SAMPLE APPLICATION FORM

Form I of Proposed Brick Clay Mining Project for M/s P.S. Bricks at Village: Sikahar, P.S.- Muffassil, Anchal: Manpur, District: Gaya, Bihar

FORM 1 (APPLICATION FOR SOIL MINING FOR BRICK KLIN)

(I) Basic Information

Sl.No.	Item	Details
1.	Name of the project/s	Brick Clay Mining Project for M/s P.S. Bricks
2.	S.No. in the schedule	Schedule 1(a)
3.	Proposed capacity /area/length/tonnage to be handled/command area/lease area/number of wells to be drilled.	3,700 Tonnes or 2850 cu m Per Annum for 1.03 Hectares or 2.56 acres.
4.	New/Expansion/Modernization	New
5.	Existing Capacity/Area etc.	1.03Hectares or 2.56 acres.
6.	Category of Project i.e. 'A' or 'B'	B-2
7.	Does it attract the general condition? If yes, please specify.	No
8.	Does it attract the specific condition? If yes, please specify.	No
9.	Location Plot/Survey/Khasra No. Village Tehsil District State	**Site 1:** Latitude : 24°47'47.02"N Longitude : 85° 2'50.80"E **Site 2:** Latitude : 24°47'47.04"N Longitude : 85° 2'52.77"E Khata No. : 237/184 Plot No.:231, 226, 232, 233, 234, 243, 244, 240, 247 Sikahar Manpur Gaya Bihar
10.	Nearest railway station/airport along with distance in kms.	Manpur Railway Station approx. 1 km in NNW direction Gaya Airport, approx. 11 km in SW direction.
11.	Nearest Town, city, district Headquarters	Nearest Town and city: Manpur, 2 km in W

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	along with distance in kms.	direction Nearest Headquarter: Gaya, approx. 3.5 km in W direction.
12.	Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given)	Gram Panchayat: Sikahar, approx. 0.3 km in W direction.
13.	Name of the applicant	Mr. Uday Kumar Singh
14.	Registered Address	M/s P.S. Bricks Mr. Uday Kumar Singh Village: Sikahar, P.S.- Muffassil, District: Gaya, Bihar
15.	Address for correspondence: Name Designation (Owner/Partner /CEO) Pin code E-mail Telephone No. Fax No.	 Mr. Uday Kumar Singh Proprietor Village: Sikahar, Anchal: Manpur, Gaya 823003 9931018194
16.	Details of Alternative Sites examined, if any. Location of these sites should be shown on a topo sheet.	Not Applicable
17.	Interlinked Projects	Not Applicable
18.	Whether separate application of interlinked project has been submitted?	Not Applicable
19.	If yes, date of submission	Not Applicable
20.	If no, reason	Not Applicable
21.	Whether the proposal involves approval/clearance under: if yes, details of the same and their status to be given. i. The Forest (Conservation) Act, 1980? ii. The Wildlife (Protection) Act, 1972? iii. The C.R.Z. Notification, 1991?	 No No No

22.	Whether there is any Government Order/Policy relevant /relating to the site?	No
23.	Forest land involved (hectares)	No
24.	Whether there is any litigation pending	No

	against the project and/or land in which the project is propose to be set up? a) Name of the Court b) Case No. c) Orders/directions of the Court, if any and its relevance with the proposed project.	

(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	No	Land will be used for collection of brick clay for making bricks; it does not involve any permanent change in the topography of the lease hold area.
1.2	Clearance of existing land, vegetation and buildings?	No	There is no tree or existing structure on the proposed site. Hence no clearance is required.
1.3	Creation of new land uses?	No	There will be creation of no land uses.
1.4*	Pre-construction investigations e.g. bore houses, soil testing?	-	Not Applicable
1.5*	Construction works?	-	Not Applicable
1.6*	Demolition works?	-	Not Applicable
1.7	Temporary sites used for construction works or housing of construction workers?	No	Workers will be hired from nearby villages so no housing facility is required. However, temporary rest shelters will be provided at the site.
1.8	Above ground buildings, structures or earthworks including linear structures, cut	-	Not Applicable

	andfill or excavations		
1.9*	Underground works including mining or tunneling?	-	Not Applicable
1.10	Reclamation works?	No	No reclamation work will be done
1.11	Dredging?	No	Only brick clay mining will be done.
1.12	Offshore structures?	No	There will be no off shore structures.
1.13	Production and manufacturing processes?	No	Nil
1.14	Facilities for storage of goods or materials?	No	Material will be directly loaded to the truck/tractors. So. No storage facility will be required.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	No	Waste generated will be the top soil, which will be preserved and used for the plantation purpose nearby areas of the project site.
1.16*	Facilities for long term housing of operational workers?	-	Not Applicable
1.17*	New road, rail or sea traffic during construction or operation?	-	Not Applicable
1.18*	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	-	Not Applicable
1.19*	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	-	Not Applicable
1.20	New or diverted transmission lines or pipelines?	No	Not required for the operation of the project.
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	Not required for the operation of the project
1.22	Stream crossings?	No	Not required for the operation of the project
1.23	Abstraction or transfers of water form ground or surface waters?	No	Not Required
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	The mining will not cause any change in the water body and also there will be no effect on ground water quality.
1.25	Transport of personnel or materials for	No	In the operation phase brick clay will

	construction, operation or decommissioning?		be excavated in a semi-mechanized way using a JCB. These will be loaded directly into truck/tractor to the brick kiln.
1.26*	Long-term dismantling or decommissioning or restoration works?	-	Not Applicable
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	No Decommissioning is involved.
1.28	Influx of people to an area in either temporarily or permanently?	No	Mostly local people will be deployed to carry out the extraction. So no influx of people will be seen.
1.29*	Introduction of alien species?	-	Not Applicable
1.30	Loss of native species or genetic diversity?	-	Not Applicable
1.31	Any other actions?	No	Not envisaged.

