

ENVIRONMENT MANAGEMENT PLAN

For

KHAJURI MURRUM QUARRY

VILLAGE : KHAJURI
TEHSIL : HUZUR
DISTRICT : BHOPAL
STATE : MADHYA PRADESH
LEASE AREA : 4.000 HECTARES
SURVEY NO. : 412 PARTS

APPLICANT

SHRI RISHAB PACHAURI

S/O SHRI GAURISHANKAR PACHAURI

**ADDRESS – R/O – PACHAURI COMPLEX PIPAL CHAURAHA
BAIRASIYA ROAD KAROND , DISTRICT - BHOPAL (M.P.)**

PREPARED BY

RAM MILAN PATHAK

RQP/DGMMP/78/2013

**Address - House No. 109, Shivlok Greens, Phase – 6,
Gopal Nagar, District– Bhopal**

YEAR 2019

ENVIRONMENT MANAGEMENT PLAN

1.0 Introduction

The Applicant, **Shri Rishab Pachauri S/o Shri Gaurishankar Pachauri**, has approached us for the preparation of an Environmental Management Plan (EMP) for a targeted production of **10,000** CuM. Murrum per annum from an area measuring 4.000 ha. As per his advice, the Environment Management plan has been prepared in the light of the amendments made in Rule 48 of Madhya Pradesh Minor Mineral Rules 1996, by the State Government; vide Gazette Notification, dated 23rd March, 2013.

The 14 points given in the Notification have been discussed in the following table 1, with replies and references. A detailed study was carried out to generate baseline data in order to assess the likely impact on the environment and its management.

Table 1:

S. No.	Particulars	Reply
1.	Name and address of the Holder of the quarry lease/action quarry	Shri Rishab Pachauri S/o Shri Gaurishankar Pachauri address – R/o Pachauri Complex Pipal Chauraha Bairasiya Road Karond , District - Bhopal (M.P.)
2.	Details of the area	4.000 ha.
i)	Date of in-principle sanction	The Murrum Quarry lease has been sanctioned to lessee through the Collector court (khanij) office Bhopal provisional letter no./01/Khanij/2019, dated.01/01/2019 for five year.
ii)	Period	5 years
iii)	Map showing boundary of sanctioned area	Location map enclosed Sanctioned lease boundary map enclosed
iv)	Khasra number/Area	Khasra no. 412 parts
v)	Name of the Village/Tehsil/District of	Village - Khajuri

	sanctioned area	Tehsil - Huzur, District - Bhopal (Madhya Pradesh)		
3.	Details of Machine to be used in mining operation	S. No.	Type of machine	No.
		1	Crawler mounted diesel engine powered hydraulic excavator	1
		2	Dumper	1-2
4.	Details of measurement of quarry pit earlier excavation in the area to be sanctioned and details of mineral concessions situated within 100 meter periphery of this area	a) Nil b) Mineral concession: Murrum for making Gitti for civil construction works		
5.	Scheme of tree plantation	Table no. 8 & 9		
6.	Details and approximate distance of National park, Sanctuary, Biodiversity area, Interstate boundary situated within periphery of 10 km. from the area to be sanctioned	No National park or Interstate Boundary exists within 10km radius study area.		
7.	Proposed annual production of mineral	10,000 cubic m per annum		
8.	Effect on ground water level due to mining operation and its preventive measures	After 05 year pit bottom level: 533 m RL Therefore, the mining operations will not penetrate the ground water table.		
9.	Details of scheme of continuous reclamation and rehabilitation of the land degradation due to mining operation	The reclamation of mining pit can be started only after the mineral gets exhausted from the pit. During two years period it will not be feasible to reclaim the mine pit as the mineral continues to occur underneath.		
10.	Details of preventive and control scheme of air and water pollution	Details provided in clause 3.2 and 3.3 here in below.		

11.	Provisions for separate stacking of surface soil excavated from mining operation and its utility	The top soil excavated will be stacked separately and will be used for plantation purposes.
12.	Details of social and economic up gradation of mining effected area due to proposed project	Proposed expenditure on CSR for the social and economic up gradation of the effected mining area: details provided in Table 10.
13.	Details of budgetary arrangement for environment management	Details of proposed expenditure on environmental management and statutory provisions are provided in table 11.
14.	Any other details desired to be submitted by mineral concession holder	Nil

2.0 **Base Line Information**

The existing environmental setting has been taken into consideration to adjudge the baseline environmental conditions, which are described with respect to climate, atmospheric conditions, water quality, vegetation pattern, ecology, socio-economic profiles of people, land use.

