

PRE-FEASIBILITY REPORT

1. Executive Summary:

India is the second largest producer of clay fired bricks, accounting for more than 10 percent of global production. India is estimated to have more than 50,000 brick kilns, producing about 50-75 billion bricks annually, employing about 5 million workers and consuming about 12 million tons of coal annually. India's brick sector is characterized by traditional firing technologies; environmental pollution; reliance on manual labour and low mechanization rate; dominance of small-scale brick kilns with limited financial, technical and managerial capacity; dominance of single raw material (clay) and product (solid clay brick).

A brick is a block, or a single unit of a ceramic material used in masonry construction. Bricks are made from dried earth, usually from clay-bearing subsoil. It is an activity that can take place in many forms, in large modern factories to small rural businesses.

1.1 Conditions Needed for Brick making:

The minimum conditions necessary to begin a brick making production are as follows:

1.1.1 Materials:

The following materials required for manufacturing of bricks:

Clay:

Clay soils are compounds of silica and alumina. It takes approximately 1 cum of clay soil to make 400 bricks.

Water:

There would be need of water for the clay, hence a source of water must be available during brick production. It takes approximately 120 litres of water to produce 400 bricks.

Sand:

Sand can be used to make minor adjustments to the quality of soil. It can be added to soil when drying to prevent the soil from becoming too brittle. Sand is also be used as a stabilizer in a mixture. An important use of sand is in the brick making process, where it is used to keep the bricks from sticking to the moulds.

If no sand is available in a location where brick making is going to start up, sawdust, ash and fine dry soil can also be used to keep the clay from sticking to the mould.

Fuel:

Firewood and coal are the most common fuel sources used for firing bricks.

1.1.2 Site Characteristics and Access Space:

It is recommended that a brick production of 400 bricks per day will require 700-800 Cum of space.

Transport:

Brick production requires transport for supplies as well as for the finished bricks. Depending on the rate of production, frequent transportation will be required. So there will need for transportation vehicles like reliable tractors or trucks, etc. Also, access for transportation of completed bricks will be required.

Tools and Equipment

The following is a sample list of tools and equipment recommended for person:

- ❖ Hoes
- ❖ Pick axes
- ❖ Shovels
- ❖ Axes
- ❖ Machetes
- ❖ Wheelbarrows
- ❖ Empty fuel drums
- ❖ Buckets or pails
- ❖ Hinge molds
- ❖ Molding tables
- ❖ Bow cutters
- ❖ Pallets
- ❖ Carrying boards

1.1.3 Organization and Management:

Motivation:

Brick making is labor intensive. It will be tedious and tiring. Workers, therefore, must be motivated to produce good quality bricks

Management:

Although brick making may be considered a simple or low technology, good management is important for successful brick production. This includes providing an adequate supply of raw materials for the workers, keeping the equipment maintained and providing suitable facilities for the workers. It also involves checking the quality of the product regularly, setting up smooth flow of production and having adequate financial arrangements for purchases and salaries. Also, it is important to make sure there are skilled personnel, and that the workers have all the tools and information needed.

Assistance:

Assistance may be financial, technical or managerial.

1.2 The Brick making Process:

The brick making involves the following process:

- ❖ Clay Preparation
- ❖ Molding
- ❖ Drying
- ❖ Firing

2. Introduction of the Project:

M/s Adarsh Bricks, Pramod Choudhary is the proponent of the Kariho Soil brick Mine at Khata no- 179, 290, 92, 195, 193, 253, 292. Khasra no.- 2699, 3377, 3322, 2351, 2454, 2479, 2291, 2764, 3477, 2632, 2594, 2592, 2715, 2952, 2890, 2893, 2853, 2935, 3041, 3014, 2641, 2727, Village-Kariho, P.O- Bishunpur Bejha, P.S- Mahua, District- Vaishali (Bihar). The total mine lease area of the proposed brick clay mining project is 1.30 Hectares or 3.22 Acres. As per EIA Notification 14th September, 2006 & O.M No-L-11011/47/2011-IA.II (M) dated 24th June 2013 the proposed project falls under Schedule 1(a) & Category “B-2”. As per MOEF&CC Office Memorandum no. L-11011/47/2011-IA.II (M) dated 24th June 2013 following conditions shall be followed during the mining activity:

- No drilling and blasting are proposed for brick clay mining activity.
- The borrowing/ excavation activity will be restricted up to maximum depth of 2m below general ground water level or up to 2m above the ground water table whichever comes first.
- No Mining activity will be carried out within 15 meter periphery of any civil structure.

