



University of Ljubljana



University of  
Belgrade

# 11<sup>th</sup> Sava Youth Parliament

Let's work with nature!



September, 2023



University of Ljubljana



Global Water  
Partnership  
Central and Eastern Europe  
GWP Slovenia



University of  
Belgrade

## Organizing committee

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*Dragan Zeljko*, International Sava River Basin Commission, Croatia

*Samo Grošelj*, International Sava River Basin Commission, Croatia

*Ana Marinić*, International Sava River Basin Commission, Croatia

izr. prof. dr. *Barbara Čenčur Curk*, University of Ljubljana, Faculty of Natural Science and Engineering, Slovenia & Global Water Partnership Slovenia

doc. dr. *Darja Istenič*, University of Ljubljana, Faculty for Civil and Geodetic Engineering, Slovenia & University of Ljubljana, Faculty of Health Sciences, Slovenia & Global Water Partnership Slovenia

Assist. dr. *Matej Radinja*, University of Ljubljana, Faculty for Civil and Geodetic Engineering, Slovenia & Global Water Partnership Slovenia

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## Introduction

The Sava Youth Parliament is the unique basin wide organization for the future generations in the world, the platform where the voice of the youth can be heard. The members of the Sava Youth Parliament are students from secondary schools in Bosnia and Herzegovina, Croatia, Slovenia and Serbia. The topic of 11<sup>th</sup> Sava Youth Parliament is “Let’s work with nature!”. The parliament is organised in cooperation between International Sava River Basin Commission (ISRBC) and Global Water Partnership Slovenia, University of Ljubljana, LIMNOS and University of Belgrade.

Through the work of Youth Parliament, the Sava Commission promotes the importance of sustainable use, and protection of water resources, raising awareness of the importance of water education, international cooperation in the field of water, supports involvement of youth in international water management mechanisms with the idea to build connection and exchange ideas between generations to solve common problems and face future challenges.

While global demand for water has been increasing as a function of population growth, economic development and changing of consumption patterns, growing are the pressures on water resources due to over consumption, and pollution but as well as effects of climate change and biodiversity and natural habitat crises. Global water cycle is intensifying due to climate change, with wetter regions generally becoming wetter and drier regions becoming even drier. Intensified development (e.g., urbanization, de-forestation, intensification of agriculture) will continue to grow in the future. The industrial, domestic and agriculture water demand will increase.

Nature-based solutions (NBS) are increasingly seen as important in water resource management practices and moreover in climate change impact reduction and protection of ecosystems and biodiversity. For implementation of the global and the EU policy framework the NBS present huge potential for sustainable development of the society. EU Commission defines NBS as solutions that are inspired and supported by nature, which are cost-effective, and simultaneously provide environmental, social and economic benefits and help build resilience.

When tackling water resources management issues, NBS can offer a vital means of moving beyond business-as-usual and to address many of the water challenges while simultaneously delivering additional benefits vital to all aspects of sustainable development.

Although recognized as of a great potential, the implementation of the NBS is somehow behind the conventional measures because of the insufficient awareness and information, and knowledge fragmentation.

To increase the knowledge of the young people about NBS it is proposed that the main topic of the 11<sup>th</sup> Sava Youth Parliament in 2023 could be related to possible implementation of the NBS in water resource management practices. The slogan of this year parliament would be “Let’s work with nature!”. The participants of the parliament would focus on practical examples, potentials and challenges in implementation of the NBS related to provision of multiple benefits across a range of sustainability issues such as increase water availability, improve water quality, reduce flood risks, limit the impacts of climate change, enhance biodiversity and improve environmental quality while contributing to economic activities and social well-being. Together with the invited experts, the young people will exchange knowledge and experiences in water and rainwater management considering NBS. They will have a chance to gather the ideas, exchange opinions, express their understanding, concerns, and perspectives about the NBS.

