

The design of railway areas for cohesion and urban mobility

Olteanu Alexandra Maria¹, Bodea Sonia²

¹ Technical University of Cluj-Napoca, Faculty of Architecture and Urban Planning

² University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Faculty of Horticulture and Rural Development Affairs

* Corresponding author: alexandraolteanu19@yahoo.com

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Abstract

This paper examines the transformations of railway infrastructures and their impact on urban development and local communities, with a focus on developing an urban planning strategy aimed to revitalize the railway and industrial areas in Cluj-Napoca. The primary aim of this research is to promote better integration and connectivity between different sectors of the city, thereby facilitating more effective social and economic inclusion between both sectors. By addressing these aspects, the goal is to create a more balanced and prosperous urban environment, where resources and opportunities are distributed and accessed equitably and sustainably.

The design proposal was developed based on the analysis of three distinct areas from Cluj-Napoca city, with the aim of identifying opportunities for a more prosperous and integrated urban development. Through careful evaluation of these areas, efforts were made to understand the specific needs and potential of each one, in order to achieve an efficient solution for improving residents' quality of life. This holistic and detailed approach has contributed to shaping a comprehensive vision for urban revitalization in these regions of the city.

This work, grounded in the detailed analyses presented, has successfully identified and proposed new spaces of interest and connection within the city. By carefully examining the data and urban context, a series of opportunities have been outlined for developing key areas intended to become focal points and centers of activity within the community.

Keywords: railroad, green corridor, revitalization, urban development, sustainability

Introduction

The concept of `landscape` (Landschaft) was introduced into the scientific and geographic context by the German geographer A. Hommeyer in 1805. It was defined as the representation of the appearance of a territory observed from a dominant vantage point [1]. Landscape refers to a portion of territory perceived as such by the population, whose character is the result of the action and interaction of natural and/or human factors [15]. Different fields offer perspectives on landscapes that reflect the specific concerns and goals of each discipline. Historians interpret landscapes as a result of inherited cultural influence; economists view them as sources of raw materials and goods; and medicine explores their therapeutic potential. For ecologists, landscapes provide essential life support, shaped by human intervention and creating diverse habitats that influence species adaptation. Geography assigns a scientific meaning to landscapes, developing a subdiscipline dedicated exclusively to their analysis. Landscape architecture interprets landscapes to design aesthetic, functional, and ecological outdoor spaces. It assesses both natural and human characteristics of the land to create innovative and sustainable solutions that enhance and transform the site [11], [13], [5].

The urban environment, given its complexity and internal and external influences, is in constant evolution, and the urban landscape reflects this continuous change, representing a flow of interconnected systems and eras, a synthesis of historical moments gathered within a single space [12]. The city and urban landscape, with their long-term evolutionary nature, embody the result of the ongoing development of human society, reflecting its inclination toward collectivity within an increasingly concrete and coherent geographic and human structure, characterized by distinct populations and habitats (including predominantly non-agricultural residential, functional areas, and cultural, administrative, and political zones). The city emerged and evolved from the desire to create a viable environment with clear territorial and functional boundaries in relation to the surrounding populated environment, yet in a continuous and reciprocal relationship with it [2].

The railway space is designed exclusively for the use of railway vehicles, with access allowed only at designated points. Railway vehicles are interdependent with, and inseparable from, railway infrastructure, and

no other type of vehicle can operate on this path. Beyond the tracks themselves, railway infrastructure includes a wide range of essential buildings and facilities, such as passenger and freight stations, workshops, locomotive depots, water stations, coal depots, and signaling devices. All these elements together form the "machine ensemble," as defined by W. Schivelbusch in his detailed cultural history of train travel. Due to their structural and functional autonomy, railways become a dominant feature and a territorial backbone. Places located near railways are inevitably affected by their presence, undergoing significant changes: they may become more attractive, suffer degradation, be divided or restricted, or even be redefined. Regardless of their previous identity, these places will subsequently be identified, often tragically, as neighbors of the railway [6], [9].

As railways expanded their presence across various regions, particularly in the second half of the 19th century, their construction took place during a period when urban and regional planning were still in their early stages or not yet sufficiently developed to be considered distinct disciplines. However, based on accumulated experience, guidelines and quality standards for railway projects gradually began to take shape, along with evaluation tools adopted by local or central authorities. These guidelines and standards later influenced the railway construction and development process [4], [10].

