

Environmental Monitoring Report

Semiannual Report
April 2016

IND: SASEC Road Connectivity Investment Program — Tranche 1

Asian Highway 2 from Panitanki to Fulbari
Asian Highway 48 from Jaigon to Changrabandha

Prepared by the Project Implementation Unit, Public Works Department, Government of West Bengal for the Government of India and the Asian Development Bank.

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ABBREVIATIONS

Abbreviations	Full Form
ADB	Asian Development Bank
AE	Authority Engineer
AH	Asian Highway
CoI	Corridor of Impact
CPCB	Central Pollution Control Board
CWLW	Chief Wild Life Warden
DFO	Divisional Forest Officer
DPR	Detailed Project Report
EIA	Environmental Impact Assessment
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
EMWCA	External Monitoring for Wildlife Conservation Activities
EPC	Engineering Procurement Construction
EUP	Elephant Underpass
FIPL	Feedback Infra Private Limited
GoWB	Government of West Bengal
HSE	Health, Safety & Environment
IA	Implementing Agency
IRC	Indian Roads Congress
ISC	Implementation Support Consultant
Km	Kilometre
LHS	Left Hand Side
MF	Multi-Tranche Financing Facility
MoEF	Ministry of Environment and Forests
MoRTH	Ministry of Road Transport and Highways
NBWL	National Board of Wild Life
NGO	Non-Governmental Organisations
NH	National Highway
NOC	No-objection Certificate
NP	National Park
PD	Project Director



Abbreviations	Full Form
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
PUC	Pollution under Control
PWD	Public Works Directorate
RHS	Right Hand Side
ROB	Railway Over Bridge
ROW	Right of Way
SASEC	South Asia Sub-regional Economic Cooperation
SBWL	State Board for Wildlife
SPCB	State Pollution Control Board
SRCIP	SASEC Road Connectivity Investment Program
TL	Team Leader
WB	West Bengal
WLS	Wild Life Sanctuary
WMP	Wildlife Management Plan



1. INTRODUCTION

The Government of India has applied for financial assistance from the Asian Development Bank (ADB) towards the cost of SASEC Road Connectivity Investment Program (SRCIP). The SRCIP is a multi-tranche financing facility (MFF) that aims to improve about 500 Km of priority road sections in the North Bengal and Northeast of India, through an investment programme set out in phases (tranches). The first tranche of the SRCIP covers two packages:

- (i) Asian Highway (AH) 2 from Panitanki to Fulbari (about 37 Km) and
- (ii) Asian Highway (AH) 48 from Jaigaon to Changrabandha (about 91 Km)

Both the existing roads are of 2 lane standards and have flexible pavements and are part of the existing National Highway Network. Realignment and bypasses have been proposed in both the project road. The construction of the project shall be on EPC basis and the Contractors for both the project roads has been mobilised at site. The Executing Agency (EA) and the Client for the project is Ministry of Road Transport and Highways (MoRTH), while PW (Roads) Directorate, GoWB has been designated as the Client's Representative. The PW (Roads) Directorate has opened up a PIU for implementation of the 2 sub project roads. There are 2 PDs stationed at Siliguri and Mainaguri in West Bengal who are responsible for the implementation of AH-02 & AH-48 respectively.

The Government of India has applied a portion of financial assistance to engage consultant firms to provide services related to Authority Engineer, Implementation Support Consultant and External Monitoring for Wildlife Conservation Activities.

The Authority's Engineer has been engaged for EPC contracts at the contract level. In addition, the Implementation Support Consultant (ISC) is engaged to support EAs in external monitoring of safeguard implementation, third-party maintenance quality, road safety audit, financial management and subsequent submission to ADB. The External Monitoring for Wildlife Conservation Activities consultant has been engaged in accordance to ADB's Guidelines on the use of Consultants to provide technical guidance and monitor implementation and effectiveness of all the environment safeguard activities including wildlife conservation related activities under the project.

1.1 Project Roads

The details of the project road are given in the table below:

Table 1-1: Sub Project Road Segments under Project

Sl. No.	Road Name	Length (Km)	District	Contractor	Appointed Date	Date of Completion
1	AH-02 Nepal Border - Panitanki – Banglabandha (Bangladesh Border)	37.271	Darjeeling and Jalpaiguri	Dineshchandra R. Agrawal Infracon Pvt. Ltd. (DRA)	28 th May 2015	23 rd November 2017
2	AH-48 Pasaka (Bhutan) – Changrabandha (Bangladesh Border)	90.586	Jalpaiguri, Alipurduar & Cooch Behar	Punj Lloyd Ltd.		

Source: EPC Contractors

Various project interventions / improvements proposed in the project roads are indicated in the table below

Table 1-2: Interventions in the Sub Project Roads

Particulars	AH-02	AH-48
Widening to 2 - Lane	24.80 Km	90.586 Km
Widening to 4 Lane	12.4 Km	-
Bypass	1 (1.250 Km)	2 (10.458 Km)



Particulars	AH-02	AH-48
Realignment	1.07 Km	-
Service Road	5.260 Km	-
Major Intersections	10	10
Minor Junction	24	77
Toll Plaza	1	1
Truck Lay byes	1	8
Bus byes / Shelter	23	45.
Major bridge	5 (3 new, 2 rehabilitation)	8 (Only Rehabilitation)
Minor bridge	18 (5 new, 4 widening & 9 rehabilitation)	24 (1 new Minor Bridge)
Culvert	98 (47 Box, 46 Slab & 5 Pipe Culverts)	132 (130 Box & 2 Pipe Culverts)
ROB	4	1
Elephant Underpass	-	3
Pedestrian Underpass	-	4
Flyover	2	1
Vehicular Underpass	1	1

Source: EPC Contractors

Figure 1-1: Project Roads





2. SCOPE OF THE REPORT

This is the first semi-annual environmental monitoring report for the project for the period of August 2015 to Dec 2015¹. It describes the present compliance status and implementation of the mitigation measures, monitoring & the compliance with the ADB environmental safeguard requirements and further states the actions that would be taken in the due course of the project.

3. Reviews & Inputs by EMWCA Consultant

The EMWCA consultant had undertaken the review of the EIA report prepared by the IA as per his scope of Work in order to understand the background of the various environmental and conservations issues related to the project. The EMWCA consultant also reviewed the Contract Agreements signed between the EPC contractors and MoRTH to understand the contractual issues related to the implementation of the EMP by the contractors. It has been found that the contract agreements signed between the EPC Contractors and the MoRTH doesn't recognize EMWCA and the roles and responsibilities of implantation of the EMP lies with the Authority Engineer. In order to overcome this issue, it has been agreed by the IA that the EMWCA shall report to the PDs who shall provide necessary instructions to the contractors for implementation of the EMP.

