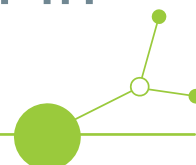


D1.3.2 Local strategy and action plan for urban stream restoration in Jablonec nad Nisou



Version 1
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A. Introduction and Local Context

The Bílá Nisa is a small mountain stream located in northern Czech Republic, flowing from the Jizera Mountains into the urban area of Jablonec nad Nisou, where it continues toward its confluence with the Lužická Nisa. The stream represents a typical transition between natural mountainous headwaters and a heavily urbanised river corridor, where natural processes are increasingly constrained by built infrastructure and land-use pressure. As it enters the city, the stream becomes an important linear landscape element that connects different urban zones and provides both ecological and social functions within a densely developed environment.

The pilot site is characterized by an open space on the left stream bank with sports grounds and multi-story housing. The right stream side is more industrial, although in the north end of the section there is an ecologically valuable site. The stream corridor is used by residents for everyday movement, leisure, and recreation, making it a visible and accessible natural feature within the city structure. At the same time, its physical condition reflects long-term modification, including channel regulation and reduced connection to surrounding natural habitats, which limits its ecological functionality and resilience.

In this context, the Bílá Nisa represents an important opportunity for urban stream restoration that can simultaneously enhance ecological quality and strengthen the role of blue-green infrastructure in the city. The city is currently in the first phase of the revitalisation process, which includes the preparation of project documentation. Technical feasibility study and landscape architect study has already been created. This document is intended to support the city in the successful implementation of nature-based solutions for urban stream restoration. The Local Strategy and Action Plan (SAP) for the study area includes concrete and applicable actions developed by local partner based on the results of project deliverables, applying a multiperspective approach. The SAP will be adopted by local authorities and documented through letters of commitment.

Figure 1. Bílá Nisa stream in Jablonec nad Nisou





B. Summary of Specific Perspectives

This chapter shortly describes the main results of the five perspectives derived from the Work Package 1 deliverables for the pilot site Bílá Nisa in Jablonec nad Nisou.

Institutional and Stakeholder Framework

Most important stakeholders

Figure 2. 53 stakeholders in total, representing 8 of 9 target groups

Stakeholder Jablonec nad Nisou

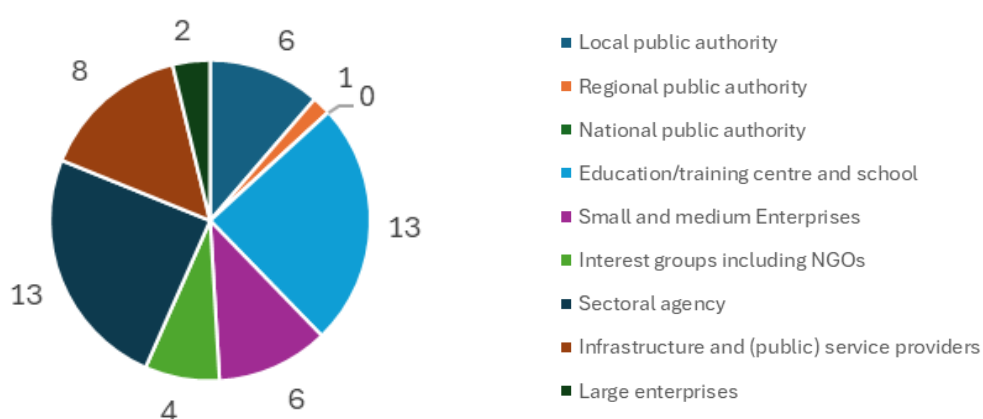


Table 1. Stakeholder role matrix

Type of stakeholder	Area of interest	Actor roles						
		Initiating	Steering and coordination	Implementing	Mediating	Financially contributing	Specialist support	Land owner
Sectoral agency	Local	yes	yes	no	yes	no	yes	no
Local public authorities	Local	yes	yes	yes	yes	yes	no	yes
Local public authorities	Local	yes	yes	yes	yes	yes	no	yes
Sectoral agency	Regional	no	yes	no	yes	no	yes	no
Education/training centre and school	National	no	yes	yes	yes	no	yes	no



