

CHAPTER 10 – INSTITUTIONAL CAPACITY ASSESSMENT & IMPLEMENTATION ARRANGEMENTS

This chapter discusses the capacity assessment, implementation arrangements including the reporting, monitoring and training requirements for the project.

10.1 Capacity Assessment of Mizoram PWD for environment management

In Mizoram PWD (MPWD) Engineer – in – Chief (ENC) is the head of the PWD and is responsible for effective implementation of project activities. ENC is assisted by four (4) Chief Engineers (CE) and one Chief Architect. CE (Planning), CE (building), CE (highways) and CE (roads) are in-charge of their respective divisions. There are 12 Superintending Engineer (SE) working under CEs and who are assisted by 21 Executive Engineers (EEs). Thirty seven (37) Assistant Engineers (AEs) are working under EEs at different places of Mizoram who intern are assisted by sub assistant / junior engineers.

PWD presently has a Project Implementation Unit which is headed by Project Director (PD) who is a SE by designation in PWD. PD is being supported by 2nos of EE (Procurement), one EE (Environment), four AEs and a Special Land Acquisition Officer (SLAO). Out of four AEs, two are working as AE (Environment) and two is working as AE (Procurement). This PIU was setup for project preparation and implementation of ADB funded projects in Mizoram .Same PIU has been has been given additional work for project preparation and implementation of World Bank funded Mizoram State Road Project -2 (MSRP-2)

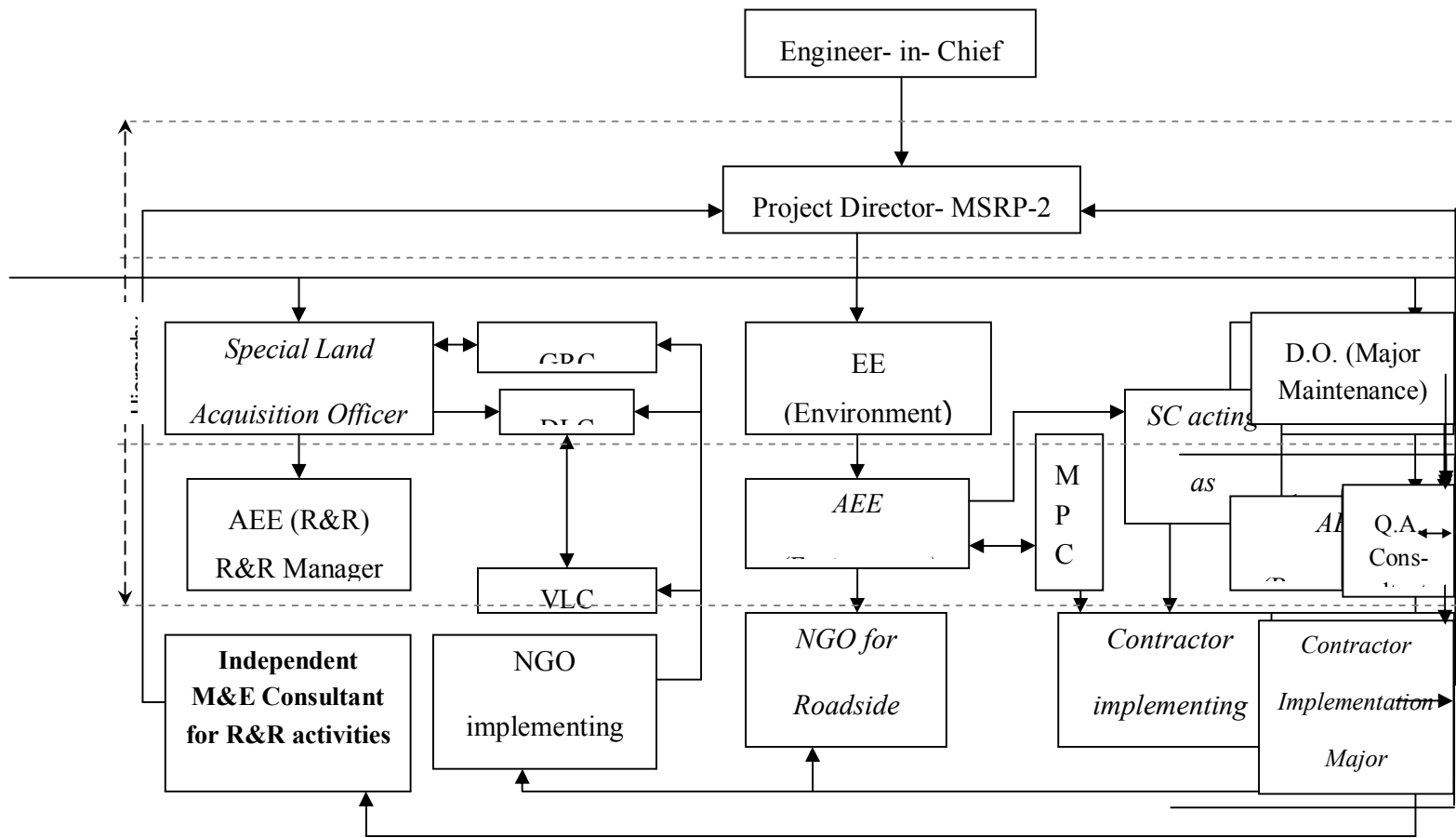
There is no Environment and Social Management Unit (ESMU) in MPWD. MSRP-1 was implemented with the help of PIU formulated only for the said project. PIU was assisted by PCC, Supervision consultant and consultant appointed for biodiversity impact assessment and agencies appointed for implementation of bioengineering techniques for slope and disposal site protection.

