

## **INTRODUCTION**

Environmental Impact Assessment (EIA) is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision making tool, which guides the decision makers in taking appropriate decisions for proposed projects. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are taken into account during the project designing.

## **ENVIRONMENTAL CLEARANCE**

The proposed project is categorized under 1 (a) (<50 hectare of mining lease area) of Gazette Notification dated Sep 14<sup>th</sup>, 2006 and subsequent amendment made on 01.12.2009 & April 2011. As per the Gazette Notification, 2006. The proposed project is under “B” category no National Park, Biosphere reserve, Migratory routes of fauna and National Monument within 5 Km radius from the project site under 1(a) activity of EIA Notification.

## **TERMS OF REFERENCE**

The State Level Expert Appraisal Committee for mining projects considered the project during its 268<sup>th</sup> meeting dated 16<sup>th</sup> January 2016. Based on the information contained in the documents submitted and the presentation made, the SEAC Committee has prescribed the Terms of Reference (TOR) vide letter no. **1725/SEAC,C.G./MINE/2506 Nawa Raipur Atal Nagar, Dated 30/10/2023.**

## **PROJECT DESCRIPTION**

The mining lease is located in village of Dumarpara, Tehsil- Shakti, District- Janjgir-Champa (C.G.) Geo-graphically the ML area extends from Longitude - 82° 51' 03.52"E to 82° 51' 15.86"E Latitude - 21° 59' 00.07"N to 21° 59' 02.23"N

Pillar No.	LONGITUDE	LATITUDE
1	82° 50' 59.91"E	21° 59' 01.34"N
2	82° 51' 03.52"E	21° 59' 00.07"N

**PROJECT: DUMARPARA DOLOMITE (LOW GRADE) QUARRY OVER  
APPLIED AREA- 4.683 HA. (BLOCK-3), VILLAGE DUMARPARA ,DISTRICT-SAKTI (C.G.)  
APPLICANT: SHUBH MINERALS PVT. LTD**

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3	82° 51' 05.58"E	21° 59' 00.08"N
4	82° 51' 05.68"E	21° 59' 00.40"N
5	82° 51' 04.67"E	21° 59' 00.80"N
6	82° 51' 04.45"E	21° 59' 01.58"N
7	82° 51' 05.65"E	21° 59' 02.07"N
8	82° 51' 04.82"E	21° 59' 03.07"N
9	82° 51' 04.54"E	21° 59' 03.98"N
10	82° 51' 06.34"E	21° 59' 03.95"N
11	82° 51' 06.78"E	21° 59' 02.66"N
12	82° 51' 08.00"E	21° 59' 01.38"N
13	82° 51' 09.03"E	21° 59' 01.42"N
14	82° 51' 09.97"E	21° 59' 02.23"N
15	82° 51' 11.42"E	21° 59' 02.14"N
16	82° 51' 13.66"E	21° 59' 01.34"N
17	82° 51' 15.86"E	21° 59' 00.26"N
18	82° 51' 15.22"E	21° 58' 59.50"N
19	82° 51' 14.70"E	21° 58' 58.69"N
20	82° 51' 13.90"E	21° 58' 57.88"N
21	82° 51' 12.75"E	21° 58' 58.13"N
22	82° 51' 12.72"E	21° 58' 57.66"N
23	82° 51' 11.82"E	21° 58' 57.09"N
24	82° 51' 08.14"E	21° 58' 57.57"N
25	82° 51' 01.97"E	21° 58' 59.04"N
26	82° 50' 59.64"E	21° 58' 59.41"N

The life of the mine is anticipated at 30 years based on the level of exploration and reserve established as per UNFC classification and expecting the market demand will remain at 2,00,000 T.

**Location of**

**Mailing/ Correspondence Address of Project Proponent:**

The lessee **M/s Shubh Minerals Pvt. Ltd.**

**Mailing/ Correspondence Address of Project Proponent:**

**M/s Shubh Minerals Pvt. Ltd.,**

Goyal Automobile, Jagatpur, Dhimarapur, Raigarh

P.O. & Tehsil- Raigarh

496001

**Size of the Project**

The total Mine Lease areas considered is 4.683 ha. The proposed production is 2,00,000 Tones/Year

**Anticipated Life of Project and Cost of the Project**

The life of the mine is anticipated at 30 years based on the level of exploration and reserve established as per UNFC classification and expecting the market demand will remain at 2,00,000Tones/Year. Total cost of the project is approx 124 Lacs.