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S.No.	**Information/checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities /rates, wherever possible) with source of information data**
2.1	Land especially undeveloped or agricultural land (ha)	No	The activity will be done in the proposed brick clay mine lease area which is a private land. No agricultural land is involved.
2.2	Water (expected source & competing users) unit: KLD	Yes	Total water requirement is about 1.75 KLD. This water will be supplied from nearby villages through tankers.
2.3	Minerals (MT)	No	-
2.4	Construction material – stone, aggregates, sand soil (expected source – MT)	No	No Construction material is required.
2.5	Forests and timber (source – MT)	No	_
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	No	_

2.7	Any other natural resources (use appropriate standard units)	No	Not envisaged.

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1*	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	-	Not Applicable
3.2*	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	-	Not Applicable
3.3	Affect the welfare of people e.g. by changing living conditions?	No	This project will not affect the welfare of people. However it will provide livelihood to the workforce during the operation which will rather help in improving their living conditions.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	This project will not affect the vulnerable groups of people.
3.5	Any other causes	Yes	Transportation is one of the major activities in the project. Accidents may occur, which may be avoided by taking due care & precautions.

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	Yes	7.5 % of the total production, top

			brick clay will be generated, and preserved and will be used for plantation purpose in the mine site area.
4.2	Municipal waste (domestic and or commercial wastes)	Yes	Negligible amount of domestic waste will be generated by the labours at site.
4.3*	Hazardous wastes (as per Hazardous Waste Management Rules)	No	_
4.4	Other industrial process wastes	No	_
4.5	Surplus product	No	_
4.6	Sewage sludge or other sludge from effluent treatment	No	_
4.7	Construction or demolition wastes	No	_
4.8	Redundant machinery or equipment	No	_
4.9	Contaminated soils or other materials	No	_
4.10*	Agricultural wastes	No	_
4.11	Other solid wastes	No	_

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

S.No.	**Information/Checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	Yes	There will be emissions due to transportation of material from site to the end user. But the average number of truck/tractor to be loaded per hour is not more than one.
5.2	Emissions from production processes	Yes	There will be small amount of dust emission during the excavation process
5.3	Emissions from materials handling including storage or transport	Yes	There will be emission of dust during the transportation of brick clay from brick clay mine site to the M/s P.S. Bricks.

5.4	Emissions from construction activities including plant and equipment	No	_
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	No	_
5.6	Emissions from incineration of waste	No	_
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	_
5.8	Emissions from any other sources	Yes	Brick clay will be sent to the brick kiln which is at a distance of approx. 500 meters from the site. Hence, there will be some emission from brick kiln due to the processing.

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S.No.	**Information/Checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data with source of information data**
6.1*	From operation of equipment e.g. engines, ventilation plant, crushers	-	Not Applicable
6.2*	From industrial or similar processes	-	Not Applicable
6.3*	From construction or demolition	-	Not Applicable
6.4*	From blasting or piling	-	Not Applicable
6.5*	From construction or operational traffic	-	Not Applicable
6.6*	From lighting or cooling systems	-	Not Applicable
6.7*	From any other sources	-	Not Applicable

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1*	From handling, storage, use or spillage of hazardous materials	-	Not Applicable
7.2*	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	-	Not Applicable
7.3	By deposition of pollutants emitted to air into the land or into water	Yes	Only dust emission is expected into air due to movement of vehicles. However dust suppression will be done by sprinkling water.
7.4	From any other sources	No	-
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	-

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	No	No such activity is envisaged.
8.2	From any other causes	Yes	Risk of accidents is expected during transportation and during loading of minerals into trucks/tractors.
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. Floods, earthquakes, landslides, cloudburst etc)?	Yes	The mine lease area lies in Seismic Zone III which is prone to earthquakes. However there are no built in structures at the site which

			would affect the mining.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1*	Lead to development of supporting. lities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: • Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other	-	Not Applicable
9.2*	Lead to after-use of the site, which could havean impact on the environment	-	Not Applicable
9.3*	Set a precedent for later developments	-	Not Applicable
9.4*	Have cumulative effects due to proximity to other existing or planned projects with similar effects	-	Not Applicable

(III) Environmental Sensitivity

S.No.	Areas	Name/ Identity	Aerial distance (within 15 km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil	-
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Nil	--
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Nil	-
4	Inland, coastal, marine or underground waters	River Phalgu	Approx 3 km in W direction.
5	State, National boundaries	Nil	-
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	NH-82	Approx. 0.5 km in N direction.
7	Defence installations	Nil	-
8	Densely populated or built-up area	Sikahar Gandhar Manpur Gaya	Approx. 0.3 km in W direction. Approx. 0.5 km in SW direction. Approx. 2 km in W direction Approx. 3.5 km in W direction.

9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Primary Health Centre (Manpur) Rajkiya Uchcha Vidyalaya, (Gandhar) Devi Temple, Sikahar	Approx. 2 km in W direction. Approx. 0.5 km in SW direction. Approx. 0.3 km in W direction.
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Nil	-
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	Nil	-
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	The site comes under seismic zone III according to Indian Standard Seismic Zone	-

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"I hereby given undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any art of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance give, if any to the project will be revoked at our risk and cost.

Date:
Place:

Uday Kumar Singh
M/s P.S. Bricks
(Authorized Signatory)

Note:

1. The projects involving clearance under coastal Regulation Zone Notification, 1991 shall submit with the application a C.R Z map duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z (at the stage of TOR) and the recommendations of the State Coastal Zone Management Authority (at the stage of EC). Simultaneous action shall also be taken to obtain the requisite clearance under the provisions of the C.R.Z Notification, 1991 for the activities to be located in the CRZ.