Governance and implementation setting

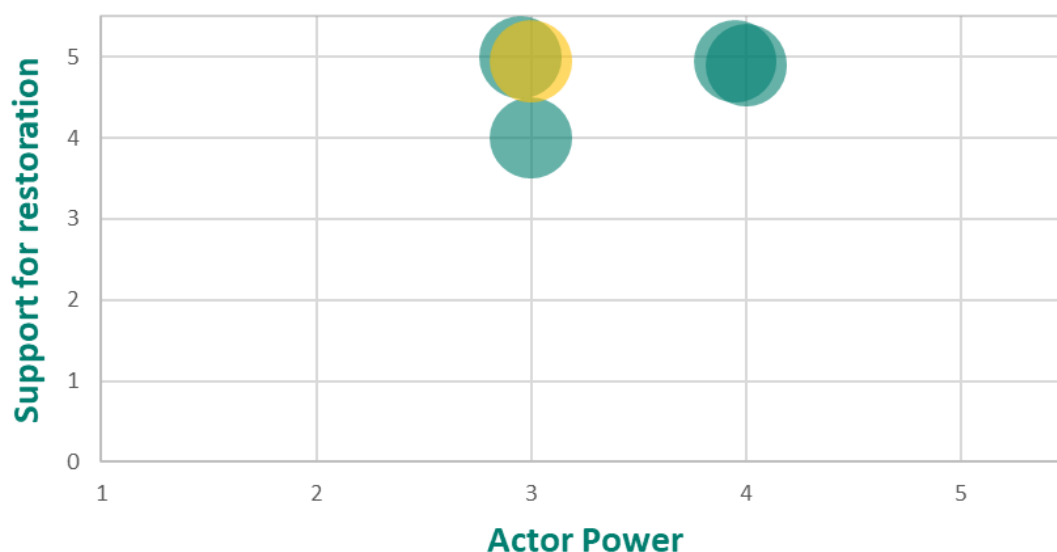
Urban stream revitalisation in Jablonec nad Nisou is implemented within a comparatively supportive and cooperative governance environment characterised by strong municipal engagement and high political commitment to nature-based solutions. Revitalisation is increasingly perceived not only as a water-management intervention, but also as a strategic tool contributing to climate adaptation, biodiversity enhancement and the improvement of urban public spaces.

Municipal authorities represent the main driving force behind project preparation and implementation. They play a central role in project coordination, strategic planning and negotiation with external institutions and landowners. Political support at the city level contributes to the prioritisation of revitalisation measures and facilitates mobilisation of organisational and financial capacities. At the same time, implementation processes remain partly dependent on external regulatory authorities, infrastructure managers and ownership structures, which limits direct municipal control over selected aspects of project delivery.

Regional environmental institutions and research organisations contribute specialised ecological and technical expertise, particularly in relation to planning, environmental assessment and methodological support. Their role is primarily advisory, supporting the quality and legitimacy of revitalisation proposals rather than directly influencing formal decision-making processes. Overall, stakeholder relations in Jablonec nad Nisou can be characterised as largely cooperative, with limited evidence of major institutional conflict or stakeholder opposition. Existing challenges are therefore linked mainly to institutional fragmentation, procedural complexity and technical constraints rather than insufficient stakeholder support.

The generally supportive and cooperative governance environment is also reflected in the stakeholder distribution presented in Figure 3, where the majority of actors combine moderate to high influence with strong support for urban stream revitalisation.

Figure 3. Stakeholder power and support distribution indicating a generally cooperative governance environment in Jablonec nad Nisou. Public-sector actors (green bubble) hold the strongest influence over decision-making processes, while the non-public expert stakeholder (yellow bubble) contributes primarily through advisory and technical support.





Key institutional barriers and enabling conditions

The main institutional barriers identified in Jablonec nad Nisou and the corresponding enabling conditions are summarised in Table 2.

Table 2. Key institutional barriers and enabling conditions

INSTITUTIONAL BARRIER	ENABLING CONDITION
Fragmented land ownership and infrastructure constraints complicate implementation of revitalisation measures	Early cross-sectoral coordination and integration of revitalisation objectives into spatial-planning processes
Dependence on external permitting and regulatory authorities limits municipal control over implementation timelines	Strong political commitment and proactive negotiation with external authorities
Administrative and procedural complexity slows project preparation and delivery	Active municipal coordination and strategic project-management capacity
Limited direct municipal control over selected water-management and technical assets	Cooperation with regional authorities, infrastructure managers and expert institutions
Financing uncertainty and dependence on external funding schemes	Integration of revitalisation into broader climate-adaptation and urban-development agendas to strengthen funding opportunities

More information can be found in deliverable [Project Communication Strategy](#) and deliverable [Cross-national comparative analysis of institutions and stakeholders](#).

