Annex 8

COMMENTS TO CERTAIN STATEMENTS/FINDINGS OF THE 'DOCUMENTATION ON THE LIKELY SIGNIFICANT TRANSBOUNDARY IMPACT OF THE UKRAINIAN DEEP-WATER NAVIGATION CANAL DANUBE-BLACK SEA IN THE CONTEXT OF ESPOO CONVENTION, 1991' (February 2005)

Comments to Part II

On the schematic map showing the location of deep-water navigation route (hereafter referred to as 'the DWNR'), the Phase I and Phase II designations refer to the DNWR **sections**: 1) from the Bystre Branch head to the Sea; and 2) from Izmail to the Bystre Branch head. **According to the design**, the Project Phase I covers **both these sections**, and includes both the implementation of dredging activity in the sand-reef (shallow) sections of the Kilia and Starostambulsky Arms, and the construction of navigating cut (together with the protective dam section) in the sandbar area of the Bystre Branch (Annexes 9 and 10).

The objective of Project Phase I is to facilitate the navigation at vessel draft of 5.85m.

The objective of Project Phase II is to complete the deep-water navigation route in line with the international standards and ensure its stable operation with the help of protective hydraulic engineering structures.

The updated design characteristics and work specifications/scopes for the Project Phase I, as well as the preliminary design data for the Project Phase II are provided in the 'Transboundary Impact Assessment', prepared by the Ukrainian party.

It is our understanding that the request considered by this Inquiry Commission refers to the assessment of transboundary impact of **Project Phase I**, as the scope and composition of works under the Project Phase II are subject to further clarification on the basis of monitoring of environmental impacts associated with the completion and operation of Project Phase I.

Comments to Annex 1

1. Hydrological Impact Assessment (pp. 9-13)

On Page 13, the deduction was made that the average hydraulic section of the Chilia Branch would increase by 240 m^2 due to dredging activity. However, the application of the following simple formulae:

$\Delta S = \Delta W/L$,

where

ΔS *is the increment by which the average hydraulic section increases;*

L *is the length of section in Chilia Branch (from Izmailsky Chatal to Vilkovo, L =95,400 m);*

ΔW *is the increase in water volume within the section (assumed as being equal to the volume of soil excavated from the bottom as a result of dredging operations, or 2.19 m^3, as indicated on Page 13)*

shows that the increase in the hydraulic section would equal to only 24 m^2 (i.e. would be 10 times smaller than the estimate provided by the Romanian party). By using this logic, the increase in flow discharges would be only by 0.6-0.7%. Even this very simple approach to the analysis of complex hydrodynamic processes shows good correlation with the results of modelling exercise described in the 'Transboundary Impact Assessment' prepared by the Ukrainian party. Therefore, it can be concluded that the transboundary impact, associated with the redistribution of river flow due to dredging activity in the Chilia Branch, is considered insignificant.

2. Assessment of the Impact of Sediment Discharge/Dumping

The satellite image (Figure 8 in the Romanian report), allegedly showing the movement of sediments generated by dredging activities in the Bystre Branch and offshore dump, in reality reflects the **natural** pattern of sediment transport/dispersal with river flow. The scale of natural transport of sediments is several orders of magnitude greater than soil losses due to dredging and dumping. It is clearly seen from the image that the sediment tail in the St. George Branch (whose head is located upstream of dredging sites in the Chilia Branch) is well comparable with tails originating in the Bystre and Starostambulsky Branches. Satellite images taken in 1988 and 2001 (Annex 11) show similar tails in the branch mouths.

Our conclusion on the absence of any transboundary impact associated with sediment transport during dredging operations in the Bystre Branch is also confirmed by the results of modelling exercise which examined the dispersal patterns for various suspended solid fractions, conduced by the Institute of Mathematical Machines and Systems of the National Academy of Sciences of Ukraine (Annex 12).

The offshore dumping estimates, shown on Page 14, are too high and do not take account of phased (non-simultaneous) character of planned dredging activities. This aspect is very important, as the selected site allows for the use of 'natural' sediments to provide an intermediate cover for dredging spoils disposed of there. According to the design, the disposal operation will take place annually during spring flooding, because this is the period when the 'avalanche' sedimentation zone around the Bystre Branch extends into the sea to cover the selected dumpsite.

The following dumping sequence is provided by the design: 1,988,000 m^3 of sediments is to be disposed of during the implementation of Project Phase I; further

1,665,000 m^3 is to be disposed of during the Project Phase II implementation (but at least a year after the completion of Project Phase I); and about 1,000,000 m^3/year of sediments, produced by operational dredging activities, will be disposed of at the site till it reaches its design capacity of 5,361,000 m^3.

