

ENVIROMENTAL MANAGEMENT PLAN

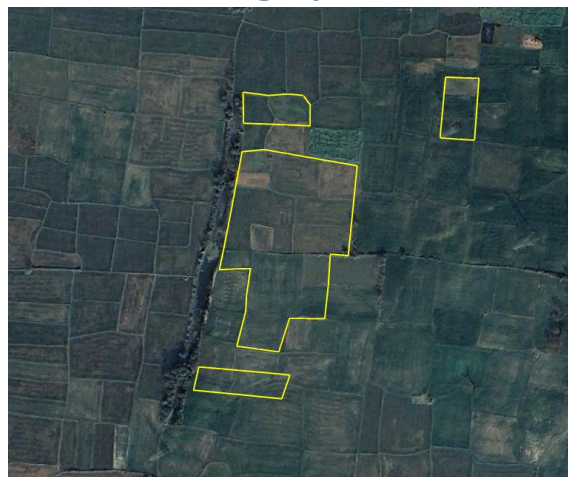
For

**PROPOSED EARTH BRICK SOIL MINING PROJECT LOCATED AT MAUZA –
GORAWAN, MAUZA NO: 406, PS & ANCHAL: SILAO, DIST-NALANDA ,
BIHAR OVER AN AREA OF 1.4204 HA HAVING A PRODUCTION CAPACITY
OF 4730 CUM/ANNUM.**

PROJECT PROPONENT

**M/s PUJA INT UDYOG
MAUJA-GORWAN , PO:SITHAURA, PS: RAJGIR , DIST-
NALANDA, BIHAR.**

**Project categorized under Schedule 1(a): Mining of minerals,
Category 'B2'**



CONSULTANT



ECOMEN MINING PVT. LIMITED

(Formerly known as Ecomen Laboratories Pvt. Limited)

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2028**

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1.0 INTRODUCTION

1.1 SUMMARY OF THE PROJECT

The proposed Earth Brick mining project located at Khata No:118 ,119, 120, 121, 122, 123, and 124, Khasra No.: 4300, 4309, 4359, 4366, 4367, 4368, 4369, 4370, 4371, 4377, 4378, 4379, & 4380 , Mauja-Gorawan , Mauja/Thana No.: 406, PS & Anchal: Silao , Dist- Nalanda , Bihar, covering a total area of 1.4204Ha (3.51Acres). The mining lease has been granted to **M/s Puja Int Udyog** , with a factory address at Vill – Gorwan P.O-Gorwan , PS & Anchal –Silao , Nalanda Bihar , 803117.

TABLE 1.1 SALIENT FEATURE OF THE PROJECT

S. No.	Particular	Detail			
1.	Project Name	The proposed Earth Brick mining project located at Mauja-Gorawan , Mauja/Thana No.: 406, PS & Anchal: Silao, Dist- Nalanda , Bihar , Over an Area Of 1.4204Ha (3.51Acres). Having A Production Capacity of 4730 Cum/Annum.			
2.	Location of mine	Mauja- Gorawan, Mauja No: 406, PS & Anchal: Silao , Dist-Nalanda, Bihar			
		Mauza No.	Khata no.	Khasra no.	Area (Ha.)
		406	118 ,119, 120, 121, 122, 123, and 124	4300, 4309, 4359, 4366, 4367, 4368, 4369, 4370, 4371, 4377, 4378, 4379, &4380	1.4204Ha

Geo-coordinate of the project site:

AREA	KHATA NO	KHESRA NO	AREA (ACR)	POINT	LATITUDE	LONGITUDE
	118	4300	0.28	A1	25.09380805	85.41971145
				A2	25.0938233	85.41952045
				A3	25.09362111	85.41955284
				A4	25.09360299	85.42002246
				A5	25.09374513	85.42002273
				A6	25.09380874	85.41997166
				A7	25.0931831	85.41985906
	119	4309	0.29	B1	25.09390271	85.42121565
				B2	25.09392869	85.42128417
				B3	25.09393744	85.42094452
				B4	25.09352485	85.42093793
	124	4359	1.85	C1	25.0932495	85.41951366
	123	4366	0.23	C2	25.09295316	85.41955384
	119	4367	0.03	C3	25.09263871	85.41957452
	119	4368	0.11	C4	25.09245826	85.41959288
	120	4369	0.10	C5	25.09241103	85.4195398

