



Operational plan for IMPP

Hármashatár Hill

City of Budapest

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1. INTRODUCTION

1.1. The aim and purpose of the OP

As a part of the URBforDAN project, Budapest reached the phase of preparing the operational plan (OP) for Hármashatár Hill. Since June 2018 The Municipality of Budapest and FŐKERT Non-profit Ltd. involved stakeholders into the participatory planning process. Based on the analysis of the ecosystem services the strategic part of the Integrated Multi-use Management Plan was completed on a wider area of about 555 hectares.

Now we prepare OP for a focus area of 16 hectares in the heart of the strategic area. The activities and measures in that small area will improve the ecosystem services in the wider area of Hármashatár Hill.

It is an absolute priority to prevent new houses built in the focus area and to preserve natural heritage. Our aim is to ensure multipurpose and sustainable use of those peri-urban forests. In the focus area of Hármashatár Hill measures have to focus on recreational activities that is to educate and gently direct the hikers, sportsmen and sportswomen. On the degraded parts of the 16 hectare focus area we also have to reconstruct forest habitats. By creating a new, attractive forest destination overcrowded forests (especially Normafa) can become less crowded.

The purpose of the OP to create a basic document for several stakeholders. First of all we will submit it to The General Assembly of Budapest and to the 2nd District to be approved. It will serve as a basic document for the land owners, and also for the forest administration.

1.2. The design of the plan, obligations and validity of OP

- Basis for OP

Forestry plans

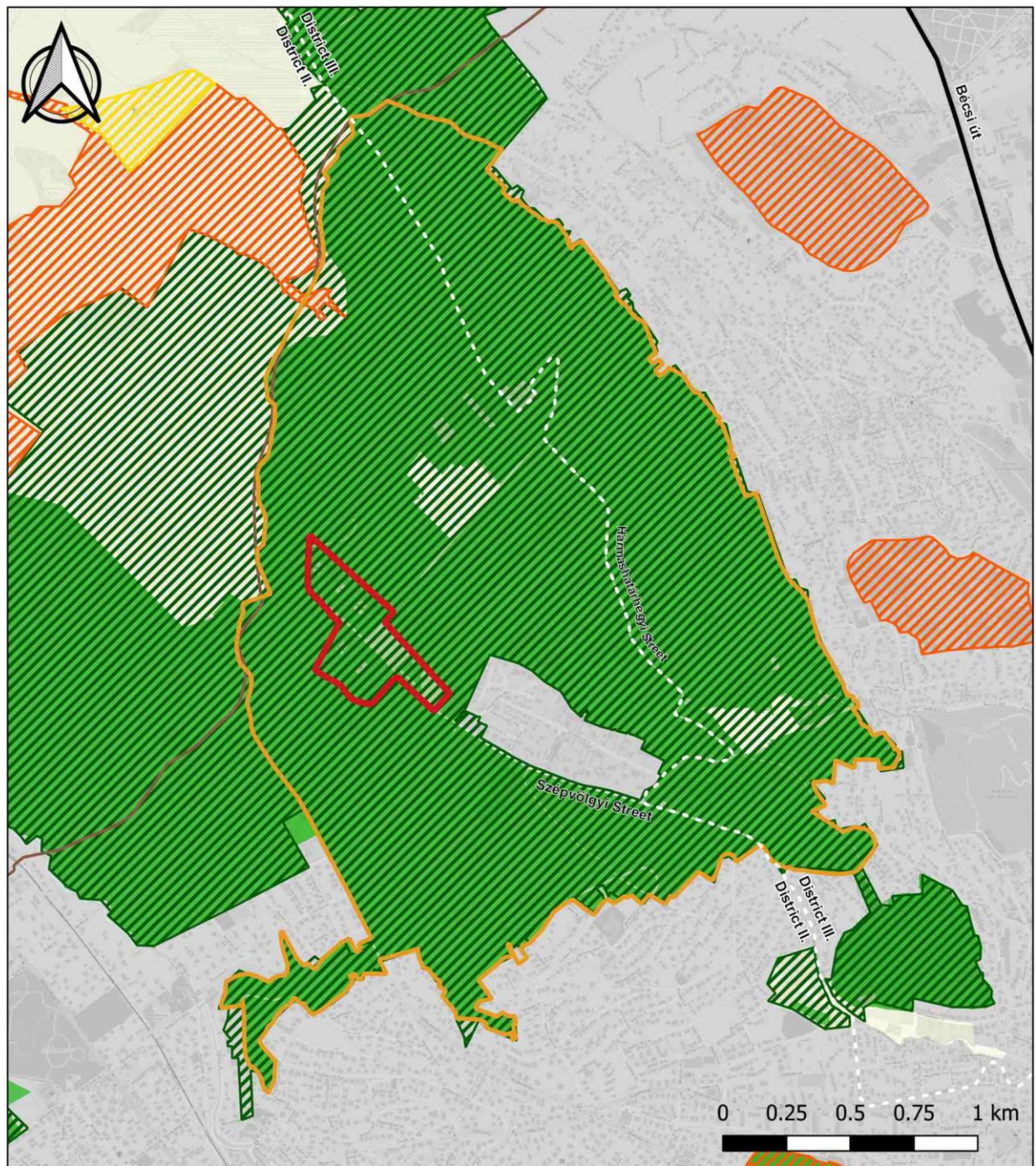
Forest management planning has a more than 3 hundred year long tradition in Hungary. The principles of the forest management planning are continuous but the institutional background changed a lot even in the last 3 decades. The last reorganization happened in 2019. Now Forestry Department works as a part of the National Land Centre. Forest management planners of the Centre make 10 year management plans. The forestry management plan valid for the strategic area and most parts of the focus area was made in 2013.

Spatial plans

The most important document is effective from 16 March 2019 Act CXXXIX of 2018 on Spatial plan of Hungary and some priority areas. Figure 1, simply called National Spatial Plan illustrates the land use planning categories of the region. It is evident that except residential areas the whole strategic area belongs to the category ‘area of forest management’.

The same Act defines the core area of National Ecological Network. In the Network whole focus area is included – as you can see it in Figure 1.

Figure 1: National Spatial Plan



Map Legend

- Focus Area
- Strategic area
- National Ecological Network – core area
- National Ecological Network – ecological corridor
- National Ecological Network – buffer zone
- Border of 2nd and 3rd District

- Highway
- Natural gas pipeline
- Land use categories
- Forest area
- Agricultural area
- Residential zone

The 3rd part of the above mentioned act speaks about the Land Use Plan of Budapest Agglomeration. As you can see in the Appendix (App Figure 1: Land Use Plan of Budapest Agglomeration) bigger part of the strategic area belongs to 'zone of forest management' smaller part to 'zone of agriculture' and 'residential zone'.

Land use plans

We researched the two-level land use regulation operative in the administrative area of Budapest. The short summary is that the strategic area (including focus area) of the URBforDAN project is part of the land use planning category 'forest'.

There is one plan we have to pay special attention to. The Regulatory Plan of the Small Plots of Forested Lands at the end of Szépvölgyi Street, 2nd District of Budapest was made in 2008 exactly for the focus area. The plan wasn't approved 11 years ago, but this November it was submitted again to the body of representatives of the 2nd District. Essentially the OP is in line with the plans of the 2nd District, but the regulatory plan assigns the reception of the tourists not on our Birders' Clearing, but in a different place, opposite of the bus terminus. Therefore we have to initiate negotiations with the 2nd District, as soon as after the local elections decision makers on both sides will be in place. You can see the map of the Regulatory Plan in the Appendix, App Figure 2.

Urban development documents and large-scale strategical plans

The OP is also in harmony with the Budapest 2030 Long-Term Urban Development Concept and the Integrated Urban Development Strategy of the 2nd District. Both documents urge enlargement of forested area.

Among the relevant documents we also reviewed the National biodiversity strategy, the Climate Strategy of Budapest, the Environmental program of Budapest and two nature conservation documents: the Management plan of the Buda Landscape Protection Area and Management of Natura 2000 Sites. Operational Plan is in harmony with all the above mentioned documents.

- Relation to forest management and other planning bases

Major part of the OP belongs to Budapest 2nd district 161A, 161 B and 161 C subcompartments, where the last planning period happened in 2013. There is an official management plan valid until 2023, but in the document of the forest manager is unsettled. URBforDAN project is a good chance to arrange it. It is true also for the smaller part of the OP which is not included in the system of forest management planning. The fact that there are only 2 owners (Municipality of Budapest and the 2nd District) will make easier to solve the administrative task.

- Obligation

It can be achieved that at the time of the next forest management planning (2023) the OP will be fully consistent with the content of the FMPs. For this purpose first the OP has to be approved by the Municipality of Budapest and the 2nd District, and the focus area of 15,6 hectares has to be declared nature conservation area of local importance (based on Act No.

LIII. of 1996 on Nature Conservation in Hungary). Forests of the focus area already managed by the Municipality of Budapest. The nature conservation area status is important, because in that case the maintenance of the focus area can be fitted into the system of FŐKERT Ltd, manager of the locally protected nature conservation areas in Budapest. It means that together with the institutional background the finances also will be provided. When those two main points had been arranged the Municipality can submit the OP to the Forest Directorate's Department of Forest Supervision and Forest Protection Service together with the application to approve FŐKERT as the manager of the given forest subcompartments. That is the way how finally OP will become part of a binding document.

Of course with an OP officially approved by the Assembly of Budapest and the 2nd District, fundraising becomes much easier.

In the case of other stakeholders there is no mandatory character of the OP. There are no private forest owners in the area. The main partners are the visitors of the focus area for recreational purposes. For them the OP is not 'a law', in the project we have to convince them about the virtues of the OP. That is already prepared by the stakeholder meetings.

- Preparation of the plan

The OP was put together by an external expert, György P. Gadó, forest engineer, graduated nature conservationist with NGO and communication background. His co-workers were professional landscape-architects, Zsombor Boromissza and Tímea Erdei, mainly focusing on graphical analysis. The work of the team was based on the former documents (minutes of the stakeholder-meetings, research on ecosystem services, strategic plan, etc.) and also the continuous communication with the project directors in the Municipality and FŐKERT, manager of the green areas in Budapest. The communication went on with forestry administration, Pilis Park Forest Company (manager of most forests in the strategic area) and the Duna-Ipoly National Park Directorate (in charge of nature conservation in the whole region).

- Time validity

The OP is made on a 10 year period which means it is valid until end of 2029. The field works begin in spring 2020. The plan will be revised in the mid-term that is in May 2025. In the end of November, 2019 we can not say who will be the person responsible for the plan revision. The situation is described in the next point. The system of control is detailed in the end of the OP on page 77.

- Difficulties in operational planning and beginning of implementation

On 13 October, 2019 there were local elections in Hungary, which had a significant effect on our project, because changes were expected and actually happened in the governance of both owners, the Municipality of Budapest and 2nd District of Budapest.

Because of the elections in the autumn of 2019 neither the Municipality nor District mayors were sure if they will continue their work after the elections. As a result Hungarian participants of the URBforDAN project could negotiate with the experts of the administration but it was impossible to make agreements with the leaders of the local governments.

Right now there is a major change in the governance of both local governments. From environmental point of view the change is definitely for better, but it takes some time until the institutional structure becomes clear. In the beginning of December we just guess that Green Territories Division will be part of the Environmental Department, the names of the Heads has not been known yet. Anyway the persons directly involved in the URBforDAN project will be probably in place.

We can be optimistic about the future of the project, hopefully the realization will speed up in second part of January. It is a realistic plan that negotiations of the Municipality and the 2nd District can be launched in the end of January. As a result modifications in the OP can happen. It is expected that in February 2020 the OP can be submitted to the Assembly of Budapest and the resolution will speed up the whole process.

In the OP main directions, planned measures and even planned facilities are clear. We expect that some important steps will be realized during the URBforDAN project period, and others will continue according to the approved OP after the end of the URBforDAN project.

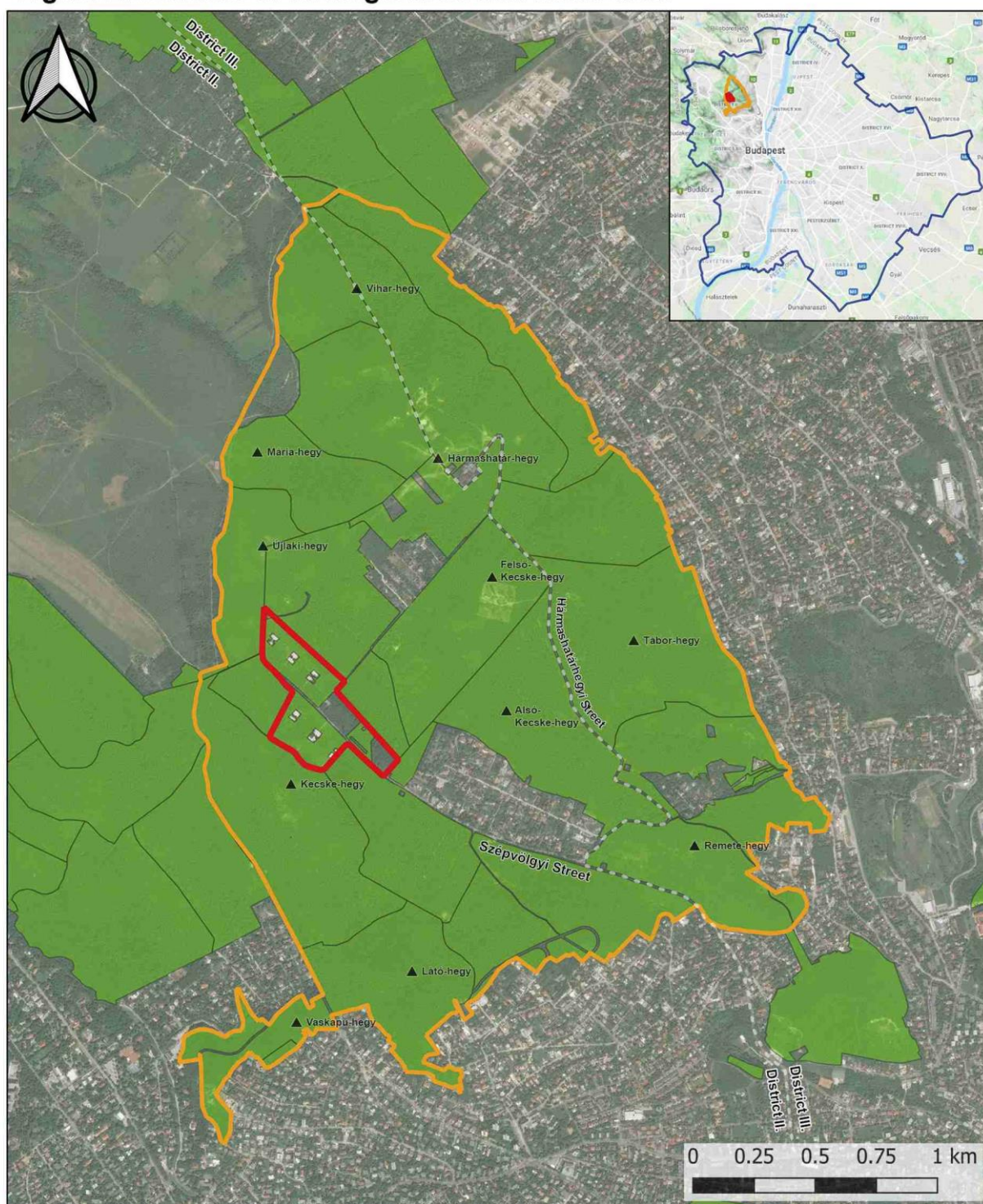
- OP area

The position of the focus area in the strategic area and the strategic area in Budapest you can see in Figure 2.

The territory of the focus area is approximately 15,6 hectars. More exactly 156 414 m². The division of the area by owners can be found in 3.1 (State of forests and forest management).

We can characterize the focus area with a good quality ortophoto which was taken for the purposes of the URBforDAN project in October, 2019. (Figure 3)

Figure 2: Borders of strategic area and focus area



Map Legend

- Border of focus area
- Border of strategic area
- Forest according to management plan
- Border of 2nd and 3rd District

Figure 3: Ortophoto of the Focus Area (October 12, 2019)



1. THE IMPORTANCE OF URBAN FORESTS AND MAIN MANAGEMENT OBJECTIVES

2.1. Purpose of UPF

- Ecosystem services / forest functions / importance of UPF

Similarly to other cities in the Danube region Urban and Peri-urban Forests (UPF) play extremely important role also in Budapest in preserving biodiversity. The capital city of Hungary has a unique geographic location. It didn't happen by accident that humans have settled down in this particular place. At the meeting of the Hungarian Plain, the river Danube and the Buda Hills people have found wonderful nature values. Fortune for the humans became clearly a misfortune for the nature. Through the centuries a huge city grew out from the earth.

People generally think that human development results in continuous devastation of forests. If we compare the forest cover of Buda Hills in the prehistoric times and nowadays of course this theory can be justified. However it is very exiting to see the change of Buda's forest cover in the last 200 years. Harvest for firewood, pasturing, grape and wine production, grape phylloxera and reforestation for multipurpose forest management determined the changes. You can see the result in the appendix (App Figure 2: Landscape History of the strategic area) Perhaps surprising but there are much more forests now than 2 centuries ago.

The almost 16 hectar focus area is strongly degraded but still valuable from biodiversity point of view. Most parts of the 555 hectar strategic area is quite exiting from geological, botanical and zoological point of you. The whole strategic area around the focus area is part of the Buda Hills Landscape Protection Area established in 1978 on 10 500 hectares. The forests are quite rich in nature values but we must not forget about the mosaic of grasslands among the forests which are even more diverse.

In the Strategic parts of the IMPP it was calculated that for the whole strategic area the most important ecosystem services are 2.1 Local climate mitigation (94%), 3.1 Nature protection (80 %), and 4.1 Recreation and tourism (68%). In the small focus area the converted and degraded surfaces modify the numbers a little bit. However the potential is there, after rehabilitating the area (thanks to the operational plan and initial fund from the URBforDAN project) the ES percentages for the strategic area will be valid for the focus area, too.

- Target groups/users

As a part of the URBforDAN project stakeholder meetings were held in November 27, 2018, March 11 and September 24, 2019. Beside that a comprehensive questionnaire-based survey was conducted and smaller traffic count happened. The following stakeholder groups were identified and involved in the process:

Users:

Cyclists, runners, hikers, paragliders, dog walkers, families with children. We have just a few questionnaires filled in by an important group, the schoolchildren and their teachers. We need more data about them. The order of the stakeholder groups in the spreadsheet is based on the survey and the traffic count however the rank is expected to change in the future. E.g. number of paragliders is more or less constant while number of cyclists and schoolchildren will grow significantly.