2. The projects to be located within 10 km or the National parks, Sanctuaries, Biosphere Reserves, Migratory corridors of wild Animals, the project proponent shall submit the map duly authenticated by chief wildlife warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden' thereon (at the Stage of EC)."

3. All correspondence with the Ministry of Environment & Forests including submission of application for TOR/Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC Meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for the specific project."

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PFR of Proposed Brick Clay Mining Project for M/s P.S. Bricks at Village: Sikahar, P.S.- Muffassil, Anchal: Manpur, District: Gaya, Bihar

PRE-FEASIBILITY REPORT

1. PROJECT DESCRIPTION:

M/s P.S. Bricks proposed brick clay mining at Khata No.: 237/184 Plot No.:231, 226, 232, 233, 234, 243, 244, 240, 247 Village: Sikahar, P.S. - Muffassil, Anchal: Manpur, District: Gaya, Bihar. The total mine lease area of the proposed brick clay mining project is 1.03 ha or 2.56 Acre. 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 Office Memorandum no. L-11011/47/2011-IA.II (M) dated 24th June 2013 following conditions shall be followed during the mining activity:**

- **The proposed brick clay mining project is an open cast, semi mechanized process which will be carried out with the help of JCB.**
- **No drilling and blasting are proposed for brick clay mining activity.**
- **The borrowing/ excavation activity will be restricted up to maximum depth of 2 meter below general ground water level or up to 2 meter above the ground water table whichever comes first.**
- **No Mining activity will be carried out with in 15 meter periphery of any civil structure.**

The break-up of proposed brick clay mine lease area is given as Table No. 1

Table 1: Breakup of brick clay mine lease area

Sr no.	Khata no.	Survey no.	Address of Mining location	Area (Acres)	Area (hectares)
1	237/184	231	Village: Sikahar, P.S.: Muffassil, Manpur, District: Gaya (Bihar)	0.17	0.07
2		226		0.07	0.03
3		232		0.08	0.03
4		233		0.06	0.02

5		234		0.24	0.10
6		243		0.56	0.23
7		244		0.30	0.12
8		240		0.95	0.38
9		247		0.13	0.05
Total				**2.56**	**1.03**

Khasra map for the proposed brick clay mining project is attached as **Annexure II.**

The proposed brick clay mining activity will be carried out on vacant/empty land .The estimated cost for the proposed brick clay mining project is Rs 8 lakhs. The quantity of annual excavated brick clay will be 2,850 cu m or 3,700 TPA. The mining will be done upto depth of 5 feet and brick production from proposed mine is Approx. 62 Lakhs (3 kg Brick clay/Brick). Total Production Capacity of the mine lease area is 18400 Tonnes for 5 years. Total manpower required for the proposed brick clay mining project will be 10.

Mining period is for 5 years. **Index map of District Gaya showing project location is given in Figure 1.**

The co-ordinates of the brick clay mining lease and brick kiln are as follows:

Sr.No.	Site	Co-ordinates
1	Brick clay Mining	Site 1: Latitude : 24°47'47.02"N Longitude : 85° 2'50.80"E Site 2: Latitude : 24°47'47.04"N Longitude : 85° 2'52.77"E
2	Brick Kiln	Latitude: 24°47'37.20"N Longitude: 85° 2'40.37"E

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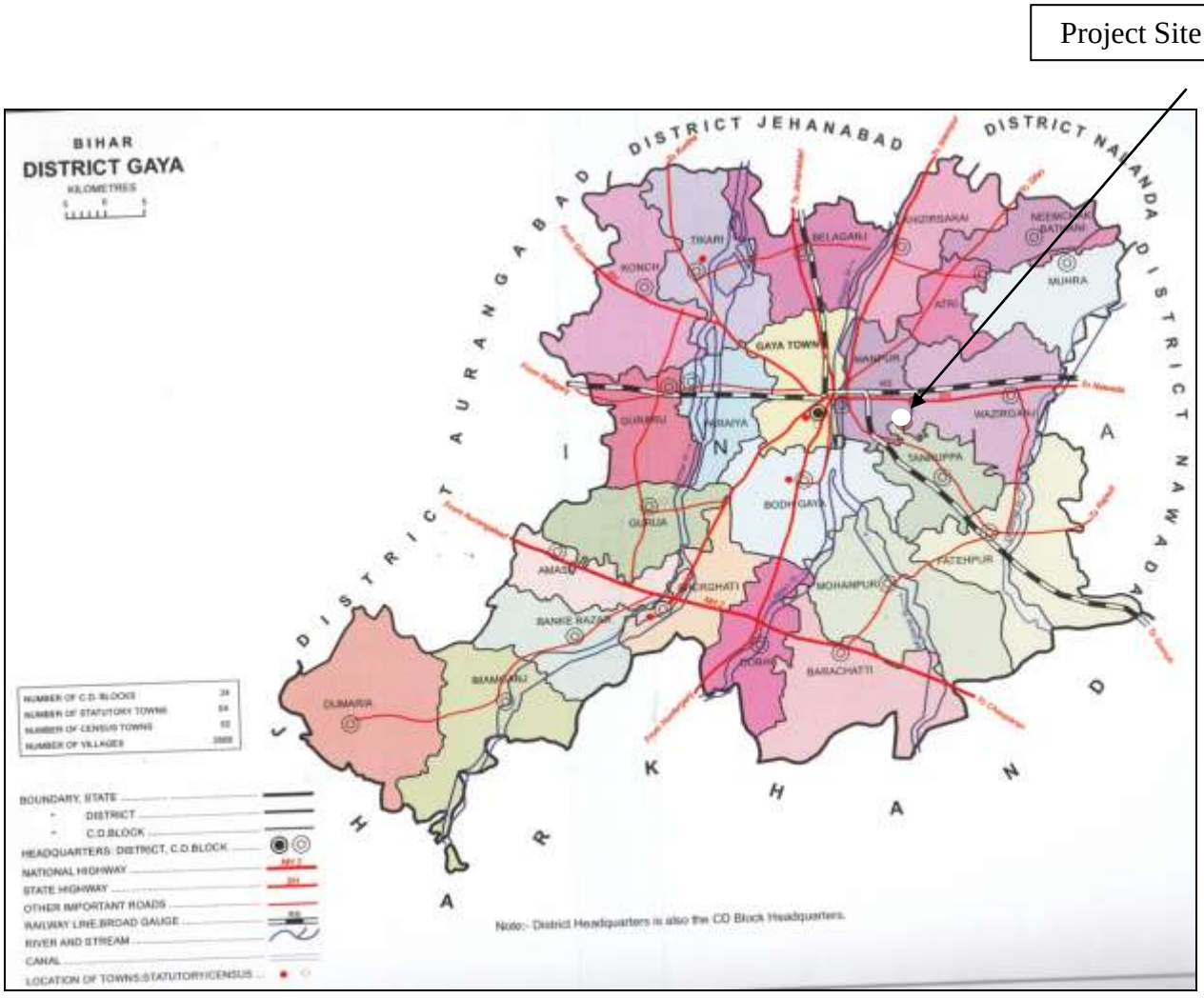