PWD technical team mainly consists of Engineers, out of which 95% are Civil engineers and remaining are Mechanical and Electrical Engineer. Only two Engineers have Master degree in Environment Engineering. Out of which one is working as EE (Procurement) and one as AE (Environment) in the present PIU.

10.2 INSTITUTIONAL ARRANGEMENTS IN PWD FOR IMPLEMENTATION OF MSRP-2

The MSRP-2 has been initiated and is being carried out by the Public Works Department. The PWD through the Engineer – in – Chief is responsible for the effective implementation of the project activities. To carry out the project prioritisation, and to design for the various improvements that are proposed, the PWD has appointed consultants as the Project Co-ordinating Consultants (PCC) for the project. To effectively oversee the project preparation and to ensure the timely implementation of the project, a Project Director assisted by 3 Executive Engineers, looking into the Procurement, Environment and one SLAO for Social Aspects has been designated. Each of these executive engineers and SLAO are assisted by an Assistant engineer for carrying out their responsibilities. The Environmental Engineers and SLAO of the PIU is expected to play a key role in implementation of the project including the overall control of construction activities and implementation of contracts.

During the implementation of the up-gradation component of MSRP-2, the PWD will be assisted by a Supervision Consultant (SC) procured through International Competitive Bidding. The SC will assume the role of the Engineer and ensure construction in an environmentally sound manner through their Environmental Specialist. The monitoring of construction activities by the PWD will be carried out in conjunction with the Mizoram Pollution Control Board Officials for the pollution component (Air, Water, Noise). For the implementation of R&R activities & local NGO will be procured. Figure 10-1 shows the existing organizational arrangements for the implementation of the MSRP-2



KEY		
MSRP= Mizoram State Roads Project	GRC= Grievance Redressal Committee	DO -Divisional Officer
EE=Executive Engineer	DLC=District Level Committee	QA - Quality Assurance
AEE=Assistant Executive Engineer	SC=Supervision Consultant	
Acc. Off.=Accounts Officer	VLC=Village Level Committee	
MPCB=Mizoram Pollution Control Board	M&E=Monitoring & Evaluation	

10.3 Assessment of Gap in Institutional arrangements in PWD for implementation of MSRP-2

Following gaps have been identified in institutional arrangements in the MPWD for preparation of safeguard documents and implementation of environment component of the safeguard MSRP-2-

