Netherlands Commission for Environmental Assessment

# Review of EIA report for dredging of el Varadero access canal to Cartagena Bay

NCEA OS25 - O96/ISBN 978-90-421-3740-0

## Colombia


8 March 2013

Netherlands Commission for
Environmental Assessment

**your reference**

**your letter**

Señor Ministro
Juan Manuel Uribe
Ministerio de Ambiente y Desarrollo Sostenible
Calle 37 # 8-40
Bogotá
Colombia

**our reference**
OS25 -O96/Sh/vf
**enquiries to**
I.A. Steinhauer
**direct phone number**
+31(0)30 234 76 54

*Date:* *8 March 2013*
*Subject:* *Advisory Review of EIA report on El Varadero Canal, Cartagena, Colombia*

Dear Minister Uribe,

In December 2012, you requested the Netherlands Ambassador in Bogotá to assist you with an independent quality review of an EIA report for the El Varadero project. The Ambassador has reacted positively to your request and contacted the Netherlands Commission for Environmental Assessment to perform this review.

It is my pleasure to submit herewith the Advisory Review of this EIA report, prepared by a working group of the Commission. I would like to draw your attention to the following:

First of all, I would like to express my appreciation for the excellent organisation of the visit and the personal interest demonstrated by your Vice Minister, Mrs. Adriana Soto and staff of your Ministry. Also the interest of the Vice Minister of Infrastructure of the Ministry of Transport and some of his staff during the visit is highly appreciated. The visit has allowed the Commission to receive a wealth of information in a short period of time.

As has already been presented during the de-briefing at the last day of the Commission's visit in Cartagena, the Commission has some overall remarks.

It is very much appreciated that during our visit a great interest was demonstrated in the project and the EIA report by many stakeholders. This has also led to closer involvement of relevant parties in the process and offered an opportunity to exchange information and experiences and share concerns and opinions.

The attitude of the proponent is open and transparent, showing the wish to design and execute the project in such a way that it is environmentally and socially sound.

The information for decision making on the environmental license is currently scattered, consisting of the EIA report of December 2011, additional information to the EIA report which became available in January 2013 and within a few months, new information will

VISITING ADDRESS
Arthur van Schendelstraat 800
Utrecht
The Netherlands

POSTAL ADDRESS
P.O. Box 2345
NL - 3500 GH Utrecht
The Netherlands

T +31 (0)30 - 234 76 60
F +31 (0)30 - 230 43 82
E mer@eia.nl
W www.eia.nl

become available on sediment quality and relocation of corals. In addition, the Commission has identified some essential shortcomings. Once all this additional information is available, I would recommend to bring everything together into one final EIA report, which is then complete for decision making. This will also enhance transparency and accountability to other public and agency stakeholders interested in or affected by the project. This final EIA report should also contain a well balanced summary of the information, with focus on the relevant issues for decision making and easily understandable for non-experts.

The Commission summarizes the main review findings in Chapter 2 of this advice. These findings overlap partly with the concerns of your own Ministry. This information is considered essential for good quality EIA to be of use for effective and well balanced decision making. My advice is to provide additional information on these specific issues in a supplement to the EIA report before decision-making on license granting. Other information gaps and shortcomings observed by the Commission can be addressed after decision making on the license, either before or during project implementation or as part of the monitoring plan.

For your convenience, I summarize these main shortcomings as follows:

- The compliance of the proposed activity with the legislation and regulations is not clear, nor its embedding in relevant policies, plans and programs;
- It is unclear whether or not proponent and competent authority have the same perception of the magnitude of the dredging operations;
- The results of a recent sediment sampling campaign, and the possible consequences of the findings on water quality in and around the project area have to be incorporated in the EIA report;
- The same holds true for the findings of the study that is currently ongoing with regard to coral relocation. Also, compensation for the mangrove areas and sea grass beds that will be affected by the project need further specification;
- The hydraulic modelling exercise is very important in coming to conclusions on expected changes in the physical system as a result of project implementation. As such a thorough, independent, quality check of this part of the EIA report is advised.
- A wealth of information has been gathered and a lot of effort has been made to understand the behaviour of the coastal/lagunal system under changing conditions. The description of the present situation is complete and well illustrated with graphs, tables and photo's. However, the EIA report is not presented in such a way that it facilitates decision making on the environmental license; the information is partly too detailed, sometimes irrelevant and there is insufficient emphasis on the real significant impacts.
- The monitoring programme is insufficiently detailed and should not only address the project implementation phase, but also the project's operational phase.
- The process of stakeholder involvement is not yet completed, nor have all the relevant stakeholders been involved.

Finally, I would like to remark that we have intended to review all information according to the Terms of Reference and Colombian EIA legislation. However, we have also taken international best practice on EIA into account. This is the reason for some of our remarks on project alternatives, although we are aware that elaboration of alternatives is not required for this project according to your regulations. Nevertheless, during our visit, the issue of alternatives was raised several times. Therefore we think that a clear and transparent summary of the

findings of a comparison of alternatives, clearly stating whether and how environmental and social considerations played a role in the selection, will greatly add to better understanding amongst relevant stakeholders and justification for the project.

I would appreciate to be kept informed on how you will use this advice and wish to express our availability to continue co-operation with your Ministry in the next stages of this EIA for the El Varadero project. This could for example be through reviewing the additional information on the coral relocation once this becomes available and if you would consider this to be useful for further decision making.

Yours sincerely,

Rudy Rabbinge

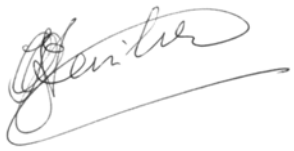
Chairman of the NCEA Working Group EIA for the El Varadero project, Cartagena

CC.:
Vice Minister of Infrastructure of Ministry of Transport
Mr. Javier Hernández López

Royal Netherlands Embassy Bogota
Mr. Robert van Embden
Mr. Maurice Valentijn van Beers
Ms. Martha Arévalo

# Review of EIA report for dredging of el Varadero access canal to Cartagena Bay in Colombia

Advisory review submitted to the Ministry of Environment and Sustainable Development in Colombia, by a working group of the Netherlands Commission for Environmental Assessment in the Netherlands.

| the technical secretary | the chairman |
| --- | --- |
|  |  |
| I.A. Steinhauer | Prof.dr.ir. R. Rabbinge |

CONTENTS



## Appendices

# 1. Introduction

## 1.1 Background

The Bay of Cartagena, Colombia, plays an important role in the regional and national economy, especially through the development potential of its port. To accommodate expected growth in numbers and sizes of ships, a new access canal (2 km long, 200 m wide and 19,5 m. depth) is being planned (see annex 5 for map). The existing entrance canal has reached its maximum limits and depths. The dredged materials will be deposited in two sites at sea and will partly be used for replenishment of beaches as well. The project initiator is the Corporación Promotora Canal del Varadero (PROCANAL). PROCANAL has prepared an EIA report for this project (December 2011) and contracted HIDROCARIBE LTDA. for its elaboration.

## 1.2 Request of the Colombian Ministry for Environment and Sustainable Development and involvement of NCEA

In January 2013, the Netherlands Commission for Environmental Assessment (NCEA) received a request from the Colombian Minister of Environment and Sustainable Development through a letter dated 7 December 2012 to the Netherlands Ambassador (see appendix 1), to perform an independent quality review of the EIA report for the above mentioned project.
The Ambassador has reacted positively to this request and contacted NCEA[1] (see appendix 2a and 2b).
The expected project impacts, as mentioned in the letter, can be summarized as follows:

- removal of vegetation (including mangroves)
- removal and transplantation of coral reefs
- sediment dispersion in the Cartagena Bay, potentially affecting marine ecosystems, tourism and fisheries
- change of coastal geomorphology

The National Agency of Environmental Licenses (ANLA) and the Direction of Coastal and Marine Issues and Aquatic Resources (DAMCRA) have serious concerns and have specified these in the letter of the Environment Minister.

The Ministry of Environment and Sustainable Development, through ANLA, is the National Competent Authority for Environment and has a formal role in the granting of the environmental license, which is required for this project. The EIA report forms the basis for the environmental license.

[1] *In the past there have been NCEA activities in Colombia. From 1999 till 2001 the NCEA reviewed and monitored an EIA report in the Cartagena region, working together with a regional branch of the Environment Ministry, CARDIQUE. On SEA, the NCEA has had an Memorandum of Understanding (MOU, 2007-2011) with the Environment Ministry, with a number of activities. In 2010, the NCEA issued advice at the request of the Netherlands Embassy related to an EIA report for the Bahía de Malaga and contributed to a seminar in Bogotá on EIA and SEA in the mining sector.*

## 1.3 Expert working group and scoping mission

This advice is prepared by a working group of experts of the NCEA. The group represents the NCEA and comprises expertise in the following disciplines: aquatic ecosystems (especially coral reefs), marine biology, ecosystem services, water resources management, coastal zone management and EIA and SEA application. The composition of the working group can be found in appendix 3.

For the preparation of this advice, the working group visited Colombia from 17 to 23 February 2013. During this period, the working group visited the project site and met with stakeholders in Bogotá and Cartagena. The programme of the visit is outlined in appendix 4. During its stay in Colombia, the NCEA was accompanied by professionals representing the Ministry of Environment and Sustainable Development. Their names are also listed in appendix 3.

The NCEA wants to emphasize that it has no opinion on the feasibility or acceptability of the El Varadero project. The objective of the advice of the NCEA is to guarantee that all essential environmental and socio-economic information has been provided for sound and well balanced decision-making and through a transparent and inclusive process.

## 1.4 Approach taken by the NCEA

In the EIA report of December 2011, the proponent indicates that use has been made of Colombian sector guidelines for EIA for dredging projects for deepening of access channels to sea ports (PU-TER-1-01) of 2006. The NCEA took these, and the Decree 2820/2010, which regulates the process of environmental licensing in Colombia, as a point of departure. NCEA also used its own practical international experience in relation to reviewing EIA for comparable dredging projects[2].

Just a few days prior to its visit to Colombia, the NCEA un-officially received another set of information on the project, which revealed that there did exist project and site specific guidelines/Terms of Reference, issued by ANLA in January 2012, just after the EIA report had been submitted. Appendix 6 lists the documents that the NCEA received:

- with the letter from the Environment Minister requesting independent advice;
- just prior to its visit to Colombia;
- and during and after the visit.

The aim of this review is quality assurance. On the one hand, the NCEA checked whether the EIA report contains the information it should, in line with the regulations and the (sector) guidelines. At the same time, NCEA verified whether the EIA report contains adequate, accurate and sufficient information (on environmental and socio-economic impacts and on options/alternatives to deal with these) that is needed for decision making on this project. In the case of serious shortcomings, the consequences for decision making are assessed and

[2] *- Terms of Reference for, and review of, EIAs for Dredging and Land Reclamation projects in Vilufushi and Viligili, Maldives, 2006 and 2006*
*- Review of an EIA for dredging from the Amaluza reservoir in the Paute river in Ecuador, 2007*

recommendations will be given for supplementary information needed to address these shortcomings.

# 2. Main review findings

The NCEA is of the opinion that the EIA report is in general well written. Information is provided in understandable and accessible language and presented in a consistent and clear manner. The EIA report is based on clearly described methodological steps and a significant amount of information has been gathered and is accompanied by maps and figures, which increases comprehensiveness.

The NCEA nevertheless concludes that the EIA report shows essential shortcomings and recommends to provide additional information on these specific issues in a supplement to the EIA report **before** decision-making on license granting. These shortcomings are:

**Regarding the project itself**

- An assessment of compatibility with, and compliance of, the intended activity with national, regional and local policies, plans, programs and legislative and regulatory considerations is lacking. Particularly developments in the area, such as future expected use of the Cartagena port, including possible induced development and associated impacts in future are not assessed. If such compatibility and compliance cannot be achieved, the supplement to the EIA report should elaborate how potentially conflicting objectives will be addressed;
- Assurance should be given that the perception of size and magnitude of the works as perceived by ANLA and other stakeholders, does not deviate from the actual plans.

