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## Appendices

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2. Project information
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6. Letters of different organisations in Cartagena, indicating the current status of the Sewerage Masterplan, Plans of the Municipality concerning spatial planning of certain areas near the Ciénaga and the current status of the Vía Perimetral

## 1. INTRODUCTION

This advice follows from the review advice of the Environmental Impact Statement (EIS) Tidal Inlet, Cartagena, Colombia, published by the Commission for Environmental Impact Assessment (EIA) on 27 June 1996. In that review advice the Commission for EIA recommended to present additional information to the existing EIS. In September 1996 Haskoning<sup>1]</sup> presented the additional information, entitled: 'Estudio Impacto Ambiental Suplemento – Informe' and Estudio Impacto Ambiental Suplemento – Anexos' (appendix 3).

In a letter dated 8 October 1996 (see appendix 1), the Netherlands Minister for Development Cooperation requested the Commission for EIA (referred to as 'the Commission') to formulate a supplementary review advice. Like the review advice of 27 June 1996, that has been prepared by a working group of independent members of the Commission<sup>2]</sup> in close collaboration with a working group composed by experts of CARDIQUE<sup>3]</sup>, the supplementary review advice again is the result of a joint effort. In order to achieve maximum benefits from this collaboration, it was deemed desirable to create a setting enabling continuation of the joint review by CARDIQUE and the Commission. Therefore, CARDIQUE was invited to participate in the meetings in the Netherlands of the working group of the Commission. These meetings took place in November 1996 (appendix 4).

In this advice the Commission presents its final conclusions concerning the review of the EIS and the additional information. These conclusions are fully endorsed by the experts of CARDIQUE.

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- 1 An ORET grant (Ontwikkelingsrelevante Export Transacties/Export Transactions relevant for Development), requested by the Dutch consulting engineers and architects company (HASKONING), has been approved to support an export transaction. The export transaction involves the design of a so called stabilized tidal inlet in Cartagena, Colombia, and the supervision during its construction. The possibility exists that the execution of works for the tidal inlet will be supported by an ORET grant as well, in case a Dutch contractor obtains the contract for these works. The ORET-desk (DEW/BL) has requested HASKONING to prepare an Environmental Impact Statement (EIS) in support of a decision on the execution of the works. In Colombia, the construction of the stabilized tidal inlet will be the responsibility of the Ministry of Transport, division river infrastructure.
  - 2 The composition of the working group is presented in appendix 2 together with project information.
  - 3 Corporación autónoma Regional del Canal del Dique (CARDIQUE), is the local competent authority which acts on behalf of the Colombian Ministry of Environment. CARDIQUE has to decide upon the environmental licence which is required for this project.

## 2. **OVERALL JUDGEMENT**

The Commission is of the opinion that **the information contained in the EIS and the Supplements is sufficient and in general correct** to weigh the environmental interest in the decision-making process.

Nevertheless, the Commission wishes to make some observations regarding the above mentioned additional information.

## 3. **REVIEW OF THE ADDITIONAL INFORMATION**

### 3.1 Main points of the review of the additional information to the EIS

The additional information has been reviewed according to the comments on shortcomings made by the Commission in its review advice dated 27 June 1996 (chapter 2).

#### 3.1.1 **General**

In the review findings the Commission stated that relevant statements needed more quantitative support. The Commission has the opinion that the additional information ('Estudio Impacto Ambiental Suplemento – Anexos') meets the recommendation of the Commission to provide an adequate summary of quantitative results of the study.

#### 3.1.2 **Problem analysis**

The criteria 'decrease of diseases related to the contamination of the lagoon' and 'the planned functions for the lagoon and its surroundings' have not been dealt with in the additional information. As the overall success of the project is ideally measured against the effects on these criteria as well, the Commission considers it important that the contractor/owner as well as the competent authorities, pay attention towards collecting comparative statistical health data and developing (urban) planning schemes.

If data are not available and cannot be produced, the criteria cannot be used and should be disregarded for the time being.

#### 3.1.3 **Project setting**

An overview of plans which have a relation with the tidal inlet project has been provided, as recommended by the Commission. However, the description of the plans has been restricted to the question whether, and to what extent, the plans will be influenced by the construction of the tidal inlet. The question in reverse has not been answered, for example does the possibility exist that certain developments in the airport Rafael Nuñez will influence the shape of the lagoon and the functioning of the tidal inlet? The same approach is applicable to the other plans and projects.

The Commission considers it important that it will be made clear to the competent authorities concerned, that the construction of the tidal inlet will impose certain limitations on existing plans and programmes. Therefore, in the decisions on existing plans and programmes certain preconditions

are required that warrant the well-functioning of the tidal inlet<sup>4</sup>]. Appendix 6 provides information on the current status of some relevant plans as available with CARDIQUE.

Concerning the relationship between the Masterplan (Plan Maestro de Alcantarillado) and the tidal inlet project, page 8 of the additional information provides conditions for treatment efficiency. The Commission has the opinion that the formulation of conditions a priori is not possible nor desirable: only scenarios and simulation-calculations can indicate which discharge is acceptable for the lagoon and which requirements therefore can or should be imposed on the effluent quality and to which extent pollution by diffuse sources should be eliminated.

