DESIGNING A RECREATIONAL GREENWAY IN A FORMER RAILWAY CORRIDOR: THE RADOŠINKA CYCLING ROUTE

Attila Tóth, Branislav Králik
Institute of Landscape Architecture, Faculty of Horticulture and Landscape Engineering, SUA Nitra, Trieda Andreja Hlinku 2, 949 76 Nitra, Slovakia

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Abstract
This paper presents a landscape architectural design proposal for a regional cycling route in the Radošinka microregion in western Slovakia. The project explores the potential transformation of a former railway corridor between Zbehy and Radošina into a recreational greenway connecting the cities of Nitra and Piešťany. The aim is to develop a sustainable cycling corridor that supports everyday mobility and recreational use while simultaneously enhancing the landscape accessibility of the surrounding rural environment. The study is based on a comprehensive landscape analysis focusing on settlement structure, landscape character, visual relationships and existing mobility networks within the predominantly agricultural landscape of the microregion. Based on these analyses, the proposal defines the main cycling route primarily outside major roads and complements it with thematic cycling loops linking individual municipalities, landscape landmarks and cultural heritage sites. Attention is given to the design of rest areas, viewpoints and small-scale landscape architectural elements that integrate the cycling route into the open landscape and strengthen regional identity. The design approach emphasises a sensitive relationship between recreation and landscape protection, ensuring that the proposed infrastructure respects the visual structure, ecological values and character of the rural landscape. The project demonstrates how the reuse of abandoned infrastructure corridors can support sustainable recreation, landscape protection and regional development.

Key words: rural landscapes; landscape accessibility; landscape architecture; sustainable mobility; green infrastructure

Introduction

Contemporary landscape architecture increasingly addresses the need to reconcile mobility demands with environmental sustainability (Fornal-Pienak and Bihuňová, 2022) and the preservation of rural landscape character (Schüppel and Staudte, 2025; Štemberová et al., 2025). In this context, cycling infrastructure has emerged as a key component of sustainable mobility systems, offering an environmentally friendly, economically accessible and socially inclusive alternative to motorised transport (Tóth et al., 2014; Čibik et al., 2019). Beyond its transport function, cycling also plays an important role in recreation, public health and regional development, contributing to improved quality of life and stronger connections between settlements and their surrounding landscapes (Bechera et al., 2022; Hus, 2024). In many European regions, including Slovakia, the development of cycling infrastructure remains uneven, particularly in rural areas where everyday mobility is still largely dependent on car transport. At the same time, these regions often contain underutilised or abandoned transport corridors—such as former railway lines—which represent significant spatial and structural potential for transformation into greenways. The adaptive reuse of such corridors enables the creation of continuous, safe and legible routes that can serve both functional and recreational purposes while minimizing new land consumption (Čibik et al., 2022; Bellérová and Hus, 2025; Karzhauov et al., 2025). The Radošinka microregion in western Slovakia presents a typical example of a predominantly agricultural landscape with dispersed settlements, limited transport alternatives and a strong cultural and natural identity (Králik, 2025). Its flat terrain and linear structure defined by the Radošinka stream provide favourable conditions for cycling. However, the absence of a coherent cycling network restricts both everyday mobility and the recreational use of the landscape. At the same time, the railway corridor between Zbehy and Radošina offers a unique opportunity for the development of a continuous cycling connection linking the regional centres of Nitra and Piešťany. Cycling routes in rural landscapes are not merely technical infrastructures; they are landscape architectural interventions that influence spatial perception, accessibility and the overall experience of the territory. Well-designed routes can connect cultural landmarks, enhance visual relationships, support biodiversity and contribute to the identity of a region (Paganová and Kuczman, 2022; Kuczman and Paganová, 2022). They can also activate underused spaces and support community engagement, reflecting broader socio-spatial dynamics in landscape design (Miklášová et al., 2022; Čakovská et al., 2019). As

highlighted in previous research, cycling infrastructure delivers economic, ecological and social benefits, including reduced emissions, support for local tourism and improved public health outcomes (Hus et al., 2021; Kristiánová and Štěpánková, 2012). This paper builds upon a comprehensive landscape architectural study and presents a design proposal for a recreational greenway utilising the former railway corridor in the Radošinka microregion (Králik, 2025). The aim is to develop a multifunctional cycling route that integrates sustainable mobility with landscape protection and recreational use. The proposal is informed by an in-depth analysis of the spatial structure, landscape character, visual axes and existing mobility networks, and it seeks to create a coherent system of main and complementary routes that enhance accessibility while respecting the ecological and visual qualities of the rural environment. By demonstrating the potential of railway-to-greenway transformation, the study contributes to broader discussions on sustainable infrastructure, landscape regeneration and the role of design in shaping resilient rural territories.

