



**Parcul Est, Cluj Napoca**  
**LANDSCAPE STUDY**

**2019**

<b>Paper title:</b>	Landscaping study with the purpose of drafting the documentations for the design competition with the competition brief " <b>Landscape design of Parcul de Est in Cluj Napoca</b> "
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## INTRODUCTION

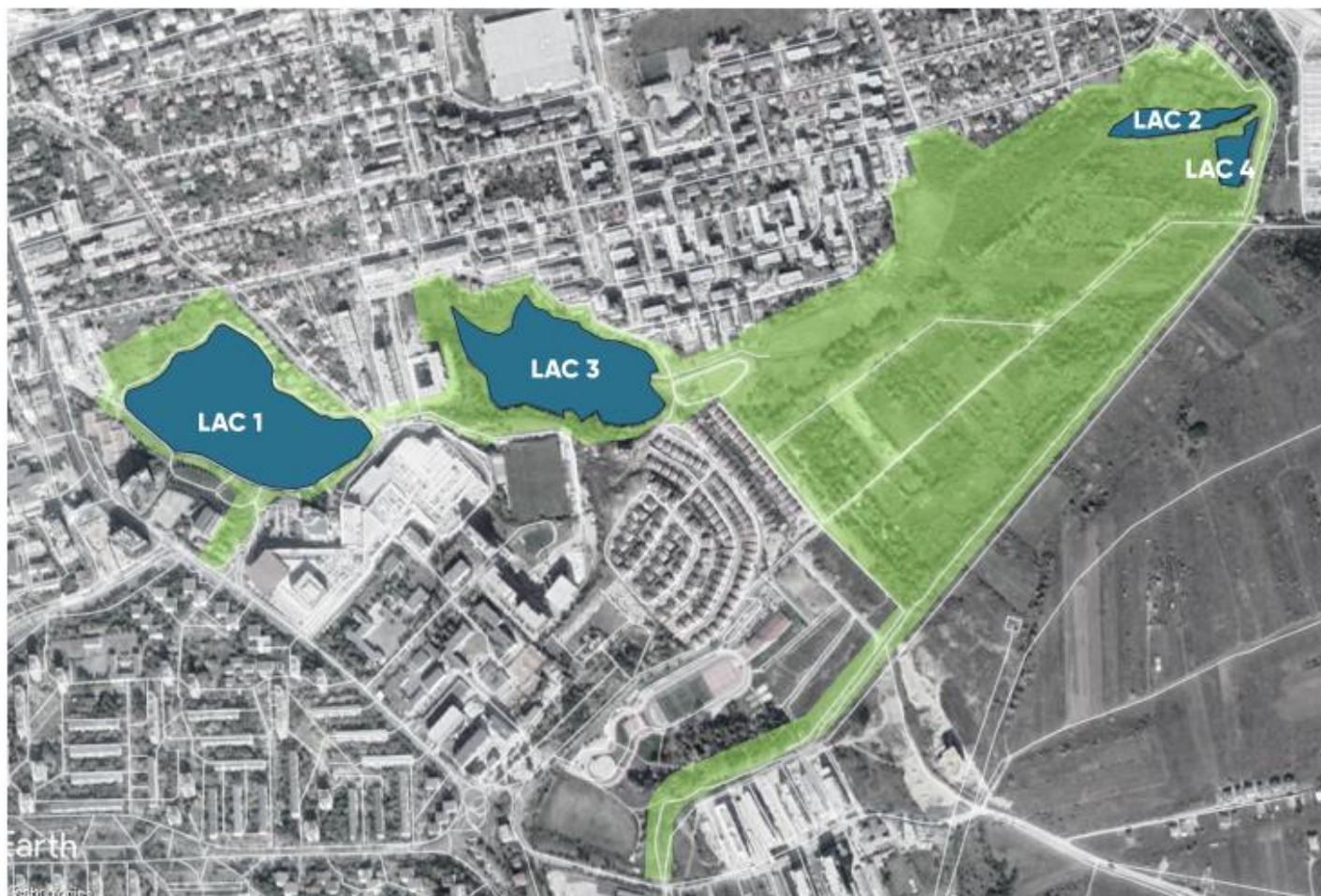
### INTRODUCTION

This study was elaborated with the purpose of substantiating the design competition organized by the Cluj-Napoca City Hall in partnership with the Order of Architects of Romania. The brief is the landscaping development of Parcul de Est (Eastern Park) in Cluj-Napoca. The objective of the competition is finding the best development design that shall contribute to diminishing the urban expansion's impact on the ecosystem and to an increase of the quality of life of residents in nearby neighborhoods.

The present analysis aims at presenting all important aspects from a landscaping point of view, in architectural-urbanistic and natural context. With regards to the elaboration methodology, the study has as basis the information collected while visiting the site and off of the internet, as well as on the information received from the "Societate Organizata Sustenabil" Association. The synthetization, processing, and drafting of the information was done by a team of landscaping experts. The recommendations regarding the final design solution were formulated based on the results obtained the analysis and their purpose is to encourage competitors to elaborate a design solution that aims at protecting and developing the exiting natural patrimony.

*1 Figure no. 1: View from the southern side of Lake no. 3*

PAPER OBJECTIVE



2 Figure no. 2: Study area

(Image translation: Lake 1, Lake 3, Lake 2, Lake 4)



## PAPER OBJECT

The paper's object consists of documenting a green space of approximately 50 hectares in Cluj-Napoca. This territory is made up of different areas, both from the point of view of the current function and of the natural context.

## TERRITORY PLACEMENT

According to the coordinates 46.77527 latitude and 23.63954 longitude, the area is located in the south-eastern side of Cluj-Napoca Municipality, in the Intre Lacuri neighborhood. In its immediate vicinity, to the west, we see Gheorgheni neighborhood, and Sopor neighborhood is being developed in the south-eastern side of the area.

The park's delimited on the north-eastern side by DJ055, and by Becas creek on the south-eastern side. A mixed area with commercial, living, and leisure functions is located on the south-eastern side of the land. The north-western side represents the most densely built area. This area is preponderantly made up of collective residences.



3 Figure no. 3: Placement in territory



4 Figure no. 4: Placement in the municipality



5 Figure no. 5: Romania's elevations (landforms)



6 Figure no. 6: Romania's hydrographical map

## MICROREGION ANALYSIS

### LANDFORM

The studied land is located in the west of the Transylvanian Plateau (Podișul Transilvaniei, Bazinul Transilvan), at an altitude between 321 – 325 meters. The modelling agents of the plain landform are Valea Somesului Mic and its arms. The lower terrace of the Somes is made up of sands, gravel, and colluvial materials. These terraces have an alluvial character, represented through terraces gravel and lute. Reshuffled clays can be found in certain areas. (FILIPAS 2007, REZERVATIE PE 2019 SOS)

### PEDOLOGY AND HYDROLOGY

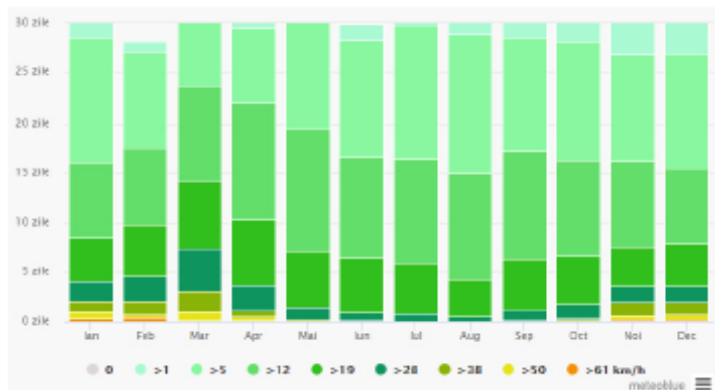
With regards to the pedological aspects, no soil samples were performed on the park's territory. According to the specialized literature, the following types of soils were identified in the area of the site: cambic chernozem, solonchak, and gley soils. The hydromorphic and alluvial soils can be found in the inferior course of the Becas creek. Within the park's perimeter, the soils are modified due to the constructions/infrastructure interventions, and due to other interventions in the nursery area. (FILIPAS 2007, REZERVATIE PE 2019 SOS)

The Becas creek is an important aspect of the territory, having a valuable fen. The length of the Becas creek is 8 km, with a hydrographic basin with a surface area of 44 km<sup>2</sup> and an average flow (upon influx) of 0.072 mc/s (Filipas, 2007). There is a canal between Lake 2 and Lake Pepiniera no. 1. There are three lakes in the area: Lake no. 3 Gheorgheni, Lake Pepiniera 1 (Lake no. 2), Lake Pepiniera 2 (Lake no. 4), currently abandoned.



7 Figure no. 7: Average temperatures in the Cluj-Napoca Municipality area

(Image translation: precipitations, daily maximum average, hot days, daily minimum average, cold nights)



8 Figure no. 8: Mean wind speed in the Cluj-Napoca Municipality area

## CLIMATE

The region's climate is continental-moderate, influenced by mostly western currents. The mean annual temperatures are between 8-11°C. Analyzing the annual statistics, we see an increase of the mean annual temperature. Between 1901-2000, the mean temperature was 8.4°C, and in 2014, it was 10.7°C. The warmest month of the year is July, when the maximum temperature during the day reaches 33°C, and the minimum temperature may fall to 11°C. the coldest month of the year is January, with temperatures between -10°C and +10°C. The polar maritime or Carpathian maritime intrusions predominate during the winter from the north-west, and warm air from the south-west prevails during the summer.

With regards to mean annual precipitations, between 1901-2000, we see an average of 564.7 mm, and in 2014, an average of 681.1 mm. The month with the most days with no precipitation is June, and the one with the most precipitations is October.

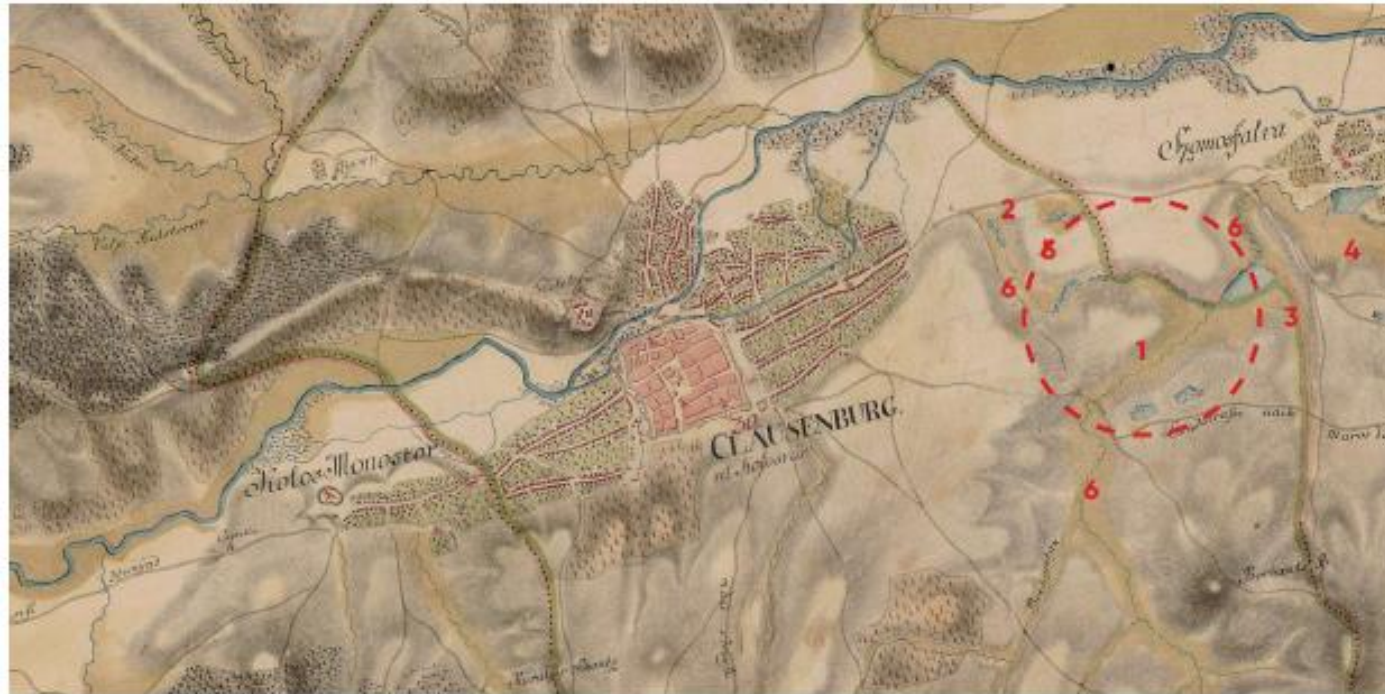
Regarding the wind speed, the strongest winds are recorded during the winter (November - February), and softer winds are recorded during summer (May-August). The polar maritime or Carpathian maritime intrusions predominate during the winter from the north-west, and warm air from the south-west prevails during the summer.

The mean annual sum of the Sun shining is close to 2000 hours, with a maximum in July, and a minimum in December.

## HISTORICAL PLACEMENT – LANDSCAPING EVOLUTION IN ARCHITECTURAL-URBANISTIC CONTEXT

## HISTORICAL PLACEMENT – LANDSCAPING EVOLUTION IN ARCHITECTURAL-URBANISTIC CONTEXT

## HISTORICAL AND LANDSCAPING EVOLUTION OF THE SITE IN MACRO-TERRITORIAL CONTEXT



9 Figure no. 9: First topographical mapping of the Hapsburg Empire (1769-1773)

On the first topographical mapping of the Hapsburg Empire, we see that the territory (1) is south of the road (2) that connects Cluj (Clausenburg) and the Someșeni locality (Szamosfalva), at an approximately equal distance between these two localities. There were no constructions around the territory, it being the component of a swamp area with a slight hill-like elevation. Furthermore, we can also observe a hydrographical network made up of large surface areas (3, 4), between the studied territory and the Someșeni locality, peat bogs (5) in the north and south of the territory, as well as water courses (6) that connects these elements, forming wet areas along them. In the south-western side of the territory, as well as in the south of Cluj, there are large surfaces with grape vine, suggesting the soil's fertility and the richness of the hydrographical network.





10 Figure no. 10: The second topographical mapping of the Hapsburg Empire (1833-1870)

On the second topographical mapping of the Hapsburg Empire, we see the expansion of Cluj and Someşeni localities. The manner in which the water areas are illustrated suggests that the hydrographical network was richer than on the first topographical mapping. It is possible that, in that period, the precipitations quantities were a lot greater than those during the first topographical mapping. Furthermore, we can see a development of the infrastructure in comparison to the previous map. On this map, we also see the denomination of the grape vine plantations, Békás Szőlő (Viile Becas) (2), which got their name after Becas creek, that exists to this day.

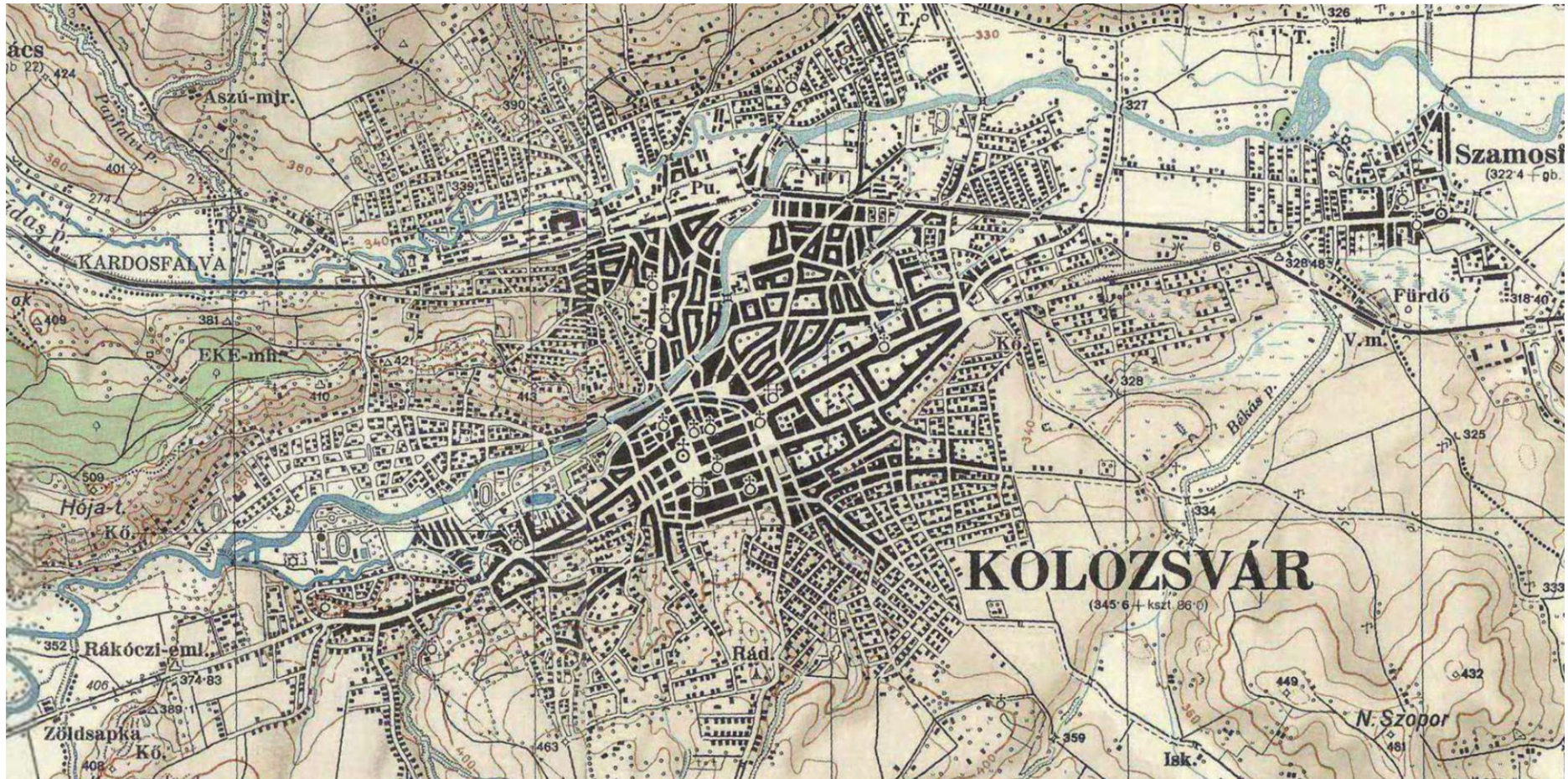




11 Figure no. 11: Third topographical mapping of the Hapsburg Empire (1986-1887)

As opposed to the first two topographical mappings of the Hapsburg Empire, we see the appearance of the railroad (2) in the northern part of the territory, an aspect that led to a more intense development of the area. As is the case of the second topographical mapping, the area is characterized through a rich hydrographical network, with a large wet area. Furthermore, the diversification of the road connections and the expansion of the localities can be observed. As in the case of the previous map, we see the denomination of the hill area in the south-eastern side of the territory, Nagy Szopor (Sopor Mare) (3).





12 Figure no. 12: Cadastral map from 1941

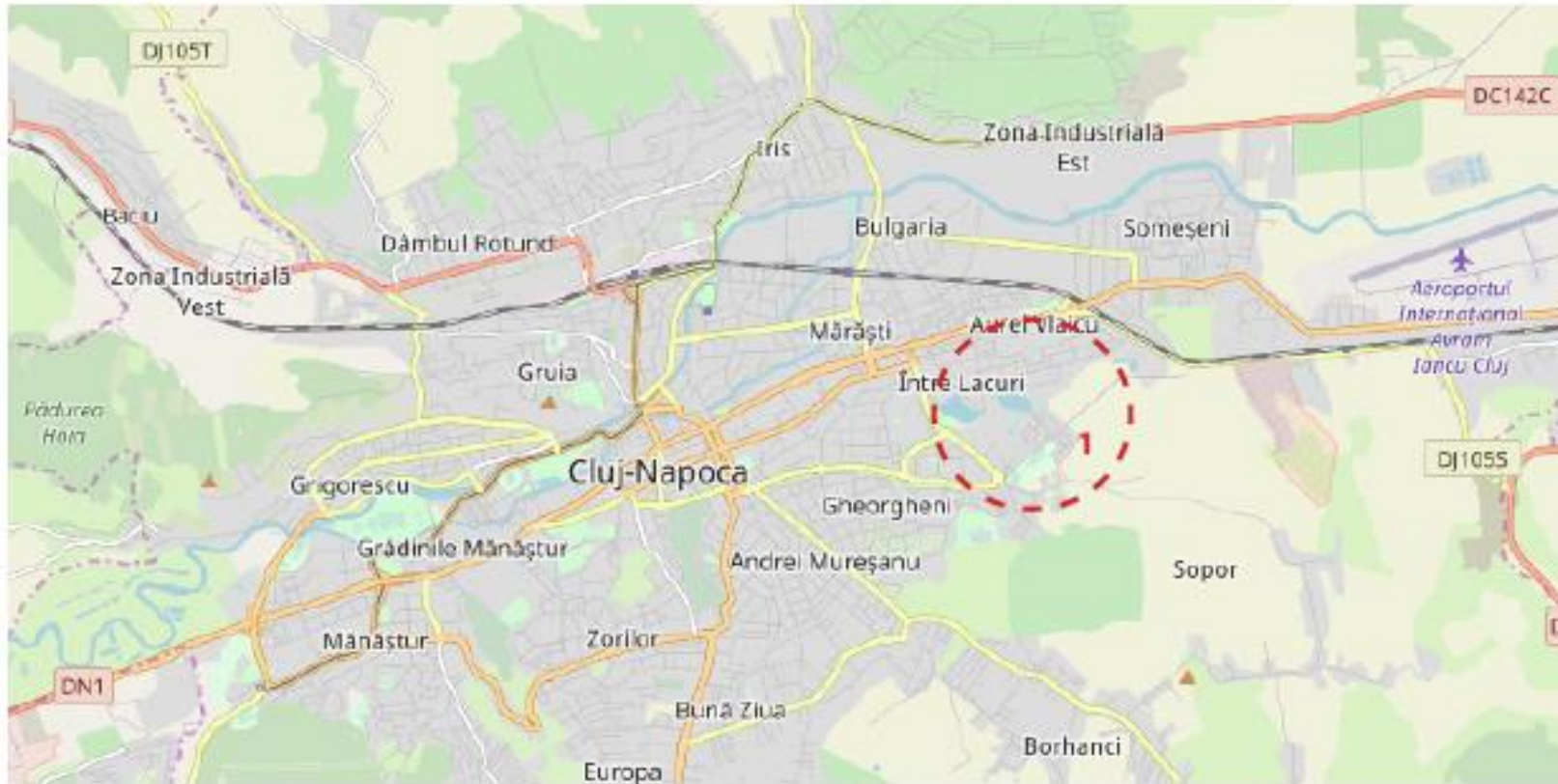
On this map, we see the current territory of the park. We see circulation structures, Becas creek (2) – its bed was regulated – and the appearance of constructions in the northern side of the territory (3), a result of the urban expansion of Cluj Municipality. As opposed to the previous maps, the hydrographic network becomes smaller, a possible factor being the densification of constructions and the decrease of precipitation quantities. In the other side of the circulation structure, in the Someseni locality's water area, we see the denomination Fürdő (bath) (4), which suggest that this area could have a leisure function.





13Figure no. 13: Google Earth satellite images (2019)

In the following decades from the cadastral map from 1941, the urban expansion took place at an accelerated pace. The park's territory was delimited by built area towards north-east, west, south-west, and south, only the south-eastern side remaining empty. Concurrently, Viile Becas disappear from the south-western side of the territory. Someseni locality becomes a neighborhood of Cluj-Napoca municipality. In this neighborhood, at approximately 3.5 km in the eastern side of the studied area, we find "Avram Iancu" International Airport that proves a rapid development of the area.



14Figure no. 14: OpenStreetMap map

On the digital OpenStreetMap map, we can see the degree to which the park's territory was incorporated into the urban tissue, simultaneous with the lack of large green spaces, which indicates that this territory was treated in such a way as to ensure that it may fulfill its role in the municipality's green spaces system.

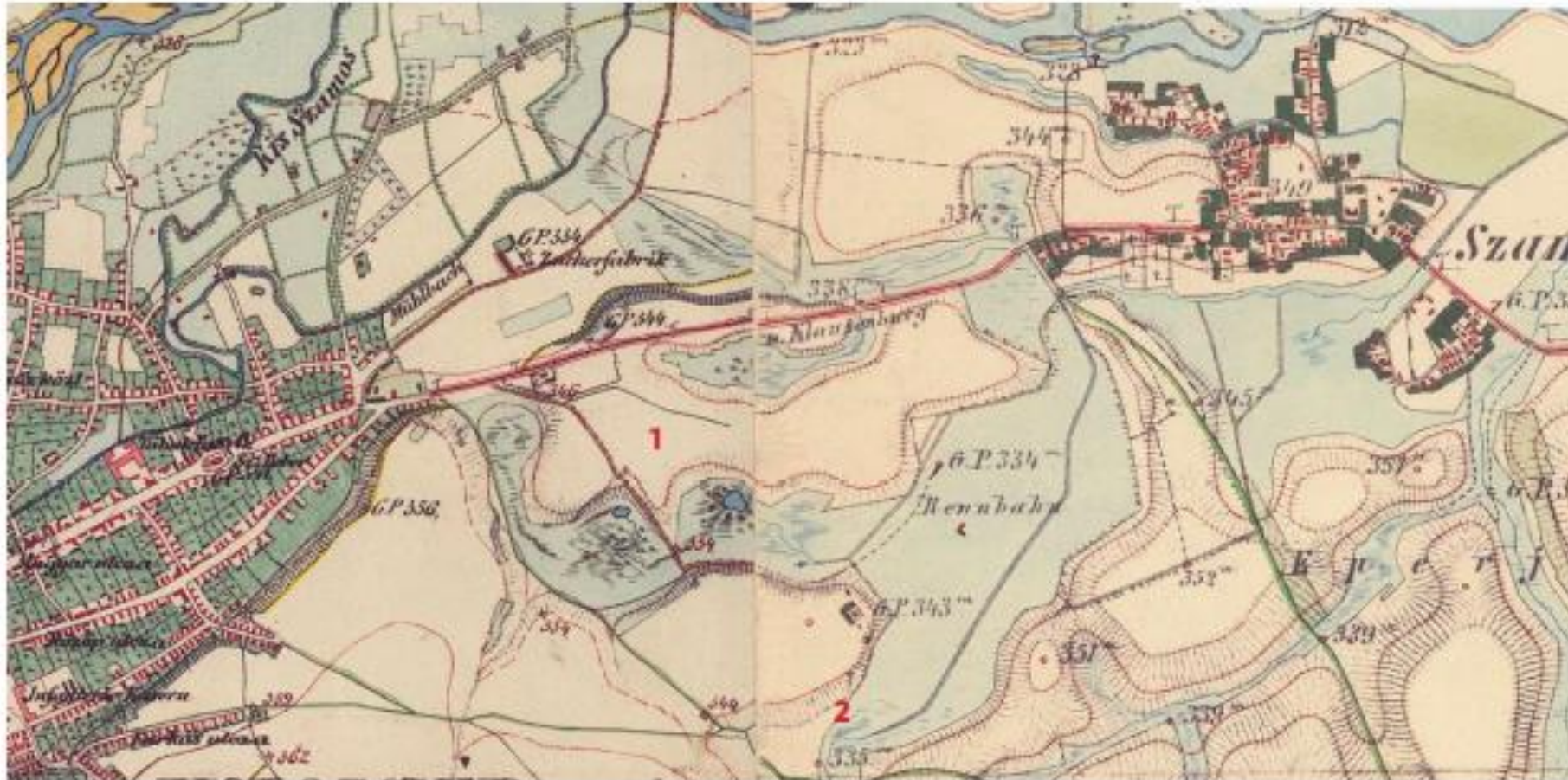


## HISTORICAL AND LANDSCAPING EVOLUTION OF THE SITE IN MICRO-TERRITORIAL CONTEXT



15 Figure no. 15 The first topographical mapping of the Hapsburg Empire (1769-1773)

The territory of the current park is delimited to the north-east and to the east by the Cluj administrative limit (1), marked by the green and red lines. Beyond this limit, we see a large water surface (3), it probably being from where the lakes on the eastern side of the studied territory developed. In the north-western side of the territory, we notice a wet, swampy area (2). Currently, this is where Gheorgheni Lake currently is and the other lake east of it. The southern delimitation represents the Becas creek (4), and the western one the route (5) that connects the roads to Semeseni and Targul Mures. In the center of the territory, we see a plateau surrounded by unlevel terrain (6). In the north and south of the territory, we see two peat bog areas (7, 8). One of the swamp areas on the northern side is connected with the one in the territory's north (2), and lake (10) south-west of the former Someseni locality (Szamosfalva) connects to lake no. 3 through the water course (9, 11), thus creating a complex hydrographic system.



