



FAIRway Danube II

Next steps towards Good Navigation Status on the Danube

MINUTES of the Meeting¹

First Meeting of the Stakeholder Forum on flexible infrastructure elements

Date	13 February 2024
Time	09:30-12:30 CET (Austrian time)
Place	Online
Online Connection	https://meet.goto.com/218225613
Invitees	Stakeholders on flexible infrastructure elements and project beneficiaries of FAIRway Danube II

Agenda

Time	Topic
09:30	Welcome (Jasna Muskatirovic, Danube Commission; Georg Rast, environmental expert)
	Tour de Table (all)
	Introduction of the project FAIRway Danube II (Andreas Bäck, viadonau-AT)
	Introduction of flexible Infrastructure elements <ul style="list-style-type: none"> • Status of pilots in Austria (Michael Kalb, viadonau-AT) • Planned pilot measures in Croatia (tbc, MMPI-HR) • Planned pilot measures in Romania (tbc, AFDJ-RO) • Planned pilot measures in Bulgaria (tbc, APPD-BG)
	Introduction of Stakeholder Forum: framework and objectives (Lina Florian, viadonau-AT) Presentation of Draft Terms of Reference Stakeholder Forum (Iris Marstaller, viadonau-AT) Feedback of participants on Draft Terms of Reference (all) Adoption of Terms of Reference (all)
	Agreement on next steps/meeting(s) (all)
	Any other business
12:30	End of meeting

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The presentations will be available on the project's website.

Introduction of flexible Infrastructure elements

Status of pilots in Austria (*Andreas Bäck, viadonau*)

Andreas Bäck from viadonau introduces the concept of Flexible Infrastructure Elements aims at testing the future of fairway management during low water levels. The successful use of artificial islands initially implemented in 2018 in Austria as an innovative measure is highlighted. Nowadays, the then innovative measure is state of the art and well-integrated into the toolkit of Austrian waterway managers. This approach has shown improvements in fairway conditions while reducing the quantity of dredged material and thus also the environmental impact.

Plans for rolling out the pilot of flexible infrastructure are introduced. Initial deployment starting with one barge East of Vienna in 2024 and potentially increasing up to three barges in the coming years based on outcomes. The well-established national stakeholder forum East of Vienna (Akteursforum östlich von Wien) was actively involved in the preparatory phase. Their feedback and issues have been incorporated into the concept, the pilot projects will be accompanied by environmental supervision, which has already been contracted to the Donauauen National Park. Environmental supervision measures include onboard cameras and the check of the compliance with authorities' requests, particularly regarding ground nesting bird habitats. Furthermore, concerns regarding anchor stability were addressed, the calculations have been extended beyond the original requirements of the environmental authorities (only used during low to mean water level), to ensure that the barge can possibly withstand a flood, mitigating risks associated with drifting away. Furthermore, emergency procedures are defined and agreed within a contract of viadonau, providing the barges. Monitoring of hydrological effects will be conducted by the experts at viadonau. Technical reports to facilitate obtaining necessary permits were discussed with the Austrian stakeholders in advance. All required permits (national park law, water law, shipping permit) are obtained. viadonau is prepared to deploy the pilot, the project start is depending on low water levels.

Viadonau proposes to share their technical reports and permits with all stakeholders as an example of what they might also look like in the other countries.

Q&A

Irene Lucius (WWF CEE) asks for clarification on the anchor stability.

Andreas Bäck explains, that the initial calculations have been requested to mean-water levels only, however, viadonau decided to extend the scope of the calculations and obtained the confirmation of stability of anchoring also during flood events.

Planned pilot measures in Croatia (*Danijel Đuđar, MMPI*)

The indicatively selected location for the pilot in Croatia is at the confluence of the Drava and Danube rivers, a critical sector with high dynamics making maintenance of required fairway parameters challenging. Dredging efforts in 2023 had limited success due to significant sediment transport from the Drava to the Danube. The proposed area is located right next to the nature park Kopacki Rit, but the proposed pilot location is outside the protected area. Nevertheless, there is ongoing communication with the administration of the nature park. Next steps involve contacting authorities to determine what technical information is needed to obtain permits.

Hydraulic and morphological analyses must be done in order to position the barges to determine the exact details, such as position, orientation and angle of the barges will be defined after hydraulic analysis and are defined by calculations from related expert.

Planned pilot measures in Romania (*Romeo Soare, AFDJ*)

In Romania, Corabia was selected as indicatively selected first location for the pilot project due to the abundance of available information, including environmental data. This area is very dynamic, so that extensive dredging work is required every year to maintain optimum fairway parameters. Sediment transport and capacity need to be considered. The fairway width ranges from 100 to 150 meters, but the water flow is relatively slow. Every year the planned fairway rehabilitation and maintenance measures are discussed with and approved by the naval authority, this includes as well the planned pilot. Effective communication with the shipping industry is prioritized to discuss the intermediate results of the pilot. A collaboration with the Romanian Waters Administration and the National Authority for NATURA 2000 areas is foreseen.

Q&A

Georg Rast raises a question regarding the flow range of 2400-3200m³/s and its significance.

