**GOVERNMENT OF ROMANIA**
**MINISTRY OF ENVIRONMENT AND FORESTS**
**Cabinet of the Minister**

No.: 3992 /RP/ 31-07-2012

Ref: The Masterplan "Protection and Reabilitation of the Romanian coastal zone"

**Dear Ms. Karadzjova,**

With the present letter we would like to conclude the transboundary SEA procedure developed for the Masterplan – „Protection and Reabilitation of the Romanian coastal zone".

Based on art.9 of the *Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment,* please receive from us the attached **Environmental Approval,** both in Romanian and in English language, for the **above mentioned Masterplan.**

The Environmental Approval summarizes how environmental considerations have been integrated into the plan and how the environmental report, the opinions expressed by the authorities and by the public and the results of the transboundary consultations have been taken into account in the final decision, including the reasons for choosing the plan as adopted, in the light of the other reasonable alternatives dealt with.

The Environmental Approval comprises, as well, the monitoring programme that will be developed by the developer. Information on the monitoring results will be sent to the Bulgarian environmental authorities, yearly, as committed.

For the South area of the Mangalia Port, the proposed works in the Master-plan will be duly notified to you at project level, according to the requirements of the Espoo Convention.

Please accept, dear minister, the assurance of my highest consideration and esteem.

**Yours sincerely,**

**Rovana PLUMB**
**MINISTER**

**Ms. Nona KARADJOVA**
**Minister**
**Ministry of Environment and Water, Republic of Bulgaria**

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*Translation from Romanian into English according to the copy*

Approved,

**STATE SECRETARY**

**Constantin Emil MOŢ**

# ENVIRONMENTAL APPROVAL

## No. 10301 as of 06.07.2012

Following the notice addressed by Dobrogea Water Branch, based in Constanta municipality, 127th Mircea cel Bătrân street Constanţa county, registered under no. 73841/April 26th 2011.

after the analysis of documents submitted and the verification,

following the procedure stages,

pursuant to Government Decision no. 544/2012 on the organization and functioning of the Ministry of the Environment and Forests, the Government Emergency Ordinance **no.195/2005 on environmental protection, as further amended and supplemented, approved by Law no. 265 as of June 29th 2006,** issues the:

**APPROVAL**

**for the** Master Plan entitled "Coastal Area Protection and Rehabilitation"

**promoted by** Dobrogea Water Branch

**for the purpose of adopting the** Master Plan entitled "Coastal Area Protection and Rehabilitation"

**I. The current situation is the following:**

- The area of interest of the Master Plan is the entire coastal line of Romania, located in the western part of the Black Sea, between Musura Bay to the north and Vama Veche to the south.
- The area of interest is divided into two main sectors, the northern unit - between Musura and Midia Harbor and the southern unit - between Midia Harbor and Vama Veche.



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- The researched coastal area is extended to the sea from the shoreline and is generally limited by the isobath of 15m. Inwards (land), the analysed area has a width of approximately 400m from the shoreline in the Northern Unit and 200m in the Southern Unit.
- The highest erosion rates are recorded in Mangalia sector, at south from VI-J-23 offshore dam, with rates of over 4 m/year.
- Nonetheless, Vama Veche - 2 Mai coastal area represented an accretion line, during the 1960s-1980s, and as a consequence to Mangalia harbour southern dam effect on the sedimentary intake, this coastal area became an erosion one, with erosion rates of approximately 3 - 4m/year.
- Erosion rates slightly below 2m/year were recorded also at Eforie barrier and Neptun seaside resort.
- The key intervention points identified by the Master Plan are represented by Mamaia, Tomis Nord, Eforie, Costinesti, Olimp - Venus beaches, Mangalia pond and Saturn.
- The Master Plan focus area is rich in habitats protected by specific legislation, therefore, their sensitivity is a primary element in further establishing punctual works to be performed for the protection and rehabilitation of the coastal area. Natura 2000 sites that located on the interest area of the Master Plan are:
    - *ROSCI0065 Danube Delta* – the only habitats that can be affected are: „Shallow underwater sandbanks" (1110) and „Coastal areas" (1150), the rest being on land.
    - *ROSCI0066 Danube Delta Marine Area* - habitats that can be affected are: „Shallow underwater sandbanks" (1110), „Sand and sludge discovered at low tide " (1140), „Reefs" (1170), „Undersea structures created by gas emissions " (1180).
    - *ROSCI0237 Sfântu Gheorghe methanogenic undersea structures* - habitats that can be affected are: „Undersea structures created by gas emissions"(1180), „Reefs" (1170), „Shallow underwater sandbanks" (1110).
    - *ROSCI0197 Eforie Nord- Eforie Sud undersea beach* - habitats that can be affected are: „Shallow underwater sandbanks" (1110), „Sand and sludge discovered at low tide" (1140), „Reefs" (1170).
    - *ROSCI0273 Capul Tuzla marine area* - habitats that can be affected are: „Reefs" (1170), „Sand and sludge discovered at low tide (1140)", „Shallow underwater sandbanks (1110)".