**Regarding sediment quality**

- Gaps in information still exist regarding the outcome of the latest sediment sampling and analysis program. When the outcome of this program gives reason to expect negative impacts of the dredging on water quality (heavy metals, algal blooms, anoxic conditions) mitigating measures have to be defined in the supplementary information to the EIA report;
- Insight in the quality of the sediment is also relevant to assess possible consequences of re-suspension and dispersal of the sediments on the water quality, and ultimately the biotic environment, in and near the dump sites.

**Regarding coral reefs, mangroves and sea grass beds**

- The description of the relocation methodology of corals is not clear in the EIA report regarding e.g. description of dislodgement of colonies, handling, transport and reattachment. A critical issue is the destination area(s) of the corals, including the criteria for selection of such areas. These issues will be addressed in a study that is currently being undertaken and should be added as supplementary information to the EIA report, to be able to better detail the aims and methodology with regards to compensation measures of biotic communities;
- As to the destination area of the mangroves, the rationale for Caño Lequerica is not explained, nor whether other sites have been considered, e.g. areas closer to the Abanico isle;

- The EIA report does not clarify whether compensation for the impacted sea grass area is considered and/or legally required, and how such compensation would be done.

**Regarding modeling of erosion/sedimentation, waves and currents and salinity**

- Actual and future (with project) erosion and sedimentation patterns in the project area, and covering the whole Cartagena Bay, are not established;
- Ship movement induced waves and current have not been modeled nor their impacts assessed on coastal stability of e.g. Baru island, nearby coral reefs and the forts of San Fernando and San José;
- Residence times of the water and salinity distribution in the whole Cartagena Bay, with and without the project, have not been assessed;
- Given the importance of the modeling exercise in coming to conclusions on expected changes in the physical system as a result of project implementation (overall the changes are predicted to be limited in magnitude, or only affect a small area) and consequently the required mitigating measures, a thorough independent quality check of this part of the EIA report is advised. CIOH in Cartagena could probably do this and conclusions could be presented in the supplementary information to the EIA report.

**Regarding presentation of base line information and impact assessment**

- It is in particular the baseline information in Chapter 3 of the EIA report that fails to provide focus for decision making. The supplementary information to the EIA report should add a summary on baseline information relevant to the key issues for impact assessment;
- The impact assessment in Chapter 5 of the EIA report does not add to understanding how the coastal-bay system reacts to project induced changes as impacts are described in an excessively general way. Supplementary information to the EIA report should concentrate on a small number of significant impacts that really matter and more attention should be given to the cumulative nature of many of the impacts, as the system is already stressed.

**Regarding monitoring**

- The proposed monitoring for the abiotic environment is insufficient to assess whether or not adverse changes occur and whether or not additional mitigating measures are required and should therefore be extended and further detailed;
- A monitoring program, to monitor the water quality in and around the dump sites during project execution is lacking;
- The monitoring program for the biotic environment must include monitoring of at least the success rate of coral relocation, the success rate of transplantation of other reef organisms and the success rate of compensation measures of mangroves and sea grass beds;
- Above parameters should be monitored during protect execution, but also in the project's operational phase, at least until a new equilibrium has been reached;
- The EIA report does not indicate who is responsible for checking whether monitoring indeed takes place and is implemented according to the monitoring plan. In general, more details are required on the (government) institutions responsible for the monitoring, the way implementation is funded, as well as locations, frequency and duration of the monitoring.

**Regarding stakeholder involvement**

- The EIA report fails to provide arguments why certain specific stakeholders were considered and other stakeholders not.

Chapters 3-7 discuss these issues in more detail. This information is **a necessary condition** for good quality EIA to be of use for effective and well balanced decision making.
In these chapters, the NCEA also mentions other issues – although not essential for decision making at this stage – that are not yet sufficiently dealt with in the EIA report. These information gaps and shortcomings can be addressed **after** decision making on the license, either before or during project implementation or as part of the monitoring plan.

# 3. Project justification and project objectives

## 3.1 General

The site specific Terms of Reference of ANLA (January 2012), mention in Chapter 1 some issues related to objectives (1.2), antecedents (1.3) and scope (1.4) which triggered the following observations by the NCEA on project objectives and justification of the project, legal and institutional framework and public participation.

## 3.2 Project objectives and justification

The EIA report contains a clear definition of the short term objectives of the proposed activity, however, the reasons for the project are not very well explained. Nor is it clear what the long term objectives are: the EIA only briefly mentions a possible amplification of the canal to 400 m or more in future. The NCEA is aware of the fact that some of this information is available (e.g. presented during the visit to Colombia) but it is not given in the EIA report.

> **Recommendation:** The EIA report should provide more details on how the project fits in overall developments such as:
> - Developments in the area (and country as a whole), such as future expected use of the Cartagena port (is there a master-plan or similar available?), including possible induced development and associated impacts in future;
> - Developments in the international shipping industry (fleet development);
> - How the expected economic benefits as a result of the project relate to or impact the ecological, cultural and maritime potential of the Cartagena Bay.

In the EIA report, the problems which are expected to be solved by realization of the project are stated in relatively clear terms and the underlying causes are analyzed. However, reasons for the selection of the current dredging project as the best solution out of several project alternatives are lacking in the EIA report.

**Recommendation:** The EIA report should describe[3] which project alternatives have been considered (such as Cartagena in comparison to other ports, and the Varadero Canal in comparison to Bocagrande and Bocachica) and give arguments why these alternative locations were not selected. The EIA report should contain a clear and transparent summary of the findings of this comparison of alternatives, clearly stating whether and how environmental and social considerations played a role in the selection.

The project activities are restricted to dredging and sediment disposal. However, the EIA report should also clearly address preconditions for successful implementation of the project, and indicate required follow up and/or parallel activities to fully contribute to the solution of the problems as identified in the EIA report. Currently, the EIA report does not describe these related requirements and developments, e.g.:

- The extension of quays, jetties and berths etc.;
- Additional dredging activities of the existing port;
- Construction of new access roads, etc.;
- Required systems for signaling, pilotage, tugboats, etc;
- Plan for ship movements;
- Increased risks of ship collisions, required emergency plans.

**Recommendation:** Although it is clear that these preconditions and parallel/follow-up activities are beyond the responsibility of this project, the EIA report should describe these in order to have an overview of what else is needed to improve the long terms sustainability of the project interventions.

## 3.3 Legislative and regulatory considerations and policies, plans and programs

Chapter 2 of the EIA report gives an overview of relevant (inter) national norms and standards and laws and regulations, but lacks a description of environmental and socio-economic preconditions or restrictions these may put on the project.

Some examples of potential restrictions that the NCEA came across during its visit were related to the following regulations and plans:

- the requirements related to the 'Area de Manejo especial de la Bahía de Cartagena y del Canal de Dique'[4];
- an overlap with the boundaries of the Marine Protected Area of the Corales del Rosario and San Bernardo and its implications for the project;
- paragraph 1 of article 207 of the Law nr. 1450 of 2011, which mentions that coral reefs and mangrove areas can not be affected by certain activities;

[3] *The NCEA is aware that the description of alternatives is not specifically required according to the ToR. However, it would greatly contribute to the better clarify the justification of the project.*

[4] *As mentioned in letter of 19 august 2011, of Director of eco-systems to Director of licenses, permits and environmental procedures of MAVDT.*

- lack of clarity about whether or not (small scale) fisheries are allowed in the Bahía de Cartagena;
- implications of the Plan de Turismo Naútico de Colombia (under development).

> **Recommendation:** The EIA report should assess compatibility with, and compliance of, the intended activity with national, regional and local policies, plans an programs and legislative and regulatory considerations. If such compatibility and compliance cannot be achieved, the EIA report should elaborate how potentially conflicting objectives will be addressed. The NCEA has noted that e.g. the issue of overlap with the Marine Protected Area has recently been addressed in an informal report by Hidrocaribe. However, this information should be made available to the relevant authorities for consideration.

## 3.4 Institutional framework and procedural requirements

During its visit, the NCEA noted that not all institutes and/or organizations involved and/or interested in the project had seen all the documents elaborated by the proponent. There are some parties that did not know the project at all, such as the Ministry of Culture and the Tourist Corporation of Cartagena, just to mention a few. Moreover, the process of commenting on (interim versions of) the EIA report (through the 'conceptos') is not very clear to an outsider, for example:

- Who is asked to comment when and for what reason?;
- How are the comments grouped and dealt with?;
- Do the ones that elaborated the 'conceptos' get feed-back on their observations and who is responsible for such feed-back?

In the opinion of the NCEA, it was remarkable that during the visit DAMCRA seemed to be in the lead (e.g. through the organization of the program, chairing meetings etc), where formally it would be more logical for ANLA to play this role. The reason for this was not clear to the NCEA and might also be confusing for other stakeholders involved.

> **Recommendation:** Although not strictly required by the site specific ToR, international best practice has shown that the quality and transparency of the EIA report greatly enhances by a clear description of the institutional framework and procedural requirements related to EIA in Colombia, including competent (licensing) authorities directly involved in the execution of the project and in the control and maintenance of the executed works.

## 3.5 Public and agency involvement

The site specific ToR in Chapter 1.4 state that the EIA report must contain a description of the stakeholders in the project and how their opinions and interests influenced the contents of the EIA report. These stakeholders include:

- National, regional and local government agencies with formal responsibilities in environment and social welfare;

- National and international organizations (including NGOs) involved in the implementation of the project and follow up activities;
- Local fishermen possibly affected by dredging works;
- Project beneficiaries, etc.

As part of the EIA, indeed a very extensive 'consulta previa' (required for indigenous, afro-descendent and gypsy communities) took place in the second half of 2011. The process seems to be well documented and a pre-agreement was reached with these communities on compensation of project impacts.

> **Recommendation:** The EIA report should indicate which stakeholders were involved and provide arguments why other stakeholders were not considered.

The NCEA has the impression that the public participation process has not yet been fully developed because:

- The communication between parties involved could be better. Not all parties are aware of the present status of the project and EIA. There is confusion about the ToR and EIA report status (additional info was presently just recently, January 2013) and new information is still being brought in on e.g. heavy metals and coral reef transplantation. The distribution of the roles of the various participants in the process is not always clear to everybody;
- This additional information (now available and being developed) should be discussed again with the relevant communities, as this may lead to an adjustment of the pre-agreement of 2011. Moreover, in a discussion with representatives of the communities during NCEA's visit, they indicated that they were willing to play a more pro-active role in contributing with local knowledge in the EIA process and in environmental and social monitoring of project implementation.

> **Recommendation:** The NCEA recommends to develop a clear and transparent public and agency participation strategy on the additional information that became and will become available after the EIA report of December 2011. Such a strategy also should indicate how stakeholders will be involved in project execution and its environmental management plan and follow-up.

# 4. Description of the project and alternatives

## 4.1 General

The EIA report gives an overview of project activities, namely:

- Dredging of approximately 7.125.500 m³ of mud, sand and eroded rock;
- Dumping the dredged materials at two disposal sites at sea;
- Re-use of materials to protect the Abanico island (4.2 ha, 100.000 m3) and to nourish some beaches in Bocachica with sand (60.000 m3). The latter is combined with the construction of 4 breakwaters;
- Relocation of selected coral reef components such as coral colonies and compensation for a mangrove area including transplantation of mangrove vegetation;
- Relocation of a sub-marine cable;
- Restoration and abandonment of temporary structures and equipment used;
- Environmental monitoring.