Possible examples of NBS:

- Water availability, water retention measures, infiltration, accumulation and subsequent use of rainwater
- Water quality measures: natural and constructed wetlands, riparian buffer strips;

Water and climate change related risk reduction measures: floodplain restoration, measures to improve microclimate (i.e., vegetation facades and roofs). Joining forces with nature offers a possibility for improvement of the water resource management practices, facilitate achievement of water security for all, and support the core aspects of sustainable development.

**Timeline:**

1. Competition for secondary schools and youth associations - from March until June,
2. Webinar on NBS to explain what NBS means, potential opportunities and concerns – 30<sup>th</sup> March 2023
3. At the online event of Celebration of the Sava Day the teams present their work – 1<sup>st</sup> of June
4. Announcement of the selected teams at the ISRBC webpage – beginning of September
5. Sava Youth Parliament in Ljubljana, Slovenia – 29<sup>th</sup> and 30<sup>th</sup> September

## 1 Webinar on Nature Based Solutions

A Webinar on Nature Based Solutions was held on 30<sup>th</sup> March 2023. The main purpose was to help the students at secondary schools and young people between the 19 and 25 years to increase their knowledge on NBS and to help them to submit their proposal to the competition for selection of schools to participate at the 11<sup>th</sup> Sava Youth Parliament. The webinar, which was organized in cooperation between the ISRBC, Global Water Partnership, University of Ljubljana and University of Belgrade, gathered more than 50 participants from Slovenia, Croatia, Bosnia and Herzegovina and Serbia.

The agenda covered the overview of NBS and the presentations on wastewater treatment wetlands, on NBS as a way to a healthy city and on large-scale NBS for flood risk reduction. The participants were also informed on online support tool ([gwtoolbox.org](http://gwtoolbox.org)) which allows stakeholders to learn, explore and connect with water management experts.

How can you join to [gwtoolbox.org](http://gwtoolbox.org)?

Step 1: Register to GWP IWRM action hub à <https://iwrmactionhub.org/user/register>

Step 2: Go to Connect, click on Communities and become member of the Community on NBS in water management

Step 3: Welcome! Explore the Community on NBS

All the presentations are available [here](#), while the audio recording is available [here](#).

Agenda of the event:

	Topic	Presenter
12:00-12:10	Welcome	ISRBC
12:10-12:15	Ice-break	Samo Grošelj, ISRBC
12:15-12:35	Nature based solutions what is all about?	Dr. Darja Istenič, University of LJ, GWP
12:35-12:40	Break with video on NBS	( <a href="#">I. film</a> , <a href="#">II. Film</a> , <a href="#">III film</a> )
12:40-12:55	Wastewater treatment wetlands	Mag. Alenka Mubi Zalaznik, LIMNOS, GWP
12:55-13:10	NBS way to a healthy city	Dr. Anja Ranđelović, University of BG, euPOLIS project
13:10-13:25	NBS for flood risk management	Dr. Jasna Plavšić, University of BG, RECONNECT project
13:25-13:30	Quiz	ISRBC
13:30-13:35	Nature-based Solutions in Water Management ( <a href="http://gwtoolbox.org">gwtoolbox.org</a> )	Primož Skrt, GWP
13:35-13:40	Planned future steps	Samo Grošelj, ISRBC

## 2 Celebration of the Sava Day

The main topic of the event was the presentation of the works received on the competition for the secondary schools and youth between 19 and 25 years on the theme „Let's work with nature!“ focusing on the use of NBS in the water management. At the event, 26 groups of students from Bosnia and Herzegovina, Croatia, Serbia and Slovenia presented their ideas and insights on NBS in their local environment. The presentation was held on local languages of the Sava River Basin or English online on the 1<sup>st</sup> June 2023.