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- *ROSCI0094 Mangalia undersea sulphurous springs* - habitats that can be affected are: „Reefs" (1170), „Sand and sludge discovered at low tide (1140)", „Shallow underwater sandbanks (1110)".
- *ROSCI0281 Cap Aurora* - habitats that can be affected are: „Reefs" (1170), „Shallow underwater sandbanks" 1110).
- *ROSCI0293 Costineşti – 23 August* - habitats that can be affected are: „Reefs" (1170), „Sand and sludge discovered at low tide (1140)", „Shallow underwater sandbanks (1110)".
- *ROSCI0269 Vama Veche-2 Mai* - habitats that can be affected are: „Reefs" (1170), „Sand and sludge discovered at low tide (1140)", „Shallow underwater sandbanks (1110)".
- *ROSCI0073 Agigea Marine Dunes*– the habitat that can be affected is „fixed coastal dunes with herbaceous perennialvegetation (grey dunes)" (2130*)
- *ROSCI0114 Herghelii Marsh– Obanul Mare and Movilei Cave*– habitats that can be affected by anthropic activities are „ water courses of plain to montaneous levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation" (3260) and„ Ponto-Sarmatic deciduous thickets" (40C0*)

➢ Furthermore, the Master Plan focus area also fully overlaps the following Natura 2000 areas for avifaunistic protection

- ROSPA0076 The Black Sea
- ROSPA 0031 Danube Delta and Razim – Sinoe Complex,
- ROSPA0057 Siutghiol Lake,
- ROSPA0061 Techirghiol Lake
- ROSPA0066 Limanu – Herghelia

under the following conditions:

The Master Plan on "Coastal Area Protection and Rehabilitation" has the purpose of identifying and prioritizing necessary interventions for stopping coastal erosion and increasing the usage value of the coastal area by new beach surfaces.

The **global objective** of this Master Plan is protecting and improving environment quality and life standards along the Black Sea Romanian coastal area, as well as increasing destructive effects of coastal erosion.

**Specific objectives** aim at:

- Developing a program and its related rehabilitation works on protecting the coast


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against the effects of coastal erosion for the rehabilitation and protection of the shoreline, adjacent lands, as well as land and marine ecosystems;

- Protecting economic infrastructure and social objectives threatened by sea erosion processes;
- Implementing an integrated monitoring program of the coastal area to support maintenance operations and works, on a medium and long term (30 years).

## II. Works suggested by the Master Plan

For adopting rehabilitation solutions all type of works have been taken into consideration, choosing the most efficient ones and those having minimum environmental impact: shore protection, offshore wave breaker dams (at the surface or underwater), stabilisation spurs (buried dykes), artificial sanding.

The chosen plan alternative presents the best results for preventing, reducing and compensating adverse effects on the environment after the master plan implementation in maximum economic efficiency conditions.

Within the Master Plan, both the intervention option (types of works) proposal as well as waiving certain types of works, or limiting them when such works are suggested in the vicinity or within a natural protected area were taken into account, in order to limit as much as possible the impact on the environment and protected natural areas,.

The Master Plan suggests the following areas for performing works:

### A. Short term projects/works 2012 – 2013

1. Mamaia Sud: the sector comprised between Melody Hotel – Pescărie

- Rehabilitation, improvement and construction of new protection structures, with artificial sanding of the beach (offshore wave breaker dams, stabilisation spurs (buried dyke) artificial sanding).

2. Tomis Nord: the sector between Pescărie and Havana street

- Rehabilitation, improvement and construction of new protection structures, with artificial sanding of the beach (offshore wave breaker dams, stabilisation spurs (buried dyke) artificial sanding).

3. Tomis Centru: on the sector comprising between Havana street and Renaşterii street

- Rehabilitation, improvement and construction of new protection structures, with artificial sanding of the beach (offshore wave breaker dams, stabilisation spurs (buried dyke) artificial sanding).



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4. Tomis Centru: on the sector comprising between Renaşterii street and Tomis tourism harbour

- Rehabilitation, improvement and construction of new protection structures, with artificial sanding of the beach (offshore wave breaker dams, stabilisation spurs (buried dyke) artificial sanding).

5. Eforie Nord: on the sector comprising between Steaua de Mare and Belona Hotel, in the area of the tourism harbour

- Rehabilitation, improvement and construction of new protection structures, with artificial sanding of the beach (offshore wave breaker dams, stabilisation spurs (buried dykes) artificial sanding).

**B. Medium term projects/works 2014 – 2021**

1. "Canalul cu Sonda"

- Artificial sanding
- Bypass type sanding (sand transfer)

2. Gura Portiţei

- Stabilisation spurs (buried dykes)
- Artificial sanding

3. Mamaia Nord: on the sector comprising between the limit of Năvodari and Rex Hotel

- Stabilisation spurs (buried dykes)
- Artificial sanding

4. Mamaia Centru: on the sector comprising between the limit Rex Hotel and Melody Hotel

- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)
- Artificial sanding

5. The sector comprising between Tomis Harbour and Constanţa Harbour

- Shore protection


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6. Agigea, on the sector comprising between Agigea dam and Steaua de Mare
- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)
- Artificial sanding

7. Eforie Centru from Vraja Mării to the International Camp
- Shore protection
- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)
- Artificial sanding

8. Eforie Sud on the sector comprising between the International Camp and Pescărie Eforie Sud
- Shore protection
- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)
- Artificial sanding

9. Costineşti Sud at south from Albatros Villa lake discharge
- Shore protection
- Stabilisation spurs (buried dykes)
- Artificial sanding

10. Olimp on the sector comprising between Maramureş Hotel– Garofiţa Villa
- Shore protection
- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)
- Artificial sanding

11. Neptun –Neptun Dam
- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)

12. Jupiter – Venus on the sector comprising between on the sector comprising between


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Tismana Lake and Silvia Hotel

- Shore protection
- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)
- Artificial sanding

13. Saturn on the sector comprising between Cerna Hotel and Diana Hotel (from Saturn)

- Shore protection
- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)
- Artificial sanding

14. Mangalia on the sector comprising between Diana Hotel up to Mangalia North Breakwater

- Shore protection
- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)
- Artificial sanding

