

# Landscape Solution of the Territory of the Transport Interchange Hub “Old Village” with the Introduction of a Historical and Cultural Cluster

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**Abstract.** One of the main tasks of urban planning is the use of natural resources as a tool for creating vital conditions (improving the quality of water and air, protecting against noise and wind, and so on), so not only maintaining the green frame, but also its creation, restoration and enhancement is one of the city’s development priorities. At present, the development of integrated landscaping and landscaping of the territory near large transport interchange hubs (TPU) is considered a hot topic for St. Petersburg.

## 1 Introduction

The state program of the city “Development of the transport system of St. Petersburg” provides for the construction of 61 hubs. In this sense, the authorities of St. Petersburg decided to adopt the experience of developing transport infrastructure from the capital. Moscow has long been building transport hubs, which are in great demand among the population. Transport interchange hubs (TPU) in the city gave a good effect, including the economic one. Transport hubs concentrate high traffic of people, and the complexes built nearby are in demand, which brings a good income. In addition, there are new jobs. In total, there are plans to build 61 hubs worth 186 billion rubles, one of the first projects planned for implementation in the next few years is the Staraya Derevnaya transport interchange hub (TPU). According to information from open sources, in addition to providing communication between five points of the transport infrastructure, the TPU will include a hotel, an office building, and an all-season park [1]. This territory is located in the densely populated Primorsky district and is already a transport hub, combining the movement of buses and trams, trolleybuses and metro, as well as a railway station with suburban trains. A preliminary analysis showed that the characteristic pendulum migration increases the load at certain hours, both on the transfer hub itself and on the adjacent socially significant infrastructure. Therefore, the construction of a modern transfer hub is fully justified, as it not only provides a range of possibilities for the commuting migration of the population, but also allows you to unlock the potential of this place in terms of the authenticity of the

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environment and landscape solutions for restoring the local green frame as part of the unified Green Frame of St. Petersburg, because the design site located in close proximity to the Central Park of Culture and Leisure. Kirov, which is the most important natural area in the green infrastructure of the metropolis. Therefore, the design site can be seen as an important link that the Park can link.

The relevance of this work lies in finding ways to regenerate the landscape as part of the green frame, elements and techniques of landscape organization, as well as in choosing the optimal functional content with the development of the cultural image of territories of a similar scale and purpose, taking into account the prospects for the development of the city.

The goal of the project is to create a comfortable historical and cultural space for all categories of citizens, taking into account the formation of environmental identity and functionality, as well as improving the environmental characteristics of the space as part of the local Green Frame of the Primorsky district of St. Petersburg.

Project objectives:

1. Ensure compliance with all criteria for the comfort of open public spaces;
2. Increase the number of functional areas using social and communication aspects;
3. Create an accessible and entertaining safe self-regulating environment;
4. Integrate and support national and cultural traditions;
5. Compensate for the harmful impact of TPU operation by transforming the landscape and increasing green spaces.
6. Integration of landscape solutions with natural content in order to strengthen the local green frame

## 2 Research Methodology

The name “Old Village” is associated with Chancellor Alexei Petrovich Bestuzhev-Ryumin, who ordered 3,000 serfs for his estate, which served as the formation of the village. The designation “Old Village” began to be used in 1747 after the formation of the “New” village opposite Kamenny Island [1].

For a detailed study of the project, best design practices were studied, one of the analogues, Szell Kalman Square in Budapest (Hungary), is shown below (Fig. 1.). The object is a reconstruction (2012-2016) of one of the busiest transport hubs in the center of Budapest, where the bus and tram station and the Budapest metro station of the same name are located. On the square and the surrounding streets there is always a lively hand trade, and not far from the square there is a market and two large shopping centers. The main task was to rationalize the internal parts and transits of traffic, making the square a public space with a priority for pedestrians, with the maximum possible amount of green space and a system of spatial solutions that provide a complex functional program. The composition is dominated by bold dynamic lines based on movement analysis. Vertical zoning, exploited green roofs, landscaping cascades and geoplastics are actively used. Flowerbeds and various landscaping elements with an extensive dendrological program increase the quality and comfort of the environment, creating conditions for contact with Nature in the center of the urbanized hub. Bus and tram stops have been modernized, electronic displays have been installed that inform passengers about the arrival time of route vehicles. A cycle path was laid along the square. Illumination of the territory adds expressiveness at night, making the space safe [2]. A bold idea, an integrated approach and a series of changes in functionality has led to the Celle Kalman Square becoming one of the liveliest squares in Budapest, providing modern functions and conditions for a comfortable stay surrounded by natural components in line with the concept of sustainable development.