Agenda of the event:

	Topic	Presenter
12:00-12:10	Welcome address	ISRBC, GWP, University of Belgrade
12:10-12:20	Ice-break	
12:20-12:35	Presentation of the Sava Youth Parliament	Representatives of SYP (TBC)
12:35-12:45	Analysis of the received works	Ana Marinić, ISRBC
12:45-13:00	Break	
13:00-14:30	Presentation of received works	Participants
14:30-14:40	Planned future steps	Samo Grošelj, ISRBC
14:40-14:45	Message for the Sava River	

## 3 Selection of winners

Until the end first week of September the expert committee reviewed the submitted works and according to common criteria and grading selected winner groups. The expert committee consisted of:

- Samo Grošelj, ISRBC
- Ana Marinić, ISRBC
- Darja Istenič, University of Ljubljana
- Anja Ranđelović, University of Belgrade
- Jasna Plavšić, University of Belgrade
- Alenka Mubi Zalaznik, LIMNOS

Two winning groups per country were selected, namely:

- Bosnia and Herzegovina
  - o Akvatim, Srednja strukovna škola „Jajce“, Jajce
  - o Ekipa 1, JU Srednja stručna i tehnička škola, Gradiška
- Croatia
  - o gerVu2, Gimnazija Sesvete, Zagreb
  - o Zeleni otočići, Ekonomska, trgovačka i ugostiteljska škola, Samobor
- Serbia
  - o Demetra, Gimnazija “Crnjanski”, Belgrade
  - o EcoGim, Palanačka Gimnazija, Smederevska Palanka
- Slovenia
  - o Konc2, BIC Ljubljana, Ljubljana
  - o Naravovarstvene ureditve ob HE Brežice, Gimnazija Celje, Celje

The winner groups were invited to participate at the Sava youth parliament event in Ljubljana, September 2023.



## 4 Sava Youth Parliament

The in-person event of Sava Youth Parliament will take place on Friday 29<sup>th</sup> and Saturday 30<sup>th</sup> September 2023 in Ljubljana, Slovenia. All winning teams will be attending the event along with their teachers.

The agenda of the event:

### Friday, 29<sup>th</sup> September 2023

	Topic	Presenter / remarks
12:00 - 12:30	Arrival of participants	
12:30 - 13:30	Lunch	
13:30 - 13:40	Welcome address	<ul style="list-style-type: none"> <li>- Uroš Brežan, Minister of Natural Resources and Spatial Planning of the Republic of Slovenia</li> <li>- Dragan Zeljko, Executive Secretary of the ISRBC</li> </ul>
13:40 - 14:00	Introduction of participants	Brief introduction of school teams, ISRBC representatives and partners of the event (GWP Slovenia, University of Ljubljana, University of Belgrade)
14:00 - 14:10	Presentation of the Sava Youth Parliament	Magdalena Živanović, President of the Sava Youth Parliament
14:10 - 14:15	Presentation of the project „Can you hear our rivers? - Scheldt and Sava Youth Parliaments Cooperation“	Blaž Lipovšek, Ljubljana Neža Ponikvar, Ljubljana
14:15 - 17:30	Visit to nature-based solutions sites (5 stops presenting different nature-based solutions)	Mag. Alenka Mubi Zalaznik
18:00 - 19:00	Check-in at the hotel reception	
19:00 - 21:00	Dinner and election of the Sava Youth Parliament Presidency	

### Kamp Ježica – hotel Ljubljana resort. Elections to the Parliament.

### Saturday, 30<sup>th</sup> September 2023

	Topic	Presenter
9:30 - 9:40	Establishment of the Parliament bodies	
9:40 - 10:00	Presentation of NBS	dr. Matej Radinja, University of Ljubljana, GWP Slovenia
10:00 - 11:30	Presentation of the winning works (5 minutes per team)	<ol style="list-style-type: none"> <li>1. EcoGim, Smederevska Palanka</li> <li>2. Zeleni otočiči, Samobor</li> <li>3. Ekpa 1, Gradiška</li> <li>4. Naravovarstvene ureditve ob hidroelektrarni Brežice na Savi, Celje</li> <li>5. Demetra, Belgrade</li> <li>6. gerVu2, Sesvete</li> <li>7. Akvatim, Jajce</li> <li>8. Konc 2, Ljubljana</li> </ol>

