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

No.: 1491 /RP/ 16-05-2012

Ref: Regarding the SEA procedure for the Romanian Masterplan "Protection and Reabilitation of the Romanian coastal zone"

Dear Ms. Karadjova,

Please receive from us the attached *Summary note on potential impact of works proposed in the Master Plan, on the Northern area of the Bulgarian Black Sea coastal zone and on associated issues raised by the Bulgarian Ministry of Environment and Waters in their letter no. 99 - 00 - 81 of 3/4/12.* This note provides the answer of the holder of the Master-plan which is Dobrogea Litoral Basin Water Administration, under the "Romanian Waters" National Administration.

From the documentation submitted to you on 10.01.2012, consisting of the draft Master-plan, the environmental report and the appropriate assessment study prepared for this Master-plan, and taking into consideration the answer provided by the holder of the Master-plan, we would like to highlight the following:

- As results from the Coastal Zone Diagnostics Report (MP Appendix B CZD_FINAL) the changes along the coastline monitored to the north of Mangalia Port, whether caused by works covered by the Masterplan or by natural factors, are not anticipated to influence the conditions of the coast to the South of the Port – down to Vama Veche and further south into Bulgarian territory.
- The Romanian littoral is devided by Constanta Port, Cape Tuzla and Mangalia Port and due to this fact projects that will take place in the middle area of the coast (Mamaia South, Tomis North, Tomis Centre and Eforie North) can not have any impact on Bulgarian territorial waters.
- For the area South of the Mangalia Port, the proposed works in the Master-plan are minimal and for these works you will be duly notified at project level, according to the requirements of the Espoo Convention.

Ms. Nona KARADJOVA
Minister
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- In order for you to decide whether you will participate or not in the transboundary EIA procedure for the projects in Mamaia South, Tomis North, Tomis Centre, Eforie North, you will receive our notification, as you requested, even if we trust that no effect is likely to be expected on the Bulgarian Black Sea coast.

- The monitoring measures proposed in the SEA Report for the Master-plan will be made available to the Bulgarian environmental authorities as a result of the information received from „Romanian Waters" National Administration, yearly, by the Ministry of Environment and Forests, in accordance with the legislation in force.

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

Yours sincerely,

Rovana PLUMB

MINISTER

Master Plan "Protection and rehabilitation of the coastal zone"

Summary note on potential impact of works proposed in the Master Plan on the Northern area of the Bulgarian Black Sea coastal zone and on associated issues raised by the Bulgarian Ministry of Environment and Waters in their letter no. 99 - 00 - 81 of 3/4/12

The need for the Master Plan

In the past, development on the coast of Romania has taken place with less environmental considerations and less in-depth analysis of coastal processes and the impact of projects than is considered appropriate today. Projects have been developed on an individual basis without the benefit of a strategic assessment of interactions with other projects or a formalised understanding of how projects in one location might impact in the long term on the coast elsewhere.

The purpose of the new Master Plan is to promote a high level, more strategic integrated approach to managing the erosion problem across the whole coast of Romania and to establish a sustainable vision for the long term (30 years) management of coastal erosion risks.

Master Plan supporting documents

There are several studies prepared in support of the Master Plan. A full list of these studies and a diagram showing how they inform the Master Plan sections is included in section 1.1.6 of the Master Plan and shown below for easy reference (Figure 1).