Ecological Conditions

In regard to stream morphology the pilot section consists of 2 parts:

- Upper section: 1030 m, with concrete bottom and embankment, structure index of 3.5 (heavily anthropogenically altered)
- Lower section: 200 m, with sandy bottom and concrete embankment, structure index of 2.1 (moderately anthropogenically altered)

The morphology of the Bílá Nisa is heavily modified by urban development and therefore in poor condition. The stream has been confined to a regulated channel and disconnected from its floodplain and former meanders. There are several migration barriers that impair ecological connectivity. On the other hand, due to its geomorphological characteristics, a large amount of sediment is transported from the mountains, resulting in a high substrate diversity in less engineered sections.

The results of the biological monitoring indicate the effect of urbanization on the macro-invertebrate community, especially the habitat degradation and missing of riparian trees in the lower reach. There is a gradient of urban impact from the upper to the lower stream sites leading to loss of biodiversity and habitat quality and increase of pollution. They also show the potential of a less disturbed site, with more substrates and habitat quality.

A more detailed description can be found in deliverable [Ecological restoration goals](#) and the [site report](#).

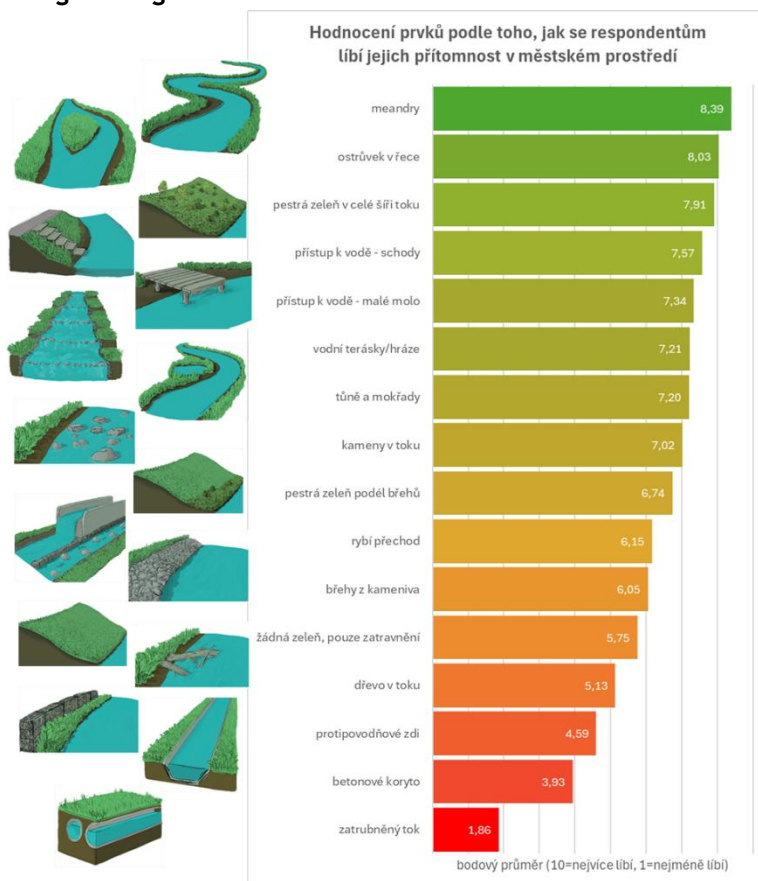


Social Perspective

The face-to-face survey conducted in Jablonec nad Nisou in autumn 2024 focused on identifying residents' preferences for the planned restoration of the Bílá Nisa stream section between Rýnovice and Mšeno. A total of 246 valid face-to-face interviews were conducted in the area, with the majority of respondents living in the immediate surroundings. The sample was relatively balanced in terms of gender and had an average age of 49 years, with a broad distribution across education and income groups. Results show that the area is frequently used by residents, with most respondents visiting at least several times per week and spending more than 15 minutes per visit. The most common reasons for visiting include **walking through the area, relaxation, nature observation, and social interaction**. This indicates that the stream corridor plays an important role in everyday recreation and local liveability. Regarding valued ecosystem services, the most important benefit that revitalisation can provide is the creation of **habitats for plants and animals**, together with **improvements in air quality, water quality, and the local microclimate**.