Within the European Union, there is an official consensus that concerns regarding spatial quality have often been overlooked in favor of economic priorities. The Guiding Principles for Sustainable Spatial Development of the European Continent, developed by the European Conference of Ministers Responsible for Regional Planning (CEMAT) in 2002, advocate for the "harmonization of economic and social demands with the ecological and cultural functions of the territory." In the context of mobility and transport, this implies that "European corridors should not be regarded solely as components of transport infrastructure. Their interaction with settlement structures [...] and the needs for environmental and landscape protection must also be considered." In a broader sense, transport corridors should be approached and planned not only as facilitators of economic growth but also as tools for spatial development. This perspective should drive the integration of large-scale spatial planning as an essential component of transport infrastructure planning [7], [14].

To establish a more sustainable relationship between mobility and urban planning, it is essential to move beyond the prevailing restrictive view that treats the railway merely as a technological and utilitarian object. A deeper understanding is required, one that acknowledges its formative and transformative impact on the places it traverses, as well as its cultural significance. The interaction between railway and urban spaces is complex and crucial, a theme both old and contemporary, demanding extensive investigation to be fully comprehended. Studying the historical relationship between housing and railways within the context of art history, architecture, and urbanism can provide valuable insights. However, the specific relationship between railways and housing is rarely addressed in the literature, whether in art history, architecture, or urban planning, with the notable exception of the work of H.J. Dyos in the United [8], [3].

Material and Method

The detailed study of the railway evolution in Cluj-Napoca city began with analyzing maps from 1769-1773, including the Josephine Map, one of the oldest cartographic representations of Romanian territory. The map shows the city's concentric development around the medieval settlement *Clus* Fortress. Although the street grid provided access from surrounding areas, the railway network was underdeveloped in Transylvania, leaving a gap where the future train station would be built. The next map, from the Habsburg Empire period (1853-1858), shows the construction of the railway linking the western part of the country to Cluj-Napoca, ending at the future station site. The topographic map from 1869-1887 depicts the continuation of the railway and the first station building, designed by Karl von Gega and built by the Warring company, inaugurated in 1870. By 1900, railway infrastructure in Cluj-Napoca grew significantly, with an expanded station and additional freight lines. A wagon sorting depot was built, marking the beginning of the limited northern expansion of the railway. These developments established Cluj as a key hub in the regional railway network, promoting economic growth and urban development around the existing railway infrastructure (Figure 1).

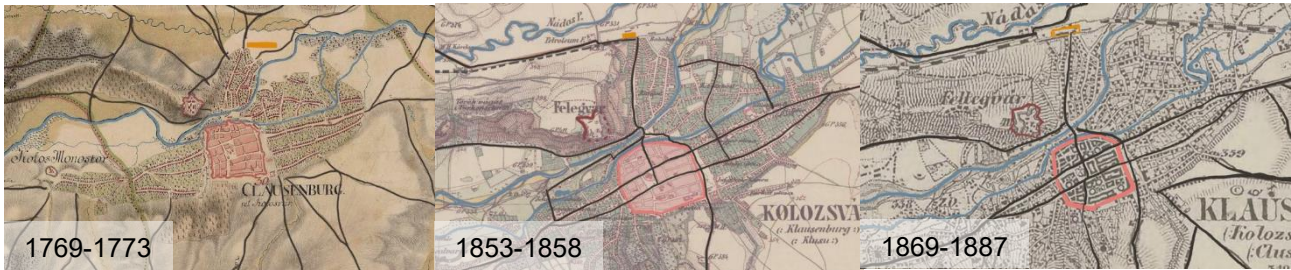


Figure 1. The evolution of the railway in the city of Cluj-Napoca
 (Source: arcanum.com [16])