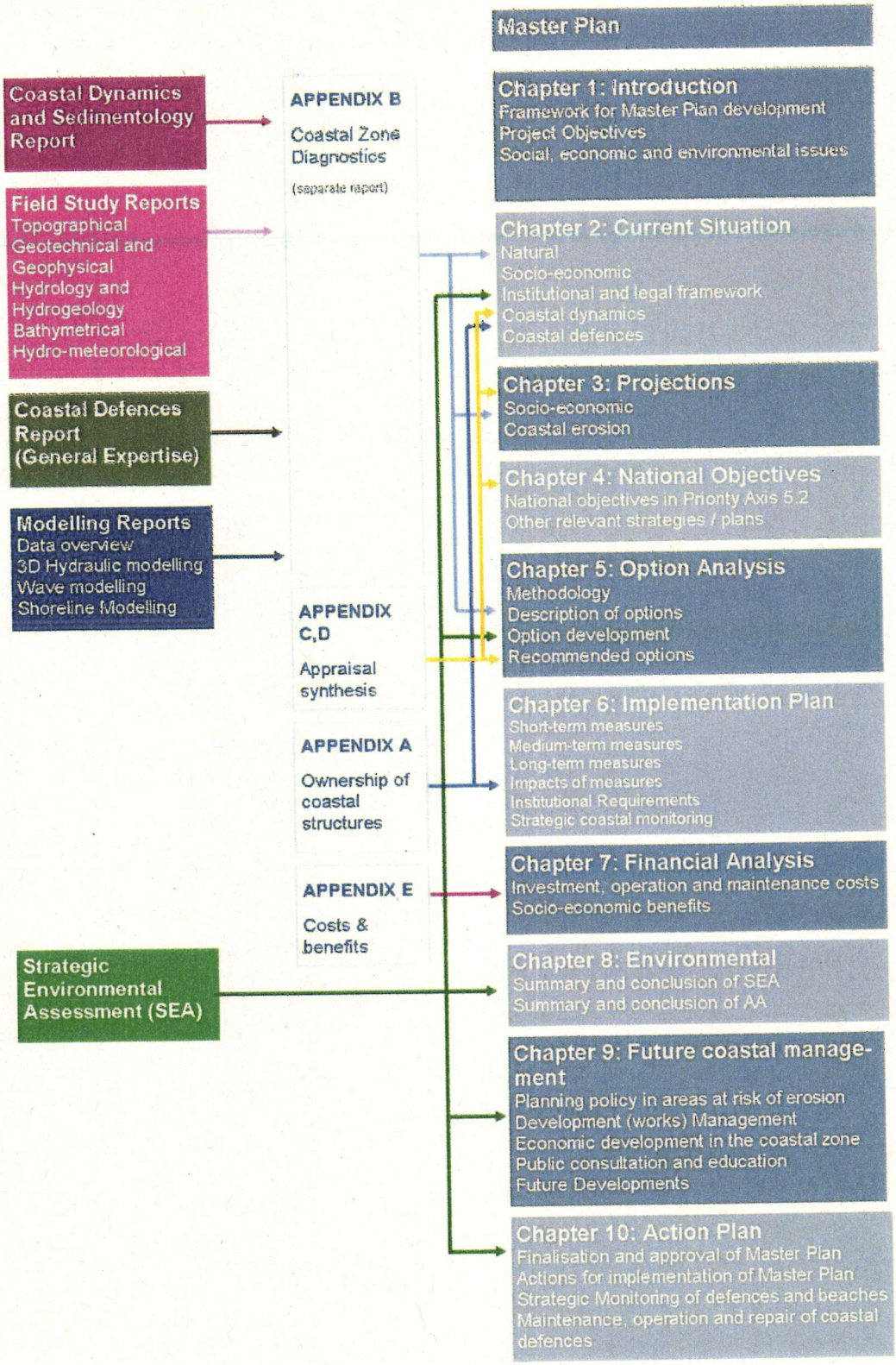

Figure 1 Master Plan 'flow diagram'

Predictions of shoreline change and modelling of sediment transport

The development of the Master Plan has been supported by a detailed analysis of mapping and data relating to shoreline change. This has included assessing past and ongoing coastal change related to the existing coastal defences and the impact of the major port breakwaters. The purpose of this assessment was to understand the causes and effects of past interventions and ongoing natural evolution in order to be able to make predictions for the future.

Modelling, to support the Master Plan development, has included studies of littoral sediment transport and shoreline change using 17 years of data from a calibrated wave model. The general sediment transport direction on the beaches is directed towards the south, apart from in areas sheltered from north easterly waves or areas where there is more exposure to waves from the south or south east, such as in the shelter of the major port breakwaters at Midia and Constanta, or in the shelter of natural headlands, such as at Cape Tuzla (Figure 2). As detailed below, the modelling reports show that any proposed works can have significant effects only in the sediment cells they are part of and that proposed works north of Mangalia Port cannot have a significant impact on the water quality and geomorphology of the Bulgarian coast.

