

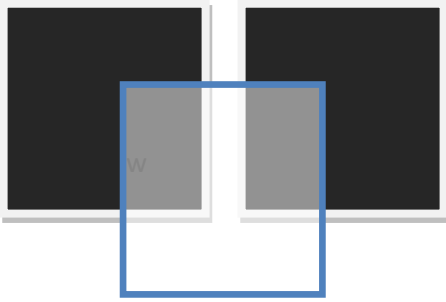
Environmental Due Diligence Report

June 2016

BAN: Financing Brick Kiln Efficiency Improvement Project – KB Auto Bricks Limited

Prepared by Bangladesh Bank for the Asian Development Bank

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Due Diligence Report KB Auto Bricks Limited Sharifpur, Deraï, Sunamganj

June 2016

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Acronym

ADB	-	Asian Development Bank
BB	-	Bangladesh Bank
DoE	-	Department of Environment
IEE	-	Initial Environment Examination
ECC	-	Environment Clearance Certificate
EMP	-	Environmental Management Plan
ESDD	-	Environmental Safeguard Due Diligence
ESIA	-	Environmental and Social Impact Assessment
ESMS	-	Environmental and Social Management System
OHS	-	Occupational Health & Safety
SPS	-	Safeguard Policy Statement
REA	-	Rapid Environmental Assessment

DUE DILIGENCE REPORT on ENVIRONMENTAL SAFEGUARDS

1.0 Subproject Title

The proponent plans for setting up a modern brick manufacturing project namely KB Auto Bricks Limited at Sharifpur, Derai, Sunamganj. The general information of KB Auto Bricks Limited are imparted in below Table-1.a.

Table-1.a: General Information on KB Auto Bricks Limited

1. Name of the Company	KB Auto Bricks Limited
2. Name of the entrepreneur	Md Sayed Ali Mahbub Hossen
3. Contact Address	Sharifpur, Patharia, Derai, Sunamganj
4. Name of the Brick Kiln	KB Auto Bricks Limited
5. Type of the Brick Kiln	Tunnel Kiln (TK)
6. Project Investment	BDT 42.65 Crore
7. Location Address of the Brick Kiln	Sharifpur, Derai, Sunamganj
8. Current office address	Sharifpur, Patharia, Derai, Sunamganj
9. Telephone/Fax	01798-726945, 01715-597943
10. E-mail	Kbbl_bd@yahoo.com

1.1 Sub-Project Description

The Sub-project proponent envisages of establishing energy efficient and environment friendly automated brick technology. The proponent plans to use mechanized back processing, chamber dryer and Tunnel kiln to burn the bricks.

A Tunnel Kin is a type of continuous kiln that is typically open at both ends and a firing zone in the centre. Bricks are passed through the device in an uninterrupted fashion, allowing large volumes to be processed without shutting off the kiln. The simplest tunnel kiln consists of a single heat source in the middle of the device where the materials are slowly heated to sintering temperatures and cooled as they pass through it. The more complex versions have better thermal sealing systems, multiple heating and cooling stages and a variety of interior atmospheric conditions. A number of different fuels can be used to heat tunnel kilns. In Bangladesh, coal is the

preferred fuel, if for no other reason, because other types of energy are either not available or they are too expensive.

Some kilns, such as the ones being presently designed, conserve energy by capturing heat at the cooling end and re-circulating it to help pre-heat materials that are entering the device.

As a result, there will be no fly ash emission but there will be black spots on the sides of the bricks. It will not affect the brick strength, just will differ on colors. It conforms to the national standard.

In a tunnel kiln, *the firing zone remains stationary* near the centre of the tunnel, while the bricks and air move in counter-current paths. Cold air is drawn from the car exit end of the kiln, cooling the fired bricks. Combustion gases travel towards the end where the cars enter the kiln, transferring part of their heat on to the incoming green bricks. The cars entering the kiln travel through it either continuously or intermittently at fixed time intervals. Tunnel kilns have provisions for air extraction and supply at several points along the length of the kiln.