Figure 1: Map Showing Location of Project Site

Source: Census of India

1.1 Site surroundings

Nearest Railway Station	Manpur Railway Station approx. 1 km in NNW direction
Nearest Airport	Gaya Airport, approx. 11 km in SW direction.
Nearest Highway	NH- 82 (about 500.0 m in North direction)

1.2 Project's importance to the country and the region

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 100,000 brick kilns, producing about 150-200 billion bricks annually, employing about 10 million workers and consuming about 25 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);

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 6.6% per year between 2005 and 2030.

Brick making in India is characterised by the following features:

- Brick making is a small-scale, traditional industry. Almost all brick kilns are located in the rural and peri-urban areas. It is common to find large brick making clusters located around the towns and cities, which are the large demand centres for bricks. Some of these clusters have up to several hundred kilns.
- The brick production process is based on manual labour, and brick kilns are estimated to employ around 10 million workers. Brick production is a seasonal vocation, as the brick kilns do not operate during the rainy season. Most of the workers migrate with their families from backward and poor regions of the country. Families, including young children, work in harsh, low paying conditions. There is typically a lack of basic facilities, such as access to clean drinking water and sanitation.

1.3 Regulatory Compliances & Applicable Laws/Regulations

The original notification S.0.763(E), published in Gazette of India, as required by subrule (3) of rule 5 of the Environment (Protection) Rules, 1986, states that "No person shall within a radius of fifty kilometers from coal or lignite based thermal power plants, manufacture clay bricks or tiles or blocks for use in construction activities without mixing at least 25 per cent of ash (fly ash, bottom ash or pond ash) with soil on weight to weight basis."

Amendment was done in Notification S.O. 979 (E) published in 27th August, 2005, where in the word "fifty kilometers", was substituted by the words "one hundred kilometres".

As per Gazette Notification of MoEF, India No. S.O. 2731 (E) dated 9th September, 2013 in exercise of the power conferred by the sub-section (I) & clause (v) of the sub-section (2) of section 3 of the Environment (protection) Act 1986 (29 of 1986) read with sub-rule (4) of rule 5 of the Environment (protection) Act 1986. The Central Government hereby makes the following further amendment to the notification of the Government of India, in the Ministry of Environment & Forest that general conditions shall apply except for the project or activity of less than 5 hectare of the mining lease area for the monir mineral

2. DESCRIPTION OF THE ENVIRONMENT

This includes the details of prevailing environment in respect of land, air, water (both ground and surface), and soil, biological (both flora and fauna).

2.1 Topography

Gaya is one of the 38 districts in Bihar. It is one of the 5 districts of Magadh division. The head quarter of the district is Gaya. It has 24 blocks. The total population of the district is 3,473,428 and the area is 4,976 sqkm. Paddy, Wheat, Potato and Lentils are the main agricultural crops. Phalgu is the main river.

Source: http://dcmsme.gov.in/dips/Gaya_BIHAR.pdf

2.2 Climatic Data from Secondary Sources

The average annual rainfall in Gaya district is 1037 mm. The maximum rainfall in the district comes from South West monsoon with a little about 10% spread over the summer and winter. There is a large variation in the rainfall over year to year. Rainfall increases from Southwest to north-east.

The climate of the district is sub-tropical to sub-humid in nature. The district experiences severe cold during winter whereas on the other hand in summer it is very hot. The summer starts from the mid of March and it continues up to mid of June, after that monsoon starts and it continues up to mid of October. The nights are generally hot from the end of May till the first break of monsoon.

The climate is generally hot and dry, the winter temperature ranges from 16°C to as low as 4°C whereas during the summer the mercury shoots to 460C. During rainy season it becomes cooler and temperature drops to 35°C to 25°C.

Source: http://cgwb.gov.in/District_Profile/Bihar/Gaya.pdf

2.3 Geomorphology

The northern and southern parts of the district constitute two distinct natural regions. The northern part is plain area underlain by alluvial soils. Consequently, it is densely populated and has a rich historical background. The southern part is hilly and undulating with a gentle ascends towards the south merging into hills and is part of southern fringes of the Chottanagpur Plateau. The entire southern boundary of the district is a conglomeration of ridges and spurs.

Scientific approach will be taken up for borrowing/excavation of mineral with systematic method and it will not alter the natural drainage pattern of the area.