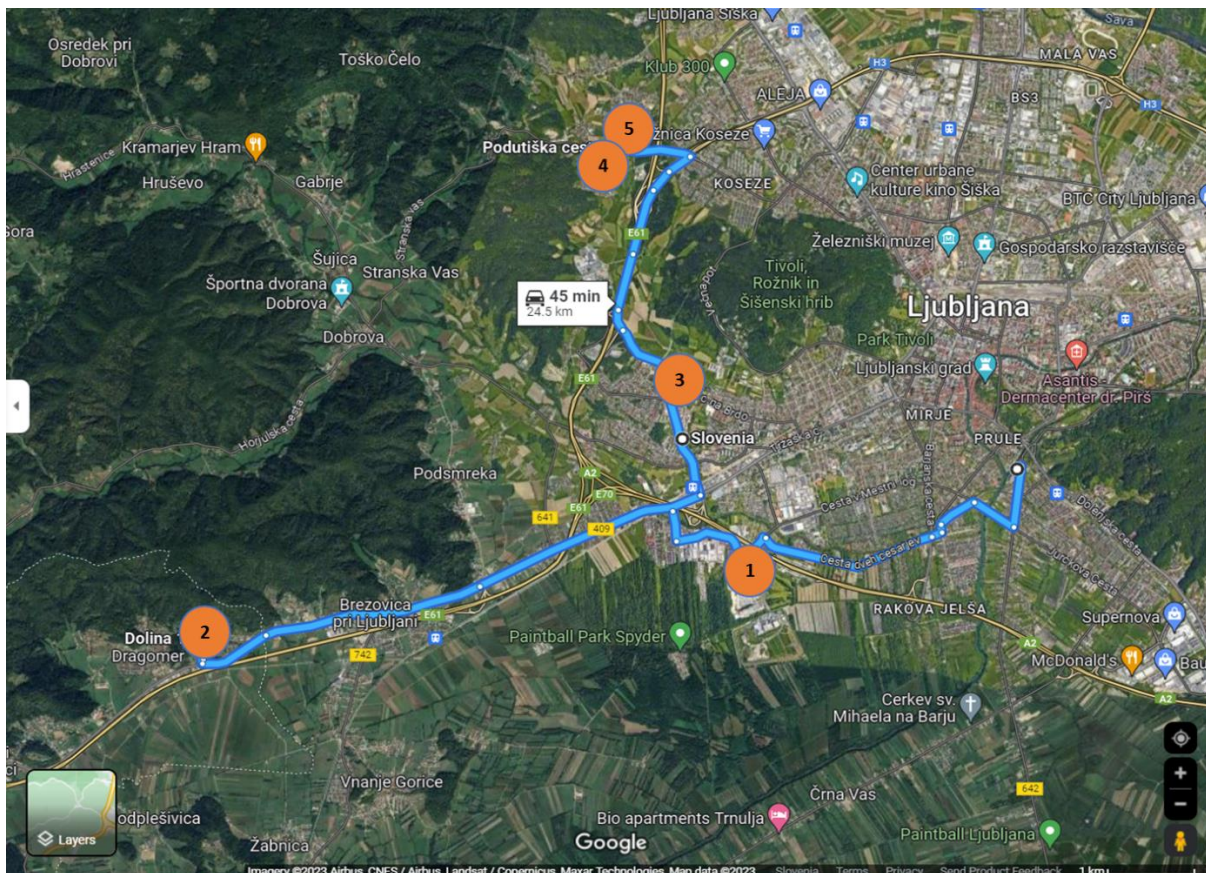


11:35 - 13:00	Workshop in 4 groups	<ol style="list-style-type: none"> <li>1. Anja Ranđelović – NBS in Urban Planning</li> <li>2. Matej Radinja – Sustainable urban drainage</li> <li>3. Mitja Bricelj – River basin management with NBS</li> <li>4. Alenka Mubi Zalaznik – NBS for wastewater treatment</li> </ol>
13:00 - 13:20	Presentation of the group work	participants
13:20 - 14:30	Distribution of certificates and closure	

## 4.1 Field trip

The field trip includes 5 stops presenting different nature-based solutions (details of the field trip are provided in an annex):

1. Nature-based sanitation of a municipal landfill Ljubljana Barje
2. Sludge drying reed bed
3. Stormwater retention pond
4. Multifunctional flood retention pond at Glinščica
5. Revitalized small urban stream