**LOCATION**

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**Details of Project**

Project Name	Dumarpara Dolomite Quarry	
Location of the Project	Village: Dumarpara, Tehsil: Shakti, Distric: Janjgir-Champa (C.G.)	
Mine Lease Area	4.683ha	Khasra No: Above mentioned khasra

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Latitude & Longitude	Latitude	Longitude
		21° 59' 00.07"N to 21° 59' 02.23"N
Toposheet Number	64 K/13	
Type of Land	Non forest Private land	
Elevation	Highest Elevation: 250 m AMSL Lowest Elevation : 246 m AMSL	
Project Cost	1.1 Lacs	
Man Power & No. of Working days	21 person /300 Working Days	
Total Geological Reserve	37,24,745.37 T	
Total Mineable Reserve	20,03,123.06T	
Targeted Production	Production from mine largely depends on market demand presently it is fixed at 2,00,000T. as per present market scenario.	
Validity of Lease	30 years	
Seismic Zone	Seismic Zone II as per IS-1893 (Part-1)-2002	
End use of Product	In Chhattisgarh dolomite is mostly used in iron and steel industries. Most of the dolomite is used in Steel plant.	
Nearest Town	Champa 20 km in NW Direction.	
Nearest Airport	Swami Vivekananda Airport approx 145 km in NW direction.	
Nearest Railway Station	Railway Station Naya Baradwar approx at 4.5 km in NW Direction.	
Nearest Highway	National Highway 200 at 4.5 km	
Nearest Water Bodies	Hasdeo River at 16 km and Son River at 6.19 km West Direction, and Borai River approx 6.5 km East Direction.	

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Historical Monuments (in 10 km Buffer)	None within the study Area.
Status of Protected/ Other Areas (in 10 Km Buffer)	None within the study Area.
Nearest Dispensary & Govt. Hospital	Agrawal City Hospital, at Baradwar 4.3 km in NW Direction.

## **MINING**

Opencast mechanized method of mining will be adopted in the lease area. The excavation will be carried out usually by manual labour with the use of jack hammer excavator etc. and loaded into tractor/truck/tipper. The Dolomite will be suitably blended to be supplied in market. Rest is inner burden.

### **Method of Mining**

Opencast mechanized method will be adopted. It has already mentioned that, the complete mining operation will be mechanised in nature. Some drilling and blasting will be required for removal of mineral body.

However, if, mine owner wants to increase the production in the lease area than in that condition some mechanical excavator might be used for removal and loading of top soil and the dolomite.

When production increased, machines will be deployed according to requirement of work and Mining plan will be modified accordingly.

### **Drilling: - Drilling machines:**

The holes will be drilled by compressed air operated by 65 mm dia wagon drill with compressor/DTH or Jack hemmer (32mm dia) and spacing between two holes will be 2.0 m, the depth of each hole will be 3.0m. Total requirement of drilled equipment is as under:

<b>S. No.</b>	<b>Particulars</b>	<b>ROM</b>
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1	Maximum proposed annual production	200000 T
2	Production per day (200000/300 day= 666.67 )	Say 667 T
3	Output per hole = Spacing x Burden x depth x B.D.  (2.0 x 1.5 x 3.0 x 2.8)	25.2 T
4	Nos. of holes per day (667/25.2 = 26.46)	27 nos.
5	Drill meterage required (27 x 3.0 =81 )	81 m
6	Drilling capacity of a wagon/DTH drill in a hour in dolomite	7 m
7	Hours per shift	8 hours
8	Availability	85%
9	Utilization	85%
10	Effective hours per shift 8 x 0.85 x0.85	5.78 hours
11	Working capacity of jack hammer drill per day  5.78 x 7 m = 40.4	40.4 m
12	Therefore no. of wagon/DTH drills required (81/40.4 = 2)	Say 2 nos.

Type	Nos.	Dia of hole	Size/ capacity	Make	Motive power	H.P.
Drifter Wagon Drill	2	65/90 mm	100	Atlas Copco	Air Compressed	-
Jack hemmer	1	32mm	32mm	Atlas Copco	Air Compressed	-

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**Blasting:** - Blasting will be carried out by contractual agency in accordance with the Explosive Act and MMR, 1961.

Drilling is proposed to be done by wagon/DTH (65/90 mm dia) or Jack Hemmer (32mm dia). The drilling parameter of the wagon is as under:

Output per blast hole will be (Spacing x Burden x Depth of hole x B.D.)	2.0 x 1.5 x 3.0 x 2.8	25.2 T
Maximum production in a year (av.)		100000 T/yr
Production in a day will be (Av. 300 working days)	200000/300	Say 667 T
No of holes to be drilled per day	$667/25.2=26.46$	Say 27 nos.
Meterage to be drilled per day	27 x 3.0 (depth)	81 m
Charge per hole	3-5 kg approx.	Approx. 4 kg
Max. charge per day	4 x 27 = 108 kg	135 kg
Powder Factor	$667/108 = 6.2$	6.2 T/kg

The blasting will be carried out by 80% special gelatin.

OR

If the cartridges are used for blasting using wagon/DTH (65/90 mm dia) or Jack Hemmer (32mm dia), the specification of cartridge for blasting will have the following parameters:

Diameter of cartridge	32 mm
Length of the cartridge	420 mm

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Weight of the cartridge	2.2 kg
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During the blasting, all Rules, Regulations and Precautionary measures will be taken. The blasting area will be covered by red flags at appropriate safety distance and operators and workers will be removed to safety distance and blasting will be conducted by a qualified blaster. The blasting will be done in twice/thrice in a week early morning or in the afternoon.