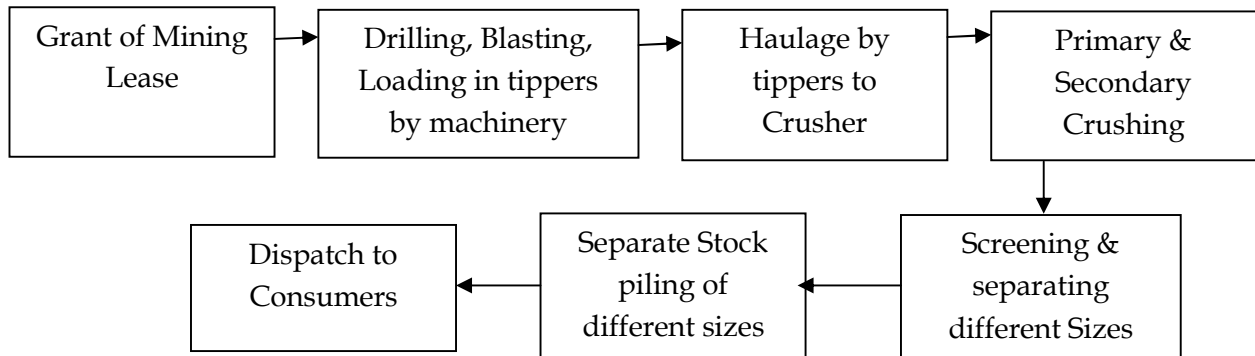
The objective of this section is to define the present environmental status which would help in assessing the environmental impacts arising due to the proposed mining operations. Base line study has been carried out for an area having a radius of 10 Km around the mining lease area.

2.1 The existing land use pattern of mine site

This is Murrum quarry and entire area will be used for carryout mining. Required facilities exist within the lease area.

Project description with process details (a schematic diagram/flow chart showing the project layout, components of the project etc. should be given).

This is a proposed project, now applying for Environment Clearance.



2.2 Water Environment

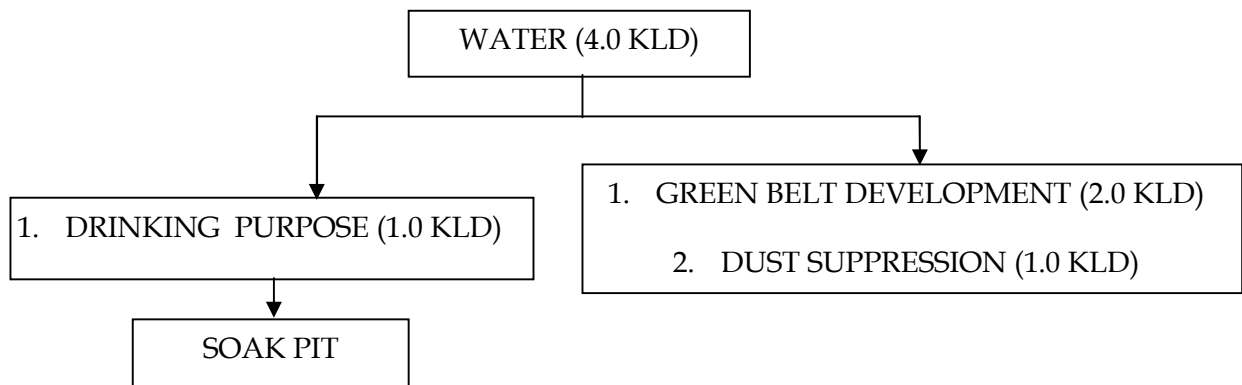
Quality of ground water resources within the study area has been considered to evaluate the anticipated impact on the quality of water due to the proposed mining activity.

The ground water Table is at 140 mRL. The water seeps into the ground through different water channels. The behavior of ground water table has been noticed to be uniform.

Ground water Consumption: Water used for different mining activities are given below:

- (a) Drinking
- (b) Mining
- (c) Afforestation
- (d) Dust Suppression

Figure no. 1 Water Consumption & source



Water will be obtained from open well/tube well.

