Ref. No.: JV-ALDLP-BR-17-006 Date : 18 January 2017

Mr. Md. Mozammel Hoque
General Manager / Project Director
Bangladesh Railway, Railbhaban(7th Floor)
16 Abdul Gani Road, Dhaka 1000, Bangladesh

Project: **Contract No.: PD/ALDLP/CSC/02/2016: Consulting Services for Construction Supervision of Akhaura-Laksam Double Track Project**

Subject: **Submission of Semi-annual Environmental Report for October-December 2016**

Ref.: Appendix A – Terms of Reference Part 4 Environmental Aspects

Dear Sir,

With reference to above we are pleased to submit the subject Report for your information.

We appreciate your attention to this matter and look forward to your comment, if any.

Sincerely yours,

Lee, Kun Koo/Team Leader
CSC of ALDLP
E-mail:gglee@dohwa.co.kr

Enclosure: **Semi-annual Environmental Report for October-December 2016 – 6 copies**

Copy to : Representatives of all 5 JV members

Received
18.1.2017
General Manager
Akhaura-Laksam Double Line Project Dhaka

Environmental Monitoring Report

Project Number: 46168-001
Semi-Annual Report
December 2016

3169-BAN/3170-BAN(SF): South Asia Subregional Economic Cooperation Railway Connectivity: Akhaura-Laksam Double Track Project

Prepared by Bangladesh Railway for the People's Republic of Bangladesh and the Asian Development Bank.

Bangladesh Railway
Ministry of Railways
Government of the People's Republic of Bangladesh

CONSULTING SERVICES CONTRACT FOR CONSTRUCTION SUPERVISION OF AKHAURA-LAKSAM DOUBLE TRACT PROJECT

ADB Loan No.: 3169-BAN & 3170-BAN(SF)

ENVIRONMENTAL MONITORING REPORT

Semi-annual Report: October-December 2016

Prepared by:

DOHWA Engineering Co. Ltd., Korea

***In Joint Venture with* Korea Rail Network Authority, Korea;**

Oriental Consultants Global Co. Ltd., Japan;

Balaji Railroad Systems Limited, India; and

Development Design Consultants Ltd., Bangladesh

EXECUTIVE SUMMARY

Akhaura-Laksam, being a part of Dhaka-Chittagong railway corridor, is a part of Trans-Asian Railway Network, SASEC, SAARC & BIMSTEC corridors in Bangladesh.

At present Dhaka-Chittagong railway corridor is the most important railway corridor in Bangladesh. By the year 2018 total Dhaka-Chittagong corridor will be double tracked except Akhaura-Laksam section which will become the bottleneck of this corridor. The existing meter gauge track of Akhaura-Laksam section is in deplorable condition which needed to be up-graded to dual gauge line to be constructed, in parallel to the existing one to meet the increased traffic demand along the corridor.

Project Status

As per SubClause 8.3 Contractor has submitted their Programme on 29th November 2016.

The Programme was reviewed and returned for remaking with comments because the Programme does not comply with the Contract on 14 December 2016.

As the Commencement of the Works were delayed, only on 31st October, 2016 the Engineer was able to issue Instruction to Commence from 1st November, 2016.

No physical works started yet, but the Contractor has prepared Mobilization for followings:

(i) All construction plant and equipment as stated in the bid proposal: 229 nos, of Heavy Equipment from Plan 579 Nos. mobilized as of 30 November 2016 and continued more Equipments mobilization in December.

(ii) All senior staff, both national and international as stated in the bid Total 47 persons 35 Engineers among 47 Engineers planned national and some international staff is mobilized as of 30 November 2016 and more engineers are mobilized in December, but the organization chart has not been submitted by the Contractor upto 31 December 2016 except Survey Organization.

(iii) Construct and equip the site laboratory: Temporary Laboratory has been set up in Comilla.

(iv) Provision of vehicles for Engineer's use: upto this month 2nos. of 11seater Micro bus and 5 Nos. of Pick-up has been provided.

Environmental Monitoring

All impacts, mitigative measures and monitoring requirements have been defined in Environment Management Plan (EMP), included in the EIA. Monitoring works focus on inspection of contractor work areas, their waste disposal sites, their rehabilitation/re-vegetation, proper landscaping, re-establishment of local access, debris clearance from reconstructed station buildings, culverts as well as the Engineers Main Office, etc. BR will implement an air and noise quality monitoring programme during three operating

years to establish the noise and air quality degradation (if any) at sensitive sites, identified during the Environmental Impact Assessment and to implement proper noise and air quality attenuation measures. In this regard, the contractor will conduct a regular air, water and noise quality monitoring programme, specified in the Environmental Management Plan and submit reports on a monthly and quarterly basis.

Conclusions

This project could generate a number of environmental impacts, such as those associated with the embankment construction, the river crossings or poor workers campsite housekeeping by the contractor. The EMP provides the specific guidelines which BR has put in place to prevent or mitigate these effects. BR is committed to implements these measures has fully endorsed the EIA which is the basis for the EMP. BR will ensure that the work is carried out in an environmentally acceptable manner and the monitoring and reporting are completed in a compliant and timely fashion, acceptable to DoE, ADB and EIB.

Further Action Required

Mitigation measures for these issues need to be implemented.

BR needs to fully address the seven mitigative and monitoring actions defined in the EMP, starting with the management of stations and the provision of clean toilet facilities and maintaining adequate separation of male and female toilet facilities.

BR needs to initiate a station cleaning protocol that addresses garbage and solid waste strewn around the station and on the tracks beside the platforms.

BR needs to seriously consider installing sewage collection tanks on its trains, thereby stopping the present practice of dumping raw sewage onto the tracks.

Lessons Learned

The single most important lesson learned is that the implementation of environmental mitigative measures must start at the time the Contractor is mobilized, and preferably just before allowing the Engineer to plan a briefing program to ensure that the Contractor is fully aware of the work to be done.

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADF	Asian Development Fund
BDT	Bangladesh Taka
BOQ	Bill of Quantities
BR	Bangladesh Railway
BG	Broad Gauge
CSC	Construction Supervision Consultancy
DB	Dispute Board
DG	Dual Gauge
DPP	Development Project Proforma/Proposal
EIA	Environment Impact Assessment
EIB	European Investment Bank
GIBR	Government Inspector of Bangladesh Railway
GOB	Government of Bangladesh
INGO	Implementation Non-Government Organization
IPC	Interim Payment Certificate
MPR	Monthly Progress Report
INGO	Implementing Non-Government Organization
ITC	Instruction to Commence
LA	Land Acquisition
LAR	Land Acuqisition and Resettlement
LC	Level Crossing
MG	Meter Gauge
MOF	Ministry of Finance
MOR	Ministry of Railways
OCR	Ordinary Capital Resource
PAM	Project Administrtive Manual
PVD	Prefabricated Vertical Drain
RoB	Rail Overbridge
RoW	Right-of-Way
SAARC	South Asian Association for Regional Co-operation
SASEC	South Asia Sub-regional Economic Cooperation

TL	Team Leader of Dohwa Joint Venture
Dohwa JV	Dohwa Engineering Co.,Ltd. Korea In Joint Venture with Korea Rail Network Authority, Korea, Oriental Consultants Global Co. Ltd., Japan; Balaji Railroad Systems Limited, India; and Development Design Consultants Ltd., Banglades
ALDLP	Akhaura- Laksam Double Line Project
TOR	Terms of Reference

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1. PROJECT BACKGROUND

1.1 Report Purpose And Rationale

1. The Contract for implementation of Consulting Services between Bangladesh(BR) and Dohwa Engineering Co., Ltd and 4 Joint partners mandates submission of "Monthly Progress Report" in compliance with Sub-Clause 26.1 Reporting Obligation of the General Conditions of Contract and Appendix A.

Appendix –A, Item C – "Scope of Work" of the Terms of Reference(TOR) of the Consultancy Services Contract relates to the Construction Supervision Activities where in the Consultant, according to the Contract will work as "the Engineer" to provide the following major categories of services.