The Coordinate details of proposed brick clay mine lease area is given as Table No.1

Table 1: Project details

Location & Revenue Details of Mining Site	179	2699	6.5	25°45'31.02"N	85°22'20.20"E
				25°45'30.76"N	85°22'21.17"E
				25°45'30.43"N	85°22'21.01"E
				25°45'30.73"N	85°22'20.07"E
		3377	13.0	25°44'35.28"N	85°22'28.58"E
				25°44'34.76"N	85°22'32.02"E
				25°44'34.51"N	85°22'31.95"E
				25°44'34.97"N	85°22'28.47"E
		3332	25.0	25°44'35.71"N	85°22'42.01"E
				25°44'35.48"N	85°22'43.31"E
				25°44'34.97"N	85°22'43.09"E
				25°44'35.16"N	85°22'41.94"E
		2351	5.0	25°45'13.93"N	85°22'55.59"E
				25°45'13.19"N	85°22'57.73"E
				25°45'12.73"N	85°22'57.55"E
				25°45'13.46"N	85°22'55.40"E
		2454	12.0	25°44'54.58"N	85°22'45.61"E
				25°44'53.89"N	85°22'50.72"E
				25°44'53.37"N	85°22'50.60"E
				25°44'54.01"N	85°22'45.77"E
		2479	1.5	25°44'56.32"N	85°22'30.63"E
				25°44'55.90"N	85°22'32.35"E
				25°44'55.19"N	85°22'32.07"E
				25°44'55.50"N	85°22'30.42"E
		2291	5.0	25°45'4.16"N	85°22'51.90"E
				25°45'4.02"N	85°22'52.57"E
				25°45'3.13"N	85°22'52.36"E
				25°45'3.23"N	85°22'51.61"E
		2764	20.5	25°45'24.68"N	85°22'12.74"E
				25°45'24.36"N	85°22'13.71"E
				25°45'23.31"N	85°22'13.37"E
				25°45'23.68"N	85°22'12.33"E
		3477	5.5	25°44'31.71"N	85°22'43.30"E
				25°44'31.46"N	85°22'44.69"E
				25°44'28.60"N	85°22'43.97"E
				25°44'28.75"N	85°22'42.71"E
		2632	13.5	25°45'17.30"N	85°22'13.49"E
				25°45'17.18"N	85°22'13.91"E
				25°45'16.14"N	85°22'13.74"E
				25°45'16.20"N	85°22'13.45"E
		2594	8.0	25°45'18.50"N	85°22'19.38"E
				25°45'18.45"N	85°22'20.07"E
				25°45'17.45"N	85°22'19.94"E
				25°45'17.48"N	85°22'19.19"E
		2592	17.0	25°45'17.45"N	85°22'19.53"E
				25°45'17.48"N	85°22'20.51"E
				25°45'16.85"N	85°22'20.44"E
				25°45'16.70"N	85°22'19.48"E
		2715	6.5	25°45'37.85"N	85°22'19.10"E
				25°45'37.59"N	85°22'19.64"E

Proposed Brick Earth Mining for M/s Adarsh Bricks-Kariho Soil Brick Mining Project at Village-Kariho, P.O.- Bishunpur, Bejha, P.S- Mahua, District- Vaishali (Bihar)

