ENVIRONMENTAL MANAGEMENT PLAN
FOR THE NEW BULK CARGO TERMINAL
IN THE PORT OF PLOČE

(FINAL DRAFT)

EKONERG, 2006.
ENVIRONMENTAL MANAGEMENT PLAN
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Zagreb, January 2006.
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A. MITIGATION PLAN

A.1. MITIGATION PLAN DURING THE PROJECT CONSTRUCTION

1. DEEPENING AND BROADENING (DREDGING) OF ACCESS CHANNEL TO CARGO BULK TERMINAL (CBT) BERTH AND TO THE VLAŠKA CHANNEL

1.1. MITIGATION MEASURES FOR PROTECTION OF THE SEA AND MARINE COMMUNITIES (BIOCENOSES)

1. Dredged material shall be disposed in the area of the zone 3 and zone 4 which are within the area of the Port of Ploče – Ploče basin according to the Decision of establishment of the Port Authority of Ploče (Gazettes 19/97, 139/97, 18/99). Area of the zone 3 and zone 4 are given on Figure 1 in Annex.

2. a) In case that hydraulic dredging is chosen:
   To prevent dispersion of the disposed material into the sea and to allow leakage of water from the material piled in the zone 3, it is necessary to make:
   - peripheral stone fills covered with geotextile and sand;
   - a drainage system consisting of drain pipes protected with geotextile and sand;

   b) In case of mechanical dredging this mitigation measure (i.e. construction of dikes and drainage system) will be excluded.

3. To prevent dispersion of the disposed material into the sea it is necessary to make a protection dike in sea (on the sea side of the zone 4). Dike is to be made of stone fill and covered with geotextile on its inner side.

4. During dredging process, economically justified BATNEEC technologies should be used to mitigate muddying up the seawater.

5. This phase of the Project construction should be scheduled in the period of the least effect on fishes e.g. fish migration period should be avoided.

1.2. NOISE MITIGATION MEASURES (NOISE PROTECTION MEASURES)

6. During dredging, economically justified BATNEEC technologies should be used to mitigate noise emission.

7. To maintain current noise emission, regular maintenance of dredgers is required.

8. Rate of excavation should be limited thus reducing the power required and the noise emitted.

9. Working hours of dredging operation should be limited in area long side Ploče - Parila.

1.3. ORNITHOFAUNA PROTECTION MEASURES

10. This phase of Project construction will scheduled in the period of the least effect on birds.
NOTE:
By application of the mitigation measures under the items 5, 6, 7, and 8, the noise impact on birds and marine organisms during the Project construction is reduced so this measure could also be considered the measure for protection of ornithofauna and marine communities (biocenosis).
2. CONSTRUCTION OF BERTH, NEW OPERATIONAL ZONE AND STORAGE AREA OF THE TERMINAL (ONSHORE PART OF TERMINAL) AND EQUIPMENT AND FACILITIES USED DURING REGULAR OPERATION OF THE BULK CARGO TERMINAL

2.1. MITIGATION MEASURES FOR PROTECTION OF THE SEA AND MARINE COMMUNITIES (BIOCENOSIS)

11. To mitigate the impact of wastewater generated during the Project usage on the seawater quality and indirectly on marine communities (biocenosis), it is necessary to build:
- a system for drainage and treatment of rainfall (storm waters) from the terminal area to achieve the quality of water for discharge into the sea stipulated by the Water License;
- a system for collection and treatment of sanitary wastewater from the terminal area;

2.2. MITIGATION MEASURES FOR AIR PROTECTION

To reduce emission of particulates to air during the Project construction, it is necessary:

12. to limit the vehicle speed at the building site to 25 - 30 km/h;
13. to spray water onto the area of construction machinery operation to reduce dust raising from ground.

To reduce particulate emission to air due to bulk cargo handling and dispersion of bulk cargo by wind during the Project usage, it is necessary:

14. to build a system for spraying/wetting bulk cargo and unloading/reloading places (transfer points);
15. to design closed unloading/reloading places (transfer points) on the belt conveyor line;
16. to plant vegetation and make a green belt on all places that will not interfere with the terminal operation.