Part 1: Project Management, Administration and Planning

Part 2: Technical Support

Part 3: Construction Supervision, Testing and Inspection

Part 4: Environmental Aspects

Part 5: Gender and Other Social Aspect

Part 6 : Resettlement Aspects

Part 7: Defect Liability Period

2. One of the requirements for this phase is to submit Monthly Progress Reports with emphasis mainly on the details of construction activies and progress of the Works. Construction Contract has commenced according to the Instruction to Commence(ITC) issued by the Engineer on 31st October, 2016 for the Contractor to commence the Works from 1st November, 2016. However even if ITC was delayed due to non-payment of some part of Advance Payment since the Agreement of Construction Contract was made on 15th June, 2016 the Contractor actually has started mobilization in various provisional disciplines' area.

3. During this month Contractor had been busy performing their duties imposed on Contract for preparation and submission of required documentations.

This report is prepared by Project Team of Dohwa Engineering Co., Ltd and 4 Joint partners as the project implementation consultant.

1) Sector Objective

4. Government of Bangladesh (GoB) adopted the National Land Transport Policy (NLTP) in April 2004 following recommendations from DFID and other agencies, through which the Institutional and Operational Capacity of Bangladesh Railway are to be enhanced and improved. The Asian Development Bank (ADB) and European Investment Bank (EIB) is financing to achieve the targets set in the NLTP.

5. Bangladesh Railway (BR) needed both reform and investment before it can achieve the targets set for the railway sector, the GOB requested the ADB to help finance a Railway Sector

Investment Program. This financial support is being extended through a multitranche financing facility (MFF). The Government committed to implement a Roadmap and Investment Program that consists of two components viz:

- The Reform Project to improve the performance of the railway sector through organisational, institutional strengthening & policy reforms;
- The Investment Project to finance implementation of priority investments ("Investment Subprojects") to overcome capacity bottlenecks in areas of the railway network where such investments are both economically and financially viable (e.g. the Dhaka-Chittagong Corridor.)

2) Project Inception

7. Under ADB's TA-Loan-2688-BAN (SF), the Sub regional Transport Project Preparatory Facility(STPPF), a design project is going on for feasibility study and detailed design for 7(seven) sub-projects. The feasibility study , detailed design and tendering services of the above sub-projects were carried out against STPPF.

8. The investment project will be funded by Asian Development(ADB), European Investment Bank(EIB) and Government of Bangladesh(GOB). Hence, the project will be guided by the guidelines of ADB, EIB and GOB.

3) Project Objectives:

9. To convert Dhaka-Chittagong railway corridor from Meter Gauge (MG) to Broad Gauge (BG) by constructing Dual Gauge and to construct the Double Tacks of the whole project segment.

To improve the traffic capacity by constructing double track of 72km section and to improve of existing track so that more trains can be introduced. After the implementation of the Project, the current capacity of 23 pairs trains per day will be increased up to 72 pairs trains per day.

10. By improving the load bearing capacity of railway track new locomotives of heavier axle load can be operated in Dhaka-Chittagong corridor.

11. This project will contribute to improve connectivity for regional and International Freight (Container) traffic along the Trans Asian Railway from India North East to Chittagong and will improve the punctuality of train services by clear off the temporary speed restrictions. Moreover, double track and improved section of existing track will save 25 minutes off the present travel time.

12. The improvement of the financial performance through lowering operating costs will provide a better quality of service for the passengers.

To improve reliability for freight services by providing capacity that affords container block trains with equal priority to intercity passenger trains.

To reduce traffic congestion and air pollution through diversion of some road traffic to rail.

4) Project Implementation

13. An International Tender was called on 19th May,2015 for Consultancy Services for the Construction Supervision of Akhaura-Laksam Double Track Project. Dohwa Engineering Co., Ltd in joint venture with 4 other companies(Dohwa JV) was resulted in the successful tenderer and a consultancy contract was signed on 28th February, 2016.

14. The detailed design of Construction of Akhaura-Laksam Double Track Project was completed in 2015. Based on the completed design, tender documents were prepared and issued to prequalified contractors in May, 2015. A contract for ALDLP was signed between BR and CTM JV(China Railway Group<CREC>,Toma Construction & CO. Ltd.<TCCL> and Max Infrastructure Limited.<MAX> on 15th June, 2016 for a Contract Amount of BDT 34,734,882,272.43(USD446,636,007 of which ADB will finance 68.3%, EIB,27.8% and GOB,3.9%).

15. After signing of the contract for construction works, Dohwa JV was appointed as the " Engineer" for the construction on 15th June, 2016.

16. Dohwa JV started mobilizing from 10th April, 2016 and CTM JV started mobilizing as from 15th June, formal Instruction to Commence of the Contract was given to CTM JV on 31st October, 2016 for their Commencement from 1st November, 2016 under the total construction period of 1,456days(48months).

17. The whole line is devided into 3 sections with different completion dates as intermediate milestone term schedule.

1.2 Project Location And Components

1.2.1 Project Location

18. The rail network is divided into two zones: east and west, separated by the Jamuna River. The network includes 659.33km of broad gauge track with the west zone, i.e., 1.676 meter width track. In addition the west zone gauge track has 534.67 km track and 374.83 km of dual gauge track (catering for both broad and meter gauge trains). The east zone has 1,273.38 km of meter gauge track, 34.89 km of dual gauge track. Jamuna multipurpose bridge, which has a dual gauge rail link, provides the only east-west rail link.

19. The project will support the Government of Bangladesh to upgrade about 72 km Akhaura-Laksam section of Dhaka Chittagong railway corridor to a double track railway line with modern signaling and telecommunication equipment. The section is part of a major sub-regional corridor and the Trans-Asia Railway network.

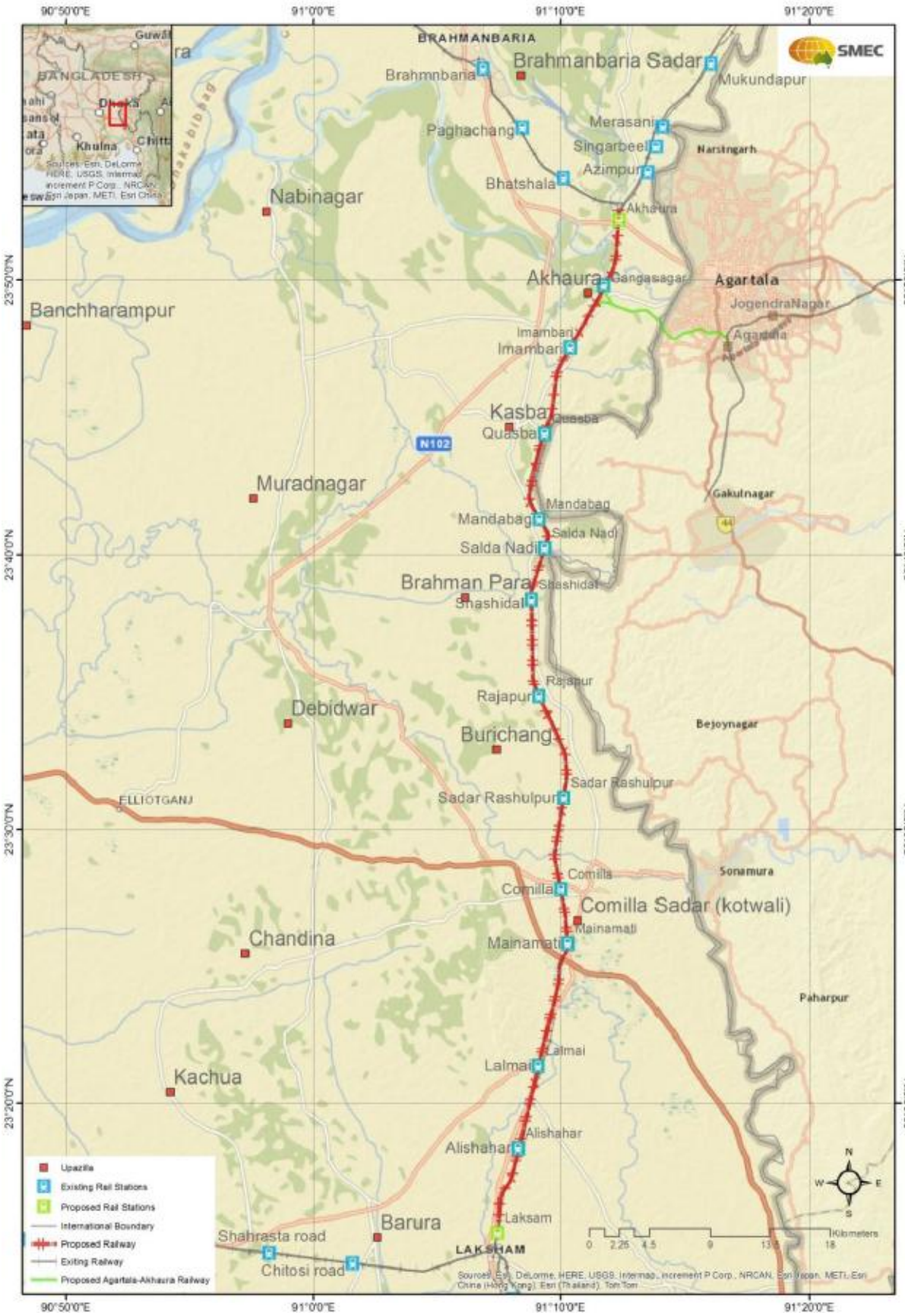
20. The rainy season in this area starts between April and July and ends between September and November. The track passes through low, flat and alluvial land and crosses several major rivers viz, Titas River, Howrah River, Bijni River, Sald River and Gumti River and many smaller rivers, streams and canals some of which become dry during the dry season.