3.1 Wildlife Management Plan

As per the scope of EMWCA, the Wildlife Specialist shall prepare a detailed Wildlife Management Plan based on the wildlife conservation related activities proposed in the EIA. This wildlife management plan shall include activities related to construction of the underpasses, compensatory afforestation and habitat enhancement through plantation of fodder and shade trees, and creation of water holes for wildlife in the project area. The Wildlife Specialist have already visited the project areas but had to truncate his visit due to unavoidable medical issues. He is now fit and is slated to meet and interact with the Forest and Wildlife officials at the project site level (Field Director of Jaldapara NP, DFOs of Jalpaiguri etc.) during the subsequent site visits for preparation of the WMP. The interactions with the officials and the official maps & the management plans of the Jaldapara National Park and the Eastern Duars Elephant Reserve shall be pivotal for the preparation of the detailed WMP. However, the final detailed WMP shall be finalised and submitted after incorporation of all condition that are laid down by SBWL, NBWL & Supreme Court. As on date the construction works are not in progress near the wildlife habitats and the work shall be commenced only when the necessary wildlife clearances are obtained. It is expected that the draft WMP incorporating both the views of the wildlife officials and the IA shall be submitted before the end of this financial year.

3.2 Checklists & Formats

As per the scope of work of the assignment, the EMWCA consultant, on the absence of the checklists & formats prepared the checklists for the usage of the contractors for implementation of the EMP. Similarly both the ISC and EMWCA has proactively prepared and shared the reporting formats for the usage by the contractors. The EPC Contractors shall review and adopt the checklists and the formats and submit the same along with his final EMP. The checklists are annexed to this report.

4. COMPLIANCE ON ENVIRONMENT SAFEGUARDS REQUIREMENTS

4.1 Compliance of Environmental Provisions of the Loan Covenant

As per the Loan Agreement for SRCIP Tranche – 1, the safeguards are to be complied with as per the Schedule 5 to the FFA during implementation of the Facility. ADBs safeguard. All the Schedule 5 to the FFA describes the environment assessment requirements and authorities responsibilities and has been complied with.

4.2 Compliance of Statutory Environmental Requirements

The Government of India has formulated various policy guidelines; acts and regulations aimed at the

¹ The EMWAC consultants were mobilized at the last week of July on 24th July 2015



sustenance of environment & some of which are triggered due to various activities of the project. The MoRTH has assessed the requirements of all statutory clearances that are required for the project at various stages of implementation during the last stage and shall ensure that all statutory clearances as applicable are obtained.

Both the sub-project roads AH-02 and AH-48 do not require Prior Environmental Clearance from MoEF. The statutory clearances prior to construction are related to removal of trees from the State Forest Department and clearances for some construction activities from the State Pollution Control Board (SPCB). The forest and Wild Life clearances are applicable for AH-48 and are being processed by the forest and wild life departments of the state. The implementing agencies for the project (PIUs for both the sub projects) have obtained clearance for tree cutting from the Forest Department and trees are being removed from the RoW.

As on date, no permission from the State Ground Water Board has been obtained for using ground water by both the contractors. Both the EPC Contractors have obtained labour license and Workmen Compensation Insurances. The Contractors have also obtained Consent to Establish (CTE) for Concrete Batching Plants, Crushers, WMM and the Hot Mix plant. In AH-02 the Consent to Operate (CTO) for WMM & Batching Plant has been obtained while that of the HMP is in progress. In AH- 48 the CTO for HMP for both camps, crusher & batching plant in Rangali Bazna obtained, while the CTO for batching plant in Mainaguri not yet obtained. The contractor of AH-48 is yet to submit the CTE for WMM Plants. The Contractors has also been asked to submit Pollution under Control Certificate (PUC) for vehicles engaged on construction activity. The status of all statutory environmental requirements is briefly summarized below:

Table 4-1: Status of Legal Compliance

Sl. No.	Clearances / Permissions / NOC	Statutory Authority	Status	
			AH-02	AH-48
To be obtained by IA				
1	Tree Felling Permission	Forest Department	Obtained for 3412 trees from DFO Kurseong Division & Forest Range Officer, Ambari Range	Obtained for 4975 trees from Range Officers of Madarihah, Dalgaon, Moraghat, Mekhliganj & Hamiltonganj Ranges
2	Forest Clearance	Forest Department	Not Applicable	Applied and under process
3	Sanctuary Clearance	NBWL, Supreme Court	Not Applicable	Applied and under process
4	Certificate of Registration of Principal Employer	Ministry of Labour & Employment Govt. of India	Obtained	Obtained
To be obtained by EPC Contractor				
5	NOC for Change of Land Use	District Land Reform Dept.	Applied and under process	Not applied
6	Consent to Establishment (CTE)	West Bengal State Pollution Control Board	<ul style="list-style-type: none"> • Obtained for Batching Plant and WMM vide NOC sl. No. N0136456 dated 31st Aug 2015 • Obtained for HMP vide Memo No. N795 / WPB /SRO/NOC /DAR /D.452.2015 dated 30th Nov 2015 	<ul style="list-style-type: none"> • Obtained for HMP at Mainaguri vide Memo No. N584/WPB/SRO/JAL/P.178.2015. dated 25th Feb 2015 • Batching Plant at Mainaguri vide Memo No. N780/WPB/SRO/NOC/JAL /P.192.2015. dated 2nd Nov 2015



Sl. No.	Clearances / Permissions / NOC	Statutory Authority	Status	
			AH-02	AH-48
				<ul style="list-style-type: none"> • CTE for HMP, Batching Plant, and Crusher Rangali Bazna vide N630/ WPB / NOC/ SRO/JAL/ P.180.2015 dated 28th May 2015
7	Consent to Operate (CTO)	West Bengal State Pollution Control Board	<ul style="list-style-type: none"> • Obtained for Batching Plant and WMM vide Consent Memo No. C1032/WPB/SRO/DAR/D.401.2015 dated 9th Dec 2015 	<ul style="list-style-type: none"> • Obtained CTO for Hot Mix Plant vide Consent Memo No. C857/WPB/SRO/JAL/P.142.2015 dated 24th July 2015 for Mainaguri Camp • Obtained CTO for Crusher, batching plant and Hot Mix Plant, Consent Memo No. C1015/WPB/SRO /JAL /P.143.2015 dated 18th Nov 2015 for Rangali Bazna Camp
8	Storage, Handling, and Transport of Hazardous Materials	West Bengal State Pollution Control Board	Not applied	Not applied
9	Explosive License for Storing Fuel Oil, Lubricants, Diesel, etc. at Construction Camp	Chief Cont. of Explosives	Obtained vide letter No. A/P/EC/WB/14/3672 (P362497) dated 10 th Dec 2015	Applied for permit, Ref No. NIL dated 21 st Sept 2015 for 150,000 lit/month at Camp – 1, Mainaguri
10	Labour License	Labour Commissioner	Obtained. Ref: No. 46/L (293)/2015-E.2 dated 3 rd Nov 2015 for not more than 200 heads. Valid up to 2 nd Nov 2016	Obtained, Ref: No. 46/L (240)/2015 E.2 dated 17 th Sept 2015 for not more than 300 heads. Valid up to 10 th Sept 2016
11	Sand & Aggregates Mining	Irrigation Dept.	Obtaining for outsourced approved / licensed vendor	Obtaining for outsourced approved / licensed vendor
12	Borrow area clearance	SEIAA	Presently not taken, as earth from borrow area are not being used in the project.	Presently not taken, as earth from borrow area are not being used in the project.

