



NATURE-BASED WATER RETENTION SOLUTIONS

Water-sensitive planning in municipalities



Photo: Canva

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Budapest, 2025



Funded by
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FOREWORD

Prolonged periods of drought and unpredictable stormwater events are increasingly drawing attention to the importance of rainwater retention. For many decades, the prevailing approach has been to ensure that stormwater runoff is channelled via conventional grey infrastructure drainage systems as quickly as possible. Today, however, these networks have in many cases reached their limits and are not able to adapt flexibly to the challenges of climate change and urbanisation.

Nature-based solutions (NbS) can address these challenges: green spaces that facilitate the infiltration, storage, and evaporation of rainwater help to retain unevenly distributed precipitation, reduce the pressure on the stormwater drainage network, while shading and cooling our urban habitats, improving air quality, increa-



sing biodiversity, and providing aesthetic value. Despite their benefits, nature-based solutions are not yet widely implemented. This is because the consideration of nature-based solutions requires a completely new approach from municipal decision-makers, professionals, planners, as well as citizens concerned.

The editor of this publication, BURST Nonprofit Ltd, being the coordinator of the Hungarian NetworkNature NbS Hub (TeAM HUB), is strongly committed to disseminating knowledge about nature-based solutions on a broad scale in Hungary, thus contributing to the much-needed shift of mindsets. This booklet was prepared with the intention of providing practical knowledge for municipal leaders, decision-makers, but also any “laymen” not having profound knowledge of urban design, landscape architecture, and water management. The booklet gives a user-friendly, easily digestible basic understanding of the process, information and considerations needed for the proper application of nature-based water retention solutions, contributing to the liveability and sustainability of our settlements.

The content of the publication is based on an educational cooperation implemented within the framework of the NbS EduWorld project. The cooperation involved landscape architecture students of the Hungarian University of Agricultural and Life Sciences (MATE) and the Municipality of Jászberény, and we believe that the experiences of their collaboration will inspire other municipalities as well to start on the path of water-sensitive planning and nature-based rainwater management!

BACKGROUND

The NbS EduWorld project

The overall objective of the NBS EduWorld project, implemented under the Horizon Europe programme, is to build a society that is receptive to and understands nature-based solutions, taking into account sustainability goals. The project develops inspiring educational materials relevant to a wide range of society and will help educators and teachers in various fields to familiarize young people, the decision-makers of tomorrow, with the potential of nature-based solutions.



Educational cooperation in Jászberény

In Jászberény – a medium-sized town in Central Hungary - the proportion of paved, impermeable surfaces has increased significantly in recent decades. At the same time, former low-lying areas have been built on, drainage ditches have been covered and, in some cases, sealed. A significant portion of the sudden heavy rainfalls runs off on the surface and causes damages to infrastructure.

The municipality's goal is to increase infiltration and water retention through the use of permeable pavements; creating high quality green spaces with diverse plant communities; and increasing the capacity of ditches and swales.

Under the coordination of BURST Nonprofit Ltd. and with the involvement of lecturers and students from the Hungarian University of Agriculture and Life Sciences (MATE), the NBS EduWorld helped to shape NbS concept designs to address the above challenges in the framework of a practice-oriented educational cooperation programme.

This publication introduces the approaches used in the educational programme to a wider audience and draws on the experience gained in Jászberény, thus ready to serve as a methodological guide for all municipalities considering the application of sustainable, nature-based water retention measures.



GUIDANCE FOR THE READER



The primary goal of our publication is to provide practical guidance and inspiration. It navigates the reader through the steps of water-sensitive design in a readable and user-friendly format, aiming to convey the approach and considerations that underpin the use of nature-based solutions in the most practical form.

Please note that the primary audience of the current booklet are Hungarians, and methodological frames and practical recommendations might be somewhat specific to the Hungarian context. At the same time, the publication might give a useful insight also to international readers regarding the specificities of water-sensitive planning methods in Hungary, also allowing for comparison with practices applied in other countries.

In order to share underlying concepts and theoretical knowledge in a more engaging way, we used the experiences and results of the educational cooperation between MATE students and Jászberény in the framework of the NbS EduWorld project as illustration: we present – always applying green background – the methodology and the process steps that students applied for NbS concept design (guided by highly experienced and renowned Hungarian trainers and experts), as well as the calculations, analyses, sketches and alternatives that students developed (N.B. – with Hungarian texts and annotations). The authors do not undertake any responsibility for the professional adequacy and accuracy of the content of the students' work – they are solely intended as illustrations and to stimulate ideas.

The user-friendliness of the publication is reinforced by the more detailed background information and theoretical knowledge contained in the "knowledge cards", which can be opened by clicking on the corresponding pictograms. The booklet is a coherent whole without these knowledge cards, but they can be used to provide additional or more structured information.



If you have any comments on this publication or would like to share your views or questions with the authors, please contact us at teamhub@burstgroup.eu.





WATER-SENSITIVE PLANNING

In urbanized areas, the natural water cycle is significantly altered due to changes in land cover. On natural surfaces covered with three layers of vegetation, half of the precipitation infiltrates into the soil and is stored there, a large part evaporates, and only 15% flows away. In urban areas, only 15% reaches the soil, evaporation is lower, and more than half of the precipitation runs off, enters the drainage system, and is moved away from the watershed. Overall, this causes further drying of urban watersheds, creating increasingly unfavourable habitats for both vegetation and humans.

High-intensity stormwater events are causing more and more problems, since the large amount of precipitation that falls in a short period of time cannot be drained, retained or channelled away through drainage networks designed for earlier rainfall levels. Since the capacity of the existing technical infrastructure network cannot be increased indefinitely or at a reasonable cost, solutions must be explored to reduce the amount of rainwater entering the drainage network or to delay its runoff.

The six basic tasks of **water-sensitive design**, aiming at maximising the local utilisation of rainwater locally, are the following:



Cleaning: to improve water quality stemming from precipitation.



Infiltration: to allow as much precipitation as possible to seep into the upper and lower soil layers.



Storage: the aim is to store as much rainwater as possible, either periodically or permanently, below or above ground.





Evaporation: to return precipitation back into the atmosphere.



Delaying runoff: to slow down the runoff of water collected on the surface or in swales, thereby increasing the quantity of evaporation and infiltration and reducing flood peaks in the drainage network.