Location of the Project:

Division	District	Upazila

Chittagong	Brahmanbaria	Akhaura, Quasba
	Comilla	Bhramanpara, Burichang, Comilla Sadar, Comilla Sadar Daksmin, Laksam.

Figure I. Project Location Plan



1.2.2 Project Components

21. The scope of the Akhaura-Laksam Double Line Project(ALDLP) and major activities are

summarized as follows:

(i) Constructing a second track in dual gauge of 72 Km

(ii) Reconstructing of the present track to dual gauge

(iii) Lengthening passing loops

(iv) Construction of new bridges

(v) Reconstruction of existing bridges and culverts

(vi) Modernization of signaling and telecommunication system

(vii) Construction of 11 new stations

22. A modern computer-based interlocking signalling system will be installed; this will be integrated with the Centralised Traffic Control system.

Additional details are shown below.

Property	Qty	Properties	Qty
Major Bridge	13 Nos.	Level Crossing	23 Nos.
Minor Bridge	46 Nos.	Station to be modified In Signalling and Telecommunication	2 Nos.
New Station	11 Nos.	Station Building with Total plinth area and New station	11 Nos.
Route Km	72 Km	Other functional and Residential building With total plinth	54 Nos.
Track Km	180 290m		

1.3 Environmental Classification and Responsibilities

1.3.1 Environmental Category

23. This project was classified as environment Category B according to the ADB Safeguard Policy Statement (SPS) 2009 as there are no environmentally sensitive sites within the project area and the project includes construction of tracks alongside an already existing track. Hence an Initial Environmental Examination (IEE) has been prepared.

24. The European Investment Bank (EIB) a co-financier for this project requires the preparation of an Environmental Impact Assessment (EIA) in accordance with the requirements of EIB Environmental and Social Handbook, 2013-Version 9.0.

25. In accordance with the requirements of the Department of Environment (DoE), Ministry of Environment and Forests, Government of Bangladesh the project is classified as red category and requires a full EIA. The 69 types of projects listed a red category in the Environmental Conservation Rules 1997 includes engineering works where the capital investment is more than 1 million Taka and construction of bridges lomger than 100 m. The project investment is more than 1 million taka and includes bridges longer than 100 m, and hence is red category project.

2) Environmental Clearances

26. According to the Environmental Conservation Rules, 1997, the project falls under Red category and thus under the provisions of the Bangladesh Environment Conservation Act, 1995, Bangladesh Rail way (BR) needed to obtain Environmental Clearance Certificate (ECC) from the Department of Environment, Government of Bangladesh before commencement of the construction works.

27. The Environmental Clearance Certificate (ECC) for the project, valid for one year, was obtained by BR from the DOE on 1st July 2009, according to their memo DOE/Clearance/4041/2009/223. Subsequently renewals of the ECC will be obtained before XXXXXX for the year 2017 (1 year). BR will have to lodge an application for a renewal of the environmental clearance certificate up to 30th Jun 2017. The current certificate is provided in Appendix 2.

3) Institutional Setup and Responsibilities

28. At all times during the preparation and construction of the Project, BR's Project Director will give the final approval for all administrative and technical decisions. The key agencies or units which will play major roles in the implementation of the EMP are:

- Bangladesh Railway's newly proposed Environmental and Social Safeguards Unit (ESSU)[58];
- The Contractor;
- Engineer (usually an international firm); and
- Bangladesh Department of Environment (DoE)

29. The implementation oversight of all safeguard items in the EMP and indeed the construction contract will be with BR and its ESSU. When the Engineer is appointed BR's technical management of the work will be delegated to the Engineer, but with final approval always passing through BR (Figure 21 in the EIA report) with annual audit reports submitted to ADB and EIB, who may undertake periodic inspection trips to confirm that safeguards are being fully implemented.

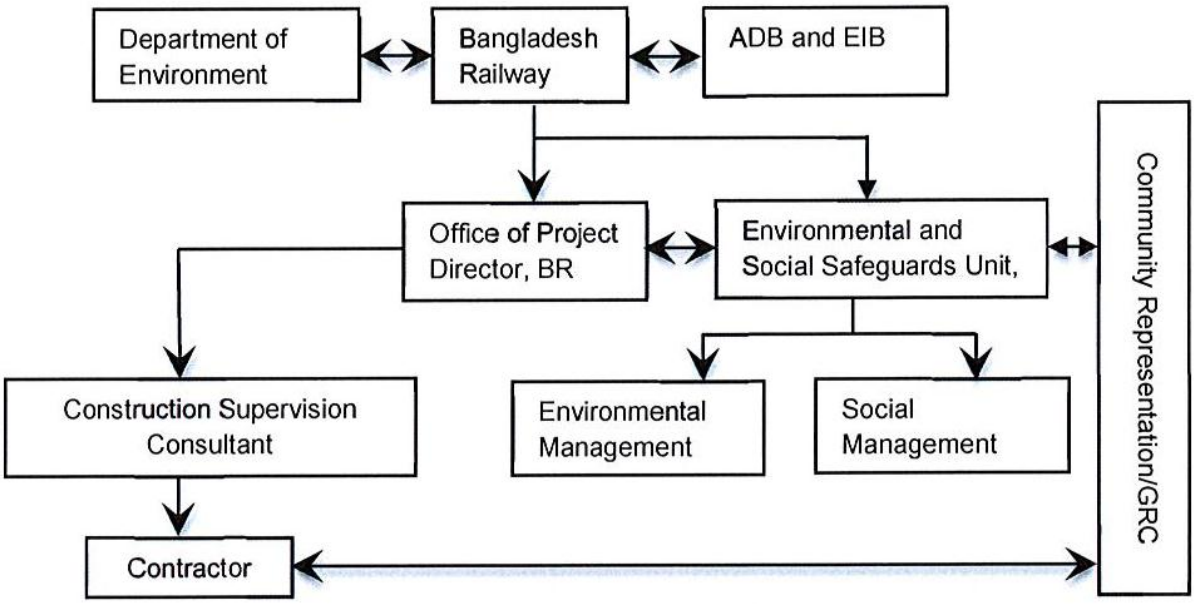


Figure 2. Safeguards Implementation and Reporting Work Flow

30. **BR's Environmental and Social Safeguards Unit (ESSU) –** The objective of an ESSU is to build enough technical capacity within BR to permit it to oversee environmental and social safeguard matters arising from donor projects and to respond with technical knowledge to specific safeguard issues triggered by Project activities, or community complaints. Secondly, the ESSU should be able to manage Consultant and oversee the Consultant's deliverables. Thirdly it will need to be able to fully address EIA requirements of the Project when the Engineer is no longer on the job. The ESSU will have to be able to assess environmental data, analyses it and define actions required to address non-compliant findings in a credible and timely manner. Finally the ESSU should be able to provide training as needed to both contractors and BR staff in all aspects of environmental and social safeguards management. Therefore the ESSU's main tasks will be:

- Oversee the implementation of the LAP and RP;
- Implementing the EMP;
- Supervise and monitor the progress of the Consultant engaged by BR, for addressing safeguard requirements, such as air quality or resettlement plan implementation monitoring;
- Liaise with all regulatory agencies, including DoE and the public;
- Prepare all manner of safeguard monitoring and compliance reports; and
- Providing training to contractors and BR staff.

