

ENVIRONMENT CLEARANCE FOR

DUMARPARA DOLOMITE MINING PROJECT,

**VILLAGE– DUMARPARA, TEHSIL – SAKTI, DISTRICT- JANJGIR-
CHAMPA, STATE – CHHATTISGARH. AREA-42.754 HA, PRODUCTION
CAPACITY- 1,50,000 TPA TO 3,40,393.16 TPA**

EXECUTIVE SUMMERY

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SUMMARY OF EIA REPORT

INTRODUCTION

This Chapter discusses in brief the summary of EIA report and present all chapters in concise manner to overall understanding of the report.

PROJECT BACKGROUND

The present Environment Impact Assessment documentation has been prepared in terms of EIA notification of the MoEF&CC dated 14.09.2006, its subsequent amendments and the EIA Guideline Manual for Mining of Minerals (Feb, 2010) of MoEF&CC, Govt. of India, for seeking environmental clearance for mining. The EIA is for the Dumarpara Dolomite Mining project, at Village Dumarpara, Sakti Tehsil, Janjgir-Champa District of Chhattisgarh State (Mine lease area 42.754 Ha) of M/s. Sri Balaji Metals & Mineral Pvt. Ltd. Kolkata (Expansion of production from 1,50,000 TPA to 3,40,393.16 TPA with crushing and screening facility)". The ToR to the project was prescribed vide letter no.-J-11015/464/2014-IA.II(M)dated 22.01.2015 as SEIAA, Chhattisgarh was not in place. The pp requested to incorporat the crushing and screening operation as part of the project and transfer the proposal to SEIAA, Chhattisgarh. The proposal was considered by the Expert Appraisal committee in its meeting held during june22-23, 2016 for amendment of ToR. The committee after detailed deliberations, recommended the proposal for amendment in ToR and its transfer to SEIAA, Chhattisgarh.

As per approved mining plan, the state govt. has sanctioned Mining lease to the applicant M/s Star Ferro Alloys Pvt. Ltd. on dated 20-05-2002 for a period of 20 years, i.e. 20.05.2002 to 19.05.2022 over an area of 42.754 ha. The lease was transferred in the name of M/S Sri Balaji Metals & Minerals Pvt. Ltd. on dated 30.08.2005 for balance period of mining lease.

Therefore 2nd Mining scheme prepared for the period of 2013-14 to 2017-18 was submitted to IBM for further approval and it has been approved by the Indian Bureau of Mines vide letter no.JNG/DOL/MPLN-677/NGP, Nagpur on dated 20.09.2013 for remaining period.

The proposed Dolomite Mining Project is located at Village Dumarpara, Sakti Tehsil, Janjgir-Champa District of Chhattisgarh State. The total mine lease area is 42.754 ha.

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Earlier EC for the project was granted on 06.05.2010 to M/s Balaji Metals & Minerals Pvt. Ltd. for the production of Dolomite (1,50,000 TPA) over the 42.754 ha with crushing and screening by SEIAA, Chhattisgarh. **The project proponent further proposes for capacity enhancement of the mine from 1,50,000 TPA to 3,40,393.16 TPA under the same lease area with crushing and screening..**

PROJECT DESCRIPTION

The proposed Dolomite Mining Project is located at Village-Dumarpara, Tehsil-Sakti, District-Janjgir- Champa of Chhattisgarh State. The total mine lease area is 42.754 ha. All operations of the opencast working will be mechanized. Drilling operation is done with the help of Wagon drill Dia 94mm with the compressed air. All the machineries are used on own or hired basis by the owner.

Table E-1: Salient Feature of the Project

Sl. No.	Parameters	Description			
1	Mining Lease Area & Type of land	Mine Lease area is 42.754 ha, The area of mine lease is Government Waste Land.			
2	Geographical co-ordinates	Block	A	B	C
		Latitude	21°58'47.47" N to 21°58'51.85" N	21°58'46.58" N to 21°58'53.11" N	21°58'41.39" N to 21°58'42.73" N
		Longitude	82°50'14.13" E to 82°50'13.71" E	82°50'28.06" E to 82°50'27.32" E	82°51'21.89" E to 82°50'31.19" E
3	Name of Rivers/ Nallahs/ Tanks/ Spring/ Lakes etc	Water bodies		Distance (km)	Direction
		Usar Nadi		6.0 km	ENE
		Kotri Nadi		7.5 km	ENE
		Boral Nadi		7.0 km	ESE
		Hasdo River		14.5 km	WSW
		Son Nadi		5.0 km	WSW
4	Name of Reserve Forest(s), Wild life Sanctuary/ National parks etc.	Forest		Distance (km)	Direction
		Adjacent Chhitapariya RF		-	S
		Bothia PF		6.0 km	SE
		Protected Forest		14.7 km	NNE
5	Nearest Railway Station	Baradwar Railway Station-About 4. km in NW direction			
6	Nearest Airport	Raipur Airport-about 200 km in SW direction.			
7	Nearest City/Town	Nearest Town-Naya Baradwar (About 5 km area-NW)			
8	District Headquarter	Janjgir (About 29 km in WNW direction)			
9	Nearest SH/NH	Other Major District road- about 2.5km in N			