2.3. NOISE MITIGATION MEASURES (NOISE PROTECTION MEASURES)

17. Low-noise-emission machinery should be used for construction of the terminal.
18. During the terminal construction, economically justified BATNEEC technologies should be used to reduce noise emission. Possible technological measures whose capabilities should be appraised in the main design are:
A) For mitigating underwater noise at piling:
   - use of air-bubble curtains
   - use of acoustic curtains
B) For mitigating noise emitted to air:
   - use of shock absorbers
   - fit a shroud around the pile; the pile shroud is constructed from rings of polythene bellows, with each section typically 1.5 m long. These rings are connected to the piling hammer at the bottom of the noise-reducing casing and reach down to water or ground level depending on the environment. They are connected to each other by special flanges, and as the pile is driven, the rings concertina together.
19. Regular maintenance of machinery and equipment used for construction for the onshore part of the terminal;
20. Before selecting the equipment and facilities for regular operation of the terminal, it is necessary to conduct a target-oriented research of noise impact on ornithofauna (see the monitoring program) in the area of Ploče - Parila (an area planned for protection in the category of special ornithological and ichthyological reserve). The results of that research should be used as limit values when selecting the equipment and facilities. They must not be exceeded during the regular operation of the terminal.

2.4. MITIGATION MEASURES FOR PROTECTION OF ORNITHOFAUNA

21. In order to protect ornithofauna, further design phases should provide direction of the light opposite to the area of Ploče - Parila and lights should be directed on the ground, as much as reasonably possible.

2.5. WASTE

22. An adequate area shall be provided for temporary dumping of waste generated during construction.
23. Waste generated during construction shall be collected separately by its type.
24. Transport of waste and its disposal shall be organized according to the Project construction schedule.
25. Building waste such as, concrete, stones, and excavation soil that cannot be used during construction and for site development, shall be taken to an adequate waste disposal site.
26. Metal waste generated during construction shall be used as secondary raw material.
27. Hazardous waste generated during construction shall be taken care of on a contract bases with legal entities licensed for collection, transport and handling of hazardous waste.
28. To provide for proper waste management during the terminal operation, at this stage of the Project it is necessary to made a Plan for reception and handling of waste and cargo residue from waterborne crafts according to the Addendum 1 to the By-law on Port Operation (Gazette 110/04).
29. To provide for proper waste management during the terminal operation, before the start of the terminal operation adequate waste facility shall be installed for reception of all types of waste from ships.

2.6. ACCIDENTS

To mitigate possible accidents in the Port area during the terminal operation and to limit the consequences of such an accident, at this stage of the Project development it is necessary

30. to provide means and equipment for prevention of sea pollution and remedy of the sea pollution consequences;
31. to make a maritime study according to the contents set out in the Article 5 of the By-law on Port Operation (Gazette 110/04);
32. that the facilities and equipment to be used for unloading bulk cargos have adequate certificates.
33. A concession holder for unloading bulk cargo must have a quality system established, applied and maintained pursuant to the standard ISO 9001:2000 or other adequate system satisfying its minimum standards. The system operation shall be verified and demonstrated in accordance with the Guidelines ISO 10011:1991 or any other adequate standard satisfying the minimum conditions of those guidelines.

2.7. GENERAL MITIGATION MEASURES

34. Regular implementation of the monitoring program

NOTE:
- By application of the mitigation measures under the items 17, 18, 19 and 20, the noise impact on birds and marine organisms during the Project construction and later on during its usage is reduced so those measures could be considered the measures for protection of ornithofauna and marine biocenosis.
- The application of the mitigation measures under the items 22 to 33 indirectly and primarily means the protection of the seawater quality and marine biocenosis so those measures could be considered the measures for protection of ornithofauna and marine biocenosis.