31. At this time BR is in the early stages of planning such a unit within its organization. During this planning stage BR will appoint at least one safeguards person to look after the Project safeguard needs, and be the direct contact for safeguard matters between stakeholders, regulators, donors and BR.

32. **BR's Regional Offices and Staff –** The day-to-day oversight of the construction work on this Project has not been decided but will likely be done by the Regional BR Office and its Chief Engineer in charge. Therefore, the Engineer will work closely with the BR's Regional office.

33. **Construction Supervision Consultant/The Engineer –** The proposed framework for implementation of the Project shall utilize consultancy services from both international and national companies for the overall management and supervision of construction work and for preparation of the associated documents.

34 **Contractor(s) –** A contractor selected on the basis of international completive bidding shall carry out construction work based on a contract containing a set of environmental clauses, conditions and/or specifications (Section 6, Subsection H of contract technical specifications and **Annex 11**). The contractor will need to demonstrate environmental capacity in the proposal submitted to BR, and be prepared to have that person(s) participate in the mandatory pre-construction training exercise delivered by BR's ESSU or its Consultant.

35. **Other GoB Organizations –** The organizations involved in regulating the project are Department of Environment (DoE), Bangladesh Water Development Board (BWDB), Roads and Highways Department (RHD) and Department of Forest (DF), Local Government Engineering Department (LGED), Bangladesh Inland Water Transport Authority (BIWTA), and local administration (UNO, DC, Police, etc.). They will provide supporting services as required.

4) Key Findings in the EIA report

36. The conclusion and recommendations of the EMP of 2015 are as follows:

The project involves the doubling of an existing rail line; therefore new impacts are really the magnification of impacts taking place along the corridor for many decades given that it has been in operation since the late 19th Century.

37. Most of the impacts associated with the project will occur during the construction period since a large and high embankment, between 2-6 n, will be put in place and requiring millions of tons of fill material. Much of that will be dredged from nearby rivers and pumped as slurry to the work sites. As much ballast, as possible will be hauled on roads. The problems arising when the contractor does not follow environmentally responsible operating procedures or does not provide proper housing or cleaning, hygienic quarters for the workers is also addressed in detail.

38. The EIA identified eight mitigative actions needing to be addressed during the pre-construction period, another 20 during the construction period and eight during the operating period of new rail line. To track the mitigation work an air, noise and surface water quality monitoring programme will be started during the construction period and carried through into the operating period for operating period for operating years 1, 3 and 5.

39. There is little chance that impacts will extend much beyond the 50 or 100 m wide corridor of impact centred over the rail line, given that all work will be strictly confined to the railways existing Right of Way.

40. Careful implementation of the pre-construction mitigative measure will make the likelihood or scale of the construction period impacts less.

41. The climate risk associated with sea level rise and the need to adjust bridge deck clearances was calculated and found to be negligible given the distance of the bridges to a location where sea level rese can be measured (Meghna River estuary).

42. The fuel saving, due to diversion of road use to rail travel during the first year of full operation, i.e. , 2020, will be 10,743,000 litre of fuel, with 6 additional train sets operating on the new track. However by 2023, with 44 train sets in operation, estimated fuel saving will be around 54 million litres/year (including the added fuel used by the larger number of train sets. After 2023 the diversion is expected to have peaked and no increase is predicted through 2044.

43. Based on these data, the diverted traffic in 2023, when 44 train sets are I operation an estimated 64.4 million litres of diesel fuel per year would be saved, with a net benefit, once train consumption is deducted, of 53.78 million litres/year. A net fuel saving of 53.78 million litres per year, translates into a saving of 145,000 metric tonnes of equivalent CO_2 per year. (using an equivalent CO_2 emissions factor of 2.69 kg CO_2 per litre of diesel fuel consumed).

44. The establishment of BR's Environmental and Social Management Unit will be essential and will make the job of implementing environmental safeguards much easier and more credible, since some expertise will reside in BR, overseeing the entire EIA procedure, instead of it being only with outside Consultant.

45. Social impacts especially associated with land acquisition and the need to relocate people and to use productive agricultural lands, will be significant and will affect thousands of people. The procedure for determining entitlement and compensation is defined in the LAP and RP documents which the Project must follow closely. The actions defined in these two documents are being implemented by BR.

46. No red-flag environmental safeguard issues were identified and all likely impacts can be prevented or mitigated to an acceptable level.

47. BR will fully implement the EIA's environmental management plan and quarterly monitoring will be used to adjust the monitoring programme defined in the EIA. Should problems be noted with the data, BR will recommend immediate actions, and the annual reporting will be used to adjust mitigative actions. These activities, coupled with the timely reporting will provide the appropriate level of environmental oversight and demonstrate to the ADB that the natural environment is being protected while the rail line is built and the system becomes operational.

48. The potential impacts on the Gumti River Bridge were examined, focusing on pile driving in water, use of drilling lubricants, work camp operation near the shore and work over a navigation channel. To address these issues a separate EMP, designed to deal with all possible effects that might endanger the river's aquatic environment, was prepared and will be implemented.

49. The reconstruction of 11 stations and construction of other building s will be managed through a programme of maximum recycling of materials and management of all wastes and dust suppression. The design of each station and building, to accommodate sewage, waste, water, lighting and universal design features has been completed as a separate report and will be verified as part of the pre-construction check by BR and its ESSU.

50. BR concludes that this EIA is complete and addresses all relevant likely impacts and proposes a full set of time-bounded mitigative and monitoring actions, including assignment of responsibility. The application of the detailed EMP will ensure that the nature and socio-cultural environment are not unduly affected by the work or the operation of the second line. Therefore BR

recommends that an environmental approval be granted by DoE, and that no additional studies be required.

51. The recommendations of the EMP were incorporated into the detailed design and the tender documents and have then became a part of the civil works contract. The cost for the implementation of the EMP was included in the contract and the approved Revised Development Project Proforma /Proposal (RDPP).

1.4 Project Status

1) Project Status at 31 December 2016

52. Commencement of Contractor's Contract: commenced from 1st November 2016.

53. Advanced Payment (AP) to Contractor:

(i) ADB portion already received on 30-6-2016.

(ii) BDT component of EIB received on 17-10-2016.

(iii) US $ component of EIB received by 17-11-2016

(iv) GoB portion payment may take some more time.

54. Engineers Office and Accommodation:

(i) Dhaka: provided on 16 Aug 2016 for office & 5 Aug 2016for accommodation

(ii) Comilla Office & Accommodation: occupied on 29 Dec. 2016.

(iii) Laksam Office and accommodation: Started to use existing Engineer Office of the other Project , and to use the existing accommodation after refurnishing from 20 Nov 2016.

(iv) Offices for Akahaura, Kasba & Gumti Bridge: Under preparation

55. Budget Disbursement of FY 2016: BDT 1150 Crore has been allocated in ADP 2016-2017. All Parties sprint for utilization of the fund in full.

56. Programme submission: Contractor has submitted on 29 Nov 2016 the Programme as specified in the Contract and Engineer returned with comments to Contractor to resubmiton15 December 2016.

57. The programme had not been made as per Contract requirements like not observing Intermediate Milestone and without basic Programme making skill and procedure and etc.

58. Survey and investigation start up:

(i) Survey program :Contractor submitted on 6 November/2016.

(ii) Calibration and certification of survey instruments:Contractor submitted for 5 Total stations during Nov 2016..

59. HIV/AIDS Awareness Program: Service Provider approved and to supplement with more information.

60. "Iconic Multi-purposed EMO building: 20 stories Building(original is 4 stories EMO building with 10 story design):

(i) Selection procedure of Designer: In progress. Will be done in Dec 2016 or in Jan 2017.

(ii) Preliminary survey and investigation scheme;

(iii) Concept and configuration of the revised EMO:

61. The Contractor recommended two local designers and the initial presentations were made for the Engineer and the next presentations are scheduled for the Employer on 29 Dec 2016 for final selection of the Designer of this revised building through the technical evaluation of their proposed scheme.

62. The Employer stressed the building construction scheme was confirmed by the Prime Minister Office, so as to maximize the land use and to commercialize this building for multi- purposes of the office and commercial use.

