DOHWA-KRNA-OCG-BARSYL-DDC Joint Venture for
Construction Supervision of Akhaura-Laksam Double Track Project

Ref. No.: JV-ALDLP-BR-19- 123 Date: 11 July 2019

Mr. D.N. Mazumder
General Manager / Project Director
Bangladesh Railway, Railbhaban (7th Floor)
16 Abdul Gani Road, Dhaka-1000, Bangladesh

Project: Contract No.: BR/PD/ALDLP/ADB-EIB/2015: Construction of Dual Gauge Double Rail Line and Conversion of Existing Rail Line into Dual Gauge between Akhaura-Laksam

Subject: Submission of Semi-Annual Environmental Monitoring Report January-June, 2019

Dear Sir,

To meet above Contractual requirement, we do hereby submit Semi-annual Environmental Report (January-June 2019) for your kind review.

Sincerely yours.

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

Attachments: 1. Semi-Annual Environmental Report January-June 2019 (6 Copies)

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

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

ADB Loan No.: 3170-BAN (SF)

ENVIRONMENTAL MONITORING REPORT

Semi-annual Report: January-June 2019

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For
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.

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

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

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

Engineer was able to issue Instruction only on 31st October, 2016 to commence from 1st November, 2016 as the commencement of the works were delayed.

physical works have been started. Contractor had 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 March 2018.

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

Environmental Monitoring

All impacts, mitigation 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 four 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.

Tree Plantation

More than 55,000 trees have been cut and will be cut. Three times that is 1,65,000 trees will be planted to compensate the loss. Moreover it will keep the ecological balance.

Conclusions

Akhaura-Laksam Double Track project could generate a number of environmental impacts, such as those associated with the embankment construction, the river crossings or workers poor 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 implement these measures have fully endorsed into 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

Bangladesh Railway 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 fully address the mitigation 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 seriously consider installing sewage collection tanks on its trains, thereby stopping the present practice of dumping raw sewage onto the tracks.

Lessons Learned

The Engineer needs to be given authority through more workable provisions in the contract to act very quickly when non-compliance is observed whereby it is clear to the contractor that serious consequences including financial penalties are possible should the contractor decide to be non-responsive to Environmental Safeguard Issues.

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 Acquisition and Resettlement
LC	Level Crossing
MG	Meter Gauge
MOF	Ministry of Finance
MOR	Ministry of Railways
OCR	Ordinary Capital Resource
PAM	Project Administrative 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., Bangladesh
ALDLP	Akhaura- Laksam Double Line Project
TOR	Terms of Reference

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1. Project Background

1.1 Purpose of the Report And Rationale

1. The Contract for implementation of Consulting Services between Bangladesh Railways (BR) and Dohwa Engineering Co., Ltd and 4 Joint partners mandates submission of "Semi-annual Environmental 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. Most important requirement for this phase is to submit semi-annual Environmental 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 period Contractor had been busy performing their duties imposed on Contract for preparation and submission of required documentations and procurement of materials.

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

1) Sector Objective

4. Government of the People's Republic of Bangladesh 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 multi-tranche 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 organizational, 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

6. 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.

7. 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:

8. 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 of trains per day will be increased up to 72 pairs of trains per day.

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

10. 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.

11. 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

12. For Consultancy Services for the Construction Supervision of Akhaura-Laksam Double Track Project an International Tender was called on 19th May,2015. 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.

13. 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%).

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

15. 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 1,456 days (48months).

16. 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

17. 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.

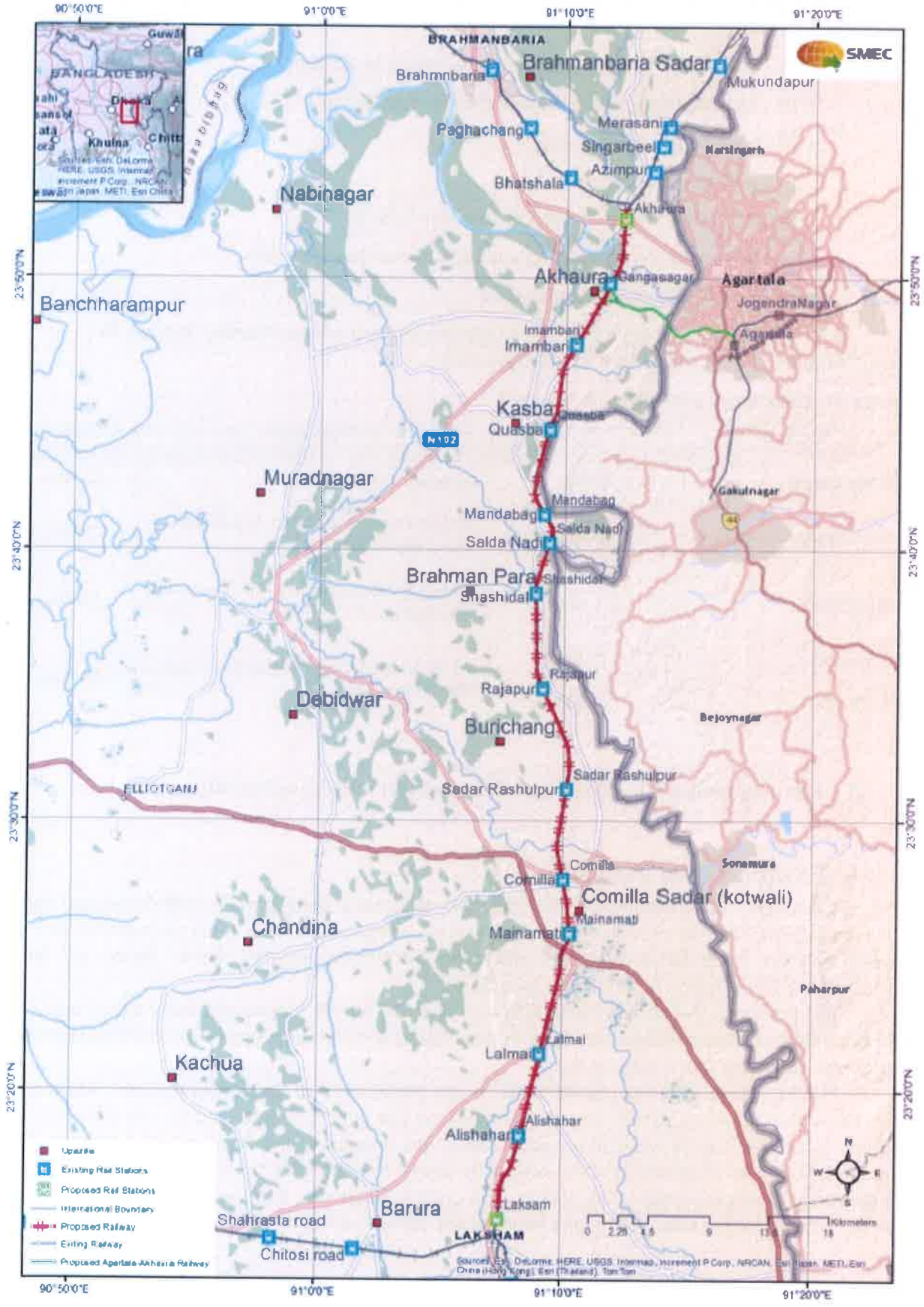
18. The project will support the Government of Bangladesh to upgrade about 72 km Akhaura-Laksam section of Dhaka Chittagong railway corridor to a double track railway line with modern signaling and telecommunication equipment. The section is part of a major sub-regional corridor and the Trans-Asia Railway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

19. 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.

Table 1. Location of the Laksam-Akhaura Double track Project

Division	District	Upazila
Chittagong	Brahmanbaria	Akhaura, Quasba
	Cumilla	Bhramanpara, Burichang, Cumilla Sadar, Cumilla Sadar Daksmin, Laksam.

Figure I. Project Location Plan



1.2.2 Project Components

20. 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

21. A modern computer-based interlocking signaling system will be installed; this will be integrated with the Centralized Traffic Control system.

Additional details are shown below.

Property	Qty	Properties	Qty
Major Bridge	12 Nos.	Level Crossing	23 Nos.
Minor Bridge (Culverts)	49 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 of the project and Responsibilities

1.3.1 Environmental Category

22. 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.

23. 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.

24. 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

25. 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 Railway (BR) needed to obtain Environmental Clearance Certificate (ECC) from the Department of Environment, Government of Bangladesh before commencement of the construction works.

26. The Environmental Clearance Certificate (ECC) for the project, valid for one year, was obtained by BR from the DOE on 2nd May 2016, according to their memo no. DOE/Clearance/ 5209/2013/188. Dated: 02/05/2016. Subsequently renewals of the ECC has been obtained before 02/05/2017 for the year 2017 (1 year). BR had to lodge an application for a renewal of the environmental clearance certificate up to 30th Jun 2017. Last year it was renewed on 29 May 2018. This year the renewal is under process.

3) Institutional Setup and Responsibilities

27. During the preparation and construction of the Project, BR's Project Director is giving the final approval for all administrative and technical decisions at all times. The key agencies or units which are playing major roles in the implementation of the EMP are:

- Bangladesh Railway's newly proposed Environmental and Social Safeguards Unit (ESSU)
- The Contractor;
- Engineer (usually an international firm);

28. The implementation oversight of all safeguard items in the EMP and indeed the construction contract are with BR and its ESSU. When the Engineer is appointed BR's technical management of the work is being 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.

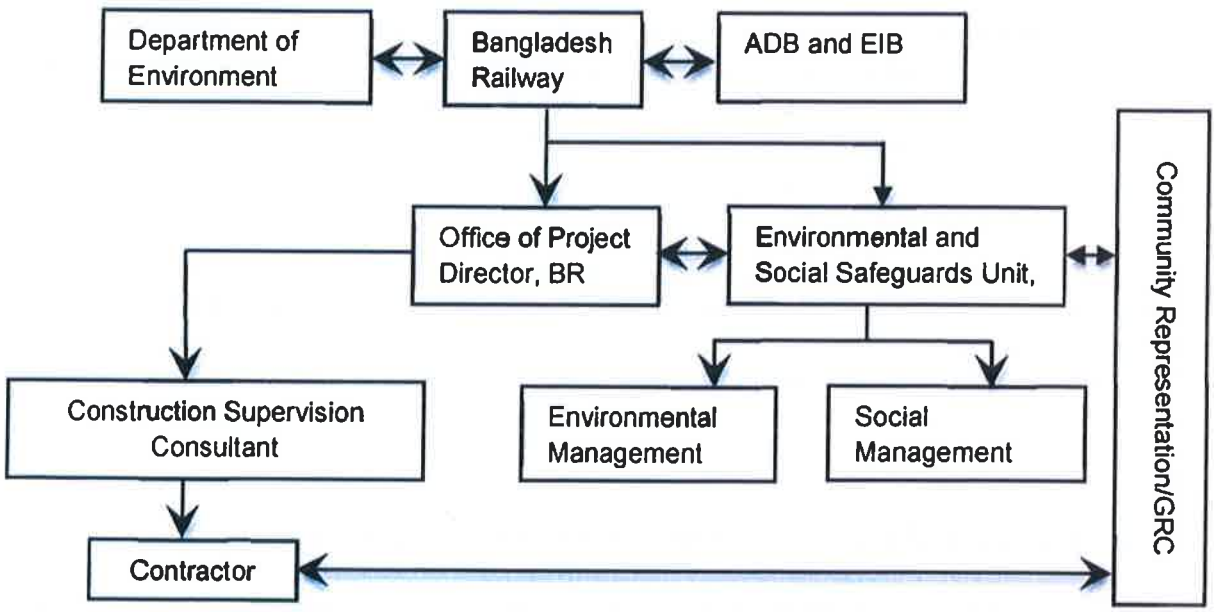


Figure 2. Safeguards Implementation and Reporting Work Flow

29. **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.

30. 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.

31. **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.

32. **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.

33. **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.

34. **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

35. The conclusion and recommendations of the EMP of 2016 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.

36. 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.

37. 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.

38. 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.

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

40. 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).

41. 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.

42. Based on these data, the diverted traffic in 2023, when 44 train sets are l 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).

43. 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.

44. 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.

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

46. 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.

47. 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.

48. 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.

49. 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.

50. 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 as of 30 June 2019

64. 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 Cumilla 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) **Embankment borrow source:** Private land and RoW is the borrow source.

(x) **Dumping yard:** Dumping yard has been selected and is under approval of DoE.

(xi) **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.

2) Environmental Management Plan

65. For this project the EIA report included (Table 38, Table 39, Table 40 and Table 41 of the EIA report) the Environmental Management Plan (EMP). 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 level. In addition this EMP will:

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

66. 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.

67. 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.

68. 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)

69. 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.

70. 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.

71. 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.

72. 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.

73. 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.

74. 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

75. 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.

76. 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.

77. 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.

78. 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.

79. The embankment slopes will easily erode if not re-vegetated quickly. Therefore, the contractor will implement a rehabilitation programme as the work is completed

80. 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.

81. 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.

82. 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.

83. 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.

84. 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.

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

2) Sampling Program

86. The extent of the impacts of environmental pollution related to surface water, ground water, air quality and noise level 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

87. Around 55,000 trees and saplings within 50m RoW of proposed alignment, workers camp setting, and station areas are being cut down during pre-construction period. Proper compensation to affected people is being provided with the house and property damage through resettlement activities of the project. The tree along the RoW were illegally planted and some are naturally grew. So no tree will be planted to compensate the tree loss but vegetation must be planted to protect erosion and potential ecological loss.

88. Based on preliminary topographical and social survey data of the project, the project involves land acquisition of around 37.38 hectares along the proposed alignment and station areas. A total of 2004 households will be affected. The detail guideline for land acquisition and compensation can be found in LAP and RP of this project.

89. Some utility lines such as electric transmission lines and water supply pipelines are being shifted or removed with proper agency approvals and permits. It will be confirmed that permits, Location and relocation site plans have been approved.

B. Construction Stage

90. Although to date many of the mitigation measures have been implemented there are some significant deficiencies that need to be addressed as the number and range construction activities has increased on site. One important area where deficiencies continue to exist and that needs further on-going action is the occupational health and safety practices. Further improvement of the general condition of the camps and work areas in relation to waste disposal, hygiene, medical facilities, etc. is still required and general cleanliness and tidiness needs attention. Personal safety including the provision and use of the range of Personal Protective Equipment (PPE) for the workforce is also an area that requires continual attention with frequent and regular training and awareness sessions for all staff. This in fact is now taking place, with the CSC taking a leading role.

91. Safety at the many work sites with the provision of signs and notices, warning flags, safety barriers and fences, shoring of excavations and general safe working practices is also an area that requires continual attention with regular maintenance and frequent replacement of many of the precautionary devices used. Until June 2019, the extent of the impacts on surface and ground water, air quality, noise and vibration from the various work activities could not be determined. The sampling requirements for surface water, ground water, air and noise have been maintained at the agreed frequency with the results up to 30 June 2019.

92. A number of impacts mentioned several times in the past have been left unaddressed, namely the completion of the clearing of all pond site debris and diversion material and the complete stabilization of embankments with vegetation, the provision of solid waste disposal facilities (garbage cans) at stations, and the removal of construction debris/equipment and materials from station platforms.

93. The clean-up and demobilization of the main subcontractor's construction yard has not started and the area is in serious non-compliance, i.e. there is waste oil spilled throughout the site as well as construction debris scattered in the open, creating ideal stagnant water pools and mosquito breeding areas. Finally, there remains the issue of filling in of large borrow areas and the arrangement with local residents to hand over these sites for other uses. This is mainly at the private land sites.

C. Sampling Program Results and Analysis

2.1 Water Quality Monitoring

2.2 Surface and Ground Water Quality

94. Surface water sampling was based on the identification of major surface water bodies which has crossed the Construction site. Groundwater sampling locations were selected to obtain a representative water sample from various zones within the study area. The samples were collected from existing tube wells of the railway stations.

95. The quality of surface water was compared with the standards for Inland Surface Water, Environment Conservation Rules (ECR) and 1997-Schedule 3 whereas the groundwater was compared with the Drinking Water Standard ECR Schedule-3, 1997. The standards have been presented along with the monitoring results of surface and groundwater for comparison.

Results of Sampling and Analysis

96. During January to June 2019 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 2.**

There is a possibility to pollute the surface water during the operating 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. Following Table provides the quality of surface water in the study area.

46. 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.

47. 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.

48. 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.

49. 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.

50. 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 as of 30 June 2019

64. 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 Cumilla 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) **Embankment borrow source:** Private land and RoW is the borrow source.

(x) **Dumping yard:** Dumping yard has been selected and is under approval of DoE.

(xi) **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.

2) Environmental Management Plan

65. For this project the EIA report included (Table 38, Table 39, Table 40 and Table 41 of the EIA report) the Environmental Management Plan (EMP). 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 level. In addition this EMP will:

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

66. 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.

67. 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.

68. 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)

69. 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.

70. 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.

71. 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.

72. 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.

73. 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.

74. 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

75. 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.

76. 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.

77. 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;
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- 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.