3. RESPONSIBILITY FOR IMPLEMENTATION OF MITIGATION MEASURES DURING THE PROJECT CONSTRUCTION

- When negotiating the contract(s) for development of design documentation and execution of the construction works, any mitigation measures for environmental protection determined during the Project construction shall be included in the contractors' contractual obligations.
- The Port Authority of Ploce shall be responsible for control and supervision of implementation of contractual obligations of contractors during the Project construction.

4. COST OF MITIGATION MEASURES DURING THE PROJECT CONSTRUCTION

- The price for setting up and/or implementation of the mitigation measure shall be determined at the later phases of design development.

5. CONTROL OF IMPLEMENTATION OF MITIGATION MEASURES DURING THE PROJECT CONSTRUCTION

- According to the Article 64, Par. 2 of the Law on Environmental Protection (Gazette 82/94, 128/99), the Inspection Office within the Ministry of Environmental Protection, Physical Planning and Construction (Environmental Inspection) shall be responsible for control of implementation of mitigation measures identified during the environmental impact assessment process (issued in a form of a Decision of the Project Acceptability).
A.2. MITIGATION MEASURES DURING THE PROJECT OPERATION (USAGE)

1.1. MITIGATION MEASURES FOR PROTECTION OF THE SEA AND MARINE COMMUNITIES (BIOCENOSIS)

1. Regular maintenance of drainage systems for rainfall (storm waters) and sanitary wastewater is required.

1.2. MITIGATION MEASURES FOR AIR PROTECTION

2. Obligatory usage of a spraying / wetting system.
3. If necessary, polyelectrolytes for spraying of the material stored at the terminal shall be used.
4. Maintenance of internal roads is required.

1.3. NOISE MITIGATION MEASURES (NOISE PROTECTION MEASURES)

5. Regular maintenance of the facilities and equipment at the terminal is required.

1.4. WASTE

6. Reception of all waste generated on board ships is required.
7. Different types of waste generated during the terminal usage shall be collected separately.
8. Waste generated during the Project usage shall be received / collected only by legal entities satisfying the conditions stipulated by the Law on Waste (Gazette 178/04).
9. If at the Project location, there is no possibility for final treatment of waste generated during the Project usage, final treatment of each type of waste shall be contracted with legal entities licensed for collection, transport and/or management of each type of waste.
10. Keeping records of type, quantity, place of origin, way and place of storing, treatment and disposal of waste is required.
11. If the quantities of non-hazardous waste during the Project usage exceed 150 t/year and/or the quantities of hazardous waste exceed 200 kg/year, a Waste Management Plan should be developed.

1.5. ACCIDENTS

12. Facilities and equipment for unloading bulk cargo shall be regularly maintained and kept in condition stipulated by the standards.
13. Persons performing the job of unloading bulk cargo shall be professionally educated and trained in terms of unloading safety and shall be provided with adequate protection outfit.
14. Bulk cargo unloading shall be carried out in accordance with the unloading plan.
15. A contingency plan shall be developed for environmental protection against hazardous substances if their quantities exceed the limits stipulated in the Appendix 2 to the Intervention Plan for Environmental Protection (Gazette 82/99, 89/99, 12/01).
16. The means and equipment for prevention of sea pollution and remedy of the pollution consequences shall be regularly maintained and completed.
17. Training and occasional check up of the employees' competence for application of the measures stipulated by the maritime study and the contingency plan for environmental protection is required.

1.6. GENERAL MITIGATION MEASURES FOR ENVIRONMENTAL PROTECTION

18. Regular implementation of the environment monitoring program (see Section B)
19. Regular reporting to the competent authorities (see Section E)

3. RESPONSIBILITY FOR IMPLEMENTATION OF MITIGATION MEASURES DURING THE PROJECT USAGE

- When negotiating the contract for the concession right for performance of some port activities, any mitigation measures for environmental protection during the Project usage shall be included in the contractual obligation of the concession holder(s).
- The Port Authority of Ploče shall be responsible for control and supervision of implementation of contractual obligations of contractors during the Project usage.

4. COST OF MITIGATION MEASURES DURING THE PROJECT USAGE

- The price for setting up and/or implementation of the mitigation measures shall be determined at the later phases of design development.