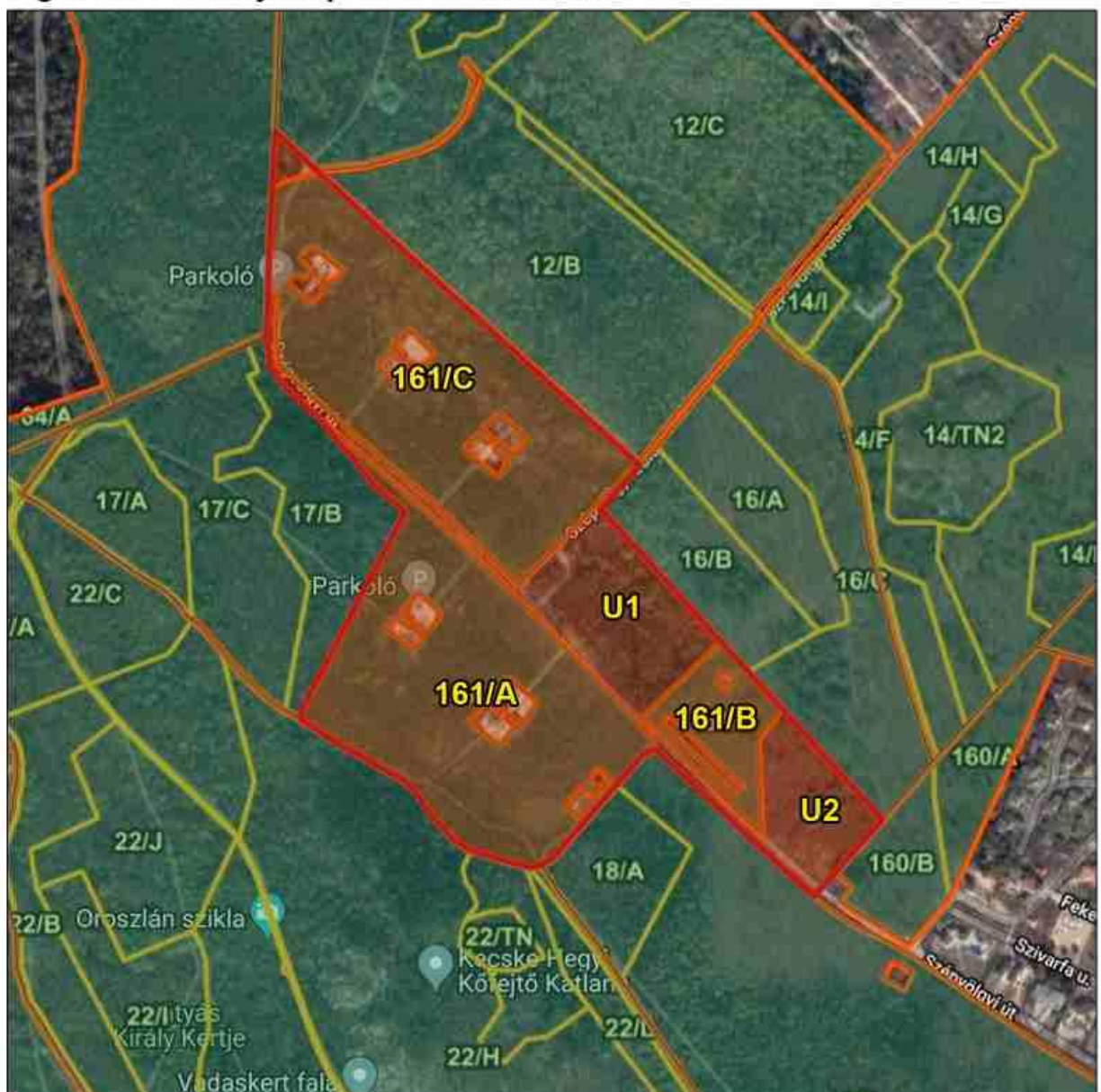
Organizations interested in the management of the focus area of the UPF:

Owners (municipality and 2nd District, manager of the surrounding forests (Pilis Park Forest Company, in charge of the nature conservation (Duna-Ipoly National Park Directorate), utility companies.

Users		
	hikers and walkers	Most numerous user group. They (and the next group) can be easily involved in our education work.
	families with children	Important target group with special needs. Of course they want benches, drinking fountains and playgrounds.
	runners	Car users but otherwise their negative impact on nature is very small. They want drinking fountains and in the questionnaires expressed their interest in bird-watching but it can be hardly connected to running. Perhaps if they return as walkers...
	dog walkers	Their environmental awareness is relatively high but it will be an important task to educate them about dog walking rules in nature.
	cyclists	Mainly graduated young adults. More than half of them arrives to the area by car. Few of them realizes the conflicts with other users. It won't be easy to make them walk on our nature trail.
	paragliders	It is not a surprise that their number was high in the upper parking lot close to their departure place. In the questionnaires many of them didn't like the idea of afforesting parking lots but in a stakeholder meeting leader of their organization told it is not a problem for them to walk more from a good parking lot some hundred meters down.
	schoolchildren	They are the potential visitors of our future classrooms in nature, nature trail and

		birdwatching point. There are at least 8 schools and kindergartens in the near vicinity of the strategic area but groups of children will arrive from a bigger distance, too.
Managers	Municipality of Budapest	The City owns the bigger part of the focus area, namely 10,7 hectares – mainly forests and grasslands. Partner in the URBforDAN project, engine of the whole process on the Hármashatár Hill.
	2 nd District	The rate of afforested areas in the 2 nd District of Budapest is 26,6 % which is quite a good number in a big city. Those forests are mainly state owned. Compared to that the 4,9 hectares of the focus area is not a big deal, but converting the parking lots and the ruins into real nature areas will have a positive effect on the whole territory.
	Pilis Park Forest Company	Pilis Park Forest Company manages 65 thousand hectares in and around Budapest, plays leading role in close-to-nature management in Hungary. All the forests around the focus area belong to them, including a big hiking center on the top of Hármashatár Hill.
	Duna-Ipoly National Park Directorate	Beside the Duna-Ipoly National Park Buda Landscape Protection Area is also a treasure for the Directorate. They experience day by day the growing number of visitors therefore it is very important for them to make extra efforts to defend the most valuable nature values.
	Public utilities	From the utility companies on the focus area the most important is the Budapest Waterworks. There is a water system in the parking lots, which helps a lot, but also have to be managed carefully in the process of afforestation. There is a small fenced waterworks facility about 100 m north of the upper corner of the focus area. Accessibility has to be provided after building the metal barrier.

Figure 4: Forestry map of the focus area



3. STATE OF FORESTS AND FOREST USE

3.1. State of forests and forest management

- Forest area

The whole focus area is 15,6 hectares. You can see the official forest map of the focus area in Figure 4 on the previous page. The area of the subcompartments in the management plan is 161 A – 5,23 ha, 161 B – 0,90 ha, 161 C – 5,24 ha. It means that the rate of the planned forests compared to the total focus area is $10,47 \text{ ha} / 15,64 \text{ ha} = 66,9 \%$. However on both sides of subcompartment 161 B there are forests which can not be found in the management plan. In one of them the forest canopy cover is bigger than in subcompartment 161 B, in the other one smaller. It's not quite clear why they haven't been included in the forest management plan, but they are the same types of forests. Our aim is to include the whole focus area in the forest management plan until the beginning of the next planning period (2023).

If we want to receive a realistic number about the forest area we have to take an aerial photo. Based on the ortophoto we can determine the area of the parking lots, which is altogether 0,875 ha. If we deduct it from the total area (15,64 ha) we receive the biologically active surface (14,765 ha) which we can call the total area of forests. The medium-term purpose of the URBforDAN project is to convert some of the parking lots to forest-covered areas.

- Ownership of forests

Total area is 156 414 m²

The whole area belongs to one category: public – local communities. Namely:

Municipality of Budapest	107 362 m ²
2 nd District	49 052 m ²

The lands owned by the 2nd District are occupied by parking lots and ruins (mostly concrete bases) of small houses. There are 12 concrete remains identified on the focus area, all of them belong to the 2nd District of Budapest.

- Forests, site conditions, forest types, stand types

Before listing the most important data about the state of the forests, it is important to mention that 50 years ago practically the whole area of the present forest was an abandoned agricultural area. An aerial photo from 1962 shows there was only one bigger group of (black pine) trees in the present subcompartment 161B and a narrow forest belt along the main road.

Figure 5: Aerial photo of the focus area, 1962



On the aerial photo from 1976 one can see some bushes and groups of trees but the main change is that parking lots and weekend cottages appeared.

Figure 6: Aerial photo of the focus area, 1976



The parking lots were probably built for the running competition of the 1969 World Modern Pentathlon Championships. Some years later the arable land was divided up to parcels. Some parcels were already sold when the Municipal Council decided to prevent the development of the area. They bought back the building sites. Some weekend cottages were already built up, they were demolished. We can not see all details of the story but we focus on forests. There are no signs of tree planting, the propagation material probably came from the surrounding forests and in the case of black locust (*Robinia*) unfortunately from the road traffic. We can say that the present forests are result of a natural forest succession in an urbanized area.

Because of the above mentioned historical background in our case the most important data characterizing the state of the forests are not growing stock and increment. The rate of the invasive tree species (black locust), non-invasive exotic species (black pine) and native tree species are more important. These data determine the interventions needed in the forest stands. In October 2019 Interspect Ltd., a small remote sensing firm made high resolution ortophotos about the focus area. After the analysis of the ortophotos Figure 7 was made.

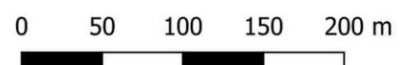
Figure 7: Rate of native species, black pine and black locust forests, grasslands and converted surfaces calculated for the whole focus area



Map Legend

- Native tree species
- Black locust stand
- Black pine stand
- Grassland
- Parking lot
- Paved road

Data source:



- Forest operations

In the management plan the primary function of all forests in the focus area is nature conservation. Beside that there are further functions mentioned in the case of subcompartment 161A, namely soil protection and protection of urban area. In the present forest management period until 2023 no logging operation is prescribed. However attached to 161A we indicated with U1 and U2 those forests which are not included in the forest management plan but the rate of black locust (*Robinia*) is quite high. In this area it is really important to get rid of the invasive species as soon as possible. We begin the forest operations in U1 in 2021, move to U2 in 2022 and go ahead with black locust cuts in 161/A and 161/B according to the new forest management plan valid from 2023. We are not in hurry in the case of black locust stands. The forest manager of the area (FŐKERT) will take part in the negotiations of the new forest management plan, and initiate including in the plan step by step removal of black pine.

- Wood production

Because of the small area and low intensity of logging the wood production will be completed by chain saw.

- Forest accessibility

Forwarders will not be used in such small and sensitive forests. Skidding happens manually or with a so-called 'ironhorse', a small tracked skidding machine. Unfortunately in Buda Hills real skidding horses are not available any more. As it will be described later most of the parking lots will be afforested in the long run but one small parking lot on the left side of the paved road and another one on the right side will be left for wood loading and other logistical purposes. However most of the harvested wood will be firewood therefore there is no need for big wood loading space.

- Impacts, problems

Damage of ungulates is an important issue in the focus area. You can see the traces of wild boar activity on the soil of the forest stands and also of the openings. Recently wild boar population is seriously effected by African swine fever virus, but the long term effects can hardly be predicted. Because of wild boars' damage effectiveness of future acorn sowing is questionable. The other potentially damaging ungulate is roe-deer. They bite off the top of the seedlings therefore it is advisable to plant small trees higher than 1 metre.

Presence and destruction of homeless people is also a problem. We guess that at the moment 3 or 4 homeless people live in the forests of the focus area. There are many problems originating from homeless people staying in the forest. Scattering rubbish all around is typical, and unfortunately because of psychiatric problems it happens that visitors can hear extremely loud shouts. Aggressive dogs attack the hikers. A homeless man raises pigs in the forest. Better place has to be find for the homeless. As we mention among the planned

activities the problem has to be managed with patience and empathy, but solution has to be found.

There is an abandoned parking space with ruderal vegetation and dumped garbage. It looks very bad. The place is shown in Figure 20. Among the activities on page 38 (Establishing coordinated parking system) it is also described that the abandoned parking space will become the new parking lot of the focus area.

3.2. Visit to UPF and infrastructure

- Visit to forest

The number of the visitors in the forests around Budapest is huge, the most overcrowded forest is called Normafa, is just about 5 km from the focus area of the Hármashatár Hill. Pilis Park Forest Company in its press releases speaks about 25 million visits/year. The number includes Pilis Hills which is a little bit out of Budapest. But the trend is clear: in a decade number of visits has doubled.

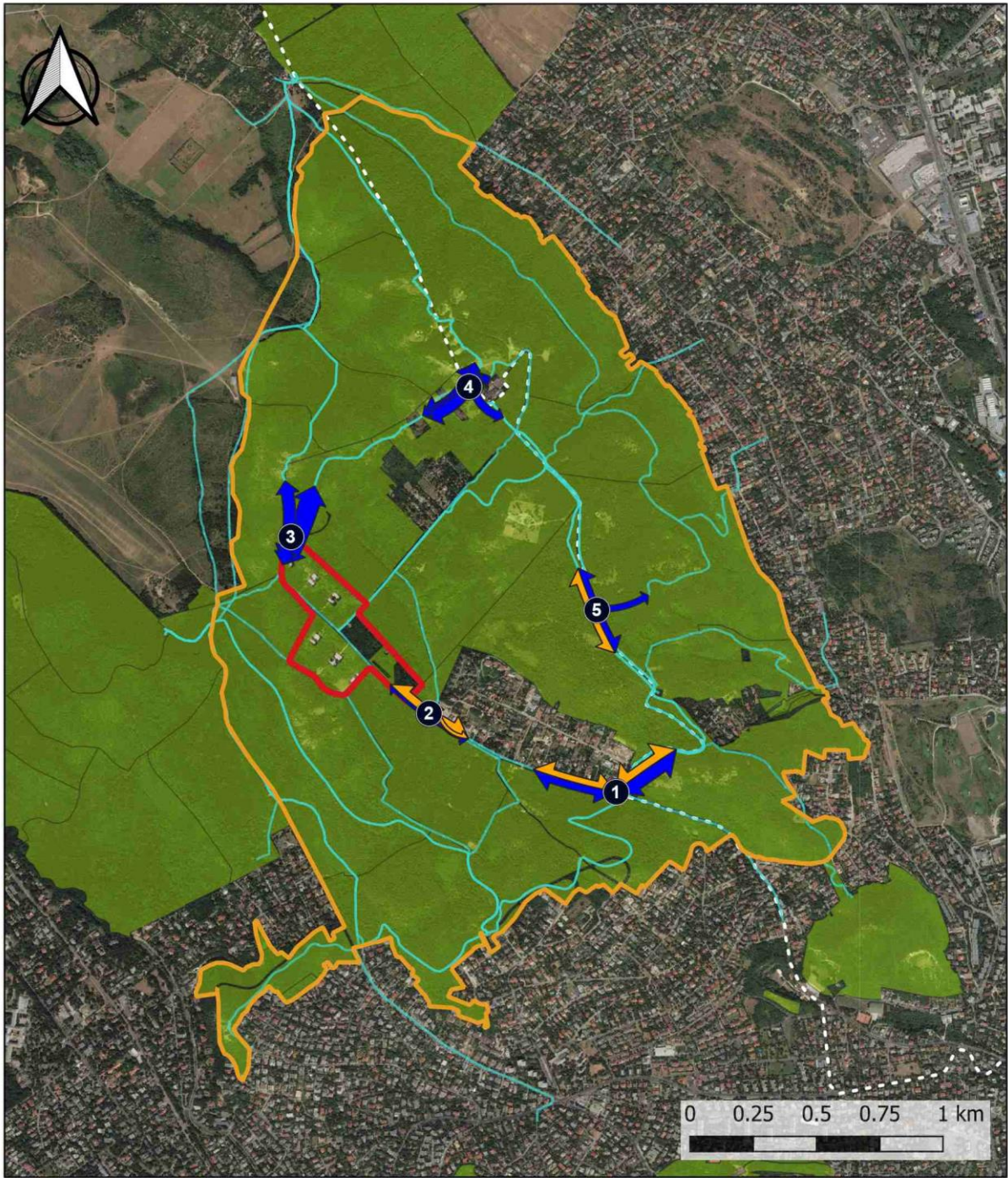
The focus area is a tiny spot, we don't have reliable numbers about the visits. However it is quite clear that it is not balanced at all in time. The highest numbers can be experienced in snowy winter days when there are parking cars along the road from the Fenyőgyöngye Restaurant to the end of the Szépvölgyi street, which is about 1,5 km long stretch of road. The visitors try to ski or sledge or just enjoy the snow, but it is very hard in such a crowd. And of course there are rainy days when one can meet only the most determined runners on the focus area. We had just a 1 day survey which served rather for measuring the proportions of the visits in the strategic area and the focus area.

On the focus area there is a tendency of slowly growing number of visitors and quickly growing garbage dumps on the edge of the parking lots. A project has to be launched to inform the people and restore the nature.

We didn't have data about the number of visitors therefore on 14 September, 2019, a sunny Saturday we organized a 1 day traffic counting. Actually it was a 30-minute counting on 5 characteristic points of the strategic area. We didn't have enough time and manpower for an extensive survey, the counting has to be organized again next spring. Anyway, the first survey was a good start to see the basic directions.

The 5 selected points were in crossings of hiking trails. The duration of each counting was 30 minutes. 3 data were collected: number of visitors, their activity (running, hiking, biking, etc.) and their age group. Along the paved roads the car traffic was also counted. Fig 8 shows the location of the counting points, the arrows represent the direction the visitors left for. In the survey points the width of the arrows are in proportion to visitor numbers, this way we can have an impression about the proportion of 'motorized' and unmotorized' visitors.