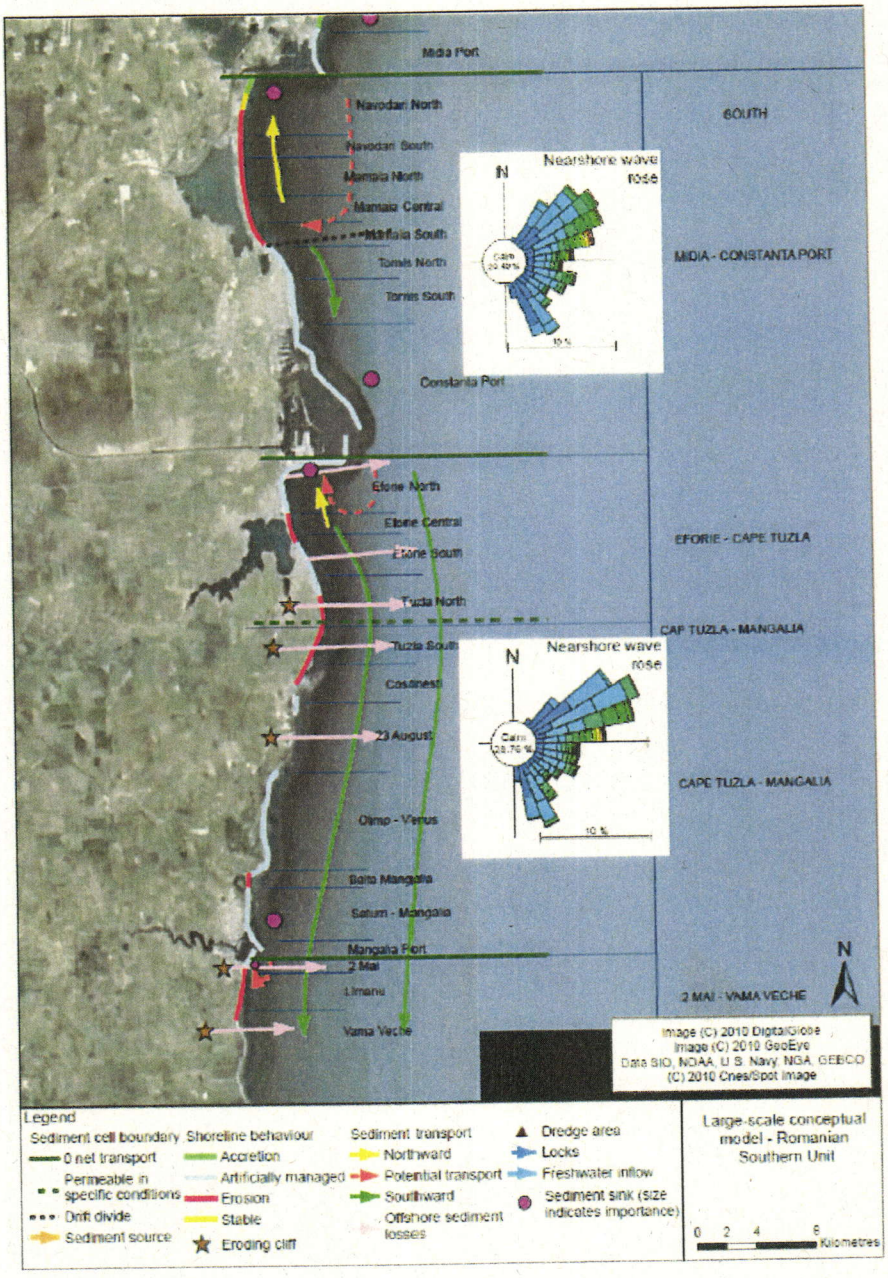

Figure 2 Conceptual understanding of coastal processes south of Midia Port

Modelling of flows and sediment transport in relation to wind and density-driven flows in the Black Sea has shown that currents (see Figures 3 and 4) are typically too low to re-suspend sediment. The exception to this is in the nearshore zone, where currents are stronger due to wave action. Currents respond to winds and density flows from the Danube and, overall, the model shows that the typical direction of current flow is parallel to the coast and towards the south.

