EXECUTIVE SUMMARY

For

CAPACITY EXPANSION FROM 0.60 MTPA TO 1.20 MTPA

(1.0 MTPA Iron Ore above threshold value (+45% Fe) & 0.20 MTPA below threshold value Mineral (-45% Fe which is Part of Overburden))

&

INSTALLATION OF A NEW 0.48 MTPA IRON ORE BENEFICIATION PLANT (PRIMARY DRY/WET)

At

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 Chhattisgarh.

Of

GOEL SHRI BAJRANG POWER & ISPAT LTD.

M/s. SHRI BAJRANG POWER & ISPAT LIMITED

PREPARED BY

B.S. ENVI-TECH (P) LTD.

Secundrabad – 500 017

NABET Accreditation No: NABET/EIA/1619/SA064

NABL Certificate No: TC - 5233

EXECUTIVE SUMMARY

1.0 INTRODUCTION

SHRI BAJRANG POWER & ISPAT LIMITED (SBPIL) is operating Iron Ore Mine located at Hahaladdi & Chahchad villages, Durgukondal Tehsil, Uttar Bastar Kanker District, Chhattisgarh. 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, Chhattisgarh.

STATUTORY COMPLIANCES OF THE OPERATING MINE

Item	Item Details
Area	75 Hectares
Forest Clearance	Forest Clearance has been obtained for entire 75.00 Hectares of Mining Lease area vide Letter No. F.No.8-34/2009-FC, Dated: 04/August/2014.
Environment Clearance	EC has been obtained for capacity of 6,00,000 TPA Vide Letter No. J-11015/150/2016-IA (II)-M, Dated: 21.02.2018.
Wildlife Management Plan	Wildlife Management Plan approved by Forest Department and for wildlife Conservation, an amount of Rs. 3.5 Crores has been deposited with Forest Department.
Eco Development Plan	An amount of Rs. 14,95,000/- has been deposited with Forest Department for local area ecology development.
Compensatory Afforestation	For Compensatory Afforestation an amount of Rs.1,78,42,095/- has been deposited for plantation over the 153.00 Hectares of area with 10 years maintenance. Mining Lease Area: 75.00 ha X 2 =150.00 Ha. Approach Road: 1.5 ha x 2 = 3.00 Ha. Total: 153.00 Ha.
Net Present Value Amount	NPV Amount of Rs 6,14,29,500/- deposited in Campa Amount.
Review Of Mining Plan	Review of Mining Plan alongwith Mine closure plan for the above proposal was approved by IBM Raipur vide letter no. KANKER/IRON/MP/1191/2018/RAIPUR/1460 dt. 28.02.2019 for the period 2019 – 20 to 2023 -24

Source: SBPIL

Mining operations were commenced on 9/2/2015. Present production capacity of the mine is 0.60 MTPA.

2.0 PRESENT PROPOSAL

SBPIL now proposes to enhance production capacity of the mine by implementing the following

1. Capacity Expansion from 0.60 to 1.20 MTPA (1.0 MTPA Iron Ore above threshold value (+45% Fe) and 0.20 MTPA below threshold value Mineral (-45% Fe which is part of Overburden))
2. Installation of a new 0.48 MTPA Iron Ore Primary Beneficiation (dry/wet)

The total peak rated excavation from the mine in any year at the above enhanced production will 2.4661 million tonnes (Product – 1.00 MTPA Iron Ore + Overburden: 1.46 MTPA [0.20 MTPA (-45% Iron Ore) used as Iron Ore] + Top soil: 0.0061 MTPA)

The Terms of Reference was approved by SEIAA Chhattisgarh for carrying out the Environmental Impact Assessment study for the above proposal vide letter No 1060/Mine/Uttar Bastar/795 dated 14/11/2019.

SBPIL has requested the SEIAA- Chhattisgarh to permit use of available baseline data of Winter 2016-'17 (covering the months of December 2016 to February 2017) and the same was conceded by SEIAA Chhattisgarh. Baseline data collected during Winter 2016-'17 has been used for preparation of Draft EIA Report. Additionally CAAQ data of SBPIL recorded for winter 2018-19 has been used as baseline data to assess the existing environmental status of various environmental parameters within the 10 km radius of study area. The impacts due to proposed expansion capacity of the mine which include new beneficiation plant of 0.48 MTPA capacity. A detailed Environmental Management Plan, which will be implemented in the expansion phase has been formulated based on the impacts for implementation in the expansion phase.