Source: *http://cgwb.gov.in/District_Profile/Bihar/Gaya.pdf*

2.4 Soil

The district of Gaya (Bihar) is drought-prone.

The soils of the region are generally deep andloamy. They have developed on alluvium. The dominant soilscapes, representing the northern plain, constitute gently to very gently sloping Ustochrepts, Haplustalfs and Eutrochrepts and gently to moderately sloping Ustifluvents.

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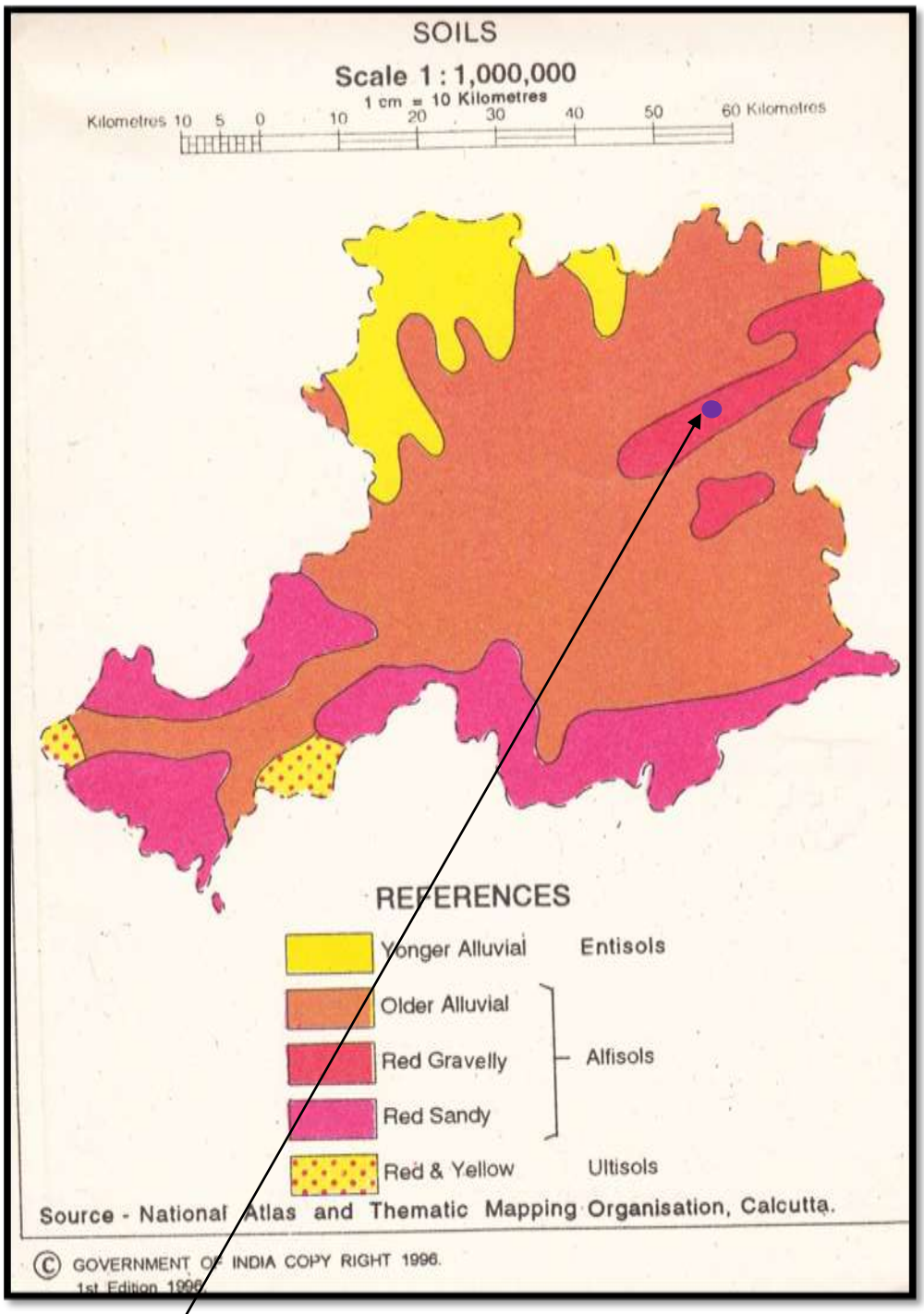

Figure 2: Soil map of District Gaya

Source: National Atlas & Thematic Mapping Organisation, Kolkata

Project Location

2.5 **Meteorological Data:** The nearest IMD station is Gaya. Meteorological data of Gaya district is given in Table No. 2, details of meteorological data are as follows;

- **Temperature:** the temperature ranges between 10°C to 40.8°C.
- **Rainfall**: The maximum mean rainfall of the district is 327.6 in the month of August.

Station Name	Month	Period	No. of Years	Mean Temperature °C		Mean Rainfall in mm
				Maximum	Minimum	
Gaya	January	1901-1999	98	23.8	10.0	20.1
Gaya	February	1901-1999	98	26.9	12.6	19.0
Gaya	March	1901-1999	98	33.4	17.7	11.7
Gaya	April	1901-1999	98	38.8	23.3	7.5
Gaya	May	1901-1999	98	40.8	26.7	21.3
Gaya	June	1901-1999	98	38.1	27.6	137.3
Gaya	July	1901-1999	98	33.4	26.1	313.9
Gaya	August	1901-1999	98	32.4	25.7	327.6
Gaya	September	1901-1999	98	32.6	25.3	205.7
Gaya	October	1901-1999	98	31.9	21.6	52.6
Gaya	November	1901-1999	98	28.7	14.8	10.0
Gaya	December	1901-1999	98	24.8	10.3	3.6

Table 2: Meteorological data of the Gaya district.