Transfer: to transfer water that cannot be used locally to other catchment areas. The aim of water-sensitive planning is to minimize the amount of water transferred.

During the planning stage, the possibilities and limitations of these six tasks must be explored so that as little water as possible is transferred and as much as possible can be used locally.



Photo: Canva

WATER-SENSITIVE PLANNING IN 4 STEPS

1

Problem identification, impact assessment, data collection

2

Field studies and surveys

3

Data analysis and evaluation, identification of areas for action

4

Development of recommendations



STAGES OF THE PLANNING PROCESS



The first and most important step in planning is the careful identification of the underlying problem and challenges, including the clear determination of affected sites, areas impacted, and stakeholders concerned. Thorough analysis often helps to better localise the problem and may result in the definition of smaller, simpler, but more targeted, thus more cost-efficient interventions. It is therefore advisable to allow sufficient time for this phase of the work (6-12 months) and to carry out problem identification in several stages.

Water does not recognize administrative boundaries, so the challenge does not necessarily need to be addressed where it arises, but must be examined in a broader context. This is particularly true in the case of flash floods and inland flooding. A change in land use (e.g., from agricultural to industrial) or a change in crop type (e.g., from orchard to arable land) can significantly alter runoff conditions in a watershed, meaning that more rainwater ends up in riverbeds and drainage channels, which can cause flash floods. A reduction in green cover and an increase in sealed areas accelerate the speed of surface runoff, putting a strain on drainage networks.

The root causes of rainwater management challenges may be manifold. The right solution can be identified by **thoroughly investigating the causes of the problem**, which requires a deep understanding of the local processes and spatial aspects of climate change and urbanization. In addition to data collection, it is essential to gather and incorporate the experiences of local residents into the preparatory process. In a broad sense, stakeholders include all actors who have an impact on land use and land use planning. In a narrow sense, stakeholders include:

- owners and managers of properties affected by rainwater management problems
- water utility operators
- all actors whose activity may significantly alter the surface on the water catchment area (farmers, forestry, infrastructure developers)



After identifying the areas of impact, the group of stakeholders may be expanded, but their involvement is necessary in every phase of the work.

In the NbS EduWorld project, the part of the Zagyva River's catchment area that flows through Jászberény and the entire administrative area of the town were designated as the impacted area. In addition to data collection, on-site interviews were also conducted during the problem identification phase. The experiences and opinions of the municipal government, local residents, and water utility operators (e.g., where flash floods usually occur) were decisive. Due to the short



time available, (which was aligned with the university's regular schedule for the semester), the problem identification was based on existing data, field surveys, and the opinions of a few stakeholders. A much longer period of time would be needed for a more accurate problem identification.

In order to identify the problem, it is necessary to explore the local implications of trends caused by climate change and urbanization, combined with data collection. Based on a thorough problem analysis, it is possible to outline precisely what interventions are needed and where they should be carried out. Without this, faulty solutions may be adopted, which could exacerbate the problem of rainwater management.

Thorough problem identification and planning require a broad knowledge base, including expertise in urban planning, strategic planning, hydrology, water management, landscape architecture, technical infrastructure development, nature conservation, forestry, and agriculture. The success of the project may depend on the selection of the right team of experts.



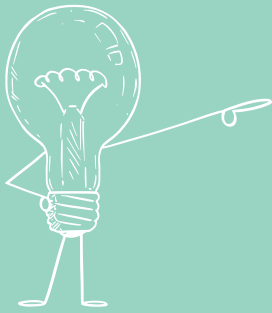
Click here to learn more about the effects caused by climate change and urbanization.

The experience and knowledge of local experts is crucial, but it is always worthwhile to involve external experts who can look at local conditions with fresh eyes.



Photo: Canva





In the student assignment, we modelled the cooperation between urban planning, landscape architecture, and water management, reviewing urban functions, land cover, blue and green infrastructure planning, and other technical infrastructure. The team sorely lacked a road and utility planner and an expert who could analyse the economic viability and feasibility of the various technical scenarios. The involvement of such actors is absolutely necessary.

Understanding the challenges requires extensive data analysis and trend identification. The broader the range of data used, the more accurately the problem and the range of solutions can be outlined. However, if the data set is too broad or there is too much non-public data, this can result in a long and difficult-to-plan process.

During **data collection**, the following easily accessible data must be collected, from which a wealth of information can be filtered during analysis:

- | | |
|--|---|
| ☐ local building codes and zoning plans | ☐ topography, slope conditions, low-lying, waterlogged areas |
| ☐ relevant strategies and municipal plans | ☐ general hydrological data |
| ☐ historical data and descriptions of the settlement, historical aerial photos, historical maps | ☐ soil data |
| ☐ the cadastral map of the municipality | ☐ local meteorological data |
| ☐ public utility data | ☐ tree inventory data |
| ☐ surface coverage data | ☐ local experience with rainwater management and problems |

Some of the necessary data, such as property registration data, current high-resolution orthophotos, or historical maps, are not freely available. However, there are free data sources for all data types, although they are less detailed or up-to-date in some cases.



Click to learn more about possible data sources and the information that can be extracted!

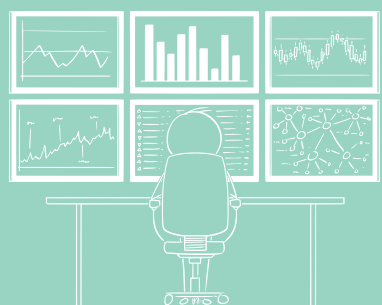
The current, high-resolution orthophotos provided for urban planning are well suited for identifying land cover, road networks, land use, crop types and landforms.



If no such aerial photographs are available, the Google Open Access databases ([Open Street Map](#), [Google Earth](#)) are also suitable. Freely available satellite images ([Sentinel](#), [Landsat](#)) are excellent for identifying vegetation cover. Land registry maps and data used for urban planning are also useful for identifying plots of land and mapping owners and managers.

