

Republic of Mozambique

Ministry of State Administration (MAE)

**Administration of Water and Sanitation
Infrastructure (AIAS)**

Cities and Climate Change Project

**Environmental and Social Management Framework
(ESMF)**

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Coastal Cities and Climate Change Project

Environmental and Social Management Framework (ESMF)

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introduction

1.1 Purpose of Environmental Management Plan (EMP)

1.1.1 Purpose of an EMP

The preparation of EMP for the Coastal Cities and Climate Change Project (Project) sub-Projects is a requirement of World Bank and may also be required by MICOA¹.

The purpose of a sub-Project EMP will be to control the potential negative environmental impacts associated with the **construction phase** of the sub-Project in question, and/or to enhance any positive environmental impacts. The effective implementation of a sub-Project EMP will ensure that the construction activities are conducted and managed in an environmentally sound and responsible manner.

EMPs typically contain Environmental Specifications to which the Contractor will be required to adhere to throughout the duration of his contract, to reduce or prevent negative environmental impacts to the surrounding environment. An EMP also details the organisational authority and structure required to ensure the effective implementation of the EMP and measures to monitor and improve the application of the EMP.

1.1.2 Purpose of this Environmental and Social Management Framework (ESMF)

This ESMF is applicable to both Component 1 and the Nacala Civil Works under Component 2 of the Project (which includes revegetation as part . The purpose of this document is to provide guidance on a framework for the development of the Project sub-Projects specific EMPs which will be included in the contract documentation for the Contractor. This guidance document is referred to hereafter as the ‘ESMF’.

In World Bank-financed Projects, a key goal is to enhance positive and sustainable environmental and social outcomes of the Project by minimizing and/or avoiding negative environmental and social impacts. Where avoidance is not possible, an Environmental and Social Management Framework is developed which provides the framework within which to address the issues. The objective of the assignment is to prepare an ESMF which will:

- Establish the legal framework, procedures, and methods for the environmental and social planning, review, approval and implementation investments to be financed using the performance grant funds;
- Identify roles and responsibilities, including reporting procedures and monitoring and evaluation;

¹ Depending on ‘pre-screening’ review of a specific activity.

- Identify capacity and/or training needs for different stakeholders to ensure better implementation of the provisions in the ESMF and;
 - Identify funding requirements and resources to ensure effective implementation of the framework.
-

1.2 Scope of the ESMF

The ESMF spells out the World Bank safeguards policies, country's institutional arrangements and capacity required to implement the framework. This ensures that sub-Projects meet the national and local E&S requirements and are consistent with OP 4.01, OP 4.12, etc of the Bank. Other objectives of the ESMF include:

- Assessment of potential adverse environmental and social impacts commonly associated with the listed sub-Projects and the way to avoid, minimize or mitigate them;
- Establishment of clear procedures and methodologies for the environmental and social planning, review, approval and implementation of sub-Projects;
- Development of an EA screening/initial assessment system to be used for sub-Projects; and
- Specification of roles and responsibilities and the necessary reporting procedures for managing and monitoring sub-Project environmental and social concerns.
- Development of general environmental management conditions to be added to construction contracts.

The ESMF will be principally used by Municipalities and other collaborators to ensure that adequate mitigation measures and other environmental and social safeguards have been incorporated into the sub-Projects to be implemented under the Project.

The scope of the ESMF is limited to the construction activities likely to be associated with the construction of the range of Project sub-Projects. This includes:

- The pre-construction activities, such as the locating of the construction site, its demarcation and establishment;
- The construction activities; and
- Decommissioning activities and site rehabilitation at the end of the construction contract.

The ESMF contains a library of the minimum scope of environmental information that must be communicated by the Contractor to his staff, including all sub-contractors and on-site workers for the duration of his contract.

1.3 Use of the ESMF

In general terms, it is expected that the ESMF will be used to:

- Ensure that the minimum requirements set by the World Bank as part of the funding agreements for the Project as a whole are reflected at the sub-Project level for the construction phase through the contract documents for the works, where reasonable and practical;
- Ensure that the World Bank requirements are understood by the Consultants tasked to undertake the appropriate environmental studies during the design of the sub-Projects;
- Ensure that the Consultant (or Contractor) has a benchmark with which to prepare a sub-Project specific EMP – and specifically a benchmark which has been reviewed by the appropriate authorities;
- Ensure that the Contractor clearly understands the level of environmental responsibility required during the execution of his construction phase contract; and
- Enable MAE and AIAS Environmental Specialist to measure compliance with the environmental management requirements for the Project as a whole and at a sub-Project level.

Specifically, the Generic EMP will be used by the key parties listed below in order to undertake the following:

MAE and AIAS The Generic EMP will be used by MAE and AIAS to ensure that a minimum scope of activities to manage the potential environmental impacts associated with the construction of its Project sub-Projects is applied and maintained by appointed parties.

Consultants Leading on from this, the Generic EMP will be used by Consultants as a framework to develop a sub-Project specific EMP, taking into account local constraints, MICOA, World Bank approval requirements and features of the construction activities and programme.

This in turn will incorporate environmental mitigation measures which have been identified during their environmental studies from the sub-Project design phase. The sub-Project EMP will then be incorporated as a contractual requirement into the Bidding Documents for bidding contractors, as prepared by the Consultant on behalf of MAE and AIAS.

The sub-Project EMP (based on the ESMF) will be implemented as a

contractual requirement by the Contractor during the construction phase of the Project.

Contractors Under some circumstances, the Consultant may pass the responsibility for producing the EMP to the Contractor². In this case, the Generic EMP will be incorporated into the Bidding Documents as guidance on the expected content, focus and minimum scope of coverage of instructions for construction activities.

The Contractor will then use the ESMF as a framework to develop the sub-Project EMP, taking into account local constraints, MICOA, World Bank requirements and features of the construction activities and programme.

It is expected that the Consultant or Contractor will review the ‘Library of Environmental Specifications’ and will incorporate those deemed relevant and reasonably feasible (taking into account cost implications) into the sub-Project EMP.

Additional environmental specifications may also be developed and included by the Consultant or Contractor into the sub-Project EMP, depending on the nature of the sub-Project, additional legal requirements, the environmental sensitivity of the area to be affected by the sub-Project and/or requirements of the MICOA and World Bank.

The development of all Environmental Specifications must be such that there is no conflict with other Specifications produced in connection with the contract. If any conflict occurs with statements made, these will need to be resolved through the Project Environmental Engineer.

Any given sub-Project EMP will need to be reviewed and approved by MICOA and/or the appropriate funding agencies before construction may commence.

1.4 Structure of the ESMF

In short, the ESMF is structured as follows:

Chapter 2	Project Description
Chapter 3	Overall Approach and Methodology for ESMF Preparation
Chapter 4	Organizational and Management Arrangements
Chapter 5	Legal and Institutional Framework Regarding the Environmental Issues in Mozambique
Chapter 6	World Bank Safeguard Policies

² While this approach is not encouraged, it is recognised that this approach may be adopted for some Project sub-Projects.

Chapter 7	Results of the Public Consultation Process
Chapter 8	ESMF Implementation Procedures
Chapter 9	Library of Environmental Specifications
Chapter 10	Recommended Format and Content for Sub-Project EMPs
Annex A	Constructions Activities that will require Method Statements
Annex B	Project Screening Form
Annex C	Project Start Up and Inspection Sheet

1.5 References

The ESMF has been developed with due reference to the following:

- Mozambique National Environmental Policy, approved by Resolution No 5/95;
- Maputo Municipal Development Program (PROMAPUTO), 2010.
- MICOA's Regulations on the procedure for Environmental Impact Assessment; and
- World Bank, Operational Policy, 4.01 Environmental Assessment, Annex C 'Environmental Management Plan, 2007.

Project description

Project components

The proposed project will assist Mozambique in developing appropriate institutions, and infrastructure improvements to strengthen the resilience of selected cities to climate related impacts. Infrastructure investments will consist of the rehabilitation of drains, conduits, embankments, levees and surface water storage facilities. Institutional investments will include improved urban environmental planning and land use management; increased own-source revenue capacity, more effective and transparent municipal financial management; and a sustainable service delivery model for operation and maintenance of urban sanitation and drainage systems.

Component 1 – Strengthening the municipal sector (US\$ 35 million)

The objective of this component is to increase municipal capacity to sustainably plan, manage and finance climate resilient urban development. It will strengthen the institutions which underpin Mozambique’s municipal system in order to improve sustainable decentralized financing and management of the urban environment and infrastructure.

Subcomponent 1A: Local level support for improved municipal governance (US\$ 27.5 million) will provide support for 20 municipalities to enhance municipal resiliency to environmental risks and municipal capacity for sustainable decentralized urban management. The 19 municipalities to be supported under Component 1 with capacity building, technical assistance and performance grants include (with their respective 2007 populations):

- in Maputo Province - Manhiça (56,165), Matola City (671,556), and Namaacha (12,725);
- in Gaza Province - Chibuto (63,184), Chokwé (53,062), Macia/Bilene (27,795), Mandlakazi (10,317), and Xai-Xai (115 752);
- in Inhambane Province - Inhambane City (65,149), Massinga (20,930), Maxixe City (108,824), and Vilankulo (37,176);
- in Sofala Province - Gorongosa (18,761);
- in Manica Province - Catandica (22,271), Chimoio City (237,497), Gondola (33,877), and Vila Manica (36,124); and
- in Tete Province - Moatize (38,924), Tete City (155,870), and Ulongue (13,620).

Subcomponent 1A activities include:

- (a) Municipal Performance Grants to provide supplementary capital resources which incentivize improved performance in core municipal land use planning and financial functions;
- (b) Improvement of Urban Planning and Land Use Management including: climate vulnerability assessments, basic spatial planning, and urban land management instruments in all participating municipalities as well as urban environmental

- and surface water management instruments in those municipalities vulnerable to climate related flooding and erosion;
- (c) Enhancement of Municipal Financial Sustainability through improved financial management and enhanced municipal revenues.

Subcomponent 1B: National Level Support for Improved Municipal Governance (US\$ 7.5 million) will strengthen key national institutions which regulate and support the municipal system. It includes:

- (a) Support to the National Policy and Regulatory Framework for Municipal Governance which will strengthen the capacity of the DNDA and of relevant units within MINFIN to monitor the performance of the municipalities and develop improved intergovernmental and municipal policies and systems.
- (b) Strengthening Capacity of the National Association of Municipalities in Mozambique (ANAMM) to provide relevant services to its member municipalities including capacity building support and policy and regulatory advocacy on municipal and intergovernmental issues.
- (c) Support to the Coordination and Management of Component Implementation by funding a Project Implementation Unit in DNDA to ensure administrative and technical capacity for component implementation and to carry out the procurement, financial management, and environmental and social safeguards related to the component activities, and to fund project audits.

Component 2 – Enhancing resilience of strategic coastal cities (US\$85 million):

This component will enhance municipal capacities in selected cities 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 analytical work and the formulation of strategic investment programs to address the increased vulnerability of these cities
- (b) Strengthening Resilience of the City of Beira to Control Floods by planning, designing, and implementing rehabilitation and relining of about 9.3 km of the primary channel of Beira's drainage system and the institutional strengthening of Beira's Autonomous Sanitation Service which is responsible for operation and maintenance of the municipal drainage system.
- (c) Strengthening the Resilience of the City of Nacala to Control Erosion by planning, designing, and implementing drainage works, in principal for three primary channels (approx 6 km), associated grading and planting vegetation to increase stability and reduce sediment deposition, and strengthening of municipal capacity for operation and maintenance of urban drainage infrastructure
- (d) Strengthening the Resilience of Maputo Metropolitan Area to Control Floods by financing the development of a Master Drainage and Sanitation Plan for the Greater Maputo area and the design of selected priority drainage investments
- (e) Support to the Coordination and Management of Component Implementation by technical assistance to AIAS to ensure administrative and technical capacity for component implementation and to carry out the procurement, financial

management, and environmental and social safeguards related to the component activities, and to fund project audits.

Overall approach and methodology for ESMF preparation

1.6 Approach

The ESMF study has been prepared in accordance with applicable World Bank safeguard policies and Mozambique environmental assessment guidelines. The distinct phases of the study include:

- Data Gathering;
- Consultations and discussions with MAE, AIAS, MICOA, Municipalities, communities, and NGOs;
- Literature review;
- Environmental screening and scoping;
- Determination of potential impacts;
- Identification of impact mitigation measures;
- Preparation of an Environmental and Social Management Plan; and
- Preparation of sub-Project guidelines.

– *Data Gathering*

The ESMF Consultant assembled and evaluated relevant baseline data related to the biophysical and socio-economic characteristics of the environment to be covered by the Project. The baseline data reviewed included: topography, soil, water resource, biological and socio-economic data.

- *Consultations*

During the assessment, consultations with key stakeholders such as impacted groups, local communities and non-governmental organizations were as part of the preliminary environmental and social assessments held from July through September 2011 for the cities of Beira and Nacala. Also, consultations with the representatives from the 19 Municipalities participating on the activities financed by Component 1 were held on XXX 2011.

The approach was based on review of available Project literature and other strategic planning documents at the national and sector level.

Organizational and management arrangements

The Project organizational and management arrangement for component 1 and component 2 are described below.

Component 1

ESMF Institutional Arrangements

The DNDA (National Directorate for Local Government Development of the Ministry of State Administration-MAE), as the implementing agency for Component 1, will be responsible for compliance with environmental and social safeguards. This responsibility will be delegated by the DNDA to the Component 1 PIU, and managed directly by the Project Coordinator with support of the PIU team of staff and consultants. For activities funded by the Project-financed Municipal Performance Grants and implemented by Municipalities, municipal officials will be responsible to implement safeguard procedures, under the monitoring and oversight of the PIU.

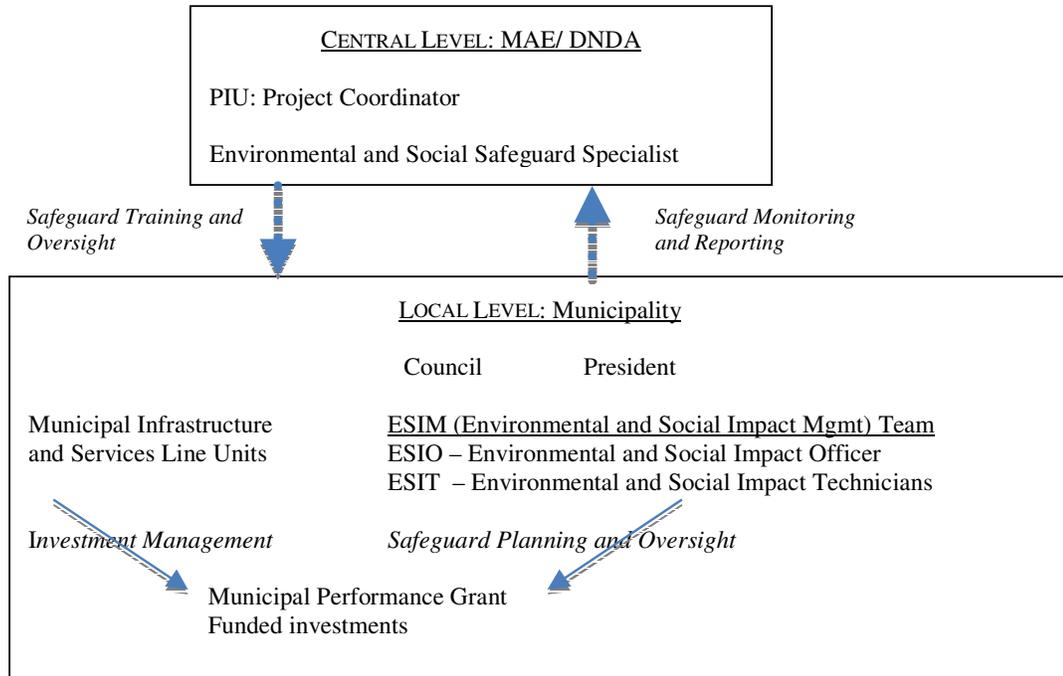
Activities to be implemented by the PIU will strengthen the capacities of beneficiary institutions at central and local level. These capacities building (CB) activities will be limited to consultancies, technical assistance, training and the in-kind provision of goods. With the exception of minor improvements to existing municipal offices, no infrastructure works are expected to be financed from PIU managed CB budget. Based on this substantive focus on the use of PIU funds, no environmental or social impacts for PIU managed activities are foreseen.

Municipal Performance Grants (MPGs) will be administered by the PIU, with funds transferred to eligible Municipalities for the funding of their annual investment plans, as specified in the Project's Grants Manual. Activities to be funded by the MPGs are to be selected by each recipient municipality based on its legal competencies and its own developmental priorities. A short negative list will detail excluded uses of MPG funds. The PIU will provide for several person-months of effort per year by a Environmental and Social Safeguards Specialist in order to ensure sufficient expertise for the PIU to undertake its oversight and capacity building regarding municipal-level safeguard implementation linked to MPG financed investments.

One of the conditions for eligibility for Municipalities to access the Grants will be signature of a Grants Agreement with MAE. The Grants agreement will require formal municipal acceptance of the rules and procedures outlined in the Grants Manual, including acceptance to apply the specified environmental and social safeguard standards and procedures. The Grants Manual will include the pertinent safeguards standards and procedures from the approved ESMF as requirements. It should be noted that since for the majority of the medium and smaller sized Municipalities, at least 14 of the 19 Municipalities to be supported by the Project, the total amount of the annual MPG will not exceed US\$150,000 per municipality, most of the investments funded by MPGs will be small and simple, mainly rehabilitation or improvement of existing infrastructure. For the majority of these cases, the environmental and social impacts will be nil or small, and therefore treated as Category C. A few larger investments may generate potential impacts which justify a category B rating and therefore require the municipality, with the support of the PIU, to prepare a Simplified Environmental Study (SES), including an Environmental Management Plan (EMP). No Category A investments will be financed by MPGs. However, all MPG funded investments will be screened by Municipalities for potential environmental and social impacts as per the

ESMF. The PIU and DNDA will support, monitor and oversee application of these safeguard measures.

INSTITUTIONAL ARRANGEMENTS FOR ENVIRONMENTAL AND SOCIAL SAFEGUARDS



To ensure safeguard compliance, each municipality will be required to formally appoint a Environmental and Social Impact Management (ESIM) Team comprised of a Environmental and Social Impact Officer (ESIO) and at least two Environmental and Social Impact Technicians (ESIT). The ESIO will be a Councilor or Director nominated by the Municipal President (mayor) with formal responsibility to ensure compliance of all MPG funded investments with safeguard requirements. The ESIO will be responsible for the planning, approval, oversight, and reporting of all municipal safeguard activities; for liaison and coordination of safeguard activities with the municipality’s President, Councilors, and Directors; and for the supervision of carrying out necessary safeguard screening and mitigation activities. ESITs will be permanent municipal staff who will carry out the screening of proposed investments and prepare, or collaborate with consultants for the preparation of, any impact assessments or mitigation plans which may be needed. ESITs, under the direction of the ESIO, will also monitor and ensure implementation of required environmental and social impact mitigation activities by the firms executing approved investments. ESIOs and ESITs will be provided by the PIU with training and practical manuals on safeguard standards and procedures.

In principle, constitution of the municipality’s Environmental and Social Impact Management Team (ESIM Team) should follow the normal allocation of responsibility within the Municipalities permanent organizational structure. Since few Mozambican Municipalities have dedicated environmental departments, typically this team would typically be based in the Urban Planning or Infrastructure Departments and would fulfill

these roles as needed alongside their other professional functions. However, alternative forms of organizing this team may be presented by any municipality depending on how it is normally structured. In all cases, each municipality will be required formally indicate who will serve as the ESIO and ESITs and to provide adequate organizational support for their work in these roles. Once the ESIM Team has been named, the PIU will provide training and technical support, as well as oversight, to ensure that they fulfill the roles stipulated in the Grants Manual regarding safeguards for MPG funded investments. It is expected that the same ESIM Team will also support the municipality in compliance with national legislation for non-Project funded municipal activities, and will collaborate as appropriate with relevant officials of MICOA regarding environmental impact management. Thus Project supported capacity building for the ESIM Team will produce benefits in improved environmental and social impact management beyond compliance with Project-related MPG requirements.