Figure 8: Survey points of the visitors' counting, September, 2019

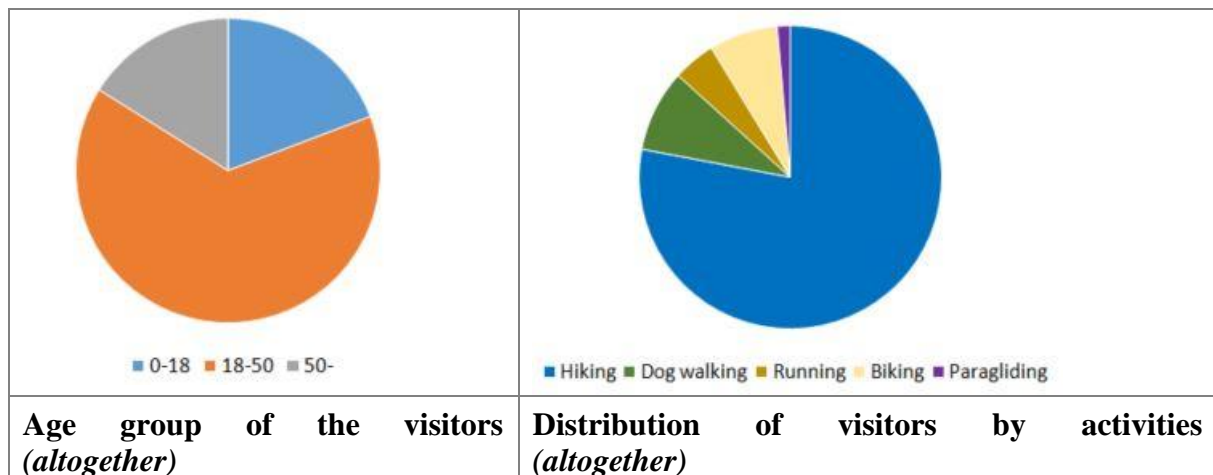


Map Legend

- Focus Area
- Strategic Area
- Survey point
- Extent of hikers
- Scale of hikers (blue) and cars (orange)

One of the main results was that on Saturday afternoon there are very few visitors on most of the parking lots while quite many of them at the most remote parking lot. The main reason is that the paragliders try to approach their departure point by car. A very short summary of the survey you can see in 2 pie charts. Figure 9

Figure 9: Pie charts summarizing the results of the visitors' count



- Already available infrastructure

Because the focus area is very small we could summarize very shortly the already available infrastructure. However the issue is very important therefore we rather extend our attention to the whole strategic area.

Accessibility

Visitors arriving by public transport, car or bicycle can reach the heart of the strategic area from South, using two main roads: Szépvölgyi street and Hármashatárhegyi street. There is a parking lot for 10 cars at Fenyőgyöngye, some other parking lots at the top of Hármashatár Hill, and a relatively big place for parking at the end of the Görgényi street. All the other parking lots are in the focus area. Therefore OP plays a key role in long term accessibility of the area by car. Public transport is not bad (and can be easily improved). Bus No 65 traditionally terminates at Fenyőgyöngye but because of the recent development of the area at the right side of Szépvölgyi street, buses optionally go further until the bus terminus in the heart of the focus area. (You have to tell the driver that you want to travel further). However at the moment on weekdays there are only 2 buses/hour and only one of them optionally goes up to the focus area. In weekends from 3 buses/hour one terminates at the focus area. After creating a logistical, information and environmental education centre on the focus area all the buses No 65 have to come up there.

Now the best infrastructure of the strategic area is definitely in the Hármashatárhegy Hiking Centre of the Pilis Forestry Company on the top of the Hill. There you can find a nice look-

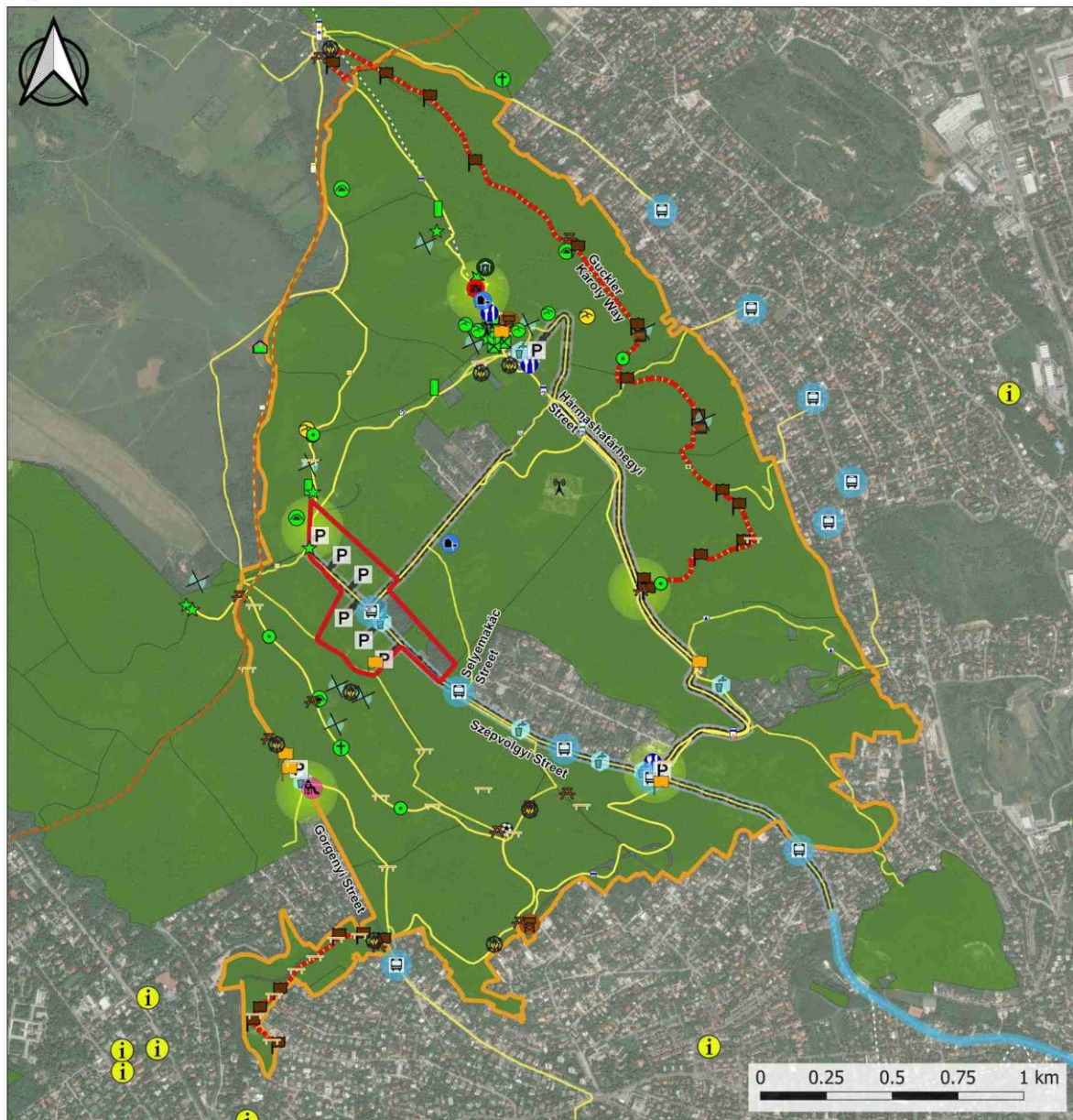
out building, 2 restaurants, a hostel, a nature education centre for schoolchildren and other attractions. In the southern part of the strategic area there are two other attractions with wonderful panoramic view of Budapest. Árpád Belvedere and Apáthy Rock. In the strategic area the network of hiking trails is quite good. You can study all the trails and other hiking infrastructure in Figure 10. (Available infrastructure – touristic and recreational attractions) Nature trails, fireplaces, view points, benches, drinking fountains and many more can be found on the map.

3.3. Important objects in UPF

- Nature conservation

At the moment focus area is a non-protected area in the surrounding ‘sea’ of Buda Hills Landscape Protection Area, a huge Natura 2000 site, locally protected nature values and protected caves. The illustration of this situation you can see in Figure 11.

Figure 10: Available infrastructure – touristic and recreational attractions



Map Legend

- Border of focus area
- Border of strategic area
- Border of 2nd and 3rd District

Available infrastructure

Traffic, accessibility

- Public road – car traffic
- P** Parking lot
- Public transport
- ⓑ Bus stop
- Main entrance points
- i Schools, kindergartens

Utilities

- Natural gas pipeline

Tourism infrastructure

- Hiking trail
- ... Nature trail
- Station of nature trail
- Information table
- Forest school
- Hikers' hostel
- Restaurant
- Events facility
- Look-out tower
- Panoramic view
- Drinking water
- Forest furniture
- Bench
- Forest fireplace

Sport facilities, playground

- Football field
- Take-off for paragliding
- Playground

Tourist attractions

- ★ Monument, historic site, statue
- ★ Historic site of aviation
- ★ Site of military history
- Landmark
- + Road (cross)
- + Geodetic datum point
- Hangar
- Antenna
- Remarkable rock

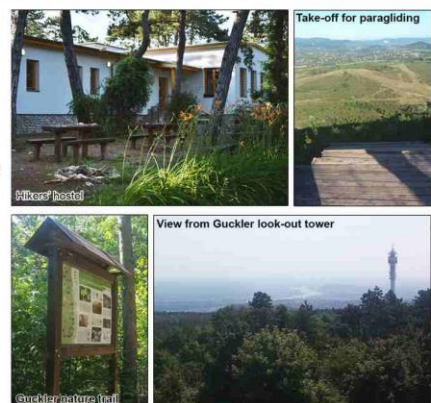
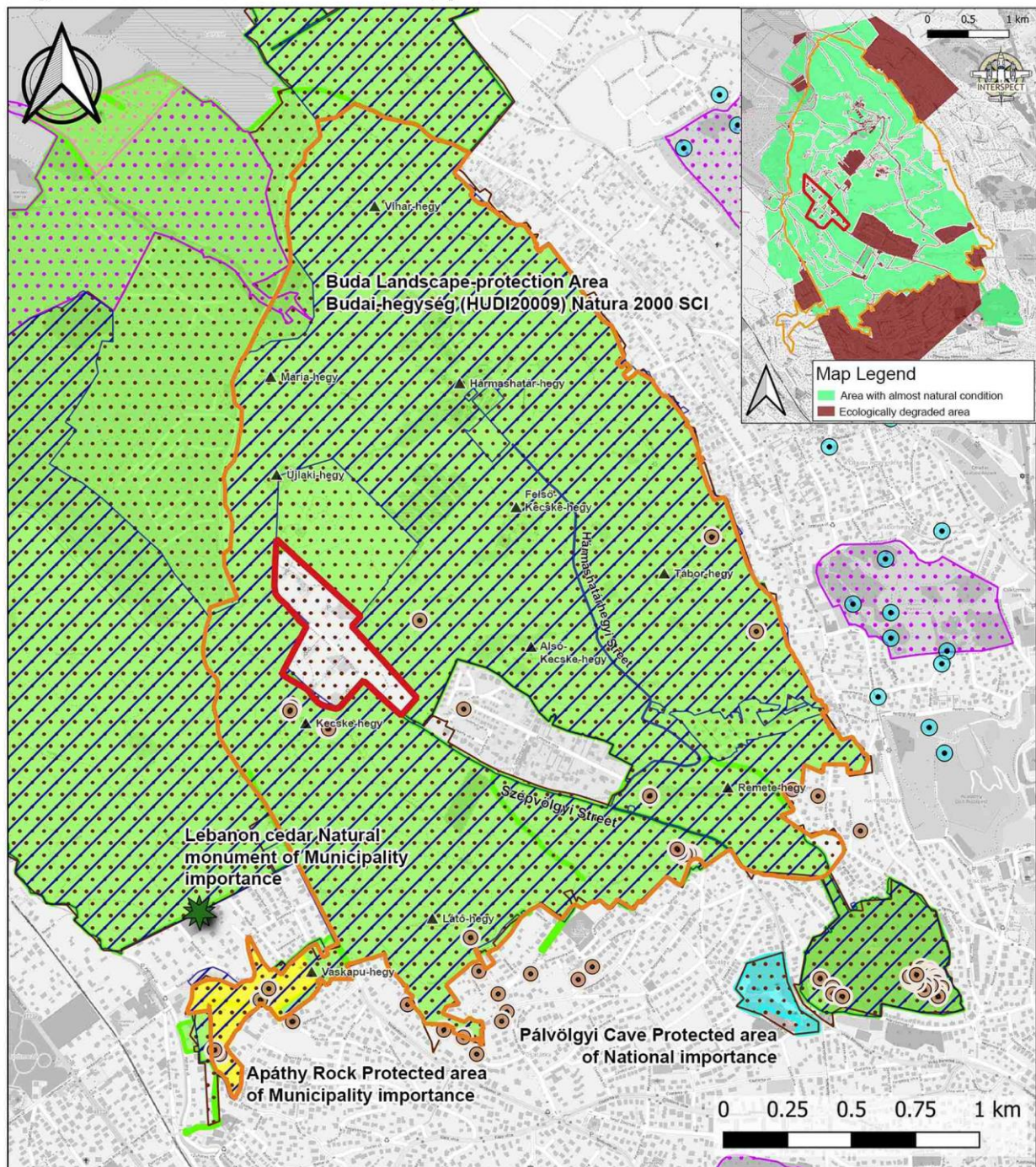


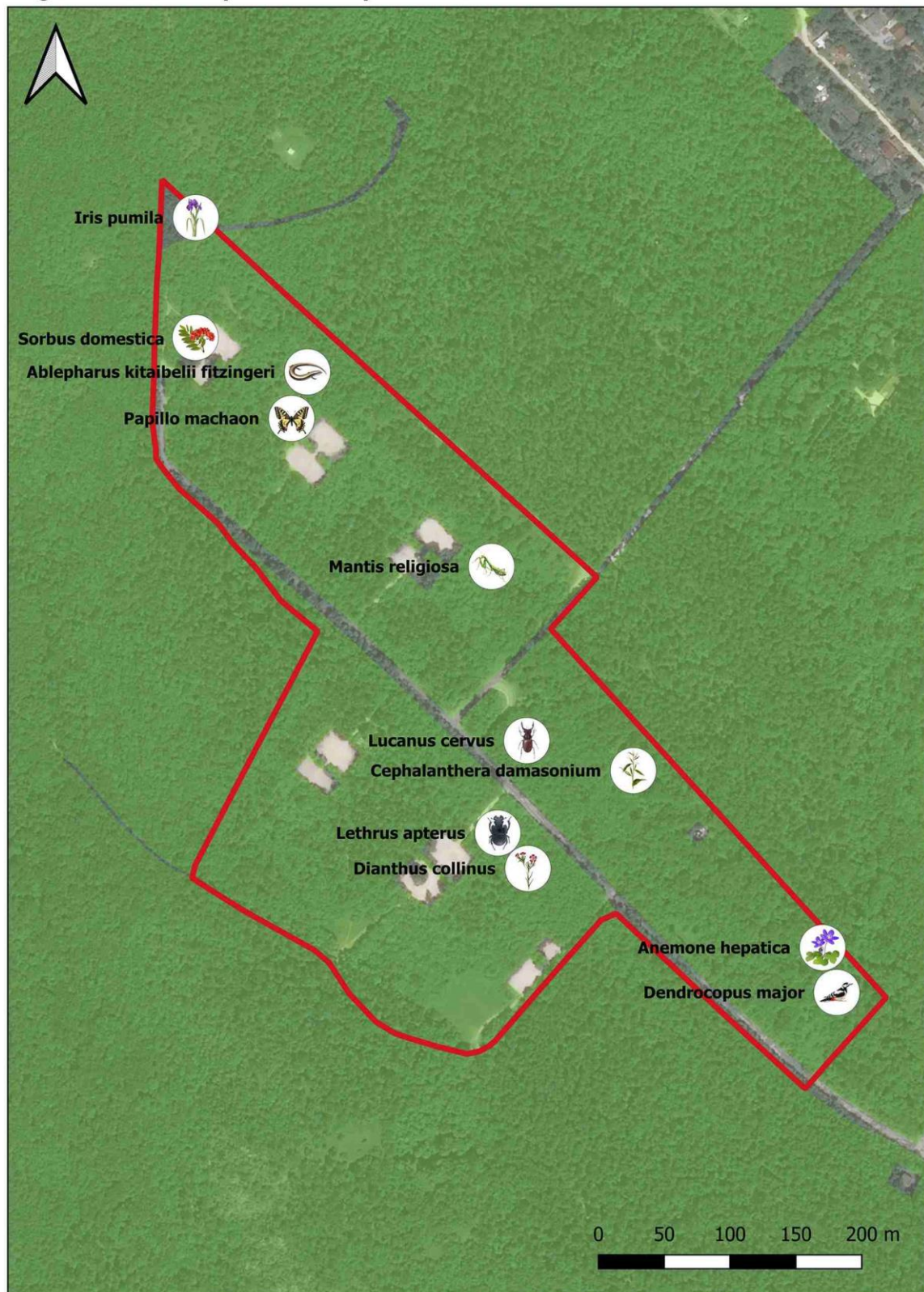
Figure 11: Nature conservation, protected areas



In the focus area, in the subcompartment 161C just 2 narrow ribbons of forests are part of Buda Hill landscape protection area and also Natura 2000 SCI. But most parts are not protected. However it doesn't mean that there are no important nature values in the focus area. Not at all.

In late September and early October 2019 experts and voluntary activists of Birdlife Hungary and some botanists surveyed the botanical values and wildlife of the focus area. The time of the survey was too late to find all the important species. However in the forests and especially on the grasslands inside the forests valuable protected species were also found. The field work will go on in the next vegetation period. The species list already consists of 213 plant species, among them 12 protected species. Majority of the protected species – like members of the Caryophyllaceae (Carnation or Pink family) and *Iris pumila* are typical plants of semi-arid habitats, but e.g. species from the Orchidaceae's *Cephalanthera* and *Epipactis* genus can tolerate a broader range of conditions. 60 protected bird species were already found in the focus area, including 2 strictly protected species, the European honey buzzard (*Pernis apivorus*) and European bee-eater (*Merops apiaster*). From other vertebrates until now 2 protected amphibians and 3 protected reptiles were found but the most exiting is a strictly protected reptile *Ablepharus kitaibelii fitzingeri*, called in Hungarian Pannon lizard. The small lizard was described from Buda Hills in 1797, but later found in several countries of the Eastern Mediterranean. Among the 11 protected insects there are butterfly and beetle species quite rare in and around Budapest. The map in Figure 12 is not big enough to contain all the characteristic species of the focus area, just some flagship species.

Figure 12: Some protected species found in the focus area



- Cultural heritage

As it was mentioned in chapter 3.2 (Visit to UPF and infrastructure) and shown in Figure 10 (Available infrastructure – touristic and recreational attractions) in the strategic area there are quite a number of monuments, historic sites of aviation and military, statues etc. In the focus area one cannot find such a rich heritage. One of the purposes of improving the focus area is to call attention of the visitors to the cultural heritage of the strategic area and help the visitors to access them. In the focus area the only spectacular piece of cultural heritage is a big landmark stone from 1863, which means before Pest, Buda and Óbuda (old Buda) were unified. The sizeable stone is in a central place along the main road, we will put an information panel of the educational trail here.

- Other objects

We have already mentioned in the end of the 2nd chapter that we have to negotiate with Budapest Waterworks since there is a water network in the parking lots. There were plans to remove it but for the project purposes it would be definitely better to renovate it. The water is very advantageous not only for watering the newly planted seedlings of our afforestations but also for installing drinking fountains for visitors.

