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Data Collection, hydraulic and morphological
modelling of the Danube River and the Sava River in
the Republic of Serbia

Lot 1: **Hydraulic and morphological modelling of the
SRB-CRO common stretch of the Danube River**

Stakeholders' Forum Meeting Number 13

06/02/2025, online

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Basic Project Data

- Contract: Data Collection, hydraulic and morphological modelling of the Danube River and the Sava River in the Republic of Serbia - Lot 1: **Hydraulic and morphological modelling of the SRB-CRO common stretch of the Danube River**
- Contracting Authority: Ministry of Construction, Transport and Infrastructure
- Contractor: Hidrozavod DTD AD Novi Sad, Republic of Serbia
- Contract signature date: 11 June 2024
- Commencement date: 14 June 2024
- Duration: 12 months
- Contract is part of activities within the EU CEF funded project “Preparing FAIRway 2 works in the Rhine-Danube Corridor”

Activities Breakdown – part 1

Contractual Timetable		2024						2025					
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
		Month of the Contract											
No.	Activity/Task/Output/Report	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9	M 10	M 11	M 12
Activity 0	Inception phase												
Meeting	Kick-off meeting	😊											
Task 00-01	Preparation of the communication matrix												
Task 00-02	Application of visibility guidelines												
Task 00-03	Acquisition of existing documentation												
Task 00-04	Preparation of Inception Report												
Output 00-01	Communication matrix	😊											
Output 00-02	Project templates	😊											
Output 00-03	Inception report	😊											
Activity 1	1D hydraulic modelling												
Task 1.1	Data Collection												
Task 1.2	Hydrological Study												
Task 1.3	Model Setup												
Task 1.4	Model Calibration												
Task 1.5	Model Simulation												
Task 1.6	Analysis and Results												
Task 1.7	Update of ENRs												
Meeting	Stakeholders' Forum meeting		😊										
Output 01-01	1D model calibrated and running				😊								
Output 01-02	Updated ENRs					😊							
Output 01-03	Technical Report on 1D Hydraulic Modeling and Update of ENRs						😊						
Activity 2	Redefinition and prioritization of navigational bottlenecks												
Task 02-01	Update of the bottleneck catalogue												
Task 02-02	Prioritize bottlenecks for which 2D models will be developed												
Meeting	Stakeholders' Forum meeting				😊								
Output 02-01	Technical report on redefined bottlenecks elaborated						😊						
Output 02-02	Technical report on prioritization of bottlenecks elaborated						😊						

Activity 4 - 2D hydrodynamic and morphological modelling

Activity 4	2D hydrodynamic and morphological modelling	Status
Task 04-01	Data Collection	Done
Task 04-02	Model Setup	Done
Task 04-03	Model Calibration	Done
Task 04-04	Model Verification	Done
Task 04-05	Definition of Scenarios	Dominantly done
Task 04-06	Preparation of Model for Considered Scenarios	In progress
Task 04-07	Analysis of Results	Not due yet
Task 04-08	Application of MCA	Not due yet
Task 04-09	Elaboration of Technical Report on 2D Modeling and Application of MCA	Not due yet
Output 04-01	2D Model Calibrated and Running	Done
Output 04-02	Scenarios Defined	Dominantly done
Output 04-03	Technical Report on 2D Modeling and Application of MCA	In progress



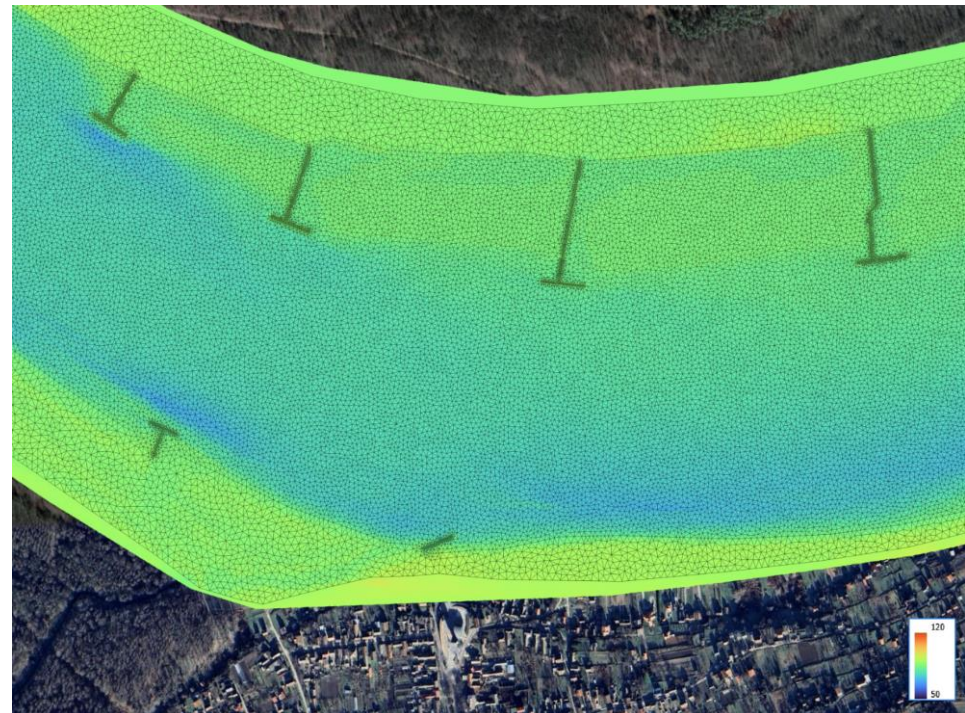
Activity 4 - Task 04-01 - Data Collection

- The existing dataset for the model has been supplemented with project documentation provided by Plovput
- Based on this documentation, a digital riverbed model has been updated
- This completes the set of input data
- Task 04-01 is finalized

Activity 4 - Task 04-02 - Model Setup

- Software used for the modeling is Basement 2D
- Steps in model setup include the following:
 - Creation of the DTM
 - Development of the computation grid which results in the computational geometry
 - Setting of the model parameters
- The digital model of the riverbed (with the computational grid) for the Aljmaš section can be seen at the Figure 1
- Task 04-02 is finalized

Figure 1: The digital model of the riverbed in the Aljmaš section with the computational mesh.