	122	4370	0.11	C6	25.09232439	85.41957686
	118	4371	0.21	C7	25.09229493	85.41987661
				C8	25.09227548	85.41989874
				C9	25.09229761	85.4200068
				C10	25.09273837	85.42004388
				C11	25.09273607	85.4201373
				C12	25.09323341	85.4203733
				C13	25.0933341	85.42037738
				C14	25.09344366	85.41956142
	120	4377	0.10	D1	25.09341831	85.49510811
	121	4378	0.10	D2	25.0934424	85.49501686
	120	4379	0.05	D3	25.09345447	85.49495731
	120	4380	0.05	D4	25.09344381	85.49495789

7.	Total Geological reserves	28408 m ³
8.	Total Mineable reserves	23650 m ³
9.	Proposed production capacity	4730 cum/Annum
10.	Method of mining	Open cast semi – mechanized method
11.	Man power requirement	33 persons
12.	No of working days	54 Days
13.	Water Demand	6 KLD
14.	Sources of water	Tankers
15.	Nearest Village	Sikandra Village is about 700 m in North West direction
16.	Nearest School	Middle School ,Gorawan is about 900 m in North West direction
17.	Nearest College	Nalanda University is about 5 Km in North direction.
18.	Nearest Hospital	Govt Hospital , Silao is about 1.3 km in South East direction
19.	Nearest River	Jalwar River is about 1 Km in East direction .
20.	National Highway	NH-20, is about 8.8 km towards SW direction
21.	Nearest Railway Station	Biharsharif – Rajgir line is about 2.2 km towards East direction.
22.	Nearest Airport	Jayprakash Narayan International Airport, Patna is about 84 km in NW direction .
23.	Nearest Town	Silao is about 1 Km in East
24.	Seismic Zone	Seismic Zone IV
25.	Project cost	Rs 15,83200 / INR
26.	EMP Cos	Capital cost: Rs 1.65 Lakhs Recurring cost: Rs 1.20 Lakhs

1.2 LOCATION OF THE MINE

The proposed Brick earth mining project located at Khata No118 ,119, 120, 121, 122,

FIG 1.1: LOCATION PLANS

Details of site Co-ordinates are given below

Geo-coordinate of the project site:

AREA	KHATA NO	KHESRA NO	AREA (ACR)	POINT	LATITUDE	LONGITUDE
	118	4300	0.28	A1	25.09380805	85.41971145
				A2	25.0938233	85.41952045
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				A6	25.09380874	85.41997166
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				B4	25.09352485	85.42093793
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	123	4366	0.23	C2	25.09295316	85.41955384
	119	4367	0.03	C3	25.09263871	85.41957452
	119	4368	0.11	C4	25.09245826	85.41959288
	120	4369	0.10	C5	25.09241103	85.4195398
	122	4370	0.11	C6	25.09232439	85.41957686
	118	4371	0.21	C7	25.09229493	85.41987661
				C8	25.09227548	85.41989874
				C9	25.09229761	85.4200068
				C10	25.09273837	85.42004388
				C11	25.09273607	85.4201373
				C12	25.09323341	85.4203733
				C13	25.0933341	85.42037738
				C14	25.09344366	85.41956142
	120	4377	0.10	D1	25.09341831	85.49510811
	121	4378	0.10	D2	25.0934424	85.49501686
	120	4379	0.05	D3	25.09345447	85.49495731
	120	4380	0.05	D4	25.09344381	85.49495789

1.3 SIZE OR MAGNITUDE OF OPERATION

The maximum proposed production is **of 4730** cum/annum, covering a total mine lease area of 1.4204Ha. It is also proposed that the extraction of soil would be done max up to 2 meters depth.