3.4. Assessment of use, changes and influencing factors

- Damages, risks

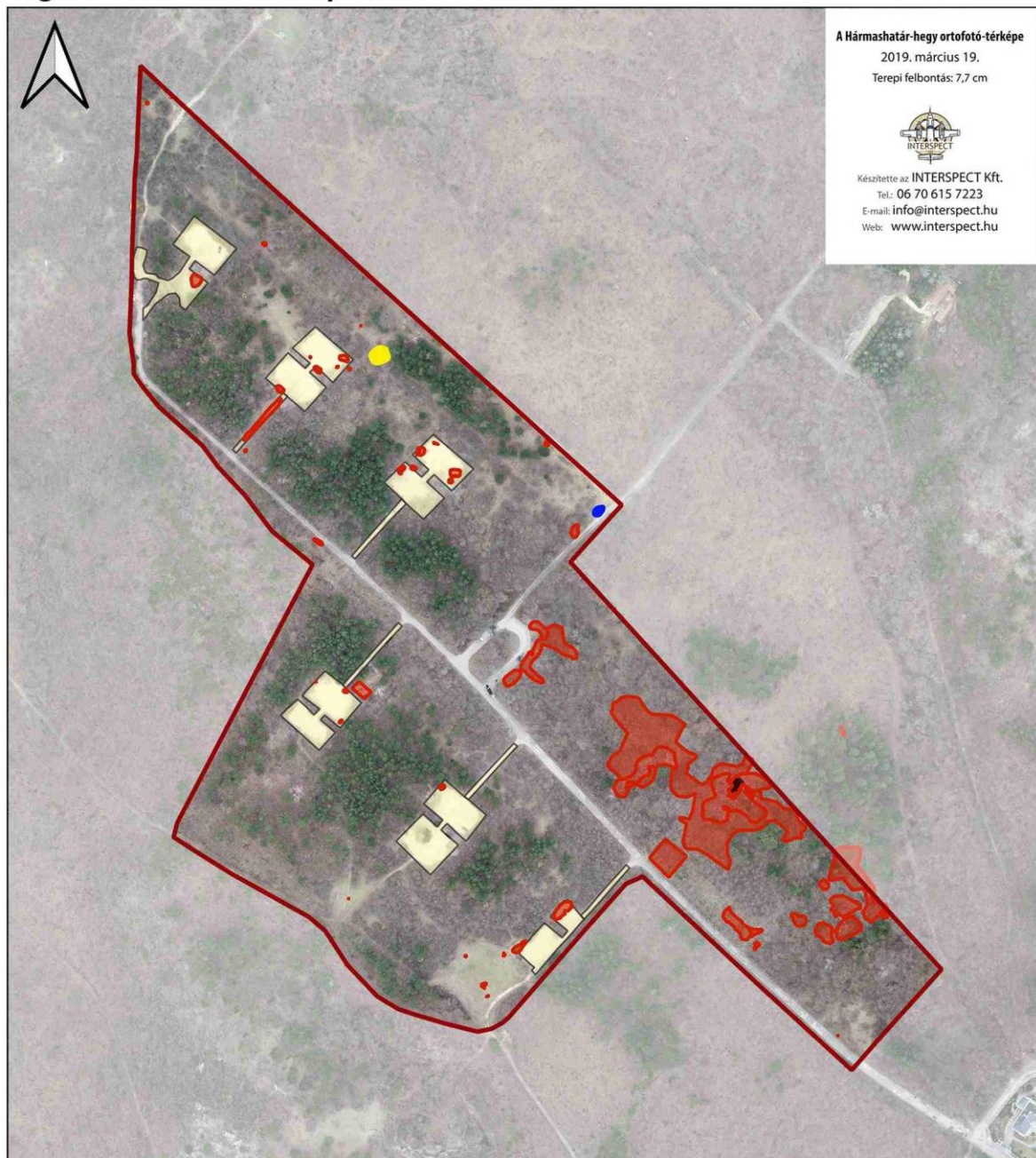
There are at least two damaging factors which are important worldwide and really relevant in our focus area. The first one is climate change. In Hungary it results in warmer and dryer climate with extremely intensive precipitation occasionally. Climate strategy of Budapest emphasizes the internationally accepted concept that beside mitigation adaptation is also a must. The second damaging factor is the strong negative effect of the invasive species. The best thing we can do against them is to work on creating healthy native forests.

As we mentioned in our former report the ecosystem services of the Hármashatár Hill were mapped by a group of external experts, the Interspect Ltd. Their aerial photographs were supplemented with field survey, and a ‘problem map’ was made about the strategic area. You can see the result in the Appendix (App Figure 4: Problem map of the Hármashatár Hill)

In the small focus area there is a long list of damages. Some of them are interconnected and take a longer time to terminate, some others can be ceased more easily. To mention just a few:

1. Parking cars and traffic in the (potential) forest area
2. Air pollution
3. Illegal rubbish dumps
4. Ruins of weekend houses
5. Damages caused by homeless people living in the forest
6. Illegal cycling and walking trails
7. Damage of ungulates, especially wild boars

Figure 13: Problem map of the focus area



Map Legend

Parking lots

Problems

Scattered rubbish

Homeless hovels

Plant disease

Dumped construction waste

Data source:

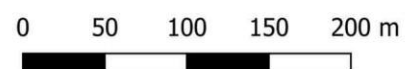


Figure 13 concentrates on the problem of the scattered rubbish and dumped construction waste on the edge of the parking lots.

- Issues of forest use

In the long run forest use will not cause result in conflicts, public will enjoy the continuous forest cover.

However harvesting invasive black locust stands in favour of converting them to native forests may cause conflicts from the 3rd year until the end of the 10 year period of the OP. This issue has to be handled very carefully. The main thing is to give easy-to-understand information in the project area in advance and make it available also online.

Afforestation is a very positive action we don't expect conflicts in connection with it. Forest use is not the main source of conflict in our project – maybe just afforestation of parking lots in an indirect way. Probably most drivers will accept that change of the parking system happens in favour of forests and visitors of the forests. However some car-users may protest. We have to convince them by good communication.

4. GUIDELINES FOR FOREST MANAGEMENT

4.1. Subordinated guidelines

- Forest management plans

The most relevant document is the Welfare Forestry Development Plan of the Budapest Forest Management Region published in 2012. The Plan was made by Act XXXVII of 2009 on Forests, Protection of Forests and Forest Management. The Welfare Forestry Plan says that anybody can visit a forest on his/her own responsibility – if it is not restricted by other measures. In a forest you are allowed to ride a horse, ride a bicycle or drive a car only on the forest roads assigned for the given function.

The other important issue introduced on the base of the Forest Law of 2009 is the naturalness of the forests. Based on the research of forest engineers and biologists categories of naturalness were set up and those 5 categories appear in the forest management plans from natural forests (1st category) to plantations (5th category)

- Spatial plans

'Budapest 2030 Long-Term Urban Development Concept' says that in order to create healthy environmental conditions the biologically active surfaces – including forest cover – and the intensity of the green spaces has to be increased.

4.2. Fundamental / basic concepts

- Forest land, forested area

In the 15,6 ha focus area the forest cover has to be increased. It is not a large scale change rather step by step afforestation of most parking lots. The numbers will show just a relatively small increase but gradual conversion of the parking lots into forests will change the connectivity of habitats, cars and garbage disappear, environmental education takes place – as it is described in chapters 4.3., 4.4. And of course it will also improve the recreational potential of the UPF.

- Structure and forest composition

Development of the forest stands

- silvicultural systems

In the focus area in the next 10 years the main purpose of the forest management is to improve the naturalness (age structure, stability, recreational value) of the forest stands. We want to move from even-aged silvicultural system to selective logging but it can not happen in a single step.

- from harvesting to continuous cover

The main obstacle is the presence of the invasive black locust, which we have to change to native tree species and then the forest can move towards an uneven-aged, mixed, diverse forest with continuous cover. We have to make plans for the transition.

- seedlings and natural regeneration

In the first phase we focus on cutting the black locust (practically it means small territory clear-cuts), treating the stumps with selective chemicals and planting native seedlings. When choosing tree species it is important to shade the forest floor in a short time with relatively fast-growing native species to prevent returning of black locust.

- black pine: salvage cutting after and thinning

The other non-native species in the area is black pine but it is not a real problem, we can gradually remove them with salvage cutting after and thinning – in those places where we find a good understorey of native broadleaved species.

- damages

The main damaging factor is people. Later we will describe how to manage the crowd. Nature and recreation have to exist in harmony.

- management of forest edges

Edge of the dry oak forests and grasslands is a meeting point of forest species and steppe species even in the small-scale. The final result of the natural succession would be a closed forest but with mowing we can halt the process and present the diversity to the public.

- stability of forest stands

After a mixed, uneven-aged, healthy forest will be in place, in the closed forests of the focus area very few management actions will be needed.

- Technology of wood production

As we shortly described in chapter 3.1 (State of forests and forest management) because of the small area and the small distance from the road there is no need for big machines.

- harvesting and skidding

Harvesting will be completed with chain-saw, skidding realized manually or with a so-called 'iron-horse', a small tracked skidding machine.

- wood concentration

For wood concentration (and other logistical tasks of park forestry) one parking lot on the left side of the main road will be left. However there is no need for big space and huge trucks, most wood will be firewood.

- season

From December to February

- informing, communication

Posters on the site, articles in local newspaper, press conference for media. Important issue.

- Nature conservation

As the surrounding area is part of both Buda Hills Landscape protection area and Buda Hills (HUDI2009) Natura2000 SCI, we know quite a lot about the nature values of the Hármashatár Hill (strategic area). It was not true until now for the focus area. But the URBforDAN project gave new inspiration. In the second part of the 2019 vegetation period experts and voluntary activists of Birdlife Hungary surveyed the botanical values and wildlife of the focus area. In the forests and especially on the grasslands inside the forests valuable protected species were also found. There is a clear plan to initiate the protection of the area on the Municipality level. The URBforDAN planning is completed already in this spirit: to provide the undisturbed state of the sensitive habitats and some other parts make accessible for nature conservation education and recreation.

- Areas with emphasized ES (or forest functions) in the UPF area

Simply saying the Southwestern part of the focus area is a general forest while Northeastern part is selected for ES 31 Nature protection and ES 41 Recreation and tourism.

- The use of forests

The accessibility of the area has to be organized very carefully. Visitors riding their bikes, walking, arriving by bus or parking their cars close to the southern border of the focus area have to find signposts, information boards, QR-codes giving them easy to understand pieces of information.

- Infrastructure in the forest area

In the focus area the road and trail network is dense enough. There will be only some small stretches of trail to renew for the purposes of the educational nature trail. Otherwise the task is rather to rail off some areas from the public. Of course in the end of the paved road there will be a strong barrier but in most places the paths will be blocked by soft methods (e.g. a pile of branches)

- Communication / Informing the public

It is a must to inform the public about cleaning up a trashy area in the beautiful Buda Hills and converting it into an important site of nature conservation and environmental education. A few weeks after the Municipality elections it's hard to say anything about the institutional background but probably in the City Hall's Environmental Department will be in charge of communication and will give publicity to the UPF.

- Cooperation with stakeholders

Until now three formal stakeholder meetings took place: November 27, 2018, March 11, 2019 and September 24, 2019. The number of participants was quite good but there were some shortages. The mountain bikers' association didn't take part in the meetings and the individual partners were also not present. Otherwise the atmosphere of the meetings was very cooperative. Beside the stakeholders' meeting in the process of planning several meetings take place with partner organizations.

4.3. Guidelines for allocations with priority ES

The first Millennium Ecosystem Assessment was published in 2005 and it played a huge role in popularizing the term and concept of ecosystem services. It helps a lot to understand depletion of Earth's natural capital, and also the global connections, like the environmental damage the rich countries caused to poor nations.

The ecosystem services are classified into 4 main categories: provisioning, regulating, supporting and cultural. It is a major effort to connect economic values to the ecosystem services to help the work of the decision makers. Provisioning ES in general give food, water and other products in the case of forestry timber. Regulating ES controls the climate and diseases, the role of forests is very important in climate control. Supporting ES gives the material base of any plant and animal growth by oxygen production, nutrient cycles and soil formation. The 4th ES is called Cultural (in a broad sense). Beside spiritual values it also includes recreational services, which is extremely important in the case of our urban forests.

In Hungary already in the 1970s introduced the concept of multi-purpose forest management. It was accepted that the forests have to serve production, protection and social-recreational purposes. However the allocations for ecosystem services are not part of the present Hungarian planning system.

Of course in the URBforDAN project we are ready to adapt the up-to-date method. However at this point we have to remark that in the partner cities the size of the focus area is quite different. Ljubljana: 651 ha, Belgrade: 489 ha, Wien: 290 ha, Cluj: 41 ha, Zagreb: 36 ha, Ivano-Frankivsk: 20 ha, Budapest: 15,6 ha. And of course there are other differences, too. Ranking ecosystem services and zoning is probably an excellent method on 651 ha, but less

relevant on a 15,6 ha area. And on the other hand of course the planning must happen very carefully, maybe using also other methods, to achieve the best possible result in the whole strategic area. We try to do our best, but it is not really relevant to divide a 15,6 ha area in several categories. In such a small area all the zones and ecosystem services would overlap or the subcompartment should have been divided into very small units. Therefore the chapters 4.3 and 4.4 will be strongly simplified.

Based on the strategic plan in the Chapter 2.1 of OP (Purpose of UPF) the 1st and 2nd ranked ecosystem services of the focus area are the following:

Figure 14: Summary of the most important ES

Ecosystem service (ES) – area (ha) and % of entire forest area – only 1 st rank and 2 nd rank	Individual objective/ES	Area (ha) and % of entire forest area
Supporting ES	31_Nature protection / habitats for species	15,6 – 100 %
Cultural ES	41_Recreation and tourism	8,4 ha – 54 %
	42_Scientific / educational	7,2 ha – 46 %

Hectares and percentages in the Cultural ES category reflect the importance of the certain ES in the focus area but can not be identified with forest subcompartments.

Ecosystem service	Justification/explanation
Nature protection	The focus area's diversity is high, especially the grasslands are very rich in species. It is a priority to manage the mosaic of grasslands and also the forests in favour of the native plant communities. The focus area already deserves the 'protected area of local importance' status, and with the spontaneous help of the surrounding natural areas it is a realistic objective to improve biodiversity further.
Recreation and tourism	Both the field survey and the feedback from the questionnaires show that recreational and sport activities are gaining popularity in the focus area. (as it was presented in the ES survey)
Scientific/educational	Species lists show the diversity of the focus area. The scientific research will continue, some grasslands will be accessible only for research. At the same time there is a good chance to create an exiting nature trail in the framework of the URBforDAN project. The balance between nature conservation and presentation to the public has to be found.

4.4. Detailed forest zoning

While forest zoning is a planning instrument to make clear which is the priority land use in a certain area, our focus area on the Hármashatár Hill is a tiny forest with a mixture of different

uses. It is very important to protect nature values and also prevent conflicts of different users. However in this micro-world the regulation happens in a small scale. We can not put whole subcompartments into a certain zone. There are differences in the occurrence of certain taxa. For example butterfly species are more numerous in grasslands, while beetles in forests. But it is clear that protected species are scattered in the whole focus area.

We have to harmonize the following two purposes:

- Protect the most valuable habitats
- Educate the public about nature conservation and forestry in general, but also give them an impression of the diversity of the habitats.

In a huge UPF the solution would be zonation, but in our case it looks more effective to direct the visitors by the following tools:

- We create a nature trail which presents real nature values
- The marked nature trail keeps off the most sensitive spots of the forest-grassland mosaic
- There are some clearings and converted parking lots specially designed for recreational activities of children and adults.
- Otherwise it is not allowed to move off the track

5 ACTIVITIES

5.1. Short description of the planned activities

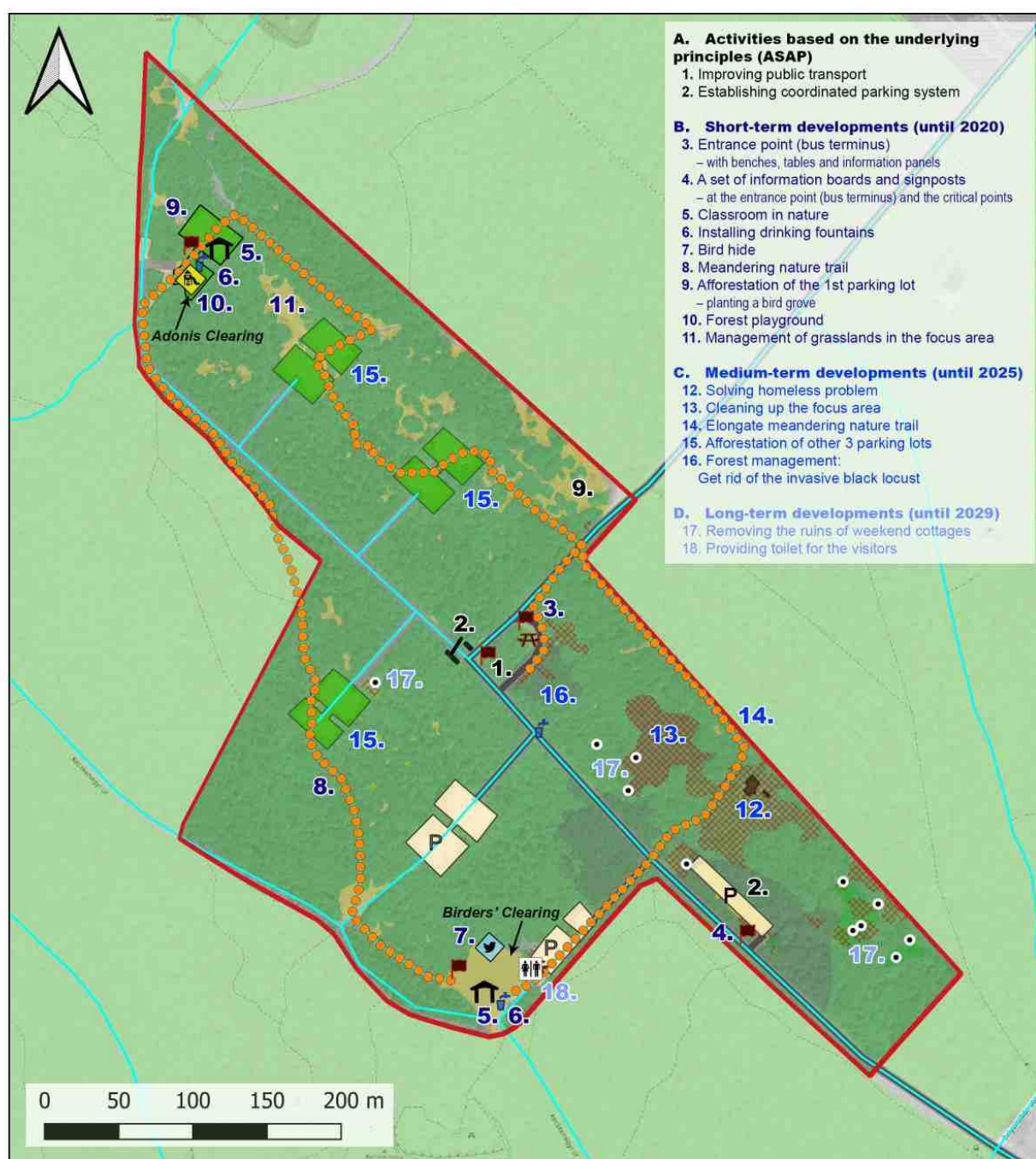
As it was described in the strategic plan – and mentioned in this document in chapter 4.2 Fundamental / basic concepts – Municipality of Budapest organized 3 stakeholder meetings: November 27, 2018, March 11, 2019 and September 24, 2019. The management activities listed here and described in detail in the next chapter, are based on the discussions with the stakeholders. The users of the UPF spoke about the problems and sometimes gave suggestions to the expected solutions. Of course not all the requests can be fulfilled automatically. Just to say an example: requests for more general accessibility are sometimes in contradiction to the nature conservation interests. However planning of activities happened according to the following principles:

- Fulfilling the requests of the stakeholders as much as possible
- Begin with the most urgent actions
- Go ahead step by step
- Pay attention to the fact that public is always happy to see actions which are understandable and acceptable.

