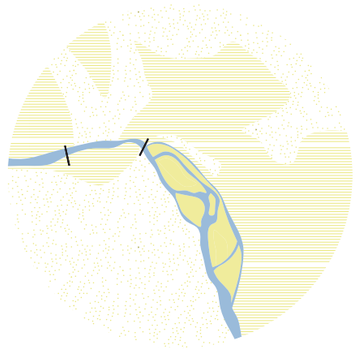

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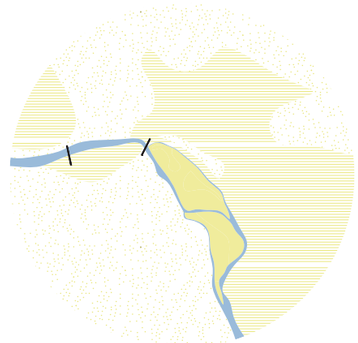

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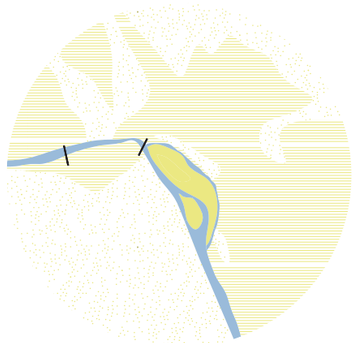

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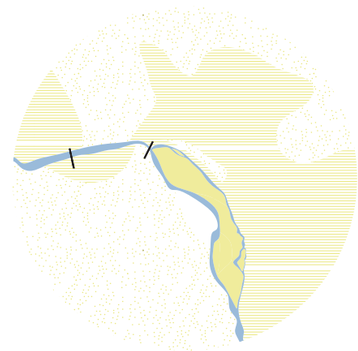

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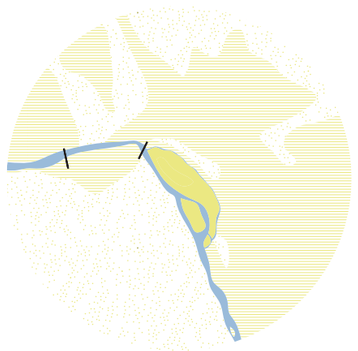


2014

research: interview

Over a century ago, the city of Berat's surrounding hills had a wide range of oak trees. The loss of these oaks came from indiscriminate use that man did to this species in order to meet its growing requirements for construction, firewood to heat dwellings and to supply artisanal brick baking ovens. Oak was always preferred due to its strength and calorific value. Many of the forests were cleared to create arable land, destroyed from the overgrazing of ruminants (goats) or by wild fires.

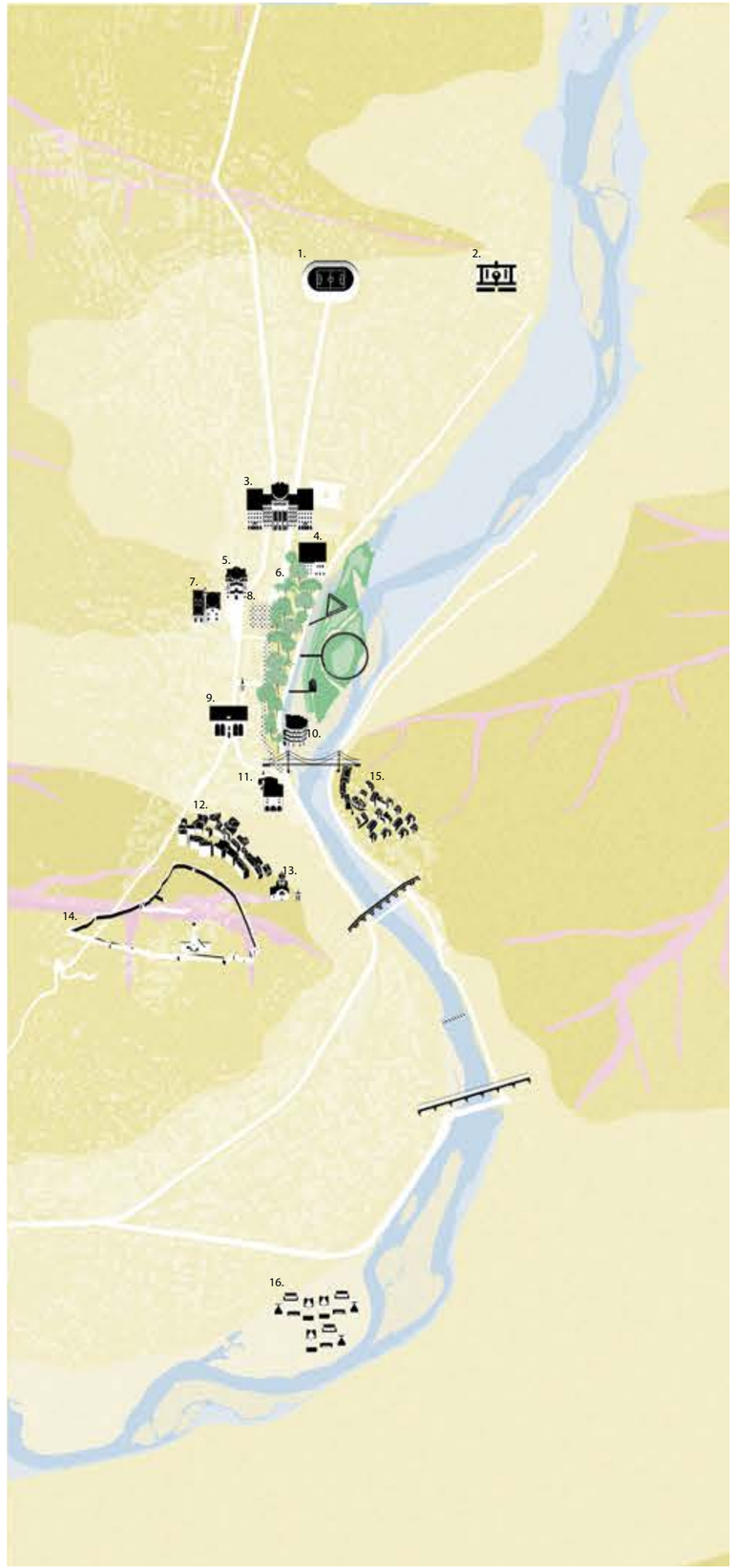
According to medieval chronicles, until the Late Middle Ages the oak forests were well preserved up to the outskirts of the city. Even during the former communist regime some of the forests (further away from the city) became restricted areas. These forests eventually disappeared, mainly due to the expansion of arable land. Simultaneously, there was also the impact of an increased demand for firewood by the city's growing population. Today the presence of oak is extremely rare and mostly in the form of shrubs.

The natural vegetation in the city of Berat is nowadays largely composed of mediterranean shrubs. Around Berat we can locate shrubs such as Maquis (green throughout all seasons) and "Shibljak" (deciduous). Among the bushes there are *Arbutus unedo, Quercus ilex, Calluna vulgaris, "cëmërdeli", Ctrataegus oxyacantha, Robinia pseudoacacia, Salvia officinalis, Lycium barbarum, "zana", Ulmus campestris, Rosa canina* and *Fraxinus ornus.* Most of these are suitable to be used as ornamental plants. Among the trees we can find *Quercus ilex, Fraxinus, Tilia, Quercus robur, Laurus nobilis* and *Aesculus hipposastanum.*

In Gorica, pine trees are present around the castle and a further east. These are coastal pine (*Pinus maritime*) which was planted by the former communist regime to combat erosion in degraded areas and also to restore an aesthetic value to the natural landscape which was damaged throughout the previous centuries. The trees grew and were well kept but after 1990 they have been badly affected by illegal logging and wild fires. Pines are also planted in the city but grow better in flinty soil.

The city of Berat is favoured by the presence of the river Osum. On both sides of its bed, typical vegetation stretches throughout the river ecosystem. There are all kinds of plants and trees in this ecosystem such as *Plantanus orientalis, Populus nigra, Salix babylonica, Alnus glutinosa, Almas campestris.* Because they've been pruned, these trees are now in shrub form, but if preserved, they are prone to grow quickly. Among the bushes of this ecosystem the most characteristic ones are *Vitex agnus castus* and *"shëlqishte"*. In the form of wet soil plants or drought tolerant plants we can find *Acorus calamus, Phragmites, Juncus acutus* and *Viscum album* - these adorn the river ecosystem and the meadows in between. Trees and plants cultivated by man within the city of Berat include olive trees, vines, plum trees, pear trees, quince, cherries, apricots and peaches which have been planted over 35 years ago.

Summary of an interview with Prof. Dr. Skënder Sala (professor of Geography at the Tirana University)



research: osumi river

Osum's Spring
The river Osum gushes in the area of Vithkuq, at approximately 1200 metres above sea level.

Osum Gorge
The canyons are excavated in the Mesozoic limestone, formed by cliffs from 4 to 35 metres wide and up to 80 metres deep. The area has a great touristic potential and allows for the practice of sports like climbing and rafting.

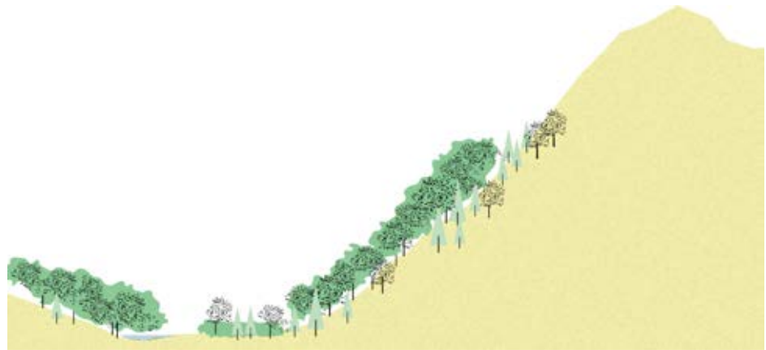
Bogove Natural Reserve
Bogove is well known for its natural beauty and a spectacular waterfall.

Tomori Mountain
One of Albania's highest peaks (2416 meters), the Tomori area is the place of a large national park and natural reserve, hosting beech forests and large alpine pastures. In the parks many rare and protected plants are to be found, as well as a great variety of herbs and medicinal plants which provide an economical activity for the area's inhabitants. Tomori hosts brown bears, wolves, wild boars, eagles and vultures. The presence of species like the Hermann's tortoise and the Capricorn beetle is an indicator of the biological richness and ecological equilibrium of the park.

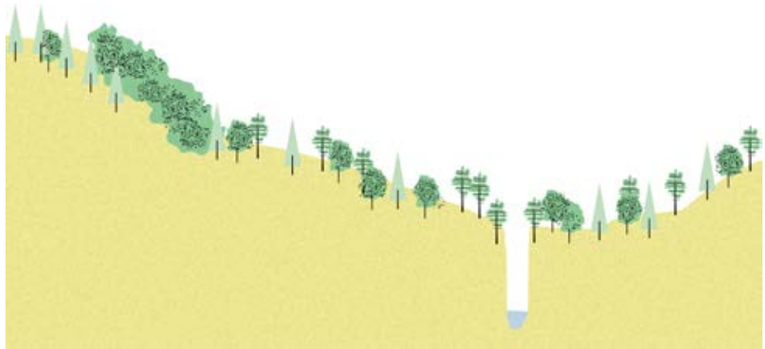
Shpirag Mountain
Particular form due to the geological composition of the relief: mixed clay, sandstone and softer, more porous stone.

Dumre Plateau
The volcanic upland has an abundance of lakes due to its carsic nature. The natural vegetation is scarce (pine, poplar, willow), while the cultivation of olives and vines is consistent.

Osum's Spring



Tomori Mountain



Osum Gorge

Shpirag Mountain

Bogove Natural Reserve

Dumre Plateau

research: osumi river

Murriz Thana Reservoir
This vast water basin is an artificial lake. There is a proposal for the re-naturalization of the area, including the introduction of avian species.

Myzeqe Plain
The large flatland is intensively used for agricultural purposes: cereals, vegetables, forage, olive, and tobacco cultures are present in the area. Some areas are under the sea level. The significant Patos Marinza oil field is located in the southern part of the plain, along with sizeable interrupted canals, traces of the former path of the river.

Ardenica Hills
The hills are part of a modest in height hilly belt, composed mainly by sandstone and clay, which interrupts the vast region of the Myzeqe plain. Among the hills is the Ardenices Monastery, founded by the Byzantine Emperor Andronikos II Palaiologos in 1282 after the victory against the Angevins in Berat.

Divjake-Karavasta National Park
The protected area includes various ecosystems: sandy coast, pine forests, agricultural fields, salty swamps and the Karavasta lagoon. The maximum depth of the lagoon is 1,5 meters, and it is connected to the sea by three channels. Biodiversity is very high: among the plant species we can find Aleppo pine, domestic pine, erm, English oak, poplar, Alder, myrtle, juniper, ivy, Albanian aster and Albanian orchid. The main animal species that can be found include various shellfish, gastropods and crustaceans in the maritime area; hares, badgers, weasels, foxes, martens, bats, water buffalos, woodpeckers, pigeons, tortoises, salamanders and toads live in the reserve, along with a colony of rare pelicans, Pelecanus crispus.

Seman Estuary
This swampy area is characterized by the presence of water basins and ponds and inhabited by numerous bird species. The vegetation is mainly composed by oleasters, maritime pines, box trees, holm oaks and heather plants.