4.3 Submission of EMP Report by Contractor

Both the EPC contractors of AH-02 and AH-48 have submitted a draft EMP and HSE Plan. The draft EMP has been reviewed by both the ISC and EMWCA and the EPC Contractors have been advised to prepare the site specific EMP for their respective contract packages. The final EMP shall contain the mitigation and enhancement measures as specified in the contract, the monitoring plan including locations and the budgetary provisions for implementing the EMP. The final EMPs are yet to be submitted and shall integrate and incorporate the EMoP, HSE Plan, Waste Management Plan and Traffic Management Plan, Reporting system, Plantation strategy and budget. The final EMP shall also contain the entire checklist and the formats for reporting purpose.



4.4 EMP Compliance Status

The detail of the EMP compliance (as per contract agreement) is given in Annexure. Overall, of the 51 mitigation measures prescribed in EMP for AH-02, the compliance rate was 34.78% (16 measures were complied with; the measures that were not applicable were not calculated). Partial compliance was achieved in 14 measures while in 16 measures no compliance was achieved. For the 57 mitigation measures prescribed in EMP of AH-48, the compliance rate was 30.61% (15 issues were complied with; the measures that were not applicable were not calculated). Partial compliance was achieved in 15 issues while in 19 measures no compliance was achieved. The summary of the compliance performance is given in the table below:

Table 4-2: Summary of EMP Implementation

Sl. No.	Sub Project	Total No. of Mitigation Measure Prescribed in EMP	Compliance Performance				% Compliance
			Yes	Partial	No	NA	
1	AH-02	51	16	14	16	5	34.78%
2	AH-48	57	15	15	19	8	30.61%
Total		108	31	29	35	13	32.63%
% of Total		100%	28.70%	26.85%	32.41%	12.04%	

4.5 Environmental Monitoring

Both the EPC contractors have not yet initiated the pollution monitoring for both the sub projects. The parameters and locations shall be part of the EMOp shall be part of the final EMP of the contractor which is yet to be submitted. The contractors are presently seeking quotations from NABL accredited laboratories for conduct of the monitoring and it is expected to conclude the monitoring for the winter season by February 2016. Representative samples from approximately 4-6 locations in each sub project road shall be collected for air, water, noise and soil quality along the corridors. These locations shall represent their campsites besides a mix of sensitive land uses and urban / semi-urban, rural land uses. The contractors have been advised to select locations and inform the AE/EMWCA/AE as well as PIU for their consensus.

4.6 Training & Capacity Building

During the reporting period, two sessions of training have been conducted jointly by the EMWCA consultant and the ISC at Siliguri for the PIU environment officers, contractors staff, & staff of AE at Siliguri for supervision of EMP implementation. The 1st session involved Environmental Management and EMP Implementation & was conducted by the ISC while the 2nd session on wild life management in the project corridors was conducted by the EMWCA. A total of 17 representatives attended the training. The 2nd session on wild life management involved the Meanings of some important terminology, Forest & WL Clearances involved in the projects, Flora, Fauna & Protected Areas in the project area, Impacts due to the Project, Mitigations as per EIA Report, Some Good Mitigation Practices, EMP as per Contract & EMOp as per Contract.

4.7 AIDS Awareness & Health Camps

An awareness camp on HIV / AIDS was conducted by the Contractor of AH-48 in their camp site and covered topics related to the risk of contracting or transferring the infections including STDs. The target audience were the workers and labourers involved in the project. The contractor of AH-02 is presently identifying NGOs who can conduct the awareness campaigns on a regular basis on their behalf and it is anticipated that AIDS awareness campaigns will be initiated from January 2016 onwards in AH-02.

A health camp was also organized for the workers by the AH-48 contractor in December 2015. Similar camps shall be held regularly for both the packages.

4.8 EMP Implementation Setup in the Project

For the effective implementation and management of the EMP, the Contractors for the respective sub-



projects have appointed qualified HSE Officers. The PIUs have also nominated Assistant Engineers to closely monitor the implementation of the EMP and report to the PD. As per the scope of work of EMWCA consultant, the task of supervision for EMP implementation is on his part. The EMWCA consultant along with ISC shall have overall reporting responsibility of the environmental safeguards to PIU and ADB. However, the contract agreements signed between the EPC Contractors and the MoRTH doesn't recognize EMWCA and the roles and responsibilities of implantation of the EMP lies with the AE. Presently, it has been agreed by the IA that the EMWCA shall report to the PDs who shall provide necessary instructions to the contractors for implementation of the EMP.

5. GRIEVANCE REDRESSAL

A grievance redress mechanism (GRM) is in place for social, environmental or any other subproject related grievances. Public complaints and grievances in both the packages mostly relate to the compensation and assistance provided to the affected persons. Only one complaint related to dust pollution in AH-48 was made and was subsequently resolved through watering. The contractors shall be maintaining a complaint register and display a notice for the same for public to register their grievance with them in case of any complaints. The PIU will also maintain a details of the Complaints received from the general public. Any complaints if received and reported by the contractor in the due course of the project will be duly summarised and presented from the next semi-annual environmental monitoring report.

6. FOLLOW UP ACTIONS AND CONCLUSIONS

The contractors are yet to submit their final EMPs, though the Draft EMP has been reviewed and suggestions made by the EMWCA and the same were shared with the contractors for necessary updation. A copy was also shared with the ISC for their information. The environmental monitoring for air, water, noise and soil are also yet to be initiated by the contractors of both the packages. They have been intimated by the authority accordingly about these lapses in EMP & environmental monitoring to be addressed immediately. These actions will be followed up and improvements will be reported in the further semi-annual environmental monitoring reports.



Annexure 1: Checklists

The checklists are to be filled by the contractors for each and every activity. The frequency of filling the checklists have been defined into daily, weekly, fortnightly, monthly, quarterly and as per requirement during the 1st quarter / six months. The contractor has the liberty to prepare / modify these checklists into checklists into weekly, monthly, quarterly one for his own suitability. The filled up checklists are to be made a part of the MPR, QPR, bi annual & annual reports and the raw data are to be maintained and retained for a minimum of the entire project duration (including construction & Defect Liability Periods) by the EPC Contractor. The EPC may decide to retain these checklists and records for a period longer than the project duration, based on its on Standard Operating Procedures. The EPC Contractor shall also define the storage and disposal methods as per its own Standard Operating Procedures.