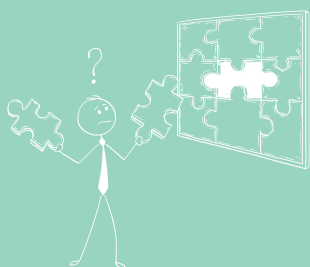
The following data was used for the NbS EduWorld project:

- 🗺️ real estate registration map (database with reduced content provided by the Municipality of Jászberény)
- 🗺️ [Google Earth](#) images and terrain data
- 🗺️ [Open Street Map](#)
- 🗺️ [Mapire](#) historical maps
- 🗺️ MFBI soil map
- 🗺️ [Sentinel satellite](#) images
- 🗺️ [E-Közmű](#) utility maps
- 🗺️ [HungaroMet precipitation](#) intensity map



Processed municipal plans and documents:

- 📖 Zoning plan and local building codes of Jászberény
- 📖 Operating and maintenance regulations of the rainwater management system of the Municipality of Jászberény, 2022
- 📖 Detailed design for the reconstruction of the rainwater drainage network in streets affected by road works planned in Jászberény, 2023
- 📖 Local flood prevention plan for the town of Jászberény, 2022
- 📖 Integrated municipal water management plan for Jászberény, 2022



Soil data and green space data were strongly lacking from the available data set. Indirect information on soil data was available from the processed documents. Green space coverage and intensity could only be analysed from indirect data based on satellite images, while field data had to be collected on tree stands and existing vegetation.

Field visits are always very important in decision-making. They provide an opportunity to check and refine GIS data and to collect new data. It is important to track the path of rainwater spatially and, accordingly, to record terrain features, terrain slope, surface cover, vegetation and underground rainwater management infrastructure as accurately as possible in site plans, cross-sections and data tables. Since the aim is to identify anomalies in rainwater management, it is advisable to conduct site inspections in both wet and dry weather.



Click here if you would like to know more about what to look for on site during field visits!

During the field visit in Jászberény, student groups had to examine pre-defined set of criteria at 6 selected neighbourhoods. The results of the survey were recorded on site plans and cross-section drawings, and the plant survey was recorded in a data table. The rainy day provided an opportunity to observe the path of rainwater and map puddles. Typical and unique situations were also photo-documented.



Selection of photos taken during the field visit in Jászberény (4 October 2024)

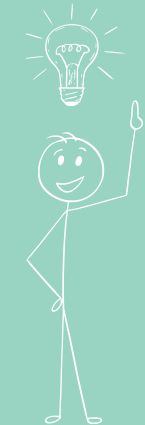
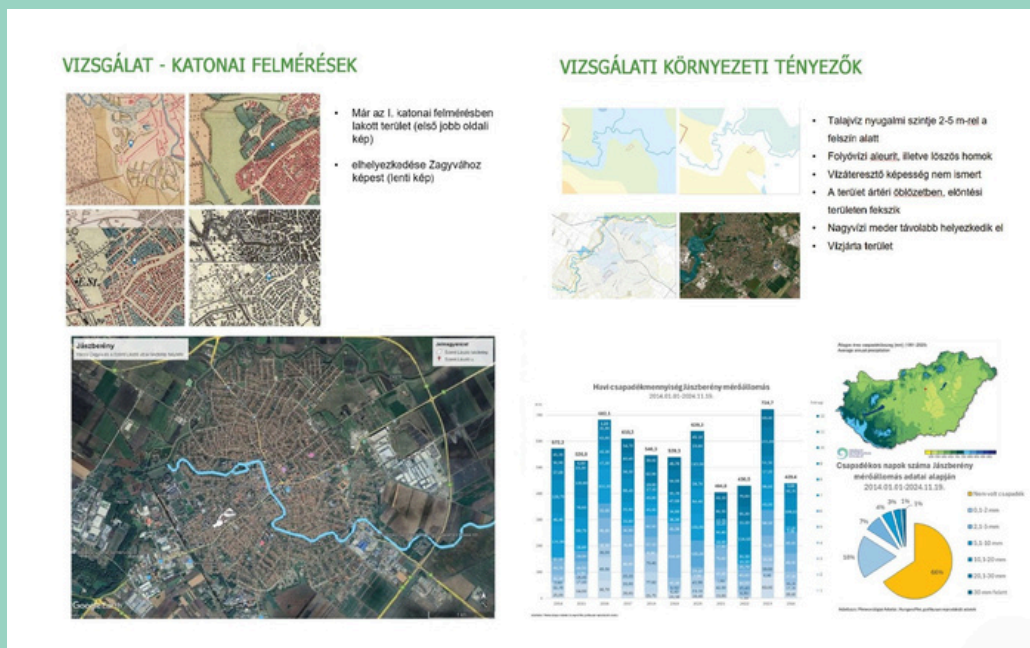


A key task in the decision-making process is **data analysis and evaluation**, which involves comparing available information, identifying trends and localising problems. The following analyses should be carried out to identify measures for retaining rainwater locally:

 analysis of ownership structure

 analysis of surface cover

Assessment of the residential area on Szent László Street in Jászberény



Click here if you would like to know more about the analyses to be performed!



 comparison of soil conditions with analysis of sealed and permeable surfaces

 examination of terrain conditions and slope gradients

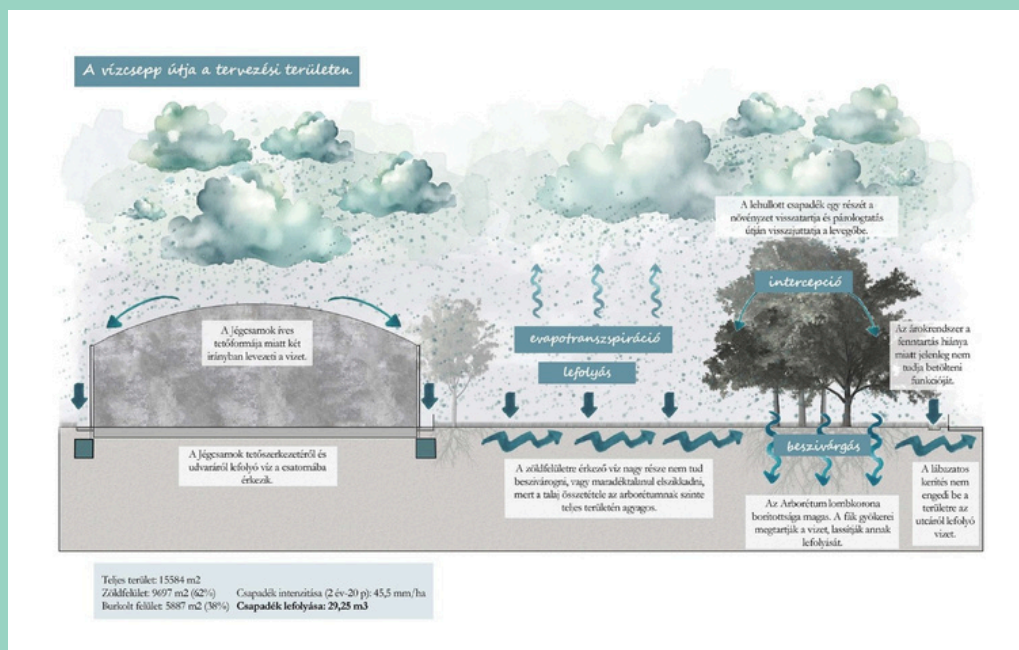
 mapping of the rainwater drainage network