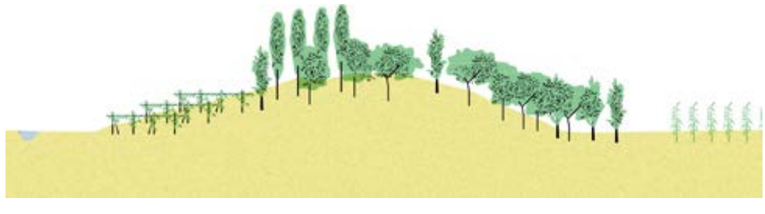
Seman Beach
The coast suffers from notable variations due to the deposit of materials brought by the river and due to the erosion caused by the sea. The seabed is sandy or muddy, rarely rocky. Behind the sand dunes grows a mediterranean pine forest.

Murriz Thana Reservoir

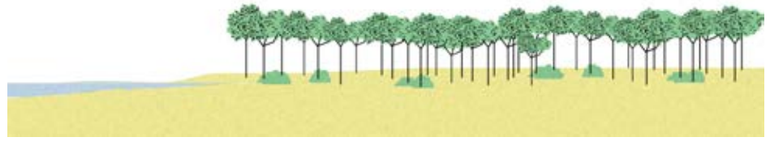
Divjake-Karavasta National Park

Myzeqe Plain

Seman Estuary



Ardenica Hills



Seman Beach

osumi panoramas

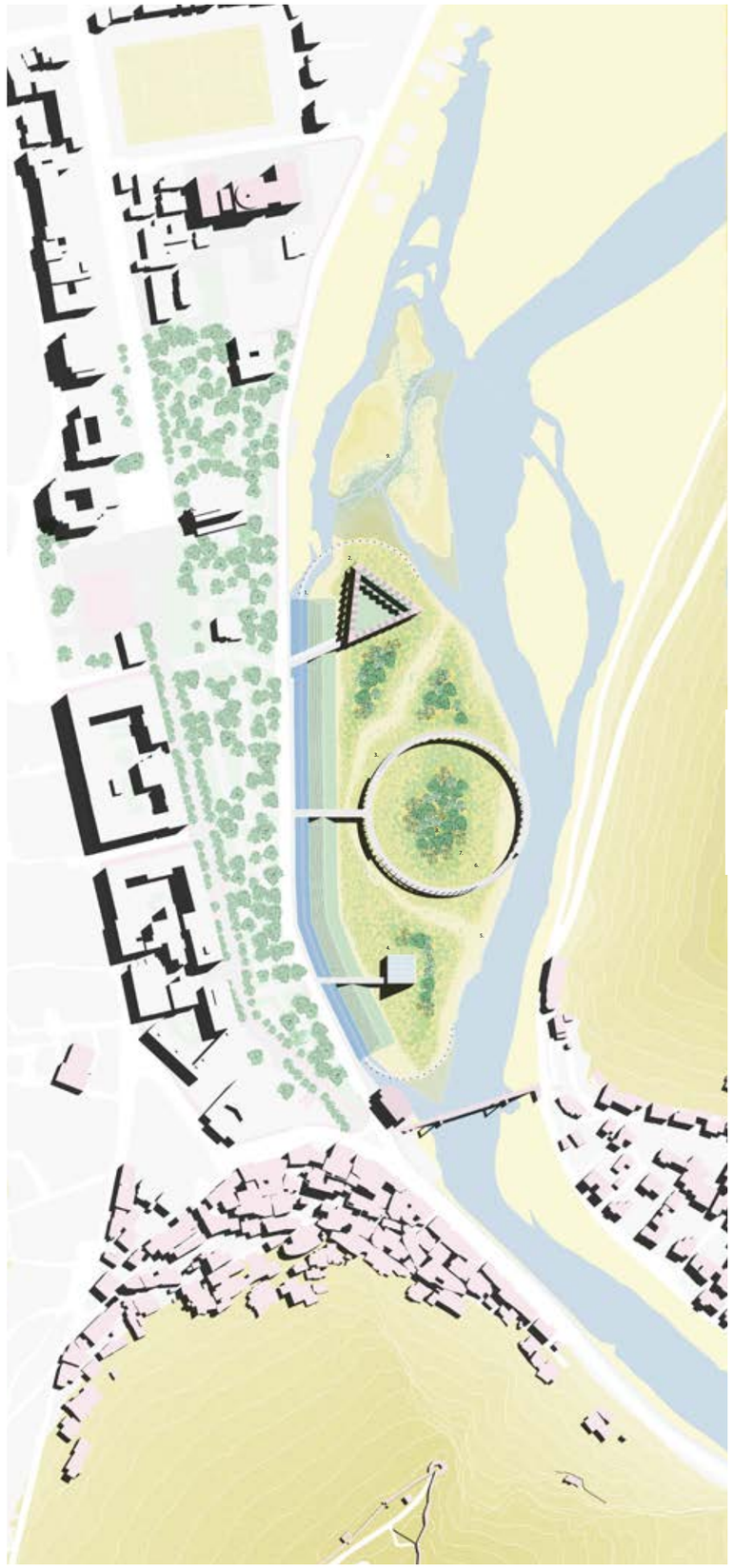
Our research on the length of the Osumi river revealed a number of intriguing natural features that portray the region as one of incredible potential. One of the most important hubs of this possibility, Berat is in itself a city of unique cultural and architectural heritage. Geographically and in its ancient development the city is oriented towards the river. However, it seems as if at present there is a complex relation to the Osumi rather than one of normality.

The river is always present whilst appearing unattainable; where one would expect Berat as a gateway to the wonders that may be visited up or downstream, the river in Berat is distant. Many historical, natural, technical and cultural factors are at play – our proposals were developed since visiting the site as a process of reflection on this manifold problematic. At first an unexpected duality appears obvious: the great natural potential of the river is not realised in the city that is it's most precious. Our process was thus one of bridging the two entities (city and nature) at their core: the island.

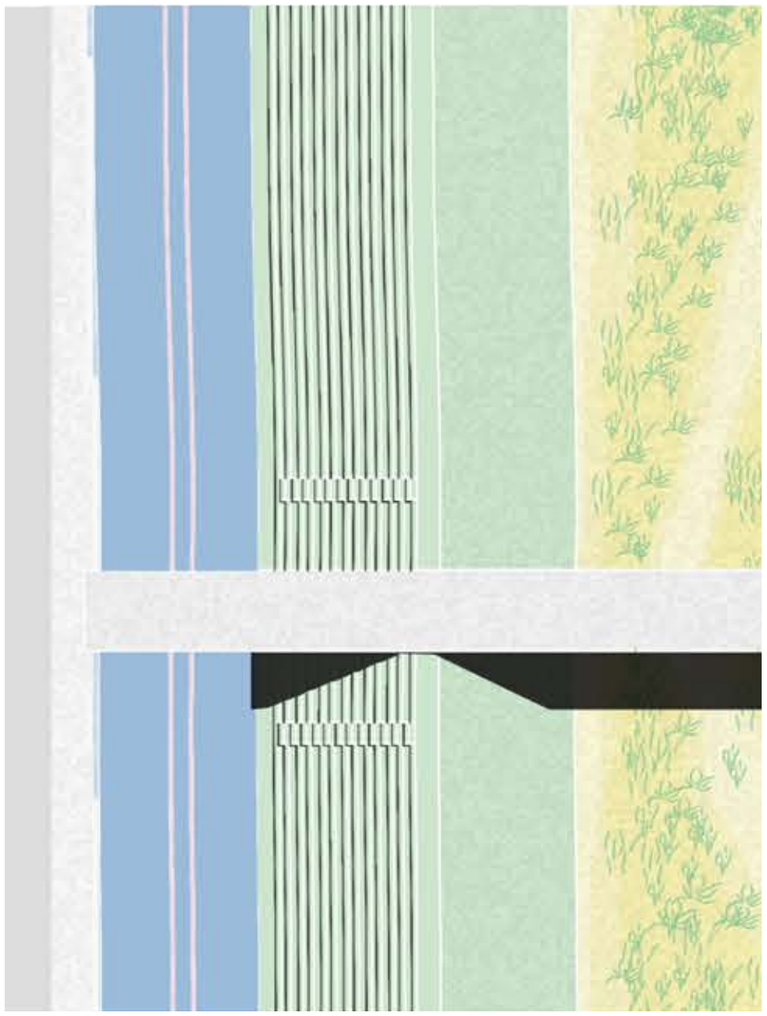
Our initial aim was to instigate a zone of negotiation; the island must become the fulcrum where nature and urbanity unite. What happens on the Osumi island has to respond to many complex challenges but primarily it has to generate confluence – one that becomes cultural and enduring. Rather than a strict yet popular re-naturalisation plan, or it's opposite, a ruthless conquer of space for the city, we attempt to propose a hinge: a multilayered process – and project – where people and nature can not only coexist but cooperate.

We wanted to research a device which could resolve many of the obvious challenges while offering various possibilities of experience. A healing of the river's ecosystem which can participate, extend and complement the recent urban renovation of the city's public space. This multidimensionality becomes explicit in the dualities we have attempted to work with: the river and the island should remain experienceable from the same higher, overseeing level which is so common today while a new distinct and intimate relation of close contact should be created; the view towards the island is kept and new views from and within the island will be offered. Various new perspectives are composed – of the Osumi natural ecosystems, of the city, castle and its surroundings, mirroring those which the city is so plentiful of in a series of new Osumi Panoramas.

At present the island has few consistent properties – while the river flow is now regulated and catastrophic floods are unlikely there are still many factors which alter it's outline, shape, height and character. We have opted for a combined approach when resolving the island's perimeter: it is to become resilient and allow for our newly proposed activities while over time change will be accepted and embraced. A passive system includes two reefs of concrete elements and natural stones at the east and west sides which will allow the necessary degree of stability. Towards the south running river, a natural planted defence will secure the soil while allowing for the usual flooding patterns to occur. Facing the city towards the north a new embankment will help shaping a multi-functional canal and protect the community from unusual floods.