The first area proposed for analysis is located in the eastern part of Cluj-Napoca city, specifically in the Ira neighborhood. It is characterized by a major traffic hub where Aurel Vlaicu Street crosses the railway line, via a bridge. This area is an important point of interest for residents, providing easy access to a food market, a park, an exhibition area and various commercial spaces. There is a significant differentiation between the northern and southern parts of the railway in terms of typology. In the north, individual houses dominate former agricultural land, with narrow long plots, having a minimal visual and environmental impact. In the south, the area is primarily characterized by collective housing and commercial spaces, including institutions, public services, publicly accessible green areas, and various economic activities, reflecting an urban planning approach focused on densification and multifunctionality. The area benefits from accessibility through public transport, vehicles, and pedestrian pathways, but there are improvised parking spaces that deteriorate the public space. Due to the lack of designated space, crossing the railway is difficult, leading to the appearance of informal paths. In the absence of permanent parking lots, residents have transformed the green areas into a parking space for their vehicles, which not only affects the aesthetics of the area but also its functionality. These issues highlight the need for more rigorous urban planning strategies, with solutions for parking and safe railway crossing. The vegetation in this area is not very diverse, consisting of spontaneously species as well as deciduous ones. Notable species include *Juglans regia* and *Fraxinus excelsior*. The spontaneous vegetation contributes to local biodiversity, providing habitat for fauna and beneficial insects, as well as a natural appearance that adds a sense of authenticity and undisturbed quality. A well-planned urban intervention is necessary to improve the area. The under-bridge passage must be properly designed to safety access, with appropriate lighting and surveillance. Transforming the green space into an organized parking area would enhance the quality of life in the neighborhood. Creating well-maintained green spaces and public facilities would discourage antisocial behavior and improve the perception of safety and attractiveness in the area, contributing to a cleaner, safer urban environment (Figure 2).



Figure 2. Area 1 analysis

The second analyzed area is located in the Mărăști neighborhood and includes the Clujana Halt railway station. It serves as an important traffic hub, where Fabricii Street crosses the railway line via a passage. This area plays a vital role in the urban infrastructure by facilitating connections between different parts of the city, but it requires modernization projects to improve pedestrian and vehicle access, as well as the rehabilitation of the infrastructure to support the area's ongoing development. The northern side of the railway is characterized by industrial zones, such as factories and warehouses, alongside individual homes

built on former agricultural land with narrow, long plots. In contrast, the southern area is distinguished by the development of collective housing and a variety of commercial spaces, including shopping centers. The south also contains educational institutions, medical centers, and other public services. This differentiation reflects the historical evolution and distinct urban planning strategies: the north area maintaining a more traditional and dispersed setting, while the south one has evolved into a denser, multifunctional urban model. The area benefits from good accessibility via public transport, vehicles, and pedestrian paths; however, there are issues with improvised parking, which impact the public space and traffic flow. Additionally, crossing the railway is challenging, with only one designated crossing, leading to the creation of informal, unsafe paths, which complicate traffic management and infrastructure maintenance. The vegetation near the Clujana railway station is diverse, including both deciduous trees and shrubs, as well as conifers and spontaneous plant species. Notable tree species include *Pinus sylvestris*, *Robinia pseudoacacia*, *Fraxinus excelsior*, *Betula pendula*, *Tilia platyphyllos* and *Acer* sp. A well-planned urban approach is needed, with solutions for managing parking, ensuring protective zones to prevent unauthorized crossing of the railway, and providing new recreational spaces for residents. These new designs will improve accessibility, safety and urban organization (Figure 3).



Figure 3. Area 2 analysis

The third area analyzed is the Cluj-Napoca Railway Station, located in the northern part of the city. It serves as an important transportation hub, offering direct connections to the city center and interconnecting various modes of transport. The station's proximity to the city center enhances accessibility and mobility for both residents and visitors. The area surrounding the Cluj-Napoca Railway Station is characterized by a mix of functions, including commercial buildings, accommodation spaces, and restaurants. It is undergoing continuous transformation, with rehabilitation projects aimed at improving the infrastructure. Urban development plans focus on expanding and modernizing transportation facilities, enhancing connectivity, and stimulating economic and social development. The southern area of the station is more intensively developed, with residential buildings and public facilities, while the northern area is dominated by industrial zones, some of which have been rehabilitated. The reuse of these industrial spaces could revitalize the area, offering opportunities for new housing, commercial spaces, and parks. The Cluj-Napoca Railway Station area is well connected to public transport, with trams and buses facilitating passenger access. Its proximity to the city center further improves accessibility; however, parking remains insufficient, leading to illegal parking that disrupts traffic flow and public space. Although underground passages are crucial for accessibility, they are perceived as unsafe due to poor lighting, lack of surveillance, and their use as shelters by homeless individuals. These issues, combined with poor maintenance, contribute to the degradation of the area and create a sense of insecurity. Regarding vegetation, the area surrounding the central point of interest contains a large amount of unused space, approximately 50% of which is covered by spontaneously developed vegetation. Additionally, waste and construction materials are stored illegally. In contrast, the area adjacent to the Nadăș river has richer vegetation. Along with spontaneously grown trees and shrubs, the river corridor features tree species such as *Salix* sp., *Fraxinus excelsior*, *Robinia pseudoacacia*, and *Tillia platyphyllos*. Consequently, the area requires cleaning and landscaping efforts to improve its ecological and aesthetic potential. The area near the small railway station in Cluj and the western bus terminal is characterized by a mineral landscape on the western side, with a street alignment made of *Tillia cordata*. Vegetation is limited, emphasizing the harsh nature of the landscape. Near the bus terminal, a dog park is landscaped with *Pinus sylvestris*, *Tillia platyphyllos*, *Abies alba*, as well as spontaneous shrubs and trees, providing a valued green space for recreation and relaxation (Figure 4).