Quality of Ground Water: The quality of ground water around river and study area is potable. The chemical analysis results are appended in the report. No change in water quality will be observed due to mining activities as mine pits will not touch ground water level. Results of water analysis are shown in Table

2. Table 2: Water analysis report

S. No.	Parameter	Result
1	PH	6.90
2	T D S (mg/Lit)	968
3	Sodium as Na (mg/Lit)	190
4	Potassium as K (mg/Lit)	1.0
5	Calcium as Ca (mg/Lit)	144
6	Magnesium as Mg (mg/Lit)	29
7	Chloride as Cl (mg/Lit)	360
8	Sulphate as SO ₄ (mg/Lit)	60
9	Nitrate as NO ₃ (mg/Lit)	27
10	Fluoride as F (mg/Lit)	0.70
11	Total Hardness (mg/Lit)	480

Madhya Pradesh has a subtropical climate. Like most of north India, it has a hot dry summer (April–June) followed by monsoon rains (July–September) followed by a cool and relatively dry winter. The mining lease area, in most part is covered by rock exposures with very little soil cover to sustain vegetation. Therefore vegetation in the mining lease area is very scanty. Some common birds and mammals are seen in the study area. There are no rare or endangered species in the area. List of flora and fauna is given table 3 and 4.

Table 3: List of plants found in the project area

S.No.	Botanical Name	Family	Common Name
Herb			
1.	<i>Tridax procumbens</i> L.	Asteraceae	Akal kohadi
2.	<i>Physalis minima</i> L.	Solanaceae	Rasbhari
3.	<i>Parthenium hysterophorus</i> L.	Asteraceae	Gajjar ghas
4.	<i>Solanum nigrum</i> L.	Solanaceae	Makoi
5.	<i>Celosia argentea</i> L.	Amaranthaceae	Cocks comb
6.	<i>Echinops echinatus</i> Roxb.	Asteraceae	Oont-Kateli
Shrub			
7.	<i>Jatropha curcas</i> L.	Euphorbiaceae	Jamal ghoti
8.	<i>Abutilon indicum</i> (L.) Sweet	Malvaceae	Kanghi
9.	<i>Calotropis procera</i> (Ait.)R.Br.	Asclepidaceae	Akra
Tree			
10.	<i>Ailanthus excelsa</i> Roxb.	Simaroubaceae	Maha nimba
11.	<i>Holoptelea integrifolia</i> (Roxb.) Planch	Ulmaceae	Papri
12.	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Mimosaceae	Jangal Jalebi
13.	<i>Parkinsonia aculeata</i> L.	Fabaceae	Jelly bean tree

Table 4: Fauna observed in the Study Area

Sr. No.	Scientific Name	Common Name
1.	<i>Centropus sinensis</i>	Crow Pheasant
2.	<i>Columba livia</i>	Rock Pigeon
3.	<i>Corvus macrorhynchos</i>	Jungle Crow
4.	<i>Corvus splendens</i>	House Crow

There is no endangered species in the study area.*

2.4 Ambient Air quality:

The ambient air quality within study area was satisfactory, by inspection it is observed that no air polluting industry exists within 500 meter radius.

2.5 Noise Level

Physical description of sound concerns its loudness as function of frequency. Noise in general is sound which is composed of many frequency components of various loudness distributed over the audible frequency range. Various noise scales have been designed to describe, in a single number, the response of an average human to a complex sound made up to various frequencies at different loudness levels. The most common and universally accepted scale is the “A”, a weighted Scale measured as dB (A). This is more suitable for audible range of 20 to 20,000 Hz. The scale has been designed to weigh various components of noise according to the response of a human ear. The noise levels recorded in core zone are given in table 5 below.

Table 5: Noise level dB(A)

S. No.	Location	Observed value
1.	Mines site	52.6

The above observed value is within the permissible limits prescribed.

2.6 Climatic Conditions of District Headquarter

2.6.1 Temperature conditions

A perusal of the data shows that Maximum and Minimum Yearly Average Temperature from 43.0°C and 2.3°C, respectively.

2.6.2 Rainfall

Average rainfall of the study area is 1068.3 mm per year. Most of the rainfall is received in the month of June to September

2.6.3 Relative Humidity

The maximum and minimum relative humidity of area was observed as 66 %(during August) and 42 %(during April).

2.6.4. Wind Speed

According to the Climatological data, the Maximum and Minimum Average Wind Speed is observed 19 and 1 Km per

hour, respectively and wind blows from NE-SW (Oct. to Feb.) to W-E (Mar. to Sept.). Monitoring data of wind speed for day and night time is given in table.

Table 6: Wind speed

Time	N	NE	E	SE	S	SW	W	NW	Calm
Morning 8:15 am	3	3	4	4	9	23	28	12	14
Evening 17:15 Pm	12	13	5	2	2	13	20	23	14

2.7 Socio-economics

The growth of mining and industrial sectors and infrastructure developments in and around the agriculture dominant areas, villages and towns is bound to create its impact on the socio-economic aspects of the local population of the area experiencing development. For assessing the prevailing socio-economic aspects of people in the study area around the existing mine, the required data has been collected from various secondary sources and analyzed.