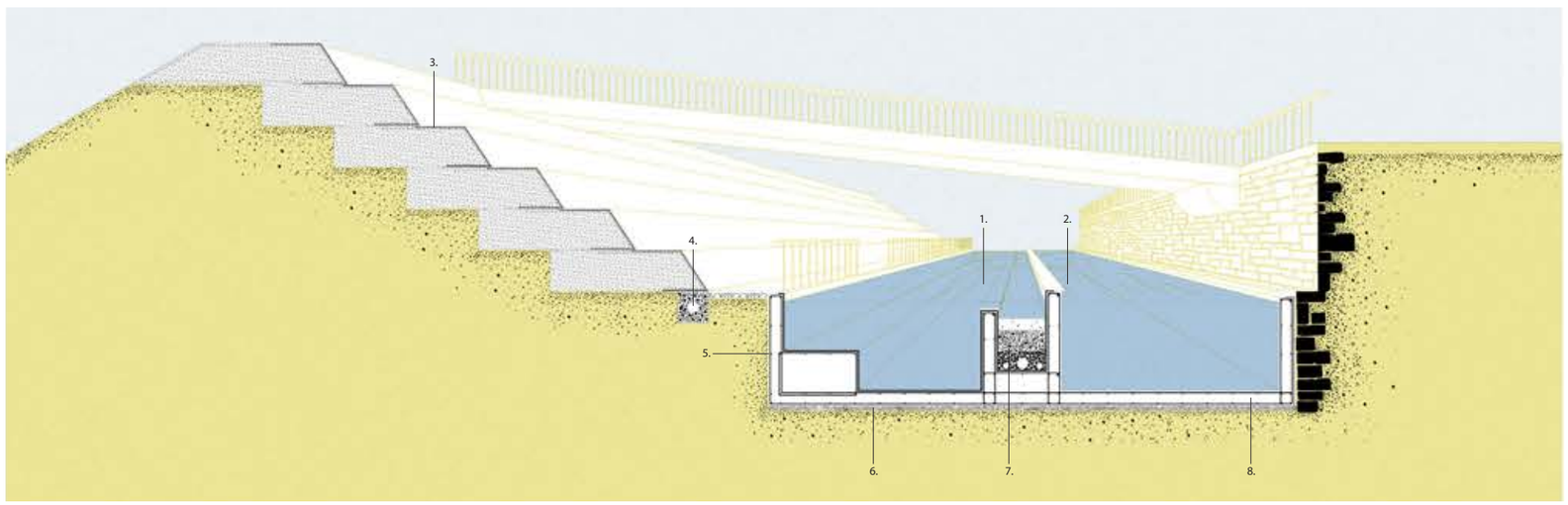


canal

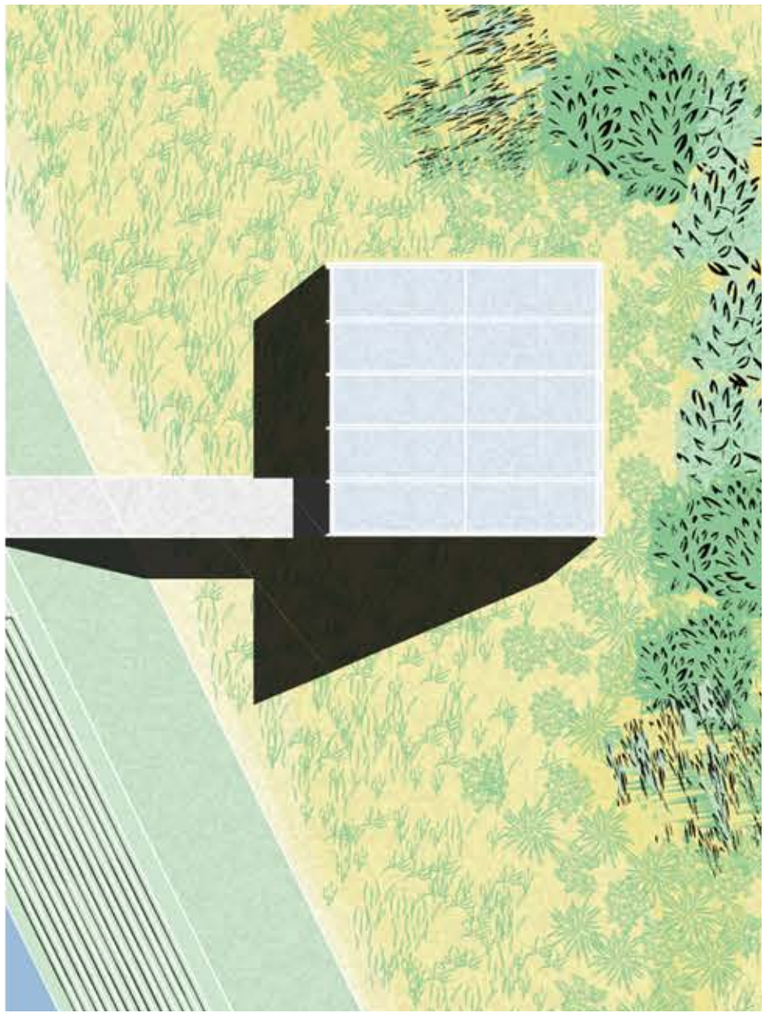


Between the shoreline and the island and where currently is a squalid creek, a new canal will have 3 parallel sections: the northern, bordered by the old wall, will contain running river water, the central one a natural water filtering system which supplies the third, facing the new stepped embankment, a natural swimming pool. The canal will be the first noticeable change and one which will provide a familiar, constant running stream, while also allowing for a new relation to the river and island. The natural pool will be accessible from the island side and have different sections suitable for swimming, wading and playing in the water – introducing a lively character to the waterfront.

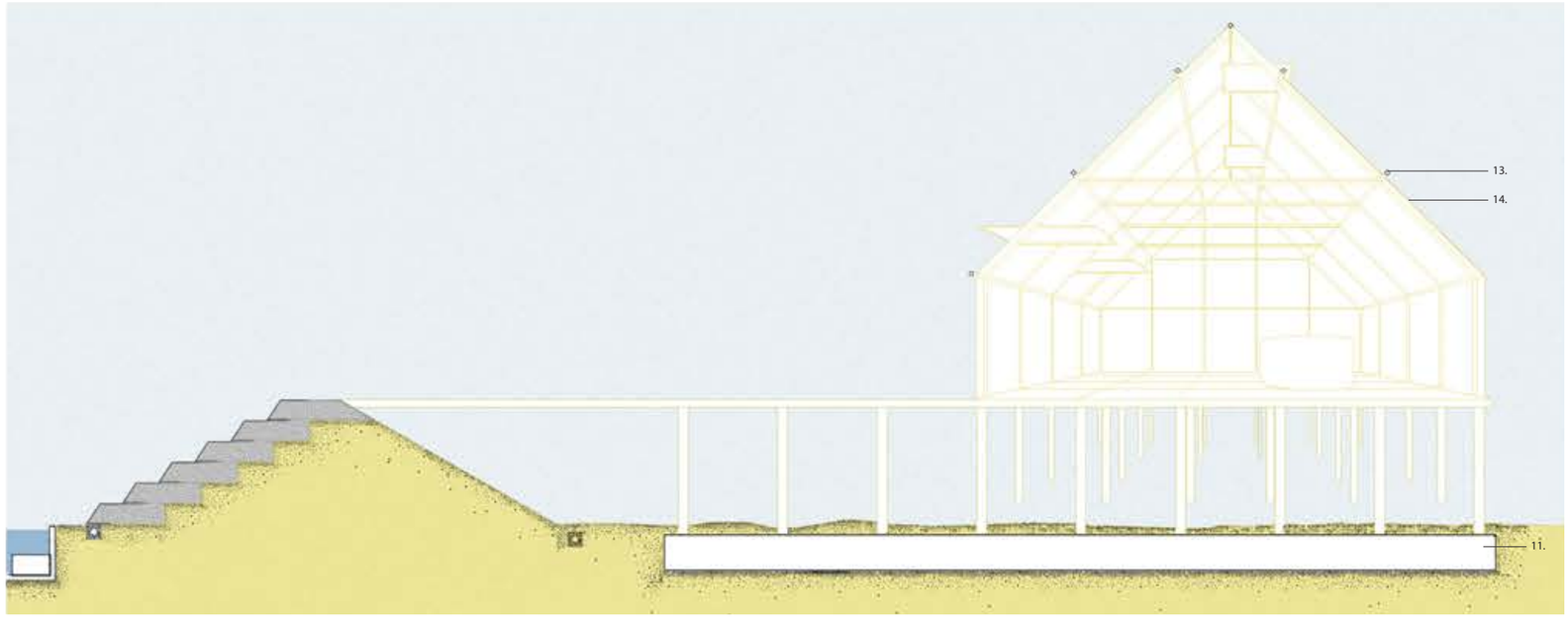
From the current river embankment three walkways project over the canal-pool and give access to a path on the top of the new, stepped earth bank, before continuing towards the island and our three new structures. These are platforms which function as vaults: each suggest a distinct way of experiencing nature and offer a separate degree of protection to a recovered environment. Each typology also enacts the idea of the panorama in various ways, providing a particular form of perception: the Greenhouse contains, the Colonnade protects and the Market discloses. This narrative of panning, scanning and focusing on particular ecologies is complemented with spaces for programme and public activities which we identified as desirable for Berat's inhabitants. The Greenhouse, the Colonnade and the Market are to hopefully become landmarks of cultural and social significance.



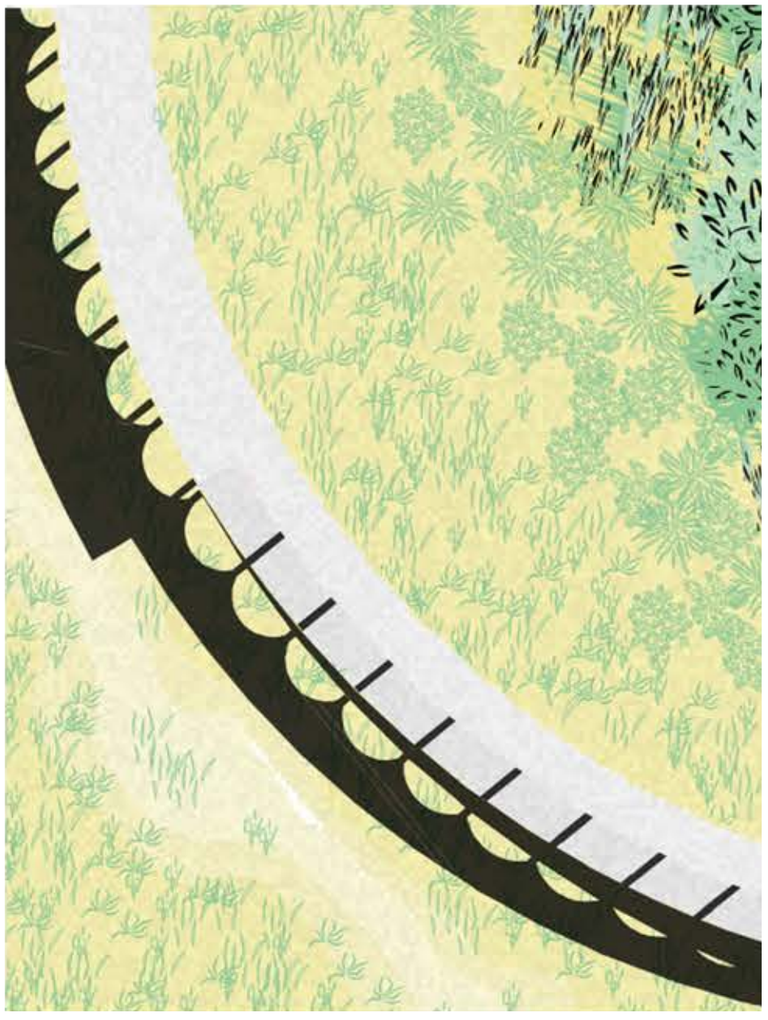
greenhouse



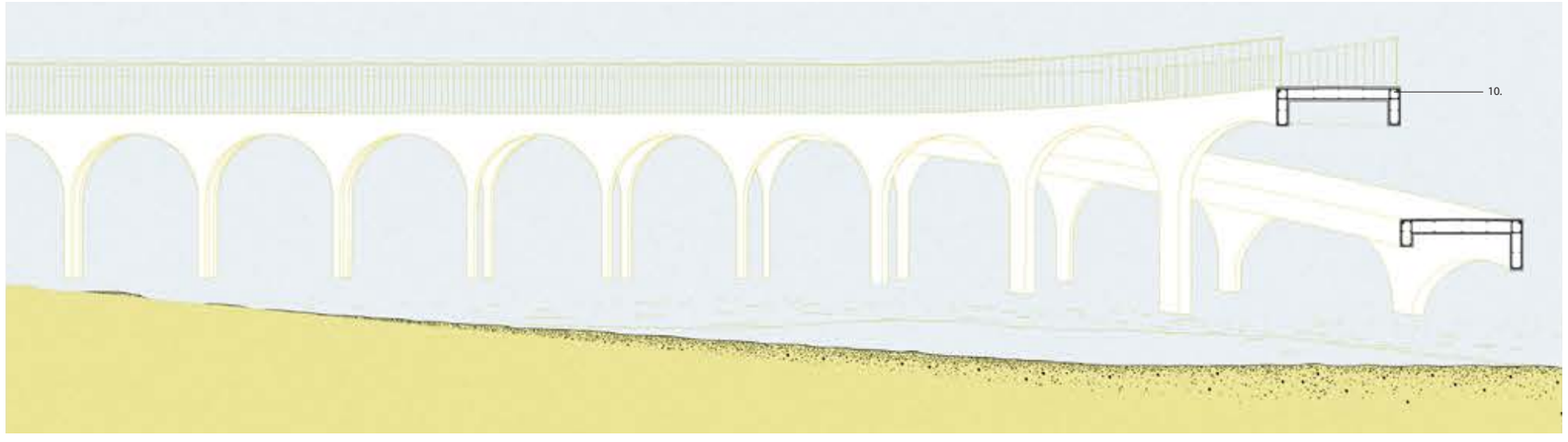
The first walkway leads to a slightly mysterious, yet elemental house floating above the island; it's volume mirrors the bridge hotel and symbolically suggests a lighthouse that guards the tip of the island. A simple greenhouse sitting on columns, it is the proposal's only fully enclosed space: a steel structure clad in glass. As an introduction to the project, the Greenhouse may enclose a catalogue of the various ecosystems of the Osumi and function as a public learning centre. This educational aspect is key to complement the scientific importance of a greenhouse: for the development of our project but also for the study of the Osumi ecologies.



colonnade



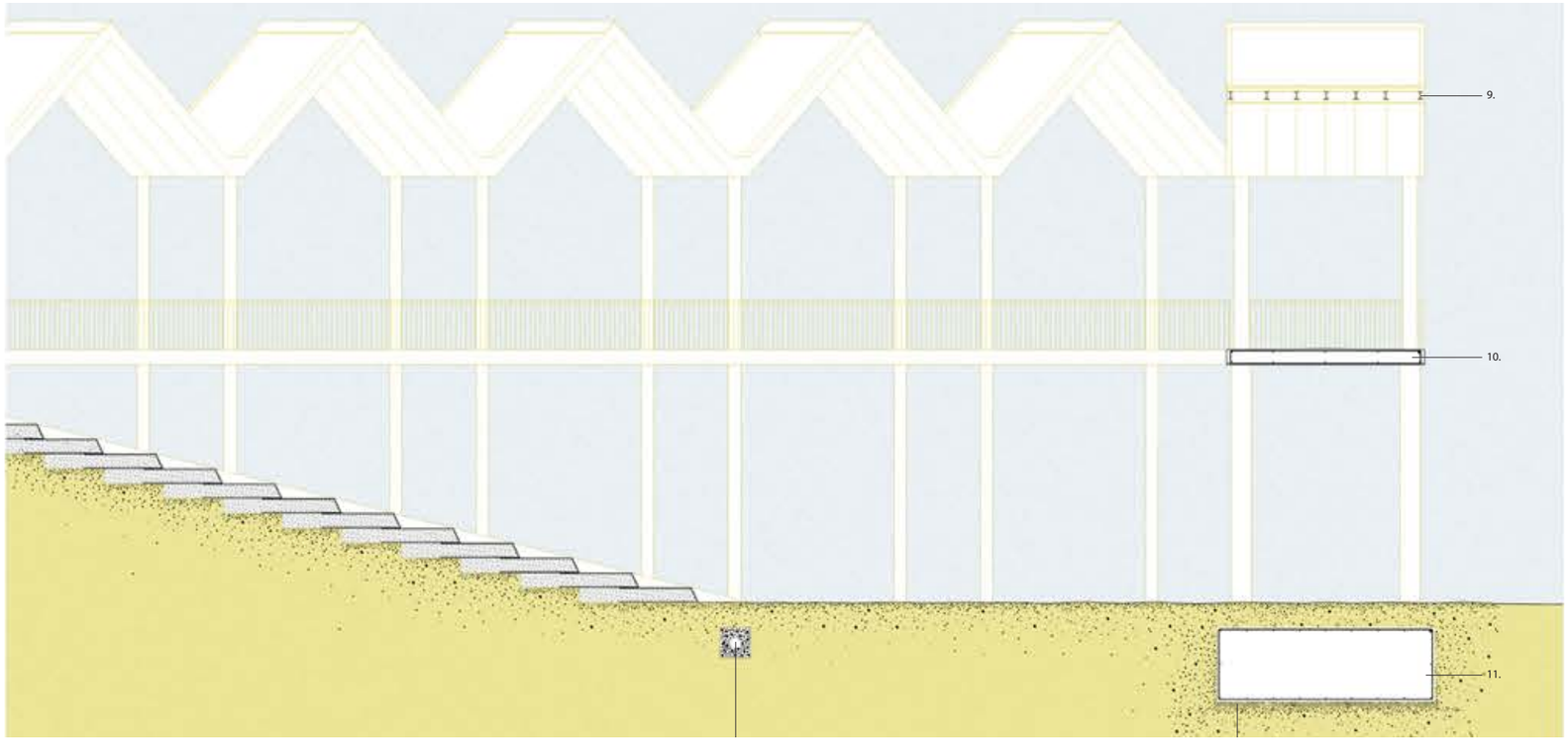
The second walkway is the largest structure of our proposal, one which provides a 360 degree experience of the city, the island and the river, while providing protection to the landscape planted on a modest hill. When starting the round one tends to look inwards, towards the centre of the circular walkway, and observe various plant species. As one approaches the axis of the river, views of up and downstream are offered in anticipation of bridging over the stream; upon returning, visitors will have a new perspective over the city and it's surrounding mountains. The arched structure references the Ottoman period and the pedestrian bridge downstream, and offers two ramps with complementary functions: one descends towards the river and a small protected beach. This ramp provides access (and facilities) for water sports and recreational use of boats and kayaks. The second ramp allows access to the island and the protected landscape in a processional manner.