In terms of preferences for restoration measures, respondents clearly favour nature-based solutions such as **river meanders, in-stream islands, diverse riparian vegetation, and improved access to the water** (e.g., steps or small piers). In contrast, heavily engineered solutions such as **channelisation, concrete beds, and flood protection walls** are strongly rejected. The choice experiment further confirms a general preference for a natural, accessible, and green river corridor, particularly one with meanders, wider vegetation zones, and urban park surroundings. More detailed analysis of the choice experiment reveals three distinct preference groups. Two dominant groups (together **88%** of respondents) consistently reject a concrete channel and prefer access to water and wider riparian vegetation, although they differ in the intensity of their positive versus negative preferences. A smaller group (**12%**) shows weaker overall preferences and is more accepting of a highly engineered, urban park-like stream environment, with a higher representation of older respondents. Detailed results can be found in Czech [here](#).

Figure 4. Average ratings of individual water features in the urban environment

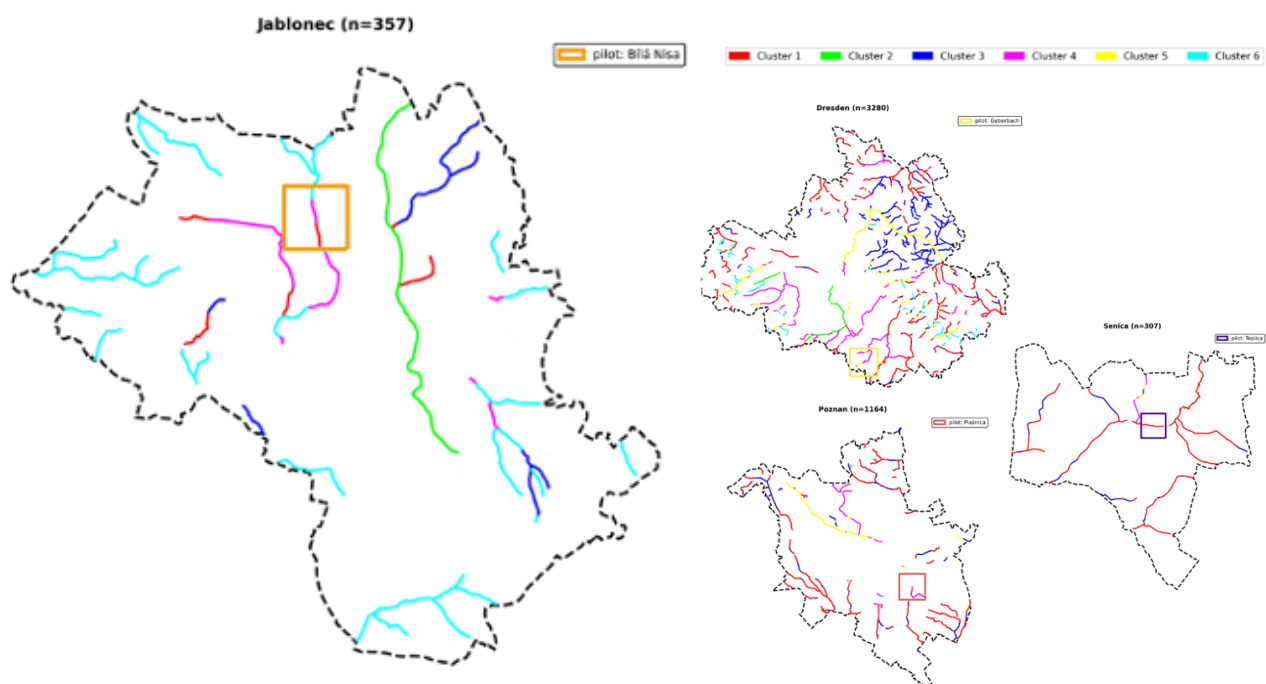




Spatial Composition

All streams of the four cities were clustered into six types, based on the performance of spatial-related variables, including impervious cover, canopy cover, green land cover richness, green land cover Shannon diversity, land surface temperature, sinuosity, absolute slope, total crossings, valley depth, poi accessibility index, transport accessibility index, visibility ratio.