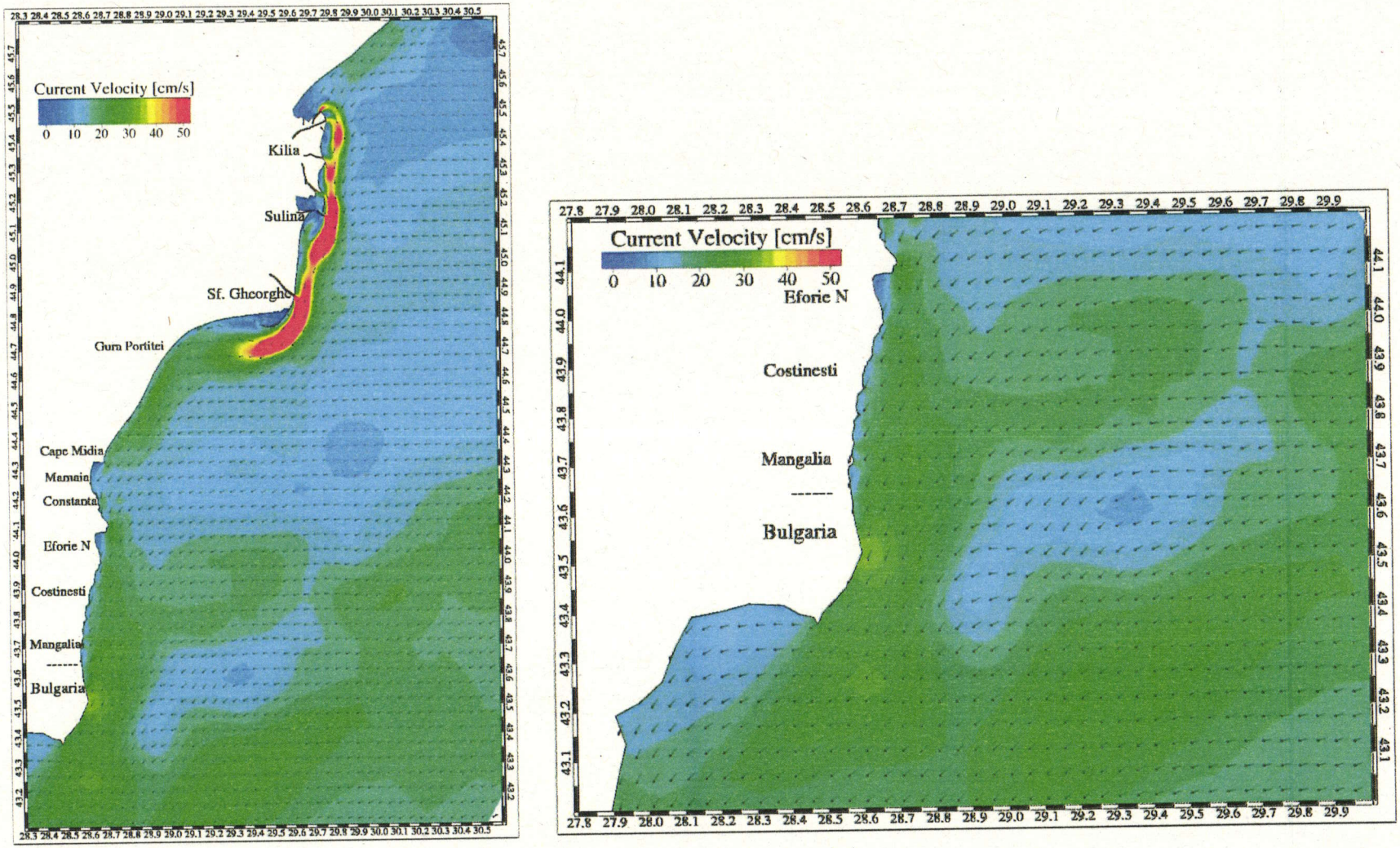

Figure 3 Surface currents along the Romanian-Bulgarian coast, in terms of wind speed NE 5 m/s, cold season