PRE-FEASIBILITY REPORT

			2952	6.5	25°45'36.96"N	85°22'19.37"E
					25°45'37.25"N	85°22'18.81"E
					25°45'3.34"N	85°22'22.22"E
					25°45'2.96"N	85°22'24.39"E
					25°45'2.48"N	85°22'24.19"E
	290		2890	34.0	25°45'3.01"N	85°22'22.08"E
					25°45'15.65"N	85°22'20.95"E
					25°45'15.85"N	85°22'21.64"E
					25°45'14.58"N	85°22'21.84"E
			2893	22.0	25°45'14.57"N	85°22'21.11"E
					25°45'16.42"N	85°22'22.13"E
					25°45'16.58"N	85°22'23.13"E
					25°45'14.62"N	85°22'23.31"E
	92		2853	5.5	25°45'14.64"N	85°22'22.47"E
					25°45'13.50"N	85°22'14.81"E
					25°45'13.61"N	85°22'15.22"E
					25°45'12.03"N	85°22'15.59"E
			2935	14.0	25°45'12.12"N	85°22'15.09"E
					25°45'0.44"N	85°22'20.98"E
					25°44'59.92"N	85°22'23.49"E
	195		3041	32.0	25°44'59.54"N	85°22'23.37"E
					25°44'59.98"N	85°22'20.86"E
					25°45'12.40"N	85°22'30.22"E
					25°45'12.29"N	85°22'30.52"E
	193		3014	41.0	25°45'11.07"N	85°22'30.03"E
					25°45'11.18"N	85°22'29.63"E
					25°45'15.99"N	85°22'32.10"E
					25°45'15.54"N	85°22'33.54"E
	253		2641	18.0	25°45'14.73"N	85°22'33.28"E
					25°45'15.18"N	85°22'31.75"E
					25°45'27.56"N	85°22'19.14"E
					25°45'27.47"N	85°22'19.49"E
	292		2727	10.5	25°45'25.59"N	85°22'18.98"E
					25°45'25.75"N	85°22'18.39"E
					25°45'29.67"N	85°22'16.87"E
					25°45'29.18"N	85°22'18.44"E
					25°45'28.70"N	85°22'18.13"E
					25°45'29.09"N	85°22'16.74"E
					Total Area :- 3.22 Acre	
BRICK KILN SITE					25°66'52.94"N	85°29'58.24"E

2.1. Identification of project and project proponent:

The project comprises of Brick Earth Mining at Khata no- 179, 290, 92, 195, 193, 253, 292. Khasra no.- 2699, 3377, 3322, 2351, 2454, 2479, 2291, 2764, 3477, 2632, 2594, 2592, 2715, 2952, 2890, 2893, 2853, 2935, 3041, 3014, 2641, 2727, Village- Kariho, P.O- Bishunpur Bejha, P.S- Mahua, District- Vaishali (Bihar) has been leased to Pramod Choudhary.

2.2. Brief description of nature of the project:

The proposed soil mining is at Khata no- 179, 290, 92, 195, 193, 253, 292. Khasra no.- 2699, 3377, 3322, 2351, 2454, 2479, 2291, 2764, 3477, 2632, 2594, 2592, 2715, 2952, 2890, 2893, 2853, 2935, 3041, 3014, 2641, 2727, Village- Kariho, P.O- Bishunpur Bejha, P.S- Mahua, District- Vaishali (Bihar). The mine lease area is 1.30 Hectares or 3.22 Acres . The maximum rated capacity of the project will be 25,00,000 bricks per annum from the MLA by excavating 5475 TPA or 4212 cum earth clay.

2.3. Need for the project and its importance to the country:

The production of Brick Clay will benefit to the state in the form of royalty. Apart from this project operation will provide employment directly and indirectly to the people residing in vicinity, thus improving the Socio-economic status of the area

The demand of clay bricks in India due to increasing urbanization many houses and industries to be constructed as per the requirement of the people.

2.4. Demand – supply gap

The growth in India's economy and population, coupled with urbanization, has resulted in an increasing demand for residential, commercial, industrial, and public buildings as well as other physical infrastructure. Building construction in India is estimated to grow at a rate of 3.5 % per year. The building stock is expected to multiply five times during this period, resulting in a very large increased demand for building materials.

2.5. Imports vs. Indigenous Production

There will be no imports for the proposed project. All production of brick making is earmarked for the indigenous demand/ local market.

2.6. Export Possibility

The present project does not seek the export possibility.

2.7. Domestic/Export Markets

The bricks will be only for domestic market.