Figure 5. KMeans Cluster Distribution by city (k=6, 12 variables)



Regarding the characteristics of each cluster:

- 1 (n=2,021): High green diversity/richness, low canopy
- 2 (n=173): High access/crossing
- 3 (n=1,181): High canopy, high visibility, low diversity/richness
- 4 (n=716): High impervious, low visibility, high crossings, transport access, high temperature.
- 5 (n=302): High POI access, high sinuosity, high canopy, many crossings
- 6 (n=421): High valley depth, steep slope, high canopy, narrow valley

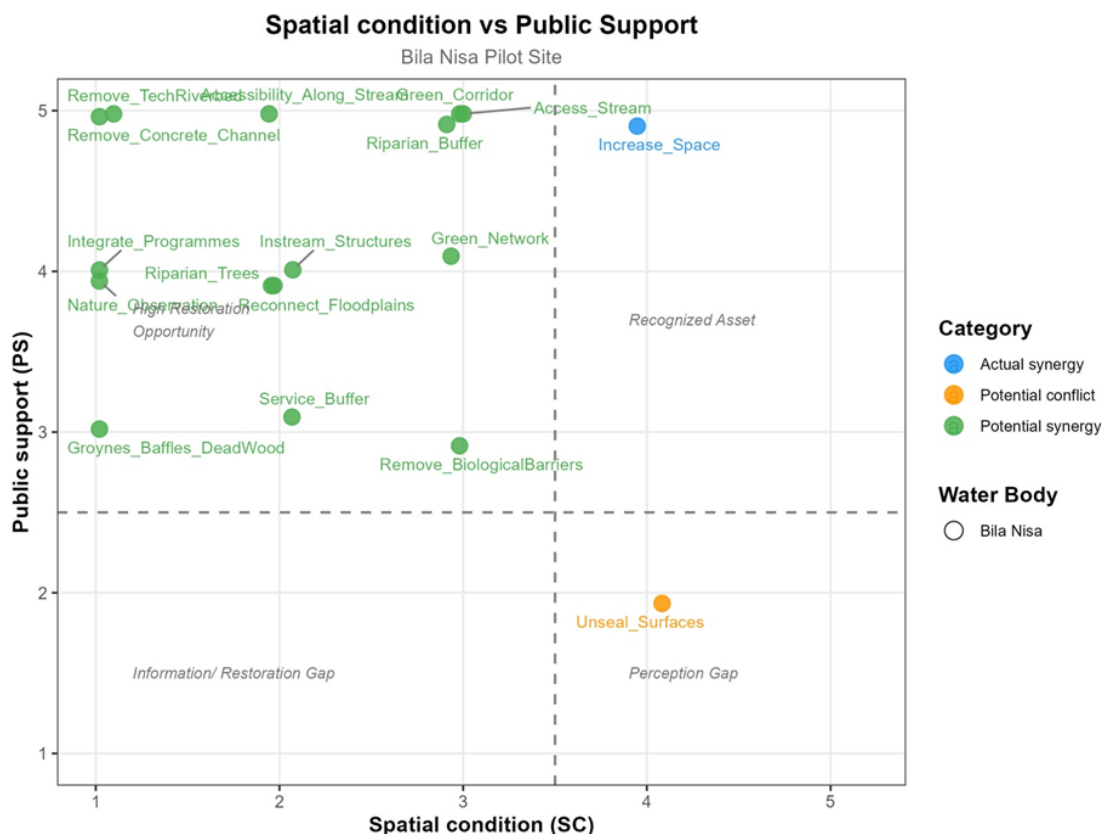
In Jablonec nad Nisou, Cluster 6 accounts for 54.9% of the city's stream segments, the largest share of any typology in the city. This cluster is characterised by high valley depth and steep slope, along with high canopy cover and narrow valley width, mostly on the urban fringe. Cluster 2 accounts for 14.6% of the city's streams, the second-largest typology, with high POI accessibility, high transport accessibility, a high number of crossings, and high impervious cover; these values are linked to the dense concentration of points of interest around Mšenský potok and a well-developed transport network. Cluster 3 segments in the city reflect dense and uniform tree cover, open viewsheds, and good visibility. Jablonec exhibits the steepest stream segments and the deepest valleys (mean 48.8 m), with most segments in higher depth classes. Sinuosity is the lowest and most uniform (mean 1.05, maximum 1.38), reflecting confined valley morphology. Mean land surface temperature is 25.4°C, the lowest of the four cities. Green land-cover Shannon diversity is lower than in Poznań or Senica. Crossing density is high, as in Dresden.