3. Impact on Migratory Fish Species (pp. 3, 14-15)

(These comments supplement the information pertaining to the assessment of DNWR impact on water quality and fish reproduction, provided by the Ukrainian party in the 'Assessment of Transboundary Impact of the Navigation Route Reopening in the Ukrainian Part of the Danube Delta' (11.02.2005).

The statement of Page 3 refers to significant adverse effects of river canalisation on the reproduction of sturgeon species. However, the proposed option of navigation route reopening, with only 1.5% of river bottom affected by dredging and no alteration of river bank configuration planned, cannot be considered as a significant impact on the reproduction of fish fauna, and clearly does not fall within a definition of 'canalisation'.

Busy traffic in the Sulina Arm does not impede the spawning migration of sturgeon species. Apparently, the deep-water canal itself attracts the sturgeon population to spawn in this area.

Similar conclusion can be made with regard to the migration of Danube herring in the St. George Branch, which, despite busy vessel traffic, remains a major fishing ground with highest herring catches (see the 'Documentation…', Fig. 9). From the evidence provided by the Ukrainian fishermen, the herring catches were highest in the Bystre Branch when it was used for navigation.

It can be concluded that the likely transboundary impact on fish migration is insignificant.

4. Socio-Economic Impact (p. 15)

Given that the navigation route reopening is not considered to be a significant transboundary impact on the reproduction of fish stocks, the associated socio-economic effects on fisheries in Romania is also considered as insignificant.

It should be emphasized that the design provisions for compensatory measures, designed to improve the reproduction of fish stocks in the Ukrainian part of the Black Sea, will also be to the benefit of Romanian fishery sector due to the migration of fishes across state borders within the whole area of Danube Delta.

The analysis of potential physical obstacles to local fisheries due to intensive navigation in the Chilia Branch is not regarded to be relevant to the subject of this Inquiry Commission, as they are not considered to be an environmental consequence.

Nonetheless, it should be noted that the Chilia Branch has always been, and is used for navigation. The recent suspension of navigation in the Chilia Branch has caused a serious economic damage to the Ukrainian ports, and this situation has to be changed.

5 Impact on Biodiversity (p. 16-22)

5.1 Flora

This is true that the EIA mentions and examines the **hypothetical probability** of the following adverse consequences of the DNWR reopening in the Bystre Branch:

- The alteration of vegetation cover and disappearance of many species and communities, including rare ones, which can only occur ***if the degradation of riparian levees along the Bystre Branch is allowed***;
- The damage to the costal sand ecosystems of the Ptichiya Spit and adjacent area of the Ptichiya Island, which can only occur ***if these areas are affected by water erosion***;
- The damage to the Red Data Book communities (*Trapa natans* and *Salvinia natans*), emerging/developing within a newly formed freshwater body (Bystre Corner), which can only occur ***if the water regime in this water body has been modified***;
- The excessive growth of vegetation in the inland water bodies, disappearance of smaller branches, and general shift to the meadow-type vegetation cover in the northern part of the Danube Biosphere Reserve ***due to the decreased water availability to the Ochakiv Branch system.***
- The invasion of alien species to the riparian ecosystems ***due to vessel traffic***.

This list was developed on the basis of discussions with scientists and local communities on the likely significant consequences of the DNWR reopening in the Bystre Branch.

The EIA, based on the analysis of proposed design solutions, modelling results, and proposed mitigation measures, has demonstrated that these consequences can be effectively prevented/avoided (where they are obviously attributed to the DNWR), or slowed down (where they are associated with the natural factors).

The degradation of riparian levees along the Bystre Branch and its adverse effects on plant communities will be prevented by:

– Restricting the vessel speed to 7 knots for vessels moving along the Bystre Branch;
– Establishing the flow-guide dam immediately upstream of the Bystre Branch head, and strengthening/stabilizing the underwater bank slopes in the areas potentially sensitive to erosion (during Phase 2),
– Strengthening the river banks (if and where necessary) by planting trees and other species recommended by the DBR experts.

The effect of <u>natural</u> factors, causing the washout and degradation of the Ptichiya Spit section near to the navigation route (located in 500 m from the access canal), will be reduced as a result of construction of seaward access canal (which diverts the river flow from the spit) and protective dam (which reduces the impact of wind-induced waves, especially those caused by the most dangerous northerly winds). These structures would also help reduce the effects of ***<u>natural</u> factors, causing the accumulation of sediments in this part of the spit*** (the coastal flow of sediments carried with sea currents is aligned eastward, whereas the sediments carried with river flow by-pass the spit via the access canal). According to the results of modelling exercise, the impact of DNWR structures on the water levels in the Bystre Branch mouth is virtually absent. Consequently, **navigation canal does not produce any impact on the coastal sand ecosystems of the Ptichiya Spit and vegetation cover in the adjacent parts of the Peschany Island and Bystre Corner. By contrast, it is expected that the DNWR structures would help improve the stability of these areas**.