Capacity Building

As part of its normal work program, the PIU will provide training and oversight for municipal ESIM Teams. Training will be based on national legislation and systems as well as the specific standards and procedures detailed in the Project's ESMF. ESIOs will receive training on policies, principles, standards and good practices in ESIM by Municipalities. ESITs will receive more detailed technical training regarding the application of the approved safeguard screening methodology to evaluate potential environmental and social impacts; on the application of standard mitigation measures as appropriate for small and low impact investments; and, for the few potential cases when called for based on the scale and/or significance of potential impacts, on the development of EIAs, Environmental Management Plans and/or Resettlement Plans for MPG funded investments. Practical manuals and simple forms and other methodological instruments derived from the ESMF will be provided to ESIOs and ESITs, and will provide the basis for their training by the PIU and its consultants. A training plan for municipal ESIM Teams will be approved before Project effectiveness and will be administered during the first year of Project implementation, before the first round of MPG-funded investments are approved and funded for execution in years 1 and 2.

An indicative list of topics to be included in training to be offered by the PIU for ESIM Teams in participating Municipalities includes:

- Principles of environmental and social impact management (ESIM)
- Procedures for impact assessment and mitigation for municipal subProjects
- Public consultation and community engagement related to environmental and social impacts
- Use of ESMF screening and checklist
- Application of standard impact mitigation measures
- Criteria and procedures for application of Environmental Impact Assessments
- Monitoring of compliance with ESIM requirements
- Planning, managing, and monitoring ESIM in the context of the Municipal Performance Grant procedures and implementation calendar

Monitoring and Evaluation Approach

The PIU will also monitor municipal compliance with environmental and social safeguard requirements as outlined in the Grants Manual and associated ESMF documents. Each municipality's proposed annual investment plan for the MPGs will be

reviewed by the PIU to ensure that proposed investments have been adequately pre-screened for potential environmental and social impacts. Once the MPG investment plan is approved, Municipalities will be required to carry out detailed safeguard screening and categorization of all proposed investments. In the case of Category C investments, Municipalities will undertake standard mitigation measures, and ensure that works specifications and associated contracts include all such measures. In the case of Category B investments, where a Simplified Environmental Study (SES) is required and an EMP may be prepared, the PIU will review TORs for the preparation of required assessments and mitigation plans and ensure that the resulting documents are cleared for compliance with ESMF before the proposed investment can be included by the municipality as part of its approved annual MPG investment plan. In the case of proposed Category B investments, these studies may be financed by the MPG as part of the preparation of the proposed investment Project for inclusion in the subsequent year's MPG annual investment plan. Once approved, the requirements of the EMP will be included in the specification and bid documents for the proposed investments.

As part of its safeguard monitoring and oversight functions, the PIU will compile annual reports on safeguard activities which verify compliance by Municipalities participating in the MPGs. These PIU safeguard monitoring reports will include the results of PIU review of each municipality's screening of proposed investments as part of the review of their proposed MPG annual investment plans. These safeguard monitoring reports will also track all proposed Category B investments to ensure that Municipalities are properly carrying out required environmental studies (SES) and preparing required EMPs. On the basis of this documentation, the PIU will keep the World Bank TTL informed of the status of all safeguard activities for Category B investments, both during preparation and execution of the MPG annual investment plans.

The PIU will also verify safeguard compliance by participating Municipalities during routine monitoring and supervision visits. During these field visits, PIU personnel will select potential moderate or high impact investments to verify the quality of the municipal safeguards process. PIU officials will verify, as relevant, some or all of the following aspects of municipal safeguard practices: compliance with screening procedures; accurate categorization of proposed MPG funded investment; for Category C investments, specification and implementation of appropriate standard mitigation measures; and for Category B investments, planning and implementation of ESIA's, approval of adequate EMP in response to SES recommendations, and appropriate field implementation of approved EMP. The PIU will report on safeguard compliance as part of the documentation for the Project's annual reviews. MICOA and its provincial DPCAs will also monitor municipal environmental management and provide oversight to ensure compliance with national environmental regulations and standards.

More formal safeguard assessments will be conducted as a part of Project evaluation arrangements and Project supervision. An assessment of safeguard compliance will be part of the evaluation of the MPG mechanisms prepared for the Project's mid-term review. In addition, World Bank Environmental Specialists and Social Specialists will review PIU documentation during routine supervision missions and may also undertake field verification of investments which potentially generate significant environmental and social impacts, as a means of verifying that the PIU is adequately ensuring implementation of the approved ESMF among Municipalities receiving MPG grants.

On the basis of its own monitoring of safeguard processes by participating Municipalities and from the recommendations of World Bank supervision missions, the PIU will adjust its annual cycle of training for ESIOs and ESITs to ensure that any identified weaknesses in application of approved safeguard standards and procedures are remedied in the planning and implementation of subsequent MPG grant cycles.

Component 2

This component, implemented by AIAS, will include investments in infrastructure works in two cities Beira and Nacala, and also possibly in Maputo, depending on availability of resources to be defined by the end of the Project preparation phase.

These investments will entail large infrastructure works requiring the preparation of Environmental Impact Assessments to be reviewed and approved both by the Bank and the MICOA.

The environmental supervision will be carried out by the environmental specialist part of the AIAS PIU, and also by the environmental specialist part of the works supervision contract. The issuing of the appropriate environmental authorization and the undertaking of the Resettlement Action Plan will be conditions to the start of the works.

legal and institutional framework regarding the environmental issue in mozambique

1.7 Legal framework

The *Constitution of the Mozambican Republic* defines the right of all citizens to live in a balanced and natural environment and their obligation to protect it (Art. 90). It further states that "*The state and local authorities with the cooperation of environmental protection organizations will adopt policies to protect the environment and ensure the rational use of all natural resources.*"

The *National Environmental Policy*, approved by Resolution No. 5/95, dated 6 December, establishes the basis for all environmental legislation. According to Article 2.1, the main goal of this Policy is to ensure sustainable development in order to maintain an acceptable relationship between socioeconomic development and environmental protection. To reach the aforementioned goal, this Policy must ensure, among other requirements, the management of the country's natural resources – and the environment in general – in order to preserve its functional and productive capacity for present and future generations.

The *Environment Law* (Law No. 20/97, dated 7 October) defines the legal basis for the sound use and management of the environment as a means to safeguard sustainable development in the country. This Law applies to all activities in the public or private sectors that may directly or indirectly affect the environment.

Some relevant principles of environmental management included in the National Environment Policy and Environment Law include:

- Environmental management should aim at improving the quality of life of citizens and protection of biodiversity and ecosystems;

- The recognition and appreciation of traditions and knowledge of the local community;
- The priority given to systems that prevent the degradation of the environment;
- A comprehensive and integrated perspective of the environment;
- The importance of public participation;
- The principle of polluter - payer;
- The importance of international cooperation.

1.7.1 Environmental Assessment

According to the *Environment Law*, the Environmental Impact Assessment (EIA) is an instrument that supports the decision-making process regarding the issuing of environmental licenses. The issuing of an environmental license must precede any other required legal licenses. The environmental impact assessment process is regulated by Decree No. 45/2004, (amended by Decree No. 42/2008 of 4 November), while environmental audit and environmental inspection processes are regulated by Decrees No. 32/2003 and 11/2006 respectively.

Regulation of the EIA Process

The regulation of the EIA process is applicable to all public and private activities and is the responsibility of the Project Proponent.

The first phase of the Environmental Assessment is the screening with the aim of determining the extent and type of environmental assessment that the activity should be subjected to.

As in the Operational Policy of the World Bank, the Mozambican Regulation for EIA has three Project categories to identify the appropriate level of EIA:

- *Category A*: Projects likely to cause significant impacts due to proposed activities or the sensitivity of the area, requiring a full Environmental Impact Assessment (EIA) (including an Environmental Management Plan – EMP).
- *Category B*: regarding Projects that would have negative impacts of short duration, intensity, extent, magnitude and / or significance, requiring a Simplified Environmental Study (SES) and an Environmental Management Plan (EMP).
- *Category C*: Projects which do not require Environmental Assessment, but are subject to compliance with the standards found in specific directives of good environmental management.

In Annex I, the regulation lists the circumstances that lead to the classification of a Project as Category A, taking into account the sensitivity of the area where the activity will take place (Table 2) as well as the type of activity proposed (Table 3). Annex III contains the list of activities classified as Category B.

Table 1 - Sensitive areas included in Category A (Decree No. 45/2004)

Activities located within the following areas are classified as Category A:

- Areas and ecosystems with a special protection status according to both national and international legislation, such as mangrove areas exposed to desertification, erosion areas including eminent seafront dunes, wetlands, areas of unique scenery, areas of archaeological, historical and cultural value to preserve, protection of springs and sources of supply protected areas;
- Densely populated areas involving the need for resettlement,
- Densely populated areas where the activity involves unacceptable levels of pollution or other disorder that significantly affects resident communities;
- Regions subject to high levels of development or where there are conflicts in the distribution and use of natural resources;
- Areas alongside waterways or areas used as a source of drinking water supply for communities' consumption.

Table 2 and 3 below presents infrastructure related activities classified as Category A and B respectively, according to the Mozambican EIA Regulation.

Table 2- Activities included in Category A (Decree No. 45/2004)

- All main roads outside urban areas, construction of new roads;
- Water pipes of more than 0,5 m in diameter and more than 10 km long;
- Pipelines and water transmission mains of more than 10 km in length and diameter equal to or greater than 1 m;
- Exploitation of groundwater resources involving the abstraction of more than 500 m³ /h or 12,000 m³/day;
- Dumping sites of municipal waste with a cargo of 500 tons per day;
- Deposition facilities / waste water treatment with capacity for over 150,000 inhabitants;

Table 3 - Activities included in Category B (Decree No. 45/2004)

- Exploration for, and use of, groundwater resources involving the abstraction of more than 200 m³ / year
- Construction activity of parking lots;
- Water supply and sanitation systems, as well as their pipelines, sewage treatment and disposal

The EIA regulation previews that for both EIA and SES cases the definition of the scope of the study (*scoping*) should be pre-established as the Terms of Reference to be approved by MICOA result of that.

The EIA regulation defines the structure of the Scoping and EIA Reports required for Category A Projects, as well as for the simplified EIA report required for Projects classified as Category B.

Public Participation is a mandatory activity for all Projects classified as Category A, which should occur whenever it involves:

- *Permanent or temporary displacement of populations or communities;*
- *Movement of goods or restriction on use of natural resources*

The General Guidelines for the Process of Public Participation in the Environmental Impact Assessment, published in the Ministerial Decree No 130/2006 of 19 July should be followed. These guidelines define the basic principles that must be respected in the public participation process and the procedures to be followed.

Regulation on the Environmental Audit

The *Regulation on the Environmental Audit Process* defines an environmental audit as a documented and objective instrument for management and systematic assessment, for the operation and organization of the management system and for the control of relevant documentation, relating to the protection of the environment.

According to Article 3 of the present Regulation, the environmental auditing can be public or private. Private audits are conducted and determined by the very entities whose activities are potentially causing environmental degradation. As stipulated in Article 7, the objective of environmental audit is to assess the compliance of their working and functional processes following the environmental management plan approved for that purpose and with the statutory environmental standards.

Regulation on Environmental Inspection

Due to the need of establishing legal inspection mechanisms for public and private activities, which directly or indirectly are likely to cause negative impacts on the environment, it has recently been approved the Regulation on Environmental Inspections (Decree No 11/2006 of 15 July), which aims to regulate the activity of supervision, control and monitoring of compliance with environmental protection nationwide.

According to Article 1 of this Regulation, Environmental Inspections consist of:

- Surveillance of environmental licensing of any activity, in order to verify its compliance with the standards of environmental protection;
- Supervision of audit activities and monitoring, verifying if the environmental audit recommendations were or not implemented, as well as the state of the environment where those actions have not been performed;
- Monitoring compliance with the mitigation measures proposed within the framework of the Environmental Impact Assessment in order to reduce or eliminate the negative effects of any activities on the environment.

1.7.2 Other relevant legal aspects

Solid Waste Management

The Regulation of Solid Waste Management was recently approved by Decree No. 13/2006. The purpose of this regulation is to establish rules concerning production, storage in soil and subsoil, the launch for water or atmosphere of any toxic substances and pollution, as well as the practice of polluting activities that accelerate environmental degradation in order to prevent or minimize their negative impacts on health and the environment.

The Regulation classifies waste as hazardous and non-hazardous and attributes to MICOA the power regarding management of hazardous wastes, including the licensing of establishments engaged in the management of hazardous or toxic waste.

This regulation states that the public and private entities that generate waste should have a Plan of Waste Management before the start of their activities with a five years validity period from the date of its approval.

At the Maputo Municipality level it shall be stressed the Municipal Regulation on the Maputo City Clean (Resolution 15/AM/2004) and the Regulation on Solid Waste Management in the city of Maputo (Resolution No. 16/AM/2004).

Air Emissions, Air Quality and Noise

The Environment Law prohibits the release of any toxic and polluting substance to the atmosphere outside the legally established limits. The Regulation on Environmental Quality Standards and Wastewater Emission (Decree No. 18/2004) sets emission standards for pollutants for stationary and mobile sources as well as key parameters that should characterize the air quality.

Regarding noise, the Regulation on Environmental Quality Standards and Wastewater Emission states that MICOA will approve the noise patterns (by the date of this report these standards had not yet been published).

The city of Maputo has a Stance on Noise Pollution (published in 1986) prohibiting the use of motor free of leaks vehicles, the use of horns or other sound carriers as well as singing and other noisy manifestations in the period between 21:00 to 6:00 pm, without, however, having defined the limits of noise creation.

Water Resources

The management of water resources in Mozambique is set by the National Water Policy and the Water Law (Law No. 16/91 of 3 August). According to Article 18 of the Water Law, the Regional Water Administrations (ARA), organized on the basis of river basins, are the institutions responsible for water management. The zone of influence of the Project is within the jurisdiction of the ARA–South.

The Water Law defines as a basis for the management of water resources the principle of "user pays" and "polluter pays" and the system of concessions and licenses. These factors are based on principles of environmental sustainability.

Decree no. 18/2004 regulates certain parameters of water quality, such as the use of agricultural and recreational purposes, as well as the parameters of the emissions and industrial and domestic effluents. For agricultural uses, it was determined that:

Standards of water quality for human consumption are included in the Regulation on the Quality of Water for Human Consumption approved by Ministerial Decree No.

180/2004. This Regulation applies to supply systems for drinking water, including surface and groundwater used for direct consumption or for production of water for human consumption. The Ministry of Health is the authority responsible for ensuring the quality of water for human consumption.

Regulation of public systems of water supply and wastewater disposal (Decree No 30/2003 of 1 July) defines technical provisions for these Projects.

Coastal Management

Regulation for the Prevention of Pollution and Marine and Coastal Environment Protection (Decree No. 45/2006 of 30 November) states, among others, the legal basis for the prevention of marine and coastal pollution by land-based sources, and the protection and conservation of public areas such as maritime, lake and river, beaches and fragile ecosystems, where the following should be emphasized:

- Article 66 defines Partial Protection Areas, which include, among others, the band of coastline and contour of islands, bays and estuaries, measured from the maximum high water mark of the sea, 100 meters into the territory. The rights of use and enjoyment of land cannot be acquired and can only be issued special permits for the exercise of certain activities.

The construction of infrastructure in the areas identified above should only be made by compliance with standards and standards of environmental quality and landscape. It should also be made in such a way that, for every 100 meters, there is free access to the beach for any citizen, especially for local communities.

- Article 67 further stipulates that in zones of partial protection and fragile ecosystems, including mangroves and dunes, is only permissible – by special permit – the construction of basic infrastructure such as water, electricity, telecommunications, drainage of sewage, solid waste services, small constructions and other removable material of a similar nature.

Protected Areas

The Land Law, approved by Law No. 19/97, classifies the land in the public areas as a total and partial protection. According to Article 7 of this law, the total protection zones are designated as those reserved for conservation work of nature, and defence and national security.

Under the Regulation of Land Law, the partial protection areas include, among others, the stretch of sea, and in contour lines, bays and estuaries as the line of maximum high tide to 100 meters into the territory, land occupied by roads, with a bordering strip of 30 meters for primary roads and 15 meters for secondary and tertiary roads, bordering strip of 50 m on each side of telecommunications carriers, electricity and water and range land 100 meters adjoining military installations and other facilities for defence and state security (Article 8).

Ownership of Land and Territory Planning

According to Article 3 of the Land Law (Law No. 19/97) the earth is owned by the state and can not be sold or otherwise alienated, mortgaged or pledged.

The Decree No. 60/2006 of 26 December regulates the Land Act for the Urban Land. It namely sets that the use and enjoyment of the land can not be acquired in areas of partial protection, hence the use is subjected to special permits to be issued by the municipality (Article 3).

It also defines the various planning instruments of urban land (Article 4) – Structure Plan, General Plan and Partial Urban and Detail Plan, consultation and approval processes.

Article 39 deals with the expropriation, providing that the compulsory purchase order to the payment of fair compensation to be calculated based on the criteria established in the Land Law.

The Land Law (Law 19/2007 of 18 July) aims to ensure the organization of national space and sustainable use of its natural resources, observing the legal, administrative, cultural and material conducive to social and economic development of the country, promoting quality of life and the protection of the environment.

Defines that it is the State and Local Government responsibility to promote, coordinate and monitor spatial planning in an articulated fashion (Article 6). At the local administrative level, it sets as tools for land planning the Urban Structure Plans, General Plans and Partial Urban and Detailed Plans.

The Land Law is regulated by Decree No. 23/200 of 1 July, which describes in detail the purpose and content of the instruments for land planning, and regulates the classification of soils. It also establishes that the approval of development plans includes a public participation process.

At Maputo Municipal level it shall be stressed the Land Use plans (as the Structure Urban Plan and the detailed urban plans) become legal documents as soon as approved by the City Council and the Municipal Assembly.

Cultural Heritage

The Cultural Heritage Act (Law No. 10/88) was designed to legally protect the tangible and intangible cultural heritage of Mozambique. For the purposes of the Act, the Cultural Heritage is defined as "a set of tangible and intangible assets created or integrated by the Mozambican people throughout history, with relevance for the definition of Mozambique's cultural identity."

The cultural properties include: monuments, groups of buildings of historical, artistic or scientific relevance, locations or sites (with archaeological, historical, aesthetic, ethnological or anthropological interest), and natural elements (physical and biological formations with particular interest from the aesthetic or scientific point of view).

Article 13 stipulates that in case of discovery of any places, buildings, objects or documents that may be classified as goods of cultural heritage, it shall be reported to the nearest administrative authority within 48 hours (Article 10).

It should be stressed that the Mozambican legal framework is provided by the Law of Forestry and Wildlife of the existence of conservation areas in the protection zones, Areas of Use and Historical and Cultural Value, for the conservation of places of historical importance or with use cultural benefit to local communities.

1.8 Institutional Framework

1.8.1 National Scope

In 1994 the Ministry for Coordination of Environmental Affairs (MICOA) was created as the central organ of the state apparatus that directs the implementation of environmental policy, coordinates, advises, manages and promotes the proper planning and use of natural resources of the country. In 2009, the current MICOA Organic Statute was approved by the Ministerial Decree nr. 265/2009 of 16 December.

MICOA's responsibility includes the following:

- a. Decide on the environmental impact inherent in the realization of socio-economic activities in the context of development Projects of sectors;
- b. Decide on the technical quality of environmental impact assessments;
- c. Conduct environmental audits and to activate the due legal process when there are offenses listed in the Environmental Law.

These powers are exercised by the National Environmental Impact Assessment that has a Department of Environmental Licensing and a Department of Environmental Audit. Like the other ministries, MICOA is represented at the level of the provinces, in this case by the Provincial Directorate for Coordination of Environmental Affairs (DPCA).

The Local Government Law (Law No. 2 / 97) defines competences in environmental management for the municipal bodies (Municipal Assembly, President of the Municipal Council and Municipal Council).

However, MICOA and its provincial offices (DPCA) retains the responsibility for environmental licensing. In the case of Category C municipal projects, DPCA may undertake periodic monitoring and inspection of these activities during or after their implementation to ensure compliance. Only in the case of municipal activities which require environmental licensing, including all Category A and all/some Category B projects, is prior review and authorization by MICOA or DPCA required.

World Bank's safeguard policies

1.9 WORLD BANK'S SAFEGUARD POLICIES

The World Bank's Environmental and Social Safeguard Policies are the base for sustainable poverty reduction. The aim of these policies is to prevent and mitigate potential damage to the environment and communities generated in the development process. These policies give the Bank and borrowers, guidelines on the identification, preparation and implementation of programs and Projects.