New geographical names in the focus area

Since there are many hikers in Buda Hills, most valleys, hills and caves have a name. However the clearing which we want to turn into an info-centre in the Southern part of the focus area, and especially the uppermost parking lot where a small clearing will be shaped only as a result of the future afforestation, are unnamed at the moment. We can not say for sure what their name will be but we have to give them names to be able to speak about them. From now on the lower clearing we will call Madarász-tisztás, in English Birders' Clearing, while the upper one at the future playground, Hérics-tisztás, in English Adonis Clearing.

Figure 15: Planned activities in the focus area



Map Legend

— Focus area	Planned activities	 Afforestation
— Hiking trail	P Parking lot	●●●● Nature Trail
 Grassland	Metal barrier	Drinking fountain
	Ruins of weekend cottages	 Cleaning up the focus area
	Forest classroom	Playground
	Bird hide	Toilet
	Info points	

5.1.1. Activities based on the underlying principles

1. Improving public transport

This activity will not be completed during the project period of URBforDAN. But this point has to be realized very soon, otherwise the project will not be a success.

It does not seem to be a very complicated task. Many people – even decision makers – think that fighting the car traffic is hopeless. We experience that in Budapest there are more and more cars on the streets but it is like a natural phenomenon, washes away everything. We think it differently. As we wrote it in 3.2 (Visit to UPF) car traffic in the focus area is unbalanced. Weekdays some people drive their cars to the hill, run an hour and return to the city. We have to tolerate it, even support and provide parking lot for them. But there are weekends when several hundred car drivers look for parking places – it is a nonsense, we have to find another solution for the car users. We don't want to provide parking lots for hundreds of individual car users. The first reason is that we must not sacrifice forest territories and fragment them. The second reason is equally important: we don't want to attract car traffic into the park forests and increase air pollution. Of course bicycle use would be a good solution, but it is not easy to ride your bike up the hills. What is manageable for everyday people is public bus traffic – if it works fine, which means comfortable and environmentally sound buses commute frequently from the present lower terminal. The changes will require negotiations with the Centre for Budapest Transport in order to increase the frequency of the buses. And it would be also important to have good parking opportunities close to the lower terminal of the bus. Evidently it requires support from the political level, too. This activity doesn't appear in the budget of the project, but it is a logical and very important basic point which we have to initiate very soon and should be realized in the 10 year planning period of the OP.

2. Establishing coordinated parking system

The importance and timing is similar to the 1st point. First results of other activities (bird-hide, classrooms in nature, educational nature trail and afforestation of the uppermost parking lot) has to be realized to justify the changes in the parking system. It can happen in the 3rd year of the planning period of the OP at the very latest, but the reconstruction works begin already in 2020.

Right up the bus terminus (Szépvölgyi-dűlő) the paved road will be closed down with a strong metal barrier. Cars will not be allowed to move further up the road. The purpose of the measure is to give back the uppermost half kilometre of the Szép-völgy (in English: Pretty Valley) to nature and unmotorized visitors. Maybe for some stakeholders the action seems to be rigorous but it is an essential condition for cleaning up the area and afforesting the parking lots.

The barrier right up the bus terminus will immediately close down 4 parking lots (3 on the right side, 1 on the left side). Of course we can not cancel car parking without giving an alternative. Therefore before set up the barrier we have to establish a new parking lot. The new parking lot is actually an old one, it was built more than 40 years ago, but later it was abandoned. Bushes and trees slowly invaded the area, at the entrance there are garbage dumps but one can still see the quarry stone edge of the lot. It can be renewed relatively easily. For car users there is a disadvantage of the planned new parking lot. It's distance from the barrier is 300 metres, from the uppermost present parking lot (future Adonis Clearing) more than 600 metres. But there is also one important advantage. The new parking lot will be much more safe from car theft than the scattered old ones. And it is very important to convince the visitors that there walking (or biking) a few hundred metres will contribute to reconstruction of nature.

And again, hikers leaving their cars in the new-old parking lot and walking or biking up the paved road has to see the result of closing down the upper parking lots. The afforestation of the old parking lots has to be launched right after the changes in parking. If finances will be available, reforestation of all the 4 parking lots can happen in one step, but anyway even in the worst case in a 2-3 years period.

5.1.2. Short-term developments (until end of 2020, mostly from the URBforDAN budget)

3. Entrance point (bus terminus)

– with benches, tables and information panels

Where the bus 65 turns around there is a small grassy area which is suitable for greeting the arriving visitors and saying goodbye for those who leave. Of course the most important is to inform the visitors about the chances and direct them to the attractions of the focus area – as it is described in the next point. However we also want to offer them benches and tables to sit down while waiting for the bus. Now the number of the arriving buses per hour is maximum 2. If the 1st point (improvement of public transport) will be realized, in the most frequented periods at least 4 buses / hour will turn up. Even in that case it will be comfortable for the visitors to sit down. The information panels will help them remembering what have they seen in the forest.

4. A set of information boards and signposts

– at the entrance point (bus terminus) and the critical points

In the stakeholder meetings it was often mentioned that people lack information about nature values and potential hiking destinations. We try to manage the problem. We don't want the visitors to be lost in the focus area. Not only in physical sense – it is relatively easy to find the hiking trails, the classrooms in nature and the way back to the city – but also mentally. Visitors have to know what we offer them in the focus area. The first information board is planned at Fenyőgyöngye, at a big forest crossroad 2 kilometres down the valley. The second

important point is near to the entrance of the focus area, at the new parking lot. And more information will be available at the bus terminus – in the long run we expect most visitors arriving by bus. From all those 3 places signposts and clearly painted trail marking will lead to the Birders' Clearing. And the 4th 'info-centre' will be at the Northern end of the focus area, at the classroom in forest and a playground created on the place of a present parking lot. We call it Adonis Clearing. At the info points visitors can read (and via QR-codes and their smartphone also hear and see) information about the suggested hiking destinations. Additionally those who walk on the paved main road – which slowly turns into a hiking trail – will also find some signposts.

5. Classrooms in nature

There will be two classrooms in nature in the focus area, both of them surrounded with other attractions. The first classroom in forest is located at Birders' Clearing, the second further up along the future nature trail, on Adonis Clearing. The Birders' Clearing's distance from the bus terminus is 350 metres, from the 'new parking lot' 250 metres, but disabled persons can park their cars in a distance of 50 metres in the small parking lot, which will preserve its function. The big virtue of the Birders's Clearing is that it has a nice view of the Hármashatár Hill. An excellent place to settle down and enjoy the beauty of nature. One of the main attractions of the Birders' Clearing is the classroom in forest, but the bird hide will be also very popular. Now we focus on the classroom in the forest and the attached info-point.

- Classroom in nature

Under the friendly wooden roof there will be space for 30 children at most. It will be an inviting place not only in rainy weather but also in sunshine. It will take place in a relatively out-of-the-way part of the clearing. Children have a good panorama of the forests, tower and antennas of the Hármashatár Hill.

- Information on suggested hiking destinations

We want to call attention on three easily accessible touristic attractions. They are not unknown for most of the hikers but many of them are not aware that they can easily reach them from the focus area – through very nice landscapes. On the Birders' Clearing we focus on 2 hiking destinations. 1st of them is Árpád lookout (Figure 16).

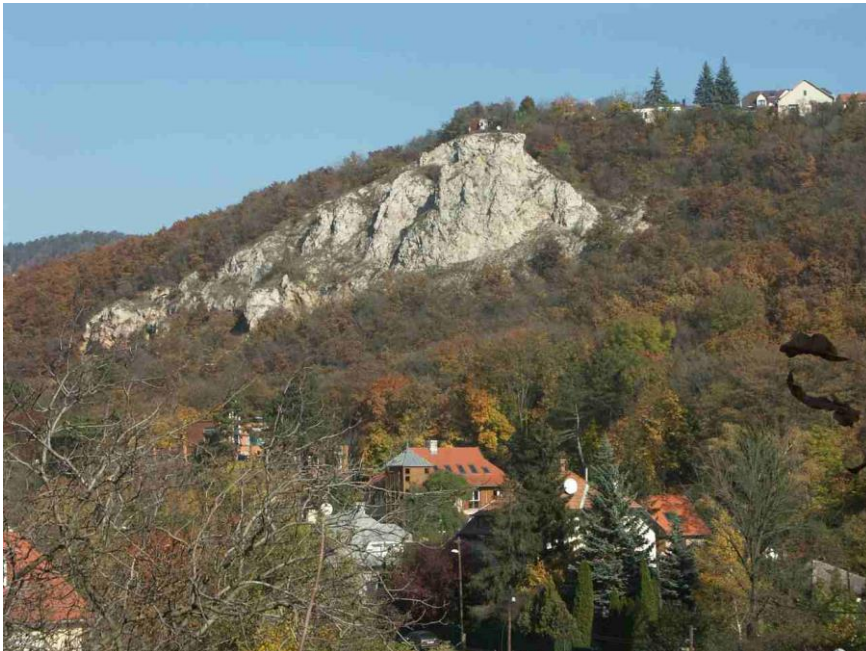
Figure 16: A nice hiking destination: Árpád lookout



On a nice information panel we will show the route to Árpád lookout and describe what they can expect there (nice panoramic view but also the fact that close to the lookout new buildings grew out of the hillside, destroying the view.) The main message is anyway: you can hike to a wonderful place through wonderful forests.

From Árpád lookout one can easily reach a public bus line. Those who are ready for hiking further can easily reach the second hiking destination, Apáthy Rock, a nice dolomite formation with different but also wonderful panorama.

Figure 17: Apáthy Rock: special vegetation, special view



Apáthy Rock is an iconic nature conservation value of Buda protected since 1977. Thanks to the careful design it can be easily accessed from the direction of Árpád lookout – among

protective fences. It is already part of an educational trail, where visitors can find good descriptions about the geological, botanical and zoological values. From the top of the Rock it is not easy to descend to the tram, but on the signed trail an average hiker can solve the task.

The 3rd hiking destination will be also offered at the Birders' Clearing, but the detailed description will be found in the Northern end of the focus area on Adonis Clearing near to the second classroom in nature and forest playground. The reason is that the hiking trail to the Guckler-lookout starts from there.

The trail to the Guckler lookout point (Figure 18) runs through nice limestone rocks, forests and grasslands. The special larch wood structure was built on the top of the Hármashatár Hill just a few years ago. Participants of the Budapest URBforDAN Workshop in the beginning of November, 2019 could enjoy the wonderful 360 degree panorama from 499 meter high.

Figure 18: Guckler lookout-point at the top of Hármashatár Hill



- Starting point of the educational nature trail (see point 8.)

6. *Installing drinking fountains*

2 locations: 1 at the Birders' Clearing, 1 at the Adonis Clearing, close to the playground (number 6 in Figure 15).

It is a significant advantage of the urban infrastructure that there is drinking water in the focus area. No springs, no mountain creeks, but the aqueduct is there. We can see even the evidence of the aqueduct, an operating water well. It is located in the centre of the focus area, close to parking place, Birders' Clearing and bus terminus. It just needs some renovation. We plan to install 2 further drinking fountains. One of them at the Birders' Clearing, the other one on Adonis Clearing, close to the playground. The installation of the drinking fountains seems to be feasible, and it will be very popular.

7. Bird hide

– with drinking pool and feeding point

Bird hide is a separate item in the budget of the project but it is at the Birders' Clearing, very close to the classroom in nature. Many children love nature and bird-watching is a very good tool to attract them even closer to the wildlife. Not only in the virtual world but also in reality. The bird-hide is a complex wooden structure equipped with drinking pool and feeding point for winter. Of course those supplementary elements are important not to feed the birds but to attract them to the bird-watchers. The special glass of the bird-hide and the curtain make the bird-watchers invisible for birds. The ready-made equipment will be installed on the edge of the clearing close to the shrubs. Warblers are already there and they will be attracted to the bird-hide in even bigger numbers.

8. Educational nature trail

The name of this attraction will be something like Meandering Nature Trail. (The Hungarian name is more playful but also refers to the narrow path curving in the forest). The nature trail starts at the Birders' Clearing and runs on narrow, friendly paths. The length of the trail is 1150 m, the end is at the bus terminus. More exactly in the first year it will end there, later when the forests around the present homeless tents will be cleaned up, the nature trail will be elongated to a distance of 1550 m and return to the starting point at the Birders' Clearing. It is an easy walk with tiny ups and downs, at the same time it gives the experience of 'wildness'. And of course 'secretly' we want to educate the visitors. There will be 10 information panels along the trail which will call attention to the surrounding 'attractions'. In Hungary there are many nature trails and majority of them works as an 'open-air exhibition'. There are panels speaking about the geology of the area the next one about the flora but they typically only give general information, nothing to do with the stones or plants you see close to the panel. Our concept is different. We want to call attention to a dead tree or a nice shrub and when it is already exiting for the visitor then we connect it to more general messages. One of the main objectives of the nature trail to present the Let's Szép-völgy Give Back to Nature! project with various elements of habitat reconstruction.

9. Afforestation of the 1st parking lot – planting a bird grove

The public will see already in 2020 that the habitat reconstruction has been begun. In the North-western corner of the focus area we want to reconstruct a bird habitat. (Number 9 in Figure 15). As practically all the parking lots, the uppermost parking area also consists of two parts. The total area to be afforested is slightly more than 1000 m², but the task is not an easy one. The size of the bigger, hotter parking lot is 868 m², here we want to plant drought tolerant shrubs with attractive fruits for the birds. The shrubs to be planted: common hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), common barberry (*Berberis vulgaris*) and cornelian cherry (*Cornus mas*). Some Turkey oak (*Quercus cerris*) and flowering ash (*Fraxinus ornus*) trees will be also added. In the smaller, shady parking lot next to the playground Turkey oak, flowering ash, field maple (*Acer campestre*) and Norway maple

(*Acer platanoides*) seedlings and also trees of 10/12 cm circumference will be planted. It will be a hard work to remove the upper layer of the dolomite cover of the parking lot and the quarry stone edge, then to dig planting wholes and fill them up with topsoil. But as we mentioned in connection with the communication of the project, for those paragliders who have to walk more because their parking place will ‘move down’, it is really important to see that their old parking lot will be changed to a ‘close-to-nature’ place. Preparatory works will be done and plants will be bought by the end of the URBforDAN project. The actual shrub and tree planting will be completed in the beginning of November 2020.

Water is also essential for the success of the shrub and tree planting. In the first 2 years plants can hardly survive in the dry and hot summers without watering them. Later it will not be a problem for the selected shrub and tree species to tolerate the dry and hot summers.

There will be some additional elements connected to the new bird grove which make it a friendly educational place. Those elements were already mentioned among other activities. A classroom in nature (part of activity 5) and a drinking fountain will be installed (activity 6). And the next equipment (playground for children) will be also near by.

10. Forest playground

The original plan was to attach forest playground to the classroom in nature, but later we thought it over and it will be better to separate the two attractions, to provide quiet environment for the classroom in nature. The two equipments are very close to each other, for the children it will be just a few steps to move from the classroom in nature to the forest playground. However the targeted age group of the playground in general a little bit younger. Of course it is a legitimate purpose of a forest playground just to amuse children while breathing clean air. But we also want to bring them close to the animals and plants. Therefore we want them to play with plants and beetles as playfellows. We plan to bring in to the playground the characteristic species of the surrounding area.

Figure 19: Mushrooms as tall as children in Budakeszi Wildlife Park



11. Management of grasslands in the focus area

URBforDAN project doesn't contain this item, but it has to be launched in 2020, and work on it continuously.

In Buda Hills and also in other forested hills of Hungary maintenance of grasslands require regular nature conservation interventions. In most places the succession can be halted only by grazing or mowing. It is necessary to conserve species by artificial interventions since it is quite evident also in the Szép Valley of Hármashatár Hill that the small grasslands in the focus area preserve a diverse flora and fauna. It is not a goal to work against succession on large areas but we have to find the most valuable grasslands and manage them. In dry grasslands we have to mow the grass just once a year – after cutting the shrubs which has invaded the clearing.

Based on the botanical research we have to identify which grasslands we want to maintain in the long run. Then it is a one-off activity to remove the shrubs from the central part of the clearings while preserving the diversity of the forest edges. The first mowing will take place after removing the shrubs, later mowing will be a repetitive action every spring. This action isn't included in the budget of the URBforDAN project but it is quite urgent, it will be launched from other sources in the first year of the OP.

5.1.3. Medium-term developments (to be realized until the mid-term revision of the OP in 2025)

12. Solving homeless problem

To solve this problem the project needs assistance of external experts. It is expected that from February 2020 there will be a department in the City Hall and also in the 2nd District in charge of the issue. Professional social workers and NGOs will help the work of the local governments. However it is a slow process to find a kind of housing for the homeless in the focus area. The target date of solution is end of 2021. Without solving the homeless problem we can not clean up the area completely and can not finish the elongated educational trail.

13. Cleaning up the focus area

The focus area is full of various types of waste. On the ortophoto made 19 March, 2019 you can see the huge spots covered with trash and construction waste. After closing down the main road many forests, openings and parking lots will be inaccessible for trucks and cars, it will be a rewarding activity to clean them up. But gradually the whole UPF has to get rid of litter. The cleaning up will be finished around the homeless camp.

14. Elongate meandering nature trail

After solving the homeless problem in the focus area and cleaning up the forests there will be a good chance to elongate the educational nature trail. The new stretch will go on the border

of a nice oak forest with some old trees and other attractions. We will put information panels of the nature trail there and make the trail a whole circle, leading back to the Birders' Clearing.

15. *Afforestation of other 3 parking lots*

The total area of the 6 existing parking lots in the focus area is 0,875 hectares. It does not seem to be a big deal to afforest less than 1 ha, however the effect is much bigger than growing the forest cover with 0,8 ha. By afforesting those places we can prevent the indirect effects of traffic: waste disposal, spread of invasive plant species and air pollution. And it is also important to assist the regeneration of natural ecosystems. We will plant native oak, ash, maple seedlings and also native shrubs.

