# Executive Summary
# In
# English

## (Category- B1)
**OF**

# " Piplawand Limestone mining Cluster Project"

**at**

**Village- Piplavand, Tehsil- Bastar, Bastar District of Chhattisgarh**

| | | | |
|---|---|---|---|
| **Khasra No.** | **393** | **399** | **Total** |
| **Area (In Hect.)** | **1.40** | **1.730** | **3.13 ha.** |
| **Mineable Reserves (Ton)** | **0.167 MT** | **0.223 MT** | **0.39 MT** |
| **Production Ton Per Year** | **7788** | **9932** | **17,720TPA** |
| **Project cost (in Lac.)** | **47.87** | **75.14** | **123.01** |

**Monitoring season- Summer Season**

**(March 2025 to May 2025)**

**Tor Letter No.- OL/REAPP_TOR/MIN/BASTAR/4399 by SEIAA Chattisgarh, Dated-13/06/2025 (Khasra no.-393)**

**Tor Letter No.- OL/REAPP_TOR/MIN/BASTAR/4399 by SEIAA Chattisgarh, Dated-13/06/2025 (Khasra no.-399)**


| PROJECT PROPONENT/APPLICANT | ENVIRONMENT CONSULTANT |
|---|---|
| **Shri Amber Pawar**<br>Main road shadar ward no 10, Jagdalpur, District-Bastar, Chhattisgarh<br>amberpawer485@gmail.com | **Skilled Enviro Services**<br>Certificate No.: NABET/EIA/24-27/IA 0140<br>C1-15, prem villa colony, Patrakar colony, Mansarovar, Jaipur, Rajasthan<br>Email: skilledenviro@gmail.com<br>Mob. No.: 7737986988<br>**Email:** skilledenviro@gmail.com |

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# 1 EXECUTIVE SUMMARY

## 1.1 Introduction and Background

The Applied Mine leases are situated in Piplawand Limestone mining Cluster and are fresh leases. The Project Proponent of Piplawand Limestone mine Cluster is Mr. Amber Pawar

The Piplawand Limestone mine cluster is located at a distance ~1.65 km, towards North direction from Piplawand village. The District Headquarter Bastar is ~11.0 km in South direction and Chhattisgarh State Capital Raipur is ~215.80.0 km in South and is connect by good tar road.

Quarry Plan, EMP & Quarry Closure Plan of Shri Amber Pawar has been approved by Mineral Officer, District- South Bastar, Dantewara, (C.G.) vide letter No.: 1137°/Mineral/2017, Bastar, Dated: -04/01/2017 (area-1.730 ha.) and Quarry Plan, EMP & Quarry Closure Plan of Shri Amber Pawar has been approved by Mineral Officer, District- South Bastar, Dantewara, (C.G.) vide letter No. Kra.82-A/Mineral/2017 Dantewara, dated 26/04/2017 (Area-1.40 ha.). (Annexure -1)

The State Government issued Letter of Intent for granting Quarry Lease of the lease areas to Mr. Amber Pawar for low grade Limestone Quarry in Village Piplawand, Tehsil Bastar, District Bastar, Chhattisgarh over an area 1.730 Ha (Khasra No.399). The Mine Plan is being prepared as required under Chhattisgarh Minor Mineral Rules 2015 for the grant of Quarry Lease.

The Mining Department, Collector Office Jagdalpur, District Bastar Chhattisgarh, issued Letter of Intent (क्रमांक 823/खनिज/ख. लि. 2/2014 जगदलपुर दिनांक 9/03/2017) to Shri Amber Pawar for granting of Quarry Lease of low grade Limestone Quarry in Village Piplawand, Tehsil Bastar, District Bastar, Chhattisgarh over an area 1.40 Ha (Khasra No. 393). The Mine Plan is being prepared as required under Chhattisgarh Minor Mineral Rules 2015 for the grant of Quarry Lease.

ToR was granted vide Letter No. OL/REAPP_TOR/MIN/BASTAR/4399 dated 13/06/2025 **to Sh. Amber Pawar**, and vide Letter No. OL/REAPP_TOR/MIN/BASTAR/4398 dated 13/06/2025 to **Shri Amber Pawar**.

