

# Environmental Monitoring Report

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Bi-annual Environmental Monitoring Report  
August 2013

## PAK: Flood Emergency Reconstruction Project

Prepared by National Highways Authority for the Asian Development Bank.

## **NOTES**

- (i) The fiscal year (FY) of the Government of the Islamic Republic of Pakistan and its agencies ends on 30 June.
- (ii) In this report, "\$" refers to US dollars.

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# **Bi-annual Environmental Monitoring Report**

Project Number: 2742/2743- PAK

## **PAKISTAN**

# **Flood Emergency Reconstruction Projects (FERP) Reconstruction and Rehabilitation of Roads**

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Reporting Period: January 2013 – June 2013

Implementation Agency: National Highway Authority (NHA)

ISLAMABAD, PAKISTAN

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**Asian Development Bank**

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## **ABBREVIATIONS**

<b>ADB</b>	Asian Development Bank
<b>DNA</b>	Damage and Need Assessment
<b>dB</b>	Decibel
<b>EIA</b>	Environmental Impact Assessment
<b>EMP</b>	Environmental Management Plan
<b>EMMP</b>	Environmental Management Monitoring Plan
<b>ES</b>	Environment Specialist
<b>FERP</b>	Flood Emergency Reconstruction Project
<b>GoP</b>	Government of the Pakistan
<b>HSE</b>	Health Safety and Environment
<b>NEQS</b>	National Environmental Quality Standards
<b>PMC</b>	Project Management Consultants
<b>PMU</b>	Project Management Unit
<b>NHA</b>	National Highway Authority
<b>REA</b>	Rapid Environmental Assessment
<b>SPS</b>	Safe guard Policy Statement
<b>SSEMP</b>	Site Specific Environmental Management Plan
<b>IEE</b>	Initial Environmental Examination
<b>EARF</b>	Environmental Assessment and Review Frame work

## **PART -I**

### **INTRODUCTION**

#### **1.0 Background**

1. Pakistan faced unprecedented flooding in 2010 affecting an estimated 22 Million people along with severe damage to infrastructure across the whole country. The incident caused extensive human suffering due to displacement, food shortage, interruption to economic livelihoods, and disease outbreaks. The Asian Development Bank (ADB) is supporting the efforts of the Government of Pakistan (GoP) in various sectors. The assistance is being provided through the Flood Emergency Reconstruction Project (FERP). FERP has three components; Irrigation component in Sindh (Sindh Irrigation Department), roads network in Sindh (Sindh Works and Services Department) and National Highway Component (NHA: National Highway Authority). This report is for National Highway Component.

2. The Flood Emergency Reconstruction Project (FERP) was funded and administered under an emergency assistance from Asian Development Bank (ADB). Rapid Environmental Assessment (REA) Checklists given in the ADB's Environmental Assessment and Review Framework (EARF) was completed for each subproject to classify the categorization of each road.

3. REA Checklists were filled for all the subprojects and the projects were categorized as B and C (none of the project was categorized as A). All the projects are disclosed on NHA's website.

4. The Flood Emergency Reconstructions project is based upon the reconstruction and rehabilitation of the destruction caused by the destructive flood of 2010 in Monsoon. The activities were carried out for the following sectors of the roads and bridges

Sr. No.	Section/ Project	Route No.	Project Category	Requirement (Local/country's)	Requirement (ADB SPS 2009)	Status	Remarks
1	Chakdara - Kalam	N-95	B	EIA	REA Checklist, IEE, EMP, SSEMP	REA Checklist has been prepared and the project is categorized ADB has approved IEE EPA KP has approved the EIA EMP was made part of the bidding document Contractor/NHA is required to submit the SSEMP before start of work	The civil work is yet to start
2	Chakdara Bridge (Old & New) including protection works	N-45	B	Environmental Clearance	REA Checklist, IEE, EMP, SSEMP, Environment Audit	REA Checklist has been prepared and the project is categorized ADB has approved IEE EPA KP has approved the EIA EMP was made part of the bidding document Environment Audit was carried out	Environment Audit indicated the areas required improvement, onsite training was provided and compliance was ensured to ADB.
3	Kohala - Muzaffarabad (Excluding new Bridges)	S-2	C	-----	REA Checklist, EMP	REA Checklist has been prepared and the project is categorized EMP has been prepared and included in bidding document	Pakistan's Environment law does not lay down any requirement of prior approval for such projects, however incase pollution is caused and NEQS are breached then EPA may take



Sr. No.	Section/ Project	Route No.	Project Category	Requirement (Local/country's)	Requirement (ADB SPS)	Status	Remarks
							action
4	Pano Aqil - Dherki	N-5	C	-----	REA Checklist, EMP	REA Checklist has been prepared and the project is categorized EMP has been prepared and included in bidding document	Pakistan's Environment law does not lay down any requirement of prior approval for such projects, however incase pollution is caused and NEQS are breached then EPA may take action
5	Ratodero-Qubo Saeed Khan	M-8	C	-----	EMP	REA Checklist has been prepared and the project is categorized EMP has been prepared and included in bidding document	
6	Multan - Muzaffar Ghar - D.G. Khan - Bewata (Vedor Nullah), excluding new bridge	N-70	C	-----	REA Checklist, EMP	REA Checklist has been prepared and the project is categorized EMP has been prepared and included in bidding document	The subproject does not include any new or major construction of bridge and causeways
7	Mansehra - Naran - Jalkhad - Chilas including bridges	N-15	C	-----	REA Checklist, EMP	REA Checklist has been prepared and the project is categorized EMP has been prepared and included in bidding document	No new alignment and bridge construction is involved

Sr. No.	Section/ Project	Route No.	Project Category	Requirement (Local/country's)	Requirement (ADB SPS)	Status	Remarks
8	Jacobabad - Dera Allah Yar	N-65	C	-----	REA Checklist, EMP	REA Checklist has been prepared and the project is categorized EMP has been prepared and included in bidding document	

**Table 1: Projects with Present Status**

5. So far, eight road projects (besides retroactive financing) are undertaken. REA checklists were completed for each project and projects were categorized. EMP for each specific project was prepared and included in relevant bidding documents. Environmental approvals were obtained from ADB as well as from the relevant EPA (Category B projects; N-45 and N-95). Site Specific Environmental Management Plan (SSEMP) was prepared for category “B” project (N-45: Chakdara Bridge). Environmental Audit was carried out for category “B” project (N-45); non-compliances were rectified and on site training was provided to the staff/workers. The Supervision Consultants (SC) and NHA are responsible for the environmental monitoring of the subprojects. Environmental monitoring checklists based upon the EMP have been developed and SC’s Environment Specialist conducts monthly monitoring of all subprojects. All the projects were disclosed on NHA’s website.

6. Under the FERP (NHA Component) retroactive financing was also required, as government had already spent money on rehabilitation of dilapidated infrastructure. All the subprojects under retroactive financing were categorized as “C” as per the sample environmental assessment. All the projects were carried out along the existing alignment ADB agreed to provide retroactive financing under the condition that no subproject would cause any significant environmental impact. Further to the above all the projects were visited and verified for compliance of ADB and EARF (REA Checklist were filled for each subproject and a report on retroactive project was submitted to ADB).

## **1.1 Detailed Activities of the Project:**

### **1.1.1. Detailed Activities for Category B Projects**

#### **Chakdara – Kalam N-95**

7. The ADB requires, REA Checklist, IEE, EMP, SSEMP for this project. The project lies in category B according to the REA Checklist. An IEE was prepared and approved by ADB. As per PEPA 1997, the project requires an EIA to be submitted to EPA Khyber Pakhtunkhwa (KP). An EIA was submitted upon which, an approval was granted by EPA KP. EMP has been made the part of the contract. Site Specific Environmental Management Program (SSEMP) has been prepared. The complete work is divided into six packages. The civil work has started on package one and two only (Commencement date, Completion Date). ADB environment specialist (TA) has made a due diligence visit and has ensured implementation of SSEMP.

#### **Chakdara Bridge (Old & New) including protection works N-45**

8. The project lies in category B according to the REA Checklist. An IEE was prepared and approved by ADB. EPA KP has accorded an environmental clearance. EMP has been made the part of the contract. Site Specific Environmental Management Program (SSEMP) has been prepared. The civil work has started (Commencement date 30-05-12, Completion Date 29-11-13). The construction progress is 46%. Environmental Audit was carried out. Environment Audit indicated the areas required improvement, onsite training was provided and compliance was ensured to SSEMP.