The Commission advises to monitor this data in order to obtain an optimal tuning of the design of the tidal inlet with the ongoing developments in the Sewerage Masterplanning.

#### 3.1.4 **Alternatives and comparison of alternatives**

According to table 4.2 in the additional information, alternative 3a shows better environmental results (+) as compared to alternative 2a (0) and 1a (--). However, it is not clear in which way the risk for eutrophication and the impacts on the marine environment have been weighed (see also 3.1.7).

The alternative 'land reclamation at the south side of the lagoon in combination with the tidal inlet' has not been elaborated. The additional information gives four reasons for not taking this alternative into consideration; the high costs (as statement, without economic considerations), the location (close to the suburban areas), possible risk of development of illegal settlements from these suburban areas and the negative 'general public opinion'. The Commission is aware of the difficulty of elaborating this alternative in the absence of urban spatial planning, but regrets that the positive aspects of this alternative have not been mentioned.

#### 3.1.5 **Incompleteness of the scope of the project**

The flushing of the Canal Juan Angola has been considered in the additional information. However, the Commission is of the opinion that proper functioning of this connection is still doubtful under present conditions. The flushing of the Canal would be an additional advantage of the project but is no precondition for the proper functioning of the tidal inlet. Therefore, this gap in information is of minor importance.

Figures 13 and 14 in the Anexos show the effects on the 'lagos y caños'. These effects should be summarized in the Plan of Operation.

#### 3.1.6 **Modelling**

The additional information provides an extensive and well-documented approach of the modelling.

#### 3.1.7 **Impacts**

##### ***Impact of eutrophication***

The possible risks of eutrophication in the near future have been recognized in the additional information. However, it was felt that no system-approach has been adopted, addressing:

- ! which types of algae occur, which changes are expected;
- ! which factor is or will be limiting for high algae-concentrations, when and where;

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4 For example: in case future urban spatial plans would consider reclamation of the southern part of the lagoon, the design and the location of the tidal inlet would not be very appropriate. Therefore, the existing contours of the lagoon have to be fixed, also to avoid the continuation of the reclamation as a result of the present and expected pressure of the population towards the borders of the Ciénaga.

! starting from a worst-case scenario: what will be the magnitude of the limiting factor necessary to cause a problem? If this is known, goals can be set which might be even more strict than the standards used initially<sup>5</sup>].

An effort is made by Haskoning to provide additional information indicating hypotheses concerning the possible developments regarding eutrophication and the character and significance of impacts resulting from it (see appendix 5).

Although all requested aspects have been dealt with now, the Commission would like to underline to all parties concerned, that the uncertainty about the risk of eutrophication should be taken into account in decision-making. The Commission expects however, that the advantages of the tidal inlet outweigh the risk of eutrophication.

Another remark regarding the impact of eutrophication originates from page 21 of the additional information. The conclusion drawn here is that project objectives cannot be realized without simultaneous implementation of the Masterplan and the tidal inlet. This means that only a joint implementation will be feasible and that a decision on funding for construction of the tidal inlet at this moment implicates the necessity for the execution of the Masterplan at short term.

#### ***Impact on the marine environment***

The impacts on the marine environment in the current situation have been described in the additional information (Anexos A, diagram 7.3). However, the situation that arises just after the tidal inlet becomes operational (the initial flushing of the heavily polluted lagoon) has not been indicated. The supplement also fails to provide figures on the impacts of the project on the marine environment in the future.

The Commission recommends to provide this information in the Plan of Operation. To mitigate the impacts of the initial flushing, the Plan of Operation should consider for example the weather conditions (wind), currents and season of touristic activities. The Plan of Operation also should describe mitigation measures for impacts on the marine environment at long term, in case these are expected to be significant.

#### ***Impacts of the construction of breakwaters of the tidal inlet***

Possibly 'La Boquilla' will be closed by the sediment as indicated. The inlet/ outlet works will affect the functioning of the natural in/outlet. The impact of the closure has not been described. The Commission advises to address this impact in the Plan of Operation, including mitigation measures (for example dredging) if deemed necessary. In addition, the Commission would like to emphasize that the construction of breakwaters along the coast line at the south side of the tidal inlet is a precondition for the implementation of the project.

#### ***Tidal impacts inside the lagoon***

A cross-section of the southern part of the lagoon, indicating the 'reclaimed' area in relation to the (tidal) water level variations, has not been presented. The Commission recommends to provide this cross-section (in the Plan of Public Information), as it will give a good presentation of the tidal impacts on the suburban areas at the south side of the lagoon to reassure the inhabitants.

### 3.2 Specific remark

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5 Besides that, the standards used in the additional information are based on the classification system as used in the Netherlands which can only serve as a reference. The analysis should be adapted to tropical circumstances.

In chapter 3 of its review advice, the Commission presented observations on shortcomings of the EIS, which are less essential for decision-making on funding of the project. However, information on these subjects has to become available before and during construction activities.

No information has been provided on these subjects until now, but in the supplement is indicated in which document this information will become available. The Commission would like to repeat its suggestion to incorporate a number of preconditions on the timely availability of the information in the environmental licence to be prepared.