1.4 METHODOLOGY OF MINING / PROPOSED MINING METHOD

The proposed clay mining project is an open cast, semi mechanized process which will be carried out as below method:

- This Borrow area will be worked in multiple pits.
- Cutting and loading of clay will be with the help of excavator and Back Hoe Loader (Commonly known as JCB).
- Shifting of the soil will be done with the help of tipper and tractor.
- No drilling and blasting are proposed for clay mining activity
- The borrowing/ excavation activity will be restricted up to maximum depth of 1.5 meter or up to 2 meter above the ground water table whichever comes first.

- No Mining activity will be carried out within 15-meter periphery of any civil structure.
- Haul road will be of 10 m width and gradient 1/16
- Berm of Base Width more than 1.0 m and height more than 1.0m will be provided all along the boundary of borrow area.
- Top Soil will be kept separately, which will later be used for reclamation.
- A water tanker of suitable quantity will be provided for regular sprinkling on the route from borrow area to the dumping point.
- A suitable SOP for traffic rule will be prepared and adopted.

PRODUCTION PLANNING

Mining excavation will be started after obtaining Mining approval from District Mining Office, Muzaffarpur, Bihar. Though application is being applied for 5 years.

2.0 ENVIRONMENTAL MANAGEMENT PLAN

Environmental Management measures for general Impacts are given in Table 2.1. This section recommends the management measures needed to prevent, minimize and mitigate the general impacts arising in operation phase as shown in Table 2.1.

TABLE 2.1 EMP FOR THE GENERAL ANTICIPATED IMPACTS

1. Mining Activity					
Activity	Impact	Duration / Extent	Magnitude	Mitigation Measures	Responsibility
Excavation	Removal of fertile top soil	Temporary	Moderate	Top soil of 0.15m will be scraped and stacked on the berm or any embarked place which will be spread over the mining pit. After completing mining activity thus fertility of land will be restored or used beside the road where plantation is to be done.	Project Proponent
	Pit formation due to excavation	Temporary	Moderate	• Mining operations will be carried out as per mining rules systematically and scientifically. • Mining operations will be carried out on a slope of 45° making terraces/benches. The height of the bench not more than 1 mt and berm of base width of the bench not more than 1 mt. • Stabilization of slope will be done by planting species having extensive root system, so as to bind the soil.	Project Proponent
	Siltation of fertile soil from adjoining farms into the pit formed	Temporary	Moderate	• Loss of fertile top soil from adjoining farms will be arrested by the bund wall. • Plantation of bio vegetative species along the bund wall to act as a fence. • Stabilization of slope by planting soil-binding species.	Project Proponent
	Change of land use from agricultural to mining	Temporary	Moderate	• Mining will be done as per the mining rules, sustainably and scientifically. • Mining will be done only after obtaining lease from land owner. • It is temporary (for a period of 5 years) and reversible.	Project Proponent

				• Agricultural practices will be resumed after mining. • Mining will be done only up to a max depth of 1.5m.	
	Fugitive dust emissions and suspension of dust in air	Temporary	Moderate	• Dust suppression measures like spraying / sprinkling of water to keep the surface wet. • Plantation on bund walls will act as dust. • No drilling or blasting proposed. • No boiler/ D.G. Sets proposed. • Mining to be done at daytime only.	Project Proponent
	Noise generation due to mining	Temporary	Moderate	• No heavy machinery is proposed for the extraction of soil, operational is manual. • In case of noise generation, appropriate measure will be taken care.	Project Proponent
	Impact on Ground Water	Temporary	Moderate	• Mining will be restricted up to a max depth of 1.5 m. • Mining will have no impact on water table. • Drinking water (3.56 KLD) for hired labours will be brought from tanker and nearby sources. • Pit formed will have a positively significant impact as it would facilitate faster percolation of water.	Project Proponent
	Impact on Surface Water	Nil	Nil	• No surface water body is present within 500 m radius of excavation plot.	Project Proponent
	Disturbance to microbial flora and fauna, avifaunal migration or migratory	Temporary	Moderate	• Top soil will be excavated and stored under tarpaulin sheets, and will be used later for making bund walls. Hence the microbial flora and fauna will be restored while bunding. • There is no migratory route of avifauna or grazing route of domesticated animal is reported, hence there will be	Project Proponent