2.6 Biological Environment

Biological diversity comprises the variability of genus, species and ecosystems and is very crucial for maintaining the basic processes on which the life depends. Broadly it can be divided in two types i.e. the floral biodiversity and faunal biodiversity.

Table 3: List of vegetation in the study area

Sl. No.	Botanical name	Common name	Family
		Buffer Zone	
1.	*Azadirachta indica*	Neem	Meliaceae
2.	*Calotropis Procera*	Aak	Asclepiadaceae
3.	*Acacia arabica*	Kikar	Fabaceae
4.	*Populous*	Poplar	Salicaceae
5.	*Mulberry*	Shahtot	Moraceae
6.	*P. dactylifera*	Date Palm	Arecaceae
7.	*Eucalyptus hybrid*	*Nilgiri*	Myrtaceae
8.	*Neolamarckia cadamba,*	*Kadam*	Rubiaceae

Fauna reported in Core zone:

During the faunal survey in the area no wildlife corridor or movement of animals was recorded from proposed project area. A list of animals of the study area has been prepared on the basis of local inquiry from the village people and from the available published literatures. The animals thus recorded were cross checked with Wildlife Protection Act, 1972 for their schedule. No established habitats of any mammals or birds are noticed in river bed and along the banks.

Avian fauna: No bird's habitats like nesting, breeding and forging patterns are noticed in the core zone. Local birds are noticed crossing over the banks in search of food. No fixed pattern in migratory behavior is noticed.

Table – 4: List of Birds, Reptiles, Amphibians And Rodents Observed In Study Area

S. No.	Family	Scientific name	English name	Status As Per WPA
Avi-Fauna				
1.	Phlacro coracidae	*Phalocrocorax niger*	Little cormorant	LC/ Sch-IV
2.	Ardeidae	*Ardea cinerea*	Grey Heron	LC/ Sch-IV
3.	Accipitridae	*Milvus migrans*	Common pariah kite	LC/ Sch-IV
4.	Alcedinidae	*Alcedo atthis*	Common Kingfisher	LC/ Sch-IV
5.	Collumbida	*Columba livia*	Rock Pigeon	LC/ Sch-IV
6.	Collumbida	*Streptopelia chinensis*	Spotted Dove	LC/ Sch-IV
7.	Cuculidae	*Eudynomys scolopacea*	Asian Koel	LC/ Sch-IV
8.	Corvidae	*Corvus splendens*	House Crow	LC/Sch-V
9.	Pycnontidae	*Pycnotus jacosus*	Red-whiskered Bulbul	LC/ Sch-IV
10.	Psittacidae	*Psittacula eupatria*	Large Indian parakeet	LC/ Sch-IV
11.	Ploeidae	*Passer Domesticus*	House Sparrow	LC/ Sch-IV
12.	Aeridotherestristis	*Sturnidae*	Myna	LC/ Sch-IV
Reptiles				
13.	Agamidae	*Calotes versicolor*	Garden Lizard	Not listed
Rodents				
14.	*Muridae*	*Bandicota indica*	Greater Bandicoot Rat	LC
15.	*Muridae*	*Mus muscatus*	Mouse	LC
16.	*Muridae*	*Rathus rathus*	House rat	LC
17.	*Sciuridae*	*Ratufa indica*	Squirrel	LC
Mammals				
18.	Bovidae	*Bos primigenius*	Domestic Cow	LC

S. No.	Family	Scientific name	English name	Status As Per WPA
19.	Bovidae	*Boselaphus tragocamelus*	Nilgai	LC

3. ANTICIPATED ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND ENVIRONMENTAL MANAGEMENT PLAN

The pollution potential of the proposed project, its possible impacts on the surrounding environment during pre-operational and operational phases and the necessary management actions proposed for control and abatement of pollution are furnished hereunder.

3.1. AIR ENVIRONMENT

3.1.1 Anticipated impacts

Due to Mining process

Although clay mining does not cause any direct change in air environment, transportation and processing of raw clays into end products could cause atmospheric pollution. In clay/soil mining operations, the source of air pollution may cause deterioration of air quality due to the fugitive dust emission during scooping, loading-unloading operations, grinding of soil and transportation. Loading and unloading of brick clay would be associated with the fugitive emission in the active area whereas fugitive emission during transportation would affect the areas/villages situated adjacent to road side. Another source of air pollution would be emission from the trucks/tractor/other vehicles to be used for transportation of soil/clay.

3.1.2 Mitigation Measures

For Fugitive Dust Emission:

- All trucks tractors will be covered by tarpaulin sheet to prevent dust emission.
- Water will be sprayed after loading activity (if soil would be in dry condition)
- The dust suppression measures like water spraying will be done on the haul roads and working areas.

For Vehicular Emission

- Overloading of trucks and trolleys will be prevented.

- Vehicular emission can pose serious health hazard. During the clay/soil mining extraction, tractor/truck would be used for transportation. Tractor/truck comprises of diesel engine produce particles are dangerously fine of PM_{10} & $PM_{2.5}$. It is well known fact that combustion of diesel generates small particulate matter, nitrogen oxides and sulphur dioxide.
- Ultra low sulphur diesel would be used in vehicle. CPCB prescribed emission Standards for the vehicle would be followed.

3.2 WATER ENVIRONMENT

3.2.1 Anticipated impacts

As far as impact on surface water is concerned, during mining, transportation and processing, there are chances of contamination of surface water resources (pond, well etc) with dust or by other means. The labourers working in clay mining and those moulding clay into bricks come from neighbouring States / districts and colonise in the surrounding areas with inadequate facilities for waste disposal. This, in due course, leads to disposal of various things into surface water bodies which in due course of time results into surface water contamination through misuse / mismanagement and decomposition of the trash.