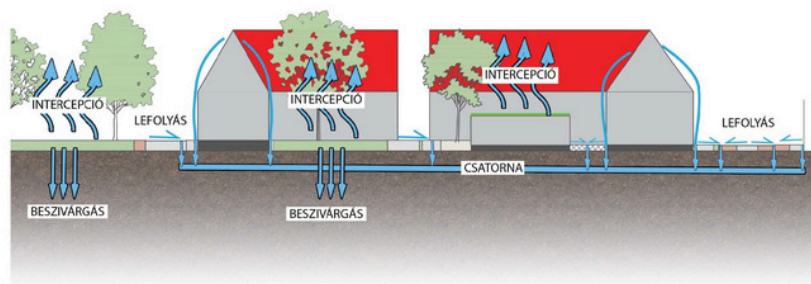
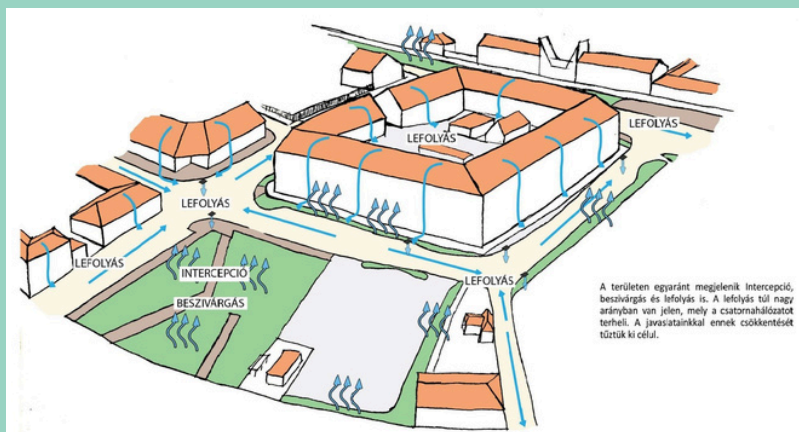


analysing the oath of the rainwater in a flowchart

The path of the rainwater at the Arboretum in Jászberény



The path of the rainwater path in Conselve Park, Jászberény



A tetőről és a burkolt felületekről a víz leginkább a csatornába folyik. A lefolyás és intercepció a parkot leszámítva kisebb arányban van jelen. A javaslatokkal az a cél, hogy ezeket a folyamatokat erősítsük, a lefolyást és ezáltal a csatornarendszer terhelését pedig csökkentsük.



calculation of surface runoff

Overview of the water catchment area of the housing estate on Szent László Street in Jászberény



comparison of existing vegetation with topographical and soil conditions

Analysis of green areas in the the housing estate on Szent László Street in Jászberény



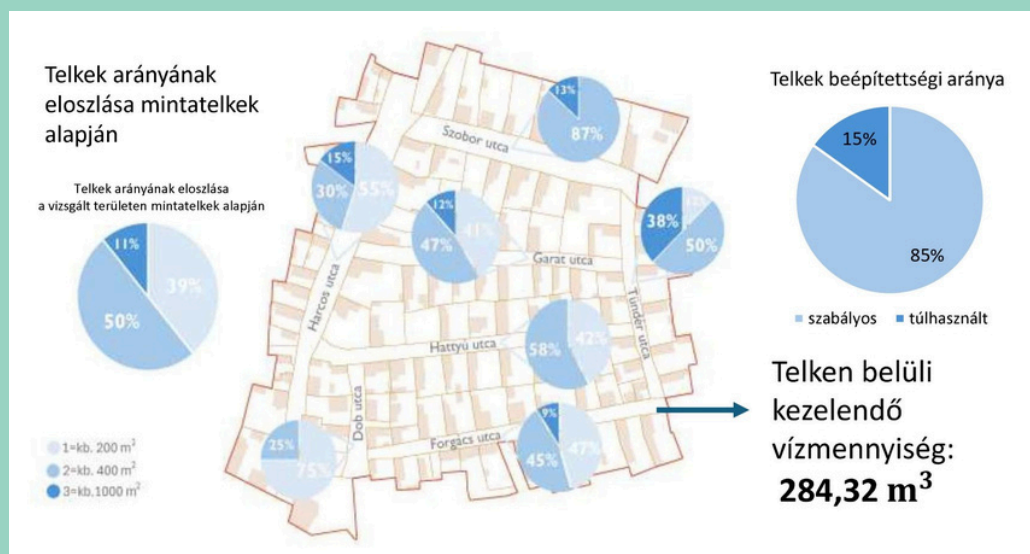
analysis of green space intensity

Calculation of green space ratio of plots on Réhely Street in Jászberény



comparison of building regulations with actual land cover

Comparison of building codes for the block bounded by Szobor Street, Tündér Street, Forgács Street, Dob Street and Harcos Street in Jászberény with the actual surface coverage



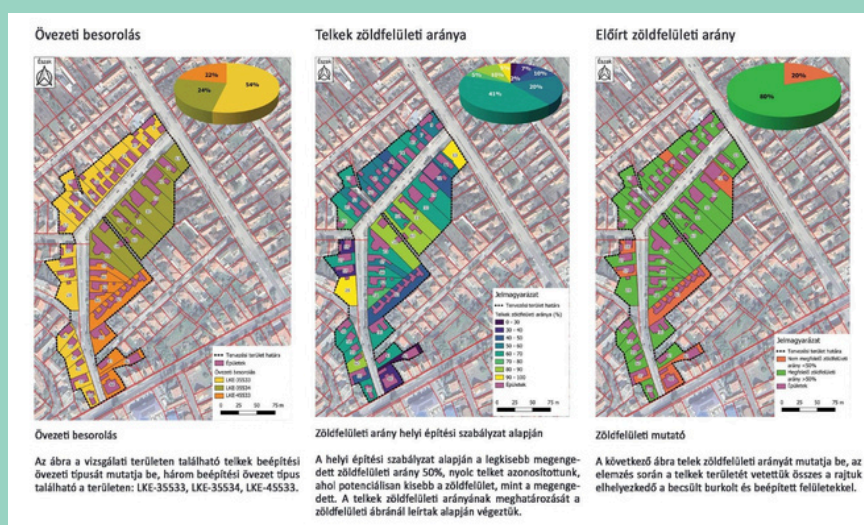
The key findings of the data analysis and evaluation in Jászberény:

