



## Lebanon - Community Development Project : environmental assessment

Document Type: Environmental Assessment

The Community Development Project will, by and large, have positive impacts on the surrounding environment, namely through improved wastewater systems, better use of irrigation, and drainage systems, with improved public health conditions. Nonetheless, this environmental assessment looks at potential adversity on the environment, due to land terracing on slopes, deforestation, adversity affecting natural habitats, and biodiversity, uncontrolled use of pesticides, and herbicides, and, impacts on cultural heritage sites. Mitigation measures include the following. Contractors shall be responsible of maintaining appropriate ditches to control drainage channel discharges, and disposing construction waste, oil spills, and lubricants at selected dump sites. The Archaeology Department will conduct ad hoc inspections, in coordination with government agencies, to prevent the risk of damage to unknown archaeological sites. Communities, and municipalities alike will be involved in the adequate disposal of solid wastes resulting from schools rehabilitation, which prioritizes on sanitary, and toilets installation. Likewise, the rehabilitation of health centers will require municipal, and community involvement for the adequate disposal of medical wastes. The Ministries of Energy, and Agriculture, contractors, and communities will be involved in monitoring irrigation, and drainage water quality resulting from degraded ponds, and reservoirs, clogged canals, or sedimentation. Adequate design of canals will provide access for weeds/sediments removal, and, an operation and maintenance plan shall enforce monitoring and control of agrochemical uses.

**Keywords:** Environmental assessment; Drainage channels; Irrigation systems; Wastewater treatment plants; Terracing; Deforestation; Natural habitats; Biodiversity conservation; Pesticide control standards; Herbicides; Cultural heritage; Archeological impacts; Drainage ditches; Waste disposal; Oil spills; Lubricants; Community participation; Municipal services; Solid waste disposal; School construction; Sanitation; Health centers; Medical wastes; Monitoring criteria; Water quality management; Sedimentation; Soil erosion; Engineering design

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## LIST OF ABBREVIATIONS

CDP	Community Development Project
CDR	Council of Development and Reconstruction
EA	Environmental Assessment
EDS	Environmental Data Sheet
EMP	Environmental Management Plan
MOE	Ministry of Environment
MOMRA	Ministry of Municipalities and Rural Affairs
NGOs -	Non Governmental Organizations
PAF	Project Application Form
PIs	Project Intermediaries
PMT	Project Management Team
TOR	Terms of Reference

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## 1. INTRODUCTION

## 1.1 Background

This Report has been prepared to present the environmental requirements for the Community Development Project (CDP) that the Government of Lebanon (GOL) will initiate. The Government of Lebanon (GOL) will initiate a Development Project (CDP) that aims at raising living standards in target communities.

..The report aims at providing guidance in identifying environmental impacts of the various subprojects that are funded by the CDP. Funded subproject categories:

(i) Social Development: Rehabilitation and upgrading of public health centers, creation of youth, culture and sports centers, revolving textbook projects, literacy and immunization campaigns, social services to ex-detainees and vulnerable groups.

(i) Rural infrastructure improvement: Community potable water supply and spring protection; small wastewater collection, treatment and disposal; rural and agricultural roads; small irrigation and drainage schemes; reclamation and rehabilitation of terraces; reforestation and soil erosion control.

protection; protection of natural and cultural heritage sites.

(iii) Income enhancement: Micro-credit finance, basic skills and voc. support to artisans and handicrafts activities.

The report is structured as follows:

Chapter 1 - Introduction:

Chapter 2 - Policy, Legal & Administrative Environmental Framework:

Chapter 3 - Potential Significant Environmental Impacts and Good Prac Environmental mitigation procedures:

Chapter 4 - Environmental Review Procedures:

Chapter 5 - Terms of Reference for Environmental Assessment:

Chapter 6 - Environmental Management Plan:

1.2 The Purpose of Environmental Guidelines

The implementation of the CDP falls under the responsibility of the C Development and Reconstruction (CDR) who would be in charge of coordi various activities with concerned sectoral ministries, local governme

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project management team (PMT) will be established and would comprise relevant experience in implementing similar projects, and with proven all functions required in such a project. Among its mandates, the PMT any sponsored subproject is environmentally sound and sustainable. Th ensure the following:

- Environmental considerations be included as criteria for selecting supported by the project;
- Environmental assessment would become an integral part of the proje subproject;
- Environmental guidelines are followed and used.

The execution of the CDP will be undertaken by Project Intermediaries consist of qualified national and international NGOs with strong comm proven execution capacity. The PIs would assist local NGOs and commun identifying local needs. preparing subprojects, coordinating with con and implementing the subprojects. The PIs shall ensure the following:

- Environmental guidelines are followed and used through outdie proje
- Environmental issues are introduced to beneficiaries through educat promotion of environmentally beneficial subprojects.

2.2 Environmental Assessment (EA)

The World Bank Operational Policy (OP 4.01) on Environmental Assessme 1999) defines the Bank's environmental assessment requirements to ens projects are environmentally sound and sustainable. A screening proce for all funded projects to assess the magnitude and adversity of pred impacts and to determine the appropriate extent and type of EA. Depen location, sensitivity and scale of the project as well as the nature environmental impacts. projects are classified into one of three cate Category A Projects that are likely to cause significant and possi environmental impacts.

Category B Projects that might cause lesser adverse impacts than t A and the impacts are often remediable or mitigable.

Category C Projects which could have minimal or no adverse environ Subprojects funded by the CDP are classified as Category B or Categor

all income enhancement subprojects will be classified as Category C, and infrastructure subprojects will be Category B. Subprojects that a  
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substantial negative impacts and are expected to fall in Category A, for funding.  
The following Chapters of the Environmental Guidelines will provide respect to the preparation of environmental assessment for the various subprojects. These guidelines are based on the World Bank Operational 4.01), the Environmental Assessment Source book (1991) and its update these guidelines should consult these references and should be also a following World Bank's Environmental Policy:

- Environmental Assessment (OP4.0 1)
- Conservation of Natural Habitats (OP 4.04)
- Water Resources Management (OP4.07)
- Pest Management (OP 4.09)
- Cultural Property (OP 4.11)
- Indigenous Peoples (OP 4.20)
- Involuntary Resettlement (OP 4.30)
- Forestry (OP 4.36)

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2. POLICY, LEGAL & ADMINISTRATIVE ENVIRONMENTAL FRAMEWORK  
2.1 Regulatory Framework for Environmental Impact Assessment  
Presently, the environmental framework of Lebanon is managed and supervised by the Ministry of Environment (MOE) that was created by law 216 of April 2nd, 1993 the institution responsible for the development of a national strategy for environmental protection. The MOE is undergoing several review procedures to update the country's environmental policies and regulations including the preparation of a code de l'Environment. The MOE is also receiving the assistance of the World Bank under the Mediterranean Environmental Program (METAP). Also the World Bank has financed through METAP an Environmental Impact Assessment (EIA) System in Lebanon. This Assessment is attached in Annex AS. METAP has also supported the establishment of an environmental impact assessment unit at MOE. The concept of EIA as part of project planning in Lebanon is still recently gained some attention. The Environmental Impact Assessment (EIA) prepared by the MOE will require that an EIA be prepared during the preparation of public and private development projects in Lebanon. Although the EIA decree has not been passed by the Lebanese Government, the process of being undertaken for most projects especially those that are being funded by international Organizations and Lending Agencies. The EA unit at MOE has started receiving EIA's submitted by many operators. Its staff consists of two environmental engineers who are conducting EIA's based on the procedures developed in the draft EA decree which

World Bank EA requirements.

During the past few years, environmental units have been created as part of the implementation arrangements of several projects. Among these are the Ministry of Public Works and the environmental unit at the Green plan ministries have developed environmental guidelines to provide guidance on the implementation of environmentally sound projects (Ministry of Municipalities Environmental Guidelines for Municipal Infrastructure Project). METAP has organized a series of EA training workshops for line ministries as well as EA awareness campaigns in municipalities.

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2.2 Existing Environmental Legislation

2.2.1 International Conventions

The Lebanese Government has ratified a large number of international conventions for Environmental Protection. Among the most important ones are:

- The Barcelona Convention for the protection of the Mediterranean Sea
- International Convention on World Heritage Protection
- International Convention on Bio-diversity Protection
- United Nations Convention on Desertification
- Montreal Protocol for the protection of the Ozone layer

2.2.3 Existing Lebanese Legislations

A list of the most significant existing environmental legislation is provided in the following sections. The primary safeguards as they are likely to affect CDP subprojects are shown in the following sections.

Natural Landscape

Protection of the natural landscape of Lebanon was first addressed under Decree No. 1949. Recently, cutting of trees was severely restricted under Decree No. 8735 and further protection was provided under Law No. 550 dated July 1996 and Decisions that were issued to protect sites of particular interest by declaring them Natural Reserves. A list of the Natural Reserves is given in Appendix A3.

Soil, Water and Air Pollution  
Protection against pollution was first addressed by Decree No. 8735 which prohibited the digging of wells for the disposal of raw sewage, banning the use of sewage for the irrigation of vegetables and some fruit crops. In 1996 introduced measures to deal with the pollution of the air, water and soil. In 2001 introduced standards for drinking water, bathing waters and wastewater quality. In 2001 completed and reviewed the previously issued standards. The available standards are given in Appendices A3 and A4.

Water Resources

Ground and surface water resources have been protected since the independence in 1943, dated June 1925, which covered the major springs that supply the country's water needs. Zoning of water sources and recharging of catchment areas was introduced by Decree No. 10276 of October 1962 to cope with increasing demand for water. In 1962 established a limit on the depth and exploitation of unlicensed wells at 100 m<sup>3</sup>/d respectively.

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Archaeological and Historical Sites

The protection of archaeological and historic sites was first addressed in November 1933. Later legislation has been introduced to afford special protection to National Heritage, World Heritage and Cultural Landscape Sites declared by UNEP. Public Streets

Law No. 60 of September 1983 covers Work in public streets, law No. 9 of 1983 and by Circular 6/95 issued by the Prime Minister's Office on March 1995. Permit Procedures

Depending on the type and size of the subproject to be executed and according to the relevant legislation, a number of approvals and permits might be required from various agencies. In view of their nature and scale, the majority of the subprojects by the CDP will only require the approval of the municipality and/or the Ministry of Municipalities and Rural Affairs. Yet, few subprojects might require the approval of other line ministries.

For all large scale subprojects requiring an environmental assessment, such as wastewater treatment and disposal, the PMT will forward the environmental assessment to the Ministry of Environment for approval prior to giving final approval to the subproject.

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3. POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS  
AND GOOD PRACTICE MITIGATION PROCEDURES

3.1 Positive Environmental Impact

Most sub-projects financed by the CDP will have a positive impact on the environment if they are well designed and properly implemented. Wastewater treatment plants can help decrease the spread of disease and improve water quality. The provision of adequate wastewater collection and treatment has major benefits for the preservation of water quality in rivers, streams and aquifers. Properly managed systems also provide a safe new source of water for irrigation purposes.

The use of proper irrigation and drainage systems has major positive impacts on the conservation of water quality and quantity, enhancement of soil fertility, as well as improving agricultural yield and employment opportunities. Similar to the provision of adequate water supply and the protection of water sources will reduce soil erosion, improve water quality and improve hygienic conditions.

New rural and agricultural roads can have a significant economical and social impact. The construction of new roads can facilitate access to agricultural lands, schools, health centres, other community facilities and services.

Another way in which the CDP can have a positive impact on the environment is through the financing of sub-projects whose principal objective is to produce a positive environmental impact. The benefits of this type of sub-projects are often long term and can be not limited to the specific local community. Examples of environmental sub-projects that will be financed by the CDP are: reforestation and soil erosion control, and the protection of natural and cultural heritage sites.

The CDP will also generate environmental benefits through a variety of activities, which are:

- Generation of environmental assessment guidelines that can be used by municipalities, or could be adopted by the Ministry of Environment for monitoring and evaluation.

- Training of environmental specialists, thus increasing the number of professionals in the country:
  - Improved environmental awareness in the local communities.
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3.2 Negative Environmental Impacts

3.2.1 Overview of Negative Environmental Impacts

The CDP will finance a considerable number of different types of subprojects. A percentage of the funding will be allocated for infrastructure and social services: community potable water supply, wells and spring protection; small water treatment and disposal schemes; rural and agricultural roads; small irrigation schemes; land reclamation and rehabilitation of land terraces; rehabilitation of public schools and health centers, and creation of youth, cultural and sports centers. Intended to improve environmental and social conditions, these subprojects will avoid negative environmental impacts that might be encountered during the operation of the subprojects.

Under certain conditions, some subprojects can have considerable irreversible impacts and will not be approved for funding. Subprojects that will not be approved are:

- Land terracing on slopes greater than 40%
- Subprojects requiring deforestation
- Subprojects adversely affecting natural habitats and biodiversity (including protected areas)
- Subprojects that would affect cultural heritage sites.
- Subprojects that include the purchase and use of pesticides and herbicides.

The mitigation of negative environmental impacts may be achieved through various means and ways. The mitigation of construction impacts is usually achieved through careful planning and implementation. The contractor who undertakes his work in accordance with good construction practices. Construction impacts are best dealt with by incorporating mitigation clauses into the subproject contracts. Examples of good practice mitigation measures are given in Appendix B. The contractor must check that the works are carried out in accordance with these guidelines throughout project implementation. Typical examples of negative environmental impacts that might arise from the construction of the various subprojects are given in Appendix C. Environmental impacts arising from the operation of the different subprojects can be avoided by appropriate site selection, good engineering design and appropriate implementation. In this brief description of the different types of subprojects, the most common environmental impacts that might arise and possible mitigation measures are discussed.

3.2.2 Potable Water Supply Sub-projects

Rural water supply sub-projects funded by the CDP could include the provision of water distribution systems, house connections, well pumps and springwater distribution. The most important considerations associated with water supply are proper allocation and use of water resources, control and prevention of pollution, adequate operation and maintenance of the system. Hence, it will be necessary to take the necessary measures to ensure adequate water quantity and quality at the time of operation.