78. 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.

79. The embankment slopes will easily erode if not re-vegetated quickly. Therefore, the contractor will implement a rehabilitation programme as the work is completed

80. 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

2.4 Air Quality Monitoring

Results of monitoring and Analysis

98. A total of 12 ambient air samples were collected from the railway station 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 by monitoring air quality at thirteen railway stations of the project.

Table 4. Air Quality monitoring during January-June 2019

Sampling Code	Sampling Location	$PM_{2.5}$ µg/m³	PM_{10} µg/m³	SPM µg/m³	SO_2 µg/m³	NOx µg/m³	CO ppm
January 2019							
AQ 1	Mainamati Railway station	32.16	61.52	118.2	4.61	22.38	<2
EMP	Mainamati Railway station	18.75	42.45	78.48	3.63	14.78	<2
AQ 2	Mandabag Railway station	24.54	48.29	85.13	4.79	18.91	<2
EMP	Mandabag Railway station	14.43	33.93	59.18	3.11	12.83	<2
February 2019							
AQ 1	Kasba Railway Station	31.11	56.25	121.5	6.32	17.22	<2
EMP	Kasba Railway Station	10.95	25.56	49.52	3.73	11.46	<2
AQ 2	Lalmai Railway Station	28.65	53.11	93.24	5.26	19.12	<2
EMP	Lalmai Railway Station	13.45	29.87	53.98	3.79	11.23	<2
March 2019							
AQ 1	Alishahar Railway Station	36.6	64.92	122.5	5.36	24.1	<2
EMP	Alishahar Railway Station	13.43	29.85	53.95	3.78	11.25	<2
AQ 2	Gangasagar Railway Station	14.73	47.35	77.32	4.22	13.6	<2
EMP	Gangasagar Railway Station	7.95	19.78	34.68	2.76	9.56	<2
April 2019							
AQ 1	Sadar Rasulpur Railway Station	21.83	38.26	59.51	4.12	14.07	<2
EMP	Sadar Rasulpur Railway Station	11.32	27.76	48.57	2.41	12.57	<2
AQ 2	Akhaura Railway Station	29.83	63.29	108.17	5.82	22.93	<2
EMP	Akhaura Railway Station	26.85	61.53	105.72	5.27	17.45	<2
May 2019							
AQ 1	Cumilla Railway Station	38.44	74.27	114.82	5.01	17.98	<2
EMP	Cumilla Railway Station	24.87	56.98	96.79	4.95	14.86	<2
AQ 2	Saldanodi Railway Station	16.87	38.21	57.82	3.88	14.29	<2
EMP	Saldanodi Railway Station	7.91	19.79	34.69	2.76	9.58	<2
June 2019							
AQ 1	Mainamati Railway Station	28.69	54.21	101.82	4.52	17.29	<2
EMP	Mainamati Railway Station	18.75	42.45	78.48	3.63	14.78	<2
AQ 2	Shashidal Railway Station	31.52	44.76	82.12	3.31	12.98	<2
EMP	Shashidal Railway Station	9.59	22.12	39.34	2.37	10.37	<2
DOE standard (2006)		**65**	**150**	**200**	**365**	**100**	**9**

Source: Air quality analysis done by EQMS Consulting Limited, 2019
Note:

** CO concentrations and standards are 8-hourly only.*
*** The Bangladesh National Ambient Air Quality Standards have been taken from the Environmental Conservation Rules, 1997 which was amended on 19th July 2005 vide S.R.O. No. 220-Law/2005.*

All parameters shown in ***Table 4*** are within the acceptable limits specified by the DoE.

2.5 Noise Quality

99. Ambient noise levels have been monitored from railway stations of the ALDLP project. Noise data logger (Digital Noise Meter: Model no. GM 1357) has been used to monitor of ambient noise levels. Eleven (11) 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 5. Noise level was measured for 1 hour at every location on different time.

Potential noise impacts will be vary and are based on the noise amplitude, frequency, distance from receivers, site landscape features, topography, presence of obstacles and meteorological effects. In this project key project related noise source will be train traffic, generators, vehicles, construction equipment and people.

During the monitoring phase of the project, field measured value of noise quality is being given in monthly environmental inspection report. Results of noise level monitoring is given in **Table 5**.

Table 5. Results of noise level monitoring during January - June 2019

SL#	Sampling ID	Location	Noise Level dB (A)	EMP	Zone (according to DoE)	Bangladesh Standard at day Time dB (A)	Remarks
January 2019							
1.	**NL1**	Mainamti Railway station	57.42	74.99	Mixed	60	Low
2.	**NL2**	Mainamati Railway station Jame Mosque	56.17	NR	Silent	50	High
3.	**NL3**	Mandabag Railway station	53.51	54.64	Mixed	60	Low
4.	**NL4**	Mandabag Railway station Jame mosque	51.30	NR	Silent	50	High
February 2019							
5.	**NL1**	Kasba Railway Station	58.25	54.64	Mixed	60	Low
6.	**NL2**	Kasba Railway Station Jame Mosque	57.04	NR	Silent	50	High
7.	**NL3**	Lalmai Railway Station	56.20	60.40	Mixed	60	Low
8.	**NL4**	Lalmai Railway Station Jame Mosque	55.65	NR	Silent	50	High
March 2019							
9.	**NL1**	Alishahar Railway Station	58.66	60.40	Mixed	60	Low
10.	**NL2**	Alishahar Railway Station Jame Mosque	54.18	NR	Silent	50	High
11.	**NL3**	Gangasagar Railway Station	59.73	62.49	Mixed	60	Low
12.	**NL4**	Gangasagar Jame Mosque	61.48	55.82	Silent	50	High

SL#	Sampling ID	Location	Noise Level dB (A)	EMP	Zone (according to DoE)	Bangladesh Standard at day Time dB (A)	Remarks
April 2019							
13.	**NL1**	Sadar Rasulpur Railway Station	45.22	**63.51**	Mixed	60	Low
14.	**NL2**	Sadar Rasulpur Railway Station Jame Mosque	40.53	**52.25**	Silent	50	Low
15.	**NL3**	Akhaura Railway Station	55.99	**66.23**	Mixed	60	Low
16.	**NL4**	Akhaura Railway station Jame Mosque	53.11	**NR**	Silent	50	High
May 2019							
17.	**NL 1**	Cumilla Rasulpur Railway Station	63.42	**72.68**	Mixed	60	High
18.	**NL 2**	Cumilla Railway Station Jame mosque	48.72	**NR**	Silent	50	Low
19.	**NL 3**	Saldanodi Railway Station	65.74	**62.49**	Mixed	60	High
20.	**NL 4**	Gangasagar Jame Mosque	41.82	**55.82**	Silent	50	Low
June 2019							
21.	**NL 1**	Mainamati Railway Station	50.06	**74.99**	Mixed	60	Low
22.	**NL 2**	Mainamati Railway Station Jame Mosque	47.71	**NR**	Silent	50	Low
23.	**NL 3**	Shashidal Railway Station	55.12	**62.22**	Mixed	60	Low
24.	**NL 4**	Shashidal Railway station Jame mosque	47.69	**NR**	Silent	50	Low

*Source: EQMS Survey Team; EMP: Environmental Management Plan; NR: Not Reported; *Environmental Conservation Rules, 1997 (Schedule 4) (subsequent amendment in 2006)*

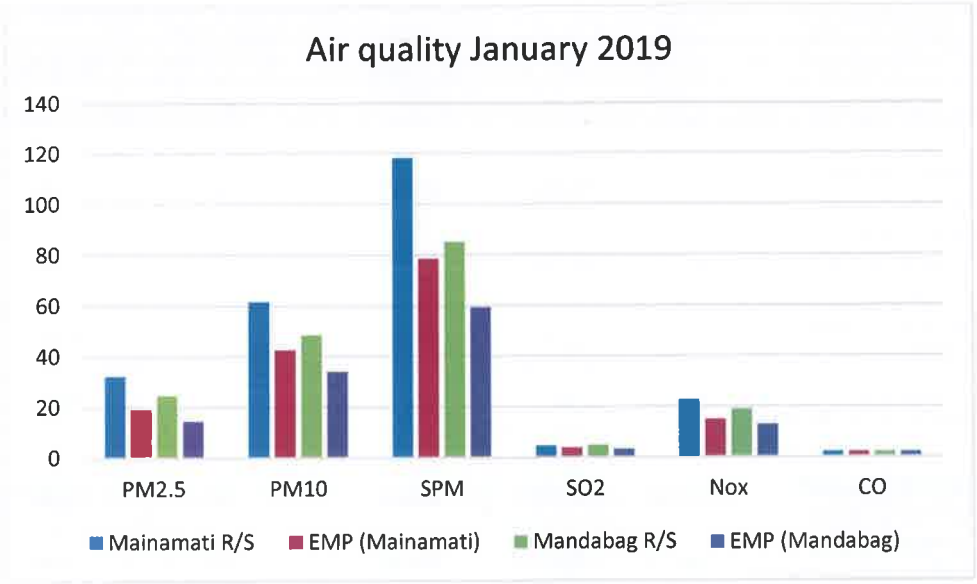


Fig. 3. Air quality (µg/m3) January 2019 in Mainamati and Mandabag Railway Station

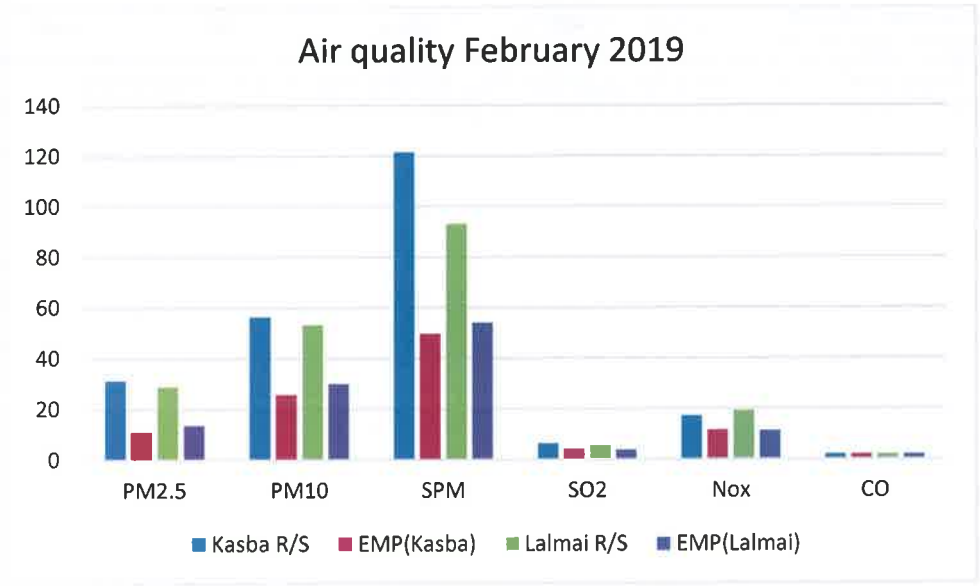


Fig.4. Air quality (µg/m3) February 2019 in Kasba and Lalmai Railway Station

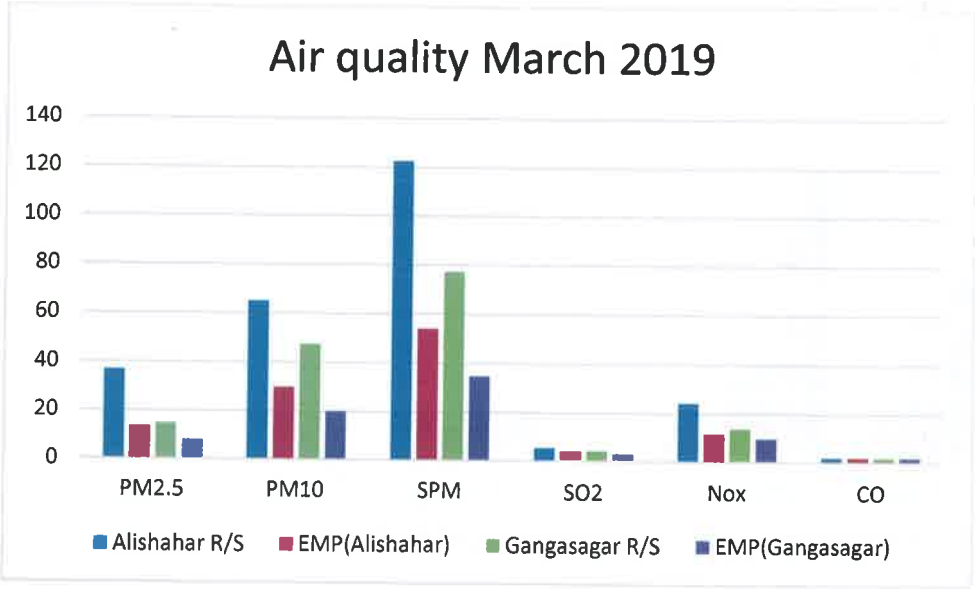


Fig.5 Air quality (µg/m3) March 2019 in Alishahar and Gangasagar Railway Station

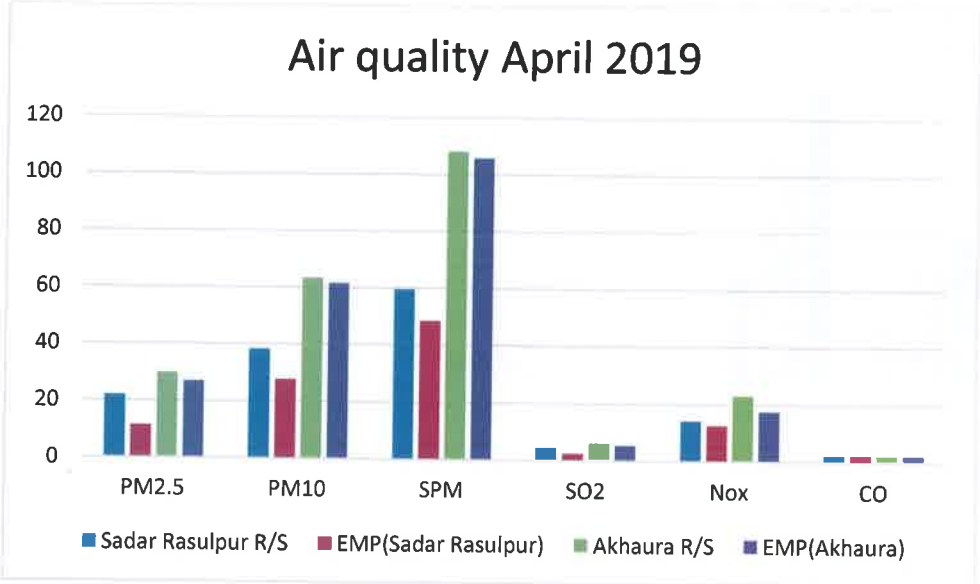


Fig.6. Air quality (µg/m3) April 2019 in Sadar Rasulpur and Akhaura Railway Station