**Fig. 1** Sell Kalman Square in Budapest (Hungary)

Further, having studied the cultural and historical aspect, the architectural and urban planning situation, natural and landscape characteristics, having analyzed the design experience, the authors of the study came to the conclusion that this landscape object in St. Petersburg has great potential and is interesting from an environmental and historical point of view, but the territory needs in the sustainable development of the architectural and landscape complex with a special approach in the design of green spaces and taking into account social significance, as well as a detailed study of the transit function in the structure of the local green frame, since the path from the Staraya Derevnja metro station to the S.M. Kirov (Central Park of Culture and Leisure named after S.M. Kirov) is an important pedestrian and, in the future, green infrastructure link. It is important to note that the public space is a hybrid [3], so it is advisable to apply the principles of working with similar territories to it.

The proposal was developed taking into account the project of the future Staraya Derevnja transport hub, the construction of which is scheduled for 2023 [4]. The planning solution is tied to its geometry. The project provides for the comprehensive implementation of new functional areas, pedestrian routes, green areas, children's and sports grounds, an exhibition space with a pavilion [5]. An important task of designing such spaces - creating a barrier-free safe environment - is solved through pedestrian links with the city, providing conditions for people with limited mobility, integrating the necessary equipment and intuitive navigation, removing fences, fences and other obstacles.

### 3 Results and Discussions

In the concept, the territory meets not only the possibilities of passive recreation, but also involves in the process of creativity, physical and spiritual development. This is achieved through the use of objects that cover the needs of people of different ages. For children, these are intellectually developing playgrounds with the opportunity to study the natural world tactilely; for adults, art objects and conditions are organized that involve social interaction. The internal planning structure takes into account the presence of several entrances to the central part of the design object in accordance with the main pedestrian arteries and public transport stops (Fig. 2.). The organization of the movement of visitors to the hybrid public space is planned along several thematic routes. The central place is a historical and cultural cluster, the basis of which is a multifunctional pavilion (Fig. an installation of wooden houses on the theme of the history of the place before the period of active urbanization and a landscaped tram ring [6]. This solution allows you to immerse yourself in the atmosphere of a unique way of life, while augmented reality technologies using modern information resources will attract additional tourists and interested people.



**Fig. 2.** Land plot organization scheme

One of the design methods was chosen the principle of “Virtual Grid” as the basis for the composition of the master plan [7]. The resulting 11 squares structured, united the space and filled with functionality. For example, in one there is a pavilion with an outdoor cafe, in the second there is a chess court, in the third there is a quiet rest area, and so on.



**Fig. 3.** Axonometric image of the project. The central part of the site with a tram roundabout and a multifunctional center



**Fig. 4.** Visualization of the project. Multifunctional center with an exploitable roof

For visitors there is a two-way bike path, bike parking and all the necessary infrastructure for comfortable movement (Fig. 5.). The cycle route is part of a large urban cycling infrastructure.

The attractiveness of the environment is achieved due to the quality of the materials used and small architectural forms, the brightness and integrity of the figurative solution, the diversity of impressions and the creation of a brand on a historical basis [8].

Design solutions demonstrate a principled approach to the choice of paving and coverings for play areas. The main feature is the change of character, which allows you to organize the zoning of space due to various types of coatings and achieve maximum

immersion in a particular environment [9]. Modern natural with special processing and artificial surfaces are used. The basis of urbanized coatings is paving from large-format slabs of 1 \* 1 meters in size, with a minimum number of seams. A variety of textures and shades, their combination contributes to obtaining interesting effects and increasing the authenticity of the space.



**Fig. 5.** Visualization of the project. Cycling route

Russian folk ornaments give the place its identity and uniqueness. The main principles for the formation of the pavement pattern were: the signing of unique zones and natural elements, the simplification of navigation of transit routes and the use of accent color, the introduction of a pattern as part of the design code of the environment (Fig. 6.)

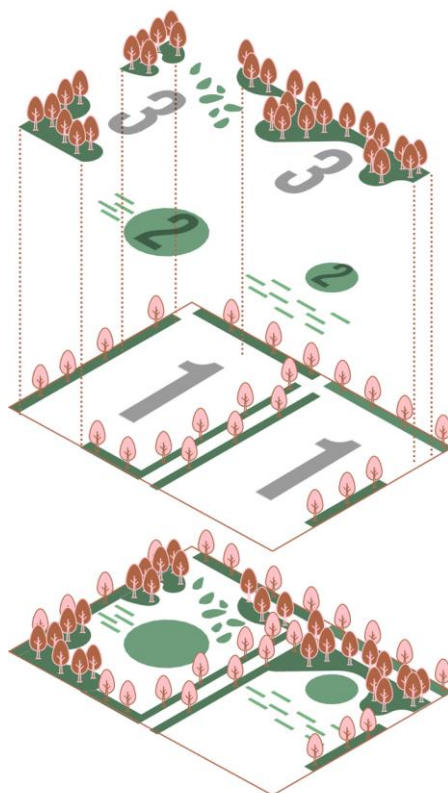
A special role is played by the lighting scenario, which is a functional lighting of points of attraction and main transit routes, as well as artistic lighting of landscape components with built-in elements [10]. A spatially oriented lighting system reacts to changing weather and time of day.