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During the operation of the system, attention should be given to the following:



contamination from municipal and industrial wastewater, solid wastes, human settlements. Testing of the water supply as required in each subproject should be performed on a regular basis to detect any contamination and the water quality. An operation and maintenance program should be also subproject.

### 3.2.3 Wastewater Collection and Treatment Subprojects

Typical wastewater sub-projects for rural communities include septic and sewage collection systems not to exceed a total cost of US\$ 100,000. Wastewater treatment and disposal is not common in community subprojects. In circumstances such type of subprojects could be executed.

Septic tanks are provided to improve health conditions and to reduce pollution and water resources. To meet these objectives, special attention should be given to siting requirements, the type of construction, and sanitary measures. Runoff and contamination of water sources are among the major impacts of poor conception and execution of septic tanks. Proper engineering design by the World Bank, should be conducted.

Sewage collection subprojects generally involve the construction of underground pipelines and house connections. In most cases the sewage collection system is constructed without any type of treatment at the end of the pipeline. The system discharges to an existing sewage system or discharge without any treatment. Connection to an existing sewage system should not be conducted without ensuring that the existing system is adequate to accommodate the additional collection. Discharge of raw sewage to water bodies can adversely affect water quality and aquifers. Measures include simple measures such as removal of debris with screen at the end of the settlements ponds prior to discharge.

Under certain conditions, the execution of a wastewater treatment and disposal subproject may be necessary and highly justifiable. Though this subproject is intended to improve environmental conditions, it might have important negative impacts in the use, pollution of natural resources from poorly treated wastewater, and the use of the treated effluent..etc. For such subprojects an environmental assessment should address site analyses, type of treatment technology, operation and maintenance required and shall confirm to the requirements of Appendix D.

### 3.2.4 Irrigation and Drainage Schemes

Irrigation and drainage subprojects are designed to manage water for agricultural production. Irrigation and drainage subprojects may include a variety of structures such as dams, ponds, reservoirs, wells, pumping stations, canals, ditches and drains.

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Irrigation subprojects lead to intensifying agricultural production and the use of agrochemicals. This in turn will cause accelerated nutrient loading and result in the degradation of water quality, algal blooms, proliferation of anaerobic bacteria and deoxygenation. Other impacts from irrigation subprojects include waterlogging of soils, degradation of downstream surface water systems, and chemical pollution of systems.

Groundwater extraction for irrigation purposes have the potential to cause hydrological changes. For instance extensive withdrawal from groundwater aquifer recharge will result in lowering of the water table and in increased salinity. Also diverting water from river systems, especially during dry periods, changes to riverine ecology, fisheries and aquatic vegetation.

### 3.2.5 Rural and Agricultural Roads

Rural and agricultural roads are designed to improve access to communal agricultural lands. These subprojects can vary from simple rehabilitation to complete provision of a new road.

Rehabilitation of roads vary from simple maintenance/asphalting to widening. In general these activities do not cause significant impacts. However, given to the various disturbances that might arise from the construction (diversions, noise, dust, solid wastes, soil erosion, damage to existing infrastructure, an important issue that should be also addressed during the rehabilitation is the provision of proper drainage systems and the relocation of any existing electrical cables, telephone lines ..... Impacts occurring during operation (e.g. safety hazards) should be also considered if road upgrading significantly affects rural communities. Under certain conditions, a new road is to be built in order to provide access to rural communities. Though this subproject could have considerable positive impacts, it might have negative impacts including, change in land use, loss of resources, erosion of lands, accumulation of sediments in streams, in some conditions, disturbance of vegetation... etc. For such subprojects an environmental study that addresses site analyses, road design criteria, construction and maintenance, etc.. will be required and shall conform to the requirements. In addition, the World Bank Handbook: Roads and the Environment, can be used. The preparation of the environmental assessment.

### 3.2.6 Small Construction Subprojects

Small construction subprojects may include rehabilitation and upgrading of health centers, and creation of youth, cultural and sports centers. In general, these subprojects will not cause significant negative impacts, however, for environmental considerations such as contamination from waste materials.  
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construction, disturbances during construction (dust, noise, etc.) and contamination during operation of the facilities such as inadequate sanitation. The most important considerations associated with public schools and health centers is the provision of adequate potable water and waste drainage and collection. The management of medical wastes is also an important environmental consideration for health centers and should be addressed during the design and operation of the facility. When rehabilitating health centers, priority should be given to the rehabilitation of toilet facilities, solid wastes and infectious wastes.  
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### 4. ENVIRONMENTAL REVIEW PROCEDURES AND GUIDELINES

#### 4.1 Status of the CDP Environmental Review

Prior to approval, no preparation of subprojects were identified since the assistance of Project Intermediaries (PIs) which will be selected. The environmental requirements therefore will consist of an assessment of the legal framework pertaining to the project as well as the development

that the PIU will be required to follow, after it will receive on the month of the project implementation.

In Chapter 2, a review of the institutional and legal framework was undertaken through visits and meetings with the MOE and CDR, as well as the assessment of the legislation which was developed by METAP. This Chapter addresses the requirements and guidelines for carrying out the CDP environment requirements at the regional level.

#### 4.2 Institutional Arrangement

The Project Appraisal Document (PAD) provides the following management structure:

- PMT: responsible for the project administration
  - PIs: responsible for design and implementation of regional programs
- The PMT will include an Environmental specialist who will be responsible for the following tasks:
- Preparing environmental characteristics for each region in terms of land use, habitat, water pollution, and sharing the information with the PIs;
  - Reviewing the environmental screening of the program submitted by the PIs;
  - Reviewing and approving the environmental assessment;
  - Obtaining the approval of the Ministry of Environment for projects and the environmental assessment report;
  - Conducting periodic monitoring of the programs;
  - Preparing annual report of the environmental situation of the CDP.

The PIs will be in charge of the environmental operation of the program in accordance with specific criteria, of which that they will have environmental assessment reports.

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with community development projects. Some PIs may not have an environmental specialist. It would be required to contract an environmental consultant for performance.

- Promote the environmental requirements and guidelines of the CDP at the community level and contractors;
- Ensure that Environmental Checklist is properly filled;
- Provide assistance to NGOs in preparing the environmental assessment;
- Conduct site specific environmental review in order to review the conditions of site and assess the potential environmental impact associated with the subproject;
- Identify mitigation measures in construction and operation;
- Supervise the implementation of environmental management plans;
- Prepare necessary reports.

#### 4.3 Program Cycle

In the PAD, PIs will be requested to formulate regional programs consisting of subprojects. It will be therefore the PIs responsibility to conduct a review of individual subprojects in accordance with the environmental screening criteria in Appendix C.

CDP funded subprojects/programs will follow a well defined project cycle as defined in the Project Operational Manual. The manual defines the steps required to implement the program and includes the procedural forms, reviews and measures to ensure proper implementation. Environmental review procedures will be incorporated in the project cycle at the subproject level. The time frame for the completion of the environmental review will be the same as those given in the Operational Manual for the completion of the technical procedures. Figure 4.1 summarizes the environmental procedure for the CDP Program/subproject cycle.

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 Figure 4.1: Environmental Requirements Within each Stage of the CDP  
 Program/Subproject Cycle

Program Development	Environmental Requirements
Program identification:	
- Identification of demand driven subprojects	- Screening of subpr
- Preparation of subprojects concepts	- Preparation of Environme
- Approval of EDS by PMT	
Program Preparation:	
- Description and analysis of subprojects	- Preparation by PI or con
(i) EA report in case subprojects have significant impacts or	
(ii) EMP on the basis of generic mitigation plans	
- Subproject approvals	- Inclusion of Mitigation
(i) tender documents for civil works	
(ii) subproject design	
- Approval of MOE and World Bank in case an EA report is required-	
Program financing:	Ensure that environmental
included in subproject agreement with NGOs and/or in civil works contracts	
Program Monitoring and supervision:	
- At the subproject level:	- At the subproject level:
Implementation of subprojects	(i) PI to ensure that miti
monitoring measures are implemented	
(ii) PI to prepare annual report on status of EMPs	
- At the program level.	- At the program level:
Supervision of contracts/works.	Preparation by the PMT of
summarizing:	
- The number of subprojects that have significant environmental impact	
- The number of projects for which EMPs were prepared	
- The mitigation measures implemented for subprojects that have significant environmental impacts	
	-Training and workshops presented

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 4.4 Environmental Screening at the Program Level  
 As mentioned earlier the CDP will fund a large number and a wide var

While several subprojects will not require environmental assessment, subprojects will be subject to the completion of an environmental assessment on the type and size of the subproject, different levels of environmental assessment might be required. Subprojects that should be screened to identify the severity of their potential environmental impacts are:

- Rehabilitation and upgrading of public schools
- Rehabilitation and upgrading of health centers
- Creation of youth, cultural and sports centers
- Community potable water supply
- Wells and spring protection
- Small wastewater collection
- Treatment and disposal schemes
- Rural and agricultural roads
- Small irrigation and drainage schemes
- Land reclamation and rehabilitation of terraces
- Protection of natural and cultural heritage sites

For these projects, environmental screening for potential environmental impacts will be conducted using the environmental checklist given in Appendix C. This would be prepared by the PIs with technical assistance, if necessary, from an environmental specialist. The purpose of this checklist is to better identify the subprojects into one of the following categories:

- No further environmental assessment
- Identification and implementation of mitigation measures according to the draft MOE Decree
- Environmental Assessment Study required

The decision to conduct an environmental assessment will be based on the decision of the Lebanese Ministry of Environment (MOE) in the draft EA decree, which will be prepared with the assistance of the World Bank. The list shown in Table 4.1, will determine whether an EA is required. In case an EA is required the PIs will prepare TOR on the EA, as shown in Annex D, including public participation. After preparing the EA, the PIs will seek the approval of the Ministry of Environment before financing particular subprojects. Table 4.1 List of subprojects requiring EA According to draft MOE Decree

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#### 4.5 Promotion of Subprojects Within the Regional Program

The first stage in the CDP subprojects cycle is to initiate promotion of demand driven subprojects. The primary responsibility would be to initiate activities that aim at disseminating information about the CDP's objectives, goals and activities among targeted community groups. Promotional activities will include the following considerations in the promotional programs in order to ensure that environmental issues are taken into account throughout the project cycle. PIs would have to educate communities and to raise awareness of environmental issues and requirements of CDP subprojects. This process would aim at enabling communities to better appreciate environmental concerns and to select and implement beneficial subprojects.

#### 4.6 Formulation of Subprojects

Following the implementation of promotional programs, community needs will be identified, project proposals will be formulated and a program will be developed and appraised.

With respect to environment, the first step would be to screen each subproject to determine whether any further environmental considerations are required. This screening should be done early in the subproject cycle, before the need to address potential environmental impacts is fully apparent during project preparation and design. On the other hand, an effective screening process would allow subprojects that will generate negligible or no negative environmental impacts to be excluded from unnecessary environmental review. Once all the subprojects have been screened, an environmental data sheet (EDS) for the program should be prepared. The form is included in Appendix C.

Subprojects that necessitate environmental consideration will either require the implementation of mitigation measures or the preparation of an environmental assessment. Projects requiring the identification and implementation of mitigation measures are considered to have minor environmental impacts. For these subprojects, the environmental expert/consultant of the PIs will identify appropriate mitigation measures during the project design and in the bidding documents.

An Environmental Assessment Study would be required whenever significant environmental impacts are likely to arise from a specific subproject. In this case, an environmental assessment report should be prepared and shall follow the terms of reference set out in Chapter 5. The report would require the involvement of a highly skilled team of experts. Several site visits would be undertaken, and subprojects requiring an assessment have to be planned and a detailed evaluation and monitoring plan developed. Most CDP subprojects will rarely need an environmental assessment study. Subprojects that require an environmental assessment report would be based on the MOE criteria and include:

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- Wastewater collection, treatment and disposal subprojects;
- New rural and agricultural roads with more than one kilometer length;
- Subprojects adjacent to critical natural habitats or protected areas;
- Medium scale irrigation schemes

Subprojects requiring an environmental assessment report are subject to the approval of the Ministry of Environment and the World Bank.

#### 4.7 Appraisal and Approval of Proposed Programs

Once formulated, the proposed program is submitted to the PMT for approval. Desk and field appraisals will be conducted by the PMT to ensure the quality of the program and to validate the information included in the proposal package. The appraisal of the program should have been undertaken during program formulation. An environmental specialist will review the environmental assessment request (including checklist, EDS, environmental assessment, reports ..... ) and assess whether the proposed environmental measures are appropriate. To the extent possible, environmental measures will be integrated into subproject design. Based on the PMT desk review or a field review depending on the nature, magnitude and potential environmental impacts.

##### 4.7.1 Desk Review

The PMT environmental specialist will first check whether subprojects have been screened properly and whether EDS has been prepared. The EDS will be reviewed for completeness and consistency with the other submitted technical data. Any major gaps or apparent inconsistencies will be reported and the PIs will be requested to provide clarification and information.

Once any required clarification is received and the EDS has been satisfied,

PMT Environmental specialist will assess whether field review of some required. In such instances the PI will be informed that the PMT with would conduct a field review (see below). If a desk review is only re environmental specialist will proceed with the revision and evaluation.

#### 4.7.2 Field Appraisal

Once the desk review has been completed, PMT environmental specialist visit to agree with the PIs and the stakeholders on the environmental the environmental assessment studies.

Discrepancies between the environmental information presented and the specialist's findings will be dealt with as follows:

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- For issues that can be clarified on site, the PMT environmental sp assessment of the situation during the field visit.
- For issues that can have significant environmental problems, the PI specialist will require the applicant to collect additional informati the problem either through undertaking further environmental studies of additional requirements in the bidding documents.