The project execution is expected to take about 17 months.

It is noted that ANLA in its letter to the Sociedad Promotora Canal de El Varadero, dated January 23, 2012, accompanying the project specific ToR for the EIA, assumes a length of the canal of 1500 m, a width of 200 m and a depth of 18 m. The assumed amount of material to be dredged is 4.000.000 m³. Yet other dimensions are given in the background report on the protection of the Abanico island and the beaches of Bocachica. In this report ('Estudio técnico de ingeniería hidráulica y costera: alternativas de disposición del material de dragado para la regeneración de playas y obras marítimas, Hidrocaribe, January 2013) the depth of the canal is given as 19 m, whereas the total amount of material to be dredged is given as 6.060.650 m³. Even the EIA report itself is not completely consistent. On page 38, a total amount of material to be dredged of 7.125.500 m³ is mentioned, whereas the next page, page 39 mentions 6.6 million m³.

The same inconsistency in figures is also noted concerning the amounts of sand needed to protect the Abanico island and to nourish the beaches in Bocachica. In the EIA report amounts of 100.000 and 60.000 m³ respectively are given, while the above mentioned study states amounts of 25.000 m³ (for the preferred alternative in Bocachica) and 68.600 m³ for the preferred Abanico island protection alternative.

> **Recommendations:** The NCEA recommends to check information related to the size and magnitude of the operation as given in de EIA report, in the various background reports and in presentations on the project and to make this information consistent. It is also recommended to make sure that the perception of size and magnitude of the works as perceived by ANLA, does not deviate from the actual plans.

## 4.2 Dredging

**Proposed activity**

The EIA report describes the following aspects of the dredging activities:

- Location and size of dredging area on a map;
- Justification for the selection of this location/alignment;
- Quantity and quality of dredged material (including place, date and depth of sampling and results of the laboratory analysis);
- Method and equipment used for dredging, including the arguments which form the basis for choosing this technical alternative;
- Duration of the dredging activity;
- Labor requirements;
- Emergency plan in case of accidents, collisions, fires, explosions or spills (diesel, grease, oil).

The NCEA considers the description of the dredging activities too limited. A general indication of the equipment to be used is given (backhoe for the fine sediments, suction dredging for the coarser, deeper located sediments), but it is not yet firmly decided how the dredging will be done. The report contains statements like 'the removal of the material **may be** done with a backhoe' and 'the **option is still open** to use backhoe dredging for the whole project'. Also a clear description of how the dredging will be organised, including a description of positioning system, depth control system and operational control procedures (full continuous or daylight operation schedule) and transport of the dredged material to the dump sites ((floating) pipeline, barges (size, number of movements required, etc)) is not given.

> **Recommendation:** The description of the dredging operations in the EIA report has to be adapted. The final choice of equipment has to be given and more details on the mode of operation have to be provided. This is particularly valid for the way in which sediments will be transported to the dump sites.

The information on the quality of the material to be dredged as presented in the EIA report is considered insufficient. The number of samples taken is limited and only samples of the top-layer are taken. This gives insufficient information to be able to assess the likelihood of remobilization of heavy metals, organic material and nutrients in the water column during dredging operations. As such, possible toxic impacts on biota, and the possible occurrence of algal blooms and anaerobic conditions can not be predicted. However, NCEA is aware of the fact that recently an extended sediment sampling and analysis programme has been carried out. The results will be available in Colombia by now.

What is missing in the description of the dredging activities is a programme to monitor water quality during the dredging operation. Such a programme should be focussed on monitoring suspended solids, heavy metals, nutrients and organic carbon in the water. This monitoring is needed to be able to take appropriate mitigating measures when threshold values are surpassed. Possible mitigating measures to avoid harmful conditions related to water quality are insufficiently described in Chapter 8 of the EIA report, the Monitoring Plan.

**Recommendation:** The NCEA recommends to incorporate the outcome of the latest sediment sampling and analysis program in the EIA report. When the outcome of this program gives reason to expect negative impacts on water quality (heavy metals, algal blooms, anoxic conditions) mitigating measures have to be defined. A monitoring program has to be developed to monitor water quality at and near the site during dredging.

**Dredging alternatives**

The EIA report considers alternative locations of the canal. Criteria for selection are given and a preferred option, the alignment that causes least damage to the coral reefs, is selected. Regarding ways of dredging, also 2 alternatives are given, by backhoe or by suction dredging, as well as their criteria for selection. Basically, fine sediments in shallow locations will be dredged by backhoe, coarser sediments, to be dredged in deeper water, by suction dredger. The EIA report does not yet give a final choice.
Alternatives related to the way the sediments will be transported to the dump sites are not discussed in the report, nor are considerations given regarding the time of the year/day (tidal cycle) that operations should be suspended. The latter deserves some thought since current prevailing during part of the year or the tidal cycle might transport sediments and contaminants to valuable and sensitive ecosystems, notably coral reefs.

**Recommendations:** The EIA should more clearly explain the selected way in which the dredging will be carried out (see also the section on proposed activity above). Alternative ways for transport of the sediments to the dump sites need to be presented, as well as their criteria for selection, and the way in which environmental and socio-economic considerations are taken into account in the selection of alternatives.
Finally, varying conditions over the year/day may render certain periods of the year or day less suitable for dredging/dredge disposal operations, since prevailing currents are towards precious ecosystems, that may then be affected by sediments or contaminants. This topic merits some attention in the EIA report.

## 4.3 Dumping and sand nourishment

**Proposed activity**

The EIA report describes:

- Location of the two dumping sites at sea;
- Location and design of two sand nourishment areas (on a map), namely beaches at Bocachica and Abanico island;
- Composition and amount of the material to be dumped/nourished at each site;
- Distance of transport;
- Description of safety measures during this phase.

The NCEA considers the description of the dumping and sand nourishment locations and process too limited. Part of these shortcomings are related to shortcomings in the description of the dredging activities as discussed above: ways of transport of the sediments to the dump sites are not discussed, the quality of the sediments to be dumped is insufficiently known

and clear criteria for the choice of the locations are not given. Considerations on variations in current direction and velocity over the day/year, rendering certain periods of the day or year unsuitable for dumping, are not given. Furthermore, a description of the ecological value of the sediment receiving seabed is lacking, as is a description of a monitoring program, to monitor the water quality in and around the dump sites during project execution.

On the other hand, the NCEA is of the opinion that the reasoning to dump the fine, more contaminated sediments, that disperse easier, further at sea and to store cleaner, coarser sediments that disperse less at a location near the coast from where they may be reclaimed for beneficial use at a later point in time, is valid. Also the idea to use part of the dredged material to stop/prevent further erosion of the Abanico island and the beaches in Bocachica is supported in general terms.

> **Recommendations:** More insight has to be provided in the quality of the sediment dumped at each of the sites and the possible consequences of re-suspention of the sediments on the water quality, and ultimately the biotic environment, in and near the dump sites.
> Considerations on variations in current direction and velocity over the day/year, rendering certain periods of the day or year unsuitable for dumping, should be given and taken into account when planning the dumping schedule.
> The ecological value of the sediment receiving seabed should be described.
> A monitoring program, to monitor the water quality in and around the dump sites during project execution has to be designed.

**Alternatives for dumping and beach nourishment**

The EIA report does not investigate possibilities for alternative:

- locations of dumping sites and nourishment areas. The 2 dumping sites and nourishment locations at Bocachica and around Abanico are given without a clear justification for the choice. The criterion used for the selection of the preferred alternatives was the coastal development, based on analysis of waves and currents, but other criteria such as environmental and social considerations were not taken into account. The choice for Abanico however seems plausible as this will compensate for the removal of part of the island. The choice for Bocachica is not really clear, as also in other areas there are problems with coastal erosion;
- alternative ways for transport of sediments from the dredge site to the dump locations are not given.

The 'Estudio técnico de ingeniería hidráulica y costera: alternativas de disposición del material de dragado para la regeneración de playas y obras marítimas, Hidrocaribe, January 2013' on the other hand, discusses in detail the final design of the sand nourishment at Bocachica and near Abanico island. For each site, a number of alternative approaches for the ways of sand nourishment is given and discussed.

> **Recommendation:** The EIA report should contain a discussion on alternative locations for sediment dumping and sand nourishment, as well as on the way in which the sediments will be transported from the dredge site to the dump/nourishment sites. Criteria taken into account in the selection the alternatives must be made explicit.

## 4.4 Mitigating measures

Chapter 7 of the EIA report, Environmental management plan, gives a number of forms ('fichas') that describe the proposed mitigating and compensating measures, for both the abiotic and the biotic environment, as well as for the socio economic aspects.

**Abiotic environment**

The measures to mitigate the impacts on the abiotic environment are subdivided in:

- measures to prevent impacts of the dredging operation;
- measures to prevent impacts of the sediment dumping;
- measures to prevent impacts on the water quality;
- measures to prevent impacts on air quality.

On the forms, some specific measures are proposed, e.g. the use of silt screens to prevent the dispersion of re-suspended sediments. However, most of the proposed measures are stated in very general terms or only the objective of the measure is given, without detailing the actual measure itself. For example under the Sediment management, the following is stated: 'Large scale dispersion of dredged material will be controlled and avoided in such a way that there will be no effects on the coastal zone, especially in the dump sites, and the waters and ecosystems adjacent to the project area. This will involve bathymetric surveys prior to commencement of the dredging activities, in order to keep a statistical record of the volumes generated' (EIA report Chapter 7, page 13). This does not actually say what needs to be done to prevent the dispersal of re-suspended sediments. Cost estimates provided are very general and lack detail. Other forms, for example those dealing with water and air quality are much more complete in the sense that actual measures to mitigate impacts are given.

> **Recommendation:** The description of mitigating measures, aimed at preventing negative impacts on the abiotic environment needs to be improved. Not only the objectives should be stated but also the actual measures to be taken. This is particularly the case for measures aiming to reduce the impacts of the dredging operation and the sediment dumping.

**Biotic environment**

The measures to mitigate the impacts on the biotic environment are described in forms B1, B2 and B3 of Chapter 7 of the EIA report:

- B1 is about the removal of the mangrove area in Abanico island and the management of associated flora and fauna;
- B2 is about protection and conservation of mangrove habitat;
- B3 contains a conservation program for endangered species, especially fish.

B1 is in fact not a mitigating measure, but part of the project activity, since dredging cannot be executed without removal of part of Abanico Island. B2 and B3 describe some additional protection and conservation measures, mainly consisting of capacity building activities to project personnel and fishing communities, which however do not seem directly related to impacts caused by the project.

**Socio-economic aspects**

The mitigation measures of socio-economic character are described in Chapter 7, S1-S5. These mainly deal with capacity building of project staff and local communities on the project and its Environmental management plan, local labour contracting and community activities. The program S5 on archaeological investigation already seems to be completed, and no archaeological remains were found.

## 4.5 Compensating measures

**Abiotic environment**

The EIA report gives two measures to compensate for the loss of part of the Abanico island: sand nourishment around Abanico island and on the beaches of Bocachica. Apparently these measures have been requested for by local communities. The sand nourishment around Abanico island will stop/slow down the on-going erosion of the island and as such compensates for the loss of part of the island. The sand nourishment at Bocachica will stop/slow down the on-going beach erosion in this area. This beach erosion is not induced by activities of the project and as such this measure is not really a compensating measure but more an additional beneficial component of the project. The design of both measures is well detailed in the 'Estudio técnico de ingeniería hidráulica y costera: alternativas de disposición del material de dragado para la regeneración de playas y obras marítimas', Hidrocaribe, January 2013. Details on the way in which the measures will be executed (how is the sand transported?, will bulldozers be necessary? etc.) is largely missing. Cost estimates are given in the above mentioned study.