### **1.1.2 Detailed Activities for Category C Projects**

#### **Multan - Muzaffar Ghar - D.G. Khan - Bewata (Vedor Nullah), excluding new bridge N-70**

9. REA checklist has categorized this project as “C”. An EMP has been prepared for this project. The EMP is included in the bidding/contract document. The

subproject is the construction of causeway on the existing alignment. The construction has started (Commencement date 21-01-13, Completion Date 20-10-13)

#### **Kohala - Muzaffarabad (Excluding new Bridges) S-2**

10. REA checklist has categorized this project as “C”. An EMP has been prepared to fulfill ADB requirement. The EMP is included in the bidding/contract document. The subproject is the construction/rehabilitation of road (Commencement date 30-05-12, Completion Date 29-08-13; the progress is 60 %) and two bridges (Commencement date 31-05-13, Completion Date 30-05-14) on the existing alignment. The construction has started. Environmental Audit was carried out during construction (after six months). Environment Audit indicated the areas required improvement, onsite training was provided and compliance was ensured.

#### **Pano Aqil – Dherki N-5**

11. REA checklist has categorized this project as “C”. An EMP has been prepared for this project. The EMP is included in the bidding/contract document. The subproject is the construction of road on the existing alignment. The road construction/rehabilitation is divided into 3 sections (Sarhad Bypass-Dherki: 1 Package, Hala-Moro: 3 packages, Ranipur-Rohri: 2 Packages). The construction has started on Sarhad Bypass-Dherki (The contract commenced on 30-05-12. The construction progress is around 35%). The construction is yet to start on the other sections.

#### **Ratodero-Qubo Saeed Khan M-8**

12. REA checklist has categorized this project as “C”. An EMP has been prepared for this project. The EMP is included in the bidding/contract document. The subproject is the construction of road on the existing alignment. The construction has been completed (Commencement date: 30-04-2012, Completion Date: 29-04-2013).

#### **Mansehra - Naran - Jalkhad - Chilas including bridges N-15**

13. REA checklist has categorized this project as “C”. An EMP has been prepared. The EMP is included in the bidding/contract document. The subproject is the construction/rehabilitation of retaining walls and road on the existing

alignment. The construction has started. The construction progress is around 11% (Commencement date: 21-01-2013, Completion Date: 20-04-2014).

#### **Jacobabad – Dera Allah Yar N-65**

14. REA checklist has categorized this project as “C”. An EMP has been prepared. The EMP is included in the bidding/contract document. The subproject is the construction/rehabilitation of road on the existing alignment. The construction has started. The construction progress is around 3% (Commencement date: 01-05-2013, Completion Date: 30-04-2014).

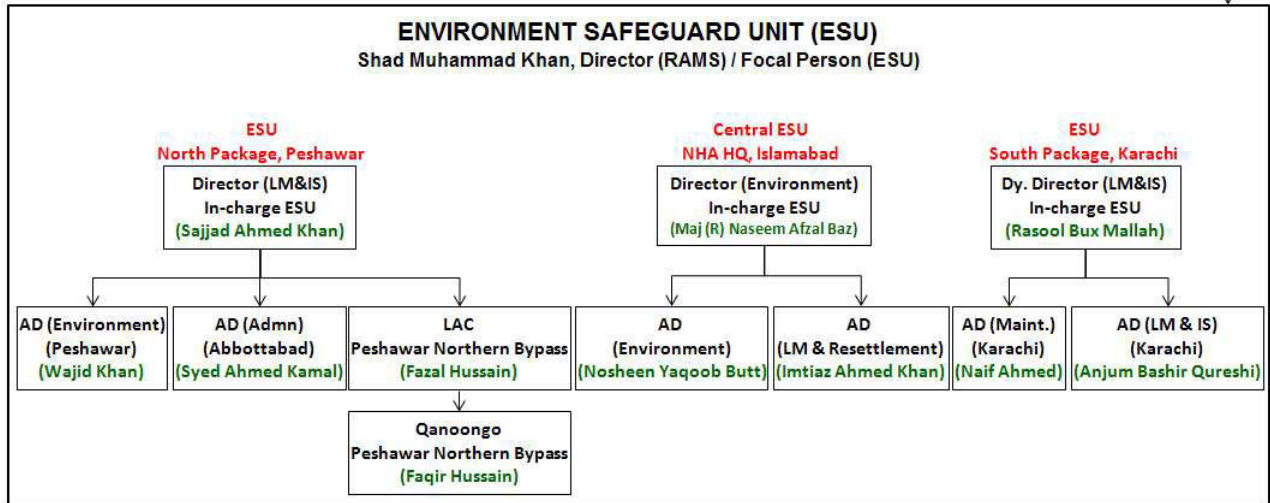
### **1.2 Project Organization and Environmental Management Team**

15. The National High Way Authority (NHA) is the implementation agency (IA) for roads and bridges rehabilitation component of FERP, the IA is responsible to ensure the implementation of the environmental management and monitoring requirements and procedures for FERP under the overall guidance of Environmental Assessment and Review Framework (EARF). The objective of the EARF is to establish systems and functions that will ensure that conditionality are built into each initiative at its design stage such that through reconstruction, improved and environmentally sustainable structures are built that have better resistance to natural calamities, particularly flood. EARF also requires ensuring that all the environmental mitigation measures proposed for the design phase are incorporated in the design and included in the contract document.

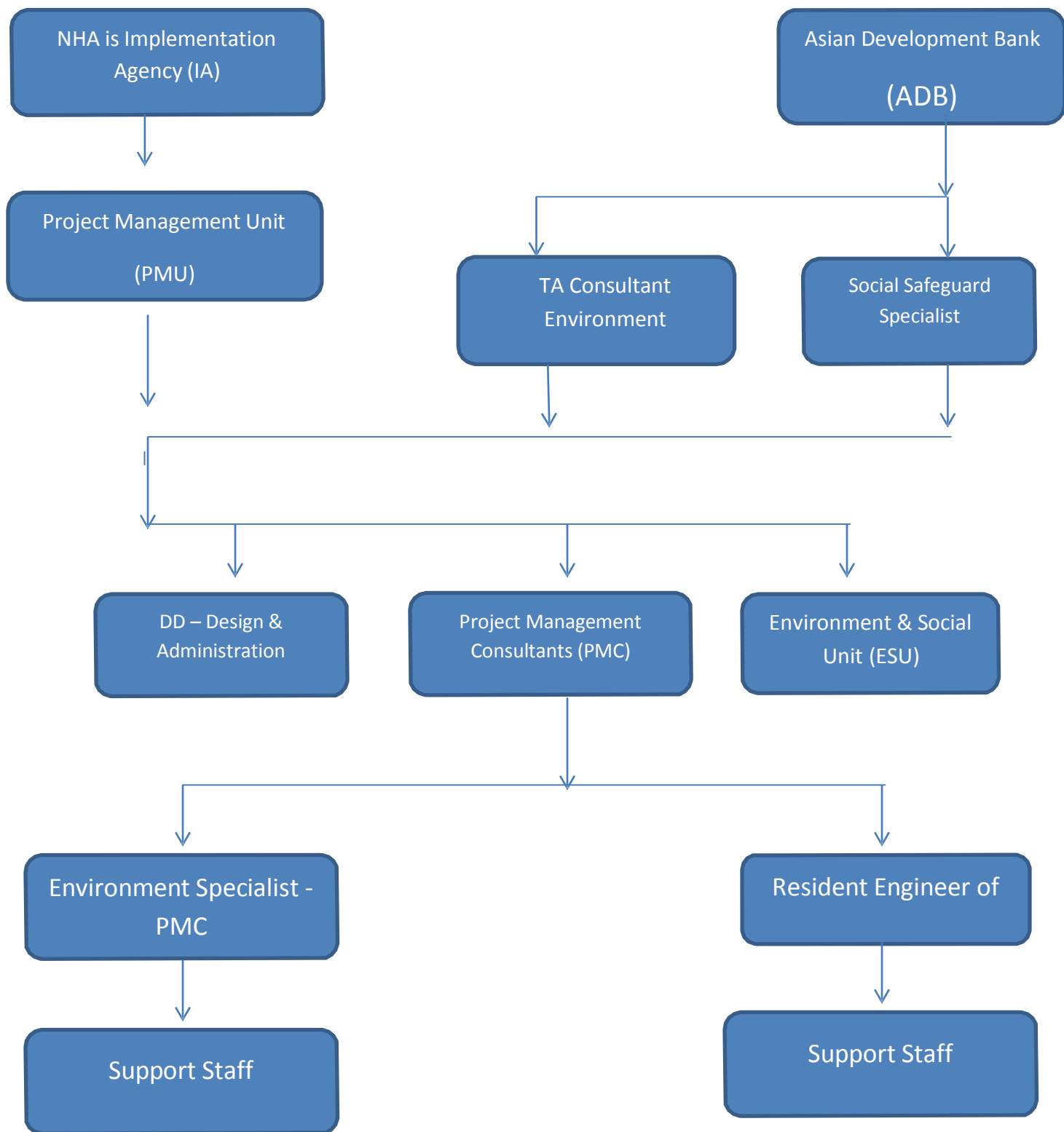
16. NHA has established an Environmental and Social Unit (ESU). The ESU is responsible for environmental and social review based on the selection criteria, preparation, submission, implementation and environmental management & monitoring and evaluation of all the subprojects. ADB has provided technical to ESU through providing environment specialist. TA Environment Specialist is responsible for explaining policy requirements to ESU, helping them to meet those requirements, building capacity, and monitoring implementation of agreed safeguards.