#### 4.7.3 Approval of Program

The results of the appraisal of the various environmental documents w environmental appraisal form shown in Table 4.2 and will be included Report. For subprojects requiring a full environmental assessment rep required to obtain the MOE prior approval. During the first year of p World Bank will be required to review and approve the environmental a MOE's approval and before financing is authorized. Post review of EA undertaken as part of the regular Bank supervision missions provided satisfied that the EA requirements comply with OP 4.01 during the fir to ensure that the recommendations of the environmental assessment st technical specifications of the construction bidding documents and in developed for each subproject.

#### 4.8 Implementation and Monitoring

Upon approval of the program proposal, arrangements regarding constru and monitoring will be contained in the legal contract signed between be necessary that the PMT ensures that the results of the environment mitigation measures, design specifications, supervision plans and mon incorporated into the legal document. Environmental monitoring of a p start with the construction phase and will extend to the operation ph. The execution of the subproject contract and construction supervision PIs. Where they do not have adequate in-house resources, the PIs will appointment of a supervision consultant. Part of the construction sup that mitigation measures are properly implemented, good practice envi respected and that no unforeseen negative impacts are occurring as a re

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Table 4.2: Environmental Appraisal Form

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#### 5. TERMS OF REFERENCE FOR ENVIRONMENTAL ASSESSMENT

##### 5.1 Environmental Impact Assessment Objectives

Environmental Assessment (EA) is a tool that enables decision making on the impacts on the environment and to identify and evaluate the applicability for potential negative environmental impacts. EA also allows to ensure:

- The project under consideration is environmentally sound and sustainable;
- Any environmental consequences are recognized early in the development and incorporated into the project design;
- The project is implemented with full awareness of environmental factors;
- The public is participating in the decision-making and is well informed about the project implementation may affect their environment.

##### 5.2 Environmental Assessment Requirements

As mentioned earlier, all CDP subprojects that require environmental Category B and consequently would require some form of environmental assessment, the degree of detail depending on the type, scale and location of the subproject. For these subprojects the identification and implementation of mitigation measures. Large scale subprojects that include construction of new roads with medium length, wastewater collection, treatment and disposal, or construction of natural habitats or protected areas, an Environmental Impact Assessment report. The report should provide a clear understanding of the environmental impacts and the measures. In the absence of specific national requirements, the EA report should be according to the World Bank standards and should include the following:

- Executive Summary;
- Relevant Policy, Legal and Administrative Framework;
- Subproject Objectives and Description;
- Summary of Environmental Baseline Data;
- Significant Environmental Impacts;
- Analysis of Alternative Proposals for the Subproject;
- Environmental Management Plan (EMP) that includes:

Environmental Mitigation Measures;

Environmental Monitoring Plan;

Institutional Responsibilities and Capacity Building Requirements;

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- Appendices;

A general description of the expected content for each section of the Appendix D1.

##### 53 Terms of Reference for EIA Report

The terms of reference (TOR) for an EA report should provide background information to the EA team on the issues to be addressed and the actions to be undertaken. It should also define the schedule and deliverables of the EA study report and serve as the basis for the addition to the description of the information required in the EA report.



background information on the proposed and would include:

- \* a brief description of the major components of the proposed project
- \* a statement of the need for the project and the objectives it intends to achieve
- the implementing agency
- a brief history of the project, including alternatives considered
- its current status and timetable
- \* a brief description of any associated projects

The general requirements for each EA report will be similar and should follow OP/BP/GP 4.01 - Environmental Assessment at the World Bank.. However, minor variations related to the type and location of individual subprojects. Sample TORs that should be considered in an EA of a new road and wastewater treatment and disposal subproject are given in Appendix D2 and D3, revised 18/04/01 - Page 24 of 30

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### 6. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

#### 6.1 Objectives and Structure of the EMP

The objectives of the EMP are to mitigate the adverse environmental impacts of the subproject. The EMP will consist of three kinds of activities:

- Implementation of mitigation measures;
- Strengthening the capacities of PMT, Pls, local NGOs and contractors;
- Monitoring and evaluation of mitigation measures identified during the implementation within the environmental assessment report.

#### 6.2 Implementation of Mitigation Measures

Mitigation measures identified following the desk/or field review shall be implemented. Typical environmental impacts and possible mitigation measures are given in the EMP. Pls will be required to adapt the generic mitigation measures to the subprojects included in the proposed program.

Table 6.1: Potential Environmental Impacts and Proposed Mitigation Measures for Different Subprojects

Project Component	Potential Impacts	Mitigation Measures
Roads rehabilitation and drainage channels	* Clogging of natural drainage channels	* Maintain ditch channels
* Encroachment on private property	* Detailed property boundary surveys and flagging in field	* Contractor to be responsible for flagging
* Dumping of construction wastes and accidental spills of machine fuels, etc.	* Proper disposal of construction wastes	* Contractor to be responsible for disposal
* Risk of damage to unknown archaeological sites	* Use "chance find" procedures and coordinate with appropriate government agency	* Pls/Archeo department
Improvements to Water Supply and Sanitation (due to pressure differentials and leaks)	* Cross contamination of sewage and water lines	* Coordinate with appropriate agency
* Improper disposal of	* Proper disposal of	* Contractor

construction debris	construction wastes	
* Destruction of historical sites	* Use chance find procedures and coordinate with appropriate agency	* Pls/Archeo department
* Risk of damage to archaeological sites		

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Rehabilitation of schools	Improper disposal of wastes	* Proper di
* Priority given to rehabilitation of toilets	PIs/community	
* Installation of sanitation (cesspools)		
Rehabilitation of health centers	Improper disposal of medical wastes	containeri wastes
* Public health awareness	Ministry of Health	
Irrigation and drainage degradation in ponds and reservoirs	Water quality quality	* Monitoring of w. and Water
* Clogging of canals from weeds/sediments	mamteratnc maintenance plan	Pls/ communito
* Inefficient water flow because of heavy sedimentation	* Proper design of canals and provision of access for weed and	Contractor/Pls
sediments remQyaL		
* Degradation of water systems receiving irrigation waters by nutrients, agrochemical and salts	Control of agrochemical use	M ty of Ministre of Agr re/commu nity

6.6 Training Program and Capacity Building

Environmental expertise within the implementing and executing bodies . Training programs will designed and implemented with the assistance o expert and will target two levels:

(i) PMT and PIs: At the initiation of the PCD, a one day workshop staff of the PMT and Pls to raise environmental awareness and to clar environmental requirements related to design and implementation of th. A three days workshop will then be provided to the PMT environmental the environmental specialist/consultants of the Pls and will cover th.

- EIA techniques
- Screening projects for environmental review
- Use of practical checklists
- Best environmental practices in design and implementation of proj.
- Effective implementation of mitigation measures
- Project supervision
- Monitoring and evaluation

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(ii) Local NGOs and Contractors: Training would be provided through workshop for local NGOs and contractors, focusing on public awareness environmental issues experienced in similar projects, use of environmental implementation of mitigation measures.

### 6.7 Environmental Monitoring

Environmental Monitoring will be the responsibility of the PIs and will

- Compliance monitoring during construction
  - Monitoring of significant impacts during the operation of the sub-projects
- The Environmental specialist of the PMT will also conduct periodic monitoring of sites of the various programs at least twice a year.

Monitoring indicators shall be developed for both the construction and subprojects. Monitoring of construction activities will have to ensure that construction impacts are being implemented properly, while the monitoring ensure that no unforeseen negative impacts are arising. Typical examples given in Table 6.2.

Table 6.2: Typical Examples of Monitoring Plan for the Operation of D

Sub-project	Monitoring Indicators	Responsibility
Roads rehabilitation channels	* Operating drainage with local community	* NGOs in close assessment
d No visible negative impacts on surrounding habitat		
Improvements to Water Supply and Sanitation Facilities	* Distribution network without leaks * No leakage or overflows of manholes or drains	* NGOs in close with local community
* Water Quality Monitoring	* Ministry of Health and Ministry of Energy and Water assessment	Semi-
Irrigation and drainage	* Irrigation network without leaks	* NGOs in close with local community
* Drainage channels clean and properly maintained		
* Water quality parameters (pH, COD, BOD, SS)	* Testing by Ministry of Health and Ministry of Energy and Water	Semi-assessment
Rehabilitation of schools	* Toilet facilities clean and functioning properly	* NGOs in close with local community
* Drinking water faucets clean and safe from	appropriate municipality	

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contamination

Rehabilitation of health centers . Medical wastes separated in proper containers . Ministry of Health coordination with local community  
Availability of guidelines for proper disposal of

medical wastes

#### 6.5 . -Cost Estimates

The implementation requirements at the program and subproject level w the proposed project component No.4 "Project Management, Monitoring a the US\$ 4.0 million allocated for this component, an estimated amount allocated for meeting the environmental requirements of the CDP as de accordance with the schedule given in Table 6.4.

Table 6.3: Cost Estimates

Component	Qty	Unit Rate
US\$ Thousands US\$		
Program Management		
PMT Environmental Specialist	5 years	36000/year
Assessment of major environmental issues in the five Mohafaza/govemates	3 MM	5000/month
Evaluation of program	2 MM	5000/month
Subtotal		
EA Preparation/Sunervision		
Short term consultants	8 MM	5000/month
Laboratory Testing and Monitoring		
Subtotal		
Training and Worshops:		
PMT and PIs:		
- One day workshop on the use and application of manual	5 workshops	3000
- Three days workshop	2 workshops	8000
Awareness Workshopsfor Local NGOs and Contractors	5 workshops	8000
Subtotal		
Monitoring and evaluation at the program level	2 MM	8000
Operation materials and supplies		
TOTAL		

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Table 6.4: Schedule of Implementation

Year 1	Year 2	Year 3	Year 4	Year 5
1) PIU environmental specialist		* 1		
2) Assessment of major env. Assessment in the 5 Mohafaza/govemerates				
3) Evaluation of subprojects				
4) Short term consultants to prepare EA				
5) Testing and monitoring				
6) Training				
- PMT / PIs				
- use and application of manual				
- Awareness workshops				

for local NGOs and  
contractors  
7) Monitoring and evaluation  
at the program level  
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#### 7. REFERENCES

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#### APPENDIX A: EXISTING LEGISLATION

Appendix A1: Existing Environmental Protection Legislation  
Appendix A2: List of Protected Natural Reserves  
Appendix A3: Standards for Drinking Water - Ministry of Environmen  
Decision 52/1, 1996  
Appendix A4: Standards for Wastewater - Ministry of Environment -  
8/1, 2001  
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Appendix A1. Existing Environmental Protection Legislation  
Protection Through Planning, Land Use and General Exploitation

Document	Date	Subject	Resp
Decree No. 113	09.08.1933	Mining Exploitation	Int.
Decree No. 253	08.11.1935	Quarry Exploitation	Inte
Law No.	07.01.1949	Forest Protection	Agri
Law No.	09.11.1951	Soil Preservation	Agri
Law No. 60	09.09.1983	Excavation in Public Streets	Pub

Order No. 69	09.09.1983	Urban Development	Pub
Order No. 2/89	05.01.1989	Urban Development	Pub
Law No. 98	09.09.1989	Excavation in Public Streets	Pub
Law No. 58	29.05.1991	Land Expropriation	Pub
Law No. 85	07.09/1991	Flora and Fauna Protection	Agri
Decree No. 10121	1992	Excavation of Sand from the	Inte
Foreshore			
Decision No. 1/42	01.03.1993	Tree Cutting and Felling	Agri
Decree No. 2/93	20.06.1993	Quarries, Sand Pits and Coating	
Plants			
Law No. 360	01.08.1994	International Convention on	Env
l_____lBiodiversity			
Decree No. 5616	06.09.1994	Quarry Exploitation	Ire
PMO Circular 6/95	13.03.1995	Excavation in Public Streets	Pub
Law No.558	24.07.1996	1 Forest Protection	Agr
Decision No. 185/1	07.11.1997	f Marble Quarries and Concrete	Inte
=		Block Works	
Protection From Pollution			
Document	Date	Subject	
Decree No. 8735	23.08.1974	Pollution from Solid and Liquid	
Wastes			
law No. 64	18.08.1988	Pollution from Hazardous	
Wastes			
Decision No. 52/1	29.07.1996	Air, Water and Soil Pollution	
Protection of Water Resources			
Document	Date	Subject	
Order No. 144	10.06.1925	Protection of Surface and Ground	
Water Resources			
Order No. 320/26	26.05.1926	Protection of Catchment Areas	
Decree No. 639	26.03.1942	Protection of Nabaa Al Assal	
Decree N.10276	07.10 2	Spring, Faraya	
f Decree No. 10276	07.10.1962	Protection Zones for Water Sourc	
l		and Recharge Areas	
Decree No. 14438	02.05.1970	Restrictions on the Depth of	
l		Unlicensed Boreholes	
Decision No. 2528/C	28.05.1996	Protection of Ground Water at El	
i		K neisse	
Decree No. 680	15.09.1998	The Preservation and Protection	
l		Boreholes	

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## Protection of Archaeological and Historic Sites

Document	Date	Subject
Law No. 166	07.11.1933	Historic and Archaeological Sites
Order No.	08.07.1939	Cultural Heritage Sites
-Decree No.	14.04.1943	Cultural Heritage Sites
Law No. 30/82	14.09.1982	World Heritage Sites
Law No. 19	30.10.1990	World Heritage Sites
Protection of the Maritime Environment		