The information presented shall be utilised for ensuring compliance with respect to the EMP and other safeguard requirements of ADB as well as legal compliances of State and Central Governments with respect to Environment Protection. The detail checklists are given below:

Table: Summary of Checklists

Sl. No.	Title	Doc. Ref. No.
1	Contractor's Checklist for Environmental Management Plan during Construction & Defect Liability Period Stage	FIPL/SASEC/EMP/Checklist /01
2	Contractor's Checklist for Environmental Monitoring during Construction Stage	FIPL/SASEC/EMP/ Checklist /02



Title: Contractor's Checklist for Environmental Management Plan during Construction & Defect Liability Period Stage

Doc. Ref. No.: FIPL/SASEC/EMP/Checklist/01

Name of Project Road:

Activity	Frequency	Responsibility of Checking	EMP Action Required (Yes / No)	Actions taken as per EMP (Yes / No)	If No, then why?	Date of Checking	Remarks
Copy of EMP provided at Camp site	Once during 1 st quarter						
EMP approved by Client / Consultant?	Once during 1 st quarter						
Tree clearance / felling under progress?	Weekly, during 1 st 6 months						
Grubbing & levelling at project road works under progress?	Weekly						
Site located away from habitations & protected areas?	Once during 1 st quarter						
Proper Drainage of rain water / surface water run off maintained / cleaned at camp site?	Monthly						
Rain water harvesting structures available at camp site?	Quarterly						
Rain water harvesting structures are clean and maintained at camp site?	Monthly						
Fumigation and insect eradication programmes running at camp site	weekly						
Proper Sanitation and disposal facilities at construction worker's camp available?	Daily						
Potable water available at camp site	Daily						
Adequate water for bathing, washing and other activities available at camp site?	Daily						
Cooking fuel at workers' camp available?	Weekly						
Safe work practice and adequate fire fighting facilities available at camp?	Daily						
Detailed Public Health Utilities plan for the workers' camps and other works sites prepared?	Once during 1 st 6 months						
Detailed Public Health Utilities plan approved by Client / Consultant?	Once during 1 st 6 months						
Tie up with municipal authorities for disposal	Once during 1 st 6 months						



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Activity	Frequency	Responsibility of Checking	EMP Action Required (Yes / No)	Actions taken as per EMP (Yes / No)	If No, then why?	Date of Checking	Remarks
of worker's camp sanitation waste done?							
Septic Tanks at camp cleaned regularly?	Weekly						
Availability of separate and adequate toilets for women and other workers in camp site?	Monthly						
Crèche for workers children adequate?	Monthly						
Child labour prohibited?	Weekly						
Proper first aid and health facilities at camp available?	Daily						
Trained paramedics available to provide first aid?	Weekly						
Labour Gang leaders / Supervisors trained on first aid / emergency aid?	Monthly						
Tie ups with local hospitals done / renewed?	Once during 1 st quarter & then monthly						
Emergency Contact details of hospitals & other authorities displayed?	Weekly						
HIV/ AIDs awareness campaign at workers' camp done?	Monthly						
Condom Vending Machine Available & in working condition?	Fortnightly						
Borrow area locations identified and approved?	Once during 1 st 6 months & then monthly						
All statutory approvals related to borrow areas obtained	Monthly						
Indemnity against third party claims related to borrow areas & quarries made?	Quarterly						
Equitable agreements for borrow pit & quarry with land owners done?	Once during 1 st 6 months						
Borrow pit & quarry exploitation and post-use restoration plans submitted?	Once during 1 st 6 months						
Any chance of Erosion / damage to embankments? If yes then checks made?	Monthly						
Top soil from borrow areas, disposal sites and	Once during 1 st quarter, then						



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Activity	Frequency	Responsibility of Checking	EMP Action Required (Yes / No)	Actions taken as per EMP (Yes / No)	If No, then why?	Date of Checking	Remarks
camp sites collected & stockpiled properly?	monthly						
Silt fencing locations identified and approved by client / Consultant?	Once during 1 st 6 months						
Silt fencing properly maintained?	Monthly, weekly during monsoon						
Any damage to services running parallel or across the alignment of project road corridor?	Weekly						
Services restored before construction?	Weekly						
Safe work practice and adequate fire fighting facilities available at construction zone?	Daily						
Workers trained in safe work practice?	Monthly						
Site restoration plans prepared & submitted?	Once during 1 st 6 months						
Site restoration plans approved by client / consultant?	Once during 1 st 6 months						
All temporary works sites notified prior to use?	weekly						
Approvals for temporary works sites received	Weekly						
Disposal sites identified and approved?	Once during 1 st 6 months						
All approvals & permissions obtained related to disposal sites?	Once during 1 st 6 months						
Vehicle maintenance and refuelling areas in construction yard identified?	Once during 1 st 6 months						
Vehicle maintenance and refuelling areas properly cleaned & maintained?	Weekly						
Permission for water abstraction for construction activity obtained from authority?	Once during 1 st 6 months						
Permission for water abstraction from authority valid as on date?	Monthly						
Location for Oil interceptors identified and approved?	Once during 1 st 6 months						
Oil interceptors maintained regularly in good conditions	fortnightly						
Trucks carrying construction material covered	Daily						



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Activity	Frequency	Responsibility of Checking	EMP Action Required (Yes / No)	Actions taken as per EMP (Yes / No)	If No, then why?	Date of Checking	Remarks
with tarpaulin sheet?							
Water sprinkling carried out in mornings and evenings on haul roads and compact surface?	Daily						
Stock piled sand and stone wetted before loading	Daily						
Construction debris disposed only at designated sites?	Daily						
Conditions laid down in CTE & CTO for crushers, WMP, HMP etc. followed?	Weekly						
Actions taken if conditions not followed?	Weekly						
All vehicles / equipment having valid PUC?	Fortnightly						
All machinery, equipment and vehicles regularly serviced	Monthly						
Environmental Monitoring data collected?	As per EMoP Checklist						
Survey of noise sensitive features done?	Once during 1 st 6 months						
Location of noise barrier walls finalised and approved by Client / Consultant	Once during 1 st 6 months						
Design of Noise barrier wall done?	Once during 1 st 6 months						
Relocation of Religious structures & CPR done?	Once during 1 st 6 months						
Safety manual prepared, submitted to Client / Consultants?	Once during 1 st 6 months						
Approval of safety manual received?	Once during 1 st 6 months						
Advance safety signs for construction available at site and construction location	Daily						
Diversion plans approved by Client / Consultants?	Once during 1 st 6 months & then monthly						
Road signages visible, legible and adequate	Fortnightly						
Fire & safety drill conducted at construction site?	Monthly						
Findings of safety & fire drills recorded and submitted to client / consultants?	Monthly						



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Activity	Frequency	Responsibility of Checking	EMP Action Required (Yes / No)	Actions taken as per EMP (Yes / No)	If No, then why?	Date of Checking	Remarks
Accidents, if any reported at project road?	Daily						
Accidents, if any reported at construction site & camps?	Daily						
Monthly accident reports submitted to client / contractor	Monthly						
Compensatory plantation land identified?	Monthly						
Species for Compensatory plantation approved by client / consultant?	Once during 1 st 6 months						
Compensatory plantation started?	Monthly						
Survival monitoring of trees done?	Fortnightly						
Dead / diseased saplings removed and replaced?	Fortnightly						
Number of trees / saplings planted tally with the Client / Consultant / authority's approved numbers	Fortnightly						
Elephant / Animal Underpasses construction started?	Monthly during winter & summer season						
Training to workers regarding chance encounter with wild animals done?	Every 6 months						
Road kill reported in project road?	Daily						
Monthly road kill reports submitted to client / contractor	Monthly						
Construction workers provided with personal protective equipment (PPE)?	Weekly						
Construction workers are using personal protective equipment (PPE)?	Daily						
Any storing of construction material, construction waste, excavated earth, etc. near the banks of surface water bodies?	Weekly						
If stored, permissions from Client / Consultants obtained?	Weekly						
Construction work during monsoon near water sources undertaken? If Yes permissions	Weekly, during monsoon season						



