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Acronyms

DENR	Department of Environment and Natural Resources
DSS	Decision Support System
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMB	Environmental Management Bureau
GeoCES	Geosciences for Coastal and Environmental Studies
ICZM	Integrated Coastal Zone Management
IWRM	Integrated Water Resources Management
LLDA	Laguna Lake Development Authority
MGB	Mines and Geosciences Bureau
NEDA	National Economic Development Agency
PEA	Public Estates Authority
PRDP	Pasig River Development Project
ToR	Terms of Reference
UP	University of the Philippines

1. INTRODUCTION

1.1 Motive and mandate of this advice

The Government of the Philippines, in collaboration with the Netherlands Government, has indicated its interest in a number of projects in Wider Manila Bay area and the possible financial support therefore. Before financial support will be given, the environmental relevance and the quality of the proposed activities should become clear. In order to advise the Netherlands Government on these projects, the Netherlands Embassy in Manila requested for this advice (see appendix 1). This advice has been prepared by a joint Netherlands - Philippines working group of the Netherlands Commission for Environmental Impact Assessment (the Commission). For the composition of the working group see appendix 2.

The following three projects have been assessed:

- ! Laguna de Bay project - Sustainable development of the Laguna de Bay environment- of the Laguna Lake Development Authority (LLDA);
- ! Guidelines project - Development of guidelines for environmentally and socially acceptable reclamation projects in coastal and lakeshore areas - of the Department of Environment and Natural Resources (DENR);
- ! Coastal and environmental development; Wider Manila Bay area, the Philippines; Combined study and survey proposal. This project concerns a combined proposal consisting of the following three different projects:
 - Integrated management and development of land and water resources;
 - GeoCES project - Geosciences for coastal and environmental studies - the original GeoCES project focusing on the Lingayen Gulf (July, 1996) is also taken into consideration;
 - Sand search and environmental investigation.

For a brief description of the projects which have been assessed, see appendix 4.

The objectives of this advice are:

- ! to assess the relevance of these projects from the environmental point of view;
- ! to assess the quality of the available documents regarding these projects;
- ! present views of and advice on the prioritisation, and as far as relevant the sequence of activities to be executed.

To comply with these objectives review criteria have been determined, see box 1.

The Commission visited the project sites and discussed the related projects with several governmental authorities and one non-governmental organisation during the period 19-28 April 1998. The programme of the site visit is presented in appendix 3.

Herewith the Commission wishes to express its gratitude for the excellent support and courtesy extended to the Commission by the various organisations during this visit. The Commission expresses special thanks to Mr H.J.J. Teunissen and Ms M.A. Van Drunen Littel of the Netherlands Embassy in Manila.

Box 1: Review criteria

- ! Environmental relevance:
 - contribution to ecological sustainability. Ecological sustainability is defined as maintaining the production functions of an ecosystem in the future;
 - prevention or mitigation of negative environmental impacts / improvement of the management of environmental resources (short term and long term);
 - environmental awareness raising.

- ! Feasibility and effectiveness:
 - feasibility (technical, institutional and timing);
 - effectiveness of the technical assistance.

- ! Institutional aspects:
 - Institutional setting;
 - mandate of the organisation;
 - Capacity of the organisation;
 - technical and management capacity of the organisation (number of people and experience, present and planned);
 - Ownership;
 - commitment and involvement of the local organisation;
 - use of human and technical resources in the Philippines;
 - knowledge and technology transfer;
 - durability of the project (institutional/ financial).

1.2

Outline of the advice

In chapter two of this advice the main and project specific recommendations are presented. In chapter three the different projects are reviewed.