## 4.2 Workshops

Workshops will be carried out in 4 groups that will address different topics of NBS use, namely:

### 1. NBS in urban planning (making cities healthier)

Moderator: dr. Anja Randelović, University of Belgrade

Description: As cities become denser and more crowded, there is an increasing demand for innovative urban solutions that prioritize the physical and mental health of residents – solutions that transform public spaces into healthier and more inviting places. NBS can be urban solutions that help in increasing access and quality of green spaces in cities, which provides better (microclimatic) conditions and opportunities for physical activities, social interaction and relaxation, and can decrease pollution levels, making the cities and its citizens healthier.

### 2. NBS for sustainable urban drainage

Moderator: dr. Matej Radinja, University of Ljubljana

Description: NBS consists of natural and semi-natural decentralized systems that can be used for urban stormwater management. However, if NBS are not designed according to water-wise principles their potential for managing stormwater is not utilized.

### 3. River basin management with NBS

Moderator: dr. Mitja Bricelj, Ministry of Natural Resources and Spatial Planning

Description: Efficient and modern river basin management plans recognize the central role of NBS as important measure for improvement of water-food-climate-ecosystem security. There is a need to use the bottom-up approach to amplify the education in local communities, including schools and to use the top-down approach to enhance the cooperation at all levels (i.e. transboundary, national and local).

### 4. NBS for wastewater treatment (treatment wetlands)

Moderator: mag. Alenka Mubi Zalaznik, LIMNOS d.o.o.

Description: Treatment wetlands are engineered and natural systems that replicate and enhance conditions for the natural processes to remove sediments and nutrients from the water environment. The location and pollution load define the treatment wetland's adequate design and size.

## Conclusions

The Sava Youth Parliament is an example of institutional participation of young people, providing them with education, networking, dialogue and participation. The Sava Youth Parliament is also a platform for the exchange of good practices and ideas between young people from different places along the Sava River.

The participation, engagement and projects of the participating student groups from the Sava catchment area show that:

- Young people are active and responsible actors in finding and implementing nature-based solutions to adapt to climate change, which also threatens well-being in the Sava river basin.
- Young people demand greater participation and influence in decisions that affect their future, both at local and national level.
- Young people want to work together with adults and contribute to the sustainable development of their environment.





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## Annex

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## 11<sup>th</sup> Sava Youth Parliament

*Field trip, 29.9.2023*

**Field trip organizers:**

Alenka Mubi Zalaznik, LIMNOS d.o.o., Podlimbarskega 31, 1000 Ljubljana; [alenka@limnos.si](mailto:alenka@limnos.si); member of GWP CEE

doc. dr. Darja Istenič, University of Ljubljana, Faculty for Civil and Geodetic Engineering, Jamova cesta 2, 1000 Ljubljana; University of Ljubljana, Faculty of Health Sciences, Zdravstvena pot 5, 1000 Ljubljana; [darja.istenic@fgg.uni-lj.si](mailto:darja.istenic@fgg.uni-lj.si); member of GWP CEE

