

EXECUTIVE SUMMARY

For

**INCREASE OF IRON ORE PRODUCTION
FROM 0.25 TO 0.60 MTPA**

Of

SHRI BAJRANG IRON ORE MINE

Area -75.00 Ha (Forest Land)

**Forest Compartment No: 641 & 642 Forest Range:
Durgukondal Forest Division: Bhanupratappur (East)
Durgukondal Tehsil, Uttar Bastar, Kanker District
Chhatisgarh.**

Implemented by



**SHRI BAJRANG
POWER & ISPAT LTD.**

**M/s. SHRI BAJRANG POWER & ISPAT
LIMITED**

Prepared By



**B.S. ENVI-TECH (P) LTD.,
Secunderabad - 500 017**

NABET Accreditation No: NABET/EIA/1316/RA002

EXECUTIVE SUMMARY

1.1 INTRODUCTION

SHRI BAJRANG POWER & ISPAT LIMITED (SBPIL) is operating Shri Bajrang Iron Ore Mine located at Hahaladdi & Chahchad villages, Durgukondal Tehsil, Uttar Bastar Kanker District, Chhatisgarh. The Mine is spread over an area of 75 Ha and is part of Forest Compartment No: 641 & 642 falling in Durgukondal Forest Range Bhanupratappur (East) Forest Division, Durgukondal Tehsil, Uttar Bastar Kanker District, Chhatisgarh.

Mining operations were commenced on 9/2/2015 after obtaining Environmental and Forest clearance and the present production capacity of the mine is 0.25 MTPA.

SBPIL now proposes to enhance Iron ore production of Shri Bajrang Iron Ore Mine from 0.25 to 0.60 MTPA.

This mine is the captive source for supply of Iron ore to SBPIL Sponge Iron Plant/Pellet Plant located at District- Raipur, Chhattisgarh.

No litigation is pending against the project.

Initially the Project cost is estimated to be about Rs. 15 Crores and now after expansion it shall be around 30 Crores and Rs. 60 lakhs will be spent for Environmental Management Plan.

At the proposed rate of production of 0.60 million tonne per annum, Life of the Mine with the balance mineral reserves of 6.977million tonnes will be 12 years.

There are no wild life sanctuaries, national parks, elephant/tiger reserves within 10km radius of the study area.

The mine is a hilly terrain with altitude varying from 450 to 655m AMSL. Mining will not intersect ground water. No perennial or seasonal stream exists in the area.

Water consumption increases from 45 to 87 m³/day. Necessary permission from CGWA is under process. About 1402527 m³ of solid waste generated will be stacked in a dump of 1 Ha. The dump is stabilised and vegetation is grown on surfaces.

1.2 DESCRIPTION OF ENVIRONMENT

As part of Environmental Impact Assessment study, baseline environmental monitoring was carried out for Winter Season 2016-17 covering the months of December' 2016 to February 2017.

METEOROLOGY

The predominant wind directions during this period were from SE-SSE-S sector accounting to about 38.71% of the total time. Average wind speeds during this period were varying between 1.0-15 kmph and most of the time the winds were more than 15 kmph. The wind of less than 1.0 kmph was treated as calm, about 20.05 % of the time the winds were under calm condition.

AIR ENVIRONMENT

Ambient air quality of the study area has been assessed through a network of eight ambient air quality locations.

The Ambient Air Quality monitored in the study area was found to be well within the limits of NAAQ standards prescribed for Residential, Rural & Other Areas.

Air Quality in the study area (All the values are in µg/m³)

Station Code	Locations	98 TH PERCENTILE VALUES (µg/m ³)			
		PM ₁₀	PM _{2.5}	SO ₂	NO _x
A-1	Mine Site	55.1	26.2	12.1	13.2
A-2	Hahalddi	51.7	23.5	1.4	12.0
A-3	Chahachad	50.0	22.7	1.2	12.4
A-4	Panrgal	44.3	20.9	9.4	10.8
A-5	Bhuski	47.6	21.0	9.8	1.1
A-6	Sadhumichgaon	45.9	19.4	10.7	1.9
NAAQ Standards for Industrial, Residential, Rural and Other Areas (24 Hrly)		100	60	80	80

Note: CO at all locations was found < 1.0 ppm

NOISE ENVIRONMENT

Eight monitoring locations were selected to assess the noise levels in the study area. Noise levels recorded were found to be in the range of 50.1 – 53.9 dB (A) during daytime and in the range of 40.3 – 43.9 dB (A) during night time.