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Activity	Frequency	Responsibility of Checking	EMP Action Required (Yes / No)	Actions taken as per EMP (Yes / No)	If No, then why?	Date of Checking	Remarks
obtained?							
Grievance / Complaint log for community / general public available at camp site?	Daily						
Grievance / Complaints are analysed and reported to Project Manager?	Daily						
Grievance / Complaints are analysed and reported in MPR to client / consultant	Monthly						

Prepared By : _____ **Checked By** : _____ **Submitted By** : _____
Signature : _____ Signature : _____ Signature : _____
Name : _____ Name : _____ Name : _____
Designation : _____ Designation : _____ Designation : _____



Title: Contractor's Checklist for Environmental Monitoring during Construction Stage

Doc. Ref. No.: FIPL/SASEC/EMP/Checklist/02

Name of Project Road:

Sl. No.	Particulars	Frequency	Date of Checking	Yes / No	If No, then when?
A. Monitoring of various Environmental parameters					
1	Parameters for Air, Water, Noise & Soil Quality monitoring identified & as per CPCB guidelines?	Once during 1 st quarter			
2	Monitoring Frequency identified and as per Contract?	Once during 1 st quarter			
3	Monitoring Locations identified and reported to Client & Consultants / Engineer?	1 month before actual monitoring			
4	Approval of monitoring locations received from Client and Consultants / Engineer?	15 days before actual monitoring			
5	NABL accredited / MoEF&CC recognised agency / Lab identified?	Once during 1 st quarter			
6	Work Order issued to NABL accredited / MoEF&CC recognised agency / Lab?	Once during 1 st quarter			
7	Work Order contains clauses to redo checks and indemnify client in case of wrong methodology etc.?	Once during 1 st quarter			
8	Agency shared methodology & all necessary details along with their approved QAP?	Once during 1 st quarter			
9	Forwarded the agency / lab's QAP to all Client & Consultants / Engineer?	Once during 1 st quarter			
10	Obtained schedule of monitoring and their key persons from the agency / lab?	1 month before actual monitoring			
11	Forwarded and approval received from Client & Consultants / Engineer on the schedule?	15 days before actual monitoring			
12	Responsibility of checking of Agency / Lab's daily activity & laboratory testing fixed in house?	Once during 1 st quarter			
13	The agency / lab have brought calibrated and approved machinery & equipment at site? Are their machinery & equipment at their laboratory calibrated & approved?	Before start of monitoring			
14	Quality Control procedures obtained / adopted during testing as per Lab's QAP?	Daily during monitoring			
15	Safety measures as per QAP / Safety Plan of Contractor adopted during monitoring?	Daily during monitoring			
16	Are the results obtained as per standards? If results not in order, when are the tests to be redone?				
17	Reported the monitoring results along with signed test results to the Client & Consultants / Engineer?	Every season except monsoon			
B. Biodiversity Assessment by External Expert					
1	Parameters for Biodiversity assessment identified & as per NBWL / Supreme Court's conditions if any?	Once during 1 st 6 months			



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Sl. No.	Particulars	Frequency	Date of Checking	Yes / No	If No, then when?
2	Monitoring Locations identified and reported to Client & Consultants / Engineer?	1 month before actual monitoring			
3	Approval of monitoring locations received from Client and Consultants / Engineer?	15 days before actual monitoring			
4	Permission from PCCF (WL) / CWLW for biodiversity assessment obtained?	15 days before actual monitoring			
5	External expert for Biodiversity assessment identified?	Once during 1 st 6 months			
6	Expert has relevant credentials?	During identification			
7	Work Order issued to External expert for Biodiversity assessment?	1 month before actual monitoring			
8	Work Order contains clauses to redo checks and indemnify client in case of wrong methodology etc.?	1 month before actual monitoring			
9	Expert has shared methodology & all necessary details?	1 month before actual monitoring			
10	Forwarded the External Expert's credential & methodology to all Client & Consultants / Engineer?	1 month before actual monitoring			
11	Obtained schedule of monitoring and their key persons from the Expert?	1 month before actual monitoring			
12	Forwarded and approval received from Client & Consultants / Engineer on the schedule?	15 days before actual monitoring			
13	The agency / lab have brought calibrated and approved machinery & equipment at site?	Before start of monitoring			
14	Responsibility of checking of Expert's daily activity fixed in house?	15 days before actual monitoring			
15	Reported the monitoring results along with signed test results to the Client & Consultants / Engineer?	-			

Prepared By :	Checked By :	Submitted By :
Signature : _____	Signature : _____	Signature : _____
Name : _____	Name : _____	Name : _____
Designation : _____	Designation : _____	Designation : _____



Annexure 2: Implementation of EMP Matrix for AH-02²

Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
1	Pre-Construction Phase				
1.1	Tree clearance	Compensatory plantation & additional plantation in available clear space	Partial	<ul style="list-style-type: none"> Tree felling in progress by Forest dept. The final no. of trees felled to be intimated by PD for firming up of compensatory plantations number. Locations need to be identified by Contractor 	Identification of location
1.2	Grubbing & levelling at along Project road	Removal of remains of trees to facilitate construction and carting away of remains	Partial	Done in some areas where tree felling done	To be done in all areas
1.3	Sitting of construction Camp	Sitting will be finalized after approval of Authority Engineer who will look into the site and planning of the Contractor	Partial	Final approval to be based on submission of modified drawings as part of EMP	Modified construction Camp drawings to be submitted to the AE for approval
2	Construction Phase				
2.1	Borrow pit exploitation causing loss of productive land (Borrow area development)	Equitable agreements for borrow pit development will be reached between land owners and contractors including measures for post-restoration	Not applicable at present	No borrow areas at present	Agreements if borrow areas required
2.2		Contractor will submit plans to Authority Engineer and PIU for borrow pit exploitation and post use restoration before commencement of work and implementation of approved plan.	No	<ul style="list-style-type: none"> No borrow areas at present Borrow area rehabilitation plan to be submitted as part of EMP 	
2.3	Erosion / damage to embankments	Embankment portion at new bridges (major & minor), Bagdogra flyover and ROB location and locations of raised portions (Km 28.000 to Km 29.500)	Partial	<ul style="list-style-type: none"> Embankments in progress 	
2.4	Safe site for construction worker's camp	Site will be located at least at 500 m downwind from habitations and major	Yes		

² As per Table 1 of Appendix A-11 of contract agreement signed between MoRT&H and the EPC Contractor