There are ten safeguard policies in the World Bank, created to inform decision making, ensuring that Projects financed by the Bank are environmentally and socially sustainable. These Operational Policies include:

- Environmental Assessment (OP 4.01)
- Natural Habitats (OP 4.04)
- Forestry (OP 4.36)
- Pest Management (OP 4.09)
- Physical Cultural Resources (OP 4.11)
- Indigenous People (OP 4.10)
- Involuntary Resettlement (OP 4.12)
- Safety of Dams (OP 4.37)
- Projects on International Waterways (OP 7.50)
- Projects in Disputed areas (OP 7.60)

Table 4 presents the main objectives of the Bank Operational Policies that are applicable to this project.

Table 4 – World Bank’s Safeguard Policies

Safeguard Policies	Main Objective	Applicability	Application in the Project
OP 4.01 Environmental Assessment	The objective of this policy is to ensure that Projects financed by the World Bank are environmentally sound and sustainable, and that decision making is improved through adequate analysis of actions and their possible risks and environmental impacts in the natural environment (air, water and soils); human health and security; physical-cultural resources; and global and transboundary and global environment aspects.	<p>This policy is applicable when a Project or sub-Project has potential to cause negative environmental impacts in its area of influence</p> <p>Activities involving religious infrastructure, gravesites, or sites of significant cultural heritage are among the projects that would not be eligible for Bank financing.</p> <p>Depending on the Project and the nature of its impacts, various instruments can be used, such as: EIA, Environmental Audits, hazard and risk Assessments; and Environmental Management Plans (EMPs).</p> <p>To decide on the type of environmental assessment to be carried out in the subProjects, three tools can be used: (1) OP directives, (2) national legislation can be followed, and/or (3) the checklist of guidelines presented in this ESMF.</p>	<p>Activities included in the Project can cause negative environmental and social impacts due to the emphasis placed on construction and rehabilitation activities for infrastructure. These activities can lead to soil erosion, noise and air pollution, soil and groundwater pollution, just to mention a few.</p> <p>Social effects are also to be expected, for example, potential impacts on public health, impacts on urban traffic and involuntary resettlements.</p>
Safeguard Policies	Main Objective	Applicability	Application in the Project
OP 4.12 Involuntary Resettlement	The objective of this policy is to (i) avoid or minimize involuntary resettlement, where feasible and explore all viable alternative Project designs; (ii) assist displaced people in improving their former living standards, income earning capacity, and production levels, or at let in restoring them; (iii) encourage community participation in planning and implementing resettlement; and (iv) provide assistance to affected people regardless of the legality of land tenure.	<p>This policy does not cover only physical relocation but any loss of income sources resulting in: (i) relocation or loss of shelter; (ii) loss of assets or means of livelihood; (iii) loss of income sources or means of subsistence, whether or not the affected people must move to another location. This policy also applies to the involuntary restriction of access to legally designated parks and protected areas, resulting in adverse impacts on the livelihood of the displaced persons.</p> <p>In these cases the World Bank requires the establishment of a Resettlement Action Plan (RAP), based on the Resettlement Policy Framework (RPF) for any Project or sub-Project.</p>	<p>For some of Project activities it may be necessary to affect or remove homes or other structures, and in this case it will be necessary to implement the Resettlement Policy Framework prepared for Project.</p>

Following the Safeguard Policies and other specific guidelines, some Projects are not considered eligible for financing by the World Bank, mainly:

- activities involving transformation or significant degradation of natural habitats;
- activities involving religious infrastructures.

As mentioned previously, the Operation Policy OP 4.01 governs the policy of World Bank environmental assessment, stating that all Projects proposed for funding by the Bank must be subjected to an EA so as to ensure environmental sustainability, thereby contributing to an improvement in the decision-making process. Determines very clearly how the assessment should be linked to the Project cycle and includes information on consultation mechanisms and provide information to affected local groups and NGOs.

The environmental assessment must address the natural and social aspects in an integrated manner and should take into account inter alia the country's political, national legislation and institutional capacities related to environmental and social aspects.

The size, depth and type of environmental assessment analysis depend on the nature, scale and potential environmental impact of the proposed Project. To facilitate the definition of the type of environmental assessment required the Bank defines three categories of Projects:

Category A – Requires a full environmental impact assessment. A proposed Project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works.

Category B – Requires an environmental assessment with a narrower scope than that of Category A EA. The Project could have potential adverse environmental impacts on human populations or environmentally important areas which are less adverse than those of Category A Projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A Projects.

Category C – Projects classified within this category do not require an environmental impact assessment, as it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C Project.

The intensity of public participation will vary with the categorization of the Project. Some Projects may be determined through a selection list created by the World Bank (tables 7-9).

RESULTS OF THE PUBLIC CONSULTATION PROCESS

To adequately appreciate the views and concerns of stakeholders with regard to the Project implementation, field visits and consultation with key stakeholders, Ministries, Departments and Agencies, Municipalities, and non-governmental organizations are on-going. The consultations focused on:

- Assessing the views and understandings of the Municipalities;
- Identifying and Assessing environmental and social impact of the Project;
- Proposed or ongoing infrastructure rehabilitation activities under the Municipalities;
- Reviewing the status of compliance and enforcement of environmental regulations within the Municipalities;
- Identifying capacity building needs for the Municipalities and relevant regulatory institutions and recommending actions to strengthen MAE and AIAS to ensure sustained environmental and social compliance monitoring.

The consultation was basically done in two forms:

- Group discussions with a cross-section of officials and professionals from government Ministries, Departments, and Municipalities.

1.10 Consultations with Municipalities

Consultations on the investments proposed to be financed through component 2 of the Project were discussed in detail with the Municipalities of Beira and Nacala.

TO INCLUDE THE NAME OF Municipalities PRESENT ON THE CONSULTATION FOR COMPONENT 1

The detailed consultation issues and responses with pictures are presented in Annex 7. The Table 4.1 below is a summary of consultations held with the Municipalities participating on Component 1.

Table 0.1: Summary of some Key Consultation Issues

S/N	Municipality	Name/Position of Officer Consulted	Main Consultation Issues	Responses
1			1.	-
2			2.	-
3.				-
4.				
5.				
6.				
7.				
8.				
9.				

ESMF – implementation procedures

The comparative analysis of the Environmental Impact Assessment Process legally established in Mozambique (Decree N°45/04) with the OP 4.01 from World Bank on Environmental Assessment indicates a great parallel between the two. Thus the procedures to be employed by the project implementators will comply both with GOM and WB environmental and social impact management requirements.

The stages of the environmental impact assessment process are presented below. The steps and players in the process of Involuntary Resettlement are listed in the *Resettlement Policy Framework* of Project II, prepared in parallel with the present ESMF.

1.11 Environmental Impact Assessment Process

The environmental impact assessment process of each activity varies with the type of activity proposed and the area in which it will be implemented. The steps to be followed in order to put to effect the Regulation for the Environmental Impact Assessment Process (*RPAIA – Regulamento do Processo de Avaliação do Impacto Ambiental*) of Mozambique and the World Bank's Safeguard Policies (OP 4.01).

1.12 Screening

The purpose of the screening process is to determine whether sub-Projects are likely to have potential negative environmental and social impacts; to determine appropriate mitigation measures for activities with adverse impacts; to incorporate mitigation measures into the sub-Projects design; to review and approve sub-Projects proposals and to monitor environmental parameters during implementation. The extent of environmental and social work that might be required for the sub-Projects prior to implementation will depend on the outcome of the screening process. This process should include screening for possible resettlement impacts.

The screening process is the first step in the ESMF process. One of the objectives of the screening process is to rapidly identify those sub-Projects which have little or no environmental or social issues so that they can move to implementation in accordance with pre-approved standards or codes of practices or other pre-approved guidelines for environmental and social management.

For each relevant sub-Project proposal the Municipalities, led by the Planning Officer (PO), will carry out a screening process. The ESIM will complete the Environmental and Social Screening Form (Annex 1b) and submit to the PIU for review as part of the Project package. Completion of this screening form will facilitate the identification of potential environmental and social impacts, determination of their significance, assignment of the appropriate environmental category, proposal of appropriate environmental mitigation measures, or recommend the execution of an Environmental and Social Impact Assessment (ESIA) or an Environmental and Social Management Plan (ESMP), if necessary.

Based on the completed Preliminary Environmental Information Sheet the Municipal Department of Environmental Management provides a preliminary classification of the activity, from one of the following categories:

- 1 Category A: activities with potential negative environmental and / or social impacts;
- 2 Category B: activities with negative impacts of lower significance, which may be mitigated;
- 3 Category C: activities with negligible, insignificant or minimal environmental impacts.

According to the guidelines of World Bank's Environmental Assessment Policy OP 4.01, Project was considered as Category B, which means that, its environmental and social impacts can be considered as localized in the general reversible can be easily mitigated.

Some activities such as construction/rehabilitation of administrative buildings, , rehabilitation of small stretches of roads, construction of stand posts or latrines, road signs, public lighting fall under Category C, because they do not require any additional environmental assessment but only the implementation of general mitigation measures (Annex 6 in this ESMF).

The category of the activity determines the level of environmental assessment required:

Category A: The activities classified under this category require an Environmental Impact Assessment (EIA), including an Environmental Management Plan (EMP) as well as the required process of public participation. This EIA will be prepared by environmental consultants certified by MICOA and are subject to the terms of Decree No. 45/04. The EIA will be preceded by a Pre-Feasibility Study and Scoping Report which will define the ToR. Both the Scoping Report +ToR and the EIA must be approved by MICOA. In situations involving involuntary resettlement the *Resettlement Policy Framework* (RFP) of Project has to be followed.

Category B: The activities classified as B require a Simplified Environmental Study (SES), including an Environmental Management Plan, and are subject to the terms of Regulations on Impact Assessment. The SES will be prepared by certified environmental consultants, but their Terms of Reference (ToR) should be approved in advance by MICOA. In cases involving involuntary resettlement the *Resettlement Policy Framework* (RFP) of Project has to be followed.

Category C: Projects envisaged in this category are likely to cause impacts that can be mitigated in simple fashion through the implementation of mitigation measures of general application.

1.13 Preparation of Terms of Reference (ToR)

If the activity is classified as Category A or B it is necessary to prepare the ToR for hiring a consultant to perform the survey and conduct the public participation process. The terms of reference should take into account potential impacts identified in Tables 9 to 12 of the present ESMF; as well as other potential specific impacts of the site where the activity will be executed. The structure and content of the EIA and SES or EMP must follow the stipulations found in the Regulation of PAIA (Decree No. 45/04).

The Public Participation Process will follow the General Directive of the Public Participation Process in the Process of Environmental Impact Assessment. The ToR has to be sent to the World Bank's Environmental and Social Safeguard specialist for no-objection and then to DNAIA-MICOA, for approval.

1.14 Preparation of the EIA or SES and conducting the public participation process

The main objective of public participation is to ensure that the concerns and issues rose by the Interested and Affected Parties (PI&As), organizations or individuals are taken into account during the EIA or SES, allowing for the PI&As to discuss the results of the study. On the other hand, the Public Participation Process grants an open channel of communication between the public, the consultants and AIAS, which will be of extreme importance in managing potential conflicts.

Although RPAIA does not consider the public consultation activities for Category B as a compulsory action, this will be required by the present ESMF, according to the OP. 4.01.

The Municipal Councils shall be actively involved in the process of public participation since an early stage, supporting the citizens' involvement in the process. With this in mind, the creation of local committees consisting of representatives of different participants, establishing the communication between AIAS, consultants and contractors with the parties directly affected, should definitely be encouraged.

The report of the public participation process should be included in the study of environmental assessment (for Category A and B cases) and / or in the activity file folder.

1.15 Review and Approval

The ESMF is the preliminary study that will be used to formulate EIAS and RAPS (or Simplified Environmental Study (SES)) for specific investments, once the appropriate designs of those investments are decided upon.

For activities undertaken under the Component 1 of the Project, MAE will review the EIA or SES prior to submission to the World Bank for approval. Once the Bank approval is provided, MAE will submit to MICOA's National Directorate for the Environmental Impact Assessment (DNAIA). For activities undertaken under the Component 2 of the Project, AIAS will review the EIA or SES prior to submission to the World Bank for approval. Once the Bank approval is provided, AIAS will submit to MICOA's National Directorate for the Environmental Impact Assessment (DNAIA). MICOA, through DNAIA, will always be responsible for the review and final approval of environmental studies and environmental management plans and the accompanying environmental licensing.

1.16 Compilation of environmental and social requirements for Tender Documents

AIAS will make a compilation of environmental and social requirements to be met by the designers (when in the planning / design) or by contractors (when referring to the construction phase). This compilation will be based in the Management Plan approved by MICOA (for Category A or B activities) or in the Mitigation Measures for Category C Activities (Annex 4 of the present ESMF).

The environmental and social requirements will be included in the Tender Documents of the Projects or Works.

1.17 Estimated costs of an Environmental Management Plan (EMP)

It is estimated that the average cost per municipality of undertaking the environmental actions under an EMP would be 3% of the average cost of the works to be financed by the project. In addition to this cost, the Project Implementation Unit (PIU) will finance activities directly or indirectly related to the implementation of the EMP, such as in technical assistance, capacity building and monitoring activities. Considering that the majority of the municipalities will receive a grant of about US\$150,000, the estimated EMP costs per municipality would attain about US\$4,500.00. Per municipality, the estimated annual costs of the PIU technical assistance, capacity building and oversight amounts to US\$50,000. The table below presents the estimated costs per municipality and in total.

Estimated costs (US\$)

Annual (per municipality)	Annual (PIU)	Total per municipality (4 years)	Total (PIU/per municipality)	General Total (20 municipalities + PIU)
4,000	20,000	16,000	100,000	2,320,000

Potential environmental and social impacts

1.18 Preamble

Description of Prospective Projects under Component 1

Under Component 1, the grant funds will be provided as discretionary funds that can be used by Municipalities for infrastructure and services that they have a mandate to deliver (with a simple negative list). These could be small scale civil works such as local roads, street lighting, drainage, markets, public toilets, sanitation, etc. The Table ES.1 below presents the list of some of the likely investments and the safeguards status this list is not comprehensive:

Table 0.1: Lists of Potential Sub-Projects

List of Potential Sub-Projects	
• Construction of classroom blocks;	• Construction of culverts;
• Rehabilitation/renovation of school blocks;	• Mounting of electricity poles;
• Drilling of boreholes;	• Construction of water standpipes;
• Mechanization of boreholes;	• Construction of teachers quarters;
• Construction of water closet seaters;	• Construction of libraries;
• Rehabilitation of public toilet;	• Landscape and greenbelt development;
• Construction of market stalls;	• Construction and lining of drains;
• Reshaping of road;	• Expansion of lorry parks;
• Bridge constructions;	• Construction of rest stops;
• Provision of streetlights;	

Description of construction works under Component 2

Drainage rehabilitation works in the city of Beira: The project will finance the rehabilitation of part of the Beira drainage system, consisting of the primary channel known as 'central'. Built on the 50 and 60's, the 'central' channel is constituted by the channels A, AII and AIV of Beira's drainage network, totaling a continuous channel of about 9.3kms, which drains approximately 2,600 hectares. It protects about 60% of city territory from floods, including high density informal neighborhoods in which most of Beira's poor are located. The territory protected by this channel is also where most of the city public and private assets are located, and constitutes the core area of the city. Directly, about 60% of the city inhabitants will benefit from these works and, indirectly, it will benefit 100% of the city inhabitants. This channel, together with the beaches along the coast, constitutes the city's most relevant

hydraulic features. Its rehabilitation will make an extraordinary difference for the city's economic viability as well as for the living standards in Beira. Project financed works will involve rehabilitation and relining of the existing canal. Costs have been estimated by detailed technical feasibility studies, and a 10% price contingency has been budgeted. The estimated costs have also been compared to the costs incurred by the large sanitation project that is coming to closure, and findings indicate that the cost estimates are realistic. These works will generate a significant number of jobs for unskilled labor during the construction phase.

Erosion control and drainage works in the city of Nacala. The proposed project will finance the rehabilitation of main erosion and drainage problems; priority has been assigned to three primary open air channels (6kms). The city of Nacala experiences significant erosion caused by drainage problems resulting from severe topographic relief (drop of more than 140 meters from the city's highest areas to the coast), vulnerable sandy soils, and the lack of adequately designed drainage channels. Erosion is aggravated by unplanned urbanization which has denuded slopes of stabilizing vegetation. The preferred technology alternative for reducing erosion along drainage channels is the use of such structures as gabions baskets, which have been widely employed by the municipality due to the availability of materials and the relatively low cost of installation. This might be combined with grading and planting on the upper portion of the cross sections, for establishing vegetation to increase stability and reduce sediment deposition within the channel. Widening of the channels will not be considered to avoid conflict with existing buildings, gardens, utilities and infrastructure. The preferred construction technology alternative is labor intensive, and will generate substantial number of jobs for unskilled labor during the construction phase.

Drainage works in Maputo and Matola. The project will finance the development of the Drainage/Sanitation Master Plan for Maputo and Matola. This study will identify priority works to be financed by the project accordingly to the amount of financial resources estimated to this activity. These works will very likely involve the rehabilitation of existing secondary drainage system.

1.19 Positive Environmental and Social Impacts

The overall environmental impact of the Project is expected to be positive. Significant positive impacts to the natural and socioeconomic environments will be achieved by the participating Municipalities. By developing infrastructure, the capacity of the Municipalities to deliver quality services will be improved. The next sections explore some of the identified prospective Projects (water supply, road rehabilitation and drainage, street light and abattoir) related benefits and general positive impacts:

1.19.1 Water Supply Project

- Construction and rehabilitation of water and sanitation facilities will have significant positive impacts on the health of the communities and populations in all the targeted districts,

- Safe water fully available to the populations as well as their assets emanating from Projects in livestock watering points and associated animal tracks (reducing or eliminating prevailing agriculturalist/pastoralist conflicts) and small scale agricultural activities and essentially improve their quality of life.

1.19.2 Urban Road Rehabilitation and Drainage Project

- The road Project in the Metropolitans and Municipalities will reduce cost of transportation and make transportation convenient to the people.
- Good access road will translate to improved movement of goods and services; and this will enhance income generation of traders and business people.
- Road rehabilitation will eliminate hazards and sufferings associated with the use of dilapidated road, including road accident.
- Good road network within the Metropolitan and Municipals will enhance the economic linkages between them through its stimulation of business locations to sites near raw materials and convenience in the transportation of goods between the urban areas.
- The drainage system that this Project will support will amongst other things reduce the incidences of flooding and erosion along the roads.

1.19.3 Street Lighting Project

- This could help in reducing the rate of crimes in the Municipalities
- It will reduce the rate of road accident within the Municipalities at night.
- Street Lights within the Municipalities will be critical to support meaningful economic activities during the night time; and this will boost further the sustained economic growth of the government of Mozambique.
- It will improve the social and aesthetic condition of the targeted Municipalities.

1.19.4 Aesthetics Improvement

Many of the selected Municipalities have not experience a major rehabilitation or maintenance over a very long period and are in very deplorable states. A major expected positive impact of the Project is that the beneficiary Municipalities will experience significant infrastructure rehabilitation which will lead to enormous aesthetic improvement.

1.19.5 Economic Benefits to Municipalities

Improved road infrastructure through rehabilitation and maintenance provides such socio-economic benefits as accessibility which will significantly enhance economic prospect and integration. Lack of access has been traditionally linked to poverty in Mozambique.

1.19.6 Enhanced Institutional Capacity to Support Decentralization

The Project will offer important contribution and legacy to the decentralization program by providing capacity building opportunities to the Municipalities. The support to Municipalities will particularly enhance community involvement in decision processes affecting their interests, gender issues and other environmental and social related activities in their immediate neighbourhoods.

1.19.7 Environmental and Social Safeguards Applied to Municipalities Projects

The skills and the culture developed by the Municipalities in applying Environmental and Social safeguards in the implementation of the Project sub-Projects are most likely to be extended to other Projects from the Municipalities. This will not only help the Municipalities meet the requirements of the environmental law, but also adequately address Environmental and Social safeguards for sustainable district developments and investments.

1.20 Identification of Potentially Adverse Environmental and Social Impacts,

The proposed upgrading of infrastructure works will have an impact on the environment. The potential impacts of the development are both adverse and beneficial. An assessment of the negative impacts can be classified into construction phase and post-construction phase impacts.