**Production Plans for First Five Years**

Year	Area in m <sup>2</sup>	Total tentative excavation  (Cu m) (Bench height 3.0m)	Total ROM ( in M <sup>3</sup> )		Total ROM (in Tonnes)		Upto RL  In M.
			Recoverable Ore	Mineral Reject	Recoverable Ore	Mineral Reject	
(1)	(2)	(3)=(2)x3.0	(4)	(5)	(6)=(4)x2.8	(7)	(8)
1st	19047.62	57142.86	57142.86	Nil	160000	Nil	B1-241.5, B2-238.5
2nd	19047.62	57142.86	57142.86	Nil	160000	Nil	B1-241.5, B2-238.5
3rd	23809.54	71428.60	71428.60	Nil	200000	Nil	B3-235.5, B4-232.5
4th	23809.54	71428.60	71428.60	Nil	200000	Nil	B4-232.5, B5-229.5, B6-226.5

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5th	23809.54	71428.60	71428.60	Nil	200000	Nil	B6-226.5 B7-223.5 B8-220.5
Total		<b>328571.52</b>	<b>328571.52</b>		<b>920000</b>		

Systematic working will be done by formation of benches as per M.M.R. 1961. All applicable rules of MMR 1961, Mines Act-1952, MCR-1960 and MCDR-1988 will be followed for safe, scientific & systematic working to follow the principles of safety & conservation of human health & mineral.

**Machinery to be deployed**

**List of Machine**

S. NO.	LIST OF MACHINES	MAKE	MOTIVE POWER	PROPOSED
1	Hydraulic Excavator (Backhoe System) Tata Hitachi 200	TATA	Diesel	3
2	Dumpers-25 T Capacity	TATA	Diesel	4
3	Tractor-40hp & Water Tank	HINDUSTAN	Diesel	1
4	Tractor-40hp (Hindustan) Compressor (Atlas Copco)	HINDUSTAN AND ATLAS COPCO	-	1
5	Jack Hammer	ATLAS COPCO 32/65MM DIA.	Com. Air	1
6	Wagon Drill	ATLAS COPCO <100MM DIA.	Com. Air	2

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7	Rock Breaker		Diesel	1
8	Pumps-5 Hp	CROMPTON	Diesel	1
9	Drill, Other & Spares	As Per Requirement		
10	Mining Safety Equipments As Safety Shous, Helmets, Hand Gloves, Leg Guard Etc.	As Per Requirement MMR 1961		
11	Mining Equipment Such As Crowbar, Pick-Axe, Spade, Chisel Etc.	As Required		

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**Disposal of Waste**

**Nature of waste, its rate of yearly generation and proposals for disposal of waste:** The mine waste is in the form of following:-

- (1) **Top soil:** - Top soil and Lateritic soil will be removed from the lease area. Total alluvial top soil 32046.80 m<sup>3</sup> top soils will be generated from the area 5940 cum soil /OB will be Dumped on 1 m height in the Barrier Zone at 4.5 m width of periphery. And remaining Soil ( 32516.16 Cum) will be Dump in adjacent Land. (Khasra No. 2319/6 and 0.089 ha)

The top soil will be used as plantation.

- (2) **OB and Mine waste:** - Nil

**Method and manner of disposal of waste:** Top soil and Lateritic soil excavation details are given bellow table:-

Year	Top Soil (cum)	Dump Area (ha)	OB/Waste (cum)	Dump Area (ha)
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1st	16487.40 (9360 in 7.5m & 22686.8 temp. as SD1)	0.936 (in 7.5m) with 5.0m dump height + 0.132 (temp as SD1) with 5.0m dump height	Nil	NA
2nd	15559.40	0.344 (temp as SD1) with 5.0m dump height	Nil	NA
3rd	Nil	NA	Nil	NA
4th	Nil	NA	Nil	NA
5th	Nil	NA	Nil	NA
<b>Total</b>	<b>32046.80</b>	<b>0.476</b>	Nil	NA

Disposal of OB/waste material is given below-

Item	Previous waste quantity (cum)	Waste generation during proposal period (cum)	Total waste Handled (cum)	Quantity disposed of on (cum)		Area for disposal (ha)	
				Dumping	Reclaimed by Backfilling	Dumping	Reclaimed by Backfilling
Top Soil	NA	<b>32046.80</b>	<b>32046.80</b>	9360 (in 7.5m) + 22686.8 (temp. as SD1)	Nil	0.936 (in Safety barrier)+ 0.476 (SD1)	Nil
OB/Waste	NA	Nil	Nil	Nil	Nil	Nil	Nil

**Use of Mineral**

The Dolomite is being sale to various part of the India for steel industries as flux

## **General Features**

### **i) Surface Drainage Pattern**

In the Study area of 10 km radius, Hasdeo River (Distance at 16 km) , son river , borai River

### **ii). Vehicular Traffic Density**

The lease area is about 20 km from Champa. The QL area can be approached from National Highway-200 which is at a distance of 4.5 km. the Nearest Railway Station Naya Baradwar approx at 4.5 km in NW Direction. The Nearest Airport is Bilaspur Airport at a distance of 90 km.

The mode of transport of mineral and waste will be dumpers or trucks within the QL area. The mineral transportation to the destination industry outside the mining lease area will be by road.

### **iii). Beneficiation/Processing**

No processing of mineral will be done in the mine. Only simple sizing and sorting will be done.

### **iv). Township**

There is no scope of earmarking any land for township; local workers will be employed.

