

## Section 7. Terms of Reference

### CONSULTANCY SERVICES FOR SPECIALIZED ENGINEERING ASSISTANCE TO PROJECT INFRASTRUCTURE INVESTMENTS

#### 1. Introduction

The Republic of Mozambique has received a credit from the International Development Association (IDA) of SDR<sup>8</sup>78.2 million (US\$120 million equivalent), for the implementation of the Cities and Climate Change Project (the Project), which will finance key analytical and infrastructure works to reduce the vulnerability to climate impacts in cities. The Project components are: Component 1 – Strengthening the Municipal Sector (US\$35 millions), and Component 2 – Enhancing Resilience to Climate Change (US\$85 millions). The Project became effective in July 18, 2012 and its closing date is December 15, 2017.

The Administration of Infrastructure of Water and Sanitation (AIAS), the Client for the purpose of this Consultancy, is responsible for the implementation of the Component 2 of the Project, which will support the enhancement of selected municipalities for sustainable resilience to weather-related environmental threats. The component will focus on:

- (a) Identification of key investment priorities in selected cities to strengthen resilience to climate related floods and erosion through the carrying out of: (i) an assessment of current needs, including the selection of the cities to be targeted, and projecting trends and scenarios taking into account climate change considerations; and (ii) training sessions for the technical teams of AIAS on climate change impacts on sanitation.
- (b) Strengthening Resilience of the City of Beira to Control Floods including through the: (i) development of a comprehensive study on integrated urban water management; (ii) design and supervision of drainage rehabilitation works; (iii) carrying out of drainage rehabilitation works including the relining of the primary channel (central) of Beira's drainage system; (iv) carrying out of rehabilitation works affected by the works referred to in (v) of this subparagraph including fences, latrines, verandas, side-walks as well as provision of resettlement houses provided with basic infrastructure; and (vi) provision of advisory services and equipment to strengthen the institutional capacity of Beira's Autonomous Sanitation Service.
- (c) Strengthening the resilience of the City of Nacala to control erosion including through the: (i) design and supervision of erosion control and drainage rehabilitation works including associated environmental and social support; (ii) carrying out of erosion control and drainage rehabilitation works including those related to the three primary channels of Nacala's drainage system; and (iii) provision of advisory services and equipment to strengthen the

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<sup>8</sup> Special Drawing Rights (SDR)

institutional capacity of Nacala municipality for managing drainage infrastructure and erosion control.

- (d) Strengthening the resilience of Maputo Metropolitan Area to control floods including through the development of a master drainage and sanitation plan for the Great Maputo area.
- (e) Project Implementation Unit for Part B of the Project: Establishment and operation of the PIU in AIAS to support the coordination and management of Part B of the Project including through the provision of technical assistance, audits, and goods and operating costs.

## **2. Description of Infrastructure Component (2)**

The Cities and Climate Changes Project - Component 2 is composed by three sub-components: (i) Strengthening resilience of the City of Beira to control floods, (ii) Strengthening resilience of the City of Nacala to control erosion and (iii) Strengthening resilience of Maputo Metropolitan area to control floods.

Specific objectives of the sub-components include the rehabilitation/expansion of sanitation/ drainage systems in respective cities.

The studies for defining the works in the three cities are in different contracting stages, and are expected to be implemented through 3 contracts signed with consultant firms. Activities under these contracts include sanitation and drainage master plan, feasibility studies, environmental and social impact assessments, detailed design and supervision of works.

### **a. Strengthening resilience of the City of Beira to control floods**

The project will (i) update the feasibility study for rehabilitation of the city-wide drainage system, (ii) develop the engineering designs of the city-wide drainage system, (iii) carry out the works supervision according to the Project investment plans, (iv) develop the bill of quantities and bidding documents, (v) prepare the environmental impact assessment, and (vi) provide social support during design and construction phases.

The feasibility study update will confirm the appropriate technical solutions and refine the proposed investments seeking optimized solutions. Related to drainage works, the project will finance the rehabilitation of part of the Beira open channels of drainage system, consisting of the primary channel known as 'central'. This system is constituted by the channels A, AII and AIV of Beira's drainage ne a continuous channel of about 9.3kms. The project will

reconstruct structures affected by the infrastructures works including rebuilding small structures such as fences, latrines, verandas, side-walks, etc. as well as between 50-80 existing structures might be affected by the project.

