

Environmental Impact Assessment

Construction of Double Line and Upgrade of Existing Rail Line between Akhaura and Laksam Project



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

EXECUTIVE SUMMARY

1. The Project entails double tracking of a 72 km rail line, construction of 11 stations and a few hundred meters of access roads in eastern Bangladesh. The land use in the Project area is mainly agricultural with no significant environmental features or protected areas. Therefore the Project is classified as Category B in accordance with the Safeguard Policy Statement (SPS) of the Asian Development Bank (ADB). Accordingly an Initial Environmental Examination (IEE) has been prepared for the Project. 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. 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 EIA¹. The 69 types of projects listed as 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 longer than 100 m. The Project investment is more than 1 million taka and includes bridges longer than 100 m, and hence is a red category project.

2. To avoid duplication, preparation of multiple reports and potential confusion during implementation, one report has been prepared to meet the requirements of ADB, EIB as well as GoB. Since under ADB requirements the Project is category B and the report fulfils the requirements of an IEE, this report will be referred to as an IEE. The report also fulfils the requirements of an EIA for EIB and GoB, hence for EIB and GoB this report will be referred to as an EIA. Aside from the title of the report the technical contents of the report including the EMP is the same. The following text summarises the key findings of the EIA.

3. Akhaura to Laksam is one of the busiest rail lines in Bangladesh. Every day up to 31 sets of trains run between Akhaura and Laksam. Of these, three are container freight trains: the rest passenger and other trains. At present, approximately 40,000 passengers travel this stretch every day. This line will also be used as a link in the Trans-Asian Railway corridor, requiring the construction of additional rail capacity and the upgrading of the existing line to meet international standards as well as future demands.

4. The Project will double the capacity of this 72 km long existing stretch of the BR's rail network. Bridges, replacing the existing structures will be needed at the Dakatia River (proposed bridge length 73.15 m), the Gumti River (proposed bridge length 175.25 m), Gumti Spill (proposed bridge length 73.15 m), Sidai Khal (proposed bridge length 72.10 m), and Howrah River (proposed bridge length 104.2 m), plus another 8 bridges with lengths between 20 m and 70 m. The proposed second track will require the placement of between 2.0 and 2.2 million m³ of sand, earth, brick and embankment and ballast material. Around 40% of these materials will be transported to the Project by truck while the rest will be dredged from rivers and conveyed to the

¹ The Consultant, on behalf of BR, organized a meeting with the Department of Environment (DoE) in late October 2012, where DoE instructed the Consultant to complete a full EIA for the Project, adhering to both the GoB's and ADB's environmental regulations and guidelines.

alignment directly. The 840,000 m³ of materials transported by truck will require more than 56,000 truck-trips using the existing road network.

5. An estimated 2500-2900 people will work on this Project at any one time and most of them will be housed in approximately nine work camps; with locations to be identified and cleared with BR before locations are finalised. Of the 14 rail stations existing along the line, eleven rail stations will be reconstructed (not needed for Laksam, Comilla, and Akhaura). The construction work is expected to start in mid-2015 and will require four years to complete. The second line will be placed into operation in 2019.

6. Since the new rail line will be built parallel to and within 6 metres of the existing rail line (in operation for >100 years), impacts will be most noticeable during the construction period, but will be easily prevented or mitigated.

7. All impacts, mitigative measures and monitoring requirements have been defined in an Environmental Management Plan, included in the EIA and organised into three components, pre-construction construction and operations. Most of the preconstruction and operating period measures will be implemented by BR, while the construction period measures will be the contractor's responsibility, and enforced by the Engineer and overseen by BR. The construction period section of the EMP has been integrated into the construction contract as a set of environmental clauses and costed as a separate Bill of Quantities section, allowing for easy calculation of financial penalties.

8. For the construction period 20 mitigative and monitoring actions were defined. Construction period actions will concentrate around issues arising due to the blockage of surface water flows and constrictions at existing river crossings by the new 2-6 m high, and 70 km long embankment.

9. The first construction period impact is the transport of the approximately 840,000 m³ of embankment material, subgrade aggregate and ballast by truck, which will affect haul roads. All haul roads will be carefully maintained and traffic controls will be in place to prevent delays. Further, all trucks used will be required to have annual maintenance inspections to be sure they are properly tuned and emissions are within permitted levels. About 1.3 million m³ of embankment material will be dredged sand, pumped as slurry through a pipeline from rivers to the embankment, where it will be allowed to drain and compact. The material will be taken from only those rivers where dredging is allowed. Erosion protection will be essential and to that end the contractors will be required to complete a landscaping and replanting programme as each section of the line is built (not at the end of construction).