market

The third walkway is the most communal – a triangular market where various activities may take place throughout the year. Benefiting from being the closest to Berat's city square, the Market is to function as it's extension. Weather permitting, events that nowadays may take place in scattered places in town will have a new forum. The triangular roofed path allows for the setting of weekly food stalls, book fairs or second hand markets.

In the centre of the walkway one can access a stepped structure which descends towards the island level. Built of compressed soil, it functions as an auditorium of sorts and offers a framed panorama of the river and the forested south embankment. We expect this space to host outdoor town meetings, film screenings and music events, offering an urban entertainment functionality to our proposal.



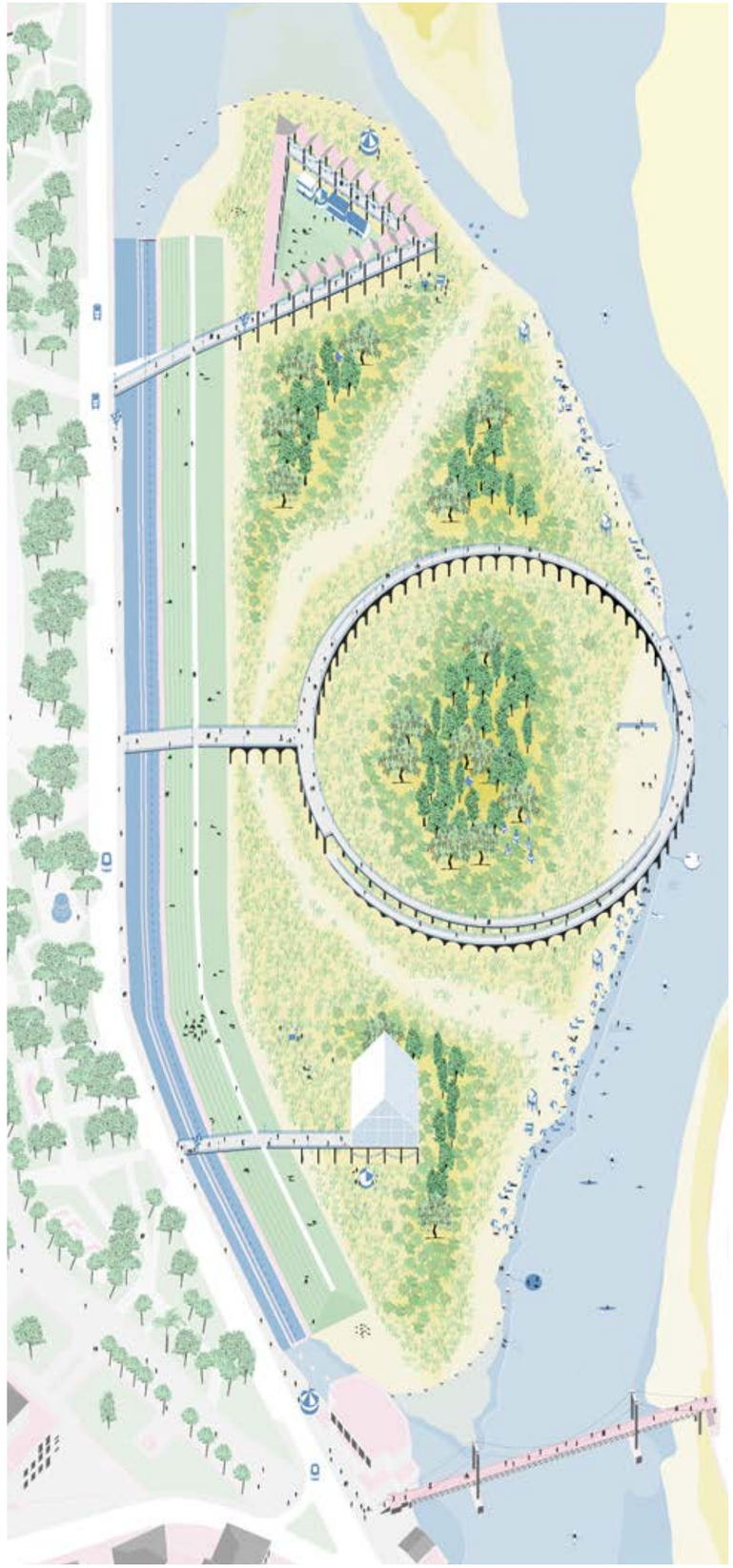
landscape

The overarching concept for the Osumi island landscape draws from our research on the river's various ecologies at large and the specific current conditions of Berat's vicinity. Our effort is to achieve a balance between the recovery and re-naturalisation of the island while reintroducing species lost in time and introduce others which mirror the environment of the river's course.

The design and implementation of this strategy also has an educational mission: the different planting phases can be organised so that Berat's population participates in the effort of renewing their precious habitat. The renewed landscape layer will co-exist with the urban aspect of our proposal and part take in what we expect to be a well proportioned ensemble: different height levels separate access and functions. The majority of more intense use areas take place at the current city level whereas a few points allow the public to descend with reserve and experience the island up close.

Osumi Panoramas aims to create impact with moderate means: setting a simple infrastructure where both natural and urban environments may coincide in a graceful yet convincing manner. The subsequent development of the project in the next phase will allow for the adjusting of our proposals to both the economic and political framework: we envisage a process in which our proposal would be implemented in stages depending on the available resources but also from the larger city strategy and it's plan for Berat's development. Ultimately these separate stages could operate independently and their implementation be guided by a comprehensive participatory process.

Our proposal is one of many possible responses to the brief and one which we believe to be carefully considered while also bold and radical in it's essence. We laid down a plan which negotiates what we find the most crucial aspects of the complex questions presented and which we hope may not only contribute to a fascinating discussion on the city of Berat and its river but eventually become a benchmark for the region's development.



Alnus glutinosa

Arbutus andrachnoides

Arbutus unedo

Myrtis communis
Tarentina

Olea europaea

Phillyrea angustifolia

Quercus suber

Rosmarinus officinalis

Salix alba

Carex elata

Carex flava

Carex pendula

Phragmites australis

Pistacia lentiscus

Platanus hybrida

Salix elaeagnos

Salix purpurea

Scabiosa hymnetia

Carex pseudocyperus

Cistus

Coronilla glauca

Platanus platanor vallis clausa

Populus alba

Populus nigra Italica

Scirpus sylvaticus

Sparganium erectum

Tamarix germanica

Dorycnium hirsutum

Erica multiflora

Medicago arborea

Populus tremula

Punica granatum

Quercus ilex

Teucrium fruticans

Typha latifolia

Vitex agnus - castus

technical description

Preliminary works include the removal of infesting plants and the collection of the waste material (garbage, wood, metal and other inert materials) that can be found in the island and embankments. The collected material will be carried to appropriate landfills and properly recycled.

The initial stage will comprehend earthworks and the approximate shaping of the island's morphology, including the minimum necessary excavation and displacement of ground material. Beyond the top layer vegetable soil (where new species will be planted), the usage of material proceeding from external sources will be minimised.

The following list describes the envisaged phases and outlines the construction steps that are needed to implement the works planned in our proposal. General dimensions and design details are outlined the drawings.

1. **Earthworks**
The terrain's morphology will be implemented as follows:

-forming of the basis of the island and embankments by the displacement of appropriate material in consecutive layers of a maximum of 50 cm which need to be levelled and compacted;

- building of the reinforced earth banks on the side facing the city park. This method is selected in order to create a stepped embankment using 35° to 40° slopes, reaching up to the 65° considered in the project. The reinforced earth system is built using a preassembled system of structural steel reinforcing (a net formed by steel wire coated by Zn-Al alloy and a plastic polymer extrusion) with a double torsion hexagonal knit. In the front and base areas there are two electro-welded galvanized wire external panels, connected with a hinge to create a rigid articulated front element. In order to retain the ground on the side meant to host vegetation, a 100% biodegradable anti-erosion coconut fiber bio-net is used. The green panel will be secured in the correct position and angle by steel triangular brackets, previously mounted and connected to the structure. The earth body of the structure is formed by compacting proper material, layered in a maximum of 30 cm. Plantation is made possible by using vegetable terrain laid on the paneling.

- along with the construction of the reinforced bank sides, the remaining of the ground shaping will be executed, with an average slope of 30°. The upper 20 cm layer will be composed of vegetable terrain;

- the ground facing the river, due to the low slope, will be layered with an anti-erosive coconut fibre net, properly installed and fastened with steel fixings;

- once earthworks are completed the hydro-seeding will commence, utilizing an organic mixture composed as follows: Festuca rubra rubra (42,5%), Bromus inermis (1,0%), Festuca arundinacea (14,0%), Phleum pratense (5,5%), Lolium perenne (15,0%), Poa pratensis (5,0%), Dactylis glomerata (6,3%), Festuca pratensis (2,0%), Lotus corniculatus (0,5%), Trifolium hybridum (1,0%), Trifolium repens (2,0%), Trifolium pratense (1,0%), Medicago sativa (1,0%), Onobrychis sativa (1,0%), Vicia sativa (1,0%), Vicia villosa pannonica (1,0%), Sanguisorba minor (0,1%), Plantago lanceolata (0,1%);

- on the top of the embankment there will be a 1,5m wide earth path;

- at the base of the earth bank, on the side facing the canal, there will be a stone pavement, using the same material of the pool's wall capping. This paving will be laid on a 10 cm reinforced layer. For safety reasons a railing will be installed;

- at the base of the earth bank, on both sides, there will be a draining belt (composed by a TNT 290 gr/sqm organic fabric) covering all the four sides, and housing a 20cm HDPE micro-perforated draining pipe. This draining canal will be filled with stone material proceeding from broken up local stone pieces (dimension of 6 to 8cm). This drainage system will direct the water directly to the river;

- a concrete ramp will be built along with the easternmost pathway to bring maintenance vehicles from the street to the island level.

2. **Canal and Natural Pool**
The canal and bio-pool system will be realized as follows:

Structure:
- excavating a 2 metre deep trench;
- levelling, rolling and compacting the foundation ground, bringing igneous material where necessary;
- installing of a pipeline system to contain and redirect the waste water to the city sewage system, using adequate waste water piping;
- laying of a weak concrete mix layer (10cm);
- assembly of the steel reinforcement (250 to 300 kg/m3 steel);
- wood/metal formwork assembly;
- concrete casting;
- formwork dismantling;
- filling of the surrounding areas with soil;
- finishing and capping the walls between the bathing and the phyto-purification sections;
- the bio-pool (bathing and phyto-purification section) will be lined with polypropylene fabric (500 gr/sqm) and waterproofed with a polyolefin layer (1,5 mm). Both fabrics will be fastened beneath the stone wall capping;
- the canal section will not be clad or lined;
- the bathing area will be divided in two sections of different depths: 1m on the island side, 2m on the embankment side.