5. CONTROL OF IMPLEMENTATION OF MITIGATION MEASURES DURING THE PROJECT USAGE

- According to the Article 64, Par. 2 of the Law on Environmental Protection (Gazette 82/94, 128/99), the Inspection Office with the Ministry of Environmental Protection, Physical Planning and Construction (Environmental Inspection) shall be responsible for control of implementation of mitigation measures identified during the environmental impact assessment process.

A3. MITIGATION MEASURES FOR DECOMMISSIONING

Decommissioning of the Project usage is not foreseen. Effects on and mitigation measures for environmental protection in case of stopping the Project usage and/or removal of the Project will be stipulated by a special study within the preliminary activities for stopping the Project usage and/or its removal.
## B. MONITORING PLAN

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<th>Phase</th>
<th>What</th>
<th>Where</th>
<th>How</th>
<th>When</th>
<th>Why</th>
<th>Cost (Euro)</th>
<th>Responsibility</th>
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<tr>
<td><strong>BASELINE</strong></td>
<td>Total deposit matter (TDM) and composition of TDM</td>
<td>5 stations (Figure 2 in Annex)</td>
<td>October 2005 - March 2006</td>
<td>Identification of baseline condition of air quality</td>
<td>3500</td>
<td>PORT AUTHORITY OF PLOČE (Public Health Institute)</td>
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<tr>
<td>Sediment</td>
<td>2 points: - entrance to Vlaška channel - reference point</td>
<td>Standard laboratory methods</td>
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<td>Chemical composition of sediments</td>
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</tr>
<tr>
<td>Marine communities</td>
<td>Area close to the Project location</td>
<td>Diving view</td>
<td>October 2005</td>
<td>Identification of biocenosis structure of sea bottom</td>
<td>7000</td>
<td>PORT AUTHORITY OF PLOČE (Public Health Institute)</td>
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<tr>
<td>Omithofauna</td>
<td>Area foreseen for protection under the category of a special reserve (Ploče – Parila)</td>
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<td>Before starting the Project construction</td>
<td>Target-oriented research of impact of some noise levels on bird population aimed at determining the limit values to be taken into account when selecting the facilities and equipment in further design phase</td>
<td>20000</td>
<td>PORT AUTHORITY OF PLOČE</td>
<td></td>
</tr>
</tbody>
</table>
E. INSTITUTIONAL ARRANGEMENTS

E.1 RESPONSIBILITIES FOR MITIGATION MEASURES AND MONITORING

- When negotiating a contract for development of design documentation and construction of the Project, all mitigation measures for environmental protection during construction shall be included in the contractors' contractual obligations.
- The Port Authority of Ploče will be responsible for control and supervision of contractual obligations of the contractors relating to the mitigation measures for environmental protection during the Project construction.

- When negotiating the contract for the concession for performance of some port activities, all mitigation measures for environmental protection during the Project usage shall be included in the contractual obligations of the concession holder(s).
- The Port Authority of Ploče will be responsible for control and supervision of contractual obligations of the concession holder(s) relating to the mitigation measures for environmental protection during the Project usage.

- The Port Authority of Ploče will be responsible for Baseline Monitoring
- Contractor(s) of each part of Project construction (for the part of the monitoring program assumed by the contractor under the contract) and the Port Authorities of Ploče (for the part of the monitoring program not contractually assigned to the contractors) will be responsible for the monitoring program of environmental protection during the Project construction.
- Concession holder(s) (for the part of the monitoring program assumed by the concession holder under the contract) and the Port Authorities of Ploče (for the part of the monitoring program not contractually assigned to the concession holder) will be responsible for the monitoring program of environmental protection during the Project usage.