15. 2 Mai in the sector comprising between the southern dam of Mangalia harbour and Pescărie 2 Mai

- Stabilisation spurs (buried dykes)
- Artificial sanding

## C. Long term projects/works 2022 – 2041

1. Sulina Dam and adjacent areas

- Stabilisation spurs (buried dykes)
- Bypass type sanding (sand transfer)

2. Periboina dam

- Stabilisation spurs (buried dykes)
- Bypass type sanding (sand transfer)



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3.Edighiol dam

- Stabilisation spurs (buried dykes)
- Bypass type sanding (sand transfer)

4.Mangalia Pond on the sector comprising between Silvia Hotel and Cerna Hotel

- Artificial sanding

5. Costineşti (stage II) on the sector comprising between Pescarului street and Forum Hotel

- Shore protection
- Wave breaker offshore dams
- Stabilisation spurs (buried dykes)
- Artificial sanding

## III. Measures for preventing/mitigating and compensating adverse effects on the environment:

The environmental report and the appropriate assessment study issued for the Master Plan "Coastal Area Protection and Rehabilitation" have identified potential significant effects on the environment and measures to prevent, mitigate and compensate these effects.

a) general measures to mitigate the impact on protected natural areas:

- applying appropriate environmental management both during the works for coastal protection and rehabilitation of the Black Sea Coast and during the operating period;
- setting the intervention period during the warm season to minimize the impact on bird species and wide-range sanding works, outside the migration and wintering period of birds of specific to sea beaches, resting or feeding on the shoreline;
- for the gradual performance of works, in parallel with monitoring biodiversity, as to reduce to minimum its impact on the latter,
- performing works of Black Sea coastal protection and rehabilitation in a more restricted area, corresponding to the excavation and dredging area, to reduce the possibility of extending negative effects on the environment and, implicitly, the effect on aquatic organisms communities;
- strict observance of on-site work norms (sound absorbing fences, moistening,


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noise generating activities performed between 8.00 A.M. - 4.00 P.M. etc.) or for transportation (using sheets or tarpaulins covering the load).

b) Measures to prevent / mitigate and compensate adverse environmental effects during the work performance - site organization:

- compliance with the schedule to achieve planned works and the conditions imposed by this notice to protect sites;
- fencing the site enclosure organization;
- prohibiting storage of materials or waste outside the surfaces of the site area organization and, in any case, their storage in beach and waterfront area near the site;
- prohibiting beach sand excavation near the objective;
- transport of materials and waste shall be performed only by suitable means of transport;
- waste management will be in strict accordance with the regulations of environmental protection in force and it will be the clear responsibility of the work beneficiary or the general contractor, but it should be clearly stated in the contract drawn up by and between the two parties for work performance;
- it is recommended that, during works in the marine environment, the contractor for coastal protection and rehabilitation works should enter into a contract with a firm specializing in remedy works, with the technical and human capability to respond immediately in case of marine pollution (accidental oil loss);
- it is prohibited to do site organization or any temporary landscaping works required during the objective construction, in the beach area (on the one hand, to protect the beach, on the other hand, to limit any risk of materials or waste migration in the sea);
- quick intervention in case of damage for removing causes and limiting effects;
- by the coastal area protection and rehabilitation project organization, the authorized constructor to be designated will ensure its environmental management system to prevent damage to the site;
- requirements of MARPOL 73/78 which Romania ratified will be fully complied with so as project performance will not lead to significant impact on the marine environment in the work area;
- machinery and transport means will be kept in good functioning condition; performing revisions and maintenance works in specialized workshops;
- dumper trucks will be equipped with tarpaulins for covering the load during transport, to reduce the quantity of dust in the atmosphere;



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- permanent equipment of the working point with adequate recipients for domestic waste storage and transportation, as well as its regular collection by an authorized economic operator;
- equipment of the site with spraying device water tank, used in case of fire and for reducing the amount of dust high into the atmosphere;
- training the staff regarding fire prevention and extinction measures and those regarding behaviour inside and near protected areas;
- drawing up a working schedule for transport means, indicating the route, movement speed and the mode of cargo transport;
- transportation and storage of fuels and lubricants in suitable containers, in compliance with storage and transportation standards for petroleum products;
- progressive, gradual project implementation, for instance coastal protection in a specific area of the coast and then shall continue to another area, so that the disturbed wildlife can take refuge in places where no works are carried out;
- strict monitoring of activities to prevent accidental loss of fuel, oil, sewage into the aquatic environment will be ensured during the performance of works;
- operation of equipment should be done in maximum security conditions, respecting the rules of operation under their technical books;
- strict compliance of site order;
- compliance with agreed access ways (new or existing).

An important aspect is represented by the available source of sand for beach sanding.

The report "Coastal dynamics and sedimentology studies" elaborated for this Master Plan, highlighted the potential sources of sand:

- Sands dredged for commercial purposes from the Danube river between Călăraşi and Cernavodă. The biotic quality of sand is characterized by the absence of pathogenic bacteria and parasites, confirmed by the State Sanitary Laboratory Inspectorate of Constanta.
- Cochirleni area (km 310 – km 305 on the Danube river) is suggested as potential source for sanding Mamaia Sud and Eforie Nord beaches.
- Danube silts in the area of Călăraşi (km 390 – km 375) have heavy texture and could be more adequate for Eforie Nord beach, but due to the large transport distance, costs will be higher as compared to the sand from Cochirleni.
- Aptian sans obtained in the quarries of Cuza Vodă and Tibrinu is considered an auxiliary source, having a granularity similar to the sand from Mamaia beach; we


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emphasize its higher content in silt and clay (25 – 35%).