2.8. National Park

No National Park is located in the study area.

3.0 Environmental Impact Assessment

3.1 Impact on Land degradation, waste dumps & top soil

The entire surface land will be affected due to mining activity. Impact on government waste land can be considered “beneficial” as low value rocky land shall be converted to valuable mineral producing land. The mining pits will slightly degrade the surface land, which will partly be reclaimed by back filling and partly shall be used as water reservoir.

There is only very little quantity of top soil available in the area. The top soil will be stacked separately for future use for spreading over waste dump terraces and plantation.

Total area likely to be affected towards end of mining by different activities like mining pit, office building, roads, waste dump and plantation is tabulated below:

Table 7: Anticipated Land Use Pattern at the end of Mining

Land Use Pattern	Present area in hectare	At the end of mine life in hectare
Mine Pit	Nil	3.00
Waste Dumps/ Top Soil	Nil	0.00
Unused	4.000	1.00
Total Area	4.000	4.000

**Green belt development will be carried out outside the core zone on a land to be arranged by the project proponent.

3.2 Impact on Air Quality

Anticipated Impact: Mining operations and associated activities generally cause air pollution and the major air pollutant is the suspended particulate matter. Most of the air pollution problems are due to fugitive dust emissions and dust generated during crushing screening operations. The intensity of dust generation in the mining and crushing is influenced by factors such as hardness of rock, mining technology and crushing /sizing etc.

Air Pollution Mitigation Measures: Following techniques are being adopted and more will be implemented in the mine and in crushing/screening/sizing plant to control air pollution due to various operations:

- Water sprinkling will be regularly done on haul roads/primary crusher hopper to make the Murrum boulders wet for low dust generation.
- Minimizing drop height of Murrum in trippers/provide telescopic chutes to drop crushed Murrum on the stockpile.
- Restriction of vehicle speed,
- Minimization of drop heights at transfer points from crusher to belt conveyors and then on screens

- Providing/installing covered hoods with suction pumps attached with dust containers made of thick canvas over high dust generation points ,
- Proper maintenance of mining machinery.
- Developing green belt and plantation.
- Scientific blasting pattern will be used which will reduce the air borne dust.
- Pollution check (from PUC) will be regularly done for the vehicles coming into the study area.

3.3 **Impact on water regime and water quality**

No adverse effect is expected on surface water, as there is no water reservoir, river or any other source near mining area. Ground water is not likely to be affected, as the mining will not intersect water table. The Murrum is inert and do not react or dissolve with water and non-toxic. No discharge of water effluents from the mines.

3.4 **Biodiversity**

The impact on terrestrial ecology will be there due to emission of gaseous pollutants like NO_x, SO₂ and dust/SPM. To check air pollution, the mitigation measures will be taken as discussed in proceeding section.

3.5 **Impact on Noise Level**

Some noise is anticipated due to working of JCB or moving of Tractor trolley. However, its intensity is very low. The adverse effect of noise will be minimized by taking suitable standard measures and use of personal protective devices like earplugs/earmuffs etc. Proper maintenance of machinery will be done, which will keep the noise within permissible limit.

3.6 **Impact on Ground Vibrations (Due to Blasting)**

Low intensity blasting or scientific blasting will be carried out causing insignificant ground vibrations.

3.7 Socio- Economic Impact

The socio-demographic profile is not likely to be adversely affected by mining activities in the area. There will be no displacement of people from their habitats. The mining activity will create jobs both direct as well as indirect for the local population. The socio- demographic profile in the area will improve. The improvement in transportation, medical and educational facilities will improve the quality of life of the population.

- 4.0 **Environmental Management Plan** To control the adverse effect of mining activity, a suitable environmental management plan is needed to adopt measures for soil utilization, waste dump management, land reclamation and afforestation etc. and the same are as follows:

(a) Programme of Afforestation

The plantation will be done on 33% of the lease area i.e. 4.000 hect. In 05 years. The proposed lease period is for 05 years i.e. 2019 -2023. Therefore, the plantation area covered in coming 05 years will be 4.000 hect. Or 30,000 m². In 05 years total 200 plants will be planted in green belt area.

Table-8: Suggested plant species (Shrub and Trees) for plantation.