Material and methods

The study is based on a landscape architectural design approach combining spatial analysis, field research and conceptual design methods. It focuses on the Radošinka microregion in western Slovakia (Nitra Self-Governing Region, districts of Nitra and Topoľčany). The territory forms part of the Danubian Lowland and the floodplain system of the Váh River basin. The landscape is predominantly agricultural, with a flat to gently undulating relief shaped by the Radošinka stream. The study area includes ten cadastral territories. The primary materials consisted of spatial and analytical data describing the natural and cultural landscape structure of the territory, including topographic and orthophoto maps, land use and vegetation data, transport infrastructure networks, cadastral and settlement structure data, as well as relevant planning documents and technical standards. Field surveys were carried out to verify current landscape conditions, identify visual relationships, assess the quality of existing infrastructure and document cultural and natural landmarks within the microregion. The methodological framework consisted of several consecutive steps: 1) landscape analysis; 2) mobility and infrastructure assessment; 3) identification of potential corridors; 4) design principles and routing strategy; 5) landscape architectural design.

Results

The proposed transformation of the former railway corridor between Zbehy and Radošina into a cycling greenway proves to be a feasible strategy for improving mobility and recreation in the Radošinka microregion. The corridor enables a continuous, safe and legible main cycling route connecting Nitra and Piešťany, while avoiding high-traffic roads. The design defines a hierarchical network consisting of a primary route and secondary thematic loops linking municipalities, cultural landmarks and landscape features, thereby significantly enhancing landscape accessibility. The flat relief and agricultural character of the territory were identified as key advantages for cycling development, while the current lack of infrastructure was confirmed as a major limitation. An important outcome is the integration of landscape architectural elements, including rest areas, viewpoints and small-scale interventions, which transform the route into a multifunctional recreational corridor. The proposal respects visual structure, ecological values and regional identity, demonstrating that the reuse of abandoned infrastructure can support sustainable mobility, tourism and rural development.

Discussion

The results confirm the potential of former railway corridors as effective spatial frameworks for the development of cycling greenways in rural landscapes. Similar to findings on the reuse of underutilised spaces and sustainable land strategies (Čibik et al., 2022; Bellérová and Hus, 2025; Karzhauov et al., 2025), the proposed transformation of the Zbehy–Radošina corridor provides a continuous and safe route while minimising new land consumption. The integration of a hierarchical network and landscape architectural elements supports previous research emphasising the role of design in enhancing landscape accessibility, identity and user experience (Paganová and Kuczman, 2024; Kuczman and Paganová, 2024). At the same time, the study highlights the need for context-sensitive approaches that balance recreational use with the protection of ecological and visual landscape values, as noted in broader discussions on rural landscape planning and sustainability (Fornal-Pienak and Bihuňová, 2022).

