

SECTOR I

APPENDIX B

TOR for EIA of Flood Diversion Channel

Introduction

The Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, is undertaking a development study “Study on Comprehensive Flood Mitigation and Environmental Improvement Plan of the Lai Nullah Basin”, in close cooperation with the concerned authorities in Pakistan. One of the components of the flood mitigation plan is the construction of a flood diversion channel to divert water from the Lai Basin to the Kurang River (hereinafter referred to as ‘the Project’). The executing agency for the project is the Capital Development Authority that will undertake the project on behalf of the Federal Flood Commission, Ministry of Water and Power, Government of Pakistan.

The Project

Lai Nullah basin receives heavy rainfall of more than 500 mm during monsoon, which could lead to large flood runoff discharge. Moreover, the recent intensive urban development in Islamabad located in the upper reaches of the Lai Nullah tends to increase the peak flood runoff discharge. At the same time, the flow capacity downstream of Lai Nullah has been remarkably reduced due to illegal encroachment of buildings into the river course and pile of garbage indiscriminately dumped into the Nullah due to metrological conditions and human activities as described above, flood discharge frequently overtops Lai Nullah inflicting severe flood damages particularly in Rawalpindi city, located in the lower reaches. The July 2001 flood caused worst damages in the basin including death of 65 people and complete/partial destruction of about 3,000 houses. Public facilities such as transportation and electric power supply had also been completely paralyzed.

First Phase of the Study was completed on December 05, 2002. One of the recommendations of the Study was the construction of the flood diversion channel. The purpose of the flood diversion channel is to divert the flood in the Lai upstream of Rawalpindi so that no flood passes through the city area. Several route options were considered for this purpose. The selected route originates from Bedarwali Kas at crossing of Kashmir Highway, follows the Kashmir Highway for about 1 km, turns east and passes through the Sector H-9 along the streambed of western tributary of Tenawali Kas, turns northeast and follows the green belt between H and I Sectors, crosses the Islamabad Highway, turns south east and follows the stream bed of Ojhri Kas to the Kurang River. The proposed diversion channel will connect all the main distributaries of Lai— Bedarwali Kas, Tenawali Kas, Kanitawali Kas, and Saidpur Kas. The salient features of the proposed diversion channel are following:

Catchment Area	129 km ²
Streambed level at origin (Bedarwali Kas)	515 m
Streambed level at terminus (Kurang River)	488 m
Streambed slope	1/700
Length	9.73 km
Flood diversion capacity	1,220 m ³ /s
Excavation Volume	5,672,000 m ³

The entire route of the diversion channel passes through green belt or along the existing streambed, therefore, no land acquisition or resettlement is expected.

The diversion of flood from the Lai catchment to Kurang River will also require improvement work in the Kurang River Basin. A preliminary study has been carried out on the improvement work. It is proposed that a 200 m wide zone centered on the existing riverbed be declared as the development restriction area. A total of 6.5 km of dike walls, 4.3 km on the right bank and 2.2 km on the left bank, would be constructed to protect the three main villages on the right bank and numerous small settlements on the left bank. About 334,000 m² of land would be acquired and as many as 250 houses may have to be evacuated affecting an estimated 1,500 persons.

Project Schedule

The EIA shall be completed by the date to be decided later.

Project Area

The term 'Project Area' refers to the area where the project components will be located, where the project activities are expected to take place, and where the proposed activities' environmental impact is expected to occur. The proposed Project area for the Project is as follows:

- The entire route of the proposed diversion channel and a 500 m wide zone centered on the channel
- The stretch of Kurang river between the Rawal Dam and the Soan River and a 1 km wide zone centered on the river
- All roads and a 500 m wide zone centered on the road that will be used for major project related traffic
- Excess soil dumping site(s) and a zone of 500 m around it.

The consultants may suggest changes to the proposed Project area.

Objective of the EIA

The objective of the EIA shall be to evaluate possible impacts to the environment due to the design, construction and operation of the proposed project and recommend suitable mitigation measures to minimize or avoid these impacts resulting in a socially and environmentally acceptable project. The EIA shall be carried out in accordance with the Pakistan Environmental Protection Act, 1997, other related environmental laws, regulations, rules and guidelines. The EIA shall also meet the requirements of the JICA environmental guidelines. The consultant shall consider and document the concerns and comments of stakeholders including communities, government agencies and major relevant NGO's.

Key Environmental Issues

JICA has conducted an internal environmental screening of the Project and has determined the following as the main environmental concerns associated with the Project:

- Change in Hydrological situation of project area
- Impact on the Fauna and flora of the project area
- Traffic disruption due to project related traffic, mainly the trucks containing the excavated soil from the park to the dump sites
- Noise due to project related traffic, particularly during the night
- Change in drainage pattern due to the disposal of the excess soil

Affect on the existing flora and fauna of the excess soil dumping site(s)

Resettlement

The terms of reference is based on the above assessment, however, the proposed EIA shall not limited to these impact. The Consultants are expected to carry out their own assessment and ensure that all potential impacts of the proposed project are assessed.