Romeo Soare responds, explaining that this interval was selected because it corresponds to the flow near the fairway, approximately 2700m³/s, taking into account depth considerations. This water level is observed for approximately 35 days per year, but in 2022, it exceeded 60 days. The flow in Corabia can vary significantly, ranging from 1700 to 12,000m³/s.

Planned pilot measures in Bulgaria (*Ivan Todorov, APPD-BG*)

Ivan Todorov reports, that after discussions with the naval authority, Vardim was indicatively selected as the first pilot location. This area is dynamic, due to sedimentation and for that water depths changing frequently. To address this, weekly monitoring is conducted to closely monitor the situation. The plan involves deploying barges to divert the water current in one direction, aiming at creating a morphological equilibrium between sedimentation and erosion in these areas, during the low water periods.

Introduction of Stakeholder Forum

For further information please see presentation and distributed Terms of Reference.

Framework and objectives (*Lina Florian, viadonau*)

A question regarding how the Stakeholder Forum will provide advice to the authorities is raised. Andreas Bäck referred to the Austrian procedure. A technical report was elaborated in close cooperation with the national stakeholder forum and this report served as a basis for obtaining the permits. Civil engineer's anchor strength calculations were submitted later. A similar procedure is planned for Croatia, Romania and Bulgaria.

Presentation of Draft Terms of Reference Stakeholder Forum (*Iris Marstaller, viadonau*)

Draft Terms of References for the Stakeholder Forum were presented to the participants, and Jasna Muskatirovic (Danube Commission) was confirmed as the chairwoman of this Forum.

During the discussion, Georg Rast asks about the involvement of fisheries associations in the Stakeholder Forum.

Danijel Đuđar informs, that in Croatia they were involved in previous projects, but due to language barriers (Croatian only) and other reasons they did not participate often.

Romeo Soare answers, that no fisheries association in the proposed areas is known.

Cristina Munteanu (WWF Romania) adds, that she was working with local Romanian fishery associations, but experienced the same problems as the Croatian colleagues.

Due to concerns from the Croatian partner regarding language barriers and possibility to travel of possible stakeholders, a discussion on pros and cons of splitting the Stakeholder Forum into two sub-groups (Croatia and Romania/Bulgaria) followed.

Herfried Leitner (Pro Danube International) expresses his concern, that there might result a knowledge gap between both sub-forums, due to possible lack of transnational exchange. The language barrier should be bridged to allow an international dialogue on an international Danube. He proposes to make use of translators.

Irene Lucius (WWF CEE) understands that it could be difficult for fisheries associations due to cultural and language differences and adds, that she has made good experience with the interpretation function of Zoom (with self-paid interpreter). Furthermore, she emphasises the need to establish good communication in between the split forums. Both groups should be informed about the ongoing discussions and solutions of the other, as they may have similar cases. She proposes to integrate "ambassadors" in the groups, if a joint meeting is not possible.

Andreas Bäck thanks all for their valuable feedback, FAIRway Danube II partners/consortium will discuss this matter internally and inform the stakeholders on the outcome.

The Croatian Bulgarian and Romanian partners decided for a joint Stakeholder Forum and will communicate organisational details in due time.

Agreement on next steps/meeting(s) (all)

List of tasks

Number	Task	Responsible	Due Date
1	Provide documents: <ul style="list-style-type: none">• Technical report AT• Permits AT	viadonau	
2	Distribute meeting documentation (incl. upload website)	Viadonau	
3	Nominate one regular Member and one deputy Member	Members	
4	Organisation of meeting on 23.05.2024	beneficiaries	

Upcoming Meetings

Meeting	Date	Time	Place
2 nd Stakeholder Forum Meeting	23th May 2024	tbc	onsite

Attachments

- Information of pilot locations (attached below)
- Presentation on flexible infrastructure (attached below)
- Presentation 1st Stakeholder Forum (attached and www.fairwaydanube2.eu (after approval))
- List of participants (attached)

Information on indicative locations for pilot tests of flexible infrastructure elements in Croatia, Romania and Bulgaria Croatia - Drava Confluence

Figure 1 shows the confluence of Drava (left) and Danube (right).