17. Moreover, IA has engaged a Project Management Consultants (PMC) team to strengthen their procurement capacity, support and help monitor design and construction supervision services, and support the preparation, implementation, monitoring and compliance of environmental safeguard action plans including consultation and social and gender analysis as well as implementation and monitoring of gender action plans.

18. The Project Management Consultants has established their offices on each construction site (where the contractor has mobilized). The Resident Engineers at the site of PMC has hired one Environment Specialist on intermittent basis who worked with the help of support staff.



**Figure 1: Environmental and Social Unit (ESU)**



**Figure 2: Organizational Chart for Implementation of Environmental Management Plan**

### **1.3 Relationship with the Contractor and the Engineer**

19. The Resident Engineer (RE) of the project has a role of the Project Manager under the construction contracts. Environment Assistant is on board for all the all the subprojects under PMC. A good working relationship was maintained among the contractor and the Engineer during the execution of the project. Contractor's representatives were informed about the Environmental Management and Monitoring activities. During camp site inspection areas of improvement were mutually discussed with Contractor's representatives. EMP compliance checklist and status of compliance in monthly progress were developed by environment assistant and shared with contractors. The environmental checklist is also shared with the TA environment specialist who review and endorsed the results and provide necessary guidance and training to the contractors.



## **Part II Environmental Monitoring**

### **2.1 Environmental Monitoring Summary**

20. The environmental monitoring was carried out by using monthly EMP compliance checklists as well as through visual observations to get information on the actual nature and extent of key impacts and the effectiveness on mitigation and enhancement measures outlined in the Environmental Management Plans (EMP's) and agreed by the Contractors under the contracts. The EMP compliance checklists have covered all the aspects mentioned in the project specific EMPs for each project. The monitoring of noise and vibration, surface and groundwater, air quality, flora and fauna, campsites, top soil erosion, cultural heritage and safety provisions are discussed in this section. There are two category B projects; Chakdara Bridge (N-45) and Chakdara – Kalam Road (N-95). Environmental approval has been obtained for both the projects and monthly monitoring is carried out. Construction has started on both the subprojects. There is only a little construction activity on N-95, which has recently started (on its two packages) involving only reconstruction of road and retaining walls on the existing alignment. Therefore the impact on environment is very low. However monthly monitoring is being carried out for both category B projects to ensure compliance to the local laws. Following are the aspects covered in the environmental monitoring of all the subprojects with more focus on the category B projects.

#### **2.1.1 Noise and Vibration**

21. Implementation of the mitigation measures recommended in EMP to reduce the impact of Noise and Vibration were observed. Construction activities situated close to populated areas were limited to daylight hours only to minimize the impact of noise. Prayer timings and school timings were observed close to the mosques and schools along the carriageway during the construction activities. Camp sites were established away from the residential areas. Contractors were advised to keep their earth moving equipment in good condition and to provide personal protective equipment like ear-plugs to the working staff at noise generating sites. No noise and vibration related complaints from public or workers were registered during the reporting period. For category B projects in addition to the above,

compliance to the SSEMP was ensured. Third party monitoring of noise values near the sensitive receptors (public property, mosque, school etc.) is being carried out.

### **2.1.2 Surface and Ground Water**

22. Preventive measures recommended in EMP were observed to monitor any Surface and Ground Water contamination that may result due to construction activities or storage of material at site. It was advised to keep fuel and oil storage areas away from water courses. Asphalt treatment was not allowed to practice during rain to avoid it being washed into water courses.

23. Arrangements for proper storage and disposal for solid waste were devised. Camp areas were selected having adequate natural drainage. Septic Tank and Soak Pits were provided at camp site for treatment of effluents. No surface water or ground water contamination was reported due to oil spillages, solid waste dumping or asphalt lying during the reporting period. Potable water was supplied to the workers working at site. For category B projects in addition to the above, compliance to the SSEMP was ensured. Third party monitoring of potable water for drinking purpose is being carried out.

### **2.1.3 Air Quality**

24. The potential sources of air pollution during construction are kick-off dust, asphalt plant, crusher, and vehicles. It was recommended to take asphalt material from existing approved asphalt plants. Visual observations were noted to monitor regular water sprinkling at dust prone areas during the construction activities. However, some violations were observed and the concerned contractors were advised to take care to control the dust emissions. Visual observations were also made for fitness of the vehicles to minimize the smoke emissions. For category B projects in addition to the above, compliance to the SSEMP was ensured. Third party monitoring of air quality near the sensitive receptors (public property, mosque, school etc.) is being carried out.

#### **2.1.4 Flora and Fauna**

25. During the reported period no flora and fauna was disturbed by the construction activity by Contractors. No mortality of wild animal was reported. All the category C projects were on the same alignment. The new Chakdara Bridge (category) is also adjacent to the old alignment, therefore no major harm to flora and fauna has occurred. All the possible adverse impacts to fish and other fauna have been addressed in the SSEMP. TA environment specialist ensures the compliance of SSEMP through site visits. There is so far limited construction activity on N-95 (category project). However the EMP compliance checklist are duly filled and reported.

#### **2.1.5 Top Soil Erosion**

26. For category B projects contractors were made responsible for regulating the procurement of borrow material and protecting topsoil from erosion by complying with the recommendation of EMP. Monthly EMP compliance reports indicate that either borrow pits are available in the RoW or natural areas with high elevation are available as borrow areas.

27. All borrow areas were required to be approved by the consultant to assess their suitability. After completion of the project the borrow areas are required to be restored to the natural land profile. If borrow areas are leased the land owner should be compensated as per lease agreement. No damage to the agricultural land due to borrow pits on agriculture land or top soil erosion is reported.

#### **2.1.6 Cultural Heritage Sites**

28. Project sites had been visited by TA Environment Specialist. No cultural heritage sites/ wetland/ protected area/ mangrove/ estuarine lies in RoW of project alignment. Almost all subprojects are being executed on existing alignment. Only N-95 has new alignment, which also does not pass through or breach any cultural heritage or sensitive site.

#### **2.1.7 Waste Disposal**

29. Waste from construction and campsites are being disposed away from the populated areas as per the EMP. For category B projects the waste disposal is taking place at designated sites. The sites are away from watercourses and populated areas and are fenced to stop scavengers from getting exposed.

## **Part III Environmental Management**

### **3.1 DDR Review of the REA's**

30. Due diligence Review (DDR) of the Rapid Environmental Assessment (REA) screening checklist along with suitability of mitigation measures recommended in EMP were reviewed by TA Environment Specialist of for the project.

31. Documents including Project Administration Manual (PAM); Environmental Assessment and Review Framework (EARF), Sectoral Initial IEE reports, IEE, EIAs, Generic Environmental Management and Monitoring Plans and project specific Rapid Environmental Assessment reports were reviewed and field visits were conducted.

#### **3.1.1 Field Visits to the Construction sites.**

32. The field visits to the sites of N-45 (4 visits), N-95 (3 visits), S-2 (2 visits), M-8 (1 visit), N-15 (2 visits), N-65 (1 visit), N-70 (2 visits) and N-5 (2 visits) were carried out along with the ESU and PMC officials. Consultation meetings were held with the contractor's representatives. Visual observations, actual sampling and photographs were taken during the field visits. Key findings were discussed with the concerned engineering staff and the contractors. DDR had been generated on the basis of observations, and the monitoring reports submitted to PMU to meet the constraints. Recommendations had been made against all the environmental issues or problematic entities of the area. However, it is concluded that so far project execution have no significant and irreversible environmental impacts.

#### **3.1.2 Campsite Guidelines**

33. Guidelines to establish campsite were prepared by TA Environment Specialist in the light of EMP recommendations. Campsites of all the project sites were visited to assess environmental compliance. These guidelines are mainly recommendation, mitigation measures given in the EMP for management of campsites at the Siting, Design & Preconstruction and Construction Stages. Campsite guidelines are organized to detail the camp locations, camp site management, workers training requirement, plans and procedures and waste management.

34. In initial visits it was observed that copy of the EMP was not available at campsites (of all subprojects). Copy of the EMP was shared with the contractors at each campsite. EMP compliance checklist to monitor monthly environmental compliance of the project was also discussed with contractor's site staff. Informal training was provided during each campsite visit regarding implementation of EMP, campsite guidelines and monthly EMP compliance checklists.