It is proposed to excavate Total quantity of 17,720 TPA{ (7788 TPA (Khasra no.- 393) + 9932 TPA (Khasra No.-399) limestone by Opencast Manual method from applied mine leases in Piplawand Limestone Mine Cluster.

| S.NO. | PARTCULLAR | Khasra | | Total |
|---|---|---|---|---|
| | | Khasra No.-393 | Khasra No.-399 | |
| 1. | Area (In Hect.) | 1.40 | 1.730 | 3.13 ha. |
| 2. | Mineable Reserves (Ton) | 0.167 MT | 0.223 MT | 0.39 MT |
| 3. | Production Ton Per Year | 7788 | 9932 | 17,720TPA |

## 1.2 Location and Environmental setting

The Piplawand Limestone Mine cluster is located in the jurisdiction of Village Piplawand Tehsil & District Bastar in Chattisgarh .The mining lease areas are located in survey of India toposheet no.65 E/15.

***Table 1-1:** Location & Environment Sensitivity Details*

***Latitude and Longitude of the Mining Lease***

**Khasra No.- 393**

| Pillars | Latitude(N) | Longitude(E) |
|---|---|---|
| P1 | 81°55'41.80"N | 19°18'09.98"E |
| P2 | 81°55'47.82"N | 19°18'11.57"E |
| P3 | 81°55'47.87"N | 19°18'08.27"E |
| P4 | 81°55'41.77"N | 19°18'08.14"E |

**Khasra No.-399**

| Pillars | Latitude(N) | Longitude(E) |
|---|---|---|
| P1 | 19°18'23.8"N | 81°55'49.0"E |
| P2 | 19°18'25.3"N | 81°55'50.7"E |
| P3 | 19°18'24.2"N | 81°55'52.0"E |
| P4 | 19°18'23.5"N | 81°55'55.1"E |
| P5 | 19°18'24.0"N | 81°55'55.5"E |
| P6 | 19°18'23.2"N | 81°55'57.2"E |
| P7 | 19°18'21.3"N | 81°55'57.2"E |
| P8 | 19°18'21.6"N | 81°55'54.6"E |
| P9 | 19°18'22.3"N | 81°55'51.6"E |
| P10 | 19°18'22.9"N | 81°55'49.0"E |

| S. No. | Area | Name | Aerial Distance in Km and Direction from M.L area | |
|---|---|---|---|---|
| | | | Core Zone | Buffer Zone |
| 1. | National Parks/ Wildlife Sanctuaries | - | Nil | Nil |
| 2 | Biosphere Reserves/ Tiger Reserves/ Elephant Reserves and any other reserves | - | Nil | Nil |
| 3. | Forest (PF/RF/Unclassified) | - | Nil | Nil |
| 4 | Habitat for migratory birds | - | Nil | Nil |
| 5 | Corridor for animals of Schedule I and II of the | - | Nil | Nil |

| S. No. | Area | Name | Aerial Distance in Km and Direction from M.L area | |
|---|---|---|---|---|
| | | | Core Zone | Buffer Zone |
| | wildlife (Protection Act 1972) | | | |
| 6 | Archaeological Site (notified, Other) | - | Nil | Nil |
| 7 | Defense Installation | - | Nil | Nil |
| 8 | Industries / Thermal Power Plant | - | Nil | Nil |
| 9 | Other Mines | - | Nil | Yes, Details enclosed |
| 10 | Airport | - | Nil | Nil |
| 11 | Railway Lines | - | Nil | Nil |
| 12 | National Highways/ State Highway | - | Nil | Yes<br>Baster Rd is 6.95 km in West direction |
| 13 | Human Habitations | - | Piplawand | 1.96 kms in North direction from the mine site |

### 1.3 Project Chronology till Date

The details of online file for the project proposal namely Form-1 (as per the EIA Notification 2006, as amended till date) along with a Pre-feasibility Report, Approved Mining plan and proposed Terms of References (ToR) for carrying out environmental studies to the State Environment Impact Assessment Authority Chhattisgarh for the mine lease are as follows: -