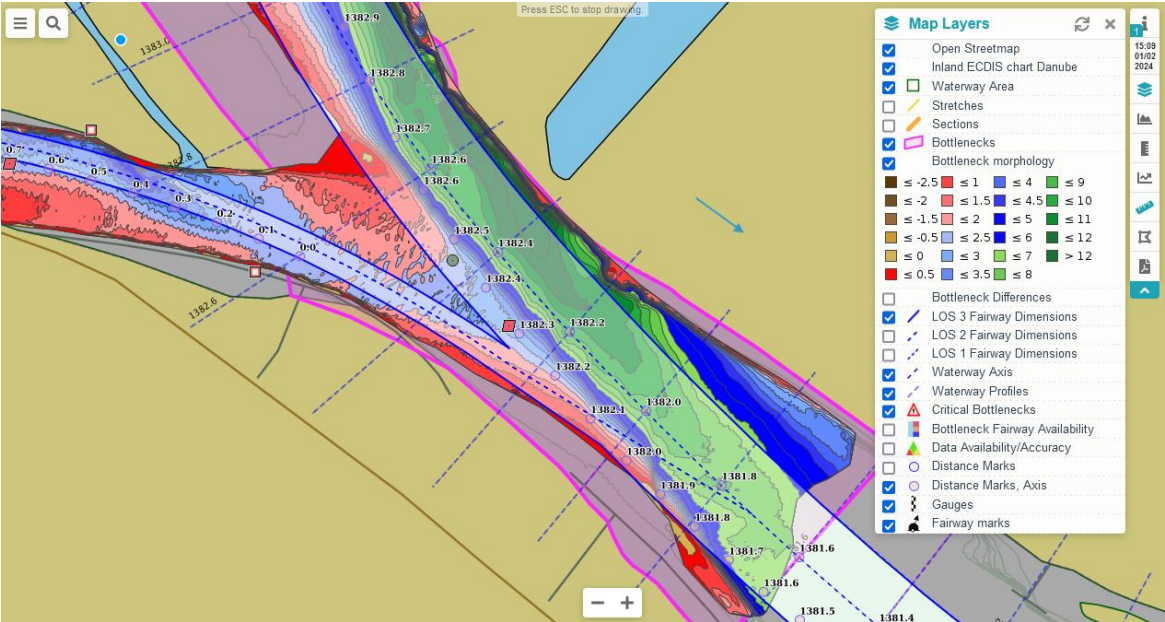


Figure 1 Drava and Danube Confluence - bottleneck morphology (Source: WAMOS)

The reference gauging station to this shallow section is Vodomjer Aljmas (river km 1380.1). Figure 2 shows the water levels in 2023 and Figure 3 shows the water levels in 2022. Looking at the water levels, it can be seen that, depending on the year, low water is to be expected in the months from August to December. In August and September 2022, the water levels fell below the regulatory low water mark several times.

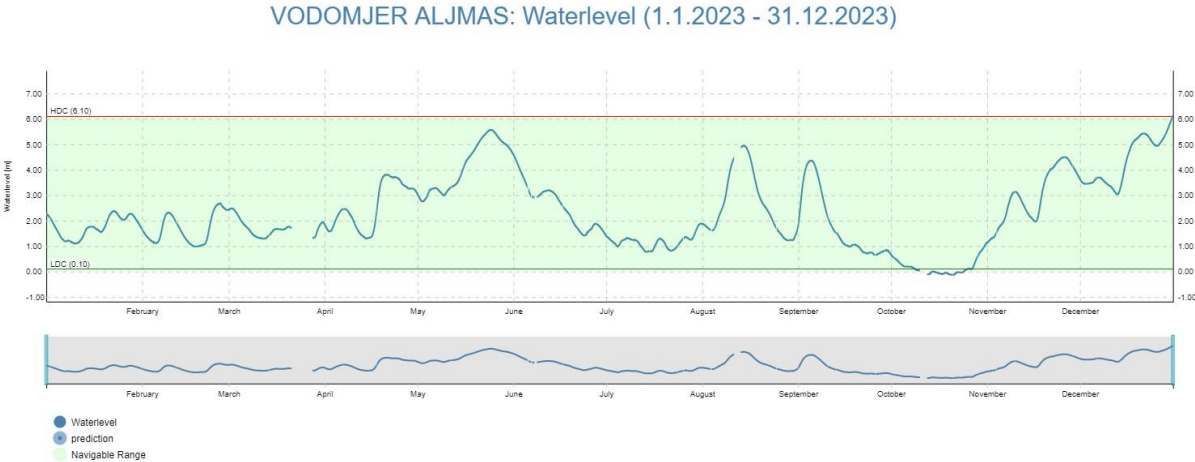


Figure 2 Gauging Station Vodomjer Aljmas 2023 (source: Wamos) LDC=ENR

VODOMJER ALJMAS: Waterlevel (1.1.2022 - 31.12.2022)

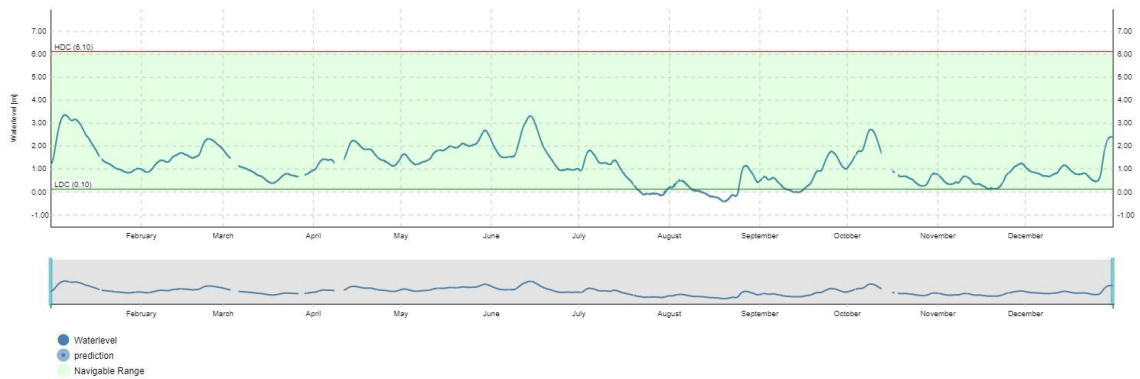


Figure 3 Gauging Station Vodomjer Aljmas 2022 (source: Wamos) LDC=ENR

- Reference gauging station: **VODOMJER ALJMAŠ**
- Flow velocity: 0.65 m/s to 1.6 m/s
- Range of discharge (Drava): 72 m³/s to 2345m³/s
- Range of discharge (Danube): 589 m³/s to 8486 m³/s
- Fairway width: 150-200 m
- Sediment: sand

The selected location for the possible pilot test is directly outside of the nature park **Kopački rit** and the Natura 2000 area (species & habitats) (see Figure 4).