Document	Date	Subject
Law No. 77/67	26.11.1966	International Conventions on Marine Protection
Decree No. 126	30.06.1977	International Conventions on Marine Protection
Laws No. 292/295	22.02.1994	International Conventions on Marine Protection
I _____		Protection of Specific Sites
Document	Date	Subject
Ministrv		
Law No.127/1	23.10/1991	Establishing a Natural Reserve from El Chouf to Dahr El Baidar, Mount, Lebnton, including public areas in Maasser El Chouf, Barouk, Ain Zhalta and Ain Dara
Law 121	09.03/1992	Establishing a Natural Reserve in Horsh Ehdn
Law No. 21/1	12.02.1992	Establishing a Natural Reserve in K Sam and Wadi El Zabadi-Qaza, Bent Jbeil, ment = _____  included public areas in surrounding villages
Law No. 152/1	15.11.1992	1 Establishing a Natural Reserve in H
Decision No. 15/1	05.10.1995	ProhibitioN of change of use around i _____ Bridge, Kesrouane
Decision No. 14/1	06.10.1995	Establishing a Natural Reserve at K. Chbat, Qoubaiyat
Decision No. 34/1	14.01.1997	Establishing a Natural Reserve at N. Ibrahim
1 Decision No. 71/1	14.05.1997	Establishing a Natural Reserve in ment
Decision No. 200/1	14.11.1997	Protection of cliffs in Cadastral Pl. l _____  Wata Salam, Tabarja, Kesrouan
Decision No. 22/1	24.02.1998	Protection of Nahr Al Jaouz river c
Decision No. 97/1	02.07.1998	Protection of Nahr El Kalb river ch
lDecision No. 121/	01.09.1998	Protection of Nahr Al Awaly river
Decision No. 130/1	01.09.1998	Protection of Nahr Beirut river cha
Decision No. 132/1	01.09.1998	Protection of Sites in the Chouf ar
Decision No. 129/1	17.11.1998	Wadi Al Damour river channel
Decision No. 187/1	17.11.1998	Protection of Al Maqmel and Qornet Saouda mountains
Decision No. 188/1	19.11	ction of Nahr Arga river channel
Decision No. 189/1	19.11.1998	1 Protection ofNahr Al Assi river cha

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Appendix A2. List of Protected Natural Reserves

Natural Reserves Classified by Law

- Palm Islands
- Yamrnouneh Area
- Tannourine Cedars and Hadath El
- Horsh Ehdn Forest
- Bentaiel Area
- Jebbeh Forest

Natural Reserves Classified By Ministerial Decree

- Karm Chbat and Wadi El Zabadi
- Qamrnmouaa Forest

- Jabal El Barouk Forest
- Arz Bcharre
- Batroun Maritime Area
- Jabal Turbol
- Bass-Tyr
- Kherbet Silm
- Bazbina Forest
- Bkassine-Jezzine Forest
- El Kif Forest
- Tyr Maritime Wetlands
- Aammiq Wetlands
- Areas Conserved by Private Initiatives
- Baabda Forest
- Khamlet Khazem
- Areas Consideration for Future Protection
- Fneidek- Quercus Cerris Forest
- Sir El Dinniyeh
- Qornet Al Saouda
- Aaqoura Plateau
- Nahr El Kalb Valley
- Yahfoufa
- Jabal El Sheikh
- Nahr El Damour Valley
- Jeita Grotto
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- Saissouk Area
- Qannoubine Valley
- Hbeline
- Kfarzabad
- Rass El Ain Coast
- Jaj Cedars Forest
- Qnat Forest
- Ain Hkailate-Karm
- Qaryet El Sfmet Fo
- Ras El Chaqaa-Hann
- Aaley Animal Encoun
- Harissa area
- Assi
- Bchaale
- Hjoula and Haqel
- Nahr Ibrahim Valley
- Pigeon Rocks, Beir
- Balou Ayha
- Balhoun Forest
- Qasmieh Valley

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 Appendix A3. Standards for Drinking Water - Ministry of Environment -  
 52/1, 1996

ORGANOLEPTIC, PHYSICAL AND CHEMICAL PARAMETERS

GUIDELINE PARAMETER VALUE	MAXIMUM CONCENTRATION	GU E	ADMISSIBLE	UNIT
Colour			1	15
Turbidity			0.4	4
Taste	0 @ 12°C	2 @ 12-C		
Taste			0 @ 25°C	3 @ 250C
u @ 12°C	2 @ 12°C			
LOdour			0 @ 25°C	3 ( 25°C
Temperature			12	25
IElectrical Conductivity (20'C)			400	-
Hydrogen Ion Activity			6.5 - 8.5	9
Calcium			100	-
Magnesium			30	50
Sodium			20	150
Potassium			10	12
Chloride			25	200
I Nitrate (NO3)			25	50
Nitrite (NO2)				0
Iron			50	200



Ammonium (NH4)	0.05	0.5	
Kjeldahl Nitrogen		I	
Total Solids (@180'C)		1500	
Oxidability	2	5	
Fluoride		1.5	8-12g/l
	10.7 @ 25-300C		m/

## HEAVY METALS AND TRACE ELEMENTS

PARAMETER	GUIDELINE	ADMISSIBLE	UNIT
VALUE	CONCENTRATION		
a Aluminum	0.05	0.2	
Arsenic	- 50		
Barium	I	-	
Cadmium		5	
Chromium		50	
Copper	0.1	I	
Cyanide	-	- 50	
i Lead		50	
Manganese	20	50	
Mercury		1	
Nickel		50	
Phosphorous (as P205)	0.4	5	
Selenium		10	

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Silver		10	
Antimony	-	10 to/	
Zinc	0.1	5	

## HYDROCARBONS AND PESTICIDES

PARAMETER	GUIDELINE	ADMISSIBLE	UNIT
ION	VALUE	CONCENTRAT	
Chlorinated Organic Pesticides		0.1	gg/i
Other Chlorinated Organic Compounds	1	-	pg/
Phosphated Organic Pesticide		0.1	4g/l
Carbamides		0.1	lg/
Herbicides	-	0.1	pLg/
Fungicides		0.1	.g/1
PCB		0.1	n/
PCT		0.1	Ig/
Phenols	-	0.5	
Surface Agents		0.2	
Dissolved Hydrocarbons		10	1
Aldrin	-	0.03	
Dieldrin	-	0.03	ugt
Hexachloro-Benzene	-	0.1	n/l
3,4 Benzopyrene	-	0.01	pg/l

11,12 Benzofluoranthene	-		0.2	p I
3.4 Benzopyrene		j	0.01	
Total Measured Substances	-		0.5	u/
BACTERIOLOGICAL PARAMETERS				
MAXIMUM				
GUIDELINE	ADMISSIBLE	SML		
PARAMETER		GUIDELINE	CONCENTRAT	SAMPLE
VALUE ~	ION	VOLUME		
Total Coliforms			0	0 0 100
Faecal Streptococcus			0	° 0 100
Sporlutaed Sulphite-Reducing			0	1 20ml
Faecal Coliforms			0	0 100
Salmonella			0	0 5 li
Thermnotolerant Coliforms			0	0 100
Pathogenic Staphylococcus			0	0 100
Faecal Bacteriophagus			0	0 50 m
Intestinal Virus			0	0 10 l

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Appendix A4. Standards for Wastewater - Ministry of Environment - Dec 2001

Environmental Limit Values (ELV) for Waste Water Discharged into the  
Parameter ELV for existing facilit

IpH 5 -9

Temperature 350C

| BOD5 mgO2/L 100

i COD .mgO2/L 250

I Total Phosphorous mgP/L 16

Total Nitrogen mgN/L 40

Suspended Solids mg/L 200

AOX 5

Detergents mg/L 3

Coliform Bacteria 37°C in 100 ml2 2,000

i Salmonellae absence

Hydrocarbons mg/L 20

Phenol index mg/L 0.3

I Oil and Grease mg/L 30

Total Organic Carbon (TOC) mg/L 75

I Ammonia (NH4I) mg/L 10

Silver (Ag) mg/L 0.1

Aluminium (Al) mg/L 10

Arsenic (As) mg/L 0.1

Barium (Ba) mg/L 10

Cadmium (Cd) mg/L 0.2

Cobalt (Co) mg/L 0.5

Chromium total (Cr) mg/L 2

Hexavalent Chromium (CrV[]) mg/L 0.5

Copper total (Cu) mg/L 1.5

Iron total (Fe) mg/L 5

Mercury total (Hg) mg/L	0.05
Manganese (Mn) mg/L	1
Nickel total (Ni) mg/L	2
Lead total (Pb) mg/L	0.5
Antimony (Sb) mg/L	0.3
Tin total (Sn) mg/L	2
Zinc total (Zn) mg/L	10
Active Cl <sub>2</sub> mg/L	1
1 Sum of Kjeldahl-N (organic N + NHI), NO <sub>3</sub> -N. NO <sub>2</sub> -N	
2 For dischargers in close distance to a bathing water a more strict	

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Parameter	ELV for existing facilit
Cyanides (CN)mg/L	0.1
Fluoride (F <sup>-</sup> ) mg/L	25
Nitrate (NO <sub>3</sub> ) mg/L	90
Phosphate (PO <sub>4</sub> <sup>3-</sup> ) mg/L	5
Sulphate (SO <sub>4</sub> <sup>2-</sup> ) mg/L	1,000
Sulphide (S <sub>2</sub> D)mg/L	5
Environmental Limit Values (ELV) for waste water discharged into surf.	
Parameter	ELV for existing facilit
pH	5 --9
Temperature	300C
BOD <sub>5</sub> mgO <sub>2</sub> /L	100
COD mgO <sub>2</sub> /L	250
Total Phosphorous mgP/L	16
Total Nitrogen, mgN/L <sup>3</sup>	40
Suspended Solids mg/L	200
AOX	5
Detergents mg/L	3
Coliform Bacteria 37°C in 100 ml <sup>4</sup>	2,000
Salmonellae	absence
Hydrocarbons mg/L	20
Phenol index mg/L	0.3
Oil and Grease mg/L	30
Total Organic Carbon (TOC) mg/L	75
Ammonia (NH <sub>4</sub> ) mg/L	10
Silver (Ag) mg/L	0.1
Aluminium (Al) mg/L	10
Arsenic (As) mg/L	0.1
Barium (Ba) mg/L	2
I Cadmium (Cd) mg/L	0.2
Cobalt (Co) mg/L	0.5
iChromium total (Cr) mg/L	2
Hexavalent Chromium (CrVI) mg/L	0.5
Copper total (Cu) mg/L	1.5
Iron total (Fe) mg/L	5
Mercury total (Hg) mg/L	0.05
Manganese (Mn) mg/L	1

3 Sum of Kjeldahl-N (organic N + NH<sub>3</sub>), NO<sub>3</sub>-N, NO<sub>2</sub>-N  
 4 For discharges in close distance to bathing water a more strict ELV  
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Parameter	ELV for existing faci
Nickel total (Ni) mg/L	2
Lead total (Pb) mg/L	0.5
Antimony (Sb) mg/L	0.3
Tin total (Sn) mg/L	2
Zinc total (Zn) mg/L	5
Active Cl, mg/L	1
Cyanides (CN <sup>-</sup> ) mg/L	0.1
Fluoride (F <sup>-</sup> ) mg/L	25
Nitrate (NO <sub>3</sub> ) mg/L	90
Phosphate (PO <sub>4</sub> <sup>3-</sup> ) mg/L	5
Sulphate (SO <sub>4</sub> <sup>2-</sup> ) mg/L	1,000
Sulphide (S <sup>2-</sup> ) mg/L	I

Environmental Limit Values (ELV) for waste water discharged into the system

Parameter	ELV for existing and new
pH	6-9
Temperature	350C
BOD <sub>5</sub> mgO <sub>2</sub> /L <sub>5</sub>	125
COD mgO <sub>2</sub> /L <sub>6</sub>	500
Total Phosphorous mrgP/L <sub>7</sub>	10
Total Nitrogen, TN mg/L <sub>8</sub>	60
Suspended Solids mg/L	600
AOX	5
Salmonellae	absence
Hydrocarbons mg/L	20
Phenol index mg/iL	5
Oil and Grease mg/L	50
Total Organic Carbon (TOC) mg/L	750
Ammonia (NH <sub>4</sub> <sup>+</sup> ) mg/L <sub>9</sub>	0.1
Silver (Ag) mg/L	10
Aluminium (Al) mg/L	

5 Assuming an outlet concentration of 25 mg/l and a cleaning capacity  
 6 Assuming an outlet concentration of 125 mg/L and a cleaning capacity  
 7 Assuming an outlet concentration of 2 mg/l and a cleaning capacity  
 8 Assuming connection to a biological waste water treatment plant. P  
 to the concentration in the inflow: 70 - 80%, ELV at outlet: 15 mg/L  
 9 Assuming connection to a biological waste water treatment plant. P  
 to the concentration in the inflow: 70 - 80%, ELV at outlet: 15 mg/l  
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Parameter	ELV for existing and new fa
Arsenic (As) mg/L	0.1
Barium (Ba) mg/L	2
Cadmium (Cd) mg/L	0.2
Cobalt (Co) mg/L	1
Chromium total (Cr) mg/L	2
Hexavalent Chromium (CrVI) mg/L	0.2
Copper total (Cu) mg/L11	1
Iron total (Fe) mg/L	5
Mercury total (Hg) mg/L	0.05
Manganese (Mn) mg/L	
Nickel total (Ni) mg/L1	2
Lead total (Pb) mg/L12	1
Antimony (Sb) mg/L	0.3
Tin total (Sn) mg/L	2
Zinc total (Zn) mg/L 13	10
Cyanides (CN-)mg/L	1
Fluoride (F-) mg/L	15
Nitrate (NO3) mg/L14	
Phosphate (PO43-) mg/L 15	
Sulphate (SO42-) mg/L	1,000
Sulphide (S2-)mg/L	1

10 ELV of 0.5 mg/L must be kept at the outlet of WWTP.

11ELV of 0.5 mg/L must be kept at the WVVWTP outlet.