16Figure no. 16: Second topographical mapping of the Hapsburg Empire (1833-1870)

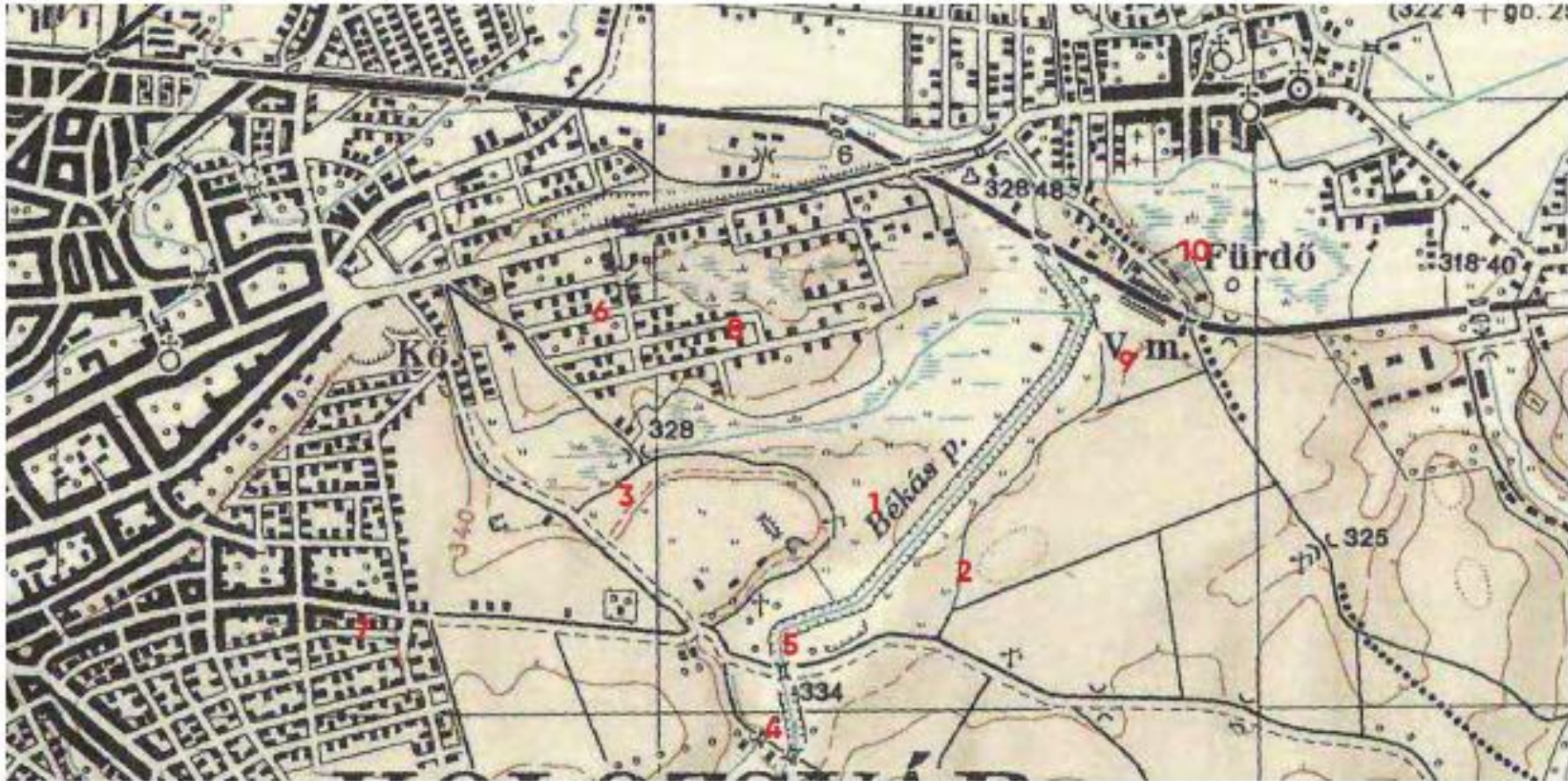
As opposed to the first topographical mapping of the Hapsburg Empire, we see that the entire area is marked by a wet area at a 334 meter altitude. Furthermore, we can see the development of the infrastructure, as well as the important link between Cluj-Napoca and Someșeni. In the marked area, north, north-east, and east of the wet area, we see a construction. The large wet areas indicate that, during this time, the quantity of precipitations were greater than those during the creation of the previous map.





17Figure no.17: Third topographical mapping of the Hapsburg Empire (1869-1887)

On this map, in the studied area, we see the text (1) “Im Hochsommer trocken”, which in German means that the area is dry during the summer. As opposed to the second topographical mapping, we see that the construction on the previous map has disappeared, and other small constructions have taken its place (in the east and south of the area), as well as a linear, rectangular element, probably a fence or a dam (2). The territory of the current park is crossed by the Becas creek (3). West of the creek, we see a road with an alignment vegetation (4). In the northern part of the territory, over the road that connects Cluj-Napoca municipality – Someșeni locality, we see the railroad (5). A large water surface can be seen south of the railroad.



18Figure no. 18: Cadastral map from 1941

As opposed to the topographical mapping of the Hapsburg Empire, on the cadastral map from 1941, the wet area is smaller, occupying only the northern side of the studied area (1). The Becas (Bekas) creek bed was regulated (2). On the northern and southern areas, we see bridges over water (3, 4). North of the creek, in the bridge area, we see a cross (5). The cross symbol may represent the place of a chapel or a cross. Continuing on, we see the densification of buildings both in the west (7), and in the north of the territory (6). In the center of the built area on the northern side, there is a wet area (8) surrounded by a water surface with the name "Fürdő" (10), which, in Hungarian, means "bath".





19Figure no. 19: Orthophoto taken in 1968 by the Corona system

The quality of these photographs allow us only to observe the road structures and the densification of the built areas. This way, we can observe that the center of the built area in the park's northern area has remained empty.



20Figure no. 20: Google Earth 2003 satellite image

As opposed to the map from 1968, on the satellite image downloaded from Google Earth, we see that there are new constructions (1) on the territory in the center of the built area. The shape of the existing lakes, the access areas, the circulation system, as well as the vegetation are contoured. In the south-western part of the territory, we see the nursery buildings (2), and alongside the road (3), that crosses the park, we see plantations (4). The south-eastern side holds agricultural lands (5).





21Figure no. 21: Google Earth 2009 satellite image

Comparing this image with the one in 2003, we notice the addition of the “Iulius Mall” shopping center (1), the sports field east of it (2), and the Selgros store.



22Figure no. 22: Google Earth 2011 satellite image

Compared to the previous map, we see the beginning of new constructions west of the park.





23Figure no. 23: Google Earth 2012 satellite image

No major changes have been identified between the Google Earth 2011 and Google Earth 2012 images.



24Figure no. 24: Google Earth 2016 satellite images

Comparing this image with the one from 2012, we can see the densification of constructions (1, 2) and the appearance of the area on which the wastes are deposited (3).





25Figure no. 25: Google Earth 2017 satellite image

We see the beginning of new constructions on the southern area (1). The waste deposits increased in size (2).



26Figure no. 26: Google Earth 2019 satellite image

In the southern area, we see the Gheorgheni sports base. The surface area of the waste deposit is getting bigger and bigger. The constructions have started to become more and more frequent in the southern area as well.



## CLASSIFICATIONS UNDER THE CURRENT REGULATIONS AND STRATEGIES



27Figure no. 27: PUG (General urban planning plan) Traffic – Existing



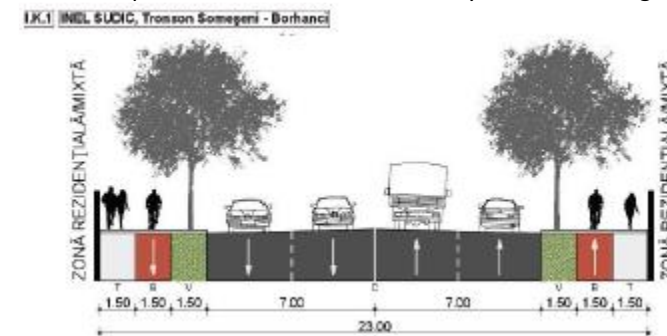
28Figure no. 28: PUG (General urban planning plan) Traffic – Proposed

## CLASSIFICATIONS UNDER THE CURRENT REGULATIONS AND STRATEGIES

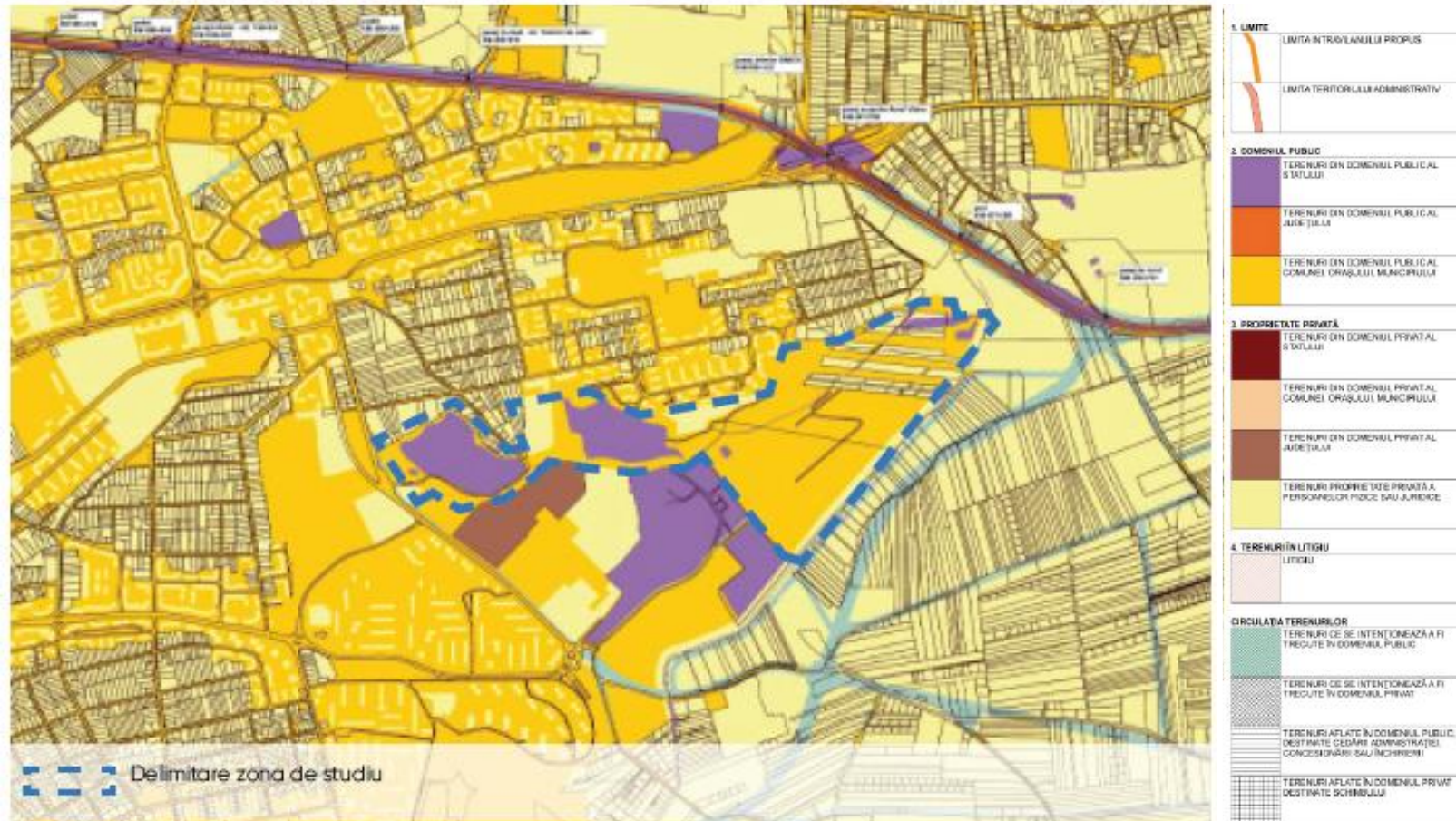
The expansion of the road network is foreseen in the current traffic scheme within the Cluj-Napoca Municipality General Urban-planning Plan, especially in the southern vicinity of the territory. The southern roundabout shall be built here, connecting E60 (to Oradea) to DJ105S (to the airport). The southern roundabout shall intersect the current major road artery, Soporului Street, and secondary arteries are proposed that will contour the major road network in Sopor neighborhood. In the northern part of the territory, at the intersection of DN1C and DJ105S, the creation of a road knot is foreseen, as well as a regional urban train station.

These interventions offer an important advantage with regards to the area's pleasing aesthetic and accessibility, however, on the other hand, it represents a danger due to the urbanization they will generate.

Both in the case of the secondary arteries, and in the case of the main roundabout, the street profiles are foreseen with a bicycle lane and alignment vegetation.



29Figure no. 29: PUG. Traffic – Section II.K.1 (mixed residential area)



30Figure no. 30: PUG. Property upon lands

(Image translation: Delimitation of study area; 1. Limits – limit of proposed built-up area, limit of administrative territory; 2. Public domain – land under state public property, land under county public property, lands under commune, city, municipality public property; 3. Private property: lands under state private property, lands under commune, city, municipality private property, land under county private property, lands under natural persons or legal entity property; 4. Disputed lands: Dispute; Land circulation: lands to be passed under public property, lands to be passed under private property, lands under public property to be given to the administration, for lease or rent, lands under private property destined to be exchanged).

Most lands belong to the Cluj-Napoca City Hall, the lakes belong to the Romanian National Waters Administration, and the south-western vicinity holds a property of the Ministry of National Defense.



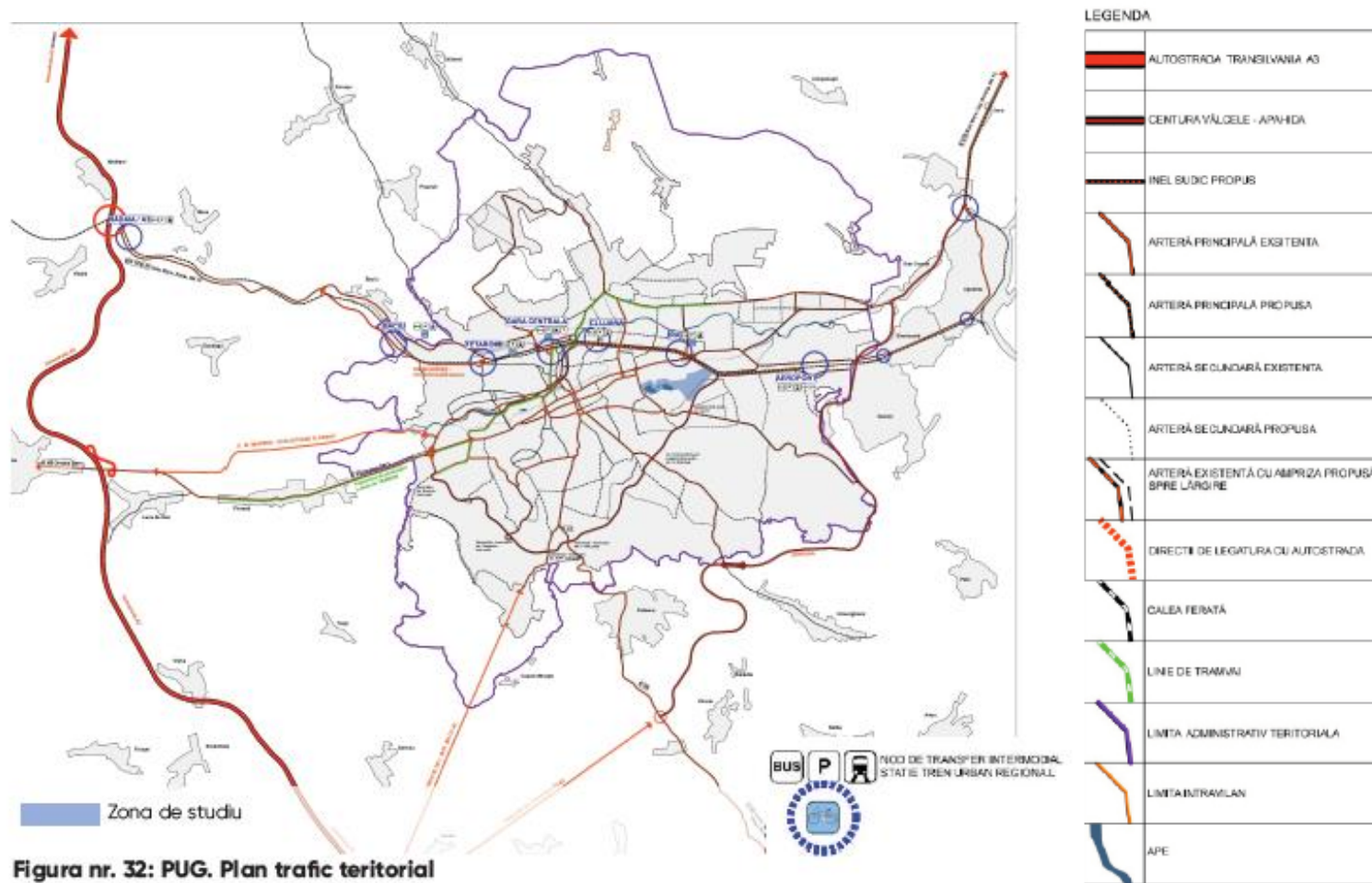
## REGULATIONS - RESTRUCTURING



31 Figure no. 31: PUG. Zoning regulations

(Image translation: Delimitation of study area; LEGEND: existing function, proposed function, restructuring of industrial surfaces, mixed functions: housing and service/trade, restructuring of the housing area, mixed functions: housing, services, and trade, restructuring of railway surfaces, mixed area, restructuring of housing area, economic activities – small production, retail, cash&carry, showroom, restructuring of the housing area, tertiary activities, commerce, tourism, offices outside of the central area, restructuring of the industrial surfaces, green area with a leisure role, restructuring of industrial surfaces, ecologic corridor).

Furthermore, the General Urban-planning Plan foresees the creation and maintenance of green spaces.



32Figure no. 32: PUG. Territorial traffic plan

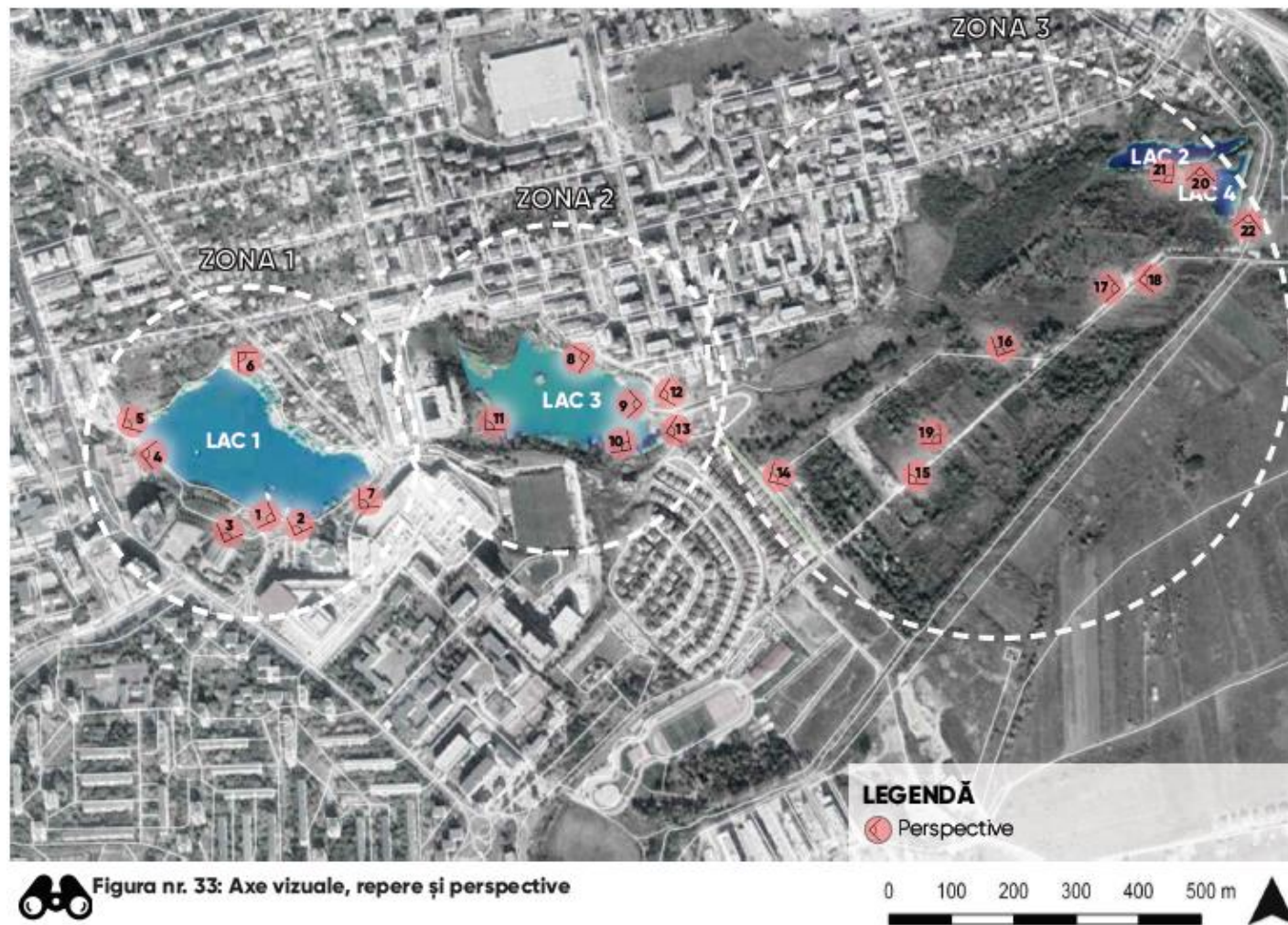
(Image translation: study area, Legend: Transylvania highway A3, Valcele -Apahida motorway, proposed southern roundabout, existing primary artery, existing secondary artery, existing artery with road territory proposed for expansion, highway connection directions, railroad, tram lines, administrative-territorial limit, built-up area limit, waters)

In this image, we can see that the studied territory is located within the major road network.





VISUAL AXES, POINTS OF REFERENCE, AND VIEWS



**Figura nr. 33: Axe vizuale, repere și perspective**

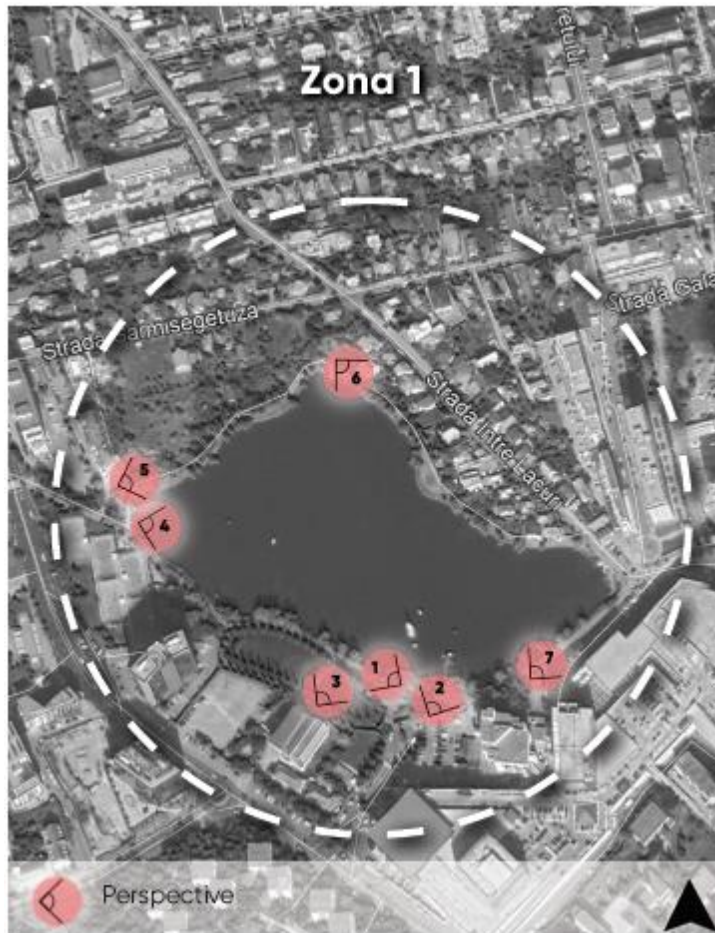
33Figure no. 33: Visual axes, points of reference, and perspectives

(Image translation: Area 1 – Lake 1, Area 2 – Lake 3, Area 3 – Lake 2, Lake 4; LEGEND - views)

## LANDSCAPE AND LANDSCAPING VALUES

34Figure no. 34: Area 1 - Visual axes, points of reference, and views

(Image translation: Area1, Views)



1. The view offered by the alignment vegetation offers a pleasant visual aspect, however, the metal poles degrade this image.



2. The reflection of the low height regime buildings on the water have a less negative impact on the visual image, than those with a high height regime.





3. Large constructions with colored facades degrade the overall image, and those with pastel colors integrate better with the surrounding environment.



4. The contrast between the natural and built elements seem more accentuated when reflected on the water surfaces.



5. Panoramic image with accentuated contrast.



6. The vegetation can tame the large buildings' image.



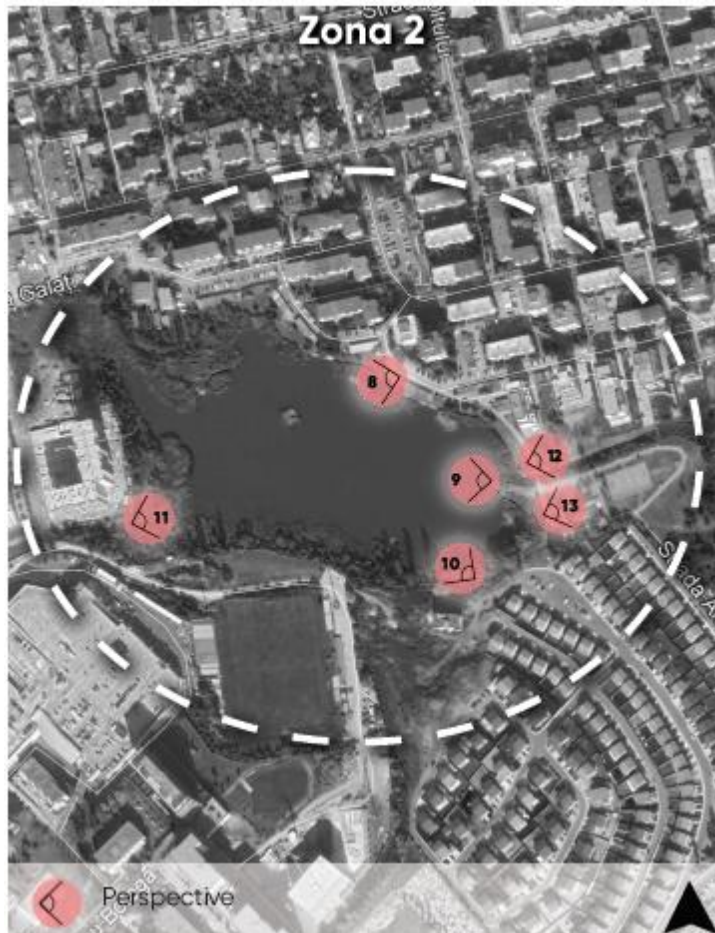
7. The vegetation can tame the large building' image.



## LANDSCAPE AND LANDSCAPING VALUES

35Figure no. 35: Area 2 - Visual axes, points of reference, and view

(Image translation: Area 2, Views)



8. The image reflected by the high height regime buildings occupies a large surface area of the water's image.



9. The constructions' level differences offer an incoherent image.



10. As opposed to the previous image, in this image, we can see the beneficial effect of the vegetation curtains upon the visual images.



11. The inexistence of construction regulations, especially with regards to the facades, leads to an irreversible negative effect on the urban images.



12. The vegetation masses can cover up the unpleasant elements while also improving the environment's appearance.



13. The vegetation curtain against built elements.



## LANDSCAPE AND LANDSCAPING VALUES

36Figure no. 36: Area 3 - Visual axes, points of reference, and view

(Image translation: Area 3, Views)



14. Visual axis towards the landform in the north-east.



15. Visual image of the road that crossed Area 3.



16. The alignment of poplars represents an important point of reference.



18. The mature tree specimens help with orientation.



17. In certain areas of the park, the built elements are not visible.



19. Contrast between the natural elements and the built ones.



## LANDSCAPE AND LANDSCAPING VALUES

37Figure no. 37: Area 3 - Visual axes, points of reference, and view

(Image translation: Area 3, Views)



20. The image offered by the vegetations' reflection on the fourth lake's surface.



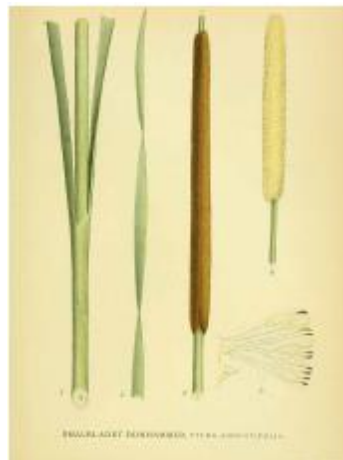
21. Unique image at Lake no. 2.



22. View on the alleyway towards Lake no. 2.



## NATURAL AND LANDSCAPING PATRIMONY

38Figure no. 38: White willow – *Salix alba*39Figure no. 40: Virginia creeper - *Parthenocissus quinquefolia*40Figure nom 39: Silver poplar – *Populus Alba*41Figure no. 41: Cattail - *Typha angustifolia*

## NATURAL AND LANDSCAPING PATRIMONY

With regards to the habitats present in the park area, a group of specialists in the field of biology and the field of ecology elaborated a detailed study as to include this territory onto the list of protected areas. In this chapter of the study, we have reiterated important texts and data from the aforementioned study.

## Vegetation

The land was covered by a halophile grassland of which only a small part has been preserved in the present, and fen vegetation, represented today by shrubbery, wicker bushes, and mesophile and meso-hygrophile grassland formations. The city's lakes have been surrounded by halophile and halo-tolerating plants, with associations dominated by weeping alkaligrass (*Puccinellia distans*). A data of significant botanical interest was the presence of milk parsley (*Peucedanum palustre*), respectively the presence of the great fen sedge, *Cladium mariscus*, species. The most important wet area of the site is the Becas creek fen, with a R4407 habitat – Danubian forests of white willow with *Rubus caesius* (Natura 2000 code: 92A0 – Galleries of *Salix alba* and *Populus alba*), which has a great conservation value, mentioned under Addendum no. 2 of Emergency Ordinance no. 57/2007 (Donita, 2005).