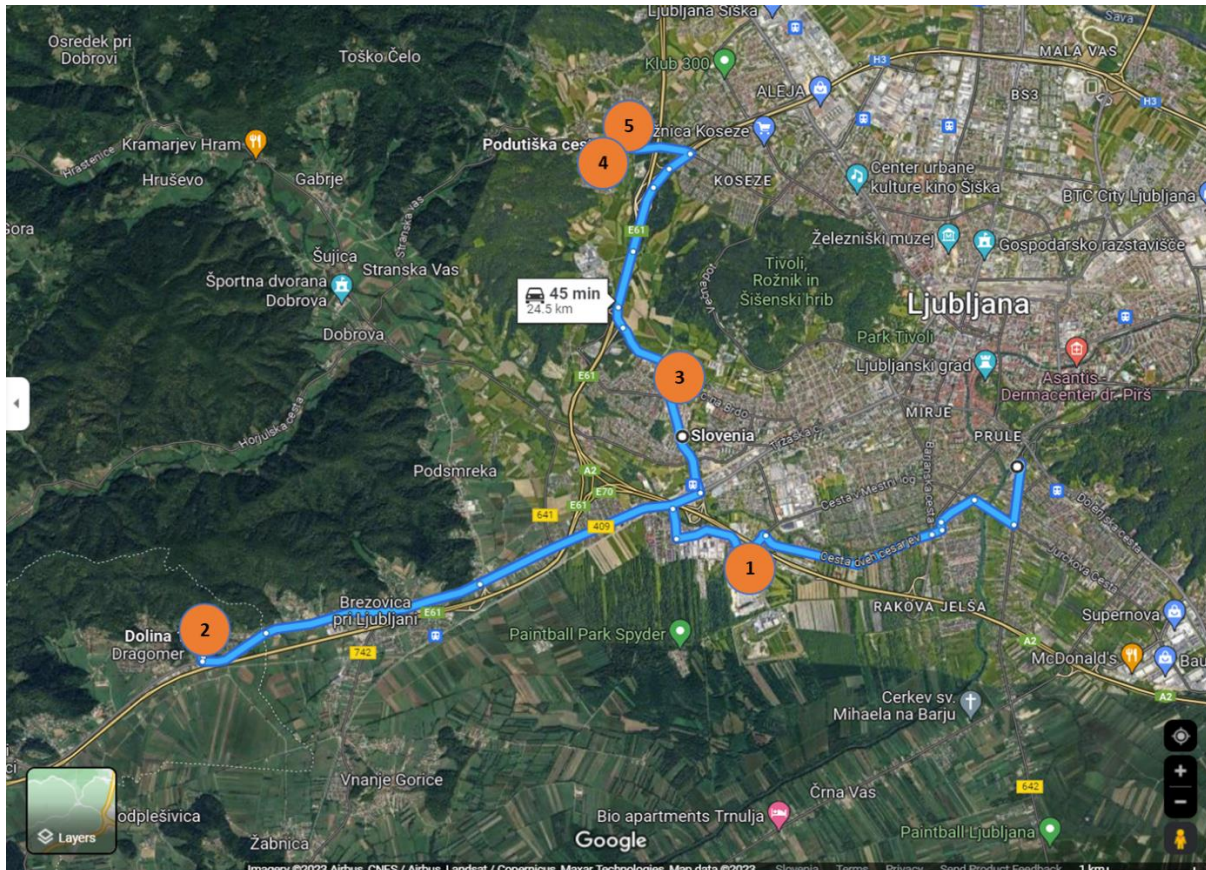
Assist. dr. Matej Radinja, University of Ljubljana, Faculty for Civil and Geodetic Engineering, Jamova cesta 2, 100 Ljubljana; [matej.radinja@fgg.uni-lj.si](mailto:matej.radinja@fgg.uni-lj.si)



## Contents

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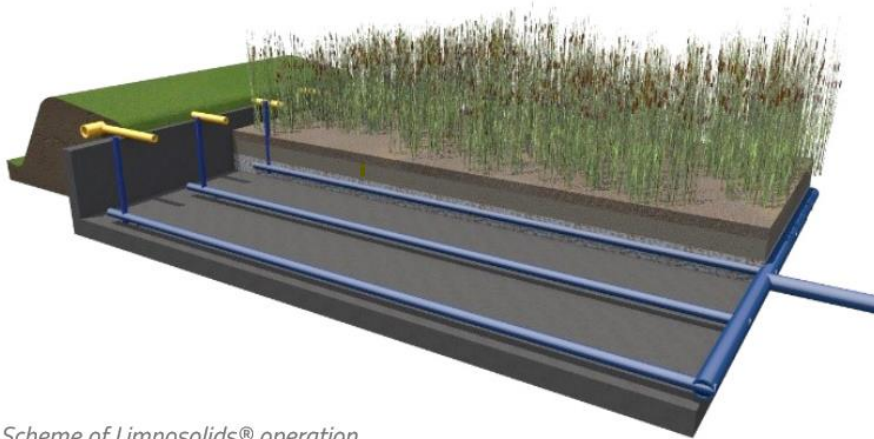
## 2 Sludge drying reed bed

Location: 46.022083, 14.391488

Sludge drying reed beds (Limnosolids®) is a passive approach technology enabling dehydration, mineralisation and stabilisation of sludge from wastewater treatment plants. It is using only natural processes. The technology enables long-term and sustainable storage of sludge with low operating and maintenance costs. It can completely replace dehydration which currently represents significant cost on existing wastewater treatment plants.