For the pilot stream in Jablonec nad Nisou, the pilot site is dominated by Cluster 4 segments with high impervious cover, low visibility, high total crossings, high transport access, and high land surface temperature. Compared with the other cities, Jablonec stands out for the highest mean transport accessibility (0.24), the steepest slopes, the deepest valleys (48.8 m mean), the lowest mean land surface temperature (25.4°C), and city-wide dominance of Cluster 6. Mean visibility (0.75) is the lowest among the four cities, though still generally high.

Synergies and Conflicts

Based on the results from Synergies and conflicts analysis, there is a great opportunity to implement nature-based measures to restore the urban stream Bílá Nisa and surrounding. 15 out of 17 classified restoration measures fell into the category of potential synergy - high restoration opportunity. This means that people support the introduction of these environmentally beneficial restoration measures, which are needed from a spatial perspective, as the current conditions are low to moderate. This is the case, for example, with **riverbed** (measures remove technical riverbed, remove concrete channel), but also facilities for **nature observation and leisure time**. Also, **accessibility along the stream** can be improved in priority considering the bad spatial condition and the high public support. More walking and cycling path should be created along the stream corridors to enhance continuous public access along the stream. The measure **increase space for river and floodplain** represents an actual synergy, which means that there is high public support for this measure and already a good current spatial condition. Only measure categorised as a potential conflict is **unseal impervious surfaces**. It is necessary to inform residents about the benefits of it to increase acceptance of this measure (as people do not view it as necessary, even though it brings significant benefits to both nature and society).

Figure 6. Distribution of restoration measures based on spatial condition and public support values





C. Suggestions for NBS Implementation

This chapter describes the general recommendations for nature-based urban stream restoration measures implementation based on the specific perspectives on urban restoration and synergies and conflicts analysis, and also specific and applicable actions developed by the city Jablonec nad Nisou for future uptake.

General recommendations

- Increase awareness about the environmental and social benefits of nature-based solutions and permeable urban surfaces.
- Support the creation of multifunctional public spaces enabling nature observation, leisure time, and social interactions.
- Strengthen coordination and communication with infrastructure providers and other key implementation stakeholders.
- Strengthen public and political awareness of the long-term environmental, social and climate-adaptation benefits of restoration measures to increase support for and allocation of financial resources to nature-based solutions.
- Address land ownership constraints through negotiated agreements, strategic land acquisition and cooperation with relevant property owners and institutions.
- Improve access to and along the stream by prioritizing existing access points, soft-surfaced paths and limited-width routes, while avoiding unnecessary new crossings or paved approaches that could further fragment habitats.

Specific actions

- Settlement of property rights for the affected land parcels
- Ensuring river accessibility and the natural organization of movement and quiet zones
- Implementation of ecological site management



Action n. 1	Action name	Property arrangement of the affected parcels of land		
	Implementation phase	pilot implementation		
WHAT	Action definition	This activity responds to the recommendation to address land ownership constraints. As part of the project preparation and the development of the coordination study, the land ownership issues related to the plots necessary for the project's implementation will be resolved. This involves a land swap with one private owner and the purchase of a portion of land from the Fire and Rescue Service. Preliminary agreements have already been reached in both cases; this activity involves finalizing them through contractual settlements, taking the necessary administrative steps, and registering the changes in the land and property register.		
	Scope	General ☐ Local ☒		
	Typology	☒ active intervention ☐ regulation ☐ promotion ☐ monitoring and/or research program ☐ educational program ☐ other:.....		
	Perspective	Spatial ☒ Public ☐ Institutional ☐ Ecological ☐		
WHY	Current status	In progress		
	Connected restoration goal	Reconnect fragmented ecosystems		
WHO	Competent stakeholders	Private owner, Fire and Rescue Service, Property Management Department of the City of Jablonec		
HOW	Funding options	City Budget		
	Time and cost estimation	6 months, 500.000 CZK		
WHERE & WHEN	Planned year and location (if relevant)	Q4/ 2026 - pilot site		
	Indicators for monitoring	Property changes agreements concluded - target value 2		
Identified RISKS	1. Delays in concluding land swap or purchase agreements due to prolonged negotiations with landowners; 2. Delays in registration of ownership changes in the land and property register. The overall risk is low to moderate, as preliminary agreements have already been reached with the relevant parties.	Risk mitigation measures	Proactive negotiating with the stakeholders at an early stage, careful legal preparation and sufficient time reserves in the project schedule.	