The phyto-purification section will be layered according to the following:
- 35cm basis layer of 10 to 12cm stone pebbles;
- 35cm intermediate layer of 4-6 cm pebbles;
- geo-fabric lining of 290 gr/sqm;
- top layer with aquatic plants substratum, composed by 20 to 30% clay and 70 to 80% sand;
- the phyto-purification section will contain the following plant species: oxygenating plants: Elodea densa, Elodea canadensis, Myriophyllum

technical description

aquaticum; marsh and moist soil plants: Acorus calamus ‘Variegata’, Caltha palustris, Cares spp. Equisetum spp. Iris spp. Juncus effusus, Lythrum salicaria, Pontederia cordata, Spartina pectinata ‘Aureomarginata’, Sagittaria spp., Typha spp.;

- the ground layer will have two types of drainage systems:
- in the central part one micro-perforated pipe (20cm) to drain water to the recycling system. It will be visitable every 20m via concrete ring wells;
- on the sides, two micro-perforated pipes (10 cm) to provide water to the phyto-purification system to enhance its cleaning capacity;
- the phyto-purification will be a relatively contained system (with the exception of the occasional compensation for evaporation loss). It will host a recycling and treating unit located in a dedicated underground chamber, including pumps and filters. The purifying activity of the plants will be assisted by the use of zeolith;
- the hydric supply of the canal-pool system is secured by consolidating the existing ramification of the river bringing water to existent canal. At the upstream of the system there will be a water lock which can be operated both manually or automatically via internal floats regulating the admission of water when necessary;
- The bio-pool can be emptied for maintenance and since no water treatment chemicals are used, the water can be discharged in the canal;
- Lastly, the foundations of the existing hotel near the bridge will be reinforced to stop the current erosion process.

3. **Consolidation of the Island Perimeter**
Shore reinforcement works will mostly be necessary at the beginning and at the end of the island (east and west sides) along the current river flow.

To achieve this we will proceed as follows:
- preparation of the ground work by flattening, rolling and compacting of the foundation, providing further adequate material if necessary;
- laying of a weak concrete mix (10 cm);
- assembly of the steel reinforcement (250 to 300 kg/m3 steel)
- wood / metal formwork assembly;
- concrete casting in cylindrical shapes;
- formwork dismantling;
- construction of a reef made of local stones (dimension between 0,5 to 1,0 m) secured with concrete;
- filling of the surrounding areas with soil.

To protect the remaining perimeter of the island we will use a natural engineering technique known as “living bundle”: bundles of plant species with a big propagation ability (Salix eleagnos) are implanted and tied with steel cables. The bundles will have a minimum diameter of 2cm and minimum length of 2m. Bundles will be dug into the soil and fastened with metal stakes (d. 2 cm, l. 50 cm) to grant their stability. The excavation will be filled by vegetable earth.

4. **Tree-bush-herbaceous implant**
We are proposing the tree implantation of Alnus glutinosa, Populus alba, Populus nigra, Salix alba.

Trees will be supplied in clumps or vases and bed out as follows:
- excavation of the implanting hole, dimension 1m x 1m x 1m;
- bedding out of the plants in a perfectly vertical position;
- filling of the hole with cultivation soil;
- mounting of a support structure of 3 poles (of autoclave treated conifer wood, 8cm in diameter and l. 3m in height), fixed to the ground, with cross supports tied with bolts;
- fastening of the plant to the support;
- installation of a green PVC protecting collar, h. 20cm;
- formation of a irrigation dip at the basis of the plant;
- initial irrigation of 100l per plant.

We propose the implantation of the shrubs Salix purpurea and Salix triandra with a vase dimension between 24 and 32cm. They will be supplied in vases and bedded out as follows:
- excavation of the implanting hole, dimension 0.2m x 0.2m x 0.2 m;
- bedding out of the plants;
- filling of the hole with cultivation soil;
- formation of a irrigation dip at the basis of the plant;
- initial irrigation of 20l per plant.

The selected herbaceous plants are Phragmites australis, Typha latifolia, Carex elata, Carex pseudocyperus, Carex flava, Carex pendula, Scirpus sylvaticus and Sparganium erectum. These new implants will be arranged with a shape between 3 and 8 plants / sqm, dimension of the vase between 9 × 9 and 11 x11cm or alternatively with naked roots.

They will be bedded as follows:
- excavation of the implanting hole, dimension 0.2m x 0.2m x 0.2m;
- bedding out of the plants;
- filling of the hole with cultivation soil;
- formation of the irrigation dip at the basis of the plant;
- initial irrigation of 20l per plant.

5. **Greenhouse**
The pitched roof greenhouse will have the following characteristics:
- steel structure, glazed with glass. The structure will be assembled from steel extrusions pre-fabricated in elements and transported to site ready for being installed. - to prevent the corrosion the steel will be galvanized, while the glass elements will be mounted on steel supporting profiles, with Dutral joint protection;
- the greenhouse will have an openable roof and sliding side panels;
- access to the greenhouse will be provided with steel structure doors;
- it will have a acclimatisation system (warming-humidification-cooling);
- the interior will be divided into: proper greenhouse area and services;
- the greenhouse will contain various mediterranean plants: Arbustus unedo, Arbutus andrachnoides, Cistus spp, Myrtys communis Tarentina, Phillyrea angustifolia, Pistacia lentiscus, Teucrim fruticans, Punica granatum, Vitex agnus–castus, Coronilla glauca, Dorycnium hirsutum Frèjorgues, Erica multiflora, Scabiosa hymnetia, Medicago arborea, Rosmarinus officinalis, Olea europaea, Quercus suber, Quercus ilex.

cost estimates

SUMMARY

	lekë	Euro
Island	31.415.580,00	224.397,00
Canal-biopool	152.005.420,00	1.085.753,00
Reinforced concrete bank	71.840.020,00	513.143,00
Bank consolidation	14.921.480,00	106.582,00
Green amphitheater	18.453.120,00	131.808,00
Greenery	70.805.560,00	505.754,00
Piers	127.355.900,00	909.685,00
Investigations and surveys	2.929.500,00	20.925,00
TOTAL	489.726.580,00	3.500.000,00

No. Analysis	Description of work: ISLAND				
	I. PRELIMINARY WORKS	**Unit**	**Amount**	**Unit Price**	**Cost**
R.109	Removal of low vegetation	m2	10.000,0	**531**	5.310.000
R.110	Removal of high vegetation	m2	10.000,0	**767**	7.670.000
An.1	Cleaning of the territory from extraneous materials such as concrete, metals, garbage etc.	m2	20.000,0	**315**	6.300.000
2.37/5a	Transport of construction materials and excavation materials with auto up 5.0 km	m3	5.500,0	**319**	1.754.500
	Morphology preparation of project with carry-over of inert material	m3	14.000,0	**198**	2.772.000
	II. ELEMENTS				
	Metal street light H=3000mm, diameter 150mm	cope	20,0	**25.000**	500.000
	Fornitures	cope	30,0	**20.884**	626.520
	Sum			**lekë**	**24.933.020**
	Reserve	**5%**		**lekë**	1.246.651
	Sum			**lekë**	**26.179.671**
	T.V.SH.	**20%**		**lekë**	5.235.934
	Sum in Lek			**lekë**	**31.415.605**
	Sum in Euro			**Euro**	**224.397**

No. Analysis	Description of work: CANAL BIOPOOL				
	I. PRELIMINARY WORKS	**Unit**	**Amount**	**Unit Price**	**Cost**
	Mechanical excavation at max depth b~1m	m3	3.553,0	**74**	262.922
2.267a	Mechanical excavation at max depth b~2m for principal excavation	m3	818,0	**148**	121.064
	Preparation of the bottom, levelling and compaction	m2	3.553,0	**150**	532.950
	Collector for existing discharges and conveyance in sewer system	cope	345,0	420	144.900
	Mechanical excavation at max depth b~1m for the formation of the water supply system	m3	3.500,0	**148**	518.000
	II. CONSTRUCTION WORKS				
2.262/1	Poor concrete layer C 7/10	m3	172,5	**8.373,0**	1.444.343
An.8	Footing foundations, strips and slabs up to 20 m3 C - 25/30	m3	1.852,0	**12.474**	23.101.848
	Iron	t	416,7	**84.000**	35.002.800
	Iron works	t	416,7	**21.000**	8.750.700
	Wooden formwork	m2	4.272,0	**2.380**	10.167.360
	Supply and installation of geotextile Sf - 49, 500 gr/m2	m2	4.140,0	**1.000**	4.140.000
	Waterproofing poliolefine TH. 1.5 mm	m2	4.140,0	**2.400**	9.936.000
3.625	Hydro-isolation	m2	1.525,0	**1.169**	1.782.725
	filling excavation (principal excavation)	m3	818,0	**100**	81.800
	Stone cover TH. 5 cm including mortar	m2	610,0	**11.200**	6.832.000
	Polished concrete for walkway TH. 8 cm with substratum TH. 10 cm	m2	397,0	**3.500**	1.389.500
	metal parapet H.100 cm TH. 2 cm	ml	300,0	**1.400**	420.000
	III. GREEN WORKS				
	composition of stratigraphy for phytodepuration area	m3	328,0	**2.240**	734.720
An.2	Supply and installation of geotextile Sf - 49, 290 gr/m2: 0,8 m2/m	m2	494,0	**577**	285.038
	Supply and planting of phytodepuration plants	m2	345,0	**4.900**	1.690.500
	IIII. TECHNICAL SYSTEMS AND EQUIPMENT				
	Recirculating and purification systems for biopool	each	1,0	**10.500.000**	10.500.000
	Facility for water intake canal	each	1,0	**2.800.000**	2.800.000
	Sum			**lekë**	**120.639.170**
	Reserve	**5%**		**lekë**	6.031.959
	Sum			**lekë**	**126.671.129**
	T.V.SH.	**20%**		**lekë**	25.334.226
	Sum in Lek			**lekë**	**152.005.355**
	Sum in Euro			**Euro**	**1.085.753**

No. Analysis	Description of work: REINFORCED CONCRETE BANK				
	I. PRELIMINARY WORKS	**Unit**	**Amount**	**Unit Price**	**Cost**
	Preparation of the bottom, levelling and compacting	m2	6.350,0	**150**	952.500
	Morphology preparation of project with carry-over of inert material	m3	9.647,0	**198**	1.910.106
	II. CONSTRUCTION WORKS				
	Reinforced concrete earth, park side	m2	3.410,0	**14.000**	47.740.000
	Reinforced concrete earth, river side	m3	528,0	**1.400**	739.200
3.376	Construction of draining channel, infill with draining stones	m3	226,0	**1.529**	345.554
An.3	Supply and installation of HDPE SN8 d=125 mm tubes	ml	660,0	**1.266**	835.560
An.2	Supply and installation of geotextile Sf - 49, 290 gr/m2: 0,8 m2/m	m2	1.784,0	**577**	1.029.368
	III. GREEN WORKS				
	Biodegradable coconut bio-net	m2	2.805,0	**980**	2.748.900
3.643	Hydro-seeding grass	m2	8.030,0	**89**	714.670
	Sum			**lekë**	**57.015.858**
	Reserve	**5%**		**lekë**	2.850.793
	Sum			**lekë**	**59.866.651**
	T.V.SH.	**20%**		**lekë**	11.973.330
	Sum in Lek			**lekë**	**71.839.981**
	Sum in Euro			**Euro**	**513.143**

No. Analysis	Description of work: BANK CONSOLIDATION				
	I. PRELIMINARY WORKS	**Unit**	**Amount**	**Unit Price**	**Cost**
2.267a	Mechanical excavation at max depth b~2m	m3	414,0	**148**	61.272
	Preparation of the bottom, levelling and compaction	m2	207,0	**150**	31.050
	II. CONSTRUCTION WORKS				
2.262/1	Poor concrete layer C 7/10	m3	46,0	**8.373**	385.158
An.8	Footing foundations, strips and slabs up to 20 m3 C - 25/30	m3	230,0	**12.474**	2.869.020
	Iron	t	51,8	**84.000**	4.347.000
	Iron works	t	51,8	**21.000**	1.086.750
	Wooden formwork	m2	169,0	**2.380**	402.220
	Different sizes of stone boulders (0,5 - 1,0 m$^{3)}$	m3	900,0	**2.800**	2.520.000
	Bundled *Salix eleagnons*	ml	40,0	**3.500**	140.000
	Sum			**lekë**	**11.842.470**
	Reserve	**5%**		**lekë**	592.124
	Sum			**lekë**	**12.434.594**
	T.V.SH.	**20%**		**lekë**	2.486.919
	Sum in Lek			**lekë**	**14.921.513**
	Sum in Euro			**Euro**	**106.582**

cost estimates

No. Analysis	Description of work: GREEN AMPHITHEATER				
	I. PRELIMINARY WORKS	**Unit**	**Amount**	**Unit Price**	**Cost**
	Preparation of the bottom, levelling and compacting	m2	920,0	**150**	138.000
	Morphology preparation of project with carry-over of inert material	m3	1.435,0	**198**	284.130
	II. CONSTRUCTION WORKS				
	Reinforced concrete earth	m2	1.000,0	**14.000**	14.000.000
3.376	Construction of draining channel, infill with draining stones	m3	13,0	**1.529**	19.877
An.3	Supply and installation of HDPE SN8 d=125 mm tubes	ml	42,0	**1.266**	53.172
An.2	Supply and installation of geotextile Sf - 49, 290 gr/m2: 0,8 m2/m	m2	106,0	**577**	61.162
	III. GREEN WORKS				
3.643	Hydroseeding grass	m2	1.000,0	**89**	89.000
	Sum			**lekë**	**14.645.341**
	Reserve	**5%**		**lekë**	732.267
	Sum			**lekë**	**15.377.608**
	T.V.SH.	**20%**		**lekë**	3.075.522
	Sum in Lek			**lekë**	**18.453.130**
	Sum in Euro			**Euro**	**131.808**