2.8. Employment generation (direct and indirect) due to the project.

The proposed brick making activity is envisaged to improve the socio-economic condition on a micro-economic scale by generating local employment 25 direct and about 5 indirect.

3. Project Description:

3.1. Type of project including interlinked and interdependent projects, if any.

The present project is a fresh application for environmental clearance for Brick earth mining in an area of 1.30 Hectares or 3.22 Acres and there are no Interlinked or interdependent projects.

3.2. Location (map showing general location, specific location, and project boundary & project site layout) with coordinates:

The mining area is located at the proposed Khata no- 179, 290, 92, 195, 193, 253, 292. Khasra no.- 2699, 3377, 3322, 2351, 2454, 2479, 2291, 2764, 3477, 2632, 2594, 2592, 2715, 2952, 2890, 2893, 2853, 2935, 3041, 3014, 2641, 2727, Village- Kariho, P.O- Bishunpur Bejha, P.S- Mahua, District- Vaishali (Bihar).

The location map is enclosed as a plate along with mining Plan.

3.3. Details of alternate sites considered and the basis of selecting the proposed site, Particularly the environmental considerations gone should be highlighted.

No alternate site was considered as the project is mineral specific.

3.4. Size and Magnitude of operation

The maximum rated capacity of the project will be 25,00,000 bricks per annum from the MLA by excavating 5475 TPA or 4212 cum earth clay.

Soil mining will be done at the proposed site. The brick making involves the following process:

- ❖ Clay Preparation
- ❖ Molding
- ❖ Drying
- ❖ Firing

It is also proposed that the extraction of clay would be done max up to 2 mts.

3.5 Project description with process details

The proposed project is to mine Brick Clay from plot(s) under agreement sustainably and scientifically. Mining will be opencast and manual along the plot(s) keeping the nearby plot(s) unaffected. Following geo-scientific methods are proposed to carry out the activity:

- Mining will be confined to extraction of Brick Clay in its existing form from the allotted plot(s) only.
- Mining of Brick Clay from the allotted plot(s) will be restricted to a maximum depth of 2 m from the surface in proper bench form as per MMR-1961.
- No drilling and blasting is proposed.
- Approximately 6824 tonne or 5249 cum minor mineral will be extracted.
- No mining activity will be undertaken during the monsoon season.
In order to avoid environmental pollution or any accidental hazards, the mining activity will be restricted to daytime only.
- The operation will remain manual, using tools like shovel, spade, sieve etc.
- During the agreement period, the deposit will be worked from the top surface to 2 m

3.6. Raw material required along with estimated quantity, likely source, marketing area of final products, Mode of transport of raw material and finished product

The main constituents for brick making are clay soil, water, sand & fuel. Along with this Constituents' tools, equipment and transportation are also required for brick making.

3.7. Resource optimization/recycling and reuse envisaged in the project, if any, should be briefly outlined.

Not envisaged.

3.8. Availability of water its source, energy/power requirement and source should be given.

There will be very little requirement of water to carry out operations as it will be done manually. The water will be required for drinking purposes and for activities like casting of bricks & sprinkling. It is projected that not more than 30 laborers will be required for the proposed project. The total water requirement will be 3.0 KLD. Drinking water requirement for workers would

be 0.5 KLD, which will be met by nearby existing bore wells. The water required for casting of bricks will be 1.5 KLD and 1.0 KLD for sprinkling, which will be taken from municipal tankers.

All the activities will be carried out manually and only in the day time. Hence, no power will be required.

3.9. Quantity of wastes to be generated (liquid and solid) and scheme for their management/disposal.

The entire mineral extracted is saleable. Hence there will be no or very less waste is expected to generated. No liquid effluents will be generated at site.

4. Site Analysis

4.1. Connectivity

Connectivity details are given in Table-2.

Table 2: Connectivity details from Proposed project site:

Nearest Railway Station	Ghoswar Railway Station is at a distance of 12.4 km in West direction.
Nearest Airport	Patna Airport at 34 km in South West direction.
Nearest Highway	National Highway NH-322 is at a distance of Approx 5.7 Km. in South-West direction.