Further, air pollutants would also be generated during firing and baking of clay articles, settling of the same on surface water bodies also contaminate the surface water source of the area.

3.2.2 Mitigation measures

- **Safeguards will be adopted against health risks on account of breeding of vectors in the water bodies created due to borrowing/excavation of earth by sprinkling of pesticides**
- Laborers would not be allowed to through trashes in water bodies.
- Utmost care will be taken to minimize or control oil spills or leakage from vehicles used for brick clay transportation.
- The washing of tractor/trucks on the land will be avoided.

- Water Quality Monitoring for the, ground water shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
- The contractor will adhere all guidelines and rules for proper and scientific method of mining during the period of extracting the brick clay. Thus, the project activities shall not have any adverse affect on the physical components of the environment and therefore may not have less effect on the recharge of ground waters or affect the water quality.

3.3 LAND ENVIRONMENT

Clay mining is the process of scooping of brick clay that actively supports the agricultural activities of an area. The removal of naturally formed soil for clay articles is really a loss forever of this fertile natural medium. The entire process is a kind of man made erosion of materials otherwise segregated by the Mother Earth through its geologic processes. The top soil is usually fertile in nature. The surface (top) layer is several folds richer in N, P, K and other micro-nutrient elements than subsurface layers. But according to some farmers of the region, the top soils of certain areas of the agricultural land are unsuitable for agricultural activity. But the subsurface layers seem to be more fertile and good for cultivation. In such cases, removal of a layer or two from the surface would be a beneficial act.

The borrowed/excavated pit/topsoil will be restored by the project proponent in a proper manner which will be used further for agricultural activities

3.3.1 Anticipated impact

The major impacts of clay mining on land are changes in landscape, land stability and soil loss. Due to continued and unscientific clay mining, pits of different dimensions would be formed in the affected areas. Some of the pits may later be covered with water to form artificial ponds. The depth of the pits often reaches >1m (03 fts) or more from the general ground surface. The artificial ponds created in random locations due to indiscriminate clay mining may lead to land stability problems in the adjoining areas. The problem of subsidence will be aggravated in areas where the

subsurface geology is with sand and clay alternations. Land failure incidences / sliding of the walls left behind after mining was completed into the neighbouring lands are also recorded in some cases. Other impacts on land include:

- Disposal of packing material, carried by the workers. This packing material would include used sachet/gutka/pan masala pouches. Polythene bag used by the workers to bring their foods etc.

3.3.2 Mitigation measures

- Top soil (0-6 inches) will be scooped first and stored for further reclamation of mined area. Clay/soil mining will be limited to 5 ft. only from the surface.
- No foreign material like polythene bag, jute bag and useless articles should be allowed to remain/spill on the land, or no pits/pockets will be allowed to be filled with such material.
- Mining will not exceeds beyond the agreed extraction depth.

3.4 NOISE ENVIRONMENT

3.4.1 Anticipated impacts

As far as noise pollution is concerned, clay mining does not contribute much to noise pollution, except the noise generated from the vehicles that transport raw clays scooped from lands and the products from the clay-based industrial units. Noise level in the working environment is compared with the standards prescribed by Central Pollution Control Board which has been adopted and enforced by the Govt. of India through The Noise Pollution (Regulation and Control) Rules, 2000.

3.4.2 Mitigation measures

- Well maintained vehicles will be used in order to reduce the noise during movement of vehicles.
- Regular and proper maintenance of transportation vehicles (trucks, tractor etc) will be ensured.
- There would be restriction on vehicular movement during night time.

3.5 BIOLOGICAL ENVIRONMENT

3.5.1 Impact on ecological factors

The area where clay mining is practised is usually agricultural and waste lands which are generally devoid of any natural vegetation. The processes of mining and reclamation in the fringe areas of the mines, in fact, foreclose the option of natural regeneration of land. As regards agriculture any type of quarrying or reclamation would produce some impacts on the area. The magnitude of which is proportional to the area under quarrying or to the extent of area brought under reclamation. There will not be any impacts on the biological environment in the surrounding area.

3.6 GREENBELT DEVELOPMENT

- The implementation for development of green belt will be of paramount importance as it will not only add up as an aesthetic feature, but also act as a pollution sink.
- The species to be grown in the area should be dust tolerant and fast growing species so that permanent green belt is created.
- Apart from the green belt and aesthetic plantation for elimination fugitive of emission and noise control, all other plantation efforts shall be decided and executed with the assistance and co-operation of the local community.

3.6.1 TREES PROPOSED FOR AVENUE PLANTATION FOR GREEN BELT DEVELOPMENT

	Agro-climatic zone & Sub zone	**Middle Genetic Plains, North west alluvial sub zone**	
S/n	**Scientific name**	**Common Name**	**Pollution control features**
1	*Acacia nilotica*	Babul	Tolerant to SO_2
2	*Azadirachta indica*	Neem	Tolerant to SO_2
3	*Pithecolibium ducle*	Jungle jalebi	Tolerant to SO_2 and Dust control
4	*Mangifera indica*	Aam	Tolerant to Dust control
5	*Tectona grandis*	Sagon	Tolerant to Dust control
6	*Ficus benghalensis*	Bargad	Tolerant to Dust control
7	*Scigium cumuni*	Jamun	To stop river bank erosion
8	*Terminalia arjuna*	Arjun	To stop river bank erosion

9	*Populus ciliate*	Popular	Fast growing, broad leaf
10	*Ficus religiosa*	Peepal	Dust particles absorbance

3.7 SOCIO-ECONOMIC ENVIRONMENT

In the trade-off between the socio-economic needs and environmental conservation, generally, the former takes the upper hand. In a situation where competing demands do occur, choice of the most environmentally viable activity is extremely difficult. The mining of clays from agricultural land is not an exception. On the one hand, the demands for construction material are to be met as these are some of the basic needs inherent in variable scale of development. In the process, the resource demand for such activities is bound to shoot up. However, the environmental viability of these activities cannot be ignored. As regards socio-economic condition of the project area, the clay mining activity provides employment opportunities to various people. The economic base of the region will also be enhanced, if the mining is allowed. In the case of land use, it is clear that any type of quarrying would drastically change the existing land use and/or settlements.