2. RECOMMENDATIONS

2.1 Main recommendations

The Commission advises:

- ! to execute the Laguna de Bay project - Sustainable development of the Laguna de Bay environment - of the Laguna Lake Development Authority (LLDA);
- ! to execute the Guidelines project - Development of guidelines for environmentally and socially acceptable reclamation projects in coastal and lakeshore areas - of the Department of Environment and Natural Resources (DENR);
- ! with respect to the combined project proposal; Coastal and environmental development:
 - not to support the project; Integrated management and development of land and water resources of Delft Hydraulics in the present form, in which land reclamation and the development of a decision support system (DSS) for the Wider Manila Bay area are linked;
 - execute the GeoCES project of the Netherlands Institute of Applied Geoscience TNO and National Geological Survey in the originally planned area of the Lingayen Gulf and not in Manila Bay;
 - not to support the project; Proposed sand search and environmental investigation in Manila Bay of Fugro Engineers B.V.”.

2.2 Project recommendations

With respect to the selected projects the Commission advises to take the following recommendations into consideration for the elaboration of the Terms of Reference (ToR) of the project proposals.

2.2.1 **Laguna de Bay project**

The Commission recommends to:

- slightly adapt the ToR for the project in order to define the activities and its boundaries more clearly;
- assign an independent advisory panel for evaluation of infrastructural works.

2.2.2 **Guidelines project**

The Commission recommends to include the following sections in the guidelines document:

- guidelines on environmental impact assessment of land reclamation projects;
- information on so-called “good practice” in land reclamation projects;
- additional sections, in the form of checklists, reviews and technical notes can be added as and when required.

2.2.3 **Integrated management and development of land and water resources**

The proposal has identified a realistic long term objective in which the development of a DSS for the Wider Manila Bay area is relevant. For implementation of a DSS within a couple of years the following recommendations are made:

- ! in view of the need for capacity building to deal with the complex integrated coastal zone management issues in the Manila Bay area of study, a pilot study in Lingayen Gulf is recommended, see section 2.2.4. and 3.4.2;
- ! the revised project should start on the basis of experiences gained in the proposed Laguna de Bay and GeoCES project.

2.2.4

GeoCES project

The Commission recommends to:

- ! take the original GeoCES proposal as a starting framework and to extend this proposal towards a pilot project for the development of a DSS for coastal zone management of the Lingayen Gulf;
- ! include a stronger biological and ecological component to be executed by the University of the Philippines system;
- ! extend the original proposal with a hydrodynamic/water quality/ecological modelling component. With these extensions a DSS can be developed addressing specifically the conditions in the Lingayen Gulf as a pilot study for the development of a DSS for Manila Bay.

2.2.5

Sand search and environmental investigation

The Commission recommends:

- ! that the project should not be included in the technical assistance of Netherlands Development Assistance it should be considered as part of a regular commercial land reclamation project;
- ! that if the Integrated management and development of land and water resources project is to be implemented in a later stage, the MGB (Mines and Geosciences Bureau) is to be involved in the necessary geological and geotechnical surveys and investigations. In that case a thorough assessment of the capacities of MGB in this field is necessary for which specific technical assistance should be procured.

2.2.6

Phasing of the selected projects

With respect to the phasing of the selected project proposals the Commission advises to:

- ! finalise the ToR of the guidelines project and start in 1998;
- ! revise the ToR of the Laguna de Bay project and start in 1998;
- ! restructure the GeoCES project proposal. This project can start in 1999.

- ! implement the Integrated Coastal Zone Management (ICZM) for the Wider Manila Bay area at a later stage on the basis of experience gained in the GeoCES and the Laguna de Bay project. DENR seems to be the most appropriate agency to develop the further planning of the implementation of ICZM for the Wider Manila Bay area.

3. REVIEWING OF THE PROJECTS

3.1 Vision on the Wider Manila Bay area

The Commission has recognised that pollution of the water and the bottom sediments is the most important environmental problem in the Manila Bay, in the Laguna de Bay and in the Pasig River which connects the two basins. The Wider Manila Bay area is defined as the Manila Bay, Laguna de Bay and the downstream section of the Pasig river watershed, see map 1.