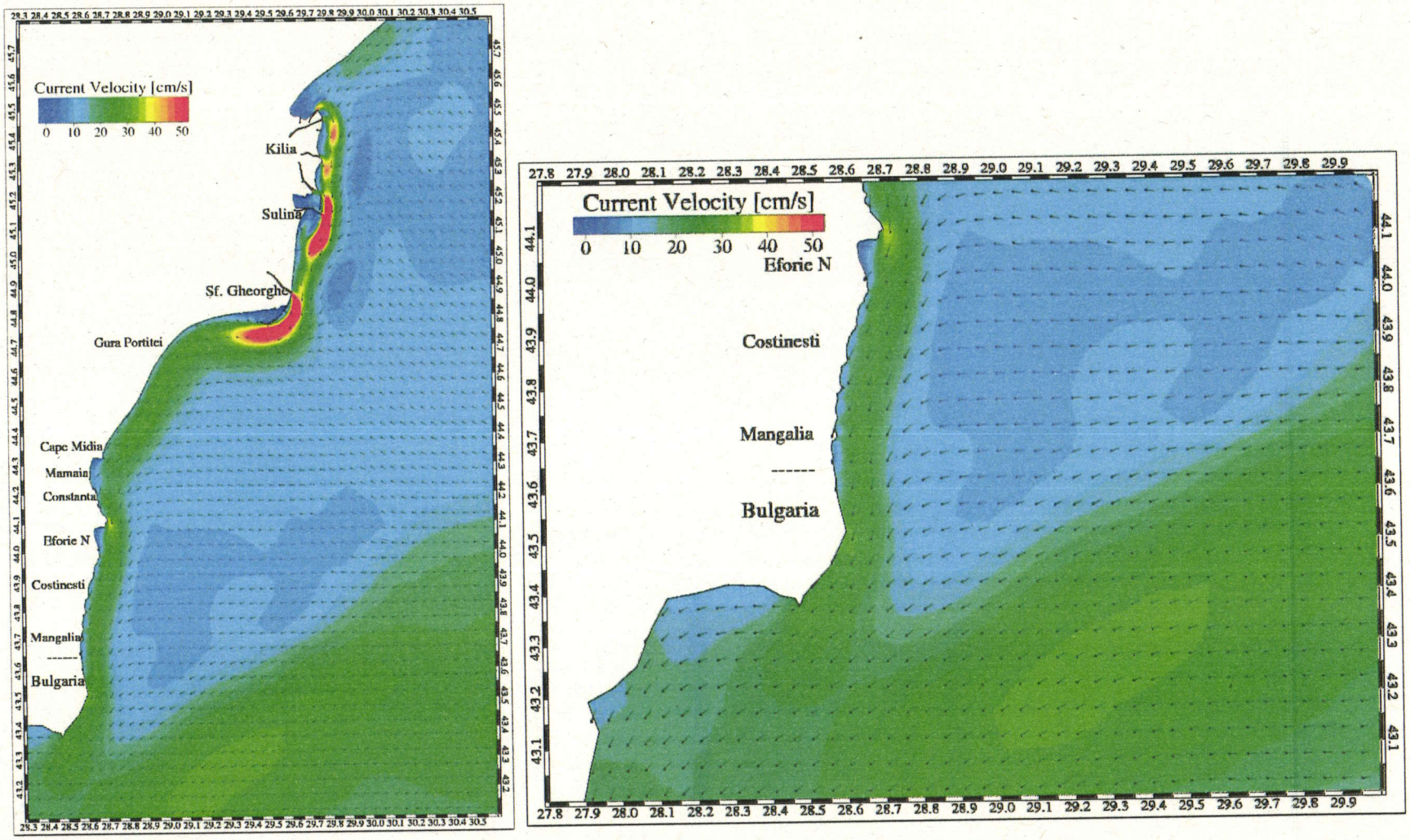

Figure 4 Surface currents along the Romanian-Bulgarian coast, in terms of wind speed NE 5 m/s, warm season

Littoral drift divides on the coast of Romania

Although sediment is generally transported towards the south along the Romanian coast, it is not a continuous system as there are a number of littoral divides. The coast can be essentially split into two major littoral units which are largely independent. The northern unit extending down to Midia Port is characterised by the lowland area of the Danube Delta. The southern unit is characterised by cliffs with intermittent barrier beaches fronting littoral lakes.

The modelling, together with analysis of past shoreline change and analysis of sediment sampling data, has identified the locations of natural and constructed divisions of the littoral system that effectively compartmentalise the coast into what are known as sediment cells (Figure 5). Significant impact from coastal defence schemes/projects proposed in the Master Plan are only likely within the coastal sediment cell where the works occur.

Figure 5 Division of the Southern Unit from Constanta Port to Vama Veche into coastal sedimentary cells: Eforie – Cape Tuzla (S3), Cape Tuzla – Mangalia (S4) and 2Mai – Vama Veche (S5)

The main littoral drift divides are located at the major ports of Midia, Constanta and Mangalia and at natural headlands such as at Tuzla (Figure 5) all of which form effective barriers to littoral movement. The operation and maintenance of the port breakwaters at Midia, Constanta and Mangalia are not part of the Master Plan, but the Master Plan assumes that these structures will remain in place for at least the 30 year lifetime of the Master Plan.