1. Member of the present PIU is controlling MSRP-2 as well as ADB funded road development in Mizoram. Considering the volume of the MSRP-2 (Group-1&2) and staff strength in PIU, member of the PIU will not be able to do justice to the World Bank funded MSRP-2 project. There is need for a separate PIU and separate Environment Management team (Environment Cell) for implementation of environmental components of the project.
2. Environment team of PIU consists of one EE (Environment) and two AEs (Environment). Staff strength of the PIU environment team are not sufficient to coordinate the implementation of EMP in group-1 and group-2 road.
3. Present environment team of PIU is lacking proper qualified engineer having proper qualification of environmental Science / engineering (except one)
4. Present environment team of PIU is lacking in experience of preparation of environmental documents and implementation of EMP in road construction projects.
5. Members of environment team of PIU are not competent to implement the EMP as they are lacking appropriate training and exposure.
6. MPWD does not have any Environment cell for monitoring implementation of EMPs in developmental projects.

10.4 Recommendation and suggestions to minimize the gap

10.4.1 for MSRP-2 Project

1. Separate PIU and environment cell for MSRP-2 project
2. PIU should have a environment cell having competent engineers to implement environment health and safety aspect of the project. Members of the cell should

be trained on preparation of environmental documents and implementation of EMP in the projects

3. Environment cell of PIU should have following staffs-
 - One Executive Engineer
 - One AE for Group-1 roads (one at site and one in PIU office)
 - One AEs for Group-2 road
 - 2 JEE for Group-1 road (one at site and one in PIU office)
 - 2 JEE for Group-2 road (one at site and one in PIU office) (Refer figure 6-2)

10.4.2 Long term capacity enhancement of MPWD

1. Establishment of an Environment and Social Management Unit (ESMU) in MPWD
2. Environment and Social Management Unit in MPWD will coordinate the preparation of Environment, Health and safety related documents and implementation of the same in all developmental project
3. The ESMU will develop the concept of sustainable development and implement the project in environmental friendly manner.
4. SE (Planning) will be the head of the ESMU, who will be assisted by an Executive Engineer and Social development specialist or Social Officer. Executive Engineer and Social development specialist or Social Officer will be assisted by AEs.