### **v). Power, Water Supply and other Infrastructure requirements**

#### **a. Power**

The mine will be worked by Semi-Mechanized method. No power will be required. Only for site office power will be obtained from solar energy. Transportation will be done through dumpers or trucks operating on diesel. No storage for diesel is proposed.

#### **b. Infrastructure and Basic Amenities**

Basic amenities like rest room shelter/tents, first aid facility, temporary office and water for drinking and portable bio-toilets will be provided during operational phase.

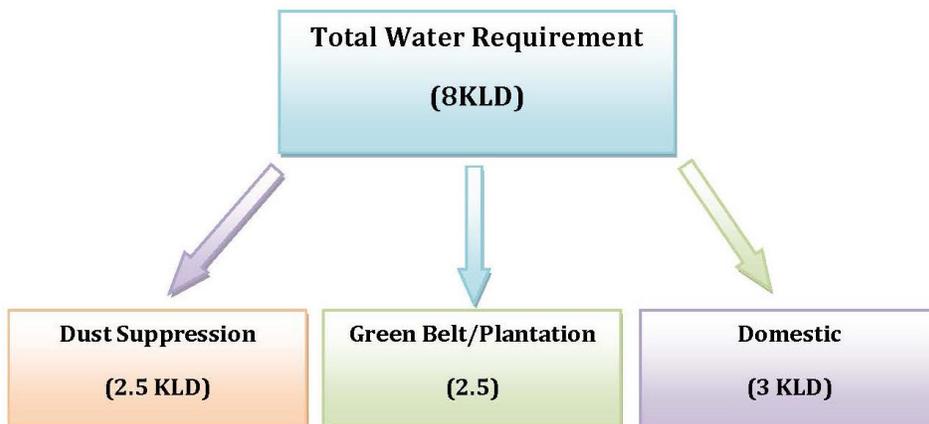
### **vi) Water Supply**

The water required is mainly for dust suppression, green belt development, drinking and other domestic purpose during mining operations. The total requirement will be 8 KLD. Water required during operation phase will be procured from bore well in the lease area and sump.

**Daily water requirement**

<i>Activity</i>	<i>Water requirement, KLD</i>	<i>Source</i>
Dust suppression /allied mining activity	2.5	Mine sump and bore well
Green Belt/Plantation	2.5	
Domestic	3	
<b>Total</b>	<b>8</b>	

**Water Balance Chart**



**MANPOWER REQUIREMENT**

About 80 persons will be getting direct and indirect employment in this mine. The man power will be mostly skilled and semiskilled.

**Manpower requirement**

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S No.	Designation	Qualification	Nos.
1	Mines Manager	Mines manager's Certification of competency	1
2	Mining Engineer *	Degree in Mining Engineering	1
4	Geologist *	PG. In Geology	1
6	Foreman	Foreman's Certification of competency	1
7	Mining mate	Mine Mate's Certification of competency	1
8	Other technical staff	Skilled	3
9	Clerical & Supervisory staff	Skilled	3
10	Raising and other misc. workers	Skilled, semi-skilled & Unskilled	10

### **ANALYSIS OF ALTERNATIVES**

Mining is a site specific activity and mine is located in the Non forest Private Revenue land of the lease area. In the proposed project, opencast semi mechanized mining will be carried out. For that, no other methodology is going to be changed, depending upon the geological set up, strata of the rock and its structural behavior. The stripping ratio is also low.

### **DESCRIPTION OF ENVIRONMENT**

This section contains the description of baseline studies of the 10 km radius of the area surrounding the Mine. The data collected has been used to understand the existing environment scenario around the proposed mining project against which the potential impacts of the project can be assessed.

Environmental data has been collected in relation to propose mining for:-

- (a) Land
- (b) Water
- (c) Air

(d) Noise

(e) Biological

(f) Socio-economic

**(a) Land Use:** The land-use is divided into agriculture land, settlement, and river and forest area as shown in the map. The area is fertile and dominated by the proportion of agriculture land.

**Land Use Pattern of the Study Area (within 10 km Buffer)**

<b>S. No.</b>	<b>Land Use Type</b>	<b>Area (in ha)</b>
1	Open Land	700.87
2	Stony Quarry/Brick Quarry	90.5
3	Settlement	1600.5
4	Water bodies	275.30
5	Agriculture Land	29739.48
Total		32406.65

There is no National Park, Biosphere reserve, Migratory routes of fauna and National Monument within 10km periphery of the lease area as per secondary data available. There is no habitation within lease area.

**(a) Results of Soil Analysis**

The analysis results show that soil is basic in nature as pH value ranges from 7.04 to 7.45 showing the saline property of soil. High electrical conductivity (320 to 428  $\mu\text{S}/\text{cm}$ ) is observed in the analysis report showing soil electrical behavior and dissolved solids in soil. The presence of

Nitrogen content varies from 0.067 to 0.080 %. The concentration of Nitrogen, Phosphorus & Potassium are found low value in the soil samples. pH and EC values vary greatly and are affected by several environmental factors including, climate, local biota (plants and animals), bedrock and surficial geology, as well as human impacts are shown in the analysis report.

Low values of EC indicate relatively dilute waters, such as distilled water and low deposition of TDS.