The Master Plan shows that sediment from the beaches of the Danube Delta is not transported to the south of Midia Port, therefore changes to the sediment regime in the northern unit will not have any impact at all on the southern unit (Figure 6). It can be concluded therefore that intervention to manage erosion risk in the northern unit cannot have any impact on sediment transport or coastal evolution in the Bulgarian territory.

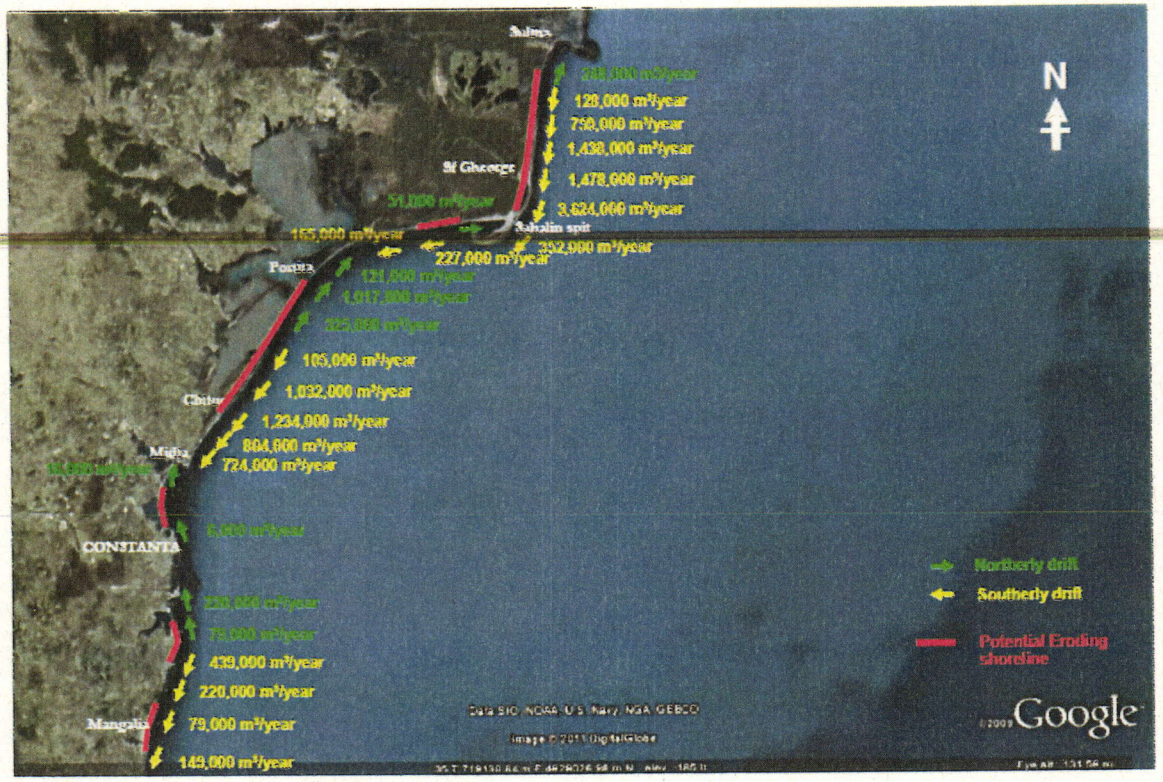

Figure 6 Net potential longshore sediment transport rates and directions on the Romania coast predicted using LITDRIFT

Potential impact of works in the southern unit

The southern major littoral unit is divided into sediment cells by the major port breakwaters at Constanta and Mangalia and the natural headland at Cape Tuzla (Figure 5). As noted previously the port breakwaters are not directly covered by the Master Plan but in terms of their influence, it has been assumed that these structures will remain in place for at least the 30 year lifetime of the Plan.

Constanta Port forms a major littoral divide, effectively blocking littoral drift, so there will not be any impact on the Bulgarian coast from schemes north of Constanta Port, including the short-term projects at Mamaia South, Tomis North and the two at Tomis Centre.

For works proposed between Constanta Port and Tuzla headland, including the short-term project at Eforie North, there is again, no chance of impact on the Bulgarian coast due to the littoral divides at Cape Tuzla and at Mangalia Port.