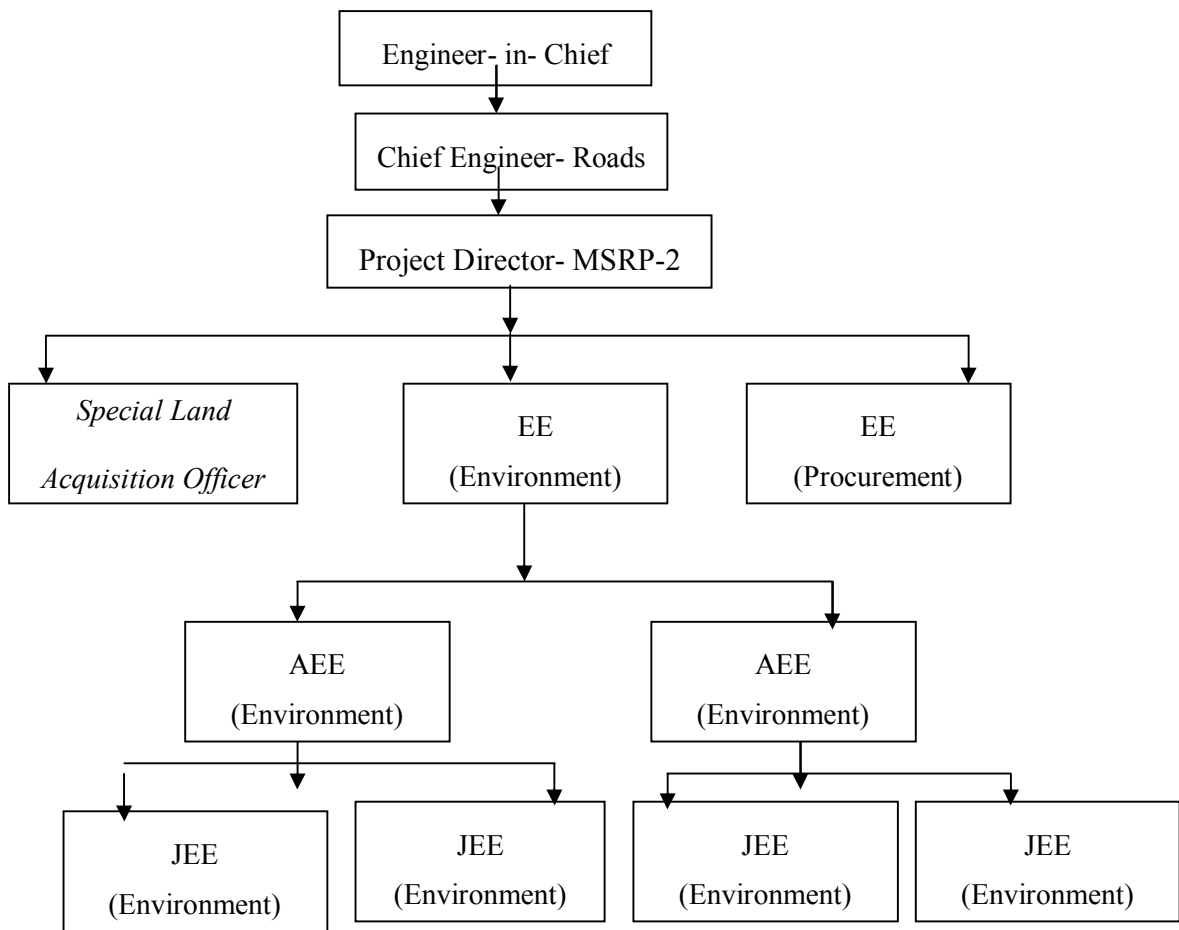


Fig 10.2 Proposed Environment cell in PIU for MSRP-2

10.5 Task of Environment team

10.5.1 Environment Cell

The implementation of the environmental mitigation measures would be the responsibility of the Environmental Cell of the PIU,PWD, comprising the Executive Engineer (Environment) assisted by an Assistant Engineer. With appropriate training and exposure, the existing set-up should become competent to implement the EMP. The set-up may be further modified and strengthened, as the project is implemented.

The Environmental Cell will be assigned with specific responsibilities with regard to:

- Monitoring progress of the project, on the implementation of the environmental provisions, as per planned schedule of activities.
- Supervising implementation of mitigation measures by the contractor along the upgradation routes.
- Assist the PWD Engineers at site by providing appropriate environmental advice, and developing appropriate mitigation measures, along the maintenance routes.
- Documenting the experience in the implementation of the environmental process.
- In collaboration with the Environmental Specialist of the Supervision Consultant, prepare and conduct training materials for the Public Works Department by incorporating the experience of implementation processes and other issues concerning protection of the environment.
- Maintaining ongoing interfaces with the other relevant institutions in the context of the works.

The Environmental Cell will ensure that all the approved mitigation measures would be implemented in their spirit and by letters and that it will prepare regular progress reports for transmission to the regulatory authority by certifying that the relevant environmental measures have been complied with during project implementation.

The specific roles and responsibilities of the Executive Engineer (Environment) and the Assistant Engineer (Environment) are presented in the following section.

Specific task for the members of the PIU environment cell has been discussed in **Annexure 7** of this report

10.5.2 Project Co-ordinating Consultants

The Project Co-ordinating Consultants have been appointed to assist the PWD during project preparation. The Environmental and Social experts of the PCC have been responsible for the preparation of EA as per the ToR approved by the World Bank. The major inputs of the PCC will end with project appraisal. However, their specialist technical inputs will continue for a limited period within the project duration.