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
		water course and at least 1 km away from Khoribari Reserved Forest at Panitanki			
2.5	Sanitation and disposal facilities at construction worker's site	Proper availability of drinking water and sanitation facilities at worker's camp	Yes		Number of toilets may be increased
2.6	Cooking fuel at worker's camp	Workers' should not depend for cooking on fuel wood.	Yes		
2.7	Health facilities at worker's camp	Availability of first aid and Health facilities	Partial	Availability of first aid boxes but dispensary absent	Dispensary to be established in all camps
2.8	HIV/ AIDS awareness campaign at workers' camp	Workers to be made aware of HIV/AIDS and protection measures.	No	Identification of NGOs in progress	To be done every month with prior intimation to client, AE & other consultants
2.9	Damage to services running parallel of across the alignment of project road corridor during construction leading to interruption in supply	Relocation of any potentially affected services prior to commencement of any construction works	Yes		
2.10		Contractor will be responsible for identifying and safeguarding services adjacent to works and for compensating statutory undertakers for any accidental damage to such services	Yes		
2.11	Fire Prevention	Adopt safe work practices and have adequate fire fighting facilities.	Partial	Yet to adopt safe work practices in the store area fully	Check fire fighting facilities in regular period
2.12	Presences of contractor's work force increasing pressure on already strained local facilities including health & medical facilities	Contractor will provide own suitable equipped and staffed site emergency medical facilities	Partial	Presence of first aid facilities but absence of site emergency medical facilities	Site Emergency medical facilities to be firmed up
2.13	Incomplete post use reinstatement of construction camps leading to land productivity or additional	Site Restoration approval plan for approval of AE & PIU to implement these plans fully prior to demobilisation. All temporary work sites to be notified	Not applicable at present		Site restoration plan to be prepared



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
	costs for land owners to reinstate land	by the contractor prior to use			
2.14	Pollution of land, ground water and surface water arising from sanitary and other wastes and spillage.	During construction it will be ensured that contractor does not dispose off debris in water bodies (River and streams being crossed by the project roads)	Yes		Monitoring of compliances during construction
2.15		Vehicle maintenance and refuelling will be confined to areas under construction yard to trap discarded lubricant and fuel spills.	Partial	<ul style="list-style-type: none"> Fuel traps / oil interceptors not in place Housekeeping standards low 	Fuel traps / oil interceptors not in place Housekeeping standards to improve
2.16		Sanitation waste from worker's camp will not be diverted to water bodies. The waste water will be diverted to septic tank	Partial	Septic tanks present, however waste water from bathrooms being let out to water channel in campsite	
2.17		Contractor to prepare for PIU's approval detailed public health utilities plan for the worker's camp and other worker sites, which make adequate provision for safe disposal of all wastes and prevention of spillage, leakage of polluting material etc.	No	<ul style="list-style-type: none"> Detailed Public Health Utilities Plan not prepared & submitted Sections of these are to be addressed in the EMP & submitted 	Detailed Public Health Utilities Plan to be prepared & submitted
2.18		Contractor will be required to pay all costs associated with cleaning up any pollution caused by their activities and to pay full compensation to those affected	Not applicable at present	Not applicable at present	
2.19	Contractor's water abstraction resulting in depletion of scarce water resources with local uses and pollution of surface water bodies from construction activities	Contractor will make suitable arrangement for own supply and protection of water bodies from pollution	Yes		
2.20		Silt fencing will be provided all around the base of the stockpile of materials wherever material is stockpiled near water bodies	No	<ul style="list-style-type: none"> Silt fencing yet to be done Stockpiling done near water channel at University area and also in camp area 	Silt fencing locations to be identified and fenced when applicable



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
2.21	Construction traffic causing pavement and structure damage to roads due to overloading increasing congestion and increased road safety hazards	Contractor will use appropriate vehicles and to comply with legal gross vehicle and axle load limits.	Yes		
2.22		Contractor will repair damage at own expense	Yes		
2.23		Contractor will minimize road safety hazards and inconvenience to other road users by taking appropriate measures such as proper diversions, signage, etc.	Yes		Increase in the number of safety features
2.24	Road safety hazards associated with temporary traffic diversions	Contractor will take all reasonable measures to minimize interference with traffic flow and to provide safe transit at diversions. The contractor will maintain two-way traffic at diversions and will inform to local traffic police about the traffic diversion.	Partial	Contractor to take necessary actions as per IRC guidelines	Increase in the number of safety features
2.25	Pollution from Hot Mix Plant, Concrete batching Plant, Construction yard and due to movement and operation of construction vehicles and machinery.	Construction camps will be located in open areas and away from residential complexes.	Yes		
2.26		Trucks carrying Construction material will be covered with tarpaulin sheet to avoid spilling	No	No coverage by tarpaulin	
2.27		Water sprinkling will be carried out in morning and evenings on haul roads and compact surface.	Partial	Water sprinkling done but not at regular intervals as per contract	
2.28		Vehicles and construction machinery will be maintained to confirm emission standards specified by West Bengal Pollution Control Board.	Yes		
2.29		Stock piled sand and stone will be wetted before loading	No	Sand not wetted before loading	
2.30		Construction debris shall be disposed only at designated sites	No	<ul style="list-style-type: none"> • Construction debris dumped along road side • No designated sites identified 	<ul style="list-style-type: none"> • Identify designated sites for dumping • No dumping along road side



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
2.31	Noise Levels	Construction camps will be located in open areas as far as possible from residential areas.	Yes		
2.32		All equipment will be maintained in good working order, properly designed engine enclosures and inbuilt silencers.	Partial	Noise reduction enclosures / measures yet to be used for all equipment	To be used for all equipment
2.33		Construction work will be prohibited between 10.00 PM to 6.00 AM near residential areas.	Yes		
2.34		Construction of noise mitigation measures such as Noise barrier wall at 3 educational institutes falling in RoW. The detailed drawings shall be worked out by the AE during construction phase in consultation with Authorities of Educational Institutes	Not applicable at present	To be undertaken later	Contractor to identify the educational institutes and submit draft drawings to the AE
2.35	Relocation of common property resources (CPRs)	7 Hand Pumps, 14 wells, 34 tube wells, 11 passenger sheds and 18 water taps within ROW. These need to be relocated in case of public assets of the owners need to be compensated in case of private asset	Partial	Undertaken in areas handed over to contractor.	To be undertaken
2.36	Accidental Hazards and Safety	The contractor will prepare a safety manual for all activities at construction as well as activities at construction camps. This manual will have safety measures to be adopted. The safety procedure for transpiration of construction materials will also detailed	Yes		
2.37	Negative impact on Flora due to Cutting of Trees and removal of vegetation	To compensate for trees to be cut through plantations	Not applicable at present	Final no. of trees felled to be intimated by PD for firming up of compensatory plantations number. Locations need to be identified by Contractor	Confirmation of numbers of trees felled and identification of locations of plantations by Contractor
2.38	Negative impact on Fauna	The compensatory plantation will	No		