Water abundance in the Ochakiv Branch has decreased by 2-fold over the past 45 years, and this trend is expected to continue in the future (Figure), being attributed to both natural factors (the progressive disappearance of the lower section of the Ochakiv Branch system and decrease in water abundance in the Kilia Branch) and technogenic factors (hydraulic engineering activities in the Romanian part of the Danube Delta).

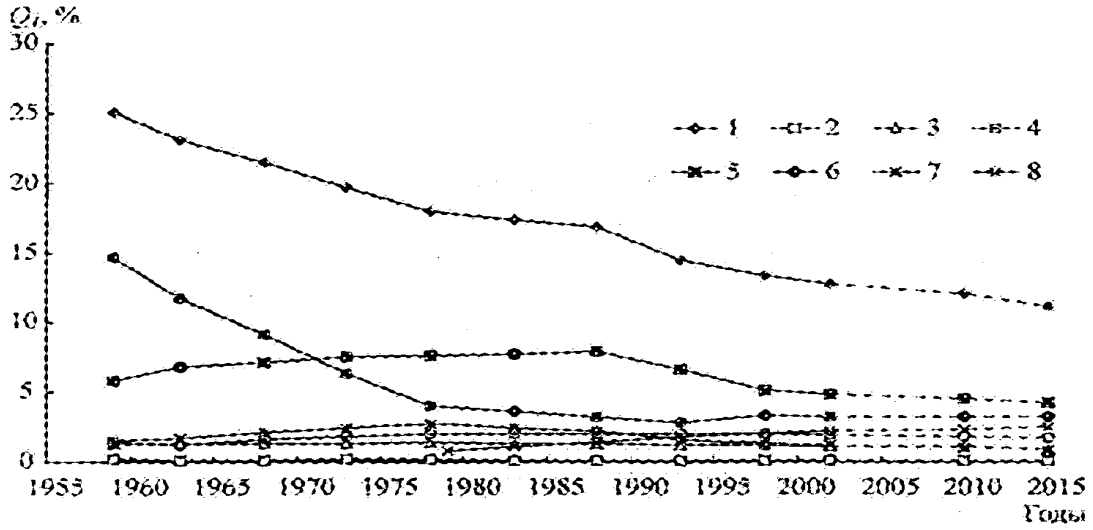

Figure: Mean annual flow distribution in the Ochakiv System of Chilia Delta (in % to the total Danube flow), and flow projections till 2015. Ochakiv System branches: 1 – Ochakivsky (head); 2 – Belgorodsky; 3 – Ankudinov; 4 – Poludenny; 5 – Prorva; 6 – Potapovsky; 7 – Gneushev; 8 – Link Canal

Dredging activities, constituting an essential element of the DNWR reopening, would produce only a minor impact on this process as the expected redistribution of the Danube flow, leading to a 1% increase in water flow carried through the Bystre Branch, will be caused by a respective increase in water abundance in the Chilia Arm, and will not affect the flow discharge rates in the Ochakiv Branch. It can be therefore concluded that **the current and expected degradation of plant communities in the northern part of the Danube Biosphere Reserve is not associated with the DNWR reopening. However, (part of) compensation payments envisaged under the project can be used to finance the measures on restoring wetland communities in this area of the reserve.**

Indeed***, the increased presence of invaded species in the riparian fauna*** is considered as an adverse consequence of vessel traffic. However, the direct contribution of the resumed navigation in the Bystre Branch to this issue is considered to be minor. The major proportion of invaded plant species is carried with river flow from the upstream sections of Delta, where navigation activity has been conducted on a permanent basis. That part of river flow, which is in contact with vessels moving within the navigable section of the Bystre Branch, is carried further downstream and reaches the sea without any contact with the river banks. **It can be concluded that the contribution of the resumed navigation in the Bystre Branch to the introduction of alien plant species is marginal.**

Generally, it is concluded that there is no transboundary impact on flora diversity in the Danube Biosphere Reserve, associated with the DNWR reopening.

5.2. Fauna

5.2.1. Assessment of Impact on Fauna in the Adjacent Areas

The stability of fauna communities present in the Bystre Branch area, both in terms of their composition and diversity, is closely linked with the stability of local biotopes. As was indicated in Section 4.1.1, the stability of biotopes in the Bystre Branch area would be secured during and after the DNWR reopening, therefore there is **no threat that the DNWR would produce any significant impact on the majority of fauna communities in the adjacent areas of the Danube Biosphere Reserve.**

However, **there is a potential for local impact of the DNWR operation on birds and mammals that are sensitive to disturbance**.