10.5.3 Construction Supervision Consultants

The Construction Supervision Consultants, to be selected through ICB, are expected to have the in-house capacity to advise on and supervise the implementation of the EMP including making the decisions regarding applicability of enhancement design options and any modifications, if needed, the appropriate landscape section to be applied etc. For this purpose, the SC will employ a Senior Environmental Specialist and two full time environmental specialist. The prime duty of the Environmental Specialist would be to supervise the implementation of the EMP by the Contractors and to ensure that the day-to-day construction activities are carried out in an environmentally sound and sustainable basis. The scope includes development of environmental procedures and good construction practices, development and delivery of training programmes etc.

Specific task of Environmental Specialist – Supervision Consultant has been discussed in **Annexure 7** of this report

10.5.4 Non Government Organisation

As part of the project implementation, the MSRP-2 plans to undertake plantation and maintenance and protection of the vegetation along the project roads (in addition to the compensatory afforestation that will be proposed by the Forest Department, Government of Mizoram). The maintenance of these plantations would be entrusted to an NGO. The environmental responsibilities of the NGO include the maintenance of roadside plantations and conservation of biodiversity.

The specific roles and responsibilities of the NGO has been discussed in **Annexure 7** of this report .

10.5.5 Contractor

The execution of the works will be responsibility of the contractor. It is expected that the environmental measures will also be implemented by the same contractor who executes the road works. This will ensure that the construction of the road and mitigation/enhancement designs will progress smoothly and efficiently. It follows that the contractor has enough environmental/social expertise to incorporate environmentally-sensitised construction practices. As executioners of the EMPs, the contractors are expected to follow the letter and spirit of the specifications. Though each contractor will have a set-up for executing works specified in the EMP, it is expected that a certain portion of its staff will have enough environmental awareness necessary for the successful completion of the works entrusted.

The Contractors too will have to employ an Environmental Engineer and will form an EHS committee. The best situation would be the use of Civil Engineers with relevant implementation experience of highway projects and with an understanding of the environmental issues.

10.6 Training for Capacity enhancement

10.6.1 Need for training

To enable the PWD in integrating the social and environmental issues in its day-to-day operation and in internalising the environmental and social issues in the existing and future road development projects training is conceived. To achieve this goal, the MPWD, needs training on road development and environment management and the effective implementation of the environmental issues.

10.6.2 Targets of proposed training

The training programme will equip the environmental personnel of MPWD to implement and supervise the EMP and expose senior members of the PWD to environmental and social issues associated with the highway projects. Such a group of senior staff can then be given the responsibility of active dissemination of the culture of environmental/social consciousness and ethics within the rest of the organisation.

Once the environmental staff of MPWD have received training and have gained experience through the implementation of the EMP, they should be ready to resume leadership role within the MPWD in providing training and in implementing future projects. In order to disseminate environmental experience gained by the MPWD, each staff would be required to maintain good records and prepare dissemination notes on specific issues and problems encountered and resolved, and how the experience gained could be integrated in future road projects. Competent members of the MPWD should be offered additional environmental training and should be encouraged to train other staff.

10.6.3 Proposed training components

The environmental training aspects of the environmental personnel of PWD should encompass the following:

- Understanding of the relevant environmental regulations and their application to the project.
- Environmental management practices in hill roads upgradation and maintenance
- Main impacts of the project on the environment.
- Mitigation measures as given in the EMP and their implementation through incorporation in the design, construction supervision and monitoring.
- Duties and responsibilities of the Contractors, Supervisor Engineers, Supervision Consultants and the MPWD.
- Public/community consultation and its role during the implementation of the project.
- Liaison with other departments and relevant agencies (such as Forestry).
- Supervision of the implementation of the EMP and social issues during construction and operation. Resolution of environmental and social issues and their reporting.

- Monitoring during construction and operation.
- Weekly, monthly and quarterly report preparations and submission.
- Preparation of dissemination notes, holding of workshops, and training of other staff in MPWD.