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Sl. No.	Parameters	Description
		NH -200 is about 13 km in NW.
11	Topography of ML area	The lease area is rolling plain having gentle slope towards north and north-east direction.
12	Name of Mineral mined	Dolomite
13	Rate of Production (TPA)	Dolomite Existing- 1,50,000 TPA Proposed-3,40,393.16 TPA
14	Life of mine	74 years
	Lease Period	20.05.2002 to 19.05.2022
15	Mineral Reserve in Tonnes	Total Geological Reserve = 31.7958 Million Tonnes Mineable Reserve = 22.3702 Million Tonnes
16	Mining Method	Opencast mechanized method of mining with wagon drilling and blasting will be adopted in the lease area
17	Drilling/ Blasting	Blasting is only with suitable method for such type of deposit.
18	Ultimate Pit Slope	60°
19	Ultimate depth of Mining	20 - 22 meter below general ground level
20	Ground water level	22 to 25 meter BGL
21	Ground Water Table intersection	Mining will be done above the ground water table. Hence ground water table will not be intersected during mining period.
22	Water requirement & source	Total water requirement for dust suppression, plantation and drinking is 21.4 KLD. Water will be sourced from nearby villages.
23	Employment Potential	30 people
24	Working of the Days	300

EXISTING LAND USE PATTERN

The existing land use of the mine lease is government waste land. The mine is operational so, there are also some existing pits from previous mining operations. The existing land use pattern given in **Table E-2**

Table E-2: Existing Land Use Pattern

S.No.	Description	Area (Ha)		
		Present Land	End of the 5 year	Conceptual period
1	Area under Pits	4.00	4.00	NA
2	Water Reservoir	NA	NA	12.000
3	Area backfilled	0.30	0.50	10.000
4	Area under roads	0.50	0.50	1.000
5	Area under Infrastructure	0.15	0.15	0.150
6	Area under Plantation	1.90	2.90	5.000

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7	Area under Crushing plant	1.00	1.00	1.000
8	Area under stock of finish Mineral	0.50	0.50	0.500
9	Area under ROM to be fed in crusher	0.50	0.50	0.500
10	Area under Magazine (Explosives)	0.36	0.36	0.360
11	Unused Area	33.544	32.344	12.244
Total		42.754	42.754	42.754

Source:- Scheme of Mining for Dumarpara Dolomite Mine (Area 42.754 ha) prepared by A.K.Singh

YEAR WISE DEVELOPMENT & PRODUCTION

The mining will be carried out in the mine lease area by adopting open cast mechanized method with use of excavator and tipper. Proposed five year production details are shown in below **Table E-3**

Table E-3: Five year Production Proposal

Year	Production proposal in Block-B	Production proposal in Block-C	Total production
2013-14	99,325.08	1,44,365.22	2,43,690.3
2014-15	95,227.09	1,62,566.18	2,57,793.27
2015-16	1,12,280.53	1,94,073.30	3,06,353.83
2016-17	1,35,847.54	1,62,597.75	2,98,445.29
2017-18	1,17,916.51	1,50,439.65	2,68,356.16

Source:- Scheme of Mining for Dumarpara Dolomite Mine (Area 42.754 ha) prepared by A.K.Singh

10.1 BASELINE ENVIRONMENT

The compilation of environmental baseline data is essential to assess the impact on environment due to the project activities. The environment includes the components of water, land, air, ecology, noise, socio-economic issues etc. The information presented in the chapter has been collected from desk research, secondary sources and primary field studies. Majority of data on water quality, vegetation, air and noise quality was collected during field studies.