The Pasig River drainage basin has two major tributaries: the San Juan River and the Marikina River (see map 2). In the wet season some 50 % of the discharge of the Marikina River drains into the Laguna de Bay, while the other half drains into the Pasig River. The flow velocities during this season are substantial and erosion of the bed occurs, flushing almost all polluted material towards Manila Bay and Laguna de Bay. In the dry season the discharge of the Pasig River and the tributaries is very low and most of the river flow is from waste water discharges, causing serious problems. "The water is biologically dead and has the appearance of diluted sewage (Metcalf & Eddy International e.o., 1997)". The level of the Laguna de Bay during this season drops to such extent that part of the water of the Pasig River flows into the lake. This water is brackish, but the net discharge of saline water is limited.

It is emphasised that the three basins: Pasig River-Laguna de Bay- Manila Bay are interconnected, not only in a hydrological sense but also in view of pollution combatment. However, no masterplan for the whole system exists. One of the reasons might be that there is no overall mandate covering the whole area by one of the authorities. Another reason is that such a masterplan requires a substantial skill, knowledge and capacity and a strong and effective political and executional support which by experience is difficult to organise in most countries. However, important first steps have been taken already in Laguna de Bay and the Pasig River basin. In Laguna de Bay a "Masterplan for integrated water management" has been prepared and for the Pasig River a "Pasig river development plan" has recently been finalised¹. For Manila Bay no masterplan is available.

Considering all problems associated with pollution control of the wider Manila Bay area, the Laguna de Bay is of particular importance. The masterplan for the Laguna de Bay has a high potential for an effective approach of integrated water resources management. In addition, the Laguna de Bay is an environmentally sensitive area with important functions such as drinking water supply and fish production. One water purification plant is established and plans for water treatment facilities are being developed. Of great importance is also that the total water management of Laguna de Bay is under the mandate of one governmental organisation, the LLDA.

For the Pasig River, although a development plan exists, the set up of an integrated water management plan has not been planned due to the limited capacity and institutional framework.

1 The Pasig River Development Plan (PRDP) and a project plan have been prepared by Metcalf&Eddy International Inc in association with Brockman Tym International and TCGI Engineers (April 1998). The PRDP considers the lower section of the Pasig river as it passes through Metro Manila.

As already mentioned for the Manila Bay there exists no masterplan whereas the institutional framework is unclear to the Commission. The environmental problems in the Manila Bay are certainly very serious. The detrimental effects of the pollution are obvious from the wide occurrence of excessive "red tide", indicative for toxic algal blooms and deposits of solid waste particles and sediments have been identified on coral reefs near the southwest tip of the Bay.

Several land reclamation projects have been executed, other projects are under construction or have been planned by the Public Estates Authority (PEA). These projects are not aiming at pollution control or combatment nor to environmental restoration.

Without a clear decisional structure at this moment, a decision support system (DSS) is not considered to be very effective by the Commission. However, it might become an effective instrument in the future. Therefore, it is important to gain experience with the implementation of integrated water management plans, including pollution control in fresh water systems (e.g. Laguna de Bay) as well as in salt water systems. In this respect the development of tools and insights in a well defined relatively simple basin in the salt water region of Lingayen Gulf is a prerequisite for the development of a future DSS for Manila Bay, leading to a Coastal Zone Management Plan. Such a plan should include the Pasig River as the major source of the pollution of Manila Bay.

3.2 Laguna de Bay project - Sustainable Development of the Laguna de Bay Environment ^{2]}

The aims of this project are to address the need for the development of Integrated Water Resources Management through institutional strengthening and development of related tools and skills. Specific activities are to:

- ! develop a permanent monitoring and evaluation system for hydrological and environmental variables;
- ! develop a set of modelling tools to examine the physical, chemical and biological behaviour of the lake waters;
- ! carry out a dredging and land reclamation related feasibility study including environmental impact assessment;
- ! carry out a study on the Laguna de Bay as a potential source for domestic water supply;
- ! carry out training of LLDA staff in the field of water management.