### **b. Strengthening resilience of the City of Nacala to control erosion**

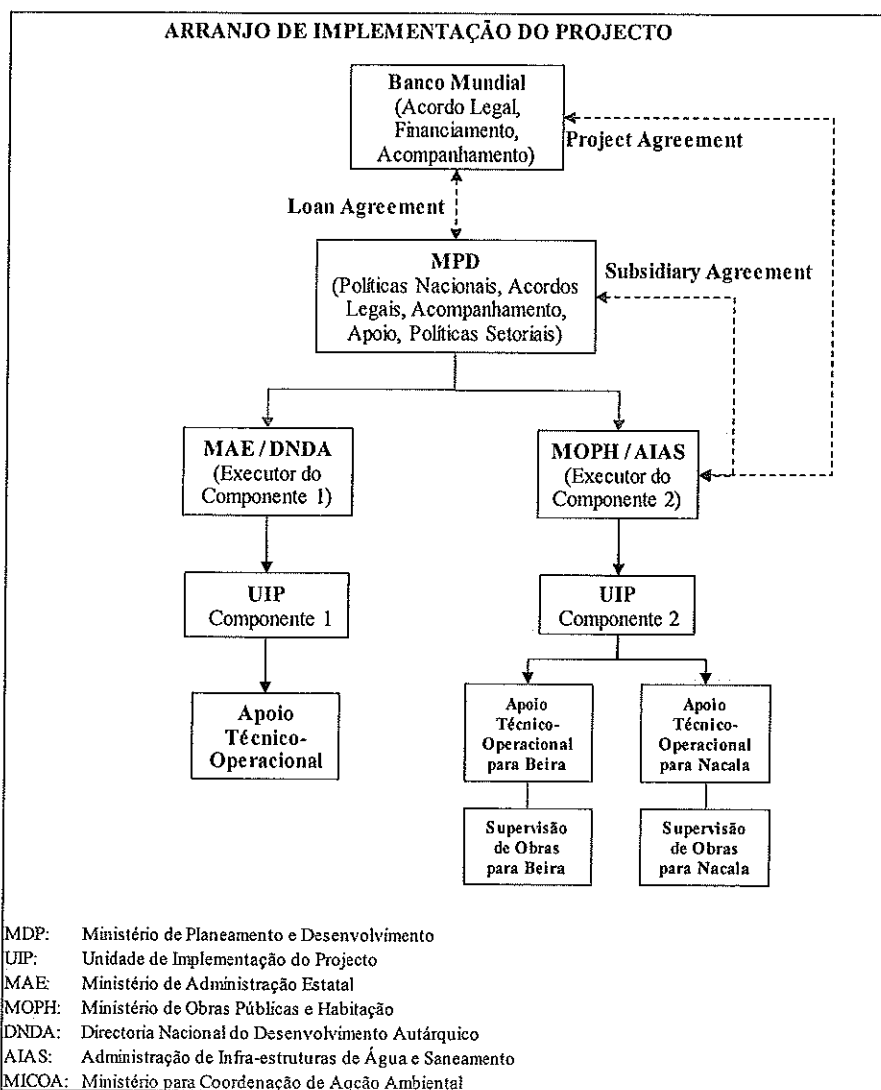
The project will (i) update the feasibility study for rehabilitation of the city-wide drainage system, (ii) develop the engineering designs of the city-wide drainage system, (iii) carry out the works supervision according to the Project investment plans, (iv) develop the bill of quantities and bidding documents, (v) prepare the environmental impact assessment, and (vi) provide social support during design and construction phases. The feasibility study update will confirm the appropriate technical solutions and refine the proposed investments seeking optimized solutions. Related to control and drainage works, the Project will finance the rehabilitation of main erosion and drainage problems; priority has been assigned to three primary open channels (6kms). The Project will also strengthening capacity for operation and maintenance.

### **c. Strengthening resilience of Maputo Metropolitan area to control floods**

The project will review, update and broaden the scope and content of the existing Maputo Strategic Sanitation Plan (2004). It will make available a Drainage and Sanitation Master Plan that describes the content and priority of interventions to be undertaken in drainage and sanitation systems within next 15 years in the metropolitan region comprising Maputo and Matola municipalities. The Project will also will also prepare detailed design, bill of quantities and technical specification for immediate priority works that might be financed by the Project depending on the availability of financial resources.