35. Contractors have mainly hired local labor. No child labor and forced labor were employed. TA environment specialist indicated the need to fence the campsites to avoid any trespassing.

36. In the EMPs, use of LPG cylinders was recommended, whereas use of wood as fuel was discouraged. Use of wood was observed at different campsite due to non-availability of LPG cylinders. Contractors were advised to avoid any wood burning. No complaints regarding transmission of Communicable diseases (such as STI's and HIV/AIDS) were reported during the reporting period.

### **3.1.3 Safety Provisions**

37. During project sites visits, TA environment specialist monitored the safety requirements during road construction. Road site safety is considered to be a serious concern along the roads especially broken culverts, road cuts, depressions and eroded road shoulders etc, which may lead to any serious accident. Many safety lapses were observed and communicated to the contractors. Contractors were advised to take road safety a priority, place safety signs (Safety cautions, Safety cones, Safety tapes etc).

38 Implementation of EMP recommendations regarding the use of PPE by contractor site staff was also poor. Contractors were asked to provide PPE's to workforce and train / motivate them about their use. However, no accident at any project has been reported during the reporting period.

39. During environment audit of N-45, and S-2 it was observed that the PPEs were not appropriately used. Contractors were advised to provide adequate number of PPEs to workers. First Aid Kits were available at campsites and worksites. A follow up visit was also carried out to ensure compliance to the findings of previous audit. All non-compliances and observations were addressed.

### **3.1.4 EMP Compliance Checklist**

40. Simple checklist has been developed to monitor monthly environmental compliance of all priority road and bridge projects. The checklist is mainly based on the recommended mitigations measures given in the EMP for environmental safeguard at different stages of the project (including the category B projects). Contractor identifies any impact on any environmental concern categorized in the form of YES and NO during the reporting month. Monthly progress report will be supported with the objectively verifiable indicators (OVI's) like video logs, photographs, letters, copy or grievances registers, test reports etc. In case, if an impact has happened, corrective action taken is provided in the remarks column supported with OVI's.

### **3.1.5 Conclusions and Recommendations**

- i. The work is in progress at most of the sites without any significant adverse environmental impact.
- ii. Copy of the EMP, Campsite Guidelines, Grievance register and monthly EMP Compliance Checklists must be available at campsites. One person from contractor side should be designated to coordinate implementation of EMP recommendations and any first aid related issues.
- iii. No noise and vibration related complaints from public or workers were registered. Construction activities situated close to populated areas must be limited to daylight hours only to minimize the impact of noise. Prayer timings and school timings must be observed close to the mosques and schools along the roads during construction activities.
- iv. No surface water or ground water contamination was reported due to oil spillages, solid waste dumping or asphalt lying during the reporting period.
- v. No flora and fauna was disturbed by the construction activity. No mortality of wild animal was reported.
- vi. No cultural heritage sites/ wetland/ protected area/ mangrove/ estuarine lies in RoW of project alignment.

- vii. No damage to the agricultural land due to borrow pits or top soil erosion is reported.
- viii. Road site safety considered to be serious concern along the roads especially broken culverts, road cuts, depressions and eroded road shoulders etc which may lead to any serious accident. Contractors were advised to take road safety a priority, place safety signs (Safety cautions, Safety cones, Safety tapes etc).
- ix. Use of PPE by contractor site staff was also poor. Contractors were asked to provide PPE's to workforce and train / motivate them about their use.
- x. During construction, special attention must be given in the areas where there are encroachments on the roads side, to minimize the impact on the livelihood of the local personals.
- xi. The contractor must execute the project by employing local labor as much as possible. Child labor is strictly prohibited activity on all of the ADB projects. Child labor was not observed on any subproject. Contractors were advised to avoid child labor in future as well.
- xii. No complaints regarding transmission of Communicable diseases (such as STI's and HIV/AIDS) were reported.
- xiii. Overall no major conflict with the community was observed. Cordial liaison has been maintained with local community.

# **ANNEXURES**



**ANNEX I**  
**Sample EMP Compliance Checklist**

**Flood Emergency Reconstruction Projects (FERP)**

## **Monthly Progress of EMP Compliance**

**Rationale for Monthly Progress Format to Monitor EMP Compliance**

As per contract, contractor of each sub project has to prepare and submit monthly environmental compliance reports to review EMP compliance of the project. This compliance report should be part of the overall monthly project progress report. It is envisaged that each contractor may opt different reporting format while submitting the monthly environmental compliance. After discussion with the Team Leader (PMC) and PMU it was decided that a standard monthly progress report format may please be developed to monitor EMP compliance of the sub projects. Contractors were also requested to submit their suggestions for developing the reporting format. Based on the monthly environmental compliance reports a six monthly environmental progress report should be prepared and submitted to ADB.

Simple checklists are developed to monitor monthly environmental compliance of sub-projects. The checklists are generally based on the recommended mitigations measures given in the EMP for environmental safeguard at different stages of the project. Contractor will identify about any impact on any environmental concern categorized in the form of YES and NO during the reporting month. Monthly progress report will be supported with the objectively verifiable indicators (OVIs) like video logs, photographs, letters, copy or grievances registers, test reports etc. In case, if an impact is happened, corrective action taken should be provided in the remarks column and supported with OVIs.

Project Director \_\_\_\_\_ Resident Engineer \_\_\_\_\_ Environmental  
Specialist \_\_\_\_\_

## Monthly Progress of EMP Compliance

Environmental Concern	Implementation of Mitigation Measures	Yes	No	OVI /Remarks
Camp site	<ul style="list-style-type: none"><li>• If copy of the Site specific EMP is provided at the camp site?</li><li>• If the EMP instructions are understood?</li><li>• If any individual is nominated for implementation of EMP?</li><li>• If contractor followed the safety precautions as per ILO convention no.62?</li><li>• If contractor provide PPE to workforce?</li><li>• If PPE are used by workforce?</li><li>• If potable water is available to labor?</li><li>• If wood used as fuel?</li><li>• If LPG cylinders are provided for cooking or heating purposes?</li></ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Project Director\_\_\_\_\_Resident Engineer\_\_\_\_\_Environmental Specialist\_\_\_\_\_

***Flood Emergency and Reconstruction Project (FERP)***

	<ul style="list-style-type: none"> <li>• If First Aid Kit is provided at camp and individual nominated for addressing emergency?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> <li>• If campsite is fenced to prevent trespassing?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> <li>• If contractor maintain Environmental Monitoring Record and submit monthly monitoring reports?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> <li>• If contractor maintain Grievances Log and registered the complaints from community?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> <li>• If camp area have adequate natural drainage?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> <li>• If arrangement for proper storage and disposal for solid waste is planned?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> <li>• If Septic Tank and Soak Pits are designed for treatment of effluents?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> <li>• If contract provide training to workers to effectively implement project specific EMP?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
	<ul style="list-style-type: none"> <li>• If contractor prohibit child labor or forced labor?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	

Project Director\_\_\_\_\_Resident Engineer\_\_\_\_\_Environmental Specialist\_\_\_\_\_

***Flood Emergency and Reconstruction Project (FERP)***

	<ul style="list-style-type: none"> <li>• If contractor encourage hiring of local labor?</li> <li>• If contractor provide HSE plan and Emergency Response Procedures?</li> <li>• If contractor properly dispose off debris materials on approved barren land?</li> <li>• If there is any complaint regarding transmission of Communicable diseases (such as STI's and HIV/AIDS)</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Topsoil Erosion due to Borrow Pits	<ul style="list-style-type: none"> <li>• If natural areas with high elevation are available as borrow areas?</li> <li>• If borrow areas identified have suitable material and approved by design team?</li> <li>• If borrow pits are available in the ROW?</li> <li>• If there is any damage to the agriculture land due to borrow pits on agriculture land?</li> <li>• If top 15 cm are stripped and stockpiled for redressing?</li> <li>• If top 0.5 m is stripped of when deep ditching is carried out?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	

Project Director\_\_\_\_\_Resident Engineer\_\_\_\_\_Environmental Specialist\_\_\_\_\_

***Flood Emergency and Reconstruction Project (FERP)***

	<ul style="list-style-type: none"> <li>• If ditch is filled with construction debris and leveled with stockpiled topsoil layer to maintain the landscape?</li> <li>• If borrow area is leased whether the land owner is compensated as per lease agreement?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Encroachment on rural communities and means of livelihood	<ul style="list-style-type: none"> <li>• If there is any damage to the shops and houses which may lie inside ROW?</li> <li>• If there is any impact on the means of livelihood of the community?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Encroachment of Precious Ecology	<ul style="list-style-type: none"> <li>• If there is any loss of forests and intrusion into wetlands?</li> <li>• If fuel/oil storage areas are away from watercourses?</li> <li>• If asphalt treatment is carried out during rain?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Encroachment Historical/ Cultural/ Archeological sites	<ul style="list-style-type: none"> <li>• If there is any damage to the Archeological /Religious/Cultural or Historical sites?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Impact on Vegetation	<ul style="list-style-type: none"> <li>• If project activities involve removal of vegetation cover?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	