Action n. 2	Action name	Ensuring public access to the river and the natural organization of flow and quiet zones	
	Implementation phase	planning	
WHAT	Action definition	As part of the preparation of the project documentation (coordination study, transportation plan), improved accessibility of the area and sensitive pedestrian access to the river will be ensured. The transportation plan will guide visitor traffic in such a way as to minimize points of conflict between cyclists and pedestrians, particularly children and seniors. In the most ecologically sensitive areas, elements and materials that naturally guide visitor movement and protect the site's natural values will be used for pedestrian paths. The solution also includes limiting paved crossings that would fragment natural habitats. The goal is to create a clearly organized system of movement within the area, increase safety, and at the same time preserve the tranquil character of the river landscape and support its ecological functions.	
	Scope	General ☐	Local ☒
	Typology	☒ active intervention ☐ regulation ☐ promotion ☐ monitoring and/or research program ☐ educational program ☐ other:.....	
	Perspective	Spatial ☐	Public ☒ Institutional ☐ Ecological ☒
WHY	Current status	In progress	
	Connected restoration goal	Reduce heat stress Reconnect fragmented ecosystems	
WHO	Competent stakeholders	City Planning Office, City Council, the public	
HOW	Funding options	City / ReBioClim	
	Time and cost estimation	NA	
WHERE & WHEN	Planned year and location (if relevant)	Q4/2027, pilot site	
	Indicators for monitoring	1 coordination study 1 transportation project study	
Identified RISKS	1.Conflicts between different user groups (pedestrians, cyclists, inline skaters, children, seniors) are difficult to resolve due to significant spatial constraints within the area; 2. Visitor movement outside designated paths causes disturbance to valuable habitats;	Risk mitigation measures	1. Careful spatial organisation of movement, prioritisation of pedestrian safety, and, where possible, separation or clear delineation of user flows. A key role will be played by natural and structural guiding elements to direct movement and reduce conflict points. 2. Use of natural guiding elements, materials and landscape design features to direct visitors along intended routes, with no need of conventional signage;



Action n. 3	Action name	Setting up environmental management for the area		
	Implementation phase	planning		
WHAT	Action definition	As part of the preparation of the project documentation, a separate section will be dedicated to establishing rules for the ecological management of the area, with the aim of promoting biodiversity and the long-term stability of natural processes. The focus will be primarily on meadow habitats, with an emphasis on blue butterfly habitats, and aquatic habitats with habitats for organisms dependent on aquatic environments. The document will establish a clear management regime aimed at enhancing the ecological value of the area and, in particular, its long-term sustainability.		
	Scope	General ☐ Local ☒		
	Typology	☐ active intervention ☐ regulation ☐ promotion ☐ monitoring and/or research program ☐ educational program ☒ other: management		
	Perspective	Spatial ☐ Public ☐ Institutional ☐ Ecological ☒		
WHY	Current status	Not started		
	Connected restoration goal	Increase ecological connectivity Promote dynamic river processes		
WHO	Competent stakeholders	Department of the Environment, Department of Urban Ecology		
HOW	Funding options	City / ReBioClim		
	Time and cost estimation	NA		
WHERE & WHEN	Planned year and location (if relevant)	2028, pilot site		
	Indicators for monitoring	Environmental Management Document		
Identified RISKS	The project documentation is currently being prepared without the involvement of a biologist/botanist, so the proposed ecological management measures are not yet based on sufficient specialist expertise. This may lead to suboptimal or insufficiently targeted interventions, particularly regarding sensitive meadow, aquatic, and species-specific habitats (e.g. blue butterfly habitats).		Risk mitigation measures	Ensure early involvement of a qualified ecologist/biologist in the design process to propose detailed management measures, and set the ecological regime to ensure its effectiveness, ecological relevance, and long-term sustainability.