***1. Table 1-5: Permission and Clearance Received***

| Khasra No. | S. No. | Permit and Clearance | Regulatory Authority | Letter No. | Issue Date |
|---|---|---|---|---|---|
| Khasra No.-393 (Area-1.40) | **1.** | LOI | Dy. Director (Mineral Admin.) Office of collector (Mining Branch ( Jagdalpur, Bastar (C.G.) | 823/Mining/Kha. LI-2/Up/2014 | 09/03/2017 |
| | **2.** | Approved Mining Plan | Mining officer District-South Baster, Datevada (C.G.) | Kr. 82-A/Mineral/2017, Datevada | 26/04/2017 |

| | | | | | |
|---|---|---|---|---|---|
| | **3.** | Deiaa EC letter | Deiaa, Bastar | Kr./754/Deiaa/EC/Mine/Baster/Jagdalpur | 12/09/2017 |
| Khasra No. 399 (1.730 ha.) | **1.** | LOI | Dy. Director (Mineral Admin.) Office of collector (Mining Branch ( Jagdalpur, Bastar (C.G.) | 1753/Mining/Kha. LI-2/Up 35/2015 | 08/09/2015 |
| | **2.** | Approved Mining Plan | Mining officer District-South Baster, Datevada (C.G.) | Kr. 1137-A/Mineral/2017, Datevada | 04/01/2017 |
| | **3.** | Deiaa EC letter | Deiaa, Bastar | Kr./220/Deiaa/EC/Mine/Baster/Jagdalpur | 01/03/2017 |

**Project Description**

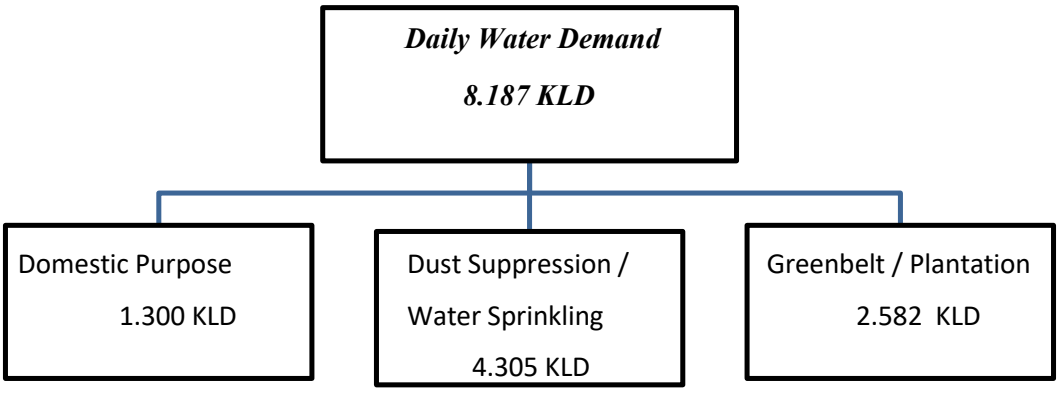
**Study Area at a Glance**

The study area is taken in accordance with the provisions of sector specific EIA guidance manual for Mining of Minerals manual, published by Ministry of Environment and Forests, during 2010. The study area for the limestone Quarry Mining Project was as follows:

- The proposed project area (M. L. area) is considered as 'Core Zone'.
- 10 km radius from the boundary limits of the M.L. area is considered as 'Buffer Zone'.

### 1.3.1 Utilities

***Table 1-2: Water Requirement for the mining***




### 1.3.2 Topography and Drainage

The lease area is located at Village Piplawand, Tehsil Bastar, District-Bastar, (C.G.). It is included in survey of India Toposheet no 65 E/15 between Latitude 19° 18' 21.3" N to 19° 18' 25.3" N & Longitude 81° 55' 49" E το 81° 55' 57.2" E. The maximum height of the area is around 589m from MSL in Western part and minimum is 583 in Eastern part.

### 1.3.3 Local Geology

Jagdalpur formation conformably overlies Kanger limestone formation. Grey to grayish limestone and Grey thinly laminated limestone area the litho units which occur in reconnoitered area, Grey thinly laminated limestone is encountered and resembles in colour, composition and quality to that of Bastar limestone. It is hard and compact with variable amount of shale intercalation. It varies in colour from grey to white and generally horizontally bedded. The lease area is a virgin area, containing exposed limestone all over the area in the form of plan surface with hillock. The existence & depth continuity of limestone has been certified by Directorate of Geology and Mining, Raipur. The adjoining pit located in the types of formation and geology of the area, limestone has been exposed to an average thickness of 10-15m, with soil cover around 0.0 to 1.0 m.

The topography of the lease area is in undulating surface. The limestone and associated formation which area at Piplawand village is forming part of Indravati group. The limestone deposit is almost horizontally bedded with local dips from 2° to 3º towards SE. Strike direction of the limestone bed is NE- SW in the area. The lease area for which the Quarry Plan has been existence of Limestone (minor mineral) has been proved.