The plant will produce 100,000 bricks of size 240 mm x 120 mm x 70 mm daily. The main features are as follows: 95% intestine combustion, raw material preparation with roller mill, shaping with vacuum extruder, tunnel drying and firing with annular kiln. Annual working days have been assumed to be of 330 days. Raw material preparation will be conducted each day in 2 shifts of 8 hours. Drying and firing in 3 shifts each of 8 hours. The raw materials (soil) mostly shall be collected from local suppliers and river beds. Tunnel Kiln technology considered to be most advanced brick making technology which is one of the prescribed technologies under the Brick Kiln (Control) Act 2013 along with zigzag, hybrid Hoffman, vertical shaft technologies. The emission of pollutants and particulate matters are much less in Tunnel kiln than the Traditional kilns because of better combustion and use of internal fuel. It has, in fact in built mitigation measures in its combustion process.

The proponent owns 6.35 acres of land for the establishment of the kiln and other ancillary facilities. The project site at Sharifpur, Derai, Sunamganj (Latitude: 24°51'2.21"N, Longitude: 91°21'41.44"E) is sparsely populated with greenish, marshy land and vacant surroundings. No school, sensitive installation including archeological site is around. **The project site is accessed through the Sunamgonj Derai road.** A branch of Surma River is just in the south-east of the plant location. The site enjoys convenient waterways and road transportation route for its operation. The site is around 8 km away from the Derai upazila centre. Sunamganj city

centre is at a distance of 31 km from the project site and 80 km from the Sylhet city centre.

1.2 Current Status of Subproject

The proponent is expecting commence of construction work by July 2016 and commercial operation by July 2017. All infrastructure facilities like electricity, labour, telecommunication, etc. are available at the project area.

The sub-project has obtained several necessary national and local environmental clearances as well as permits and approvals for project implementation.

Copies of NOC from Union Parishad, (Annexure 2) Site Clearance Certificate from Department of Environment, (Annexure 3) NOC from Power Development Board for Electricity, (Annexure 4) Fire Licence from Bangladesh Fire Service and Civil Defence (Annexure 5) are annexed for ready references.

Land development has been completed and waiting for the sanction of loan for ground breaking. The proponent has also completed the lay out plan, digital survey and design by an independent surveyor. Technical plan and design has been done with the assistance of Chinese company.

2.0 Relevant Environmental Safeguards Policies and Regulatory Framework

I. National Regulatory Framework

Bangladesh environment Conservation Act'95 is the key Act in the environmental arena. Under this Act, it requires that no industry or project can be set up in the country without the clearance from Department of Environment (DoE). Bangladesh Environment Conservation Rules'97 provides the procedures how to obtain the environment clearance from DoE. According to this Rule, brick manufacturing projects fall under the "**Orange B Category**". According to ECR 1997, the project sponsor is required to prepare a comprehensive Initial Environmental Examination (IEE) report including an Environmental Management Plan (EMP) and submit those to DoE for obtaining Site Clearance and Environmental Clearance. **Brick Kiln Act 2013** is the latest legislation that the brick kiln owners has to comply. It

regulates the technology and type of the kiln, location characteristics, source of soils/ earth, fuels etc.

II. ADBs Safeguards Policy and Requirements

ADB's Safeguard Policy Statement (2009) is a consolidated policy framework setting out policy objectives, principles and requirements for three (3) safeguard areas: environmental, involuntary resettlement, and indigenous people.

The ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, financial intermediation loans, and private sector investment operations.

Environmental assessment is a process rather than a one-time report, and includes necessary environmental analyses and environmental management planning that take place throughout the project cycle.

III. Bangladesh Bank's Commitment

Bangladesh Bank's cherished goal is to achieve sustainable development in the overall economy. In the energy sector, it promotes cleaner and more environmentally friendly technologies, and thus is committed to avoid and mitigate adverse environmental impacts, if any, resulting from the projects it finances.

Bangladesh Bank has agreed upon with Environmental and Social Management System (ESMS) of ADB and committed that all sub projects financed by BB through ADB LoC would be compliant to ADB Safeguard Policy Statement (SPS) 2009.

Currently, Bangladesh Bank is considering of finance the subproject through the ADB LoC, therefore an Environmental Safeguard Due Diligence (ESDD) of the proposed subproject has been warranted.

3.0 Methodology for Environmental Safeguards Due Diligence (ESDD)

The ESDD of the subproject has been carried out in accordance with the guidance provided in the ESMS of ADB under Policy Statement (SPS), June 2009.