> **Recommendation:** The EIA report should give more details on the way in which the sand nourishment compensation projects at Bocachica and Abanico island will be executed, to be able to assess whether this is done according to best practice and to judge whether any adverse impact could occur and how these should be mitigated.

**Biotic environment**

Chapter 7 of the EIA report gives three compensation measures for the removal of mangrove vegetation (B4), compensation for coral reef removal and associated fish fauna through nurseries (B5) and relocation of the coral reefs (B6). B6 is in fact to be considered as a project activity. A period of 3 months has been estimated for this, prior to the start of the dredging activity.

Concerning the compensation for the mangrove area (B4), the proposed target area is el Caño Lequerica del Canal del Dique. It is stated that this area is only indicative and that the final destination area will be decided in coordination with CARDIQUE.

The EIA report indicates that an area of sea grass will be affected by the dredging activity. It is not clear whether there will be compensation for this.

**Recommendation:** As to the destination area of the mangroves, the rationale for Caño Lequerica should be explained, including whether other sites have been considered, e.g. areas closer to the Abanico isle.
The EIA report should clarify whether compensation for the impacted sea grass area is considered and/or legally required, and how this compensation will be done.

Concerning the coral reef removal and compensation for this (B5 and B6), the NCEA has the following observations:

- The NCEA notes that there is an inconsistency in data regarding the percentage of existing coral cover. The numbers mentioned in the EIA report differ from the percentages mentioned in the various presentations held during NCEAs visit and are different again in the additional information to the EIA report. This poses doubts on the reliability of the information, which is very relevant related to this critical issue of coral reef damage and compensation;
- The description of the relocation methodology is not clear in the EIA report and needs to be improved, e.g. description of dislodgement of colonies, handling, transport and re-attachment should be more precise. Aims should be clearly stated: which species and which size classes are included in relocation efforts. Is translocation limited to hard coral (Scleractinia) or are soft corals (Gorgonacea) included? Handling should be given for different size classes, colony shapes and possibly species. During NCEA's visit it became clear that a start has been made with a detailed study on this issue (by Aqua y Tierra consultants). The results are expected to be ready within 2-3 months.

The NCEA also notes, that it will probably not be possible to transplant all coral colonies. The size of large coral colonies (e.g. Montastraea faveolata) prohibits relocation. In practice colonies larger than 2 m cannot be removed and transported. This is a reality and should be clearly stated. The size limit will be lower for more fragile species such as Agaricia spp.
The aim of building artificial reefs is not clear. In addition it is not clear where these will be located? What size and depth? How will maintenance take place? The use of Reef Balls should be reconsidered, as results with such structures have been disappointing.
B5 indicates that reef fragments are to be used as compensation measure. The origin of fragments and handling are however unclear. Are all coral species used? Where are these nurseries to be located and at which depths? Fish larvae and invertebrates are collected and reared. Where and how? Culturing techniques are not available for many species and for others culturing and rearing will be extremely difficult. What groups and species of invertebrates? This whole section needs reconsideration.

**Recommendation:** The above mentioned issues need to be addressed in the ongoing study that is currently being undertaken by Aqua y Tierra consultants and should be added to the EIA report. A critical issue is the destination area(s) of the corals (including the criteria for selection of such areas). B6 mentions areas close to the area of origin. There are also studies known of relocation of corals to the Islas del Rosario area[5]. However, if this alternative area would be considered, it should also be assessed what could be the impacts of this activity in a relatively pristine and undisturbed area.

**Socio economic aspects**

Chapter 7 of the EIA report elaborates in its form S6 the social compensation, which is in fact the 100% implementation of the agreement that has been reached with the 5 communities in the Cartagena Bay. Currently, this agreement is still in the pre-agreement stage and will need to be adapted as new information comes available (see also par. 3.2 of this advice). The compensation package consists of, amongst others, providing new fishing boats and gear and projects related to food security and alternative livelihoods. The costs for this part of the Environmental management plan are the highest in comparison to the other components. It is difficult to judge for the NCEA whether the compensation measures and associated costs are adequate and realistic (change of traditional fishing methods required).

**Recommendation:** AUNAP, the fisheries authority, has already indicated that it would like to have an active role in the assessment of the quality of social plan for the about 2000 traditional fishers in Cartagena Bay. This involvement of AUNAP in the assessment of the social plan is supported by the NCEA.

[5] *It is recommended to make use of recent literature, e.g. Edwards, A.J. (ed.) (2010). Reef Rehabilitation Manual. Coral Reef Targeted Research & Capacity Building for Management Program: St Lucia, Australia. ii + 166 pp., with 10 case studies.*

# 5. Description of the natural and socio-economic environment and its autonomous development

## 5.1 General

The description of the baseline in Chapter 3 (abiotic, biotic and socio-economic) is kind of overwhelming in quantity. It contains data, that are not directly relevant for the project (e.g. what kind of games children play) for the decision on the environmental license. The baseline part of the EIA report largely fails to come up with meaningful information for decision making. When having assess future consequences of (high impact) projects, project proponents and government agencies around the world are facing a shortage in data. A first understandable response is to collect as much data as possible. This has obviously also happened in this EIA report. This has probably taken a considerable amount of time and budget, and consequently reduced available resources for a meaningful assessment process. There is, however, a large difference between data and relevant information for decision making.

> **Recommendation:** EIA is meant to support decision making by providing relevant information, based on existing sources of data, within time and budget limits. As said, especially the baseline information part of the EIA report fails to provide focus for decision making. Therefore, NCEA recommends to add a summary in Chapter 3 highlighting the baseline information relevant to the key issues.

## 5.2 Natural environment

The description of the abiotic environment is fairly detailed and in accordance with the ToR. Actually the description in Chapter 3 of the EIA report not only describes the present situation, but also the situation that will prevail in the 'with project' situation. In describing this present and future situation, extensive use has been made of modeling of waves and currents and the resulting dispersal of suspended sediments. At first glance, this modeling exercise seems to be complete and carried out appropriately. Given the limited time available, it was not possible for the NCEA to check all data, model assumptions, model procedures and model results.

> **Recommendation:** Given the importance of the modeling exercise in coming to conclusions on expected changes in the physical system as a result of project implementation (overall the changes are predicted to be limited in magnitude, or only affect a small area) and consequently the required mitigating measures, a thorough independent quality check of this part of the EIA report is advised. CIOH in Cartagena could probably do this.

The NCEA perceived four shortcomings in the modeling exercise:

- modeling of erosion/sedimentation patterns in the project area has not been done, except for the areas where sand nourishment (Bocachica, Abanico island) will take place;
- ship movement induced waves and currents near and in the future El Varadero canal have not been modeled;
- changes in residence time of the water in Cartagena Bay, nor changes in distribution of salinity in the Cartagena Bay have been modeled. Care should be taken not only to look at negative impacts; improved exchange through the canal between the bay and the ocean could improve the water quality situation in the bay;
- the model grid does not include the Islas del Rosario. To make certain that this ecologically very valuable area is not affected by project interventions, the model grid should be extended to cover this area. However, this is only necessary if changes are perceivable at the (present) model boundaries. If model results show no changes at the boundaries of the present grid, extension of the grid is not needed.

Information on the quality of the sediments in the project area, notably the content of heavy metals, nutrients and organic material, has already been commented upon in Chapter 4.

> **Recommendations:** Actual and future (with project) erosion and sedimentation patterns in the project area, and covering the whole Cartagena Bay, should be established. Possible positive impacts as a result of the project, e.g. improved water quality in the Cartagena Bay, should be mentioned in the EIA report as well.
> Ship movement induced waves and current have to be modeled and their impacts assessed on coastal stability of e.g. Baru island, nearby coral reefs and the forts of San Fernando and San José.
> Residence times of the water and salinity distribution in the whole Cartagena Bay should be assessed, with and without the project.
> CIOH could assist in drawing conclusions on the necessity of increasing the model grid to include the Islas del Rosario.

The descriptions of the biotic environment are partly sufficient, e.g. for coral communities, but not always consistent e.g. in terms of coral percentages given for Reef Areas A and B. Emphasis is on stony corals (Scleractinia), however other components are hardly mentioned (soft corals, sponges, crustaceans, echinoids and other invertebrates). Chapter 4.5 already elaborates on the crucial information which is lacking on coral reef relocation issues and is currently being supplemented in the Aqua y Tierra consultants study.

> **Recommendation**: The lacking information should be added, to be able to better define and detail the aims and methodology with regards to compensation measures of biotic communities.

## 5.3 Socio-economic environment

The EIA report extensively describes in its Chapter 3 issues like:

- Demography (also specified for each of the 5 communities in Cartagena bay);
- Spatial issues (Public and social services);
- Economic (Tourism, Industry, Port, Construction, Fisheries) and
- Social and living conditions.

At the end of the chapter a zoning is proposed, distinguishing 4 areas: areas with special environmental significance, areas with corals and mangroves which are deteriorating, areas for economic production and areas with social importance.
The information seems to be complete, but it difficult to determine which are the most significant issues (see also recommendation in 5.1)

## 5.4 Autonomous development

The EIA report takes autonomous developments insufficiently into account. This is particularly valid for the expected changes in sediment delivery by the Canal del Dique. Planned interventions in the upstream part of the canal will greatly reduce the sediment loads of the canal and consequently sediment concentrations in the Cartagena Bay.

> **Recommendation:** Assessment of future conditions in the Cartagena Bay and wider project area should take into account autonomous development. NCEA recommends to add this information to the EIA report.

# 6. Impacts

## 6.1 General

The overall assessment methodology applied in the EIA report (Chapter 5 and annexes) is satisfactory. A distinction is made between project activities during the construction phase and during the operational phase. The impact identification is based on the 'Guía Ambiental para la construcción de puertos marítimos de gran calada' del MAVDT and the results and conclusions of the base line studies. A distinction is made between impacts on the abiotic, biotic, cultural and socio-economic environment.

The horizontal and vertical analysis of the impact matrices gives some insight in which impacts are most important and which activities cause most impacts. The valuation of the impacts in terms of nature, extent, time of occurrence, reversibility, duration and effect is useful and increases this insight. The statistical analysis of the impacts in Chapter 5.5.2 of the EIA report is considered less valuable. This analysis does not add to the understanding of how the coastal-bay system reacts to project induced changes.

**Recommendations:** The NCEA advises to replace this chapter by a discussion of the identified, really significant, impacts. It is generally better to concentrate on a small number of significant impacts that really matter, than providing details on less significant issues. More attention should also be given to the cumulative nature of many of the impacts, as the system is already stressed.

The attempt to economically valuate the impacts is appreciated, but the outcome of the exercise is greatly determined by a number of assumptions and uncertainties. As such it is considered an academic exercise, that is of limited value for the decision making process. Furthermore it is remarked that the information presented is more detailed than normally expected in an EIA report and hard to understand for non-economists.

## 6.2 Impacts on the natural environment

The EIA report gives a detailed description of the impacts on wave conditions and flow velocities and directions. As stated in paragraph 5.1, changes in erosion/sedimentation patterns should be assessed more explicitly in the EIA report. Also mentioned in paragraph 5.1 are shortcomings related to the prediction of impacts of ship induced waves and currents and impacts on residence times and salinity distribution in the Cartagena Bay.
Dispersal of sediments at the dumping sites is modeled in detail, but what is not covered in the EIA report is the dispersal of sediments at the dredging locations (see 4.1.1).
In paragraph 4.1.2 it was already noted that impacts of remobilization of heavy metals, nutrients and organic carbon on water quality and ultimately biota during dredging and dredge spoil disposal is insufficiently covered in the EIA report.

**Recommendation:** Dispersal of sediments in the water column during the dredging operations has to be assessed, as well as the possible impacts on water quality and ultimately on biota. For further recommendations see paragraph 4.1 and 5.2.