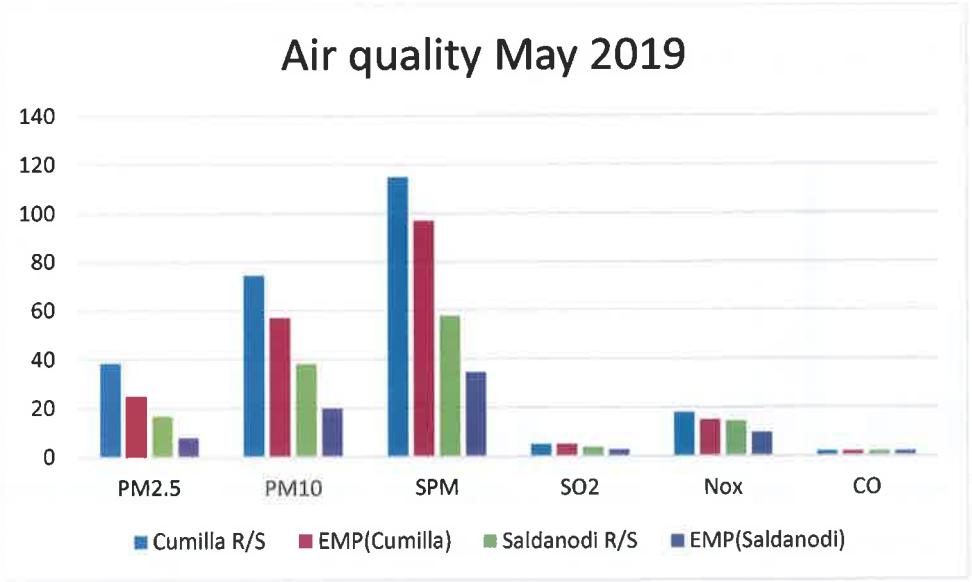


Fig.7. Air quality (µg/m3) May 2019 in Cumilla and Saldanodi Railway Station

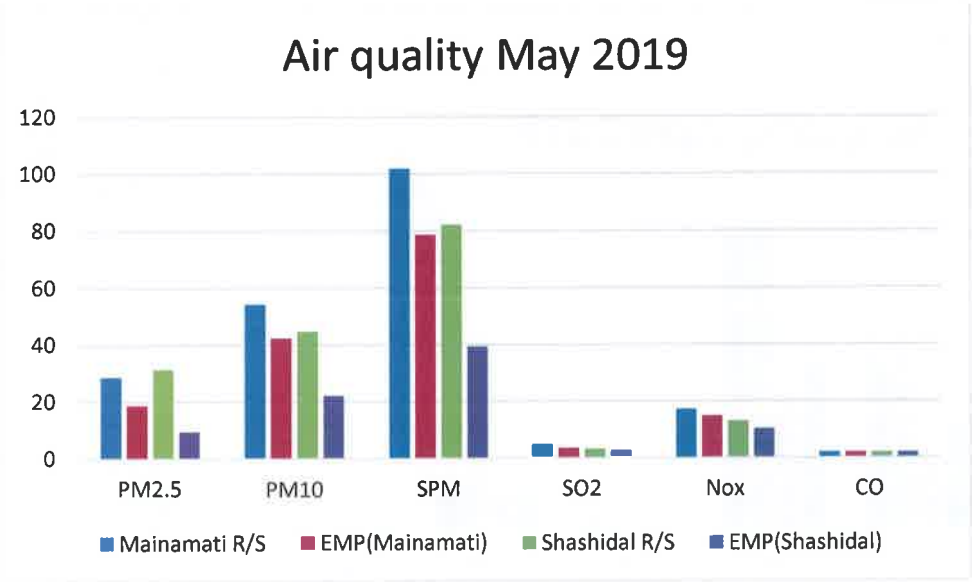


Fig.8. Air quality (µg/m3) June 2019 in Mainamati and Shashidal Railway Station

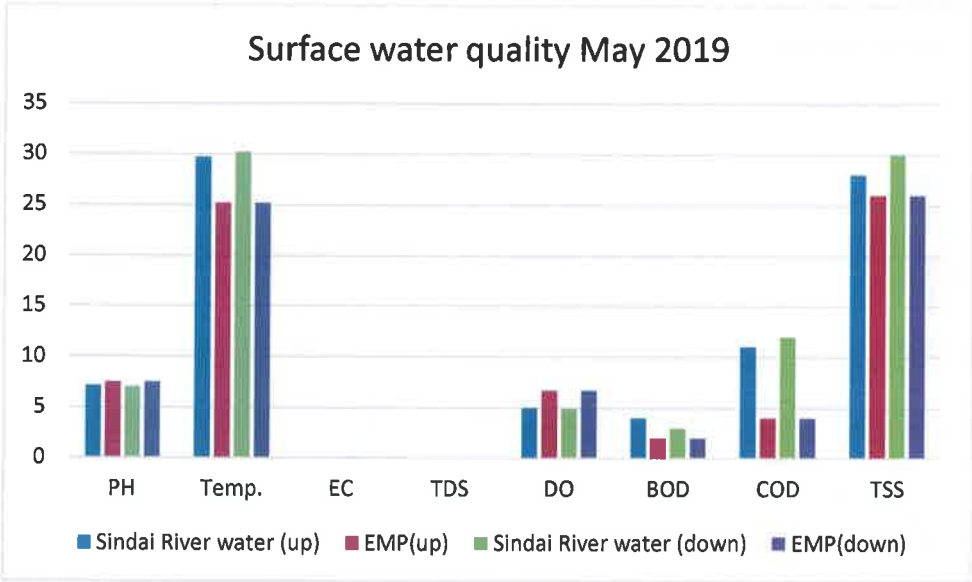


Fig. 9. Surface water quality May 2019 in Sindai River upstream and downstream

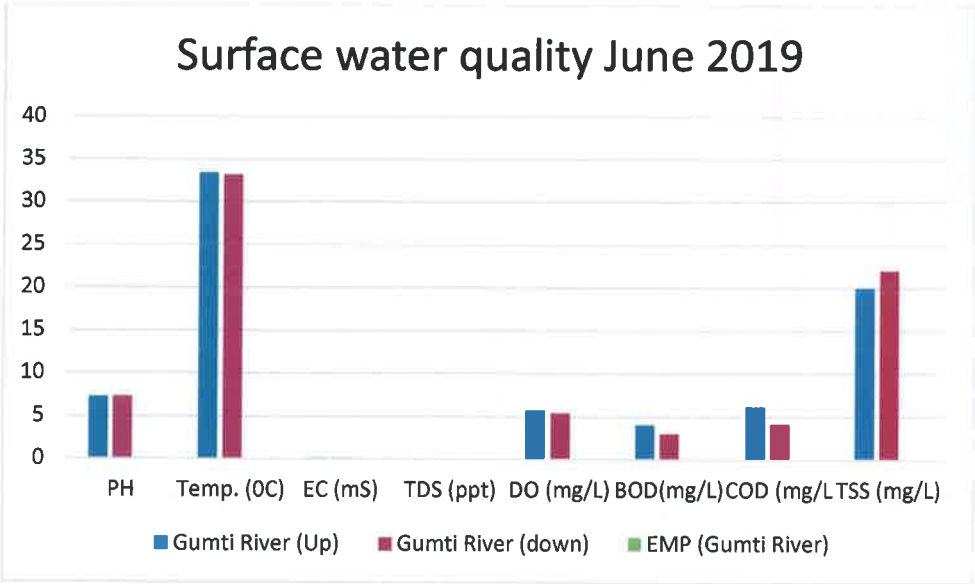


Fig. 10. Surface water quality June 2019 in Gumti River upstream and downstream

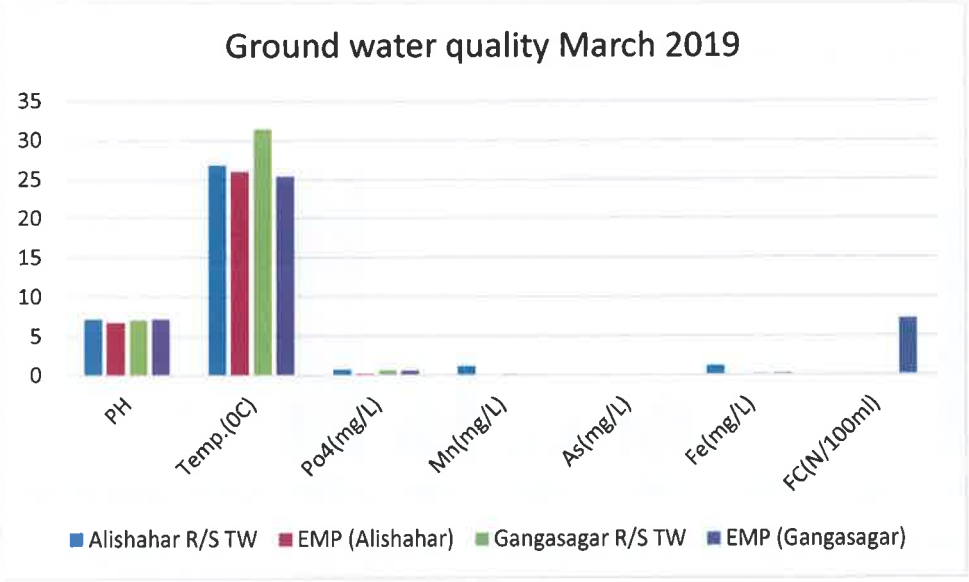


Fig. 11. Ground water quality March 2019 in Alishahar R/S TW and Gangasagar R/S TW

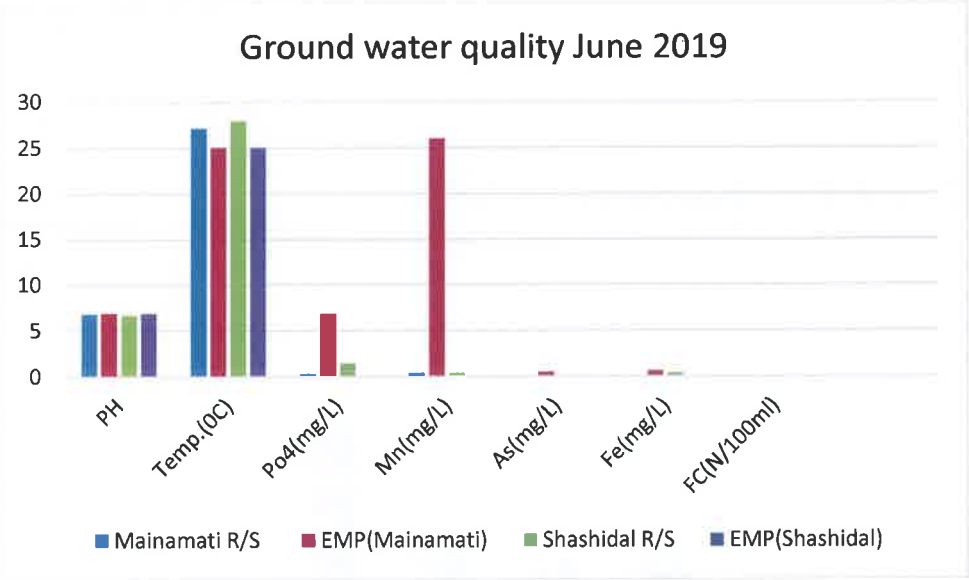


Fig. 12. Ground water quality June 2019 in Mainamati R/S TW and Shashidal R/S TW

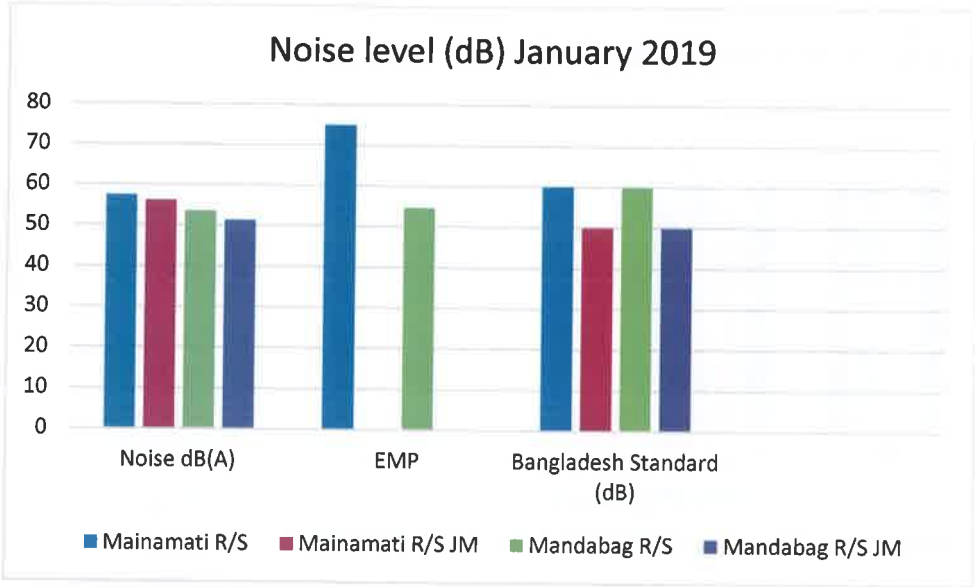


Fig. 13. Noise level January 2019 in Mainamati and Mandabag R/S and Jame Mosque

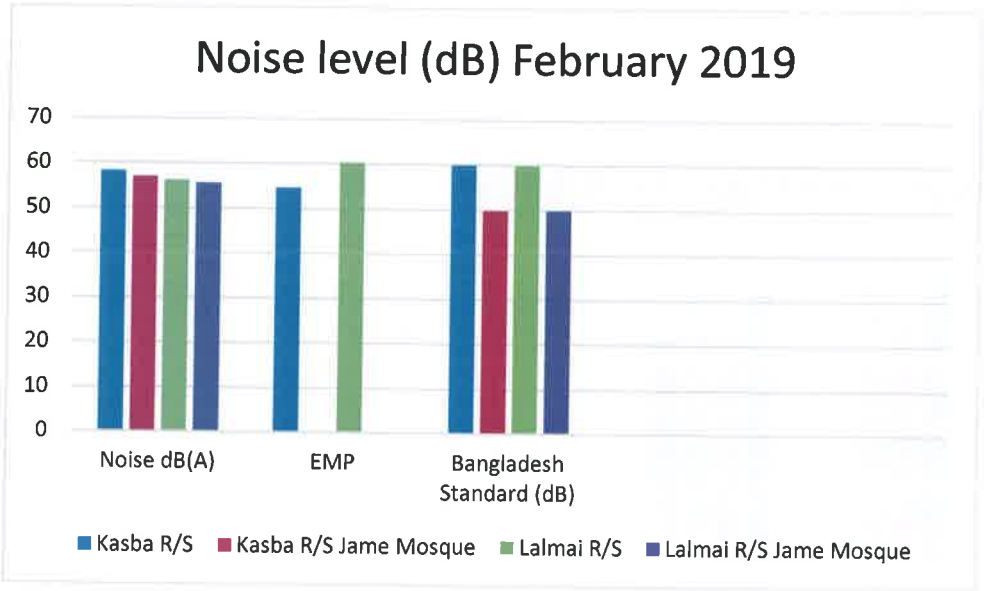


Fig. 14. Noise level February 2019 in Kasba and Lalmai R/S and Jame Mosque

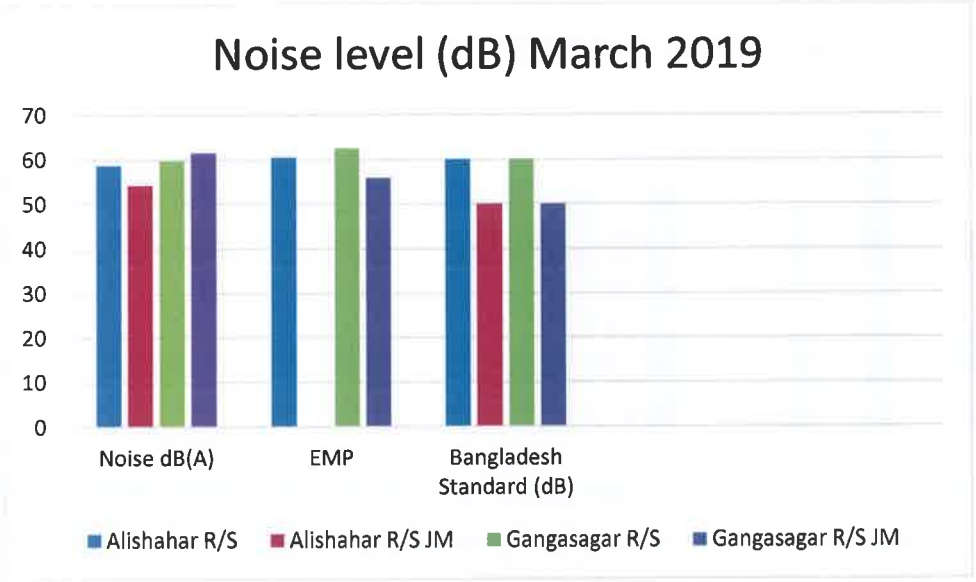


Fig. 15. Noise level March 2019 in Alishahar and Gangasagar R/S and Jame Mosque

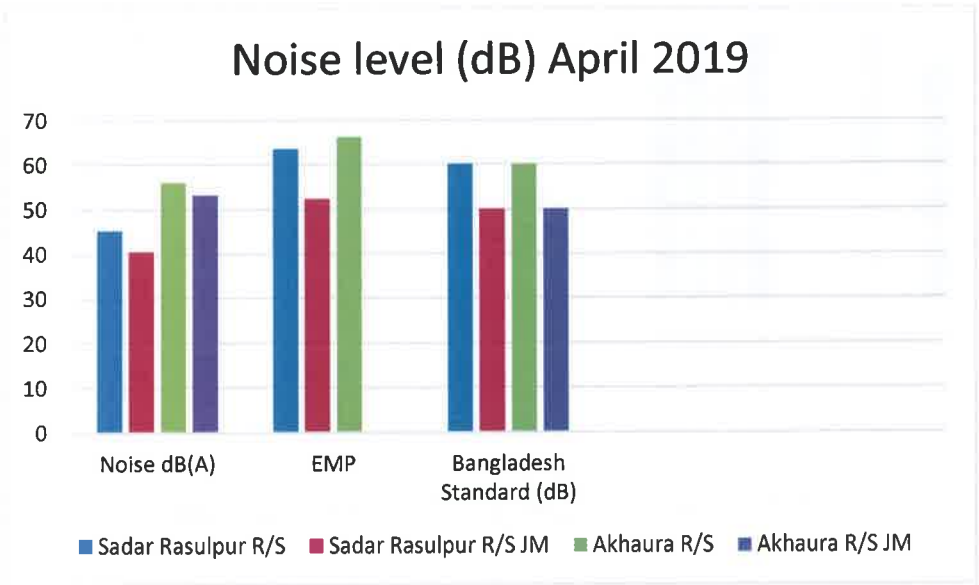


Fig. 16. Noise level April 2019 in Sadar Rasulpur and Akhaura R/S and Jame Mosque