12 ELV of 0.5 mg/L must be kept at the WWTP outlet.

13 ELV of 5 mg/L must be kept at the WWTP outlet.

14 ELV for total nitrogen has to be kept

15 ELV for total phosphor has to be kept

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Appendix A5: Evaluation of the Lebanese EIA system (METAP EIA Institu  
Strengthening Project)

#### 1. Introduction

An evaluation of the Lebanese EIA system was conducted as part of the Institutional Strengthening project. The evaluation was carried out in the Centre International des Technologies de l'Environnement de Tunis EIA Centre, University of Manchester.

Warm appreciation is expressed to Rola Nasreddine, National Focal Point Manager Of the Unit of Planning and Programming (UPP) of the Ministry Hatem-Moussallem of the UPP, for their assistance with arranging the all meetings, for their invaluable contributions to the discussions, . Many valuable comments and suggestions on the introduction of environ were made by all of the participants. These contributions are greatly

#### 2. Status of EIA in Lebanon

Provisions for EIA are included in the draft Law on Protection of the Code), which has yet to be enacted. An EIA decree is being drafted by Programming, under a METAP project funded by the World Bank.

A number of EIA studies have been carried out for internationally fun the funding agencies. Many of these projects have been coordinated by

Reconstruction (CDR). Others have been managed by the relevant line ministries. The Ministry of Works established an Environment Unit in 1997, with support from the World Bank. The Unit has conducted studies for the ministry, and to monitor and supervise environmental impact assessments. Many of the internationally funded EIA studies in Lebanon have been conducted by international organizations, which have accumulated significant expertise. In addition, some studies have been carried out voluntarily by private sector investors, at the request of the Ministry of Works.

4. Comparison of the Lebanese EIA system with international norms

The Lebanese EIA system is summarized in Table 1, along with the corresponding World Bank EA procedures (OP 4.01) and the European Union EIA Directive (1986). The compatibility with the procedures of the World Bank and other development banks is discussed both to facilitate the preparation of EIA reports for funded projects and to ensure consistency with international standards. Individual EIA studies may be required for sub-projects under the national EIA system. The EIA procedures of other international banks are generally similar to those of the World Bank, so that compatibility with World Bank procedures is also ensured.

For comparative purposes, the requirements of the European Union directive are also presented. This is another example of international EIA practice, framed around national or local government, rather than those used by the World Bank. The European directive has been framed in such a way as to meet the individual needs of different countries, with diverse decision-making mechanisms.

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The table also indicates possible changes to the Lebanese EIA system, to achieve compatibility with the WB procedures and consistency with the requirements of the European Union. The paragraphs identify ways in which this might be achieved. More details of the draft EIA decree are presented in Annex 1.

Enabling legislation for EIA (item 1)

The draft Law on Protection of the Environment should be enacted, with provisions for EIA.

Detailed legislation for EIA (item 2)

The draft EIA directive should be finalized and issued, without changes, to ensure compatibility with WB or EU requirements.

General and specific guidelines (item 6)

General guidelines on implementation of the EIA system should be developed, based on a revised version of the EIA directive. Pending development of more comprehensive guidelines, consistency may be made to internationally recognized guidelines such as those of the World Bank. Method of co-ordination with pollution control approval and regulation should be clarified. For compatibility with WB, the relationship between EIA and existing pollution control measures should be specified in greater detail, consistent with the Bank's Pollution Prevention and Abatement Handbook.

Screening method (item 16)

The screening lists in Annexes I and 2 of the draft directive need to be finalized. Requirements for non-technical summary (item 19)

In finalizing the EIA directive, the requirement for the executive summary should be clarified.

Requirements for transboundary impacts (item 22)

For compatibility with WB, regulations should specify the study of transboundary impacts. For consistency with EU, this should be defined in more detail, including requirements for global impacts (item 23)

For compatibility with WB, the global impact requirements of OP 4.01 regulations. This would more than satisfy the EU requirement.

Expertise for conducting EIA (item 30)

For compatibility with WB, procedures should be defined for obtaining internationally recognized experts for major projects or major issues

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The World Bank's additional requirement, for independent expertise for developing a strong review system. For consistency with EU, this requires requiring the EIA study team to be independent of developers and their

5. Conclusions and recommendations

The UPP and the Ministry of Environment have made excellent progress in readiness for enactment of the Environmental Code. The discussions and evaluation generated many suggestions for further improving the first summarized in Annex 1.

In parallel; the Ministry of Environment has begun to obtain valuable the voluntary support of a small number of investors.

Fairly extensive experience of implementing EIA for projects funded by World Bank, has been built up by the Council for Development and Reconstruction supported by similar experience within certain line ministries, notably. Several Lebanese consultancy organizations have undertaken EIA study projects, and have built up a considerable body of experience. Similar EIA has been developed in several NGOs.

There are two main barriers to implementing EIA in Lebanon beyond its \* enactment of the Environment Code and the EIA decree

\* building institutional capacity in the Ministry of Environment

Enactment of environmental legislation

The Ministry of Environment does not yet appear to have sufficient strength government to push through environmental legislation on its own, with Responsibility for approval of development projects rests with other bodies, for whom the promotion of investment in Lebanese development bodies have their own mechanisms for taking environmental matters into Environmental legislation which gives the MoE major powers over other difficult to enact. Legislation framed in such a way as to support other own environmental responsibilities may carry less weight in the short inclusion of certain features of international practice in EIA. However more effective than taking a confrontational approach.

In either case, there is a limit to the extent to which EIA can be fully legislation is enacted.

EIA capacity in the Ministry of Environment

The bulk of the work carried out to date in preparation for a Lebanese units such as the UPP, funded by international organizations, and attached part of it. In advance of the enactment of the EIA decree, an EIA unit established within the MoE, with a senior member of staff at its head these staff will need to devote the major part of their time to EIA, expertise and experience to undertake high level negotiations with other developers.

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 Additionally, before the EIA decree can become fully effective, capacity of project approval conditions needs to be established. This applies to requirements, and ongoing enforcement of pollution permits and other need either to establish its own team of inspectors, with legal power ministries and local government bodies, which already have monitoring. To be sustainable, all of this capacity will need to be funded by national for doing so, for example through permitting charges and/or application consultation with other relevant government bodies.

The current EU LIFE project for SPASI is addressing monitoring issues a strategy for monitoring and enforcement will need to be agreed, in capacity for administering the EIA system.

General recommendations

During the evaluation, a good understanding of environmental issues with of several other government bodies, together with an encouraging degree the MoE.

It is recommended that, both in finalizing the EIA decree and address MoE pursue this cooperative approach, as far as it is able to, without own responsibilities for environmental protection.

Immediate actions

1. Continue to work with other ministries to secure support for the EIA enactment.
  2. Recruit and train permanent members of MoE staff dedicated to EIA.
  3. Obtain copies of all past EIA reports prepared for internationally
  4. Establish an advisory role in the preparation of EIAs for all pres-funded projects, particularly in respect of Terms of Reference and re
  5. Continue with setting up an advisory committee on EIA involving government, and linked to the EU LIFE programme. Through this:  
 define links between EIA and existing permitting systems, avoiding du  
 define links into the IDAL permitting process  
 encourage establishment of environment units in line ministries and l  
 for EIA
  6. Consult with line ministries and local government to finalize the .
  7. Secure support for amendments to other ministries' legislation, fo
- Actions when the Environment Code has been enacted
1. Prepare and issue general guidelines on management of the EIA pro
  2. Programme of awareness raising and training for public and privat
  3. Consult with line ministries and local government to define the re
- Secure government finance for monitoring, and establish appropriate s
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Table 1. Summary of the Lebanese EIA System and Comparison with World  
 Lebanese EIA system      World Bank procedures      EU directive  
 compatibility with WB      consistency with

EU  
 EIA LEGISLATION AND



## PROCEDURES

I	Enabling legislation for EIA Protection of the Environment)	none (draft Law on	OP 4.01
2	Detailed legislation for EIA Directive	draft EIA Operational state	BP/GP 4.
3	Formal provisions for SEA directive, but without detail	included in scope of draft for relevant loans (17)	secto
4	Local government EIA legislation or procedures	none	
5	Sectoral authority EIA legislation or procedures	Ministry of Public Works procedures	
6	General and specific guidelines updates 1991-1998. Pollution Prevention and Abatement Handbook	none	EA sour

1 '999. \_ \_ \_ \_ \_

## ADMINISTRATION OF EIA M999

Main administrative body for EIA Ministry of Environment and Natural Resources  
Wit Envir. Department

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□	Community Development Project Environmental Guidelines		
	Lebanese EIA system	World Bank procedures	EU directive
	'compatibility with WB	consistency with	
8	Competent authority for environmental acceptability	MoE	WB appr.
9	Review body for EIA sector unit and task team (BP)	MoE	WB regi.
10	Sectoral authority responsibilities	Submit applications. Issue permits, subject to	N/A
II	Local government responsibilities	As sectoral authorities	N/A
12	Other bodies responsible for planning approval	Sectoral authorities and local government	N/A
13	Method of co-ordination with other planning approval bodies and review.	Advisory committee. Involvement in scoping	Close 1 national go
14	Method of co-ordination with pollution control approval and regulation	Other government agencies have responsibilities,	Polluti. abateimieint included in
	Coordination not defined. standards have not yet been developed, make use of the World Bank's Pollution Prevention and		

## Abatement Handbook

## STAGES OF EIA

## Screening

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□  
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 Lebanese EIA system      World Bank procedures      EU directive  
 compatibility with WB      consistency with

15      Screening categories      i) full EIA      Cat A  
 ii) simpler Impact      responsible for full EIA      EIA:  
 Statement      Cat B - WB responsible      Annex I - full EI.  
 for less intensive analysis      mandatory;  
 (118)      Annex 11 - screening for  
 full EIA

16      Screening method      Lists with thresholds and      Indi  
 criteria      significance, with      Annex 11 - indiv  
 illustrative lists (B1', GP1)      screening for  
 significance, or standard  
 significance criteria,  
 based on criteria in  
 Annex III

SCOPING

17      Scoping method      Scoping by proponent to      Genera  
 guidelines in Annex, to be      visit by W13, approval of      scoping by pr  
 agreed by Mot      ToR by W13 (BP)      (Art 3), optiona  
 opinion of competent  
 authority and statutory  
 consultees (Art 5), no  
 scoping restriction by

## CONTENT OF EIA STUDY

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□  
 Community Development Project  
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 Lebanese EIA system      World Bank procedures      EU directive  
 compatibility with WB      consistency with

18      Content of EIA report      Guideline in Annex,      - execu  
 including all WB      - policy, legal and      - outline of alter  
 components      administrative      - baseline data  
 framework      - prediction and  
 - project description      assessment of  
 - baseline data      environmental impacts  
 - prediction and      - mitigation measures  
 assessment of      - non-technical summary

environmental impacts - indication of difficulties  
and mitigation in assessment  
- analysis of alternatives (Art 5, Annex 4)  
- environmental  
management plan  
- list of EIA report  
preparers  
- record of consultations  
- references and  
supporting data  
(Annex B)

19 Requirements for non-technical executive summary Executi  
summary (Annex B),  
understandable (I16) technical

20 Requirements for considering required in Annex Analysis  
alternatives Annex B)

21 Requirements for environmental described in Annex EMP req  
management plans EMP specific

22 Requirements for transboundary none To be t.  
impacts (113)

7) as WI?I consultation.

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Lebanese EIA system World Bank procedures EU directive  
tompatibility with WB consistency with

EU

23 Requirements for global impacts none Impacts  
change, ozone-depletion, impacts to be assessed, global impacts,  
international water but not specifically global  
pollution and biodiversity (Annex 4)  
to be taken into account

(113)

REVIEW, PUBLIC PARTICIPATION AND  
DECISION-MAKING

24 Method of checking quality of comparison with ToR Compari  
EIA reports submitted (BP)

project, the environmental  
features likely to be  
affected, and current  
knowledge and methods  
of assessment (Art 5)

25 Requirements for public Scoping requirements a) cons  
participation defined in Directive and and NGOs  
Annex. Public access to finalizing ToR comment (Art 6)  
EIA report. b) public and NGO access

to and comment on draft  
EA report (11 15)

Arrangements for access to EIA Available at MoE Made availab  
26 reports public

affected groups and member states (Art 6)  
 NGOs (¶117)  
 27 Decision-making method Decision by MoE, with Integra  
 involvement of of project design and consults statutory  
 stakeholders economic analysis (BP) consultees (Art 6,  
 publication of reasons for  
 decision (Art 9)  
 28 Provisionls for appeal Provisions in Directive  
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 Lebanese EIA system World Bank procedures EU directive  
 compatibility with WB consistency with  
 EU  
 FoU 9w-up  
 29 Requirements for MoE responsible Reports  
 implementation monitoring by proponent,  
 supervision visits by WB  
 (1¶20, BP)  
 EIA CAPACITY  
 30 Expertise for conducting EIA Proponent responsible. Indepen.  
 retained by proponent, the assessment (Art 5 andi major issues. S  
 independent international Annex 4) review systemfor  
 panel for major issues independent review  
 (14)  
 31 No. of EIAs conducted Numerous for funding -  
 agencies, plus a few  
 voluntarily.  
 32 Approx. no. of EIA firms and Several local -  
 individuals consultancies with  
 experience.  
 33 Foreign consultants used? Sometimes -  
 34 Universities/ Several  
 institutes with EA technical  
 expertise  
 35 Universities/ none  
 institutes with EIA systems  
 expertise  
 36 Training provisions Previous World Bank and -  
 other programmes  
 37 Other EIA capacity-building Current METAP -  
 programmes programme, attached to  
 MoE  
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 APPENDIX B: ENVIRONMENTAL IMPACTS AND GOOD  
 PRACTICE PROCEDURES  
 Appendix B1: Good Practice Environmental Procedures.  
 Appendix B2: Typical Construction Environmental Impacts and  
 Mitigation Measures  
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 Appendix B1: Good Practice Environmental Procedures.