Project Director\_\_\_\_\_Resident Engineer\_\_\_\_\_Environmental Specialist\_\_\_\_\_

***Flood Emergency and Reconstruction Project (FERP)***

	<ul style="list-style-type: none"> <li>• If any trees cutting is required on the ROW or shoulders of the road?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Surface and Ground water contamination/Drainage	<ul style="list-style-type: none"> <li>• If any surface water or ground water contamination reported due to oil spillages, solid waste dumping or asphalt laying?</li> <li>• If asphalt treatment is practiced during rain?</li> <li>• If fuel/Oil storage areas are far away from watercourses?</li> <li>• If additional Cross drainage is provided?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Impact on adjacent communities	<ul style="list-style-type: none"> <li>• If project site is fenced to prevent trespassing?</li> <li>• Community consultation has been carried out for project activities/concerns?</li> <li>• If project activities are displayed at proper locations?</li> <li>• If safety signs are properly placed?</li> <li>• If any complaint registered in the Grievance Log</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	

Project Director\_\_\_\_\_Resident Engineer\_\_\_\_\_Environmental Specialist\_\_\_\_\_

***Flood Emergency and Reconstruction Project (FERP)***

Dust generation	<ul style="list-style-type: none"><li>• If there is any record of dust generation during the environmental monitoring?</li><li>• If proper sprinkling is done on regular basis?</li></ul>	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	
Impact on human settlements and wildlife habitat	<ul style="list-style-type: none"><li>• If site selected for camp is 100 m from the human settlements and wildlife habitats?</li></ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Safety impacts due to road constructions	<ul style="list-style-type: none"><li>• If safety signs are properly displayed?</li><li>• If construction machinery is parked at designated areas?</li><li>• If any complaints registered regarding traffic issues?</li></ul>	<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>	
Noise and Vibration	<ul style="list-style-type: none"><li>• If any complaints due to noise and vibration?</li><li>• If construction activities is carried out in daylight to reduce the impact of noise?</li></ul>	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	

Project Director\_\_\_\_\_Resident Engineer\_\_\_\_\_Environmental Specialist\_\_\_\_\_

***Flood Emergency and Reconstruction Project (FERP)***

Damage to Services	<ul style="list-style-type: none"><li>• If any damage reported to public services like electric, water, gas, sewer or telephone lines?</li></ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Transportation of construction materials	<ul style="list-style-type: none"><li>• If transport trucks are weighed to verify they don't exceed the bridge and pavement structure?</li></ul>	<input type="checkbox"/>	<input type="checkbox"/>	
Asphalt plants	<ul style="list-style-type: none"><li>• If asphalt material is taken from existing approved plants?</li><li>• If any complaint registered about the asphalt plants?</li></ul>	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	
Quarrying materials	<ul style="list-style-type: none"><li>• If materials taken from existing quarry sites?</li><li>• If any complaint registered about the quarry sites?</li></ul>	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	

Project Director\_\_\_\_\_Resident Engineer\_\_\_\_\_Environmental Specialist\_\_\_\_\_



## **ANNEX II**

Implementation report on EIA/IEE mitigation  
requirements

**NEW CHAKDARA BRIDGE PROJECT (N-45)**

## **ENVIRONMENTAL MITIGATION REPORT**

The New Chakdara Bridge will be located at 88 - Km near Batkhela on N-45 from where N-95 (Batkhela - Kalam) also starts. The proposed project will be constructed in between two existing old bridges (see figure 1).



Figure-1: showing the alignment of the New Chakdara Bridge Project

## **PROJECT DETAILS**

- The height of the new Chakdara Bridge will be 1.5 meter higher than the existing bridge.
- The length of new Chakdara Bridge is 27 meter longer (307 meters long) than the existing bridge.
- Available width between two bridges is 36m
- Required width for the new bridge is 12m
- Land acquisition for approaches not required

## **PROJECT CATEGORIZATION**

According to ADB Safeguard Policy Statement, projects are to be categorized into three environmental categories; A, B, or C. All the anticipated adverse environmental impacts of the project are mitigable, temporary, nature and localized. Also there is no environmentally sensitive or archeological site falling within project area of influence; therefore the project is classified as Category B. An IEE was prepared and approved by ADB. Environmental Approval from EPA KP has been acquired.

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### Site Specific Environmental Mitigation Plan (EMP)

CONSTRUCTION PHASE										
CAMP SITE AND CONSTRUCTION WORKS										
Project Activities	Type of Impact	Potential Impacts on Environment	Where the Impact is likely to happen	When the Impact is likely to Occur	Magnitude of Impacts	Mitigation Measures	Institutional Responsibility		Comments	CORRECTIVE & PREVENTIVE ACTION
							Implementation	Supervision		
1. Grievance Redress										
Grievances	Social Impact	Social Disputes	Valid for entire construction area throughout construction period	Throughout FERP	low if recommendations are followed	Official in charge of people's grievance will be designated.  A leaflet outlining environmental protection measures and listing grievance contact points will be distributed.  Community leaders will be given detailed information on the	PMU, Contractor	NHA, supervision consultant, Contractor, Grievance Specialist	No such issues raised by local inhabitants.  No Residential community exists nearby the construction site except the few army check posts and army camps.	The Project Staff will prepare an Inventory of Losses (IOL) in case of any grievance.

						grievance management process  NGOs will be informed in the same manner as the community leaders.				
Constructi on Camps	Physical	Damage of topsoil  Contami nation related to fuel storage and fuelling operations  Sewerage related contamination  Waste	Valid for entire construc tion area througho ut construc tion period	Througho ut FERP	Minor if recom mend ations are follow ed	Proper construction camp management in compliance with Construction Camp Management Plan  Proper waste management in compliance with Waste Management Plan  Proper spill management in compliance with Spill Management Plan	Design Engineer, Contractor	NHA, , supervision consultant Environme nt Specialist, Contractor	There was no labor camp near the construction site.  Residential facility for workers was located 5 km away from the construction site. Workers are residing in properly build rented house by the contractor. There was no contamination of air and water but heaps of solid waste were seen outside the	Solid waste was collected and managed according to the national and local regulations.  As a rule, solid waste was dumped and disposed off as mentioned in EMP

		Management							workers house	
<b>Utilities</b>										
<b>Public Utilities</b>	Social Impact	Damage to gas or water pipelines. Disconnection & distortion of phone line	All along the construction site	During Construction	Medium	All public utilities likely to be impacted, such as gas and/or water pipes, power and/or phone lines etc. must be relocated to suitable places, in consultations with respective agencies	Contractor	NHA, Environment Specialist, Contractor	Power transmission Poles (ROW) were successfully relocated. No other relocation was carried out at site.	Demolition waste was removed from construction site.
Site selection and operation of construction camp.  Store materials Human activities on site Travel to / from	Socio-cultural Environmental Acceptability to public/owner ; Friction with residents	Sanitary waste disposal, solid waste (Kitchen waste) disposal, fuel leakage. Noise and additional	Several sites along roadside for construction camp sites	Throughout construction period	Minor if recommendations are followed.	<ul style="list-style-type: none"> <li>Prior consultation with local</li> <li>Contractor need to obtain NOC for sitting work camps &amp; workshop, or agreement made with the landowner</li> <li>Site construction to</li> </ul>	Contractor	NHA, , supervision consultant Environment Specialist, Contractor	As the construction camps were away from the construction site, physical impacts (contamination to air water and soil) were insignificant. However the social interaction with the nearby community could	The condition of labour camp was improved after the removal of solid waste by municipal committee.

construction camp		Increased traffic. Water usage of pollution				<ul style="list-style-type: none"> <li>be supervised</li> <li>Proper storage and fencing/locking of storage rooms containing hazardous material</li> <li>Setting up of complaints office, advertising ways to voice complaints</li> </ul>			create problem as the labor was hired from other areas as well. Open dumping was observed near workers residence that could cause visual intrusion.	
Site restoration after the contract completion	Loss of roadside vegetation/assets and plantations if any in an area of scarce biodiversity and dissatisfaction on rehabilitation	Loss of Plants in an area with already scarce biodiversity, and loss of functional benefits from roadside	All along route, campsites	Long lasting	Moderate	<ul style="list-style-type: none"> <li>Manage design to minimize removal of roadside plantation</li> <li>Apply flexibility in decision in reducing locally the shoulder width.</li> <li>Plan for compensatory planting for</li> </ul>	Design Engineer, Contractor	NHA, , supervision consultant Environment Specialist, Contractor	Biodiversity disturbed by construction activity was localized and temporary.	After the meeting with the project director of NHA , it was ensured that the plants would be saved and , plantation will be done in post construction phase in collaboration with forest department.