CAPITAL COST

Project cost of proposed expansion is Rs 50 Crores. Rs. 65.0 lakh is budgeted towards capital expenditure with Rs. 42 lakh towards recurring expenditure per annum for implementation of the environmental management plan at expansion capacity. An amount of Rs 50 Lakhs is budgeted for Corporate Environmental Responsibility (CER).

IRON ORE MINING

The mine is being operated by the open cast method of mining. Overburden is excavated by using rock breakers and excavators. Float ore is handled by excavator and subsurface iron ore is excavated by drilling and blasting, loading and transportation by deploying heavy earth moving machineries. Now the permission was obtained for blasting.

After Capacity Expansion from 0.60 to 1.20 MTPA (1.0 MTPA Iron Ore above threshold value (+45% Fe) and 0.20 MTPA below threshold value Mineral (-45% Fe which is part of Overburden)) it will work in two shifts for 300 days in the year whereas at present the mine is being operated in a day time only.

BENEFICIATION PLANT

The Beneficiation plant of 0.48 MTPA consists of a dumping platform for feeding the raw burden into a hopper by front end loaders. From the hopper controlled feed is mixed with water and fed to a wet drum scrubbing system scrubs the raw ore and made mixed slurry. The slurry passes via double deck or triple deck screens by gravity provided in front of wet scrubber drum and it get screened to various desired sizes.

Screened semi wet sized material transported via conveyors to respective equipment's and finally passes through jigging system where heavier iron ore concentrate goes as product and lighter material as rejects to dump.

SCHEDULE OF PROPOSED EXPANSION

SBPIL proposes to implement expansion by April, 2020 after obtaining necessary approvals.

3.0 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.

AIR ENVIRONMENT

Ambient air quality of the study area has been assessed through a network of six 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* «g/m^3)

Station Code	Locations	98TH PERCENTILE VALUES			
		PM_{10}	$PM_{2.5}$	SO_2	NOx
A-1	Mine Site	55.1	26.2	12.1	13.2
A-2	Hahalddi	51.7	23.5	11.4	12.0
A-3	Chahachad	50.0	22.7	11.2	12.4
A-4	Panrgal	44.3	20.9	9.4	10.8
A-5	Bhuski	47.6	21.0	9.8	11.1
A-6	Sadhumichgaon	45.9	19.4	10.7	11.9
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

CAAQ DATA OF February, 2019

The PM_{10} and $PM_{2.5}$ concentrations prevailing in the mine and in its vicinity have been used for assessing the existing baseline concentrations. Summary of the data is given below:

CAAQ data (ug/m³) – February 2019

		Maximum	Minimum	Average
PM_{10}	AAQMS - 1 E-Point	37.67	18.93	28.30
	AAQMS - 2 - D Point	38.01	24.91	31.46
	AAQMS -3 Near Stores Point	41.69	28.29	34.99
$PM_{2.5}$	AAQMS - 1 E-Point	13.82	11.16	12.49
	AAQMS - 2 - D Point	14.22	8.49	11.36
	AAQMS -3 Near Stores Point	20.14	10.45	15.30

Note: CAAQMS were installed on 13.02.2019

NOISE ENVIRONMENT

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.

The spot noise level recorded within the core zone are given below

SL NO	LOCATION	NOISE LEVELS IN dB(A)
1	Mines Office Area	66
2	Drill	95
3	Excavator	90
4	Dumper	90
5	Loader	85
6	Dozer	90

WATER ENVIRONMENT

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

SOIL ENVIRONMENT

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

BIOLOGICAL ENVIRONMENT

As per Wildlife (Protection) Act, 1972, Schedule - I species present in the study are *i.e.* **Sloth Bear, Indian Peafowl and Indian Rock Python.** Wildlife Conservation Plan submitted to Chief Wildlife Warden (PCCF – Wildlife) Department of Forests, Govt. of Chhattisgarh, has been approved and submitted to the Regional Office of the Ministry as well as the amount of Rs. 3.5 Crores has already been paid to the State Forest Department for its implementation.