### 3. Implementation Structure of the Infrastructure

The Cities and Climate Changes Project will be implemented according to the following organogram:



### 4. Objective of Services

The Consultancy Services for Specialized Engineering Assistance to Project Infrastructure Investments (the TA), includes providing occasional specific technical assistance engineering services within a foreseen duration. The objectives of this assignment are as follows:

- a) Provide technical and management advisory services to the AIAS - Project Implementation Unit (AIAS - PMU) in analyzing and providing comments on the various deliverables (reports and others technical documents) produced by Consultant Firms contracted by AIAS for conducting sanitation and drainage master plan, feasibility studies, environmental and

social impact assessments, detailed design and supervision of works for infrastructures being implemented under the Project. .

b) Provide when required, technical services in the process of the selection of contractors for execution of the referred works. This will include support to be provided by a procurement specialist for the detailed evaluation of the bid proposals and the participation of specific specialists in evaluation panels as required.

c) Provide short term technical assistance or support on specific areas of infrastructure design in order to strengthen the capacity of the AIAS.

d) To carry out legal and technical advice to AIAS - PMU on contract disputes between AIAS, and the Consultant Firms or/and the Works Contractors, as required.

It is noted that the work under the present assignment are initially concentrated in: tendering phase for Maputo, Beira and Nacala studies and to developing of the Maputo master plan, feasibility and detailed design studies for Beira, Nacala and Maputo priority works. The works during the construction phase will be concentrated in the supervision of works and contract management.

## **4.1 Duration of the Services**

This TA is expected to be provided within a total period of 16 months concurrently with implementation of different phases of the studies and works, including: feasibility studies, detailed design, including inputs to Tender Documents and selection of contractors for construction works and construction supervision of works financed by the component 2 of the Project in Maputo, Beira and Nacala.

This TA is expected to initiate in June 2013 and conclude in October 2014. The activities under this Consultancy will be provided upon request of the Client and accordingly to the requirements associated with the implementation of each phase of studies and works.

## **4.2 Scope of Services**

### **1.2.1 General**

The scope of the Consultancy includes assistance to AIAS - PMU in reviewing, analyzing and providing comments on the deliverables produced by the Consultants and Contractors performing activities included in the following sub-components:

- Strengthening resilience of the City of Beira to control floods,
- Strengthening resilience of the City of Nacala to control erosion and
- Strengthening resilience of Maputo Metropolitan area to control floods.

During the implementation of the assignment, the Consultant is expected to interact mostly with the Client. Direct interaction with Consultants and Contractors will be limited to site meetings, working sessions and other meetings to be arranged by the Client.

## **5. Description of the activities to be performed:**

The Consultant will include the following activities:

**Task 1 - Review of Master Plan and Feasibility Studies Preparation:** The Consultant will provide under request of the Client, technical comments on deliverables prepared by the Consultants preparing all the products under the Drainage and Sanitation Master Plan for Maputo Metropolitan Area and the Drainage Feasibility Studies for Beira and Nacala cities. The comments from the Consultancy should be delivered to the Client five days after submission of the deliverable report by the Consultant. The Client and the PMU will compile comments in a report, which will be submitted to the Consultant. During this stage, the TA will be request to participate together with the Client representative and the Consultant in site visits to be familiarized with technical options, layouts, alignments and other details proposed by the Consultants. If required, TA representative may join Client team in working sessions to jointly harmonize views, understandings and final comments in certain deliverables.

**Task 2 - Review of the Detailed Design and Bill of Quantities:** Upon request of the Client, the TA will provide comments in specific deliverables to be submitted by the Consultant caring out the detailed design phase. The comments in specific deliverables should be delivered to the Client in five days. The Client and the PMU will compile the comments of the report/deliverable, which will then be submitted to the Consultant. During this stage, the TA will be request to participate together with the Client representative and the Consultant in site visits to be familiarized with technical options, layouts, alignments and other details included in detailed design proposed by the Consultants. If required, TA representative may join Client team in working sessions to jointly harmonize views, understandings and final comments in certain deliverables.