- The sand dredged by AFDJ Galaţi from the mouth of Sulina branch can be provided in large quantities, significant for the sedimentary stock of eroded beaches between Sulina and Sfântul Gheorghe.
- Surface sources from Histria and Chituc sandbanks.
- Sediments dredged from Sulina bar.
- Sediments collected near Midia harbour.

The environmental impact assessment report will identify, during the project stage, the best sediment source for artificial sanding in terms of environmental protection.

c) Punctual measures on biodiversity protection

Technical solutions implemented by this Master Plan shall be based upon the results of the appropriate assessment study elaborated at project level.

**In the areas Constanţa and Mamaia:**

- works shall be avoided in the cold period of the year as to avoid disturbance of aquatic birds migrating or wintering on the shore;
- the performance of all categories of works for continuous monitoring of the impact on biodiversity;
- works will be phased as to avoid any duplication of similar work on neighbouring areas, thus avoiding impact aggregation and limiting access of aquatic birds to refuge/feeding areas;
- works will be performed in compliance with working norms regarding powder emissions and the level of noise.

**In Agigea area**

- the extraction of sand from the coastal cell between Constanţa Sud Southern Pier - Agigea and Capul Tuzla shall be avoided, the sand for sanding must be brought from another source, and the works will be carried out on the shore;
- dams location shall be set with the purpose to avoid direct influence of construction works on habitat 1170-10 with *Pholas dactylus*;
- works will be performed in the period of calm sea.

**In Eforie Nord area**

- works will be performed in the calm sea period, so that the migration of suspension generated by the works performed would be limited to the maximum in the northern


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part of ROSCI 0197 Eforie Nord – Eforie Sud underwater beach, even though it is estimated that a great part will be blocked by the northern pier of the tourism harbour (Eforie Nord Marina) and diverted offshore;

- For sanding, sand extracted from the site ROSCI 0197 Eforie Nord – Eforie Sud underwater beach or its vicinity shall not be used;
- The dynamics of species *Donacilla cornea* and *Donax trunculus* will be monitored before, during and post works completion;
- Reducing artificial sanding rhythm according to the monitoring results.

**In Eforie Centru area**

- no such works will be performed on-site or in its vicinity;
- technical solution will be identified in the planning stage leading to the natural accumulation of sand on the beach bordering the site;
- For sanding, sand extracted from the site *ROSCI0197 Eforie Nord - Eforie Sud* underwater beach or its vicinity shall not be used;
- works will be carried out on the shore.

**In Eforie Sud area**

- works will be performed at the protection structures in the north of the resort and in artificial reefs, only in calm sea days (wind, 2nd-3rd Beaufort degree and the Sea 2nd-3rd Douglas degree) or in the days with air circulation from the northern sector (north, north-east or north-west), and when the sea is rough and the wind strong, works will be stopped;
- for sanding, sand extracted from the site *ROSCI0197 Eforie Nord - Eforie Sud* underwater beach or its vicinity shall not be used;

In Costineşti area

- no work directly affecting the natural rocky shore of Forum hotel (located on the northern shore of the site *ROSCI0281 Costinesti – 23 August*)shall be carried out;
- within the technical solutions adopted in the project stage, solutions will be identified for limiting to the maximum sediment losses towards the site *ROSCI0281 Costinesti – 23 August*), as building a dyke that blocks sediments from Costineşti beach to the south, in order to prevent their entry in the mentioned site.

**In Jupiter - Venus area**

- no work affecting the bay formed from the two dykes at Carmen hotel, located


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within *ROSCI 0281 Cap Aurora,* intended to lead to the free communication of the limit with the see or clogging with sediments shall be carried out;

- works will be carried out only for the recovery of the two dykes, provided that works are carried out only on the front, side of dykes outwards;
- no such work shall be carried out, nor within the bay, nor outside, intended to lead to the free limiting with the sea or clogging with sediments;
- in order to reduce the negative impact of high turbidity waters, sanding works or dam constructions shall be carried out in good weather conditions, calm sea, light wind (maximum wind 2nd-3rd Beaufort degree and sea 2nd-3rd Douglas degree).

**In the area of Mangalia pond**

- sand from or near *ROSCI 0281 Cap Aurora* shall not be used for sanding;
- in order to reduce the negative impact of high turbidity waters, sanding works or dam constructions shall be carried out in good weather conditions, calm sea, light wind (maximum wind 2nd-3rd Beaufort degree and sea 2nd-3rd Douglas degree).

**In Saturn – Mangalia area**

- no such works for existing structures demolition shall be performed, since these will lead to the destruction of the habitats for which the site was declared;
- Only works for recovery of existing structures shall be carried out, in their current form;
- Sanding works will be carried out only between the last two dykes from the south of Mangalia sea-wall (in front of President hotel, parallel to Teilor street);
- No type of new coast defence structure shall be built.

**In 2 MAI area**

- in the design stage, it is required to analyse the optimal method of performing repair works to existing structures to reduce at minimum level the impact on the protected area biodiversity;
- For works at the sea-wall foot, prior research on the special and plant associations is required, in order to avoid destruction of rare *arenicola* or halophile plant species;
- It is recommended to carry out heavy protection works hard to support the sea-wall and the road, in the bay next to the former military unit of 2 Mai and the road linking 2 Mai locality to the corresponding fishing harbour, as well as general sanding to restore the beach.