Lithological Characteristic: Lithological Characteristic of locally occurring formations in Piplawand area are described below:

Soil: Light Brown humus soil as narrow strips along the quarries and in agricultural land.

Murrum: Murrum of lateritic origin occupying higher grounds cover limestone and shale.

Interstitical Clay: Yellowish brown and sticky clay filled in solution channels formed due karstic effects on carbonates and up to 4m depth.

Limestone: It is dominant rock in the area although the exposures of limestone are seen in the adjoining quarries. The rocks are compact, hard, saccharoidal stromatolitic fine to coarse grained, flaggy in nature, thickness of beds varies from 10m-40m

Shale Yellowish to reddish shale occurs as thin layers between limestone bed and also as basal grey carbonaceous shale below limestone horizon:

Soil

Granite

(Above Geological data is adopted from District Resource Map of Geological Survey of India)

***Table 1 3: Reserve Estimation***

Total estimated mineral reserves/resources in different categories of are given below: -

| *Reserve* | *Khasra No. 393* | *Khasra No. 399* |
|---|---|---|
| Blocked mineral reserve | 78189.75 t | 101160 t |
| Total blocked mineral reserve | 223853 t | 223853 t |
| Proved mineral reserve (mineable Reserve) | 167483.81 t | 223853 t |

### 1.3.4 Mining Method

Proposed mining activity will be carried out by the open cast semi mechanized method of mining using excavators, loaders, hydra machines and other required machineries and tools. OB of average 1.0 m is resting over the limestone along with intercalated waste of about 5% of low grade limestone volume will be excavated and transported mechanically by using the above mentioned machineries. From the loading point of view crusher stone will be transported by truck/dumper to the users. The proposed five year working will be emphasized with systematic pits developed with development and production benches.

### 2.0.1 Drilling

Exploratory drilling comprising of 2 drill holes of 30.00 m depth is recommended to understand the subsurface geology, thickness and extent of stone below 10.00 m depth.

### 2.0.2 Loading and Transportation

Quarrying will be carried out by semi mechanized open-cast method adopting a system of benches. Benches will be maintained 1.5m. Hydraulic excavators will be deployed for progressing benches and for handling ore/waste material. Manual labors are also deployed for quarrying and handling quarrying waste. Truck/tipper will be used for loading and dumping of stone. Stone will be blasted, handled and loaded by excavators into truck/tipper.

| S. No. | Name of Machinery | Number |
|---|---|---|
| 1. | Tipper | 2 |
| 2. | Tractor | 2 |

## 1.4 Meteorology Long Term Meteorology (Secondary Data)

Information presented in subsequent paragraphs is from the Indian Meteorological Department (IMD) Jagdalpur, Long Term Climatological Tables, 1971-2000. These tables give useful information about a region's weather, since it was collected over a period of 30 years.

### 1.4.1 Temperature

The average ambient temperature remains 26.2°C, varies from 9.2°C to 41.7°C. The minimum - maximum temperature range is 29.5 - 49 °C in summer, and 8 - 25 °C in winter. The average relative humidity remains around 62.6%, varies from 15.4% to 99.2%. The station pressure varies from 974 hPa to 960 hPa, averaged around 987 hPa.

### 1.4.2 Wind

Long- term wind direction data is presented in Table 3 7, and indicates that the predominant wind during the study period (March, April, May)-2025 is NE and second predominant wind direction is NW.

### 1.4.3 Rainfall

The annual rainfall in the district is around 1240 mm. The rainfall increase slightly from South to North. Out of the total annual rainfall, 90% occurs in SW monsoon in-between 15th June to 15th September. Due to the sub-tropical climate the maximum temperature ranges between 35 to 48°C whereas humidity varies from 36% and 86%.

**Relative Humidity**

Most humid conditions were found in the monsoons, followed by post-monsoons, winter and summer in that order. Mornings were more humid than evenings and humidity ranged from a high of 88-82% in monsoon mornings to a low of 53-34% in summer evening.

### 1.4.4 Site Specific Meteorology

Baseline meteorological data representing the Summer Season of 2025was collected near project site. Meteorological data showed that the average wind speed during the study period was observed to be 9.21 m/sec. It was observed that during study period wind blows pre dominantly from South East and Second pre dominant direction is NE. The data obtained during the study period was compiled to obtain average data.