No. Analysis	Description of work: GREENERY				
	I. GREEN WORKS	**Unit**	**Amount**	**Unit Price**	**Cost**
An.15	Supply and installation of decorative trees	cope	65,0	**10.690**	694.850
	Supply and planting of shrubs	m2	4.500,0	**7.000**	31.500.000
	Supply and planting of herbaceous	m2	8.000,0	**3.000**	24.000.000
	Sum			**lekë**	**56.194.850**
	Reserve	**5%**		**lekë**	2.809.743
	Sum			**lekë**	**59.004.593**
	T.V.SH.	**20%**		**lekë**	11.800.919
	Sum in Lek			**lekë**	**70.805.512**
	Sum in Euro			**Euro**	**505.754**

No. Analysis	Description of work: INVESTIGATIONS AND SURVEYS				
	I. INVESTIGATIONS AND SURVEYS	**Unit**	**Amount**	**Unit Price**	**Cost**
	Topological survey	n.	1,0	**750.000**	750.000
	Hydraulics survey	n.	1,0	**350.000**	350.000
	Geological survey	n.	1,0	**700.000**	700.000
	physical-chemical analysis of the water	n.	1,0	**300.000**	300.000
	physical-chemical analysis of the soil	n.	1,0	**225.000**	225.000
	Sum			**lekë**	**2.325.000**
	Reserve	**5%**		**lekë**	116.250
	Sum			**lekë**	**2.441.250**
	T.V.SH.	**20%**		**lekë**	488.250
	Sum in Lek			**lekë**	**2.929.500**
	Sum in Euro			**Euro**	**20.925**

No. Analysis	Description of work: PIERS				
	I. PRELIMINARY WORKS	**Unit**	**Amount**	**Unit Price**	**Cost**
	Preparation of the bottom, levelling and compacting	m2	2.440,0	**150**	366.000
	II. CONSTRUCTION WORKS UNDERGROUND				
	SQUARE PIER				
	Concrete	m3	80,0	**14.000**	1.120.000
	Iron	t	18,0	**84.000**	1.512.000
	Iron works	n.	1,0	**280.000**	280.000
	TRIANGULAR PIER				
	Concrete	m3	300,0	**14.000**	4.200.000
	Iron	t	67,5	**84.000**	5.670.000
	Iron works	n.	1,0	**1.050.000**	1.050.000
	CIRCULAR PIER				
	Concrete	m3	680,0	**14.000**	9.520.000
	Iron	t	153,0	**84.000**	12.852.000
	Iron works	n.	1,0	**2.380.000**	2.380.000
	III. CONSTRUCTION WORKS ABOVE				
	SQUARE PIER				
	Concrete	m3	90,0	**14.000**	1.260.000
	Iron	t	40,0	**84.000**	3.360.000
	Iron works	n.	1,0	**840.000**	840.000
	Carpentry work	n.	1,0	**2.520.000**	2.520.000
	Metal parapet H.100 cm TH. 2 cm	ml	100,0	**1.400**	140.000
	TRIANGULAR PIER				
	Concrete	m3	171,0	**14.000**	2.394.000
	Iron	t	65,0	**84.000**	5.460.000
	Iron works	n.	1,0	**1.365.000**	1.365.000
	Carpentry work	n.	1,0	**4.095.000**	4.095.000
	Metal parapet H.100 cm TH. 2 cm	ml	420,0	**1.400**	588.000
	CIRCULAR PIER				
	Concrete	m3	450,0	**14.000**	6.300.000
	Iron	t	150,0	**84.000**	12.600.000
	Iron works	n.	1,0	**2.100.000**	2.100.000
	Carpentry work	n.	1,0	**6.300.000**	6.300.000
	Metal parapet H.100 cm TH. 2 cm	ml	820,0	**1.400**	1.148.000
	IIII. ELEMENTS				
	SQUARE PIER				
	Green house	n.	400,0	**21.000**	8.400.000
	Furniture	n.	40,0	**20.884**	835.360
	TRIANGULAR PIER				
	Metal street light H=3000mm, diameter 150mm	n.	10,0	**25.000**	250.000
	Furniture	n.	40,0	**20.884**	835.360
	CIRCULAR PIER				
	Metal street light H=3000mm, diameter 150mm	n.	20,0	**25.000**	500.000
	Furniture	n.	40,0	**20.884**	835.360
	Sum			**lekë**	**101.076.080**
	Reserve	**5%**		**lekë**	5.053.804
	Sum			**lekë**	**106.129.884**
	T.V.SH.	**20%**		**lekë**	21.225.977
	Sum in Lek			**lekë**	**127.355.861**
	Sum in Euro			**Euro**	**909.685**

No. Analysis	Description of work: EXTRA SCOPE WETLAND				
	I. PRELIMINARY WORKS	**Unit**	**Amount**	**Unit Price**	**Cost**
	Morphology preparation of project with carry-over of inert material	m2	5.000,0	**198**	990.000
	II. GREEN WORKS				
	Supply and planting of herbaceous for wetland	m2	2.500,0	**4.900**	12.250.000
	Sum			**lekë**	**13.240.000**
	Reserve	**5%**		**lekë**	662.000
	Sum			**lekë**	**13.902.000**
	T.V.SH.	**20%**		**lekë**	2.780.400
	Sum in Lek			**lekë**	**16.682.400**
	Sum in Euro			**Euro**	**119.160**

team

KWY
Ricardo Gomes, Principal; Luise Marter and Mara Nuyens, Architects.
Consultants: Prof. Dr. Heiko Sieker of The Storm Water Experts, Ingenieurgesellschaft Prof. Dr. Sieker mbH, Berlin

KWY is a multidisciplinary platform investigating the nature of collaboration within the context of specific projects, with a proven track record of designing and delivering engaging and thought-provoking designs. KWY was founded in 2009 by architects Ben Allen and Ricardo Gomes in Berlin, and curator and editor James Bae in Los Angeles.
A central interest of our office is collaborating closely with artists, writers, curators, educators and other architects in order to enrich the process of making uniquely specific works that limn the fields of art and architecture. Through our rigorous approach to design development, we aim to seamlessly connect the transitions between initial concept, detailed design and final realisation.

YellowOffice
Francesca Benedetto, Principal; Letizia Mazzoni, Alberta Menegaldo, Emilio Mossa, Giacomo Nava and Elisa Scussolin, Architects
Consultants: Nicola Canepa and Vassilis Mpampatsikos

YellowOffice's practice brings together several scales of landscape design processes ranging from urban planning to private parks, from fragments of urban centres to territorial parks, as well as the re-naturalization of discarded zones to the integration of naturalistic relevant areas. YellowOffice will draw from their recent experience acquired through a multitude of commissions and international awards, among which their recent 1st prize for the Durana project in Albania, and envisages this proposition as an opportunity to further expand on their research approach to design.

Nicola Canepa is a doctor of Agronomy, graduated in Vegetable production of Green Systems, specialized in Landscape and Garden Architecture. He worked for some of the most distinct italian architectural studios and for the enviromental engineering collectives and currently works as a private consultant. Recent work includes green works for the EXPO 2015 in Milano and advising on the third phase of the international competition of Durana.

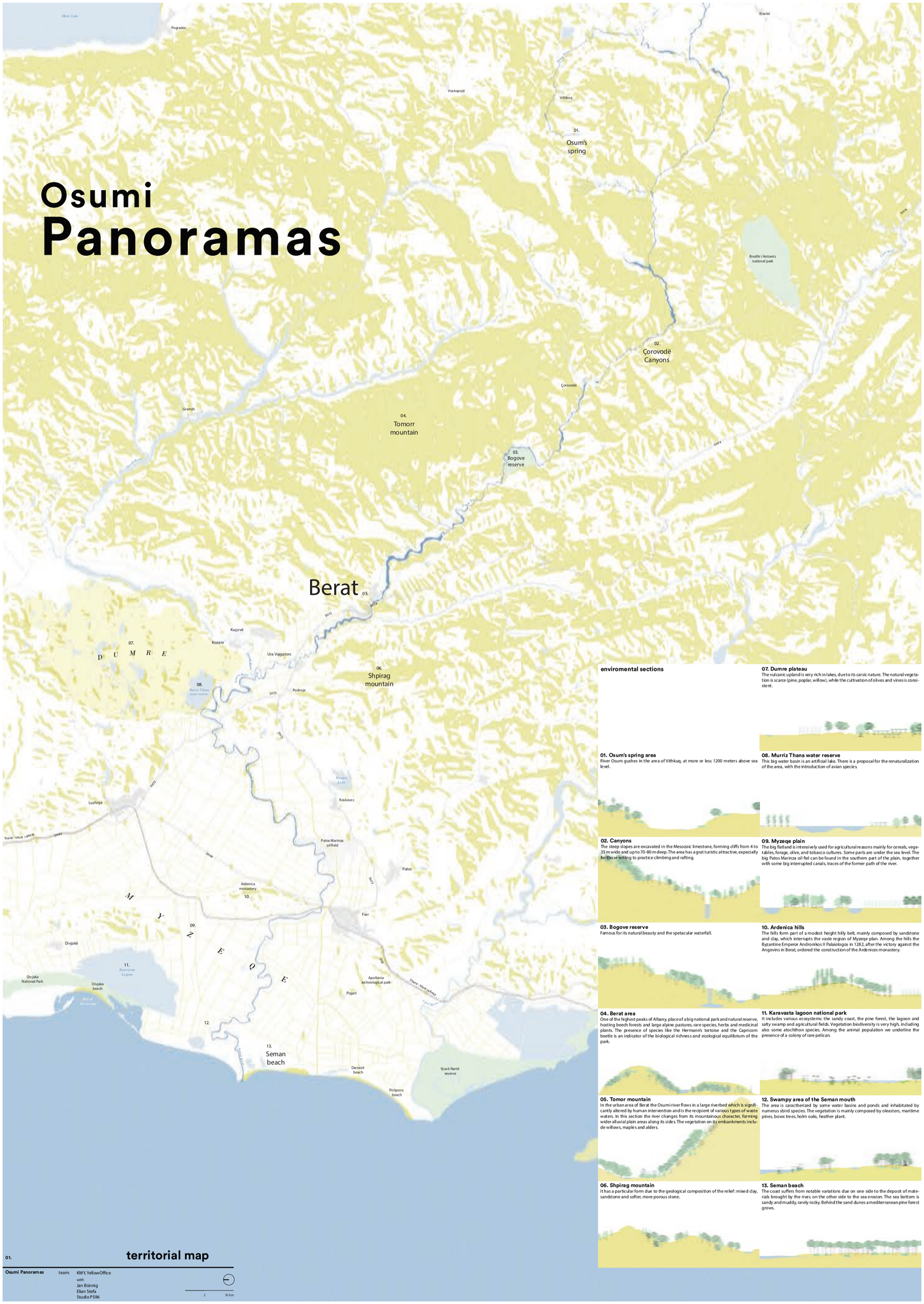
Vassilis Mpampatsikos is a structural engineer with a PhD in seismic engineering, based in Milan. He works as freelancer engineer and as a professor at the Polytechnic of Milan where he teaches structural mechanics and design at the Architecture faculty. Recent work includes consultancy for the Government of Malawi concerning the issue of flooding in the African villages.

Jan Bünnig
Artist based in Berlin. He has recently taken part of group exhibitions at the University Galleries of Illinois, at CIAC in Rome and Sangsangmadang in Seoul. He has had solo exhibitions of his work at Akira Ikeda Gallery, Autocenter and the Sammlung Hoffmann, all in Berlin, and has had a significant retrospective at the Heidelberger Kunstverein in 2013. Bünnig's work reflects an interest in the representation of nature and his method of production often adds a performative dimension to the work. The representation of an intentionally non-symbiotic relationship between nature and science belies an ongoing struggle to rectify matter - or nature - with its interpretation by scientific means.

Elian Stefa
Elian a Tirana based curator, architect, and lecturer. His work focuses on territorial ambiguity, revitalization of abandoned spaces, and self-construction. He has founded Concrete Mushrooms, a non-profit organization promoting cultural planning and sustainable historical tourism in Albania. Elian is currently teaching at the Polytechnic University of Tirana, and has recently been the Associate Curator of 'Adhocracy', exhibited at the 1st Istanbul Design Biennial, the New Museum NYC, and LimeWharf London. He has curated and collaborated on exhibitions at La Triennale di Milano and the EXD'11 Lisbon Biennale.

Studio PS96
Piro Stefa, Principal; Dhimiter Stefa, Hydroengineer
Studio PS96 has 20 years of architectural and urban planning experience in Albania, dealing with a variety of projects and involving expert external collaborators from its extensive network in order to provide a complete coverage of the project's needs in different contexts.

Osumi
Panoramas



territorial map

01.

Osumi Panoramas

team: KWY, YellowOffice
with
Jan Bünnig
Ellan Stefa
Studio PS96

2 10 km

enviromental sections

01. Osum's spring area
River Osum gushes in the area of Vithkuq, at more or less 1200 meters above sea level.

02. Canyons
The steep slopes are excavated in the Mesozoic limestone, forming cliffs from 4 to 35 m wide and up to 70-80 m deep. The area has a grat turistic attractive, expecially for those willing to practice climbing and rafting.

03. Bogove reserve
Famous for its natural beauty and the spetacular waterfall.

04. Berat area
One of the highest peaks of Albany, place of a big national park and natural reserve, hosting beech forests and large alpine pastures, rare species, herbs and medicinal plants. The presence of species like the Hermann's tortoise and the Capricorn beetle is an indicator of the biological richness and ecological equilibrium of the park.

05. Tomor mountain
In the urban area of Berat the Osumi river flows in a large riverbed which is significantly altered by human intervention and is the recipient of various types of waste waters. In this section the river changes from its mountainous character, forming wider alluvial plain areas along its sides. The vegetation on its embankments include willows, maples and alders.