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## IV. Monitoring

**The program for monitoring significant effects of the Master Plan implementation, on intervention sectors and during the Master Plan validity:**

| Sub sector | Intervention area (project location) | Brief description of the chosen option | Monitoring measures |
|---|---|---|---|
| **Musura bay** | Sulina canal, dam and the area adjacent to the northern branch (to reduce erosion issues in "Canalul cu Sonda") | The regular transport of sediments from the northern part of Sulina Canal structures or from maintenance dredging of the Sulina Canal in sub-sectors Sulina and/or "Canalul cu Sonda".<br>Solutions will be completed by further studies and shall take into account the recommendations of the Management Plans for ROSCI0065 Danube Delta and ROSPA0031 Danube Delta areas, as well as Razim-Sinoe Complex | • Estimated sedimentation dynamics modelling to be obtained in the downstream sector, by means of bypass;<br>• Monitoring measurements of the beach line and bathymetry real effects<br>• Adjusting the model based on field results and adjusting technical solutions to achieve desired outcomes |
| **"Canalul cu Sonda"** | "Canalul cu Sonda" | Shore supply by unloading dredged sediments from the offshore underwater beach | • Estimated sedimentation dynamics modelling to be obtained in "Canalul cu Sonda" sector, by means of bypass;<br>• Monitoring measurements of the beach front and bathymetry real effects<br>• Adjusting the model based on field results and adjusting technical solutions to achieve desired outcomes |
| **Portita** | Gura Portiţei (Local protection structures for the tourist beach) | Beach sanding and existing structures repairs | • Monitoring by annual measurement of the beach front and underwater beach bathymetry evolution |


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|---|---|---|---|
| **Periboina** | Adjacent to Periboina dam | Entry Management<br>Solutions will be completed by further studies and shall take into account the recommendations of the Management Plans for ROSCI0065 Danube Delta and ROSPA0031 Danube Delta areas, as well as Razim-Sinoe Complex | • Monitoring by annual measurement of the beach front and underwater beach bathymetry evolution<br>• Monitoring the direction, flow and intensity of currents and communication between Sinoe lagoon and the sea |
| **Chituc** | Adjacent to Edighiol dam | Repair of existing dykes and entry management<br>Solutions will be completed by further studies and shall take into account the recommendations of the Management Plans for ROSCI0065 Danube Delta and ROSPA0031 Danube Delta areas, as well as Razim-Sinoe Complex | • Monitoring by annual measurement of the beach front and underwater beach bathymetry evolution |
| **Mamaia Nord** | Mamaia Nord | Beach sanding works | • Monitoring by annual measurement of the beach front and underwater beach bathymetry evolution<br>• Monthly/weekly measurement, in the summer season, of bathing water quality; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution. |


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|---|---|---|---|
| **Mamaia Centru** | Mamaia Centru | Building new beach stability dams/ rock wave breaker and performing sanding works on the beach. | • Monitoring by annual measurement of the beach front and underwater beach bathymetry evolution;<br>• Monthly/weekly measurement, in the summer season, of bathing water quality; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution. |
| **Mamaia Sud** | Mamaia Sud | Rehabilitation, improvement and construction of new protection structures with beach sanding | • Monitoring by annual measurement of the beach front and underwater beach bathymetry evolution;<br>• Monthly/weekly measurement, in the summer season, of bathing water quality; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution. |
| **Tomis Nord** | Tomis Nord and Tomis Centru | Rehabilitation, improvement and construction of new protection structures with beach sanding | • Monitoring by annual measurement of the beach front and underwater beach bathymetry evolution<br>• Monthly/weekly measurement, in the summer season, of bathing water quality; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution. |


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| | | | |
|---|---|---|---|
| **Tomis Sud** | Tomis Sud up to Palas Hotel | Rehabilitation, improvement and construction of new protection structures, as well as beach sanding | • Monitoring by annual measurement of the beach front;<br>• Monthly monitoring of water quality (pH, suspended matter, extractable substances with organic solvents, oil product)<br>• Monthly/weekly measurement, in the summer season, of bathing water quality; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution . |
| | From Palas Hotel up to Constanta harbour | Building a new consolidation structure of the sea-wall foot to replace the current one and to provide additional protection | • Monthly monitoring of water quality (pH, suspended matter, extractable substances with organic solvents, oil product)<br>• Annual monitoring of benthic fauna evolution . |
| **Eforie Nord** | Agigea - from the wave braker dam of Agigea waves, up to Steaua de Mare | Based on the monitoring, one of the solutions suggested below shall be adopted:<br>• lack of area interventions;<br>• identifying certain technical solutions, at project level, leading to natural accumulation of sand in the area. | • Monitoring the distribution of habitat 1170-10<br>• Monitoring the dynamics of the population *Pholas dactylus* before, during and after works are carried out<br>• Monitoring sediment migration in the area, after sanding. |


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| | Eforie Nord - from Steaua de Mare up to Belona Hotel (Tourism harbour) | Rehabilitation, improvement and construction of new protection structures, as well as beach sanding | • Monitoring the distribution of species *Donacilla cornea* and *Donax trunculus* before works commencement<br>• Monitoring the dynamics of the population *Donacilla cornea* and *Donax trunculus* before, during and after works are carried out<br>• Monitoring the beach front and underwater beach bathymetry evolution after sanding<br>• Monitoring granular composition of sediments after sanding. |