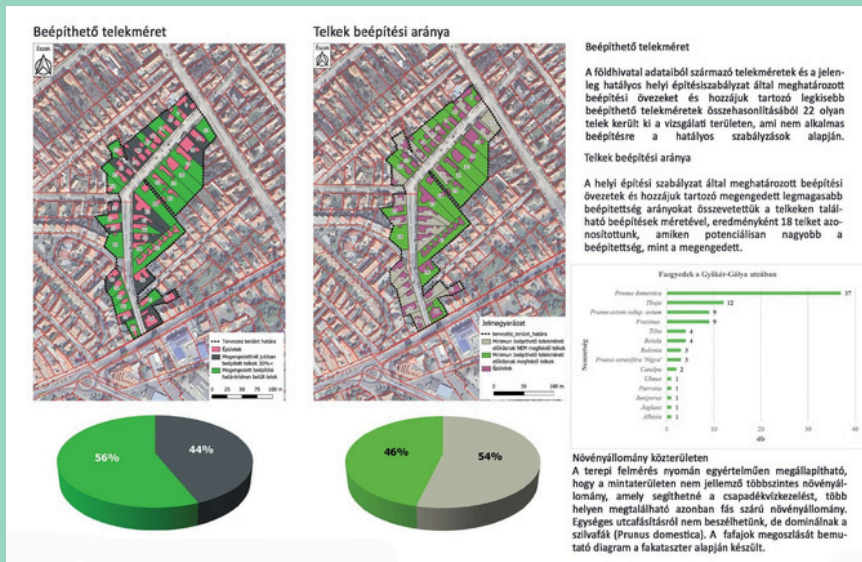
- ☀ The town was built along the floodplain of the Zagyva River, on flood-free terraces. Most of the buildings are located on higher ground. Later, buildings were constructed and roads were built in the floodplain areas as well. Some of the formerly low-lying areas now suffer from drainage problems.
- ☀ The city was built on sediment along the Zagyva River, on well-drained soil with good water absorption, but there are also many areas with clay soil that hinders infiltration. Due to extensive construction, there is also compacted and nutrient-depleted soil in the city. Soil testing is essential in the planning area to determine water storage and drainage capacity. Unfortunately, there is no generally available data on this. However, it is crucial to know this before planning any intervention: do not plan infiltration where the soil has poor drainage capacity!



- ☀ In Jászberény, the local building codes and the regulation for the operation and maintenance of the rainwater network were the basic documents that contained detailed information for developing proposals. The regulations for the rainwater network are very detailed in terms of blue infrastructure, but they are technical in nature and do not examine the possibilities for links with other sectors, so they only partially support the application of NbS.

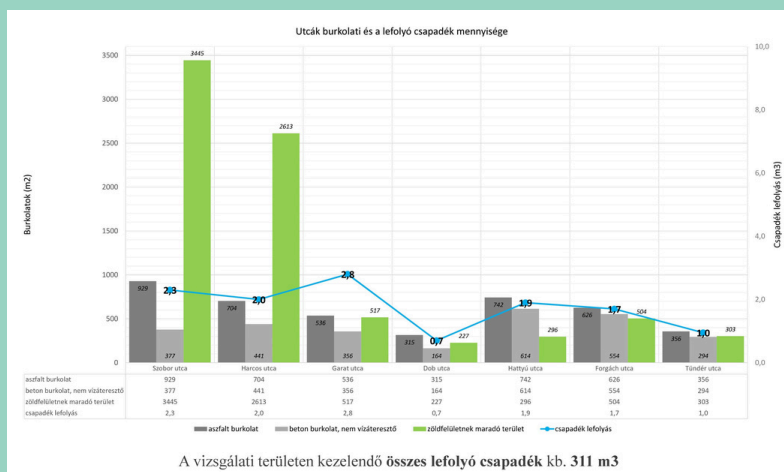
Analysis prepared for the area of Gólya Street and Gyökér Street in Jászberény





- The so-called 'raindrop path' diagrams are a useful tool for understanding the modified water cycle in the planning area. The chart summarises the characteristics of surface cover, terrain, technical infrastructure, function and green space and their impact on water management. It provides an ideal basis for considering technical interventions.
- Runoff calculations were used to estimate the amount of precipitation to be managed in each sample area. The calculations were based on the amount of precipitation falling during a 20-minute stormwater event occurring every two years, and the aim was to plan for the retention of the calculated amount of precipitation at the site.

Surface covering and rainwater runoff analysis for the block bounded by Szobor Street, Tündér Street, Forgács Street, Dob Street and Harcos Street in Jászberény



- Almost all sample areas (except for the housing estate) are characterised by excessive paving and overbuilding, which causes significant problems. This situation is exacerbated by the fact that property owners channel rainwater from private plots into public areas, as excessive paving and overbuilding prevent water from draining away within the plots. This means that the burden of rainwater management is being shifted from private to public areas. If the applicable building regulations were enforced, most of the rainwater manage-

ment problems in the detached house area would be solved, and the investment required would be much lower.

- ☀ Green areas would often need improvement. Although public green areas usually include trees, but it is less common on private land. Shrubs are almost completely missing, even though they evaporate a lot of water through their foliage.
- ☀ Based on the sample areas, it can be concluded that the settlement generally has good drainage capacity, so in most places not even deeper ditches are necessary. However, the amount of water is typically greater than the available drainage surface, so drainage problems must be addressed.

The **action areas** can be identified after detailed problem identification, impact area delimitation, stakeholder identification, first-round data collection and data analysis. It is important to identify areas where the planned intervention can actually

- improve local use of rainwater;
- manage rainwater management anomalies;
- and provide opportunities for the application of nature-based solutions.