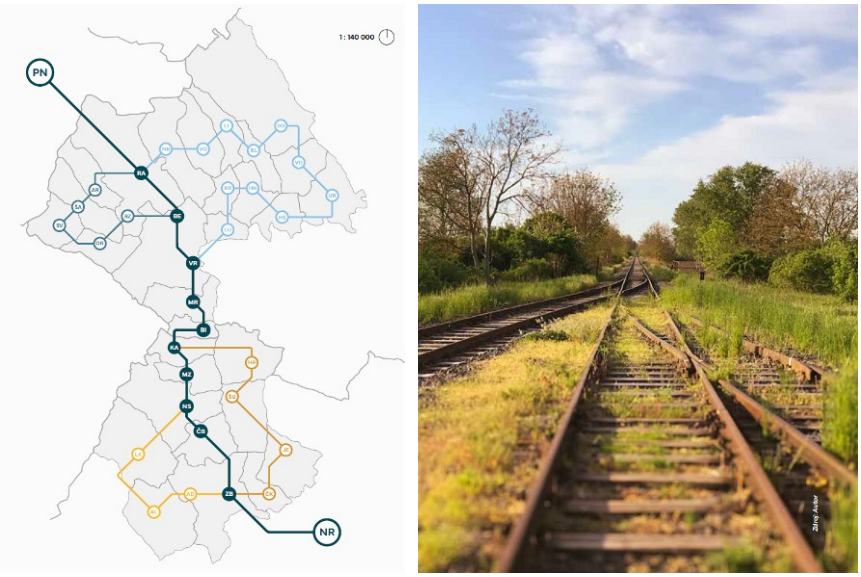

Fig. 1: The proposed cycle route from Nitra to Piešťany (left), partly to be implemented on an abandoned railway corridor (right) (Source: Králik, 2025).

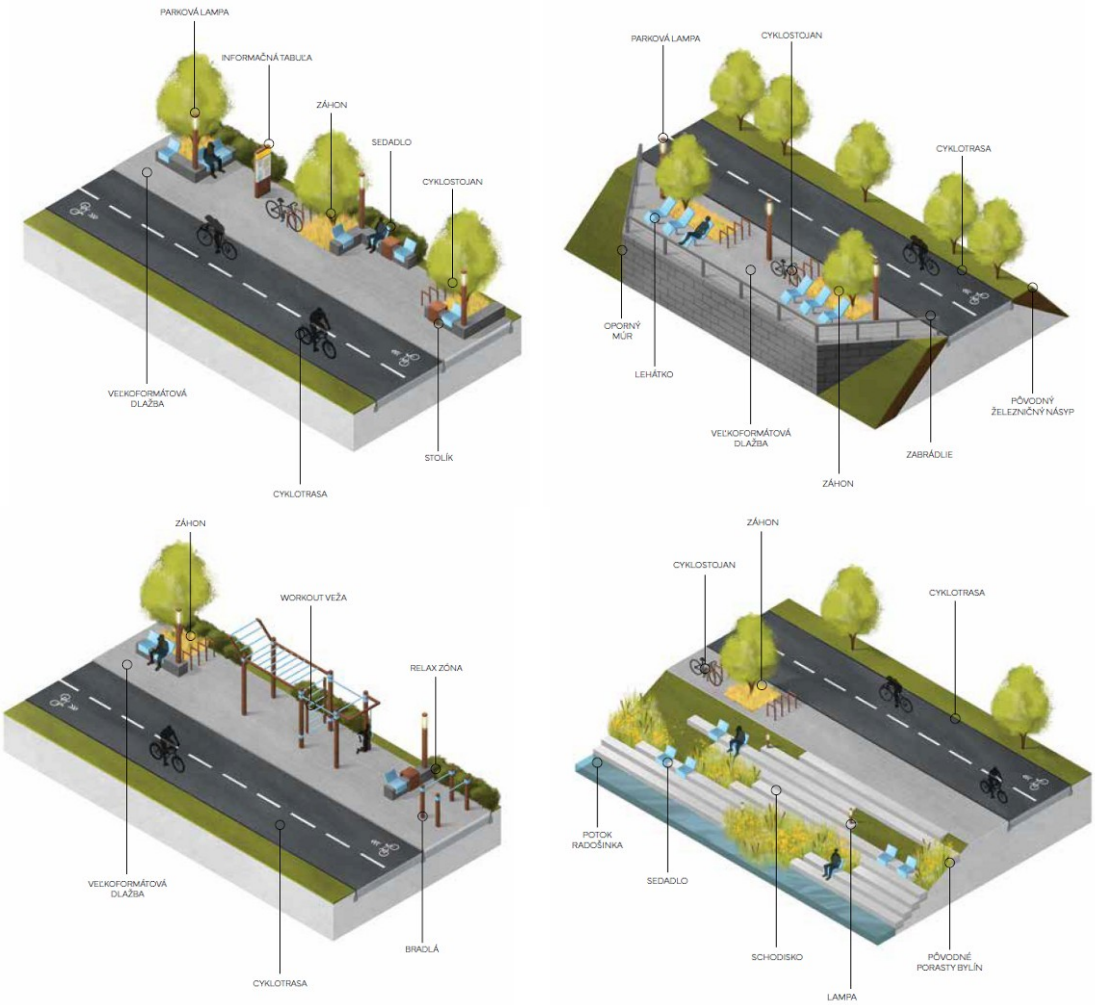

Fig. 2: Different site-design typologies along the cycle route (Source: Králik, 2025).