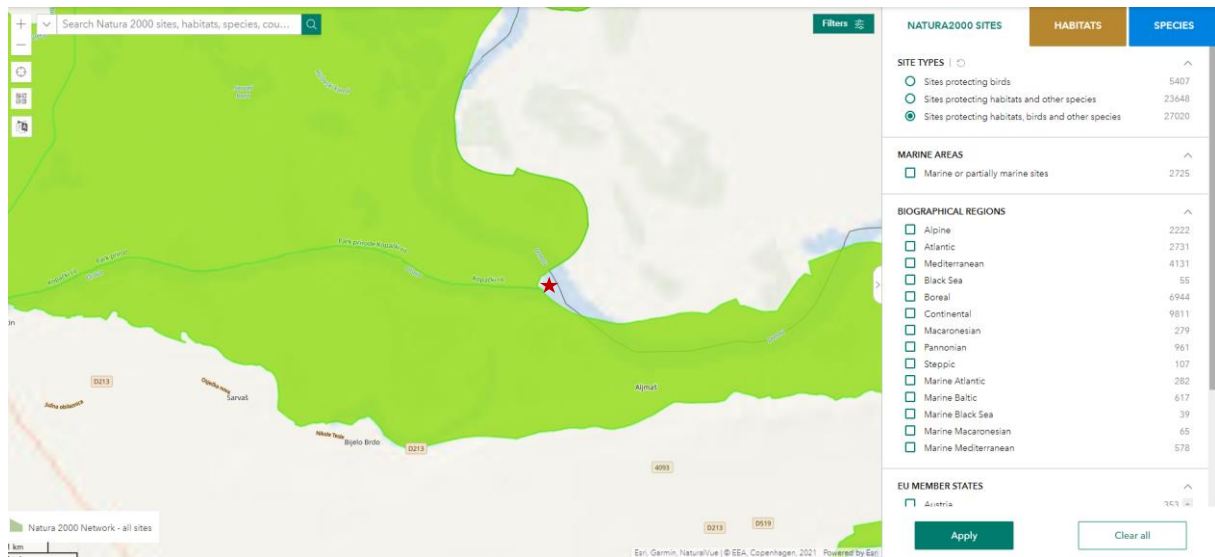


Figure 4 Natura 2000 area Drava-Danube Confluence (Source: <https://natura2000.eea.europa.eu/>)