1.20.1 Environmental Impact Assessment

Constructional Phase Impacts

The constructional works would present negative environmental impacts. The construction phase includes the following operations: site clearing, excavation and grading, upgrading of access roads and drains, installation of utility services (electricity and water supply). These activities will have direct impact on the environment. The negative impacts are discussed and assessed below:

(a) Disposal of polluted sludge from the cleaning of the existing drainage canals

The rehabilitation and upgrading of existing drainage canals will entail the removal of polluted sludge and will require it appropriate transportation and disposal.

(b) *Loss of ornamental and shady trees:*

The upgrading of access roads may on occasion require the cutting of trees and bushes. There is however no endangered species of flora and fauna on the right of way since this development are taking place within an urban environment.

(c) *Soil and Land Degradation*

Access road upgrading normally involves the use of earth-moving equipment such as bulldozers and excavators. The use of earth moving equipment or machinery during the clearing of the access way will not only expose the soils but also compact the soil and break down the soil structure. This and the sealing of the road surface with tar or another petroleum-based material would potentially reduce rainwater percolation into the ground water. In addition, site-levelling activities will interfere with the natural drainage pattern and this has the potential of causing siltation of the natural drainage channel.

(d) *Visual Intrusion*

The Project will change the natural landscape setting or characters of the area. The clearing of vegetation, construction of roads and drains will impact on the visual amenity of nearby houses and communities or township around the area.

(e) *Air Quality*

The main impact on air quality will be experienced during the construction phase. Particulates (dust) from site preparation, haulage of plant and equipment and construction materials on the untarred access road will cause deterioration in the quality of air at the site. Other sources of dust will be earthworks such as excavation and the delivery of coarse aggregates. The excessive generation of dust will have a significant impact on the health of the workers and persons living in nearby residences.

(f) *Vehicular Traffic Implication*

The construction works will result in an increase in traffic volume on the roads in the area. The transport of raw materials will introduce a number of heavy trucks on the main road and this could increase the risk of motor accidents and also result in vehicular-pedestrian conflicts. These impacts are localised and regarded as short term.

(g) *Noise Levels and Ground Vibration*

Minimal and intermittent noise would be generated during the construction phase of the Project. The background noise levels and ground vibrations at the access roads will increase

as a result of the movement of a number of tipper trucks delivering materials, heavy earthmoving equipment and the use of machinery such as concrete mixtures. The anticipated noise levels and ground vibrations will however, not have devastating effects on the work force and immediate environment. Other inconveniences will be created to the adjoining communities during the construction stage

(h) Constructional Wastes

The constructional activities on the access ways will produce wastes such as excavated soils and redundant materials such as broken block and pieces of wood. The haphazard collection of constructional wastes could obstruct the movement of the workers and trucks as well as affect the beauty of the estates. These wastes will therefore have to be managed at various times during the construction period.

(i) Occupational Health and Safety

Safety of the local population and workforce may be threatened during constructional phase. The movement of trucks to and from the access roads, the operation of the various equipment and machinery and the actual construction will expose the workers to work-related accident and injuries. Pollutants such as dust and noise in the workplace environment could also have negative implications for the health of the workers.

1.20.2 Social Impacts

The Potential Negative Impacts

Social impacts may emanate from the various infrastructure services delivery activities under the Project funded sub Projects within the Municipalities. The project will not finance infrastructure improvements that will require population resettlement. The following are some of the potential social negative impacts:

(a) Disruption of Utility Services

There will be interruption of utility services such as electricity and water and this will cause temporary disruption of these services. Such disruptions will be a nuisance to the affected communities in the area. As far as possible such connections would be carried out as soon as possible to reduce the inconvenience.

(b) Displacement of families

Under Component 1, the project will not finance infrastructure improvements triggering the World Bank OP 4.12 Involuntary Population Resettlement (displacement of people and resettlement, loss of livelihood or access to assets due to land acquisition). Therefore, capital investments that trigger the referred OP 4.12 are not eligible to be financed by the municipal grant.

(c) *Dumping of solid waste and rubbish into the drains*

Some unscrupulous residents will resort to anti-social practices whereby, rubbish and other solid waste matter will be dumped into open drains, to await storm waters to wash them away.

(d) *Accidents*

As the condition of the roads improves, the traffic volume will increase, and some drivers tend to over speed, increasing the chance of road accidents.

(e) *Inconvenience to be caused due to delays in payment*

Inconvenience, delayed payment and lower than market value payment for households whose lands are expropriated by Municipalities during access road upgrading.

1.21 Mitigation Measures

Various mitigating measures are proposed below in order to ensure an efficient environmental management of the construction and sustainability of the infrastructure facilities provision. The mitigation measures are proposed for the impacts identified under both the construction and post construction phases of the Project.

1.21.1 Construction Phase Impacts

(a) *Transportation and disposal of polluted sludge from the cleaning of the existing drainage canals*

A Waste Management Plan will describe the solution chosen for the transportation and disposal of the polluted sludge from the cleaning of the existing drainage canals. Prior to the sludge removal and disposal, an inventory of the industrial discharge to the drainage canals will be carried out to identify points from which sludge samples will be collected and analysed. It is anticipated that most of the sludge will present a pollution level allowing its disposal in the municipal solid waste land fill. In case the pollution level is not compatible with its disposition on the solid waste land fill, it will be disposed in an area which location will prevent the contamination to the natural environment as well as to the public health. The liquid sludge will be dry out in situ before being transported in closed body trucks.

(b) *Air Quality*

Dust pollution will be temporal since it will be restricted mainly to the constructional phase. However, all the exposed surfaces will be watered regularly and finally tarred with bitumen in order to enhance dust suppression. Moreover, all the exposed surfaces will be paved. Besides, transportation of raw materials will be covered with tarpaulin to avoid dust blow and spills. In addition there will be speed limits for vehicles plying the road.

(c) Noise and Vibration

To ensure that the noise generated during construction is not a nuisance to the residents of the neighbourhood, constructional activities will be restricted to the daytime. In this way, the noise generated will be confined to working machinery only and diffuse into the existing background noise. The plant and equipment that will be used at the site will also be maintained and serviced regularly in order to ensure their smooth operation so as to reduce the noise they generate. In addition, all heavy construction machinery must be equipped with appropriate and functional noise suppresser (muffler).

(d) Constructional Waste Management

Excavated soils will be stock piled and be transported elsewhere. In addition, the sand would be used to level holes or pits created by the construction activities and landscape the area. Re-usable pieces of block will be packed and used elsewhere. In addition, the site offices and stores of the contractors will be decommissioned and the planks of wood and other materials, which could be used again, will be carted away and kept for other Projects elsewhere.

(e) Occupational Health and Safety

The health and safety of the work force must be of paramount concern. Contractors will be required to adopt extensive policies to minimise accidents and to improve the health and safety of its workers. This will be done through the provision of protective clothing. All workers on site will be provided with helmets, Wellington boots, ear plugs, nose pad and hand gloves to protect them from injuries. The use of protective clothing will be strictly enforced.

Besides the provision of protective clothing, a first-aid kit stocked with enough drugs and materials will be provided on site so that workers who unfortunately get injured or sick on the job would be given first aid. However, workers who may sustain serious injuries will be given some initial treatment and rushed to the Hospital for professional medical care.

In addition, provision for workers to include:

- Proper management of sanitary wastes
- Adequate supply of safe water
- Adequate protection against dust and excessive noise
- An education program is a component of occupational health and safety. An orientation on proper values on safety and environmental awareness shall be inculcated among contractors and in turn among their workers.

Furthermore, there should be in addition to the above:

- Vehicle safety signals
- Speed ramps
- Loading and off-loading procedures
- Only drivers with Vehicle license and permit are to drive

(f) Adherence to specification and Environmental Standards by Contractors

Municipalities shall be responsible for the strict compliance of its contractors and sub-contractors with the highest standards of social responsibility and environmental management. Contractors shall be required to follow and incorporates environmental mitigation measures. This is the basis for monitoring by the proponent's Municipalities Development Planning Subcommittee (or, where applicable, the Environment Management Committee). The contractors shall also be responsible for the proper disposal of their wastes subject to monitoring.

Generally, concerns are raised about some contractors who do not observe the proper specifications in the civil works, have no safety signs, etc. Stakeholders are interested to help monitor not only observance of commitments on social and environmental compliance as a result of the Environmental Impact Statement, but would like to be part of a mechanism that will review quality of civil works by eradicating leakage in the application and purchase of materials. Such a mechanism may be strengthened or established if none yet exists. The appropriate monitoring body should also address feedback on alleged corruption and poor implementation by contractors.

A policy may be issued whereby erring contractors may be blacklisted for using substandard specifications and for not observing environmental guidelines, provided that they shall be released only upon proper compliance.

(g) Social Problems from Work Sites

Social problems created by migratory workers in work sites areas should be discussed by contractors, local officials and women representatives. The appropriate sanctions and enforcement mechanism, as agreed upon, shall be made known to the workers. Concern about workers transmitting sexually transmitted diseases can be addressed through worker education.

(h) Housing and Sanitation for Non-Resident Workers

Priority shall be given to residents of those low-income areas for employment as a way to help regulate the in-flow of migrant workers. On the other hand, there shall be proper planning of worker facilities. Necessary non-resident workers shall be provided with housing facilities with adequate provisions for water and sanitation. Malaria is endemic in the Municipalities. There shall be schedules for measures of the workers' camp for mosquito control. Monitoring shall be done to ensure that solid wastes are properly disposed.

(i) Addressing Fear of Non-Compensation

There may be homeowners, businesses, etc in proposed Project areas and elsewhere who may be apprehensive about non-compensation because they do not possess building construction permits. Awareness raising activities and orientation meetings at Municipalities level, carried

out by the Municipalities, can address undue fears and facilitate discussion on acceptable compensation packages.

(j) *Resettlement*

Under Component 1, the project will not finance infrastructure improvements triggering the World Bank OP 4.12. Population Resettlement (displacement of people and resettlement, loss of livelihood or access to assets due to land acquisition).

Under Component 2, if the financed infrastructure improvements require the displacement of people and resettlement, loss of livelihood or access to assets due to land acquisition, therefore triggering the World Bank OP 4.12 Involuntary Resettlement, the RPF will be used to inform the preparation of a RAP.

1.21.2 Post Constructional Phase impacts

(a) *Support for Wood Lot and Roadside Tree Planting*

Municipalities can consider it an important contribution to the enhancement of the aesthetic value of the access road to support tree planting, lawns, bushes by the roadside. Support for a community-based tree-planting Project for shade enhances the aesthetic of the environment. SubProjects may involve roadside planting of appropriate trees.

(b) *Management of Social Issues on Burrow Pits*

Many issues both environmental and social now surround the extraction of materials in the quarrying areas for construction. Some involve non-compensation of areas that are appropriated as quarry sites. Attendant environmental concerns needs to be adequately addressed including closure plans.

(c) *Addressing Observation of Lack of Road Maintenance*

Lack of road maintenance is rampant in Municipalities and cost recovery schemes can help support routine maintenance while being sensitive to affordability issues for the poorest sectors. The enforcement of load limits can extend serviceable life of road. Existing arrangements for canal clearing and road maintenance may be augmented through involving local governments and populations in the routine clearing of ditches. Some canals accumulate garbage and others fill up because of sandy soil. The cleanliness of canals may be maintained in coordination with nearby neighbourhoods as a function of a cleanliness drive by local governments.

(d) *Information Campaign/Public Hearing*

An information campaign shall be undertaken to inform and get the feedback of the people on sub Projects that trigger EMPs, its potential impacts and proposed mitigating measures. This can be in the form of a public hearing or meetings to inform officials, traditional and community leaders, etc. In Mozambique, a public hearing is scheduled only if there are significant concerns against a Project. On the other hand, meeting among stakeholders can be

a management tool to inform, clarify misconceptions, give feedback on proposed mitigating measures to issues that were raised, plan for cooperative action – i.e. land use, traffic management, implementation of Municipalities Development Plan, etc. These can also be occasions to firm up recommendation on a monitoring mechanism and as venues to reach consensus on outstanding issues.

Misconceptions about Municipalities/Department of Urban Roads requirements for compensation without building permits may be clarified or further discussed.

The officials and representatives of the various sectors of the population shall be properly briefed on their role in the proper implementation of the Environmental Impact Assessment System in such phases as Project planning, implementation, and environmental and social impact monitoring and evaluation. This is designed to increase stakeholder participation – host community, local governments, NGO, etc., role in environmental management and social development in cooperation with the proponent. This can be part of the program during a public hearing/meeting.

Information dissemination shall also be done on a regular basis to communicate the result of Project monitoring. Results of periodic monitoring shall also be given to the districts and localities.

(e) Continuing Dialogues and Consultations on Resettlement

Consultations shall be conducted on site identification regarding the process of relocation, the terms of compensation and other issues relative to resettlement. The negotiation of an acceptable package and the settlement of important concerns may be settled through dialogue which shall be a continuing feature of problem solving and cooperation among Department of Urban Roads, the local government and affected and host populations.

(f) Dissemination of Monitoring Results

Information dissemination is also done on a regular basis to communicate the result of Project monitoring and evaluation. In addition to the MMPCU, results of periodic monitoring shall be submitted to the assembly, which shall be enjoined to disseminate critical information to their constituents and submit recommendations on the resolution of issues when necessary.

(g) Environmental Information and Awareness Raising Campaign

The Municipalities should educate the general public through the local media to desist from dumping rubbish and other solid waste matter into the open drains, a practice which prevents road side drains from functioning properly.

(h) Prompt payment of Compensation

The time lag between field measurements of affected properties and preparation of compensation for the beneficiaries by the Land Valuation Board should be reduced, as work sometimes had to be suspended pending receipt of approval. Secondly, such delays tend to

bring untold hardship to the affected persons (beneficiaries) and a great inconvenience to both the Contractor and the Consultants on the Project.

Library of environmental specifications

1.22 Preamble

The following comprises a library of the minimum range of constraints, controls, procedures and standards that are typically required for the construction of Projects associated with the ProjectP.

It is intended that a selection of these Environmental Specifications be included into a sub-Project EMP, and that these may:

- Either be included verbatim in the sub-Project EMP; or
- Be amended to reflect, for example specific information regarding the sub-Project, the area to be affected and/or any specific requirements made by AIAS, MICOA, World Bank.

Irrespective of the above, the content of the listed Environmental Specifications should not be regarded as exhaustive and any improvements should be made where reasonable or required.

The final number and scope of Environmental Specifications included in any given sub-Project EMP will depend on:

- The nature of the sub-Project;
- The associated range and extent of construction activities required;
- The results of the environmental impact assessment studies;
- The nature of comments received from MICOA and World Bank;
- Comments made by the AIAS Environmental Engineer.

1.23 Index of Environmental Specifications (ES)

An **index** of the Environmental Specifications contained in this library is provided below. The Environmental Specifications have been listed as per the following key construction stage activities:

- Planning
- Site Establishment.

- Site Clearance.
- Site Housekeeping.
- Construction Activities.
- Rehabilitation.
- Monitoring and Management.
- Completion of Contract and Decommissioning of the Site.
- Measurement and Payment.

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1.24 Planning

1.24.1 Environmental Principles for the Construction Works

1. The environment is considered to be composed of both biophysical and social components.
2. Construction is a disruptive activity and all due consideration must be given to the environment, including the social environment during the execution of a Project to minimise the impact on affected parties.
3. Minimisation of areas disturbed by construction activities (i.e. the 'footprint' of the construction area) should minimise many of the construction related environmental impacts of the sub-Project and reduce rehabilitation requirements and costs.
4. All relevant standards relating to international, national, provincial and local legislation, as applicable, should be adhered to. This includes requirements relating to waste emissions, waste disposal practices, noise regulations, road traffic ordinances, etc.
5. All relevant permits and permissions shall be obtained from the relevant authorities to undertake construction activities as necessary.
6. Every effort should be made to minimise, reclaim and/or recycle 'waste' materials.
7. The Contractor will be required to prepare an Environmental Policy Statement that will state his commitment to achieving the basic principles for environmental protection and control for the duration of his contract. This statement will be displayed at the site as part of the Environmental Information Poster display.

1.24.2 Compliance with Environmental Legislation

1. The Contractor shall ensure that all pertinent legislation concerning the protection of the natural environment and prevention of pollution is strictly enforced.
2. This includes:
 - Mozambican legislation (including any international standards and criteria that have been adopted in the absence of Mozambican standards).

- World Bank requirements – as described in the Environmental Assessment Reports prepared in support of the Project design.
3. The Contractor shall maintain a database of all pertinent legislation, regulations and guidance pertinent to the environmental management of the sub-Project for the duration of the contract.

1.24.3 Permits and Permissions

The Contractor shall ensure that all pertinent permits, certificates and permissions have been obtained prior to any activities commencing on site and are strictly enforced/adhered to. This includes, for example, land mine clearance certificates.

The Contractor shall maintain a database of all pertinent permits and permissions required for the contract as a whole and for pertinent activities for the duration of the contract.

1.24.4 Existing Services and Infrastructure

1. The Contractor shall ensure that existing services (e.g. roads, pipelines, powerlines and telephone services) are not damaged or disrupted unless required by the contract and with the permission of the RE.
2. The Contractor shall be responsible for the repair and reinstatement of any existing infrastructure that is damaged or services which are interrupted.
3. Such repair or reinstatement will be to the Contractor's cost and shall receive top priority over all other activities.
4. A time limit for the repairs may be stipulated by the RE in consultation with the Contractor.
5. It is the Contractor's responsibility to familiarise himself with the position of existing services and infrastructure that may get damaged due to construction activities.

1.24.5 Site Location and Contractor's Camp

1. The location and boundaries of the Construction Site shall be defined in the contract.
2. The site for the Contractor's Camp shall be determined in collaboration with the RE such that it is effectively isolated from the surrounding environment and takes into consideration:
 - The need to be more than 20 meters from watercourses and wetlands in a position that will facilitate the prevention of stormwater runoff from the site from entering the watercourse.

- The risk of public nuisance through for example, noise generation, visual intrusion, light pollution or disruption to access, is reduced.
 - Security implications are reduced.
3. The Contractor's Camp layout shall take into account availability of access for deliveries and services and any future works.
 4. The Contractor's Camp should also be of sufficient size to accommodate the needs of all sub-contractors that may work on the Project.
 5. Utilities and other Service Providers shall be advised of the construction activities. The Contractor will be responsible for any damage to these services/utilities.
 6. Where possible, underground services for the Contractor's Camp shall be located in common trenches.
 7. The Contractor may be required to visually screen a specific part of the Camp as instructed by the RE. In these instances, the visual screening shall be aesthetically pleasing and shall be erected by the Contractor prior to commencing any activities. The Visual screening shall be maintained by the Contractor for the duration of the contract.

1.24.6 Environmental Training and Awareness

1. The Contractor and sub-contractors shall be aware of the environmental requirements and constraints on construction activities contained in the provisions of the EMP.
2. The Contractor will be required to provide for the appropriate Environmental Training and Awareness as described in this specification in his costs and programming.
3. The Contractor shall arrange for the ECO or the delegated responsible person to prepare and undertake awareness training for all site staff, including sub-contractor's staff.
4. An initial environmental awareness training session shall be held prior to any work commencing on site.
5. The training should include reference, but not be restricted, to the following:
 - Basic awareness and understanding of the key environmental features of the work site and environs.
 - Understanding the importance of and reasons why the environment must be protected.
 - Ways to minimise environmental impacts.

- Relevant requirements of the sub-Project EMP.
 - Prevention and handling of fire.
 - Health risks pertinent to the site, including prevention of diseases such as malaria and cholera.
 - Awareness, prevention and minimisation of risk with regard to the contraction and spread of HIV/AIDS and other sexually transmitted diseases.
 - Risk of injury from land mines and other unexploded ordinance and the measures to minimise such risks.
6. The emphasis of the environmental awareness training should be on any (potential) environmental impacts relating to the construction activities to be undertaken on site and the related environmental precautions which need to be taken to avoid or mitigate these impacts.
 7. Registers of attendance shall be maintained by the Contractor and ESIM.
 8. The Contractor shall erect and maintain Environmental Information Posters for his employees. These posters shall depict actions to be taken to ensure compliance with aspects of the Environmental Specifications.
 9. The Environmental Information Posters shall be erected at the eating areas and any other locations specified by the RE.