### **(b) WATER ENVIRONMENT**

The results of Ground water samples are collected at six locations in the post-monsoon season as discussed above for organoleptic & physical parameters, general parameters, toxic and biological parameters. The analysis results at the six ground water locations and two surface water locations are given below:

The analysis results indicate that pH of the groundwater is in range of 6.72 – 7.19. The TDS were found to be in the range of 382-506 mg/l. Total Hardness is in range of 139.39 – 220.41 mg/l. The analysis results indicate that pH of the surface water to be in range of 7.12– 7.34. The TDS is found to be in the range of 561-615 mg/l. Total Hardness is in range of 320-360 mg/l. Other parameters like chloride and sulphate are observed within the prescribed limits. The necessary treatment required to minimize the impact is mentioned in Environment Management Plan and cost is born by the Project Proponent.

### **(c) AMBIENT AIR QUALITY**

The Ambient Air Quality Monitoring reveals that of 13 monitoring stations the minimum concentrations of PM<sub>2.5</sub> are 20.23 µg/m<sup>3</sup> at AQ4(Parsadakalan) and maximum 38.25 µg/m<sup>3</sup> at AQ1(Project site ). The results of PM<sub>10</sub> reveal that the minimum concentration of 29.78µg/m<sup>3</sup> at AQ6 while maximum concentration of 68.28 µg/m<sup>3</sup> is found at AQ1. These values for PM10 and PM2.5 are within prescribed CPCB limit of 100 µg/m<sup>3</sup> and 60 µg/m<sup>3</sup>, respectively for residential and rural areas at all stations.

The gaseous pollutants SO<sub>2</sub> and NO<sub>2</sub> are within the prescribed CPCB limit of 80 µg/m<sup>3</sup> for residential and rural areas at all stations. The minimum & maximum concentrations of SO<sub>2</sub> were found to be 11.03 µg/m<sup>3</sup> at AQ5 & 34.82 µg/m<sup>3</sup> at AQ8, respectively. The minimum & maximum concentrations of NO<sub>2</sub> are found to be 9.12 µg/m<sup>3</sup> at AQ4 & 28.08 µg/m<sup>3</sup> at AQ8 respectively.

#### **(d) NOISE ENVIRONMENT**

The values of noise observed in some of the areas are primarily owing to vehicular traffic and other anthropogenic activities. Noise monitoring results reveal that the maximum & minimum noise levels at day time were recorded in the range of 66.59 dB (A) at NQ8 (Industrial zone) and 36.54 dB (A) at NQ11 (Silent zone) and maximum & minimum noise levels at night time were recorded in the range of 48.92 dB (A) at NQ8 (Industrial zone) and 30.12 dB (A) at Village NQ11 (Silent zone) respectively.

#### **(e) BIOLOGICAL ENVIRONMENT**

The lease area as well as buffer zone area reveals no endangered and endemic species of flora and fauna in the area.

#### **(f) SOCIO- ECONOMIC**

##### **Population Composition**

According to 2011 Population Census the study area has a total population of 93111. Of this 50.14 percent are male and the remaining 49.86 percent are female. Further 11.79 percent of the total population belongs to 0-6 age group. About 51.13 percent of them are male and the remaining 49.87 percent are female.

##### **Sex Ratio**

The overall sex ratio in the study area has been worked out to 976 females per 1000 males, which is more than the national average of 940 females per 1000 males. The highest sex ratio recorded

in the study area is 1026 females per thousand of males. Sex ratio of Children belonging to 0-6 age group has been worked out to 956 females per 1000 males.

### **Density of Population**

The overall density of population in the study area has been worked out to 449 persons per sq. Kilometre. This is less than the density of population for the state, which stands at 489 persons per sq. Kilometre, according to census 2011.

### **Households**

There are 20779 households in the study area and the average household size is three.

### **Social Structure**

In the study area the total number of persons belonging to Scheduled Caste community is 20691, which is 15.73 percent of the total population. The gender wise distribution of schedule caste population indicates male 50.82 percent and female 49.18 percent, registering a sex ratio of 967 females per one thousand males.

Further analysis of data reveals that in the study area, the total number of persons belonging to Scheduled Tribe community is 16203, which is 17.40 percent of the total population. This is nearly same as the total number of persons belonging to Scheduled caste community residing in the study area.

About 78.33 percent of the total population belongs to General category, which includes people belonging to 'Other Backward Castes'. In absolute number the population belongs to this category are 59379 with 50.15percent male and 49.85 percent female. The sex ratio of General category population has been worked out to 993 females per 1000 males.

The socio-economic development of poor and downtrodden scheduled caste and scheduled tribe people is a continuous process and the governments, both at the centre and the states are constantly making efforts to improve the destiny of these people. Distribution of surplus land to the members of the above categories of people is an important step taken by the government for their economic empowerment. The State Governments have drawn up its own list of socially and educationally backward classes and implementing various developmental schemes for them. These schemes are mainly in the field of education and income generation. All the ongoing schemes are critically examined and modified periodically to cater to the needs of different groups amongst the above

communities. The government has also started various schemes to improve the quality of life of the rural poor, especially for the scheduled castes and scheduled tribes by making special provisions for them. 'Sampornma Grameen Rozgar Yojana' (SGRY) is one such programme, which was launched to safeguard the interest of the weaker sections and women by providing them wage employment. The 'Swarnjayanti Gram Swarozgar Yojana' (SGSY), another rural development scheme aims at bringing poor families above the poverty line by providing them with income generating assets through a mixture of credit and subsidy. The SGSY has also made an explicit provision that 50 per cent of the Swarozgaris assisted should be from Scheduled caste and Scheduled Tribe communities.

