

APPENDICES

**with the advice on the Integrated
Coastal Zone Management plan
for the city of Beira, Mozambique**

(appendices 1 to 4)

APPENDIX 1

Terms of Reference

I Introduction and Background

Background and problem definition

The city of Beira is the second largest city in Mozambique, situated in the province of Sofala, along the coast of the Indian ocean. Beira is the most important harbour in Mozambique and is therefore of economic importance.

Beira is located at the mouth of the Pungue river, which flows on the western side of the city into the Indian Ocean. The water-flow through the Pungue river fluctuates considerably between seasons. Over the years the flow of the Pungue has been negatively affected by the construction of dams upstream. As a result, particularly in the dry season, there is a considerable infiltration of seawater into the river channel to the extent that currently the water-intake for the city of Beira is threatened by salinization.

At the mouth of the river lies a shallow coastal zone consisting of sandbanks and tidal channels. Tidal movement is an important feature for Beira. Particularly during spring-tides considerable differences in water levels occur with high current velocities. The coastal area in Beira has a complex morphology because of the interaction between the river-flow, the tide, the waves and the current along the coast. The influence which these phenomena have on the coast differs from place to place.

For years the coastline and the beach of Beira have been subject to erosion. Already in the 1940's several measurements were implemented to combat the erosion process. These infrastructural works, such as groynes, could not adequately be maintained. Consequently these works are currently in a dilapidated condition. As a result of the bad condition of the works, in combination with the natural wave-, tidal- and current movements, the erosion has presently progressed to the extent that buildings and infrastructure are being undermined and parts of the low-lying hinterland are permanently under threat of flooding. This risk is particularly eminent in the case of a storm combined with a spring-tide. The risk of inundation of the hinterland is further increased through the deterioration of the condition of the dunes, which only form a thin line protecting the lower lying coastal plain. The present bad condition of the dunes can be contributed to a number of uncontrolled activities (woodcutting, construction of settlements in the dunes and the use of x cars) which have disturbed the original ecosystem.

A channel, which was constructed in order to drain the storm-water from Beira, poses another threat of inundation. This drainage channel traverses the dune field and discharges into the sea. At the end of the channel sluices have been constructed to prevent the infiltration of seawater during high tide. However, these sluices are not functioning any longer and during high tide seawater flows freely into the channel causing problems of inundation, as well as salinization of the agricultural fields in certain parts of Beira. Furthermore, at the point where the channel discharges into the sea, considerable sand deposits do occur in front of the coast, causing a risk of blocking the drainage channel through siltation.

Overall the drainage system is not as effective as it should be, causing parts of the hinterland (agricultural fields and houses) to submerge during the rainy season when water cannot be removed quickly enough and, as indicated, because of the non-functional sluice compartments which allow infiltration of seawater.

Institutional setting

The City Council of Beira is officially responsible for protection and management of the Beira coastal zone. To this extent the city council created an organisation with specific responsibilities for coastal zone management. This includes the management of the mangrove forests. Over the years there has been a process of degeneration of the mangroves. The disappearance of these forests has considerable consequences for the coastal condition.

There is, however, also a provincial organisation (Maritima) which has to give official approval for all the works which will be executed at the coast. According to their statutes Maritima is responsible for management of the coastal zone from the water line up to 80 kilometres inland. Maritima answers directly to the Governor of the Province of Sofala. Furthermore the activities which the Beira harbour authorities undertake (dredging of the access channel etc.) also have an important influence on the management of the Beira coastal zone. The human resources- and financial capacity of the Beira City Council for coastal zone management are not adequate. Furthermore, the responsibilities, lines of communication and coordination between the parties involved in coastal zone management are not clearly defined.

Over the years the city of Beira has sought support in order to address the problems related to coastal erosion, sanitation and water supply and environmental management. In the last 10 years support was received from FINNIDA, the World Bank, the Netherlands Government and the cities of Gothenburg and Amsterdam.