63. The Engineer stated that at this moment nobody know the budget, size of building, concept of the subject building, so we have to look for the competent designer to configure the Iconic building concept and to perform the feasibility study on this building.

64. Site preparation, clearing and grubbing:

(i) Organization of CTM to follow up;

The Engineer once again requested to the Contractor due submission of organization chart specifying the responsible person in charge of each discipline.

(ii) Status of on-going coordination with relevant Authorities of Forest, Irrigation & Road:

The Engineer asked to the Contractor the current on-going status of the coordination to remove and relocate such utilities..

65. Processing Status of Materials and Others:

(i) Rails: Approved manufacturer of rails as to “Inner Mongolia Baotou Steel Union Co, China”

(ii) Third Party Inspector: the Engineer approved NMCI for rails only, other track material not approved.

(iii) Ballast source: Approved 4 suppliers.

(iv) Temporary Laboratory has been set up in Comilla at the end of November 2016.

(v) Aggregate Source: approved 4 suppliers

(vi) Cement suppliers: Approved 4 suppliers

(vii) Rebar: Approved 3 suppliers

(viii) PSC Sleepers: GPT Infra-project Technologies/India will be acceptable, but TOMA and MAX plants shall be checked in legal aspects.

(ix) Turnouts: “ Rail Track Technologies/India” approved with comments.

(x) Engineer’s vehicles: Contractor was requested the supply of vehicles.

Upto the end of Nov 2016 two 11 seats bus provided. So, 28 vehicles still to be Provided within Dec 2016.

(xi) Embankment borrow source: to submit the borrow source prior to any work commencement.

Initial submission was rejected.

(xii) Dumping yard: to be submitted soon.

(xiii) Temporary Contactor's site layout/facility plan: submitted and partly approved and the balance to be submitted early. At several areas are under preparation.

(xiv) Water purifiers for Engineer's accommodation:

The Engineer concerned about the quality of ground water, so both planned to analyze the ground water quality to assure it to meet with the potable water criteria of user's country criteria.

(xv) IT system at Site Offices:

The Engineer asked the Contractor for checking the IT conditions at sites and to upgrade the plight condition. At present Internet and telephone communication are available without

Problem.

2) Environmental Management Plan

66. The EIA report included the Environmental Management Plan (EMP) for this Project(Table 38, Table 39, Table 40 and Table 41 of the EIA report). The EMP defines a set of mitigation and monitoring actions to be taken, in response to potential impacts predicted to take place during the pre-construction, construction and operating period of the Project. The sources of the impacts and the impacts were identified during the EIA study. The EMP is presented as two tables, defining not only impacts and mitigative and monitoring actions to be implemented, but also, where when and who will be responsible for implementing them. The EMP describes well known and best practice mitigative action to be taken to prevent negative impacts from taking place and if that is not possible to mitigate them to an acceptable[55] level. In addition this EMP will:

- define measures to off-set or compensate irrenversible[56] negative impacts;
- specify the institutional arrangement for the implementation of the EMP; and
- identify means to enhance and maximize positive impacts.

67. The EMP (Table 38 and Table 39 of the EIA report) will be the main tool with which BR will manage environment impacts by applying both mitigative and monitoring measures in a technically credible and timely manner. The mitigative measured are considered successful when the impacts have either been eliminated or the residual effect complies with the environmental quality standards, policies, and legal reqauirement set by DoE. Mitigative measures are tracked via the monitoring programme, which is described in the second of two EMP tables, and focuses on construction and operating period impacts.

68. As agreed with DoE, the construction of any large bridge (>100 m spans) which under DoE regulations would normally require their own EIA, and which DoE has exempted BR from doing, will be presented in more detail and with its own mitigative and monitoring requirements. These details for the Gumti River Bridge are provided in Chapter VI and Chapter IX in the EIA report.

69. The Contractor shall be responsible for preparing detailed documentation related to implementing this EMP. This should include information regarding scheduling, personnel, reporting and auditing requirements, training and detailed procedures for implementing the EMP. The Contractor's EMP and associated documentation shall be approved by BR prior to construction commences.

3) Environmental Management Implementation Works Schedule (EMWS)

70. The approved EIA and the certificate from DoE Will trigger the implementation phase for the EIA, i.e. the actions to mitigate and monitor the predicted impacts resulting from the building and operation of the Project.

71. BR is committed to exploring the establishment of an ESSU and has included that as an action item in the Project's feasibility study. BR will address this internally, to establish if such a staff compliment is available. The EMP has been integrated into the contract specifications, making it a mandatory set of task for the contractor to implement. By preparing and approving the EIA and its EMP, BR has already confirmed its commitment to following through on the EMP. Until an ESSU is established BR will assign at least one safeguards specialist to deal with Project safeguard matters.

72. During the pre-construction period BR will be responsible for implementing the seven mitigative and monitoring measures, according the timetable defined in the EMP and submitting a final monitoring checklist - Prior to the start of construction. BR will insure that the contractors receive all relevant safeguard documents and that a training workshop be held to help the contractors understand the EMP, how to prepare their mandatory work plan, and deliver the required documentation.

73. The contractors will implement all 20 mitigative and monitoring actions (See EMP), providing environmental safeguard compliance update as a section of the overall Project monthly progress report. The contractor will also submit semi-annual summaries of surveys, findings and compliance. During the pre-mobilization workshop BR or its Engineer will review all these requirements (which are all defined in the EIA and its EMP). Construction bid documents have been prepared with a specific environmental bill of quantity section, allowing for unambiguous calculation of environmental penalties.

74. Monthly and quarterly progress reports on EMP implementation shall be prepared by the Contractor in cooperation with the Engineer appointed by BR. All reports to be submitted to Br via the Engineer. The quarterly reports will include a compliance monitoring checklist reporting (Annex 12 of the EIA report) on the progress of all 20 constructions period actions. Incidents of significant contamination/pollution caused by the Contractor's activities shall be reported. Recommendation shall be made for mitigation of environmental damage and for prevention of any recurrences.

75. During the construction period (four years) the Engineer will prepare annual environmental due diligence reports, based on the monthly and quarterly submissions by the contractor. Additional details describing the implementation arrangements are provided in Chapter XI in the EIA report.

1.5 Environmental Mitigation and Monitoring Requirements

1) The Environmental Management Plan in different Phases of the Project

76. In pre-construction period BR identified eight impacts which if not properly addressed could lead to impact during the other two Project phases or totally eliminate the objective of completing an EIA. These included, having a tree replacement plan in place, minimizing land requirements by fine tuning where the new alignment is placed, and giving a process in place that protects the three identify PCRs and the 46 community-level sites (CPR) identified during consultations as needing protection.

77. The Project will require the construction of several new stations as well as improved access. The EMP underscores BR's actions to make sure the designs and alignments are sensitive to local conditions and wishes.

78. During construction period BR identified 20 mitigative and monitoring actions that will need to be implemented if significant construction-related effects are to be minimized (see EMP **Table 32 33**). The following nine construction activities are likely to trigger negative effects which have been addressed in the EMP:

- Unrestricted movement of construction, machinery and vehicles;
- Railway embankments construction;
- Construction of station buildings and EMO building;
- Rail and loop/siding development;
- Station access road construction;
- Bridges crossing structures, culverts and any training works;
- Installation of signaling and interlocking system, platforms, foot over bridges at stations, platform sheds and level crossing safety facilities; and
- Poor good housekeeping practices by the contractor and failure to properly implement an occupational health and safety programme.

79. Of these, the most important will be the effects stemming from the placement of the two-six meter high embankment paralleling the existing rail line for around 70 km. the movement of around 56,000 truck-loads of material and pumping of dredged sand, generating noise and dust as well as traffic bottlenecks, will need to be properly managed. Dust suppression, and limits to truck traffic during low noise periods, as well as care with fleet maintenance will be important. Insuring the trucks and construction machinery do not idle for more than three minutes if not in use will markedly reduce the emissions and provide considerable fuel savings.

80. The embankment slopes will easily erode if not revegetated quickly. Therefore, the contractor will implement a rehabilitation programme as the work is completed

81. To better track the air and noise pollution the contractor will be required to undertake a compliance monitoring programme, testing the parameters defined in Chapter IV of the EIA report and at the same station as shown in the strip maps (Annex 2 in EIA report) Noise monitoring will be completed at the three PCRs and selected CPRS (closest schools, mosques and residences). The schedule will be more or less the same as the sampling completed during the field work for this EIA.