16. *Forest management: Get rid of the invasive black locust*

The most urgent issue of the forest management in the focus area is the invasive black locust. In Figure 7 (Rate of native species, black pine and black locust forests), based on the aerial photo from October 2019 we receive a clear picture about the black locust invasion. It is spread in one patch along both sides of the paved road, but divided by the borders of subcompartments. It is urgent to halt the invasion. However we don't want to clearcut a 1 hectare nearly continuous area covered by black locust for several reasons. First of all because in the long run we try to practise close-to-nature management and provide continuous cover. Secondly – and it is very important – in forests with effective forest management plans the owner has to stick on the regulations of the management plan. And on the management sheets of subcompartments 161/A and 161/B and 161/C the manager is unsettled. Therefore first we have to arrange administrative tasks, then we can launch the silviculture measures. It means that in spite of urgency the removal of black locust will not be launched in the first year of the OP.

Hopefully in 2021 the project can be launched with cutting black locust just in the Western edge of (unplanned) U1, saving the common maple (*Acer campestre*) trees. (See Figure 7.) After cutting and chemical control of trunks it is important to provide full shade, therefore beside oak and maple we plant also relatively fast-growing native species (*Tilia platyphyllos* – large-leaved lime). In the following years removal of black locust happens step by step according to the OP and the forest management plan. It can be finished until 2025, the mid-term revision of the OP.

5.1.4. Long-term developments (until end of 2029, the validity of OP)

17. *Removing the ruins of weekend cottages*

As we described in the 3rd chapter in the 70s in some parts of the focus area weekend cottages were built. Very soon the concept has changed, the parcels were bought back and the houses were removed. Unfortunately in 2 big patches the concrete bases of the houses are still there. We have listed 12 concrete remnants. It is quite an expensive work but if we want to reconstruct the forest ecosystems we have to get rid of the concrete. The timing of the work is

not clear yet, if the finances will be available it would be practical and cost-effective to complete it in maximum 2 stages. Most of the ruins are located inside the forest, to cause less harm to the trees we have to work there in the winter period.

18. Providing toilet for the visitors

Participants of the stakeholder meetings emphasized that lack of toilets is a serious problem for them. Of course we can say that in the last century it was not a problem for hikers, but there are more and more people in the forests, the habits and expectations change. On the other hand the waste products all around annoy the manager of the area. It looks like we have to manage this issue, too.

There are no sewage pipes in the focus area. The transport of sewage by traditional container trucks would cause a regular cost, a traditional, cheap biotoilet would need extra attention from the visitors and also a kind of maintenance. In Sweden there is a long tradition of a self-contained, waterless and odourless toilet treatment system. It uses no chemicals, heat or water and has no polluting discharge. The investment cost is quite high, but if we consider the maintenance costs, it is a relatively cheap solution. We will collect information and references about it.

5.2. A detailed plan for each of activities listed above

Activities based on the underlying principles

1. Improving public transport

- Area and map

In Figure 15 (Planned activities in the focus area) we could sign all the activities. Or nearly all of them. In the case of the 1st action: Improving public transport we put number 1 to the bus terminus. However the question is, how often bus 65 arrives there. And it depends on the decision makers. It is an extremely important issue for the future of the focus area, which will be decided in the City Hall and the headquarters of the Centre for Budapest Transport.

- Condition / problems

Maybe improvement of public transport seems to be a question of environmental policy, which can not be influenced by foresters and nature conservationists. However in our case the future of the parking lots in the Szép Valley, Hármashatár Hill is directly connected to the bus line 65. If buses with good environmental parameters commute every 15 minutes to the focus area, the change of the parking system and the reconstruction of forests in the place of parking lots can be justified. This requests fits into the environmental policy of the newly elected Lord Mayor. The only problem may be the financial background, which is not a minor issue.

- Target state

Time interval of the buses No 65 will be decreased to 15 minutes until the end of 2020.

- Purpose

If this activity will be successful the whole concept of the OP will be justified.

- Priority

Must to achieve it until the end of 2020.

- Infrastructure measures

At the bus terminus benches, tables and information panels will be installed in summer 2020. The photos of the entrance point will help the lobbying activity.

- Costs

The costs of increased bus frequency has to be paid by the Centre for Budapest Transport.

- Financiers

Municipality of Budapest

- Coordinator

Department of Public Transportation of BUD

- Stakeholders

Municipality of Budapest, Centre for Budapest Transport, Clean Air Action Group, Urban and Suburban Transit Association, member of the European Passengers' Federation

- Legal basis

Act LIV of 1996 on Forests and the Protection of Forests
Budapest 2030 Long-Term Urban Development Concept
Climate Strategy of Budapest

2. Establishing coordinated parking system

- Area and map

In Figure 15 (Planned activities in the focus area) we put number 2. on the planned new parking lot. In the description of the activities we mentioned that the new parking lot is actually an old one, it was built more than 40 years ago, but later it was abandoned.

- Condition / problems

Closing down the upper parking lots and opening a new one lower in the valley is a good solution anyway. However some conditions have to be fulfilled. First of all the new parking place has to be safe from car break-in and car theft. This is important because it is an understood thing that thieves work regularly in the surroundings. A good video surveillance system has to be installed. The 2nd District of Budapest works with a security firm, probably they will solve the problem.

- Target state

A safe parking lot in the Southern part of the valley, one parking lot for disabled persons close to the Birders' Clearing, one further parking lot left for logistical purposes, all other parking lots are afforested. The paved road is closed down up the bus terminus. Even in the lower part of the valley the number of cars is low, majority of the visitors arrive by bus.

- Purpose

No wounds in the landscape of the focus area, no cars, no air pollution in the upper part of the valley.

- Priority

In all likelihood in 2020 the renewal of the old parking lot can be completed. The cost bearer is the Municipality of Budapest. As we put down among conditions the installation of the video surveillance system can not be warranted in 2020. The metal barrier and the information about the new parking system will be done only when the safe parking in the renewed parking lot is solved. The latest deadline is end of 2021.

- Infrastructure measures

In Figure 20. you can see the research of the cover of the abandoned parking lot.

Figure 20: Taking sample from the soil cover of the old parking lot



At first glance the picture is frightening with garbage and weeds all around. However the thickness of the dolomite cover is 10 cm on average and the quarry stones around the parking lot are more or less in place. Transporting away the garbage, scraping the surface, reconstructing the stone edge and cover an extra 10 cm layer of dolomite is needed. And of course as we described above installing a video surveillance system is also a must.

- Costs

The estimated cost is 1.500 € + the video security system. The metal barrier with installation costs 800 €.

- Financiers

The reconstruction of the parking lot will be covered by the Municipality of Budapest. The video system probably will be inserted into the security budget of the 2nd District.

- Coordinators

Head of Nature Conservation Management at FÖKERT Nonprofit Ltd.

- Stakeholders

Forestry Department of the National Land Centre, 2nd District Police Office, 2nd District of Budapest

Short-term developments (until end of 2020, mostly from the URBforDAN budget)

3. Entrance point (bus terminus)

– with benches, tables and information panels

- Area and map

In Figure 15 you can see the exact place of activity 3. It is just a few steps further from the bus terminus. It is a small clearing, no trees, a natural site for the entrance point.

- Condition / problems

No problems, just approval from the Centre for Budapest Transport is needed.

- Target state

A very pleasant place to welcome the visitors and say them goodbye while they wait for the bus. 2 tables, 5 benches and a lot of information. Aesthetical wooden fence preventing children from running out into the road.

- Purpose

Of course people arriving by bus can hike on their own. But it is really important to present them information about their chances. It means first of all to get to the Birders' Clearing and learn a lot about the hiking destinations, bird hide and educational nature trail.

- Priority

The park forest furnitures and information panels will be installed until the end of 2020.

- Costs

Calculated costs of buying and installing the equipment is 18.500 €

- Financiers

This activity will be fully financed by INTERREG URBforDAN project.

- Coordinators

Head of Nature Conservation Management at FÖKERT Nonprofit Ltd.

- Stakeholders

Centre for Budapest Transport, 2nd District of Budapest, Municipality of Budapest

4. A set of information boards and signposts

– at the entrance point (bus terminus) and the critical points

- Area and map

In Figure 15 the place of the information boards is indicated by small flags. Apart from the bus terminus the location of the info centres will be near to the classrooms in nature. As we described above, it is also an important aim to provide information both printed and electronic form. In the Pretty Valley QR-codes will be popular since there is no problem with the smartphone signal.

- Condition / problems

Condition of the full information system is the parking system completed and the educational nature trail finished. Since we can not complete everything in one step, in the second, third and fifth year of the validity of the OP new signposts and info boards will be added to the system. However from the very beginning we try to accomplish a clear system with many pieces of information.

- Target state

An evident information system in the focus area. Visitors must not feel that they can not enjoy nature because the area is overcrowded with signposts and info panels, they just have to feel themselves comfortable and well-informed about the chances offered for them.

- Purpose

The main purpose of the project is to reconstruct degraded habitats and provide new scenes for environmental education and recreation. However it can not be achieved if potential visitors don't know where to go and what to do. That's why this subproject about informing the visitors is essential for the success of the project.

- Priority

The information boards and signpost will be bought, prepared and installed until the end of 2020.

- Unwanted or prohibited activities

In the park forests of Budapest in some places vandalism can damage information boards and signposts. The experience of Pilis Park Forest Company and other managers that in the most visited places vandalism practically doesn't happens. Hopefully the focus area will become a popular place with many visitors very soon. In the case of damage, the equipments will be restored in a very short time.

- Costs

The calculated cost of the information boards, signpost and their installation is 5.000 €

- Financiers

This activity will be fully financed by INTERREG URBforDAN project.

- Coordinators

Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

- Stakeholders

Hungarian Hikers' Association (MTSZ), Pilis Park Forest Company, Duna-Ipoly National Park Directorate, 2nd District, Municipality of Budapest

5. Classrooms in nature

- Area and map

Number 5 in figure 15. There are two classrooms in nature planned, one of them on Birders' Clearing, the other is on Adonis Clearing.

- Condition / problems

At the moment the selected place of the future Birders' Clearing is popular not only among hikers but also wild boars. The latter dig up the topsoil quite often. Irrespectively of our actions the trend is that number of wild boars – because of African Swine Fever – decreases drastically. Probably the signs of their rummage will slowly disappear from the clearing.

- Target state

An attractive classroom in nature is located at Birders' Clearing, with the launching information panel of Meandering nature trail and demonstration of the offered hiking destinations nearby. The classroom in nature with a similar inviting wooden cottage at the Adonis Clearing is also ready and frequently visited.

- Purpose

The open air facilities help teachers to show the beauty and vulnerability of nature. Both classrooms in nature are also starting points of visits in the UPF. The purpose is education and orientation, helps also adult visitors to learn about forests. Doesn't want to collect several hundred people at one time, rather to show them important things and then send them further.

- Priority

The activity of writing, buying and installing equipments has to be finished until the end of 2020.

- Most important ES

The area and surroundings of both lower and upper classrooms in nature belong to the Cultural ES (41 Recreation and tourism and 42 Scientific / educational).

- Unwanted and prohibited actions

No problem expected until installing the equipment. Later – as mentioned also in the case of activity 4 – potential vandalism might cause problems. Probability level is low.

- Costs

The total costs of 2 classrooms in nature with information panels about the hiking destinations, 2 additional wooden tables and 4 benches altogether 23 400 €

- Financiers

This activity will be fully financed by INTERREG URBforDAN project.

- Coordinators

Head of Nature Conservation Management at FÖKERT Nonprofit Ltd.

- Stakeholders

Hungarian Society for Environmental Education, Central Buda Educational District of the Klebelsberg Centre, Hungarian Hikers' Association (MTSZ), 2nd District of Budapest

6. Installing drinking fountains

- Area and map

In Figure 15 you can see the place of the 2 new drinking fountains (Number 6). As we described among the activities: 1 has to be placed at the Birders' Clearing, 1 at the Adonis Clearing (close to the playground) Both drinking fountains will be placed into places where they are really needed. Close to the classrooms in nature and other attractions.

- Condition / problems

It is a very good chance that we can install drinking fountains on the focus area. If approach from emotional point of view it is always a pleasure for hikers, and especially for children to drink water. From environmental point of view it is very useful if we can decrease the quantity of plastic bottles, because they are not needed if we have clear water.

The quality of the pipes is not clear at the moment. But the water is there and hopefully it will not cost much money to reactivate the water pipes.

- Target state

Two nice and well-functioning drinking fountains close to the classrooms in nature. Water efficient solution, no waste of water. Small drinking trough for dogs in place.

- Purpose

To make the spaces of environmental education pleasant for children. There is no chance to operate a canteen, but fresh drinking water is very useful.

- Priority

The planning process and installation has to be finished until the end of 2020.

- Unwanted or prohibited activities

It would be a problem if the experts of the Budapest Waterworks found that there are technical problems with the water pipes in of the area or very long additional pipes has to be constructed. Probability level is low.

- Costs

The costs of the 2 drinking fountains and their installation are 4500 €

- Financiers

The drinking fountains will be financed by INTERREG URBforDAN project.

- Coordinators

Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

- Stakeholders

Budapest Waterworks, 2nd District of Budapest

7. Bird hide

– with drinking pool and feeding point

- Area and map

The exact place of the equipment is drawn in Figure 15 (Number 7). When positioning the bird hide two points were very important. First of all to put it into a good bird habitat frequented by warblers. It has to be also a quiet place not to frighten away the birds. But the second point is also important. To install the equipment in a place ‘frequented by potential visitors’.

- Condition / problems

The suitable place, a small opening among the hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) shrubs is given. Fortunately there is a ready-made construction of Birdlife Hungary which just has to be installed. It might be a challenge later: the hyperactive children have to persuade not to run around the bird hide. It is the task of the parents and teachers but kind warnings with explanations will help them.

- Target state

Near to the classroom in nature, as a supplementing element in nature conservation, a popular bird hide works. Drinking pool is regularly filled up from the nearby drinking fountain. Drinking pool in the vegetation period, bird feeder in wintertime attracts birds into the scope of the bird hide. Wheelchair users can access the hide quite easily. FŐKERT and volunteers of Birdlife Hungary continually take care of the facility. Fill up and clean the drinking pool in summer, the bird feeding in winter.

- Purpose

The purpose of the equipment is to acquaint children and adults with the bird species and teach them how to become silent observers of the nature. As they enter the wooden structure, draw the curtain and settle down behind the special glass they get excited about watching well-known and unknown bird species.

- Priority

The equipment is ready-made but the water supply of the drinking pool has to be solved. Anyway until the end of 2020 it has to be done.

- Unwanted or prohibited activities

It is one of the most expensive equipments of the project. Vandalism has to be prevented – mainly with well-written explanations and regular attendance of the bird hide.

- Costs

The equipment itself and the installation will cost together 10.000 €

- Financiers

This activity will be fully financed by INTERREG URBforDAN project.

- Coordinators

Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

- Stakeholders

Birdlife Hungary (MME), Birdlife Hungary's Budapest Local Group,

8. Meandering educational nature trail

- Area and map

In Figure 15 you can see the trace of the Meandering educational nature trail. It will be completed in two stages as it is described above. The length of the first stretch is 1150 m.

- Condition / problems

The original concept is that following a closed circle the nature trail returns to the Birders' Clearing. At the moment there is no sense to direct the visitors to homeless tents and forests full of garbage, therefore the trail will terminate at the bus stop. However by the time of the mid-time revision the original concept will be completed.

- Target state

A funny meandering narrow nature trail running through different forest types, sites of newly afforested areas, passing by a children's playground and a classroom in nature. The nature trail will be equipped with 10 information panels with nice pictures, easy-to-understand texts and additional information in the form of QR-codes. The model of the information panels you can see in Figure 20.

Figure 21: Information panel on a Budapest nature trail



- Purpose

The purpose of the activity is to educate the children and adults about the diversity of forests, ever changing nature, background of nature conservation and concrete elements of habitat reconstruction in Szép-völgy (Pretty Valley).

- Priority

First stage of nature trail has to be ready until the end of 2020. Finalization of the subproject depends on the solution of the local homeless issue, but it has to be done until mid time revision of the OP.

- Unwanted or prohibited activities

Failure in solving the moving of the homeless people or further people moving in the area. In case of close cooperation with the Social Department of the Municipality and NGO-s helping homeless people in crisis such a failure can not happen.

- Costs

Total cost of making the 1st stage of the nature trail's 10 info panel is 7.600 €

- Financiers

The 1st stage will be financed by by INTERREG URBforDAN project. The final stretch will be financed later from different source.

- Coordinators

Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

- Stakeholders

Experts of forest ecology, forest management, botany, zoology and geology.

9. Afforestation of the 1st parking lot – planting a bird grove

- Area and map

In Figure 15 you find the location of the action (Number 9). Beside the lower cleaning this double parking lot will become one of the first spectacular successes of the project. Classroom in nature and children's playground with drinking fountain also take place here, and of course the newly planted trees and shrubs will become honours of the URBforDAN.

- Condition / problems

The afforestation of a parking lot is much more difficult than a traditional reforestation project. On the surface instead of fertile topsoil we find a 20-30 cm thick dolomite layer, which is a natural material, but the root system of the young nursery trees can not find the nutrients which are necessary for their initial growth.

A preparatory work is also needed, namely the removal of the quarry stone edge of the parking lot. The trees would live without completing that work, but the stone and the concrete understructure blocks the natural spread of propagation material from the surrounding grasslands to the newly afforested areas.

- Target state

Colourful shrubs and some scattered trees on the upper part of the former parking lot with a classroom in nature, a more closed forest with a playground and drinking fountain in the smaller part of the former parking lot. However after 10 years visitors can hardly recognize the artificial character of the site. The transition to the former forest is continuous the equipments fit into the natural landscape.

- Purpose

Shrubs (Crataegus, Prunus, Berberis, Cornus) are food for birds, but also important 'educational material' for students. In this surrounding it will be a pleasure for them to get acquainted with the typical shrubs of the native flora. The trees and shrubs provide a nice protection and decoration around the classroom in nature and children's playground.

- Priority

The afforestation will be finished just before the end of the URBforDAN project, in November 2020. For 2 or 3 years it will look very new and artificial, only the bigger trees will look like 'ready'. However, slowly the whole place will become a semi-natural character.

- Costs

If we look at the area to be afforested it is quite an expensive operation. Some of the trees are sizeable, expensive ones, digging of the planting wholes is a hard work and topsoil is also needed for the initial growth of the roots. The calculated cost for all of these materials is 10.000 €.

The removal of the concrete/stone edge mentioned among conditions/problems costs 1500 €

- Financiers

The costs of trees, shrubs, topsoil and the planting process (10,000.00 €) will be financed by INTERREG URBforDAN project. The preparatory phase, that is the removal of the concrete/stone edge (1500 €) will be covered by the Municipality of Budapest.