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
		provide nesting ground to avifauna as this will be done in available space on either side of road			
2.39		Construction workers shall be trained about safe handling of animals if found by chance. Cost of training built into training component cost	No	Training and workshop on chance encounter with fauna, no hunting and fishing not undertaken by the contractor	Training and workshops to be conducted
2.40		Construction workers will be trained not to go for fishing in water bodies	No		
2.41	Occupational Safety and Health	Construction worker will be provided with personal protective equipment (PPE) such as ear plugs, helmets, safety shoes, gloves etc.	Partial	PPEs provided but not in adequate number especially to subcontracted labourers	Adequate numbers of PPE to be procured & provided
2.42	Siltation in to water Bodies	The siltation will be avoided by not storing the construction waste, excavated earth etc. near the banks of surface water bodies – Mechi, Manza, Hullia, Balason, Mahananda and at locations of new major and minor bridge construction	No	<ul style="list-style-type: none"> Storage of construction material near water channel in university area Silt fencing details to be provided in EMP which is yet to be submitted 	
2.43	Contamination of water from construction wastes	All measures will be taken to prevent the waste water produced in construction site from entering directly in to water body as directed by Authority Engineer.	No	Waste water entering water body near camp site	Adequate measures to be taken
2.44		Construction works near surface water sources shall be avoided during monsoon	Yes		
2.45		The discharge standards promulgated under the Environmental Protection Act shall be strictly adhered to.	No	No monitoring done as on date	Monitoring to be done
2.46	Environmental monitoring during construction phase	Monitoring of Ambient air quality, Water quality (ground and surface), Noise Level & Soil quality	No	<ul style="list-style-type: none"> Monitoring labs not yet identified Monitoring plan (part of EMP) yet to be submitted 	<ul style="list-style-type: none"> Identify External Expert and conduct Assessment Submit monitoring plan



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
2.47		Monitoring of construction sites arrangements made for protection measures at storage areas, drainage arrangement and sanitation at construction camp.	No	Monitoring parameters & frequency not yet finalised by Contractor	Finalise Parameters and frequency
2.48		Inspection of construction camps for sanitation.	No	Monitoring parameters & frequency not yet finalised by Contractor	Finalise Parameters and frequency



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Annexure 3: Implementation of EMP Matrix for AH-48³

Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
1	Pre-Construction Phase				
1.1	Tree clearance	Compensatory plantation & additional plantation in available clear space	Partial	Final no. of trees felled within CoI to be intimated by PD for firming up of compensatory plantations number. Locations need to be identified by Contractor	Identification of location
1.2	Grubbing & levelling at along Project road	Removal of remains of trees to facilitate construction and carting away of remains	Partial	Done in areas handed over to Contractor	To be done in all areas
1.3	Sitting of construction Camp	Sitting will be finalized after approval of Authority Engineer who will look into the site and planning of the Contractor	Partial	Final approval to be based on submission of modified drawings	Modified construction Camp drawings to be submitted to the AE for approval
2	Construction Phase				
2.1	Borrow pit exploitation causing loss of productive land (Borrow area development)	Equitable agreements for borrow pit development will be reached between land owners and contractors including measures for post-restoration	Not applicable at present	No borrow areas at present	Agreements if borrow areas required
2.2		Contractor will submit plans to Authority Engineer and PIU for borrow pit exploitation and post use restoration before commencement of work and implementation of approved plan.	No	<ul style="list-style-type: none"> No borrow areas at present Borrow area rehabilitation plan to be submitted 	
2.3	Erosion / damage to embankments	Embankment portion at bridges, High embankment locations and ROB location (0.674 of Hasimara bypass), and locations of raised portions	Partial	Yet to be undertaken in all sections. Work in progress in ROB location	
2.4	Safe site for construction worker's camp	Site will be located at least at 500 m downwind from habitations and major water course and at least 4 km away from	Yes		

³ As per Table 1 of Appendix A-11 of contract agreement signed between MoRT&H and the EPC Contractor



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
		Jaldapara National Park			
2.5	Sanitation and disposal facilities at construction worker's site	Proper availability of drinking water and sanitation facilities at worker's camp	Yes		
2.6	Cooking fuel at worker's camp	Workers' should not depend for cooking on fuel wood.	Yes		
2.7	Health facilities at worker's camp	Availability of first aid and Health facilities	Partial	Availability of first aid boxes but dispensary absent	Dispensary to be established
2.8	HIV/ AIDS awareness campaign at workers' camp	Workers to be made aware of HIV/AIDS and protection measures through awareness programme every month.	Yes	Conducted by contractor in the month of December 2015	
2.9	Damage to services running parallel of across the alignment of project road corridor during construction leading to interruption in supply	Relocation of any potentially affected services prior to commencement of any construction works	Yes		
2.10		Contractor will be responsible for identifying and safeguarding services adjacent to works and for compensating statutory undertakers for any accidental damage to such services	Yes		
2.11	Fire Prevention	Adopt safe work practices and have adequate fire fighting facilities.	Yes		Check fire fighting facilities every fortnight
2.12	Presences of contractor's work force increasing pressure on already strained local facilities including health & medical facilities	Contractor will provide own suitable equipped and staffed site emergency medical facilities	Partial	Presence of first aid facilities but absence of site emergency medical facilities	Site Emergency medical facilities to be firmed up
2.13	Incomplete post use reinstatement of construction camps leading to land productivity or additional costs for land owners to reinstate land	Site Restoration approval plan for approval of AE & PIU to implement these plans fully prior to demobilisation. All temporary work sites to be notified by the contractor prior to use	Not applicable at present		Site restoration plan yet to be prepared
2.14	Pollution of land, ground water and surface water arising from sanitary and other wastes and spillage.	During construction it will be ensured that contractor does not dispose off debris in water bodies (River and streams being crossed by the project roads)	Yes		Monitoring of compliances during construction



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
2.15		Vehicle maintenance and refuelling will be confined to areas under construction yard to trap discarded lubricant and fuel spills.	Partial	<ul style="list-style-type: none"> Fuel traps / oil interceptors not in place Low standards of Housekeeping to improve 	Fuel traps / oil interceptors not in place Housekeeping standards to improve
2.16		Sanitation waste from worker's camp will not be diverted to water bodies. The waste water will be diverted to septic tank	Yes		
2.17		Contractor to prepare for PIU's approval detailed public health utilities plan for the worker's camp and other worker sites, which make adequate provision for safe disposal of all wastes and prevention of spillage, leakage of polluting material etc.	No	<ul style="list-style-type: none"> Detailed Public Health Utilities Plan not prepared & submitted However sections of these are to be addressed in the EMP 	Detailed Public Health Utilities Plan to be prepared & submitted
2.18		Contractor will be required to pay all costs associated with cleaning up any pollution caused by their activities and to pay full compensation to those affected	Not applicable at present		
2.19		Contractor's water abstraction resulting in depletion of scarce water resources with local uses and pollution of surface water bodies from construction activities	Contractor will make suitable arrangement for own supply and protection of water bodies from pollution	No	Kitchen wastes dumped in low lying depression / pond in Mynaguri site leading to unhygienic conditions
2.20		Silt fencing will be provided all around the base of the stockpile of materials wherever material is stockpiled near water bodies	No	<ul style="list-style-type: none"> Silt fencing yet to be done However no stockpiling done near water bodies at present 	Silt fencing locations to be identified and fenced when applicable
2.21	Construction traffic causing pavement and structure damage to roads due to overloading increasing congestion and increased road safety hazards	Contractor will use appropriate vehicles and to comply with legal gross vehicle and axle load limits.	Partial	Road signages deficient as per IRC standards	Increase in the number of safety features
2.22		Contractor will repair damage at own expense	Partial		
2.23		Contractor will minimize road safety hazards and inconvenience to other road users by taking appropriate measures such	Partial		