Photo: Canva

Since the application of NbS requires space and is based on integrated decisions, it is advisable to choose areas where both conditions are met. In cities, most green spaces are privately owned (residential gardens, institutional gardens, private forests, meadows, orchards). It is therefore worth considering solutions that promote the development of green spaces on private land and improve their rainwater management capacity.

However, in most cases, integrated interventions can only be carried out in public space. These are suitable to deploy a more comprehensive NbS-toolkit, which can also serve as an example for the development of private properties.

When thinking on a city scale, it is worth examining the rainwater management capacity of individual city districts and their characteristic land uses, as well as the existing infrastructure and its operation. Solutions may vary in districts with different characteristics, so it is worth examining a variety of examples to gain a comprehensive picture of the settlement.



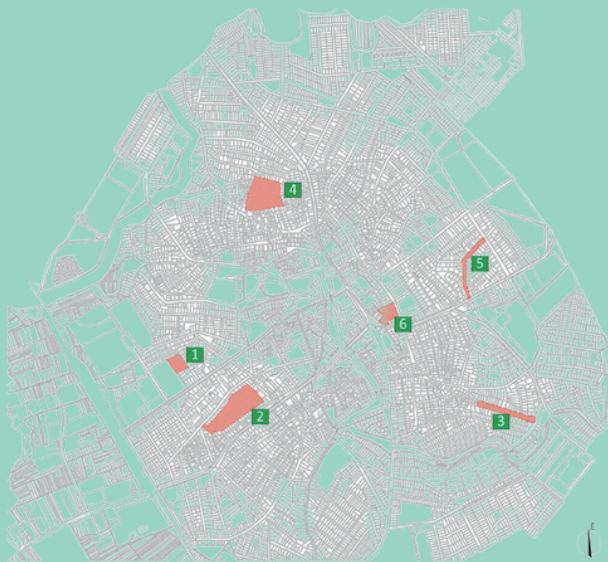
In Jászberény, the following criteria were decisive in selecting the action areas:

- ☀ existing, previously identified rainwater management problem
- ☀ characteristic features of the built environment and public space
- ☀ different types of connected residential areas and public spaces, as well as connected institutional areas and public spaces

Taking the above into account, six typical residential and institutional areas with different characteristics, varying degrees of built area, surface coverage and green space have been identified, where rainwater management problems currently exist (e.g. wide and deep puddles remaining on the streets for several days, rainwater flowing into residential areas, etc.). The size and morphology of public spaces also vary.

The analysis of the sample areas allowed us to draw general conclusions about rainwater management tasks. At the same time, the examination of areas with different characteristics provided an opportunity to explore management alternatives for specific urban situations.

The six selected sample areas:



- 1** Arboretum of the Károly Eszterházy Catholic University's Jászberény Campus
- 2** Réhely Street public space
- 3** Szent László Street housing estate
- 4** Block bounded by Szobor Street, Tündér Street, Forgács Street, Dob Street and Harcos Street
- 5** Gólya Street - Gyökér Street area
- 6** Parking area next to Conselve Park, bounded by Zirzen J. Street, Zoltán Street and Bercsényi Street



Click here if you would like to learn more about the characteristics of sample areas!



The primary goal for **developing proposals** is to reduce the insulated surface area, increase drainage and storage capacity, slow down runoff, reduce the amount of water that flows away, and increase evaporative surfaces. The planning process is time-consuming and requires considerable capacity, but if it paves the way for the application of NbS, it will pay off, as it will significantly reduce implementation costs.

The tasks of local authorities in retaining rainwater are manifold. Depending on the nature of the task, they may include:



Governance measures:

This may include measures ordering the removal of sealed surfaces and buildings, and checking and ordering the replacement of trees, thereby improving water permeability and evaporation. The municipality may also develop an incentivisation scheme to help citizens to retain and utilise water within their properties.



Regulatory measures:

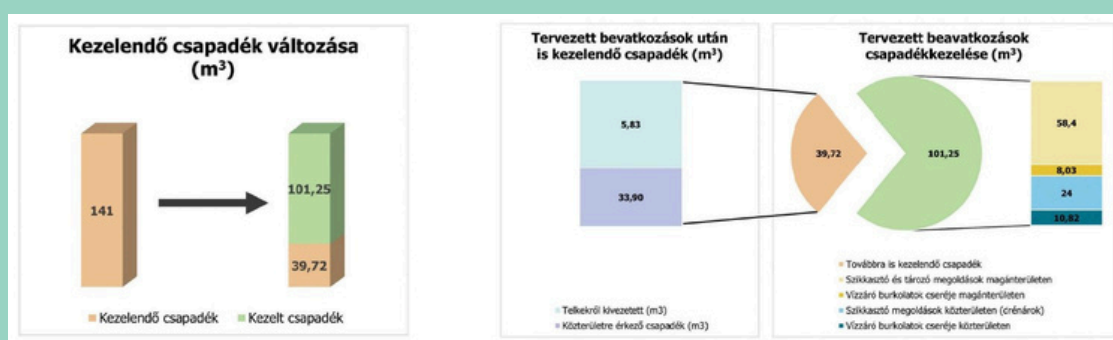
Local legislation may be enacted to protect and develop green spaces and to promote rainwater management within plots.



Technical measures:

During any infrastructure development, it is recommended to use technical solutions that help utilise rainwater locally. In many cases, rainwater management can be significantly improved by developing green infrastructure, while in other cases additional grey infrastructure is also needed.