**Task 3 - Participation in Bidding Process for Selection of Contractors:** The TA will provide under request of the Client, technical comments for procurement process of works to be implemented in Maputo, Beira and Nacala. The TA will be requested to join the Client Evaluation team members for different bids, review and evaluate the contractor's proposals for works. The TA is expected to provide a specialist with extensive experience in evaluating construction tenders for large works (contracts above US\$ 5.0 million), to serve in the evaluation panels for each of the construction tenders launched. The Consultant should plan to provide different individuals

engineers specialized in sanitation, drainage and erosion control for each evaluation panel for procurement of works above \$5.0 million. The tasks that the TA will be required to perform in the evaluation panel include:

- revising the proposed construction strategy and methods of each bidder,
- verifying the adequacy of the work plan, equipment, key staff and organization of each bidder,
- checking the completeness and accuracy of the priced bill of quantities submitted by each bidder,
- Collect data for price reasonableness analysis, and assist the evaluation panel in performing such analysis.

## **6. Expertise and Project Team Requirements**

The Consultant is responsible for the sufficiency of his/her work and this TOR are not intended to be an exhaustive list of all activities, but to indicate the level of work required for the outputs. Although the work is divided into various elements, the Consultant shall ensure that results are delivered according to Client requirements. The duration of the assignment and the key professional staff are described below:

The activities under this TA involving the two (2) specialists (storm water and sewerage) will be episodic and recurrent. While the activities under this TA involving the procurement specialist will be required in particular during the tender of works and the subsequent management of the works contract.

The Level of Effort (LOE) of professional staff to be provided by the Consultant for this assignment is estimated at approximately 20 man-months (m/m) for the key staff. The consultant will allocate sufficient backstop resources to support the project Key staff.

The Consultant shall provide adequate staff with appropriate qualification and experience to undertake the works described herein. It is expected that the following staff/areas of expertise will be included in the team:

**The Key Professional Staff are:**

1. Drainage Specialist (Team Leader)
2. Sewerage Engineer (Deputy Team Leader)

**The Other Professional Staff are:**

1. Procurement Specialist

## 7. TYPE OF CONTRACT

The contract to be entered between AIAS and the Consultant will be Lump Sum. For the implementation of the contract, the Client will submit to the TA a formal request for revision of deliverable, and this request together with the invoice will support the TA request for payment of the services.

The staffs mentioned in item 6 above are considered essential to complete the services and shall be fully qualified to cover the requirements of these Terms of Reference. The TA shall make available one or more of the above mentioned key staff member when required by the Client.

The TA shall ensure that expertise are adequately supported and equipped. In particular, shall ensure that there are sufficient support staffs engaged on its team to enable experts to concentrate on their primary responsibilities. It must have funds to support its activities under the Contract and to ensure that its employees are paid regularly and on time.

The TA shall arrange for his own office space as well as equipment in Mozambique in case abroad firm be contracted.

The summary qualifications for the required key personnel for this consultancy service are profiled below. *Note: AIAS - Project Management Unit will accept either the Storm water and Drainage Specialist or Sewerage Specialist to fulfill the positions of team leader and deputy team leader.*

### **Team Leader - Storm Water Specialist**

The proposed team leader will have primary responsibility for overall management and coordination of technical assistance to AIAS - Project Management Unit. In this capacity, the proposed team leader may be required to assist AIAS - Project Management Unit in the development or refinement of AIAS internal project management systems (e.g. Quality Assurance plans, risk management plans, work plans/schedules).'

Additionally, the proposed Drainage Specialist, he/she will be responsible for analyzing, reviewing and commenting on the proposed pavement design associated with the drainage projects including erosion and flood control.

Minimum of fifteen (15) years of cumulative combined experience, ten (10) of which are related to drainage studies and design projects.

He/She must also have previous professional experience in working as storm water drainage Engineer on at least two (2) projects of similar magnitude and complexity in



Developing Counties. Additional experience must include project management, technical assistance and quality management of large infrastructure projects. Also he/she should be familiar with high quality environmental assessments and environmental management plans for construction.

The proposed person must be a professionally qualified Civil Engineer with a postgraduate degree in hydraulic or similar areas. The candidate must possess strong skills in communication and project management. The candidate must have experience in managing donor-supported projects and be fluent in English.