1.24.7 Local Labour

1. Wherever possible, the Contractor should endeavour to use local labour.

1.25 Site Establishment

1.25.1 Site Identification

1. The Contractor will produce a plan illustrating the proposed construction camp and proposed working and 'no-go' areas. The plan must be approved by the RE. The plan should include reference to the following aspects where pertinent as and where these are required:
 - Proposed working areas.
 - 'No-go' areas.
 - Contractor's Camp.

- All buildings, offices and/or hostels.
 - Cooking and eating areas.
 - Sanitation/ablution facilities.
 - Storage, spoil, stockpile and lay down areas.
 - Hazardous and fuel storage areas.
 - Batching plant and workshop/equipment maintenance areas.
 - Vehicle wash areas.
 - Waste disposal facilities.
 - Access routes.
 - Security gates and gatehouses.
 - Parking areas and other infrastructure required for the running of the site.
2. The working areas shall be kept to a minimum to reduce the total physical ‘footprint’ of the construction site and to reduce environmental damage.
 3. The Contractor shall not use the land forming or connected with the construction site for any purpose other than for the proper carrying out of the works under the contract.

1.25.2 Working Areas and No-go Areas

1. The Construction Site shall be divided into working areas and ‘no-go’ areas and shall be marked on appropriate plans for reference.
2. Working areas are those areas required by the Contractor to construct the works.
3. ‘No-go’ areas are generally those large areas outside the designated working areas, and may include, but not be limited to:
 - Existing services and infrastructure.
 - Occupied villages and homesteads.
 - Grave sites.
 - Large trees (> 200 mm in diameter).
 - Cultivated lands and all fruit and nut trees.

- Wetland areas.
 - Natural or special features as defined in the Environmental Specification.
 - ‘Sensitive Environments’ as defined in the Environmental Specification.
4. In the event that any damage is caused to the ‘No-go’ areas, the Contractor will be required to repair, restore, reinstate and/or rehabilitate these areas to a standard required by the RE and at the Contractor’s cost.

1.25.3 Site Demarcation

1. Prior to construction commencing, the Contractor shall inspect the site and identify any sensitive environments (as defined in the Environmental Specification) and other ‘No-go’ Areas.
2. Where necessary, the No-go areas shall be demarcated using materials as specified. These shall include fencing, plastic tape or other approved materials or means.
3. All trees which are to be retained are to be clearly indicated on a site plan and demarcated.
4. Trees are to be demarcated shall be clearly marked under the guidance of the RE using materials to be approved by the ESIM. Tagging by exclusion may be considered, i.e. where the number of trees to be cleared is fewer than those to be retained.
5. Trees shall remain demarcated for the duration of the works on site. Any damaged demarcation shall be repaired or replaced immediately.
6. The Contractor will be required to maintain all demarcation fencing and other demarcating materials for the duration of construction activities or as otherwise instructed by the ESIM.
7. The Contractor shall ensure that, insofar as he has the authority, no person, plant equipment or material enters the No-go areas at any time.
8. Any areas disturbed outside the demarcated areas or without the permission of the ESIM shall be subject to rehabilitation at the Contractor’s cost.

1.25.4 Contractor’s Camp

1. The Contractor shall implement the following, as required:
 - A suitable stormwater drainage system to prevent soil erosion, protect storage areas and to prevent stagnant ponds forming.

- A suitable potable water supply.
 - An electricity supply which shall be negotiated with the local utility and/or provide his own generators as necessary.
 - Telecommunications which shall be negotiated with the local utility.
 - Suitable facilities for bathing, washing clothes or vehicles – site staff will not be permitted to use open water bodies for such activities.
 - Suitable sanitation facilities, adequate for the number of staff on site.
 - Facilities for solid waste collection.
 - Facilities for waste water management.
2. The method for provision of these services will be approved by the ESIM.

1.25.5 Water Supply

1. Abstractions from natural, municipal and/or private water resources (e.g. streams, lakes, boreholes, well points and pipelines) for potable water and construction water require for prior approval by the ESIM.
2. The Contractor shall arrange for the necessary approvals/permits from the relevant authorities/parties for the abstraction of water.

1.26 Site Clearance

1.26.1 Topsoil Conservation and Stockpiling

1. Where specified, topsoil shall be excavated to the base of the organic rich A-Horizon and stockpiled separately. The topsoil shall not be mixed or contaminated with any other material.
2. Wherever practical the Contractor should use hand labour for topsoil removal.
3. Topsoil stockpiles should, where possible, be located in previously disturbed or cleared areas. Topsoil stockpiles shall be clearly demarcated and vehicle access restricted. The topsoil shall not be contaminated with any fuels, oils or other construction waste or materials.
4. Topsoil stockpiles are not to exceed 1.5 m in height.
5. Subsoil shall be stockpiled separately.

6. Compaction of the topsoil stockpiles is not permitted.
7. Topsoil stockpiles are to be maintained in a weed free condition.
8. Erosion of soil stockpiles will not be permitted and appropriate protection of the stockpiles from wind erosion and water erosion must be provided.
9. Where feasible, topsoil shall be replaced by direct return (i.e. replaced immediately on the area where construction is complete), rather than stockpiling it for extended periods.
10. The movement of soils from one part of the construction site to another should be minimised and undertaken with the consent of the ESIM.
11. Where soil is to be stockpiled for several months, these stockpiles should be seeded with a quick germinating, annual grass species to stabilise the stockpiles. Alternatively, the stockpiles may be protected by a mulch cover (which is free from alien vegetation and seeds).
12. No materials classed in terms of this Specification as topsoil shall be used as backfill for any excavation.

1.26.2 Access Roads/Haul Roads

1. The Contractor will be required to prepare a **Method Statement** on the construction of any new roads, the method for upgrading an existing road and the proposed method for rehabilitation on completion of the construction works.
2. The Contractor shall comply with all applicable legislation and by-laws with regard to road safety and transport.
3. The Contractor shall notify the appropriate authorities in advance where road closures and similar activities will be required.
4. Access to the construction site and works area and haul routes are to be shown on a site plan and approved by the ESIM.
5. Access to the construction site and works area shall utilise existing roads and tracks where possible
6. Upgrading of the access roads shall be undertaken within the existing confines of the road, unless otherwise agreed with the ESIM.
7. The Contractor is to maintain the haul roads. Maintenance includes adequate drainage and side drains, dust control and restriction of edge use as per the Environmental Specifications.
8. Movement of vehicles is to be confined to identified roads as far as possible and vehicles may not drive through or make turning circles in wetland areas, machambas or yards of homesteads under any circumstances.

9. All public roads shall be kept clear of mud and sand.
 10. Disruption to regular road users must be minimised.
 11. All temporary access routes shall be rehabilitated at the end of the contract to the satisfaction of the RE
 12. Damage to the existing access roads as a result of construction activities shall be repaired to the satisfaction of the RE. The cost of the repairs shall be borne by the Contractor.
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1.27 Site Housekeeping

1.27.1 Site Housekeeping

1. The Construction Site and surrounds are to be maintained in a clean orderly and presentable condition at all times.
2. Regular inspections by the Contractor (and ESIM) will be undertaken using checklists to ensure a minimum standard of orderliness is maintained.
3. Construction activities shall avoid causing unnecessary disruption and nuisance to adjacent settlements, landowners and the public as a whole.

1.27.2 Workshop, Equipment Maintenance and Storage

(a) Workshop

1. Where practical, all maintenance of equipment and vehicles on Site shall be performed in the workshop.
2. If it is necessary to do maintenance on site, but outside of the workshop area, the Contractor shall obtain the approval of the RE prior to commencing activities.
3. The Contractor shall ensure that there is no contamination of the soil, vegetation or surface water in his workshop and other plant or emergency maintenance facilities.
4. Where a workshop is required, the Contractor will be request approval to the ESIM on the design, construction and use of the workshop and pollution prevention and accident/emergency procedures. The Method Statement should include the following restrictions, at a minimum:
 - The workshop shall have a smooth impermeable floor either constructed of concrete or suitable plastic covered with sufficient gravel to protect the plastic from damage;

- The floor shall be bunded and sloped towards an oil trap or sump to contain any spillages of substances (e.g. oil);
 - Drip trays shall be used to collect the waste oil and lubricants during servicing and shall also be provided in construction areas for stationary plant (such as compressors).
 - The drip trays shall be inspected and emptied daily. Drip trays shall be closely monitored during wet weather to ensure that they do not overflow.
5. All static plant shall be located within a bunded area. The bunded area shall have a smooth impermeable surface (plastic) with an earth bund. The impermeable material shall extend to the crest of the earth bund. The floor of the bunded area shall be sloped towards an oil trap or sump to enable incidental spillage to be removed.
 6. The workshop shall be kept tidy at all times.

(b) Equipment Maintenance and Storage

7. All vehicles and equipment shall be kept in good working order, are serviced regularly and stored in an area approved by the ESIM.
8. Leaking equipment shall be repaired immediately or removed from the site.
9. All washing of equipment shall be undertaken in the workshop or maintenance areas which shall be equipped with suitable impermeable floor and sump/oil trap. The use of detergents for washing shall be restricted to low phosphate/nitrate and low sudsing-type detergents.
10. Rivers and streams shall not be used for washing of equipment and vehicles.

1.27.3 Cooking Facilities

1. The Contractor shall designate cooking and eating areas, subject to the approval of the RE.
2. Any cooking on site shall be done on either well maintained gas cookers or by containing fires (e.g. in a drum) and locating them away from flammable vegetation or construction materials.
3. The following will not be permitted:
 - Cooking outside the designated areas and in particular beyond the site.
 - Open cooking fires or fires for heating.
 - The use of surrounding and/or indigenous vegetation for cooking or heating fires.

- The feeding or leaving of food for animals.
4. Sufficient bins for waste disposal, as described in the Environmental Specification, shall be present in this area.

1.27.4 Light ‘Pollution’

1. The Contractor shall ensure that any lighting installed on site for his activities does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community or other uses or the area – particularly during the night time.
2. Where the Contractor has authorised night work, low flux and frequency lighting shall be used.

1.27.5 Security

1. Appropriate fencing, security gates, shelter and/or security guards are to be provided at the Construction Site to ensure the security of all plant, equipment and materials, as well as to secure the safety of site staff.
2. The Contractor must ensure that good relations are maintained with local communities and their leaders to help reduce the risk of vandalism and theft.
3. Valuables are to be stored in secure, locked areas.
4. Site staff that are found to be involved in incidences of theft or pose other security risks to the local community are to be dismissed and reported to the authorities.

1.27.6 General Materials Handling, Use and Storage

1. All materials shall be stored within the Contractor’s camp unless otherwise approved by the RE.
3. Stockpile areas shall be approved by the RE.
4. All imported fill, soil and/or sand materials shall be free of weeds, litter and contaminants. Sources of imported materials shall be listed and approved by the RE.
5. Topsoil stockpiles shall be located and managed in accordance with the Environmental Specification.
6. The Contractor shall ensure that delivery drivers are informed of all procedures and restrictions (including ‘No go’ areas) required.

7. The Contractor shall ensure that these delivery drivers are supervised during off-loading, by someone with an adequate understanding of the requirements of the Environmental Specifications.
8. Materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them from spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or supplier to properly secure transported materials.
9. Temporary above ground storage tanks and handling areas for fuels, lubricants, chemicals and other hazardous substances shall be situated on a smooth impermeable surface (plastic liner or concrete) base with an earth bund. The floor of the bunded area shall be sloped towards an oil trap or sump to enable spilled liquids to be removed. A roofed area is to be provided to prevent the bunded area from filling with rainwater. The integrity of the liner for the bunded area is to remain intact for the duration of the contract until its removal.
10. Any water that collects in the bunded area shall not be allowed to stand and shall be removed within one day and taken off site for disposal as approved by the RE.
11. Open storage vessels are to be stored under cover to prevent 'splash' contamination of the surrounding area.
12. All products stored in 200 litre drums shall be dispensed from these drums using appropriate equipment – i.e. the products shall not be dispensed by tipping the drums.
13. Any electrical or petrol driven pumps shall be equipped and positioned so as not to cause any danger of ignition of the stored product.
14. Collection containers (e.g. drip trays) shall be placed under all dispensing mechanisms for hydrocarbons or hazardous liquid substances to ensure contamination from any leaks is reduced.
15. Regular checks shall be conducted by the Contractor on the dispensing mechanisms for all above ground storage tanks to ensure faulty equipment is identified and replaced timeously.
16. Only empty and externally clean tanks may be stored on bare ground. All empty and externally dirty tanks shall be sealed and stored on an area where the ground has been protected.

1.27.7 Spoil Sites

1. Where the Contractor is required to spoil material, environmentally acceptable spoil sites must be identified and approved by the RE.
2. Spoil sites should be located within demarcated construction sites.

3. Material should ideally be spoiled in exhausted borrow pits or quarries and may not be located where stormwater runoff may result in sedimentation of wetlands or the pollution of other surface water bodies.
4. The development and rehabilitation of spoil areas shall include the following activities:
 - Stripping and stockpiling of topsoil.
 - Removal (to a nominal depth of 500mm) and stockpiling of subsoil.
 - Placement of spoil material.
 - Contouring of spoil site to approximate natural topography and drainage and/or reduce erosion impacts on the site.
 - Placement of excavated subsoil and then topsoil over spoil material.
 - Contouring and re-vegetation.
5. The Contractor shall ensure that the placement of spoil is done in such a manner to minimise the spread of materials and the impact on surrounding vegetation and that no materials 'creep' into 'no-go' areas.

1.27.8 Fuels, Oils, Hazardous Substances and other Liquid Pollutants

1. All potentially hazardous raw and waste materials are to be handled by the Contractor's trained staff and stored on site in accordance with manufacturer's instructions and legal requirements.
2. Appropriate training for the handling and use of such materials is to be provided by the Contractor as necessary. This includes providing for any spills and pollution threats that may occur.
3. Products should be clearly labelled and symbolic safety/hazard warning signs should be provided.
4. Areas for the storage of fuel and other flammable materials shall comply with standard fire safety regulations.
5. The location of the fuel and chemical depot(s) shall be located at least 100m from any surface water body.
6. See also the Environmental Specification for the handling and storage of materials.

(a) Fuels (Petrol and Diesel) and Oil

7. Unless otherwise specified, fuel shall not be stored on site, but shall be transported to the site as and when required.

8. Where fuel is to be stored on site, all necessary approvals regarding storage and dispensing shall be obtained from the appropriate authorities.
9. The location of the fuel storage area shall be approved by the RE.
10. The fuel storage tank(s) shall be erected at least 3.5m from building, boundaries and any other combustible or flammable materials.
11. The Contractor shall ensure that all liquid fuels and oils are stored in tanks with lids and that these are kept firmly shut and locked at all times. The design and construction of the storage tanks shall be in accordance with a recognised code and as approved by the RE.
12. The tanks shall be situated in a bunded area which has a volume of at 110% of the volume of the largest tank. The floor of the bunded area shall be constructed as per the Environmental Specification.
13. The storage tank shall generally not exceed a capacity of 9000 litres and shall not be used for the storage of liquids other than those with a flash point in excess of 40 °C, and should allow for expansion of the stored product with any rise in temperature.
14. Areas for storage of fuels and other flammable materials shall comply with any standard fire safety regulations and may require the approval of the local Fire Brigade.
15. All storage tanks are to be designed and constructed in accordance with a recognised code.
16. Appropriate symbolic signage (No Smoking, No Naked Lights and Danger) must be prominently displayed in and around the fuel storage area.
17. The capacity of the tank shall be clearly displayed and the product contained within the tank clearly identified.
18. Storage tanks are to be removed on completion of the works.
19. No smoking shall be allowed in the vicinity of the fuel storage area.
20. There shall be adequate fire fighting equipment at the fuel storage and dispensing area or areas.
21. Fuel shall be kept under lock and key at all times.
22. The Contractor will be required to produce a **Method Statement** for the filling of and dispensing from the storage tanks.
23. Where reasonably practical, plant shall be refuelled at a designated refuelling area or at the workshop as applicable. If it is not reasonably practical then the surface under the temporary refuelling area shall be protected against pollution to the reasonable satisfaction of the RE prior to any refuelling activities, as per the Environmental Specification.

24. The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/breakdown any spilled fuel and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200l of hydrocarbon liquid spill. This material must be approved by the RE prior to any refuelling or maintenance activities.

(b) Hazardous Substances

25. If potentially hazardous substances are to be stored on site, the Contractor shall provide a **Method Statement** detailing the substances/materials to be used together with the procedures for the storage, handling and disposal of the materials in a manner which will reduce the risk of pollution that may occur from day to day storage, handling, use and/or from accidental release of any hazardous substances used.
26. Hazardous chemical substances used during construction shall be stored in secondary containers.
27. The relevant Material Safety Data Sheets (MSDS) shall be available on Site. Procedures detailed in the MSDS shall be followed in the event of an emergency situation.

1.27.9 Solid Waste Management

1. The site is to be kept clean, neat and tidy at all times.
2. No burying or dumping of any waste materials, vegetation, litter or refuse shall be permitted
3. The Contractor will be required to prepare and submit a **Method Statement** on waste control and management at the site. At a minimum, the Contractor shall include the following in the Method Statement:
 - The provision of sufficient bins (preferably vermin and weatherproof) at the camp and work sites to store the solid waste produced on a daily basis.
 - The collection of refuse and waste generated by his staff on a daily basis.
 - The identification of an appropriate and/or approved temporary waste site for waste generated during the construction contract.
 - The final disposal of the site waste at an approved landfill site, or at a site as approved by the RE.
 - A litter control plan for the Camp and across the working areas.
 - Refuse screens shall be installed at runoff concentration points from large parking facilities, wash bays, stormwater outlets, inlets to

detention ponds, workshop forecourt drainage points, ablution and eating areas. These facilities shall be serviced and monitored at the discretion of the RE.

- Wherever possible, materials used or generated by construction shall be recycled.
- Provision for responsible management of any hazardous waste generated during the construction works.

1.27.10 Sanitation

1. Adequate washing and toilet facilities are to be provided close to the works.
2. Portable chemical toilets at a ratio of 1 toilet per 15 workers shall be provided within 200m of each working front and shall be moved as the working front progresses.
3. Portable toilets shall not be located on flood plains where the possibility of flooding exists, and must be at least 50m from any water bodies.
4. All temporary/portable toilets shall be secured to the ground to the satisfaction of the RE to prevent them from toppling over.
5. The type and exact location of the toilets shall be approved by the RE prior to establishment. The use of septic tanks may only be used after appropriate investigations have been made and the option has been approved by the RE.
6. All toilets shall be maintained by the Contractor in a clean sanitary condition to the satisfaction of the RE.
7. Toilet paper shall be provided.
8. A wash basin with adequate clean water and soap shall be provided alongside each toilet. Staff shall be encouraged to wash their hands after use of the toilet, in order to minimise the spread of possible disease.
9. The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from the site to an appropriate location/facility.
10. The Contractor shall provide a contingency plan for controlling and containing any spills.
11. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited.
12. The Contractor shall instruct their staff and sub-contractors that they must use toilets provided and not the veld, bush or streams.

13. Staff shall not be permitted to wash themselves or their personal effects in rivers.

1.27.11 Wastewater and Contaminated Water Management

1. No grey water runoff or uncontrolled discharges from the site/working areas (including washdown areas) to adjacent watercourses and/or water bodies shall be permitted.
2. The Contractor shall prepare a **Method Statement** on the control and management of wastewater and/or contaminated water on site – including providing for the appropriate disposal of contaminated water (particularly where this may be contaminated by hydrocarbon and hazardous materials).
3. Water containing such pollutants as cements, concrete, lime, chemicals and fuels shall be discharged into a conservancy tank for removal from site. This particularly applies to water emanating from concrete batching plants and concrete swills.
4. The Contractor shall also prevent runoff loaded with sediment and other suspended materials from the site/working areas from discharging to adjacent watercourses and/or water bodies.
5. Potential pollutants of any kind and in any form shall be kept, stored and used in such a manner that any escape can be contained and the water table not endangered.
6. Wash areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas (including groundwater) are not polluted.
7. The Contractor shall notify the RE of any pollution incidents on site.
8. Any evidence of water related erosion shall be addressed as per the Environmental Specification.
9. Contaminated water shall not be discharged to the Municipal sewer system unless approved by the RE.

1.27.12 Stormwater Management and Erosion Control

1. The Contractor shall take reasonable measures to control stormwater and the erosive effects thereof and shall provide a **Method Statement** for approval by the RE.
2. During construction the Contractor shall protect areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking measures to prevent the surface water from being concentrated in streams and from scouring slopes, banks or other areas.