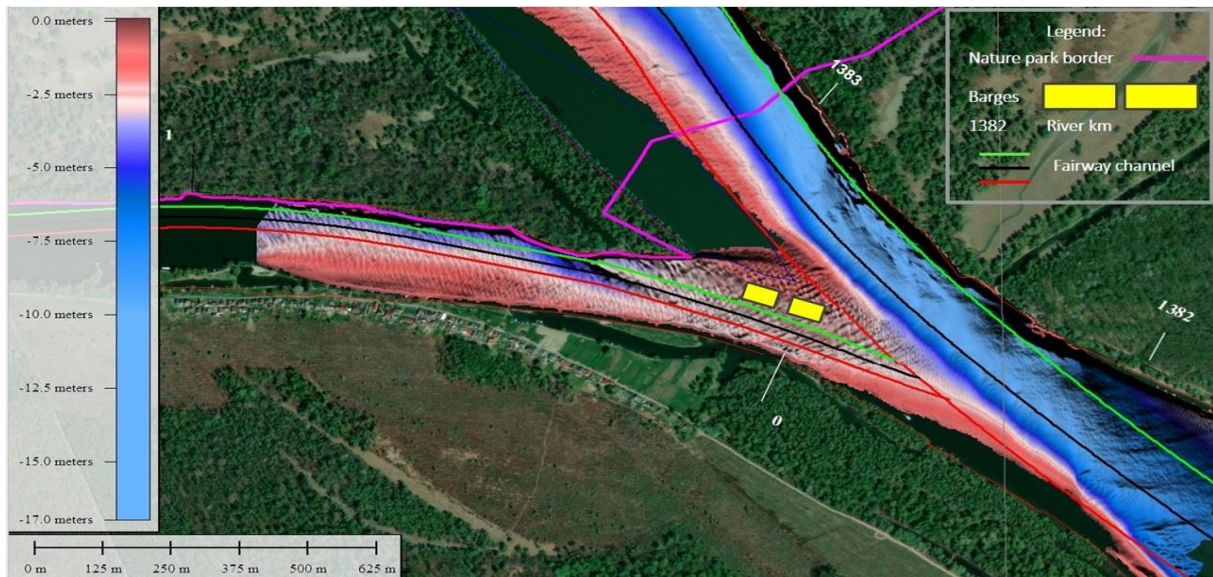


Figure 5 Proposed area for pilot test

Two barges, with an indicative minimum length of 50 meters, are proposed in the first year for this location. These barges will be filled with water or river sediment (on agreement with the national waterway authority). The draught of the barges will be monitored and a minimum under keel clearance (UKC), whose precise value will be agreed with the contracting authority, will be kept at all times by adjusting the quantity of loaded water or river sediment. This approach will ensure that the potential risk of the barge getting stuck in the river bed due to rapid changes in water level is mitigated. As can be seen from Figure 2, the barges are expected to be in use for approximately 6 months, depending on the low water period, but it shall be as well considered to keep the barges anchored on location all year round and only to adjust the amount of loaded water or river sediment, by this calibrating the draught and subsequently the under keel clearance to the water level.

In general, for the provision of flexible infrastructure, an indicative maximum of 3 non-propelled barges (each having an indicative minimum length over all of 50 meters and an indicative minimum draught of 2.30 meters) are planned for a use during low water period in the selected critical section. In the first phase, 1 to 2 barges are to be used from 2024 onwards at one critical shallow section for navigation; in the following years (2025-2027), an indicative maximum of 1 to 3 barges are to be kept available at one critical shallow section for navigation.

Romania - Corabia

The bottle neck at Corabia extends from river km 633 to 626, here water depth and river width may change rapidly. (Figure 6)

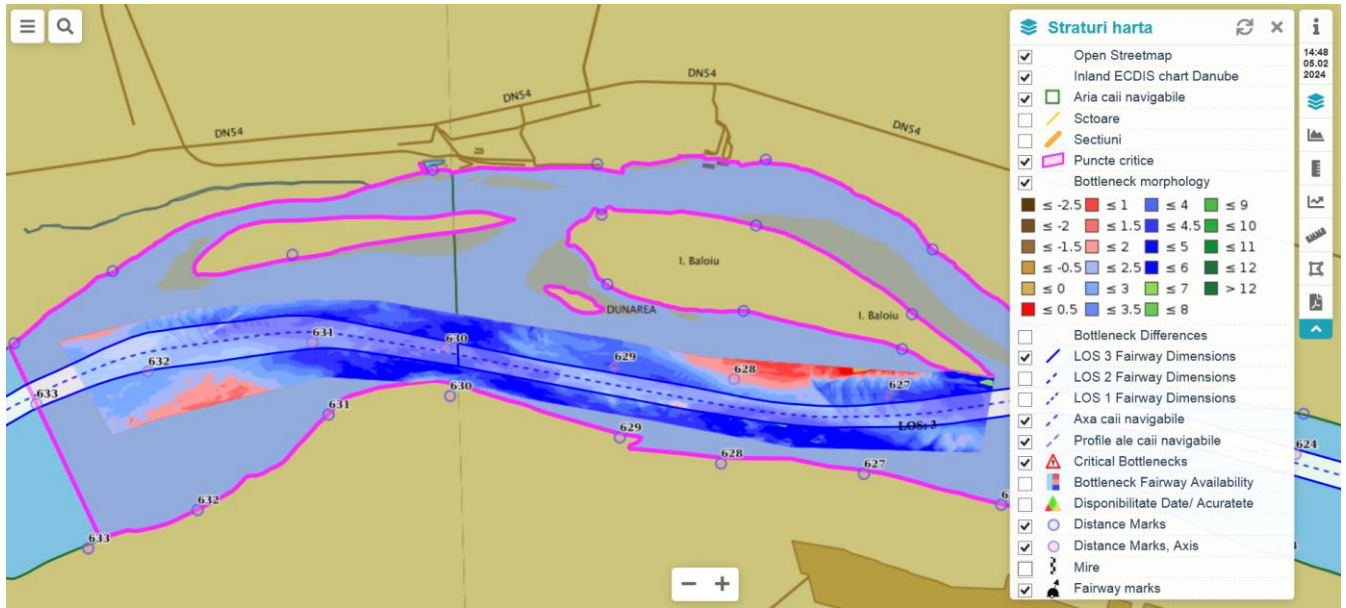


Figure 6 Corabia - bottleneck morphology (Source: WAMOS)

The reference gauging station to this shallow section is Corabia (river km 630). Figure 7 shows the water levels in 2023. Looking at the water levels it can be seen that from October to November the regulatory low water level has been undercut several times.