Over the decades the Scheduled caste and scheduled tribe people are making rapid progress both in economic and social sphere. Today they are no more untouchables. The literate Schedule Caste and Scheduled tribe people are engaged in trade, commerce & industry, private & government services including police and armed forces.

### **Literates and Literacy Rate**

All persons aged seven years and above, who can both read and write with understanding in any language including Braille are considered as literate. The total numbers of literate persons in the study area are 65522 which is 70.37 percent of the total population. Of the total number of literate persons 58.64 percent are male and the remaining 41.36 percent are female.

The overall literacy rate in the study area has been worked out to 70.37 percent. The gender wise distribution of literacy rate reveals that 81.46 percent of the literate persons are male and 59.27percent are female. This creates a gender gap of 23.19 percent.

### **Workers and Work Participation Rate**

A worker has been defined as a person who participates in a productive activity with or without compensation, wages or profit and such participation may be physical and/or mental in nature. A worker may be a main worker or a marginal worker. The main workers are those workers who had worked for the major part of the total working period. In case the total working period is 365 days the worker must have worked for more than 190 days. The marginal workers, on the other hand are those workers who had worked for less than six months during the last 365 days.

The total number of workers in the study area has been worked out to 28853, which is 30.98 percent of the total population. Of the total number of workers 65.32 percent are male and the remaining 34.68 percent are female. The overall work participation rate is 87.61 percent. While the work participation rate of male is 79.13 percent, it is only 86.85 percent in the case of females. This creates a gender gap of 18.73 percent, which is significantly high. The Main workers constitute only 87.61 percent of the total workers, while marginal workers constitute 12.38 percent of the same. An analysis of data reveals male dominance in Main workers (79.13 percent) and female dominance (86.85 percent) in case of Marginal workers. This was as expected. The females prefer to work as marginal workers as they have very little time to spare for other work outside their houses as they are to undertake household work besides rearing their children. The total number of main and marginal workers in the study area is 28853 and 4080 respectively.

Further classification of the workers has revealed that in the study area 35.36 percent of the total workers are agricultural workers, 6.29 percent are household industrial workers and the remaining 8.07 percent are 'Other Workers'. Furthermore, of the total agricultural workers about 16.36 percent are Cultivators and the remaining 16.36 percent are Agricultural Labour. About 54.3 percent of cultivators are male and the remaining 45.7 percent are female. On the other hand, 66.03 percent of Agricultural labours are male and the remaining 33.97 percent are female. It may be observed from the above figures that participation of women in agriculture both as cultivators and agricultural Labour is far below in comparison to their male counterpart. This also confirms that in agriculture women work more as agricultural labours than as cultivators. The agricultural labours are mostly landless. They work in the field of big farmers for which they get wages or part of the produce. The wages of women agricultural labour is miserably low in comparison to their male counterpart, though they put same amount of hard work as the male does. The 'Other Workers' include white collar workers, blue collar workers, pink collar workers, informal workers, etc.

### **Dependency Ratio**

Based on total number of workers gainfully employed and non-workers either in search of a job or very old & retired or physically handicapped or mentally retarded or students continuing their

studies or people who have no intention to work, the overall dependency rate has been worked out to 41.85 percent. While the dependency rate for male is 40.81 percent, it is 42.89 percent in the case of female. This indicates that unemployment situation in the study area is a matter of concern.

### **Education Facilities**

An analysis of data reveals that 15 private pre-primary schools are located in the study area but no Government pre-primary school has come up in the area so far. There are 80 government primary schools in the study area and six private primary schools. Similarly, of 40 middle schools 50 are Government Middle Schools and six are private middle schools. There are 25 secondary schools and 15 senior secondary schools in study area. Of 25 secondary schools 18 are government secondary schools and 7 private secondary school. Of 15 senior secondary schools 9 are government senior secondary schools and 6 private senior secondary school.

### **Health Facilities**

The data given in the above table reveals that institutional health facilities in the study are extremely disheartening as there are only 15 Primary health sub-centres, which are manned by 3 doctors and 30 para-medical staffs. There is no other institutional health facility in the study area worth the name. The number of medical practitioners per one thousand populations has been worked out to 0.4 persons, which is highly distressing. The study area is also devoid of Indian System of Medicine viz. Homeopathy, Ayurveda, Unani and Siddha.

### **Drinking Water Facilities**

The villagers in the study area are not yet provided with treated tap water. The untreated tap water has so far reached only 3 villages. For supply of water for drinking, washing and cleaning the villagers mostly depend upon uncovered wells and hand pumps. As many as 10 villages in the study area are provided with uncovered wells and 100 villages with hand pumps. The Other sources of drawing water are tube wells/boreholes, river /canals, Spring etc.