3. Areas affected by construction related activities and/or susceptible to erosion must be monitored regularly for evidence of erosion – this includes:
 - Areas stripped of topsoil.
 - Soil stockpiles.
 - Spoil sites.
 - Borrow pits.
 - River banks.
 - Steep slopes.
4. On any areas where the risk of erosion is evident, special measures may be necessary to stabilise the areas and prevent erosion. These may include, but not be restricted to:
 - Confining construction activities.
 - Using cut off berms.
 - Removing grass sods before construction and replacing them after backfilling.
 - Using mechanical cover or packing structures such as geofabric to stabilise steep slopes or hessian, gabions and mattress and retaining walls.
 - Straw stabilising.
 - Brushcut packing.
 - Mulch or chip cover.
 - Hydroseeding.
 - Sprigging or sodding.
 - Constructing anti-erosion berms.
5. The erosion prevention measures must be implemented to the satisfaction of the RE.
6. Where erosion does occur on any completed work/working areas, the Contractor shall reinstate such areas and areas damaged by the erosion at his own cost and to the satisfaction of the RE and ECO.

7. Traffic and movement over stabilised areas shall be restricted and controlled. Any damage to the stabilised areas shall be repaired and maintained to the satisfaction of the RE.
8. The Contractor shall be liable for any damage to downstream property caused by the diversion of overland stormwater flows.

1.27.13 Air Emissions and Odour Control

1. The Contractor will be required to ensure that all vehicles and plant used are maintained in good working order to help reduce air emissions.
2. Exhaust emission control devices are to be installed on vehicles and/or machinery where practical.
3. Lids and covers are to be kept on all containers holding materials, products and chemicals that may produce odours.
4. Store potentially odorous materials, products and/or chemicals downwind of sensitive areas where practical.

1.27.14 Noise Control

1. The Contractor shall keep noise level within acceptable limits and construction activities shall, where possible, be confined to normal working hours. The Contractor shall comply with all government regulations.
2. The use of all plant and machinery shall be appropriate to the task required in order to reduce noise levels and/or environmental damage.
3. Silencers are to be installed and maintained in good working order on machinery, plant and equipment where practical.
4. Appropriate directional and intensity settings are to be maintained on all hooters and sirens.
5. No amplified music shall be allowed at the site. The use of radios, tape recorders, compact disc players, television sets etc. shall not be permitted unless the volume is kept sufficiently low as to avoid any intrusion on members of the public or residents within range.
6. The Contractor shall not use sound amplification equipment on site unless in emergency situations or as instructed by the RE.
7. Noise levels exceeding 85dB shall only be permitted where approved by the RE.
8. Any such approved construction activities generating output levels of 85 dB(A) or more, in residential areas, shall be confined to the hours 08h00 to 17h00 Mondays to Fridays.

9. The Contractor shall inform nearby residents at least 5 days in advance of any excessive noise that is anticipated due to specific construction activities
10. Schools, hospitals and other noise sensitive communities shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity. Any excessively noisy activity shall be conducted outside of school hours, where approved by the RE.
11. Should the RE sanction any construction activities outside of normal working hours, affected residents shall be notified at least 5 days in advance of the event.
12. Any complaints received by the Contractor regarding noise will be recorded and communicated to the RE.

1.27.15 Traffic Control

1. The Contractor will be required to prepare **Method Statements** on traffic safety measures for construction traffic entering, exiting public roads and for the general control of construction traffic.
2. On the gravel or earth roads within the site and within 500m of the site, the vehicles of the Contractor and his suppliers shall not exceed a speed of 45 km/h.
3. Appropriate traffic warning signs shall be erected and maintained.
4. Trained and equipped flagmen shall be used where access roads intersect any public roads.
5. Any complaints received by the Contractor regarding traffic disruption will be recorded and communicated to the RE.

1.27.16 Disruption of Access to Property

1. Disruption of access to property must be kept to a minimum at all times.
2. Where such disruption is unavoidable, the Contractor shall advise the affected parties and the RE at least seven working days in advance of such disruption.

1.27.17 Dust Control

1. Dust is regarded as a nuisance when it reduces visibility, soils private property, is aesthetically displeasing or affects palatability of grazing. Dust generated by construction related activities must be minimised.
2. The Contractor shall be responsible for the control of dust arising from his operations and activities.

3. Control measures shall include regular spraying of working/exposed areas with water at an application rate that will not result in soil erosion or runoff. The frequency of spraying will be agreed with the RE.
4. The removal of vegetation shall be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilised as soon as practically possible.
5. The excavation, handling and transport of erodible materials shall be avoided under high wind conditions.
6. Where possible, soil stockpiles shall be sheltered from the wind.
7. Vehicle speeds shall be limited to minimise the generation of dust on site and on access/haul roads.
8. Any complaints received by the Contractor regarding dust will be recorded and communicated to the ESIM.

1.27.18 Conservation of Vegetation and Wildlife

1. Except to the extent necessary for establishing the construction site and carrying out the construction works, vegetation shall not be removed, damaged or disturbed. Nor should any unauthorised planting of vegetation take place.
2. The clearance of the site for construction purposes shall be kept to a minimum. The use of existing cleared or disturbed areas for the Contractor's Camp, stockpiling of materials etc shall be encouraged.
3. Areas of indigenous forest vegetation are not to be removed unless required for construction purposes, nor shall new access routes be cut through indigenous vegetation.
4. Trees should be trimmed rather than removed wherever possible.
5. Areas where construction will occur in close proximity to indigenous forest/bush must be strictly controlled. The minimum of indigenous plants/bush must be disturbed and the limits of construction activity must be clearly demarcated as per the Environmental Specification.
6. The Contractor's staff must not remove or harvest trees or medicinal plants, nor must they poach (through trapping, poisoning or shooting) or otherwise harm wild animals in the area.
7. The use of indigenous plants as firewood is prohibited unless they are obtained from approved cleared areas.
8. No domestic pets or livestock are permitted on site.
9. There is a possibility of encountering harmful species of snakes during the construction works – these snakes should be avoided where possible and may

only be killed if posing a direct and real danger to staff and where approved by the ESIM.

10. Before cutting or trimming indigenous trees (as authorised by the ESIM), the Contractor with the ESIM shall ensure that no nests are in the portion to be cut and that orchids are removed and relocated.
11. Protected plants which cannot be avoided shall be transplanted to a safe position with similar conditions close by, at the direction and instruction of the ESIM.
12. Where the use of herbicides, pesticides and other poisonous substances has been specified, the Contractor shall submit a request to ESIM.

1.27.19 Alien Invasive Plant Control

1. Disturbance to the natural vegetation will encourage the establishment of exotic/alien plant invader species.
2. Wherever alien plants are cut or excavated, the cuttings, roots etc must be gathered into heaps and not spread around in order to prevent cuttings from taking root and re-establishing themselves.
3. Alien plants must be eradicated where they begin to establish themselves in areas previously disturbed by the construction activities, in the working areas and construction camp. Eradication must take place before the plants reach maturity.
4. The ESIM will assist in the identification of alien plant species to be removed and will advise on the methods of eradication. Methods may involve hand removal, hoeing by hand, or the application of herbicides.

1.27.20 Protection of Features of Cultural, Historical and/or Archaeological Importance

1. The Contractor will be required to produce description for all construction activities that will occur within or close to grave sites, graveyards or other cultural, historical or archaeologically sensitive areas.
2. If remains or artefacts are discovered on site during earthworks, chance finds procedures recognize that work shall cease and the Contractor shall immediately inform the RE and contact the relevant authority.

1.27.21 Protection of Sensitive Environments and Natural Features

1. Sensitive environments and natural features within and/or close to a construction site will be designated as 'no-go' areas and will be subject to the conditions described in the Environmental Specification.

2. The protection of indigenous vegetation (including forests and bush) has been provided for in the Environmental Specification.

(a) Intertidal Zones and Estuaries

3. The Contractor will be required to ensure that any works carried out within intertidal zones, lagoons and/or estuaries is compliant with any legislation and regulatory requirements.
4. No vehicle shall be permitted onto a beach without a permit having first been obtained from the relevant authority.

(b) Rivers and Streams

5. The Contractor shall ensure that the footprint of construction activities is minimised at river and stream crossings
6. The Contractor shall submit a **Method Statement** for review 10 working days prior to commencing any construction activities within the 1:50 year floodline. The Method Statement should highlight (but not be limited to):
 - Providing a detailed plan for any crossings, including pipe protection works.
 - How water flow will be diverted.
 - Containment of contaminated runoff and wastewater.
 - Extent of working area.
 - Final expected profile of river/stream banks.
 - Reinstatement and rehabilitation of river/stream banks.
7. Sedimentation from the construction works of rivers and streams must be minimised.
8. No construction materials shall be stockpiled within areas that are at risk of flooding.
9. The Contractor shall ensure that all construction activities within the flood plain and lagoon, including the removal of vegetation, stockpiling of top material, excavating of pipeline route, laying of pipeline, backfilling of excavations and rehabilitation occur within as short a period as possible.
10. All temporary and permanent fill used adjacent to, or within, the river / streambed shall be of clean sand or larger particles. Silts and clays shall not be permitted in the fill.

11. Plastic sheeting, sandbags or geofabric approved by the ESIM shall be used to prevent the migration of fines through the edges of the fill into the river.
12. Banks shall be suitably stabilised incrementally immediately after construction allows. Upkeep of stabilisation facilities shall be continuously maintained.
13. The Contractor shall not modify the banks or bed of a watercourse other than necessary to complete the specified works. If such unapproved modification occurs, the Contractor shall restore the affected areas to their original profile.
14. The Contractor shall preserve all riparian and wetland vegetation for use in rehabilitation of those environments. This vegetation shall be kept moist until replanting. Replanting is to be undertaken immediately after surface reinstatement has been completed.
15. The Contractor shall not pollute the watercourse through any construction activities.
16. Rocks for use in any gabion baskets or other structures must not be obtained from a watercourse.
17. Activities that trigger the OP 4.04 are not eligible for financing under the project.

(c) Wetlands

17. Wetlands shall be avoided where at all possible and practicable. Where unavoidable, the footprint for construction activities and associated damage to the wetland shall be minimised.
18. Construction shall not permanently alter the surface or subsurface flow of water through the wetland.
19. Wetlands shall not be drained at any stage.
20. If construction activities unavoidably affect a wetland, the Contractor shall remove and store all wetland vegetation with their rootballs intact as indicated by the ESIM. This vegetation shall be kept moist until replanting. Replanting is to be undertaken immediately after surface reinstatement has been completed.
21. No construction materials shall be stockpiled in any wetland areas.
22. No spoil material shall be deposited in any wetland areas.
23. No vehicles shall be driven through wetland areas.
24. No drains channelling concentrated runoff shall be directed into wetlands of any type.

25. Any affected wetland areas are to be restored to as similar state as before construction commenced. The surface reinstatement of wetland areas is to ensure that no depressions, ridges or channel features remain that could affect the hydrological regime of the wetland.

(d) Residential Dwellings or Machambas

26. The Contractor shall avoid working near residential dwellings, machambas and cultivated lands wherever possible.
27. Where this is not possible, the Contractor shall minimise impacts of construction by abiding by the relevant terms of this EMP and instructing all site staff accordingly.

(e) Natural Features

28. The Contractor shall not deface, paint, damage or mark any natural features (such as rock formations) situated within or around the site for survey or other purposes unless agreed with the RE.
29. Any features affected by the Contractor shall be restored/rehabilitated to the satisfaction of the ESIM at the expense of the Contractor.
30. The Contractor shall not permit his staff to make use of any natural water feature, including springs, streams or open water bodies for the purposes of swimming, personal washing and the washing of machinery or clothes.

1.27.22 Fire Prevention and Control

1. The Contractor shall take all reasonable and precautionary steps to ensure that fires are not started as a consequence of his activities on site.
2. Fires within National Parks, Nature Reserves and other natural areas are prohibited.
3. Permitted heating and cooking facilities are described in the Environmental Specification. No cooking fires are to be left unattended.
4. The Contractor shall ensure that there is basic fire-fighting equipment available on site. This shall include, but not be limited to:
 - Rubber beaters when working in grass/bush areas.
 - At least one fire extinguisher of the appropriate type when welding or other 'hot' activities are undertaken.
5. The Contractor shall supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other areas identified by the RE with tested and approved fire fighting equipment.

6. Flammable materials should be stored under conditions that will limit the potential for ignition and the spread of fires.
7. 'Hot' work activities shall be restricted to a site approved by the ESIM.
8. Smoking shall not be permitted in those areas where there is a fire hazard. These areas shall include:
 - Workshop.
 - Fuel storage areas.
 - Any areas where vegetation or other material is such as to make liable the rapid spread of an initial flame.
9. The Contractor shall ensure that all site personnel are aware of the fire risks and how to deal with any fires that occur. This shall include, but not be limited to:
 - Regular fire prevention talks.
 - Posting of regular reminders to staff.
10. Any fires which occur shall be reported to the RE immediately and then to the relevant authorities.
11. In the event of a fire, the Contractor shall immediately employ such plant and personnel as is at his disposal and take all necessary action to prevent the spread of the fire and bring the fire under control.
12. Costs incurred through fire damage will be the responsibility of the Contractor, should the Contractor's staff be proven responsible for such a fire.

1.27.23 Emergency Procedures

1. The Contractor shall submit **Method Statements** covering the procedures for the main activities which could generate emergency situations through accidents or neglect of responsibilities. These situations include, but are not limited to:
 - Accidental fires.
 - Accidental leaks and spillages.
 - Vehicle and plant accidents.
2. Specific to accidental leaks and spillages:
 - The Contractor shall ensure that his employees are aware of the procedure for dealing with spills and leaks.

- The Contractor shall also ensure that the necessary materials and equipment for dealing with the spills and leaks is available on site at all times.
3. Specific to hydrocarbon spills:
 - The source of the spill shall be isolated and the spillage contained using sand berms, sandbags, sawdust, absorbent material and/or other materials approved by the ESIM.
 - The area shall be cordoned off and secured.
 - The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/breakdown the spill.
 - The quantity of such materials shall be able to handle a minimum of 200 l hydrocarbon liquid spill.
 - The Contractor shall notify the relevant authorities of any spills that occur.
 4. The Contractor shall assemble and clearly list the relevant emergency telephone contact numbers for staff and brief staff on the required procedures. These contact details shall be listed in Portuguese and English.
 5. The treatment and remediation of areas affected by emergencies shall be undertaken to the reasonable satisfaction of the RE at the cost of the Contractor where his staff have been proven to be responsible for the emergency.

1.27.24 Health and Safety

1. The Contractor shall comply with all standard and legally required health and safety regulations as promulgated by Mozambican law.
2. The Contractor shall provide a standard first aid kit at the site office.

(a) Public Liability

3. The Contractor shall ensure that staff are made aware of the risks of contracting or spreading sexually transmitted diseases, particularly HIV/AIDS and how to prevent or minimise such risks.
4. The Contractor shall be responsible for the protection of the public and public property from any dangers associated with construction activities, and for the safe and easy passage of pedestrians and traffic in areas affected by the construction activities.
5. All works which may pose a hazard to humans and domestic animals are to be protected, fenced, demarcated or cordoned off as instructed by the ESIM. If appropriate, symbolic warning signs must be erected.

6. Speed limits appropriate to the vehicles driven are to be observed at all times on access and haul roads. Operators and drivers are to ensure that they limit their potential to endanger humans and animals at all times by observing strict safety precautions.
7. Telephone numbers of emergency services shall be posted conspicuously in the Contractor's office near the telephone.
8. No unauthorised firearms are permitted on site.

(b) Diseases, Heat Stress and Wounds

9. Consideration must be given to the following:
 - Malaria is prevalent in the area and the Contractor must ensure that regular monitoring occurs amongst construction staff for symptoms of malaria to enable timeous treatment.
 - Open trenches and other depressions that accumulate stagnant water should be backfilled as soon as possible to prevent the creation of breeding areas for malaria carrying mosquitoes.
 - Cholera and dysentery outbreaks are possible during times of flood. Outbreaks of these diseases must be prevented by providing uncontaminated potable water, suitable ablution, sanitation and eating facilities for site staff.
 - The Contractor should be aware of the signs of heat stress/heat stroke. Plenty of drinking water must be made available on site to prevent dehydration and over heating.
 - Open wounds must be treated timeously with antiseptic/antibiotics to prevent the development of tropical ulcers

1.27.25 Community Relations and Control of Community Disruption

(a) General

1. The Employer (Project) and or the ESIM shall liaise with local communities on a regular basis to keep them informed of activities that may affect them.
2. Liaison shall be through recognised local leaders.
3. If so required, the Contractor shall erect and maintain information boards in the position, quantity, design and dimensions required by the ESIM.
4. Such boards shall include contact details for complaints by members of the public.

(b) Community Disruption

5. Operations that are likely to be noisy, dusty or otherwise disruptive shall only commence after due notice and consultation with the community likely to be affected has been carried out.
6. The Contractor shall minimise any disruption to adjacent communities through any or all of the following, at a minimum through the application of the relevant specifications in this EMP:
 - Noise nuisance
 - Dust nuisance
 - Visual intrusion
 - Disruption to access
 - Risk of accidents from traffic or the works themselves
7. The Contractors employees shall in no way be a nuisance to nearby residents. Any complaints received will be addressed and if necessary the relevant persons will be suspended from the Project.
8. Appropriate advance warning (at least 5 days) of potentially disruptive activities (such as blasting) shall be provided to adjacent communities prior to the activity commencing.

(c) Private Land and Community Properties

9. DOES NOT APPLY TO THIS PROJECT COMPONENT 1 INVESTMENTS. THE RPF PROVIDES GUIDANCE ON THIS ISSUE FOR ALL OF THE COMPONENT 2 NACALA-PORTO INVESTMENTS THAT ARE COVERED UNDER THIS ESMF.

(d) Grievance Mechanism

14. The RE is to establish a formal grievance mechanism through which affected people can lodge a grievance and to help ensure a speedy satisfactory resolution of any disputes.
15. The Contractor will be required to minimise the risk of grievances with the local communities through implementing the specifications described in the EMP.
16. Where grievances occur, the Contractor will be required to assist in the process to investigate and resolve the grievance as effectively and quickly as reasonable.
17. The Contractor shall keep a 'Complaints register' on Site. The register shall contain:

- All contact details of the person who made the complaint and information regarding the complaint itself.
 - The investigations undertaken and response provided
 - Actions taken and by whom
 - Any follow-up actions taken.
18. Copies of complaints received are to be copied to the ESIM.

1.28 Construction Activities

1.28.1 Manual Excavation

1. Wherever practically possible, excavation activities shall be done manually and not with machine excavators. This is necessary to reduce negative environmental impacts and to enhance the economic benefits to the local communities.

1.28.2 Cement/Concrete Batching

1. A Method Statement for the layout and preparation for the batching plant will be required.
2. Concrete batching plants shall generally be located in an area of low environmental sensitivity, as identified by the ESIM.
3. In particular, the concrete batching plant shall be located more than 20 m from the nearest stream/river channel.
4. Topsoil shall be removed from the batching plant site and stockpiled as per the Environmental Specification.
5. The batching plant site shall be bunded with earth berms or sandbags such that runoff cannot escape from the plant site.
6. Concrete shall not be mixed directly on the ground.
7. The concrete batching works shall be kept neat and clean at all times.
8. Contaminated stormwater and wastewater runoff from the batching area and aggregate stockpiles shall not be permitted to enter streams but shall be led to a pit where the water can soak away.
9. Unused cement bags are to be stored so as not to be effected by rain or runoff events.
10. Used bags shall be stored and disposed of in a manner which prevents pollution of the surrounding environment (e.g. via wind blown dust).
11. Concrete transportation shall not result in spillage.
12. Cleaning of equipment and flushing of mixers shall not result in pollution of the surrounding environment.
13. Suitable screening and containment shall be in place to prevent wind blown contamination associated with any bulk cement silos, loading and batching.

14. Waste concrete and cement sludge shall be scraped off the site of the batching plant and removed to an approved disposal site.
15. All visible remains of excess concrete shall be physically removed on completion of the plaster or concrete and disposed at an approved disposal site. Washing the remains into the ground is not acceptable.
16. All excess aggregate and sand shall also be removed.
17. After closure of the batching plant or any area where concrete was mixed all waste concrete/cement sludge shall be removed together with contaminated soil. The surface shall then be ripped to a depth of 150mm and the topsoil replaced evenly over the site and re-grassed as per the Environmental Specification.