## 1.5 Existing Environment Scenario

### 1.5.1 Land Use

**Land Use of the Study Area**

The land use land cover map of the study area has been prepared using recent Landsat satellite image, area and distance calculations have been carried out using GIS software after geo-referencing and interpretation.

### 1.5.2 Soil Quality

The soils of study area are predominantly Sandy loam in texture. The pH of the soil is ranges from 7.82 to 8.16. The soil being of friable consistency, the bulk density of the soil is in the range of 1.35 to 1.52 g/cm3. The organic matter content of the soil samples varies from 0.22 to 0.57 %..

### 1.5.3 Ambient Air Quality

The above analysis report shows that since this mine is not operating and traffic on the National Highway is also less, population in the village is not more. The baseline ambient air quality was found to be within the permissible limits of NAAQS.

### 1.5.4 Noise

**Day time Noise Levels (Leqday)**

- The day time (Leq day) noise levels observed in the range of 50.4 to 68.4 dB (A) in study area.

**Night time Noise Levels (Leqnight)**

- The night time (Leqnight) Noise levels observed in the range of 40.8 to 56.8 dB (A) which is within the prescribed limit of 45 dB (A) in study area.

### 1.5.3 Water Environment

**Groundwater Quality**

Analysis of results of ground water reveals the following: -

The analysis results shows that the pH for the ground water samples GW1, GW2, GW3, GW4, GW5, GW6 and GW7 ranged from 7.62 to 7.96 indicating slightly alkaline in nature. The TDS (Total Dissolved Solids) were found to be in the range 322.0 mg/l to 434.0 mg/ l. which is within the permissible limit of 2000 mg/l. Total Hardness of Ground water samples in the study area was found to be 195-277 mg/l which is within permissible limit.

Alkalinity indicates better buffering capacity of water and ranges between 102.0-135.0 mg/l. Fluoride content varies from 0.89 mg/l – 1.1 mg/l which is within permissible limit. The overall ground water quality in the study area was found to be mineralized with respect to total dissolved solid, chloride (54.8 mg/l to 85.2 mg/l), sulphate (15.4 mg/l to 30.9 mg/l)and hardness.

**Surface Water Quality**

Surface water samples were collected, and analyzed, pH value was found to be 7.2 to 7.8 mg/l which indicate that surface water is alkaline in nature; TSS was found to be 12.4 to 17.6 mg/l. It is seen that the physicochemical analysis of other parameters like chloride, calcium, magnesium, nitrate and fluoride were found within the desirable limit. The overall surface water quality of the available sources within the study area was found to be good physico-chemically with respect to all the parameters. There is no organic load-observed in the sources monitored indicating no pollution load in the source.

### 1.5.4 Impact on Air Environment

- Water sprinkling will be done twice during the day in summer season and once during the day in winter season for settling of dust particles.
- Transportation of mineral will be done on Kaccha road which will generate dust and rest of the distance will be on State Highway will not cause air pollution.
- Regular maintenance of machinery and vehicles will be done to check the excess emissions. A system of regular overhauling of dumpers & excavators, after specified hours of working shall be evolved and observed to avoid generation of obnoxious fumes.
- Green belt with tall trees will be planted. It will restrict the particulates and reduce the concentration of $SO_2$ and $NO_2$.
- Plantation along Kaccha road and statutory barrier etc. will also protect the soil from wind erosions.

- All the haulage roads including the main ramp to mine pit will be kept properly maintained and watered regularly during the working shift to prevent generation of dust due to the movement of dumpers, water tankers etc.
- Dust mask shall be provided to the workers engaged at dust generation points like excavations and loading points.

### 1.5.5 Impact of Traffic Density:

Traffic analysis is carried out by understanding the existing carrying capacity of the roads near to the project site and the connecting main roads in the area. Existing traffic on these roads was compared with the carrying capacity of these roads as per IRC guidelines and it was found that the roads are capable of handling the additional traffic/load.

***Table 2.12: Comparison Carrying Capacity of Road in Existing &Proposed PCU***

| national hhighway-30 (baster road) | Vol. of vehicle in PCU/Day -V | Capacity of Roads in PCU/day- C | LOS |
|---|---|---|---|
| Existing | 5074 | 15000 | 0.338<br>Very Good |
| Proposed | 5156 | 15000 | 0.344<br>Very Good |

**LOS- Level of Services*

### 1.5.6 Impact on Noise Environment

The expected noise levels in the working environment are compared with standards prescribed by occupational safety and health administration (OSHA-USA) & CPCB-NEW DELHI, the noise levels are expected to be in the acceptable range.