Habitat R5305 – Danubian communities with *Typha angustifolia* and *T. latifolia* surround the two fishing lakes, their presence indicating a good quality bank habitat.

Habitat R5309 – Danubian communities with *Phragmites australis* and *Schoenoplectus lacustris*: a semi-natural habitat is located on the north-western side of the park.



42 Figure no. 42: Sea buckthorn – *Hippophaë rhamnoides* (left)



43 Figure no. 43: Canadian goldenrod – *Solidago canadensis* (right)



44 Figure no. 44: Persian olive – *Elaeagnus angustifolia* (left)



45 Figure no. 44: Persian olive – *Elaeagnus angustifolia* (right)

The rush-bed offers a safe habitat, food, and space for reproduction not only for birds, but also for reptiles, amphibians, and fish. A reed similar in size means an advance state of succession; it is foreseen that wood plants will be growing here as well in the next decades. The reeds function as a natural water purifying system: they consume the excess nitrogen accumulated in water, and the microorganisms that live at their roots and in the withered leaves contribute to the degradation of accumulated nutritive substances, thus impeding water quality degradation.

Aside from large shrubs, we also see several limited areas of tree plantations. The native species are only seen in a sporadic manner, as ornamental trees or fruit trees were the ones preferred here: locust tree (*Robinia pseudoacacia*), walnut (*Juglans regia*), sea buckthorn (*Hippophaë rhamnoides*), foreign to the region, or the wild olive (Russian olive / oleaster / silver berry) (*Elaeagnus angustifolia*), which is an invasive species. The presence of invasive species with grassy stems is explained through the fact that certain parts of the park suffered repeated alterations to its habitats, which favors their growth. The most represented species of this type are Canadian goldenrod (*Solidago canadensis*), sunroot (*Helianthus tuberosus*), woodbine (*Parthenocissus quinquefolia*, *P. inserta*) that grows up onto the treetops, or wild cucumber (*Echinocistis lobata*). An intervention as to stop the extremely rapid spread of these plants would be justified.\*\*text taken in its entirety from the form for the characterization of protected areas



## Bird fauna



46 Figure no. 46: the little bittern (*Ixobrychus minutus*)



47 Figure no. 47: gray heron (*Ardea cinerea*)

\*The area is the most diverse in number of species in Cluj: between 2014-2018, 67 bird species were noted here (Addendum 8). Of these, 55 of them are nesting species. It is noted that approximately 75% of the 74 nesting species identified in Cluj-Napoca city are found here, over a relatively limited surface area. In fact, this area of Cluj is where we see the largest diversity of species: a single 500x500 m square may hold 37 species of nesting birds (Addendum 9). If we take into consideration the “auxiliary” data as well, we reach the impressive number of over 50 nesting species / square kilometer.

In the warm season (April - August), we can observe humid area species that do not nest anywhere else in the city, such as the little bittern (*Ixobrychus minutus*), the great reed warbler (*Acrocephalus arundinaceus*), the Eurasian reed warbler (*Acrocephalus scirpaceus*), the sedge warbler (*Acrocephalus schoenobaenus*), the Savi's warbler (*Locustella luscinioides*), the common reed bunting (*Emberiza schoeniclus*), the Eurasian coot (*Fulica atra*), common moorhen (*Gallinula chloropus*). The surrounding rush-bed and trees areas host species that are extinct or rare in other parts of the city, such as the common nightingale (*Luscinia megarhynchos*), the common cuckoo (*Cuculus canorus*), the common whitethroat (*Sylvia communis*), the African stonechat (*Saxicola torquatus*), the red-backed shrike (*Lanius collurio*), the Eurasian golden oriole (*Oriolus oriolus*). In autumn and winter (when the lakes are not frozen), certain species are present here as well, such as the great crested grebe (*Podiceps cristatus*), the blackheaded gull (*Larus ridibundus*), the yellow legged gull (*Larus michahellis*), the common kingfisher (*Alcedo atthis*), the mallard (*Anas platyrhynchos*). During migration, some rarer species can also be observed: black tern (*Chlidonias niger*), common tern (*Sterna hirundo*), little grebe (*Tachybaptus ruficollis*), gray heron (*Ardea cinerea*), purple heron (*Ardea purpurea*), common sandpiper (*Actitis hypoleucos*).



48Figure no. 48: The great reed warbler (*Acrocephalus arundinaceus*)



49Figure no. 49: The Eurasian coot - *Fulica atra*

During migration, some rarer species can also be observed: black tern (*Chlidonias niger*), common tern (*Sterna hirundo*), little grebe (*Tachybaptus ruficollis*), gray heron (*Ardea cinerea*), purple heron (*Ardea purpurea*), common sandpiper (*Actitis hypoleucos*).

From the point of view of bird species that migrate and spend winter in Romania, it is important that we mention the brambling (*Fringilla montifringilla*) and the redwing (*Turdus iliacus*) that have also been present in Parcul Est throughout winter (rombird.ro). The intensification of agricultural methods has had a negative effect on the redwing's winter territories.

\*\*text taken in its entirety from the form for the characterization of protected areas



50Figure no. 50: The common whitethroat (*Sylvia communis*)





51 Figure no. 51: common noctule (*Nyctalus noctula*)



52 Figure no. 52: common pipistrelle (*Pipistrellus pipistrellus*)

## Mammals

### Chiropterofauna

\*In comparison to the relatively small size, Parcul Est offers feeding habitats for a high diversity of bat species, respectively 7 of the 32 species present in Romania. By comparison, Vacaresti Natural Park is used as a feeding habitat by at least 8 bat species (Mantoiu D. - com. pers.). This diversity is explained even through the fact that several bat species are well adapted to the urban environment (ex. *N. noctula*, *P. pipistrellus*), tolerating a certain level of illumination and disturbance, and certain species (ex. *V. murinus*) actually prefer to hunt under the lamp posts' light. However, we consider that the number of bats identified in Parcul Est within the present study is at a minimum value for the area, due to the fact that these results have been obtained only through the assessment of the most anthropic of the Park's lakes. The other water surfaces and habitats in the north-eastern corner of the area present a low anthropic degree, without being surrounded by buildings, and their artificial illumination level being low. As such, for 2019 and after the continuation of the study using various methods (automatic recording throughout the entire night, net capture, identifications of natural and anthropic shelters etc.), we foresee an increase in the number of bat species present in the Parcul Est habitats (Bucs and Stan, 2018).

\*\*Text taken in its entirety from the form for the characterization of protected areas



53Figure no. 53: deer -*Capreolus capreolus*



55Figure no. 55: *Brenthis daphne*



54Figure no. 54: boar – *Sus scorfa*



56Figure no. 56 *Colias alfacariensis*

### Other mammals

Most mammal species that are present in Parcul Est are active at night, due to the biorhythm and to the human presence throughout the day -, that is why the photo-trap was installed in the evening and checked in the morning. The data obtained in this manner demonstrate only the presence of those respective species, and not the number of specimens pertaining to each species. The noted mammals: boar (*Sus scorfa*), red fox (*Vulpes vulpes*), deer (*Capreolus capreolus*), otter (*Lutra lutra*). The otter is a strictly protected species, it is indicated in addendum no. 3 of the Emergency Ordinance no. 57/2007. The presence of the otter is correlated to food resources, as it is considered a key species in the functioning of the ecosystems.

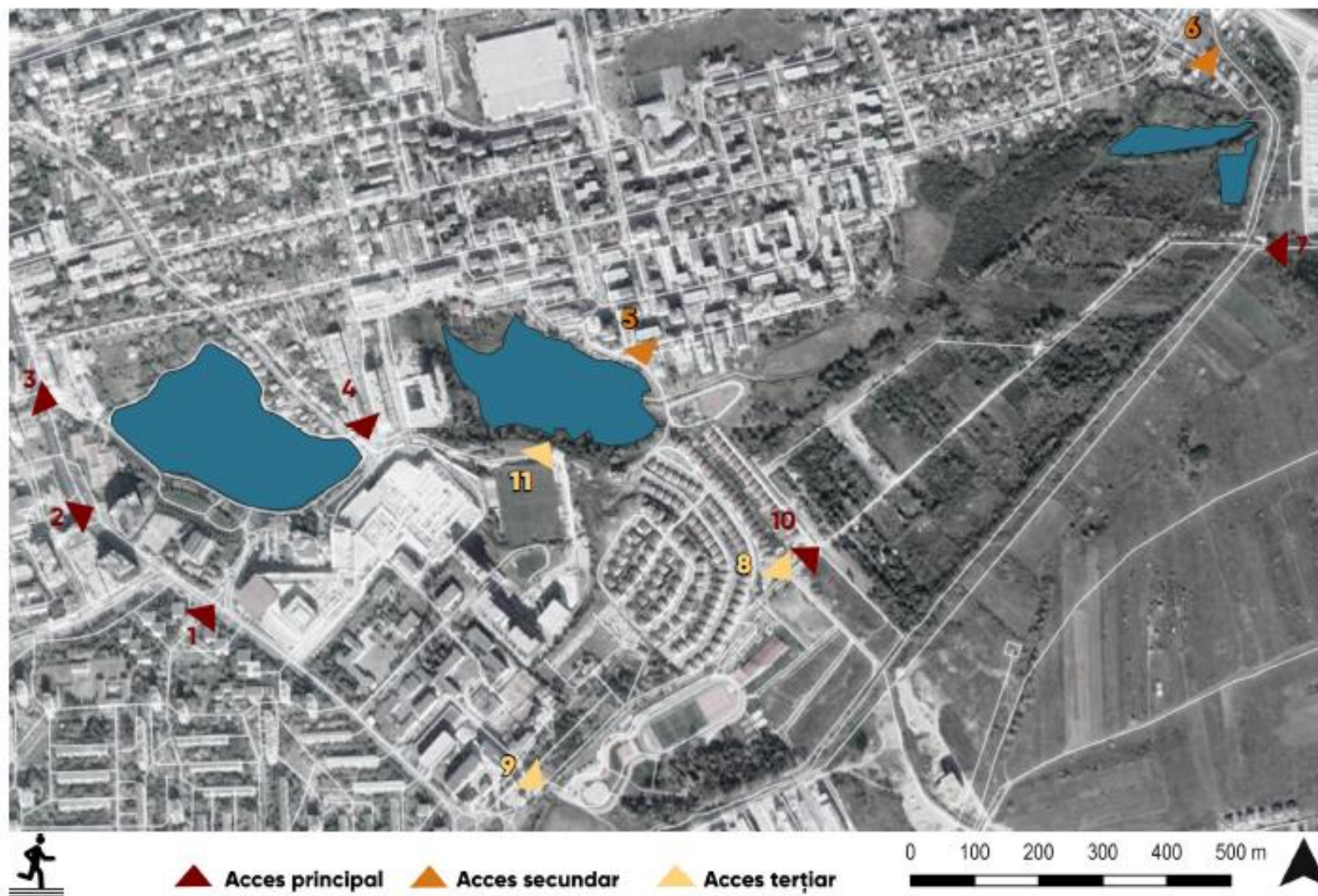
\*\*Text taken in its entirety from the form for the characterization of protected areas

### Butterflies with daytime activity

Only 5 species presented populations that were greater in number: *Celastrina argiolus* (37 specimens), *Pieris napi* (17 specimens), *Inachis io* (17 specimens), *Coenonympha pamphilus* (13 specimens) and *Pieris rapae* (10 specimens). In the case of the other 32 signaled species, the total number of specimens noted on the site visits in May and June remained below 10. The presence of the nude soil over a significant surface in the “Parcul Est” researched area (30%), as well as the presence of humid areas, explain the presence of certain daytime lepidoptere species bound to this natural component, respectively *Erynnis tages*, *Carcharodus alceae*, *Cupido alcetas*, *Brenthis daphne* (Székely 2008, Rákósy 2013).

\*\*Text taken in its entirety from the form for the characterization of protected areas





57Figure no. 57: Map of study area accessibility

(Image translation: Primary access, secondary access, tertiary access)

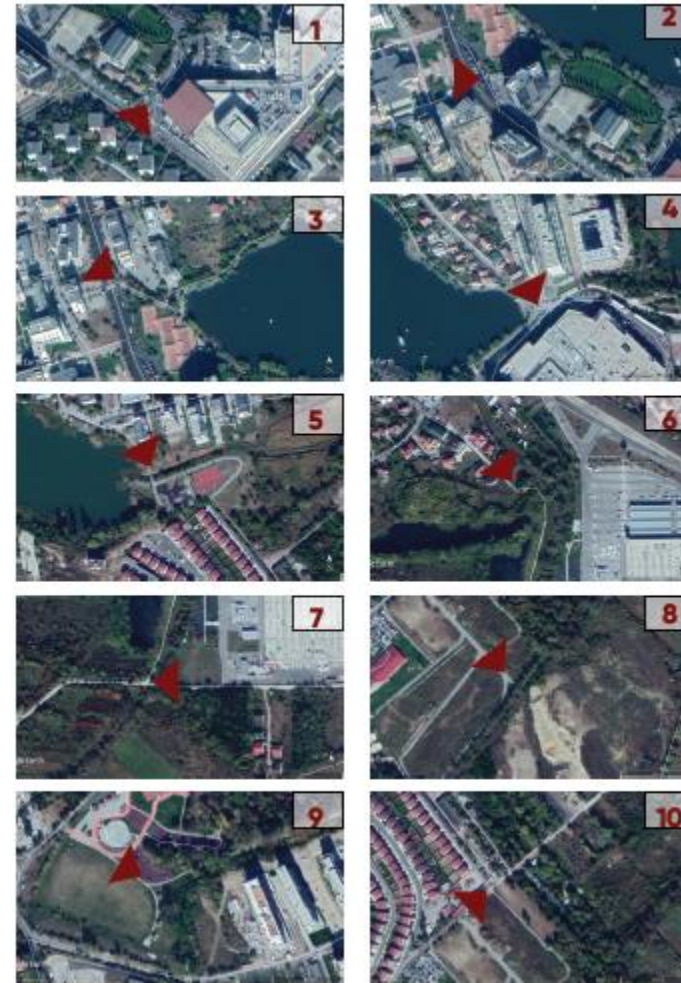
## ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

The current analysis is based on the information collected upon visiting the site, as well as on the information received from the beneficiary and the specialists at the “Societate Organizata Sustenabil” Association. In the presentation of analyses, we used our own photographs and photographs found on the internet.

### Access

Upon visiting the site and as a result of the analysis performed using Google Street View, we have identified 11 main access points to the park's territory.

- Gheorgheni lake (Lake 1)
  - It can be accessed through the locations marked with the numbers 1, 2, 3 and 4.
- Lake 3
  - Can be accessed through the access points marked with numbers 4, 5 and 11.
- The nursery and lakes in the eastern area
  - Can be accessed by means of the access points marked by 6, 7 and 10.
- Becas Creek
  - Can be accessed through the points marked with the numbers 8 and 9.
- Upon visiting the site, we did not identify any indicators that could mark the access into this park.



58Figure no. 58: Access points





59Figure no.: 59 -Access area no. 1



60Figure no. 60: - Access area no. 2

#### Access area no. 1

Coordinates: 46° 46' 18" N, 27° 37' 30" E

- Main access Area 1 – Alexandru Vaida Voievod Str.

#### Description:

This access area is located at the primary entrance of the Iulius Mall shopping center, and in consequence, it is very crowded. From here, cars enter the mall's underground parking lot, and a taxi station is located in front of its steps. In the proximity of the entrance, we see various kiosks with commercial functions. The organization of the road traffic and the lack of an adequate infrastructure for pedestrians put this area at a disadvantage, and the existence of the lakes is not signaled.

#### Access area no. 2

Coordinates: 46° 46' 23" N, 23° 37' 27" E

- Main access Area 1 – Teodor Mihail Str.

#### Description

This entry point is between the Iulius Mall sports field and the United Business Center Tower building. In its immediate proximity, we find the underground parking lot. Although the road signs indicate that speed should be reduced, pedestrian access in this area cannot be safely carried out due to the lack of sidewalks.



61 Figure no. 61: Access area no. 3

Access area no. 3

Coordinates: 46° 46' 28" N, 23° 37' 18" E

- Main access Area 1 – Teodor Mihail Str.

Description:

Gheorgheni Lake can be accessed by means of a roadway. The lateral side of said roadway is occupied by parked cars, and the road cover is deteriorated. The pedestrian access is not resolved in this case either.



62 Figure no. 62: Access area no. 4

Access area no. 4

Coordinates: 46° 46' 27" N, 23° 37' 39" E

- Main access Area 1, 2 – Intre Lacuri Str.

Description:

This access road is destined for both cars and pedestrians that travel from the north. The diversity and quality of the tiles on the sidewalks, as well as their width do not allow access for persons with reduced mobility. The left side of the road is occupied by parked cars that offer an unpleasant aspect.





63Figure no. 63: Access area no. 5

Access area no. 5

Coordinates: 46° 46' 28" N, 23° 38' 03" E

- Secondary access Area 2 – Tulcea Str.

Description:

This access point represents the main access for the Intre Lacuri neighborhood residents. Vehicle access is not possible, however, due to the fact that no parking spots have been indicated, we see irregular car parking. The built garages give an unpleasant aspect to the urban spaces.



64Figure no. 64: Access area no. 6

Access area no. 6

Coordinates: 46° 46' 46" N, 23° 38' 40" E

- Secondary access Area 3 – Ion Oarga Str.

Description:

Lakes 1 and 4 can be accessed from this street, on the north-eastern side of Intre Lacuri neighborhood. Pedestrian access is difficult, as the sidewalk is occupied by parked cars.



65Figure no. 65: Access area no. 7

Access area no. 7

Coordinates: 46° 46' 40" N, 23° 38' 06" E

- Primary access Area 3 – DJ 105S.

Description:

This area represents the main access from DJ105S, in the immediate vicinity of the Selgros store. This road is not developed, and there is no pedestrian infrastructure. There are no parking spots, no signs to indicate the presence of the lakes in the area.



66Figure no. 66: Access area no. 7

Access area no. 8

Coordinates: 46° 46' 19" N, 23° 38' 12" E

- Tertiary access Area 4 – Lucia Sturdza Bulandra Str.

Description:

Unpaved road. Access is forbidden.





67Figure no. 67: Access area no. 9

**Access area no. 9**

**Coordinates:** 46° 46' 08'' N, 23° 37' 54'' E

Tertiary access Area 4 – Lucia Sturdza Bulandra Street

Description:

This access represents the access point to Gheorgheni Sports Base, as well as a potential access to the water course.



68Figure no. 68: Access area no. 10

**Access area no. 10**

**Coordinates:** 46° 46' 20'' N, 23° 38' 15'' E

Primary access on Lucia Sturdza Bulandra Street

Description:

The nursery and Lake no. 3 can be accessed by means of this road. Pedestrian access is difficult in this case as well, as the road has no sidewalk. The roadway passing through the nursery's land is used by vehicles that intent to access the city from Gheorgheni neighborhood.



69Figure no. 69 Access area no. 11

Access area no. 11

Coordinates: 46° 46' 25" N, 23° 37' 55" E

- Tertiary access Area 2

Description:

An access area probably developed by the residents in the vicinities. The steps are inadequate, as they have no handrails.

Conclusions

Both in the case of primary access areas, as well as in the case of secondary and tertiary access areas, the optimal bicycle and pedestrian infrastructure is absent. None of the areas is arranged as a visitors' greeting area. Informative materials such as boards, indicators, or signs are absent. There are no restrooms, shelters, parking spaces for bicycles or urban furniture. In most cases, a large part of the access areas is occupied by irregularly parked cars.

In conclusion, we can state that these areas do not have an esthetic value, and due to the lack of infrastructure, they cannot fulfill their purpose.



## Bicycle accessibility



**Figura nr. 70: Hartă accesibilitate cu bicicleta**

70Figure no. 70: Bicycle accessibility map

(Image translation: Bicycle accessibility, Legend, territory limit, existing route for bicycles, connection potential with Calea's route, bicycle parking spot)

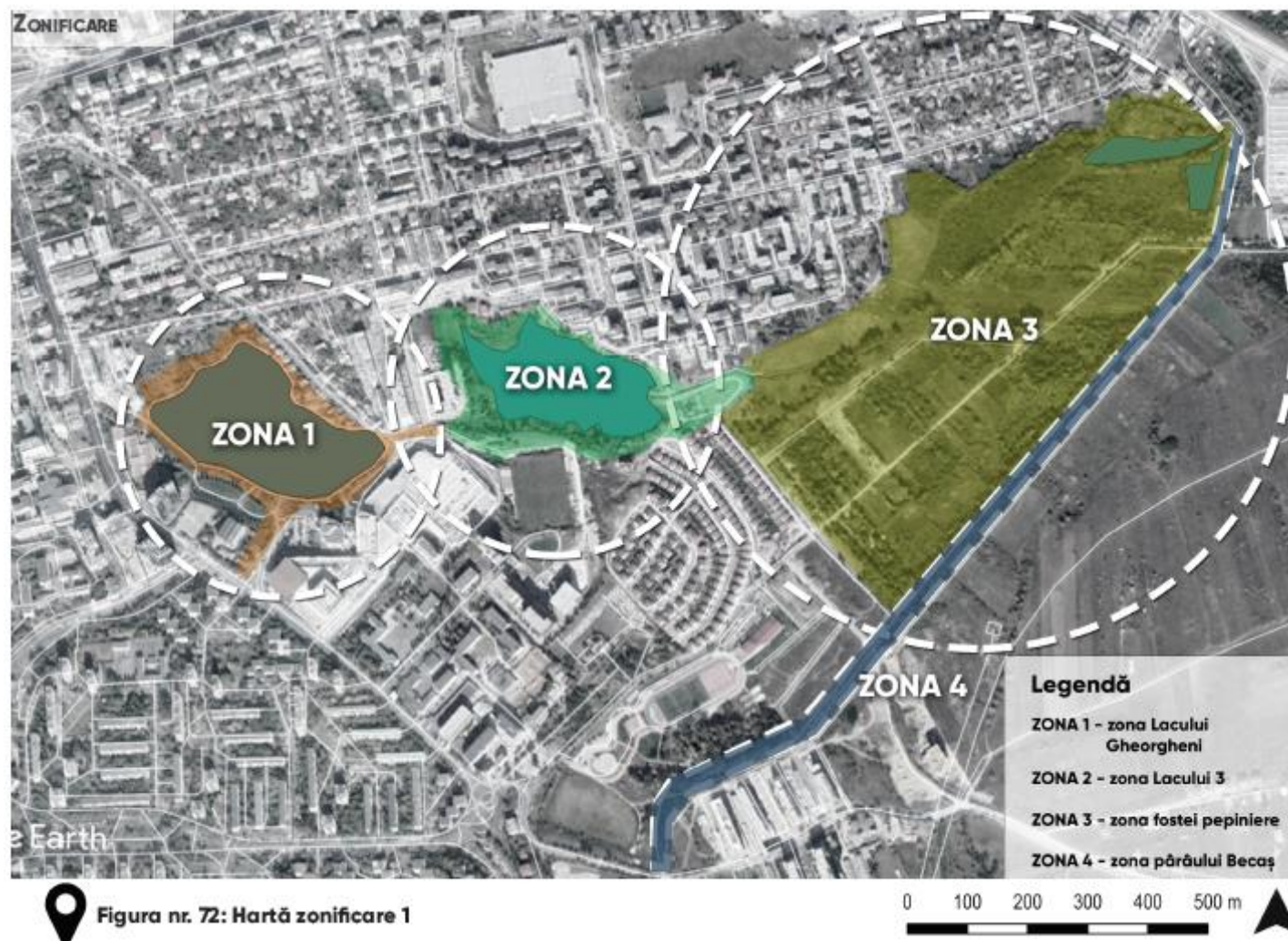
## Accessibility by public transport



71Figure no. 71: Public transportation accessibility map

(Image translation: Accessibility by public transport, Legend, territory limit, public transport route, station)





72Figure no. 72: Zoning map 1

(Image translation: zoning, area 1, area 2, area 3, Legend: area 1: Gheorgheni lake area, area 2: Lake 3 area, area 3: former nursery area, area 4: Becas creek area)



73Figure no. 73: Zoning 1 map

(Image translation: Gheorgheni, lake 1, green scene, Iulius Mall, lake 2, lake 3, MApN residences, cartodrome park, Aurel Vlaicu/Intre Lacuri, Becas, Former nursery, Nursery Lacuri, Selgros)

## ZONING

Upon visiting the site, we have identified four large areas that can be differentiated through their character:

Area 1: Gheorgheni lake

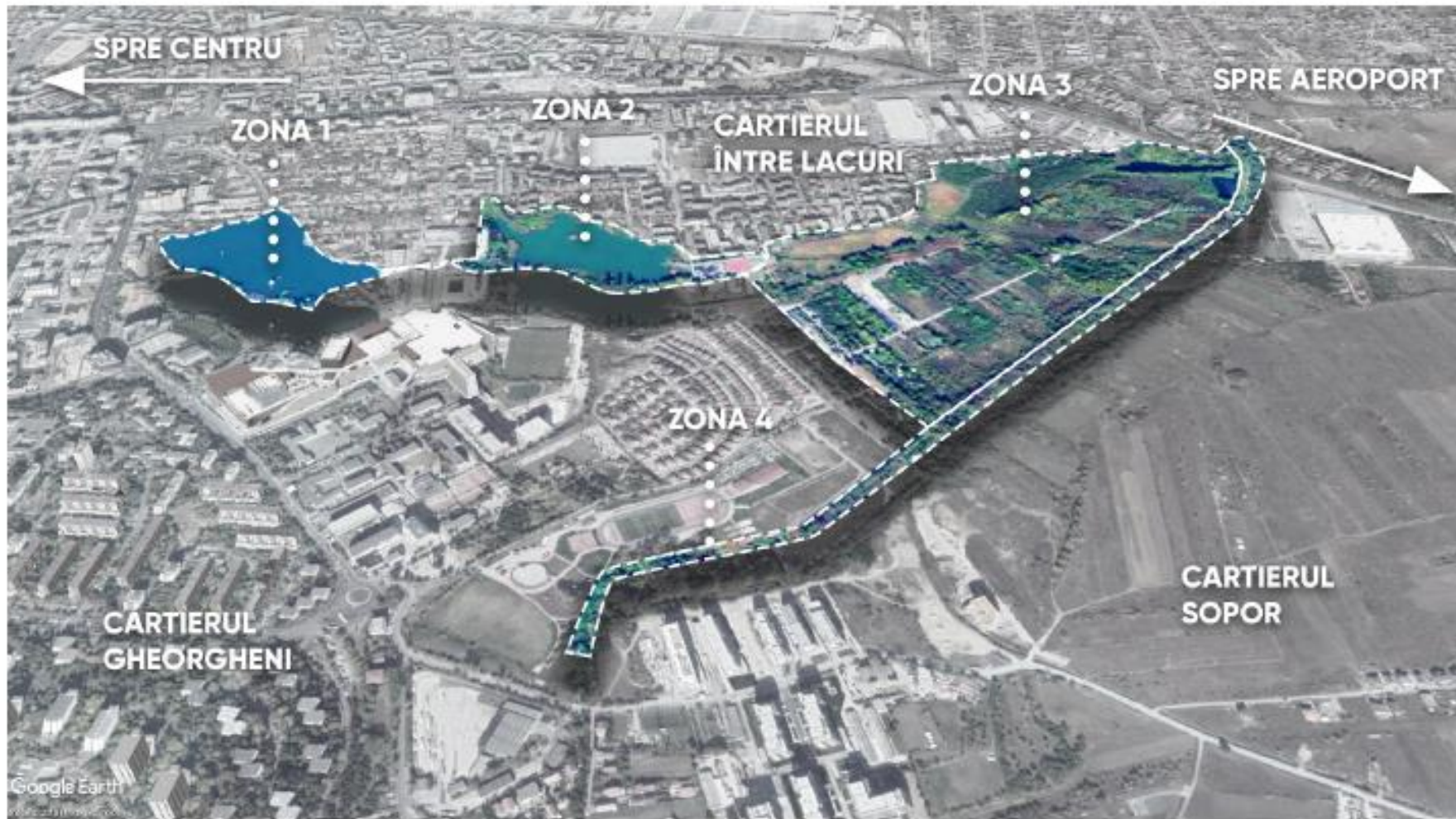
Area 2: Lake 3 A

Area 3: Nursery and lakes 2 and 4

Area 4: Becas creek

In the case of these area, the character differences are contoured both through the physical and functional components and through each of the areas' ambiance. With regards to the physical components, we considered the circulation system, the built elements, and the existing vegetation. In the case of functional aspects, we analyzed the accessibility of the park and the water surfaces, the functions and greeting areas for visitors. The areas' ambiance was created by combining the anthropic and natural factors. The important characteristics of the area are presented under figure no. 75.