4.2. Land form, land use and land ownership

The proposed area is a private land for which lease agreement is attached. The land has been leased to the proponent for mining for 5 years.

4.3. Topography

Vaishali district lies between north latitude 25° 28' 0" to 26° 5' 0" and east longitude 85° 5' 0" to 85° 40' 0". It covers a part the degree sheet number 72G of survey of India. The geographical area of the district is 2015.37 km². It's district Headquarter is Hajipur. The district is bounded in the north by Muzaffarpur, in the south by Patna (the river Ganga forms a natural boundary), in the east by Samastipur, and in the west by Saran (the river Gandak forming a natural boundary) districts.

The proposed area is almost flat terrain, No perennial nala has observed in the area. The altitude

of the area is 69 mRL. Earth is exposed in the area applied for proposed project. No other rock is exposed. No habitation located in the proposed area.

Geology:

These soils have been developed by the Indo Gangetic alluvium laid down by Gandak River. The colour of these soils is pale yellow to yellowish brown. The soils are dark grayish brown to dark brown. The surface texture may vary from sandy loam to loam, clay loam and even to clay. The alluviation of finer particles ensures fine texture of the middle horizons. Soils are neutral to alkaline in soil reaction. Salinity hazards are visible at some places in Vaishali district. Carbonates are found in increasing order with depth.

4.4 Existing land use pattern (agriculture, non-agriculture, forest, water bodies (include area under CRZ), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette Notification should be given.

The existing land use pattern of the proposed area is completely Non-agricultural land.

There are no forests, national park, wild life sanctuary, eco sensitive areas, water bodies or any notified area in the leased-out area.

4.5. Existing Infrastructure

The Applied area is at Kariho. National Highway NH-322 is at a distance of Approx 5.7 Km. in South-West direction from the project site.

4.6. Soil classification

Soil is the backbone of agricultural and industrial development. Soil has a number of characteristics, which may be regarded as the aggregate of the physical, chemical and biological properties. The Bihar plane consists of a thick alluvial mantle of drift origin overlying in most part. The siwalik and older tertiary rocks. The soil is mainly young loam rejuvenated every year by constant deposition of silt, clay and sand brought by different streams. This soil is deficient in phosphoric acid, nitrogen and humus, but potash and lime are usually present in sufficient quantity.

There are three major types of soil in Bihar:

Piedmont Swamp Soil - found in northwestern part of west Champaran district.

Terai Soil – found in northern part of the state along the border of Nepal.

The Gangetic Alluvium – the plain of Bihar is covered by gangetic alluvium (both new as well as old).

4.7. Climate data from secondary sources

The climate of Vaishali district is sub-tropical to sub-humid. The winter temperature ranges varies from 16° C to 4° C where as the summer temperature rises upto 40° C. The relative humidity is at its minimum during April and May and maximum during July and August. It ranges between 60 to 90%. The average annual rainfall in the district is 1168 mm. The district receives about 85% of the total rainfall from south-west monsoon. The south west monsoon extends from the middle of June to end of September. The district receives 50% of the rainfall during July and August month of the year.

4.8 Social infrastructure available

The proposed project is located in District- Vaishali of Bihar, having all the basic social and civic amenities. Some of the Social amenities and basic civic amenities are as follow:

Schooling facilities are available in the village Kariho. College Education is available at Vaishali.

Health Centres are also available in Vaishali.

5. PLANNING BRIEF

5.1. Planning concept (type of industries, facilities and transportation etc.) town and country planning/development authority classification.

The present project is soil mining for making bricks.

5.2. Population Projection

The project will employ most of the workers from nearby villages. Only supervisory staff will be hired from outside. There will not be any increase in population due to the project. However, few people from other area may migrate in this area for business opportunities

5.3. Land use Planning (Breakup along with green belt etc.)

The soil mining will be carried out on an area of 1.30 Hectares or 3.22 Acres . Green belt will be developed in an area identified by the local gram panchayat.

5.4. Assessment of infrastructure demand (physical & social)

5.4.1. Physical

Conditions of roads are moderately good and needs to be maintained.