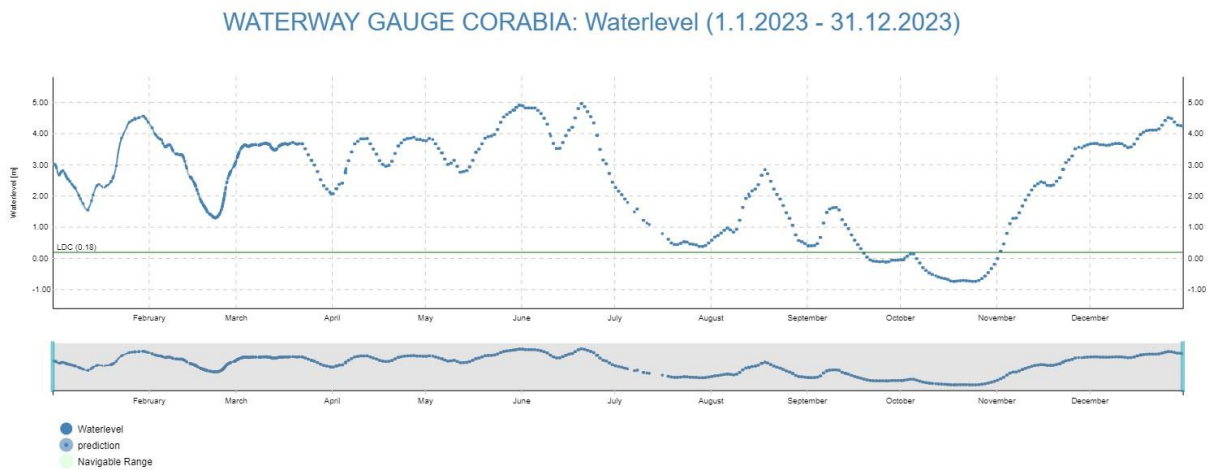


Figure 7 Gauging Station Corabia 2023 (Source: Wamos) LDC=ENR

- Reference gauging station: **CORABIA**
- Flow velocity: 0.63m/s to 0.78 m/s
- Range of discharge (Danube): 2400 m³/s to 3200 m³/s
- Fairway width: 100-150 m
- Sediment: sand

In Figure 8 the red star marks the possible pilot test location, it can be seen that the pilot test is located in the Natura 2000 area (habitat and species).



Figure 8 Natura 2000 area Corabia (Source: <https://natura2000.eea.europa.eu/>)

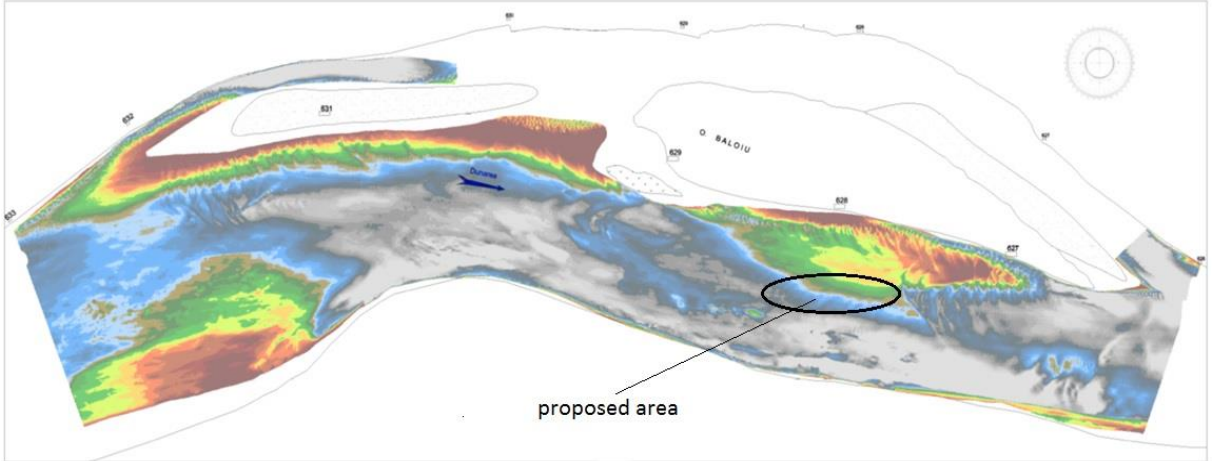


Figure 9 Proposed location for pilot test - Corabia

As an indication, two to three barges, each spanning a minimum of 50 meters in length indicatively, are proposed in the first year for this location. These barges will be filled with water or river sediment (on agreement with the national waterway authority). The draught of the barges will be monitored and a minimum under keel clearance (UKC), whose precise value will be agreed with the contracting authority, will be kept at all times by adjusting the quantity of loaded water or river sediment. This approach will ensure that the potential risk of the barge getting stuck in the river bed due to rapid changes in water level is mitigated. As can be seen from Figure 7, the barges are expected to be in use for approximately 6 months, depending on the low water period, but it shall be as well considered to keep the barges anchored on location all year round and only to adjust the amount of loaded water or river sediment, by this calibrating the draught and subsequently the under keel clearance to the water level.

For Romania and Bulgaria, maximum of 11 non-propelled barges (each having an indicative minimum length over-all of 50 meters and an indicative minimum draught of 2.30 meters) are planned for a use during low water period in the selected critical sections. In the first period, an indicative minimum of at least 2 barges are to be used from 2024 onwards at one critical shallow section for navigation in Romania and Bulgaria respectively; in the following periods (2025-2027), together an indicative maximum of 11 barges are to be kept available for the critical shallow sections for navigation in Bulgaria (at least one section) and Romania (at least two sections), which can be used in parallel in corresponding shallow section areas.

Bulgaria - Vardim

At Vardim island are three bottlenecks in total. The bottleneck where the pilot test is expected to be conducted extends from kilometer 547 to 544, here water depth and river width may change rapidly. (Figure 10)

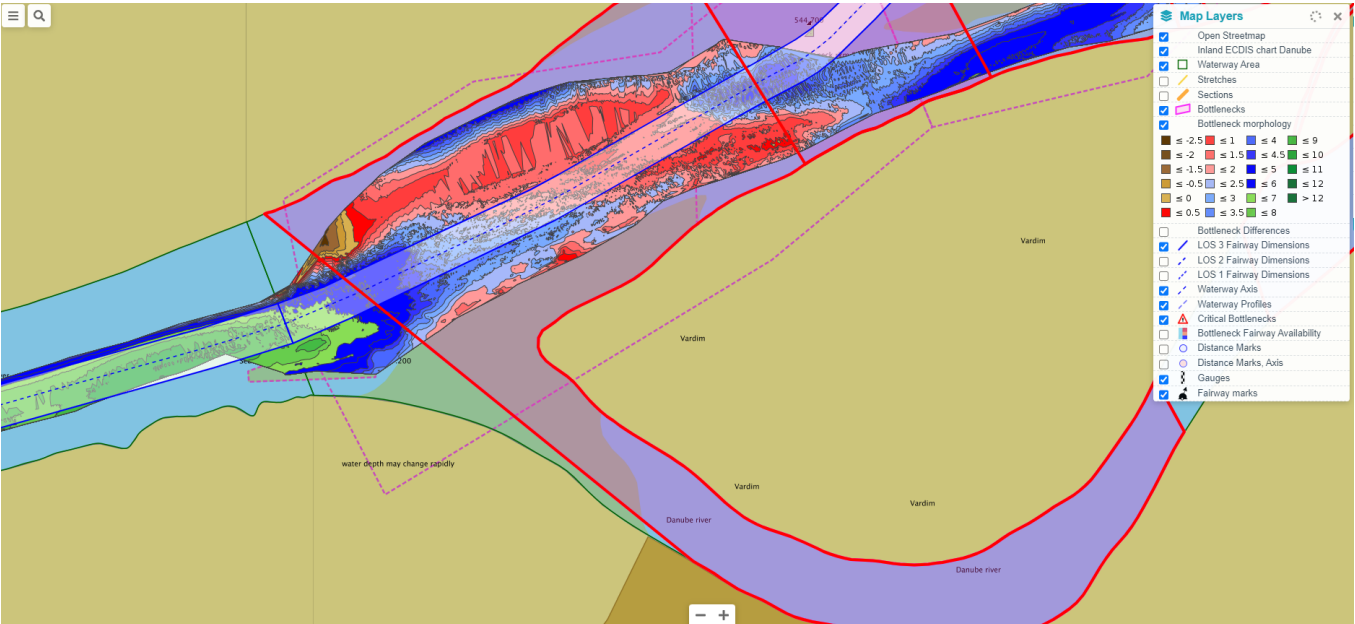


Figure 10 Vardim - bottleneck morphology (Source: WAMOS)

The reference gauging station to this shallow section is Svishtov (river km 553,8). Figure 11 shows the water levels in 2023. Looking at the water levels it can be seen that from October to November water levels below ENR occurred several times.

GAUGE SVISHTOV: Waterlevel (1.1.2023 - 31.12.2023)

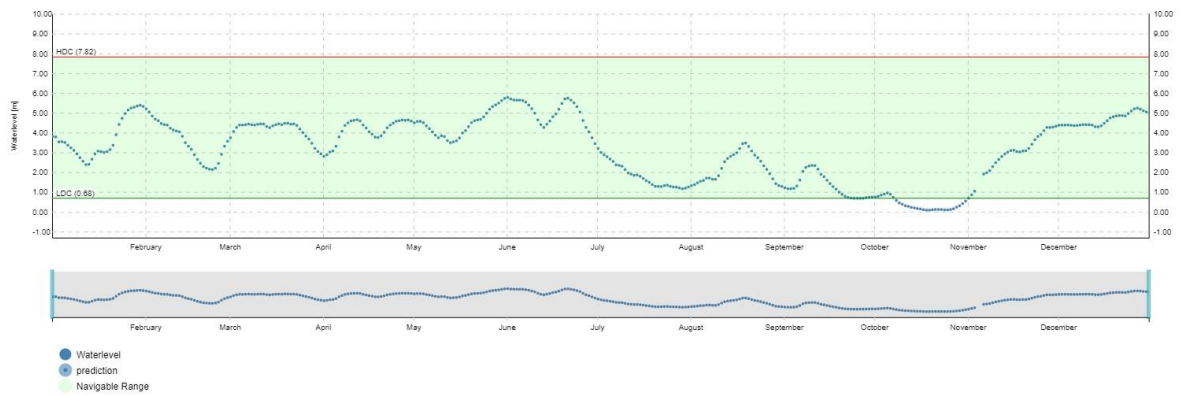


Figure 11 Gauging Station Svishtov 2023 (Source: Wamos) LDC=ENR

- Reference gauging station: **Svishtov**
- Range of discharge (Danube): 2400 m³/s to 3200 m³/s
- Flow velocity: min: 0,74 m/s to max: 1,38 m/s
- Fairway width: 100-150 m
- Sediment: sand

In Figure 12 the red star marks the location for the possible pilot test. It can be seen that is on the border to a Natura 2000 area (habitat and species).