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
		as proper diversions, signage, etc.			
2.24	Road safety hazards associated with temporary traffic diversions	Contractor will take all reasonable measures to minimize interference with traffic flow and to provide safe transit at diversions. The contractor will maintain two-way traffic at diversions and will inform to local traffic police about the traffic diversion.	Partial	Contractor to take necessary actions as per IRC guidelines	Increase in the number of safety features
2.25	Pollution from Hot Mix Plant, Concrete batching Plant, Construction yard and due to movement and operation of construction vehicles and machinery.	Construction camps will be located in open areas and away from residential complexes.	Yes		
2.26		Trucks carrying Construction material will be covered with tarpaulin sheet to avoid spilling	No	No coverage by tarpaulin	
2.27		Water sprinkling will be carried out in morning and evenings on haul roads and compact surface.	Partial	Water sprinkling done but not at regular intervals as per contract	
2.28		Vehicles and construction machinery will be maintained to confirm emission standards specified by West Bengal Pollution Control Board.	Yes		
2.29		Stock piled sand and stone will be wetted before loading	No	Sand not wetted before loading	
2.30		Construction debris shall be disposed only at designated sites	No	<ul style="list-style-type: none"> • Construction debris dumped along road side • No designated sites identified 	<ul style="list-style-type: none"> • Identify designated sites for dumping • No dumping along road side
2.31	Noise Levels	Construction camps will be located in open areas as far as possible from residential areas.	Yes		
2.32		All equipment will be maintained in good working order, properly designed engine enclosures and inbuilt silencers.	Partial	Noise reduction enclosures / measures yet to be used for all equipment	To be used for all equipment
2.33		Construction work will be prohibited between 10.00 PM to 6.00 AM near residential areas.	Yes		



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
2.34		Noise barrier wall (about 35 m length) will be provided at educational institute. (KM 104.500 RHS)	Not applicable at present	To be undertaken later	
2.35	Relocation of common property resources (CPRs)	19 Hand Pump, 12 tube well, 21 passenger sheds and 09 water taps within ROW. These need to be relocated in case of public assets of the owners need to be compensated in case of private asset	No	No construction work Undertaken in the relocation areas.	To be undertaken
2.36	Relocation of religious structures	53 small religious structures are falling in proposed ROW. These needs to be relocated in consultation with locals.	Partial	To be undertaken in consultation in PIU and locals all throughout the road	To be undertaken
2.37	Accidental Hazards and Safety	The contractor will prepare a safety manual for all activities at construction as well as activities at construction camps. This manual will have safety measures to be adopted. The safety procedure for transpiration of construction materials will also detailed	Yes		
2.38	Negative impact on Flora due to Cutting of Trees and removal of vegetation	To compensate for trees to be cut through plantations	Not applicable at present	Final no. of trees felled to be intimated by PD for firming up of compensatory plantations number. Locations need to be identified by Contractor	Confirmation of numbers of trees felled and identification of locations of plantations by Contractor
2.39		The compensatory plantation will provide nesting ground to avifauna as this will be done in available space on either side of road.	No		
2.40	Negative impact on Fauna	Construction of three underpasses for the elephant crossing in Jaldapara Wild Life Sanctuary at Km 718, Km 86.173 and Km 86.913.	Not applicable at present		Work to be undertaken after obtaining clearance
2.41		The elephant underpass construction works will be taken up in December to May period when elephant movement is low.	Not applicable at present		Work to be undertaken after obtaining clearance
2.42		Necessary signage on either side of project	No	Signage related to movement of	Signage to be provided



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
		road will be provided at Jaldapara Wild Life Sanctuary and at locations of elephant underpasses to warn the road users.		wild life not adequate / provided	
2.43		Construction workers shall be trained about safe handling of animals if found by chance. Cost of training built into training component cost.	No	Training and workshop on chance encounter with fauna and fishing not undertaken by the contractor	Training workshops to be conducted
2.44		Construction workers will be trained not to go for fishing in water bodies	No	Training and workshop on chance encounter with fauna and fishing not undertaken by the contractor	Training workshops to be conducted
2.45		Noise barrier will be provided in the form of fibre sheet in the entire length of project road portion falling Jaldapara Wild Life Sanctuary (km 85.022 to 87.900)	Not applicable at present		Work to be undertaken after obtaining clearance
2.46	Occupational Safety and Health	Construction worker will be provided with personal protective equipment (PPE) such as ear plugs, helmets, safety shoes, gloves etc.	Partial	PPEs provided but not in adequate number and quality especially to subcontracted labourers	
2.47	Siltation in to water Bodies	The siltation will be avoided by not storing the construction waste, excavated earth etc. near the banks of surface water bodies.	No	Silt fencing using geo textiles will be provided in EMP	
2.48	Contamination of water from construction wastes	All measures will be taken to prevent the waste water produced in construction site from entering directly in to water body as directed by Authority Engineer.	No	Waste water entering water channel near in Rangali Bazna camp	Adequate measures to be taken
2.49		Construction works near surface water sources shall be avoided during monsoon	Yes		Construction of cross drainage structures in progress
2.50		The discharge standards promulgated under the Environmental Protection Act shall be strictly adhered to.	No	No monitoring done as of now	Monitoring to be done
2.51	Environmental monitoring during construction phase	Monitoring of Ambient air quality, Water quality (ground and surface), Noise Level & Soil quality	No	<ul style="list-style-type: none"> Monitoring labs not yet identified 	Identify External Expert and conduct Assessment



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Sl. No.	Environmental Issue/ Component	Mitigation Measure	Implementation Status (Yes, No, Partial)	Comment / Reasons for Partial or Non-Compliance	Issues for further action
				<ul style="list-style-type: none"> Monitoring plan (part of EMP) to be submitted 	
2.52		Monitoring of construction sites arrangements made for protection measures at storage areas, drainage arrangement and sanitation at construction camp.	No	Monitoring parameters & frequency not yet finalised by Contractor identified	Finalise Parameters and frequency
2.53		Inspection of construction camps for sanitation.	No	Monitoring parameters & frequency not yet finalised by Contractor identified	Finalise Parameters and frequency
2.54	Biodiversity Assessment in Jaldapara Wild Life Sanctuary at Midterm of construction phase	Biodiversity Assessment through an external expert at the midterm of construction to assess any damage or changes in the biodiversity in 3 km distance on either side in area due to construction	No	<ul style="list-style-type: none"> External Expert not yet identified Monitoring plan (part of EMP) to be submitted 	Identify External Expert and conduct Biodiversity Assessment