For baseline data collection, an area covering 10 km radius from the proposed project site boundary as the centre has been considered as the Study Area. Baseline data for environmental attributes like ambient air, meteorology, water, water use, hydrology, land use, soil, geology, noise, socio-economic status, ecology and biodiversity etc. was collected. The study was conducted during the period **March to May, 2015**.

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Meteorological Data

The data on meteorological parameters in the study area were monitored for the period Pre – monsoon season (March, 2015 to May, 2015). The data was monitored with an automatic weather-monitoring station placed near the proposed mining site.

Air Environment

Eight Ambient Air Quality locations has been selected. Criteria used for designing the network were principally governed by the wind rose pattern for pre monsoon season and the accessibility of the selected sites. Attempts were made to locate most of the AAQ stations in predominant downwind direction with respect to the project site. A Coverage Factor concept was used for determining the location of AAQ monitoring stations(R EMunn). A large number of stations were identified as potential monitoring stations all around the project.

Detail survey results of the study period are analysed and the 98th percentile, average, maximum and minimum values have been computed from the observed analysed/raw data for all the AAQ monitoring stations. The summary of these results for PM₁₀, PM_{2.5}, SO₂, NO₂ and CO for each location representing pre-monsoon (2015) are presented in **Table E.4**

Table E-4: Consolidated Values of AAQ (98th percentile)

Code	Location Name	Distance (km)	Direction	Units in µg/m ³				Unit in mg/m ³
				PM10	PM2.5	SO ₂	NO ₂	CO
AQ1	Chhitapariya	1.5	S	64.4	29.6	9.4	14.7	0.92
AQ2	Darrabhatta	3.0	S	62.2	27.5	10.6	13.7	0.96
AQ3	Dumarpara	1.0	N	63.7	30.5	10.5	14.9	0.98
AQ4	Tanduldih	3.5	SE	57.8	26.4	9.8	15.6	1.00
AQ5	Deragarh	1.2	NNE	62.2	29.3	10.1	17.4	1.21
AQ6	Khamhariya	6.5	S	56.2	26.1	8.8	15.2	1.02
AQ7	Project Site	-	-	67.5	32.7	11.9	15.7	1.09
AQ8	Naya Baradwar			64.9	31.4	11.3	16.0	0.91
Industrial, Residential, Rural & Other Areas				100	60	80	80	04***
Ecologically Sensitive Area (notified by Central Government)				100	60	80	80	04***

Source: Gazette of India Notification, dated 18th Nov, 2009

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* Annual Arithmetic Means of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals, ** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable shall be complied with 98% of the time in a year. 2% of the time they may exceed the limits but not on two consecutive days of monitoring, *** For CO 8 hourly standard is being considered

Land-use

Land use of the Study Area: From the above table it can be seen that majority of the land in the study area is Single crop agricultural land (82.65%), Built up (5.186%) , water body (3.944%) and Open Scrub land (2.531%). The part of the land used for forest land is 2.782%, Barren land 2.224%, and Brick kiln 0.002%, of the total land of the study area. Mining of dolomite is done in about 0.070% of the total study area

Land-use of Project Site: The core zone of 18.7 Ha is dominated by the open scrub, 15.1 ha is agricultural land, 2.6 ha water body and 5.3 ha is barren land and there are no forests in the core zone.

Soil Environment

Physical Characteristics

- **Moisture Content:-** Moisture content of soil along the proposed study varies from .4% to 6.2% in the study area.
- **Colour:-** The soil was predominantly Brownish to Reddish brownish in colour.
- **Texture: -** The soil is predominately Clay to Sandy Clay Loam mixture type
- **Bulk Density:** Bulk Density of soil varies from 1.23 gm / cm³ and 1.50 gm / cm³ in study area.

Chemical Characteristics

- **pH:** The soil samples were ‘neutral’ to ‘slightly alkaline’ in nature with pH range 6.9 to 7.6.
- **Available Nitrogen:** Available nitrogen of soil samples in the proposed study varies from 121.4 to 155.3 kg/ha, which is ‘good’ to ‘better’ as per ICRA standards.
- **Potassium:** Potassium content as K in soil samples in the study area is varies from 16.2 to 25.2 kg/ha, which is ‘very less’ as per ICRA standards.
- **Total Organic Carbon:** Total organic carbon content in soil samples in the Study area is found average sufficient (0.33% – 0.65 %) in terms of productivity
As per NPK soil fertility of the area is not for vegetation

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Water Environment

Surface Water: The surface water quality of SW1, SW2 and SW3 do not meet any criteria of CPCB (A,B,C, D or E). The BOD levels recorded in these samples were 9.3mg/l, 3.2mg/l,5.2mg/l which is beyond the mark set by CPCB.