Documents Review:

- Review of subproject related documents like PIM (Project Information Memorandum)
- Review of all licenses permits obtained in favour of the subproject.
- Review of feasibility report for the subproject prepared by the entrepreneur
- Desk review of secondary environmental baseline data from authentic and published sources

Stakeholder Consultation:

- Discussions with the sector specific team within Bangladesh Bank, involved in the appraisal and loan processing of the subproject
- Discussions with the subproject proponent, explaining the need and scope of safeguards due diligence, and seek additional information, wherever required that are not available in the PIM for preparing ESDD.
- Discussion with local people/community during the site visits (**Public Consultation**)

Site Visit: In co-ordination with Bangladesh Bank and PFI, field visit was undertaken by Environmental Safeguard specialist, Social Safeguard specialist and Business Development specialist to the subproject site on 24th April, 2016. The representatives of the project accompanied the safeguard specialists to the subproject site and responded to various questions.

4.0 CATEGORIZATION OF SUB-PROJECT

- A **rapid environmental assessment** of the subproject using the REA checklist and **environmental categorization** were carried out based on the documents review supplemented by site visits for ground truth verification. **The filled-in REA Checklists and Environmental Categorization** forms are given in **Annexure 1**.
- Based on the filled-in REA checklists and environmental categorization, the subproject can be classified as **Category B**, as the impacts both in construction and operation phase are likely to be limited to subproject site itself and such impacts can be controlled/mitigated through site specific measures.

5.0 Due Diligence on Environmental Safeguards

Based on the documents review, site visit and desk review of secondary data from published sources, Environmental Safeguards Due Diligence was carried out. The findings of the due diligence as well as the environmental sensitivity of the subproject are given here under:

5.1 Regulatory

- The sub-project has obtained necessary national and local environmental clearances as well as permits and approvals for project implementation which are due at this stage. The Brick Burning License from the Deputy Commissioner's office is under process. The Brick Burning license along with the Environment Clearance certificate from DoE shall be due during its operation stage and not now.
- The subproject had prepared an IEE checklist (**Annex 6**) as per regulatory requirement and submitted to DoE along with other documents for obtaining environment site clearance. It may be clarified that the Department of Environment (DoE) recognizes the filed in IEE Checklist as the **IEE document** for the purpose as required for category B projects.
- The subproject will not require/warrant an ESIA preparation as per regulatory requirement
- The subproject does not fall under the ADB prohibited list of activities given in **Annexure 7**.

- During discussion with the local people it was observed that they supported the idea of the proponent and the subproject enjoys the support of the local community. (**Proceedings of the Public Consultation have been provided in Annexure 8**)

5.2 Sitting

- Location alternatives were considered during site selection. This site was chosen because the site enjoys all the utilities & facilities for operation of the plant. Moreover, the site is sparsely populated with greenish, marshy and vacant surroundings.
- **The subproject site is connected to the Sylhet-Sunamganj highway through the Derai access road.** It has an unpaved approach road for carrying raw materials to the site. From the transportation point of view, the location is excellent as it will enjoy both road and water ways for clay collection and finished product deliveries.
- The land use in the vicinity of the project area is mixed. Vacant land all around. There are a few homesteads around 300 to 1000 meters away and marshy land as well. Surma river is just north-east of the subproject site.
- The site has no human habitation or any other impediments. The land used for traditional kiln previously. The project location is shown in different maps (**Annexure 9a**).The satellite image maps of the project site are shown in **Annexure 9b**.
- There is no National Park or Wildlife Sanctuary or ecologically sensitive areas within a radius of 10 km of the project site.
- The subproject site is not reported to be falling along the migrant route any threatened/protected wildlife. Occurrence of rare and/or endangered (both flora and fauna) species has not been reported in and around the subproject area/region.

- No archaeological or historical monuments, protected from the Bangladesh Government have been reported in and around the sub project site as well as within a radius of 10 km.

5.3 Environmental Management Plan (EMP)

- The sub project shall not have major environmental concerns as it will have an efficient technology for brick burning. However, the sub-project is advised to give importance on regular repair and maintenance of the equipment and machineries. So, monthly maintenance scheduling is advised. It is expected that the emission will be within the limits of GoB standard.

Nevertheless, it will have certain site specific negligible pollution related issues during construction and operation phases, if those issues are not properly addressed. Anticipated concerns and or impacts and likely mitigation measures to contain them are described as **Environment Management Plan (EMP)** in the following table.