WATER ENVIRONMENT

Eight Ground water and two surface water samples each were collected from in and around the study area. The parameters thus analysed were compared with IS -10500. All the samples were found to be well within the limits.

SOIL ENVIRONMENT

Eight soil samples were collected within 10 km radial distance of the study area and were analyzed to study the soil quality.

BIOLOGICAL ENVIRONMENT

From the study it has been observed that there are no endangered, endemic or threatened species

1.3 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

1.3.1 AIR ENVIRONMENT

The air borne particulate matter is the main air pollutant contributed by opencast mining. The baseline concentrations monitored reflects the emission due to present material handling of 0.37 MTPA. Therefore for prediction of impacts, the additional material of 0.51 MTPA is considered.

DETAILS OF PRODUCTION, MTPA

	PRESENT (A)	PROPOSED (B)	INCREMENTAL QUANTITY (B) - (A)
Iron Ore Production	0.25	0.60	0.35
Waste (Overburden / Interburden)	0.12	0.28	0.16
Total Material Handling			0.51

Note: The impacts have been drawn for increase of production from 0.25 to 0.60 MTPA.

Resultant ground level concentrations for the prevailing meteorological conditions using the mathematical model were estimated.

The Overall Scenario with predicted ground level concentrations over the baseline is shown below.

PREDICTED GROUND LEVEL CONCENTRATIONS AND OVERALL SCENARIO, $\mu\text{g}/\text{m}^3$

24-Hourly Concentrations	Particulate Matter - 10 (PM₁₀)	Particulate Matter - 2.5 (PM_{2.5})
Baseline concentration, max*	55.1	26.2
Predicted Ground level Concentration, max	14.9	1.5
Overall Scenario	70 {100}	27.7 {60}

NOTE: *max of 98th percentile values

Values in parenthesis are National Ambient Air Quality (NAAQ) standard limits

The environmental control measures to control the fugitive dust released are given below:

- ☞ Wet drilling to suppress the dust emission from the drill machines at its source by inbuilt water injection system
- ☞ Regular water sprinkling on haul roads with water tankers.
- ☞ 50 m³/day of water will be used for dust suppression operations at mine.
- ☞ Use of sharp drill bits for drilling holes and arrangements for bit regrinding. Charging the holes by using optimum charge and using time delay detonator.
- ☞ Regular grading of haul roads and service roads to clear accumulation of loose material.

- ☞ Avoiding overfilling of tippers and consequent spillage on the roads.
- ☞ The vehicles and machinery are kept in well-maintained condition so that emissions will minimize.
- ☞ Afforestation for control of dust. To arrest the amount of airborne dust, plantation is being carried out within the mines.
- ☞ Operator cabins in all major HEMM equipment are air conditioned to minimize dust exposure of the operators.
- ☞ Crusher is provided with Mist water spray.
- ☞ Fugitive dust generation is being controlled by regular water sprinkling on site & roads by movable water sprinklers and water Tankers and records are being maintained.

1.3.2 NOISE ENVIRONMENT

Noise produced at the mine is due to movement of machinery, drilling, blasting and transport etc. The noise generated by the mining activity will be dissipated within a small zone around the mines. There will be no major impact of the mining activity on the vicinity. However, pronounced effect of above noise levels will be felt only near the active working area.

The impact of noise on the villages will be negligible as the villages are far located from the mine site. Nearest village is at 0.9 km from the mine lease boundary. SBPIL is providing a greenbelt of 7.5 m barrier zone. Hence the impact on the mine vicinity due to noise levels is nil.

NOISE PREVENTION MEASURES

SBPIL will develop greenbelt in an area of 5.0 ha within the mine. The following noise abatement measurements are proposed for control of noise:

- Proper and regular maintenance of vehicles, machinery and other equipment.
- Limiting time exposure of workers to excessive noise.
- The noise generated by the machinery is reduced by proper lubrication of the machinery and equipment.

- The workers employed are provided with protection equipment, earmuffs and ear-plugs, as a protection from the high noise level generated at the mine site wherever required.
- Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
- Proper and timely maintenance of mining machinery.
- Speed of tippers in the mines area is limited to moderate speed of 25 kmph to prevent undue noise from empty tippers.

1.3.3 WATER ENVIRONMENT

There is no perennial or seasonal nala passing through the mining lease area.

SBPIL proposes to construct garland drains all along the mine pit with check dam at discharge end to prevent siltation of nearby water courses.

The mine is located on a hilly terrain, with maximum elevation at 655m RL and minimum elevation of 450m RL. The maximum depth of working pit at conceptual period will be 520 m RL. The minimum depth of water table as observed in surrounding area in water well is 30 meters from the general ground level and maximum depth is 35 meters. Hence, the working will never intersect ground water table at any stage of mining.