SOCIO ENVIRONMENT

The population profile shows that total population of the study area villages is 22038. The villages falling in this Study area are Hahaldi, Palachur, Chahachad, Bhuski, Padgal, Durgkondal, Juin, Gumdidih , Kewatintola, Dangra, Karramad, Medo, Paurkheda. Durgkondal the highest population (1609) and Juee village has the lowest population (55). The total population density of the study area is about 63 persons/sq. km.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 AIR ENVIRONMENT

The air borne particulate matter is the main air pollutant contributed by opencast mining. The baseline concentrations monitored (CAAQ data) reflects the emission due to present material handling of 0.76 MTPA. Therefore for prediction of impacts, the additional material of 1.70 MTPA is considered.

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

PREDICTED GROUND LEVEL CONCENTRATIONS AND OVERALL SCENARIO, «g/m³

24-Hourly Concentrations	Particulate Matter - 10 (PM_{10})	Particulate Matter – 2.5 ($PM_{2.5}$)
Baseline concentration, max* (CAAQ Data)	41.69	20.14
Predicted Ground level Concentration, max	19.3	7.31
Overall Scenario	**60.7 {100}**	**27.45 {60}**

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

AIR POLLUTION CONTROL MEASURES

IRON ORE MINING

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
- Dust Suppression is being done by Mist Water spray System.
- Water sprinkling is done by Fixed and Movable water sprinklers
- Dust suppression will be done by water sprinkling. The water consumption for dust suppression will increase from present 50 m^3/day to 83 m^3/day at enhanced production.
- 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.

BENEFICIATION PLANT

The following measures will be taken beneficiation plan for dust suppression

- Fugitive dust emissions arising from the handling, stockpiling and further size reduction of dry iron ore of size below 10 mm will be arrested by high pressure water spraying at emission points.
- Enclosed screens will be provided

4.2 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.

The impact of noise on the villages will be negligible as the villages are far located from the mine site. Nearest village is at 1.0 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 POLLUTION CONTROL MEASURES

SBPIL will develop greenbelt in an area of 3.89 ha within the mine. The following noise abatement measurements are implemented and the same will be continues 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.

The proposed beneficiation plant will be provided with enclosures and Ear muffs and earplugs will be provided to the workers working in beneficiation plant.

4.3 WATER ENVIRONMENT

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

SBPIL presently has provided 3374 Meters of garland drain & retaining wall all along the mine pit with 5 Nos of 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 87 m^3/day of water for mining operations including domestic use. The additional water requirement due to enhancement of production capacity and proposed beneficiation plant is about 313 m^3/day. Therefore the total water consumption in the mine after expansion will be about 400m^3/day. In that 110m^3/day will be recycled from proposed beneficiation plant and the total fresh water requirement is 290 m^3/day.

There is no wastewater generation from the mining lease area except domestic wastewater of 14 m^3/day which will be treated in existing Septic tank followed by soak pit.

4.4 LAND ENVIRONMENT

The total waste generation for the Review of Mining Plan Period is estimated to be about 5.04 million Tonnes. Of this about 1.0 Million Tonnes will be consumed at the rate of 0.20 MTPA. Balance OB will be disposed to earmark OB Dumps.

The generated waste will be dumped inside the lease area. An area of 13.54 Ha is earmarked The maximum height will be 30 meters in three stages and overall slope of the dump will not exceed 28°. The present height is 12 meters. Total 4.04 million tonnes of OB will be accommodated in dumping site and further 0.72 Million Tonnes of Tailing will be generated from Beneficiation Plant.

The following measures are proposed for dump protection:

- Retaining wall of 620 m will be provided for dump.
- A garland drain (3374 m) of permanent nature has been constructed along the outside periphery of retaining wall along the contours.
- The dumping will be carried out along the demarcated boundary by leaving 3 meters space from the retaining wall.
- The three phase of dumping up to a height of 10 m will be done. In an average. The total height of the dump is 30 m.
- The dump will be terraced into benches.
- The width of the berm will be restricted to minimize erosion.
- Contour trenching will be adopted along the slope of the terrace for retaining of water for quick stabilization of loose dump by planting fast growing species/grass seeds.
- Soil will be spread along with fertilizer. Agave and other fast growing shrubs will be planted on the slope of the dump.

The generation of Solid Waste Tailings from the Proposed Iron Ore Primary Beneficiation Plant (0.48 MTPA) is 0.144 MTPA.

Conceptually, mined out area of 31.490 Ha will develop under bench reclamation with plantation. In addition, all dumps will be stabilized with coir matting and plantation will be taken up. The following table shows the post mining land use pattern of the mine.