Environmental relevance

With a surface area of 90,000 hectares the Laguna de Bay is the largest lake in the Philippines. Existing and potential functions include: fisheries and aquaculture, transport, flood retention, power generation, recreation, waste sink, water supply (domestic and irrigation) and industrial cooling water supply. The national government prioritises the use of the lake as a long-term source of domestic water supply.

For LLDA as a resource management agency, both the quality and the quantity of the lake water is of primary concern. Although the present situation doesn't seem to be alarming, there is serious concern for both the quality and quantity of the water reserves. Ongoing eutrophication and increasing loads of toxic and hazardous substances are a direct threat to the quality of the lakewater and its main production functions, being fish production and drinking water supply^{3]}. Furthermore, the storage capacity of the lake is gradually decreasing due to the continuous inflow of large

2 The following project document has been reviewed: Laguna Lake Development Authority (April 20th, 1998): Sustainable development of Laguna de Bay environment. A project proposal to the Government of the Netherlands.

3 The following functions of the lake, apart from the mentioned production functions can be distinguished: (i) regulation functions such as: natural water purification, water storage capacity, counteracting surface sea water intrusion, breeding grounds for fish; (ii) carrier functions such as: suitability for water transport, suitability for aquaculture and crop production, tourism potential; (iii) information functions: scientific interest, scenic beauty, see (OECD-DAC, 1997) and (Koudstaal e.o.,1994).

quantities of sediments from the 21 tributary rivers. As the proposed project relates to the planning and the decision-making processes for the sustainable development of the Laguna de Bay environment, the environmental relevance is obvious. Besides, it is to be expected that the project activities will enhance the public environmental awareness.

Feasibility and effectiveness

The proposal indicates that both surface and ground water resources within the Laguna de Bay basin will be considered. Besides, the project will focus on supporting management decisions concerning sedimentation in the lake and on options for removing contaminated sediments by dredging. Based on this scope of work, the proposed project and the related transfer of knowledge and technology is expected to be effective.

In relation to the section “Key components of the technical assistance/grant” of the proposal, it is to be noted that the request for assistance also comprises the involvement of an advisory panel for evaluation of various types of infrastructural works. This aspect is considered to be outside the scope of the proposed project.

Institutional aspects

The mandate in relation to the management of the Laguna de bay Basin rests with the LLDA. Consequently LLDA is the right proponent for this project. During the past three years the LLDA developed itself into a profit making organisation with dedicated and capable people. The organisation has effective working relations with local authorities and research institutes. Its capacity for Integrated Water Resources Management (IWRM) is practically non existing. Especially knowledge required for working with complex computer models - 3D modelling of lake hydrodynamics, sediment transport, water quality and ground water flows - is absent. Therefore, training and transfer of know-how are crucial for the successful execution of the project.

In 1995 LLDA published the Laguna de Bay master plan. At present the main activities are related to reducing levels of contamination:

- ! introduction of a pollution fee system;
- ! zoning and reducing numbers of fish pens;
- ! river rehabilitation programme;
- ! execution of baseline studies such as a study on sedimentation and erosion, industry survey, water balance.

The agency is considered to be the right organisation that can develop into a professional IWRM agency for the Laguna de Bay area.

3.3 Guidelines project - Development of guidelines for environmentally and socially acceptable reclamation projects in coastal and lakeshore areas^{4]}

The aim of this project is to develop guidelines for environmentally sound and socially acceptable land reclamation projects in the coastal and lakeshore areas.

Environmental relevance

The Guidelines project was initiated and formulated by the Department of Environment and Natural Resources (DENR). The Commission is of the opinion that the background and rationale as given in the DENR project description of October 7th, 1997 is correct. At present various small and larger

4 The following two project documents have been reviewed: (i) DENR & Waterman, R. (February 16th, 1998): draft Terms of reference. Development of guidelines for environmentally and socially acceptable reclamation projects in coastal and lakeshore areas; (ii) DENR-EMB (unpublished): Terms of Reference; Development of Environmental guidelines for coastal and lake reclamation.

scale land reclamation projects are being carried out or considered. The required know-how for both environmentally sound and socially acceptable preparation, and for the execution of the works, as well as for the related EIAs is insufficient. Recent examples of EISs for land reclamation projects showed that at present no attention at all is paid to the selection of possible effects in the borrow areas. Furthermore no attention is being paid to the effects of:

- ! large scale sand extraction on coastline development and on fisheries;
- ! dredging / reclamation monitoring programmes.