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| **Eforie Centru** | Eforie Centru | Based on the monitoring, one of the solutions suggested below shall be adopted:<br>• Any kind of works within the site or in its proximity shall not be performed<br>• Identification of certain technical solutions at the project level that shall lead to the natural accumulation of sand on the beach that borders the site. | • Detailed scientific researches on the dynamics of *Donacilla cornea, Ophelia bicornis* and *Donax trunculus populations, for at least two years before the works commencement*<br>• Based on the researches, the identification of a working period and method for the beach artificial sanding, that shall reproduce as much as possible the natural phenomenon of sanding and sediments accumulation in the area, both on short and long term<br>• The monitoring of *Donacilla cornea* and *Donax trunculus* population dynamics, during and after the works performance<br>• The monitoring of the shoreline evolution and of the submerged beach bathymetry, after sanding<br>• The monitoring of granulometric composition evolution of the sediments after sanding |
| **Eforie Sud** | Eforie Sud | Rehabilitation, improvement and construction of certain new protection structures, with the beach sanding | • Monitoring by annual measurements of the beach front and the submerged beach bathymetry evolution;<br>• Monthly/weekly monitoring during the summer season, of water quality for bathing; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution |


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| **Costinesti** | From the guide wall of the lake south lock to the Albatros Villa (Costineşti South) | Rehabilitation, improvement and construction of certain new protection structures, with the beach sanding<br>• Any kind of works that affect the natural cliff from the Forum hotel shall not be performed (the northern limit of site *ROSCI0281 Costinesti – 23 August*)<br>• Within the adopted technical solutions, solutions for the maximum limitation of sediments loss shall be identified at the project level for Natura 2000 site | • Monitoring of 1170-10 habitat distribution<br>• Monitoring of *Pholas dactylus* population dynamics, before, during and after the works performance<br>• Monitoring of sediments migration in the northern limit of Costineşti-23 August site, after sanding.<br>• Monitoring by annual measurements of the beach front and the submerged beach bathymetry evolution;<br>• Monthly/weekly monitoring during the summer season, of water quality for bathing; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution |
| **Olimp – Venus** | Olimp - From Maramures Hotel to Garofita Hotel | Rehabilitation, improvement and building of certain new protection structures, with larger bays and beach sanding | • Monitoring by annual measurements of the beach front and the submerged beach bathymetry evolution;<br>• Monthly/weekly monitoring during the summer season, of water quality for bathing; (total coliforms, faecal coliforms, faecal streptococci) |


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| | Neptun - Neptun Dam | Rehabilitation and improvement of the existent structure | • Monitoring by annual measurements of the beach front and the submerged beach bathymetry evolution;<br>• Monthly/weekly monitoring during the summer season, of water quality for bathing; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution |


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| | Jupiter - Venus - From Tismana Lake to Slivia Hotel | Rehabilitation, improvement and building of certain new protection structures, with larger bays and beach sanding<br>• Any works that may affect the bay formed between the two dykes near Carmen Hotel, situated within the site ROSCI 0281 Cap Aurora, aiming to limit the open communication with the sea or at the sediments silting, shall not be performed<br>• Within this area, only the rehabilitation works of the two dykes are allowed, provided that the works are performed only on the dykes surface orientated to the open sea.<br>• In order to reduce the waters negative impact with a high turbidity, the sanding works or the dams construction shall be performed in good weather conditions, calm sea, breeze (maximum wind degree 2-3 Beaufort and sea degree 2-3 Douglas). | • The 1170-8 habitat monitoring with *Cystoseira barbata* near Carmen Hotel before the works commencement; density, coverage and biomass measuring related to this species; the characterization of the associated fauna biodiversity<br>• Monitoring of all parameters listed above annually, before, during and after the works completion<br>• Monitoring by annual measurements of the beach front and the submerged beach bathymetry evolution;<br>• Monthly/weekly monitoring during the summer season, of water quality for bathing; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution<br>• Monitoring of sediments migration to the shore area of Cap Aurora site, after sanding. |


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| **Mangalia pond** | Mangalia pond – Silvia Hotel – Cerna Hotel | Beach sanding: the length is determined at SF | • Monitoring by annual measurements of the beach front and the submerged beach bathymetry evolution;<br>• Monthly/weekly monitoring during the summer season, of water quality for bathing; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of benthic fauna evolution |
| **Saturn – Mangalia** | Saturn - From Cerna Hotel to Diana Hotel | Rehabilitation, improvement and building of certain new protection structures, with larger bays and beach sanding<br>Based on the monitoring, one of the solutions suggested below shall be adopted:<br>• No demolition works of the existing structures, construction works for new protection or sanding structures shall be performed.<br>• Only rehabilitation works of the existing structures shall be performed<br>• Beach sanding works shall be performed only in the alveole formed between the two dykes from the southern part of Mangalia Sea-wall, where a 20 m sanding is allowed. | • Monitoring the evolution of surfaces covered with habitats 1110-1 with *Zostera noltii* , 1170-8 with *Cystoseira barbata* and1110-7 with *Arenicola* and *Callianassa*; of their quality and representativity<br>• Monitoring by annual measurements of the beach sea-wall and the submerged beach bathymetry evolution;<br>• Monthly/weekly monitoring during the summer season, of water quality for bathing; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of the benthic fauna evolution, of all important habitats from the site |


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| | Mangalia- From Diana Hotel to Mangalia Nord dam | Construction of new protection structures with larger bays and performance of a beach sanding | • Monitoring the evolution of the surfaces covered with habitats 1110-1 with *Zostera noltii* , 1170-8 with *Cystoseira barbata* and 1110-7 with *Arenicola* and *Callianassa*; monitoring of their quality and representation<br>• Monitoring by annual measurements of the beach sea-wall and the submerged beach bathymetry evolution;<br>• Monthly/weekly monitoring during the summer season, of water quality for bathing; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of the benthic fauna evolution, of all important habitats from the site |
| **2 Mai** | 2 Mai | Rehabilitation of the existing structure and the intermittent protection of the sea-walls base<br>Heavy protection works shall be performed in order to support the sea-wall and the road that connects the locality 2 Mai with the related fishing harbour, as well as the sanding towards the open sea, in order to rehabilitate the beach. | • Monitoring by annual measurements of the beach sea-wall and the submerged beach bathymetry evolution;<br>• Monthly/weekly monitoring during the summer season, of water quality for bathing; (total coliforms, faecal coliforms, faecal streptococci)<br>• Annual monitoring of the benthic fauna evolution, of all important habitats from the site |