Ground Water:

The four ground water samples collected during the study period are found well within the desirable limit of drinking water standard IS 10500:2012. A brief interpretation is described below.

Physico-Chemical Quality

The analysis results of ground water samples showed the pH in range of 7.2 to 7.7, which is well within the specified standard of 6.5 to 8.5. Colour and Turbidity of the samples are below 5 Hazens and 1 NTU accordingly. Electrical conductivity of the samples ranged from 532.0 to 810.5 µS/cm while the Total Dissolved Solids varied from 329 mg/l to 580 mg/l. within the maximum permissible limit of 2000 mg/l.

The maximum hardness was 253.5 mg/l recorded at Punchi Village (GW1) and the minimum was 155.7 mg/l recorded at Chhitapariya Village (GW2).

Chlorides and Sulfates at all the locations were within the permissible limits (78.5 to 102.4 mg/l and 42.1 to 62.2 mg/l respectively). Fluoride concentrations were observed in between 0.14 and 0.32 mg/l and were within the permissible limits.

The alkaline earth metal like Calcium and Magnesium concentrations ranged from 42.6 to 79.5 mg/l and 12.0 to 17.7 mg/l respectively. The alkali earth metal like sodium and potassium concentration range was observed in between 37 to 47 mg/l and 6 to 11 mg/l respectively.

Heavy Metals

The Heavy metals are found to be below detectable limits, except iron. However, iron was found below the prescribed permissible limit.

Based on the above results it is evident that most of the parameters in ground water samples fairly meet the desirable standard limits of IS: 10500

Noise Environment

The monitored noise level in the study area varied from 51.5 dB (A) to 57.8 dB (A) during day time and 35.7 dB (A) to 38.0dB (A) during night time. In Project site(N1),Boral site (N5).Dhaneli(N6) and Baradwar(N2) Leq Day was a little high due to existing mining activities and movement of heavy

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vehicles. Overall the ambient noise level in the monitored locations was found to be within the permissible limits stipulated for residential, commercial and industrial areas.

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table E-5: Types of Environmental Impact due to Mining

Types of Impact	Causes of Impact
Impact on land and soil	By overburden, mining, top soil generation and solid waste generation.
Impact on air quality	Generation of particulate matters from various sources such as mining and transportation
Impact on surface water, ground water and hydrogeology	Run-off from OB dump; wash off of eroded material of soil, leaching of oil /grease, waste water generated due to sanitation purpose and other purposes.
Impact on noise level	Movement of dumpers for transportation of minerals, blasting
Impact on ecology (flora and fauna)	Loss of forest land, loss of surface vegetation
Impact on socio-economic environment (population & settlement)	Land use pattern change, economic growth, environment quality degradation, lowering of water table causing shortage of drinking water.

AMBIENT AIR QUALITY

The mining is proposed to be carried out by opencast other than fully mechanized method. The air borne particulate matter is generated by ore drilling, blasting and handling operations, and transportation of ore. The emissions of Sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) are contributed by vehicles plying on haul roads and carrying ores outside the ML Area. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions.

The maximum incremental GLC of PM₁₀ will be 0.98 µg/m³ near to the project site. The first highest GLC of PM₁₀ is 1.96 0.98 µg/m³ which will be within the mine lease area.

MITIGATION MEASURES

Following measures shall be taken to mitigate the effect of mining operation over ambient air environment

- Water spraying on mine faces to control dust emanating from loading and handling operations;

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- Water spraying over the muck pile to be loaded in order to reduce dust generation during loading operations;
- Water sprinklers along the mine haulage roads to reduce dust generation during plying of dumpers on the haul road;
- Trucks transporting materials will be covered to reduce dust emission;
- Periodic water sprinkling on haul roads to minimize dust emissions;
- Extensive plantation of trees of different variety in Dolomite storage yard;
- Dust masks to all workers working in dusty atmosphere;
- Periodical monitoring of air samples at various locations.
- Wet drilling arrangement will be made;
- All over-burden dumps shall be stabilized with legumes and grass to prevent the erosion of soil and arrest the dust emission during windy days; and
- Regular maintenance of vehicles shall be carried out in order to control emissions.

Impact on Noise Level

Noise generated at the mine is due to truck transportation activities. The noises generated by the mining activity will dissipate within the mine. There may be noise pollution due to drilling, blasting and movement of trucks. This may go beyond the threshold value i.e. 90dB (A), but will be momentary. No major impact of the mining activity on the nearby villages is envisaged. The pronounced effect of noise will be felt only near the active working area.

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

CONTROL OF NOISE, VIBRATION AND FLY ROCK DURING BLASTING

Ground vibrations due to blasting and its impact on various mine structures, should be studied in details when the mine becomes operational, especially the charge per delay factor. Drilling and charging pattern should be accordingly modified based on this study. Thereafter, a proper management plan should be designed and administered. General measures should be taken to reduce ground vibration and fly rocks resulting from blasting

WATER POLLUTION

The total requirement for the project is estimated to be about 21m³/day. Water for mining operation (dust suppression) and for domestic and drinking purpose will be supplied with the help of water tankers from nearby villages. No waste water will be generated from mining

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activity. Domestic waste generated from the site office will be discharged to septic tank / soak pit.

The rain collected in the pits after spell of rain will be used for plantation and dust suppression. At the end of life of mine, excavated area will be used as a rain water pit.

Impact on socio-economic

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments etc exist within the lease area or in the vicinity. The mining operation will not disturb/ relocate any village or need resettlement. Thus no adverse impact is anticipated.

The impact of mining activity in the area is positive on the socio-economic environment of the region. The negative impact will be limited to some sporadic health problems, which may occur due to increase in fugitive emission in the vicinity of the mines. The proposed mine project is providing employment to local population and it will be give preference to the local people whenever there is requirement of man power. The local skilled labour will have additional opportunity to enter into automobile maintenance profession to cater to the needs of the transport trucks

ENVIRONMENT MONITORING PLAN

To evaluate the effectiveness of Environment Management Programme, regular monitoring of the important environmental parameters will be taken up. The schedule, duration, and parameters to be monitored are given in **Table E-6**.

Table E-6: Monitoring Schedule and Parameters

Sl. No.	Description of Parameters	Schedule & Duration of Monitoring
1	Air Quality (SPM, PM10, PM2.5, SO ₂ , NO _x) monitoring in five locations In the pit office/workshop Two monitoring station in up wind Two in downwind in consultation with SPCB	Will be monitored in every quarter as per norms laid down under MCDR 1988 and DGMS norms.
2	Continuous micro-meteorological monitoring in one location On roof of nearby building	Continuous
3	Water Quality of surface and ground water around the site will be collected from 6 (3 for each) locations in consultation with SPCB One of the locations will be in near the OB Dump One near the active working area One near the natural discharge point	Will be monitored in every quarter as per norms laid down under MCDR 1988 and DGMS norms

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Sl. No.	Description of Parameters	Schedule & Duration of Monitoring
4	Ambient Noise Level monitoring in consultation with SPCB Near the pit head	Will be monitored in every quarter as per norms laid down under MCDR 1988 and DGMS norms
5	Inventory of flora to judge the comparative status will be done in the nearest forest	Once in 2 years
6	Soil One of the locations will be near OB Dump One near the active working area	Twice in a year in reclaimed land
7.	Biological Green Belt development Block Plantation Reclaimed Area Plantation Hydro Reclamation Water harvesting Schemes	Every 6 months by a core group formed from management and plantation executing agency

Budgetary Provision for Environment Protection

Adequate budgetary provisions have been made by the company for execution of the EMP. **Table E-7** gives the overall investment on the environmental safeguards and recurring expenditure for monitoring and implementation of control measures including reclamation.

Table E-7:- Capital Investment including Environment Protection

Particulars	Capital Cost	Recurring year in Rs.
Dust Suppression & Pollution Control	6,00,000	2,00,000
Tarpaulin and cover for stack of ore	1,00,000	1,00,000
Environmental Monitoring	---	1,00,000
Garland Drain, check dam and settling tank etc	1,00,000	1,00,000
Green Belt	50,000	3,00,000
Total	9,50,000	8,00,000

MINE DISASTER MANAGEMENT PLAN

The Disaster Management Plan (DMP) is a guide, giving general considerations, directions, and procedures for handling emergencies likely to arise from planned operations. The DMP has been prepared on the basis of the Risk Assessment and related findings covered in the report.

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Disaster Management Plan: Structure

The Disaster Management Plan (DMP) is supposed to be a dynamic, changing, document focusing on continual improvement of emergency response planning and arrangements. A structure working on a Plan, Do, Check & Review (PDCR) cycle has been therefore suggested. Another advantage of doing this is to have a system that is in synchronicity with commonly used SHE systems such as ISO 14001 and OHSAS 18001.

The DMP is covered in further detail in the remaining sections of this Chapter.

Policy

The Safety Health and Environmental (SHE) policy is existing & accessible to all at site and to other stakeholders. The policy has been framed considering legislative compliance, stakeholder involvement, continual improvement, and management by objectives.

Planning

Identification and Prevention of Possible Emergency Situations

Possible emergency situations can broadly be classified into unintended explosions, vehicle collision, and inundation. Additional emergency situations can be developed on the basis of audit or other procedures prior to commencement of operations.

Emergency Prevention

Some of the ways of preventing emergencies are as follows:

- Preparation of a Preventive Maintenance Schedule Programme and also covering maintenance schedules for all critical equipment and instruments as per recommendations of the manufacturers user manuals, Rescue and treat casualties and safeguards the rest.
- Importantly, it is of great importance to collect and analyze information pertaining to minor incidents and accidents at the site, as well as for recording near-misses or emergencies that were averted. This information gives an indication of how likely or unlikely it is for the site to face actual emergency and what shall be further action to prevent them from occurring.
- Establishment of an ongoing training and evaluation programme, incorporating the development of capabilities amongst employees about potential emergencies and ways and means of identifying and averting the same. Most emergencies do not occur

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without some incident or an abnormal situation. So there is always sometime of few seconds to few minutes to arrest an incident of abnormal situation from turning in to an emergency. This is the role of the shift in-charge who is the incident controller (IC) along with his shift team.

Emergency Plan Objectives

Specific objectives of the Emergency Response Plan are to be clearly listed with regards to the responses desired for successful management of the possible emergency situations. Suggested Objectives could include:

- To define and assess emergencies, including risk and environmental impact assessment;
- To control and contain incidents;
- To safeguard employees;
- To minimize damage to property or/ and the environment;
- To inform employees, the general public and the authority on the hazards/risks assessed.
- Safeguard provided residual risk if any and the role to be played by them in the event of emergency.
- To inform authorities like Safety and Fire Dept and Mutual Aid Centers to come up for help.
- For effective rescue and treatment of casualties and to count the injured.
- To identify and list fatal accidents if any.
- To secure the safe rehabilitation of affected areas and to restore normally.
- To provide authoritative information to the news media.
- To preserve records, equipments etc. and to organize investigation into the cause of the emergency and preventive measures to stop its recurrence.
- To ensure safety of staff and patients and resume work.
- To work out a plan with all provisions to handle emergencies and to provide for emergency.
- Preparedness and the periodical rehearsal of the plan.

The objectives are suggested in emergency preparedness plan of Mines. Responsibilities, resources and timeframes require to be allocated for implementing the objectives.

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Responsibility of Essential Workers

A task force of essential trained staff is made available to get work done by Incident Controllers. Such work shall include –

- Fire fighting and spill control till fire brigade takes the charge.
- To help the fire brigade, if it is so required.
- Emergency engineering work e.g. isolating equipment, materials, urgent repairing or replacement, electrical work etc.
- Provision of emergency power, water, lighting, material, etc.
- Movement of equipment, special vehicle and transport to or from the scene of the incident.
- Search, evacuation, rescue and welfare. First - Aid and medical help.
- Manning of assembly points to record the arrival of evacuated personnel. Manning of outside shelters and welfare of evacuated persons there.
- Assistance at casualty’s reception areas to record details of casualties.
- Assistance at communication centre to handle outgoing and incoming calls and to act as messengers if necessary.
- Control of traffic at Quarry premises.

PROJECT BENEFITS

IMPROVEMENT IN PHYSICAL AND SOCIAL INFRASTRUCTURE

The proposed project is expected to provide employment to local people in different activities such as Mining transportation and plantation activities. The project activity will not have any major impact on the environment. At Post mining stage of proposed project, the existing waste land shall be converted to water harvesting bodies and green belts.

Also the company’s Corporate Social Responsibility initiatives will have a positive impact on socio economic fabric of the region.

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

- Improvements in physical infrastructure;
- Improvements in social infrastructure;
- Increase in Employment Potential;

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- Prevention of illegal mining;
- Enhancement of green cover;

IMPROVEMENTS IN PHYSICAL INFRASTRUCTURE

The opening of the project will improve the physical infrastructure of the adjoining areas. This will include the following:-

- Improved road communication due to project;
- Strengthening of existing community facilities through the Community Development Program;
- Pumping of mine water augment the water availability after treatment;
- Creation of community assets (infrastructure) like provision for drinking water, village roads/linked roads, market place etc;
- Literacy program, adult education, assists formation of Village Working Group (VWG), Mahila Mandal etc;
- Awareness program and community activities, like health camps, medical aids, family welfare programs, immunization camp, sports & cultural activities, plantation etc;

IMPROVEMENTS IN SOCIAL INFRASTRUCTURE

There will be some obvious changes in various environmental parameters due to mining activity. Increase socio-economic activities, creation of new employment opportunities, infra-structural development, better educational and health facilities.

EMPLOYMENT POTENTIAL

The socio-economic conditions of the surrounding villages are poor as there is no significant source of earning. The occupational activities are agriculture, cattle rearing and employment in mines but on daily wages. The mining activity will provide employment to local people which will improve socio-economic status of the mining area.

The local labors shall be engaged for sizing of dolomite and loading and handling of mineral in mining area, besides, watch and ward and plantation activity with proper maintenance. The total manpower required for this works out to 30. Beside this, project proponent shall engage skilled and managerial staff to meet the statutory requirement under MMR 1961 and MCDR 1988

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TANGIBLE SOCIAL BENEFITS

There will be positive impact on socio-economic area due to increased economic activities, creation of new employment opportunities, infrastructural development and better educational and health facilities.

Initiation of this mine will also contribute for sustainable use of mineral resources as a raw material for manufacture of steel (Steel plants of Jindal & other plant of Chattisgarh) Odisha, Jharkhand, West Bengal and other nearby states). Local people will be taken into confidence in all activities to redress their grievances, if any, and to meet their aspirations. The lessee will provide social welfare activities in and around the lease area.

On analyzing the complete aspects, it is inferred that:

- This project will give employment to many throughout the year giving food to their family members.
- Due to employment of local people in mining work, they will not be involved in illegal cutting of forest produce. Thus the running of this mine will help in protection and conservation of forest areas.
- The mining lease area does not contain significant number of trees. Hence backfilling and Afforestation at the end will improve the environmental conditions of the non-forest area.
- The approach road connecting the applied area will improve transportation facilities for the people near the mine site.

ENVIRONMENT MANAGEMENT PLAN

AIR POLLUTION MANAGEMENT & CONTROL

Table E-8: Air Pollution Management & Control

Sl. No.	Dust Source	Control measure
1	Haul Road	Regular water spraying and afforestation.
2	Truck Movement	<ul style="list-style-type: none"> ▪ No overloading of trucks. ▪ Trucks to be covered while transporting ore. Enforcing speed limit. ▪ Regular monitoring of the exhaust. ▪ Proper maintenance of trucks.
3	Waste dumps	The dumps are temporary. It will be adequately sloped, compacted

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Sl. No.	Dust Source	Control measure
		and stabilized.
4	Mine workings	<ul style="list-style-type: none"> ▪ Regular water spraying in working areas. ▪ Green belt surrounding Mine Lease area will be developed. ▪ Water spraying at time of drilling is being carried out. ▪ Personal protective equipments like dust mask, ear muffs/ plugs and goggles will be provided to the employees.

NOISE LEVELS AND VIBRATIONS & ITS MITIGATION

The details of noise and vibration in respect of activity time are given in below **Table E-9**.

Table E-9: Noise Pollution Management & Control

Potential Impact	Action	Parameters for Monitoring	Timing
Noise	List of all noise generating machinery onsite along with age to be prepared. Equipment to be maintained in good working order.	Equipment logs, noise reading	During mining operation.
	Generation of vehicular noise	Maintenance records of vehicles	During transportation.
	Implement good working practices (equipment selection and siting) to minimize noise and also reduce its impacts on human health (ear muffs, safe distances and enclosures). Adopt good blasting practices to reduce impact on flora and fauna. Muffling will be done at the time of blasting	Site working practices records, noise reading	During blasting
	Noise to be monitored in ambient air near blasting shelter and at the lease boundaries.	Noise reading	As per GPCB requirement or quarterly whichever is earlier.
	The Noise level should not exceed the permissible limit both during day and night time.		
	All equipment operated within	Random checks of	During mining operation

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Potential Impact	Action	Parameters for Monitoring	Timing
	specified design parameters.	equipment logs/ manuals	
	Vehicle trips to be minimized to the extent possible.	Vehicle logs	During mining operation
	Plantation of dense hedges on the boundary of lease area, these will reduce dust and noise in the vicinity area.	Adhere to mine closure plan	During mining operation
	Good blasting layout must be adopted. Adopting less number of holes per delay	Vibrations to be modeled	At the time of blasting or based on the blasting data.