Results of calculations for the sample area of "Gólya Street – Gyökér Street area" in Jászberény after the proposed NbS interventions



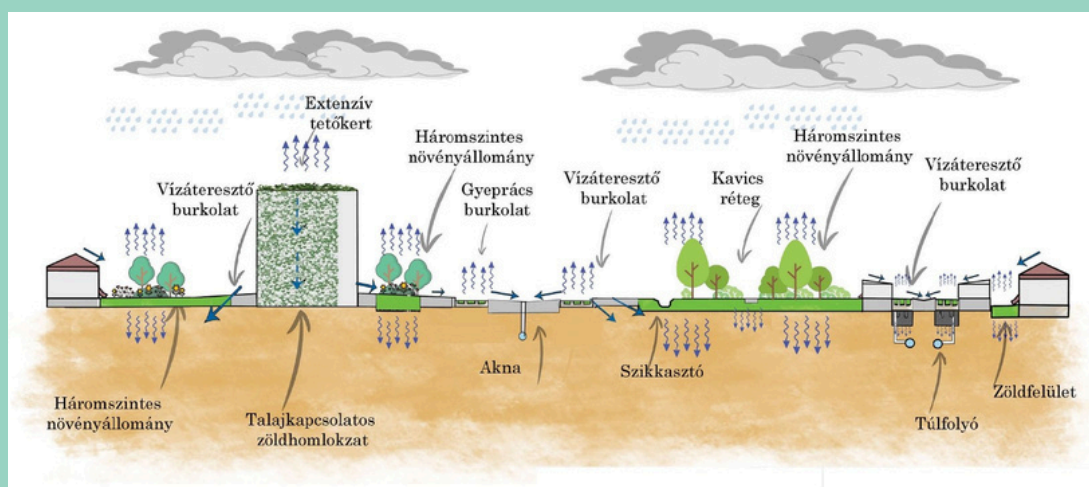
Rainwater management is more effective if we consider the development of complex green infrastructure. Therefore, during the planning stage, it is worth reviewing where green roofs or green facades can be created. Extensive green roofs are effective in retaining rainwater, delaying runoff and evaporation, and in some cases, they can even be installed during retrofitting. Green facades are low-maintenance and can create large vertical evaporation surfaces.

Municipal areas are generally over-paved – there is more sealed surface than it would be required for their function. During planning, these unnecessary square metres must be identified and green spaces planned instead of paved areas. For the remaining paved areas, it is recommended to consider changing the sealed surface into permeable paving, if technically possible.



Click here if you would like to learn more about the planning process of rainwater retention measures!

Proposed rainwater drainage diagram for the sample area of the housing estate on Szent László street, Jászberény

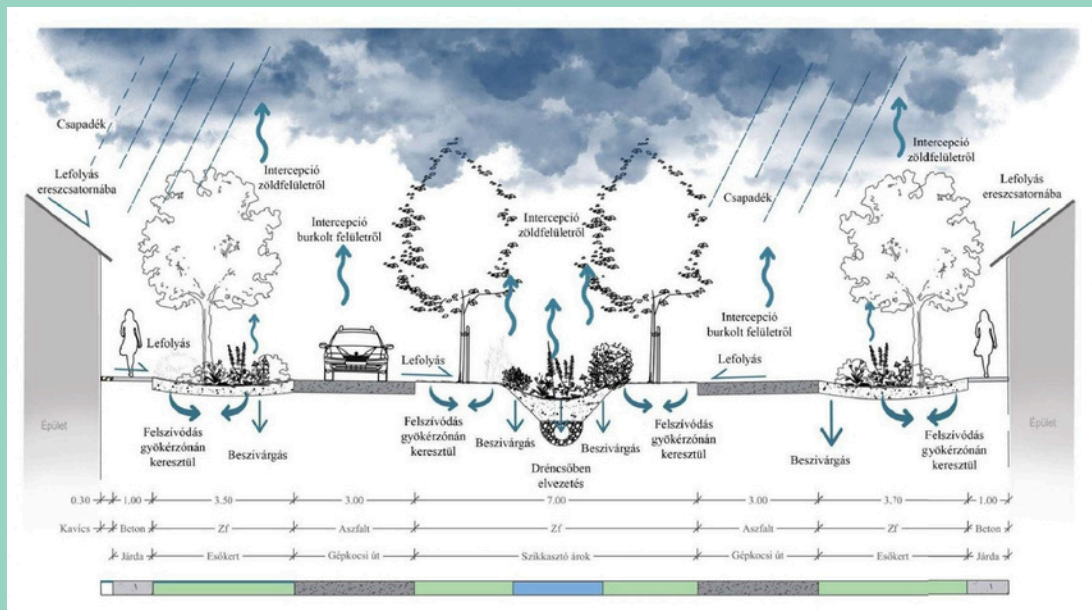


Water retention capacity can be significantly increased by developing green areas. Through soil improvement and the creation of three-level vegetation, most of the precipitation can be utilised locally: it infiltrates into the soil, where it is stored and used by plants. In paved environments, tree-planting can be a solution; in such cases, the creation of sufficiently large tree-plots with water management capacities are recommended.



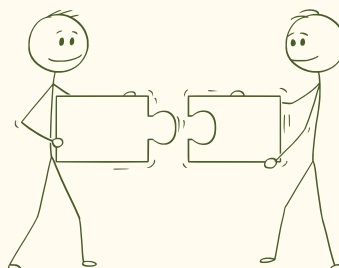
Rain gardens can be developed at the lowest points of green areas and also embedded in pavements, which can increase evaporation and water retention, as well as provide diverse green space. Careful dimensioning is essential for all water management green infrastructure elements. It is also advisable to connect them to the drainage network to prevent any damages.

Water flow in the sample area of Réhely Street in Jászberény after the proposed NbS interventions