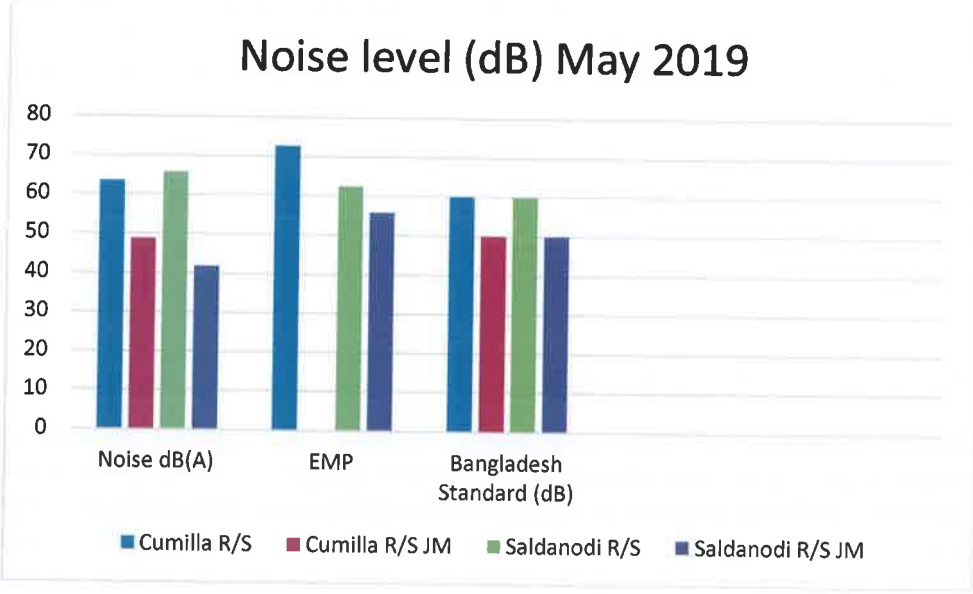


Fig. 17. Noise level May 2019 in Cumilla and Saldanodi R/S and Jame Mosque

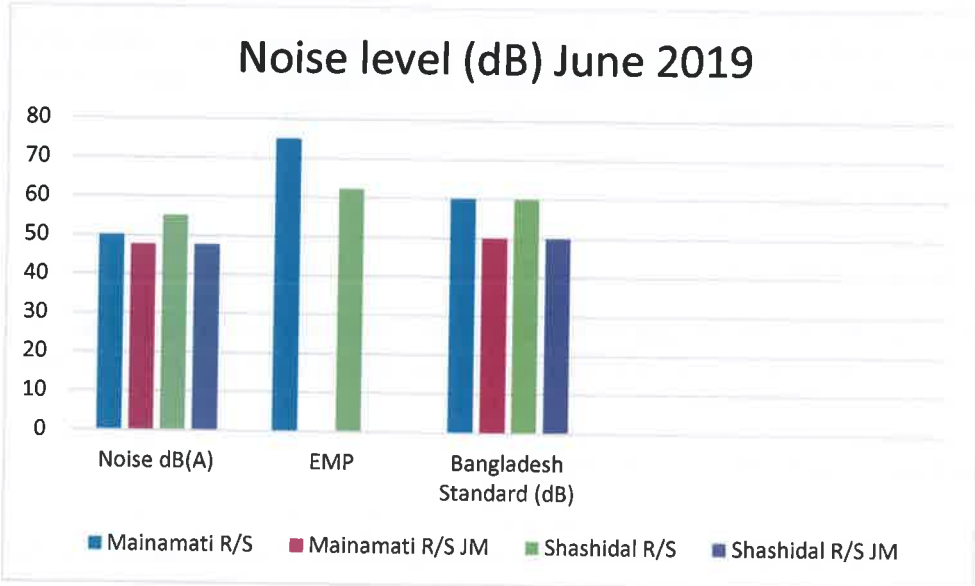


Fig. 18. Noise level June 2019 in Mainamati and Shashidal R/S and Jame Mosque

1) Fisheries Resource.

100. 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. The major rail crossing rivers are Dakatia, Goniajoori, Gumti River, Gumti Spill, Saldanadi, Bajni River, Sidai Khal, and Howrah. During breeding season of fishes, construction activities specially piling of bridge is being avoided.

2) Wildlife

101. Within the RoW and the areas where embankment is to be placed is all either paddy, pasture or water ditches specially ponds 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. Contractor is trying to keep minimum disturbance of these wildlife.

3. Compliance with Environment Related Project Covenants

1) Compliance with National Environmental Laws

102. The environmental legislation of GOB emphasizes reducing the negative impacts of infrastructure development projects and enhancement of the positive impacts. This conforms to the National Environmental Policy 1992 that was enacted based on the Agenda 21 of Rio Conference and subsequent enactments of the Bangladesh Environmental Conservation Act (ECA) 1995 and Bangladesh Environmental Conservation Rules (ECR) 1997. The DOE documents though do not mention about the provisions for railway tracks and railway bridges specifically.

2) Compliance with ADB Guidelines

103. According to the environmental guidelines of ADB the project falls under Category B and hence an IEE was sufficient to meet the environmental requirements. An IEE report was prepared by the Consultant engaged by the ADB during appraisal in 2014. However during the detailed design stage in 2016 an updated Environmental Management Plan (EMP) was prepared. The project is also in conformity with the latest Guideline of ADB i.e. Safeguard Policy Statement 2009.

3) Contractor Compliance

a) Environmental Management Plan (EMP)

104. Overall compliance with key actions defined in the EMP, as indicated in the Compliance Monitoring Check List. At present only clearing, earth work for embankment and some station ground preparation are going on.

b) Compliance with Construction Contract Clauses

105. Detailed assessment of compliance by the Contractor with applicable construction contract clauses addressing environmental matters are shown in contract agreement. The Contractor has been complying with more of the contract clauses. Operating period mitigative measures (not the responsibility of the Contract) after the Taking Over of the Works by BR should be implemented properly, e.g. waste management and maintenance of station facilities. For garbage this is partially due to the failure of the Contractor to provide garbage bins as specified in the station specifications. The Engineer will work with BR during the defect period to try and rectify this condition.

c) Environmental Monitoring Reports

106. The contractor began submitting monthly environmental monitoring reports based on the approved template and Table of Contents from November 2016. Based on the environmental reports of January 2019 to June 2019 of contractor this Semiannual Environmental Report has been 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

107. During site inspection it was found that, aside from the borrow areas which have been turned over to local operators for use as fishponds, landscaping had been very well executed.
With the earthworks for embankment and bridges test piling, the majority of works remaining are located at the stations involving the station buildings, platforms and platform sheds, pedestrian foot over bridges and the signaling system. Cleaning up of surplus materials along the ongoing track and its tidy storage at the stations is required as well as the cleaning up of all the station yard areas and approaches of construction debris. Some clearing of channels and removal of construction debris is also required at some of the bridge sites, but this can only be done after the monsoon season when the river water levels have dropped.

4. Adequacy of Mitigation Measures

1) Budget and Timeline

108. The original budget allocated for this work is for 4 years for international specialist and for national counterpart. This budget allowed for the completion of two monitoring reports every year, but did not provide enough time for the essential workshop and training at the start of the Contract and the requirement for the international environmental specialist to be on site when the Contractor mobilized. Finally the budget provided should be related to the length/size of the project since larger projects take longer to inspect and longer to report on.

2) Capacity Building

109. Bangladesh Railways has recognized the gap in their technical capacity to address safeguard issues and to implement EMPs. BR has committed to establishing an Environmental and Social Safeguards Unit to manage safeguards across the agency.

5. Adequacy of Institutional Arrangements for EMP Implementation

110. An annual workshop on EMP implementation and an annual performance review is require, in which ADB should participate. To operate effectively the Engineer should have the direct authority to stop work and fine the contractor for not complying fully with the environmental contract clauses and EMP. The contractor should not be asked to provide presentations on project progress to the lender or BR without the involvement of the Engineer. It only stands to reason the self-reporting will not be impartial and likely miss many important issues, as was the case during at least one ADB mission. This situation led to multiple future problems.

111. The Engineer needs to better enforce the specific deliverables as defined in the EMP, e.g. the construction period EMP completion report and adherence to the reporting table of contents, and field survey requirements.

6. Results Of Environmental Monitoring and Compliance Measures

Key Environmental Issues

1) Key Issues Identified

112. 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 need to be taken by the contractor to meet up full compliance with the EMP, as many more activities have been started on site already.

7. Action Plan of Environmental Mitigation and Monitoring

113. Substantial construction activities will occur after the rainy season when many of the work sites will become accessible. The focus of environmental monitoring will be on the following aspects:

(a) Better implementation of environmental management plan and mitigative measures to minimize the negative environmental impact of the work under construction;

(b) Continue to improve water, air and noise quality sampling and analysis of the project by adhering to specific instructions provided by the Engineer. Pay close attention to the causes of non-compliance and remediation measures to secure safe water supply, air quality and acoustic environment;

(c) Ensure soil erosion protection of the embankment and the bridge sites; and

(d) Strengthen the implementation of the Health and Safety aspects of the EMP for the entire workforce.

114. The Engineer intends to strictly enforce these requirements and with the help of BR be able to demonstrate a substantial improvement by the Contractor over the remaining months of 2019.
Of these the Health and Safety issues will need continued and on-going attention with all of the site activities including track laying and signaling works in progress where the safety of works adjacent to the operating line will be paramount, both for worker's safety and for the safe operations of the train services. The action plan is defined in Table 1, and will be expanded by the Contractor.

TABLE 6. ACTION PLAN AND STATUS OF ENVIRONMENTAL MITIGATION AND MONITORING

Environmental Parameter	Action Required	Implemented by	Super-vised by	Status January 2019	Status February 2019	Status March 2019
Landscape and future visual intrusion	Cleaning up of various work areas along the site as embankment and bridge works proceed to enable channel and slope protection works and grassing, etc. to be installed and become stabilised and minimise visual intrusion	CTM	CSC	√√	√√	√√
Tree Felling	Ensure trees felled are correctly recorded to enable compensation to be made if required. Initiate planting of trees along lower slope where completed to ensure sufficient time for their establishment.	CTM	CSC	√	√	√√
Fisheries, Fish habitat and water courses	Initiate consultation with relevant government agencies to obtain details relating to fisheries in the major rivers. Make appropriate arrangements for restoration of borrow pits for use as fishponds wherever possible and where requested by local communities.	CTM	CSC/BR	√	√	√
Wildlife	Initiate consultation with relevant government agencies to obtain relevant details of wildlife in areas affected.	CTM	CSC/BR	N/A	N/A	N/A
Surface Water				√	√	√
Ground Water				√√	√√	√√
Air Pollution	Execute sampling in line with sampling program specified the EMP and BR instructed CTM to undertaken; then present results with analysis indicating impacts (if any) and mitigative measures if needed.			√	√	√
Noise	Sampling should be carried out in the presence of ENGINEER staff with details of locations provided on plans and on the ground and at the times appropriate to ensure meaningful data can be obtained.	CTM	CSC	√√	√√	√√
Soil Contamination				Not sampled-not required by ADB	Not sampled-not required by ADB	Not sampled-not required by ADB
	Ensure that once crossing structures are completed all obstructions are removed, natural channel restored	CTM	CSC	√	√	√√

Environmental Parameter	Action Required	Implemented by	Super-vised by	Status January 2019	Status February 2019	Status March 2019
Workforce Camp Conditions	Ensure adequate waste bins are provided at camps with regular disposal to suitable locations. Initiate regular collections and disposal of garbage from around campsites and ensure the areas remain hygienic. Provide potable water supply at all times (e.g. arsenic found in camp tube-well)	CTM	CSC	√√	√√	√√
Construction Waste Management	Ensure all solid wastes at works sites and yards are contained and then correctly disposed of; and that oils, grease, etc. from servicing activities is properly collected, contained and recycled.	CTM	CSC	√	√	√√
Personal Health and Safety	Maintain effective operation and cleaning of sleeping, cooking, washing and toilet facilities in camps. Ensure water supplied is potable and conduct tests for verification. Ensure First Aid Equipment and Medical Facilities are readily available at all times. Initiate further training and awareness sessions on the use of PPE for staff and take steps to ensure these are used correctly	CTM	CSC	√√	√√	√√
Vector Borne Diseases	Initiate treatment of abandoned borrow pits and clean up areas where water is ponding to reduce risks for breeding of mosquitos. Record of regular inspections provided.	CTM	CSC	Could not be varified	Could not be varified	Could not be varified

√√= compliant, √= marginally compliant, × = non-compliant

Environmental Parameter	Action Required	Implemented by	Super-vised by	Status April 2019	Status May 2019	Status June 2019
Landscape and future visual intrusion	Cleaning up of various work areas along the site as embankment and bridge works proceed to enable channel and slope protection works and grassing, etc. to be installed and become stabilised and minimise visual intrusion	CTM	CSC	√√	√√	√√

Environmental Parameter	Action Required	Implemented by	Super-vised by	Status April 2019	Status May 2019	Status June 2019
Tree Felling	Ensure trees felled are correctly recorded to enable compensation to be made if required. Initiate planting of trees along lower slope where completed to ensure sufficient time for their establishment.	CTM	CSC	√√	√√	√√
Fisheries, Fish habitat and water courses	Initiate consultation with relevant government agencies to obtain details relating to fisheries in the major rivers. Make appropriate arrangements for restoration of borrow pits for use as fishponds wherever possible and where requested by local communities.	CTM	CSC/BR	√√	√√	√√
Wildlife	Initiate consultation with relevant government agencies to obtain relevant details of wildlife in areas affected.	CTM	CSC/BR	N/A	N/A	N/A
Surface Water				√	√	√
Ground Water				√√	√√	√√
Air Pollution	Execute sampling in line with sampling program specified the EMP and BR instructed CTM to undertaken; then present results with analysis indicating impacts (if any) and mitigative measures if needed.			√	√	√
Noise	Sampling should be carried out in the presence of ENGINEER staff with details of locations provided on plans and on the ground and at the times appropriate to ensure meaningful data can be obtained.	CTM	CSC	√√	√√	√√
Soil Contamination				Not sampled-not required by ADB	Not sampled-not required by ADB	Not sampled-not required by ADB
	Ensure that once crossing structures are completed all obstructions are removed, natural channel restored	CTM	CSC	√	√	√
Workforce Camp Conditions	Ensure adequate waste bins are provided at camps with regular disposal to suitable locations. Initiate regular collections and disposal of garbage from around campsites and ensure the areas remain hygienic. Provide potable water supply at all times (e.g. arsenic found in camp tube-well)	CTM	CSC	√√	√√	√√

Environmental Parameter	Action Required	Implemented by	Super-vised by	Status April 2019	Status May 2019	Status June 2019
Construction Waste Management	Ensure all solid wastes at works sites and yards are contained and then correctly disposed of; and that oils, grease, etc. from servicing activities is properly collected, contained and recycled.	CTM	CSC	√√	√√	√√
Personal Health and Safety	Maintain effective operation and cleaning of sleeping, cooking, washing and toilet facilities in camps. Ensure water supplied is potable and conduct tests for verification. Ensure First Aid Equipment and Medical Facilities are readily available at all times. Initiate further training and awareness sessions on the use of PPE for staff and take steps to ensure these are used correctly	CTM	CSC	√√	√√	√√
Vector Borne Diseases	Initiate treatment of abandoned borrow pits and clean up areas where water is ponding to reduce risks for breeding of mosquitos. Record of regular inspections provided.	CTM	CSC	Could not be varified	Could not be varified	Could not be varified

√√= compliant, √= marginally compliant, × = non-compliant

8. Gap Assessment to the Applicable Reference Framework Applicable Standard

This section reviews the performance of the Project with respect to the Applicable Standards. In terms of IFC performance standard (PS) EQMS review the following PS standards.

- PS2: Labor and Working Conditions;

The findings are categorized as per the following definitions:

Table 7. IFC PS Alignment Definitions

Rating	Definition
Complied	Information available indicates that the Project fulfills the requirement and/or is aligned with intended outcome of the requirement.
Partially Complied	Information available indicates that the Project partially fulfills the requirement and/or is partially aligned with intended outcome of the requirement.
Not Complied	Information available indicates that the Project does not fulfill the requirement.
Insufficient Information for the assessment	There is insufficient information to make an assessment of the level of alignment.
Not Applicable	The requirements do not apply to the Project at the current time.

JANUARY- JUNE 2019

8.1 Noise and Attention Measures

Clause 3.5 of the EMP defines in detail the noise attenuation measures to be undertaken:

Item	Status	Comments
Use of modern plant and equipment with appropriate muffling devices.	Partially Complied	• Plant and equipment are modern but no appropriate muffling device
All powered mechanical equipment and machinery to be fitted with noise abating gear such as mufflers for effective noise control, in compliance with DoE regulations.	Partially Complied	• Contractor need to install mufflers for combating noise generation from the machineries to comply the national regulation
Locate rock crushing, concrete mixing and material shipment yards away from residential areas, schools, colleges and hospitals.	Complied	• Crushing and mixing activities are away from institutions.
Install temporary noise barriers near sensitive locations such as schools, religious places and hospitals	Complied	• These institutions are far away from construction sites. So no need barriers.
Providing the construction workers with suitable hearing protection like ear cap, or earmuffs etc.	Not Complied	• Contractor has not provided the ear cap or earmuffs to the workers who are working near to the noise generating

Item	Status	Comments
		instruments. These devices are not found in local market.
Noise quality monitoring to be carried out as per the schedule in the environmental monitoring plan.	Complied	• Noise monitoring is according to monitoring plan.