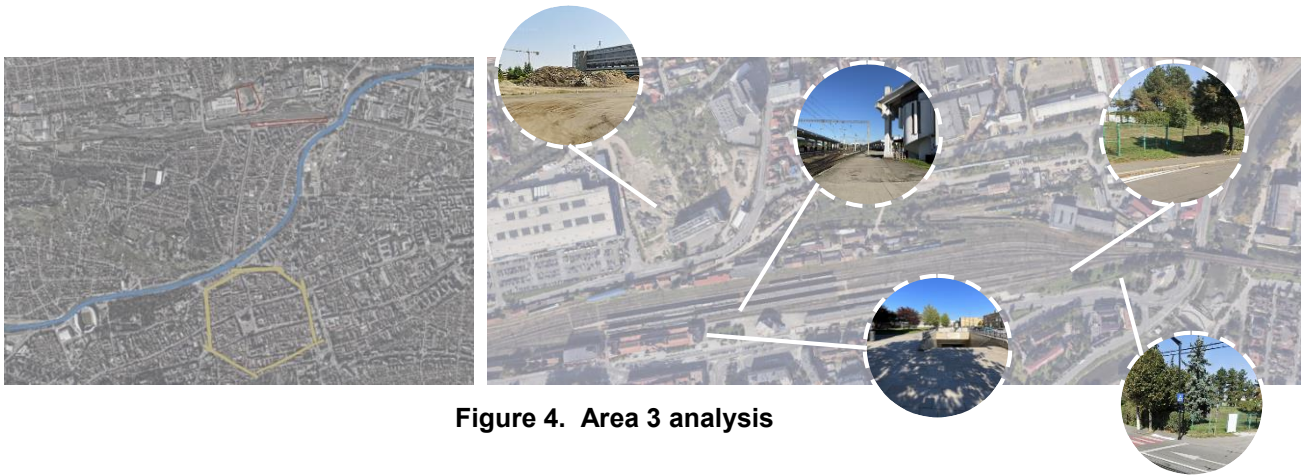


Figure 4. Area 3 analysis

Results and Discussion

Building on the analysis of the current situation and a deeper understanding of the site, a design concept is proposed to address the identified challenges. The design concept focuses on addressing the current challenge to ensure a safe crossing of the railway. It also proposes the design of a parking area to accommodate both residents and visitors. Additionally, the project aims to expand the children's playground and construct a pavilion for events, enhancing the area's functionality and attractiveness (Figure 5).



Figure 5. General urban design plan for area 1

To improve connectivity within the city, the road network will be adjusted to suit the specific characteristics of each area. The proposed plan will consider the street profiles for each zone while adhering to the Cluj-Napoca Urban Planning Regulations. Generous sidewalks on both sides of the street will ensure pedestrian safety and comfort. By adhering to these specific street profiles, the road infrastructure will be tailored to the needs and characteristics of each area, improving traffic flow and ensuring harmonious integration within the urban landscape. The design concept aims to integrate seamlessly into both the current and future context, creating a cohesive ambiance with the future development of Aurel Vlaicu Park. The primary goal is to provide solutions for the safe crossing of the railway, which is currently a major concern. Additionally, the project seeks to enhance the variety of recreational and leisure facilities. This includes expanding the children's playground to offer more entertainment and exploration options. The construction of an event pavilion will also create a versatile and flexible space suitable for various community and cultural activities. These initiatives are intended to enrich the experience of residents and visitors, contributing to the creation of a more cohesive and dynamic community. Furthermore, the proposal includes the introduction of a parking area accessible to both residents and those passing through the area. This is crucial for ensuring an efficient and safe traffic flow, reducing congestion, and minimizing the dangers of illegal parking. An essential aspect of the project is honoring the area's industrial heritage by preserving the disused railway tracks and incorporating them into a memorial trail. This will connect the past with the present, offering meaningful memories for both the community and visitors. The plan also proposes measures to reduce noise pollution and improve safety, such as the creation of earth mounds and dense vegetation, which will act as a natural barrier against noise and enhance the surrounding environmental quality. To improve connectivity between the northern and southern areas of the railway, it is proposed to extend the pedestrian bridge from Aurel Vlaicu