#### **Deputy Team Leader - Sewerage Specialist**

The proposed deputy team leader will also have responsibility for overall Management and coordination of technical assistance to AIAS - Project Management Unit Mozambique. In this capacity, the proposed deputy team leader may be required to assist AIAS in the development or refinement of AIAS internal project management systems (e.g. Quality Assurance plans, risk management plans, work plans/schedules).’ Additionally, as a the proposed sewerage specialist, he/she shall be primarily responsible for analyzing, reviewing, commenting and providing recommendations on designing and upgrading effective sanitation and storm water drainage systems associated with the projects. This will include an assessment of current constraints to sewerage systems, and the identification and evaluation of several sewerage management alternatives appropriate to each city.

The proposed specialist shall be a Civil Engineer, and shall have not less than fifteen (15) years of cumulative combined experience in designing sewerage systems in urban areas. He/She must have specific experience working as urban sanitation or drainage engineer on at least two (5) projects of similar nature and complexity of which at least one must be from sub-Saharan Africa. Additionally, the proposed candidate should have extensive project management skills. Postgraduate qualifications in a related field are desirable. He/She must be fluent in English; and Portuguese would be an advantage.

## **8. Staff Replacement Requirements and Participation Expectations**

Changes in the proposed key staff members shall be subject to the approval of AIAS - Project Management Unit. In the case of need for replacement of a key staff member, AIAS expects his/her replacement to possess the same or greater qualifications and experience as the replaced professional. The Consultant will be expected to submit a CV for formal approval by AIAS - Project Management Unit of the proposed replacement.

The Consultant shall ensure that specialists in different fields will be available and on duty as and when required by AIAS.

## **9. Reporting Requirements**

The consultant shall provide his comments in writing on each deliverables in a period of no longer than five (5) working days to the AIAS - PMU. The following **Appendix A** presents the description of Deliverables to be produced in each consultancy service of Beira, Maputo and Nacala. The TA will be requested to provide comments to all or part of deliverables listed in the Appendix A. The final decision in the number of deliverables to be commented will rest to the Client.

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## APPENDIX A - DETAILED LIST OF PROJECTS DELIVERABLES

### a) Strengthening resilience of the City of Beira to control floods

Or	Designation	Target
1	Detailed Design Inception Report	(M+9)
2	Data and Design Criteria Report	(M+11)
3	Draft RAP	(M+12)
4	Monthly Progress Reports	(M+12)
5	Draft Detailed Design Report + Technical Tender	(M+13)
6	Final RAP	(M+13)
7	Implementation Report	(M+13)
8	Final Detailed Design Report + Tender documents	(M+14)
9	Evaluation of Tender for Construction Phase + Evaluation Report	(M+16)

### b) Strengthening resilience of the City of Nacala to control erosion

Or	Designation	Target
1	Detailed Design Inception Report	(M+9)
2	Data and Design Criteria Report	(M+11)
3	Draft RAP	(M+12)
4	Monthly Progress Reports	(M+12)
5	Draft Detailed Design Report+ Technical Tender	(M+13)
6	Final RAP	(M+13)
7	Implementation Report	(M+13)
8	Final Detailed Design Report + Tender documents	(M+14)
9	Evaluation of Tender for Construction Phase + Evaluation Report	(M+16)

**c) Strengthening resilience of Maputo Metropolitan area to control floods**

Or	Designation	Target
1	Detailed Design Inception Report	(M+7)
2	Data and Design Criteria Report	(M+9)
3	Draft RAP	(M+10)
4	Monthly Progress Reports	(M+12)
5	Draft Detailed Design Report+ Technical Tender	(M+11)
6	Final RAP	(M+11)
7	Implementation Report	(M+11)
8	Final Detailed Design Report + Tender documents	(M+12)
9	Evaluation of Tender for Construction Phase + Evaluation Report	(M+16)

**10. Appendix B - documentation to be provided by the AIAS - Project Management Unit**

The following information of the Consultancies and related works to be implemented under the Project Cities and Climate Change will be provided by the Employer:

- a) TORs,
- b) Consultant methodology and approach,
- c) Work plans,
- d) Deliverables to be commented.