The proponent will take care of all the facilities for workers at the mining site area.

- **For sanitation purpose portable/mobile toilets will be provided by the proponent.**
- **Provision of drinking water: Water required for drinking purpose will be obtained through tankers/nearby sources with proper permission.**

ENVIRONMENT MANAGEMENT PLAN

To mitigate the adverse impacts which are likely to be caused due to the mining operation and overall scientific development of local habitat, environmental management plan (EMP) has been formulated and integrated with the mine planning.

Proper environmental management plan is proposed for “Brick clay” mining project to mitigate the impact during the mining operations.

a. **A berm will be left from the adjoining field having a width 0.75 meter (equal to at least half the depth of proposed excavation). Further plantation will be done above the berm.**

b. No labour camps will be established on Mining site.

c. No cooking, or burning of woods will be allowed at the mine site.

d. Prior to commencement of mining, a short awareness program will be conducted for labours to make them aware of way of working and various precautions to be taken while at work. Such program will be repeated occasionally.

e. No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed.

f. Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.

g. Collection of brick clay samples at strategic locations once in every year and analysis thereof with regard to deleterious constituents, if any.

h. Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells

i. Plantation/afforestation will be done as per program i.e along mining lease, road sides and near civic amenities, which will be allotted by Government bodies. Post plantation, the area will be regularly monitored in every two years for evaluation of success rate. For selection of plant species local people should also be involved.

Mine management will be in regular touch with local surrounding villages to update the various developmental schemes made by them. They will also consider any immediate requirement, which could be taken care of in near future.

4. ENVIRONMENTAL MONITORING PROGRAMME

To evaluate the effectiveness of environmental management program regular monitoring of the important environmental parameters to be monitored are shown in Table.

Table 5: Monitoring Schedule and Parameters

Monitoring Parameters	Frequency of Monitoring

Ambient Air: Ambient Air Quality at appropriate location for $PM_{10,}$ $PM_{2.5}$, $SO_{2,}$ NO_x • In the vicinity of the mine area. • In the surrounding area covering two locations.	**Six Monthly**
Water: • Two Surface & Three Ground Water Samples around the project site • Mine Area for Water Portability Confirming to Drinking Water Standards IS: 10500 : 2012	**Six Monthly**
Noise: Day & Night level Noise Monitoring	**Six Monthly**
Soil: Soil Monitoring, Qualitative and quantitative testing/analysis to check the soil fertility, porosity, texture, water holding capacity etc.	**Six Monthly**

For air, water and noise pollution control measures, it has been suggested that samples would be collected and tested all round the year with appropriate frequency at strategic places by suitable agencies. In case, it is found that any of the control parameters exceed the tolerance limit as fixed by the State/Central Pollution Control Board, preventive measures will be taken and if required expert opinion will be sought for proper remedial measures

5. ADDITIONAL STUDIES

5.1.1 DEMOGRAPHIC COMPOSITION OF THE VILLAGE

Census data of Project Village: Sikahar, Subdistrict: Manpur, District: Gaya, Bihar

Items	Details
Town/Village	255298
Name of Village	Sikahar
Number of Household	410
Total Population	2245

Total Male	1194
Total Female	1051
Childrens	390
Schedule caste	643
Literate	1208
Illiterate	1037
Total Worker	728
Total Non Worker	1517

Source: Census of India 2011,

5.1.2 Corporate Social Responsibility

CSR (Corporate Social Responsibility) details for the Project

CSR plan is given below:

- Total Cost of the Project = Rs. 8 Lakhs
- Yearly CSR cost for the project, i.e. 5% of the total project cost

Rs. 8 Lakhs x 0.05 = Rs. 40,000

- Distribution of 100 blankets to the poor people from the nearby villages, each costing approx. Rs. 400.

5.1.3 RISK & HAZARDS MANAGEMENT

As it is brick clay mining project, so there are no major risk and hazard activities associated with the proposed activities. But the project proponent will must take care the site location by:

- **Proper fencing all around the mining site so that it can prevent any mishap or accident in future.**
- **The materials being transported after excavation will be properly covered with tarpaulin sheet.**
- **Periodic water sprinkling will be done to arrest the dust.**

6. PROJECT BENEFITS

6.1 EMPLOYMENT

The socio-economic conditions of the surrounding villages indicate that employment generation is seasonal. The occupational activities are agriculture, cattle rearing and employment in mines but on daily wages. The mining activity will provide employment to local people which will increase socio- economic status of the area.

There is a possibility of creation of direct and indirect employment opportunities due to working of this mine.

6.2 IMPROVEMENTS IN PHYSICAL AND SOCIAL INFRASTRUCTURE

The opening of the proposed project will enhance the socio-economic activities in the adjoining areas. This will result in following benefits:-

a. Improvements in physical infrastructure.
b. Improvements in Social Infrastructure.
c. Increase in Employment Potential
d. Contribution to the Exchequer.
e. Prevention of illegal mining.
f. During and Post-mining enhancement of green cover. Plantation/afforestation will be done as per program i.e. along the road sides and near civic amenities, which will be allotted by Government bodies as it is not feasible to plant trees near the mine lease area. Post plantation, the area will be regularly monitored in every season for evaluation of success rate. For selection of plant species local people will also be involved. The management will provide free saplings of fruit and other trees, etc. to local during rain for plantation.

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