Activity 4 - Task 04-03 - Model Calibration

- Steps in the model calibration include iterative setup of model parameters to match the results of available measurements:
 - Measured flow velocities
 - Suspended sediment distribution
 - Bathymetric measurements from September 2023
- Task 04-03 is finalized



Activity 4 - Task 04-04 - Model Verification

- Steps in the model verification include control confirmation of model parameters to match the results of data set available for the verification:
 - Measured flow velocities
 - Suspended sediment distribution
 - Bathymetric measurements from May 2023
- Model verification is limited by the availability of data for the verification
- Task 04-04 is finalized



Activity 4 - Task 04-05 - Definition of Scenarios

- Four scenarios are defined:
 - Scenario 1: Do nothing
 - Scenario 2: Structural measures (2 chevrons, 5 sills (Apatin), 2 sidearm openings (Civutski Rukavac and Aljmas))
 - Scenario 3: Fairway realignment
 - Scenario 4: Re-naturalization (sidearm openings (Civutski Rukavac and Aljmas), removal of other existing structures)
- Task 04-05 is still on-going (Scenario 4)

Activity 4 - Task 04-06 - Preparation of Model for Considered Scenarios

- Figure 2 shows the model representation of chevrons
- Figure 3 presents the simulation results of the flow calculation for the “do nothing” scenario (Scenario 1) at the mean flow rate
- The results of this simulation serves as the initial condition for the sediment transport model
- Task 04-06 is still on-going

Figure 2: The terrain model for the scenario 2 (two chevrons analyzed as proposed measures)

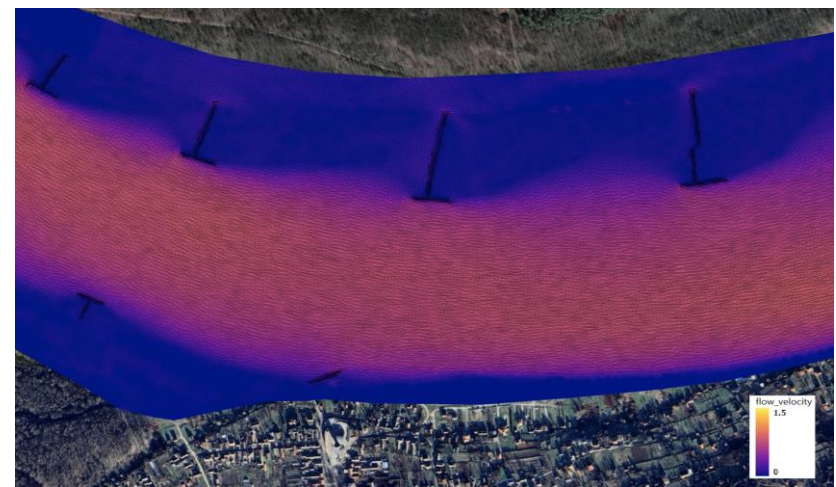
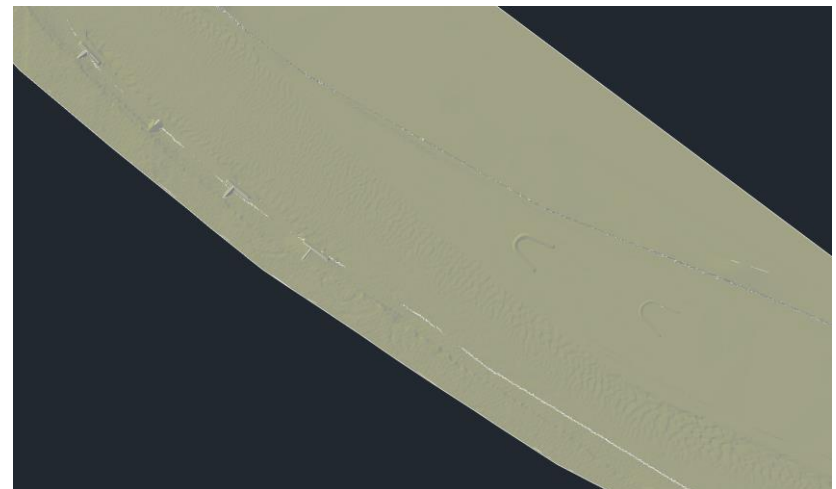


Figure 3: A computationally obtained representation of depth-averaged flow velocity vectors under mean flow conditions (Aljmas sector)



Activity 4 - Task 04-07 - Analysis of Results

- Task 04-07 is not due yet



Activity 4 - Task 04-08 - Application of MCA

- Task 04-08 is not due yet



Activity 4 - Task 04-09 - Elaboration of Technical Report on 2D Modeling and Application of MCA

- Task 04-09 is not due yet



Activity 4

Output 04-01 - 2D Model Calibrated and Running - Finalized

Output 04-02 - Bottlenecks Scenarios Defined - Dominantly finalized

**Output 04-03 - Technical Report on 2D Modeling and Application of MCA -
Not due yet**



Next steps

- Finalization of Task 04-05 – regarding Scenario 4
- Finalization of Task 04-06 - Preparation of Model for all 4 considered scenarios
- Start of the Task 04-07 - Analysis of Results
-

Q&A



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Thank you for your kind attention

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