82. Another common impact involves the failure of contractors to properly maintain work camps, allowing sewage to leak, garbage to be left unmanaged, fuel to leak and even bitumen to spill over the ground near the asphalt batch plant[57] occupational health and safety (OHS) practices are often

ignored, the contractor either not providing adequate safety equipment or not enforcing its use. Contractors will be required to provide hard hats, ear plugs, dust masks and eye protection, and deliver OHS training sessions at least once a year.

83. Construction of one large bridge, 11 medium bridges and 47 culverts could result in impacts on surface water quality and to that end the Gumti River crossing work will undertake water quality monitoring, according to the design used in this EIA. This is particularly true if bentonite drilling mud is used during the pile boring operations on the six larger rivers. Contractors will be required to provide a bentonite recovery plan, should this material be used.

84. Finally, the Project will require concrete since all piles; piers and large culverts will be cast at casting yards requiring the establishment of a mobile concrete batch plant, generating noise and dust. The contractor will be required to have dust and noise suppression features built into any concrete batch plant. The plant will need to be located at a DoE approved site, at least 500 m from the nearest occupied dwelling.

85. Since the existing line has been in operation for over 100 years, producing noise, dust and air pollution, there will be added impact from the operation of a second line, but the extent of this impact should be compared with the establishment of a new railway line. Eight mitigative and monitoring actions will need to be implemented during the operating period. Three important impacts that BR will address are:

- Possible inadequate clean up and rehabilitation of contractors camps and yards and borrow areas;
- Added noise and air pollution from a doubling of the rail traffic, impacting on local sensitive receptors; and
- Lack of adequate new safety measures/equipment accounting for the large increase in train traffic across the level crossing.

86. These impacts, mitigative measures and monitoring requirements are listed in detail in the EMP.

2) Sampling Program

87. The extent of the impacts of environmental pollution related to surface water, ground water, air quality and noise were determined in quantitative terms by sampling a range of related environmental parameters. The mitigative measures provided for in the EMP can be adjusted based on these results as well. The field sampling work was specified for the construction and operating period.

2. ENVIRONMENTAL MONITORING

A. PRE-CONSTRUCTION STAGE

To be filled next time

B. CONSTRUCTION STAGE

Progress ongoing and to be stated next time.

C. SAMPLING PROGRAM RESULTS AND ANALYSIS.

2.1. Surface Water Quality

Results of Sampling and Analysis

88. During October to December 2016 some minor works were being undertaken. There is a possibility to pollute the surface water during the construction and operation period from untreated sewage effluent discharged by passing trains, spillage of fuel and other chemicals from freight trains, accidental spillage of oil and other noxious chemicals. The quality of surface water tested and analyzed in the project area is provided in the following Table.

Table1. Surface Water Quality in the Study Area during November-December 2016

Sl#	Sampling Code	Location	GPS	pH	Temperature (^{0}C)	Electric Conductivity (EC)	Total Dissolve Solids (TDS)	Dissolve Oxygen (DO) (mg/L)	Biochemical oxygen demand (BOD_5) (mg/L)	Chemical Oxygen Demand (COD) (mg/L)	Total Suspended Solid (TSS)
November 2016											
1.	SW 1	Saldanadi River	23^{0}40'17.9"N 91^{0}09'25.4"E	7.5	23.8	0.09	0.05	5.6	6	24	18
2.	SW 2	Chandansha River	23^{0}51'41.6"N 91^{0}12'17.7"E	7.25	22.6	0.40	0.20	5.1	LA	LA	LA
3.	SW3	Haoura River	23^{0}50'02.1"N 91^{0}11'53.3"E	7.49	23.4	0.15	0.08	6.1	LA	LA	LA
4.	SW 4	Hinai River	23^{0}46'51.8"N 91^{0}09'58.2"E	7.5	25.2	0.08	0.04	6.7	LA	LA	LA
December 2016											
5.	SW 1	Lalmai Railway Station near Mosjid Pond	23^{0}21.390'N 91^{0}09.057'E	6.62	23.8	0.32	0.16	5.9	LA	LA	LA
6.	SW2	Hawra River	23^{0}50'02.1"N 91^{0}11'53.3"E	6.65	26.0	0.15	0.08	7.9	LA	LA	LA
7.	Bangladesh Standard										
	Source of drinking water for supply only after disinfecting			6.5-8.5	-	-	-	6 or above	2 or less	-	-
	Water usable for recreational activity			6.5-8.5	-	-	-	5 of more	3 or less	-	-
	Source of drinking water for supply after conventional treatment			6.5-8.5	-	-	-	6 or above	6 of less	-	-
	Water usable by fisheries			6.5-8.5	-	-	-	5 of more	6 of less	-	-
	Water usable by various process and cooling industries			6.5-8.5	-	-	-	5 of more	10 or less	-	-
	Water usable for irrigation			6.5-8.5	-	-	-	5 of more	10 or less	-	-

Note: BDL = Below Detection Limit; LA: Lab Analysis Still Going On; Source: EQMS Field Survey and DPHE Central Laboratory

2.2 Ground Water Quality

Results of Sampling and Analysis

89. Groundwater sources can be contaminated by the seepage of wastes from workers' camps through the soil profile into the GW aquifer when wells access the shallow aquifer. The contamination from train operations would be mostly bacteria, viruses and waste from the sewage-laden track runoff leaking into the well. The quality of groundwater tested and analyzed in the project area is provided in the following Table.

Table2. Ground Water Quality in the Study Area during November-December 2016

Sl#	Sampling Code	Location	GPS	pH	Temperature (^{0}C)	Phosphate	Manganese, Mn	Arsenic, As	Iron, Fe	Fecal Coliform, FC
November 2016										
1.	GW 1	Rajapur Railway Station	23^{0}34'49.6"N 91^{0}09'8.2"E	7.03	24.5	0.32	0.80	0.001	0.21	0
2.	GW 2	Sadar Rasulpur Railway Station	23^{0}31'9.1"N 91^{0}10'7.5"E	6.76	28.6	0.21	0.06	0.001	<BDL	9
3.	GW 3	Comilla Railway Station	23^{0}27'51.2"N 91^{0}9'59.9"E	6.97	27.0	0.56	0.09	0.001	0.18	0
4.	GW 4	Labiba Tower (Engineer's Office)	23^{0}26'59.7"N 91^{0}11'10.2"E	6.81	27.2	0.30	0.51	0.001	0.14	3
5.	GW 5	Maynamoti Railway Station	23^{0}25'56.8"N 91^{0}10'16.44"E	6.72	26.0	0.46	0.61	0.003	<BDL	11
6.	GW 6	Lalmai Railway Station	23^{0}21'23.0"N 91^{0}9'5.7"E	6.20	27.0	0.18	0.09	0.001	0.05	0
7.	GW 7	Alishahar Railway Station	23^{0}18'23.2"N 91^{0}08'17.9"E	6.9	25.0	0.24	0.33	0.001	0.05	9
8.	GW 8	Laksham Railway Station	23^{0}15'21.1"N 91^{0}07'26.2"E	7.35	24.7	0.19	0.09	0.001	0.41	2
9.	GW 9	Laksham Engineering Office	23^{0}15'32.0"N 91^{0}07'26.4"E	7.06	24.5	0.47	0.33	0.006	0.52	0
10.	GW 10	Laksham Accomodation	23°15'29.1"N 91° 7'30.8"E	6.9	24.8	0.59	0.17	0.004	0.31	5
11.	GW 11	Akhaura Railway Station	23°52'7.4"N 91°12'21.1"E	6.2	27.3	LA	LA	LA	LA	LA
12.	GW 12	Gangasagar Railway Station	23°49'48.9"N 91°11'44.7"E	7.12	26.2	LA	LA	LA	LA	LA
13.	GW 13	Mandabag Railway Station	23°41'19.5"N 91°09'06.6"E	7.19	25.4	LA	LA	LA	LA	LA
14.	GW 14	Kasba Railway Station	23°44'25.3"N 91°09'19.8"E	6.79	28.6	LA	LA	LA	LA	LA
15.	GW 15	Saldanadi Railway Station	23°40'14.0"N 91°09'20.87"E	7.1	27.1	LA	LA	LA	LA	LA
16.	GW 16	Shashidal Railway Station	23°38'21.9"N 91°08'49.2"E	6.84	27.6	LA	LA	LA	LA	LA
December 2016										
17.	GW 1	Lalmai Railway Station	23^{0}21.382'N 91^{0}09.096'E	5.7	27.1	LA	LA	LA	LA	LA

18.	GW 2	Gangasagar Railway Station – Base Camp	23°50'06.0"N 91°11'53.6"E	7.12	26.2	LA	LA	LA	LA	LA
Bangladesh Standard (ECR'97)				**6.5-8.5**	-	**6.0**	**0.1**	**0.05**	**0.3-1**	**0**

Note: BDL =Below Detection Limit; LA: Lab Analysis Still Going On; Source: EQMS Field Survey and DPHE Central Laboratory.