74Figure no. 74: Zoning map 2

(Image translation: Towards the center, area 1, area 2, Intru Lacuri neighborhood, area 3, towards the airport, Gheorgheni neighborhood, area 4, Sopor neighborhood)

Area	Physical components	Functional aspects	Physical ambiance
Area 1	<ul style="list-style-type: none"> <li>- Complex circulation system</li> <li>- Multiple types of pavements</li> <li>- High number of urban furniture compared to the other areas</li> <li>- High mineral/vegetal percentage</li> <li>- Alignment vegetations, ornamental species, lawns</li> </ul>	<ul style="list-style-type: none"> <li>- Multitude of facilities</li> <li>- Good accessibility compared to the other areas</li> <li>- Developed access areas at the water surfaces</li> <li>- High degree of urbanization</li> <li>- Numerous disfunctions</li> </ul>	<ul style="list-style-type: none"> <li>- Urban ambiance due to high height level constructions</li> <li>- Discrepancy between the northern and southern sides of the lake</li> <li>- Pleasant ambiance offered by the image of vegetation alignments and their reflection on the water</li> </ul>
Area 2	<ul style="list-style-type: none"> <li>- Inadequate circulation system</li> <li>- Low number of paved surfaces</li> <li>- Several urban furniture elements in the playground area, large percentage of improvised furniture</li> <li>- Low mineral/vegetal percentage</li> <li>- Spontaneous, expanded, and wild vegetation</li> </ul>	<ul style="list-style-type: none"> <li>- Reduced number of facilities</li> <li>- Reduced accessibility</li> <li>- Non-developed access points to water</li> <li>- Not developed</li> <li>- Numerous reversible disfunctions</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed ambiance – the territory has a natural character, however, the reflection of the collective residential buildings on the water offer a specific urban aspect</li> <li>- Pleasant ambiance offered by the vegetation</li> </ul>
Area 3	<ul style="list-style-type: none"> <li>- No circulation system – there is a single roadway and several alley that are partially developed</li> <li>- No urban furniture, several improvised constructions</li> <li>- Low mineral/vegetal percentage</li> <li>- Spontaneous, expanded, and wild vegetation</li> </ul>	<ul style="list-style-type: none"> <li>- Area lacking in facilities</li> <li>- Very reduced accessibility</li> <li>- Several non-developed point of access to the water surfaces</li> </ul>	<ul style="list-style-type: none"> <li>- Natural ambiance, yet very unsure – very few visual points of references</li> <li>- Pleasant ambiance offered by the increased biodiversity</li> </ul>
Area 4	<ul style="list-style-type: none"> <li>- Not developed, no circulation system, and no constructions or furniture</li> <li>- Spontaneous vegetation</li> </ul>	<ul style="list-style-type: none"> <li>- Area lacking in facilities</li> <li>- Inaccessible</li> <li>- Natural aspect</li> <li>- Reversible disfunctions</li> </ul>	<ul style="list-style-type: none"> <li>- The area is not developed</li> <li>- Pleasant ambiance offered by a natural context</li> <li>- The area is not developed</li> </ul>

75Figure no. 75: Major characteristics of the area



## Area 1 facilities



76Figure no. 76: Area 1 facilities map

(Image translation: Legend: individual residences, collective residences, commercial building, public interest building, trade and services, accommodations, parking, restroom, playground, boat renting, tennis, lawn / resting areas, roadway, running lane)

## AREA 1: GHEORGHENI LAKE AREA

With regards to the urbanization degree, the Lacul Gheorgheni area is the one that is the most densely built. In this area, we find most facilities and constructions, as well urban furniture. Iulius Mall is located in the south-western side of the lake (colored with green - Va), fulfilling the rest and recreation facility function. Here, we find a sports field, public restrooms, a playground, lawns, pergola, alignment vegetation, a running route, and audio systems for music. We have to mention the fact that this is the sole area that has a surface developed as to access water, where boats can be rented in the summer. Iulius Mall is located on the south and south-eastern side, representing a very crowded area.

The running lane and the alignment vegetation continue on one side of the bank, up to the south-eastern corner of the lake, where we find the passing area towards Lake no. 3 (colored with dark green - UVa).

Furthermore, we can see a significant discrepancy between the bank on the northern side and the bank on the southern side, as, in comparison with the southern side, the northern one is not developed, and the existing elements, such as the pavements and the urban furniture, are in an advanced degradation state. This discrepancy generated an incoherent and disadvantageous image.

## REFERENCE FUNCTIONAL AREAS AND TERRITORIAL UNITS, ACCORDING TO THE GENERAL URBAN PLANNING PLAN

**Ec** – commercial economic activities area – en detail – carried out in large units – big box, mall, showroom

**Is\_A** – area with institutions and public services, and public interest areas constituted in independent ensembles

**Et** – economic activities area with tertiary character

**Va** – grass median, gardens, parks with unlimited public access

**Uv/a** – urbanization area – green area – grass medians, gardens, public parks

**Ve** – green area for the protection of waters or with an ecologic corridor role

**Lip** – low height regime residences placed on a peripheral type lot

**Lcs** – Campus residences area

**ULc** – urbanization area – ensembles that include collective living and the associated facilities



## Area 2 facilities



77Figure no. 77: Area 2 facilities map

(Image translation: Legend: individual residences, collective residences, commerce and services, pavilion, steps, fishing area /improvisation, bridge, football field, playgrounds, lawn/resting areas, parking, alley / wooden path, bicycle lane, garages)

## AREA 2: LAKE NO. 3 AREA

As opposed to Gheorgheni Lake, numerous natural elements were kept in the Lake no. 3 area. This area is exceedingly difficult to access, the paved services being present in an exceedingly small proportion. In certain places, at the limit of these areas, we find the garages of the Intre Lacuri neighborhood residents.

The large number of improvised constructions, the arrangements made by citizens as to access the water, especially for fishing, as well as the paved areas and the steps created with different construction materials, suggest that this area is frequently used by the residents of the adjacent neighborhoods, as well as the existence of a need to have access to a natural area. On the eastern side of the lake, we find a playground, and the bank holds several benches and a gazebo. Around the green space on which the playground is built, there is a bicycle route (marked with green).

This area may be accessed by means of a bridge, and on the southern side, access can be made by means of steps built from concrete bricks. We can speculate that

these steps were built by the area's residents, as they do not respect the technical standards, and the use of these steps is dangerous.

## REFERENCE FUNCTIONAL AREAS AND TERRITORIAL UNITS, ACCORDING TO THE GENERAL URBAN PLANNING PLAN

**Ec** – commercial economic activities area – en detail – carried out in large units – big box, mall, showroom

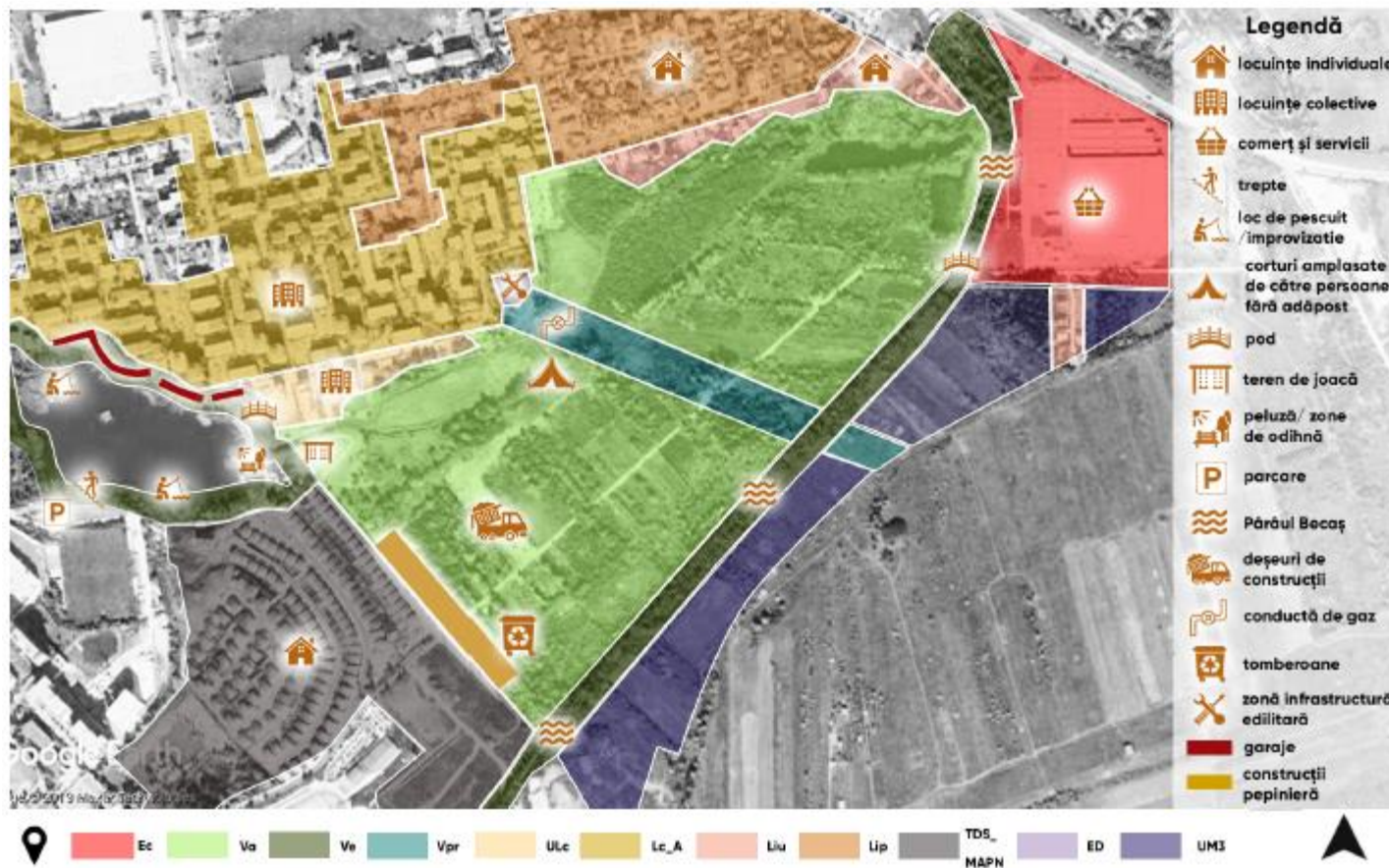
**Uv/a** – urbanization area – green area – grass medians, gardens, public parks

**Ve** – green area for the protection of waters or with an ecologic corridor role

**ULc** – urbanization area – ensembles that include collective living and the associated facilities



## Area 3 facilities



78Figure no. 78: Area 3 facilities map

(Image translation: individual residences, collective residences, commerce and services, steps, fishing area / improvisation, tents placed by the homeless, bridge, playground, lawns / rest area, parking, Becas creek, construction waste, gas line, waste bins, utility infrastructure area, garages, nursery constructions)

## AREA 3: THE NURSERY AND LAKES 2, 4 AREA

With regards to the natural patrimony and the landscape elements, area no. 3 is the richest in this respect. On this territory, we find several plant species and animal species, contributing significantly to the area's biodiversity. On the south-western side of this area, we find the constructions of a nursery, some of them being abandoned and in an advanced state of degradation.

There is an area in the proximity of the constructions where construction waste is deposited, and on the other side of the road that crosses the studied territory we see numerous plastic material waste bins. In the proximity of the utility infrastructure, we find a very large iron pipeline, and south-west of it, we see tents put up by the homeless. The north-eastern side holds the two lakes, this area being the most beautiful in terms of landscape.

Area no. 3 represents a high level of ecological importance, and the decisions made with regards to the elaboration of the development proposal need to aim at protecting all of the natural elements, while also avoiding any major impact on the existing ecosystem.

## REFERENCE FUNCTIONAL AREAS AND TERRITORIAL UNITS, ACCORDING TO THE GENERAL URBAN PLANNING PLAN

**Ec** – commercial economic activities area – en detail – carried out in large units – big box, mall, showroom

**Va** – grass median, gardens, parks with unlimited public access

**Ve** – green area for the protection of waters or with an ecologic corridor role

**Vpr** - green protection are in relation to the major infrastructure for sanitary protection, plantations with the role of stabilizing the ecological reconstruction versant.

**ULc** – urbanization area – ensembles that include collective living and the associated facilities

**Lc\_A** – collective residence ensemble built before 1990

**Liu** – Residences with reduced height regimen built on a peripheral type lot

**Lip** – low height regime residences placed on a peripheral type lot

**TDS\_MAPN** – area with special destination area, special destination lands under the property of the Ministry of National Defense

**ED** – area associated to the utility infrastructure

**UM3** – urbanization area – mixed area with open construction regime, adjacent to the main traffic arteries



## Area 4 facilities



79Figure no. 79: Area 4 facilities map

(Image translation: Legend: individual residences, collective residences, commerce and services, road, tents placed by the homeless, bridge, sports base, Becas creek, construction waste, gas line, waste bins, nursery constructions)

**AREA 4: BECAS CREEK AREA**

The Becas creek area represents the southern border of the park, being a considerable element of the area's ecosystem. Currently, this water course is difficult to access, however, there is a place where it can be accessed (aided by a bridge) only off the road that crosses the area. The creek is polluted, its banks having waste on them. The largest difficulty is accessing the creek and protecting it from the constructions proposed in the Sopor neighborhood.

**REFERENCE FUNCTIONAL AREAS AND TERRITORIAL UNITS, ACCORDING TO THE GENERAL URBAN PLANNING PLAN**

**Ec** – commercial economic activities area – en detail – carried out in large units – big box, mall, showroom

**UEc** – urbanization area – commercial economic activities area – en detail – carried out in large units, big box, mall, showroom

**Va** – grass median, gardens, parks with unlimited public access

**Ve** – green area for the protection of waters or with an ecologic corridor role

**Vpr** - green protection area in relation to the major infrastructure for sanitary protection, plantations with the role of stabilizing the ecological reconstruction versant.

**Liu** – Residences with reduced height regimen built on a peripheral type lot

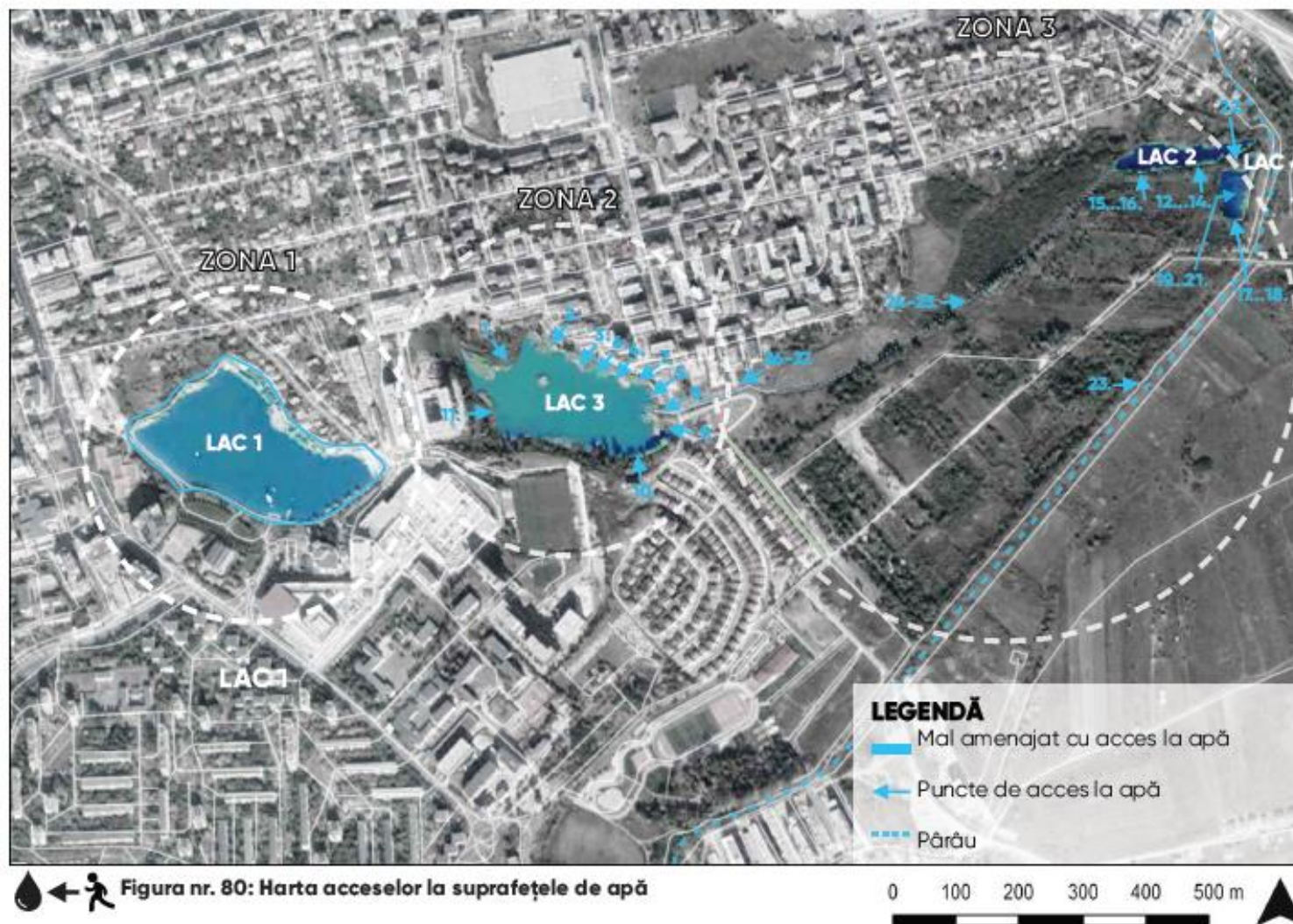
**TDS\_MAPN** – area with special destination area, special destination lands under the property of the Ministry of National Defense

**Tf** - railroad traffic area and associated developments

**Tr** – road traffic area and associated developments

**UM3** – urbanization area – mixed area with open construction regime, adjacent to the main traffic arteries



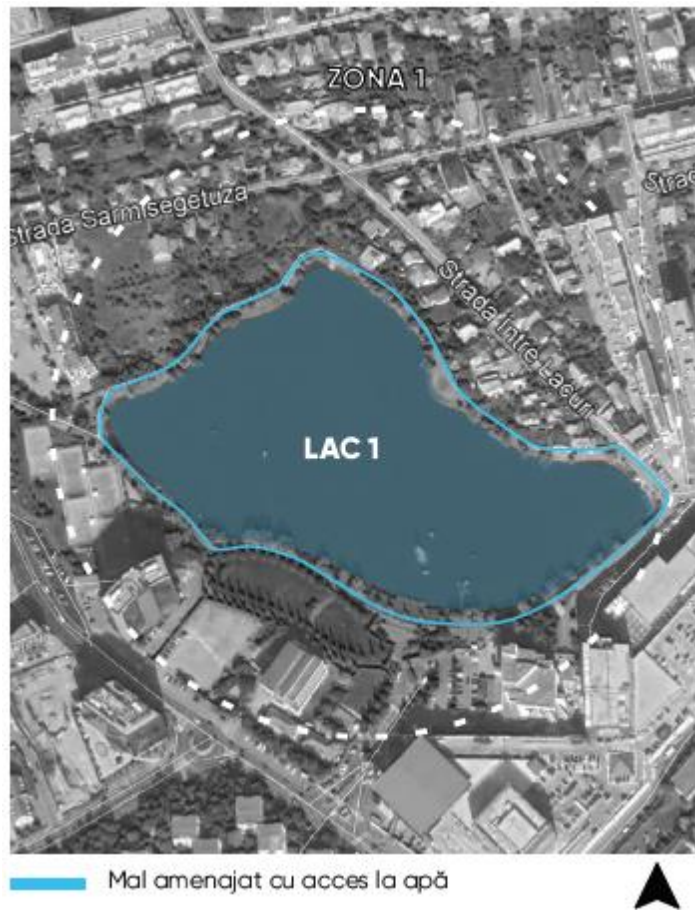


80Figure no. 80: Map of accesses to the water surfaces

(Image translation: Legend: bank with developed access to water, water access points, creek; LAKE 1, LAKE 1, Area 1, Area 2, LAKE 3, Area 3, LAKE 2, LAKE 4)



## ANALYSIS AND ASSESSMENT OF CURRENT SITUATION



81Figure no. 81: Area 1 – Access to water surfaces

(Image translation: AREA 1, LAKE 1, bank with developed access to water)



The northern bank of Gheorgheni lake is in a degraded state. Access to water is difficult due to the lack of urban furniture and adequate development.



It is possible to access the water from the southern side of the lake. A part of this area is developed with steps on the bank, so that the visitors may enjoy the water's presence.



Certain areas of the southern bank function as pedestrian alleys. There are no places from which to access the water in these areas, however, the view constituted by the alignment vegetation and the water offer a very pleasant aspect.



As opposed to the southern bank, the space quality degrades the visual experience.



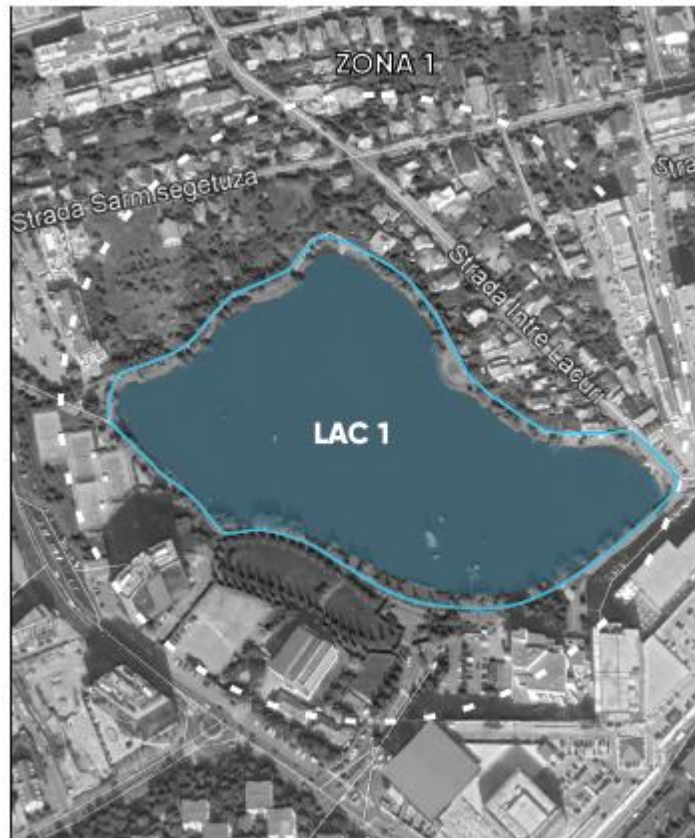
A great part of the surfaces destined for pedestrian traffic is occupied by parked cars.



North-east of the lake we see a space created as to access the lake, however, it is degraded, and access is dangerous.

#### ANALYSIS AND ASSESSMENT OF CURRENT SITUATION





Mal amenajat cu acces la apă  
(Image translation: AREA 1, LAKE 1, bank with developed access to water)



The lack of handrails represents a hazard, especially for children.





Image from the running lane.



Accessing the water is impossible in certain areas of the northern bank. The regulation of the facades and fences construction manner would have a very benefic effect on the park's image.



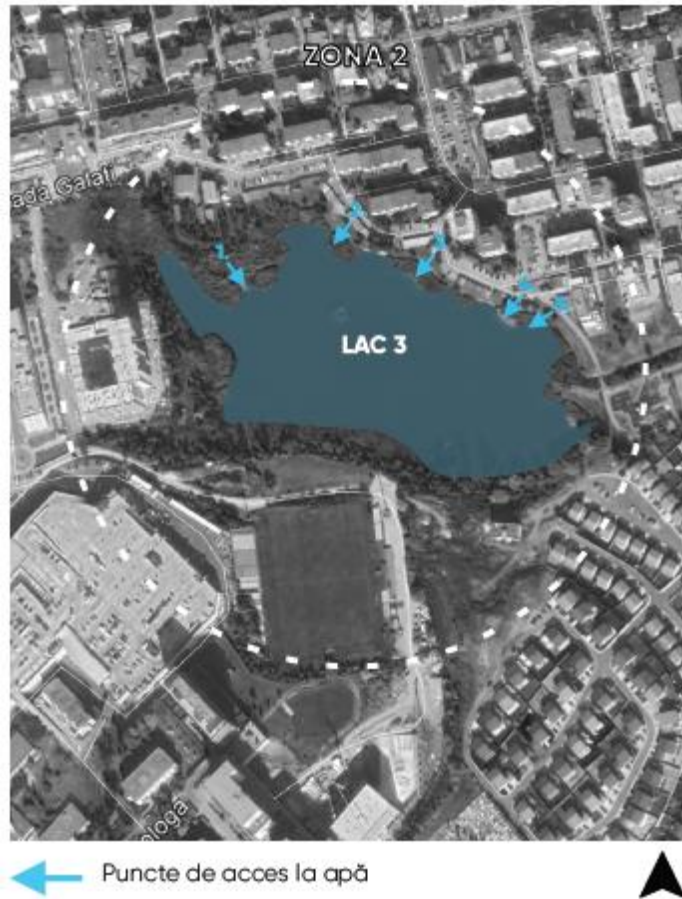
The difference between used materials, the road guard height, and the arrangement manner is not advantageous.



In the image above, we can see several dysfunctions: the small distance between the water and the sidewalk, the lack of a handrail, the way the sidewalk is created, the colored facades, the parked cars, and the poor quality fences.

## ANALYSIS AND ASSESSMENT OF CURRENT SITUATION

82 Figure no. 83: Area 2 – Access to water surfaces



(Image translation: AREA 2, LAKE 3, water access points)



1. This access point is marked with no. 1 on the map. In the proximity of the table on the right side, there is a makeshift shelter set up by the homeless.



2. In this area, marked with 2, we found no built elements, however, the wastes here suggest that this, too, is a frequented place.





3. Access point marked with no. 3 is rarely used.



4. Similar to no. 2, access no. 4 is used. Here we find a makeshift wooden construction.



5. There is a chair placed on the lake's bank, and we find waste bags on the walls of the garages. These objects suggest that the area is frequently visited by one person or a group of people.



# ANALYSIS AND ASSESSMENT OF CURRENT SITUATION

83Figure no. 84: Area 2 – Access to water surfaces



(Image translation: AREA 2, LAKE 3, water access points)



6. The water is inaccessible due to the abundant vegetation.



7. Another improvised fishing spot, made from different materials.



8. Fishing spot with a lot of common waste.



9. Natural area, not developed. The light post degrades the place's image



10. Non-developed area, with abundant vegetation

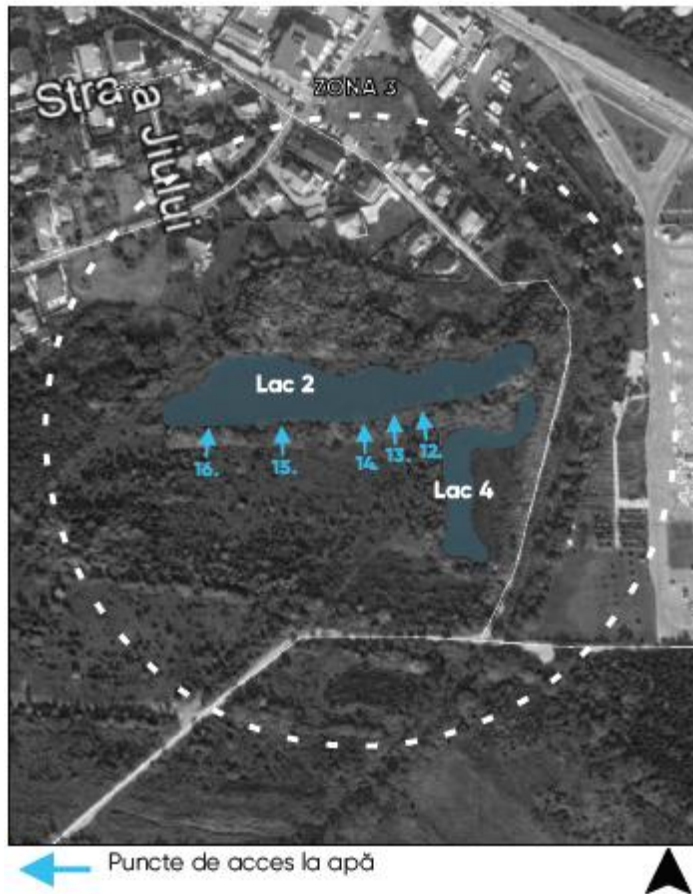


11. Pontoon improvised with various materials; makeshift shelter made from wood. This is a frequently used spot, and it has a capacity of 10-15 people.