5.4.2. Social

- ❖ The good numbers of educational facilities are available in the study area.
- ❖ Proper Medical facilities are lacking but available in the district.

5.4.3 Amenities/Facilities

The mine site office, first aid room & rest shelter will be established in the lease area. Clean drinking water will be provided. The toilets will be provided separately for males and females.

6 Proposed Infrastructure

6.1. Industrial area (processing area)

Not applicable

6.2. Residential area (non processing area)

Not applicable.

6.3. Green belt

It is proposed to plant trees along the village roads and other area in consultation with local gram panchayat. The details of the plantation are as given on the tabular form:

Table 3: Details of plantation

Year	Plantation (No of Trees)	Area of Plantation (Green Belt in ha)	Survival Rate	Species to be Planted
1st	5	0.01	80%	Neem, Gulmohar,

2nd	5	0.01	80%	Mango, Sagwan, Kachnar, Gamhar Jatropha, babool etc.
3rd	5	0.01	80%	
4th	5	0.01	80%	
5th	5	0.01	80%	

6.4. Social Infrastructure

No social infrastructure is proposed in present project

6.5. Connectivity (Traffic and transportation road/rail/metro/water ways etc.)

The Applied area is at Kariho. National Highway NH-322 is at a distance of Approx 5.7 Km. in South-West direction from the project site.

6.6. Drinking water management (source & supply of water)

In order to meet the drinking water requirement for site workers, water from existing bore wells will be used.

6.7. Sewerage system

The domestic effluent from the clay/soil mining site and rest shelter will be generated, which will be managed through soak pit.

6.9. Solid waste management

Solid waste generated will be of domestic in nature and separate bins will be used for collection of waste. No littering will be allowed in the mine site.

6.10. Power requirement & supply/source

Mining would be manual in nature. Electrical power will be required only in the office of brick kiln site and will be obtained from the state electricity board.

7 Rehabilitation and Resettlement (R&R) plan

7.1. Policy to be adopted (central/state) in respect of the project affected persons including home oustees, land oustees and landless laborers (a brief outline to be given).

The project involves soil mining for making bricks in the lease area wherein resettlement and rehabilitation is not applicable.

8 Project schedule & cost estimates

8.1. Likely date of start of construction and likely date of completion (time schedule for the project to be given)

The project activity will be taken up in parallel along with the opening of mine, after the Environmental Clearance is granted. The production will commence within two months of the grant of Environmental Clearance.

8.2 Estimated project cost along with analysis in terms of economic viability of the project

The project proponent will incur a total cost of Rs. 5.5 lakhs.

Table 4: Project Cost

Sr. no.	Description	Cost in Rs.
1	Land cost expenditure	250000.00
2	Cost of infrastructure, Equipment, vehicles, Manpower, machineries, etc.	150000.00
3	Environmental protection (check dams etc)	100000.00
4	Socio-economic development	50000.00
	TOTAL	550000.00

9 Analysis of proposal (Final Recommendations)

9.1. Financial and social benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area

The project will bring economic benefits to the state by royalty for mineral and to the people by direct (25 laborers) and secondary employment (5 persons for transport) opportunities. The mine management will be helping nearby villages by providing aid to school, conducting medical and social awareness camps, helping in formation of self help groups etc. especially keeping in the view the tribal and economically backward population in the area as part of its corporate social responsibility. Thus the project will bring out socio-economic improvement of the area and will prove beneficial to the area.

Environment protection and its preservation is today the major concern all over the world. The environment proves that all the human activities on this earth are inter-connected, so much so that an environmental damage in the boundaries of one state has trans-border ramifications. Environmental destruction and pollution have seriously threatened the human life, health and livelihood.

Understanding the need to give back to the society, State SEIAA has made it mandatory to invest 2- 5 % of total project benefit cost in CSR activities ie. Approx rs.11000 (2 % of project cost) In the present case, the project proponent have decided to invest with various activities such as:

1. Medical Checkups in the village
2. Provision of private or community latrines in the village.
3. Betterment of village roads.

These activities shall be in consultation with the local authority and shall be need based, so as to provide maximum benefit to the locals.