### 1. Introduction

The prevention of injury and/or illness to site personnel and the pub to public and private property, protection of the environment, and co laws, shall be the primary objectives of the contractor. All work sha to minimize disturbance and avoid dangers to the public. Selected min outlined in these Good Practice Environmental Procedures with which c Given that these Procedures cannot cover every eventuality, the contr. exercise good judgment in all such matters, even though not mentioned shall take all necessary measures to meet his responsibility with res: The Contractor shall, throughout the execution and completion of the ' any defects therein:

\* Have full regard for the safety of all persons on Site and keep th orderly state appropriate to the avoidance of danger to any person; K Know and understand all laws governing his activities along with, #n work site hazards;

\* Take all necessary measures to protect his personnel, other person the environment;

\* Avoid damage or nuisance to persons or to property of the public o pollution, noise or other causes arising as a consequence of carrying

### 2. Protection of the Environment

The Contractor shall comply with all environmental requirements, rule Lebanese laws, laid down by Lebanese Authorities or issued by the Emp Specific attention should be paid to regulations for materials, inclu wastes under his control. The Contractor shall not dump, release or o dispose of any such dump without the authorization of the Engineer. Any release of a hazardous substance to the environment, whether air, reported to the Engineer immediately. When releases resulting from Co Contractor shall take proper precautionary measures to counter any kn health hazards associated with such releases. These would include rem spill control and containment and notification of the proper authorit

### 3. Air Pollution

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The Contractor shall take all necessary measures to limit pollution of materials during the Works, including dumping down with water on a regular climatic conditions.

The Contractor shall ensure that all trucks leaving the Site are properly discharge of dust, rocks, sand, etc.

### 4. Water Pollution

The Contractor shall not dispose of waste solvents, petroleum product solutions-in the village drainage system or watercourse, and shall not on the Site. He shall maintain the Site in a sanitary condition and shall of the ground all rubbish, surplus spill, and litter which may have been. All wastes shall be taken to an approved disposal facility regularly, requirements of the relevant authorities. The Contractor shall dispose pumping discharge in a manner that does not cause contamination or nuisance responsible to control all run-offs, erosion, etc.

Work on or in surface water channels shall allow for the maintenance of users. The Contractor shall take all reasonable measures to maintain water discolouration.

Where a temporary reduction in downstream flow, or discolouration by excavations is, in the opinion of the Engineer, unavoidable, the Contractor shall make arrangements for supplying all affected users throughout the period of discolouration.

### 5. Solid Waste

#### General Housekeeping:

The Contractor shall maintain the Site and any ancillary areas used adjacent of the Works in a clean, tidy and rubbish-free condition at all times. Upon the issue of any Taking-Over Certificate, the Contractor shall clear the Site of all Contractor's Equipment, surplus material, rubbish and debris and leave the Site in a clean condition to the satisfaction of the Engineer. Rubbish Removal and Disposal:

The Contractor shall comply with statutory and municipal regulations concerning disposal of rubbish and waste.

The Contractor shall provide suitable metal containers for the temporary storage. He shall remove rubbish containers from site as soon as they are full. Rubbish shall not be allowed to overflow. Vehicle access to rubbish containers shall be provided. 18/04/01 - Page B3

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Domestic and biodegradable waste shall be removed daily from the Site. Non-biodegradable wastes shall be collected separately and be disposed of in accordance with the relevant requirements. No waste shall be burnt on Site unless approved by the Engineer.

### 6. Noise Control

The Contractor shall adopt the best practicable means of minimizing noise. For noisy job, the quietest available plant/and or machinery shall be used. All machinery shall be maintained in good mechanical order and fitted with the appropriate silencing acoustic covers where applicable. Stationary noise sources shall be screened from noise-sensitive areas, and where necessary acoustic barriers shall be provided. Such barriers may be proprietary types, or may consist of site materials. Acoustic mould as appropriate.

Compressors, percussion tools and vehicles shall be fitted with effective

recommended by the manufacturers of the equipment. Pneumatic drills and appliances shall not be used during days of rest or after normal work of the Engineer.

Working hours shall be restricted to between 8 am and 6 pm Monday to Saturdays unless agreed otherwise with the Engineer and having taken holidays and other religious and social commitments.

Work outside these hours will only be permitted if it is of an emergency maintenance of existing services, the stability of the works or for public safety.

## 7. Additional Requirements for Work in Public Areas

### 7.1 General

Public areas are defined as areas still used by or accessible to the public, roads and pavements, occupied buildings and areas outside the Contract. Before commencing work, the contractor shall ensure that all necessary labour, plant and materials, will be available when required and that work will be completed in the shortest possible time. Periods of delay or progress or delays in meeting the agreed programme for the works, resulting from failure to provide necessary resources or other causes within the contract shall not be accepted. In the event of such inactivity, slow progress or delay, the Engineer shall take immediate action to rectify the situation, including all possible acceleration measures, to complete the works within the agreed programme. Details of the actions and acceleration measures shall be submitted to the Engineer for his approval.

### 7.2 Method Statements

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The Contractor shall submit to the Engineer in a timely manner a method statement which shall include:

- a general description of the identified mitigation measures and methods to be carried out;
- details of the measures and temporary works to minimize disturbance to the public. These shall include temporary diversions, safety barriers, signage and arrangements for control of traffic and pedestrians and advance warning to the public.

Should the method of work proposed by the Contractor be unacceptable, the Contractor shall provide a revised Method Statement. The work will not proceed until a Method Statement has been approved by the Engineer.

### 7.2 Site Clearance and Removal of Topsoil

Site clearance shall be carried out over the areas to be occupied by the Contractor beginning excavation or filling or other work, and shall include the removal of bushes and other vegetation and the removal of all boulders.

Topsoil shall mean the surface layer of soil, which by its humus content is unsuitable as a formation to roads and concrete structures or as a base for vegetation. The extent and depth of topsoil that needs to be removed shall be agreed with the Engineer. Topsoil shall be set aside for subsequent re-use or disposal as directed by the Engineer. Materials arising from site clearance shall be disposed of in a manner approved by the Engineer, on the site in a manner and place approved by the Engineer in accordance with Lebanese Environmental Regulations.

The Engineer may require individual trees, shrubs and hedges to be preserved. The Contractor shall take all necessary precautions to prevent their damage.

The Contractor shall preserve as far as practicable all grass and other vegetation.

of trenches and permanent works and shall not unnecessarily destroy c whose removal would not be essential to his operations.

### 7.3 Existing Services

The Contractor shall be responsible for maintaining all existing serv telephone, water, sewerage and drainage. Any curtailment of these ser undertaken with the prior approval of the Engineer. The Engineers app alternative services shall only be given after consultation with the . Any accidental curtailment of services resulting from the Contractor' as an emergency and repaired without undue delay, notwithstanding tha 18/04/01 - Page B5

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immediately available. All such accidents shall be reported in writin of the remedial action undertaken.

No existing services shall be decommissioned or otherwise put out of supply being provided to consumers to the satisfaction of the Enginee be disposed off-site at a site selected by the Contractor and approve The connection of new services with existing services shall only be m of the local Authority and the Engineer. The Contractor shall give a of his intention to connect to an existing service line and shall pro connection. No work on site shall commence until approval in writing has been obtained.

### 7.4 Closure of Roads

The closure or partial closure of roads, pavements and other public a approved by the Relevant Authorities and the relevany closure permit Authority. The Contractor shall detail for each closure the extent of and duration of the closure and, where appropriate, proposed diversio produce the Closure Permit for inspection bt the Engineer if requeste the right to order cessation of the relevant work if the Contractor d Permit.

### 7.5 Protection of Buildings and Properties

The foundations of many older buildings may be expected to be shallow movement. The Contractor shall take this into account when selecting and method of working. The Contractor shall be fully responsible for resulting from inadequate or inappropriate methods of work.

When working adjacent to existing properties, the Contractor shall:

- Advise owners or occupiers of adjoining property of the dates on w executed;
- Obtain permission of the owners if it is necessary to erect Tempor adjoining property and pay all charges;
- Take all reasonable precautions to prevent damage to adjoining pro is caused as a result of the execution of the Works, make good to the owner.

### 7.6 Protection of Archeological and Historical Sites

Excavation in sites of known archaeological interest should be avoide unavoidable, prior discussions must be held with the Directorate of A given the opportunity to undertake pre-construction excavation or ass 18/04/01 - Page B6



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discoveries as construction proceeds.

Where historical remains are unexpectedly discovered in an area not of archaeological interest, work should be curtailed and the finds reported to the Antiquities, who will be given the opportunity to visit the site and undertake any necessary work.

#### 7.7 Excavation

The requirements covering excavations will depend on the location and the potential risks to the public. The following guidelines apply to excavations and shall be observed by the Contractor.

(i) before commencing work the contractor shall:

- Obtain an excavation permit from the relevant local authority.
- notify the Engineer on the location and duration of the work. An order signed by the Engineer must be issued before excavation proceeds in a particular location.
- Erect all temporary works such as barriers, warning signs, lighting and safety equipment.
- Have available adequate materials for temporary supports to sides of excavations, necessary labour, plant and materials to complete the work within the possible time.

(ii) in carrying out the works the Contractor shall, unless otherwise directed by the Engineer:

- Not open more than one excavation within a radius of 250 meters.
- Limit the length of trench excavation open at one time to 150 meters.
- Maintain and alter or adapt all temporary works including supports and shoring of excavations. Ensure the stability and safety of excavations and take all necessary measures to ensure that no collapse or subsidence occurs.
- Remove all surplus excavated material the same day it is excavated unless material suitable for re-use shall be removed without the approval of the Engineer.
- Complete the works, including final reinstatement within the shortest possible time.
- Keep all excavations free from water and it shall be the Contractor's responsibility to construct and maintain temporary diversion and drainage works, to carry out dewatering, pumping and to take all measures necessary to comply with this requirement.
- Not deposit excavated materials on public or private land except with the approval of the Engineer or with the consent in writing of the relevant Authority.

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or responsible representative of the owner of such land and only then and under such conditions as the relevant Authority, owner or representative may prescribe.

#### 7.8 Work in Confined Spaces

Where any part of the works is to be carried out in a confined space:

- Display at the entrance to each confined space a sign warning of the hazards and the levels to be monitored before access and while work is proceeding;
- Monitor the atmosphere in the confined space for oxygen depletion and for the presence of toxic gases before any person enters it;
- Provide suitable and sufficient breathing apparatus appropriate to the work to be carried out;
- If sufficient means of natural ventilation cannot be guaranteed to ensure the safety of the workers, artificial ventilation shall be provided.

adequate circulation of uncontaminated air, provide forced air ventilation. other gas levels are shown to be safe;

- Provide suitable and sufficient gas monitoring equipment in appropriate locations that it is used at all times when the confined space is occupied;
- Ensure that all persons within the confined space vacate it as soon as possible without waiting to record the gas level;
- Maintain a register of all alarms sounded every day, including Nil and provide a copy of the register to the Engineer each week;
- Provide appropriate harness, safety ropes and rescue facilities, and means of access top to bottom;
- Provide when work is in progress radio or telephone communication, or other communication where this is appropriate and background noise levels permit;
- Ensure that all electrical tools and equipment are of the appropriate type and condition;
- Provide appropriate protective clothing and hygiene facilities;
- Ensure that all persons entering or working in a confined space are properly trained and authorized to enter.

#### 7.9 Safety Barriers

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#### Community Development Project Environmental Guidelines

Safety barriers shall be provided to the perimeter of work areas and excavations and to existing openings such as manholes, drawpits and trenches to the public, safety barriers shall be provided to both sides of trench and other openings.

The Contractor shall provide details of the type or types of safety barriers to the approval of the Engineer prior to commencing work. No work shall commence until safety barriers are in place.

The types of safety barrier used shall be appropriate to the particular risks to the public. Examples of different types of safety barriers in different situations include:

- Excavated material
- Non-rigid barrier of rope or florescent tape strung between metal rails
- Rigid barrier of timber, steel or concrete. Such barriers could be made of rail(s) or sheet material secured to posts driven or concreted into the ground.

#### 7.10 Use of explosives

Explosives shall not be used on any part of the Works without the approval and permission from the relevant authorities. The Contractor shall:

- Observe all regulations regarding proper purchasing, transportation and storage of explosives;
  - Ensure that explosives and detonators are stored in separate and adequately secured and clearly marked in English and Arabic "DANGER - EXPLOSIVES" to the satisfaction of the Engineer;
  - Ensure that all possible precautions are taken against accidental ignition of explosives are kept in a proper and safe condition;
  - Ensure explosives and detonators are always transported in separate containers until the last possible moment and that metallic tools are not used to handle them.
- Blasting Procedures: the Contractor shall carry out blasting operations in accordance with the approved Blasting Procedures. Blasting shall not endanger the safety of the persons and property. Priming, charging, setting and firing shall be carried out with greatest regard for safety and in strict accordance with the relevant regulations. Adequate warning of blasting shall always be given and a

area, before blasting take places. The Contractor shall:

- Ensure that police and other relevant authorities are kept fully informed of the program so they may be present during blasting if they so require.

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Environmental Guidelines
- Erect warning notices around the area affected indicating that blasting is in progress.
  - Ensure explosive charges are not excessive charged, that boreholes are drilled and appropriate precautions are taken for the safety of persons and property.
  - Maintain an up-to-date inventory of all explosive devices and submit to the Resident Engineer, detailing the use of explosives by date and location.

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Environmental Guidelines  
Appendix B2: Typical Construction Environmental Impacts and Mitigation Measures
- |                 |                          |
|-----------------|--------------------------|
| IMPACT MEASURES | GOOD PRACTICE MITIGATION |
|-----------------|--------------------------|

Obstruction of Access:  
Installation of pipelines may require partial or total closure for the duration of construction, causing obstruction and necessitating the diversion of vehicular and pedestrian traffic. Avoiding total closure of road line traffic; diversion roads to the expected traffic adequate diversion signs; open trench; expeditious completion and reinstatement

Disruption of Services  
Existing services such as water, sewerage, electricity and telephones may be temporarily disconnected, thus causing inconvenience to consumers. They may also be subject to accidental damage during construction. Minimizing the period of alternative arrangements where extended period is unavoidable

Increased Traffic Generation  
Contractors' heavy transport and construction equipment will result in increased traffic and reduced availability of residents' parking. Restriction of heavy transport activity to normal working hours

Soil and Water Pollution  
Improper dumping of excavated and construction materials, chemicals, solvents and oils may contaminate the soil as well as surface and ground waters. Runoff contamination may also affect flora and fauna. Collection and disposal of demolition materials at appropriate location; recycling of lubricants; prevention of accidental spills.