The EIA-report gives sufficient information on potential impacts on ecosystems, landscape and flora and fauna. What is lacking is the a description of the impact of loss of seabed habitat at the dumping/nourishment sites, resulting in (temporary) loss of bottom life, which may impact a wide range of living components in density and diversity of living components. This includes obvious organisms such as coral reef organisms (hard and soft corals, sponges and other benthic invertebrates) but also related ecosystems such as mangroves and sea grass beds. These changes will also impact organisms that are linked to these systems ranging from fish stocks that are depending on corals reefs or sea grass beds, to sea birds breeding in mangrove forests.

**Recommendation:** The EIA report should also contain information on the potential impacts of the seabed habitat at the dumping/nourishment sites. For further recommendations related to impacts of mangrove and coral reef relocation and see paragraph 4.4 and 5.2.

## 6.3 Impacts on the socio-economic environment

The EIA-report clearly describes impacts of the proposed activity on fishing activities (disturbance), on possibilities for and expectations of local people to have (temporary) job opportunities (and what kind) in the execution of the works, and impacts on cultural and historic values and tourism potential.

> **Recommendations:** The induced impacts (see also recommendation in 3.2) of the proposed activity will also have socio-economic impacts, which are beyond the scope of this EIA report, but which require due attention, such as:
> - Employment and economic opportunities and diversification as a result of increased economic activity related to port activities;
> - Population growth leading to increased demands on natural resources and services:
> - Impact equity (economic activities, employment, income).

## 6.4 Construction related hazards and risks

The EIA report gives a detailed description of hazards and risks during the project execution. The contingency plan, Chapter 9, is very complete and detailed. What is missing in Chapter 5 of the EIA report is an analysis of what the consequences of e.g. a major pollution event on the biota and/or workers would be. The same is valid for the impacts of noise/vibration on the workers and biota (fauna).

> **Recommendation:** Impacts of accidents on the biotic environment and workers should be described in the EIA , as should impacts of noise/vibration on workers and biota (fauna).

# 7. Monitoring

The planned monitoring of the project is described as part of the Management Plan in Chapter 7 of the EIA report, but also in Chapter 8 where an environmental monitoring plan is presented. A distinction is made between the abiotic environment, the biotic environment and the socio-economic environment. It is not entirely clear how Chapter 7 and 8 are related; sometimes the forms seem to be duplications (e.g. A1 to A4 contain the same information as SMA 1 to 4, like S1-S6 and SMS1 to SMS6), others are different (B1-B4 and SMB B1-B4).

The plans do not indicate who is responsible for checking whether monitoring indeed takes place and is implemented according to the monitoring plan. In general, more details are required on the (government) institutions responsible for the monitoring, the way implementation is funded, as well as exact locations, frequency and duration of the monitoring.

### Abiotic environment

The monitoring of the abiotic environment focuses on the dredging/deposition activities, the sand nourishment at Abanico island and the Bocachica beaches, the water quality and the air quality. The responsible agency is the Corporation Promotora Canal El Varadero.

Regarding the dredging/deposition activities, only the volumes of dredged and deposited material will be assessed on a monthly base. As far as the sand nourishment at the Abanico island and Bocachica is concerned, the bathymetry and volumes of sand supplied will be monitored monthly. Water quality, physical, chemical and microbiological parameters, will be monitored on a quarterly basis for 9 sites. Air quality and noise levels will also be assessed quarterly, at 3 points each.

Overall, NCEA is of the opinion that the proposed monitoring is insufficient to be able to assess whether or not adverse changes in the abiotic environment occur and whether or not additional mitigating measures are required.

> **Recommendations:** The program for monitoring the abiotic environment has to be extended and detailed. Important parameters during project execution and in the operational phase are sediment content/turbidity, heavy metals, nutrients and BOD in the water column at and around the dredging and deposition/nourishment sites and nearby precious ecosystems (coral reefs), to be monitored at least once a week. In addition, sedimentation rates on the coral reefs and nearby benthic communities should be monitored, as well as changes in coastline configuration (sedimentation/erosion) in the project area.
> Above parameters should not only be monitored during the protect execution phase, but also in the project's operational phase, at least until a new equilibrium has been reached. Once the dredging activities are finished and the canal is in place, a number of other parameters has to be monitored in the whole Cartagena Bay and nearby coast as well: wave heights, currents, residence times and salinity, at least seasonal and at least for a period of 3 years. Special attention is required for the monitoring of ship movement induced waves and currents, with reference to the forts located on both sides of the Bocachica channel, once the canal becomes operational.

### Biotic environment

The current monitoring program includes two of the three system components: coral reefs and mangroves, but the sea grass beds are lacking. Monitoring includes the transplanted organisms as well as the coral communities in the damaged original reef area. Health characteristics of organisms should be monitored along with physical-chemical parameters of the environment (e.g. temperature, salinity, turbidity and sedimentation). Health characteristics of transplanted coral should encompass more than survival of colonies. Impact of coral diseases and levels of coral reproduction should be examined in two monthly surveys over three years. Coral growth in weight or linear extension will supply additional information on coral health. On transplantation sites, cover of spatial competitors and their impact on coral survival should be monitored.

**Recommendations:** The monitoring program for the biotic environment must include monitoring of at least the success rate of coral relocation, the success rate of transplantation of other reef organisms and the success rate of compensation measures of mangroves and sea grass beds. Depending on the location of transplantations, the NCEA recommends cooperation with personnel of the Parque Nacional El Rosario.
Environmentally sound site clearance at Abanico Island should also be monitored.

**Socio-economic environment**

The current monitoring program contains for each of the 6 components of the social part of the Environmental management plan forms to check whether or not objectives have been met. Also it will be checked what were the reasons in case objectives could not be reached. However, none of these monitoring activities include a budget, nor are provisions foreseen in case additional mitigation or compensation measures will be needed.

**Recommendations:** The NCEA advises to further detail the socio-economic monitoring program with particular emphasis on the compensation of impacts on fishermen.

# APPENDICES

Review of EIA report for dredging of el Varadero access canal to Cartagena Bay, Colombia

(appendices 1 to 6)

# APPENDIX 1

## Letter with request for advice by the Ministry of Environment and Sustainable development

MinAmbiente
Ministerio de Ambiente y Desarrollo Sostenible

PROSPERIDAD PARA TODOS

COPIA

MINISTERIO DE AMBIENTE Y DESARROLLO SOSTENIBLE
11/12/2012 16:9:30 FOLIOS:3 ANEXOS:1
AL CONTESTAR CITE: 8000-E2-59509
TIPO DOCUMENTAL:OFICIO
REMITE:DESPACHO DEL MINISTRO DE AMBIENTE Y DESARROLLO SOSTENIBLE
DESTINATARIO EMBAJADOR EMBAJADA DEL REINO DE LOS PAISE

Bogotá D.C. 07 DIC. 2012

Señor
**ROBERT VAN EMBDEN**
Embajador
Embajada del Reino de los Países Bajos
Carrera 13 # 93-40 Piso 5
Ciudad

Cordial saludo:

En el marco del mejoramiento de las capacidades de Colombia en materia de cooperación y comercio internacional, el país está en un proceso de planificación de una estrategia de expansión portuaria que permita responder a los grandes desafíos que se han venido imponiendo principalmente relacionados con la negociación y firma de tratados de libre comercio con diferentes países del mundo, así como los desarrollos de infraestructura que demandará la futura ampliación del Canal de Panamá (Panamax en dos vías de tráfico, Post Panamax en una o dos vías de tráfico y tanqueros Suez Max y Super Post Panamax en una vía de tráfico).

Nuestro Ministerio, recibió a través de la Agencia Nacional de Licencias Ambientales solicitud de concepto sobre el proyecto "Estudio de Impacto Ambiental para el dragado del canal de acceso del canal de Varadero" presentado por la Sociedad Promotora Canal del Varadero, quienes aseguran que el objetivo del nuevo canal es proveer una entrada independiente para manejar el volumen de tráfico previsto en Cartagena a largo plazo, con las características de los buques que se espera recalen en los terminales de la bahía de esta ciudad en el futuro. En el recinto de la Bahía de Cartagena está instalado el 42% de los terminales portuarios registrados en el país y maneja el 17% de la carga del tráfico portuario colombiano.

Conforme la información suministrada por los dueños del proyecto, el canal existente en Bocachica entre los fuertes históricos San Fernando y San José fue en el pasado profundizado a 15,2 m, y ampliado a 137 m, sin embargo estas dimensiones constituyen el límite máximo que se podría ampliar del canal, toda vez que preocupa que cualquier dragado adicional socave la estabilidad de los muros que rodean los dos fuertes que hacen parte del patrimonio histórico de la ciudad de Cartagena.

Las dimensiones propuestas para el nuevo canal que estará localizado en el sector de Varadero será de 2 km de largo, 200 m de ancho y 19,5m de profundidad, lo que implicaría la remoción de aproximadamente 7.125.500 m³ entre limos blandos, arenas y arenas limosas y roca erosionada. El peticionario pretende disponer este material en dos botaderos:

- Botadero 1, ubicado en aguas profundas a aproximadamente 15km al noroccidente del sitio de dragado.

Calle 37 No. 8 – 40 Bogotá. Colombia
Conmutador (571) 3323400
www.minambiente.gov.co 2475

- Botadero 2, además del depósito de material en el Botadero 1 se proponen obras adicionales, la primera el relleno de la playa en Bocachica y la segunda relleno de Isla Abanico como medida de protección.

En los trabajos de campo que adelantaron los dueños del proyecto para caracterizar el área de influencia del proyecto, realizaron el reconocimiento de los ecosistemas marinos en la zona de probable dragado para la construcción del canal.

Se identificaron dos principales áreas de coral. La Zona A comprende un área de 23,2 hectáreas de arrecife coralino, y se extiende hacia el sur a todo lo largo de la costa este de la Isla de Barú. La Zona B comprende una extensión de arrecife coralino de 18,80 hectáreas y cubre un área entre el sector El Varadero y el canal de Bocachica, sobre el costado occidental de las islas Abanico y Draga (ver Figura 1, Anexa).

La formación A tiene una mayor representatividad de cobertura biótica (corales duros, corales blandos, algas y esponjas), mayor densidad de colonias y número de especies de coral, presentando un desarrollo estructural y por tanto una diversidad de hábitats muy superior a la formación B, lo que genera a su vez mayor exposición a factores de deterioro, mientras la formación B al presentar una menor complejidad y mayor proporción de especies generalistas o resistentes a los factores de deterioro tienen una menor afectación. Otros ecosistemas importantes también comprende dos pequeños islotes de mangle (Isla Abanico). El área de la bahía se utiliza igualmente para actividades turísticas y de pesca artesanal.

En síntesis se han identificado los siguientes potenciales impactos por la ejecución del proyecto:

- Se removerá la cobertura vegetal y se dragará el extremo sur de isla Abanico en un total de 0,4 ha, lo cual corresponde a 20 % del total del área de la isla.
- Remoción y trasplante de 1.2 ha área de coral.
- Suspensión de sedimentos en la Bahía
- Modificación de la geomorfología costera como consecuencia del lleno de las zonas costeras y playas del sector.

Nuestra Dirección de Asuntos Marinos, Costeros y Recursos Acuáticos, evaluó el referido proyecto encontrando los siguientes temas de preocupación y consideración:

1. El trazado del canal intercepta con el Área marina Protegida de los Archipiélagos de Rosario y San Bernardo-AMP-ARSB creada por nuestro Ministerio mediante la resolución 679 de 2005 y estaría ubicado en el sector 5, con restricciones especiales para garantizar la conservación en el largo plazo de la zona.

2. Presentación de posibles Floraciones Algales Nocivas por las actividades de dragado y consecuente re-suspensión de nutrientes.