With this technology different types of sewage and industrial sludge can be treated. It is stored in the reed beds normally between 8 to 10 years. Due to parallel operation of physical (drying) and biological processes (mineralisation) the treatment results in significant sludge volume reduction. The sludge no longer contains pathogen organisms and is therefore stabilised.

The end result of the process is a compost-like soil that can be reused as fertilizer in agriculture, cover layer for landfills or construction material.



*Scheme of Limnosolids® operation*

Notes:

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### 3 Stormwater retention pond

Location: 46.045230, 14.464507

A stormwater retention pond is an example of blue-green infrastructure to store, treat, and slowly discharge the rainwater from nearby buildings. The residential neighborhood of Novo Brdo was recently built. The rainwater from the area is collected separately and managed depending on the surface type, namely stormwater from surfaces with higher pollution potential is treated accordingly:

- stormwater from parking lots is collected in stormwater sewer and treated in an oil separator before discharge into the Glinščica stream;
- stormwater from an emergency path (no regular traffic) is discharged into the stormwater sewer without treatment;
- stormwater from roofs is led into infiltration wells or stormwater sewer that discharges to Glinščica stream.

Since the stormwater sewer has a limited capacity, the exceeding amount of stormwater is retained in a retention pond. The retention pond is designed to store a part of the area's surface runoff typical for a 10-minute event with a return period of 2 years that discharges 36,1 L/s, amounting to 21,66 m<sup>3</sup>. The pond has an approximate surface area of 500 m<sup>2</sup>; therefore the design rainfall event causes a 5 cm water level increase. Besides the hydraulic benefits, the pond also presents a multifunctional unit that increases the aesthetic value of the area and contributes to the local biodiversity.



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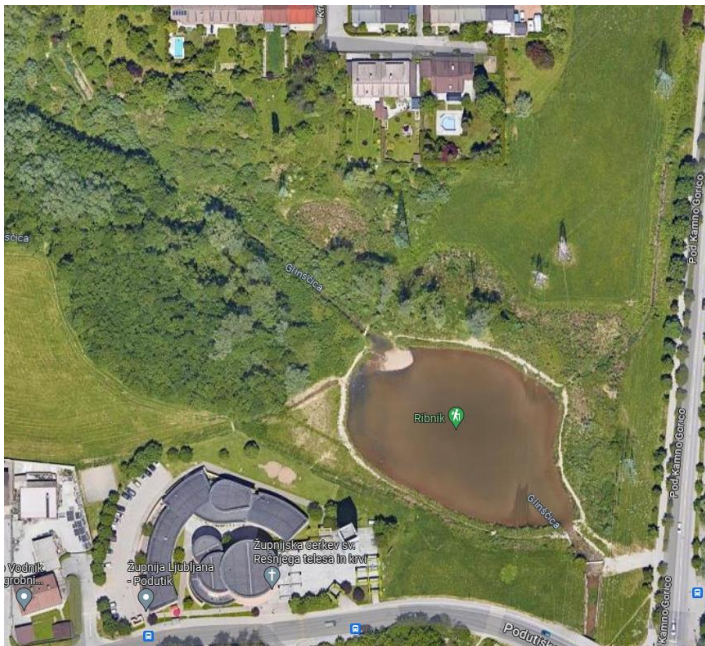
## 4 Multifunctional flood retention pond at Glinščica

Location: 46.075166, 14.453979

The City of Ljubljana has been dealing with flooding of rivers for many years, especially because settlements are gradually spreading to areas of periodic flooding. The flood reservoir was constructed in 1986 on Glinščica river to tackle the issue of floods, but later it was facing water quality problems, as it was affected by occasional overflows from septic tanks, polluted tributaries and urban stormwater runoff (gardens, parking places).