### **Electricity**

Out of 110 inhabited villages 90 are provided with power supply for all uses. This works out to 91% of the total number of villages in study area. Of the remaining 9 villages 24 are having power

supply for domestic and agriculture uses and two are having power supply exclusively for domestic uses in the project village.

### **Roads**

In the study area there is all type of roads. Paved, Mud and Foot Roads are available in 108 villages. In another 2 villages only Mud and foot roads are available.

### **Banks and Financial Institutions**

The study area is awfully lacking in banking facilities. There is only 10 commercial bank in the study area. There is no cooperative bank, and credit society in the study area to provide financial support to the farmers. Due to non-availability of adequate number of commercial banks and credit societies the general public including the farmers are forced to approach the money lenders to meet their credit requirements.

## **ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES**

### **Impact on Ambient Air Quality**

The mining is proposed to be carried out by opencast other than fully mechanized method. The air borne particulate matter generated by ore and handling operations as well as transportation is the main air pollutant. The emissions of Sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) contributed by vehicles plying on haul roads are marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions.

### **Mitigation Measures**

1. Water sprinkling will be done on the haul roads twice in a day.
2. The dust generated during the process will be minimized by water spray at the working faces before and after the activity.
3. Plantation will be carried out on approach roads and in Lease boundary.
4. Planning transportation routes of mined material so as to reach the nearest paved roads by shortest route. (minimize transportation over unpaved road);

5. Personal Protection Equipments (PPE) like dust masks, ear plugs etc. will be provided to mine workers.
6. Rock breaker will be used for breaking over size boulders in order to reduce dust and noise generation, which otherwise would be generated due to secondary blasting.
7. Speed limit will be enforced to reduce airborne fugitive dust from vehicular traffic.
8. Deploying PUC certified vehicles to reduce their noise emission.
9. Haul road shall be covered with gravels
10. Spillage from the trucks will be prevented by covering tarpaulin over the trucks.
11. Ambient Air Quality Monitoring will be conducted on regularly basis to assess the quality of ambient air.
12. Proper maintenance of machines improves combustion process & makes reduction in the pollution.
13. Good maintenance and monitoring of fuel and oil will not allow significant addition in the gaseous emission.

### **NOISE ENVIRONMENT**

Noise generated at the mine is due to mechanized mining operations and truck transportation activities. The noise generated by the mining activity dissipates within the mine. There is no major impact of the mining activity on the nearby villages. However, pronounced effect of above noise levels is felt only near the active working area.

The impact of noise on the villages is negligible as the villages are far located from the mine workings. Since there is no involvement of major machinery, the impact of noise levels will be minimal.

<b>S. No.</b>	<b>Impact Prediction</b>	<b>Mitigation Measures</b>
<b>1</b>	Noise Impact due to mining activities.	The noise levels from all the sources are periodical and restricted to particular operation.

2	Noise impact due to vehicular movement.	<p>a) Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce the generation of noise.</p> <p>b) Plantation along the sides of approach roads, around office building and mine area will be done to minimize the propagation of noise.</p> <p>c) Personal Protective Equipments (PPE) like earmuffs/earplugs will be provided to all operators and employees working near mining machineries or at higher noise zone.</p> <p>d) Periodical noise level monitoring will be done</p>
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**BIOLOGICAL ENVIRONMENT**

S. No.	Impact Predicted	Suggestive measure
1	Disturbance of free movement/living of wild fauna	<ul style="list-style-type: none"> <li>• Care will be taken that noise produced during vehicles movement for carrying OB and ore materials are within the permissible noise level.</li> <li>• Care will be taken that no hunting of animals (birds) carried out by labours.</li> <li>• If wild animals are noticed crossing the core zone, it will not be disturbed at all. Labours will not be allowed to discards food, plastic etc., which can attract animals near the core site.</li> <li>• Only low polluting vehicle will be allowed for carrying ore materials. All vehicles allowed in the project site area will have to provide pollution under control certificate at the end of three months</li> </ul>

**PROJECT: DUMARPARA DOLOMITE (LOW GRADE) QUARRY OVER  
 APPLIED AREA- 4.683 HA. (BLOCK-3), VILLAGE DUMARPARA ,DISTRICT-SAKTI (C.G.)  
 APPLICANT: SHUBH MINERALS PVT. LTD**

		<ul style="list-style-type: none"> <li>Noise level will be within permissible limit (silent zone-50dB during day time) as per noise pollution (regulation and control), rules, 2000, CPCB norms</li> </ul>
2	Harvesting of flora	<ul style="list-style-type: none"> <li>No tree cutting, chopping, lumbering, uprooting of shrubs and herbs should be allowed</li> <li>Collections of economically important plants will be fully restricted</li> </ul>

**LAND ENVIRONMENT**

<b>S. No.</b>	<b>Impact Prediction</b>	<b>Mitigation Measures</b>
1	Change in the Topography of the Land / Land Degradation	The proposed mining activity is carried out in hilly region and waste land After removal of ore body, a undulating portion will be created. All the broken area will be reclaimed by systematic backfilling and rehabilitated by afforestation so that landscape of the area is improved.
2	Solid waste generation	About 10% mineral wastes will be generated. Top Soil will backfilled in the mined out areas on which plantation will be raised.
3	Change in Drainage Pattern	Water flow / course will not be obstructed and natural drains or nallahs will not be disturbed. Run-off from mine and mineral stack will be prevented to avoid being discharged to surroundings, particularly to agricultural land. Garland drains and, catch pits has been constructed to prevent run off affecting the surrounding agricultural land. Green belt has been developed in boundary.