3. Posible presencia de metales pesados u otros compuestos tóxicos para la vida humana y las especies animales y vegetales y la necesidad de análisis más detallados de los sedimentos a dragar.

MinAmbiente
Ministerio de Ambiente y Desarrollo Sostenible

PROSPERIDAD PARA TODOS

4. Capacidad de soportar los volúmenes de depósito estimados en el dragado en los Botaderos.

5. Alta incertidumbre en el nivel de éxito del traslado de los volúmenes de corales presentes en la zona de dragado.

6. Posible afectación de otros ecosistemas (pastos manglares) y las actividades productivas asociados a los servicios que proveen estos sistemas.

Conociendo del amplio nivel de conocimiento por parte de su país y con el ánimo de orientar las mejores decisiones encaminadas a garantizar la conservación de los recursos costeros y marinos de nuestro país, solicitamos muy respetuosamente su apoyo para que expertos de su país analicen las implicaciones ambientales de llegarse a desarrollar el referido proyecto y se emita concepto imparcial y objetivo al respecto.

Anexamos en CD los siguientes documentos:

1. Proyecto presentado por la Sociedad Promotora Canal del Varadero
2. Concepto de la Dirección de Asuntos Marinos, Costeros y Recursos Acuáticos
3. Concepto emitido por INVEMAR
4. Resolución 679 de 2005, que declara el AMP de los archipiélagos de Corales del Rosario y San Bernardo

Agradecemos de antemano su colaboración

Atentamente,

**JUAN GABRIEL URIBE**
Ministro de Ambiente y Desarrollo Sostenible

CC: Maurice Van Beers, Oficial *Senior* de Políticas, Embajada del Reino de los Países Bajos, Carrera 13 # 93-40, Piso 5.

Anexo: Lo anunciado en un CD.

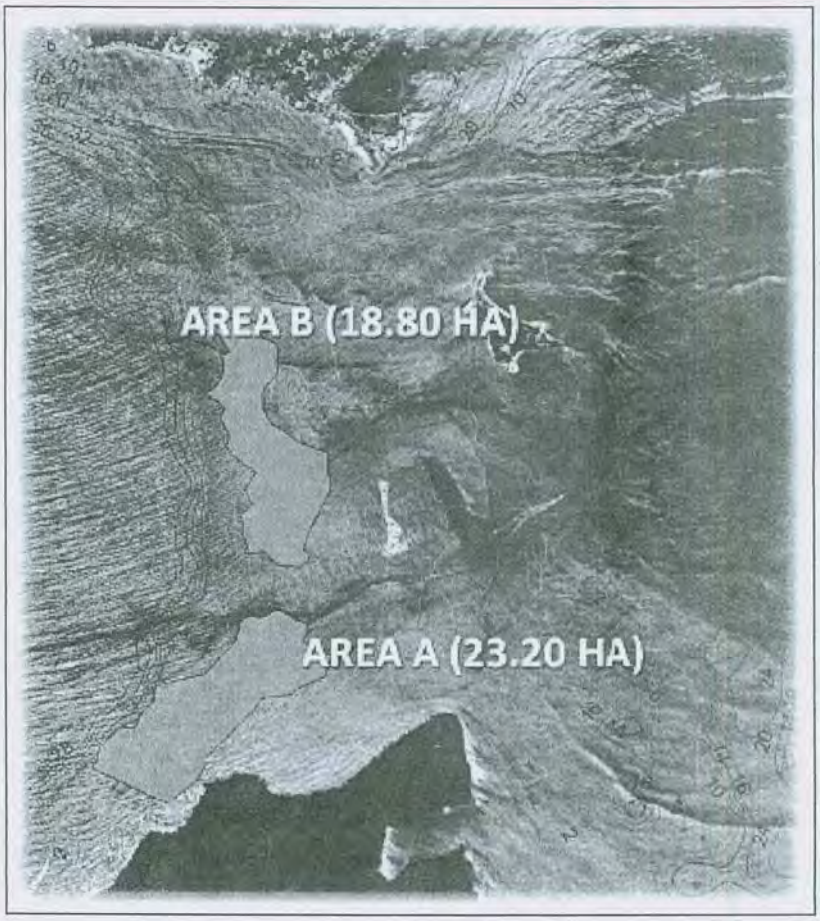
Aprobó: E. Taylor
Proyectó y Revisó: E. Taylor

Calle 37 No. 8 – 40 Bogotá, Colombia
Conmutador (571) 3323400
www.minambiente.gov.co

MinAmbiente
Ministerio de Ambiente y Desarrollo Sostenible

PROSPERIDAD PARA TODOS

**Figura 1. Ubicación de las Áreas de Corales en la zona del Dragado**




Calle 37 No. 8 – 40 Bogotá, Colombia
Conmutador (571) 3323400
www.minambiente.gov.co

# APPENDIX 2

## Correspondence between Netherlands Ambassador and the Ministry and NCEA

PROSPERIDAD PARA TODOS

MinAmbiente

8000-2-1366

Bogotá, D.C. 21 ENE. 2013

Señora
**Ineke Steinhauer**
Secretaria Técnica
Netherlands Commission for Environmental Assessment - NCEA
isteinhauer@eia.nl

Cordial saludo Sra. Steinhauer,

Recibimos con complacencia su voluntad manifiesta de proporcionar la asistencia solicitada por nuestro Ministerio a la Embajada de los Países Bajos en Colombia para la evaluación del proyecto del canal de acceso de Varadero, Cartagena. En primera instancia queremos confirmar que no tenemos inconvenientes con la fecha propuesta entre el 11 y 23 de febrero para el desarrollo de la misión.

En estos momentos nos encontramos construyendo la agenda tentativa para los 5 días de visita, la cual ponderemos a su consideración vía electrónica, el 22 de enero próximo.

En este sentido y con el animo de avanzar en la fase preparatoria de la misión, me permito a continuación confirmar el equipo de trabajo de nuestro Ministerio que estará acompañando de manera permanente a los especialistas en Colombia:

| Nombre | Especialidad | Contacto |
|---|---|---|
| Ana Maria Gonzalez | Conservación y uso sostenible de la biodiversidad y ecosistemas marinos y costeros | amgonzalez@minambiente.gov.co Cel. 57-3162796022 |
| Juan Pablo Caldas | Recursos hidrobiologicos, costeros y marinos | jcaldas@minambiente.gov.co Cel. 57-3184665509 |

De igual manera, estamos coordinando con nuestro Instituto de Investigacions Costeras y Marinas – Invemar- y con la Autoridad Nacional de Licencias Ambientales –ANLA-, su asistencia a través de algunos de sus especialistas, cuyos nombres y contactos estaremos proporcionando en los próximos días.

Queremos confirmar que la Directora de DAMCRA, Elizabeth Taylor, etaylor@minambiente.com.co, cel. 57-3165252737, será la lider por parte de nuestro Ministerio. Asimismo, será la persona directamente responsable de coordinar los detalles sobre el periodo de trabajo e interaccción con otros organismos de gobierno y actores claves.

Nuevamente queremos agradecer este importante apoyo a nuestro país, que sin duda alguna contribuirá con la mejor toma de decisiones en pro del desarrollo sostenible de nuestros mares y costas.

Atentamente,

**JUAN GABRIEL URIBE**
Ministro de Ambiente y Desarrollo Sostenible

Proyectó y Revisó: E.Taylor, Directora Asuntos Marinos, Costeros y Recursos Acuáticos - Aprobó: Adriana Soto, Viceministra de Ambiente

Calle 37 No. 8 – 40 Bogotá, Colombia
Conmutador (571) 3323400
www.minambiente.gov.co

PROSPERIDAD PARA TODOS

MinAmbiente

8000-2

Bogotá, D.C. 21 ENE. 2013

Excelentísimo
**ROBERT VAN EMBDEN**
Embajador del Reino de los Países Bajos
Carrera 13 # 93-40 piso 5
La Ciudad

Excelentísimo Embajador Van Embden:

Quisiera agradecer la generosa respuesta que hemos recibido de la Embajada de los Países Bajos sobre la solicitud que hicimos para que expertos de su país analizaran las implicaciones ambientales del "Proyecto de dragado del canal de acceso al canal de Varadero" y emitieran un concepto imparcial y objetivo del mismo.

Estamos seguros que el trabajo que desarrollará la Comisión Holandesa para Evaluaciones Ambientales (Netherlands Commission for Enviromental Assessment – NCEA) será invaluable para este Ministerio y para el proceso de orientar las mejores decisiones encaminadas a garantizar la conservación de los recursos costeros y marinos de nuestro país.

Para contactos y cualquier otra información, por favor comunicarse a los correos etaylor@minambiente.gov.co o amgonzalez@minambiente.gov.co.

Cordialmente

**JUAN GABRIEL URIBE**
Ministro de Ambiente y Desarrollo Sostenible

C: C: Maurice Van Beers, Oficial *Senior* de Políticas, Embajada del Reino de los Países Bajos- Embajada del Reino de los Países Bajos -Carrera 13 # 93-40 piso 5- Bogotá

Elaboro: Ana María Gonzalez, Dirección de Asuntos Marinos, Costeros y Recursos Acuáticos
Revisó: Elizabeth Taylor Jay, Dirección de Asuntos Marinos, Costeros y Recursos Acuáticos
Adriana Soto, Vice Ministra Ministerio de Ambiente y Desarrollo Sostenible
Fecha: Enero 14 de 2012

Calle 37 No. 8 – 40 Bogotá, Colombia
Conmutador (571) 3323400
www.minambiente.gov.co

Netherlands Commission for Environmental Assessment

your reference
—
your letter
7-12-2012
our reference
OS25-096/Sh/vf
enquiries to
isteinhauer@eia.nl
direct phone number
(030) 234 76 654

Señor Ministro
Juan Manuel Uribe
Ministerio de Ambiente y Desarollo Sostenible
Calle 37 # 8-40
Bogotá D.C.
Colombia

*Fecha: 15 de Enero de 2013*
*Sujeto: Estudio de Impacto Ambiental relacionado con proyecto de dragado del canal de acceso a la bahía de Cartagena El Varadero*

Distinguido señor Ministro Uribe,

La semana pasada, recibimos copia de su carta de 12 de Diciembre 2012 a la Embajada del Reino de los Países Bajos, solicitando un apoyo técnico en forma de una evaluación imparcial sobre los impactos ambientales relacionados al proyecto de dragado del canal de acceso del canal de Varadero, Cartagena.

Ayer también recibimos copia de la carta del Embajador del Reino de los Países Bajos en la cual el ofrece la posibilidad de hacer uso de los servicios de nuestra Comisión Holandesa para Evaluaciones Ambientales (NCEA por sus siglas en inglés).

Con mucho gusto puedo confirmar que podemos darle una respuesta positiva a su solicitud. Permítame explicarle brevemente el rol de la NCEA en el procedimiento de las evaluaciones ambientales (Evaluaciones de Impacto Ambiental, EIA y Evaluaciones Ambientales Estratégicas, EAE).

En Holanda, la NCEA existe desde los años 80, es una instancia independiente, tiene base legal y un rol obligatorio en todos los procesos EIA y EAE. Su tarea específica se concentra en asesoramiento sobre los alcances (TdRs) de EIA y EAE y asesoramiento sobre revisión independiente de la calidad de los estudios EIA o EAE a las autoridades competentes. La NCEA no elabora los mismos estudios de EIA o EAE, esto es trabajo de consultores. En el marco internacional, la NCEA además provee capacitación de sistemas e instituciones con el fin de mejorar la práctica de EIA/EAE y tiene un centro de referencia sobre avances recientes en la práctica de EIA/EAE (www.eia.nl). Las actividades internacionales se realizan bajo un convenio con nuestro Ministerio de Relaciones Exteriores.
En Colombia, en el pasado ya tuvimos una colaboración con su Ministerio, tanto en EIA como en EAE.