Park to the northern side of the railway, eliminating physical and visual barriers. Additionally, the western passage will be expanded to facilitate vehicle access, and a new pedestrian bridge will be built on the eastern side, ensuring safer and smoother access to the commercial areas of the neighborhood.

The proposed landscaping for the green areas adjacent to the railway tracks aims to plant tree and shrub species that prevent obstruction of train visibility and discourage illegal crossings. Tree species include *Acer platanoides*, *Betula pendula*, *Fraxinus excelsior*, and *Tilia cordata*, while shrub species include *Berberis thunbergii*, *Cornus sanguinea*, *Cotoneaster horizontalis*, and *Juniperus sabina*. In parking areas and near traffic arteries, trees from the genera *Acer*, *Platanus*, and *Tilia* (*Acer platanoides*, *Platanus hybrida*, *Tilia tomentosa*) are proposed to provide shade and regulate temperature in summer. For major public areas, like the multifunctional pavilion and children's playground, solitary trees such as *Acer campestre*, *Betula pendula*, *Corylus avellana*, *Sorbus aucuparia*, and *Tilia tomentosa* will be planted to offer shade without blocking views, keeping the space open and airy. Earth mounds will serve as both visual barriers and climbing areas for children. These will be planted with trees like *Sambucus racemosa*, *Morus alba*, and *Quercus rubra* to reduce summer heat and add color. Near the street, creeping shrubs such as *Cotoneaster horizontalis*, *Juniperus horizontalis*, and *Elaeagnus pungens* will ensure children's safety by preventing them from crossing the mounds. To honor the area's industrial history, the former railway tracks will be integrated into a memorial path landscaped with flowering perennials and grasses. Proposed species include *Achillea millefolium*, *Astilbe arendsii*, *Coreopsis verticillata*, *Echinacea purpurea*, *Lavandula angustifolia*, *Nepeta faassenii*, *Rudbeckia hirta*, *Salvia nemorosa*, as well as grasses like *Carex morrowii*, *Festuca glauca*, *Panicum virgatum*, and *Pennisetum alopecuroides* (Figure 6).



Figure 6. Ambience perspectives, area 1

The area near Clujana Train Station is a key point of interest for the local community. The focus is on modernizing the platform and improving access for efficient and comfortable transit. In the northern part, a green strip currently used for pedestrian crossing will be transformed into a space for walks and relaxation. In the southern part, which serves both locals and visitors, the goal is to enhance its distinctive character by creating a comfortable resting area, a park for children, a space for outdoor sports, and a pet-friendly area. These facilities will meet the diverse needs of the community, promoting an active and healthy lifestyle. These initiatives will turn the area into a vibrant, multifunctional hub, improving the quality of life and fostering a sustainable urban environment (Figure 7).