The city of Amsterdam has an agreement with the city of Beira. In the context of this agreement a number of projects have been defined, among others this includes a project to define solutions for the coastal erosion. For this a number of reports have been produced. These reports do propose some solutions to the erosion problem, however, they are rather qualitative in nature. During missions executed by the city of Amsterdam a number of emergency measurements, to halt the coastal erosion and prevent the inundation of the hinterland, have been identified. Among others they include dune stabilization, repair of the sluices, beach recharge and the construction of groynes.

The municipalities of Beira and Amsterdam later decided that the nature of the problem, and consequently the resources required to prepare (let alone to implement) adequate solutions was such that it fell outside the scope of the city to city agreement. It was at this stage that the Netherlands Minister for Development Cooperation, during a visit to the city of Beira, in August 1997, decided to provide support for the preparation of an integrated coastal zone management plan for the city of Beira, which includes the implementation of some of the identified emergency works.

II Scope of Work

The principal objective of the consultancy will be to assist the municipality of the city of Beira in the formulation of an integrated coastal zone management plan covering the areas of coastal erosion, management of water supply, sanitation and drainage, management of the coastal environment and institutional capacity building.

With respect to the problem of coastal erosion the plan will have to identify alternative solutions which are quantified both in time as well as in monetary terms (investment and maintenance). In identifying the alternative solutions the consultant will have to pay due respect to the institutional and financial condition and possibilities of the municipality of Beira. This implies that the solutions should not only be of an expensive civil engineering nature and/or require specific expertise and equipment to maintain.

The secondary objective of the consultancy is to implement and/or supervise the

implementation of some of the already identified emergency works, which are; repair of the sluices, beach recharge, dune stabilization and the rehabilitation and/or construction of the groynes. Particular attention will have to be given to the repair of the sluices. The implementation of other emergency works depends on the remaining budget and the discussions with the counterpart. Some of the identified emergency works, such as the construction and/or rehabilitation of groynes, might require further studies and measurements conducted for the preparation of the overall management plan, before implementation.

If there are no objections to the implementation of the mentioned emergency works the consultant will have to prepare a detailed financial proposal for the execution of the works which will have to be compared to the available resources. It is the decision of the consultant whether part of the works will be subcontracted or whether the consultant will implement the total package of activities required for the execution of emergency works. In case the consultant decides to subcontract to a local contractor, the consultant will be entirely responsible for this process, ie. the preparation and formulation of tender documents, the bills of quantities (if applicable eg. for beach recharge) and the contract documents as well as for the supervision during the implementation of the emergency works.

The implementation of the emergency works will be executed simultaneously with the preparation of the coastal zone management plan since the two activities are closely related.

The Beira City Council has taken the initiative to create a forum of all parties who are responsible for coastal zone management in Beira. Through the City Council the forum will be the counterpart to the consultant during the entire process of implementing activities required to achieve the primary and secondary objectives. As an integral part of the duties the consultant will assist and advise the forum in creating an appropriate institutional framework required for adequate coastal zone management. In this respect will knowledge of the portuguese language be an advantage.

III Client

On behalf of the city council of Beira, the Minister for Development Cooperation of the Netherlands has commissioned the consultancy. The Minister will be represented by the Royal Netherlands Embassy in Maputo.

IV Terms of Reference

The consultant will undertake the following activities:

- A In relation to the primary objective ie. the preparation of a coastal zone management plan for Beira:
- Prepare an historic overview with regard to the coastal erosion problems;
 - Collect and analyze existing, relevant reports which will be used as the basis for this consultancy. Particularly reports produced in the context of the twinning arrangement between the city of Amsterdam and the city of Beira are relevant. These reports will be made available to the consultant.
 - Collect additional information if and when required eg. measurements, statistics etc.
 - Prepare an overview of the parties involved in coastal zone management forum and identify their respective mandates. Also present an opinion on the composition of the forum.
 - Prepare an assessment of the institutional strengths and weaknesses of the parties