# ANALYSIS AND ASSESSMENT OF CURRENT SITUATION

84Figure no. 85: Area 3 – Access to water surfaces



(Image translation: AREA 3, Lake 2, Lake 4, water access points)



12. Access point marked with 12, which offers one of the most beautiful views.



13. The vegetation's autumn colors and the mirroring on the water offers a special visual experience.



15. The southern area of the lake is accessible. It is used for fishing activities.



14. The accesses are made through the bank's vegetations.

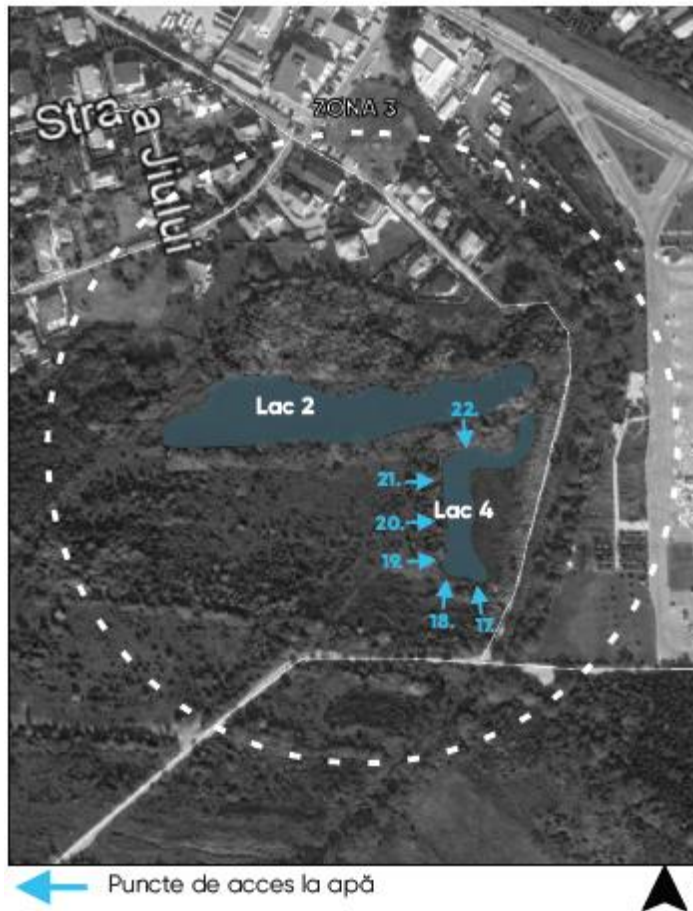


16. The eastern side is covered with a dense layer of rush.



# ANALYSIS AND ASSESSMENT OF CURRENT SITUATION

85Figure no. 86: Area 3 – Access to water surfaces



(Image translation: AREA 3, Lake 2, Lake 4, water access points)



17. The southern bank holds a degraded concrete bank.



18. Access places full of waste.



19. The image of the water is degraded by the waste on the bank.



20. The construction on the left side of the image has a negative impact on the visual experience.



21. Access is made through the rush-bed.

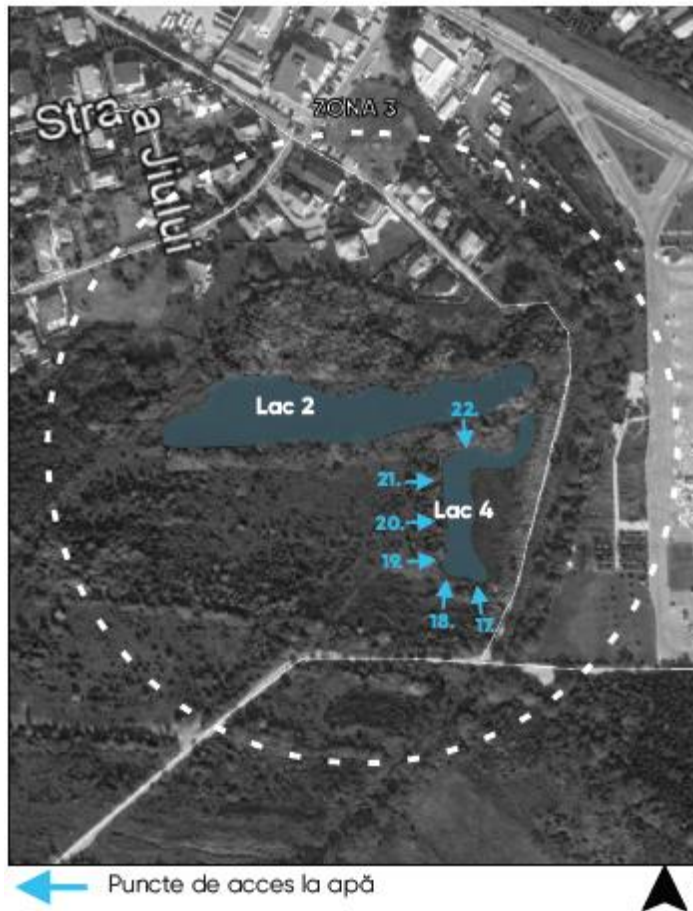


22. In certain areas, visitors have attempted at creating access by means of concrete blocks.

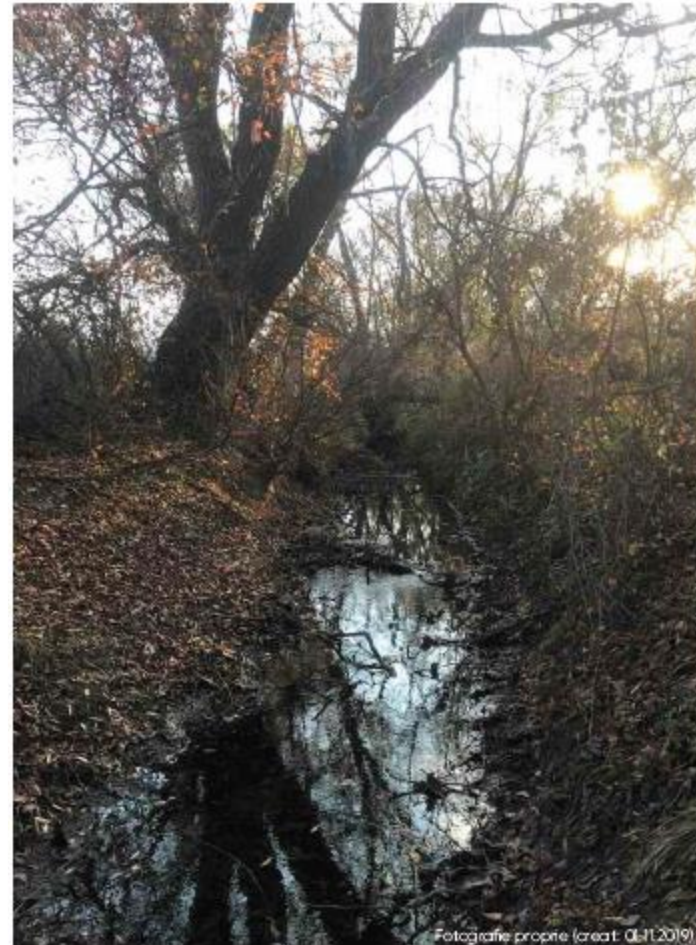


## ANALYSIS AND ASSESSMENT OF CURRENT SITUATION

86Figure no. 87: Area 3 – Access to water surfaces



(Image translation: AREA 3, Lake 2, Lake 4, Creek, water access points)



23. Near Becas creek, we find typical vegetation that makes access to water difficult, however, it fulfills a valuable ecological service.



24. The creek is located between Lake 2 and Lake 3. The access is made through wooden footbridges, that are in an advanced state of degradation.



25. Rush grows on the bank naturally. The swamp area offer space for several bird, butterfly, and mammal species.



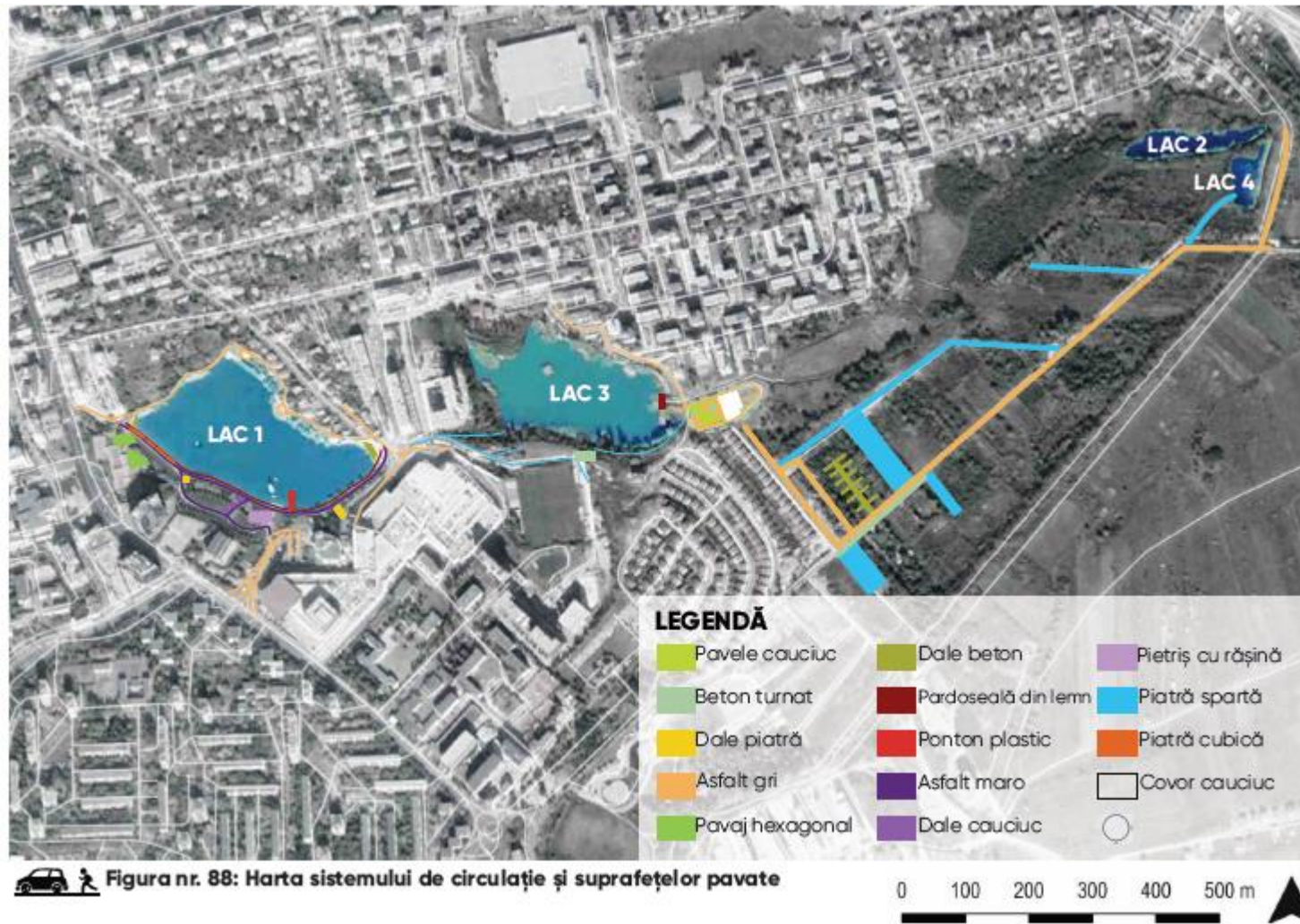
26. The water surface is not visible due to the vegetation. There is no arranged access.



27. A protection dam was built in the Lake 3 area.



## CIRCULATION SYSTEM AND PAVED SURFACES

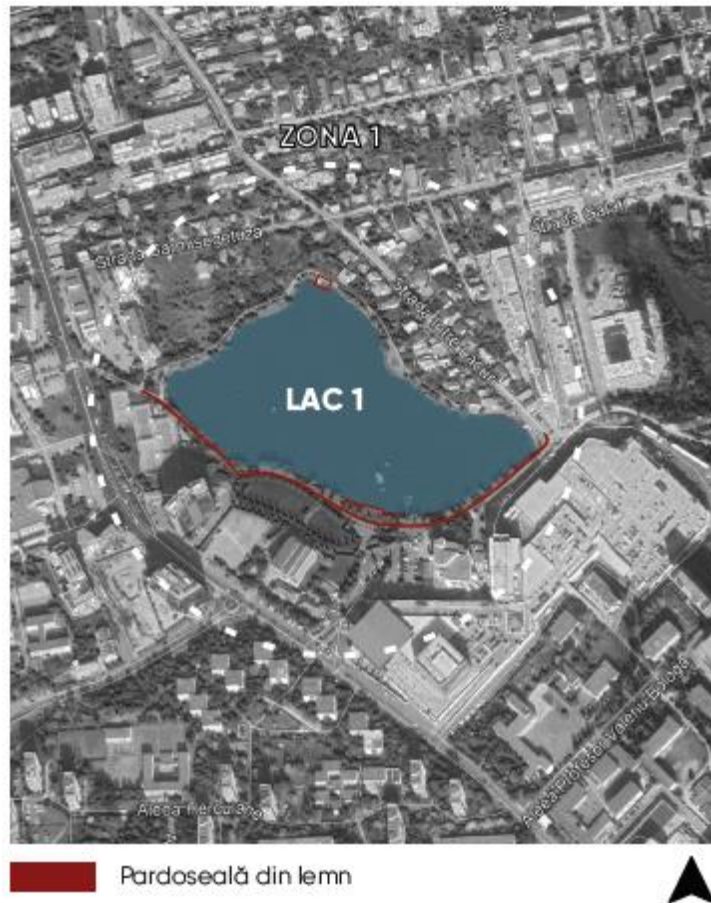


87Figure no. 88: The map of the circulation system and the paved surfaces

(Image translation: LEGEND: rubber tiles, poured concrete, stone tile, gray asphalt, hexagonal pavement, concrete tiles, wooden floor, plastic pontoon, brown asphalt, rubber tiles, resin gravel, crushed stone, cubic rock, rubber mat)

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

88Figure no. 89: Area 1 – Circulation system and paved surfaces



(Image translation: Area 1, LAKE 1, wooden floor)



There is a large surface area with wooden floors on the Gheorgheni lake bank, in Iulius park.



The material is slightly worn.





The development on the northern side is in an advanced state of degradation.



The color contrast between the wood, the vegetation that contours it, and the water's surface, presents an advantage for the view.



The delimitation of the wooden floor paved alleyway from the route destined for running is created through small-sized bushes.



The extent to which a paved area is circulated is best reflected in its degree of wear.

## ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

89Figure no. 90: Area 1 – Circulation system and paved surfaces



(Image translation: Area 1, LAKE 1, brown asphalt)



The running lane is paved with brown asphalt.





The deterioration of the surfaces and the small difference between the nuances degrade the park's image.



The level difference between the running lane and the wooden floor represents an injury hazard.



The large planter boxes placed at the end of the running lane block the fluid passage of pedestrians and does not allow for the area to be accessed by persons with reduced mobility.



Aside from the fact that the asphalt is not a material destined for running lanes, its quality is extremely poor.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

90Figure no. 91: Area 1 – Circulation system and paved surfaces



(Image translation: Area 1, LAKE 1, epoxy resin gravel)



The materials and the method used for the stairs are of a poor quality.

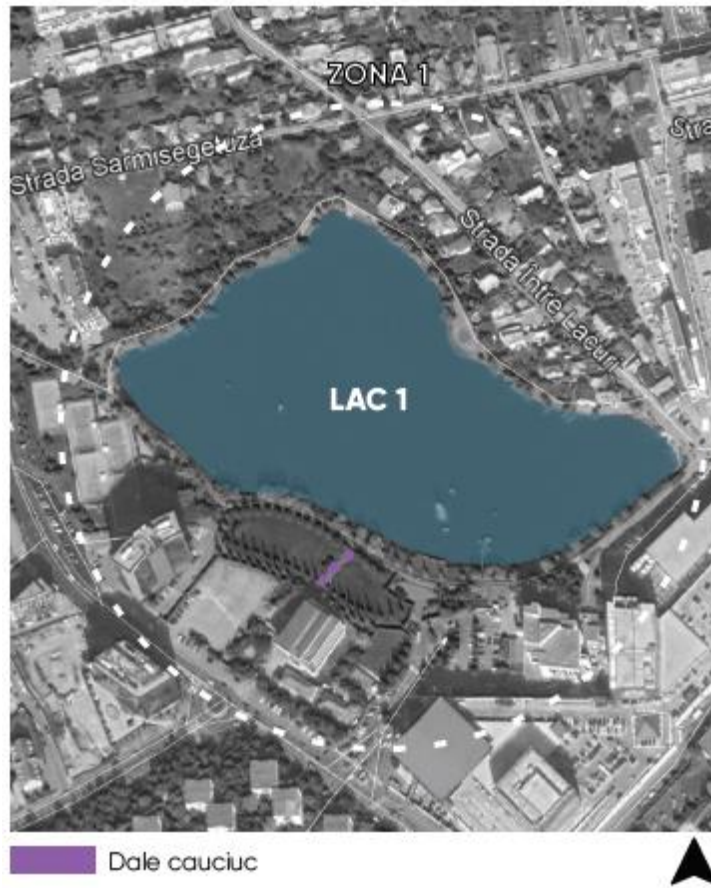


The use of a single type of pavement over a large surface area makes the entire space monotonous.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

91Figure no. 92: Area 1 – Circulation system and paved surfaces



(Image translation: Area 1, LAKE 1, rubber tiles)



The aspect given by this surface is unfortunate, due to the material's quality and the manner in which it was installed.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

92Figure no. 93: Area 1 – Circulation system and paved surfaces



(Image translation: Area 1, LAKE 1, hexagonal pavement)



The image above was taken in front of the individual houses on the north-eastern side of the lake. The paved surface is an advanced state of degradation.



This type of pavement is not esthetically pleasing, and it gets dirty quickly.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

93Figure no. 94: Area 1 – Circulation system and paved surfaces



(Image translation: Area 1, LAKE 1, gray cement tiles)



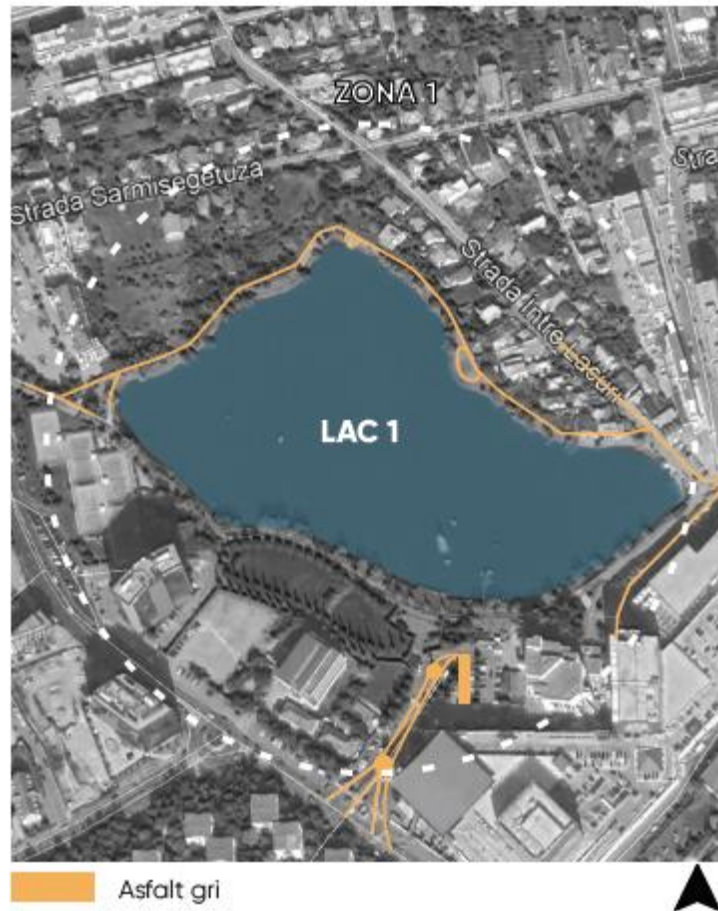
The aspect offered by this type of pavement, alongside the rest of the concrete and metal elements, negatively affect the overall image of the space.



The gray cement tiles are found in two places in the Gheorgheni Lake area. In both cases, these occupy a small surface.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

94Figure no. 95: Area 1 – Circulation system and paved surfaces



(Image translation: Area 1, LAKE 1, gray asphalt)



The surfaces paved with gray asphalt on the northern and north-eastern side of the lake are very degraded. The placement and alignment of the curb elements is inadequate.



The roads are covered in asphalt. In certain places, it is in an acceptable state.





Road surfaces need to be redone on the north-western side.



The pedestrian alley on the northern side is degraded.



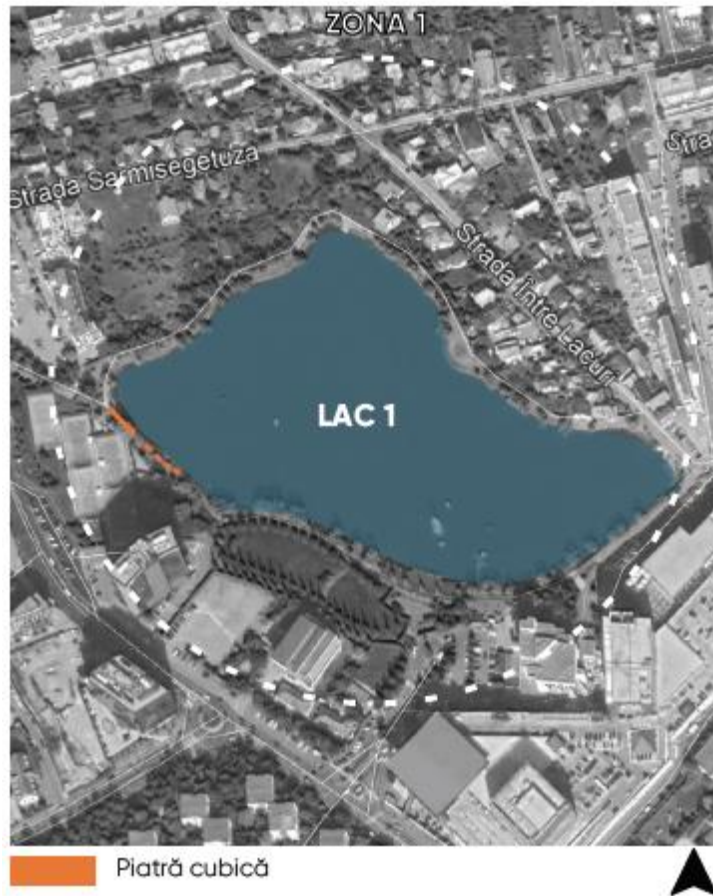
The lack of handrails or vegetation on the bank represents a hazard for pedestrians.



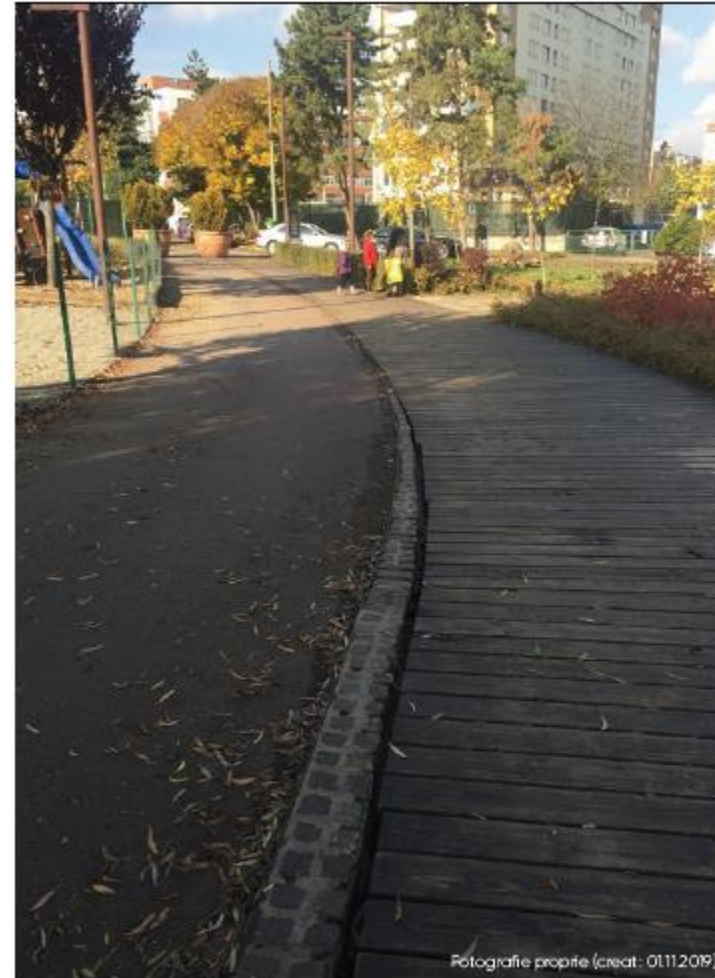
There is a green circle on the northern side, surrounded by an asphalted surface.

ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

95Figure no. 96: Area 1 – Circulation system and paved surfaces



(Image translation: Area 1, LAKE 1, cubic rock)



The distance between the running lane and the wooden floor is completed with cubic rock.





Small surface area paved with cubic rock.



The use of various types of pavements on a small surface area is disadvantageous.



By comparing the quality of the used materials, we can observe the dysfunctionality caused by their hierarchy. The cubic rock is a much more durable material and with a much more aesthetic aspect compared to the other two materials.



The arrangement of paved surfaces with blocks is much better in terms of aspect and functionality if sand is used instead of cement.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

96Figure no. 97: Area 1 – Circulation system and paved surfaces



(Image translation: Area 1, LAKE 1, floating plastic pontoon)



There is a floating plastic pontoon on the southern side of the lake.



The materials used for the pontoon, as well as the metallic fence around it, are of a poor quality.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

97Figure no. 98: Area 1 – Circulation system and paved surfaces



Dale piatră naturală

(Image translation: Area 1, LAKE 1, natural stone tiles)



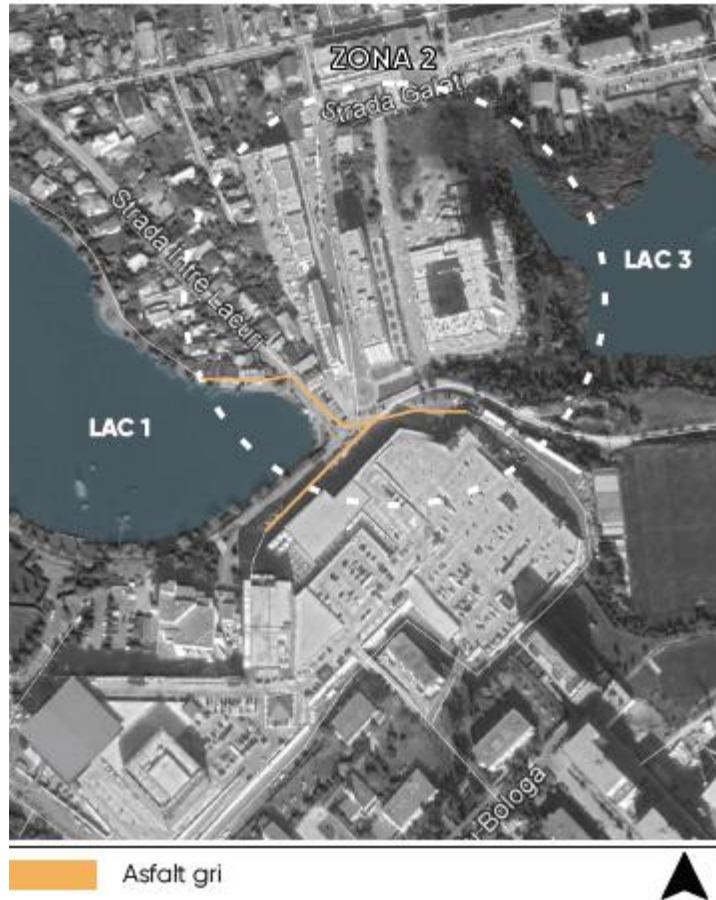
Although the material is of a good quality, the manner in which these steps were built is inadequate.



The manner in which the steps were built is acceptable, however, the steps are not adequate for persons with low mobility.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

98Figure no. 99: Area 2 – Circulation system and paved surfaces



(Image translation: Area 2, LAKE 1, LAKE 2, gray asphalt)



In passing from Lacul Gheorgheni to Lake no. 2, the road surfaces are done with asphalt mat.

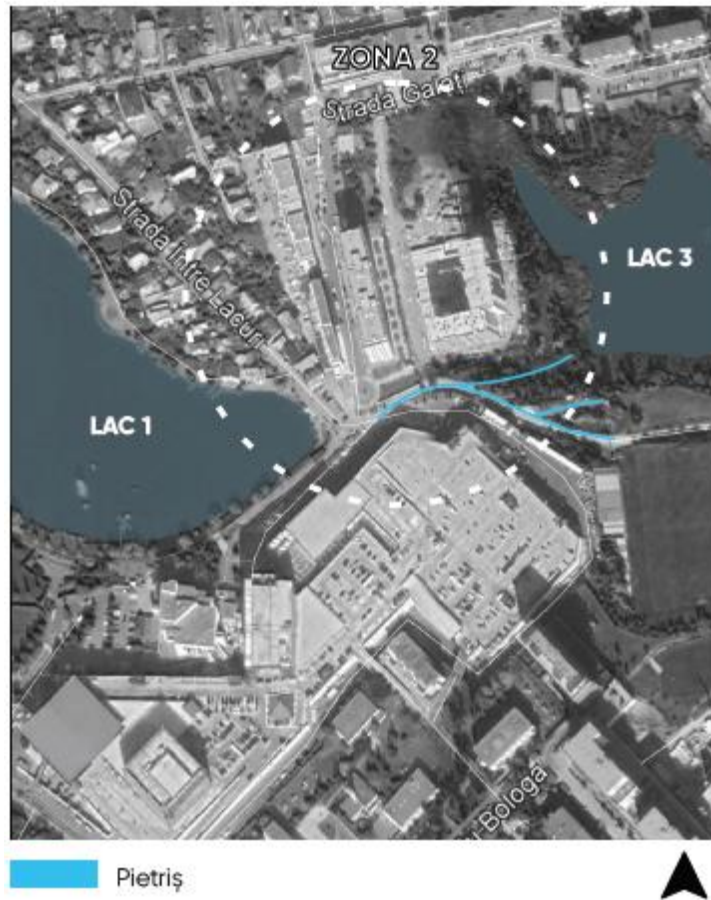


In most cases, there are no sidewalks.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

99Figure no. 100: Area 2 – Circulation system and paved surfaces



(Image translation: Area 2, LAKE 1, LAKE 3, gravel)



The access to lake no. 3 is done by means of a road covered in crushed rock.



These roads have not yet been arranged.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

100Figure no. 101: Area 3 – Circulation system and paved surfaces



(Image translation: Area 3, LAKE 3, gray asphalt)



Road surfaces near the residence area are covered in asphalt.