POST MINING LANDUSE PATTERN OF THE MINE AREA (Ha)

Land Use	**Area in Ha.**
Area Under Pit – Plantation	31.490
Area Under Waste Dump & top soil dump	13.54
Area for mining roads	0.080
Plantation – 7.5 M barrier along mine periphery	3.890
Infrastructure	0.050
Stock Yard	3.100
Processing Plant	0.190
Virgin area	22.66
Total area	**75.00**

(Source: Review of Mining Plan and progressive mine closure plan)

4.4.1 CONTROL OF GROUND VIBRATIONS

All safety precautions specified by DGMS are followed during blasting. Care is taken to evacuate the mining area completely at the time of blasting operations. The blasting team is equipped with all personal safety and precautionary measure. The Permission Obtained from DGMS for blasting vide letter S.No. 1748 dated 13.04.2018.

The following safety measures are taken while conducting the blasting operations

- A blasting SIREN is used at the time of blasting for audio signal.
- Before blasting and after blasting, red and green flags are displayed as visual signals.
- Warning notice boards indicating the time of blasting and NOT TO TRESSPASS were displayed prominently.

4.5 AFFORESTATION

Extensive Tree Plantation has been 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 48.43 ha will be developed under greenbelt conceptually.

4.6 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.

In the Left-wing extremism (LWE) Area, there is no scope for general employment. After opening of the mine, SBPIL has engaged 280 people at different levels. In addition to this 500 people are engaged in Transportation business. To support them a secondary market is growing where 100 people are working at present.

The local villagers were engaged in the Mines area from the beginning of the project in various jobs related to establishment of mine. One member from each house have been engaged by the company on regular basis before start of mining activities during development of Mines, resulting improvement in their economic condition.

However Additional employment will be provided to about 45 persons for installation of Iron ore beneficiation plant. In addition there has been indirect employment to many more people in the form of contractual jobs, business opportunities, service facilities etc. which has enhanced the economic status.

4.7 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.

The employees who are working at the time of initiation of this program are covered for the occupational health tests. If any person failed in this health checkup, will not be recruited. Like so, a baseline data on the health status of workmen in the Pre-recruitment stage was established. The same is being repeated periodically to update and to take action accordingly.

5.0 ENVIRONMENTAL MONITORING PROGRAMME

SBPIL is monitoring the environmental parameters as per the guidelines of CPCB, State Pollution Control Board and Ministry of Environment & Forests.

6.0 BUDGETS FOR IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN

SBPIL will incur an amount of Rs. 65 lakh (towards capital expenditure) and Rs. 42 lakh (towards recurring expenditure per annum) for implementation of the environmental management plan at enhanced production and installation of beneficiation plant under expansion

7.0 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 on 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 winding, 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 takenup the following in the surrounding villages.

- Conducting Medical camps and awareness camps on adult education
- Distribution of plants
- Scholarship to the students of surrounding villages
- Payment of better wages leading to improvement of living conditions.
- Providing drinking water facility
- Water source for agriculture lands, digging of water tanks, cleaning and desilting.
- Health camps and distribution of medicines

Apart from above following infrastructure development work has been done.

1. Installation of Solar Street lights in all villages surrounding the Mining Lease area
2. Washroom construction in all villages surrounding the ML area.
3. Drinking water facilities in all villages surrounding the ML area.
4. De-siltation and Pond deepening work for ground water recharging and so as to ensure availability of water throughout the year within 5 KM radius.
5. Road access to Chahchad & Padgal Village as there was no road till we construct it.Construction of Bridge on Hahaladdi-Donde Road.
6. Regular health check-up and free treatment with medicine for all nearby villagers.
7. School boundary wall construction for safety and security of school students.
8. Scholarship to needy students of the nearby villages
9. Computer system and furniture for Dibyang School.
10. Promotion of cultural & Sports activities

SBPIL has spent about Rs 1.47 crores for various development activities under CSR. Budget of Rs. 50.00 lakhs is allotted as capital expenditure towards Corporate Environment Responsibility (CER). After completion of Public Hearing, based on the issues raised during public hearing, list of activities to be implemented under CER in the surrounding villages will be listed out with item-wise details along with time bound action plan.

CONCLUSION

SBPIL will implement the environment management plan and will take up various socio economic development activities to have the positive impact on the surroundings.