The training modules to be worked out for the project need to be of relevance to the specific context of the roads in Mizoram, focussing on the following issues:

- Conservation of biodiversity
- Slope stability and vulnerability to landslides
- Siting criteria for identification of dumping sites
- Harnessing water resources, including rain water harvesting
- Concepts of bio-engineering and application of bio-engineering techniques for slope protection

The training modules suggested in Table 10.1 incorporate the training as envisaged for the entire project including both social and environmental components. The details of training for the social aspects is given in the RAP

Table 10.1: Proposed Training Modules for Environmental Management

No.	Training Recipients	Mode of Training	Environmental & Social Aspects to be covered training module	Training Conducting Agency
Module – I	Environmental staff of “Environmental and Social Management Cell”. Associated NGOs in implementation and staff associated with construction supervision	Lecture System Workshops & Presentation	Environmental overview: <ul style="list-style-type: none"> • Key issues • Methodology • Public Consultation • Value Addition 	External trainers, Environmental Specialist, Supervision consultant
Module – II	Members of PWD staff involved in supervising up-gradation corridor, NGO representatives;	Lectures; Group discussions	Mizoram State Road Project: <ul style="list-style-type: none"> • Environmental Impact Assessment • Social Impact Assessment • Environmental Management Plan • Slope protection 	External Trainers; Environmental Specialist, Supervision consultant
Module - III	Contractors’ representatives; NGO representatives; Supervision Consultants’ representatives; Members of PWD staff involved in	Lectures and Presentations	Institutional Framework for Implementation of MSRP: <ul style="list-style-type: none"> • The role of the PWD • The responsibilities of the 	Specialist trainers, Environmental Specialist, Supervision consultant,

No.	Training Recipients	Mode of Training	Environmental & Social Aspects to be covered training module	Training Conducting Agency
	supervising up-gradation corridor,		Supervision Consultant and the NGO <ul style="list-style-type: none"> • Reporting requirements • Contractual Obligations and Environmental Protection 	PWD
Module – IV	Members of PWD staff involved in supervising Major Maintenance, Upgradation; NGO staff implementing the R&IPDP; District Officials & Members of special committees – MVAC and GRC	Presentations; Site Visits; Demonstration Sessions	Special Issues in MSRP-2: <ul style="list-style-type: none"> • Bio-Diversity Assessment and Conservation • Geo-morphological Assessment and Slope Protection • Consultation and Counselling • Income generation and Economic Rehabilitation • Preparation of Micro-plans 	Specialist Trainers and PCC Consultants
Module – V	Members of the PWD; Selected Officers of the line Departments such as Forests, Officials of the Pollution Control Board, Mining and Geology department	Lectures; Group Discussions	Improved Co-ordination with other departments: <ul style="list-style-type: none"> • Overview of the MSRP • Environmental & Social Impacts of the proposed improvements • Statutory permissions – procedural requirements • Co-operation with the Forests Department • Co-operation with the Revenue Department 	External agency.

No.	Training Recipients	Mode of Training	Environmental & Social Aspects to be covered training module	Training Conducting Agency
Module – VI	Members of PWD involved in MSRP	Lectures; Demonstration sessions; Group Discussions	Long-term issues in Planning Roads development in Mizoram <ul style="list-style-type: none"> • Environmental & Social Assessment Methodology • Preparation of EMP & RAP • Stability of Hill Roads and mitigation measures • Conserving bio-diversity along roadside <ul style="list-style-type: none"> • Highway related diseases and AIDS Consultation tools and techniques	External Agency

10.7 Reporting system

Reporting system provides the necessary feedback for project management to ensure quality of the works and that the program is on schedule. The rationale for a reporting system is based on accountability to ensure that the measures proposed as part of the Environmental Management Plan get implemented in the project.

