Shaping the cultural landscape of the entrance group of Mira Park in Vologda

S M Hamitova1,2,3, E I Fedchenko1, M A Ivanova1,2, A S Pestovskij3 and I R Galiullin4

1Vologda State University, 15, Lenina Street, Vologda 160000, Russian Federation
2North (Arctic) Federal University, 17, Severnaya Dvina Embankment, Arkhangelsk 163002, Russian Federation
3FGBUUAll-Russian Research Institute of Phytopathology, 5, Institute, Odintsovo district, Bolshie Vyazemy 143050, Russian Federation
4Kazan State Agrarian University, 25, Karla Marx Street, Kazan 420015, Russian Federation

*Corresponding email: xamitowa.sveta@yandex.ru

Abstract. This article is devoted to the creation of the cultural landscape of the entrance group of a park in an urbanized environment. The entrance group of any recreational area shapes the first impression of the whole project. In this paper, we conducted a study of the current state of the territory, studied regulatory and reference sources on the topic of the study and developed the concept of the entrance group of Mira Park in the city of Vologda.

1. Introduction
The entrance group is the calling card of any place. It shapes the impression of the visiting object and influences the visitor's interest. Arrangement of the entrance group in the territory of a garden and park facility is an important aesthetic component of the entire spatial architectural and artistic composition [1].

Mira Park is located in the Vologda region, in the northwestern part of the city. Currently, the place is actively used by residents for leisure and recreation. Despite the large passability of the park, the place is almost unfit for use. Lack of street furniture, litter and dried up trees lead to the deterioration of the environment.

Green areas in the city are one of the main criteria in assessing the quality of the urban environment. Based on the study of the territory of Mira Park and the study of various sources, the authors design a master plan of the original territory. When analyzing the information, the work also provides recommendations for methods to combat environmentally unsustainable territory [2-5].

2. Methods and Materials
The object of the study is Mira Park in the city of Vologda. The subject of the study is the entrance group of Mira Park.

In this work, the authors used the following methods: visual inspection with photofixation; landscape-taxation assessment; study of literary sources; analysis of the information obtained; 3D visualization of the project.
The purpose of this study is to develop a landscape design for the entrance group to reduce environmental degradation and, as a consequence, to conserve biodiversity and protect the ecosystem in Mira Park.

In this work, we used visualization methods using AutoCAD and Lumion. Using AutoCAD, the authors designed a schematic drawing of the landscaping of the entrance group of Mira Park (figure 1). Lumion is a software for landscape visualization. With the help of this program it is possible to create realistic images, videos and panoramas from three-dimensional models of the landscape. In this study, the authors exported the resulting 3D image made in AutoCAD to the Lumion program and obtained a detailed image of the future project (figures 2a and 2b).

3. Results and Discussion
Landscape design is a science combining architecture, construction (engineering aspect) and ecology, plant breeding (biological aspect). The main task is to create a harmonious picture, combining aesthetic, natural and ecological function.

Creating a landscape of the area helps to form comfortable conditions for a person to be in this environment with the help of various design tools, in particular, the selection of special types of plants, the creation of an artificial reservoir, small architectural forms, lighting elements [6].

In order for people to feel comfortable and safe, the environment should be characterized by optimal normative values of temperature, humidity, insolation and favorable conditions for the growth of plants [7-9].

The main element in the park area is greenery, which not only has a favorable effect on the air, but also protects it from wind and city noise. The ornamental diversity of plant life contributes to the creation of various design solutions [8-10].

Properly designed spatial environment will improve the quality of life of the urban population, and their psycho-emotional and physical health [11].

The area of Mira Park is one of the largest in the city of Vologda. In 1938, the general plan for the Central Park of Culture and Recreation was presented. The new recreation area was to appear on the right bank of the Vologda River, in the northwestern part of the city. Construction began on May 18, 1939.

The park covers both banks of the Vologda River and is bounded on the west and east side by Burmagin and Chernyshevsky streets. The total area of SPNR is about 157 hectares.

The original layout of the forest park was intended to be regular, that is, having a geometrically regular composition, with a pronounced symmetry. According to the architects' idea, the main alley leads to the main entrance of the park zone. Within the territory on the upper terrace from the front alley to the railway passage there shall be one more alley. Along it are the structures carrying various functions (sports, reading). According to the plan, the park itself should be divided into several functional zones: in the north - the territory of different types of plants, in part of the river valley there should be geoplastic relief, on the bank - the open-air theater, in the south of the park there was designed a children's area, as this part is the closest to the city.

In the process of studying the territory, it was concluded that the area is in a degraded state. Here is a number of problems that need to be eliminated through design: problems with lighting; lack of parking spaces on weekends; uncomfortable area, lack of street furniture; lack of pointers, signs; the area is not adapted for people with low mobility; the problem of the location of garbage cans in the area.