E.2. ENVIRONMENTAL INFORMATION FLOW

Responsibility for data submission:

- Data on the baseline monitoring program to the competent authority for environmental protection in the Dubrovačko-neretvanska County is submitted by the Port Authority of Ploče (after the EIA process).
- Data on the monitoring program during the Project construction is submitted by the legal entity competent for implementation of the monitoring program during construction (contractor and/or Port Authority of Ploče) to the competent authority for environmental protection in the in the Dubrovačko-neretvanska County.
- Data on the monitoring program during the Project usage is submitted by the legal entity competent for implementation of the monitoring program during the usage (concession holder(s) and/or Port Authority of Ploče) to the competent authority for environmental protection in the in the Dubrovačko-neretvanska County.
ADDITIONAL:

Waste:
- Once a year, the Port Authority of Ploče or the concession holder shall submit the data on types and quantities of waste collected to the Government Office with the Dubrovačko-neretvanska County.
- Once a year, the Port Authority of Ploče or the concession holder shall inform the Ministry of Sea, Tourism, Traffic and Development about the condition of the facilities for waste and cargo residue reception from ships.

Accidents:
- In case of an accident and in line with the provisions of the Contingency Plan for Accidental Marine Pollution in the Republic of Croatia (Gazette 8/97), those who cause pollution or notice an accident possibly causing pollution shall forthwith inform the County Reporting Center, competent Port Authority Office, or the nearest police station about that event.

E.3. DECISION-MAKING CHAIN OF COMMAND FOR ENVIRONMENTAL MANAGEMENT (TAKING ACTIONS, AUTHORIZING EXPENDITURES, SHUTTING DOWN, ETC.)

- Pursuant to Article 64, par. 2 of the Law on Environmental Protection (Gazette 82/94, 128/99) the inspection office with the Ministry of Environmental Protection, Physical Planning and Construction is responsible for control of implementation of the mitigation measures determined by the environmental impact assessment process.

AIR:

- Pursuant to Article 43 of the Law on Air (Gazette 178/04), when the air quality of the second category is involved, a town council makes a plan of mitigation measures for air pollution. It is called a Plan of Mitigation Measures based on the air quality assessment (identification of places and exceeding the pollution levels, their duration and reasons for exceeding the pollution levels, general information about the area, types and assessment of pollution, origin of pollution, and analysis of factors that caused exceeding of emission levels). The content of the Mitigation Plan is defined by the par. 2 of Article 43. The funds for development of the Mitigation Plan and implementation of the measures for emission mitigation from group sources are provided by the town budget. Polluter (stationary sources) is responsible for implementation and for financing the measures for mitigation of pollutant emission to air stipulated by the Plan of Mitigation Measures.

- Pursuant to Article 44 of the Law on Air (Gazette 178/04), when the air quality of third category is involved, a town council makes a decision on development of a sanation program for a stationary source and the time for making the program. Polluter is responsible for development of the this program within the time stipulated in par. 2 of Article

1 =Plan for air quality improvement
44. The representative body of the local self-government unit must approve the Polluter's sanation program.

Pursuant to Article 45 of the Law on Air (Gazette 178/04) referring to the area in which the air quality of third category is the consequence of emission from group sources (such as traffic, home furnaces and similar), an integral sanation program is developed. The town council determines development and implementation of the integral sanation program and the order of priority of its implementation. The funds for implementation of the sanation program are provided by the town budget.

WASTEWATERS:

Pursuant to Article 184 of the Law on Waters (Gazette 107/95), if the water inspectorate finds that the provisions of the Law on Waters or regulations based thereon are violated, the water inspector shall make a written report of the irregularities and deficiencies and determine the measures and time for their remedy.

NOISE:

Pursuant to Article 23 of the Law on Noise Protection (Gazette 20/03), sanitary inspectors of the Government Office in the counties and the sanitary inspectors of the Ministry of Health in line with their competence based on the Law on Sanitary Inspection are responsible for controlling implementation of this Law and the regulations based thereon. The inspectors of the State Inspectorate are responsible for controlling implementation of the Law provisions referring to the noise in working premises in which noise is generated during the work process and the provisions of the Law referring to traffic of machines, means of transport, and equipment and devices with no data on acoustic power emitted under certain conditions of use.