	routes of domesticated cattle.			no impact anticipated. • Mining operation will be carried out during daytime.	
	Generation of employment	Temporary	Moderate	• The proposed project will generate employment opportunities to local people. • Will improve the livelihood condition of the nearby areas by providing employment opportunities.	Project Proponent
	Occupational health of labors	Temporary	Significant	• Labors will have access to basic first aid (first aid –box) facility on site. • Awareness on safety and ensure using of personal protective equipment's (PPE) by workers such as Nose mask, Ear plug, Helmet & Shoes etc. • Toilet and Rest Shelter will be provided.	Project Proponent
Transportation of quarried soil	Impact on adjoining farms	Temporary	low	• Vehicular exhaust will be minimized by using PUC certified vehicles and planting dust barrier species along roads. • Tractor trolleys/ carts will use the existing route for to and from movements and no additional haulage route shall be formed. • Hence, no impact on adjoining farms anticipated.	Project Proponent
	Impact on crop yield/ quality and productivity in adjoining farms	Temporary	low	• Only fugitive dust emissions may occur due to transportation activity which will be minimized by using: 1. Tarpaulin cover over tractor trolleys/ carts 2. Dust suppression measures like	Project Proponent

				spraying/sprinkling of water to keep the surface wet 3. Provision of the dust barriers along haulage route 4. Plantation of soil binding species such as bamboos, euphorbia, agave etc.	
	Impact on existing traffic	Temporary	low	There is no existing traffic on village, roads, so no impact predicted on existing traffic.	Project Proponent
	Impact on air environment	Temporary	Moderate	- Fugitive dust emissions and vehicular emissions from tractor trolleys may occur due to transportation activity which will be minimized by using: - Tarpaulin cover over tractor trolleys/ carts - PUC certified tractors will be employed - Dust suppression measures like spraying/sprinkling of water to keep the surface wet - Provision of the dust barriers along haulage route. - Plantation of soil binding species such as bamboos, euphorbia, agave etc.	Project Proponent
	Impact on noise environment	Temporary	Moderate	- Carts or tractor trolleys will be employed on village roads. - Fitness certified vehicles will be used. - Timely maintenance of vehicles and their silencers to minimize vibration and sound.	Project Proponent

				• Care will be taken to produce minimum sound during loading. • Noise barriers in form of plantations will be done at haulage roads.	
	Impact on occupational health of labors	Temporary	Moderate	• Labors will have access to basic first aid (first aid –box) facility on site. • Anti-venom will be provided in case of snake bites. • Awareness on safety and ensure using of personal protective equipment's (PPE) by workers nose masks to avoid respiratory disorders. • The workers will be trained on using personal equipment's as a precautionary measure & thereby preventing any infectious diseases.	Project Proponent

2.1 AIR ENVIRONMENT

Main pollutant from the subject Mine is Dust/Particulate Matter/Fugitive dust. The following are the identified sources of emission of dust during mining operations and transportation activities.