## Detailed list of the monitoring indicators in case of biodiversity

| Monitored parameters | Purpose |
|---|---|
| **Flora monitoring**<br>Data about the biocoenosis structure:<br>- type of vegetation | Information procurement regarding the:<br>- conservation of certain species and habitats<br>- assessment regarding the conservation |



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| - rare species<br>- vascular plants<br>Data about the biocoenosis functions:<br>- populations dynamics<br>- herbivorous plants/plants relation<br>- expansion/regression<br>Impact on the biocoenosis:<br>- anthropic activities<br>- climate factors<br>- conservation measurements | measures of certain species, as well as their habitats,<br>- follow-up of the biodiversity evolution in the protected areas in order to maintain their ecologic integrity |
| **Fauna monitoring**<br>Data about the biocoenosis structure:<br>- animals groups<br>- rare species, endemic<br>- distribution method<br>- morphology<br>Data about the biocoenosis functions:<br>- migration, expansion/regression<br>- herbivorous plants/plants relation<br>- hybridization<br>Impact on the biocoenosis:<br>- climate factors, pollution<br>- food resources | Information procurement regarding the:<br>- conservation of certain species and habitats<br>- assessment regarding the conservation measures of certain species, as well as their habitats,<br>- follow-up of the biodiversity evolution in the protected areas in order to maintain their ecologic integrity |

## Monitoring of beach front for the structural on short term proposed measures

| Location/ Option | Length of coast protected against erosion (km) | Created beach surface (ha) | % development of beach surface (%) |
|---|---|---|---|
| **Mamaia Sud**<br>Rehabilitation of existing structures, construction of new structures and beaches sanding | **1.2** | **8.2** | **81** |
| **Tomis Nord**<br>Rehabilitation of existing structures, construction of new structures and beaches sanding | **2.3** | **12.0** | **1359** |
| **Tomis Centru**<br>Rehabilitation of existing structures, construction of new structures and beaches sanding | **0.9** | **3.8** | **199** |
| **Tomis Sud**<br>Rehabilitation of current structures, construction of new ones and sanding of beaches | **1.5** | **3.0** | **47** |


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| **Eforie Nord**<br>Rehabilitation of current structures, construction of new ones and sanding of beaches | **1.4** | **6.3** | **323** |
| **Eforie Sud – ongoing project drawn up prior to Master Plan elaboration**<br>Underwater dams made of geotextile materials filled up with sand, extensions of current dams, repairs of current dykes and artificial sanding of the beach | **1.8** | **10.1** | **356** |
| **Total** | **9.1** | **43.4** | |

## Monitoring of the beach front for structural average term proposed measures

| Location/ Option | Length of coast protected against erosion (km) | Created beach surface (ha) | % development of beach surface (%) |
|---|---|---|---|
| **"Canal cu Sondă"**<br>Beach natural supply by discharging the dredged material within the underwater beach | **6.5** | **0.0** | **0** |
| **Portiţa**<br>100 m width artificial sanding and consolidation of current structures | **0.4** | **0.0** | **0** |
| **Mamaia Nord**<br>50 m width artificial sanding, dykes and 2 dams | **2.7** | **1.0** | **7** |
| **Mamaia Centru**<br>Artificial sanding in order to create a 70 m width beach, the construction of underwater dykes/breakwater dams. | **1.8** | **2.1** | **17** |
| **Tomis Harbour – Constanţa Harbour**<br>New protection structure of front base in order to replace the current one and to ensure a high degree of protection. | **1.6** | **0.0** | **0** |
| **Agigea**<br>Rehabilitation, improvement and construction of new structures and artificial sanding of the beaches. | **0,6** | **1,1** | **160** |
| **Eforie Centru**<br>Current structures repairs and less frequent sanding | **1.6** | **1.2** | **13** |
| **Eforie Sud**<br>Rehabilitation, improvement of current structures, construction of new ones and artificial sanding of the beach | **3.7** | **23.2** | **399** |


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| **Costineşti Sud**<br>Rehabilitation, improvement of current structures, construction of new ones and artificial sanding of the beach | **2.0** | **1.5** | **13** |
| **Olimp**<br>Repairs, rehabilitation and new structures with larger bays and artificial sanding of the beach | **1.5** | **2.0** | **89** |
| **Neptun Landing stage**<br>Repairs of the current structure, new and rehabilitated offshore dam and 50 m width beach | **1.7** | **5.7** | **121** |
| **Jupiter – Venus**<br>Disposal of certain structures in order to enlarge the bays. Rehabilitation, improvement of current structures, construction of new ones and artificial sanding of the beach. | **2.7** | **5.7** | **50%** |
| **Saturn**<br>Repairs/rehabilitation/improvement of current structures, construction of new ones with larger bays and artificial sanding works of 40 m width beach. | **0.8** | **3.4** | **448** |
| **Mangalia**<br>Disposal of certain structures in order to enlarge the bays. Rehabilitation, improvement of current structures, construction of new ones and artificial sanding of the 40 m width beach. | **1.8** | **9.3** | **530** |
| **2 Mai**<br>Rehabilitation of current structures and intermittent protection of front base within this sector | **2.0** | **1.0** | **17** |
| **Total** | **31.4** | **57.2** | |