SBPIL is presently using about 45m³/day of water for mining operations including domestic use. The additional water required for handling the increased Iron ore production will be about 42m³/day. Therefore the total water consumption in the mine after expansion will be about 87 m³/day.

There is no wastewater generation from the mining lease area except domestic wastewater of 4 m³/day which is being treated in Septic tank followed by soak pit.

1.3.4 LAND ENVIRONMENT

The total waste generation in life of mine is estimated to be about 3.36 million Tonnes. The generated waste will be dumped inside the lease area in along the lease boundary side in proposed places. Dump is already preserved in good manner for future use. The maximum height will be 30 meters in two stage and overall slope of the sump shall not exceed 28°. The present height is 2 meters. Total 1402527 cum OB will be accommodated in dumping site. Overburden will be used for constructing protective bund and maintenance of approach road.

At conceptual stage, out of the total mining lease area, the mined out area of 20.0 Ha will be converted to water reservoir, 5.00 Ha will be developed under afforestation. 6.330 Ha will remain under built-up area 1.264 Ha will be under roads.

1.3.4.1 CONTROL OF GROUND VIBRATIONS

The following measures are implemented to control the ground vibrations at the mine:

- ↻ Blast holes are fired by non-el shock tube initiation system.
- ↻ Avoiding excessive confinement of charges.
- ↻ Care is taken to ensure that the effective burden is not excessive and the free face is kept effective.
- ↻ Number of blast hole per delay is kept optimum.
- ↻ Blasting is done in only one bench at a time.

Maximum Charge per delay is properly adopted to minimize and maintain ground vibrations as per DGMS standards. The blasting vibrations are monitored and found that the PPV values are well within the limits.

1.3.5 AFFORESTATION

Plantation is being developed in the ML area, Haul roads, OB dump sites. A dense green belt also has been developed as per CPCB guide line for plantation of selected plant species as well as consultation with the local DFO/Agriculture department. Although it is already

dense forest area, however in open land, demarked for plantation, has been planted as per norms i.e. 2500 nos/Hect. About 5.0 ha will be developed under greenbelt conceptually.

1.3.6 SOCIO ECONOMIC ENVIRONMENT

The mining area does not cover any habitation. The mining activities don't involve any displacement of human settlement. No public buildings, places, monuments etc., exist within the lease area or in the vicinity. The mining operations did not disturb / relocate any village or need resettlement. The mining lease area is part of Forest Land.

SOCIO-ECONOMIC IMPACT PREDICTION AND EVALUATION

The aim of this section is to identify the potential socio-economic factors that impact is likely to crop up as a result of the proposed project.

1.3.7 OCCUPATIONAL HEALTH AND SAFETY

Excessive dust, noise and vibration are the major health hazards for the miners. The health of the workers is regularly checked and suitable medical facilities are created on or close to the site. Highest safety is ensured in the working conditions of the miners.

SBPIL is providing all necessary provisions as per applicable Mines Acts and Regulations. In addition, a Mine Pit Safety Committee is formed and manned by equal participants from Management and Workers.

Safety shoes, helmet & uniform are issued to each worker. Other safety equipments will be used according to the nature of job involved, like nose filter / mask, ear plug / muff, safety goggles, gum boots, etc.

1.4 BUDGETS FOR IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN

SBPIL will incur an amount of Rs. 60 Lakhs (towards capital expenditure) and Rs. 30 Lakhs (towards recurring expenditure per

annum) for implementation of the environmental management plan, for this expansion project.

1.5 PROJECT BENEFITS

The mining operation of Shri Bajrang Iron Ore Mine of SBIPL has resulted/ will result in the following project benefits

- a) Providing employment
- b) Social welfare measures for the locals

The Mine was opened in Feb' 2015. SBPIL is taking up the measures for upliftment of the poor section of the society, like organized Skill development training program under which free of cost training are being provided to female villagers (tailoring, making cloth bags, Dona Pattal, etc) and to male villagers (Driving cum Mechanic work, Electrician, Motor Binding, Vehicle repairing etc). Apart from it, towards community development activities and income generating programs, vegetable seeds & fruit bearing sapling distribution to nearby villagers. However permanent income generation source (employment) from the Mines has been provided to one member of each family of the surrounding villages, that too on regular basis.

SBPIL has earmarked Rs. 50 Lakhs towards the Social Welfare Measures for spending in future for welfare of the people in the region