- Excavating
- Loading and Transportation
- Dumping

Control Measures

- Total Water requirement for drinking and other operations will be 6 KLD.
- Regular grading of haul roads and service roads will be taken up to clear accumulation of loose material.
- Periodic maintenance of transport vehicles and equipment will be carried out to check emission levels.
- Greenbelt will be developed with avenue plantation all along the haulage roads and peripheral plantation all around the mine in order to control dust.
- Overloading of trucks will be avoided and carrying the mineral in covered trucks will be taken-up to minimize pollution levels.
- Trucks to be covered with tarpaulin/plastic Enforcing with speed limit, less than 25kmph.
- Dust Masks will be provided for the workers based on work area.

2.2 NOISE ENVIRONMENT

Source of Noise:

Noise produced from mining operations is not continuous. The levels of noise are different based on the activity workers are exposed to. The noise levels are expected to be below 75dB.

Identified sources of noise from the mine are listed below:

- Operations
- Machinery operation i.e. Excavator and Dumpers.

Control Measurers

The noise generated by Mining activity through the machinery and transportation of

ordinary soil will be controlled with proper mitigative measures and there will be minimum vehicular traffic.

- Mining operations will be carried out during day time only and avoid inconvenience to the nearby habitations.
- The machinery will be maintained properly to reduce the noise levels.
- The protective noise reducing gear like earmuffs, earplugs will be provided by the company.
- Proper maintenance of equipment.
- Machinery will be fitted with properly designed noise generating acoustic silencers.
- Proper maintenance and periodic lubrication of noise generating parts of the machines.
- Provision of thick plantation in and around the mine is planned in order to reduce the noise and prevent it from reaching to surrounding habitation areas.

2.3 WATER ENVIRONMENT

As far as impact on surface water is concerned, during mining, loading and transportation there are chances of contamination of surface water resources (pond, well etc.) with dust or by other means. 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.

Mitigation Measures

- Workers 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 soil transportation.
- The washing of tractor/trucks on the land will be avoided. Overloading of trucks and trolleys will be prevented.
- 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.

2.4 GREEN BELT DEVELOPMENT

- The development of a green belt will be of utmost importance, serving not only as an

aesthetic enhancement but also as a pollution sink. The selected plant species should be dust- tolerant, native, and fast growing to ensure the creation of a permanent green belt. In addition to aesthetic and green belt plantations for controlling fugitive emissions and noise, the development will be carried out in coordination with the local community. As per MoEF & CC, minimum 10 trees should be planted.

- The species selection for the plantation is based in the features:
- Tolerate to SO₂
- Tolerate to dust
- Dust particle absorbance

2.5 LAND ENVIRONMENT

- Clay mining involves the extraction of clay, a process that significantly impacts the agricultural potential of an area. The removal of naturally formed soil for clay production results in the permanent loss of fertile topsoil, which serves as a vital natural medium for plant growth. This practice can be considered a form of human-induced erosion, disrupting the geological balance established by nature.
- Topsoil is typically rich in essential nutrients such as nitrogen (N), phosphorus (P), potassium (K), and various micronutrients. However, some local farmers believe that in certain areas, the topsoil is not suitable for cultivation, whereas the subsurface layers are more fertile and better for farming. In such cases, the removal of a surface layer or two could be beneficial for agricultural productivity.
- To mitigate the impact of clay extraction, the project proponent will ensure that the excavated topsoil and pits are properly restored, making the land suitable for future agricultural use.

2.6 SOCIAL WELFARE MEASURES

- There will be no major impact on socio economic environment of the surrounding villages as the lease area is small and with the proposed development activities.
- For the functioning of the mine, local manpower will be utilized.
- Land allocated for road will be laid with avenue plantation along with lights, which will be useful for the local people.
- No impact due to influx of population/ labour because the mine is very small.

2.7 SAFETY AND ENVIRONMENT

The proponent will provide all necessary provisions stipulated under the Factories Act and

Mines Act. In addition, a safety committee will be formed and manned by equal participants

from Management and Workers.

The mining in this area does not involve any hazardous methods. The applicant is providing First Aid facilities at mine site.