8.2 Dust Control

Undertake dust suppression as defined in Clause 3.3 of the EMP:

Item	Status	Comments
Vehicles transporting construction material to be covered	Complied	• Materials are covered during transportation.
Construction equipment to be maintained to a good standard and idling of engines discouraged.	Complied	• Equipment maintains in good standard.
Machinery emitting visible smoke to be banned from construction sites.	Complied	• Smoke banned from sites.
Contractor to prepare a dust suppression program detailing action to be taken to minimize dust generation (e.g. spraying of roads with water), and the equipment to be used.	Complied	• Contractor is spraying water properly in the dust generating area.
Dust masks to be provided to workers where dust hazards exist.	Partially Complied	• Contractor has provided all PPE item to the labours but they are not using properly.
Air quality monitoring to be carried out as per the schedule in the environmental monitoring plan.	Complied	• Air quality monitoring according to the schedule.
All roads, permanent or temporary, pukka or katcha, that become dusty and all areas where construction related activities are carried out, shall be subject to necessary suppression measures by watering, sweeping or other measures approved or directed by the Engineer.	Complied	• Contractor is spraying water for dust suppression.
Contractor shall not allow waste oil, lubricant or other petroleum derivatives to be used as dust suppressants and shall take all reasonable precautions to prevent accidental spillage of petroleum products, contact of such materials with soil or water course through discharge, run-off, and or seepage.	Complied	• Waste oil, lubricant etc. are not allowed to suppress dust. Accidental spillage is prevented.
Contractor shall take all reasonable measures to minimise dust-blowing from areas under his control by spraying water on stockpile, bare soil, haul road, un-surfaced traffic route and any other source of dust when conditions require dust suppression. If the Engineer considers that the dust suppression measures adopted by Contractor ineffective, Contractor shall in that case take further measure to minimise dust blowing at construction site as per his direction	Partially Complied	• Contractor is spraying water on dust at road and embankment but not on stockpile.

8.3 Watercourse Impacts in Wetlands/Ponds/Rivers/Canals

Item	Status	Comments
Adequate mitigation measure shall be undertaken to limit the impact on all water bodies within the Project area	Complied	• Mitigation measure has been taken to limit the impact on all water bodies within project area.
Earth moving in the vicinity of watercourses shall be kept to a minimum to avoid sedimentation and contamination from fuel and lubricants.	Complied	• Contractor is using concrete surface for fuel storage.
Proper disposal of bricks, cement, and steel reinforcement which will be removed as part of the reconstruction of bridges/ culverts shall be ensured not to block stream flow.	Partially Complied	• Contractor is not fully ensuring sufficient stream flow of the water bodies during the bridge and culvert construction.
Temporary erosion and sedimentation control measures during rehabilitation of cross-drainage structures shall be undertaken to ensure that sediment laden run off does not enter the adjoining watercourses.	Complied	• Sediment laden run off does not enter the adjoining watercourses.
Construction materials and waste shall not be discharged in watercourse during construction of bridges/culverts by implementing appropriate mitigation measure.	Complied	• Construction materials and waste are not discharged in watercourse.

8.4 Borrow and Dredging Site Impacts

There is no dredging site.

8.5 Disposal of Construction Debris and other Waste Materials

Item	Status	Comments
Adequate mitigation measure shall be undertaken to limit the impact on pedestrians, local communities and water bodies within the Project area	Complied	• Adequate mitigation measure has been undertaken to limit impact on pedestrians.
No burning shall be allowed.	Complied	• Contractor is not burning.
No cleared debris shall be left lying on the surface of the ground or buried in any agricultural land	Complied	• Debris are not left on ground.
Man-made construction debris shall be disposed of in disposal areas the location and nature of such disposal shall be subject to the approval of the Engineer; and	Complied	• Debris are disposed of in designated areas.
All disposal areas shall be finally graded to a uniform and level condition and left such that they create a minimum impact on the surrounding area.	Partially Complied	• Contractor is partially ensuring the minimum impact on the surrounding area due to waste disposal.

8.6 Servicing and Operating Equipment

Item	Status	Comments
Servicing of machines or equipment near rivers, streams or other bodies of water shall be carried out in such a manner as to avoid pollution with gasoline, diesel fuel, oil, grease, or surplus or disposable materials	Complied	• Machines and equipment are being serviced with care to avoid pollution.

Item	Status	Comments
Without limiting the generality of the foregoing, the Contractor shall ensure that all hydraulic systems, fuel systems and lubricating systems are in good condition to avoid leakage of petroleum products; and	Partially Complied	• Sometimes leakage happens. Contractor does not fully maintain these systems properly.
Fuel spills will not be condoned and care shall be taken to avoid overfilling machines.	Partially Complied	• Sometimes overfilling machines. Contractor need to be cheeked properly and avoid overfilling machines.
The Contractor shall have the proper equipment to transport fuel so that spillage will not occur. Automatic shut-off nozzles shall be installed on all fuel dispensing units.	Complied	• They have proper equipment to transport fuel.
The Contractor shall have oil spill abatement equipment on the Site at all times.	Complied	• Contractor has oil spill abatement equipment.
The type of equipment shall be subject to the approval of the Engineer, and the equipment shall be maintained in good working condition. Disposal of used oil, lubricants, tires, etc. shall be in accordance with the EMP or as directed by the Engineer.	Complied	• Equipment are being maintained in good working condition.

8.7 Control of Petroleum Products

Item	Status	Comments
All petroleum products shall be stored in a designated storage location where any spillage can be safely maintained without contamination of the surrounding area. Storage of petroleum products shall not be permitted in the vicinity of streams rivers or other bodies of water. Impermeable liner shall be placed on subsurface of the storage room to avoid groundwater contamination.	Partially Complied	• Sometimes spillage contaminants the surrounding area. Contractor should prevent contamination.

8.8 Occupational Health and Safety

Item	Status	Comments
Supply of appropriate personal protection equipment, such as safety boots, helmets, gloves, protective clothing, goggles and ear protection among the workers and enforce its use.	Complied	• Workers are using PPE properly.
Follow the specification on construction safety as defined in civil works	Complied	• They are following specification.
Construction workers will be required to train in general health and safety matters and on specific hazards of their work.	Complied	• Workers are getting training on general health and safety matters. •
In order to maintain the labour standards following four issues must be ensured throughout the Project period	Complied	• Maintaining labour standard.
Must not hire child labour, age below 14	Complied	• Labour age is not bellow 14.

Item	Status	Comments
Must not hire bonded labour	Complied	• Does not hire bonded labour.
Hire, use of benefit from child labour-Child labour (as defined by ILO Conventions 138 and 182) means that no workers under the age of 14 may be hired as general labours, and no workers under the age of 17 are to be hired for hazardous jobs	Complied	• No workers under the age of 17 for hazardous works. General labours are not bellow the age 14.
Equal treatment, equal opportunity. No discrimination based on race, caste, origin, religion, disability, gender, sexual orientation, union or political affiliation, or age; no sexual harassment. Minimum wage- according to minimum wage standards as defined in the Bangladesh Labour Act.	Complied	• No discrimination among the labours. They are getting equal opportunity. No sexual harassment.

8.9 Protection of Topsoil and Soil Erosion

Item	Status	Corrective Action Plan
Topsoil storage areas must be protected during the dry season from wind erosion by covering.	Complied	• Topsoil has been protected from erosion.
Rapid re-vegetation and use of hydro-seeding and jute erosion protection mats will be applied in areas where erosion is noted during the regular monthly inspections.	Partially Complied	• Sometimes soil erosion is happening from embankment due to heavy rain fall.
Embankment site to be planted with trees to promote natural vegetation; as well as fast growing grasses.	Partially Complied	• In the month of May 2019 tree plantation has been started.
The stockpiling and/or disposal of material as aforesaid shall be such that the material is not placed in any area where natural drainage or storm water could pond and become stagnant, or where could erode the material and cause silting of the adjacent area or of any natural or man-made water course.	Complied	• Natural drainage has not been hampered by stockpiling and or disposal of materials.

9. Tree Plantation and Replacement Programme

Contractor has planned to plant tree to compensate the loss of tree. It will help to keep ecological balance. Sub consultant EQMS is planting tree. Trees are being planted on both side of the rail line. CTM JV had submitted tree plantation and replacement programme which was approved by ADB.

9.1 Objective of tree plantation

The objective of the tree plantation and replacement program is to compensate for the loss of trees due to the proposed implementation of the Akhaura-Laksam double line railway Project. Other major objectives of the program are

- To protect the affected cultural/sensitive areas (within 50 m from the RoW boundary).
- To enhance the health of the existing ecosystem.

- To reduce the impacts of air pollution and dust as trees are known to be natural sink for air pollutants.
- To arrest soil erosion at the embankment slopes.

9.2 Scope of tree plantation

About 31,749 timber trees, 13,546 fruit trees, 188 medicinal trees, 4,166 banana trees, and 5,693 bamboo trees of different sizes will be cut due to the implementation of Project at pre-construction and construction periods. Approximately, 55,000 trees will be removed from the study area. The proposed Tree Plantation and Replacement Program (TPRP) will suggest to plant at least three times of the actual fallen trees. These trees are calculated on both side of the proposed new alignment, proposed station building areas, and new station access road areas (associated facilities). Therefore, a total of 165,000 trees will have been planted completion of this project.

The following areas have been identified for development of plantation sites in the Project areas:

- Both side slopes of the constructed new railway embankment;
- Back side of the constructed new stations; and
- Along the affected cultural/sensitive areas (within 50 m from the ROW boundary).

9.3 Selection of Tree Species

Selecting appropriate species to plant adjacent to rail lines and near structures is important in minimizing the maintenance of such plantings in the future. The species for the proposed tree replacement have been selected based on the statistics of the lost vegetation and suitability for the intended purpose. The list of tree species proposed to be planted is as follows:

On the slope of railway embankment:

- Timber Trees: Garjan (*Dipterocarpus turbinatus*), Shal (*Shorea robusta*), Shilkoroi (*Albzia procera*), Akashmoni (*Acacia auricoliformis*), Kat Badam (*Terminalia calappa*), and Mehogani (*Swietenia mahagoni*);
- Fruit Trees: Date Tree (*Phoenix sylvestris*), Date Palm;
- Medicinal Trees: Neem (*Azarlira chlaindica*), Bohera (*Terminalia belliricha*), Horitoki, and Amloki; and
- Fuel Trees: Epil-Epil (*Leucaena leucocephala*), Rain Tree (*Samania saman*) and Koroi.

On the back side of railway station and along the affected cultural/sensitive areas are as follows:

- Timber Trees: Arjun (*Terminalia arjuna*), Garjan (*Dipterocarpus turbinatus*), Shal (*Shorea robusta*), Shilkoroi (*Albzia procera*), Akashmoni (*Acacia auricoliformis*), Kat Badam (*Terminalia calappa*), Mehogani (*Swietenia mahagonl*), Epil-Epil (*Leucaena leucocephala*) and Rain Tree (*Samania saman*);
- Fruit Trees: Date Palm (*Phoenix sylvestris*), Olive (*Elaeocarpus floribundus*), Palm Tree (*Borossus flabelliformis*);
- Medicine Trees: Neem (*Azadirachta indica*), Arjun (*Teominalia arjunna*), Bel (*Aegle marmelos*) and Bohera (*Terminalia belliricha*); and
- Fuel Wood Trees: Koromcha, Radhachura and Krishnochura (*Delonix regia*).

The estimated number of trees under each category is given in the table 8.

Table 8. Estimated Land Area and Quantities of Trees

Tree Species	Spacing Between Trees (m)	No of Trees
On the slope of railway embankment		
Timber (50%)	2.0	61,875
Fruit (30%)	2.0	37,125
Medicine (10%)	2.0	12,375
Fuel (10%)	2.0	12,375
	Sub Total	**123,750**
Vicinity of Stations and affected culturally sensitive areas		
Timber (50%)	2.0	20,625
Fruit (30%)	2.0	12,375
Medicine (10%)	2.0	4,125
Fuel (10%)	2.0	4,125
	Sub Total	**41,250**
	Grand Total	**165,000**

9.4 Sources of Saplings

The saplings needed for plantation will be collected from different nursery adjacent to project areas. As the number of sapling is huge in amount (near about 165,000), if the local nursery has inadequacy to provide then saplings will be collected from some country wide renowned nursery e.g., Barisal Nursery, Gardenia Nursery, Torukunja Nursery Dhaka with proper inventory process.

9.5 Responsibility till Survival Period

After planting the trees in selected area, the contractor will be responsible for sapling until they have survive for at least two years from date of planting. To enhance the survival ability of sapling contractor should develop a plan including fencing, watering, weeding etc. The maintenance process of survival for the sapling as follows,

- Both Horizontal and Vertical fencing for the sapling.
- During the first month after planting, weed once every two weeks.
- Weeding can be completed once a month once the plants have become established.
- Watering regularly if it is needed.
- Using herbicide and pesticide to protect sapling from diseases.

9.6 Cooperation with Local Communities

Local people from the local communities will be encouraged to engage to assist with implementation of the tree plantation and replacement program. For tree plantations, the local institutions will be encouraged to involve for plantations as per these guidelines. The local institutions are like school, college, madrasa etc. Local people surrounding rail corridors will be encouraging for social forestry. To engage the community people with Tree plantation program several tools will be used like as,

- Focus Group Discussion.
- Awareness buildup program at educational institutions.
- Consultation with local people.

- Making sense of ownership for the maintenance of the planted tree adjacent to their land or household.
- Public awareness for the protection from grazing.

9.7 Cooperation with Forest Department

The selection of species will be strictly done as per the said guidelines or as per the recommendation of adjoining forest department with site specific native species. Location-wise specific choices can be made with the help of local experts from the Forest Department and Horticulture department. The advice and recommendation from the Forest Department will be ensured at all stages of the tree plantation and replacement program. Continuity of maintenance and compliance with Forest Department requirements will also be ensured.

9.8 Responsibility till Survival Period

After planting the trees in selected area, the contractor will be responsible for sapling until they have survive for at least two years from date of planting. To enhance the survival ability of sapling contractor should develop a plan including fencing, watering, weeding etc.

9.9 Provision and purpose of Training

A day-long training workshop session will be taken place to train the BR staff from the contractor side before tree plantation. The training module will be developed to a larger extent to the maintenance and protection of planted trees as well as biodiversity. The purpose of this manual is to orient the members of the BR, who will be responsible for management of the tree plantations, various technical and institutional issues related to protection, maintenance, management and utilization of the plantations.

9.10 Present status of tree plantation

Tree plantation has been started in the month of May 2019. In May about 3000 saplings have been planted. Plantation has been started from Zero point at Laksam end. As of 30 June 2019 about 10% saplings are died and these saplings will be replaced by fresh ones. During tree plantation CTM JV will follow the guidelines of Bangladesh Railway and Social forestry rules of Forest Department.

10. Bentonite Slurry Management

10.1 Re-use of Bentonite Slurry

Bentonite slurry can be re-used repeatedly provided its properties are carefully monitored and kept under control. Whatever system of excavation is used, loss of slurry will occur. Some will be excavated with the soil, some will permeate into the strata, and some will become too contaminated for re-use and have to be taken off site. Also, some slurry may be left in the excavation if it is not filled with concrete to ground level. The slurry which is lost is replaced by fresh slurry which is blended with the used slurry to top up the system. Bentonite powder may have to be added to the slurry or admixtures may have to be introduced to adjust its properties. About 94-96% bentonite is being reused. The quantity of bentonite powder to be added to the mixing water depends on the quality of the bentonite and the required viscosity of the slurry. For most applications, concentrations between 4% and 6% by weight are typical.

10.2 Final Disposal of Bentonite Slurry

Usually, the cheapest acceptable method of disposal of bentonite slurry is to place it in an approved landfill tip. However the availability of approved tips is limited, and many tip operators will only accept limited daily quantities (generally related to how much dry solid waste they are handling). Additionally, in wet weather, some tips will not accept bentonite slurry for disposal. The purpose of these forms of treatment is to allow the products to be disposed of as solid waste. Waste disposal regulations have been the subject of significant changes in recent years and users of this guide should always ensure that any transportation or disposal is in compliance with the latest regulations. A part of the dried slurry

is being collected and deposited to a designated approved dumping place (Bibirbazar, Jagonnathpur, Cumilla City Corporation dumping yard and Quasba City Corporation dumping yard) which is 2 km far away from the locality. Rest of the slurry is taken by the people who will use the slurry for their landfill site. At present there is no piling work. So bentonite slurry is not being produced.