	measures after completion	s plants				<p>each felled 10 plants of similar / local flora species</p> <ul style="list-style-type: none"><li>• Contractor will provide plan for removal &amp; rehabilitation of site upon completion</li><li>• Photographical and botanical inventory of vegetation before clearing the site</li><li>• Disallow introduction of exotic species or species with known environmental setbacks (eg Eucalyptus etc.)</li></ul>				
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Project Activities	Type of Impact	Potential Impacts on Environment	Where the Impact is likely to happen	When the Impact is likely to Occur	Magnitude of Impacts	Mitigation Measures	Institutional Responsibility		Comments	CORRECTIVE & PREVENTIVE ACTION
							Implementation	Supervision		
Creation and burning of wastes at or near camp sites	Solid liquid waste generated and air pollution associated with burning garbage	Air pollution associated with burning garbage	Along campsites	throughout construction and after math	Moderate	<ul style="list-style-type: none"> <li>Disallow sitting for work camp, including waste dump sites, in distance closer than 1 km to any inhabited areas</li> <li>Incorporate technical design features for refuse collection containers at sites that would minimize burning impacts</li> <li>Devise plan for safe handling, storage and</li> </ul>	Contractor	NHA, , supervision consultant Environment Specialist, Contractor	Although Waste burning was prohibited at site but it was observed at different places.	Safety signs were sufficiently placed. i.e. no fire at site signs were displayed at all suitable locations.



						disposal of harmful materials <ul style="list-style-type: none"> <li>Disallow burning</li> </ul>				
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#### Safety & Accident Risks

<b>Construction Activities and Accident Risks through transportation of material through labor</b>	<b>Health &amp; Safety</b>	Minor And major injuries, can even lead to fatalities in case of ignoring safety practices	Various construction sites through out project corridor	During construction	low	Safety signals will be installed on all temporary routes During construction. Strict enforcement of traffic rules and regulations.  Workers will be provided safety equipment such as helmets, masks, and safety goggles.	Contractor	NHA, , supervision consultant Environment Specialist, Contractor	Hazards identified at site include the following: No speed Limit was displayed. No barricade marked. NO HTV/LTV signage, were provided. No PPEs were provided to the workers during working hours. No training was provided to the workers about Road safety.	After the identification of the hazards and risks, a mitigation plan was made which include the implementation of following things: <ul style="list-style-type: none"> <li>Speed limits sign were displayed.</li> <li>PPEs were provided to the workers.</li> <li>Training was conducted for the implementation of PPEs.</li> </ul>
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						<p>A readily available first aid unit, dressing Materials, ambulance, and nursing staff will be ensured at critical locations.</p> <p>Road safety education will be imparted to drivers of construction vehicles.</p> <p>Traffic management will be ensured during Construction periods.</p> <p>Information dissemination through newspaper, radio and/or TV and banners</p>			<p>No media was involved for the information dissemination.</p>	<ul style="list-style-type: none"> <li>• , Assembly point was designated at site In case of emergency</li> <li>• Medical camp was established.</li> <li>• Parking for HTV/LTV was designated.</li> <li>• Borrow areas were rehabilitated.</li> <li>• Safe storage of Hazardous material i.e. (ultra chemical) fuel, diesel etc. was ensured</li> <li>• Prayer area was designated for the workers.</li> <li>• scrap yard was also designated.</li> <li>• Ensured the use of PPEs on site.</li> </ul>
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						etc. about project time frame, activities causing disruption and temporary arrangements for public relief must be ensured.				
<b>Loss of Access</b>	<b>Traffic congestion</b>	Air pollution & fatigue	Various construction sites throughout project corridor	During construction	Minor if properly mitigated	Alternatives and temporary accesses will be provided at all interchanges, bridges, and culverts, in congested areas. Such diversions will have proper drainage facilities.	Contractor	NHA, Environment Specialist, Contractor	Loss of access was due to the army check post near the construction site, which could cause traffic congestion.	Old bridge (steel bridge) site is used as alternate route only for LTVs.
Health and safety at work place	Health risks if work conditions provide unsafe and/or		Valid for entire construction area through	At establishment of camp sites and construction	High	Drainage, sanitation, and waste disposal facilities will be provided at work	Contractor	NHA, Environment Specialist, Contractor	Waste water was discharged in the open drain that may cause outbreak of different diseases	Fumigation was ensured on the open drain and borrow area containing the stagnant water.

	unfavorable work conditions		out construction period	on period		places. Drainage will be maintained to avoid waterlogging, which leads to mosquitoes and disease. Suitable sanitation and waste disposal facilities will be provided at camps by means of septic tanks and soakage pits, etc. Sufficient water supply will be maintained at camps to avoid water-related diseases and to secure workers' health.			and mosquitoes. No medical facilities were provided at the construction site to the workers and no routine checkup was carried since the work started. No first aid training was provided to workers. Lack of paramedic staff in case of emergency at the construction site.  The waste / drill cuttings which contain the chemicals were openly dumped near the river which was entering the river ultimately causing river contamination.  No PPEs and	A Medical camp was made for the workers to provide first aid in case of emergency. emergency numbers were displayed in different areas near construction site. Areas where environmental hazards and risk were identified were marked and barricaded. Ensured the use of PPEs on site.  • The waste drills was seen at site and the area was barricaded for recovery
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						<p>Health education &amp; preventive medical care will be provided to workers. Routine medical checkup of workers to avoid Communicable disease</p> <p>Provide basic medical training to specified work staff, and basic medical services and supplies to workers</p> <ul style="list-style-type: none"><li>• Layout plan for camp site indicating safety measures taken by the contractor,</li></ul>			<p>training was provided to the workers. NO pesticides were applied for the control of pests. No danger/warning signage was displayed.</p>	
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						<p>e.g. fire fighting equipment, safe storage of hazardous material, first aid, security, fencing and contingency measures in case of accidents</p> <ul style="list-style-type: none"><li>• Work safety measures and good workmanship practices to ensure no health risks for laborers</li><li>• Protection devices (ear muffs) be provide to the workers operating in high noise generating machines,</li></ul>				
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						<div>blasting</div> <ul style="list-style-type: none"><li>• Proper maintenance of facilities for workers</li><li>• Regular pest control measures in dormitories</li><li>• Obligatory warning of work staff if pest hazard is imminent or detected</li><li>• Awareness campaigns for protection from AIDS / HIV / Hepatitis</li></ul>				
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Project Activities	Type of Impact	Potential Impacts on Environment	Where the Impact is likely to happen	When the Impact is likely to Occur	Magnitude of Impacts	Mitigation Measures	Institutional Responsibility		Comments	<b>CORRECTIVE &amp; PREVENTIVE ACTION</b>
							Implementation	Supervision		
Digging borrow pit areas	Physical environment	Borrow pit collect water, material mosquitoes	The entire length will require fill to raise the level of the carriageway	Early in construction	Low	<ul style="list-style-type: none"> <li>Used approved borrowed areas. Borrow roads made good on completion of the contract</li> <li>Inspection of sites</li> <li>Borrow pits shall be dewatered and fences should be provided as appropriate, to minimize health and safety risks.</li> </ul>	Digging borrow pit areas	NHA, , supervision consultant Environment Specialist, Contractor	The waste / drill cuttings which contain the chemicals were openly dumped near the river that was entering the river causing water pollution.	The waste Drills or was seen at site and the area was barricaded to recover/



Excavation of earth from borrow areas, Embankment works, cutting operation, embanking, clearing of vegetations	Change of topographic characteristic, loss of topsoil, impact on agriculture, Soil Erosion, loss of vegetation and habitat	Aesthetics, water storage, w seepage, Agricultural impacts, soil erosion, interrupting pathways	Borrow areas at/near agriculture and irrigation area / elsewhere, At all sites where high embankments are required, eg near bridges	During construction	Medium	•	Co n tractor	NHA, , supervision consultant Environment Specialist, Contractor	Localized impacts on biodiversity were observed because of inappropriate storage of construction material. The borrow area was near the old bridge site where there was no vegetation. Retaining walls were made on the side to control the soil erosion and flooding.	Borrow area was rehabilitated.