### 1.5.7 Impact on Water Environment

**Impact on Surface Water Quantity**

Surface water will not be utilized and impact on surface water quantity is not anticipated due to the proposed activity.

**Impact on Surface Water Quality**

The proposed opencast mining operation may cause water pollution. The sources of pollution generally are:

- Wash off from dumps
- Soil Erosion

**Mitigation Measures**

In open cast mining pits as well as on dumps, it is necessary that the rainwater falling outside the edge limit of the working areas will not be allowed to enter into the pit and working areas. Therefore, it is proposed to develop garlands drains around the mining pits and dumps to arrest

the surface runoff water and divert it to lower synclines without any contact with the mining operations.

In the lease for proper drainage of water, a set of garland drainages will be made in the mining lease area and the water will be accumulated at the lower most gradient by constructing siltation tanks which will act as water storage in the area as well as collection of silts. Silts will be regularly cleared regularly.

**Impact on Groundwater Quantity**

As evident from nearby wells, as well as also by villagers during the summer water table goes down below 35.0 meter and in rainy season water table comes up within 32.0 meter. Since the water table is below the maximum excavation depth (25-26m) of operation in and the flow or extent of nearest hydrology is too far from the proposed lease area thus no impact can be assessed on water table, water flow or hydrology. Moreover, no sewage or other effluents will be generated from the mine closure activities which are required to be discharged on water. Hence no water pollution can be assessed

### 1.5.8 Impact on Flora and Fauna

As the mining activities will be confined to core zone only, no adverse impact is foreseen on the flora & fauna in the core zone. To prevent the entry of wildlife animals from entering the lease area proper fencing will be done all around the lease area.

### 1.5.9 Impact on Top Soil

During mining of Limestone top soil will be generated and will be used for plantation.

### 1.5.10 Impact on Socio Economic Status

Socio-economic survey was conducted in villages within the study area located in all directions with reference to the project site.

The respondents were asked for their awareness/opinion about the project and their opinion about the impacts of the project, which is an important aspect of socio-economic environment, viz. job opportunities, education, health care, transportation facility and economic status.

## 1.6 Environment Monitoring Program

The monitoring of pollutant in mine will be carried out for air, water, soil and noise. It takes care of all monitoring needs of the mine. Additionally ambient air and work zone monitoring in mine will be conducted in every season near mining operation, loading and transportation (haul road) areas by Government approved private agency. The analysis results of air monitoring will be properly recorded and submitted to the statutory authorities from time to time. Noise measurement of mine equipment will be done Twice in a year, ambient air monitoring will be done twice in year. Water quality monitoring will be done once in season at two locations & soil quality monitoring will be done once in a year at locations within the study area.

## 1.7 Additional Studies

### 1.7.1 Risk Assessment and Disaster Management Plan

The following natural /industrial problems may be encountered during the mining operation are:

- Inundation-filling of the mine pit due to excessive rains.
- Slope failures at the mine faces or stacks.

Water table will not be encountered during proposed working. No high-risk accidents like landslides, subsidence flood etc. have been apprehended. But possibility of accidental disaster is also not ruled out. Therefore, all the statutory precautions will be taken for quick evacuation as per the Mines Act 1952, the Mines Rules 1955, Rule of MMR- 1961 and the Rules of MCDR-1988.

## 1.8 Environment Management Plan

The environment management plan is prepared with a view to facilitate effective environmental management of the project. Apart from having an Environmental Management Plan, environment management cell consisting of mines manager, safety officer and environmental officer is constituted. About 3.0 lakh of capital cost and 2.50 lakh per year recurring cost for khasra no.-393& About 3.0 lakh of capital cost and 2.30lakh per year recurring cost for khasra no.-399 and total cluster EMP cost is 10.8 Lac. would be spent on environment management activities.

## 1.9 Project Benefits

The surrounding inhabitants around the mine lease area are mainly agricultural oriented. Opportunities for jobs activities will be created and mining will serve as a source of permanent livelihood. The mine will create employment directly or indirectly. Additional, certain works like transportation will be outsourced on contract. So, overall effect of mining is expected to be positive.