4	Impact on the Agricultural Practice at nearby area due to dust generation	Agriculture activities are practiced nearby areas may impacted because of dust generation but mitigative measures such as regular water sprinkling on active areas for example haul roads, excavation sites will be strictly followed so that impact is minimized.
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### **WATER ENVIRONMENT**

<b>S. No.</b>	<b>Impact Prediction</b>	<b>Mitigation Measures</b>
1	Effect on the Ground Water Table	Max Elevation of the ML area is 250 m AMSL Ultimate depth of mine is up to 246 m AMSL. Ground Water table is 30m to 40m ground water table.
2	Wash off from the dumps	No dumping has been proposed.
3	Soil Erosion	Reclamation of the mined out area will be done with plantation to avoid the soil erosion
4	Waste Water generation/ Discharge	Portable Bio-toilets will be used; hence no sewage / liquid effluent will be generated and contamination is also not expected due to percolation.
5	Siltation in nearby agriculture field	A Garland drain has been constructed on the sloping side barrier of the ML area. The garland drain has been routed through settling tank to remove Suspended solids from flowing into storm water.

### **ADDITIONAL STUDIES**

## **DISASTER MANAGEMENT PLAN**

In order to avoid any danger in the mine site at the end of life of mine a disaster management cell headed by local authority District Collector will be constituted. Police department health authorities, including doctor, ambulances and so on will have a vital part to play following a disaster along with the mine management, and they will be an integral part of the disaster management plan.

The disaster management plan is aimed to ensure safety of human life and property and protection of environment Following are the objective of the disaster management plan. (i)

First Aid to injured.

- (ii) Rescue operation and provision of adequate medical facilities to the injured.
- (iii) Safety of the human life in the buffer zone if needed.
- (iv) Protecting and minimizing damage to property and the environment.
- (v) Initially restrict and ultimately bring the incident under control.
- (vi) Identify any dead.
- (vii) Inform to the administration, DGMS and statutory persons as per Rules.

### **Budget for Environmental Protection**

Particulars	Capital Cost	Recurring Cost/ year in Rs.
Environmental Protection		
Dust Suppression	70,000	30,000
Tarpaulin and cover for stack of fly ash	50,000	20,000
Environmental Monitoring	60,000	30,000 (Air – 10,000 Water -10000 Soil and Noise- 10000)

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Green Belt along with chain link fencing in barrier zone	7,57,970	2,32,396
<b>Total</b>	<b>9,37,970</b>	<b>3,12,396</b>

**Budget for Occupational Health**

<b>Particulars</b>	<b>Capital Cost (Rs.)</b>	<b>Recurring Cost (Rs.)</b>
For routine checkup	--	1,00,000
Infrastructure &PPE's	50,000	50,000

**Budget for Water, Shelter and Sanitation for Mine Worker**

<b>Scheme</b>	<b>Capital Cost (In Rs)</b>	<b>Recurring Cost (In Rs)/year</b>
Drinking water facility	50,000	30,000
Rest shelter	50,000	40,000
Sanitation (Urinal and Toilet )	1,00,000	30,000
<b>Total</b>	<b>2,00,000</b>	<b>1,00,000</b>

**IMPORTANT ASPECTS OF THE ENVIRONMENTAL MANAGEMENT PLAN  
 STAGE-WISE PLANTATION, & POST MINING LAND USE**

The species of Neem, Pipal, Karanj, Munga, Ber, Bel, Mango, Dalbergia sissoo, Gulmohar, Amla, Kachnar, Gamhar, Khamhar, Jamun, Mahua, and Kadam etc. will be planted etc. will be planted every year. Barbed wire fencing will be done to protect the plants.

The proposed land use at the end of fifth year and at the end of mine life is given in table below:

**Break-Up of Land Utilization Pattern (Area in ha)**

\		Pvt. Land (Non forest land)		
		Land use at Present in Ha.	Land use at the end of 5 years in Ha.	Land use at the end of conceptual period in Ha.
A.	Lease Area	4.683 Ha.	4.683 Ha.	4.683 Ha.
B.	Mining & allied			
1	Area under pits	Nil	2.136	3.687
2	Storage for top soil	Nil	1.412 (0.936+0.476)	0.936
3	Mineral storage (temp.)	Nil	0.020	0.020
4	Infrastructure (workshop, administrative building etc.)	Nil	Out side	Out side
5	Roads	Nil	0.107	0.004
6	Total Area (1 to 12)	Nil	3.675	4.647
7	Undisturbed area	Nil	1.008	0.036

**Important Aspects of the Environmental Monitoring Programme**

The monitoring of the environment parameters will be out sourced and carried by the lab of SPCB or a lab approved by MoEF/NABL.

**CONCLUSION**

As discussed, it is safe to say that the proposed facilities are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits.