

MITIGATION MEASURES DESIGNED TO MINIMISE THE ENVIRONMENTAL IMPACT OF THE DEEP-WATER NAVIGATION ROUTE

1 Protective Hydroengineering Measures

The construction of flow-guide dam. Given that the potential for gradual riverbed washout in the Bystre Branch cannot be excluded, leading to a more significant redistribution of river flow to the benefit of the Bystre Branch, the Project Phase 2 involves the construction of a flow-guide dam on the left bank of the Starostambulsky branch where it splits to form the Bystre branch (Annex 3). According to the design, the flow-guide dam represents an underwater structure with the height of 2 m from the river bottom. The main purpose of this flow-guide dam is to provide a pathway for bottom sediments carried with river flow and to keep them away from the navigation route lying along the Bystre branch, and stabilize the hydraulic section of river branch after the achievement of the designed profile of navigation route.

The retaining dam along the seaward access channel is designed to minimize the intensity of sediment transport through the sandbar cutting in the Bystre Branch during storms. Additionally, the dam will prevent the degradation of Ptichiya Spit by storm-waves induced by strong northerly winds.

Settlement ponds and internal dams designed to increase the travel route for drainage waters will be created at the riparian storage sites for dredging spoils in order to reduce the potential for water contamination by surface runoff from these sites, and provide sufficient time for water clarification.

Strengthening and stabilizing the riparian levees along the Bystre Branch by planting trees inherent to the Danube Basin (white willow, white and black poplar, ash-tree) and local wave-absorbing aquatic plants: final decision is planned to be made on the basis of monitoring results, if and when there is a threat of bank degradation, and according to recommendations of the DBR experts.

2. Protective Technical Measures

The termination of all construction and repair/restoration activities along the navigation route during fish spawning and migration of young fish is a key measure designed to minimize the adverse impact on fish fauna.

The termination of construction and repair/restoration activities during bird nesting in the area of seaward access channel and upstream section of the Bystre Branch is a key measure designed to minimize the impact of deep-water navigation route on bird communities inhabiting the Danube Biosphere Reserve, because nesting birds are extremely sensitive to noise caused by mobile plant.

The introduction of speed restriction for vessels moving along the Bystre Branch (to 7 knots per hour) is the requirement intended to prevent the adverse impact of waves on riparian levees and meet the noise limits set for the protected area of the Danube Biosphere Reserve.

Proper siting and distribution of mobile plant, adjusting engine power, adjusting/regulating the number of mobile plant operated simultaneously: this suite of measures is designed to ensure that water and air quality guidelines are met (for example, by reducing the near-ground

concentrations of nitrogen dioxide) in the populated and protected areas sharing borders with the construction site. The design provides for complete termination of hydraulic engineering activity and mobile plant operation under inclement weather conditions.

Banning the acoustic signals and outdoor music on vessels passing the Bystre Branch, limiting (as far as possible) the vessel traffic in the Bystre Branch to the daytime: this suite of measures is designed to minimize the disturbances for the DBR fauna and reduce damage to fisheries due to loss of catches.

2 Compensatory Measures

The damage to fish fauna caused by the deterioration of food base and conditions of reproduction/migration can be compensated through the **construction of fish-breeding farm** in this area. In this respect, the construction of sturgeon-breeding plant downstream of Vilkovo (Ochakiv Branch) is considered. The feasibility study for this project was prepared by the Odessa Fishery Institute.

The damage associated with the disturbance to birds in the sandbar section, caused by construction activity and vessel traffic, can be compensated through the implementation of **measures on restoring the degraded habitats in the adjacent areas of the Danube Biosphere Reserve.**

It is the view of the DBR experts that the major part of compensation funds, allocated during the construction and operation of the navigation route for environmental actions, should be mobilized to finance the **environmental rehabilitation of Stentsivsky and Zhebrianovsky wetlands,** in particular the clearance of existing and construction of new waterways in order to improve water availability in the degraded areas; and the removal of degraded reed patches in order to improve water exchange and prevent progressive biodegradation.