These disturbances might include noise generated by vessel engines and mobile plant during dredging operations and vessel traffic.

Some sensitive species may attempt to move out and inhabit adjacent areas. However, taking into account the design provisions with regard to noise control and suspension of construction activity in the Bystre Branch area during nesting period, especially for protected bird species, **the transboundary impact of these local migrations is considered as insignificant for the majority of fauna communities inhabiting the Danube Biosphere Reserve**.

It is expected that environmental impacts of the DNWR will be limited to local sources, therefore the navigation route **is not likely to impede the migration of birds, as their habitats extend to other areas of the reserve, and nesting grounds are not located in the immediate vicinity of the navigation canal** (this also relates to winter residents, migratory visitors and feeding birds). Consequently, it can be concluded **that the transboundary impact on these birds is unlikely.**

Special focus should be placed upon the assessment of potential impacts on birds nesting on the Ptichiya Spit, especially those that might arise in case of non-compliance with design provisions relating to the duration and schedule of construction activities in the sandbar section of the Bystre Branch. This issue is considered in Section 5.2.3.

5.2.2 Impact on Aquatic Fauna

The impact of DNWR on the biodiversity of aquatic fauna may be ***hypothetically attributed to the following factors:***

- Changes in water quality and bottom habitats as a result of upstream dredging operations in the Chilia and Starostambulsky Branches;
- Saline water penetration through the seaward access channel;
- Physical damage caused by vessel screws.

The first factor can be considered as a source of transboundary impact, as it affects the branches located near the Romanian border. However, the Assessment of Transboundary Impact of the Navigation Route Reopening indicates that **the scale of this impact is too small to cause changes in species diversity and composition**.

The second factor may cause changes in the composition of bottom ecosystems in the Bystre Branch, **however this is not a transboundary impact**.

Vessel traffic may cause damage and death of some aquatic organisms, however low traffic intensity, limited to 1-2 movements per day and concentrated within a navigation route, which occupies only part of watercourse, **is not able to produce a significant transboundary impact on the biodiversity of aquatic fauna**.

Generally, the transboundary impact of DNWR on animal communities present in the Danube Biosphere Reserve is considered as insignificant, the only exception is the potential for impact on bird communities nesting on the Ptichiya Spit, which is discussed below.

5.2.3 Assessment of Impact on Tern Colonies and Other Bird Communities Present in the Area of Ptichiya Spit

Similarly to other spits, the Ptichiya Spit represents a 'temporary' formation, emerging at a certain stage of delta development in order to merge with an advancing coastline within a span of several decades. The Ptichiya Spit admittedly emerged in 1996, and satellite image taken in 2001 showed the progressive advancement of north- and south-western ends of spit in the direction of the Kubansky Island (see Annex 11), being an obvious graphic illustration of an approaching merge of this spit with the coastline.

The presence of DNWR structures/components (seaward access canal and protective dam) might help slow down the sedimentation process in the north-western end (see Annex 10) and thereby extend the lifetime of this spit as a safe nesting grounds for protected bird's communities. If necessary, special provision can be made for maintaining a sufficient interval between the spit and coastline so that to protect the spit against the invasion of predators.

The provisions made in the design for applying speed restrictions in the access channel and banning acoustic signals would help minimize the impact of noise on bird colonies nesting on the spit.

An important natural factor causing damage to nests are storms frequently occurring in the outer delta area during nesting period, therefore birds dwelling in this area have developed the ability for repeated egg-laying. According to the data provided by the Ust-Dunaisk meteorological station, the average frequency/duration of stormy winds (>15 m/s) during nesting period is about 5 days per month.

This phenomenon might have been a cause for nesting habitat change by tern colony, which moved out of the Ptichiya Spit in June-July 2004. According to the Ptichiya Spit Inspection Protocol, made on 17.07.2004 by a special commission comprising the DBR inspectors, veterinary doctor, dredging activity client, and NGO representatives (Annex 13), the stormy and cyclonic events were claimed as the most likely reason for deserted nesting grounds. Notably, the Protocol contains a statement saying that the commission members did not perceive any noise generated by dredging machinery which was in operation at the time of inspection at a distance of 500 m.

From this Protocol, the Commission did not establish any direct relationship between the terminated nesting attempt at the Ptichiya Spit and the operation of dredging machinery in the sandbar section of Bystre Branch. However, no dredging activity will be conducted in the sandbar section in order to completely eliminate this factor of disturbance.

From the above, the impact of access channel construction on the protected bird colonies inhabiting the Ptichiya Spit can be defined as a likely single-time impact. It is expected that in the future the impact of DNWR operation on these colonies will be insignificant.