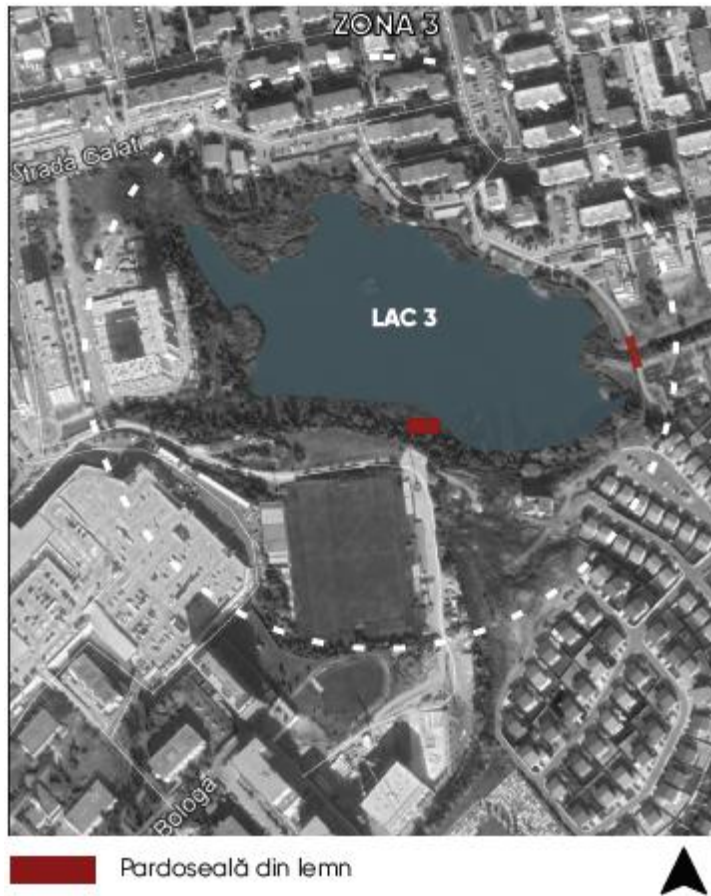


As in the case of road surfaces, the pedestrian alleys in the playground area are covered in asphalt.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

101Figure no. 102: Area 3 – Circulation system and paved surfaces



(Image translation: Area 3, LAKE 3, wooden floor)



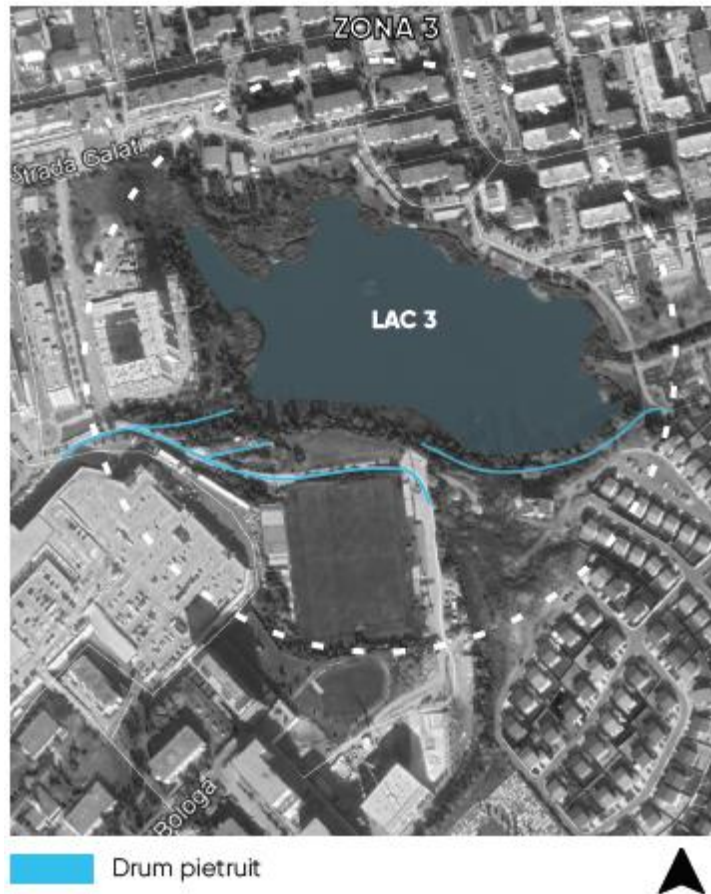
The bridge that ensures the access to the playground from the residential area is made from wood and metallic elements.



The floating wooden pontoon is on the southern side of Lake no. 3.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

102Figure no. 103: Area 3 – Circulation system and paved surfaces



(Image translation: Area 3, LAKE 3, gravel paved road)



The roadways on the southern side of the lake are covered in compacted crushed rock.



In certain cases, we see concrete sidewalks.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

103Figure no. 104: Area 3 – Circulation system and paved surfaces



(Image translation: Area 3, LAKE 3, poured concrete)



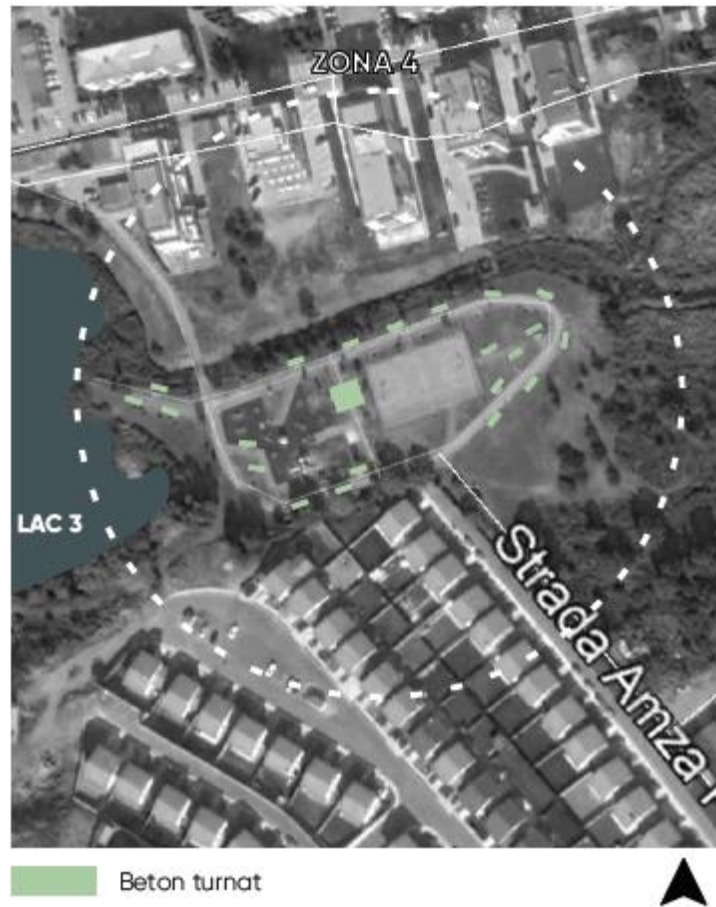
The benches in the playground area are placed on a poured concrete platform with a concrete curb.



Near the sports field, we find a parking lot made from poured concrete.

ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

104Figure no. 105: Area 4 – Circulation system and paved surfaces



(Image translation: Area 4, LAKE 3, poured concrete)

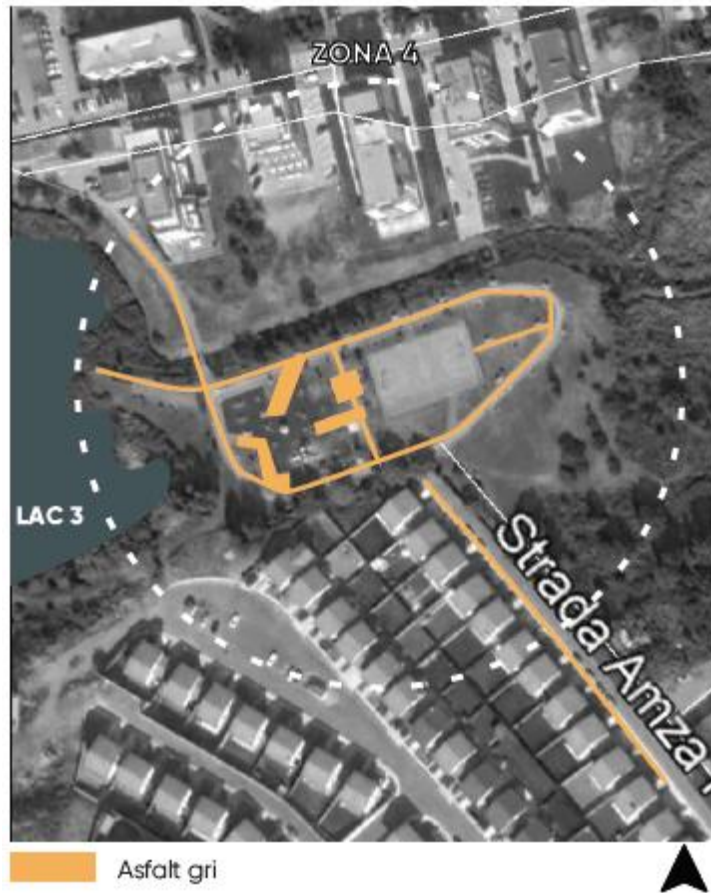


The concrete platforms on which the benches are placed have to landscaping activity.



ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

105Figure no. 106: Area 4 – Circulation system and paved surfaces



(Image translation: Area 4, LAKE 3, gray asphalt)



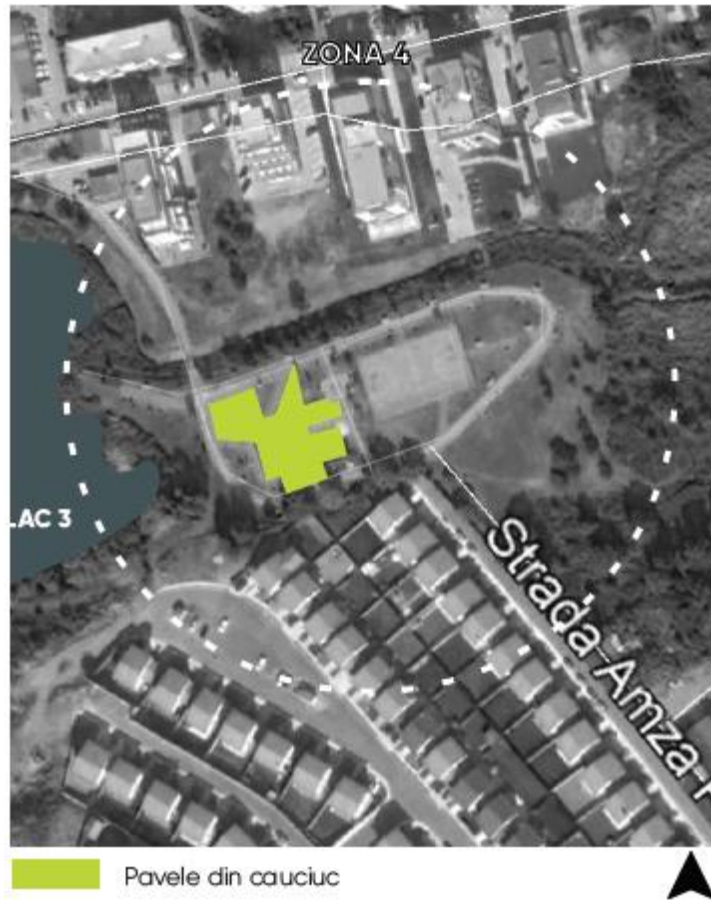
Most roads are covered in gray asphalt.



The bicycle lane on the alley surrounding the sports field and playground.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

106Figure no. 107: Area 4 – Circulation system and paved surfaces



(Image translation: Area 4, LAKE 3, rubber tiles)



The playground is made from small rubber tiles.



The see pored rubber around the poles. This is not aesthetic.



ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

107Figure no. 108: Area 4 – Circulation system and paved surfaces



(Image translation: Area 4, LAKE 3, rubber mat)



The sports field is covered with poured rubber.

ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

108Figure no. 109: Area 5 – Circulation system and paved surfaces



(Image translation: Area 5, gray asphalt)



A large part of the roadways are covered in asphalt. They are cracked.





The road in the image above is unused and unkept.



Due to the low quality of the materials and the manner in which it is arranged, the road needs regular repairs.



The road to the residence area is in an advanced state of degradation.



Repair traces appear all throughout the length of the road that crosses area no. 3.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

109Figure no. 110: Area 5 – Circulation system and paved surfaces



(Image translation: Area 5, gravel road)



The parking lot and the place where construction waste is deposited are covered in compacted crushed stone.



On the northern side, we see traces of surfaces covered in compacted crushed rock.



ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

110Figure no. 111: Area 5 – Circulation system and paved surfaces



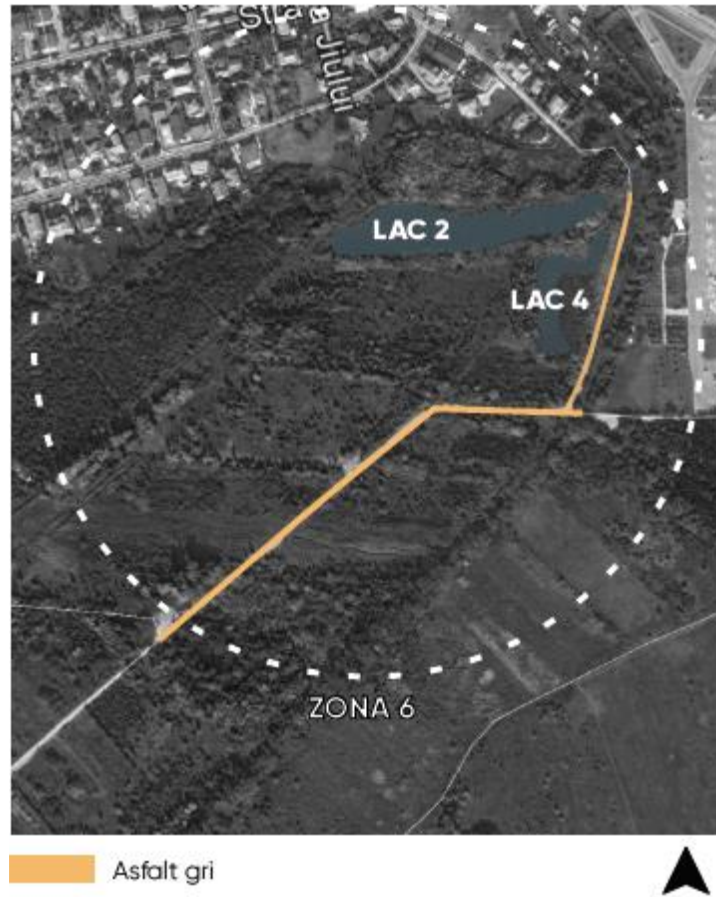
(Image translation: Area 5, concrete tiles)



A part of the alleyways in the nursery area are covered in concrete tiles.

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

111Figure no. 112: Area 6 – Circulation system and paved surfaces



(Image translation: Area 6, LAKE 2, LAKE 4, gray asphalt)



The width of the breaks in the asphalt reach even 2-3 cm.

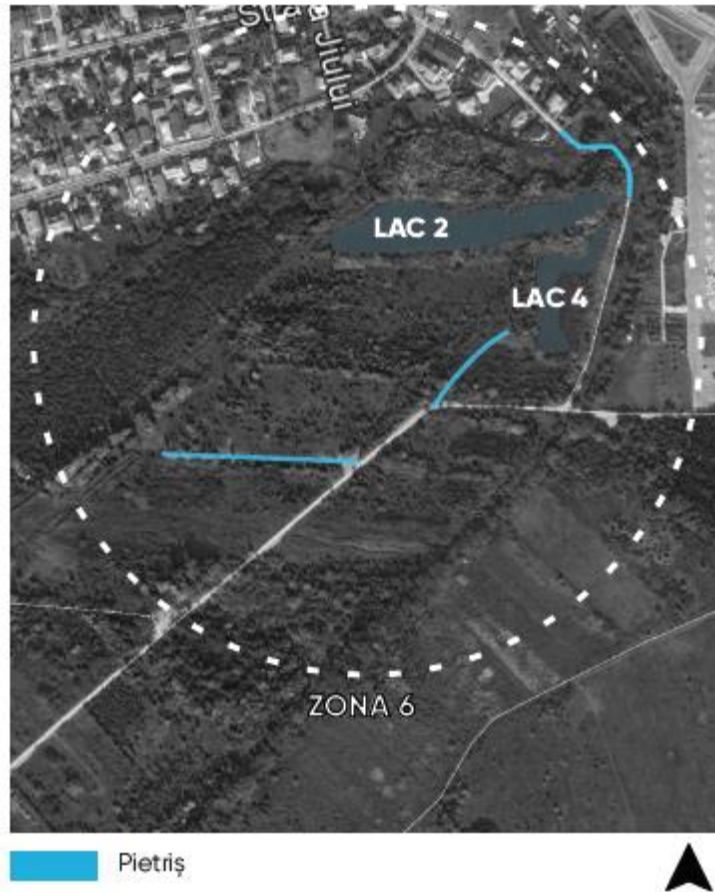


The road towards lakes 2 and 3 is completely degraded.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

112Figure no. 113: Area 6 – Circulation system and paved surfaces



(Image translation: Area 6, LAKE 2, LAKE 4, gravel)



There are certain routes in area 3 where traces of gravel pavement can still be seen.

## ANALYSIS AND ASSESSMENT OF THE CURRENT SITUATION

### VEGETATION

From the point of view of the natural components, areas 3 and 4 are the richest in vegetation. The SOS Parcul Est Association's team has identified 29 sub-areas, of which 27 are in the 3 and 4 areas. These sub-areas have been delimited according to habitat and the existing facilities on the respective territory. Among these areas, some of them have landscape and ecological value, however, many of them present a hazard for the natural patrimony.

#### Sub-areas with special value:

- 3. White poplar (*Populus alba*) plantation** – aside from the ecologic value, it plays an important role from a visual point of view.
- 4. Water ridge vegetation** – it has an important ecological role.
- 5. Silver birch plantation (*Betula pendula*)** – enriches the natural and landscape patrimony.
- 6. Reed vegetations (*Phragmites australis*)** – it has an important role if its spread is controlled.
- 7. Wet grasslands with shrubbery and trees** – ecologic and landscape importance.
- 8, 9. Nursery lake** – ecological and landscape importance.
- 14. Meadow shrubbery with willow (*Salix sp.*) and dogwood (*Cornus sanguinea*)** – willows can be visual points of reference, and the vegetation's autumn-winter chromatics improves the landscape's aspect.

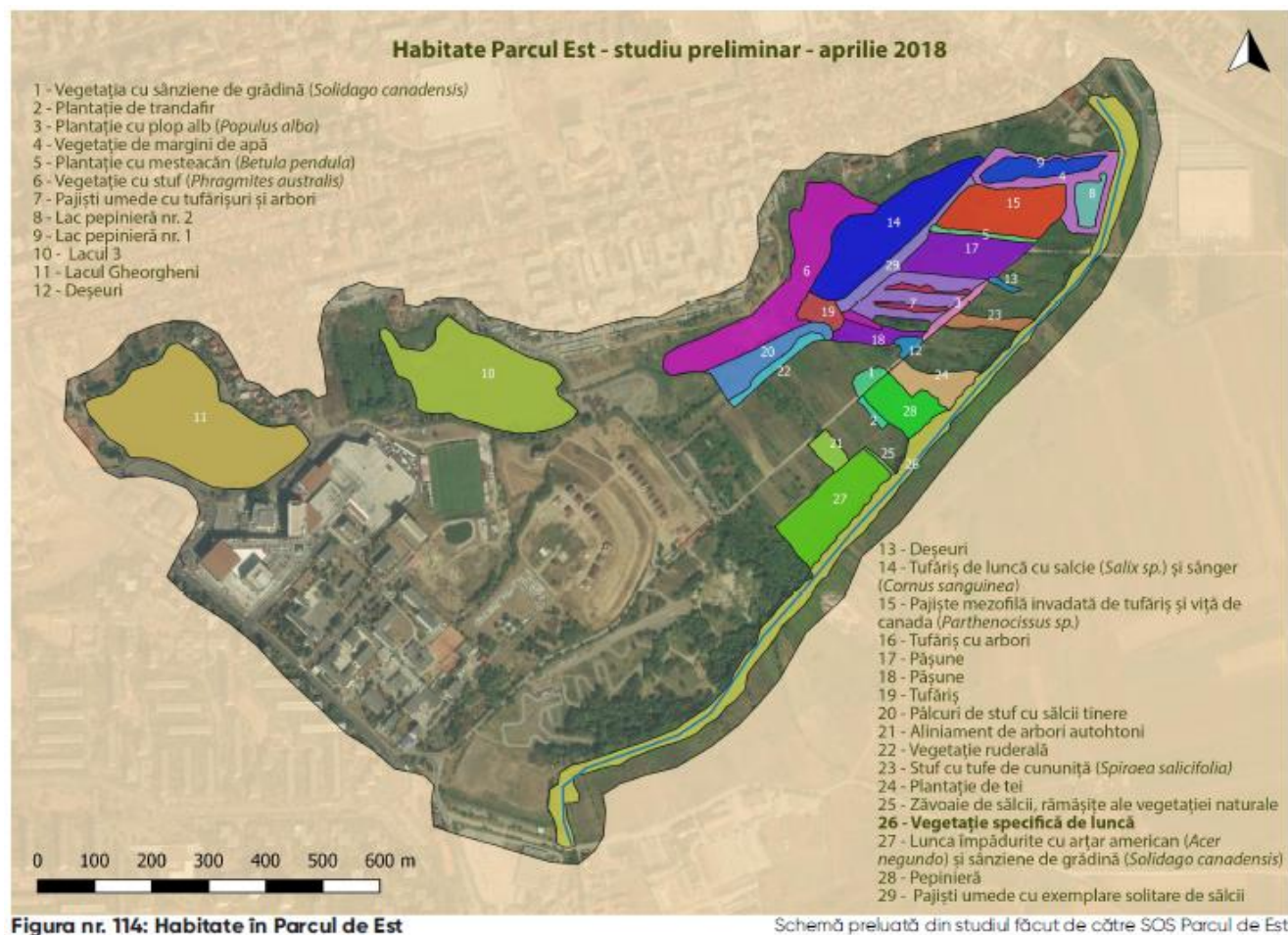
### VEGETATION

- 16. Shrubbery with trees, 17, 18 – Grassland, 19 – Shrubbery** – ecologic role.
- 20. Rush clusters with young willows** – they have an important role if their spread is controlled.
- 21. Native trees alignment** – special landscape value, the alignment represents a visual point of reference.
- 22. Ruderal vegetation** – ecologic and landscape importance.
- 23. Rush with *Spiraea salicifolia* bushes** – ecologic and landscape importance.
- 24. Linden plantation** – exceptional landscape importance, represents a visual point of reference.
- 25. Willow park, remains of the natural vegetation** – area with a major importance, needs to be protected.
- 26. Specific meadow vegetation** – ecologic and landscape importance.
- 26. Nursery** – valuable species and specimens
- 29. Wet grasslands with single willow specimens** – ecologic and landscape importance.

#### Sub-areas that represent a hazard:

- 1. Canadian goldenrod (*Solidago canadensis*) vegetation** – invasive species, must be eliminated.
- 12, 13. Waste** – represents a hazard for the ecosystem.
- 15. Mesophile grassland invaded by shrubbery and Virginia creeper (*Parthenocissus sp.*)** – invasive species, must be eliminated.
- 27. Meadow with Boxelder maple (*Acer negundo*) and Canadian goldenrod (*Solidago canadensis*)** – invasive species, must be eliminated.





113Figure no. 114: Habitats in Parcul Est – Scheme taken from the study carried out by SOS Parcul Est

Image translation: Habitats in Parcul Est – preliminary study – April 2018; 1. Canadian goldenrod (*Solidago canadensis*) vegetation, 2. Rose plantation, 3. White poplar (*Populus alba*) plantation, 4. Water ridge vegetation, 5. Silver birch plantation (*Betula pendula*), 6. Reed vegetations (*Phragmites australis*), 7. Wet grasslands with shrubbery and trees, 8. Nursery lake no. 2, 9. Nursery lake no. 1, 10 Lake 3, 11. Gheorgheni Lake, 12. Waste, 13. Waste, 14. Meadow shrubbery with willow (*Salix* sp.) and dogwood (*Cornus sanguinea*), 15. Mesophile grassland invaded by shrubbery and Virginia creeper (*Parthenocissus* sp.), 16. Shrubby with trees, 17. Grassland, 18. Grassland, 19. Shrubbery, 20. Rush clusters with young willows, 21. Native trees alignment, 22. Ruderal vegetation, 23. Rush with *Spiraea salicifolia*, 24. Linden plantation, 25. Willow park, remains of the natural vegetation, 26. **Specific meadow vegetation**, 27. Meadow with Boxelder maple (*Acer negundo*) and Canadian goldenrod (*Solidago canadensis*), 28. Nursery, 29. Wet grasslands with single willow specimens.

Item no.	Scientific denomination - Latin	Denomination – Romanian/English	Character	Mentions
1	Acer campestre	Field maple	native	melliferous species
2	Acer negundo	Boelder maple	invasive	to be eliminated
3	Acer platanoides	Norway maple	native	melliferous species
4	Acer pseudoplatanus	Sycamore maple	native	melliferous species
5	Acer saccharinum	Sugar maple	exotic	valuable
6	Betula pendula	Silver birch	native	pioneer
7	Elaeagnus angustifolia	Persian olive	exotic	to be controlled
8	Fraxinus excelsior	Ash	native	valuable
9	Juglans regia	Walnut	cultivated species, sub-spontaneous	valuable
10	Malus domestica	Apple tree	native	melliferous species
11	Malus sylvestris	Wild apple tree	native	melliferous species
12	Populus alba	Silver poplar	native	valuable
13	Populus nigra	Black poplar	native	valuable
14	Prunus avium	Cherry tree	native	melliferous species
15	Prunus padus	Bird cherry	native	melliferous species
16	Quercus robur	Common oak	native	valuable
17	Robinia pseudacacia	Black locust tree	invasive	melliferous species
18	Salix alba	White willow	native	valuable
19	Salix fragilis	Crack willow	native	valuable
20	Salix triandra	Almond willow	native	valuable
21	Salix viminalis	Basket willow	native	valuable
22	Sambucus nigra	Elderberry	invasive	melliferous species
23	Tilia platyphyllos	Largeleaf linden	native	valuable
24	Ulmus sp.	Elm	native	valuable

114Figure no. 115: Table of existing trees



Item no.	Scientific denomination - Latin	Denomination - Romanian / English	Character	Mentions
1	Amorpha fruticosa	Desert false indigo	invasive	to be eliminated
2	Berberis vulgaris	Barberry	native	valuable
3	Chaenomeles X superba	Japanese quince	exotic	to be controlled
4	Cornus sanguinea	Dogwood	native	valuable
5	Crataegus monogyna	Hawthorn	native	melliferous species
6	Euonymus europaeus	European spindle	native	valuable
7	Forsythia x intermedia	Border Forsythia	exotic	valuable
8	Hippophaë rhamnoides	Sea buckthorn	invasive	to be controlled
9	Ligustrum vulgare	Wild privet	native	valuable
10	Parthenocissus quinquefolia	Virginia creeper	invasive	to be controlled
11	Parthenocissus inserta	Thicket creeper	invasive	to be controlled
12	Prunus spinosa	Blackthorn	native	melliferous species
13	Rhamnus cathartica	Buckthorn	invasive	melliferous species
14	Rubus caesius	Dewberry	native	melliferous species
15	Spiraea media	Spirea	native	valuable
16	Spiraea salicifolia	Spirea	native	valuable
17	Spiraea x vanhouttei	Bridalwreath	ornamental	valuable
18	Viburnum lantana	wayfarer	native	melliferous species
19	Viburnum opulus	Guelder rose	native	melliferous species

115Figure no. 116: Table of existing shrubs

Item no.	Scientific denomination - Latin	Denomination - Romanian / English	Character	Mentions
1	Achillea millefolium	Yarrow	native	melliferous species
2	Aegopodium podagraria	Ground elder	invasive	to be controlled
3	Agropyron repens	Wheatgrass	native	valuable
4	Ajuga reptans	Bugle	native	melliferous species
5	Alliaria petiolata	Garlic mustard	native	valuable
6	Anthriscus sylvestris	Cow parsley	invasive	to be controlled
7	Artemisia vulgaris	Mugwort	invasive	to be controlled
8	Asarum europaeum	European wild ginger	native	valuable
9	Bidens frondosa	Devil's pitchfork	exotic	to be controlled
10	Brachypodium sylvaticum	False-brome	native	valuable
11	Brassica napus	rapeseed	exotic	melliferous species
12	Bryonia alba	False mandrake	invasive	to be controlled
13	Calystegia sepium	Bindweed	invasive	to be controlled
14	Capsella bursa-pastoris	Shepherd's purse	invasive	to be controlled
15	Cardaria draba	Whitetop	native	to be controlled
16	Carex acutiformis	Lesser pond-sedge	native	valuable
17	Carex hirta	Hammer sedge	native	valuable
18	Carex riparia	Greater pond sedge	native	valuable
19	Carex spicata	Prickly sedge	native	valuable
20	Ceratophyllum sp.	Hornwort	exotic	to be controlled
21	Chelidonium majus	Greater celandine	native	valuable
22	Cichorium intybus	Chicory	native	valuable
23	Cirsium arvense	Field thistle	invasive	to be controlled
24	Cirsium canum	Queen Anne's Thistle	invasive	to be controlled
25	Cirsium oleraceum	Siberian thistle	may be invasive	to be controlled
26	Cirsium vulgare	Spear thistle	invasive	to be controlled