1.28.3 Planning Borrow Pits and Quarries

1. All borrow pits sites shall be clearly indicated on a plan and approved by the RE.
2. The Contractor will be responsible for ensuring that appropriate authorisation to use the proposed borrow pits and quarries has been obtained before commencing activities.
3. The operation of borrow pits and/or quarries shall, at all times, be in accordance with any pertinent national or local legislation (e.g. mineral extraction, safety and noise levels).
4. The Contractor shall give 14 days notice to nearby communities and farmers of his intention to begin excavation in the borrow pits or quarries.

1.28.4 Construction and Operation of New Borrow Pits and Quarries

1. Topsoil shall be stripped prior to removal of borrow and stockpiled on site, as per the Environmental Specification. This soil shall be replaced on the disturbed areas once operation of the borrow site or quarry is complete. The worked floor area and access roads shall be ripped and topsoiled during the decommissioning phase. This shall be undertaken so as to ensure adequate drainage of the affected area without producing a risk of erosion.
2. Vegetation shall be cleared from the borrow site or quarry and surrounding areas shall be protected from further damage as per the relevant Environmental Specifications.
3. Trees and debris shall not be permitted to fall outside of the clearing limits. Trees shall be cleared or felled so as not to damage other trees or vegetation
4. Borrow pits and quarries shall be fenced to prevent unauthorised persons and vehicles from entering the area. Fences shall also be stock and game proof.

5. Unauthorised access to the borrow pits and quarries shall be prevented using methods as approved by the ESIM.
6. Excavation of materials from the borrow pits or quarries should take place systematically and progressively so that areas which are worked out may be rehabilitated while other areas are being mined.
7. Only single lane access will be provided to a borrow pit and the need to construct a new access road will require approval from the ESIM.
8. Stormwater and groundwater controls shall be implemented to prevent runoff entering streams and the slumping of soil from the hillside above.
9. Vehicles leaving borrow pits shall not deposit/shed mud, sand and debris onto any public road.
10. All loads shall be covered with a tarpaulin or similar to prevent dangers and nuisance to other road users.
11. The Contractor shall ensure that the condition of all areas disturbed by borrow or quarry activities are returned to a state that approximated to pre-operations and to the satisfaction of the RE. Specifically:
 - All contaminated soils shall be excavated to the depth of contaminant penetration and removed to the nearest approved landfill site
 - The slopes of the borrow areas shall be graded so that they do not present a threat to any grazing livestock or the community using the land in the future.
 - The slope of the borrow pit shall be graded to blend with the natural terrain and be stabilised to prevent erosion.
 - All drainage lines affected by construction and operation shall be reinstated to approximately their original profile
 - All compacted areas (including stockpile areas) shall be ripped along the contour to a depth of 150mm prior to replacement of topsoil, except where otherwise instructed by the ESIM.
 - The blasted faces of the pit shall be shape-blasted to the approval of the ESIM.
 - Topsoil shall be replaced to a depth of no less than 75 mm and fertilised if necessary.
 - The Contractor shall ensure all areas disturbed by construction activities are re-vegetated to the satisfaction of the ESIM.
 - Alien invasive plant species will be dealt with as per the Environmental Specification.

- The rehabilitation of a borrow pit or quarry should take into account the needs of an adjacent community where feasible – for example the area may be required for a livestock watering hole.
12. The use of borrow pits or quarries for material spoil sites may be approved by the RE (and/or with the appropriate consent of the landowner). Where this occurs, the materials spoiled in the borrow pit shall be profiled to fit into the surrounding landscape and covered with topsoil.

1.28.5 Blasting

1. The Contractor will be responsible for obtaining a current and valid authorisation from the relevant authorities prior to any blasting activity. A copy of this authorisation shall be given to the ESIM.
2. A **Method Statement** shall be required for any blasting related activities. No blasting will be permitted unless the Contractor has satisfied the ESIM that his proposed blasting methods and controls are such that no damage will be caused to any adjoining structures, pipelines, service or surrounding sensitive environmental areas.
3. All Mozambican laws and regulations relating to blasting activities shall be adhered to at all times.
4. A qualified and registered blaster shall supervise all blasting and rock-splitting operations at all times.
5. The Contractor shall ensure that appropriate pre blast monitoring records are in place (i.e. photographic and inspection records of structures in close proximity to the blast area).
6. The Contractor shall allow for good quality vibration monitoring equipment and record keeping on Site at all times during blasting operations as required by the RE.
7. The Contractor shall ensure that emergency services are notified, in writing, a minimum of 24 hours prior to any blasting activities commencing on Site.
8. The Contractor shall take necessary precautions to prevent damage to special features and the general environment, which includes the removal of fly-rock. Environmental damage caused by blasting/drilling shall be repaired at the Contractor's expense to the satisfaction of the ESIM.
9. The Contractor shall ensure that adequate warning is provided to the local communities immediately prior to all blasting. All signals shall also be clearly given.
10. The Contractor shall use blast mats for cover material during blasting. Topsoil shall not be used as blast cover

11. During demolition the Contractor shall ensure, where possible, that trees in the area are not damaged.
12. Appropriate blast shaping techniques shall be employed to aid in the landscaping of blast areas, and a request should be approved by the RE, shall be required in this regard.
13. At least one week prior to blasting, the relevant occupants/owners of surrounding land shall be notified by the Contractor and any concerns addressed. Buildings within the potential damaging zone of the blast shall be surveyed preferably with the owner present, and any cracks or latent defects pointed out and recorded either using photographs or video. Failing to do so shall render the Contractor fully liable for any claim of whatsoever nature, which may arise. The Contractor shall indemnify the Employer in this regard.

1.28.6 Asphalt, Bitumen and Paving

1. The site of the asphalt plant shall be selected and maintained according to the following basic criteria:
 - The plant should be situated on flat ground.
 - Topsoil shall be removed prior to site establishment and stockpiled for later rehabilitation of the site.
 - Bitumen drums/products shall be stored in an area approved by the RE. This area shall be indicated on the construction camp layout plan. The storage area shall have a smooth impermeable (concrete or thick plastic covered in gravel) floor. The floor shall be bunded and sloped towards a sump to contain any spillages of substances.
 - The area shall be covered to prevent rainwater from contacting the areas containing fuels, oils, bitumen etc and potentially generating contaminated runoff.
 - The plant shall be secured from trespassers and animals through the provision of fencing and a lockable gate to the satisfaction of the RE.
 - Well-trained staff shall be responsible for plant workings.
 - Within the bitumen plant site, areas shall be demarcated/marked for plant materials, wastewater and contaminated.
 - An area should be clearly marked for vehicle access.
 - Drums/tanks shall be safely and securely stored.
 - Materials requiring disposal shall be disposed of at an appropriate waste facility.
2. During the application/use of the bitumen products, the following shall apply:

- Over spray of bitumen products outside of the road surface and onto roadside vegetation shall be prevented using a method approved by the RE.
- When heating bitumen products only LPG or a similar zero emission fuel shall be used and the Contractor shall take cognisance of appropriate fire risk controls.
- Stone chip/gravel excess shall not be left on road/paved area verges. This shall be swept/raked into piles and removed to an area approved by the RE.
- Milled or cut out bitumen shall be removed to an area approved by the RE.
- Water quality from runoff from newly /fresh bitumen surfaces shall be monitored by the RE and remedial actions taken where necessary.

1.28.7 Open Trench Length

1. 'Open trench' includes the period from initial removal of topsoil to replacement of topsoil/original cover after backfilling.
2. Trenching shall be kept to a minimum through the use of single trenches for multiple service provision.
3. Trench lengths shall be kept as short as practically possible before backfilling and compacting. Unless permitted otherwise by the RE, no more than 300m of trench per working gang shall be open at any time.
4. The planning and selection of trench routes shall be undertaken in liaison with the RE and cognisance shall be given to minimising the potential for soil erosion.
5. The permitted working areas along the trench route shall be clearly defined and marked with painted stakes prior to excavation.
6. At least one end of any open trench shall be sloped to allow egress of any animal or person falling into the trench.
7. Trenches shall be shored where they may pose a safety hazard to workers.
8. Trenches shall be re-filled to the same level as (or slightly higher to allow for settlement) the surrounding land surface to minimise erosion. Excess soil shall be stockpiled in an appropriate manner.
9. Backfilling shall generally be undertaken as soon as practically possible in order to limit the risk of erosion and to encourage the rapid natural regeneration of the disturbed area.

10. Open trench time shall be strictly limited to within 14 days where trenches pass through wetlands, streams and on steep slopes.
11. Immediately after back filling, trenches and associated disturbed working areas shall, where specified, be planted with a suitable plant species. Where there is a particularly high erosion risk, a fabric such as Geojute (biodegradable) shall be used in addition to planting.

1.28.8 Bridges, Culverts and Pipe Crossings

1. The Contractor shall ensure that provision is made to facilitate continuity of base water flow at all times during construction of these features across streams, rivers, lagoons and flood plains.
2. Reduction of baseline water quality through construction actions/activities shall be prevented (for example coffer dams, silt traps or plastic lining).
3. Water quality monitoring regimes shall be established prior to the onset of any construction activities within watercourses.
4. The Contractor shall not divert, dam or modify any watercourse without the approval of the ESIM.
5. The Contractor shall submit a **Method Statement** to the ESIM for approval prior to commencing construction of bridges or culverts.
6. The fording of watercourses by machinery and vehicles shall be undertaken at slow speed and with clean vehicles (i.e. no oil leaks, etc) and along a single track. The methodology of vehicle crossings via fording shall be detailed in a **Method Statement**.

1.28.9 Scour Valves

1. The route of the discharge water from scour valves shall be checked on site by the ESIM and Contractor prior to construction to ensure that scouring will not cause erosion or damage to agricultural lands or property.
2. Erosion protection measures shall be installed if required.

1.28.10 Work Stoppage and Temporary Site Closure

1. The ESIM shall have the right to order work to be stopped in the event of significant infringements of the Environmental Specifications contained within this EMP, until the situation is rectified in compliance with the specifications. In this event, the Contractor shall not be entitled to claim for delays or incurred expenses.
2. In the event of temporary site closure (i.e. a period exceeding one week) the Contractor's Safety Officers shall check the site, to ensure that the following

conditions pertain and report on compliance with this clause. The check shall be made in consultation with the RE.

(a) Fuels/Flammable/Hazardous Materials Stores

3. Fuel stores are as low in volume as practicable.
4. There are no leaks.
5. The outlet is secure and locked.
6. The bund is empty.
7. Fire extinguishers are serviced and accessible.
8. The area is secure from accidental damage through vehicle collision and the like.
9. Emergency and contact numbers are available and displayed.
10. There is adequate ventilation in enclosed spaces.
11. There are no stores or containers within the 1:50 year flood line.

(b) Safety

12. Site Safety checks have been carried out in accordance with the pertinent Occupational Health and Safety requirements prior to site closure.
13. That there is an inspection schedule and log for use by security or contracts staff.
14. All trenches and manholes are secured.
15. Fencing and barriers in place.
16. Applicable notice boards are in place and secured.
17. Emergency and Management contact details are prominently displayed.
18. Security personnel have been briefed and have the facilities to contact or be contacted by relevant management and emergency personnel.
19. Night hazards such as reflectors, lighting, traffic signage etc are in order and have been checked.
20. Fire hazards identified and the local authority notified of any potential threats e.g. large brush stockpiles, fuels etc.
21. Pipe stockpiles are wedged/secured.
22. Scaffolds are secure.

23. Structures vulnerable to high winds secure.

(c) Erosion

24. Wind and dust mitigation measures such as straw, brush packs, irrigation etc are in place.

25. Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows.

26. Re-vegetated areas have a watering schedule and the supply to such areas is secured.

27. There are sufficient detention ponds or channels in place.

(d) Water Contamination and Pollution

28. Hazardous fuel stores are secure.

29. Cement and materials stores are secured.

30. Toilets are empty and secured.

31. Refuse bins are empty and secured.

32. Bunding is clean.

33. Drip trays empty and secure.

1.28.11 Pipeline Cleaning

1. Cleaning/flushing of pipelines shall not impair (down grade) downstream baseline water quality. The water quality of receiving waters shall be monitored by the Contractor during cleaning/flushing operations. A **Method Statement** including water quality monitoring shall be approved by the ESIM.

2. Materials used in the sterilisation of pipelines, viz. chlorine solutions shall be treated as hazardous substances and disposed of at an approved landfill site.

3. Litter traps shall be installed and maintained at the outflow of all pipelines.

1.28.12 Crushing

1. The positioning of the crusher plant shall take cognisance of minimising noise nuisance to adjacent communities and landowners.

2. The site of the crusher shall be fenced and sign-posted, and access to all unauthorised persons and vehicles shall be strictly prohibited.

3. In order to minimise dust a water spray system may be required at the crusher and pre- and post-crush stockpiles.
4. All fuels and oils required for the crusher infrastructure shall be stored in the fuel store, if one is present on Site, or in an appropriately bunded and secured area.

1.28.13 Demolition

1. Hazardous building materials, including asbestos shall be identified prior to demolition of any buildings and dealt with in accordance with the safety and health legislation. A **Method Statement**, outlining the proposed approach to the disposal of these materials, must be supplied for approval by the ESIM.
2. The Contractor shall be responsible for ensuring that the buildings to be demolished do not require any specific permits for demolition or are designated as of cultural value and/or are protected as a consequence.
3. Municipal and other services shall be isolated prior to any demolition occurring.
4. Safety legislation shall be strictly adhered to in demolishing buildings and structures.
5. A Safety officer shall be appointed to oversee the safe demolition of buildings and structures.
6. Demolition sites shall be kept in a neat, tidy and safe condition.
7. Hazardous and non-hazardous materials shall be separated on Site and disposed off at appropriate licensed disposal sites. The Contractor shall supply the ESIM with a certificate of disposal.

1.28.14 Drilling and Jackhammering

1. The Contractor shall submit a **Method Statement** detailing his proposals to prevent pollution during drilling operations. This shall be approved by the RE prior to the onset of any drilling operations.
2. The Contractor shall take all reasonable measures to limit dust generation as a result of drilling operations.
3. Noise and dust nuisances shall comply with the applicable standards.
4. The Contractor shall ensure that no pollution results from drilling operations, either as a result of oil and fuel drips, or from drilling fluid.
5. All affected parties shall be informed at least one week prior to the onset of the proposed drilling/ jackhammering operations, and their concerns addressed.

6. Any areas or structures damaged by the drilling and associated activities shall be rehabilitated by the Contractor to the satisfaction of the ESIM and at cost to the Appoint Contractor.

1.28.15 Piling, Jacking and Thrust Boring

1. Piling, jacking and thrust boring operations require a **Method Statement**, which shall detail the type of operations to be undertaken, e.g. *in situ* casting or pre-cast pile structures. *In situ* piles shall take cognisance of possible groundwater impacts.
2. The Contractor shall take preventative measures to minimise nuisance, caused by these activities such as screening, muffling, dust control, and identifying appropriate timing for the activities. Pre-notification of affected parties shall be implemented to minimise complaints regarding dust, noise and vibration nuisances.
3. The area shall be adequately fenced and warning signs erected for the duration of these activities.

1.28.16 Pumping and Sumping

1. A drip tray shall be placed beneath pumps in order to prevent fuel spills and leaks from contaminating the water in the pumped area.
2. Contaminated water from the pumps may not be discharged into existing watercourses or streams and a request approved by ESIM for discharge of this contaminated water shall be required.
3. Silt-laden water may be cleaned by using any one of the following or other approved methods:
 - A perforated 200l drum containing sand and stone separated by geotextile fabric with a central delivery water pipe.
 - Ensuring that the overland flow of water disperses widely through vegetation.
 - Tying a geotextile sock on the delivery pipe of the pump. Other filtration methods may be used and shall be approved by the RE.
 - A settlement pond.

1.28.17 Settlement Ponds

1. The Contractor shall submit a **Method Statement** proposal in connection with settlement ponds prior to the construction of any such ponds. The Contractor shall size settlement ponds in accordance with the envisaged scale of operation.

2. Suspended solids and contaminants including oils shall be removed and disposed of by the Contractor at frequent intervals at a site as approved by the ESIM.

1.28.18 Retaining Walls and Gabions

1. A request approved by the ESIM, shall be required to deal with these structures.
2. Rocks for use in gabion baskets/reno mattresses shall be obtained from a source approved by the ESIM.
3. Rocks for use in gabion baskets/reno mattresses shall not be obtained from a watercourse.

1.28.19 Rock Breaking

1. Mechanical methods of rock breaking, including Montabert type breakers, jackhammers and 'boulder busting', have noise and dust impacts that shall be addressed.
2. Boulder buster use requires that blasting protocols shall be followed.
3. Residents shall be notified at least one week prior to these activities commencing, and their concerns addressed.
4. Chemical breaking shall require a **Method Statement** approved by the ESIM before commencing.

1.29 Rehabilitation

1.29.1 Rehabilitation

1. Rehabilitation shall be required for all specified areas disturbed by the works.
2. Where possible, the natural re-vegetation of the areas should be encouraged.
3. Rehabilitation shall ensure that all specified areas disturbed by the works are returned to a similar or better state than before the construction works commenced.
4. The Contractor shall rehabilitate all disturbed areas to the satisfaction of the ESIM.
5. The Contractor should implement a programme of progressive rehabilitation, i.e. once works are complete in particular areas, rehabilitation and/or re-vegetation could begin.
6. A programme of progressive rehabilitation will provide an opportunity to assess whether or not the methods employed are suitable and successful and would help prevent erosion in impacted areas. Where rehabilitation of an area is not successful, the Contractor will rehabilitate these areas at no additional cost to the Employer.
7. The Contractor shall provide the RE with a comprehensive plan for the rehabilitation of the entire site for approval. The following points must be taken into account when drawing up the Rehabilitation Plan:
 - The plan should be flexible – i.e. where measures are found to be inefficient, the plan shall be modified at no additional cost to the Employer.
 - Restoration will include, at a minimum, removing unused materials, rubble and foundations, ripping any compacted ground to loosen soil, spreading topsoil evenly over the former site and re-establishing grass cover.
 - The Contractor shall be responsible for the successful rehabilitation and/or re-vegetation of the site within the contract defect/warranty period.
 - Successful re-vegetation means $\geq 80\%$ of the seeded area is covered with grass/groundcover.
 - The inclusion of grass seed mixes for summer and winter.
 - The inclusion of suitable fertilisers and application rates.

- The rehabilitation of all temporary access tracks, haul roads and any other disturbed areas outside of the approved working areas to their original condition will be at the Contractor's expense.

8. Rehabilitation may include the following activities:

- Clearance of rubble associated with construction, including removal of surplus materials, excavation and disposal of consolidated waste concrete and concrete wash water, litter etc.
- Covering and capping of boreholes as specified and/or as directed by the ESIM.
- Removal of all soil contaminated by hydrocarbons by excavation to the depth of contaminant penetration and removal to an appropriate landfill site.
- Backfilling and contouring using stockpiled subsoil removed during site clearing.
- Finishing and grading of final levels of all disturbed areas shall be consistent with the natural topography of the area, where feasible.
- Rehabilitation of all drainage lines affected by construction to approximately their original profile. Where this is not feasible due to technical constraints, the profile is to be agreed upon by the ESIM.
- Ripping along the contour of compacted disturbed areas, including stockpile areas, to a depth of 150mm prior to the replacement of topsoils, except where otherwise specified by the ESIM.
- Replacing topsoil to the required depth and scarification consistent with the natural contour.
- Re-vegetation if insufficient topsoil is available, e.g. selective sodding or seeding.
- The method of vegetation removal and establishment where required may be specified by the ESIM.
- The eradication of young invasive/alien species that may have grown up during the construction period in impacted and rehabilitated areas.
- The removal of visually detracting or environmentally unacceptable piles of blast rock and boulders to an approved spoil site.

1.29.2 Grass Seeding

1. Grass seeding shall be carried out where specified by the RE under the guidance of the ESIM. In most cases, replacement of existing topsoil and original groundcover should be sufficient.
2. In assessing the need for seeding, the RE shall take into account the following conditions:
 - On slopes where the gradient exceeds 15% in long or cross section.
 - On high-lying exposed slopes where the soil will dry out easily.
 - Where existing topsoil is thin (less than 80 mm).
 - Where soil is very infertile.
 - Adjacent to a watercourse.
 - On embankments of permanent roads created as part of the Contract.
 - The need to inhibit re-infestation of alien invasive weeds.
3. The ESIM shall assess the conditions timeously before final cut or filling is undertaken and specify areas which are to be seeded.
4. Where grass seeding is deemed to be necessary, the whole of the disturbed corridor shall be seeded and not only the width of the excavation.
5. Seeding is to be undertaken during the growing season.