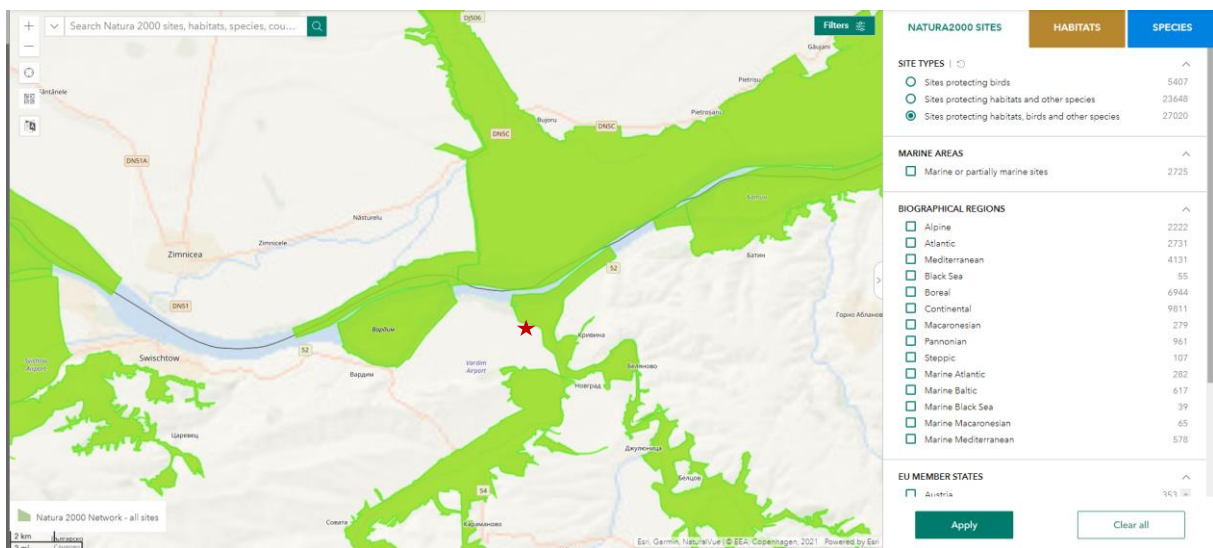


Figure 12 Natura 2000 area Vardim Island (Source: <https://natura2000.eea.europa.eu/>)

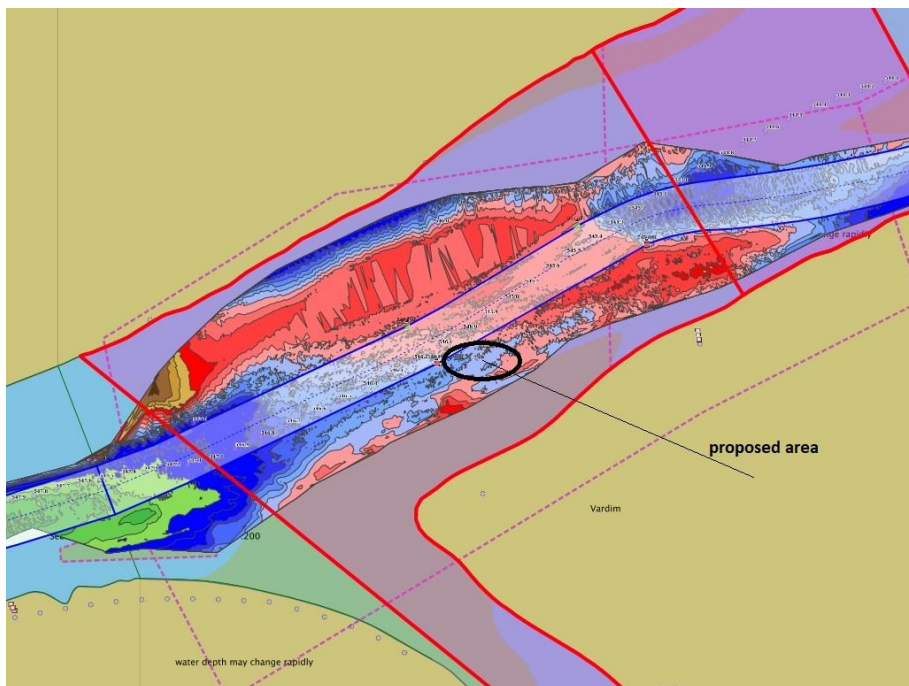


Figure 13 Proposed location for pilot test – Vardim

Figure 13 shows the proposed location for the pilot test. Two to three barges, each spanning a minimum of 50 meters in length, are proposed in the first year for this location. These barges will be filled with water or river sediment (on agreement with the contracting authority). The draught of the barges will be monitored and a minimum under keel clearance (UKC), whose precise value will be agreed with the contracting authority, will be kept at all times by adjusting the quantity of loaded water or river sediment. This approach will ensure that the potential risk of the barge getting stuck in the river bed due to rapid changes in water level is mitigated. The barges are expected to be in use for approximately 6 months, depending on the low water period, but it shall be as well considered to keep the barges anchored on location all year round and only to adjust the amount of loaded water or river sediment, by this calibrating the draught and subsequently the under keel clearance to the water level.

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