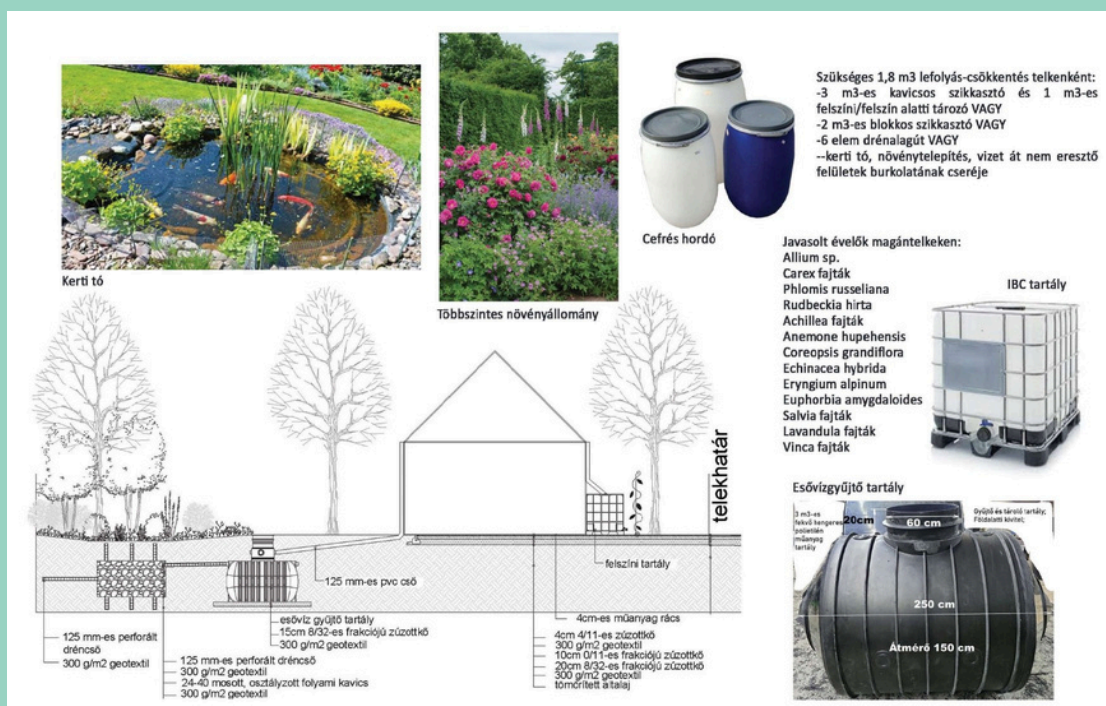


Awareness raising, promotion:

The importance of retaining rainwater is becoming increasingly recognised, but methods for collection and local treatment are not widely known. Private individuals without gardens especially neglect the importance of rainwater retention. It is therefore crucial that those affected understand the links between construction, rainwater management and green space development.



Water retention solutions proposed for private plots in the sample area of "Gólya utca – Gyökér utca" in Jászberény



Engagement, partnership building:

The involvement of stakeholders is equally important in the preparation, implementation and operation phases as well. Participatory planning tools can be used to engage participants from the beginning of the process.

The task in Jászberény involved complex green infrastructure development for all sample areas, with a particular focus on rainwater management. Each scenario examined the following options:

- ☀ green roof and green wall design
- ☀ de-sealing surfaces and replacing them with permeable surfaces
- ☀ landscaping
- ☀ green space development

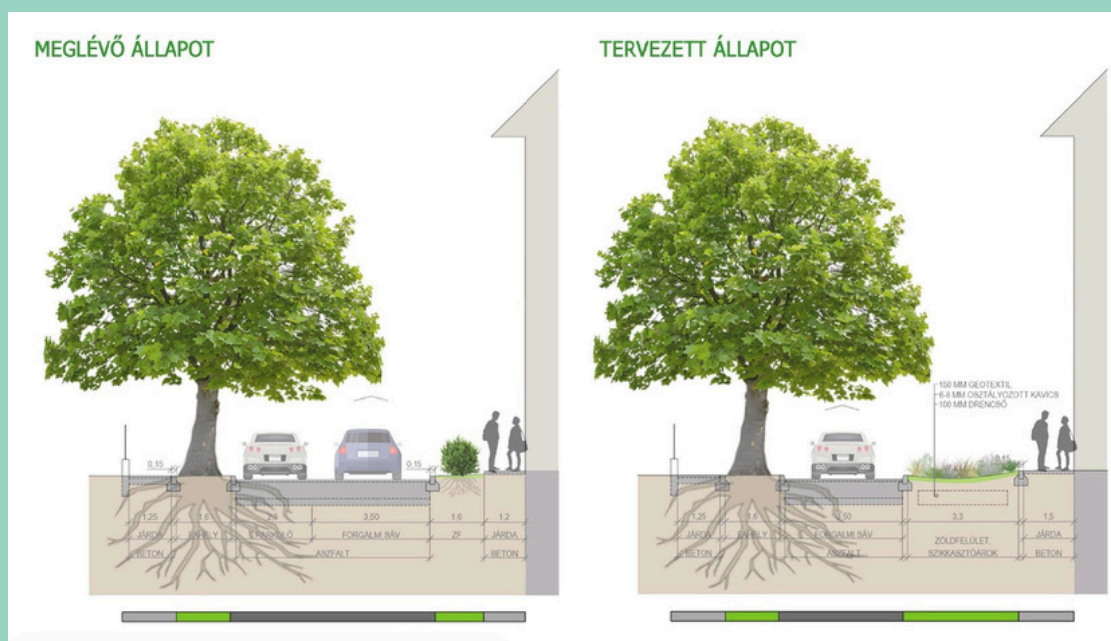
The proposals prepared for the sample areas included site plans and cross-sections, as well as a water cycle diagram and visual drawings. Further results of the student assignment:

- 💡 A thought-provoking discussion paper has been drafted on trends in urban rainwater management and possible solutions.
- 💡 The project work highlighted that the solution lies in more effective cooperation, the involvement of the actual stakeholders (the population) and conscious actions.



- 💡 The analysis demonstrated that several small steps (e.g. reconstruction of tree lines, distribution of rainwater collection containers to residents) can lead to very effective solutions. With regard to specific solutions, it became clear that even a few simple measures could significantly improve rainwater management and quality of life (e.g. removing pavement in private areas, creating drainage green belts, planting three layers of vegetation in private gardens, etc.).

Proposed design for the sample area of the “parking area next to Conselve Park” in Jászberény



- 💡 It is essential to build capacities and integrate comprehensive knowledge and approaches related to the application of nature-based solutions into the daily operation of the municipality, e.g. organising resident workshops, awareness-raising campaigns, regular consultations, frequent inspections by building authorities (even by a municipal team set up for this purpose), etc.
- 💡 There is considerable potential in monitoring and enforcing existing regulations. Curbing overbuilding and overpaving is an important task, as demolition can restore significant permeable surfaces even in the most problematic locations.



RECOMMENDED READING (in Hungarian)



[Green Infrastructure Booklets 1-6 - Guides for the planning and implementation of green infrastructure developments](#)



[Sponge City – Rainwater retention in urban environments \(Green Infrastructure Booklets 8\).](#)



[Green Infrastructure Guide - A guide to planning and implementing green infrastructure developments](#)



[Municipal Rainwater Management Guidelines \(Water Collection and Management Plan 2015 - Appendix 8-6\).](#)



[LIFE LOGOS 4 WATERS Document Repository.](#)



[TeAM HUB - Nature-Based Solutions Hub in Hungary case studies and resources](#)



[Climate adaptation guide for local authorities](#)



Click here if you would like to learn about the basic concepts related to this topic.