11. Occupational Health and Safety

11.1 Main Objective in Health and Safety

- Identify hazards involved in the work
- Assess the risk of harm to health and safety arising from the hazards identified
- Eliminate or control any foreseeable risks
- Review risk assessment and control measures
- Provide instruction, training and information about safety procedures
- Provide reasonable supervision for employee
- Provide personal protective equipment (PPE) where required
- Provide emergency procedures for the workplace
- Provide and maintain amenities 9such as the facilities for toilets, drinking water
- Provide appropriate First Aid facilities and trained personnel

11.2 H&S Management system principles

HSE main principle is "keep safe workplace, keep safe people". So, if we want ensure this principle, then we must need our employee are to know-what is safety and why it is necessary. So, contractors take a smart way for keep their all type of employee under the same roof.

CTM recognizes the inherent & operational hazards associated with construction projects and clearly belief that a strong, effective & employment driven HSE Management Systems with commitment, support and share responsibility from all project personnel are the basic requisites to achieve the injury & illness free construction work.

11.3 Managing Risk in the workplace

CTM persons are using "risk management" approach to address workplace health and safety issues. This involves:

- Identifying the hazards
- Assessment of risks
- Eliminate or control the risk
- Monitoring control measures

These are the elements of a risk management process and is being done in consultation with the people most likely to be affected, such as employees, sub-contractors of contractor, and vendors who may also be working on the same work site.

11.4 Providing of Safety Tools

The contractors have provided for their own staff, and the engineer, all appropriate protective clothing, including safety vests, helmets, and steel capped boots, and other equipment for the work to be done, and ensured proper use of the protective clothing. All safety and rescue equipment are always being fully maintained and made available at site.

11.5 Training, awareness and supervision

The contractor is taking all reasonable steps for training and promote safety awareness. The training includes the following:

- Training and record keeping
- General health and safety induction training
- Work activity-based health and safety induction training

- Site specific health and safety induction

CTM conducts every week general safety awareness training to their officers, engineers, supervisors and workers. They try to keep update their employees HSE knowledge.

11.6 Welfare facilities

Contractor is making available site welfare facilities for his people. Contractor people who shall work on any site shall have access to adequate toilet and washing facilities. The welfare facilities shall be made enough for everybody who is working in the site. Welfare facilities shall be made easily available to people working on the site.

11.7 Sanitary conveniences

Adequate numbers of toilets have been provided for people working on site. Toilet shall be flushed by water and connected to a mains drainage system. Men and women shall use the separate toilet. A washbasin with water, soap and towels shall be located close to the toilets.

11.8 Washing facilities

Contractor is being provided basins in all sites to allow people to wash their faces, hands and forearms. All basins shall have a supply of clean hot or cold or warm, running water.

11.9 Drinking water

Contractor has supplied of safe drinking water for the workers in the site. A tap direct from the mains shall be made available, and also bottles or tanks of water shall be used for storage. If water is stored, it shall be protected from possible contamination and changed often enough to prevent it from becoming stale or contaminated.

11.10 Precautions to prevent fires

All types of measures for precaution have been taken to prevent fires. The following precautions have been taken to prevent fires:

- Use less-easily ignited and fewer flammable materials
- Low-solvent adhesives and paint
- Keep the quantity of flammables at the workplace to a minimum
- Always keep and carry flammable liquids in suitable closed containers
- To minimize the risk of gas leaks and fires involving gas-fired plant
- Store flammable solids, liquids and gases safety
- Have an extinguisher to hand when doing hot work such as welding or using a disc cutter that produces sparks

11.11 Precaution in case of fire

People shall be able to escape from fire if a fire shall break out. Where hot work is to be conducted in an area surrounding bush land or scrubland, extreme care shall be taken. Control shall be in place to prevent sparks and hot material contacting combustible material prior to the ignition source occurring.

11.12 First aid

First aid can save lives, reduce pain and help an injured person make a quicker recovery. First aid box for all sites has been provided with enough equipment to cope with the number of workers on site. An appointed person has taken charge of first-aid arrangements.

11.13 Site Security

The contractor is responsible for the security of the site and for maintaining it as a safe-working environment at all sites. The overall site boundary as well as the specific boundaries of the various site facilities is being identified by contractor and be submitted to the Engineer for approval, complete details of the contractor's proposed method or methods for maintaining the security of the various boundaries and for the security of the buildings, personnel, material and equipment contained therein.

11.14 Work in the rail corridor

The work site protection plan is in place which identifies any pedestrian, commuter, or traffic management issues. There remains watchman. It is the responsibility of the site supervisor to ensure controls documented in the worksite protection plan are implemented.

11.15 Safety measures during construction period

On behalf of the contractor a safety officer is supervising the safety arrangement at the site of work. From starting to completion of the embankment, bridge/culvert and track construction work, many safety measures are being taken by contractor. They are providing safety barricade for protect the public. CTM has installed safety caution signboards. They have installed heavy barricade by galvanizing sheets in bridge work site. They also have installed barricade for protect their sensitive works.

11.16 Safety Notice Board

The contractor has set up adequate safety notice board located within their workplace. Relevant safety information that has been displayed is:

- Caution of workplace
- Color post demarcation of Rail Track 3m apart
- Toe line demarcation
- Signs of level crossing
- Signs of work on-going
- First aid kit locations
- Emergency contact details
- Evacuation procedures
- Site maps
- Existing hazards in the workplace
- Meeting minutes Name of first aiders and the safety representative

11.17 PPE requirements and Training

The relevant mandatory safety equipment shall be issued to all employees. Minimum PPE requirements for projects include:

- Medium impact safety glasses
- Steel capped boots (with lace up ankle supports)
- Long pants
- Long sleeved safety orange shirt
- Safety orange vest
- Safety helmet with brim
- Stay safe booklets
- Water containers

11.18 Safety promotional event

Based on the HSE principle CTM organize safety promotional event and carry out other promotional activities. They are giving various HSE training and visual presentation for their employee by this event. The safety promotional events content elements such as –Awareness Training, Fire Fighting Training, Emergency Procedure Training, First Aid Training and Safety related heart touching video presentations. They have also installed many type of safety promotional poster in their workplace.

11.19 Accident information

Mr. Hasan Ali driver of MAX group rushed to black cotton zone area (Km.165+020) near Rajapur station from Cumilla headquarter on 25 June 2019. H carried breakfast, water, umbrella for chief engineer

project Bangladesh Railway. He dropped from his transport at about 12.30 PM. He was standing over rail line and talking in his mobile phone. Suddenly 719 UP Paharika Express intercity train ex Chattogram to Sylhet dashed him. In this incident he expired on spot. MAX people informed GRP/Cumilla, they attended site at about 14.45 PM and taken his death body in their custody.

11.20 Orientation session on HIV/AIDS and STI Awareness

Activities :

- Presentation of awareness orientation session on HIV/AIDS prevention programme.
- Provision of medical and counseling services.
- Managing, monitoring of HIV/AIDS prevention programme.
- Condom and IEC materials distribution.
- Posters provided for all railway stations and work sites.

Description

Many workers are working in the ALDLP and adjacent to project area lot of community people are working. The workers and the community people are not aware of the HIV/AIDS.

Orientation session on HIV/AIDS and STI Awareness/Prevention under ALDLP has been conducted in the construction sites and communities. During January-June 242 male and 127 female were trained.

Table 9. Orientation session on HIV/AIDS and STI awareness/prevention

Sl No	Location	Date	Male	Female
01	Quasba Railway Station Site for workers	21/1/2019	20	0
02	Quasba Railway Station for Community people	22/1/2019	0	10
03	Ali Sahar Railway Station for workers	23/1/2019	22	0
04	Ali Sahari Railway Station for Community people	23/1/2019	0	10
05	Mainamati Railway Station Site for workers	11/2/2019	18	0
06	Mainamati Railway Station Site for Community people	12/2/2019	0	9
07	Quasba Railway Station Site for workers	13/2/2019	20	0
08	Quasba Railway Station for Community people	13/2/2019	0	10
09	Saldanadi Railway Station for workers	18/3/2019	19	0
10	Saldanadi Railway Station for Community people	19/3/2019	0	11
11	Sadar Rasulpur Railway Station for workers	20/3/2019	21	0
12	Sadar Rasulpur Railway Station for Community people	20/3/2019	0	8
13	Mainamati Railway station for community people	17/4/2019	0	10
14	Mainamati Railway Station site for workers	18/4/2019	18	0

Sl No	Location	Date	Male	Female
15	Shashidal Railway Station for community people	30/4/2019	0	12
16	Shashidal Railway Station for workers	30/4/2019	16	0
17	Gangasagar Railway Station for Community people	16/5/2019	0	15
18	Gangasagar Railway Station for workers	16/5/2019	22	0
19	Bridge 243 site for community people	17/5/2019	0	8
20	Bridge 243 site for workers	17/5/2019	23	0
21	Cumilla Railway station site for workers	2/6/2019	25	0
22	Cumilla Railway station site for community people	3/6/2019	0	11
23	Mandabag Railway station for workers	26/6/2019	18	0
24	Quasba Railway station for community people	27/6/2019	0	13

Orientation Session on HIV/AIDS and STI awareness

11.21 Preparation of the safety execution plan

- Safety inspection for all of vehicles.
- Provide rail safety training to all of project staffs.
- Identify high potential risk on site and mitigate risk.
- Implement HSEMP and continue reviewing.
- Reinforce Contractor safety team safety knowledge and training them.
- Development OHSAS18001 standard for project.
- Focus HIV/AIDS team their work activities.
- To push Contractor, employ enough safety staff for our project.
- To reach 2019 yearly HSE target.

11.22 Comments on occupational health and safety

- CTM is continuously inspecting the sites for identify hazard

- Every month they inspect their machinery and equipment
- Every month CSC and CTM have done the Health and Safety joint inspection.
- They inspect for railroad safety including level crossings.
- They are inspecting in all works, and much more for keeping safe workplace
- They are providing high quality of PPE for their employees
- They are keeping up-to-date PPE checklist and stock
- They exchange damage PPE
- They provide PPE for the visitors
- They are providing general safety awareness training
- Providing individual safety awareness training
- Delivering work basis training and toolbox meeting.
- Group safety induction

11.23 Recommendations for health and safety

- All workers should be provided with Personal Protection Equipment (PPE) and wear properly.
- Using of PPE by workers should be ensured.
- Safety guards should be nominated at every unman rail crossing and railway bridge sites
- The cautionary sign boards should be set up at very close to the bridge ends. So people can easily notice the sign board and will be careful of the accident.
- Working sites should be well demarcated to protect the public.
- Potable safe water should be ensured in every site.
- Barricading must be installed during excavation, work at height.
- All the vehicles and plant must be inspected and display the copy of permit.
- More pay attention for the electric cables and equipment in safe use and tagged after inspected.
- Implement fire safety

Table 10. HSE Statistical report on accident/incident (MAX part)

Sl. No.	Description of report items	Jan-Feb 2019	Mar-Apr 2019	May-June 2019	Cumulative Since Jan.
1	Total Manpower (Engaged daily average)	2755	2750	2312	7817
2	Total man-hours worked [(according to pay roll) for that month]	650360	670840	565938	1887138
3	Cumulative Man-hours worked since start	-	-		7616256
4	Total man-hours worked without Loss Time Accident (LTA)	650360	670840	565938	1887138
5	Total Man-days loss due to Loss-Time Accident (LTA)	0	0	0	7
6	Number of Reportable LTA	0	0	1	3
7	Number of minor injury/first-aid cases	4	7	8	57
8	Number of near miss incidents	0	1	2	4
9	Number of major injuries	0	0	0	8
10	Number of fatal accidents	0	0	0	0
11	Number of dangerous occurrences	0	0	0	0
12	Frequency rate= (Number of reportable LTAx1000000)/Man-hours worked	0	0	0	0.394

13	Severity rate= (Man-days lost due to reportable LTAx100000)/Man-hours worked	0	0	0	0.919
14	Incident rate=Number of reportable LTAx1000)/Average number of persons employed	0	0	0	3.025
15	Cumulative AIR (Accident Incident Rate); AIR= (Number of Reportable Accident x 1000)/Average Daily Manpower.	0	0	0	5.041

Table 11. Compliance measures (MAX part)

Sl. No.	Description	Jan-Feb 2019	Mar-Apr 2019	May-June 2019
1	% of First-Aid Kit Available complete with necessary medicines	100%	100%	100%
2	% of Camp Labour covered with periodic medical attention	100%	100%	100%
3	% of excavated area barricaded	100%	100%	100%
4	% of welders using necessary PPE	100%	100%	100%
5	% of Staff & Workmen using required safety gear	100%	100%	100%

6	% of Staff & Workmen getting portable drinking water	100%	100%	100%
7	% of area lighting for night work	100%	100%	100%

Training and awareness programs (MAX part)

Sl No.	Description	Jan-Feb 2019	Mar-Apr 2019	May-Jun 2019
1	Total Manpower (engaged daily average)	2755	2750	2312
2	No. of personnel exposed to tool box training	5811	5724	4043
3	No. of tool box meeting held	445	530	521
4	No. of safety induction training program conducted	12	10	9
5	No. of safety training held	5	3	2
6	No. of safety seminars held	-	-	-
7	No. of Safety film screened	98	68	21

Table 12. HSE Statistical report on accident/incident (TOMA part)

Sl. No.	Description of report items	Jan-Feb 2019	Mar-Apr 2019	May-June 2019	Cumulative Since Jan.
1	Total Manpower (Engaged daily average)	1414	1509	1945	4868
2	Total man-hours worked [(according to pay roll) for that month]	311696	347040	474480	1133216
3	Cumulative Man-hours worked since start	-	-		4051087
4	Total man-hours worked without Loss Time Accident (LTA)	311696	347040	474480	1132216
5	Total Man-days loss due to Loss-Time Accident (LTA)	0	0	0	0
6	Number of Reportable LTA	0	0	0	0
7	Number of minor injury/first-aid cases	0	0	0	0
8	Number of near miss incidents	0	0	0	0
9	Number of major injuries	0	0	0	0
10	Number of fatal accidents	0	0	0	0
11	Number of dangerous occurrences	0	0	0	0
12	Frequency rate= (Number of reportable	0	0	0	0

Sl. No.	Description of report items	Jan-Feb 2019	Mar-Apr 2019	May-June 2019	Cumulative Since Jan.
	LTAx1000000)/Man-hours worked				
13	Severity rate= (Man-days lost due to reportable LTAx100000)/Man-hours worked	0	0	0	0
14	Incident rate=Number of reportable LTAx1000)/Average number of persons employed	0	0	0	0
15	Cumulative AIR (Accident Incident Rate); AIR= (Number of Reportable Accident x 1000)/Average Daily Manpower.	0	0	0	0

Table 13. Compliance measures (TOMA part)

Sl. No.	Description	Jan-Feb 2019	Mar-Apr 2019	May-Jun 2019
1	% of First-Aid Kit Available complete with necessary medicines	100%	100%	100%
2	% of Camp Labour covered with periodic medical attention	100%	100%	100%
3	% of excavated area barricaded	100%	100%	100%
4	% of welders using necessary PPE	100%	100%	100%
5	% of Staff & Workmen using required safety gear	100%	100%	100%
6	% of Staff & Workmen getting portable drinking water	100%	100%	100%
7	% of area lighting for night work	100%	100%	100%

Table 14. Training and awareness programs (TOMA part)

Sl No.	Description	Jan-Feb 2019	Mar-Apr 2019	May-Jun 2019
1	Total Manpower (engaged daily average)	2455	2044	1945
2	No. of personnel exposed to tool box training	5111	3166	6513
3	No. of tool box meeting held	395	280	112
4	No. of safety induction training program conducted	7	7	12

5	No. of safety seminars held	1	2	2
6	No. of Safety film screened	45	66	18

Table 15. Key Action Taken in January to June 2019 (MAX + TOMA)

Sl No.	Status of Key Actions from previous Health& Safety	Status
1	Installation of reflective road signboard	Continue
2	Individual safety induction for all type of employee	Done
3	Installation of safety fence for protecting the public	Continue
4	Maintained of diversion signboard and supporting board	Continue
5	PPEs inspection and replacement	Continue
6	Provide company ID card for employee	Continue
7	Supervise HIV/AIDS subcontractor's prevention program.	Continue
8	Safety induction training to 3rd party	Continue
9	Specific HSE training programs to workers (e.g. Hoist, Lifting act)	Continue
10	Induction sticker & logo sticking in helmet	Continue
11	Organize safety management team meeting	Done
12	Installation of safety WARNING & CAUTION signboard	Done
13	Group training to employee e.g. First aid, Fire fight, etc.	Done

12. Overall Conclusion and Recommendations

a. Overall Progress with Implementation of Environmental Safeguard Measures

115. According to the monitoring and supervision by the Engineer of the environmental activities on the ALDLP it is found that the Contractor, CTM is now credibly undertaking most of the environmental mitigative measures specified in the EMP although there are areas where further action and improvement need to be made.