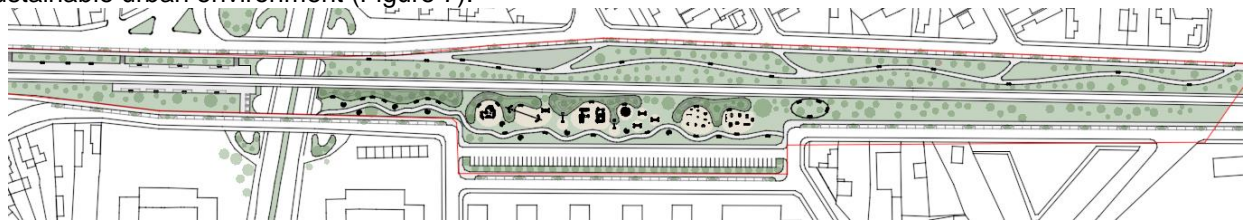


Figure 7. General urban design plan for area 2

To improve connectivity within the city, the unique characteristics of each area's streets will be considered. The plan includes adjustments to the adjacent traffic arteries, in alignment with the General Urban Plan of Cluj-Napoca. The area, which is predominantly residential, has narrow streets. In addition, wide sidewalks will be designed on both sides of the street to ensure pedestrian safety and comfort. By following these specific street profiles, the aim is to create a road infrastructure that meets the needs and characteristics of each area, helping to improve traffic flow and integrate smoothly into the urban landscape. This approach will enhance mobility within the city, making it a more pleasant and efficient environment for both residents and

visitors. The general design concept aims to create attractive and accessible spaces near the railway tracks, addressing the safety risks in the area. To mitigate this, a visual and physical barrier will be built using earth mounds and medium to tall vegetation, discouraging pedestrians from crossing outside the designated passage and providing a safer route. Both the southern and northern communities will benefit from tailored designs that meet their specific needs. These spaces will be designed to be functional and appealing for all age groups, considering accessibility for people with disabilities, integration into the urban landscape, and promoting sustainable space usage. The goal is to improve the quality of life, create a safer urban environment, reduce the risks associated with crossing the railway, and encourage active and sustainable mobility in the city. The focus is on improving the train station platform and access, ensuring comfortable and safe travel conditions for all passengers. Covered areas will be provided on the platform to protect travelers from rain and snow, offering shelter during bad weather. In the northern part of the area, a green strip currently used for pedestrian crossing will be transformed into a space dedicated to walks and relaxation amidst nature. This multifunctional area will offer a peaceful retreat, with benches and terraces for rest and contemplation, providing a welcome break from urban bustle and fostering connection with the environment. The plan for the southern area aims to create an attractive and improved space, accessible and friendly for both local residents and visitors. Existing garages will be replaced with an open parking lot, enhanced with vegetation to improve air quality and create a healthier, cooler environment. A comfortable seating area with benches and green spaces will be designed for relaxation and socialization. A park for children of all ages will include play facilities to promote physical activity and creativity. A designated area for outdoor sports will be available for all ages, encouraging exercise and recreation in nature. Additionally, a special space for pets will be created, allowing them to enjoy a safe and pleasant environment.

The proposed vegetation plan focuses on preserving the natural character of the area, creating attractive green spaces, and enhancing safety by preventing illegal railway crossings. Native species such as *Jungla regia*, *Fraxinus excelsior*, and *Robinia pseudacacia* will be preserved to maintain the landscape's authenticity. Tree and shrub planting will ensure visibility for trains and act as a natural barrier to discourage unauthorized crossings. Proposed tree species include *Acer platanoides*, *Betula pendula*, *Fraxinus excelsior*, and *Tilia cordata*, combined with shrubs from *Berberis thunbergii*, *Cornus sanguinea*, *Cotoneaster horizontalis*, and *Juniperus sabina*. For parking areas and roadsides, trees like *Acer platanoides*, *Platanus hybrida*, and *Tilia tomentosa* will provide shade and reduce the heat island effect. In public spaces such as playgrounds and sports areas, solitary trees like *Acer campestre*, *Betula pendula*, *Corylus avellana*, *Sorbus aucuparia*, and *Tilia tomentosa* will be planted to ensure comfort and maintain open visual spaces. For the northern promenade area, existing trees from *Robinia*, *Fraxinus*, *Junglas*, and *Acer* will be preserved, and new species like *Acer campestre*, *Acer tataricum*, *Amelanchier spicata*, *Berberis vulgaris*, *Corylus avellana*, *Malus floribunda*, *Morus alba*, *Prunus avium*, *Prunus cerasifera*, *Prunus serrulata*, *Quercus cerris*, and *Quercus rubra* will be introduced to complement the space's character (Figure 8).