- participating in the forum for coastal zone management in Beira;
- Prepare a proposal for institutional reform, including a training strategy for employees of the relevant departments, to create sustainable coastal zone management capacity;
- In cooperation with the forum, prepare a coastal zone management plan for Beira presenting alternative solutions to the problems of coastal erosion, the siltation and the management of the water resources, sanitation and drainage, the degeneration of the coastal ecosystem (specifically the degeneration of the mangrove forests) as well as the creation of a proper institutional framework for coastal zone management.
- Prepare a clear and transparent budget for the identified solutions (investment and maintenance);
- Identify possibilities for assistance and support from the city of Amsterdam during plan implementation;
- Identify possibilities for assistance from the Netherlands Institute for Southern Africa (NIZA) during plan implementation;

B In relation to the secondary objective ie. the execution of emergency works:

- Assess the relevance and urgency of the proposed emergency works and their effectiveness in relation to the integrated coastal zone management plan, as referred to under "A" above;
- Assess the possibilities for using sand from dredging operations in the access channel to the harbour, for beach recharge;
- Identify a set of emergency works for implementation starting with the repair of the sluices of the drainage channel;
- Prepare an adequate budget for the implementation;
- Implement identified emergency works, either under own management or through subcontracting.

In case of subcontracting (part of) the works;

- prepare tender documents, bills of quantities and contract documents for the sub-contractor;
- negotiate and enter into a contract with the sub-contractor;
- provide the supervision during the execution of the works by the sub-contractor.

All activities will be carried out in close collaboration with the forum of parties, involved in coastal zone management in Beira.

V Timing of the Consultancy

The consultant is expected to start his activities on 1 April 1998.

The coastal zone management plan will have to be presented to the Netherlands Embassy in Maputo and to the Beira City Council as the representative of the forum, latest 31 September 1998.

It is expected that the execution of the emergency works will also be finalized by 31 September 1998.

VI Project organisation and Work-method

The consultant will organize a team of experts who will be based in Beira for most of the duration of the consultancy. The team should consist of members with the following expertise:

- Institutional development (team-leader)

- Coastal zone morphology
- Geo-hydrology
- Civil engineering
- Environmental management of african coastal zones.

One team-member can be qualified in more then one field of expertise.

The consultant will (if appropriate) receive additional instructions from, and be directly answerable to the Royal Netherlands Embassy in Maputo. The Embassy will take final decisions in case of unforeseen problems and/or conflicts. In order to adequately monitor progress the consultant will produce bi-monthly technical and financial progress reports which will be sent to the Embassy and the Beira city council.

On a day to day basis the consultant will cooperate and work together with the city council of Beira and other relevant parties in the forum if required.

VII Required Outputs for the consultancy

The following outputs are expected:

- A coastal zone management plan with identified alternatives, phased in time and adequately budgeted (investment and maintenance costs). The proposed solutions to the problem should, whenever possible, be formulated using the following principles:
 - environmentally sound
 - socially acceptable
 - technically simple
 - not capital intensive
 - be implementable with local expertise and technology
- The plan submitted to the Embassy needs the approval of the Forum.
- A proposal for institutional reform and/or strengthening for the forum.
- A training strategy for the forum, with an accompanying training plan with identified courses;
- A proposal for further collaboration between the cities of Amsterdam and Beira;
- A proposal for further support from the Netherlands Institute for Southern Africa (NIZA);
- Implemented emergency works;
- Trained personnel in the parties involved in the forum for maintenance of the implemented emergency works.

The coastal zone management plan will be presented to the Commission for Environmental Impact Assessment in the Netherlands for its opinion on the quality of the plan and the implemented priority works.

APPENDIX 2

Letter from the Royal Netherlands Embassy dated 8 May 1998 in which the Commission has been asked to submit an advice.



Royal Netherlands Embassy

	Commissie voor de Beira kustzone
ingekomen :	16 JUNI 1998
nummer :	161-98
classificatie :	034
kopie naar :	Ts/Jc/b/b/Po/Sh/Kh

Reference: MAP/OS-1084/98

Maputo, 8 May 1998

Subject: Invitation for an Advisory mission to the Beira Coastal Zone Management project.

Dear Mr. Scholten,

The Netherlands Embassy in Maputo has commissioned ARCADIS/Euroconsult to prepare an integrated coastal zone management plan for the city of Beira as well as to execute some emergency works necessary for the protection of its coastline. In order to ensure the sustainability of the project-interventions due attention will be given to institutional analysis and support for effective coastal zone management in Beira. The project has started on 13 April 1998 for a period of six months, ending on 13 October 1998.