S.No.	Botanical Name	Family	Common Name
Shrub			
1.	<i>Bougainvillea glabra</i> Choisy	Nyctaginaceae	Booganbel
2.	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Gurhal
3.	<i>Nerium indicum</i> Mill.	Apocynaceae	Kaner
Tree			

4.	<i>Ailanthus excelsa</i> Roxb.	Simaroubaceae	Maha nimba
5.	<i>Butea monosperma</i> (Lamk.) Taub.	Fabaceae	Khakhra/Palash
6.	<i>Cassia fistula</i> L.	Caesalpiniaceae	Amaltas
7.	<i>Mangifera indica</i> L.	Anacardiaceae	Am
8.	<i>Polyalthia longifolia</i> (Sonnerat) Thw.	Annonaceae	Ashok
9.	<i>Tectona grandis</i> L.	Verbenaceae	Teak/ Sagun
10.	<i>Terminalia cattapa</i> L.	Combretaceae	Jangli badam

Table 9: Proposed Plantation for Next Five Years

Year	No. of plants	Possible survival of plants (80% survival)	Budget allocation
1 st	50	40	2500
2 nd	50	40	2500
3 rd	50	40	2500
4 th	50	40	2500
5 th	50	40	2500
Total	250	200	12,500

*The compensation of the remaining 20% non-surviving plants will be done by re-plantation.

(c) Water management

Ground water is not likely to be encountered in mining pits as mining will be carried out above water table in the area. Some rain water may get accumulated in rainy season. The accumulated rainwater will be drained out by diesel engine powered water/sludge pump and can be utilized for irrigation purposes and for green belt development. Rain water harvesting will be done on the infrastructure in mining areas and collected in the sumps which will be tested before use and filtered if needed. Garland drains will be constructed around the mine pit and channelized water will be used for irrigation /plantation and sprinkling on haul road.

(d) Flora And Fauna

No significant vegetal cover and there are no rare or endangered species of fauna in the study area. The proposed plantation, measures for preventing air pollution, water pollution and noise pollution will more than compensate the flora (Mentioned in Table No.3 and fauna in (Table No.4) in the study area. No National Parks or sanctuaries present in the study area.

(e) Socio-Economic Benefits Arising out of Mining

Socio-economic conditions of area will improve as mining activities create additional employment opportunity for local inhabitants. Socio-economic status of local populace will improve due to social welfare activities undertaken by PP. Improvements in education, medical, cultural, availability of water etc. will be make the quality of life better. CSR activities as proposed will also contribute for the betterment of population. Accordingly, the proposed CSR for the project focuses on educational, health, Social and other aspects of the said population.

Table 10: Proposed CSR Activities

S. No.	Proposed activity
1.	Providing toilets and urinal facilities for students in village school
2.	Medical treatment for seriously ill persons in nearby hospitals.
3.	Organizing health check up camp in the nearby villages and providing free medicines.
4.	Drinking water will be made available to the works.

2% of the annual profits will be spent CSR activities.

Table 11: Cost of statutory compliance and environment protection measures

S. No	Particulars	Annual recurring expenditure in Rs.
Statutory expenses		
1	Recurring expenditure for providing personal protective equipments like dust mask, helmets, safety shoes, goggles, ear plugs etc.	10,000
2	Annual Health Check up of all employees	10,000
3	First aid facilities and transporting the injured to nearby hospital	10,000
4	Employees welfare, food snacks etc.	12,000
Environment protection expenses		
5	Annual/periodical monitoring of environmental parameters	20,000
6	Green belt development/plantation	112,000
Total		70,000



संचालनालय भौमिकी तथा खनिकर्म मध्यप्रदेश

मध्यप्रदेश गौण खनिज नियम 1996 के अंतर्गत
मान्यता प्राप्त योग्य व्यक्ति

प्रमाण पत्र



श्री राम मिलन पाठक, पिता श्री हरि राम पाठक, पता मकान नम्बर 109, शिवलोक ग्रीन्स, फेस-6, गोपाल नगर, भोपाल, मध्यप्रदेश, जिनकी फोटो तथा हस्ताक्षर अभिप्रमाणित है, को म.प्र. गौण खनिज नियम 1996 के अंतर्गत मान्यता प्राप्त योग्य व्यक्ति के रूप में प्रदत्त पंजीयन क्रमांक **RQP/DGMMP/78/2013**, दिनांक **25.09.2018** से **24.09.2023** की अवधि के लिये नवीनीकृत किया जाता है।

मान्यता प्राप्त व्यक्ति के हस्ताक्षर -

भोपाल, दिनांक 14.08.2018

संचालक
भौमिकी तथा खनिकर्म
मध्यप्रदेश, भोपाल