Soil Erosion  
Soil erosion may occur from excavations, Limitation of earth moving

road cuttings and other exposed surfaces excavations and movements during periods of rain. This may result in during the summer months; alteration to landforms and natural susceptible surfaces with mulch drainage and in accumulation of trenches with plastic sheeting sediments in rivers and streams. sides.

#### Disruption of Drainage

New municipal roads traversing surface The excavation of cut-off t water catchment areas can reduce runoff channels may need to be con or divert natural drainage, thus causing a Works until land re-grad diminution in flow downstream to the permanent diversion channels ca detriment of bank-side vegetation and aquatic invertebrate fauna.

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### Community Development Project

#### Environmental Guidelines

##### Increased Noise

High noise levels from equipment, Restriction of work to normal machinery and vehicles will cause the quietest available plant/a disturbance to surrounding residences and maintaining all equipment particularly impact upon hospital, schools, and fitting them with th churches, mosques, and upon cultural and mufflers.... recreational facilities that require quiet conditions for their enjoyment.

##### Reduced Air Quality

Dust and particulate matter from the Keeping access and haul roads works may have a particularly serious with water especially during t impact upon people with respiratory spraying of spoil heaps with w problems, as well as on adjacent vehicle and other engines are vegetation and buildings. Increased traffic needlessly; preventing a will increase vehicle fumes and odors, and levels of exhaust from fu tire and exhaust particles can coat been rectified. roadside vegetation.

##### Damage to Vegetation

The removal of vegetation may affect Minimizing loss of natural ve both local ecological communities and the construction; replanting a physical environment. The immediate shrubs. result is the intensification of physical factors such as sunlight, desiccation, wind and water erosion. This, in turn, may lead to a paucity of food, shelter, nesting materials and habitats for birds and small animals.

##### Accumulation of Spoil

Accumulations of spoil generated from Reusing spoil for backfill an road cuttings and other excavations are transporting to an approve visually unsightly and may be rapidly grading small quantities ver eroded by rainfall. The suspended solids does not result in the de content of surface runoff may increase balancing the quantities of ' and culverts and drainage channels minimise the generation of exc l become silted. Spoil tipped on hillsides

may be inherently unstable and subject to slippage.

#### Destruction of Archaeological Sites

Excavations may result in the destruction of archaeological remains. Avoiding excavation in sites with potential historical remains; assigning an archaeologist to log discoveries as construction proceeds.

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Contractors' Yards  
Sites containing offices, storage areas, maintenance shops, prefabrication yards generate domestic and industrial waste, including spent oils and chemicals, damaged materials and abandoned equipment. The excavation, crushing, washing, treatment and transport of rock materials, and the construction of pre-cast units will cause increased noise, air pollution and heavy traffic. Careful siting, construction contractor's yards

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□  
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APPENDIX C: ENVIRONMENTAL SCREENING  
Appendix C1: Environmental Checklist  
Appendix C2: Environmental Data Sheet (EDS)  
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□  
Community Development Project  
Environmental Guidelines  
APPENDIX C1: ENVIRONMENTAL CHECKLIST  
1. SUBPROJECT DESCRIPTION  
Description of the project and its major components.  
2. SUBPROJECT LOCATION  
2.1 Site Information  
Name of Mohafaza, Caza and Municipality  
Community Land use designation, total p

Present Use & Development

Surrounding Uses/Zoning

North:

South:

East:

West:

Access

Name of roadway if direct access

private roadway

Public Services

Water Supply: name of district

or "shared well"

Sewage: name of district or "septic system"

IOther: e.g. school, health clinic...

### 3. POTENTIAL SIGNIFICANT ENVIRONMENTAL EFFECTS

The following checklist indicates the potential level of impact and i

Known Sig.: Known significant environmental impacts.

Unknown Poten. Sig.: Unknown potentially significant impacts which ne  
significance level.

Poten. Sig. and Mitig.: Potentially significant impacts which can be i

Not Sig.: Impacts which are not considered significant.

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Community Development Project

Environmental Guidelines

#### 3.1 GEOLOGIC PROCESSES

Poten.

Unknown      Signit.

Known      Poten.      and      Not

Will the proposal result in:

Si2niE.

a.      Exposure to or production of unstable earth conditions  
such as landslides, soil creep, mudslides, ground failure  
(including expansive, compressible, collapsible soils),  
or similar hazards?

b.      Disruptions, displacements, compaction or over  
covering of the soil by cuts, fills, or grading?

c.      Permanent changes in topography?

d.-      The destruction, covering or modification of any  
unique geologic, or physical features?

e.      Any increase in wind or water erosion of soils, either  
on or off the site?

f.      Changes in deposition. or erosion or siltation which  
may modify the channel of a river, or stream, or any  
water body?

g.      The placement of septic disposal systems in  
impermeable soils with severe constraints to disposal of  
liquid effluent?

h.      Excessive grading on slopes of over 20%?

j.      Sand or gravel removal or loss of topsoil?

i.      Vibrations, from short-term construction or long-term  
operation, which may affect adjoining areas?

j.      Excessive spoils. tailings or over-burden?

Impact Discussion:

Mitigation Measures:

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□

Community Development Project

Environmental Guidelines

3.2 WATER RESOURCES/FLOODING

Poten.

Unknown Signit

Known Poten. and Not

Will the proposal result in: Signi.

a. Changes in currents, or the course or direction of water movements?

b. Changes in percolation rates, drainage patterns or the rate and amount of surface water runoff?

c. Change in the amount of surface water in any water body?

d. -\* Discharge into surface waters, or alteration of surface water quality, including but not limited to temperature, dissolved oxygen, turbidity, or thermal water pollution (e.g.. eutrophication)?

e. Alterations to the course or flow of flood waters, or need for private or public flood control projects?

f. Exposure of people or property to water related hazards such as flooding, or accelerated runoff?

g. Alteration of the direction or rate of flow of groundwater?

h. Change in the quantity of groundwaters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations or recharge interference?

i. Overdraft or overcommitment of any groundwater basin? Or. an increase in the existing overdraft of any groundwater basin?

j. The substantial degradation of groundwater quality including saltwater intrusion?

k. Substantial reduction in the amount of water otherwise available for public water supplies?

Impact Discussion:

Mitigation Measures:

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□

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Environmental Guidelines

3.3 TRANSPORTATION/CIRCULATION

Poten.

Unknown Signif

Known Poten. and Not

Will the proposal result in: SizniE

a. Generation of substantial additional vehicular movement (daily, peak-hour, etc.) in relation to existing

traffic load and capacity of the street system?

- b. A need for private or public road maintenance, or need for new road(s)?
- c. Effects on existing parking facilities, or demand for new parking?
- d. Substantial impact on alteration of present patterns of . . .circulation or movement of people and/or goods?
- e. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians (including short-term construction and long-term operational)?
- g. Inadequate sight distance?

Impact Discussion:  
Mitigation Measures:

4.4 AIR QUALITY

Poten.

Unknown      Signif.

Will the proposal result in:

Known  
Signif

Will the proposal result in:

- a. The violation of any ambient air quality standard, a substantial contribution to an existing or projected air quality violation or exposure of sensitive receptors to substantial pollutant?
- b. The creation of objectionable smoke, ash or odors?
- c. Extensive dust generation?

Impact Discussion:  
Mitigation Measures:

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□

Community Development Project  
Environmental Guidelines  
3.5 BIOLOGICAL RESOURCES

Poten.

Known      Poten.      and      Not

jUnknown      Sagn  
SiKni

|Will the proposal result in:

FLORA

- a. Removal or disturbance of natural vegetation?
- b. A loss or disturbance to a unique, rare or threatened plant community?
- c. A reduction in the numbers or restriction in the range of any unique, rare or threatened species of plants?
- d. A reduction in the extent, diversity, or quality of native vegetation (including bush removal for fire prevention and flood control improvements)?
- e. Introduction of herbicides, pesticides, or other factors that would change or hamper the existing habitat?

FAUNA

- f. A reduction in the diversity or numbers of animals onsite?
- g. A deterioration of existing fish or wildlife habitat ?



e. Introduction of barriers to movement of any resident or migratory fish or wildlife species?

1 h. Introduction of any factors (light, fencing, noise, human presence and/or domestic animals) which could hinder the normal activities of wildlife?

Existing Plant and Animal Communities/Conditions:

Impact Discussion:

Mitigation Measures:

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□  
Community Development Project  
Environmental Guidelines  
3.6 ARCHAEOLOGICAL RESOURCES  
Poten.  
Unknown      Signitl  
Known      Poten.      and      Not  
|Will the proposal result in:      Signio  
a.      Disruption, alteration, destruction, or adverse effect on a recorded historic or archaeological site?  
b.      Disruption or removal of human remains?  
c.      Increased potential for vandalizing, or sabotaging archaeological resources?  
d.      Ground disturbances in an area with potential cultural resource sensitivity based on the location of known historic sites?

Impact Discussion:

Mitigation Measures:

3.7 HISTORIC RESOURCES

Poten.

Unknown      Signit

Known      Poten.      and      Not

Will the proposal result in:      Si nif

a.      Adverse physical or aesthetic impacts on a structure or property at least 50 years old and/or of historic or cultural significance to the community?

b.      Beneficial impacts to an historic resource by providing rehabilitation, protection, conservation, etc.?

Impact Discussion:

Mitigation Measures:

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□  
Community Development Project  
Environmental Guidelines  
3.8 NOISE

Unknown      Poten.

Known      Poten.      Signif

Signif.      Sig.      and      Not

Will the proposal result in:

a.      Long-term exposure of people to noise levels?

- b. Short-term exposure of people to noise levels?
- C. Project-generated substantial increase in the ambient noise levels for adjoining areas (either day or night)?

Impact Discussion:

Mitigation Measures:

3.9 LAND USE

Poten.

14kown      Signif.  
 Known      Poten.      and      Not

Will the proposal result in: Signif

- a. Structures and/or land use incompatible with existing land use?
- b. The induction of substantial growth or concentration of population?
- c. The extension of sewer trunk lines or access roads with capacity to serve new development beyond this proposed project?
- d. The conversion of prime agricultural land to non-agricultural use, impairment of agricultural land productivity, or conflict with agricultural preserve programrs?
- e. The loss of open space?
- f. An economic or social effect that would result in a physical change?

Impact Discussion:

Mitigation Measures:

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□

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3.10 PUBLIC FACILITIES

Poten.

Unknown      Signif

GENERAL SERVICES-

Known  
 Sign

Will the proposal result in:

- a. A need for new police protection and/or health care services?
- b. Student generation exceeding school capacity and/or facilities?
- c. Additional amounts of solid waste and wastewater generation?
- d. A need for new or altered sewer system facilities \* - - (sewer lines, lift-stations, etc.)?

Impact Discussion:

Mitigation Measures:

4.11 ENERGY

Poten.

Unknown      Signif.  
 Known      Poten.      and      Not

Will the proposal result in: Sign

- a. Substantial increase in demand, especially during peak

periods, upon existing sources of energy?

b. Requirement for the development or extension of new sources of energy?

Impact Discussion:

Mitigation Measures:

### 3.12 FIRE PROTECTION

Poten.

Unknown      Signif.

Known      Poten.      and      Not

Will the proposal result in:

Sign

a. Introduction of development into an existing high fire hazard area?

b. Project-caused fire hazard?

c. Introduction of development into an area without adequate water pressure, fire hydrants or adequate access for fire fighting?

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□

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Impact Discussion:

Mitigation Measures:

### 3.13 RECREATION

Poten.

Unknown      Signif.

Known      Poten.      and      Not

Will the proposal result in:

Signi

a. Conflict with established recreational uses of the area?

b. Substantial impact on the quality or quantity of existing recreational opportunities?

Impact Discussion:

Mitigation Measures:

### 3.14 AESTHETIC/VISUAL RESOURCES

Poten.

Unknown      Signic

Known      Poten.      and      Not

Will the proposal result in:

Signi

a. The obstruction of any view open to the public or the creation of an aesthetically offensive site open to public view?

b. Change to the visual character of an area?

c. Glare or night lighting which may affect adjoining areas?

d. Visually incompatible structures?

Impact Discussion:

Mitigation Measures:

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## Environmental Guidelines

## 3.15 HOUSING

Poten.

Unkno Stgnil

Known wu and Not

Will the proposal result in:

Signif

a. Loss of existing affordable dwellings through demolition, conversion, or removal?

b. Displacement of current residents?

Impact Discussion:

Mitigation Measures:

## 3.16 RISK OF UPSET/HAZARDOUS MATERIALS

Poten.

Unknown Signif

Known Poten. and Not

Signif. Sig. Mitig. Signif.

a. In the known history of the Project Area, have there been any past uses, storage, or discharge of hazardous materials?

Examples of hazardous materials include, but are not limited to, fuel or oil stored in underground tanks, pesticides, solvents, or other chemicals.

b. Will the proposed project involve the use, storage, or distribution of hazardous or toxic materials?

Will the proposal result in:

c. A risk of an explosion or the release of hazardous substances (including, but not limited to oil, gas, pesticides, or chemicals) in the event of an accident or upset conditions?

d. Possible interference with an emergency response plan or an emergency evacuation plan?

e. The creation of a potential public health hazard?

f. Public safety hazards?

g. The contamination of a public water supply?