Project Phase	Concerns and/or likely Impacts	Response measures
Plant Location/ Pre-construction Phase	Land Acquisition	The proposed project didn't require any relocation of homestead and land acquisition as the proposed plant would be set up on the land own by the proponent. So no impact
	Loss of and displacement from agricultural land	The land is used for tradition kiln. No mitigation measures needed in this regard.
	Disruption to drainage pattern	Project will not create any water logging and drainage problem. The drainage shall be connected to the surma river for its discharge.
	Change in Landscape	It is implicit that the project will have a modern architectural view. Green belt and afforestation around the project shall turn the altered green area into good landscape.

Project Phase	Concerns and/or likely Impacts	Response measures
Construction Stage	Worker accident	<ul style="list-style-type: none"> ○ Regular inspection on work safety and maintenance of equipment ○ Environmental health and safety briefing ○ Provision of protective gear
	Sanitation diseases hazard	<ul style="list-style-type: none"> ○ Provide proper sanitation facilities ○ Supply safe drinking water
	Dust/air pollution	<ul style="list-style-type: none"> ○ Carrying clay in covered vans, lorries. ○ Arrangements for water spraying in dust generating areas ○ Paving of the unpaved kucha roads
	Noise/vibration hazard	<ul style="list-style-type: none"> ○ Avoiding as much as possible the construction equipment producing excessive noise during peak hours and also at night ○ Maintaining equipment in good working condition ○ Creation a buffer zone
	Traffic congestion	<ul style="list-style-type: none"> ○ Scheduling of transportation may be done in consultation with local communities. ○ Speed reduction provision in critical areas and road turns ○ Use of safety road symbols, if required
Operation Stage	Pollution from liquid waste discharge	<ul style="list-style-type: none"> ○ The Proposed plant will not create any process liquid from the production process, so, mitigation suggestion is not required. The domestic liquid waste to be disposed through a septic tank with a soak pit.
	Pollution from dusts	<ul style="list-style-type: none"> ○ Carrying clay in covered vans, lorries. ○ Arrangements for water spraying in dust generating areas including clay shed ○ Plantation in the surrounding of the

Project Phase	Concerns and/or likely Impacts	Response measures
		<ul style="list-style-type: none"> plant ○ Paving of the unpaved kucha roads
	Pollution from solid waste	<ul style="list-style-type: none"> ○ Segregation of solid wastes ○ There will be some solid wastes as waste clay, misshaped or broken under burnt or over burnt bricks, which have secondary demand and to be sold to the traders.
	Emission of particulate Materials (PM) and flue Gases (SO ₂ , NO _x)	<ul style="list-style-type: none"> ○ Optimal use of high-grade coal ○ Regular maintenance of plant equipment and machineries ○ Use of bottom ash in the green bricks ○ Capacity building of master mason and other workers
	Coal transportation and grinding	<ul style="list-style-type: none"> ○ Coal storage, unloading and coal grinding facility will have to be done in a closed shed so there is no chance to escape coal ashes.
	Occupational health and Safety	<ul style="list-style-type: none"> ○ Protective clothing, goggles, helmets, shoes and accessories to be provided to the workers especially who will work in the kiln. ○ Adverse impact on worker's safety would be minimized by implementing an occupational health program. ○ Regular medical check-up will have to be done to ensure the soundness of health of employees and workers.
	Traffic congestion	<ul style="list-style-type: none"> ○ Provision of adequate internal parking for all vehicles coming to the plant premises; ○ Paving the dilapidated service road with tarmac or more durable material and speed reduction provision in critical areas and road turns ○ Use of safety road symbols, if

Project Phase	Concerns and/or likely Impacts	Response measures
		required
	Noise hazard	Maintaining equipment in good working condition and where appropriate using noise suppressors, mufflers and acoustic hoods etc.

- The subproject shall create a good employment opportunities for men and women in the locality.

6.0 Further Actions Required

The ESDD indicated the requirement of following further actions for the subproject:

- The proponent has to Obtain **Environment Clearance Certificate (ECC)** from Department and **Brick Burning license** from Deputy Commissioner's office prior to go for commercial operation
- The proponent has to **open L/C, import of machineries after the review of Technical plan and Design by the ADB technical consultant**
- The proponent has to construct the kiln and dryer as per approved design.
- The proponent has to implement an **Environmental Management Plan (EMP)** for mitigating site specific impacts for the construction phase and operation phase, **in line with the suggestions provided in 5.3 and in fulfilling the conditions stipulated in the Site Clearance of DOE** as well as loan covenant of BB.
- The proponent has to prepare **Occupational Health & Safety (OHS) Plan**, in line with the suggestions provided in 5.3 and in fulfilling the conditions stipulated in the site clearance of DOE as well as loan covenant of BB.