Both the experts who are drafting these EIAs as well as the experts who have to evaluate them, lack the specific experience and knowledge related to these types of works. Consequently, the environmental relevance of the proposed project is considerable.

Feasibility and effectiveness

The preliminary ToR made for this project still has to be reviewed and finalised by DENR. In the ToR ample attention is paid to the planning of the works and to the evaluation of its effects, but little to the more practical aspects of reclamation works. The guidelines would clearly benefit if background information on common /good practice methodologies (“how to ...” on site selection, dredging and land reclamation, field investigations, monitoring practice, etc.) is added.

In this way a distinction can be made between the specific guidelines for environmental impact assessment purposes, and practical guidelines/ information for the planning, preparation and execution of these works. Both sections will enlighten and strengthen one another.

Institutional aspects

As DENR is responsible for safeguarding the environmental and social acceptability aspects of land reclamation projects, it is clearly within the mandate of DENR to prepare and publish the proposed guidelines. However, it must be noted that the Public Estates Authority (PEA) has a mandate for preparing and executing land reclamation projects, whereas the Environmental Management Bureau (EMB) has a mandate for evaluating the related EIAs. Closer consultation between these organisations should be undertaken.

The development of the guidelines can only be achieved successfully, if it is carried out as a joint activity of both Philippine and Dutch experts, as stated in the project proposal. Dutch knowledge and experience with these types of projects should be tailored to fit the Philippine situation and legal framework. Although the development of the guidelines will be a DENR activity, it is foreseen that individual experts from other Philippine organisations will be requested to contribute.

As the development of the guidelines does not require an investment in hard- or software and the works are limited both in manpower and duration, capacity at DENR will not be a problem.

3.4 Coastal and environmental development - Combined study and survey proposal for the Wider Manila Bay Area^{5]}

The aim of the project is to develop capacity for integrated coastal zone management for the Wider Manila de Bay area through:

- ! the setting up of an Integrated Coastal Zone Development and Management Unit in PEA in cooperation with DENR and other authorities;
- ! collection of data and development of an information system on land and water resources;
- ! development of a decision support system (DSS) for comprehensive analysis of specific development projects;
- ! institutional support including training and support in terms of facilities, hardware and software.

5 The following project document has been reviewed: Delft Hydraulics, Fugro Engineers B.V., Netherlands Institute of applied Geoscience TNO (February 21th, 1997): Coastal and Environmental Development; Wider Manila Bay area; Combined Study and Survey proposal.

The Commission is of the opinion that the combined project can not be treated as an integrated project because there is:

- ! no authorised institutional framework to which the DSS can be attached;
- ! a lack of capacity to accommodate the DSS and;
- ! a lack of cohesion between the projects.

Therefore the projects have been reviewed separately.

3.4.1 **Integrated management and development of land and water resources in the Wider Manila Bay area^{6]}**

The aims of this project are to address the need for development of integrated coastal zone management and integrated water resources management through institutional strengthening and development of technologies and skills. Specific activities are:

- ! to establish a coastal zone management unit for the wider Manila Bay area within the PEA;
- ! develop an atlas of land and water resources;
- ! develop a decision support system (DSS) for the wider Manila Bay area;
- ! transfer of technology and training.

Environmental relevance

The proposed activities under the combined study are directed towards land reclamation. Their relevance for short term mitigation of effects of presently dominant environmental impacts is limited. However, the long term aim of development of a decision support system (DSS) for the wider Manila Bay area is environmentally relevant. The production of the atlas for rapid assessment is a first step in the process towards the development of a database serving environmental management and decision support needs.