10. The second important construction period impact would be problems arising at the larger bridge crossings where there is the chance that materials will fall into the river; machinery operate illegally in the water; or the crossing width is constricted, resulting in flow blockage and erosion. To avoid this, BR has designed all bridges to the 100 year design flow and culverts to pass the 50 year design flows.

11. The third important construction period impact will be associated with the sighting and operation of the concrete batch plant used to build the bridge elements. Its location will be at least 500 m away from residences and sensitive noise receptors and will be equipped with dust suppression equipment.

12. The storage of any material will be carefully monitored and sites fully restored after use, including any borrow sites created during the construction period.

13. At a total of 9 large bridges, where the piers are located in water, piles will need to be bored, requiring the use of drilling muds such as bentonite. Bentonite is fine clay that, once released to the water body, will remain in suspension for a long time, affecting the turbidity and degradation of fish habitat. To avoid this, a strict bentonite handling and recovery protocol has been defined to which the contractor will be required to adhere. The contractor will be encouraged to replace bentonite with muds available locally.

14. Poor housekeeping by the contractor at work camps and construction sites is frequently a serious problem. Unenforced and poor contractor site management could lead to serious pollution from fuel spills, sewage discharges into surface and groundwater, garbage littering as well as inadequate occupational health and safety measures. The operation of batch plants, with their noise and dust, is often a prime area where occupational health and safety measures are not enforced and noise and cement dust inhalation issues arise.

15. Given that the new operating double track will have steadily increasing traffic, and given the existing frequency of a train around every 20 minutes, level crossings (legal and unauthorised) will have an increased safety risk as the interval between crossing closure is reduced, and traffic and frustration builds up among pedestrians and road users. BR will address this by closing some crossings and significantly upgrading the operating efficiency of crossing facilities. These facilities will be included as part of the construction work.

16. The contractor will be required to conduct a regular air, water and noise quality monitoring programme, specified in the EMP, and submit reports, on a monthly and quarterly basis. The contractor's environmental safeguard personnel will have to attend a mandatory training workshop on EMP implementation, prior to the start of work.

17. During the operating period, BR's mitigation and monitoring work will focus on inspection of contractor work areas, their waste disposal sites, their rehabilitation/revegetation, proper landscaping, re-establishment of local access, debris clearance from reconstructed culverts, etc. Secondly, BR will implement an air and noise quality monitoring programme during 3 operating years to establish the noise and air quality degradation (if any) at sensitive sites, identified during the EIA and to implement proper noise and air quality attenuation measures.

18. Three major positive operating period impacts of the Project have been identified. The first positive impact will be the *traffic diversion and fuel saving*. The proposed train service will divert road users to the improved train service that will reduce road traffic congestion and generate fuel savings. It was estimated that due to the diverted traffic in 2023, when 44 train sets are in operation an estimated 64.4 million litres of diesel fuel/year would be saved, with a net benefit, once train consumption is deducted, of 53.78 million litres/year. The second positive impact will be a *reduction of the carbon footprint*. Fuel saving of 53.78 million litres/year, which translates into a saving of 145,000.00 metric tons of CO₂/year (using a CO₂ emission factor of 2.69 kg CO₂/l of diesel fuel consumed), and accounting for the fuel used for the additional train trips. The third positive impact will be the *construction of environment friendly rail*

stations/.All new rail station buildings will be constructed with modern facilities including environmentally friendly solar panel system, rainwater harvesting systems and improved station facilities and accessibility for physically challenged persons.

19. The measures defined in the EMP as well as other environmental clauses in the construction contract, are estimated to cost a total of USD 713,698 for the four construction years and three years of operating period monitoring. Breaking this down into the three phases, for the preconstruction period the costs are all BR planning costs and not included in the this calculation. For the four-year construction period, the total cost is estimated to be USD 625,800, of which USD 252,500 is the cost of the tree replanting programme. The operating period mitigation and monitoring is estimated to require USD 48,000, not including the cost of the Environmental and Social Safeguard Unit (ESSU), for which there is a separate calculation.

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