116. The Contractor's compliance with contract clauses and EMP tasks has increased since the mobilization of CTM's environmental engineer, which is a very positive sign.

117. The potential adverse impact of the ongoing works on the major watercourses and overall drainage of the area is being minimized by ensuring the design and construction of the new embankment and structures generally match the embankment and structures of the existing track alignment. The potential adverse impact of dust from the transport of large quantities of embankment materials is being minimized by spraying water to the worksites.

118. The monitoring of water and air quality, and noise levels has generally been fully compliant since January 2019. The implementation of the occupational health and safety issues has been greatly improving with the Contractor and Engineer holding regular briefings related to the various campsites and work sites.

b. Recmmendations for Improving Contractor's Compliance

119. Based on the site inspection and monitoring of the execution of the Environmental Safeguards program the accomplishments in response to the relevant recommendations are given in the following table.

Table 16. Recommendations for Improving Contractor Compliance

Sl. No.	Recommendation	Timeframe	Implemented by	Supervision by
1	The Contractor must ensure that the sampling of the critical parameters for water quality, noise and air quality is carried out **fully** in line with the Sampling Program so that meaningful results can be obtained enabling further mitigative measures to be determined and initiated if required.	During project period	CTM	CSC Engineer
2	The on-site construction supervision and management of the Contractor should be strengthened so that actions taken to improve health and safety issues are maintained and not lost over time. It will be necessary to arrange the training and awareness in the health and safety issues for the construction workers with regular and repeated sessions presented & delivered by specialised personnel.	During project period	CTM	CSC Engineer
3	The overall management of camps and worksite must be further improved in line with the best practices on occupational health and safety so that these areas of the site can be made fully compliant.	During project period	CTM	CSC Engineer
4	The staffing provided to address the environmental safeguards program should be enhanced to ensure that all the requirements of the program can be correctly actioned and reports can be provided in a timely manner recognising the importance of these matters to all stakeholders.	During project period	CTM	CSC Engineer

c. Overall Environmental Safeguards Compliance

1) Contractor

120. The environmental awareness creation, particularly regarding the direct construction impacts and especially for health, pollution and safety issues are important. 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

121. 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)

122. The engineer need addressing all safeguard issues and recognizing the lack of technical capacity of the contractor through preparing and delivering workshop on EMP implementation, field monitoring and reporting, including templates of all required tables and reports.

4) Asian Development Bank (ADB)

123. For loan implementation work the ADB's active participation is very important and periodic discussion with BR about the need for the Contractor to comply (based on the Engineer's input) is essential if the EMP actions need to be effective. This action reinforces the seriousness of safeguard

implementation with both the Contractor and BR, while underscoring the value of the Engineer's oversight. With the absence of suitable staff engaged from the commencement of the Project by the Contractor this did not happen at the start of the works, but the situation will be resolved after the first year.

d. Lessons Learned and Gaps.

The following are major lessons learned during January 2019 to June 2019 implementation period

1) Prequalification of the Contractor

124. Contractor's pre-qualification in environmental and social safeguards needed to specify in the bid documents and then follow through commitments by the contractor to provide safeguard expertise from the start of the construction period need to be constantly enforced.

2) Preparation of Environmental Clauses Section of Contracts

125. Contracts should have environmental sections where all measures are defined, including cross referencing the EMP, prepared as part of the environmental assessment, and with financial effects provided for non-compliance.

3) Prepare Environmental BOQ section

126. In order to effectively hold back payment for safeguard work not completed or inadequately addressed, costs should be linked to each major mitigative task or task group. To address this an environmental safeguards section of the construction contract's Bill of Quantities was prepared, thereby attaching costs to each task. In this way the Engineer can easily link payment hold-backs with incomplete work.

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

127. Having the Engineer's (CSC) designated environmental specialist on the job when the Contractor mobilized was essential to set the tone and significance of environmental safeguards. Most EMPs have, as an important pre-construction activity, information on EMP implementation and reporting to the Contractor, and assisting with the preparation of the contractor's Environmental Mitigation or Management Work Schedule (EMWS). These contracts should therefore have a provision for the early involvement of the project environmental specialist.

5) Presentation on safeguard by contractor for all of the ADB missions and involvement of CSC

128. Contractor should make presentations on the work being undertaken without the knowledge or oversight of the Engineer is essentially the same as taking away all responsibility and authority of the Engineer to direct the Contractor and to decide on performance. This occurred twice during the constructions stage and resulted in a very significant loss of authority for the Engineer. The Contractor took this to mean that the Engineer and environmental safeguards were items to ignored, with few if any consequences.

129. ADB needs to insist that the Engineer be involved in all matters that require regular the Engineer oversight. This is especially true for safeguard matters, which tend to slip "under the radar". It is important to have both EIB and ADB HQ involved on large and long duration projects and to make sure that the Engineer is kept in the information loop as much as possible.

Table 9. Present environmental progress status during January-June 2019

Sl No.	Environmental Issues	Results of progress level (January-June 2019) in %						Remarks
		January	February	March	April	May	June	
1	Noise and attenuation measures	60	61	61	62	62	63	Gradually improving
2	Dust control	55	59	62	65	67	70	Gradually improving
3	Water course impacts in wetlands/ponds/rivers/canals	45	48	48	50	50	51	Gradually improving
4	Disposal of construction debris	47	49	49	51	51	52	Gradually improving
5	Other waste management	55	58	60	62	65	66	Gradually improving
6	Servicing and operating equipment	48	48	49	50	50	51	Gradually improving
7	Control of petroleum products	49	49	50	50	51	52	Gradually improving
8	Waste oil and lubricants	57	60	61	61	62	65	Gradually improving
9	Occupational health and safety	52	53	53	54	54	55	Gradually improving
10	Toilet facility	70	72	74	75	78	80	Gradually improving
11	House keeping	67	69	72	73	75	78	Gradually improving
12	Drinking water facility	70	75	80	85	90	95	Good condition
13	Use of personal protective equipment (PPE)	75	78	80	84	85	90	Gradually improving
14	Protection of top soil and soil erosion	20	23	25	27	28	30	Gradually improving
15	Borrow and dredging site impacts	35	40	43	45	47	48	Gradually improving
16	Disposal of Bentonite slurry	50	52	54	55	60	70	Gradually improving
17	Tree plantation and replacement	0	0	0	0	2	0	Less improving

11. Appendices

12.1 Annex- A. Quantitative Environmental Monitoring Schedule for Year 2019

Factor of Monitoring	Stage	Point of Monitoring	Test Parameters	Method for Monitoring	Frequency of Monitoring	Test Month in year 2019
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

12.2 Annex - B. Environmental monitoring Photographs: January-June 2019

Sampling photo in the month of January –June 2019

Air Quality Monitoring at Alishahar Railway Station

Air Quality Monitoring at Gangasagar Railway Station

Noise Level Monitoring at Alishahar Railway Station

Noise Level Monitoring at Alishahar Railway Station Jame Mosque

Noise Level Monitoring at Gangasagar Railway Station

Noise Level Monitoring at Gangasagar Railway Station Jame Mosque

Surface Water Collection at Haora River (Upstream)

Surface Water Collection at Haora River (Downstream)

Groundwater Collection at Alishahar Railway Station

12.3 Annex- C. Site Inspection Report during January-June 2019

Site Inspection Report-Environmental Safeguards

Report No:	**ENV-05/03/2019**	Date of Inspection	**05/03/2019**
Contract No.	**BR/PD/ALDLP/ADB-EIB/2015/WD1**	Site Location	**Akhaura Station [210+200]; Gangasagar Base Camp [196+123-196+000]; BR#276 [197+048]; Imam Bari New Station Building [191-8/9]; Shashidal Station [173-8/9]; Culvert#258 [174-718]; BR#261 [177-584]; Mandabag Station Building [179-6/7]**
Inspected By	**Dr. Md. Kabil Hossain** [Senior Environment Specialist], **Md. Redoan Rakib Mugdho** [Junior Environment Specialist]		
Contractor	**Toma construction company limited**	Contractor's Representative	**Md. Maynul Hasan** [Assistant Officer-Safety]

OBSERVATIONS/ NON-COMPLIANCES				
SERIAL NO.	**OBSERVATIONS**	**ACTION REQUIRED**	**PHOTOGRAPH**	**REMARKS**
Location 1 : Akhaura Station [210+200] ; Work Activities : New site office building finishing work is going on				
Occupational Health and Safety	**Hygienic Accommodation and Environment** During Site inspection we observe clean and hygienic surrounding environment.	Good practice and should be carried on		**References:** **[EMP 2.4.2 (P-98)]** **[EMP 2.10.1 (P-100)]** **[EIA VI B (8) 215 (P-58)]**

Location 2 : Gangasagar Base Camp [196+123-196+000] ; Work Activities : Regular maintenance and repairing work at mechanical yard				
Control of Petroleum Products	**Storage of Surplus or Disposable Petroleum Products** During Site visit we observe surplus or disposable petroleum products were kept in a scatter manner and without any impermeable liner below which can cause ground water contamination.	Should be rectified as- I. Contractors are requested to store any kind of petroleum products at permitted and designated location II. Must provide impermeable liner to avoid ground water contamination. Available time to rectify is one (01) week from the inspection date.		**References:** **[H 6.7 (a) (P-8)]** **[EIA VI B (8) 216 (P-58)]**
Control of Petroleum Products	**Storage of Surplus or Disposable Petroleum Products** During Site visit we observe surplus or disposable petroleum products were kept in a scatter manner and without any impermeable liner below which can cause ground water contamination.	Should be rectified as- I. Contractors are requested to store any kind of petroleum products at permitted and designated location II. Must provide impermeable liner to avoid ground water contamination. Available time to rectify is one (01) week from the inspection date.		**References:** **[H 6.7 (a) (P-8)]** **[EIA VI B (8) 216 (P-58)]**

Disposal of Construction Debris and other Waste Materials	**Man Made Construction Debris** During inspection, we found unusable metallic sheets and different metallic wastes kept haphazardly inside the camp premises all over. Which is destroying the overall environment of the camp and can create safety and health issues who resides and work inside the camp.	Should be rectified as- I. All the wastes should be relocated to one or two specific places within camp and should be covered. II. No cleared debris shall be left lying on the surface of the ground or buried in any agricultural land. III. Waste materials should be recycled/ reused where possible, then sold if remaining waste cannot be used. Available time to rectify is one (01) week from the inspection date.		**References:** **[EMP 2.5.2 (P-99)]** **[H 6.5 (c) (P-7)]**
Location 3 : BR#276 [197+048] ; Work Activities : Pier cap setting work will be done next				
Disposal of Construction Debris and other Waste Materials	**Man Made Construction Debris** During inspection, we found construction debris left laying at the side of river.	Should be rectified as- I. All the wastes should be relocated to one or two specific places within camp and should be covered. II. No cleared debris shall be left lying on the surface of the ground or buried in any agricultural land. III. Waste materials should be recycled/ reused where possible, then sold if remaining waste cannot be used. Available time to rectify is one (01) week from the inspection date.		**References:** **[EMP 2.5.2 (P-99)]** **[H 6.5 (c) (P-7)]**

Watercourse Impacts in Wetland/ Ponds/ Rivers/ Canals	**Water Congestion or Loss of Navigability Due to Cross Drainage Works** Erosion protection measures are not taken.	Should be rectified as I. Erosion and sedimentation control measures should be taken during cross-drainage work. II. Ensure the continuous stream flow during any construction works. Available time to rectify is one (01) week from the inspection date.		**References:** **[H 6.3 (c) (P-7)]** **[H 6.3 (d) (P-7)]** **[H 6.3 (e) (P-7)]** **[H 6.3 (f) (P-7)]** **[H 6.3 (g) (P-7)]**
Location 4 : Imam Bari New Station Building [191-8/9] ; Work Activities : Basement filling of Building is going on				
Disposal of Construction Debris and other Waste Materials	**Man Made Construction Debris** Wastes and other construction debris are kept in haphazard condition.	Should be rectified as- I. All the wastes should be relocated to one or two specific places within camp and should be covered. II. No cleared debris shall be left lying on the surface of the ground or buried in any agricultural land. III. Waste materials should be recycled/ reused where possible, then sold if remaining waste cannot be used. Available time to rectify is one (01) week from the inspection date.		**References:** **[EMP 2.5.2 (P-99)]** **[H 6.5 (c) (P-7)]**
Location 5 : Shashidal Station [173-8/9] ; Work Activities : Finishing Work				

Air Quality and Dust Control	**Bare Stockpiled Materials** Bare stockpile of sand which can cause dust in air	Should be rectified as- I. Cover stockpiled sand. II. Spray water 4 times a day to avoid blowing dust at all the places construction of embankment, stations and placement of ballast. III. Also limit the vehicle speed to ≤35 Km/h. Available time to rectify is one (01) week from the inspection date.		**References:** **[H 6.2 (b) (P-6)]** **[EMP 2.2 (P-97)]** **[EMP 2.3.1 (P-97)]** **[EMP 2.5.2 (P-99)]** **[EIA VI B (1) 187 (P-50)]**
Disposal of Construction Debris and other Waste Materials	**Man Made Construction Debris** Wastes and other materials are kept in haphazard condition and in a scatter manner	Should be rectified as- I. All the wastes should be relocated to one or two specific places within camp and should be covered. II. No cleared debris shall be left lying on the surface of the ground or buried in any agricultural land. III. Waste materials should be recycled/ reused where possible, then sold if remaining waste cannot be used. Available time to rectify is one (01) week from the inspection date.		**References:** **[EMP 2.5.2 (P-99)]** **[H 6.5 (c) (P-7)]**
Location 6 : Culvert#258 [174-718] ; Work Activities : Currently no work is going on				

Watercourse Impacts in Wetland/ Ponds/ Rivers/ Canals	**Loss of navigability** Navigability is disturbed as no scope of water flow has been kept	Should be rectified as I. Erosion and sedimentation control measures should be taken during cross-drainage work. II. Ensure the continuous stream flow during any construction works. Available time to rectify is one (01) week from the inspection date.		**References:** **[H 6.3 (c) (P-7)]** **[H 6.3 (d) (P-7)]** **[H 6.3 (e) (P-7)]** **[H 6.3 (f) (P-7)]** **[H 6.3 (g) (P-7)]**
Location 7 : BR#261 [177-584] ; Work Activities : Pier cap				
Watercourse Impacts in Wetland/ Ponds/ Rivers/ Canals	**Loss of navigability** Action taken to keep continuous flow of water. Though it is narrow and not sufficient.	Should be rectified as I. Erosion and sedimentation control measures should be taken during cross-drainage work. II. Ensure the continuous stream flow during any construction works. Available time to rectify is one (01) week from the inspection date.		**References:** **[H 6.3 (c) (P-7)]** **[H 6.3 (d) (P-7)]** **[H 6.3 (e) (P-7)]** **[H 6.3 (f) (P-7)]** **[H 6.3 (g) (P-7)]**
Location 8 : Mandabag Station Building [179-6/7] ; Work Activities : Basement casting is going on				

Servicing and Operating Equipment	**<u>Operating Defective Vehicle, Machine, Equipment or Plant at Work Site</u>** Oil driven machine is being operated without impermeable liner which can cause ground water contamination	Should be rectified as- I. Provide problem free machines for any kinds of operation II. Maintain and run in a good place with casting or plane sheet or drum sheet at the bottom of the machine to avoid spillage, and pollution III. Provide tray during fuelling activities to limit unwanted spillage where needed. Available time to rectify is one (01) week from the inspection date.		**References:** **[H 6.6 (a) (P-8)]** **[H 6.6 (b) (P-8)]** **[H 6.6 (c) (P-8)]** **[EIA VI B (8) 216 (P-58)]**

12. Public consultation and site inspection photograph during January-June 2019

13. Monitoring Checklist January-June 2019

CONSTRUCTION CAMPS

Checklist Question	Yes	No	Remarks
1. Is the camp/yard located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?		√	
If yes, comment on the adverse impacts on the environment:			
2. Is the camp/yard being properly maintained?	√		Partially

If no, list what is not being done properly			
3. Is the wastewater being disposed of properly?	√		
If no, comment on how it is being disposed and what are the impacts			
4. Have septic tanks been installed?	√		
5. Are the septic tanks working correctly, that is not overflowing, or emitting smell?		√	
6. Is the solid waste being disposed of properly?	√		Partially
If no, comment on how it is being disposed and the impacts of such disposal:			
7. Is attention being paid to "Good housekeeping"?	√		
If no, comment on what is not being done:			
8. Are contractor's vehicles being maintained at the campsite/yard?	√		
9. Is the waste from vehicle maintenance being disposed off property?	√		
If no, comment on how it is being disposed:			
10. Is the fuel storage area properly surfaced?		√	Partially
If no, comment on how the surrounding area is being affected:			Oil can lead to surface and Groundwater pollution
11. Are occupational health and hygiene precautions being taken?	√		
If no, comment on where they are being negiected:			
12. Does the community have any issues with the camp?		√	
If yes, what are the issues?			
13. Is the detail First Aid is available?	√		Not in all sites
14. All necessary firefighting equipment is on site and in good working order.	√		
15. Telephone numbers of emergency services are available on site	√		

EROSION OF SLOPES

Checklist Question	Yes	No	Remarks
1. Is there any erosion/Landslides/Instability beside the road? If yes than what is the reason		√	
(a) A combination of some of the reasons above			
(b) Improper drainage			
(c) Improper leveling after earth removal			
(d) Inadequate water channel diversion			
2. Is remedial action required?			
If yes, comment:			
3. Did the erosion/landslide/instability cause any damage?			
If yes, what was the nature of the damage?			
4. Was the erosion brought to the notice of appropriate authorities by the communities?			
If no, was there any action taken?			