To address these issues, various design solutions were analyzed. The landscaping begins with the entrance group, which sets the visitor on a certain wave of emotion. The entrance to the front alley will be through an arched structure with a sign bearing the same name. A pond with a bridge will be designed to the north of the parking area. At the corner of the parking lots there will be an Alpine rock garden (with stones, flowers), smoothly transitioning into flower beds. Memory alleys will be formed on both sides of the path. A medicinal garden will be designed in the northern part of the entrance area (figure 1).
The expected long-term results of the project include an improvement in the environmental condition and aesthetic appearance of the entrance group. Also, after the transformation of the entrance group, it will be necessary to launch a chain of improvements to other recreational areas of Mira Park.

**Figure 1.** Schematic diagram of the landscaping of the entrance group of Mira Park. Symbols: 1. Alpine rock garden combined with a flower bed. 2. A pond with a bridge. 3. Memory alley. 4. Medicinal garden. 5. Garbage cans.

**Figure 2a.** A visual representation of the entrance to Mira Park.
4. Summary
The authors conducted a study of the current state of Mira Park. In the absence of proper care, over time, initially designed objects in the area have fallen into a dilapidated state. Consequently, the new master plan should provide for anti-vandal street furniture and plants that do not require a special type of care.

In the course of the study the regulatory and reference literature was studied. On June 18, 1998, Mira Park acquired the status of SPNR by the Decision №138 of the Vologda City Municipality Council.

After the study of the territory, the authors have developed a landscape project of the entrance group of Mira Park. A master plan of the territory and 3D visualization were created.

References
1. Theodoronsky V S and Zherebtsova G P 2010 Gardening of populated areas. Urban planning basics. Textbook for students of higher education institutions. (Moscow: Academy Publishing Center) p 256
2. Avdeev Yu M, Khamitova S M and Pestovsky A S 2019 The use of GIS technologies in the study of forest and urban plantations. Actual problems of the development of the forest complex: materials of the XVI International Scientific and Technical Conference (Vologda, December 5, 2018). Ministry of Science and Higher Education of the Russian Federation, Government of the Vologda Region, Department of the Forestry Complex of Vologda area, Vologda State University. ed S M Khamitova. (Vologda: VoGU) pp 6–8
3. Zalyvskaya O S, Kalikina A L and Kiseleva N A 2019 Decorative urban landscape in winter. Actual problems of the development of the forest complex: materials of the XVII International Scientific and Technical Conference (Vologda, December 3, 2019). Ministry of Science and Higher Education of the Russian Federation, Government of the Vologda Region, Department of the Forestry Complex of the Vologda Region, Vologda State University. ed Yu M Avdeev(Vologda: VoGU) pp 47–48
4. Khamitova S M 2017 Decorative assessment of plantings by the nature of the tree crown. Improving the efficiency of the forest complex: materials of the third All-Russian scientific-practical conference with international participation. Petrozavodsk. pp 233–235
5. Ivanova M A and Fedchenko E I 2019 A comprehensive analysis of the current state of the Fryazinovsky Park in Vologda. XIII Annual scientific session of graduate students and young scientists: materials of an interregional scientific conference: in 2 volumes. Ministry of
6. Grafius D R et al 2019 Using GIS-linked Bayesian Belief Networks as a tool for modeling urban biodiversity. *Landscape and Urban Planning* 189 pp 382–395
7. Yuan Shi, Chao Ren, Kevin Ka-Lun Lau and Edward Ng 2019 Investigating the influence of urban land use and landscape pattern on PM2.5 spatial variation using mobile monitoring and WUDAPT. *Landscape and Urban Planning* 189 pp 15–26
8. Bing-Bing Zhou, Jianguo Wu and Anderies J M 2019 Sustainable landscapes and landscape sustainability: A tale of two concepts. *Landscape and Urban Planning* 189 pp 274–284
9. Nafikova A R, Gabbasova R I and Rakhimova A R 2018 Capabilities of the Geographic Information System Quantum GIS. *International Scientific and Practical Journal "Integration of Sciences"* 5(20) pp 66–67
10. Khamitova S M, Khamitov P S, Fedchenko E I, Ivanova M A and Yuzhakov D E 2020 Formation of the cultural landscape of urban environment using Geographic Information Systems Technology. *IOP Conf. Series: Earth and Environmental Science* 507 (2020) 012010 doi:10.1088/1755-1315/507/1/012010
11. Kulbaeva A V and Galliulina A F Gardening methods in landscape design as a factor in improving the urban environment. *State and prospects for the development of forestry: materials of the National scientific and practical conference* (March 13–14, 2017). [Electronic resource] Omsk pp 153–158