2.3 Air Quality Monitoring

Results of monitoring and Analysis

90. In November 2016 ambient air quality was monitored at 13 locations and in December that was at 2 locations from the railway station and Construction areas of the Project rail corridor between Akhaura and Laksam. The ambient status of major air pollutants viz. Particulate Matter (SPM, PM_{10} and $PM_{2.5}$), Sulphur Dioxide (SO_2), Oxides of Nitrogen (NO_x), and Carbon Monoxide (CO) have been assessed.

91. Respirable Dust Sampler (Model-Lata Envirotech APM 250 combined PM10 and PM2.5 sampler) has been used to collect the air sample. The particulate and gaseous samples collected during the monitoring have been analyzed as per the procedures specified in Table. All the samples were collected for 8 hour and using the simple power law principle (Schroeder and Jugloff, 2012) results was converted to 24-hour values. The results of the ambient air quality monitoring have been listed in Table.

Table3. Methodology for Analysis of Ambient Air Quality

Sl.	Parameter	Analysis procedure
1.	SPM	Gravimetric method
2.	PM_{10}	Gravimetric method
3.	$PM_{2.5}$	Gravimetric method
4.	SO_2	Colorimetric method at 560nm using spectrophotometer (West-Gaeke method)
5.	NO_x	Colorimetric method at 540 nm using spectrophotometer (Jacob and Hochheiser method)
6.	CO	Digital CO meter

Table4. Air Quality monitoring during November-December 2016

Sampling ID	Sampling Location	GPS Location	$PM_{2.5}$ µg/m³	PM_{10} µg/m³	SPM µg/m³	SO_2 µg/m³	NOx µg/m³	CO ppm
November 2016								
AQ 01	Laksham	N23°15'25.2" E91°07'27.0"	23.76	51.79	86.78	4.87	16.35	<2
AQ 02	Alishahar	N23°18'23.0" E90°08'18.0"	15.29	36.65	65.82	2.56	13.59	<2
AQ 03	Lalmai	N23°21'23.3" E90°09'06.1"	13.45	29.87	53.98	3.79	11.23	<2
AQ 04	Mainamati	N23°25'57.5" E91°10'16.3"	18.75	42.45	78.48	3.63	14.78	<2
AQ 05	Comilla	N23°31'09.4" E91°10'07.3"	24.87	56.98	96.79	4.95	14.86	<2
AQ 06	Sadar Rasulpur	N23°27'48.5" E91°10'00.0"	11.32	27.76	48.57	2.41	12.57	<2
AQ 07	Rajapur	N23°34'50.1" E91°09'08.1"	12.47	26.81	63.21	2.91	10.43	<2
AQ 08	Shoshidal	N23°38'21.4" E91°10'00.0"	9.59	22.12	39.34	2.37	10.37	<2
AQ 09	Saldanadi	N23°52'10.0" E91°12'21.2"	7.91	19.79	34.69	2.76	9.58	<2

Sampling ID	Sampling Location	GPS Location	$PM_{2.5}$ µg/m³	PM_{10} µg/m³	SPM µg/m³	SO_2 µg/m³	NOx µg/m³	CO ppm
AQ 10	Mandabag	N23°49'49.4" E91°11'45.0"	14.43	33.93	59.18	3.11	12.83	<2
AQ 11	Kasba	N23°44'29.3" E91°09'20.4"	10.95	25.56	49.52	3.73	11.46	<2
AQ 12	Gangasagar	N23°40'15.3"E91°03'21.2"	22.73	49.97	98.46	2.95	12.39	<2
AQ 13	Akhaura	N23°41'18.3"E91°09'08.2"	26.85	61.53	105.72	5.27	17.45	<2
December 2016								
AQ 1	Laksam	N23°21'23.3" E 91°9'6.1"	15.49	26.78	79.86	3.70	9.18	<2
AQ 2	Gangasagar	N23°40'15.3" E 91°3'21.2"	25.17	36.47	75.40	6.39	6.36	<2
DOE standard (2006)			**65**	**150**	**200**	**365**	**100**	**9**

AQ=air quality; Source: Lab Analysis

2.4 Noise Quality

92. Ambient noise levels have been monitored from 13 railway stations of the ALDLP project and Comilla Engineers office (Labiba Tower). Noise data logger (Digital Noise Meter: Model no. GM 1357) has been used to monitor of ambient noise levels. Fifty two (52) and Eight (8) noise level sampling locations have been selected from the nearby sensitive receptor of the stations. The Detail list of sampling location has been shown in **Table**. Noise level was measured for 1 hour at every location on different time.

Table5. Noise Level monitoring results

SL No.	Sampling ID	Location	Noise Level dB (A)	Zone (according to ECR 1997 and amendment in 2006)	Bangladesh Standard at day Time dB (A)	Remarks
N0vember 2016						
1.	NL1	Laksham Railway Station area	64.40	Commercial	70	Low
2.	NL2	Laksham Railway Station	70.80	Commercial	70	High
3.	NL3	Laksham Railway Station	67.23	Silent	50	High
4.	NL4	Laksham Railway Station	60.40	Residential	55	High
5.	NL5	Alisahar Railway Station area	58.80	Commercial	70	Low
6.	NL6	Alisahar Railway Station	61.83	Silent	50	High
7.	NL7	Alisahar Railway Station	56.56	Residential	55	High
8.	NL8	Alisahar Railway Station	62.95	Commercial	70	Low
9.	NL9	Lalmai Railway Station area	60.34	Commercial	70	Low
10.	NL10	Lalmai Railway Station	64.13	Commercial	70	Low
11.	NL11	Lalmai Railway Station	54.35	Residential	55	Low
12.	NL12	Lalmai Railway Station	59.12	Silent	50	High
13.	NL13	Maynamoti Railway Station area	66.02	Commercial	70	Low
14.	NL14	Maynamoti Railway Station	59.27	Residential	55	High
15.	NL15	Maynamoti Railway Station	65.20	Silent	50	High
16.	NL16	Maynamoti Railway Station	74.99	Commercial	70	High
17.	NL17	Sadar Rasulpur Railway Station area	69.54	Commercial	70	Low
18.	NL18	Sadar Rasulpur Railway Station	52.25	Silent	50	High
19.	NL19	Sadar Rasulpur Railway Station	63.51	Commercial	70	Low

SL No.	Sampling ID	Location	Noise Level dB (A)	Zone (according to ECR 1997 and amendment in 2006)	Bangladesh Standard at day Time dB (A)	Remarks
20.	NL20	Sadar Rasulpur Railway Station	59.57	Residential	55	High
21.	NL21	Comilla Railway Station area	82.75	Commercial	70	High
22.	NL22	Comilla Railway Station	72.68	Commercial	70	High
23.	NL23	Comilla Railway Station	66.10	silent	50	High
24.	NL24	Comilla Railway Station	56.65	Residential	55	High
25.	NL25	Rajapur Railway Station area	67.10	Commercial	70	Low
26.	NL26	Rajapur Railway Station	66.84	Commercial	70	Low
27.	NL27	Rajapur Railway Station	66.84	Residential	55	High
28.	NL28	Rajapur Railway Station	60.98	Silent	50	High
29.	NL29	Labiba tower inside Noise in 7th floor	57.18	Residential	55	High
30.	NL30	Labiba tower outside Noise	75.81	Mixed Zone	60	High
31.	NL31	Shashidal Railway station area	70.14	Commercial	70	High
32.	NL32	Shashidal Railway station	62.22	Commercial	70	Low
33.	NL33	Shashidal Railway station	61.95	Silent	50	High
34.	NL34	Shashidal Railway station	54.88	Commercial	70	Low
35.	NL35	Shashidal Railway station	56.29	Residential	55	High
36.	NL36	Akhaura Railway station	66.23	Commercial	70	Low
37.	NL37	Akhaura Railway station	55.8	Silent	50	High
38.	NL38	Akhaura Railway station	55.4	Commercial	70	Low
39.	NL39	Kasba Railway Station	54.79	Commercial	70	Low
40.	NL40	Kasba Railway Station	54.65	Commercial	70	Low
41.	NL41	Kasba Railway Station	54.66	Residential	55	Low
42.	NL42	Saldanadi Railway Station	54.64	Commercial	70	Low
43.	NL43	Saldanadi Railway Station	56.14	Residential	55	High
44.	NL44	Saldanadi Railway Station	62.49	Commercial	70	Low