Plan for Reduction of Impact on Fauna

The impact on fauna species in the mining area is mostly due to noise and loss of vegetation cover. Although no Schedule I fauna has been reported in the study area, certain measures have been proposed to reduce the impact as given below.

Table E-10:- Plan for reduction of impact on Fauna

Impact Predicted	Suggestive measure
Disturbance of free movement/ living of wild fauna	<ul style="list-style-type: none"> No labour camp will be allowed in ML area other than maintenance shed, office setup etc. No tract or new road for movement of labours or vehicles be laid in forest area, which will prevent forest fragmentation, encroachment and human – animal encounter Care will be taken that noise produced during vehicles movement for carrying ore materials are within the permissible noise level. Care will be taken that no hunting of animals carried out by labours Labours will not be allowed to discards food, plastic etc., which can attract animals near the core site. Only low polluting vehicle will be allowed for carrying ore materials.

OCCUPATIONAL HEALTH AND SAFETY

The working conditions in the mines are governed by the enactments of the Director General of Mines Safety (DGMS). As per the guidelines of the Mines Act, the management will take all necessary precautions. Normal sanitary facilities will be provided within the lease area. The management will carry out periodic health check-up of workers.

Occupational hazards involved in mines are related to dust pollution, noise pollution, blasting and injuries from equipments and fall from high places. DGMS has given necessary guidelines

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for safety against these occupational hazards. The management will strictly follow these guidelines.

All necessary first aid and medical facilities will be provided to the workers. The mine will be well equipped with proper fire protection and firefighting equipment. All operators and mechanics will be trained to handle fire-fighting equipments. Further all the necessary protective equipments such as helmets, safety goggles, earplugs, earmuffs, etc. will be provided to persons working in mines as per Mines Rules, 1955. Initial and periodical medical examination as per Mines Rule, 1955 will be carried out of persons employed in the mine. During periodical examination it will be ensured that every worker is examined once in five years. Schedule of examination will be fixed accordingly.

To avoid any adverse effect on the health of workers due to various pollutants, sufficient measures relating to safety and health will also be practiced:

- Protective safety boots, goggles, hand glove and helmets will be provided to the person working in the opencast works;
- Employee will be adequately trained and educated for involvement in and commitment in to the implementation of health and safety guidelines;
- Provision of all necessary resources for safety and health of employees and contractors engaged in mining;
- Periodical Medical Examination (PME) of all workers by a medical officer;
- First Aid facility is provided at the mine area;
- Close surveillance of the factors in working environment and work practices which may affect environment and worker's health;
- Proper ear plugs and muffs will be provided to mine workers in high noise area to protect them from noise hazards;
- For minimizing the adverse impact of dust, the mine workers working in the dust area will be provided dust masks for their occupational safety;

Table E-11: Budget for Occupational Health (in Rupees)

Particulars	Capital Cost	Recurring cost
For routine checkup	--	1,00,000
Infrastructures & PPEs	75,000	75,000

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SOCIO-ECONOMIC CONDITION OF THE REGION

The region is basically semi urban & poor area. The main economic activity is agriculture & mining. The literacy rate is average. The standard of living is average. The mining operation generates employment opportunity causing beneficial impact. Transportation facility & awareness in the area improving considerably and socioeconomic status of the region has also been improved. In order to improve the socio-economic conditions of the people of the area, a detailed program for development of the area has been framed.

Following measure will be taken to improve the Social infrastructure of the study area:

- Preventive medical care and educational facilities for rural population shall be promoted.
- Priority will be given to local people for employment. Indirect employment through contractual services shall be provided.
- Extending general benefits by way of development work in the villages through respective Gram Panchayat.
- A well-laid plan for employment of the local people will be prepared by giving priority to local villagers.
- Social welfare program like provision of medical facilities educational facilities, water supply, recreational amenities for the employees as well as for nearby villagers.
- Local people will be taken into confidence in all activities to redress their grievances, if any, and to meet their aspirations.
- Assisting social forestry program.

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