1.29.3 Rehabilitation of Trenches and Impacted Areas

1. After backfilling the trench, the topsoil shall be replaced on top and only lightly compacted, e.g. by trampling under foot.
2. Where grass seeding is required, it must be carried out within 2 days of topsoil replacement and before lightly compacting the soil and preferably during the growing season.
3. Care shall be taken to ensure that the surface is finished in a manner which does not result in the channelling of water or the concentration of flows.
4. Where slope gradients exceed 15% in long section, anti erosion berms shall be made which are angled at $\pm 10^\circ$ across the contours such that they lead water off the disturbed corridor.
5. The erosion berms shall be made after backfilling and before topsoil replacement.

1.30 Management and Monitoring

1.30.1 General Inspection Monitoring and Reporting

1. The ESIM shall:
 - Liaise with the Employer and PIU as appropriate.

2. The ECO shall:
 - Conduct regular "audits" to ensure that the system for implementation of the EMP is operating effectively. The audit shall check that a procedure is in place to ensure that:
 - The Method Statements and EMP being used are the up to date versions.
 - Variations to the EMP/Method Statements and non-compliance and corrective action are documented.
 - Appropriate environmental training of personnel is undertaken.
 - Emergency procedures are in place and effectively communicated to personnel.
 - Keep a register of major incidents (spills, injuries, complaints, legal transgressions, spot fines and penalties etc) and other documentation related to the EMP.
 - Liaise with the ESIM on a regular basis.
 - Ensure that appropriate corrective and preventive action is taken by the Contractor once instructions have been issued through the ESIM.

3. The Contractor shall:
 - Inspect the site on a daily basis to ensure that the environmental specifications are adhered to.
 - Provide the RE with a verbal report, on a weekly basis, detailing both compliance with the EMP as well as environmental performance.
 - Maintain a record of major incidents (spills, impacts, complaints, legal transgressions etc) as well as corrective and preventive actions taken, for submission to the Responsible Person at the scheduled weekly report back meetings.

4. The Project Environmental Specialist shall:
 - Undertake independent environmental audits to ensure that the system for implementation of the EMP is operating effectively, and that the ESIM is undertaking his tasks effectively.

1.30.2 Compliance with the EMP

1. The Contractor and/or his agents are deemed not to have complied with the EMP and remedial action if:
 - Within the boundaries of the site, extensions, haul/access roads and in adjacent water/wetland bodies, there is evidence of contravention of the EMP clauses.
 - Environmental damage ensues due to negligence.
 - The Contractor fails to comply with corrective or other instructions issued by the RE, within a time period specified by the RE.

1.30.3 Tolerances

1. Environmental management is concerned not only with the final results of the Contractor's operations to carry out the Works, but also with the control of how those operations are carried out.
2. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operation required to complete the Works.
3. It is thus required that the Contractor shall comply with the environmental requirements on an ongoing basis and any failure on his part to do so will entitle the ESIM to certify the imposition of a penalty subject to the details set out.

1.30.4 Penalties

1. Penalties will be issued for the transgressions and non-compliances where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the environmental specifications. He shall be liable to pay a penalty over and above any other contractual consequence. The Contractor is deemed NOT to have complied with this Environmental Specification if:
 - There is evidence of contravention of the Environmental Specification within the boundaries of the site, site extensions and/or haul/ access roads.
 - Environmental damage ensues due to negligence.
 - The Contractor fails to comply with corrective or other instructions issued by the ESIM with in a specific time.

- The Contractor fails to respond adequately to complaints from the public.
2. A list of incidents and associated penalty value shall be prepared by the Environmental Consultant for inclusion in the specific sub-Project EMP and incorporated into the Bidding Documents for Bidding Contractors.
 3. Penalties may be issued per incident at the discretion of the ESIM. The value of the penalty imposed shall be as defined in the contract and enforcement shall be at the discretion of the Employer.
 4. Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the EMP. The RE will inform the Contractor of the contravention and the amount of the penalty, and will deduct the amount from monies due under the Contract.
 5. The penalty monies will become the property of the Employer.
 6. The RE shall be the judge as to what constitutes a transgression in terms of this clause subject to the provisions of the General Conditions of Contract. In the event that transgressions continue, the Contractor's attention is drawn to the provisions of the General Conditions of Contract, under which the ESIM may cancel the Contract.
 7. For each subsequent similar offence, the penalty may, at the discretion of the RE be doubled in value to a maximum value to be determined by the ESIM.
 8. Payment of any penalty in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.
 9. An Environmental Performance Guarantee of at least 5% of Contract Value shall form part of the 'Performance Bank Guarantee (Unconditional)' which the Contractor is required to provide as part of the Contract with Project. This Guarantee shall be used in the event of non-conformance or contraventions of the EMP.
 10. Penalties for the typical incidents detailed below, will be imposed by the RE on the Contractor and/or his Sub-contractors – the typical incidents listed below are not exhaustive.

TYPICAL INCIDENTS INCURRING PENALTIES
Failure to submit Method Statements timeously.
Failure to demarcate working servitudes and/or maintain demarcation tape.
Working or parking vehicles outside of the demarcated servitude and/or within the boundaries of a no-go area.
Failure to strip topsoil with intact vegetation.
Failure to stockpile topsoil correctly.

TYPICAL INCIDENTS INCURRING PENALTIES
Failure to stockpile materials in designated areas.
Pollution of water bodies - including increased suspended solid loads.
Failure to provide adequate sanitation, waste disposal facilities or services.
Failure to demarcate 'No-go' Areas before commencing construction clearance and other activities
Insufficient education of staff regarding environmental matters and site housekeeping practices
Use of soil in an unspecified manner
Stockpile of soils and materials outside demarcated areas
Inappropriate mixing of cement/concrete and poor management of slurry
Untidiness and litter at camp.
Unauthorised removal of indigenous trees, fruit or nut trees, medicinal or other plants.
Failure to erect temporary fences as required.
Failure to reinstate disturbed areas within the specified timeframe.
Fire – costs of runaway fires will be borne by the Contractor, should he/she be proven responsible for such fires.
Failure to provide equipment for emergency situations
Animal poaching.
Defacing, painting or damaging natural features
Damaging cultural, historical and/or archaeological sites of importance
Failure to maintain basic safety measures on site.
Failure to obey site protection measures specified by the RE.
Failure to carry out required community liaison, damage to property etc, without prior negotiation and/or compensation and other social infringements.
Persistent and un-repaired oil leaks from machinery. The use of inappropriate methods of refuelling.
Failure to provide drip trays and/or empty them frequently.
Inappropriate use of bins and poor waste management on site.
Inappropriate offsite disposal of waste from site.
Deliberate lighting of illegal fires on site.
The eating of meals on site outside the defined eating area. Individual not making use of the site ablution facilities.
Dust or excess noise on or emanating from the site.
Inappropriate use of adjacent watercourses and water bodies – such as for unapproved water abstraction, washing of vehicles, wastewater disposal and use by

TYPICAL INCIDENTS INCURRING PENALTIES
staff for washing.
Any person, vehicle, item of plant, or anything related to the Contractor's operations causing a public nuisance.
Improper use of plant or equipment.
Construction vehicles not adhering to speed limits
Failure to maintain a register of incidents on site.
Failure to remove all temporary features and leftovers from the construction site and works areas upon completion of the works.
Any other contravention of the environmental specification.

1.31 Completion of Contract and Decommissioning of the Site

1.31.1 Completion of Contract

1. Prior to completion of the Contract, the RE is to timeously notify the ECO and the Employer's Environmental Engineer of 'Practical Completion' meetings and 'snagging lists' to provide an opportunity to identify work outstanding or incomplete.
2. The ESIM is to timeously inform the PIU and the Employer's Environmental Engineer of Contract Completion so that a final audit can be arranged.

1.31.2 Decommissioning of the Site

1. On completion of the Contract, the Contractor shall decommission the Contractor's Camp and works. This shall include the following:
 - Removal of all remaining structures, services, facilities, unless sold or given to the landowner.
 - Removal of all remaining construction rubble and waste, to be disposed of at an appropriate waste disposal site.
 - Reinstatement and rehabilitation of all remaining disturbed area, including temporary access routes, turning circles, parking areas, etc.

1.31.3 Measurement and Payment

1.31.4 Measurement and Payment

The Contractor shall include all costs for the EMP in his Contract with the Employer.

recommended format and content for sub-Project emps

The following presents a suggested format and content for a typical sub-Project EMPs which will be included in the contract documents for the works Contractor:

Introduction

By way of setting the context for the sub-Project EMP, this section should outline the following:

- Purpose of the sub-Project EMP.
- Scope of application of the sub-Project EMP.

Statement on Environmental Management

This should describe in a simple statement, the Contractor's understanding and commitment to implementing the sub-Project EMP.

It should also include reference to the management of the EMP itself, to ensure that the document remains pertinent to the activities on site.

Organisation and Management Structure

This should outline the roles and responsibilities for each of the key staff who will implement and/or monitor the implementation of the sub-Project EMP.

Environmental Specifications

This should contain the key specifications pertinent to the nature of the sub-Project, the scale of the sub-Project and the environment within which construction will occur.

Environmental specifications may be grouped according to broad activities, such as:

- Planning.
- Site Establishment.
- Site Clearance.
- Site Housekeeping
- Construction Activities.
- Rehabilitation.
- Contract Completion and Decommissioning of the Site.

Alternatively the specifications may be listed in alphabetical order – whichever suits the potential users best.

Programme for Implementation

This should include reference to the following:

- Procurement of equipment and materials and programme for arrival on site.
- Environmental Training programme.
- Timing of construction activities linked to implementation of Environmental Specifications.
- Preparation of Method Statements.
- Environmental and other auditing schedules.

This section may best be represented with the addition of plans and drawings rather than plain text alone.

Management and Monitoring

This should describe the manner in which the implementation of the EMP will be managed and how the potential impacts of the works may be monitored for the duration of the contract.

Penalties

A list of incidents and the designated penalty should be included here, together with details of how and who will impose the penalty.

Measurement and Payment

This should include a statement or instructions on the coverage of costs for the contract.

Annexures

Annexures should be used to store supporting information to the main document, such as:

- List of Definitions, Terms and Abbreviations.
- Contact details.
- Forms and checklists to be used during the implementation and/or monitoring of the sub-Project EMP.

ANNEXES

Annexure A: Construction Activities that will require Method Statements

Annexure B: Project Start Up and Site Inspection Sheet

Annexure C: Routine Site Inspection Sheet

Annexure D: Site Decommissioning Inspection Sheet

Annexure E: Site Inspection Report Structure

ANNEX A: Construction Activities that will require Method Statements

ACTIVITY	SPECIFICS
Access Routes	<ul style="list-style-type: none">• Upgrading and construction of access routes• Rehabilitation of temporary access routes• Location of proposed access routes
Alien Plant Clearing	Method of control to be used for the eradication or control of alien vegetation
Anchors	Use of rock or ground anchors
Blasting	Details of all methods and logistics associated with blasting
Bunding	Method for the bunding of static plant
Site Establishment	<ul style="list-style-type: none">• Layout and preparation of the construction camp• Method of installing fences required for 'no go' areas, working areas and construction camp areas• Preparation of working area
Cement/Concrete Batching	<ul style="list-style-type: none">• Location, layout and preparation of cement/ concrete batching facilities including the methods employed for the mixing of concrete including the management of runoff water from such areas

ACTIVITY	SPECIFICS
Contaminated Water	Contaminated water management plan, including the containment of runoff and polluted water
Demolition	Proposed methods of demolition
Drilling and Jack Hammering	<ul style="list-style-type: none"> • Method of drill coring with water or coolant lubricants • Methods to prevent pollution during drilling operations
Dust	Dust control plan
Earthwork	<ul style="list-style-type: none"> • Method for the control of erosion during bulk earthworks operations • Method of undertaking earthworks, including hand excavation and spoil management
Emergency	Emergency construction Method Statements
Environmental Awareness Course	<ul style="list-style-type: none"> • Logistics for the environmental awareness course for all the Contractor's employees • Logistics for the environmental awareness course for the Contractor's management staff
Erosion Control	Method of erosion control, including erosion of spoil materials
Fire, hazardous and Poisonous substances	<ul style="list-style-type: none"> • Handling and storage of hazardous waste • Emergency spillages procedures and compounds to be used • Emergency procedures for fire • Use of herbicides, pesticides and other poisonous substances • Methods of the disposal of hazardous building materials, including asbestos, fibre claddings, refrigerants and coolants.
Fuels and Fuel Spills	<ul style="list-style-type: none"> • Methods of refuelling vehicles and plant • Details of methods for fuel spills and clean up operations • Refuelling of construction vehicles in high flow areas • Method of refuelling dredgers during dredging operations
Piling, jacking and thrust Boring	The method of piling operation (e.g. driven or bored) or in situ casting or pre-cast pile structures
Rehabilitation	<ul style="list-style-type: none"> • Rehabilitation of disturbed areas and re-vegetation after construction is complete

ACTIVITY	SPECIFICS
	<ul style="list-style-type: none"> • Retaining walls and gabions • Method for construction and installation of retaining walls/gabion baskets
Riverine corridors	<ul style="list-style-type: none"> • Method of diverting the river during construction • Details of methods to control downstream sedimentation • Details of methods to control in stream and floodplain erosion • Details of methods to cross rivers or streams during construction activities • Details of the release of any construction related effluent water into any natural stream or river • Method for all construction activities within the 1 in 50 year flood plain • Method of laying pipelines across water bodies including the details of methods to control sedimentation
Rock breaking	Details of chemical applications to be used for rock breaking
Sediment ponds and sumps	Layout and preparation of settlement ponds and sumps
Solid waste management	<ul style="list-style-type: none"> • Solid waste control and removal of waste from site • Methods for the disposal of vegetation cuttings, tree trunks and/or building materials
Sources of materials	Details of materials imported to the site (where applicable)
Sensitive environments	Proposed construction methods within sensitive environments (as defined by the ESIM)
Traffic	Traffic safety measure for entry/exit onto/off public roads
Vegetation clearing	Method of vegetation clearing during site establishment
Wash areas	Location, layout, preparation and operation of all wash areas, including vehicle wash, workshop washing and paint washing and clearing.

Annex B : Project Screening Form

1. NAME OF THE PROPOSED ACTIVITY:

2. TYPE OF ACTIVITY:

New	<input type="checkbox"/>	Rehabilitation	<input type="checkbox"/>	Expansion	<input type="checkbox"/>
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3. IDENTIFICATION OF THE PROPONENT:

Conselho Municipal

4. ADDRESS/ CONTACT PERSON

5. ACTIVITY SITE:

City of

Municipal District n^o: _____

Bairro (s): _____

(Map attached with the location of the activity)

6. ZONNING:

Residential zone	<input type="checkbox"/>	Industrial	<input type="checkbox"/>	Services	<input type="checkbox"/>	Green	<input type="checkbox"/>
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Urban area	<input type="checkbox"/>
Semi-urban area	<input type="checkbox"/>
Informal settlement	<input type="checkbox"/>

7. Project DESCRIPTION:

7.1 Size and installed capacity:

Brief description of the Project (site area, Project capacity, size, materials to be used, construction and operation technologies)

Confirmation that population resettlement is not required: On behalf of the Municipality, I(name),.....(position) confirm that population resettlement, including land acquisition, or any loss such as fruits tree or 'machambas', is not required to implement the proposed project.

7.2 Brief description of the construction and operation:

Estimated duration of the Project's construction phase: ____ ____ days/months

7.3 Type, source and quantity of raw material to be used:

7.4 Chemical products to be used:

7.5 Source of water and energy supply:

AdeM	<input type="checkbox"/>	Borehole	<input type="checkbox"/>	Tank truck	<input type="checkbox"/>	<input type="checkbox"/>
EDM	<input type="checkbox"/>	Generator	<input type="checkbox"/>			

7.6 Source and quantity of fuel and lubricants to be used:

7.7 Other need resources:

8. LAND OWNED BY:

9. LOCATION ALTERNATIVES:

10. BRIEF INFORMATION ON THE ENVIRONMENTAL ASPECTS OF THE SITE AND SURROUNDING AREAS:

10.1 Physical characteristics of the site area:

Coastal plain	<input type="checkbox"/>
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Steep slope	
High area	
Low area	

10.2 Environmental sensibility of the area:

	Site area	Surrounding area
Low flooding prone area		
Water courses		
Apparent erosion		
Mangrove, dune vegetation or wetland		

10.4 Land use

a) Land use in the site and surrounding area

	Site area	Surrounding area
Residential		
Commerce and Services		
Industry		
Agriculture		
Leisure & Sport		
School		
Health Center		
Heritage or sacred site		
Other:		

b) Land use according to the city planning instrument:

c) Main existing infra-structures in the surrounding area:

School	
Health Post	
Water supply network/ water standpost	
Sewage network	
Drainage network	
Paved road	

Electricity

Telecommunication

Other:

ANNEX C:Project Start Up and Site Inspection Sheet

PROJECT START UP INSPECTION SHEET

Project: _____

Date _____

Contract No.: _____

Completed by: _____

Contractor: _____

ES	ENVIRONMENTAL ASPECT	YES NO N/A	COMMENTS	ACTION
PLANNING				
ESTABLISHMENT				
CLEARANCE				

PROJECT START UP INSPECTION SHEET

ANNEX D: Routine Site Inspection Sheet

ROUTINE SITE INSPECTION SHEET

Project: _____

Date _____

Contract No.: _____

Completed by: _____

Contractor: _____

ES	ENVIRONMENTAL ASPECT	YES NO N/A	COMMENTS	ACTION
HOUSEKEEPING				
CONSTRUCTION ACTIVITIES				
REINSTATEMENT AND REHABILITATION				

ROUTINE SITE INSPECTION SHEET

ANNEX E:Site Decommissioning Inspection Sheet

ANNEX F:Site Inspection Report Structure

Purpose of the Site Inspection Report

The purpose of the Site Inspection Report is to describe the results of the site inspections undertaken by the ECO or delegated responsible person so that the level of compliance with the EMP can be monitored throughout the contract.

In particular, it will be expected to summarise the following:

- The key results;
- Trends observed;
- Key issues observed;
- Problems encountered;
- Actions required and response taken or to be taken; and
- Recommendations.

The Site Inspection Report should conclude with a commentary on the overall performance of the Contractor in terms of meeting the requirements of individual/groups of Environmental Specifications and/or EMP as a whole.

Preparation of the Site Inspection Reports

Site Inspection Reports are expected to be prepared regularly throughout a given construction contract, including (but not be limited to) the following:

- Prior to the handover of the site to the Contractor;
 - At regular stages throughout the construction works, and particularly with the commencement of particularly significant activities; and
 - At the decommissioning of the site and prior to the handover of the site to the Employer/Operator.
-

Recommended Structure for the Site Inspection Reports

The following report structure is suggested for the Site Inspection Report:

Introduction	<p>By way of setting the context for the Site Inspection Report, this section should outline the following:</p> <ul style="list-style-type: none">• The need for the Site Inspections, and reporting.• Purpose of the Site Inspection Report.• The scope of coverage of the Site Inspection Report.
Environmental Management Requirements	<p>This section should summarize the environmental requirements for the contract and for the construction works, and against which environmental performance is assessed.</p>
Methodology	<p>This should describe the activities undertaken during the particular site inspection, such as:</p> <ul style="list-style-type: none">• A site walkabout with the RE.• A review of documents and records, such as complaints records and/or incidents reports maintained by the Contractor and/or ECO.• Consultations with pertinent parties on site.
Findings of the Site Inspection	<p>This should contain reference to the following:</p> <ul style="list-style-type: none">• A commentary on the level of compliance with key aspects of the Environmental Specifications, as listed in the checklist(s).• Details of issues, infringements, problems and non-compliances encountered.• Recommendations on actions to be undertaken to address any issues, infringements and/or non-compliances.
Conclusions	<p>This should include an overall statement on the level of compliance observed during the site inspection.</p>

Annexures

Annexures should be used to store supporting information to the main document, such as:

- Photographs.
- A quick reference, summarize table of issues of concern and the necessary corrective measures required to address these issues.