Terms of Reference

The consultant shall be responsible for the following:

1. Description of the Proposed Project

The consultant shall gain a complete understanding of the proposed project and provide a description of the same in the EIA. The Consultant shall include the following information in the EIA in a non-technical language:

Design of the project components

Pre-construction activities

Construction activities

All operation activities including flood control, flood warning, and contingency plans

Use of local resources including land and water

Wastes and emissions arising from all activities

Clear understanding on the waste management aspects of the operations (equipment, activities, and human resources)

2. Review secondary information on the physical, biological and socio-economic environment of the project area.

The consultant shall collect and document all available secondary data on the physical, biological, and socioeconomic environment of the project area. This shall include:

Physical environment including topography, geology, soils, surface and groundwater resources and climate

Biological environment including flora and fauna, particularly in respect of rare or endangered species

Socioeconomic environment including settlements, socioeconomic conditions, community well-being, infrastructure and land use

Heritage aspects – including sites of cultural, archaeological or historical significance

3. Review existing environmental legislation, guidelines and standards applicable to the proposed project and assess their applicability.

The consultant shall review all relevant legislation, regulations, rules, and guidelines applicable to the proposed project and assess their applicability.

4. Baseline Surveys

For the purpose of the EIA, baseline surveys shall be undertaken of the project area. A team of experts shall undertake the baseline survey, including:

Zoologist, Botanist, Water Resources Specialist, Environment Specialist, Sociologist/Anthropologist

The scope and the expected outcome of the baseline study are as follows:

Flora

A complete knowledge of flora of the project shall be developed. The baseline survey shall:

List flora species in the Project area

Identify types of vegetation communities in the area and vegetation habitats

Identify species of economic value

Identify threatened, rare, and vulnerable species and their distribution outside the project area

Identify, and if required, evaluate present threats to flora of the project area

It is suggested that Braun-Blanquet method shall be used for vegetation survey. An appropriate number of quadrats shall be placed so that all different types of habitats are representatively surveyed. The Consultants can suggest alternate survey methods that can achieve the same objective.

A vegetation survey shall also be undertaken at the proposed excess soil dumping site(s). The survey shall:

List flora species in the area

Identify species of economic value

Identify threatened, rare, and vulnerable species and their distribution outside the Project area

Fauna

The survey shall cover the following species:

Carnivores, Small mammals, Reptiles, Birds

The baseline survey shall contain the following information:

A list of species based on field observations, sampling and secondary data

Species that are included in the IUCN Red List, protected under the wildlife laws or are believed to be under threat from different sources

Identification of habitats for key wildlife species that will be affected

Assessment of abundance and distribution of key wildlife species outside the project area

Determination of the biology, behavior, breeding season, habitat requirements and feed requirements for all relevant species on the basis of the secondary data.

Identification, and if required, evaluation of present threats to relevant species and their habitats.

Description of association of the species with the vegetation of the habitat

A wildlife survey shall also be undertaken at the proposed excess soil dumping site(s). The survey shall:

List wildlife species in the area

Identify threatened, rare, and vulnerable species and their distribution outside the Project area

Water Resources

The baseline shall contain the following information:

Identification of all perennial and non-perennial, surface and sub-surface water resources in the project area

For all water wells in the project area, discharge, water quality, history, uses, and ownership

Sources of recharge to the existing groundwater aquifers

Pre-project flood condition including inundation, and water level

Present use of the water sources

Present run-off pattern in the excess soil dumping site(s).

Appropriate qualitative and quantitative methods shall be used for the collection of the above data.

Communities

The socioeconomic survey would focus on the following:

Group A: The residents of Islamabad living in the project area along the diversion channel

Group B: Residents living along the access route or having commercial establishments along the access routes

Group C: Persons that use the proposed route of the channel for different purposes.

Group D: Persons living near the excess soil dumping site(s)

Group E: Villagers near the Kurang River

The scope of the socioeconomic survey for the above groups would be the following:

Group A: Estimated density of population in the project area

Group B: Estimated density of population in the project area

Group C: Identification, number, natures of interest, economic profile, available alternate.

Group D: General profile, dependence, if any, on the proposed disposal site.

Group E: Complete socioeconomic profile of the communities

The socioeconomic survey shall also identify any archaeological, historical and culturally sensitive resources in the project area, and describe its importance.

Traffic and Noise

The current volume of traffic and noise levels on all roads that will be used for the project. The traffic and noise survey shall be conducted over a seven-day period. Hourly traffic count, by type of traffic (cars, vans, motorcycles, bus, truck, etc.) shall be provided over a 24-hour period. Peak and average traffic noise shall be measured at 30-minute intervals during the same period.

5. GIS database and Use of GIS Techniques

All geographical information collected will be put into a GIS database. This may include, but not limited to, components of the baseline survey discussed in Item 4 above.

6. Identification and Evaluation of Environmental Impacts

All potential impacts arising from each activity of the proposed project shall be identified.