Figure 8. Ambience perspectives, area 2

The intervention design elements proposed near the Cluj-Napoca train station, focuses on transforming the area adjacent to the central point of interest and the bus station into a recreational and relaxation space, resembling a park. The goal is to create a multifunctional park that combines relaxation, recreational activities, and socialization in an attractive and accessible environment. The design will incorporate modern facilities while preserving the natural aspects of the area, particularly near the Nadăș river, where the natural character will be maintained with local vegetation and winding paths. The park will include playgrounds with safe, innovative equipment for children, outdoor sports areas, and a central multifunctional pavilion for cultural and social events. Parking will be expanded, and the area will be visually separated with mounds of trees and shrubs to enhance comfort and safety. A pedestrian link will connect the train station and bus station via an elevated pathway, ensuring a pleasant and safe experience. The area will integrate

abandoned industrial elements, such as old railway tracks, into a revitalized urban space, potentially housing historic trains and wagons as exhibitions or green spaces. Near the bus station, the dog park will be modernized, and a relaxing green space will be created at the top of the park to provide a serene retreat amid the urban bustle. This concept aims to improve functionality while creating a pleasant urban environment that supports the community's social, cultural, and recreational growth (Figure 9).

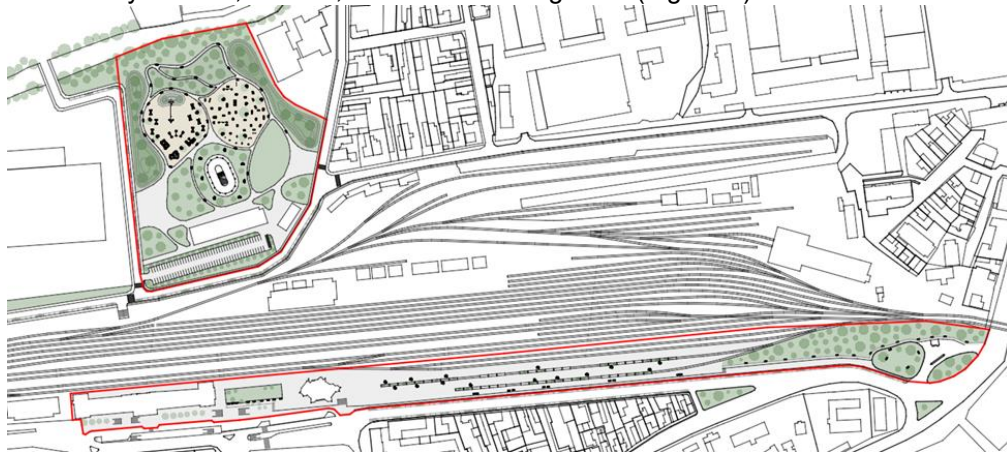


Figure 9. General urban design plan for area 3

To improve connectivity within the city, the specific street profiles of each area will be considered. In this regard, the proposed plan for the area considers adjusting the adjacent traffic arteries, in compliance with the General Urban Plan of Cluj-Napoca. The plan also includes bike lanes in both directions and wide sidewalks for pedestrians. By adhering to these specific street profiles, the goal is to create a road infrastructure that meets the needs and characteristics of each area, thereby improving traffic flow and ensuring a harmonious integration into the urban landscape. The proposed development concept for the area near the Cluj-Napoca train station aims to transform the space into a recreational and relaxation area, blending modern elements with natural features to create a peaceful and comfortable oasis in the heart of the city. The area, located near the central hub and the western bus station, as well as the pedestrian corridor connecting to the train station, has the potential to become a vibrant, multifunctional urban hub. It will meet the diverse needs of the local community and serve as a central attraction for both residents and visitors. The first proposed area, the park, will be designed to offer a variety of functions for all age groups. Near the Nadăș River, a natural space will be created to preserve the river's essence, with natural pathways and resting areas under the shade of trees. This space will be dedicated to meditation, relaxation, and immersion in nature, providing a peaceful oasis for those seeking a calm environment. Nearby, children's play areas and outdoor sports facilities will encourage recreational activities and physical exercise, with modern and safe equipment suitable for all ages. In the heart of the park, near the former industrial building, a multifunctional pavilion will host cultural and social events. This pavilion will serve as a meeting place for various community activities, offering a versatile and modern space. Additionally, the parking network will be optimized by creating new spaces nearby to manage the increased parking demand and enhance the area's aesthetic. The goal of this development is not only to improve the functionality of the area but also to create an attractive and friendly urban environment that supports and stimulates the local community's social, cultural, and recreational activities. To ensure a safe and efficient pedestrian connection between the train station and the western bus station, it is proposed to maintain an elevated walkway above street level. This initiative aims to provide a pleasant and secure experience for pedestrians. Currently, the area contains abandoned industrial elements, such as two railway tracks used for storing out-of-service wagons. One proposed solution is to reintegrate these industrial elements into a revitalized urban design. By converting the tracks into an exhibition space for historic wagons and locomotives, the area can preserve its authentic identity and cultural heritage. These structures could be refurbished to house green spaces with ornamental plants, perennials, shrubs, or small to medium-sized trees. Another option is to incorporate commercial spaces, such as rentable kiosks. This approach would create a multifunctional space combining history and modernity, providing new opportunities for public space development. For the area near the bus station, the dog park is to be maintained, but with proposed modernization. Additionally, a relaxation zone is planned for the upper part of the park, offering residents a peaceful natural retreat in the heart of the urban bustle. This initiative will improve the quality of life for residents by providing a nearby oasis for rest and recreation.