El secretariado de la NCEA cuenta con 10 personas trabajando en el campo internacional (de los 60 en total) y para poder asesorar, se forman 'grupos de trabajo' de varios expertos (haciendo uso de una red de entre 400-500 expertos). En relación a su solicitud, también vamos a conformar un tal grupo de expertos, probablemente un equipo 4 personas, compuesto por un presidente del grupo, un secretario técnico y 2 expertos. El grupo planificará una visita de mas o menos una semana a Colombia y siempre trata de finalizar un primer borrador de un informe al final de un tal visita.

Ya recibimos copia del resumen del informe EIA y estamos a la espera de recibir el CD con los documentos que menciona en su carta. Mientras tanto vamos a buscar e invitar algunos expertos que pueden ser miembros del grupo de trabajo. Le avisaré por supuesto en cuanto tengo sus nombres y especialidades.

El siguiente paso generalmente es una reunión del grupo de trabajo en las oficinas de la NCEA. Seguramente, como resultado saldrá una lista de organizaciones, personas, agencias, con quiénes los expertos quisieran reunirse en Colombia y sugerencias para las áreas a visitar en relación al proyecto. También generalmente se elabora una pagina con asuntos claves a discutir durante la visita.
Finalmente, entendemos que la Agencia Nacional de Licencias Ambientales y la Dirección de Asuntos Marineros, Costeros y Recursos Acuáticos serían nuestras contrapartes institucionales en relación al proyecto. Lo consideramos importante e imprescindible que algunas personas de estos equipos técnicos nos acompañen durante la visita de forma permanente. También nos parece importante coordinar y trabajar conjuntamente con el equipo relevante del Ministerio de Transporte.

Sin otro particular, saludo a Ud. muy atentamente,

Sra. Ineke Steinhauer
Secretario técnico de la NCEA

Kingdom of the Netherlands

Ms. Ineke Steinhauer
Technical Secretary
Netherlands Commision for Environmental Assesment

Carrera 13, No. 93-40
Bogotá
Colombia
www.mfa.nl/bog

**Contact**
Martha Lucia Arévalo Reyes

T (571) 638 4217
F (571) 623 3020
martha.arevalo@minbuza.nl

**Our reference**
BOGNL2013-0010

**c.c.** Corina Kerkmans; Claudia Schutte - AGNL

Date January 3rd, 2013
Re Environmental impact study Colombian port project

Dear Ms. Steinhauer:

As a follow up to your prior telephone conversation with my colleague Maurice van Beers, enclosed please find the formal request from the Colombian Minister of Environment and my reply to him offering the expertise of the Netherlands Commission for Environmental Assessment.

Please notice that I have mentioned to the Minister that he could receive a draft report within 6 to 8 weeks, as it was agreed in the prior phone communication.

I am looking forward to your reply on any specifics and next steps to accomplish this assignment.

As Maurice van Beers will be out of the office, please feel free to contact Martha Arévalo, martha.arevalo@minbuza.nl tel (571) 6384217 for any further information or assistance you may require.

Best regards,

Robert van Embden
Royal Netherlands Embassy Bogotá

Reino de los Países Bajos

Señor Ministro
Juan Manuel Uribe
Ministerio de Ambiente y Desarrollo Sostenible
Calle 37 # 8-40
Bogotá

**Cooperación para el Desarrollo**

Carrera 13, No. 93-40
Bogotá
Colombia
www.mfa.nl/bog

**Persona de contacto**
Martha Lucia Arévalo Reyes

T (571) 638 4217
F (571) 623 3020
martha.arevalo@minbuza.nl

**Referencia**
BOG-NL-2013-004

**Copia**
Señor Viceministro de Intraestructura Javier Alberto Hernández Lopez -Ministerio de Transporte

Señora Elizabeth Taylor – Directora Asuntos Marinos y Costeros y Recursos Acuáticos - Ministerio Ambiente y Desarrollo Sostenible

Fecha Enero 3 2013
Asunto Concepto sobre implicaciones ambientales dragado del canal de acceso del canal de Varadero"

Respetado señor Ministro Uribe:

Reciba un cordial saludo, deseándole ante todo un próspero año nuevo.

Tengo el gusto de dirigirme a usted en respuesta a su oficio 8000-E2-59509 de fecha 11 de diciembre de 2012, mediante el cual me solicita apoyo para que expertos del Reino de los Países Bajos analicen las implicaciones ambientales del "proyecto de dragado del canal de acceso del canal de Varadero" y se emita un concepto imparcial y objetivo del mismo.

Sobre el particular, me complace informarle que mi Embajada ha contactado a la Comisión Holandesa para Evaluaciones Ambientales (Netherlands Commission for Environmental Assessment -NCEA), que es una entidad experta independiente que provee servicios de asesoría y que podría emitir un concepto objetivo partiendo de las conclusiones del estudio de impacto ambiental previamente realizado. Esta entidad ha tenido una trayectoria de trabajo con su Ministerio, lo que le permitirá junto con su experticia emitir un concepto idóneo sobre el particular.

Vale la pena aclarar que el gobierno holandés proveerá el apoyo financiero para la realización de este estudio por parte de la NCEA.

Mencionado lo anterior, su solicitud formal ha sido enviada hoy a la NCEA, institución que podría remitir un primer concepto en las próximas 6 – 8 semanas. Cabe agregar que habrá que tomar en cuenta los requerimientos de la NCEA para el respectivo acompañamiento que se requiera por parte de su Ministerio y del Ministerio de Transporte para llevar a cabo este encargo.

Me despido, nuevamente con mis mejores deseos para este año nuevo.

Atentamente,

Robert van Emden
Embajador del Reino de los Países Bajos

# APPENDIX 3

## Project Information, Working Group Composition and composition of team of the Colombian Environment Ministry

**Proposed activity:** The Bay of Cartagena, Colombia, plays an important role in the regional and national econ-omy, especially through the development potential of its port. To accommodate expected growing numbers and sizes of ships, a new access canal, (2 km long, 200 m wide and 19,5 m. depth) is being planned. The existing entrance canal has reached its maximum limits and depths. The dredged materials will be deposited in two sites at sea and will partly be used as well for replenishment of beaches. The project initiator is the Corporación Promotora Canal del Varadero (PROCANAL). PROCANAL has prepared an EIA report for this project (December 2011) and contracted HIDROCARIBE LTDA. for its elaboration.

**Categories:** DAC/CRS: 21040 Water transport

**Project number:** Netherlands Commission for Environmental Assessment OS25-096

**Progress:** The Netherlands Commission for Environmental Assessment (NCEA) received a request from the Colombian Minister of Environment and Sustainable Development through a letter to the Netherlands Ambassador, to perform an independent quality review of an EIA report for the above mentioned project. The Ambassador has reacted positively to this request and contacted NCEA. The National Agency of Environmental Licenses (ANLA) and the Direction of Coastal and Marine Issues and Aquatic Resources (DAMCRA) have serious concerns and have specified six themes of consideration, which are mentioned in the letter of the Environment Minister.
The Ministry of Environment and Sustainable Development, through ANLA, is the National Competent Authority for Environment and has a formal role in the granting of the environmental license, which is required for this project. The EIA report forms the basis for this license.

**Procedural information:**

| | |
|---|---|
| Receipt request for Advice | : December 2012 |
| Site visit to Colombia by NCEA working Group | : 17-23 February 2013 |
| Submission of Final Draft Review Advice | : March 2013 |

**Composition of the working group of the NCEA:**
Mr R. Rabbinge - Chairman
Mr R.P.M. Bak
Mr M. Vis
**Technical secretary:**
Ms I.A. Steinhauer

**Composition of team of Ministry of Environmental and Sustainable Development in Colombia**
Mrs E. Taylor (director of Marine and Coastal issues and aquatic resources)
Mrs A.M Gonzalez
Mr J.P. Caldas

# APPENDIX 4

## Working program 17-23 February 2013

<table>
<tr><th rowspan="2">Hora</th><th>Febrero 18 de 2013</th><th>Febrero 19 de 2013</th><th>Febrero 20 de 2013</th><th>Febrero 21 de 2013</th><th>Febrero 22 de 2013</th></tr>
<tr><th colspan="2">BOGOTA</th><th colspan="3">CARTAGENA</th></tr>
<tr><td>7:30 am</td><td>Almuerzo en la residencia del Embajador de Holanda en Colombia</td><td rowspan="8">Reunión revisión de la información asociada al proyecto con autoridades y entidades competentes en los diversos temas - <u>Almuerzo en el lugar de la reunión</u><br>Hotel Viaggio Transversal 4 #43-95 Chapinero alto - Bogotá</td><td>Viaje a Cartagena de Bogotá.</td><td rowspan="3">Jornada de Trabajo en campo en Cartagena - salida marina ( Buceo) - C<u>ajas de almuerzo</u></td><td>Reunión con la Sociedad Portuaria.</td></tr>
<tr><td>9:00 am</td><td rowspan="3">Reunión Introductoria de alto nivel en el MADS - Salón Colombia</td><td rowspan="3">Preparación logística Salida de campo por parte del equipo del MADS</td><td>Reunión con la Alcaldía de Cartagena (Alcaldía)</td></tr>
<tr><td>10:00 am</td></tr>
<tr><td>11:00 am</td><td>Reunión con la Gobernación de Bolivar (Gobernación)</td></tr>
<tr><td colspan="2">Receso Almuerzo</td><td colspan="2">Receso Almuerzo</td></tr>
<tr><td>2:00 pm</td><td rowspan="4">Reunión presentación del proyecto en el Hotel Viaggio Transversal 4 #43-95 Chapinero alto - Bogotá</td><td rowspan="4">Reunión con autoridades ambientales, Parques Naturales Nacionales de Colombia, sectores productivos y Comunidades (CARDIQUE)</td><td>Presentación de las conclusiones preliminares por NCEA (CARDIQUE)</td></tr>
<tr><td>3:00 pm</td></tr>
<tr><td>4:00 pm</td><td rowspan="2">Reunión con autoridades marítimas y portuarias (CIOH)</td></tr>
<tr><td>5:00 pm</td><td>Regreso a Bogotá</td></tr>
</table>