06. Shpirag mountain
It has a particular form due to the geological composition of the relief: mixed clay, sandstone and softer, more porous stone.

07. Dumre plateau
The vulcanic upland is very rich in lakes, due to its carsic nature. The natural vegetation is scarce (pine, poplar, willow), while the cultivation of folives and vines is consistent.

08. Murriz Thana water reserve
This big water basin is an artificial lake. There is a proposal for the renaturalization of the area, with the introduction of avian species.

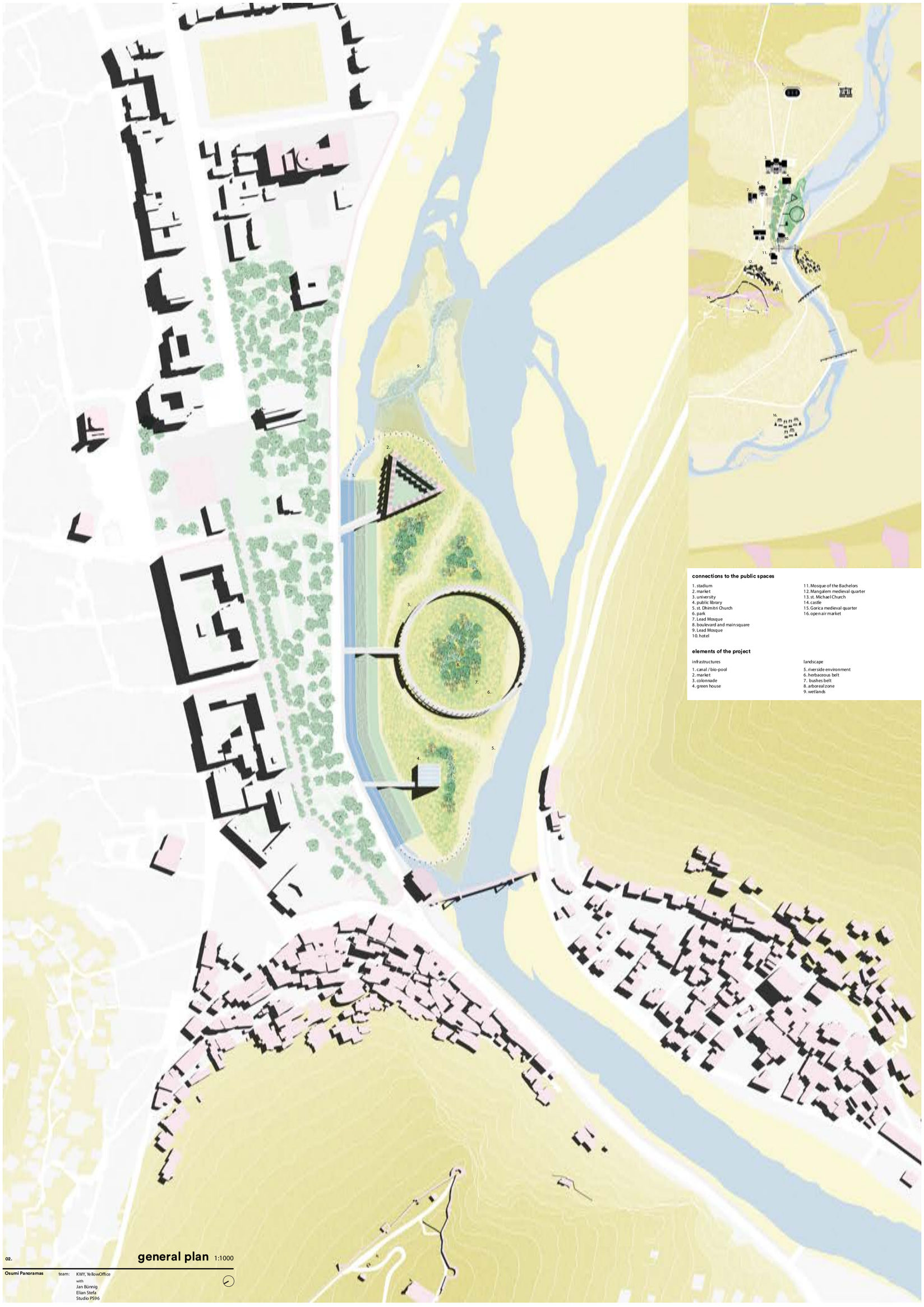
09. Myzeqe plain
The big flatland is intensively used for agricultural reasons mainly for cereals, vegetables, forage, olive, and tobacco cultures. Some parts are under the sea level. The big Patos Marinza oil fiel can be found in the southern part of the plain, together with some big interrupted canals, traces of the former path of the river.

10. Ardenica hills
The hills form part of a modest height hilly belt, mainly composed by sandstone and clay, which interrupts the vaste region of Myzeqe plan. Among the hills the Byzantine Emperor Andronikos II Palaiologos in 1282, after the victory against the Angevins in Berat, ordered the construction of the Ardenices monastery.

11. Karavasta lagoon national park
It includes various ecosystems: the sandy coast, the pine forest, the lagoon and salty swamp and agricultural fields. Vegetation biodiversity is very high, including also some atochthon species. Among the animal population we underline the presence of a colony of rare pelican.

12. Swampy area of the Seman mouth
The area is caractherized by some water basins and ponds and inhabitated by numerus sbird species. The vegetation is mainly composed by oleasters, maritime pines, bowx trees, holm oaks, heather plant.

13. Seman beach
The coast suffers from notable variations due on one side to the deposit of materials brought by the rives on the other side to the sea erosion. The sea bottom is sandy and muddy, rarely rocky. Behind the sand dunes a mediterranean pine forest grows.



connections to the public spaces

1. stadium
2. market
3. university
4. public library
5. st. Dhimitri Church
6. park
7. Lead Mosque
8. boulevard and main square
9. Lead Mosque
10. hotel
11. Mosque of the Bachelors
12. Mangalem medieval quarter
13. st. Michael Church
14. castle
15. Gorica medieval quarter
16. open air market

elements of the project

infrastructures

1. canal / bio-pool
2. market
3. colonnade
4. green house

landscape

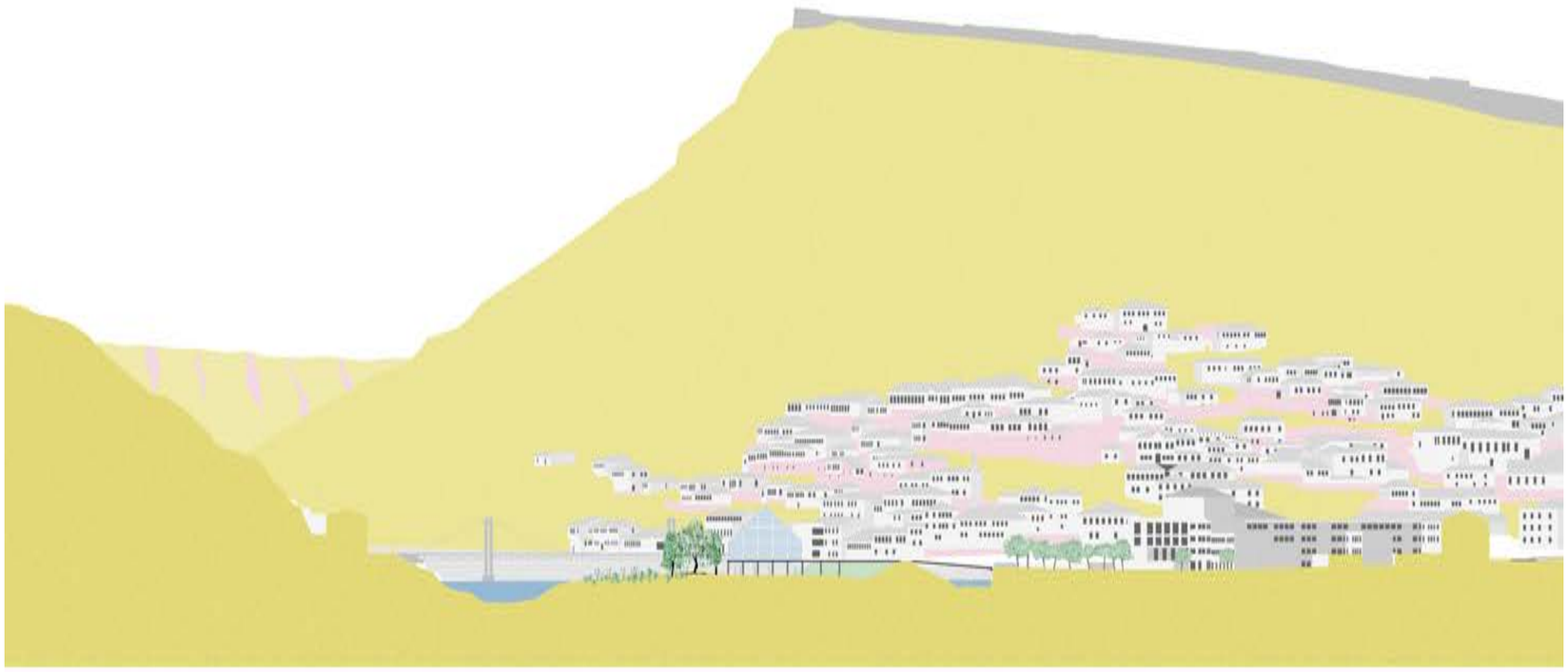
5. riverside environment
6. herbaceous belt
7. bushes belt
8. arboreal zone
9. wetlands

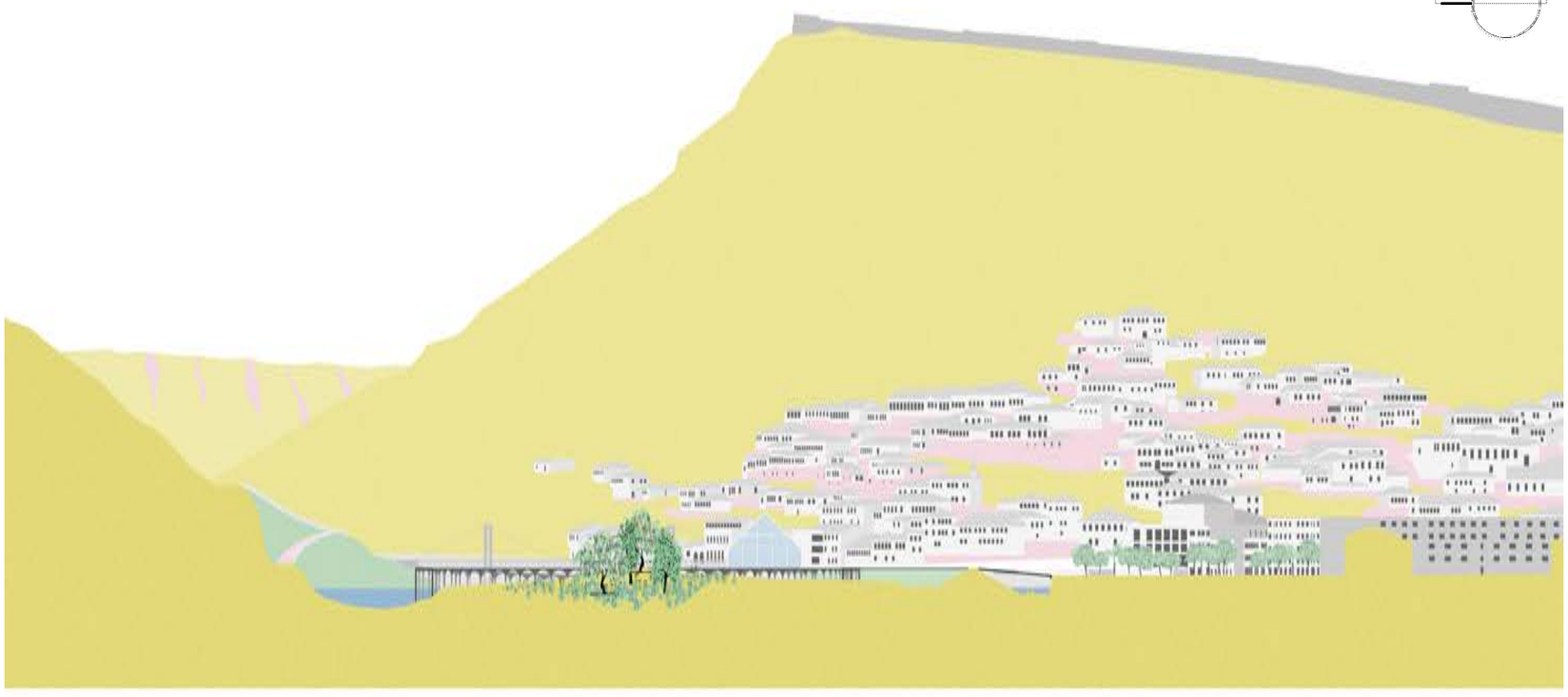
02.

general plan 1:1000

Osumi Panoramas

team: KWY, YellowOffice
with
Jan Bünnig
Elian Stefa
Studio PS96





03.