- Mine benches will be maintained with safety slopes.
- Competent persons will be hired for mine operation to avoid manual failure.
- Safety sign boards will be placed at required areas within the mine area.
- The management firmly believes in the concept of safety and environmentally sustainable growth. The authorities and staff are very much concern in Environment issues.
- The management is going to develop scientifically designed green belt around the premises to mitigate air and noise pollution impacts on the surroundings.
- The management proposed to monitor ambient air as per BPCB guidelines.
- All the employees are provided with personal protective equipment such as helmets, hand gloves, safety shoes etc.
- The management will provide safety training to all employees periodically and regularly.

2.8 OCCUPATIONAL HEALTH MEASURES

Fugitive dust, noise and fines may affect the health of workers. Safety of employee during operation will be taken care as per mines regulations and Mine Rules and act 1961. To avoid any adverse effects on the health of workers due to dust & noise, the following measures will be implemented:

- Provision of rest shelters for mine workers with amenities like drinking water, fans, toilets etc.
- Provision of personal protection devices to the workers;
- Dust suppression of haul road.

- First-aid facilities within lease area.
- Height, slope and width of dump development as per the approved mining plan.
- Regular medical examination for the employees.

The following Personnel protective equipment (PPE) based on the nature of job of the worker will be provided

- Respiratory Protection – Dust Masks
- Head Protection - Helmets
- Foot Protection – Safety Shoes
- Hearing Protection – Ear Muffs

3.0 ENVIRONMENTAL MONITORING PROGRAMME

The following environmental monitoring program will be implemented during operation of the Mine.

TABLE 3.1 ENVIRONMENTAL MONITORING PROGRAMME

	Location	Parameters	Frequency
AIR QUALITY	Core Zone – at one location of the activity area Buffer Zone – Nearby village.	PM ₁₀ and PM _{2.5}	Once in Six Monthly
WATER QUALITY	Ground water From Bore well near to Mine. Surface Water	As per IS 10500	Once in Six Monthly
NOISE QUALITY	Core Zone ➤ Excavation ➤ Transportation Buffer Zone Nearby Village In transportation route.	Spot Noise levels will be checked for conformance with OSHA work zone noise levels for exposure of eight hours Buffer zone values will be recorded for eight-hour duration during the mining activity to compute equivalent values and the same will be checked with for conformation with residential day equivalent	Once in Six Monthly

	Location	Parameters	Frequency
		values specified by CPCB	
SOIL QUALITY	Core Zone and Buffer Zone	BIS Method	Once in Six Monthly

External NABL accredited laboratory services will be hired for carrying out Environmental Monitoring measures.

In order to maintain the environmental quality within the standards, regular monitoring of various environmental components is necessary. The supervisor will take care of Environmental Management activities with objectives as:

- To implement control/mitigation measures.
- To monitor this implementation process.
- To determine and improve the efficiency of the implemented measures.
- To identify any other unforeseen effect on environment not covered hereby and regular monitoring of various environmental parameters shall be carried out through third party to ascertain the following points.
 - Status of air, noise, water, land pollution within the plant and in its vicinity.
 - Generate data for predictive or corrective purpose in respect of pollution.
 - To assess and monitor environmental impacts periodically.
 - The frequency of monitoring will be done as per norms.

3.1 BUDGET FOR ENVIRONMENTAL MANAGEMENT PLAN

Budget allocated for EMP is Rs 1.65 Lakhs and recurring cost is Rs 1.20 Lakhs. Detail breakup is given in below table.

TABLE 3.2 BUDGET FOR ENVIRONMENTAL MANAGEMENT PLAN

S. No.	Description	Capital Cost Rs. in Lakh (Rs.)	Recurring Cost Rs. in Lakh (Rs.)
1	Dust suppression (Water tanker, sprinkler)	0.50	0.20
2.	Pollution Monitoring • Air • Water • Soil • Noise	0.00	0.30
3.	Plantation	0.15	0.50
4.	Construction and maintenance of haul	1.00	0.20

	road		
Total		1.65	1.20