The proposed vegetation plan aims to create comfortable green spaces adjacent to streets and parking areas for relaxation and outdoor activities, while preserving the character of the area near the Nadăș River. It includes various plant species, from ornamental plants to trees, strategically placed to encourage social interaction and recreation.

In parking and road areas, green spaces will be integrated between parking spots, with trees like *Acer platanoides*, *Platanus hybrida*, and *Tilia tomentosa* to provide thermal comfort and reduce the urban heat island effect. In the bus station area, tree and shrub species such as *Acer platanoides*, *Betula pendula*, *Fraxinus excelsior*, *Larix decidua*, *Robinia pseudacacia*, *Sorbus aucuparia*, and *Tilia cordata* will help prevent unauthorized crossings of the railway tracks, while creating relaxing spaces for the dog park. Medium-sized shrubs like *Berberis thunbergii*, *Cornus sanguinea*, *Cotoneaster horizontalis*, *Crataegus monogyna*, *Juniperus horizontalis*, *Juniperus sabina*, *Philadelphus coronarius*, and *Spirea japonica* will be added. In the rehabilitated railway track area, large wagons will be filled with soil and planted with trees such as *Betula pendula*, *Fagus sylvatica*, *Malus floribunda*, and *Prunus serrulata*. Smaller wagons with open frames will house ornamental plants like *Astilbe arendsii*, *Coreopsis verticillata*, *Echinacea purpurea*, *Nepeta faassenii*, *Perovskia atriplicifolia*, *Rudbeckia hirta*, *Salvia nemorosa*, and *Salvia officinalis*, along with grasses such as *Carex morrowii*, *Festuca glauca*, *Miscanthus sinensis*, and *Panicum virgatum*. Near the center of interest, the existing vegetation along the Nadăș River will be preserved and enhanced with a dense area of trees and shrubs to foster relaxation and meditation. Species like *Acer pseudoplatanus*, *Berberis vulgaris*, *Corylus avellana*, *Euonymus europaeus*, *Fagus sylvatica*, *Quercus cerris*, *Quercus robur*, *Quercus rubra*, *Sambucus racemosa*, *Syringa vulgaris*, and *Tilia cordata* will be used, along with shrubs such as *Cornus sanguinea*, *Crataegus monogyna*, *Elaeagnus pungens*, *Forsythia suspensa*, *Ilex aquifolium*, *Juniperus communis*, *Juniperus sabina*, *Mahonia aquifolium*, *Philadelphus coronarius*, *Pyracantha coccinea*, *Spirea japonica*, *Spirea salicifolia*, and *Viburnum opulus*. For high-traffic areas like the pavilion, playground, and sports spaces, solitary tree planting will include species such as *Acer campestre*, *Betula pendula*, *Corylus avellana*, *Robinia pseudacacia*, *Sorbus aucuparia*, *Prunus cerasifera*, and *Tilia tomentosa* (Figure 10).



Figure 10. Ambience perspectives, area 3

Conclusions

Following historical documentation and site-specific analyses, the design scenarios proposed have the purpose of creating a stronger connection between the city's northern and southern parts. This connection offers both recreational and relaxation spaces within specially designed green areas, as well as new points of interest for residents and the general public. All developments aim to provide safety, comfort, and ambience to the areas. Additionally, new elements have been integrated, preserving the character of the area. For urban developments that include areas near railway lines, incorporating green spaces into the green-space network is recommended, using a sustainable landscape design approach accessible to the entire community. Another key consideration is the selection of plant species for these areas, which should be chosen in alignment with local conditions and to diminish noise pollution caused by trains.

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