Further details and information are given in the Terms of Reference (TOR), a copy of which is in your possession. In the TOR it is indicated that the Commission for the Environmental Impact Assessment (Cie) will advise the Embassy on the quality of the coastal zone management plan as well as on the implemented emergency works.

With regard to the relatively short timeframe it is essential that the project is well planned right from the beginning. A workplan will have to be produced which not only indicates the areas on which the project will concentrate but also specifies the process and activities foreseen which will lead to the formulation of the coastal zone management plan and the implementation of the emergency works. Currently this plan is being prepared and it is expected to be ready by mid May 1998.

In order for the Cie to prepare an advice on the final product it is essential that the Cie is involved in the planning process from the beginning and advise the consultant during the preparation of the workplan. This will ensure that activities and approaches, which the Cie feels are important, will be included in the workplan. This approach has been agreed to by the teamleader of ARCADIS/Euroconsult, the City of Beira, the Cie, the Embassy and the Department of Environmental Affairs (DML) of the Ministry of Development Cooperation in the Netherlands.

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MAP/OS-1084/98

Referring to the above I herewith would like to invite the Cie to field an expert mission to Mozambique in the framework of the agreement between the Cie and Neda of 1997. The Mission should ideally consist of persons with expertise in the fields of coastal zone management, coastal ecology, civil engineering and institutional development.

The specific TOR for the Mission will be as follows:

- From background documents develop an understanding and insight in the problems of the city of Beira with regard to coastal zone management.
- Liaise with relevant Mozambican counterparts in Maputo and in Beira and develop an understanding for the situation in this field with regard to the physical and institutional situation in this context;
- Advise on the following specific issues in order to assist the consultant on the contents and approach of the workplan:
 - . the composition of the Coastal Zone Management Forum in Beira, its envisaged tasks and responsibilities, its internal communication and decision making procedures;
 - . the physical conditions of the coastline in Beira and the emergency works selected for implementation;
 - . the coastal ecology in Beira and pertinent issues in this regard to be addressed in the workplan.
- Collaborate with the consultant during the preparation of the workplan and ensure that all relevant issues, based on the TOR, are covered in the plan.

This includes a description of the process and approach which will lead to the formulation of the workplan and the implementation of the emergency works.
- Advise the Embassy on the workplan as prepared by the consultant;
- Prepare a Mission report for the Netherlands Embassy in Maputo describing matters mentioned above.

I trust that the above presents you with sufficient information for the Mission to adequately prepare itself for the task ahead. In case more information is required please do not hesitate to contact me.

Yours sincerely,
For the Ambassador,



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First Secretary

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APPENDIX 3

Project information

Proposed activity: The Minister of the Netherlands for Development Cooperation decided to support the city of Beira for preparing an Integrated Coastal Zone Management plan (ICZM) for the city of Beira Mozambique. Included in the plan is the implementation of emergency works for preventing the coast from further erosion.

Categories: Environmental protection activities, DAC-CRS code 92100, Erosion control, DAC-CRS code 92019, Water and sewerage, DAC-CRS code 92010, Water supply, DAC-CRS code 91087

Project numbers: The Royal Netherlands Embassy MAP/OS-1084/98; Commission for EIA 034

Progress:

Letter with request to submit an advice: 8 May 1998

Advice submitted: 25 June 1998

Composition of the working group of the Commission for EIA:

Mr J.W. Kroon (chairman)

Mr E.W. Bijker

Mr F. van der Meulen

Mr A.J.H. Negenman

Mr J. Rassul (local resource person)

Technical secretary: Ms V.C.F. Tersteeg

APPENDIX 4

List of documents consulted

Arcadis Euroconsult, *Integrated Coastal Zone Management Plan for the city of Beira, Mozambique*, March 1998

David Chemane, Helena Motta, Mussa Achimo, Report: *Vulnerability of coast resources to climate changes in Mozambique: A call for Integrated Coastal Zone management*, Maputo, 1998

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