Conclusion

The study demonstrates that the reuse of the former railway corridor in the Radošinka microregion offers a viable solution for developing a sustainable cycling greenway. The proposed design enhances mobility, landscape accessibility and regional identity while respecting ecological and visual values. It highlights the potential of abandoned infrastructure as a catalyst for sustainable rural development.

References
Bechera, D., Kuczman, G., Čibik, M. (2022). Evaluation of woody plants located in rural public park areas. In: *Public recreation and landscape protection.* Brno: MU, pp. 120-123.
Bellérová, S., Hus, M. (2025). Renaturalization practices applied to the creation of public spaces in peripheral urban areas. In: *Public recreation and landscape protection*. Brno: MU, pp. 237–243.
Čibik, M., Tóth, A., Štěpánková, R. (2019). Integration of the historical watermill into a sustainable peri-urban riverfront redesign. In *Public recreation and landscape protection. Brno: MU,* pp. 212–216.
Čibik, M., Kuczman, G., Bechera, D. (2022). Possibilities of unused rural agricultural land renewal using strategies of contemporary eco-socialism. In: *Public recreation and landscape protection.* Brno: MU, pp. 229-232.
Fornal-Pienak, B., Bihuňová, M. (2022). Evaluation of current landscape architecture approaches in chosen cities in Poland and Slovakia. *Acta Horticulturae et Regiotecturae*, *25*(1), 28–36.
Hus, M., Paganová, V., Raček, M. (2021). Non-traditional alley tree species for urban conditions. In: *Acta Horticulturae*, vol. 1331, pp. 151–158.
Hus, M. (2024). Trees as a part of small sacral architecture in the Liptov region. In: Public recreation and landscape protection. Brno: MU, pp. 351-358.
Karzhauov, D., Paganová, V., Moravčík, Ľ. (2025). A methodological approach to the restoration of a rural street using affordable digital technologies. In: *Land*, vol. 14, iss. 9, art. no. 1790.
Králik, B. (2025). Návrh krajinno-architektonického riešenia cyklotrasy pre mikroregión Radošinka. Diploma Thesis. Nitra: SPU, 327 p.
Kristiánová, K., Štěpánková, R. (2012). Historical and cultural values of forest landscape in Iliašovce, Spiš region – protection and presentation for tourism. In: Public recreation and landscape protection. Brno: MU, pp. 93–97.
Kuczman, G., Paganová, V. (2024). Landscape-architectural design in the recreation area Nová Duchonka. In: Public recreation and landscape protection. Brno: MU, pp. 189–194.
Paganová, V., Kuczman, G. (2024). Landscape-architectural design of the old orchard in location Preseľany for recreation and well being. In: Public recreation and landscape protection. Brno: MU, pp. 199–205.
Schüppel, S., Staudte, S. (2025). Landscape architecture as a catalyst for sustainable rural development: A multi-case analysis of German municipalities. Acta Horticulturae et Regiotecturae, 28(1), 21–29.
Štemberová, Z., Smetanová, M., Jeníková, E. (2025). Landscape in focus: The Czech perspective on sustainable landscape development. Acta Horticulturae et Regiotecturae, 28(2), 99–108.
Tóth, A., Bihuňová, M., Halajová, D., Štěpánková, R. (2014). Towards an inclusive approach to recreation and landscape protection. In Public recreation and landscape protection. Brno: MU, pp. 335–339.

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Souhrn
Článek představuje návrh cyklistické zelené stezky v mikroregionu Radošinka, který vychází z přeměny bývalého železničního koridoru. Projekt spojuje udržitelnou mobilitu s ochranou krajiny a vytváří souvislou trasu doplněnou tematickými okruhy a prvky krajinářské architektury. Návrh zlepšuje dostupnost, rekreační potenciál a posiluje regionální identitu v převážně zemědělské krajině.

Contact:
Attila Tóth
E-mail: attila.toth@uniag.sk