The impacts identified shall be characterized into the following:

Nature - direct or indirect

Duration - short term or long term

Timing - the stage of the operation during which the impact is expected

Likelihood - probability of occurrence

Reversible or irreversible

Consequence - severity of impact

Significance - based on the consequence and likelihood of the impact, effects on the natural ecosystem, level of concerns from relevant stakeholders and conformance with relevant legislative or statutory requirements.

Identification of impacts shall be based on understanding of the project activities, understanding of the project area environment, understanding of the relevant legislative requirements, past experience, professional judgment, expert advice and case studies of drilling operations in other environmentally sensitive areas of the world with similar conditions (physical, socioeconomic and others).

Impact identification and assessment may also consider cumulative/integrated approach to impact assessment over a long term.

The impact evaluation shall prioritize each potential impact, screen out significant impacts and form the basis for the development of the environmental mitigation and monitoring program for all significant impacts.

7. Stakeholder Consultation

The consultant, in association with the proponents, shall ensure that all the key stakeholders are consulted during various stages of the EIA process. The consultant will undertake stakeholder consultation in accordance with the Pakistan Environmental Protection Agency Guidelines. The consultation will focus the communities as identified in Item 4 above, NGOs, government agencies, and academic institutions.

8. Resettlement

The owners of the land acquired by the project will be compensated according to the Land Acquisition Act, 1894 of the Government of Pakistan (GoP) and the *Draft Resettlement Policy* of the GoP. The Consultant shall prepare a resettlement plan for the persons, legal and illegal, affected by the project. The resettlement plan should include an institutional set-up of a cell for the purpose to be established in the government. The plan should comply with the relevant laws and regulations. The resettlement policies and procedures of the World Bank and the Asian Development Bank should also be referred to. Specifically, the following activities will be undertaken:

Identification of the landowners through land records

Identification of tenants through key informant interviews, and field verification

Identification of illegal settlers in encroachments and their socioeconomic situations

Detailed quantitative and qualitative survey to determine the extent of their loss. The census should document the number of project-affected persons; nature of business/occupation; types of structures/assets; ownership documentation, if any; annual and per capita income; vulnerable households (people below the national poverty line). This information will form the basis for the compensation.

Group discussions should be organized with affected persons to assess their willingness to sell their lands and to resettle to other places.

Resettlement plans should be prepared where required by community basis. The plans will include the followings: 1) a summary of policy, legal and administrative framework regarding land acquisition and resettlement; 2) a description of the project design and the scope of resettlement; information on the impact of land acquisition and losses to project- affected persons (PAPs); 3) identification and assessment of the expected impact of the resettlement on vulnerable groups; 4) a clear definition of eligibility for compensation in the plan; 5) detailed information on the losses of affected persons; 6) a plan of the required actions for the development of the resettlement site and income restoration programs, based on the participatory input of affected persons; 7) identification of organizations that will be responsible for implementing the plan; 8) a survey of the land prices on market price, 9) a budget including the full cost of resettlement and compensation in addition to the schedule for the implementation of the plan; and 10) a detailed monitoring and evaluation system.

The resettlement plan shall include a detailed schedule of actions to be taken by the government and PAPs. The plan shall be flexible enough to ease the complaints and obtain consent for the project from PAPs.

9. Recommendations for Mitigation Measures

The consultant shall identify mitigation measures to help prevent or minimize all potential environmental impacts of the operation. These mitigation measures may include management and monitoring practices, alternative technologies, physical controls, environmental enhancement programs or compensation in monetary terms. The mitigation measures proposed shall be based on a good understanding of the sensitivity and behavior of environmental receptors within the project area (gained on the basis of the secondary data and first hand data collected in the baseline survey), past experience, case studies, legislative controls, guidelines, previous of similar projects, and expert advise.

For any residual impacts (impacts remaining after applying the recommended mitigation measures) or for impacts for which there has been a level of uncertainty in prediction such as the level of disturbance to wildlife, the consultant shall recommend monitoring measures or propose environmental enhancement programs. Type and nature of environmental enhancement programs must be in line with the physical, biological and socioeconomic needs of the area.

10. Development of an Environmental Management Plan

An Environmental Management Plan (EMP) shall be prepared for the construction phase of the project. The EMP shall:

Provide a mitigation and monitoring plan. Mitigation plan to include clear and practical steps for mitigating impacts with clear monitoring protocols.

Define roles and responsibilities of the proponent and contractors for implementation and monitoring

Prescribe requirements for communication, documentation and training during the construction

Provide a waste disposal plan

A traffic management plan

11. Preparation of a Final Report

The consultant shall prepare a final report compiling the information collected and findings of the EIA study. The table of contents shall be as follow:

Executive Summary

Scope and Methodology

Project Description

Governing Legislation and Statutory Requirements;

Description of the Baseline Environmental Conditions of the Project Area

Identification and Evaluation of Potential Environmental Impacts

Mitigation and Monitoring Requirements

Resettlement Framework

Environmental Management Plan

Documentation of the stakeholders' consultation

Three copies of the draft report shall be submitted for review. Upon approval 17 copies of the final report shall be provided to the relevant agencies.