The reporting system will operate linearly with the contractor reporting to the Supervision Consultant, who in turn shall report to the Project Director’s office. All reporting by the contractor and Supervision Consultant shall be on a monthly and quarterly basis. The PWD shall be responsible for preparing targets for each of the identified EMP activities. All subsequent reporting by the contractor shall be monitored as per these targets set by the PWD before the contractors move on to the site. The reporting by the Contractor will be a monthly report like report of progress on construction and will form the basis for monitoring by the PWD, either by its own Environmental Engineer/s or the Environmental Specialist hired by the Supervision Consultant. The monitoring and the subsequent reporting would include:

- Monitoring of facilities at construction camps
- Monitoring of air, noise, soil and water parameters including silt load
- Monitoring of survival rate of trees planted on valley slopes
- Monitoring of cleaning of drains and water bodies
- Monitoring for biodiversity – protection measures during construction phase
- Monitoring of bio-engineering measures suggested

10.8 Environmental Monitoring Plan

The purpose of the monitoring programme is to ensure that the envisaged purpose of the project are achieved and result in desired benefits to the target population. To ensure the effective implementation of the EMP, it is essential that an effective monitoring programme be designed and carried out. The environmental monitoring programme provides such information on which management decision may be taken during construction and operational phases. It provides basis for evaluating the efficiency of mitigation and enhancement measures and suggest further actions that need to be taken to achieve the desired effect.

The monitoring includes:

- Visual observations;
- Selection of environmental parameters at specific locations;
- Sampling and regular testing of these parameters.

Desired Monitoring and Reporting Process and Responsibilities has been discussed in table 10.2. The details of the various monitoring indicators and their thresholds will be described in the Environmental Management Plan.

Table 10.2: Desired Monitoring and Reporting Process and Responsibilities

Format No.	Item	Timing	Supervision Consultant /Local PWD		PWD Head Office		World Bank (WB)
			Supervision	Reporting to PWD Head Office	Oversee/ Field Compliance Monitoring	Report to WB	Desired Supervision
CONTRACTOR MOBILISATION AND SITE CLEARANCE							
	Reporting by contractor to SC for dumping locations	Before start of construction	As required	As required		Quarterly	Half yearly
CONSTRUCTION PHASE							
	Monitoring of construction site and construction camp	Before start of work		Quarterly		Quarterly	Half yearly
	Target sheet for Pollution Monitoring		As required	After Monitoring		After Monitoring	Half yearly
	Target sheet for Tree cutting		Monthly	Quarterly	Quarterly	Half yearly	Yearly
	Target sheet for monitoring of cleaning culvert openings		Monthly	Monthly	Quarterly	Half yearly	Yearly
	Target sheet for monitoring bio-diversity	Before start of work	Quarterly	Quarterly	As required	Half yearly	Yearly
OPERATION PHASE							
	Target sheet for roadside plantation		MPWD		Quarterly	After monitoring	Once completing plantation
	Target sheet for monitoring of cleaning culverts		MPWD		Quarterly	After monitoring	Twice operation phase

Format No.	Item	Timing	Supervision Consultant /Local PWD		PWD Head Office		World Bank (WB)
			Supervision	Reporting to PWD Head Office	Oversee/ Field Compliance Monitoring	Report to WB	Design Supervision
	Monitoring of Landslide clearance	As required	MPWD		As required	After Monitoring	Twice operation phase

10.9 Environmental Budget

The Environmental Assessment and its incorporation into the designs and the contract documents will be taken up at all stages of the preparation and will continue during the implementation of the project. As part of good engineering practices in the project, there have been several measures as slope protection , erosion prevention, rehabilitation of borrow areas, safety, signage, provision of temporary drains, etc the costs for which will be included in the engineering costs. Therefore, these items of costs will not be included in the EMP budget. Only those items not covered under budgets for construction and RAP are costed in the EMP budget. The EMP costs will include:

- Mitigation / Enhancement Costs (including purpose-designed protection for flora, designs of waterfalls as picnic spots, provision of barbed wire-fencing of important areas, etc.)
- Monitoring Costs
- Training cost

The summary of approximate budget for the Environmental management costs for the MSRP-2 is 45,500,000 (INR) which are presented in the Table 10.3.

Table 10.3: Environmental Budget – MSRP-2 (in INR)

Budget Head	Upgradation / Improvement
Mitigation/Enhancement	40,000,000
Monitoring	3,500,000
Training of MPWD	2,000,000
Total	45,500,000