- The proponent has to ensure **deployment of adequate human and financial resources** for on-site environmental management and comply with all consent conditions stipulated in the Site Clearance and Brick Burning license from the District Commissioner in a timely manner, document and submit annual regulatory compliance reports to ADB as well as quarterly progress reports to Bangladesh Bank (BB).
- The proponent has to **allocate a budgetary provision** for the environmental management plan including a periodical environmental monitoring program for the operation phase.
- The proponent **shall require improving the kutcha road** for its effective use in the transportation of raw materials.
- During the conduct of safeguards due diligence, the project proponent has **consented to allot a budgetary provision** for environmental management as per Site Clearance requirements of DoE and BB's loan covenant.
- The Proponent has to develop and improve Landscaping, green belt, afforestation during operational phase
- The **ESMS cell at BB will require monitoring implementation of the environmental management plan** through developer's periodic environmental monitoring progress reports and undertaking bi-annual due diligence visits to ensure satisfactory implementation of environmental management plans at all stages of subproject.

6.1 Suggested Monitoring Plan

The proponent is suggested to develop arrangements for regular monitoring of air quality and occupational health issues during construction and operational phase in accordance with the suggested plan in table 6A & 6B.

Table 6.A Environmental Monitoring Plan during construction phase of the project

Issue	Parameters	Location	Monitoring Frequency
Ambient air Quality	PM ₁₀ , PM _{2.5}	Around the project site	Data from DOE CAMS in the air shed can be used
Groundwater	Groundwater level, pH, TDS, Ammonia, Nitrate, Phosphate, As, Fe, Mn and Coliforms	At the project site	Once
Construction waste	Solid waste/construction debris, visual observation and record check	At site	Once a month
Health	Health status of the workers, visual observation and record check	At site	Once every 2 months by the contractor's appointed health professional

Table 6.B: Environmental Monitoring Plan during operational phase

Phase	Environmental parameter	Sampling Location	Testing Parameter	Frequency
Operation Phase	Ambient Air Quality	Project site at Sharifpur, Derai, Sunamganj	SPM, PM ₁₀ and PM _{2.5}	Bi-annual (routine) analysis
	Stack Emissions	Project site at Sharifpur, Derai, Sunamganj	SO _x , NO _x and CO	Bi-annual (routine) analysis
	Drinking water	Project site at Sharifpur, Derai, Sunamganj	As, Total hardness, Bacterial total count,	Bi-annual basis in each year (pre-monsoon and post-

Phase	Environmental parameter	Sampling Location	Testing Parameter	Frequency
			E.Coli	monsoon)
	Noise	At four corners of Project boundary, generator room etc.	Hourly basis for 24 hours	Quarterly (routine) analysis

6.2 Reporting Requirement

As a part of environmental and social compliances, the project will submit quarterly EHS compliance report of the Project to PFI & Bangladesh Bank (BB). This report will contain the analysis of testing various environmental parameters during monitoring phase. It will also describe in detail about the status of implementation of environmental management plan (EMP).

Table 6.C: Reporting schedule

Reporting entity	Frequency of Report	Entity to whom the report
Manager of the plant	Quarterly EHS Compliance Report including the implementation status of EMP	PFI, BB
PFI, BB	Annual ESDDR Report based on the findings of half-yearly monitoring of the plant based on the EMP	ADB

6.3 Suggested Maintenance Schedule

It is suggested that a schedule of maintenance of kiln, dryer, generator and all other machineries shall be devised and carried out in accordance with the safety and maintenance instructions of the respective equipments and be reported along with the monitoring report.

7.0 Conclusion and Recommendations

The conclusions of the ESDD for the subproject are:

- The subproject has been primed by the proponent as per their own investment plan supplemented by BB's loan assistance (in anticipation of availability of funds).
- The construction and operation of Brick Kiln project near at Sharifpur, Dera, Sunamganj District has no major significant environmental issues. The subproject expecting their Commercial Operations by September 2017
- BB, through its Sustainable Financing cell is committed to monitor the implementation of Environmental and Social Management Plan at subproject site through proponent's periodic progress reports and undertake bi-annual due diligence visits to subproject site and assess the implementation of environmental management and environmental monitoring being carried out by the proponent.
- The subproject is expected to be in compliance to ADB Safeguard Policy Statement (SPS) 2009 and does not pose reputational risk to ADB funding on environmental safeguards.