sections 1:500

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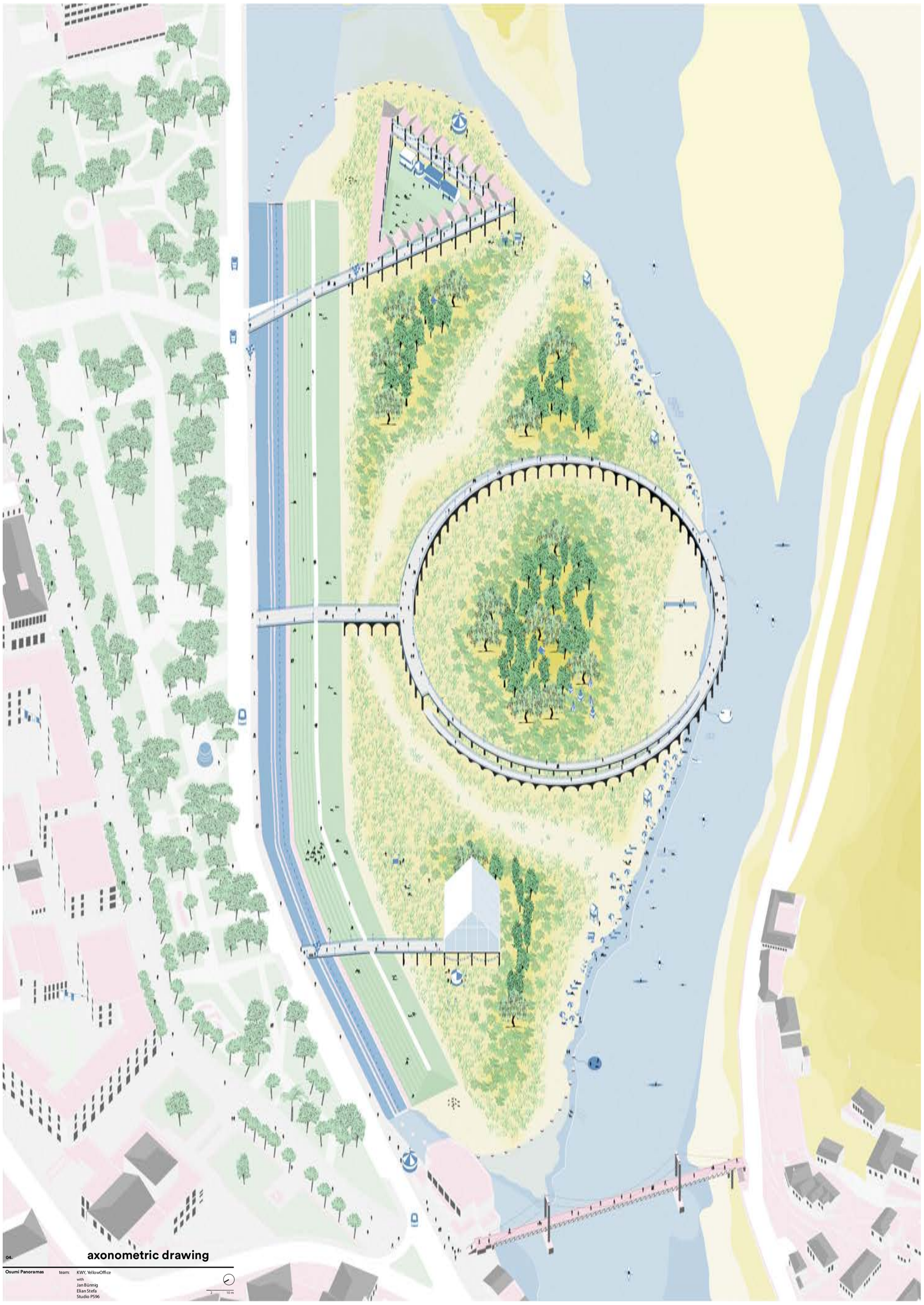
Elian Stefa
Studio PS96



04.

axonometric drawing

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team: KWY, YellowOffice
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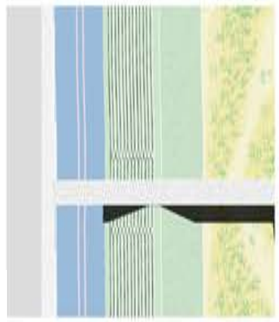
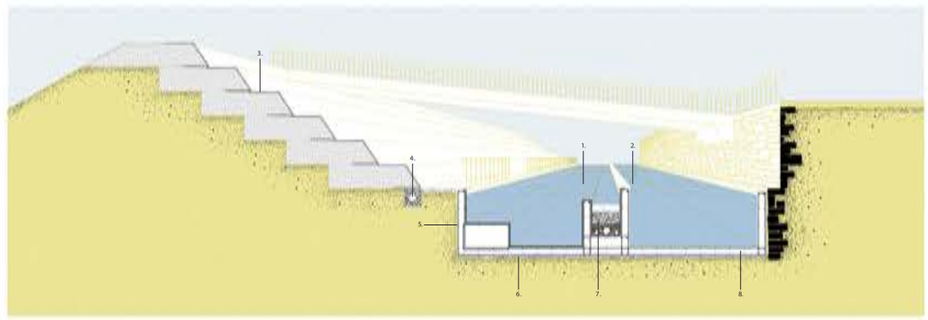
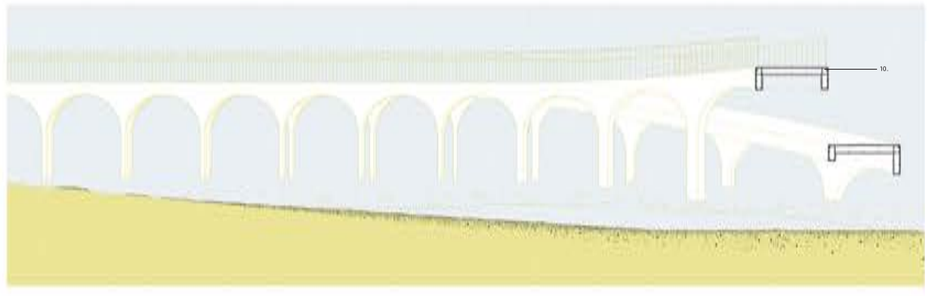
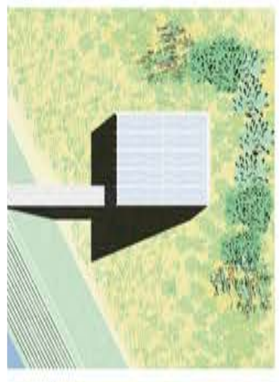
Jan Bünnig
Elian Stefa
Studio PS96

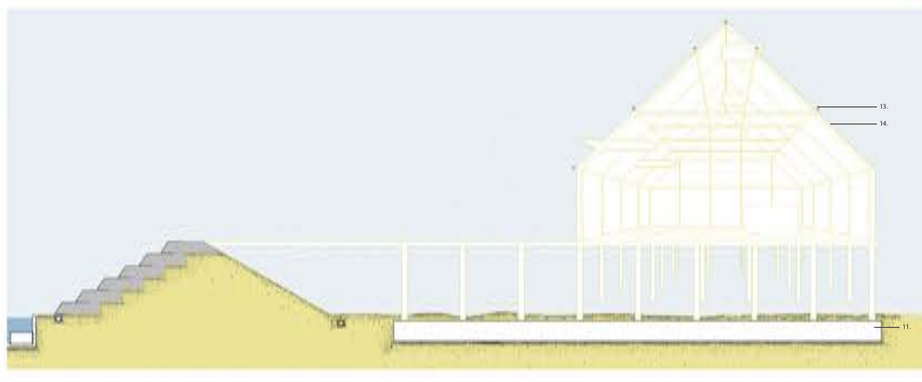
2 10 m

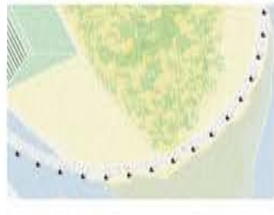












1. pool
2. canal

3. reinforced earth with geotexile and coconut bionet
4. draining canal hdpe tube Ø 200 mm
5. waterproofing barrier
6. poor concrete layer TH. 10 cm
7. stratigraphy for phytodepuration
8. reinforced concrete foundation 25/30 TH.30 cm
9. IPE H.150 mm B. 100 mm
10. reinforced concrete 30 cm
11. reinforced concrete plinth 25/30
12. poor concrete layer TH. 10 cm
13. metal tube L.100 mm
14. glass
15. reinforced concrete cylinder Ø 100 cm
16. local stone barrier

05. constructive plans and sections

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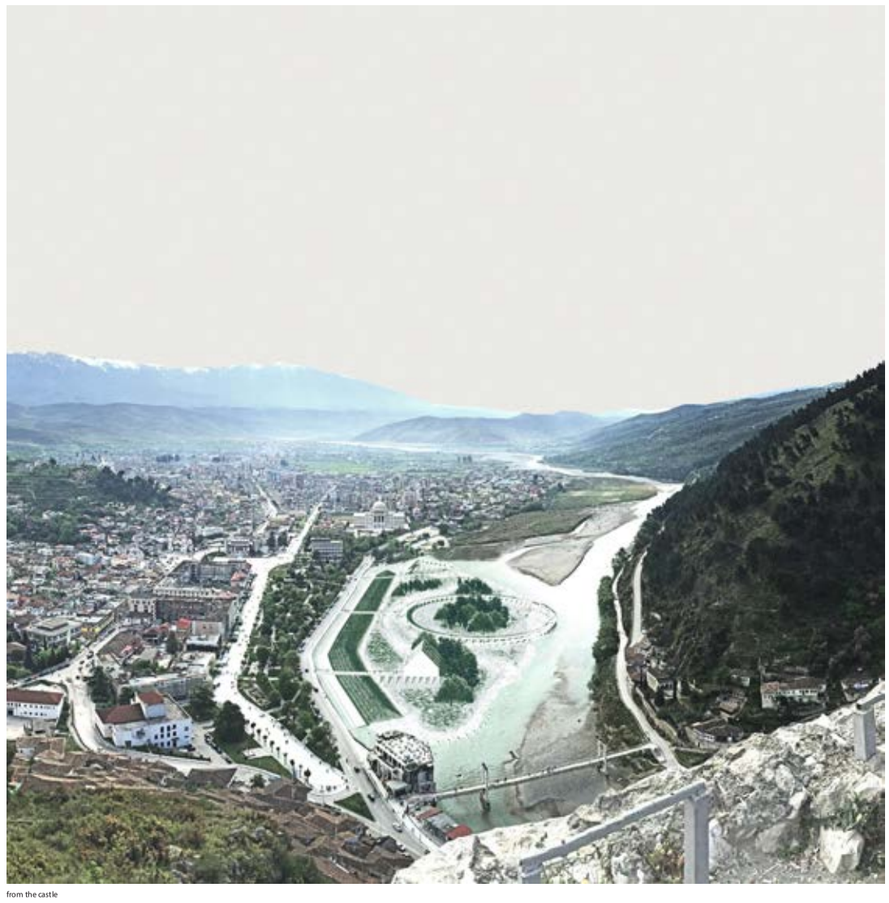

from the castle

06.

bird-eye view

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from the market

in the canal

07.

eye-level views

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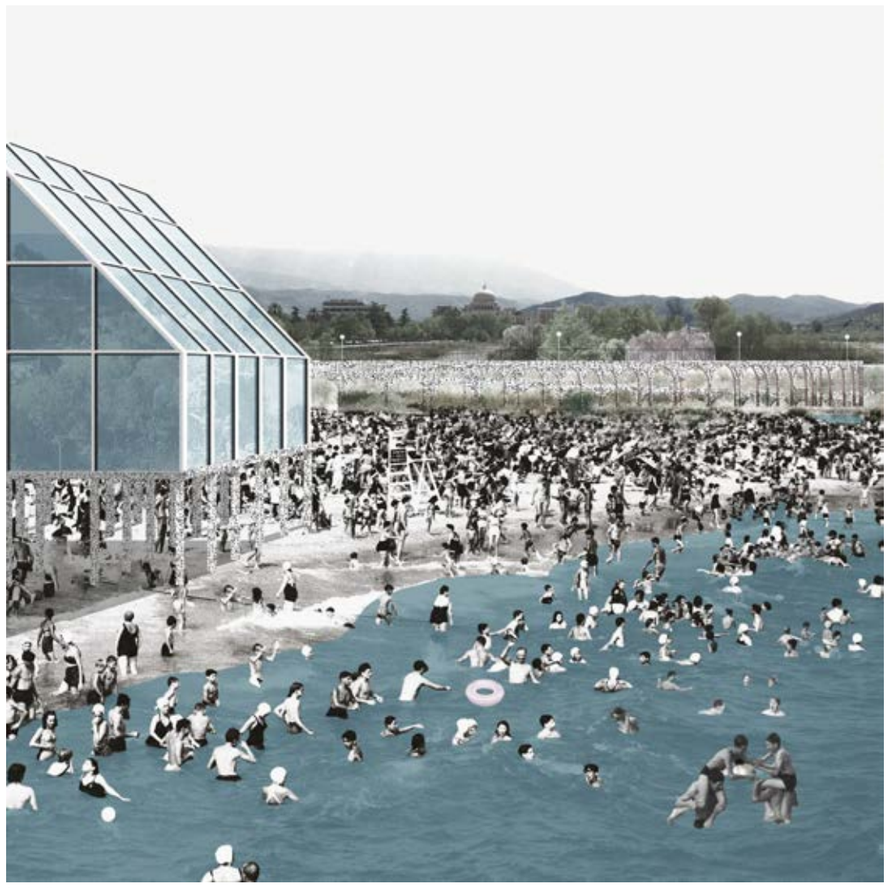
Elian Stefa
Studio P596



from the bridge

from the city

08.

eye-level views

Osumi Panoramas

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Studio PS96