Feasibility and effectiveness

Decisions about location and size of the present land reclamation projects have already been taken. Therefore this project cannot contribute to the decision making process anymore. However, in view of the size and importance of potential developments in the area the project should aim at the development of a DSS for the whole of the wider Manila Bay area. Assessment of future land reclamation projects should fit in the framework of this DSS.

In view of the complexity of the problems in the wider Manila Bay area a DSS is considered an effective tool for integrated planning. However, the effectiveness largely depends on the involvement of the locally mandated institutions and other relevant partners such as LLDA, MGB and UP. The tasks, responsibilities and interactions of these organizations are not clearly defined in the present proposal.

Institutional aspects

In the view of the Commission the PEA has a mandate for land reclamation, but it is not an integrated coastal zone planning and management agency. The mandate for integrated resource planning and management is given to DENR and to LLDA in the eastern part of the wider Manila Bay area.

The complexity of the issues at hand warrants the proposed scope of activities. However, the present capacity and experience of the PEA and of the mentioned institutions supposed to cooperate within

6

The following project document has been reviewed: Delft Hydraulics (August 1995): Integrated management and development of land and water resources of the Wider Manila Bay area. Appendix C-1. In: Coastal and environmental development; Wider Manila Bay area, the Philippines; Combined study and survey proposal (February 21th, 1997) by: Delft Hydraulics, Fugro Engineers B.V., Netherlands Institute of Applied Geoscience TNO.

the proposed Integrated Coastal Zone Management Centre is limited. The present project proposal does not detail the scope of work to be done by local institutions and inputs related to local institution building and human resources development.

The motivation of the proposed counterpart, the PEA, is driven by land reclamation objectives which is their mandate and core business. Its commitment to widen its scope towards involvement in ICZM for the wider Manila Bay is assessed positively.

3.4.2 **GeoCES Project**

The present proposal is part of the overall proposal "Coastal and Environmental Development". However it is a rewritten version of an original proposal "GeoCES", dated July 1996, which focuses on the geoscientific study for coastal planning in the Lingayen Gulf. The set up of both proposals are similar, only the area of investigation is extended to the whole Manila Bay. The present assessment therefore covers both proposals. They will be referred to as the "present proposal" and the "original proposal"⁷].

The present proposal aims at the identification of major geohazard problems associated with land reclamation, at geoscientifically sound planning, and at policy guidelines. In addition relevant geoscience data will be gathered to be included in a data base and in a DSS. Specific activities are:

- ! development of an organisational structure and staff technical upgrading at the MGB;
- ! overseas training and on-the job training;
- ! field surveys and production/distribution of user specific information on coastal zone environmental and geoscientific issues;
- ! organisation of meetings and workshops with involved groups and institutions on practices for geoscientifically sound land use planning and environmentally sustainable development of the coastal zone.

Environmental relevance

The present proposal has only a limited environmental relevance because the area of investigation is too large and the proposal lacks a strong biological and ecological connection. Obviously in the present and original proposal the geoscience aspects refer to environmental hazards, but the proposals are merely descriptive and lack the integration in a broader environmental context, including the determination of the ecological processes and effects related to geohazards. However, purely from a geoscience point of view the proposals address the prevention and mitigation of negative environmental impacts and aim at raising environmental awareness. These are relevant environmental aspects.

Feasibility and effectiveness

The proposals certainly have their merits. However, there are two shortcomings: the present proposal is too limited in scope, and covers too wide an area, viz the whole Manila Bay.

The existing Philippine knowledge and technical means and the additional Dutch inputs contribute to the feasibility of the proposals. The right partners are selected and the proposals can start in due course.

Institutional aspects

7 The following two project documents have been reviewed: (i) "present proposal"; Proposal Netherlands Institute of Applied Geoscience TNO: Geoscience for Coastal and Environmental Studies (July 1996). Appendix D. In: Coastal and Environmental Development; Wider Manila Bay area, the Philippines; Combined Study and Survey proposal (February 21st, 1997) by Delft Hydraulics, Fugro Engineers B.V., Netherlands Institute of Applied Geoscience TNO;(ii) "original proposal"; DENR-MGB, Geological Survey of the Netherlands & International Institute for Aerospace Survey and Earth Science in the Netherlands (July 1996): Geoscience for coastal and environmental studies (GeoCES).