Agenda detallada en la siguiente página

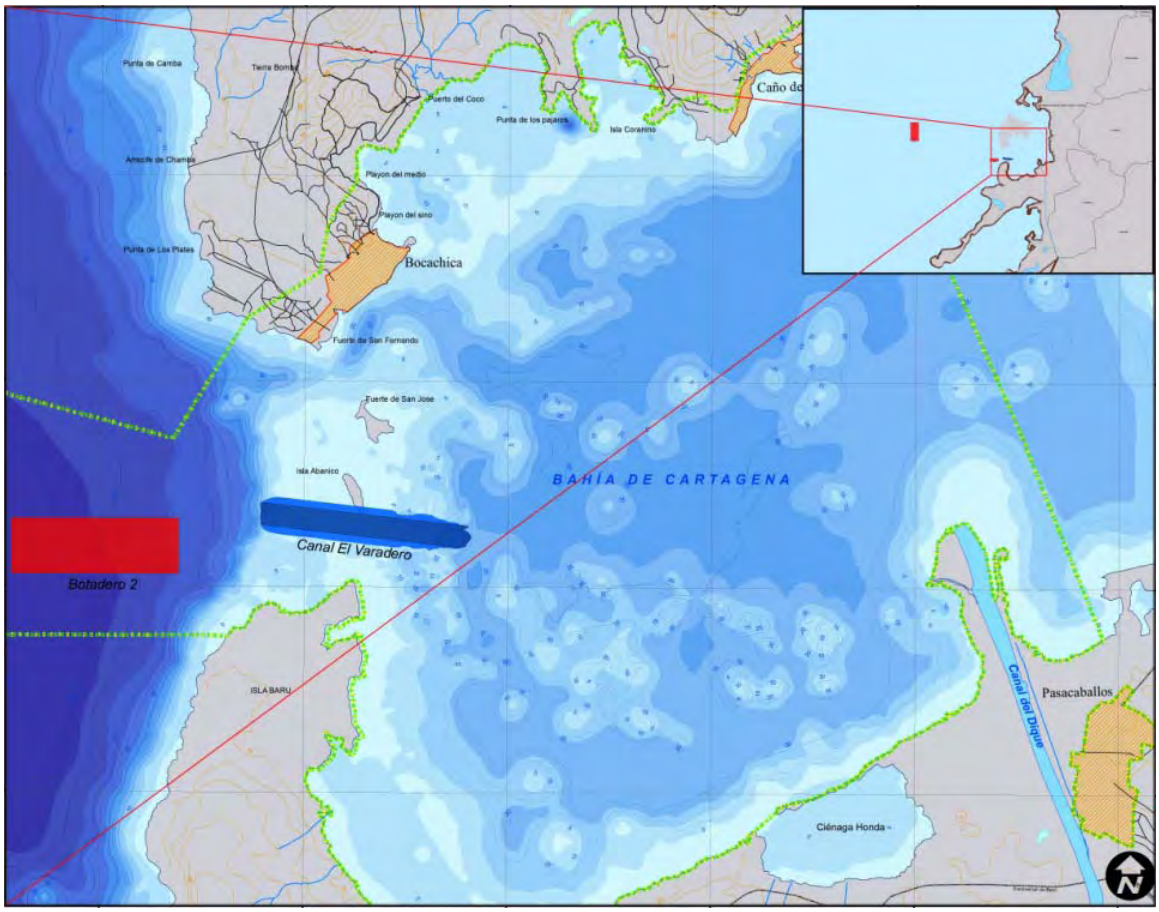
| Hora | Febrero 18 de 2013 | Febrero 19 de 2013 | Febrero 20 de 2013 | Febrero 21 de 2013 | Febrero 22 de 2013 |
|---|---|---|---|---|---|
| | BOGOTA | | CARTAGENA | | |
| AM | **Almuerzo con el Embajador** Robert van Embden, Adriana Soto (Viceministra de Ambiente), Elizabeth Taylor (Minambiente, DAMCRA), Javier Hernández López (Viceministro de Infraestructura del MinTransporte), Maurice Beers (Embajada)<br><br>**Reunión Introductoria de alto nivel.**<br>**Lugar: Salón Colombia – MADS**<br>**Hora: 9:00 – 11:00am**<br>*Objetivo:* Agradecer el apoyo de Holanda e introducir el tema del proyecto con altos representantes del gobierno.<br>*Participantes:*<br>- Viceministra MADS<br>- Embajada de Holanda (2)<br>- Comisión NCEA Holanda (3)<br>- Viceministro MCIT (1)<br>- Directora DAMCRA –MADS<br>- Jefe OAI –MADS<br>- PNN (2)<br>- INVEMAR<br>- DIMAR (2)<br>- CARDIQUE (3)<br>- Ministerio de Cultura (Patrimonio cultural) (2)<br>- INVIAS | **Reunión revisión de la información asociada al proyecto**<br>**Lugar: Hotel Viaggio Transversal 4 #43-95 Chapinero alto – Bogotá**<br>**Hora: 8:30 am-12:30 am**<br>*Objetivo:* Revisión de la documentación técnica de soporte al proyecto.<br>*Presentaciones por:*<br>- Ministerio de Cultura (3) (presentación aspectos culturales y de patrimonio en el área de influencia del proyecto)<br>- AUNAP (1) (presentación de la actividad de pesca en el área de influencia del proyecto)<br>- DIMAR (2) (presentación aspectos relacionados con navegabilidad, tráfico marítimo, etc.)<br>- INVEMAR (1) (Presentación de la información ambiental del área de influencia del proyecto)<br>- DAMCRA (3) (Presentación de conceptos generados por la dependencia).<br><br>Otros participantes: | **Viaje de Bogotá –Cartagena** | **Jornada de Trabajo en campo en Cartagena – salida marina**<br><br>*Objetivo:* Realizar una verificación de campo del área de influencia del proyecto<br><br>**Hora**: 8:00 am –1:00 pm<br><br>Salida de campo para hacer recorrido en el área propuesta para el proyecto "Canal el Varadero", con posibilidad de hacer buceo scuba para la verificación de tipos de fondo y colonias de coral importantes.<br><br>*Participantes:*<br>- DAMCRA<br>- ANLA<br>- INVEMAR<br>- PNN<br>- DIMAR<br>- CARDIQUE | **Reunión con la Sociedad Portuaria.**<br>**Lugar:** Sociedad Portuaria<br>**Hora**: 8:30 a 10:00 am<br>*Objetivo*: Evaluar proyecto "Canal el Varadero"<br>- DAMCRA (3)<br>- NCEA (3)<br>- MinTransporte (1)<br>- INVIAS (1)<br>- Alcaldía (2)<br>- Holland Water House<br>- PROCANAL (7)<br><br>**Reunión con la Alcaldía de Cartagena.**<br>**Lugar:** Alcaldía<br>**Hora**: 10:30 a 12:00 pm<br>*Objetivo*: Evaluar proyecto "Canal el Varadero"<br>- DAMCRA (3)<br>- NCEA (3)<br>- MinTransporte (1)<br>- INVIAS (1)<br>- Alcaldía (2)<br>- Holland Water House<br><br>**Reunión con la Gobernación de Bolívar.**<br>**Lugar** :Gobernación<br>**Hora:** 12:00 a 1:00 pm<br>*Objetivo*: Evaluar proyecto "Canal |

| | | | | | |
|---|---|---|---|---|---|
| | - Sociedad Portuaria de Cartagenas<br>- Confecar<br>- PROCANAL<br>- Holland Water House<br>- Equipo de especialistas | ANLA<br>NCEA (3)<br>INVIAS (1)<br>Min. de infraestructura (1) | | | el Varadero"<br>- participantes como arriba y 4 de la Gobernación |
| **PM** | **Reunión en el Ministerio de Transporte – Viceministerio de Infraestructura.**<br>*Objetivo:* Presentación en detalle del proyecto "Canal el varadero"<br>*Participantes:*<br>- Proponentes del proyecto "Canal el Varadero"<br>- DAMCRA – MADS<br>- ANLA<br>- INVEMAR<br>- Comisión NCEA Holanda | | **Reunión autoridades marítimas y portuarias**<br>**Lugar** : CIOH<br>**Hora**: 4:00 a 6:00 am<br>*Objetivo*: Reunión con la Dirección General Marítima – DIMAR y el CIOH. Para evaluar proyecto "Canal el Varadero"<br>Objetivo<br>- DAMCRA (3)<br>- DIMAR (4)<br>- NCEA (3)<br>- MinCultura | **Reunión autoridades ambientales**<br>**Lugar** :Salón juntas CARDIQUE<br>**Hora**: 2:00 a 5:00 pm<br>Reunión CARDIQUE y Parques Naturales Nacionales de Colombia, sectores productivos y Comunidades<br>- CARDIQUE (5)<br>- DAMCRA (3)<br>- NCEA (3)<br>- PNN (3)<br>- MinTransporte<br>- ANLA (2)<br>- DIMAR<br>- CIOH<br>- PROCANAL (5)<br>- Comunidades (4)<br>- INVIAS | Presentación conclusiones preliminares por la NCEA<br>**Lugar** :Salón juntas CARDIQUE<br>**Hora**: 2:30 a 4:30 pm<br>- CARDIQUE (3)<br>- DAMCRA (3)<br>- NCEA (3)<br>- MinTransporte<br>- ANLA<br>- INVIAS<br>- Holland Water House<br><br>5:00 -6:30 regreso a Bogotá |

ANLA: Autoridad Nacional de Licencias Ambientales
AUNAP: Autoridad Nacional de Acuicultura y Pesca
CARDIQUE: Corporación Autónoma Regional del Canal de Dique
DAMCRA: Dirección de Asuntos Marinos, Costeros y Recursos Acuáticos
DIMAR: Dirección General Marítima
INVEMAR: Instituto de Investigaciones Costeras y Marinas
MADS: Ministerio de Ambiente y Desarrollo Sostenible
MCIT: Ministerio de Comercio Industria y Turismo
NCEA: Netherlands Commission on Environmental Assessment
OAI: Oficina de Asuntos Internacionales
PNN: Parques Naturales Nacionales

# APPENDIX 5

## Map of the area



# APPENDIX 6

## List of documents received

**Documents accompanying letter with request for advice:**

- EIA report December 2011, 4 Volumes, Volume I, 67 p. Volume II, >750 p. Volume III, maps and Volume IV, results of 'consulta previa', public participation results documented on 17 CDs (received during site visit), and >50p. Annexes
- 'Concepto' of Direction of Marine and Coastal Issues and Aquatic Resources (DAMCRA), 29 August 2012, 27 p.
- 'Concepto' of INVEMAR, Marine and Coastal Research Institute, 2 August 2012, 8 p.
- Resolution N0. 679 of 2005, which declares the Archipelago of Rosario and San Bernadino Islands as a Marine Protected Area, 160 p.

**Documents received unofficially, just prior to site visit**

- File with results of soil drilling, laboratory analysis, conclusions and recommendations
- Information of PROCANAL, providing answers to the 6 concerns mentioned in the 'concepto' of DAMCRA, 13 p.
- File with results of soil studies, again with results of drilling
- File with drawings, cross sections of El Varadero canal
- File with bathymetric information
- Annex 1: sector guidelines for EIA for large scale dredging projects, 35 p. (EIA Proyecto de Dragado de Profundización de canales de acceso a Puertos Marítimos de gran calado PU-TER-1-01
- Annex 2: Sector Specific Guidelines for the El Varadero Project, 47 p. by ANLA, January 2012
- Annex 3: Additional information on the EIA, Volume I, 280 p. by PROCANAL, of 28 January 2013, and 6 Annexes
- Annex 4: Additional information on the EIA, Volume II, by PROCANAL, containing modelling studies related to beach replenishment in the Bay of Cartagena and the Abanico Isle, 28 January 2013

**Documents received during visit in Colombia**

- Sociedad Promotora Canal de El Varadero, Construcción y operación del Canal de Acceso a la Bahía de Cartagena por el Paso de El Varadero, 13 p. Febrero 2011
- Concepto tecnico B de INVEMAR, Julio 23 de 2012, 13 p
- Un-officially: article of 2001: Sobrevivencia al transplante de corales masivos el en archipielgago del Rosario, Colombia, IX Congreso Latinoamericano sobre ciencias del Mar, San Andres, Colombia, Septiembre 2011, 5 p.
- Un-officially: Estudio y evaluación de alternativas para el traslado de organismos sésiles coralinas del Canal del Varadero, Aqua y Tierre Consultants/PROCANAL, October 2012, 13 p.

**Power-point presentations held during visit in Colombia**

- Presentations held by Hidrocaribe/Procanal on 18 and 23 of February
- Presentation held by Ministry of Culture, Direction of Patrimony, 19 February
- Presentation held by National Authority of Aquiculture and Fisheries, 19 February

- Presentation held by DIMAR, Maritime Direction of Ministry of Defense, 19 February
- Presentations held by INVEMAR, 19 February
- Presentation held by MADS/DAMCRA, 19 February

**Received after visit to Colombia**

- 'Concepto' by Parques Naturales Nacionales, 12 October 2012, 16 p.
- 'Concepto' by AUNAP, 8 Noviembre 2012, 4 p.