- Coordinators

Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

- Stakeholders

Forest ecologist of WWF Hungary, experts of Birdlife Hungary (MME), 2nd District of Budapest,

- Legal basis

Act No. XXXVII of 2009 on forests, on the protection and management of forests

10. Forest playground

- Area and map

The place of the forest playground is beside the afforestation project described in the 9th activity. The exact place is signed in Figure 15 (number 10).

- Condition / problems

We want playground equipments which give information about nature, attract children and at the same time they are strong and durable. Fortunately we have more and more examples of wooden toys on playgrounds in and around Budapest, which give us ideas and also potential contractors of wood-carving.

Figure 22: A wooden stag-beetle in a forest near to Budapest



- Target state

An attractive, safe forest playground with wooden images of characteristic species and easy-to-understand, funny description of the portrayed animals and plants. The trees near to the playground provide a pleasant natural surrounding for the children.

- Purpose

To inspire the children to feel free, keep moving and breathe fresh air. At the same time to raise there interest in wild animals and plants. The description of the wooden animals and plants will be read by parents, but the simple and funny text is tailored for children.

- Priority

The children's playground has to be finished until the end of 2020.

- Unwanted or prohibited activities

Any kind of accident or injury. With careful planning observing the national and EU standards chance of unwanted cases can be minimized.

- Additional plan / sketch, if needed

We still have to work on selection of species to be portrayed. However some flagship species (with good forms to be turned into wood-carvings) are already suggested.

Figure 23: Models for wooden-carvings: Pannon lizard (*Ablepharus kitaibelii*), flightless earth-boring dung beetle (*Lethrus apterus*) and pheasant's eye (*Adonis vernalis*)



- Costs

The total cost of the wooden toys portraying animals and plants and installation is 9000 €

- Financiers

The forest playground will be financed by INTERREG URBforDAN project.

- Coordinators

Head of Nature Conservation Management at FÖKERT Nonprofit Ltd.

- Stakeholders

Ilona Water Mill Workshop, Kaposcs
Boldizsár Kő, graphic artist

11. Management of grasslands in the focus area

- Area and map

As we described among activities, the nature conservation interventions to maintain the grasslands in a forested area are justified in those territories where the presence of endangered species is proved. In Figure 15 we signed those grasslands where removal of shrubs will probably happen.

- Condition / problems

Before launching the removal of shrubs an additional ‘checking’ botanical survey is needed.

- Target state

The most valuable grasslands of the focus area are cleaned and mowed once a year. The biodiversity of grasslands shows a growing tendency.

- Purpose

To halt the fast natural reforestation in those small areas where grasslands can maintain more diverse plant and animal communities.

- Priority

The nature conservation management has to be launched in spring 2020.

- Costs

The work will be completed by the nature conservation management group of FŐKERT

- Financiers

The subproject isn't included in the URBforDAN project. The labour costs of the nature conservation management are covered by the Municipality budget.

- Coordinators

Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.
Division of Nature Conservation of the Municipality

- Stakeholders

Volunteers of Birdlife Hungary (MME)

Medium-term developments (to be realized until the mid-term revision of the OP in 2025)

12. Solving homeless problem

- Area and map

The problem is concentrated on the Southern edge of the focus area. In Figure 15 number 12 shows the place where some homeless people stay permanently.

- Condition / problems

The problem is unfortunately quite typical in the big cities of Europe, but there is a difference in the rate of homeless people in the periurban forests. It is a complex social problem, we wrote just a few words about it among the description of the activities. The attitude of the good leadership of the City Hall is promising, good experts are applied and they begin their work these days in cooperation with experienced NGOs, focusing on social issues. However at the moment we can not say how successful and how fast they will be.

There is also a connection with the 17th activity: Removing the ruins of weekend cottages. Actually in most places of the focus area they are not really ruins, rather concrete covered surfaces. However, they are attractive for homeless to put up their tents or hovels. In the long run it is important to remove the remnants of the weekend cottages completely.

- Target state

There are no homeless people in the focus area, there housing is solved humanely. The forests are cleaned up completely, moving in of new homeless people is unlikely, because there problem is managed in the city.

- Purpose

Moving out of homeless people is the only way how the forest can be completely cleaned up, all the concrete remnants can be removed, and the Meandering educational nature trail can be completed.

- Priority

From our perspective it is a really urgent activity, but we have to take into consideration the character of the social work. In the previous big chapter we wrote that the target day of solution is end of 2021, but as a matter of fact it would be nice to solve it until the end of 2020.

- Unwanted or prohibited activities

Failure of social work, homeless stay in the forest, and even new homeless people move in. We don't expect that it can happen.

- Costs

No extra costs from the project side. Just very patient and consequent cooperation with other departments of the City Hall and concerned NGOs.

- Financiers

Municipality of Budapest

- Coordinators

Division of Nature Conservation of the Municipality

Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

- Stakeholders

- Social Department of Municipality of Budapest (the name may change in the near future)
- The City is for All – a group against institutional discrimination of homeless people
- Budapest Methodological Centre of Social Policy and Its Institutions (BMSZKI) – the largest homeless service provider in Budapest

13. Cleaning up the focus area

- Area and map

As we wrote the focus area was full of various types of waste. In Figure 15 we signed with number 13 just the biggest 'sea of waste'. Unfortunately it is not the single problematic territory.

- Condition / problems

Waste can be collected, but the effect will be long-lasting only if the new supplies of waste are blocked. At the moment unfortunately some citizens and also small companies just drive to the end of an empty parking lot and throw out 1 or 10 bags of litter. That's why we want to block the traffic by a metal barrier up the bus terminus. The waste dumping on the right side of the main road is of different origin. The cleaning up can be finalized only after moving out the homeless people.

- Target state

Clean UPF, only a very few paper tissues and plastic bottles are thrown away, but they are collected regularly.

- Purpose

If the forest is clean most people will preserve cleanness, they will not throw away anything. And of course this is the only way to enjoy the greatness of the nature.

- Priority

Unfortunately it can be fully completed only after the metal barrier blocks the 'waste transport' and the homeless people moved out. We put it into the medium-term category, but we will not wait with it until the mid-time revision. It has to be done until the end of 2022 – the latest.

- Costs

The total cleanup of the area has not been estimated yet. We can give only a very rough estimate, which has to be revised. About 40.000 €

- Financiers

Municipality of Budapest – a one time big cleanup
FŐKERT Nonprofit Ltd. – regular activity

- Coordinators

Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

- Stakeholders

Environmental Department of the Municipality

14. Elongate meandering nature trail

- Area and map

In Figure 15 number 14 marks the new stretch of the Meandering nature trail.

- Condition / problems

Condition is the clean forest after moving out of the homeless people. It was described in detail in the former points.

- Target state

A whole circle of Meandering nature trail is in place.

- Purpose

The new attractions – like old trees – make the educational trail more exiting, more diverse.

- Priority

Depending on the conditions, but identifying the exact place of the new information panels can go ahead. If the former activity (cleaning up) is accomplished, the nature trail should be completed by mid-2023.

- Unwanted or prohibited activities

Precondition is not fulfilled.

- Costs

Since the whole concept and context of the educational trail will be ready by the time of the elongation, the costs will not be high. The estimated cost is 2000 Euro.

- Financiers

Environmental Fund of Municipality of Budapest

- Coordinators

Head of Nature Conservation Management at FÖKERT Nonprofit Ltd.

- Stakeholders

Hungarian Society for Environmental Education, 2nd District of Budapest,

15. Afforestation of other 3 parking lots

- Area and map

In Figure 15 you can find number 15 close to those parking lots which will be afforested in the framework of this activity. Two parking lots are on the right side of the main road, one on the left. From the big 'double' parking lots only is left out. It will serve the logistics of the projects but finally it will be afforested, too.

- Condition / problems

The climate and especially the soil conditions of the sites are hard. The work will be quite expensive. However, finally the job can be done.

- Target state

The big parking lots are covered with diverse, mixed, uneven aged native forests. Only the experts of landscape history can tell that the levelled parts of the hillside in the 2nd part of the 20th century must have served some strange functions – maybe parking of the cars. At that time there were many cars in Budapest.

- Purpose

Purpose of the action is to give Pretty Valley of Hármashatár Hill back to nature, in other words to reconstruct ecological integrity of the focus area.

- Priority

The work has to be completed until the mid-time revision of the OP that is until mid-2025.

- Most important ES

The new forests in the first 10 years will provide mainly Regulating ecosystem services (21_Local climate mitigation and 22_Local air quality. Later its Cultural ES will become also important

- Unwanted or prohibited activities

If the project goes ahead according to the OP, no prohibited activities are expected

- Silviculture measures

The first cleaning regulating the tree species mixture will be completed after period of validity of the OP.

- Costs

The estimated cost of the preparatory works + seedlings + bigger trees + the afforestation itself for 3 parking lots is 50.000 €

- Financiers

Potentially Afforestation Fund of the Ministry of Agriculture or the future Afforestation Fund of Municipality of Budapest.

- Coordinators

Forestry official of the Municipality of Budapest

Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

- Stakeholders

2nd District of Budapest, Forestry Department of the National Land Centre

- Legal basis

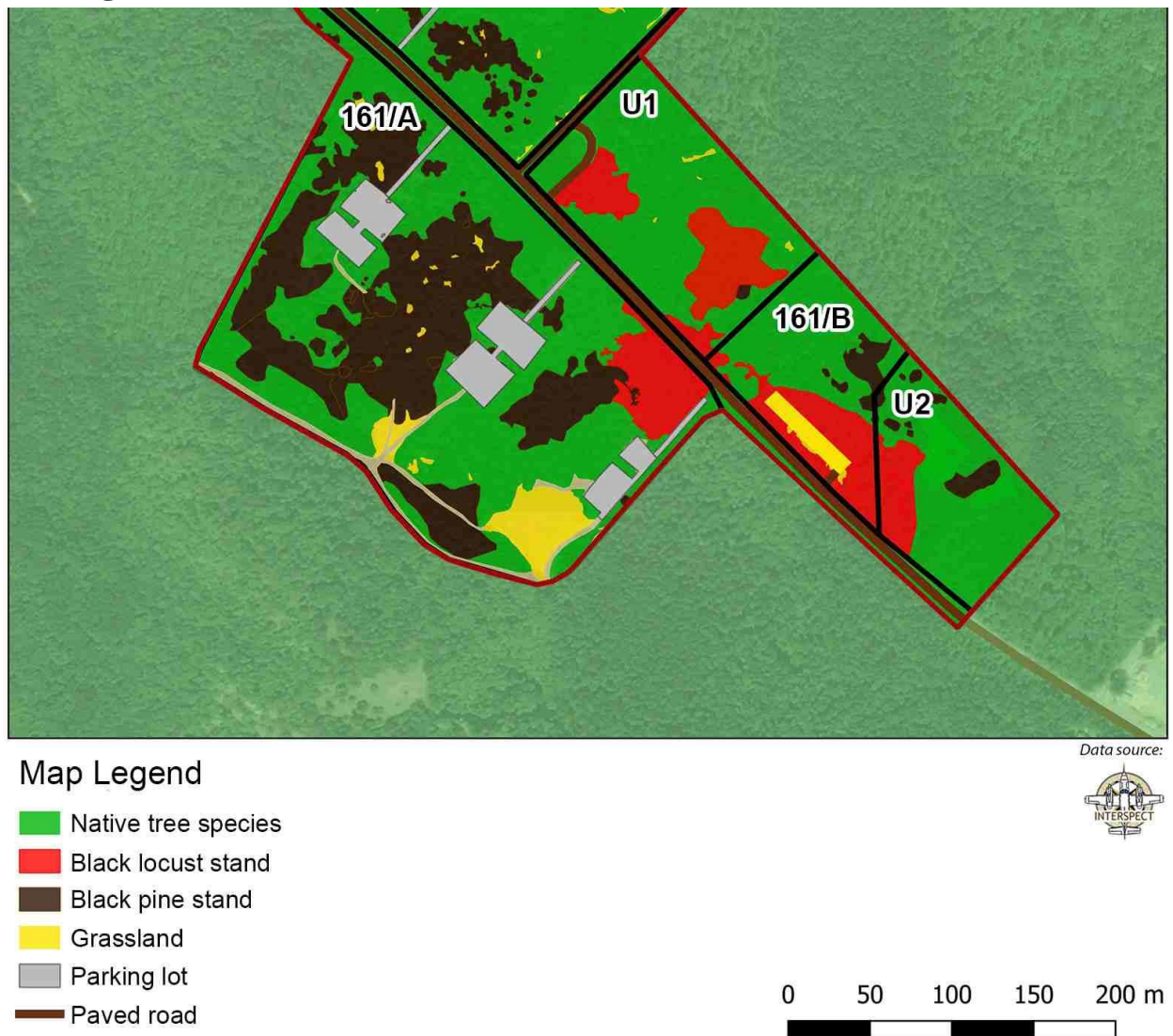
Act No. XXXVII of 2009 on forests, on the protection and management of forests

16. Forest management: Get rid of the invasive black locust

- Area and map

In Figure 15 number 16 shows the centre of the activity. Figure 7 gives a better picture about the present situation. And to avoid struggling with the computer mouse or turning over the pages we copied the lower part of Figure 7 here. (see Figure 24)

Figure 24: Black locust invasion in the focus area



- Condition / problems

The intervention is quite urgent but in the forest management plan the manager is unsettled, therefore first we have to arrange administrative tasks, then we can launch the silviculture measures. On page 45 we specify the strategy and the likely date of measures. The short summary is that the cuttings will be begun in the unplanned U1 in 2021 and step by step all black locust stands will be cut and replaced by native species until 2025, the date of mid-time revision of the OP.

- Target state

Black locust (*Robinia pseudoacacia*) stands are all cut and replaced by native tree species, namely *Quercus cerris*, *Fraxinus ornus*, *Acer campestre* and *Tilia platyphyllos*. In the shadow of those broadleaved species after the chemical treatment the black locust could not be regenerated.

- Purpose

Purpose of the intervention is to grow diverse native forests in the focus area. *Robinia* destroys the soil and the herbaceous plant vegetation as well. Hikers often cannot list the reasons, but they definitely prefer oak forests to black locust forests.

- Priority

As we explained among the problems we try to do our best, but because of administrative obstacles the targeted 2025 is the realistic deadline when replacement of black locust by native species can be finished.

- Most important ES

1.1 Timber production of *Robinia pseudoacacia* is quite good. Otherwise all other ecosystem services, like 2.1 Local climate mitigation 3.1 Nature protection and 4.1 Recreation and tourism of mixed oak forests is much better than that of a *Robinia* stand.

- Costs

Of course the described conversion of black locust stands to mixed oak forests has extra costs, but the whole work happens in the framework of the regular forest management works.

- Financiers

Municipality of Budapest
FŐKERT Nonprofit Ltd.

- Coordinators

Forestry official of the Municipality of Budapest
Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

- Stakeholders

Visitors of the focus area (information campaign is launched: written information along the paved road and at the Birders' Cleaning, articles and interviews in electronic and print media)

- Legal basis

Act XXXVII of 2009 on Forests, Protection of Forests and Forest Management. Articles on naturalness of forests.

Long-term developments (until end of 2029, the validity of OP)

17. Removing the ruins of weekend cottages

- Area and map

The place of the concrete remnants is signed by number 17 in Figure 15. Most of the ruins are on the right side of the paved road, but there is one large concrete base on the left side, too. Altogether there are 12 concrete remnants.

- Condition / problems

The main problem is that it is a very hard and expensive work to remove the memories of a wrong development concept. Probably the potential donors are not eager to donate money for destroying buildings with a hydraulic breaker. Maybe they are not quite sure if it is an environmental activity.

- Target state

In ten years time we walk around the focus area and can not find a single ruin. The surrealistic semi-industrial character of the landscape has disappeared. Wild animals and plants took over the power.

- Purpose

The purpose of demolishing the concrete remnants is to give back space to natural flora and fauna. As a side effect, from esthetical point of view visitors like the change very much.

- Priority

It would be nice to complete the work as soon as possible but because of the above mentioned financial reasons we can only say that we should accomplish it until the expiration date of the OP.

- Costs

After a quick survey of an entrepreneur the estimated cost was 75 000 Euro.

- Financiers

Unknown.

- Coordinators

Head of Nature Conservation Management at FÖKERT Nonprofit Ltd.

- Stakeholders

Visitors (It is a must to inform them in advance).

18. Providing composting toilet for the visitors

- Area and map

In Figure 15 at the edge of the Birders' Clearing you can find a symbol and Number 18. It is the selected place of the biotoilet. A minor change in the exact location me happen, but it is the place where the equipment is needed most.

- Condition, problems

The equipment is quite expensive. Until now we did only internet research. The Swedish biotoilet seems to be a really good solution, but we still have to collect references, check the experiences of operation.

- Target state

The composting toilet is installed in the hidden corner of the most frequented Birders' Clearing. Visitors understand that it is their interest to take care of cleanliness. The manager of the area have to check it just twice a week. There is no problem with the maintenance.

- Purpose

The purpose is preserving the order of the focus area, and provide the most necessary comfort for the visitors.

- Priority

It is a really needed equipment, but we have to find the best solution and the finances for it. There are even more urgent tasks that's why we left it for the second half of the OP period.

- Costs

Clivus Multrum is a good technology with long experience in operation. An invention in harmony with nature. We have to check it. The price of two cabins with freight and installation is about 12.000 €

- Financiers

To be identified later

- Coordinators

Head of Nature Conservation Management at FÖKERT Nonprofit Ltd.

- Stakeholders

Visitors. Description of the technology and kind notices to inform the visitors are needed.

6. GOVERNANCE

6.1. Implementation / responsibility

6.1.1. Changes expected in the near future

On the 6th page of the OP we have mentioned a significant fact:

On 13 October, 2019 there were local elections in Hungary, which had a significant effect on our project. The governance of both owners, the Municipality of Budapest and 2nd District of Budapest has been changed. It is expected that in January 2020 in the Municipality of Budapest an organizational unit in charge of the green territories will be established. Political scientists say that the green politics of the Municipality will become much stronger therefore it is expected that the new unit/department/division will have more manpower and more effective structure for implementation and control. However at the moment we can only describe the present structure and look forward to the institutional changes.

6.1.2. As if nothing had happened

The highest level governor of the URBforDAN Budapest subproject is the Department for Investment and Project Management of Municipality of Budapest, more exactly the head of department and her co-workers. The professional governance of nature conservation is implemented by the nature conservation officer of Department of Communal Public Services and Environment in the Division of City Management. The URBforDAN project is implemented by the Municipality together with the FŐKERT Nonprofit Ltd, which is the company in charge of green territories management of Budapest, 100 % property of the Municipality. The assigned tasks will be accomplished in medium-term and long-term, too by the Municipality and the FŐKERT.