Likewise the proposed works in the sediment cell between Tuzla and Mangalia cannot have any significant impact on the shoreline south of Mangalia as coarse sediment is unable to be transported past the Mangalia breakwaters to feed the shoreline to the south.

However, in this sector, there could be temporary impact during construction that would have to be considered in more detail, and for which mitigation plans would be developed, at feasibility and EIA assessment stages. Temporary impact could include suspended sediment plumes from run-off from beach nourishment activities. As there are sensitive marine environmental sites in the Romanian territory offshore from 2 Mai to Vama Veche, it will be essential that the design and implementation of works proposed in the Master Plan avoids adverse impact on the Romanian sites downdrift. Therefore it is extremely unlikely that, following such scrutiny at feasibility stage, any temporary impact of works north of Mangalia would remain to detrimentally affect bathing waters, the condition of the coastal zone or coastal morphology and current (streams) within Bulgarian territorial limits downdrift of these sensitive marine sites.

In respect of longer-term impact on the coarse sediment transport on the beaches, it is considered that works to the north of Mangalia are very unlikely to have any impact on the coastal cell south of Mangalia due to the long breakwaters at Mangalia which extend seawards past the closure depth for sediment transport in the littoral zone – closure depth is the water depth beyond which there is no significant littoral transport of beach material.

Impact of works to the south of Mangalia

Works to the south of Mangalia could have potential impact on other areas within the sediment cell, and so will need further careful assessment at feasibility and EIA stage. The sediment cell extends from Mangalia past the national border at Vama Veche to Cape Shabla in Bulgaria and therefore potential impact of works in this area will be considered in detail during the EIA procedure, at project level.

In consideration of the sensitive marine sites offshore from the 2 Mai to Vama Veche coast, the works proposed in the Master Plan are minimal. The works proposed south of Mangalia consist of cliff toe protection at selected locations on the 2 Mai frontage (including in front of the military base) and refurbishment of the existing fisherman's breakwater at 2 Mai. No significant beach recharge has been considered, in order to avoid potential adverse impact on the sensitive marine areas offshore during recharge operations. It must be mentioned that in earlier versions of the Master Plan, beach recharge options have been considered south of Mangalia but these options have been discarded specifically to reduce any risks associated with such works being in close proximity to the Bulgarian border.

Natural sediment supply to the beaches in the Mangalia to Cape Shabla sediment cell is largely from shells and from limestone fragments from abrasion of the limestone platform where it outcrops. Although there is active erosion of the simple cliffs at Limanu and elsewhere, the cliffs are composed of loess which breaks down to fine sediment which is not retained on the beaches and will be dispersed offshore during storms. Localised cliff toe protection works, as proposed around 2 Mai, would therefore not have a significant effect on the sediment budget and the works proposed will have no impact on erosion or bathing water quality further south.

It can be concluded that even though the sediment cell extends into Bulgarian territory, the works that have been proposed will avoid adverse environmental impact and have limited impact on the sediment regime. Any temporary impact of such works on sites to the south within Bulgarian territory will depend on how such works are implemented. The magnitude of any impact, both long term and during construction would be considered in more detail before or at feasibility and EIA assessment stages and appropriate mitigation plans developed.

Environmental Monitoring

As indicated earlier in this note, changes along the coastline monitored to the north of Mangalia Port, whether caused by works covered by the Plan or by natural factors, are not anticipated to influence the conditions to the south of the Mangalia Port – down to Vama Veche and further south into Bulgarian territory. That being the case, we would only anticipate the Bulgarian authorities being interested in data pertaining to areas south of Mangalia. The information will be gathered by the Romanian authorities in accordance with the legislation in force and the monitoring recommendations in the Master Plan. It is anticipated that this information will be made available to the Bulgarian authorities as agreed by the two parties.

Effects of the short term projects in the area of Mamaia South, Tomis North, Tomis Centre and Eforie North

As explained in earlier sections of this note, modelling and the evaluation of shoreline changes demonstrate that the Romanian littoral divides at Constanta Port, Cape Tuzla and Mangalia Port. Based on the above mentioned assessment and on the documentation already sent by the Romanian environmental authorities to Republic of Bulgaria we trust that the short-term projects cannot have any impact on Bulgarian territorial waters.