SL No.	Sampling ID	Location	Noise Level dB (A)	Zone (according to ECR 1997 and amendment in 2006)	Bangladesh Standard at day Time dB (A)	Remarks
45.	NL45	Saldanadi Railway Station	55.82	Silent	50	High
46.	NL46	Mandabag Railway Station	54.64	Commercial	70	Low
47.	NL47	Mandabag Railway Station	54.64	Commercial	70	Low
48.	NL48	Mandabag Railway Station	54.66	Residential	55	Low
49.	NL49	Mandabag Railway Station	54.74	Silent	50	High
50.	NL50	Gangasagar Railway Station	55.06	Commercial	70	Low
51.	NL51	Gangasagar Railway Station	55.51	Silent	50	High
52.	NL52	Gangasagar Railway Station	54.8	Residential	55	Low
December 2016						
53.	**NL1**	Lalmai railway station	64.35	Commercial	**70**	Low
54.	**NL2**	Lalmai railway station Construction Site	64.41	Mixed	**60**	High
55.	**NL3**	Residential area, North side of lalmai station (Hazi Jafor Ali House)	64.82	Commercial	**70**	Low
56.	**NL4**	Tofazzol store, Lalmai	51.28	Residential	**55**	Low
57.	**NL5**	Lalmai railway station Maje Mosque	52.89	Silent	**50**	High
58.	**NL6**	Gangasagar railway station Base Camp	73.60	Commercial	**70**	High
59.	**NL7**	Infront of Diru Chandra Sarkar House	58.73	Mixed	**60**	Low
60.	**NL8**	Gangasagar railway station	53.84	Residential	**55**	Low

Source: EQMS Survey Team

1) Fisheries Resource.

93. Bridges, culverts and existing railroad cross many waterways. Of them Gumti River is the main river which is crossed this rail line. There is no doubt that fish populations, their habitat and water quality in general are all seriously threatened due to land use changes and chemical pollution.

2) Wildlife

94. Within the RoW and the areas where embankment is to be placed is all either paddy, pasture or water ditches paralleling the tracks. Some of these ditches may be home to

common amphibians, reptiles and aquatic birds. During the filed inspection no wild mammals have been observed to be affected.

3 Compliance with Environment Related Project Covenants

1) Compliance with National Environmental Laws

2) Compliance with ADB Guidelines

3) Contractor Compliance

a) Environmental Management Plan (EMP)

b) Compliance with Construction Contract Clauses

c) Monitoring Reports

95. The contractor began submitting monthly environmental monitoring reports based on the approved template and Table of Contents in November 2016. Based on the reports of November and December 2016 and quarterly progress report October-December 2016 of contractor this Quarterly Progress Report is prepared by CSC of ALDLP. The report contains tables of all monitoring results those are being reported in the respective monthly reports.

d) Landscaping and Site Restoration

4 Adequacy of Mitigation Measures

1) Budget and Timeline

To be filled up next time

2) Capacity Building

To be filled up next time.

5 Adequacy of Institutional Arrangements for EMP Implementation and Needed Adjustments.

To be filled up next time.

6 RESULTS OF ENVIRONMENTAL MONITORING AND COMPLIANCE MEASURES

6.1 Key Environmental Issues

1) Key Issues Identified

The monitoring results revealed that there were no major significant environmental issues that would be raised during the reporting period. But there are a number of working sites where more mitigation action is needs to be taken by the contractor to meet up full compliance with the EMP, as many more activities will commence on site soon.

7 Action Plan of Environmental Mitigation and Monitoring

TO BE FILLED UP NEXT TIME.

8 CONCLUSION AND RECOMMENDATIONS

8.1 Overall Progress with Implementation of Environmental Safeguard Measures

To be filled up next time.

8.2 Problems Identified and Actions Recommended

To be filled up next time.

8.3 Overall Environmental Safeguards Compliance

1) Contractor

The environmental awareness creation, particularly regarding the direct construction impacts and especially for health, pollution and safety issues will be needed. The need to develop self-regulation of the contractors will have to be emphasized, with the consultant's supervisory role that to be in conformity the relevant Environmental Clauses (Section 6, Subsection H of contract technical specification) incorporated in the construction contracts and national legislation.

2) Bangladesh Railway

Bangladesh Railway has recognized the need to improve its safeguards technical capacity and to that end in planning to establish an Environmental and Social Safeguards Unit within the agency.

3) Construction Supervision Consultant (Engineer)

4) Asian Development Bank (ADB)

8.4 Lessons Learned and Gaps.

The following are major lessons learned during this project implementation period

1) Prequalification of the Contractor

2) Preparation of Environmental Clauses Section of Contracts

3) Prepare Environmental BOQ section

4) Engineer's Environmental Specialist on the Job while the Contractor is mobilizing.

5) Ensure that for all ADB missions related to the project, especially when the Contractor is asked to make presentations concerning safeguards, the Engineer is involved and leads the discussion

9 APPENDICES

9.1 Annex-A. Quantitative Environmental Monitoring Schedule Table for Year 2017

Factor of Monitoring	Stage	Point of Monitoring	Test Parameters	Method for Monitoring	Frequency of Monitoring	Test Month in year 2014
Air Quality	Construction	All construction locations along the line - 2 locations	PM 10, PM 2.5, SOx, NOx	High Volume Sampler	Once per Month	January, February, March, April, May, June, July, August, September, October, November, December
Ambient noise and vibration	Construction	All construction locations along the line - 2 locations	Measurement of noise dB(A)	Filed Level Noise Meter	Once per Month	January, February, March, April, May, June, July, August, September, October, November, December
Surface Water Environment	Construction	All construction locations along the line - 2 locations	Temperature, pH, TDS, EC, TSS, DO, COD, BOD5	In situ and Laboratory analysis	Once per Month	January, February, March, April, May, June, July, August, September, October, November, December
Ground Water Environment	Construction	All construction locations along the line - 2 locations	Temperature, pH, Phosphate, Mn, Fe, As, Fecal Coliform	In situ and Laboratory analysis	Once per Month	January, February, March, April, May, June, July, August, September, October, November, December

9.2 Annex - B. Environmental monitoring Photographs during October-December 2016

Photo1. Earth works for trimming the slope at chainage……

Photo 2. Trimming of slopes with topsoil at chainage ……..

Photo 3. The Engineer's instruction on safeguard to the workers at ……..

Photo 4. Engineers are observing Ballast Yard at chainage ……..

Photo5. Surface water collection near xxx Bridge. Sampling was done according to Engineer's specification

Photo 6. Surface water collection from xxx River. Sampling was done according to Engineer's specification

Photo 7. Groundwater collection from Comilla site office. Sampling was done according to Engineer's specification

Photo 8. Ground water collection from Comilla station. Sampling was done according to Engineer's specification

Photo 9. Noise level monitoring at Laksam station. Monitoring was done according to Engineer's specification

Photo 10. Noise level monitoring at xxx. Monitoring was done according to Engineer's specification

Photo 11. Air quality monitoring at xxx. Monitoring was done according to Engineer's specification

Photo 12. Air quality monitoring at xxx. Monitoring was done according to Engineer's specification

Photo 13. Noise level monitoring at xxx. Monitoring was done according to Engineer's specification

Photo 14. Air quality monitoring at xxx. Monitoring was done according to Engineer's specification

Photo 15. Air quality monitoring at xxx. Monitoring was done according to Engineer's specification