AIR POLLUTION

Checklist Question	Yes	No	Remarks
1. What is the nature of air pollution?			
(a) Dust from road/ rail	√		
(b) Generator emissions	√		
(c) Vehicular emissions	√		
2. Is the problem significant enough to warrant attention?		√	
If yes, did the contractor take appropriate measure to mitigate the problem?			
3. What is/are the measures taken?			
(a) Periodic water sprays on road surface /borrow pits	√		
(b) Vehicles regularly maintained	√		
(c) Equipment regularly maintained	√		
4. Is air pollution creating problems for the surrounding communities?		√	
If yes, what type of problems?			

WATER POLLUTION

Checklist Question	Yes	No	Remarks
1. What is the nature of water contamination?			
1.1 Surface water (stream, pond etc.)			
(a) Disposal of out spoil into water body or on slope leading to water body		√	
(b) Discharge of wastewater from camp into fresh water body		√	
1.2. Groundwater			
(a) Oil spillage		√	
(b) Any other disposal over soil surface		√	
2. Is the impact significant enough to warrant mitigatory measures?			
If yes, provide necessary details:			
3. Is the impact long term?			
If yes, comment:			
4. Can it be ratified by mitigatory measures?			
If yes, what type of mitigatory measures should be taken?			

LAND CONTAMINATION (CAMP SITE)

Checklist Question	Yes	No	Remarks
1. What are the impacts of project activities on land?			
(a) Road/ rail run-off oil, grease and fuel contaminating land			
(b) fuel oil/used oil/grease spill on land in equipment yards/camps sites	√		
(c) indiscriminate discharge of waste on land			
(d) indiscriminate disposal of solid waste			
any other project activities resulting in land contamination			
2. Is the impact significant enough to warrant mitigatory measures?		√	
If yes, provide necessary details:			
3. Is the impact permanent?		√	
4. If permanent, could it have been avoided by taking appropriate mitigatory measures?			
If yes, what type of mitigatory measures should have been taken?			
5. Is the impact temporary?	√		
If yes, how could it be corrected?			Waste water, fuel oil, used oil,

			grease will be kept in drums which are properly surfaced.
6. Is the community satisfied with the measures taken by the contractor to protect agricultural activities?	√		
If no, how and with what measures can it be improved?			
7. Is the local administration satisfied with the measures taken by the contractor to protect agricultural activities?	√		
If no, what is being suggested by the local administration?			
8. Did the community allow the use of their land for borrow pit or any other purpose?			
If yes, what was the motivation behind it?			
If no, did the contractor take permission from the land owner and local administration for the specific use?			

CULTURAL HERITAGE

Checklist Question	Yes	No	Remarks
1. Does the project area have any cultural heritage, archaeological, historical or religious sites?		√	
2. If yes, are they affected in any way by the project activities?			
If yes, how?			
3. Did the concerned authorities and the contractor take any appropriate measures to protect the site?			
If yes, what are the measures taken?			
4. Are the communities satisfied with the measures taken?			
5. Is the community satisfied with the measures taken by the contractor to protect land?			
If no, how and with what measures can it be improved?			
6. Is the local administration satisfied with the measures taken by the contractor to protect land?			
If no, what is being suggested by the local administration?			

NOISE POLLUTION

Checklist Question	Yes	No	Remarks
1. What is the nature of noise pollution?			
(a) Vehicles on road/ railway	√		
(b) Generators, construction plant			
(c) Construction vehicles			
2. Is the problem significant enough to warrant attention?		√	
If yes, did the contractor/consultant take appropriate measure to mitigate the problem?			
3. What is / are the measures taken?			
(a) Vehicles regularly maintained and silencers checked			
(b) Speed limit enforced on project vehicles			
(c) Construction equipment maintained and silenced			
(d) Awareness raising of staff over causing nuisance to local communities			
4. Is noise pollution creating problems (health, aesthetic and nuisance) for the surrounding communities?		√	
If yes, what type of problems?			

DRAINAGE AND FLOODING

Checklist Question	Yes	No	Remarks
1. Is the flooding extensive or not?		√	
If yes, give details:			
2. Have contractors activities caused flooding or blocked drains?	√		
If yes, give details:			Heavy rainfall causes drainage congestion
3. Have cross drainage structures been built in correct location as shown in contract?	√		Partially
If no, give details:			
4. Are cross drainage structures "as built" same as in "detailed design"?	√		Partially
If no, give details:			

CONSTRUCTION CAMPS CLOSURE

Checklist Question	Yes	No	Remarks
1. Is the camp/yard located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?		√	
If yes, comment on the adverse impacts on the environment:			
2. Has the camp/yard been properly cleared of all debris and re-vegetated?	√		
If no, list what was not done properly:			
3. Was the wastewater disposed of properly?	√		
If no, comment on how it was being disposed and what were the impacts:			
4. Are septic tanks installed? Have they been removed?	√		
If no, why not?			
5. Was solid waste disposed of properly?	√		
If no, comment on how it was being disposed and the impacts of such disposal:			
6. Was attention being paid to housekeeping?	√		
If no, comment on what was not being done:			
7. Have all the contractor equipment being removed from the campsite /yard?		√	
8. Has the scrap metal from vehicle maintenance being disposed of properly?	√		
If no, comment on how it is to be disposed:			
9. Has all fuel storage been removed from the site?	√		
If no, comment on how the surrounding area is being affected:			
10. Have all general offices and staff dwellings been removed?	√		
If no, comment on if they are to be handed over to new owner or other plans:			
11. Does the community have any issues with the camp closure?		√	

FLORA AND FAUNA

Checklist Question	Yes	No	Remarks
1. Is any flora or fauna will be disturbed?		√	
If yes, give details:			
2. Have contractor's activities caused any damage to fish habitat?		√	
If yes, give details:			
3. Does any Plant species need to be cut down for construction?	√		
If yes, give details:			Some local species needed to cut down
4. Is re-vegetation going on		√	
If not, why			Re-vegetation will be started after the construction/work

14. Authorized Construction Waste Dumping Yard in Quasba and Cumilla City Corporation

Comilla City Corporation
Comilla.

Phone : 081-76099
Fax No : 081-62800
website: www.cocc.gov.bd
Email: coccbd@gmail.com

Memo No- 1383.

Date 19.06.2019.

To,

A.M.M. Yahya
Project Manager of ALDLP
Project Office, CTM Joint Venture
Cumilla Rail Station, Cumilla

Subject: **Permission regarding Cumilla City Corporation Dumping yard.**

Reference: Yours application Ref. No. CTM JV/Mayor/KCC/18/02, Dated: May 30, 2019

Dear Mr. A.M.M. Yahya,

In the mentioned above reference no and date, It has been giving permission to dump hazardous waste, Chemical waste, inorganic waste, dry bentonite cake and unsuitable slurry into our waste dumping yard at Bibir Bazar, Jaggonnathpur, Cumilla under Cumilla City Corporation for greaat safe of environment, which will become up to your project running up and you will be informed me by written about your project close.

Under the following some necessary terms and conditions.

1. No waste shall be kept on the road.
2. All wastage Materials must keep at he selected place of the waste dumping yard.
3. No wastage shall not be kept in any entering point of the waste dumping yard etc.

M. Hoq Shakot

Md. Monirul Hoque
Mayor
Cumilla City Corporation, Cumilla

Ref: CTM JV/TL/ALDLP/BR/19/2998 July 01, 2019

P.M.	dP.M.	C.S.	GIE	ENV

Mr. Lee Kun Koo
Project Manager/Team Leader
Construction Supervision of
Akhaura – Laksam Double Track Project
House # 9, Road # 14 (1st floor)
Baridhara Diplomatic Zone
Dhaka-1212

Sub: Contract No. BR/PD/ALDLP/ADB-EIB/2015/WD1 dated 15.06.2016
Construction of Dual Gauge Double Rail Line and Conversion of Existing Rail Line into Dual Gauge between Akhaura and Laksam
- **Authorized Construction Waste Dumping Yard in Cumilla**

Ref: (i) Cumilla City Corporation Memo No. 1383 dated 19 June 2019
(ii) Your letter ref. JV-ALDLP-CO-19-270 dated 29 May 2019
(iii) Our letter ref. CTM JV/TL/ALDLP/BR/19/2913 dated 22 May 2019
(iv) ER, Vol.3, Section 6, Subsection H, Sub-Clause H-6.5 (d)

Dear Sir,

Further to above correspondence and your committed "No objection", we attach herewith, for your approval, the authorization letter from the Mayor of Cumilla City Corporation, Memo No. 1383 dated 19 June 2019, allowing CTM-JV to use their designated dumping yard at Bibir Bazar, Jaggonnathpur, Cumilla, for all our construction waste materials including hazardous/chemical/inorganic waste, dry bentonite cake and unsuitable slurry.

Your prompt response in this regard will be greatly appreciated.

Thanking you and assuring you of our best intentions at all times.

Yours faithfully
For **CTM JOINT VENTURE**

GERARD CUMMINGS
Contractor's Representative

Enclosed: Comilla City Corporation Memo No. 1383 dated 19 June 2019.

Copy to: Mr. D N Mazumder, General Manager/Project Director, Akhaura – Laksam Dual Gauge Double Line Project, Bangladesh Railway, Rail Bhaban, Dhaka – 1000, Bangladesh

Ref: CTM JV/TL/ALDLP/BR/19/**3004**

July 02, 2019

P.M.	dP.M.	C.S.	G/E	ZJV

Mr. Lee Kun Koo
Project Manager/Team Leader
Construction Supervision of
Akhaura – Laksam Double Track Project
House # 9, Road # 14 (1st floor)
Baridhara Diplomatic Zone
Dhaka-1212

Sub: Contract No. BR/PD/ALDLP/ADB-EIB/2015/WD1 dated 15.06.2016
Construction of Dual Gauge Double Rail Line and Conversion of Existing Rail Line into Dual Gauge between Akhaura and Laksam
- **Authorized Construction Waste Dumping Yard in Quasba**

Ref: ER, Vol.3, Section 6, Subsection H, Sub-Clause H-6.5 (d)

Dear Sir,

With reference to the above contractual provision, we attach herewith drawing showing dumping area, allowing CTM-JV/TCCL to use their designated dumping yard at Quasba Municipality, Dist. Brahmanbaria for dumping of all railway construction waste including chemical waste, harzardous waste, inorganic waste etc. for your kind review/approval.

Your prompt response in this regard will be greatly appreciated.

Thanking you and assuring you of our best intentions at all times.

Yours faithfully
For **CTM JOINT VENTURE**

GERARD CUMMINGS
Contractor's Representative

Enclosed: Drawing Showing Location for Garbage area in Quasba Station: 1 sheet

Copy to: Mr. D N Mazumder, General Manager/Project Director, Akhaura – Laksam Dual Gauge Double Line Project, Bangladesh Railway, Rail Bhaban, Dhaka – 1000, Bangladesh

কসবা পৌরসভা

কসবা, ব্রাহ্মণবাড়িয়া।

ফোন : ০৮৫২৪-৭৩০৯২

পত্র ঃ- 283

তারিখ ঃ 14.03.2018

To
Project Manager
CTM Joint Venture (TCCL Part)
Akhaura - Laksam Double Line Railway Project.

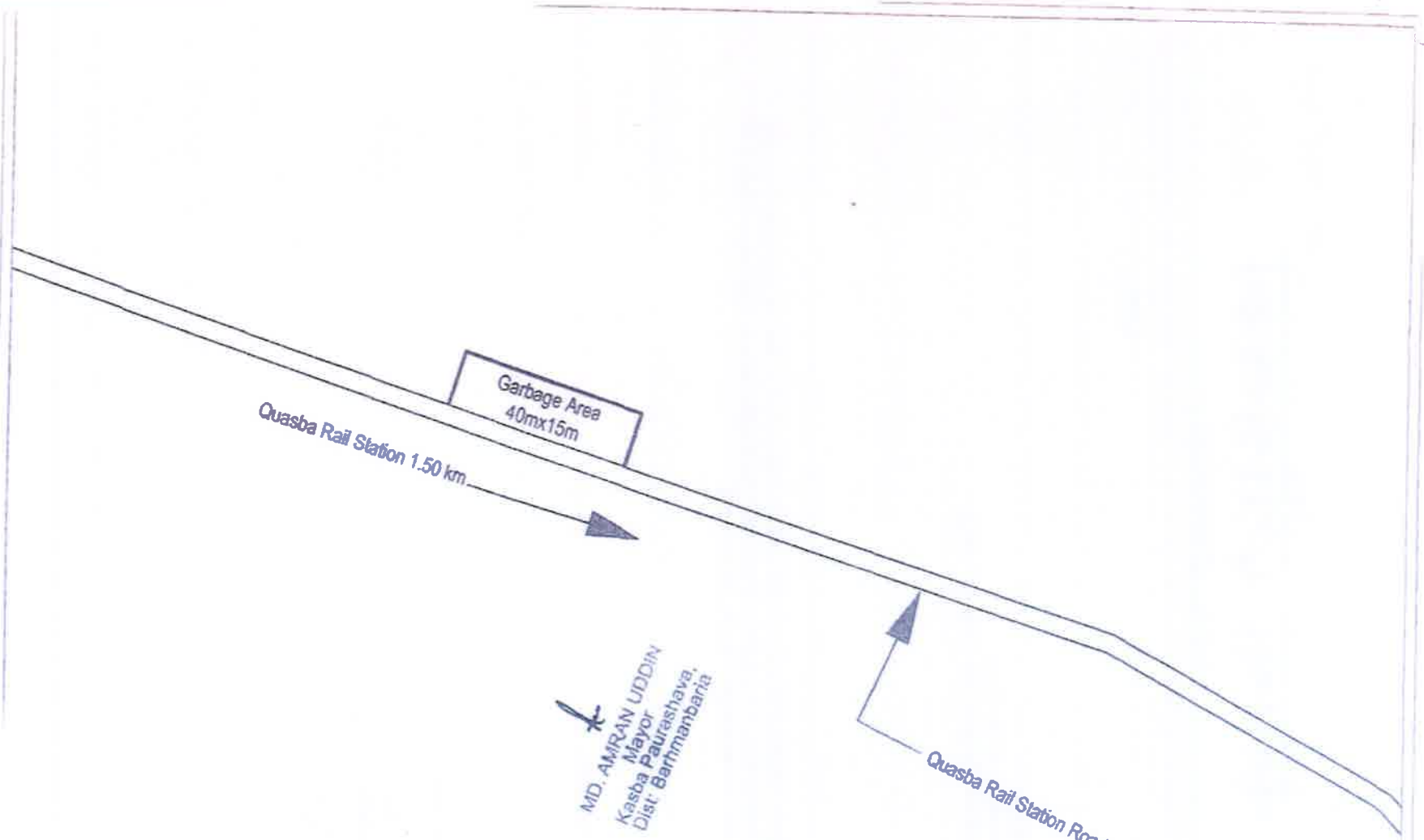
Dear Sir,

The undersigned hereby confirm you that we don't have any problem to use dumping yard of Quasba Municipality, for dumping of railway construction waste / garbage / debris in compliance with environment friendly requirement.

Thanks with Regards

(Amran Uddin Jwel)
Mayor
Quasba Municipality.

MD. AMRAN UDDIN
Mayor
Kasba Paurashava,
Dist: Barhmanbaria



REVISIONS			
NO.	DATE	DESCRIPTION	BY
01	09-25-19	Location of garbage area	CTM JV

CONTRACTOR

CTM JOINT VENTURE CONSISTS OF

CHINA RAILWAY GROUP LIMITED

TONIA CONSTRUCTION & CO. LTD

MAX INFRASTRUCTURE LIMITED

SUBMITTED BY
NAME: GERARD CUMMINGS
DESIGNATION: Project Manager
SIGNATURE:

PREPARED BY
NAME: Bimal Chandra Dhara
DESIGNATION: Construction Manager (E&M)
SIGNATURE:

ENGINEER / CONSULTANT

DOHWA-KRNA-DCC-BARSYL-CDC
JBM Venture

DOHWA ENGINEERING CO. LTD
KOREA RAIL NETWORK AUTHORITY
ORIENTAL CONSULTANTS GLOBAL
BARSYL
DEVELOPMENT DESIGN CONSULTANT LTD

APPROVAL

EMPLOYER

BANGLADESH RAILWAY

EMPLOYER

AKHAURA-LAKSAM DOUBLE LINE
LOCATION OF GARBAGE AREA
IN QUASBA