An important role in the formation of a comfortable environment is played by functional zoning, which determines the distribution of mass flows of visitors across the territory. The project provides for the division of the object into 8 functional zones, different in purpose, landscape and assortment [8]. The concept of landscape organization is to create open and closed spaces using the structure of landscaping and landscape architecture techniques, such as the integration of geoplastics in combination with unique architectural and design solutions of individual small architectural forms and spatial elements, the formation of compositions of different heights and relief differences, a combination of different levels of landscaping and types of coatings, synthesis of linear and natural pictorial forms, land art, innovations and design code of the environment. At the same time, the territory is simultaneously divided into zones - various landscape and ecological areas, thereby maintaining and developing the biodiversity of the city.



**Fig. 6.** Visualization of the project. Children's playground and landscaping

Landscaping of the territory consists of several types of structures, different in function and purpose: protective and sanitary landscaping, accent landscape elements and dense arrays of trees and shrubs, alleys, picturesque groups, mixborders, etc. (Fig. 7). All of them are planned from three tiers (lower, middle and upper), which will ensure the creation of a sustainable self-regulating ecosystem, biodiversity, conditions for birds and insects [11]. An important element of landscaping is to ensure stress-free adaptation of plants.



**Fig. 7.** Scheme of the organization of the land plot (illustration by the author).

## 4 Conclusions

Thus, the project is aimed at creating a comfortable urban environment and is focused on environmental feasibility in line with the concept of sustainable development, the formation of empathy towards natural objects and the use of ethno-oriented forms and technologies of educational orientation to build constructive public communication, social control, education, integration of conditions for small and medium-sized businesses in a modern format, the adaptation of refugees and migrants to culture and history, solving issues of interethnic relations and the implementation of migration policy. The ethno-oriented content of the project is implemented in three directions: material culture (national dwelling, its decoration, household items, vehicles, and so on), spiritual culture (targeted walks, folklore concerts, theatrical performances, national symbols), local culture (place name, historical authenticity of some zones). This hybrid public space involves active dialogue and calls for interaction. The presence of a transfer hub in the design area was a prerequisite for the formation of an integrated approach to landscape and environmental solutions. The use of the method of propaedeutic design allows solving the problem of anthropogenic load, taking into account its increase, and the issue of painless closure with plans for the development of the adjacent territory by the city. An important role in the project is given to the creation of a single brand of space and the formation of a positive attitude towards the urban environment and the interaction in it of various social groups of residents, taking into account the modern challenges of the time.

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## References

1. A. K. Brodsky, N. G. Bobylev, Biodiversity in overcoming the current environmental crisis: a study of ecosystem and anthropocentric approaches in the strategy of sustainable development, **62(3)**, 237-253 (2017).
2. S. B. Danilova, The Green Frame of Saint Petersburg: modern aspects, unique functions and green plant systems, 336-344 (2023).
3. S. B. Danilova, N. A. Kerimova, Architectural and landscape design: a tutorial, 359 (2021).
4. K. S. Gorbachevich, E. P. Khablo, Why are they so named? On the origin of the names of streets, squares, islands, rivers and bridges of St. Petersburg, 138 (1998).
5. Landezine. Szell Kalman Square (2016), <https://landezine.com/szell-kalman-square-budapest-hungary/>.
6. E. Krasilnikova, D. Klimov, The main design principles of hybrid spaces in terms of the urban planning regeneration (2016).
7. Website of the Natural History Museum of Finland (2023), <https://www.luomus.fi/en/natural-history-museum>.
8. Official website of the Administration of St. Petersburg (2023), <https://www.gov.spb.ru/>.



9. Official website of SPbGASU (2023), <https://www.spbgasu.ru/>.
10. RBC, What is the ecological framework of the city and why is it needed (2020), <https://trends.rbc.ru/trends/green/5ecfa2679a79475081e84b12>.
11. Kommet - a complex of advertising services in the St. Petersburg metro and authorized by the agency for the placement of sound advertising on escalators (2021), <http://www.kommet.spb.ru/>.