In 2005, dispersed pollution was partially reduced with establishment of vegetated ditch and revitalization of small tributary (see chapter 5) that drained septic tank overflows and stormwater from a nearby settlement. The rest of retention pond was reconstructed, cleaned and a new overflow structure was built in 2019 which enables active flood protection at Glinščica river.

Besides flood retention, the pond serves other ecosystem functions such as biodiversity, mitigating heat island and providing recreation space for nearby inhabitants. The banks of retention pond were planted with diverse indigenous wetland plants like broadleaf cattail (*Typha latifolia*), soft rush (*Juncus effusus*), sedge (*Carex* sp.) and yellow iris (*Iris pseudacorus*) and around the pond willows (*Salix* spp.) and black alder (*Alnus glutinosa*) can be seen. Maintenance on regular basis is required to avoid reduction of the retention capacity due to alluvial deposits and overgrowth of vegetation, including the establishment of safe operating conditions.



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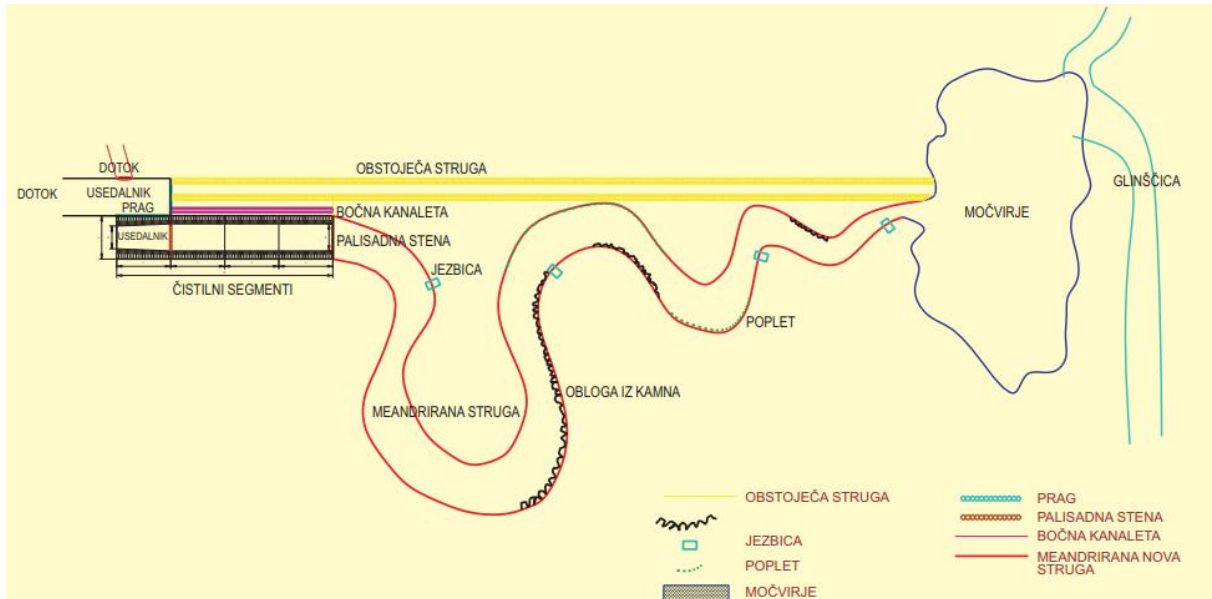


## 5 Revitalized small urban stream

Location: 46.075944, 14.452532

The nature-based system is designed to clean the inflow of polluted stormwater and the drain, which collects and carries pollution from several sources (fertilizing fields, gardens). The NB system consists of a cleaning ditch, which is filled with various sand mixtures and planted with marsh plants with a cleaning function, and meandering new river bed with elements of revitalization.

Firstly, the water flows into the sedimentation pond (below, left), then through the cleaning ditch and finally, the meandering part of the stream.



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