## New Chakdara Bridge Project (NCBP): IEE Mitigation Report

Project Activities	Type of Impact	Potential Impacts on Environment	Where the Impact is likely to happen	When the Impact is likely to Occur	Magnitude of Impacts	Mitigation Measures	Institutional Responsibility		Comments	CORRECTIVE & PREVENTIVE ACTION
							Implementation	Supervision		
Quarrying materials	Physical environment	Cuts scar natural hillsides	In mountain section	During construction	Low fill should be available	<ul style="list-style-type: none"> <li>Use existing quarry sites</li> </ul>	Contractor	NHA, , supervision consultant Environment Specialist, Contractor	There was no quarrying site near the project area.	
Acquisition of sub base material procurement of construction materials	Degradation of existing river beds, alternation of surface and groundwater regime, land-use conflicts, Soil erosion, change of hydraulic patterns and landscape degradation by use of	Some erosion may occur	At agricultural sites and at demarcated areas quarries and borrow areas	Long lasting effects	Medium	<ul style="list-style-type: none"> <li>Excavation in farmlands and at river beds be prohibited, unless authorized by local irrigation departments responsible for river works</li> <li>Maximum use of</li> </ul>	Contractor	NHA, , supervision consultant Environment Specialist, Contractor	<p>There was no degradation of the river bed.</p> <p>No land conflict occurs due to the construction, because the project is in the RoW.</p> <p>The hydrological pattern of the river was temporally changed, because of construction activities.</p> <p>Trout strength could be affected locally because of the disposal of the</p>	

	quarries & borrow area					<div>existing quarries from approved and in use quarry sites</div> <ul style="list-style-type: none"><li>• Selection through community consultation, which could subsequently be developed into fishponds or other productive purposes</li><li>• River excavation be executed in close cooperation and upon approval from</li></ul>			chemicals	
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						<div>relevant authority</div> <ul style="list-style-type: none"><li>• No productive land or land adjacent to agricultural / irrigated land will be used</li><li>• Non-productive, barren lands in broken terrain, nullahs and publically recognized waste lands should be given preference as been recommended for borrowing</li></ul>				
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						<div>materials</div> <ul style="list-style-type: none"><li>Aggregate required for road construction procured from quarries need approval from relevant authority.</li><li>Extraction of sand and gravel in river beds shall be prohibited except (I) where feasible alternative, and (II) provided specific mitigation measures</li></ul>				
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						are implemented to minimize impacts on river morphology, water quality (e.g. turbidity), and ecosystems (e.g. reduced extraction during fish spawning period.				
Constructing pavement Laying base course Clearing surplus	Physical Environment Runoff of hydrocarbons during “curing” period	Noise and dust, water	All along road surface	During construction	Low if adequate precautions taken	<ul style="list-style-type: none"><li>• Supervision of construction to ensure proper techniques</li><li>• Lay asphalt during dry periods only</li></ul>	Contractor	NHA,, supervision consultant Environment Specialist, Contractor	Noise and dust was observed at site.	Monthly monitoring has been carried out to ensure compliance with NEQS

**New Chakdara Bridge Project (NCBP): IEE Mitigation Report**

Project Activities	Type of Impact	Potential Impacts on Environment	Where the Impact is likely to happen	When the Impact is likely to Occur	Magnitude of Impacts	Mitigation Measures	Institutional Responsibility		Comments	CORRECTIVE & PREVENTIVE ACTION
							Implementation	Supervision		
Laying of asphalt	Physical Environment	Emission of dust and fumes from asphalt plant; Runoff of hydrocarbons during "curing" period	In asphalt batching plant area One length of road where surface laying is taking place	In latter stages of construction Within 48 hours of laying of asphalt	Low  Low if laying of asphalt does not occur in rain	<ul style="list-style-type: none"> <li>Ensure Workers use appropriate clothing</li> <li>Lay asphalt during dry periods</li> </ul>	Contractor	NHA, , supervision consultant Environment Specialist, Contractor	There was no asphalt plant at the construction site.	
Construction of structures, bridges / culverts.	Socio-cultural	Severance to local population	At points where road crosses established tracks	During construction	Low if provision for crossings is given	<ul style="list-style-type: none"> <li>Ensure provision of adequate crossing points</li> <li>Work on irrigation canals shall be kept to a minimum to avoid disrupting water supplies to crop lands. Damaged irrigation canals shall be repaired immediately</li> </ul>	Contractor	NHA, Environment Specialist, Contractor	There was no crossing point at the project site.	
Planting trees	Ecological	Introduction	Alongside	After	Medium	<ul style="list-style-type: none"> <li>Use Forest</li> </ul>	Forestry	NHA, ,	No tree plantation	Tree plantation has

	Socio-cultural	n of appropriate species  Trees create safety hazard	new road  Where trees are planted	Construction  Once trees have matured	Medium	<p>Department s to select appropriate plants. Require approved plan to be prepared and used</p> <ul style="list-style-type: none"> <li>Planting scheme to include shrubs close to road as barrier</li> </ul>	Department	supervision consultant Environment Specialist, Contractor	carried out.	been carried out as per EMP
Removal of Construction Camp	Socio-cultural	Adverse effects on residents	At camps	After completion of construction	Low if correct closure plan implemented	<ul style="list-style-type: none"> <li>Supervise and enforce closure plan Monitor</li> </ul>	Contractor	NHA, , supervision consultant Environment Specialist, Contractor	No labour camps were constructed at project site. No potential impact on the residents, after the completion of the project.	Demolition waste has been removed to restore site



## New Chakdara Bridge Project (NCBP): IEE Mitigation Report

Project Activities	Type of Impact	Potential Impacts on Environment	Where the Impact is likely to happen	When the Impact is likely to Occur	Magnitude of Impacts	Mitigation Measures	Institutional Responsibility		Comments	Improvements
							Implementation	Supervision		
Closure plan										
Clearing site	Damage not restored on departure					<ul style="list-style-type: none"><li>Borrow roads made good on completion of the contract</li><li>Supervise and enforce closure plan. Monitor</li></ul>	Contractor	NHA, , supervision consultant Environment Specialist, Contractor		
Discharge Control										
Drinking water	Water born disease	Workers/labour health	Const camp	Throughout construction period	medium	<ul style="list-style-type: none"><li>Contractor will ensure the Provision of safe drinking water to all the workers/labour</li><li>Water quality should</li></ul>	Contractor	NHA,, supervision consultant Environment Specialist, Contractor	Ground water was use for drinking purposes and there was no monitoring of the water during the construction phase.	Monitoring has been carried out to check any contamination caused during construction. Water Quality conforms WHO standards.

						<p>conform WHO standards</p> <ul style="list-style-type: none"> <li>Should be reconfirmed once during construction phase</li> </ul>				
Waste water discharges	Water pollution	Contamination of water sources	Contractor Camp sites	Throughout construction period	Low	<ul style="list-style-type: none"> <li>Suitable sanitation and waste disposal facilities will be provided at camp by means of septic tank linked with soaking pits.</li> <li>All discharges should be in compliance with NEQS through a</li> </ul>	Contractor	NHA, , supervision consultant Environment Specialist, Contractor	There was no proper channel for the disposal of waste water, which could cause visual intrusion and diseases.	A waste disposal facility is provided at camp by means of septic tank linked with soaking pits

[illegible]

						<div>will be placed at min. 1 km at downwind direction to human settlement s</div> <div><ul style="list-style-type: none"><li>• All vehicles, equipment and machinery used for construction be regularly maintained to ensure that the pollution emission levels conform to the NEQS</li><li>• Air quality parameter s be monitored</li></ul></div>				
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						<p>at determine d sites on monthly basis</p> <ul style="list-style-type: none"> <li>• Incorporat e design features enabling continuatio n traffic flow and traffic jams</li> <li>• Water will be sprinkled to avoid kick off dust.</li> </ul>				
Operation of asphalt mix plants, crushers, etc	Dust generation from construction machineries causing health risks to operating workers, impact on	Dust emissions from crusher and screening pant Emission of dust and fumes	At sites of plants, crushers	Throughout constructio n period	High	<ul style="list-style-type: none"> <li>• Ensure precaution s to reduce the level of dust emissions from, mixers, plants, crushers</li> </ul>	Contractor	NHA, supervision consultant, Environme nt Specialist, Contractor	<p>There was no asphalt plant or crusher near the construction site, however the concrete plant present at site could produce dust.</p> <p>Construction Equipment present at site could cause nuisance.</p>	Monthly monitoring is carried out and reports are prepared to ensure compliance with NEQS

	biophysical environment	from asphalt plant				<p>and batching plants, eg providing with dust extraction units.</p> <p>Crushers to be fitted with dust suppression equipment.</p> <p>Plant to have suppression equipment.</p> <ul style="list-style-type: none"><li>• Water will be sprayed in lime / cement and earth mixing sites</li><li>• Work safety measures like dust masks and</li></ul>				
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						<p>appropriate clothing be used to ensure no health risks for operators</p> <ul style="list-style-type: none"> <li>• Equipment be well maintained</li> <li>• Asphalt plants be located 1 km away from populated areas (downwind) and may have wet scrubber</li> </ul>				
Transportation of materials, and other construction activities that create dust and emissions	Dust and emissions from machineries causing health risks to operators impacts on		Throughout Project Road Construction sites near the major settlements	During construction	Low	<ul style="list-style-type: none"> <li>• Vehicles delivering loose and fine materials like sand and fine aggregate</li> </ul>	Contractor	NHA, supervision consultant, Environment Specialist, Contractor	Gravel present at site could cause minor to major damages to health, property and physical environment. No monitoring was carried out. (air, water soil)	<p>Monthly monitoring has been carried out.</p> <p>Ambient Air quality conforms NEQS.</p>

	the bio-physical environment					<p>s shall be covered to reduce spills on existing road.</p> <ul style="list-style-type: none"><li>• Ambient air quality monitoring be carried out in accordance to the EMP</li><li>• If monitored parameters are above the prescribed NEQS-limits suitable control measures must be taken</li></ul>				
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**New Chakdara Bridge Project (NCBP): IEE Mitigation Report**