Impact Discussion:

Mitigation Measures:

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APPENDIX C2: ENVIRONMENTAL DATA SHEET (EDS) for PROPOSED PROGRAM

Geographical Location:

Program Reference

No.:

Program Name:

Subprojects included in the Program:

Program Location: (besides geographic location, information about the environmental characteristics of the area likely to be affected by the and proximity of any protected areas or sites or critical natural hab

Environmental Issues: (identified or suspected in project)

Proposed Actions: (to mitigate environmental issues described above)

Justification/Rationale for Environmental Category: (presents reasons

environmental category selected)

Reporting Schedule: (Is there a separate environmental analysis? If y  
when is it due?)

Date for first draft

Current status

Remarks: (gives status of any other environmental studies, lists loca  
and local NGOs consulted.)

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Community Development Project

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APPENDIX D: ENVIRONMENTAL IMPACT ASSESSMENT

Appendix D1: General Content of an EA Report

Appendix D2: Sample TOR for EA for a new rural or agricultural  
road

Appendix D3: Sample TOR for EA of a Wastewater Collection,  
Treatment and Disposal Subproject

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Appendix DI: General Content of an EA Report

Executive Summary: It should contain a concise statement of the project  
brief project description in addition to a descripti  
findings and recommendations for environmental management.

Policy, Legal, and Administrative Framework: Describe the pertinent regulations, permitting cond  
governing environmental quality, health and safety,  
sensitive areas, land use control, etc.

Framework:

Tables should be used to list applicable standards and note which  
authorities are responsible for their application. Where there are no  
relevant local standards, suitable international norms may be used.

Project Objectives and Description: This section should describe the need for the projec  
the local and national situation and strategy. The e  
and social development goals of the locality, countr  
be described. If the project is an element of an overall development  
program in the area, then a description of the other program elements  
must be presented.

A description of the relevant parts of the project should be provided  
using maps and including the following information: location; general  
layout; size; capacity; etc.; pre-construction activities; constructi  
activities; operation and maintenance activities; and life span.

Baseline Data This section should include descriptions of the area  
study area and the relevant physical, biological and socioeconomic  
conditions. This should include any topics falling under the safeguar  
policies of the World Bank. The data presented should be relevant to  
decision making regarding project location, design, operation, and  
mitigation measures for adverse impacts. The source, accuracy and  
reliability of the data should be clearly stated.

Environmental Impacts: A prediction of the changes in the environment result from construction and operation are to be considered, and the effect on the surrounding physical, biological, and social environment, should be presented. This should include positive as well as negative impacts. Mitigation measures should be identified as well as any negative impacts for which there are no mitigative measures. This section should also identify and estimate the extent and quality available data, key data gaps, and uncertainties associated with predictions, and specific topics that do not require further attention.

Analysis of Alternatives: This section should provide a brief description of project to the project including the 'no action' alternative location, site layout, technologies, design options, and management systems.

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Community Development Project  
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The reasons why the various alternatives considered were rejected should be documented.

Environmental Management Plan: This section should include details of the management implemented during both the construction and operation project. The EMP should have three main components:

- (i) Environmental mitigation plan: Recommend feasible and cost-effective measures to prevent or reduce significant negative impacts to acceptable levels. Estimate the impacts and costs of those measures, and of the institutional and training requirements to implement them. Consider compensation to affected parties for impacts which cannot be mitigated. Prepare a management plan including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures.
- (ii) Institutional capacity and needs: Review the authority and capability of institutions and recommend steps to strengthen or expand them so that the management and monitoring plans in the environmental assessment can be implemented. The recommendations may extend to management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.
- (iii) Monitoring Plan: Prepare a detailed plan to monitor the implementation of mitigating measures and the impacts of the project during construction and operation.

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Appendix D2: Sample TOR for EA for a new rural or agricultural road

1. Background Information  
The PMT environmental specialist should include the following information

- Brief description of the major components of the proposed subproject.
- A statement of the need for it and the objectives it is intended to achieve.
- A brief history of the subproject, its current status and timetable.
- A summary of the environmental issues identified during the screening process.

## 2. Objectives and Scope of Work

Consultants are required to carry out an EA study and prepare an EA report in accordance with World Bank standards. The report should be concise and limited to significant issues. The main text should focus on findings, conclusions and recommendations, supported by summaries of the data collected and citations for any references used. Detailed or un-interpreted data are not appropriate in the main text but may be included in appendices or a separate volume. Unpublished documents used in the study should be readily available and should also be assembled in an appendix.

The report should include the following sections:

- \* Executive summary
- \* Policy, Legal, and Administrative Framework
- \* Project Objectives and Description
  - Baseline Data
- \* Environmental Impacts
- \* Analysis of Alternatives
- \* Environmental Management Plan
- \* Appendices

The general requirements for the above should be based on the World Bank Environmental Assessment at the World Bank. Specific aspects under the EA that should be addressed in the EA are described below.

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- 
- Community Development Project  
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- ### 3. Key Outputs of EA Report
- |  |   |
|--|---|
| Executive Summary:                           | A one page concise statement of the project objectives and recommendations for environmental management.  |
| Policy, Legal, and Administrative Framework: | Describe the directly pertinent regulations, permit standards that applies to the subproject. Tables cover applicable standards and note which authorities are responsible for their application. |
| Project Objectives and Description:          | This section should describe the existing road network, proposed road and its effect on economic and social conditions of the community.  |
- A physical description of subproject should be also provided, including the road location/route, type, expected volume of use and number of beneficiaries, traffic impacts, and necessary construction activities including temporary re-routing of traffic, etc.
- Engineering descriptions such as site clearance; earthworks; drainage and service ducts; road pavements; traffic safety features; etc.; should be also provided.
- Baseline Data This section should include descriptions of the area of study area and the relevant physical, biological and socioeconomic conditions.
- The key data needed for a road subproject is the biological environment (of road site and potential area of influence of the road); ecological

important or sensitive habitats, including parks or preserves; and significant natural, cultural or historic sites.

Environmental Impacts: A prediction of the changes in the environment result from construction and operation should be identified, and the effect on the surrounding physical, biological, and human systems should be presented. The engineering plans should reflect "best practice" in road alignment and construction to ensure that potential negative environmental impacts are minimized. Among the issues to be investigated are:

- Effects on biodiversity; effect on hydrology due to construction of road; impacts on land resources caused by clearing, topsoil removal (desertification), grading, filling, and paving.
  - Air pollution from asphalt plants; dust; noise from construction equipment and blasting.
  - Loss of vegetative cover; landslides; erosion; desertification.
  - Modification of natural drainage patterns; changes in groundwater elevation; flash flooding.
  - Stream and lake sedimentation; use of pesticides; fuel and oil spill water pollution from spills or accumulated contaminants on road
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surfaces.

- Interference with movements of wildlife and livestock.
- Interference with movements of people; destruction of important cultural/historic sites; effects to local economy.

Analysis of This section should provide a brief description of project Alternatives: to the project including the 'no action' alternative. A table comparing the various alternatives could be added and the reasons why the various alternatives considered were rejected should be documented.

Environmental Management Plan: This section should include details of the management implemented during both the construction and operation project. The EMP should have three main components:

(i) Environmental mitigation plan: describe feasible and cost-effective measures to be implemented to prevent or reduce significant negative impacts to acceptable levels. A management plan including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures should be also included. Good Practice Environmental Procedures should be prepared and recommended for inclusion in the subproject bidding and construction documents. Any additional measures to mitigate site-specific impacts should be developed as part of this task.

(ii) Institutional capacities and needs. this should include:

- Institutional responsibilities for management of the road
- Responsibilities for monitoring, reporting and enforcement
- Identification of any needs for capacity building, training or equipment

(iii) Environmental monitoring program: Prepare a detailed plan to



monitor the implementation of mitigating measures and the impacts of the project during construction and operation. Include in the plan an estimate of capital and operating costs and a description of other inputs (such as training and institutional strengthening) needed to conduct it.

#### 4. Consulting Team for EIA

Members of the team should consist of people with the following exper

- Environmental specialists with experience in EAs of roads
- Terrestrial ecology (wildlife, plant and conservation ecology)
- Hydrology/hydrogeology

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Appendix D3: Sample TOR for EA of a Wastewater Collection, Treatment and Disposal Subproject

#### 1. Background Information

The PMT environmental specialist should include the following informa

- Brief description of the major components of the proposed subproje
- A statement of the need for it and the objectives it is intended to
- A brief history of the subproject, its current status and timetabl
- A summary of the environmental issues identified during the screen

#### 2. Objectives and Scope of Work

Consultants are required to carry out an EA study and prepare an EA r World Bank standards. The report should be concise and limited to sig issues. The main text should focus on findings, conclusions and recom by summaries of the data collected and citations for any references u Detailed or un-interpreted data are not appropriate in the main text . appendices or a separate volume. Unpublished documents used in the as readily available and should also be assembled in an appendix.

The report should include the following sections:

- \* Executive summary
- \* Policy, Legal, and Administrative Framework
- \* Project Objectives and Description
- \* Baseline Data
- \* Environmental Impacts
- \* Analysis of Alternatives
- \* Environmental Management Plan
- \* Appendices

The general requirements for the above should be based on the World B Environmental Assessment at the World Bank. Specific aspects under th the EA that should be addressed in the EA are described below.

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#### 3. Key Outputs of EA Report

Executive Summary: A one page concise statement of the project objecti project description in addition to a description of

and recommendations for environmental management.

Policy, Legal, Describe the directly pertinent regulations, permiss and standards that applies to the subproject. Tables co Administrative applicable standards and note which authorities are Framework: application. Where there are no relevant local sta international norms may be used. Regulations should particularly cove environmental quality, pollutant discharges to surface waters and lan industrial discharges to public sewers, water reclamation and reuse, agricultural and landscape use of sludge, health and safety, protecti of sensitive areas, siting, land use control, etc.

Project Objectives This section should describe the existing wastewater and need for the proposed subproject.

Description: A physical and engineering description of the proj provided including location; general layout (e.g. distribution and/or collection systems, pumping stations, treatment works, intakes and outfalls); unit process description and diagram ,< size in terms of population and population equivalents, present and projected: number and types of connected industries; anticipated influent and effluent characteristics; pre-construction construction operation and maintenance activities; life span...

Baseline Data This section should include descriptions of the are study area and the relevant physical, biological and socioeconomic conditions.

(a) Physical environment: geology; topography; soils (general description for overall study area and details for land application sites); monthly average temperatures, rainfall and runoff characteristics; description of receiving waters (identity of streams lakes, or marine waters; annual average discharge or current data by month, chemical quality; existing discharges or withdrawals).

(b) Biological environment: rare or endangered species; sensitive habitats, including parks or preserves, significant natural sites; species of commercial importance.

(c) Sociocultural environment: present and projected population; present land use; planned development activities: community structure.

Environmental Impacts: A prediction of the changes in the environment result construction and operation should be identified, an the effect on the surrounding physical, biological, and human systems should be presented. The assessment should pay particular attention t. I1

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- The extent to which receiving water quality standards and/or other beneficial use objectives will be achieved with the proposed type and level of treatment.

- The length of stream which will be positively or negatively affect by the discharge, and the magnitude of the changes in water quality parameters.

- Projected quantitative changes in beneficial uses, such as fisheri.

recreation and tourism, and waters available for portable supply, irrigation, and industrial use.

- Sanitation and public benefits anticipated.
- Wastewater re-use for agriculture

**Analysis of Alternatives:** This section should provide a brief description of the project including the 'no action' alternative. The analysis should investigate the variety of siting and technological alternatives existing for wastewater collection, treatment and disposal and sludge management. Alternatives should be compared in terms of potential environmental impacts, land and energy requirements, capital and operating costs, reliability, suitability under local conditions, institutional training, and monitoring requirements.

A table comparing the various alternatives could be added and the reasons why the various alternatives considered were rejected should be documented.

**Environmental Management Plan:** This section should include details of the management implemented during both the construction and operation of the project. The EMP should have three main components:

- (i) Environmental mitigation plan: describe feasible and cost-effective measures to be implemented to prevent or reduce significant negative impacts to acceptable levels. In particular, the arrangements for the continued provision of wastewater collection and disposal during periods of disruption, e.g. by over-pumping, and the protection of the environment in the vicinity and downstream of the point(s) of discharge. A management plan including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures should be also included. Good Practice Environmental Procedures should be prepared and recommended for inclusion in the subproject bidding and construction documents. Any additional measures to mitigate site-specific impacts should be developed as part of this table.
- (ii) Institutional capacities and needs: this should include:
  - Institutional responsibilities for management of the road
  - Responsibilities for monitoring, reporting and enforcement
  - Identification of any needs for capacity building, training or equipment
- (iii) Environmental monitoring program: Prepare a detailed plan to monitor the implementation of mitigating measures and the

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impacts of the project during construction and operation. Include in the plan an estimate of capital and operating costs and a description of other inputs (such as training and institutional strengthening) needed to conduct it. Monitoring should ascertain compliance with agreed standards of effluent discharge, and serve as an analytical support tool for achieving optimal operational performance.

**Appendices** - Subproject location plan, to include all water sources together with any available hydrogeological information;

- Sub-project site plans - Topography and Land Use at 1:20,000;
- List of EA report preparers;
- List of References cited in the text;
- Records of inter-agency, public forum and other consultation meetings;
- Relevant Environmental data;
- Copies of study reports and other unpublished documents cited in the text.

4. Consulting Team for EIA

Members of the team should consist of people with the following exper

- Environmental specialists with experience in EAs
- Terrestrial ecology (wildlife, plant and conservation ecology)
- Hydrology/hydrogeology
- Water Quality expert

Other specialties that may be needed, depending on the nature of the :  
agronomy, land use planning, and resource economics.

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**Republic of Lebanon**  
Office of the Minister of State for Administrative Reform  
Center for Public Sector Projects and Studies  
(C.P.S.P.S.)