The proponent is the Bureau of Mines and Geosciences which resorts under DENR. The project team is the right and capable organisation for the execution of the present proposals. DENR has a mandate for protection of the coastal environment, conservation of natural resources and the sustainable development of coastal areas. Therefore the projects are well incorporated in the institutional framework of the Philippines.

The Philippine-Dutch project team is capable to perform the geoscientific tasks. However it is also mentioned in both proposals that coastal zone master plans will be an outcome of the project. No clear indications have been presented how this will be achieved, nor how the ecological and/or biological aspects will be incorporated in these plans. In addition it is not clear in the present proposal how the interaction with the development of the DSS is organised and to which degree of detail the geoscience aspects are incorporated. In both proposals there is capacity in the Project team in database management, but little experience in the analysis for integrated planning. The planned input of the partners in the proposals is sufficient to execute the project.

The commitment of the MGB and the Philippine and Dutch partners is obvious from both proposals and full use is made of the human and technical resources in the Philippines. The transfer of knowledge and technology is well organised in workshops and participation of local and regional planning authorities and local groups. The proposed projects will increase the capabilities of the Philippine partners and it is expected that they will have a lasting effect.

3.4.3 **Proposed Sand Search and Environmental Investigation in Manila Bay ^{8]}**

The aim of this project is to implement a sand search for large scale land reclamation in Manila Bay in cooperation with the PEA. Specific activities are:

- ! desk study;
- ! seafloor and geophysical seismic survey (phase 1);
- ! geotechnical investigation (phase 2);
- ! environmental investigation (optional).

Environmental relevance

The proposed activities are serving the purpose of identification of borrow pits for land reclamation. The project does not provide information on environmental impacts relevant for selection and identification of borrow pits. Environmental information is necessary because EIA for land reclamation is obligatory in the Philippines, but experience is lacking^{9]}. Survey data of the Fugro project could be used as input for a pilot EIA for this type of project in the Philippines. The Guidelines project can provide the mandated DENR/EMB with proper guidelines for EIA on land reclamation, including guidelines on selection and identification of borrow pits.

Feasibility and effectiveness

Decisions about location and size of some major land reclamation projects have already been taken or are in an advanced stage and the project is too late to influence these decisions. The "Boulevard 2000" land reclamation works presently under implementation use a borrowpit area at approximately 5 nautical miles southwest of Cavite and this area is large enough to serve presently identified needs.

Institutional aspects

8 The following project document has been reviewed: Fugro Engineers B.V.(October 1996): Proposed sand search and environmental investigation in Manila Bay Philippines. Appendix E. In: Coastal and environmental development; Wider Manila Bay area, the Philippines; Combined study and survey proposal (February 21th, 1997) by: Delft Hydraulics, Fugro Engineers B.V., Netherlands Institute of Applied Geoscience TNO.

9 In meetings of the working group of the Commission for EIA with DENR/EMB and DENR/MGB it has been noted that in the first EIA for land reclamation executed in the Philippines (Bacolod reclamation, 1997) environmental information on borrow pits was not asked for due to limited experience with EIA for this type of project.

The PEA is the organization having the authority to implement land reclamation works all over the Philippines. In that sense the PEA is the right counterpart for this project. The organization mandated for geological surveys, geological data base management and mining in the Philippines is the MGB.

The motivation of Fugro and the PEA to execute this project is technical and commercial. The present proposal gives no attention to the importance of technology transfer and the role of local institutions such as MGB. Although MGB is mandated and capable to do the necessary survey work using their offshore mineral exploration vessel "RPS Explorer" and supporting land based facilities and staff, their involvement is not mentioned in the project.

Fugro, with the support of the PEA is technically capable to implement the proposed survey.