116Figure no. 117: Table of existing herbaceous plants 1



Item no.	Scientific denomination - Latin	Denomination - Romanian / English	Character	Mentions
27	Clematis vitalba	Old man's beard / Traveler's joy	may be invasive	to be controlled
28	Convolvulus arvensis	Field bindweed	native	melliferous species
29	Cucubalus baccifer	Berry-bearing catchfly	invasive	melliferous species
30	Dactylis glomerata	Cat grass	native	valuable
31	Daucus carota	Wild carrot	native	pioneer
32	Dipsacus laciniatus	Cutleaf teasel	native	melliferous species
33	Echinochloa crus-galli	Watergrass	invasive	to be controlled
34	Echinocystis lobata	Prickly cucumber	invasive	to be controlled
35	Epilobium hirsutum	Great willowherb	native	melliferous species
36	Equisetum sp.	Horsetail	native	melliferous species
37	Eupatorium cannabinum	Holy rope	invasive	to be controlled
38	Euphorbia cyparissias	Cypress spurge	native	valuable
39	Festuca gigantea	Giant fescue	native	melliferous species
40	Festuca pratensis	Meadow fescue	native	melliferous species
41	Festuca rupicola	Festuca	native	valuable
42	Fumaria schleicheri	(no English equivalent)	native	melliferous species
43	Galega officinalis	Galega	native	valuable
44	Galium aparine	Cleavers / goosegrass	native	valuable
45	Galium mollugo	Hedge bedstraw	native	valuable
46	Galium verum	Yellow bedstraw	native	valuable
47	Geranium pratensis	Meadow geranium	native	valuable
48	Geranium robertianum	Red robin / Death come quickly	native	valuable
49	Geum urbanum	Wood avens	native	valuable
50	Glechoma hederacea	Ground ivy	native	valuable
51	Heracleum sphondylium	Hogweed	native	valuable
52	Humulus lupulus	Hops	native	valuable

117Figure no. 118: Table of existing herbaceous plants 2

Item no.	Scientific denomination - Latin	Denomination - Romanian / English	Character	Mentions
53	Impatiens sp.	Snapweed	may be invasive	valuable
54	Lactuca serriola	Prickly lettuce	native	valuable
55	Lamium album	White dead nettle	native	melliferous species
56	Lamium amplexicaule	Common henbit	native	melliferous species
57	Lamium purpureum	Purple dead nettle	native	melliferous species
58	Lathyrus tuberosus	Tuberous pea	native	valuable
59	Lemna minor	Lesser duckweed	native	valuable
60	Linaria vulgaris	Toadfax	native	valuable
61	Lotus corniculatus	Common bird's foot trefoil	native	melliferous species
62	Lycopus europaeus	Buggleweed	native	valuable
63	Lysimachia nummularia	Moneywort	native	valuable
64	Lysimachia vulgaris	Yellow loosestrife	native	melliferous species
65	Lythrum salicaria	Purple loosestrife	native	valuable
66	Marrubium peregrinum	Horehound	may be invasive	to be controlled
67	Mentha longifolia	Mint	native	valuable
68	Myriophyllum spicatum	Eurasian watermilfoil	may be invasive	to be controlled
69	Pastinaca sativa	Parsnip	native	valuable
70	Phragmites australis	Common reed	may be invasive	to be controlled
71	Pimpinella saxifraga	Burnet-saxifrage	native	valuable
72	Plantago lanceolata	Narrowleaf plantain	native	valuable
73	Plantago major	Broadleaf plantain	native	valuable
74	Poa pratensis	Blue grass	native	valuable
75	Poa trivialis	Rough trivialis	native	valuable
76	Polygonum mite	(no English equivalent)	native	valuable
77	Potentilla anserina	Silverweed	native	valuable
78	Potentilla reptans	Creeping cinquefoil	native	valuable

118Figure no. 119: Table of existing herbaceous plants 3



Item no.	Scientific denomination - Latin	Denomination - Romanian / English	Character	Mentions
79	Pulmonaria mollis	Lungwort	native	melliferous species
80	Pulmonaria obscura	Unspotted lungwort	native	melliferous species
81	Ranunculus auricomus	Greenland buttercup	native	melliferous species
82	Ranunculus ficaria	Lesser celandine	native	valuable
83	Ranunculus repens	Creeping buttercup	native	pioneer
84	Ranunculus sclereatus	Celery-leaf buttercup	native	valuable
85	Reynoutria sp.	(no English equivalent)	may be invasive	valuable
86	Silene vulgaris	Maidenstears	native	valuable
87	Solidago canadensis	Canadian goldenrod	invasive	to be eliminated
88	Sonchus arvensis	Field milk thistle	native	melliferous species
89	Stachys sylvatica	Whitespot	native	valuable
90	Stellaria media	Chickweed	native	valuable
91	Symphytum officinale	Comfrey	native	melliferous species
92	Tanacetum vulgare	Tansy	invasive	melliferous species
93	Taraxacum officinale	Common dandelion	native	valuable
94	Thlaspi arvense	Field pennycress	native	melliferous species
95	Tussilago farfara	Coltsfoot	native	valuable
96	Typha latifolia	Cattail	exotic	valuable
97	Urtica dioica	Stinging nettle	native	melliferous species
98	Valeriana officinalis	Valerian	native	melliferous species
99	Veronica hederifolia	Ivy-leaved speedwell	may be invasive	to be controlled
100	Veronica persica	Birdeye speedwell	may be invasive	to be controlled
101	Vicia angustifolia	Garden vetch	native	melliferous species
102	Vicia cracca	Bird vetch	native	melliferous species
103	Vicia grandiflora	Large yellow vetch	native	melliferous species
104	Vicia tetrasperma	Smooth vetch	may be invasive	to be controlled

119Figure no. 120: Table of existing herbaceous plants 4

BUILT ELEMENTS

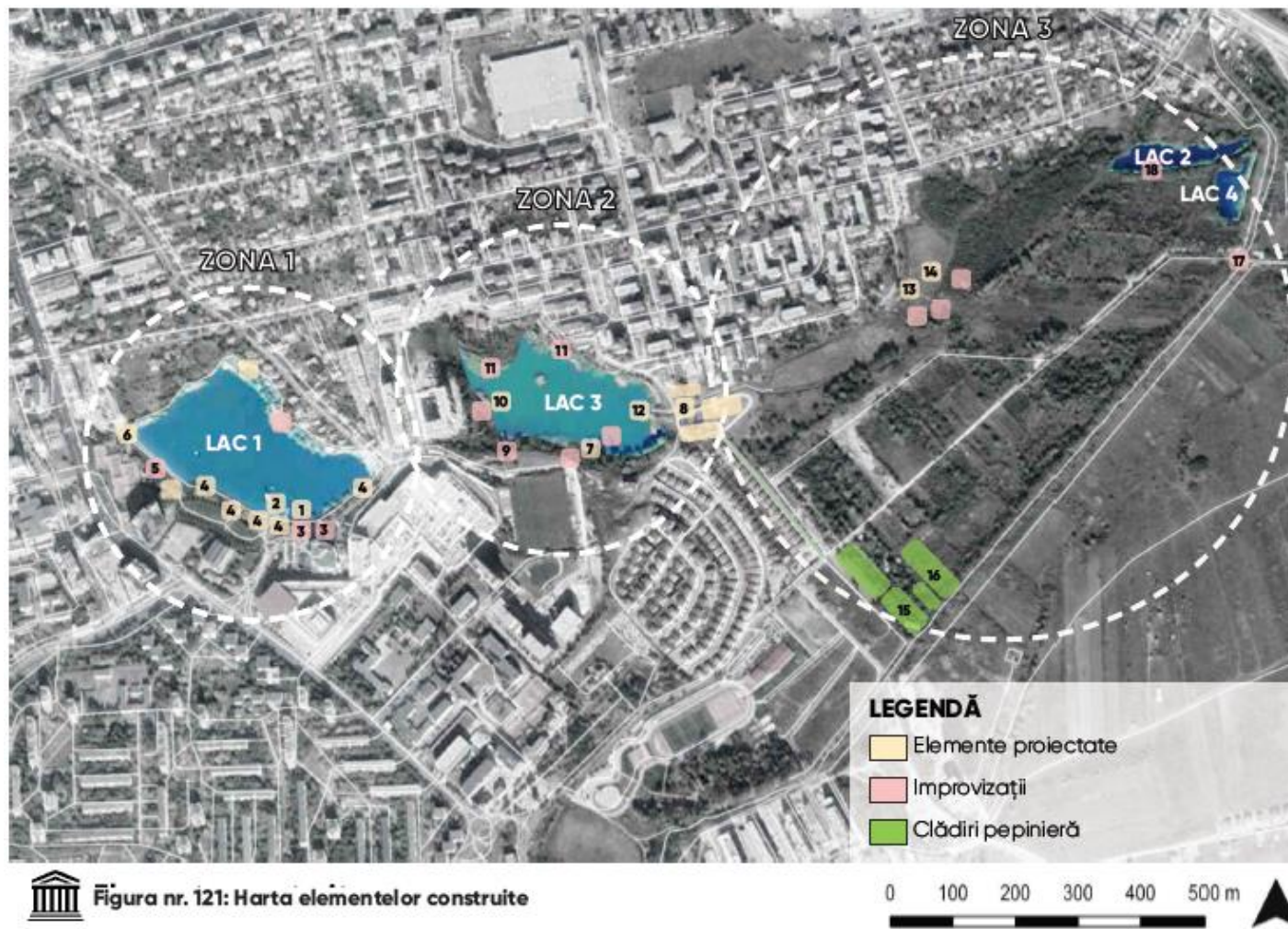


Figura nr. 121: Harta elementelor construite

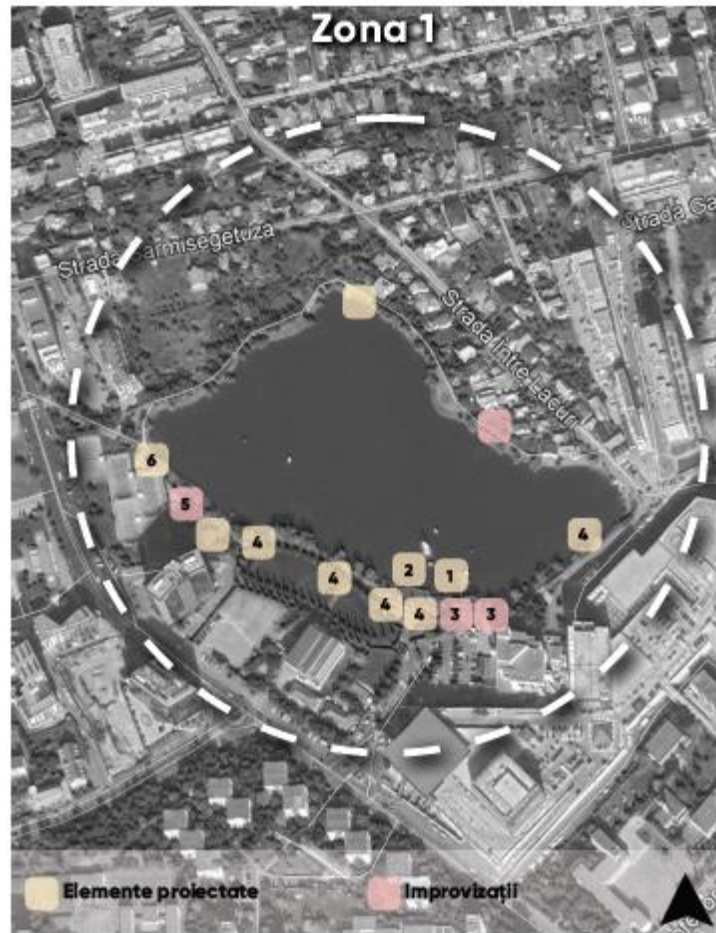
120Figure no. 121: Map of built elements

(Image translation: Area 1 – Lake 1, Area 2 – Lake 3, Area 3 – Lake 2, Lake 4, LEGEND: Designed elements, improvisations, nursery buildings)



## ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

121Figure no. 122: Area 1 – Built elements



(Image translation: Area 1, Designed elements, Improvisations)



1. The floating plastic pontoon in the Iulius Park area. The poor quality material and the manner in which it is made generates an unpleasant visual aspect.



2. Wooden pontoon in a slightly deteriorated state. Needs renovation.



3. Comparing the kiosks in the image, we can see that the one with vivid colors degrades the overall image more.



5. The tent functions as a coffee shop. The tent is made of poor quality materials and its aspect is unpleasant.



4. The gazebo is in a good state, with Chinese Wisteria (*Wisteria sinensis*).

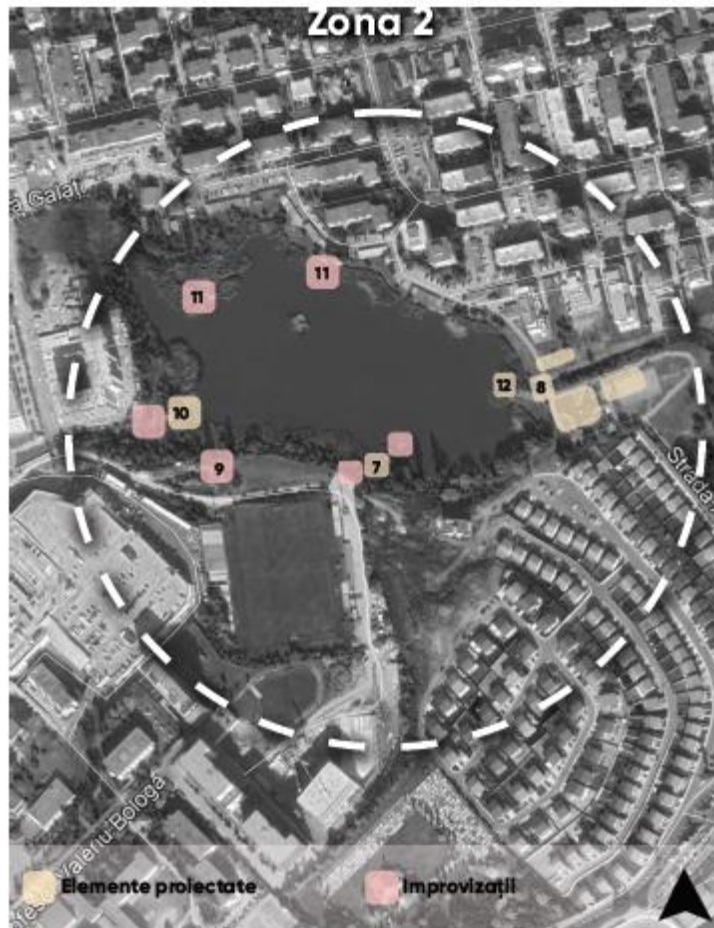


6. The playground surrounded by an iron fence. The playground has very few elements, and the fence does not add value to the urban image.



## ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

122Figure no. 123: Area 2 – Built elements



(Image translation: Area 2, Designed elements, Improvisations)



7. Wooden pontoon in a good state, that merges well aesthetically with the environment.



8. Enforced concrete bridge. Although it does not add value to the urban image, the bridge is functional and in a good state.



9. Concrete building in a degraded state, with an inaesthetic aspect.



10. Private wooden cottage.



11. Improvised wooden shelter, built by the area's visitors.



12. Wooden gazebo in an acceptable state.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

123Figure no. 124: Area 3 – Built elements



(Image translation: Area 3, Designed elements, Improvisations, nursery buildings)



13. Support for the gas line.



14. Wooden bridge over the canal. The bridge is a degraded state and is unstable.



15. Abandoned containers.



17. Bridge over water.



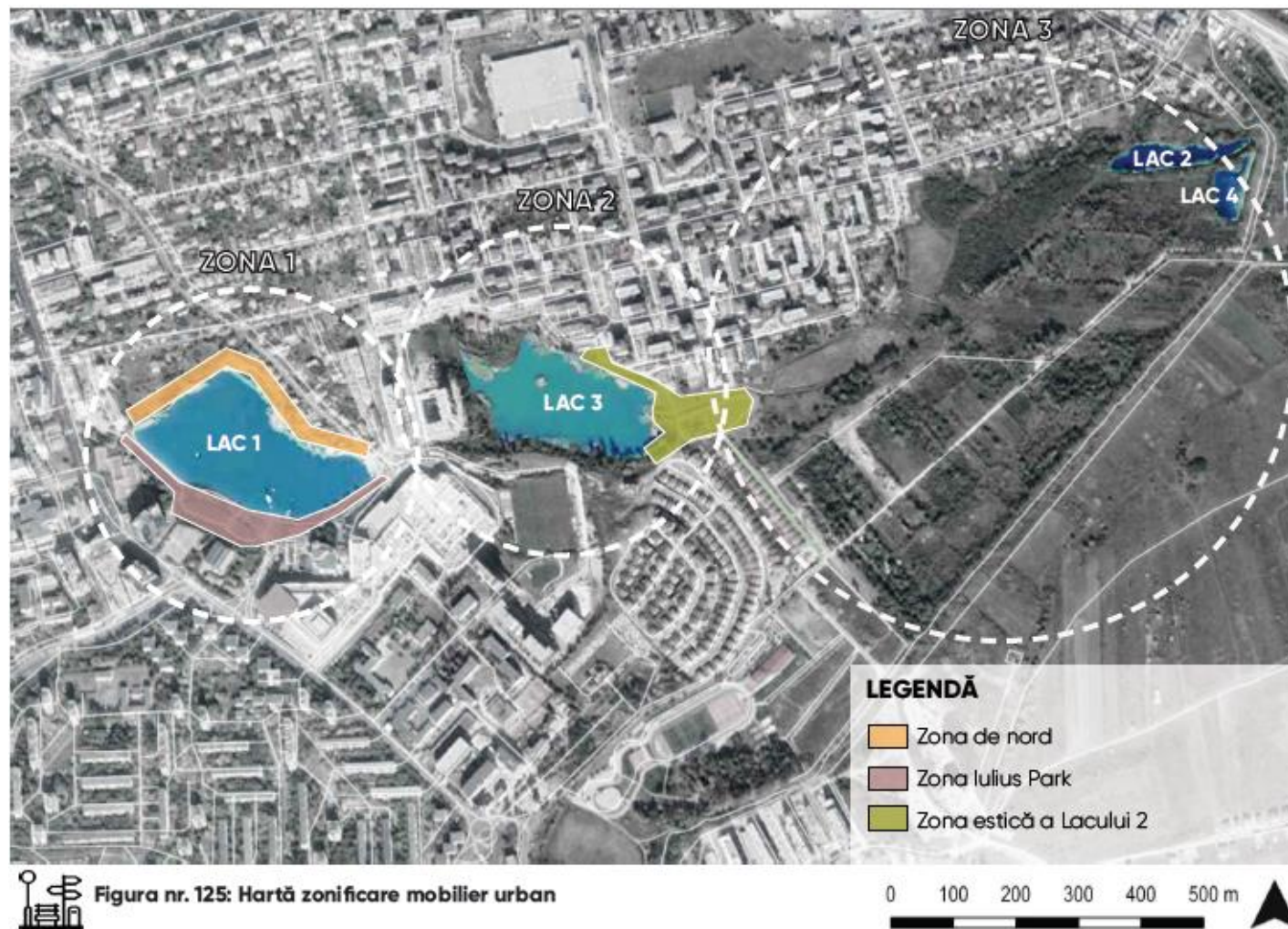
16. Concrete greenhouse pertaining to the nursery. The building is an advanced state of degradation.



18. Wooden shelter – improvisation with plastic foil



## URBAN FURNITURE

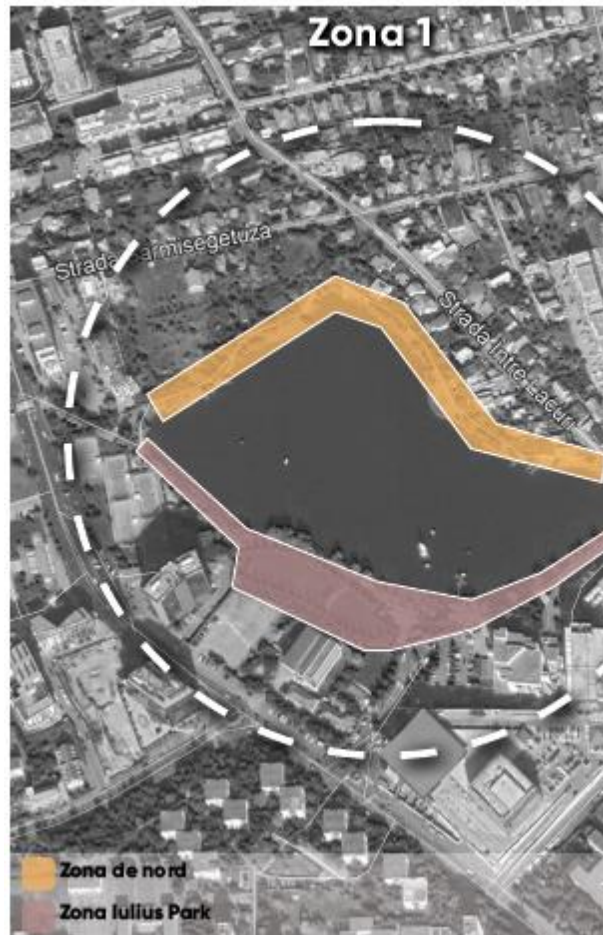


124Figure no. 125: Urban furniture zoning map

(Image translation: Area 1 – Lake 1, Area 2 – Lake 3, Area 3 – Lake 2, Lake 4, LEGEND: northern area, Iulius Park area, eastern area of Lake 2)

# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

125Figure no. 126: Area 1 – Urban furniture



(Image translation: Area 1, northern area, Iulius Park area)



Wood and brick bench.



Inaesthetic board in front of the alignment vegetation.



Wooden and metal bench.



Park rules.





Wrong placement of metallic elements.



Metallic fountain, kitsch.



Old lighting post.



Plastic planter box that are oversized and vandalized.

ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

126Figure no. 127: Area 2 – Urban furniture



(Image translation: Area 2, eastern side of Lake 2)



Poor quality metal fountain.





Wood and metal benches, plastic trash bin, and metal board.



Fotografie proprie (creat: 01.11.2019)



Fotografie proprie (creat: 01.11.2019)



Fotografie proprie (creat: 01.11.2019)

Metal lighting posts.



Playground elements made from plastic and metal. Degraded state.



Fotografie proprie (creat: 01.11.2019)



Fotografie proprie (creat: 01.11.2019)



Fotografie proprie (creat: 01.11.2019)

Vandalized boards.

## DYSFUNCTIONS AND CONFLICTS

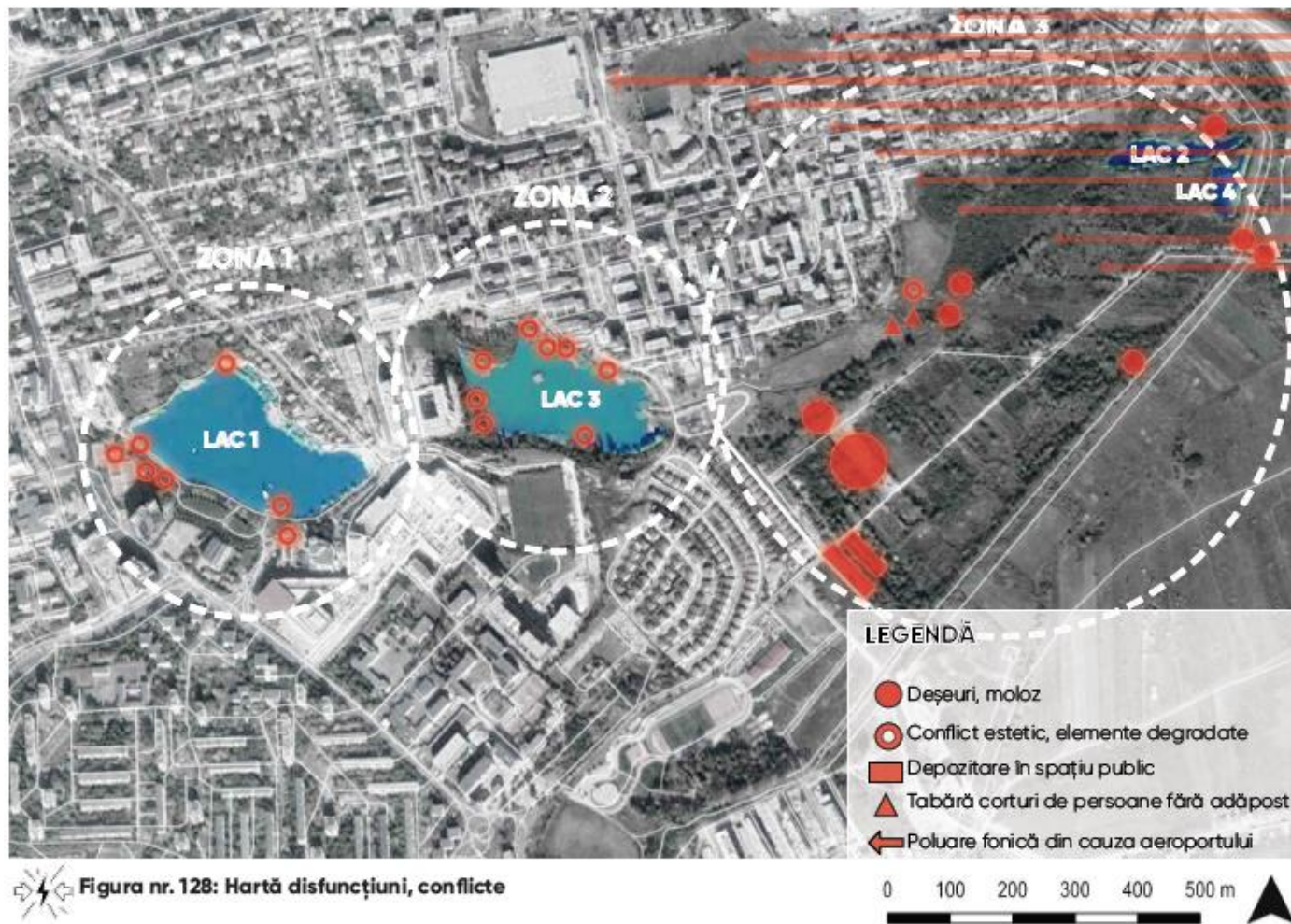


Figura nr. 128: Hartă disfuncțiuni, conflicte

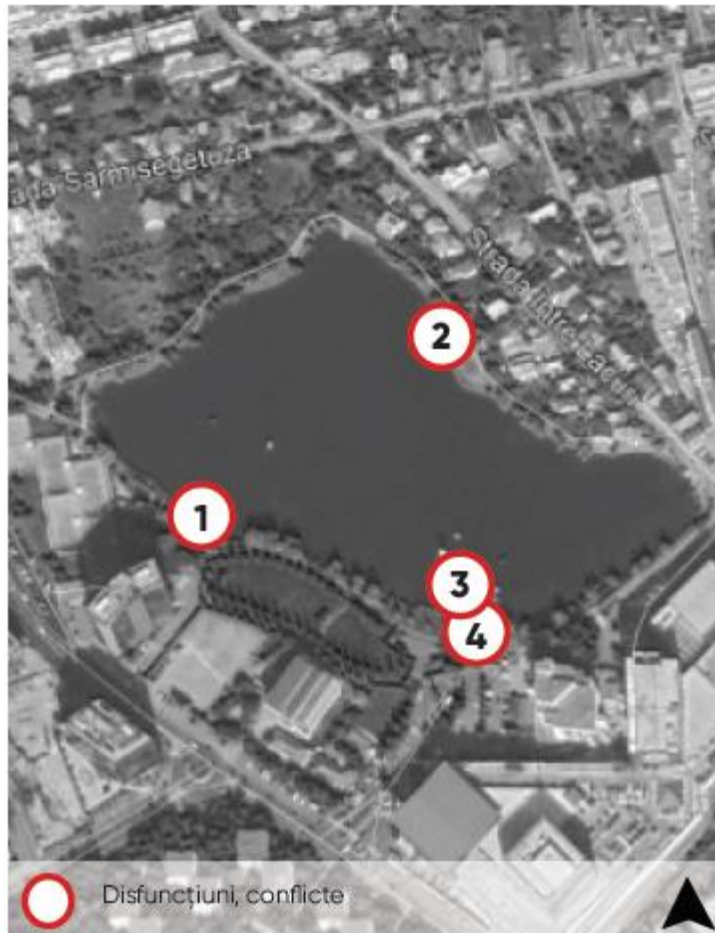
127Figure no. 128: Map of dysfunctions, conflicts

(Image translation: LEGEND: Waste, debris; aesthetic conflict, degraded elements; storage on public space; camp with tents of the homeless; sound pollution caused by the airport)



## ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

128Figure no. 129: Dysfunctions, conflicts – Area 1



(Image translation: Dysfunctions, conflicts)



1. The playground on the western side of the Gheorgheni Lake utterly lacks in urban furniture, water sources, and has a single playground element. The placement of this element does not respect the safety normative SR EN 1176. The quality of materials and the paved surfaces and the built elements are inadequate. The playground cannot fulfill its role due to its unpleasant aspect.



2. Deteriorated wooden pontoon located on the northern side of Gherogheni Lake. A part of the pontoon is underwater, very unstable and presents a major accident hazard.



3. Both the material used for and the design of this pontoon are inadequate. The fence surrounding the pontoon has a very negative impact on the overall image.