Pursuant to Article 25 of the Law on Noise Protection (Gazette 20/03), competent inspection bodies from Article 23 of the Law are authorized for taking immediate measures from Article 25, par. 1, items 4 and 5 of the Law if noise imission exceeds the highest levels allowed on the basis of the measurement results by a sound meter of Class I according to HRN EN 60804. Competent inspection bodies can issue an order by which a legal or physical entity is temporarily restricted or prohibited to perform some activity for a period of maximum 8 days. Competent inspection bodies can execute the order forthwith by sealing the equipment, devices, and premises or in some other adequate way if the noise measurement shows that the noise levels are exceeded.

- Article 25: In performing its inspection activities, the competent bodies from Article 23 of that Law are authorized
  1. to order acoustic measurements in the premises of legal and physical entities using the noise sources in the area where people live and work;
  2. to order taking measures stipulated for protection against noise;
3. to prohibit the use of constructed or reconstructed building if the measures of protection against noise have not been implemented until they are implemented.
4. to prohibit the use of a noise source until the measures for protection against noise are taken.
5. to prohibit performance of business and other activities whose noise disturbs rest period and night peace if that cannot be achieved by the measures from item 4 of this Article.
6. to prohibit the use of machines, means of transport, devices and equipment with no data on acoustic power they emit under certain conditions of use.
7. to prohibit performance of business and other activities if they were started without a decision issued by a competent authority confirming that the measures for noise protection have been implemented.

The bodies from Article 23, par. 2 of that Law are authorized to take measures according to a special regulation.
F. CONSULTATION WITH LOCAL NGOs AND PROJECT-AFFECTED GROUPS

On 6 October 2005 in Ploče, a preliminary public presentation took place about the new multipurpose container terminal and predominantly about the new bulk cargo terminal (CBT) planned in the Port of Ploče. The presentation/public consultation was hosted by representatives of the Port Authority of Ploče, with participation of the World Bank mission members, together with key authors of the CBT EIA Study. The meeting was attended by representatives of several local environmental protection associations (e.g., Lijepa naša NGO, Neretva, etc.), members of fishermen association, Town of Ploče officials (environmental inspector), Port of Ploče union members and environmentally interested former employees, Dubrovačko-neretvanska County representatives, as well as other citizens and media representatives.

After presentation of the intended CBT location and conceptual design, Draft EIA preliminary findings and results (incl. env. protection/mitigation measures), as well as current related activities, a discussion took place in which a series of questions, worries, suggestions and requests was raised by interested participants. The audience put emphasis on: air pollution - current measurements and predominant winds - and noise emission (incl. possible and planned mitigation measures), impacts on neighbouring nature reserve, ballast waters from ships, dredging activities (material disposal and impacts on sea), water supply issues (sources, abundances, sufficiency for citizens), ship waste, and a couple of others (aesthetic appearance of the CBT, railway transportation impacts, etc.).

The PPA and EIA Team respectively, explained and answered a number of questions/issues raised, and noted others to be either transferred to the CBT designers, or to be taken particular or additional care of during completion of the Draft CBT EIA Study. In addition to this WB-procedure-initiated public consultation, the audience was reminded of the Croatian EIA-process-defined public hearing still to take place in the beginning of 2006, after the EAI Study is assessed by the special expert commission.

On 17 January 2006 in Ploče, the EIA Team leaders presented the recent Draft CBT EIA Study to chairwoman of the local Lijepa Naša environmental NGO (Mrs. Musa) and to one of the most respected local environmentalists of the Neretva Valley (Mrs. Rogosic) on their request, and with PPA consent.

During the environmental impact assessment process, if the expert commission named by the Ministry of Environmental Protection, Physical Planning and Construction finds the EIA study for the new bulk cargo terminal integral and professionally founded, public consultations and a public hearing about the Project planned will be organized. Thereby the public will be informed about the Project, impact assessment of the Project, the measures proposed for environmental protection, and a program for environmental monitoring.

Information about the "zero" condition of the environment and the results of the environmental monitoring program during project construction and project usage will be published on official web pages of the Port Authority of Ploče (PPA).