## Monitoring of beach line for structural long term proposed measures

| Location/ Option | Length of coast protected against erosion (km) | Created beach surface (ha) | % development of beach surface (%) |
|---|---|---|---|
| **Sulina dam**<br>Periodical transfer of sediments from the northern part of Sulina Channel structures or resulted from its maintenance dredging and location within Sulina subsectors and/or "Canal cu Sondă" | **The values will be defined by the study proposed as a non-structural average term measure** | | |
| **Periboina sluice**<br>Input management | **1.0** | **1.0** | **10** |



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| **Edighiol sluice**<br>Rehabilitation of dyke and input management | **0.4** | **0.4** | **0.4** |
| **Mangalia Pond**<br>Artificial sanding of the beach up to 60 m width | **1.7** | **1.7** | **1.7** |
| **Costineşti (2nd stage)**<br>Repairs and rehabilitation of current structures, construction of new ones and artificial sanding of beaches | **2.0** | **2.0** | **2.0** |
| **Total** | **5.1** | **5.1** | **5.1** |

**The Master Plan holder undertakes to provide the results related to the environmental effects monitoring programme to the environmental notice issuing authority, up to the end of first semester afferent to the year prior to monitoring (art. 27, paragraph (3) of GD 1076/2004). The monitoring programme results will be annually forwarded to the Ministry of Environment and Forests, during the Master Plan implementation.**

**The environmental notice was issued taking into account:**

The environmental assessment procedure has been performed according to the provisions of GD no. 1076 of July 8th 2004 and the environmental considerations have been included within the plan.

All proceedings mentioned within GD no. 1076/2004 have been performed for audience information and participation.

- **Without intervention or "Zero Option"** – where no investment regarding the current coastal protection structures is included, allowing a natural coastal evolution without any control. Where the shoreline is actually protected, through the "Zero Option", the current protection structures will not be maintained, but let to degrade continuously until total disappearance. It means that the areas nearby the shore will be submitted hereafter to the high risk of erosion and/or coastal floods.
- **Controlled disposal, "Disposal" or "protection line disposal"** – by means of which the shoreline is let to displace back in a controlled manner in order to manage the coastal erosion risk. This strategic option takes into account a new protection line construction and the adoption of measures regarding the erosion process limitation.
- **Line maintenance** – by means of which the erosion risk is controlled by current structures maintenance and rehabilitation or by building new ones.


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- **Current protection line movement**– where the erosion risk is controlled by new protection structures construction as a support to the current ones in order to recover the sea land.

Following the analysis of the presented variants effects, the optimum alternative has been established for each area, in order to fulfil the relevant environmental objectives and to serve the purpose the Master Plan has been elaborated for.

**The public debate** has taken place on March 21st 2012, 1 p.m., at IBIS Hotel - "Decebal & Traian" Conference Hall, in Constanţa, 39-41 Mircea cel Bătrân Street, Constanţa County.

Public authorities representatives participated at the meeting, being invited by the holder, in compliance with the provisions of art. 31, paragraph (3) of GD 1076/2004.

The authorities and other stakeholders' opinions have been taken into account regarding the optimum Master Plan variant selection. The latter has been posted both on holder's website, respectively ANAR – Dobrogea Water Branch and on MMP's website, during the entire procedure (April 26th 2011 – May 30th 2012). During the environmental assessment procedure, no remarks/commentaries have been presented by the audience in question.

**The cross-border procedure** has been performed in compliance with the provisions of Directive CE 42/2001 regarding the effects of certain environmental plans and programmes, transcribed through GD 1076/2004 and the Protocol regarding the environmental strategic assessment (SEA Protocol), ratified by Romania through Law 349/2009.

With reference to the location of projects proposed within the Master Plan herein, according to art. 10, paragraph 1 of Law 349/2009 and art. 7 of Directive CE 42/2001, the Romanian state is bound to present the possibly affected countries a notification prior to the plan ratification.

Within the cross-border procedure implemented by the Ministry of Environment and Forests (MMP), the following activities have been performed:

- MMP notified and provided Bulgaria the draft Master Plan, the environmental report and the appropriate assessment study.
- Bulgaria announced its participation within the environmental assessment procedure implemented by Romania, posting the received documents on its own website, in order to consult with the audience, for a 30 days period (February 13th 2012 – March 13th 2012).
- Following the documentation analysis, Bulgaria provided the Romanian state a


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request for information regarding:

- The possible risk assessment with reference to the bathing water quality and Bulgarian coastal area conditions (in the northern part of Bulgaria) determined by the works proposed within the south of Mangalia locality, possible morphological modifications of the Bulgarian coast, coastal marine current changes.
- Identification of proper measures in order to prevent and limit the impact and possible risks regarding the Bulgarian coastal area.

- Romania provided Bulgaria the requested information, announcing the fact that it shall inform Bulgaria with reference to the monitoring results performed by the Master Plan holder.

**The holder shall submit for adoption the Master Plan "Romanian Coastal Area Protection and Rehabilitation" approved through the environmental approval herein and any amendment to it shall be previously notified to the Ministry of Environment and Forests.**

Should no amendments to the approval herein occur, the latter is valid starting with its issuing date, during the entire availability of the Master Plan.

Non-compliance of the conditions mentioned within the approval herein represents an offence, being punished according to the legal provisions in force.

**CHIEF EXECUTIVE OFFICER**
**Octavian PĂTRAŞCU**

**Approved,**
**Head of Department**
**Daniela PINETA**

Drawn up,
Camelia Hintea


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