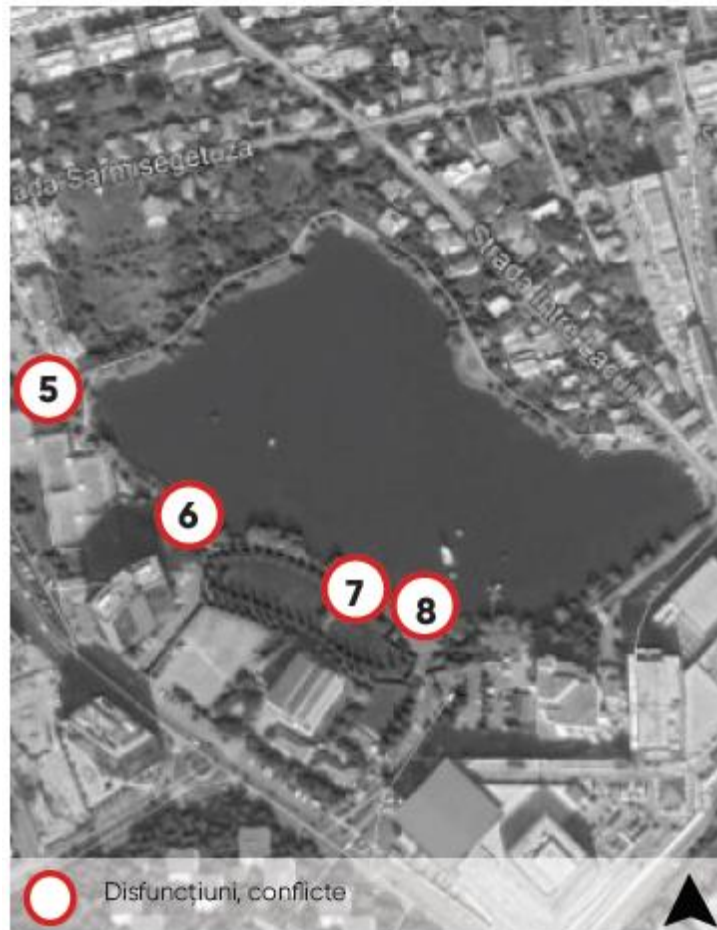


4. In the image above, we see several elements that have a disadvantageous aspect. First of all, we see the hotel building that negatively dominates the visual field through its size and aspect, and especially due to the shapes, the construction materials used, and the lack of vegetation. After noticing the building, in front of it, we see the temporary construction, the board, and the fountain. Their placement does not follow any composition logic. The board is unkept. The fountain's placement is unjustified. The temporary public food services building's vivid colors stands out and is more accentuated due to the large surface made out of a single material.



## ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

129Figure no. 130: Dysfunctions, conflicts – Area 1



(Image translation: Dysfunctions, conflicts)



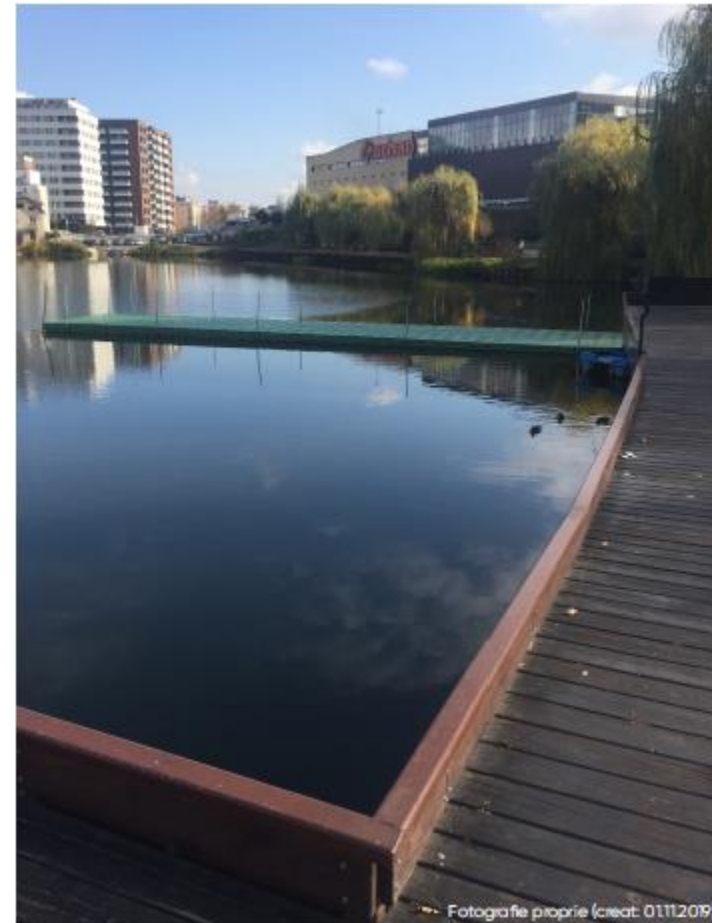
5. The running lane is blocked by the oversized plastic planter boxes. A carriage/wheelchair or bicycle cannot pass between the planter boxes. The specimens in the planter boxes (*Thuja* sp.) are exotic species, and neither of them, the plants, or the planter boxes, are adequate for the urban image.



6. There are various objects placed in different places, without any specific function. These elements must be eliminated.



7. The views can be degraded by the wrongful placement of a single object. In the case of the image above, the metallic objects disadvantage the view created by the alignments.

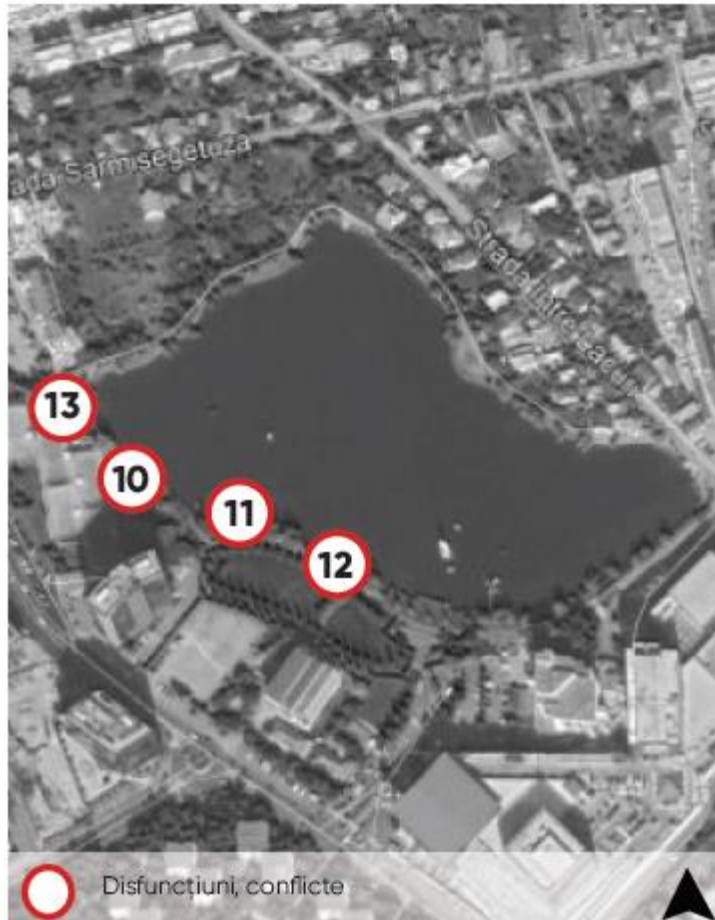


8. In public spaces, the visitors' safety represents a priority. In this image, the height of the metallic guard rail is insufficient, and puts the lives of the visitors in danger, especially in the case of children and people with reduced mobility.

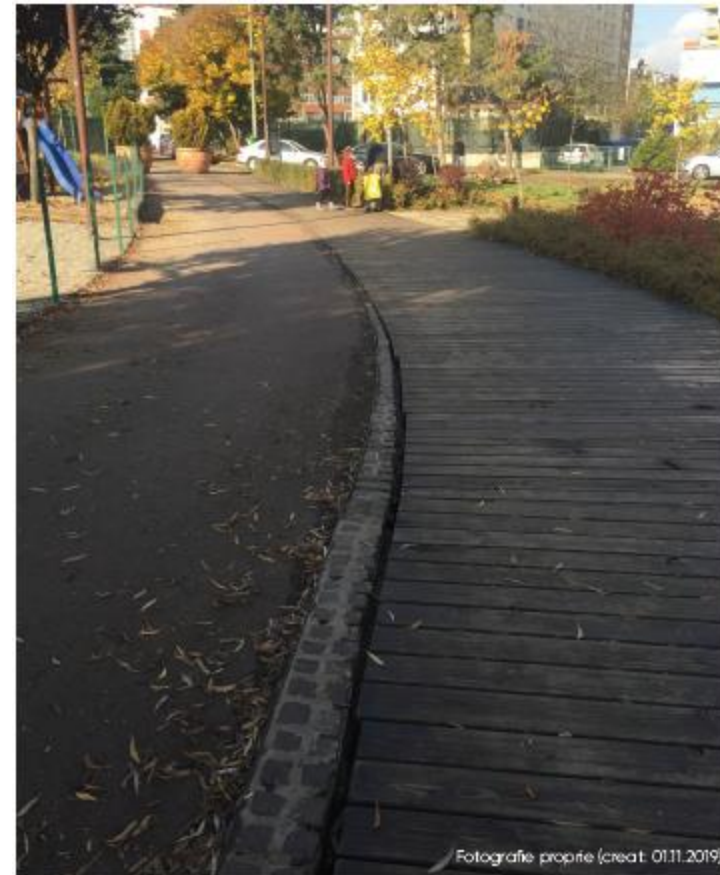


# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

130Figure no. 131: Dysfunctions, conflicts – Area 1



(Image translation: Dysfunctions, conflicts)



10. The technical details must be adequate, both from a stylistic point of view and a functional point of view. The curb built out of natural cubic rock between the wooden floor and the running lane is not only inaesthetic and non-functional, but it also represents a hazard of the pedestrians.



11. In the image above, the material use for the steps is of a good quality, however, the manner in which they are built is inadequate.



12. The hierarchy of the paves surfaces is not reflected in the used materials. On the other hand, the technical solution is wrong.

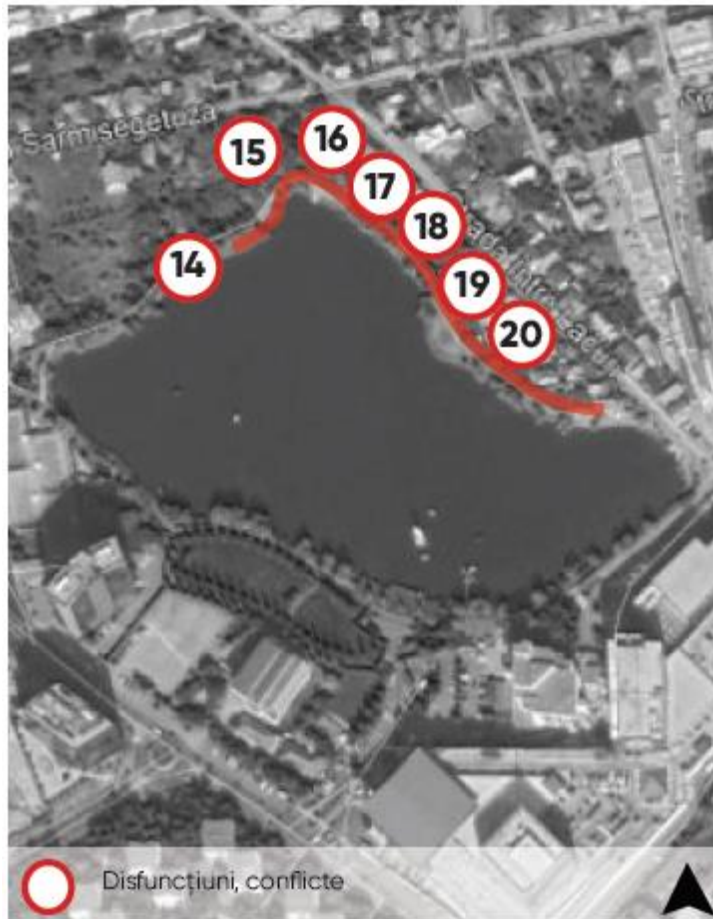


13. The road surfaces are unkept, and they have cracks and holes. During period with heavy precipitations, these surfaces become dysfunctional and unusable, as the rainwater drainage is not resolved.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

131Figure no. 132: Dysfunctions, conflicts – Area 1



(Image translation: Dysfunctions, conflicts)



14. There are stumps along the northern bank. In the case of tree grooming or cutting, certain technical standards must be respected, and the stumps must be eliminated.



15. Around Gheorgheni Lakes, we see various types of trash bins. It is recommended that a single type of bins be placed.



16. Rusty door on the northern side of Gheorgheni Lake.  
17. Curb elements from the old pavement.



18. The fences of the private properties on the northern bank with incoherent character degrades the urban image.

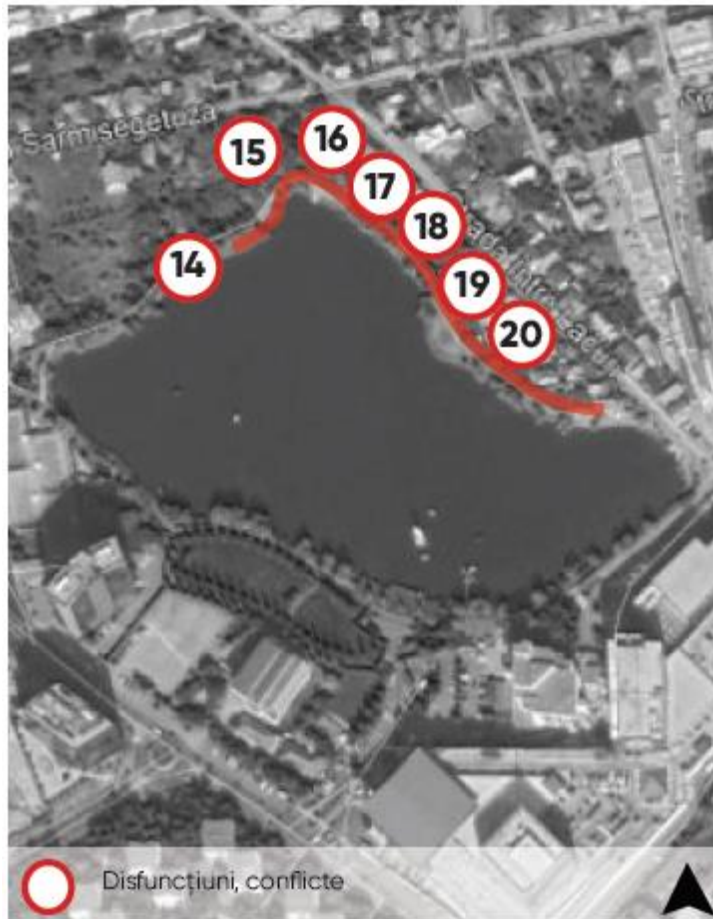


19. Furthermore, the urban image can also be degraded the inadequate technical details.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

132Figure no. 133: Dysfunctions, conflicts – Area 2



(Image translation: Dysfunctions, conflicts)



1. The backs of the garages are used for graffiti.



Common waste, but hazardous was as well, is present in many places.



2. The visitors arranged fishing spaces and access points to the water using different materials.



3. The waste bins have a negative visual impact.



4. In the image above, we see an area with benches, a table, a bed, a boat, a tarpaulin etc. We can presume that a homeless person lives here, or that certain visitors have arranged this place for fishing.



## ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

133Figure no. 134: Dysfunctions, conflicts – Area 2



(Image translation: Dysfunctions, conflicts)



5. The rules on the board in the image appears only in Romanian. In a multi-cultural city such as Cluj-Napoca, the information boards should at least also be translated in English. Furthermore, the boards are lacking creativity: no illustrations, no colors.



5. The bridge in area 2 is deteriorated, the iron elements are rusty, the homeless cannot pass on this boat.



6. The wastes are also left in places where there are no trash bins. Both the number of trash bins and the regulations are insufficient.



7. Construction waste near the residential area.



8. Poison for rodents in the proximity of the playground.

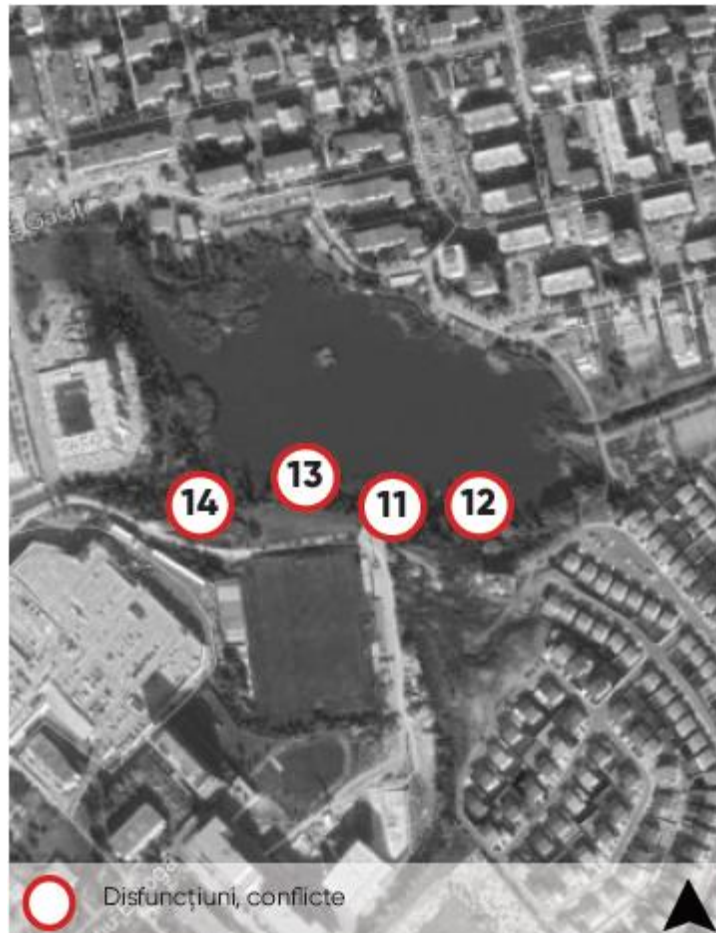


9. The gazebo and its furniture are unkept. The lack of a surveillance system encourages vandalism.



ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

134Figure no. 135: Dysfunctions, conflicts – Area 2



(Image translation: Dysfunctions, conflicts)



11. Access to the residential area on the southern side is not adequately ensured.



12. The visitors have built shelters near the water surfaces. In this image, the shelter also has a gate made from branches.



13. The shelter is built out of materials found on the lake bank and those brought along by those who built it.



14. The southern side is host to many specimens of valuable trees that require treatment.

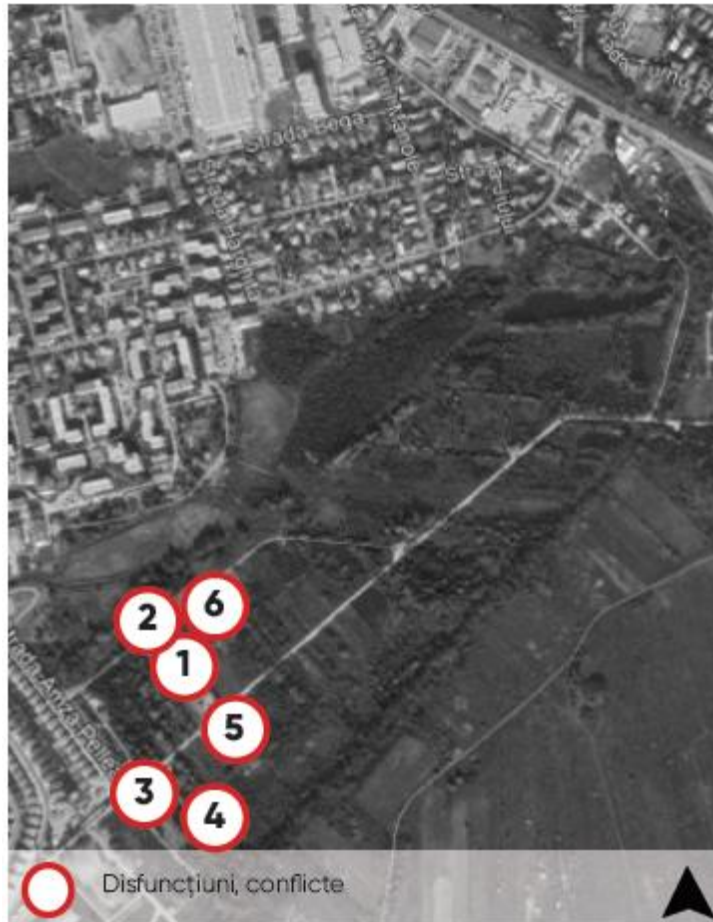


15. Concrete construction on the southern side of the lake.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

135Figure no. 136: Dysfunctions, conflicts – Area 3



(Image translation: Dysfunctions, conflicts)



1. The construction waste has a negative visual impact and represents a hazard for the ecosystem and the biodiversity.



2. The appearance of rodent species due to the waste can destroy the natural ecosystem's balance.



3. The presence of dogs discourages unmonitored walks.



4. Degraded construction in the nursery area.



5. Furthermore, the waste bins' placement attracts pest species. As a result, they represent a danger for biodiversity.



6. Construction waste mixed with common waste.



# ANALYSIS AND ASSESSMENT OF THE EXISTING SITUATION

136Figure no. 137: Dysfunctions, conflicts – Area 3



(Image translation: Dysfunctions, conflicts)



7. Opening fire in areas that are not destined for such use put the natural environment in danger.



8. The disadvantageous visual axes can be eliminated with the aid of tall vegetation plantations.



9. Improvised construction on the bank of Lake no. 2.



10. Tree grooming is particularly important for the protection of the natural context. In this image, we can see poplars (*Populus alba*) affected by European mistletoe (*Viscum album*). The mistletoe must be eliminated.





## STRONG POINTS

The 3 and 4 areas are rich in natural and landscape values.  
 The territory is accessible by car.  
 The size of the large unbuilt area allows for the placement of various facilities.  
 The large water surfaces, as well as the water course play a very important role in increasing biodiversity and improving climate.  
 The presence of Iulius Mall increases the number of visitors.  
 The species remaining in the nursery offer the park a unique character.

S

O



A natural park in the 3, 4 areas could serve not only the adjacent neighborhoods, but all the residents of Cluj-Napoca Municipality.  
 The creation of a park with numerous facilities and natural elements would represent a tourist attraction.  
 Maintaining and protecting the natural values would play a crucial role in the creation of a green network in Cluj-Napoca, aiding the increase of biodiversity, and the decrease of pollution and the negative effects caused by the climate changes.  
 The developed large green surface area and the park's landscape values will result in the value increase of adjacent real estate neighborhoods.  
 The natural park offers possibilities for ecology education and raising awareness with regards to the significance of natural values.

## OPPORTUNITIES

**WEAK POINTS**

The lack of maintenance has led to the degradation of the park, the uncontrolled spread of invasive species, as well as the irregular use of the territory (placement of tents by the homeless – AREA 3).  
 There are improvised constructions and degraded interior furniture (chairs, armchairs etc.).  
 There is no infrastructure for the unmonitored circulation.  
 There are no signs placed in the environment (adjacent streets) that signal the existence of the park.  
 In most cases, there are no developed access points to the water.  
 Becas creek is inaccessible.  
 There is no protective vegetation on the park's limits.  
 The high height regime buildings in the proximity of the park have a negative visual impact.  
 Most paved surfaces are degraded (A1 - north).  
 There are wastes stored in Area 3.  
 The Becas creek banks and the lake banks are unkept.  
 There are very many valuable tree specimens that are ungroomed.  
 The existence of the gas line.

**W****T**

The expansion of the built areas, the construction of the Sopor neighborhood puts the park and its ecosystem in danger (Area 3, 4).  
 The lack of protection by law of the natural elements in areas 3, 4.  
 The lack of awareness among public and private district actors with regards to the ecological importance of the park.  
 Traffic in area 3.  
 Air, soil, and sound pollution.  
 Constructions made out of artificial materials that contain chemicals lead to the decrease of water in the soil.

**THREATS**



## RECOMMENDATIONS



Elegant arrangement on the water bank in Wellington, New Zealand.



The chromatics of the vegetation stands out if ostentatious colors are avoided in the used materials – Wellington, New Zealand.

## RECOMMENDATIONS

## DESIGN PRINCIPLES

## Character

The areas contoured in the analysis have different characteristics, and as such, the design solution must take into consideration maintaining the primary character:

Area 1 is the most urbanized one, as in its proximity we see commercial spaces, living facilities, services, university campus etc. The facilities that can generate large numbers of people may be placed here, however, the infrastructure for said facilities must also be ensured. Furthermore, the materials and the design must fall naturally into place with the urban image.

Currently, Area 2 serves the residents of the nearby neighborhoods. On the lake's bank, we see improvisations made as to access the water and to facilitate fishing, and near this lake, there is a playground and sports field. The design shall take into consideration the current facilities and the residents' need to have access to green spaces that offer relaxation and recreation possibilities. Although the collective residence buildings' aspect is not very advantageous, their image offers a certain mixed character between the natural environment and the urban one that can be developed. This area could play a transitional role between the urban character (Area 1) and the natural one (Area 3, 4).

Areas 3 and 4 are the most valuable ecologically and from the point of view of landscape, where anthropic interventions are rare and reversible. The development solution shall focus on developing the natural environment so that it will not have a negative impact on the existing ecosystem. The interventions must be delicate and respectful towards the natural patrimony.



Design of the Qunli National Urban Wetland park in China.



The water areas are very delicate and need an adequate infrastructure - Qunli National Urban Wetland park in China.

#### Infrastructure

The landscaping design shall keep in mind an adequate infrastructure with visitors greeting areas, information points, parking lots, velo routes, street lighting systems, ecological restrooms, and quality urban furniture. Furthermore, passage for persons with reduced mobility shall also be ensured, as well as the park access to the adjacent residential areas. The traffic surfaces must respect the safety normative and the universal design principles.

#### Water surfaces

With regards to the lakes and the water course, maintaining and protecting them represents a priority. Any aggressive intervention can negatively influence biodiversity. The synthetic materials and major interventions can cause the disappearance of certain species, which will result in the change of the ecosystem. The proposed design must aim at maintaining the natural elements, the protection and increase of biodiversity. On the other hand, the existing visual axes must be taken into consideration so that those that enhance the area's character will be developed, and those that have a negative impact will be eliminated by planting dense vegetation. Aside from the aesthetic and ecologic aspects, it is important to ensure all facilities that serve visitors and the area's residents, facilities such as: access to water surfaces, recreation, and leisure facilities etc. Both the lakes and the water course must be treated in a delicate manner, swimming or any activity that may pollute the water shall be avoided, and access to the natural elements must be ensured.





Wood and metal furniture – Exhibition in the Forest, Berlin, Germany.



Furniture and other wooden and metallic constructions - Exhibition in the Forest, Berlin, Germany.

#### Built elements and urban furniture

It is recommended that the materials and the density of their placement be chosen depending on the area's character; as such, in Area 1, the number of elements shall be greater as to serve the great flow of people, and the materials may also be artificial. In Areas 3 and 4, it is recommended that natural materials be used, and that light and/or folding elements be placed in low density. Furthermore, vivid colors should be avoided in Areas 3 and 4. The creation of a coherent design is well received; however, the elements must be adapted to the character of the area in which they will be placed.

#### Dysfunctions

The landscape proposal shall prioritize resolving all dysfunctions presented in the analysis.

#### Urban plans and existing regulations

The proposed design shall keep in mind the urban plans and the existing regulations, as well as the development strategies (for example, the development of Sopor neighborhood, that will have a significant impact on the park's territory).

#### Environment protection

The landscape proposal shall prioritize the resolution of all dysfunctions presented in the analysis.



The small constructions, made from natural materials, do not degrade the views (PhareN. – Polissky – landscape theory).



The constructions that can be taken apart, made with natural materials have an exceptionally low ecological impact.

#### Visual axes

In the landscape design, it is important that the views and spectacular visual axes be developed. The negative visual axes can be eliminated through vegetation masses, and the positive axes can be developed. Furthermore, the park's image from the outside shall also be considered (from buildings, hills etc.).

#### RECOMMENDATIONS REGARDING THE TECHNICAL SOLUTION

With regards to the technical solution, the following are recommended:

- The use of good quality materials
- The use of natural, recycled, and recyclable materials
- The use of technologies that help manage rainwaters
- In the natural areas (3, 4), the placement of constructions that can be taken apart; synthetic materials and strong colors must be avoided
- Objects and constructions that set the biodiversity in danger shall be avoided





Perennial plant groups of different colors and textures have a natural aspect and help increase biodiversity.



The colors of the vegetation during autumn offer a picturesque aspect to the landscape.



Gravel path and different species plant groups.



Path made from natural rock blocks and homogeneous plant groups.



Idyllic ambiance created by the furniture and the vegetation groups.



With regards to the biodiversity and the ecology, plantations on three levels play an especially important role.

## RECOMMENDATIONS REGARDING VEGETATION

With regards to vegetation, existing native species, mature and valuable trees, and the mature specimens from the former nursery must be protected.

It is recommended that invasive species be eliminated and that spontaneously spreading species be controlled, such as the reed in lakes, and that exotic species be avoided in favor of native ones.

In areas 1 and 2, it is recommended that certain sub-species of taxonomies found in areas 3 and 4 be used. The landscape design must fit in with the environment, and as such, leafy trees are recommended.

The vegetation represents an important landscape component; spaces with a particular character can be created by alternating species of different height, texture, and color.

Aside from the landscape and ecological values, the mature tree specimens play a role in orientation. They need to be groomed adequately and to be Phyto-pathologically treated (if applicable).

In order to increase biodiversity, we recommend the use of plantation on levels (trees, shrubs, perennial plants); this type of planting shall increase the leaf mass, that plays a significant role in climate improvement.

Plant species should be chosen in such a way so that there are specimens or groups of plants that offer a special visual experience regardless of the season.

In order to protect the natural environment in areas 3 and 4, we recommend plating a protection vegetation band, comprised of trees and shrubs.

Given the climate change process, we recommend the use of species that can easily adapt to these changes.



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