The timely state of the project activities will be controlled by the Municipality regularly, both on professional and project management levels. Beside that the factual interventions accomplished by FŐKERT in the focus area will be supervised, too. The actions will meet the requirements of the project as well as the laws operative in Hungary and the regulations of the competent authorities. The regular maintenance and servicing of the equipments will be accomplished by the Municipality and FŐKERT in common. This is valid also for the period after expiry of the URBforDAN project that is for the period of medium- and long-term developments.

The focus area is the property of two entities, namely the Municipality of Budapest and 2nd District of Budapest. The forests in the focus area are owned by the Municipality. There are no private owners and forest owner associations. Compensation for limiting the private owners is not relevant.

It is a definite aim of the professional leadership of the URBforDAN Budapest project to declare protected status of Municipality importance for the habitats of the focus area. As a result of protection it is expected that the medium-term and long-term development plans (after the expiry of URBforDAN) can be warranted. The reason is that if the project area will have a protected status, the Municipality can fit the area into its nature conservation program, resulting in assigned financial resources. After an operative protected status the governance of the project will be provided by nature conservation and forestry officers of the Department of Communal Public Services and Environment. It won't change after the focus area declared protected that the developments belong to the FŐKERT Nonprofit Ltd., because the Company is mandated by the Municipality to carry out the overall maintenance and development of the protected areas of the Municipality.

7 . MONITORING

7.1. Indicators of monitoring and control

During the URBforDAN project period and also in the following years the owners of the area (Municipality of Budapest and 2nd District of Budapest) and FŐKERT, the main implementer of the project control every year if the activities were realized according to the plans. Responsible persons are the Nature Conservation Officer of the Department of Communal Public Services and Environment and Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.

The success of activities and developments are controlled on prescribed field surveys. The controllers have to find answers to the following questions:

- Which developments have already been realized according to the plans
- Which developments haven't been realized yet?
- What are the discrepancies compared to the original timing?
- Are the permissions and approvals necessary to the accomplishment available?
- How the mistakes can be rectified?
- Does level of discrepancies makes it necessary to revise the plan?

The dates of the prescribed large controls:

December 2020, May 2023, May 2025 (mid-time revision), May 2027, December 2029

The 2020 control in the end of URBforDAN is quite natural. The timing of mid-time revision and December 2029 control is clear. The importance of the 2023 and 2027 large controls is the following: There is a 20 % indicator. If more than 20 percent of the activities are not realized until the deadline, revision of the plan is needed.

Beside the large controls there are field surveys in every intervening year, too. (May 2021, May 2022, May 2026, May 2028). Every year in the field surveys the state of the habitats and equipments is diagnosed. The need of maintenance and repair is determined.

Every second year we put together a questionnaire about the developments and make the visitors of the focus area to fill it in. (responsible: Head of Nature Conservation Management at FŐKERT Nonprofit Ltd.) During the validity of the OP it is also crucial to maintain regular contact with the schools, kindergartens and NGOs using the UPF, since through their opinion it is easier to judge the usefulness of the developments. The potential modifications of the interventions have to be based on their opinions.

On the homepage of the focus area continuous updating is necessary, including the programs attracting many people to the area. The internet communication is a common task of the Municipality and the FŐKERT.

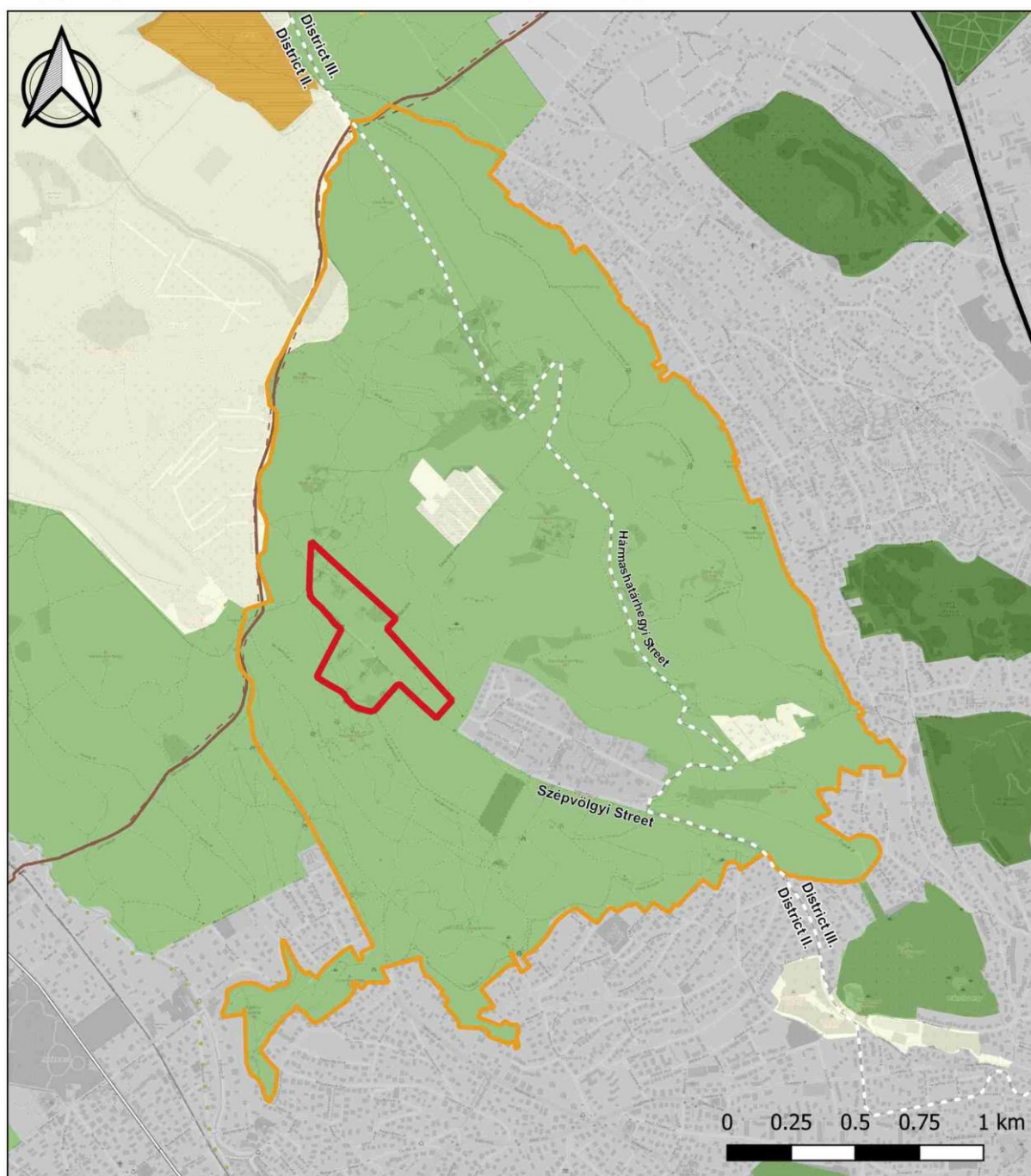
7.2. Revision of the plan

As it was described in 7.1. mid-time revision (May 2025 is compulsory. Beside that if large controls of 2023 and 2027 find that the problem indicator is higher than 20 %, the extra revision of the OP has to be completed until June 30th of the given year.

8. COSTS AND FINANCING

Number	Activity	Until the end of 2020 from URBforDAN	Until the end of 2020 from other source	2021-2029 from other source
1	Improving public transport			
2	Establishing coordinated parking system		1.500	800
3	Entrance point (bus terminus)	18.500		
4	A set of information boards and signposts	5.000		
5	Classrooms in nature (2 pieces)	23.400		
6	Installing drinking fountains	4.500		
7	Bird hide – with drinking pool	10.000		
8	Meandering educational mature trail	7.600		
9	Afforestation of the first parking lot	10.000	1.500	
10	Forest playground (Adonis Clearing)	9.000		
11	Management of grasslands			
12	Solving homeless problem			
13	Cleaning up the focus area			cca. 40.000
14	Elongate Meandering educational nature trail			2000
15	Afforestation of other 3 parking lots			cca. 50.000
16	Get rid of the invasive black locust			
17	Removing the ruins of the weekend cottages			cca. 75.000
18	Providing compost toilet for the visitors			12.000
	Total	88.000 €	3.000 €	cca. 179.800 €

App Figure 1: Land Use Plan of Budapest Agglomeration



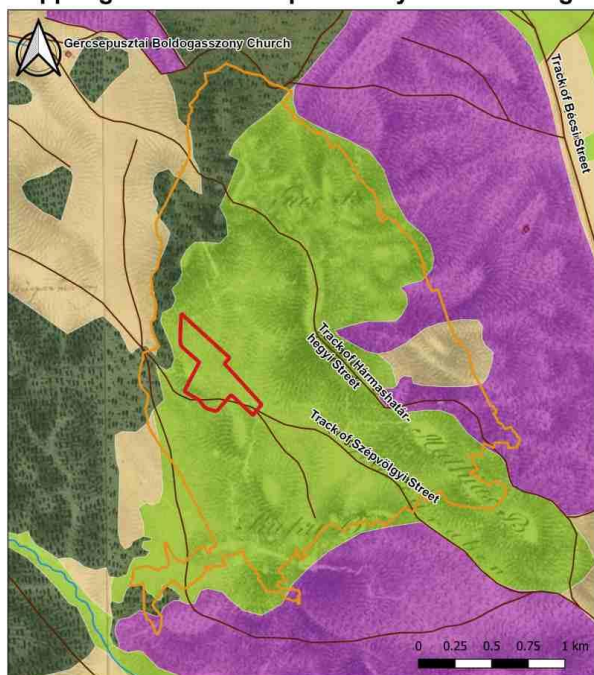
Map Legend

- Focus Area
- Strategic Area
- Highway
- Natural gas pipeline
- Border of 2nd and 3rd District

Land use categories

- Forest area
- Garden area
- Agricultural area
- Urban green area
- Residential zone

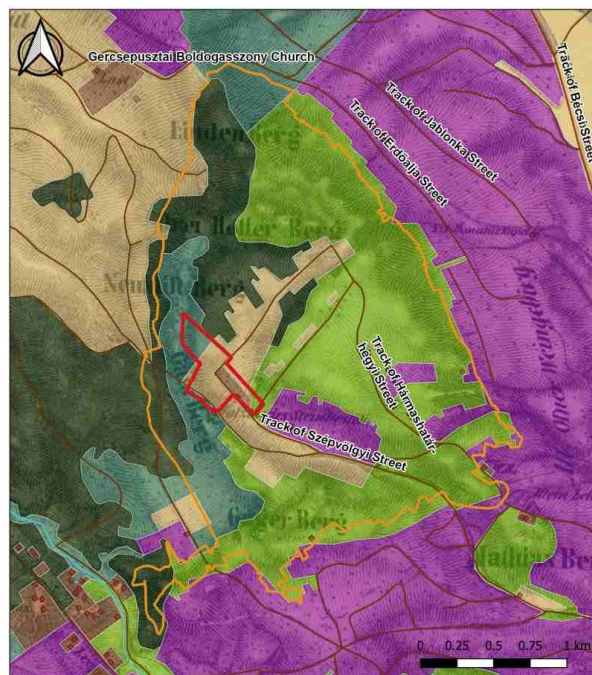
App Figure 3: Landscape History of the strategic area



Map Legend

First Military Survey – 1783

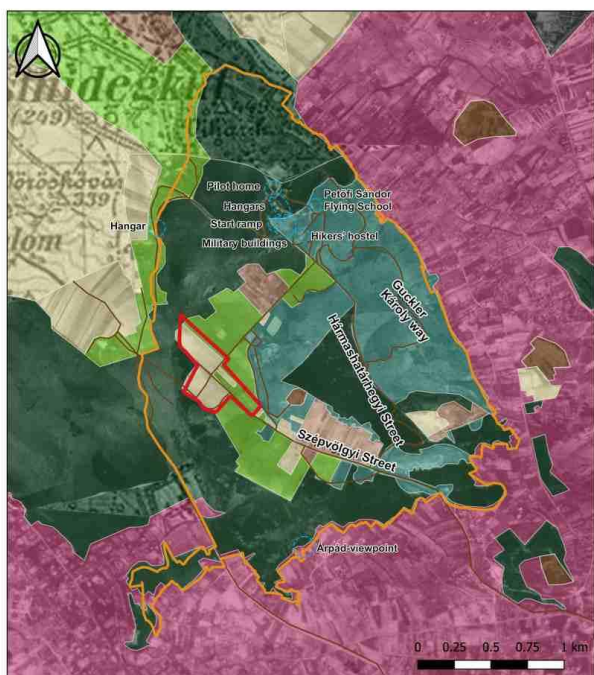
- Focus Area
- Strategic Area
- ◆ Building
- Road
- Water-course
- Forest
- Grassland
- Arable land
- Vineyard



Map Legend

Second Military Survey – 1861

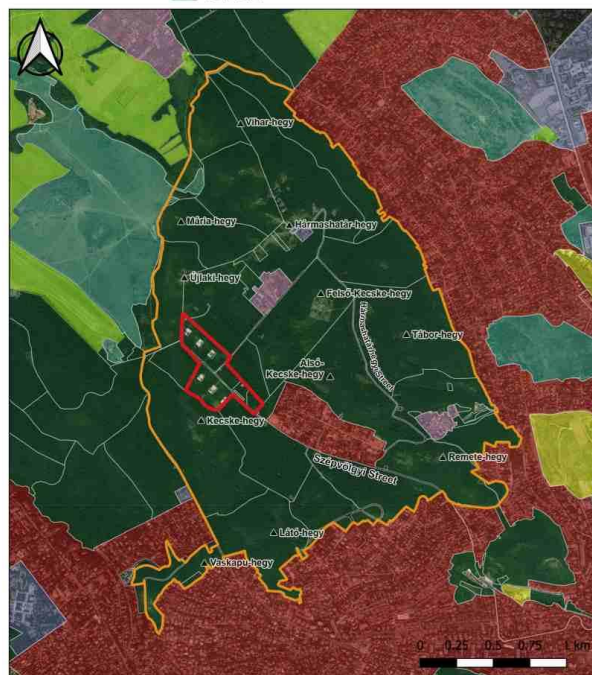
- Focus Area
- Strategic Area
- ◆ Building
- Road
- Water-course
- Forest
- Grassland
- Arable land
- Vineyard
- Garden
- Shrubland



Map Legend

Aerial photo 1944

- Focus Area
- Strategic Area
- Major roads
- Forest
- Grassland
- Arable land
- Garden
- Small gardens being developed
- Land in the process of natural forestation
- Damaged landscape – Clay mine
- Cemetery

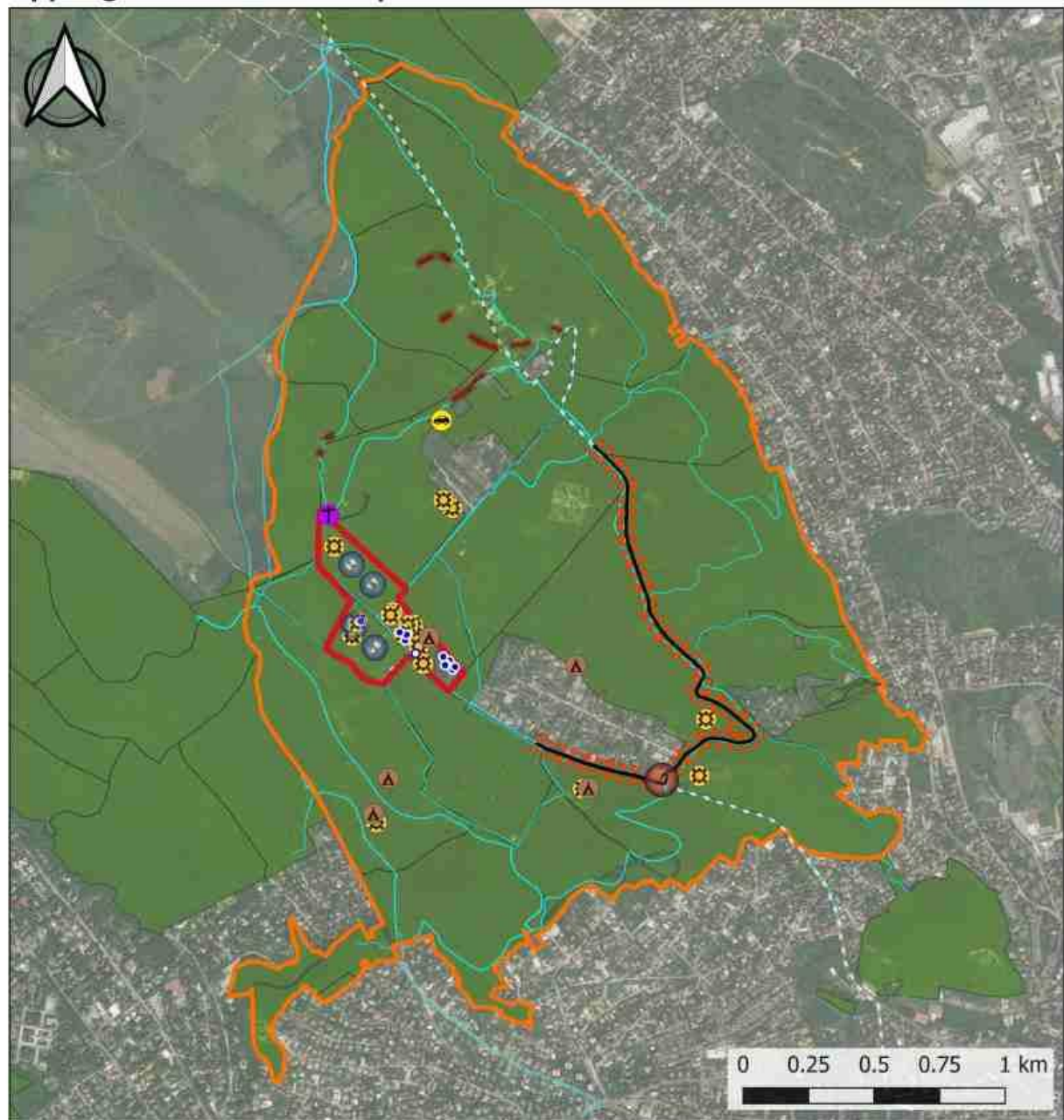


Map Legend

Present state

- Focus Area
- Strategic Area
- Forest
- Natural forestation
- Grassland
- Garden
- Residential area
- Other developed area
- Cemetery
- Area for recreation/sport

App Figure 4: Problem map of the Hármashatár Hill



Map Legend

- Focus Area
- Strategic Area
- Hiking trail
- Large-scale soil erosion
- Parking along the road
- Broken signpost
- Abandoned car wreck
- Rubbish left behind
- Homeless camp
- Ruins of cottages
- Basement
- Crowded parking lot
- Unnecessary parking lot

Rubbish left behind



Broken signpost



Parking along the road



Large-scale soil erosion



Unnecessary parking lot