Project Activities	Type of Impact	Potential Impacts on Environment	Where the Impact is likely to happen	When the Impact is likely to Occur	Magnitude of Impacts	Mitigation Measures	Institutional Responsibility		Comments	CORRECTIVE & PREVENTIVE ACTION
							Implementation	Supervision		
FAUNA AND FLORA; Wildlife & adjacent ecological sensitive areas										
Access to sensitive areas fragile ecosystem	Poaching on wildlife plants, disturbance of river habitats	Disturbance to ecological sensitive area adjacent or near roads	Near river banks	Throughout construction period	Low	<ul style="list-style-type: none"><li>The use of fire wood for cooking and execution of works be prohibited</li><li>No open fires be allowed</li><li>Restoration of vegetated areas</li><li>Strict instruction from the Contractor to work staff (particularly the cooks) with respect to poaching local wildlife</li><li>Signage for wildlife crossing to raise attention</li><li>Assist in public awareness programs</li><li>Special bushes / plants for sandy areas along road way</li><li>Patrolling and enforcement</li></ul>	Contractor	NHA, supervision consultant, Environment Specialist, Contractor	At Some places fire was seen  No Vegetated land was restored.  No wildlife signage were displayed  No public awareness was carried out.	Vegetated land was restored.  wildlife signs were displayed
Use of local	Competition		Agricultural	Througho	Low	<ul style="list-style-type: none"><li>Water supply /</li></ul>	Contractor	NHA,	The river water	Warning signs













resource and products	for natural resources, eg with farmers, livestock raisers and nomads for range land & water		area with tube well and canal irrigation limited water availability	ut constructi on period		sanitation facilities labor not exacerbate the existing shortages and environmental hazard; Contractors should primarily seek its own sources of water by deep well boring at 4-5 locations in due distance (min. 1 km) from local user's wells.  • Ensure labor do not exploit adjacent forest resources is ban on tree cutting		Environme nt Specialist, Contractor	is used for the construction purposes. For drinking water, ground water was used. No exploitation of the natural resources were observed.	displayed stating restriction on exploitation of resources
<b>Archeological Sites</b>										
Encountering archaeological sites during earth works and construction	Impacts of historically important sites and damage to fossils, artifacts, tombs, structure etc, as	If Sites of Special interest not identified and flagged the contractors may inadvertentl y cause	Throughout entire project area, including borrow sites	Througho ut constructi on period	Low	<ul style="list-style-type: none"> <li>Carrying archaeological inspection identifying all sensitive areas prior to construction.</li> <li>In case of finding any archaeological artifact, structure, tomb etc the Contractor needs halt all works at once and</li> </ul>	Contract or	NHA, supervision consultant, Environme nt Specialist, Contractor	The old steel bridge is considered as cultural amenities present in the project area	

	defined in 1975 Antiques Act.	damage				<p>Department.</p> <ul style="list-style-type: none"> <li>Contractor has the duty to secure the sites against and intrusion until the archeological expert will decide on further action</li> </ul>				
<b>Environmental Enhancements</b>										
Roadside Landscape Development			Various construction sites throughout project corridor	During construction	low	Avenue plantation of mixed specie aesthetics trees, shrubs, and Aromatic plants will be carried out.	Contractor	NHA, Supervision consultant, Environment Specialist, Contractor	No plantation was carried out.	Plantation has been carried out as suggested in EMP
Roadside Amenities			Various construction sites throughout project corridor	During construction	low	Provision of bus shelters, bus bays, petrol pumps, restaurants, recovery areas and truck stops as per detailed design will be carried out. Road furniture including footpaths, railings, traffic signs, speed zone signs, wildlife warning boards, etc. will be erected at suitable places	Contractor	NHA, supervision consultant, Environment Specialist, Contractor	Provision of bus shelters, bus bays, petrol pumps, restaurants, recovery areas and truck stops as per detailed design was not carried out, because of the restriction of	Safety, traffic and wildlife warning signs are appropriately displayed

									the Army. There was no safety, traffic and wildlife warning signs displayed.	
Cultural Properties	Socio economic /cultural		Various construction sites throughout project corridor	During constructi on	low	All cultural properties will be enhanced and the access roads will be provided, wherever required	Contract or	NHA, supervision consultant, Environme nt Specialist, Contractor	Only cultural site is the army fort and the old steel bridge. Fort is away from the construction site.	













ANNEX III

Findings of the Environmental Audit:

			
Signs are placed at the workplace	Signs are placed at workplace	New designated area for parking	Barricaded area to avoid accidents
			
Scaffolding provided at diesel storage area	Soil Contamination with chemicals	Workers using PPEs.	Designation of assembly area
			
Closing of borrow area	Parking Area	Chemical storage area	Electric sockets after safety sign



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Diesel storage area	Prayer area	Work in progress	Safety instructions
			
No fire at site.	First aid box requirements	First aid box	Medical camp for workers
			
Training session of workers	Improper placement of cement bags.	Electric sockets before safety sign	Storm water near chemical storage area.



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Storm water near chemical storage area.



Improper placement of material near asphalt plant.



Waste near the workplace



Removal of the lose stairs from the camp site.



Marking area with barricade tape.



Marking proposed site with barricade tape.



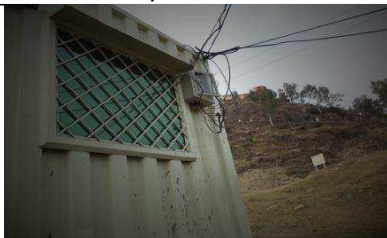
Employ cards



Employ cards



Lose fitting of stairs can cause fall



Electric hazard














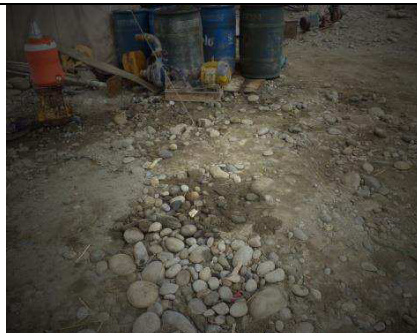
Sharp edges, cause tripping hazard



Sharp edges, cause tripping hazard



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 <p>Investigating the storm water drain</p>	 <p>Investigating the storm water drain</p>	 <p>Improper disposal of waste</p>	 <p>Wooden plank placed at worksite.</p>
 <p>Borrow area</p>	 <p>Safety helmets are placed on ground</p>	 <p>Used oil filter not properly disposed off</p>	 <p>Scrap yard area</p>
 <p>Store room for the workers</p>	 <p>Store room for the workers</p>	 <p>Oil spill from the diesel tanks</p>	 <p>Oil spill from the diesel tanks</p>












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Soil reclamation	Poorly maintained construction site	Blades placed on ground	Poorly maintained construction site.
			
Motor with improper wiring taking water from river	Fire at site	Oil spill from the dumpers and Crain	Fire at site
			
Soil Contamination	Open wires, source of electric hazard	Open wires, source of electric hazard	Waste at workplace














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Electric wires at workplace	Chemical spillage	Work in progress , worker not wearing safety gloves	barricaded Chemical spillage area
			
Electric wires live wire in improper condition	Poor house keeping	Improper wires and sockets, source of electrical hazard	Electric wires live wire in improper condition
			
Gas pipes for welding and used scrap at workplace	Improper working conditions	Worker using PPEs during work	Worker using PPEs during work
			
Improper welding equipment			



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		Improper welding equipment	Tools left behind after use at workplace.	Stagnant water at worksite
				
Open Electric cables at work place.	oil spill at site	Pipes in improper condition	Contamination due to mixture of chemicals and soil	
				
Open wires source of electrical hazard	Improper placement of material at workplace	Improper placement of material at workplace	Electrical hazard at site	
				
Improper placement of generator causing spillage of diesel at site	Chemicals mixed with soil	Mixture of Chemicals and soil contamination due to fractured pipe.		