

**SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT
REPORT
OF**

B.S. SPONGE PRIVATE LTD.

Village : Taraimal,
Tehsil : Gharghoda
District : Raigarh

Submitted to:

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD
Raipur, Chhattisgarh

B.S. SPONGE PRIVATE LIMITED

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1.0 INTRODUCTION

M/s B.S. Sponge Private Limited is an existing plant operating 2 x 100 TPD Sponge Iron plant in Taraimal Village, Gharghoda Tehsil, Raigarh District, Chhattisgarh. Now as a part of proposed expansion it has been proposed to enhance the production of Sponge Iron and also to go for forward integration to produce Billets and Structural steels. The existing and proposed production capacities are furnished below:

Sr. No	Units	Existing production capacity (TPA)	Proposed Expansion production capacity	Total Capacity after expansion
1.	Sponge Iron	60,000	1,20,000 TPA	1,80,000 TPA
2.	Induction Furnace with Concast	---	1,62,000 TPA	1,62,000 TPA
3.	Rolling Mill	---	1,05,000 TPA	1,05,000 TPA
4.	Ferro alloys	---	25,000 TPA	25,000 TPA
5.	Power Plant	WHRB	12 MW	12 MW
		FBC	36 MW	36 MW

The proposed expansion will be taken up in the existing plant premises only which has 90 acres of land.

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, have prepared Draft Environmental Impact Assessment report for the proposed expansion of the Steel Plant by incorporating the Terms Of Reference (TOR) approved by The Ministry of Environment & Forests, New Delhi. The report contains detailed description of the following:

- a. Characterization of status of environment with in an area of 10 km radius from the plant for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.
- b. Assessment of air emissions, liquid waste and solid waste from the proposed expansion along with the noise level assessment.
- c. Environmental Management Plan proposed to be adopted in the expansion project.
- d. Post Project Environnemental Monitoring

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2.0 PROJECT DESCRIPTION

1. The plant site is located at Taraimal Village, Gharghoda Tehsil, Raigarh District, Chhattisgarh
2. The nearest railway facility is available at Raigarh which is about 16 Kms. from the proposed project site.
3. The power generated in the plant will be utilized for plant internal requirement.
4. Total land already in possession is 90 Acres.
5. The average annual rainfall in the area is 1143 mm.
6. There are no National parks / Wild life sanctuaries within 10 Km radius of project site.
7. The following are the industries situated with in 10 km radius of the proposed project site.

S.NO	NAME OF THE INDUSTRY
1.	M/s. Nalwa Sponge Iron Ltd
2.	M/s. Ind Agro Limited
3.	M/s. MSP Steels Pvt. Ltd.
4.	M/s. Singhal Enterprises (P) Ltd
5.	M/s. Seleno Steels Ltd.
6.	M/s. Ambica Sponge Iron Ltd.
7.	M/s. Shyam Steel Pvt Ltd.
8.	M/s. Anjani Steels (P) Ltd.
9.	M/s. Navadurga Fuels(P) Ltd.
10.	M/s. Salasar Sponge Iron & Power Ltd.
11.	M/s. Raigarh Ispat Ltd.
12.	M/s. B.S. Sponge Pvt Ltd.
13.	M/s. Raigarh Iron Industries Ltd.
14.	M/s. Siddhi Vinayak Sponge Iron Pvt Ltd.
15.	M/s. Jindal Industrial Park.
16.	M/s. Mahamaya Rolling Mill

8. The major crops in the study area are Paddy, etc.

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3.0 DETAILS OF PROJECT

3.1 RAW MATERIALS

The following will be the raw material requirement for the proposed Steel Plant.

RAW MATERIAL REQUIREMENT

S.NO.	RAW MATERIAL	CONSUMPTION (TPA)			SOURCE OF SUPPLY	METHOD OF TRANSPORT
		Existing	Expansion	Total		
STEEL & POWER PLANT						
1	Iron Ore	96,000	1,92,000	2,88,000	Barbil, Orissa NMDC, Chhattisgarh	By Rail/road (in covered trucks)
2	Coal	78,000	1,56,000	2,34,000	SECL	By Rail/road (in covered trucks)
3	Dolomite	2,400	4,800	7,200	Local	Covered trucks
4.	Scrap	---	1,41,750	1,41,750	Local	By road (in covered trucks)
5	Ferro Alloys	---	810	810	Own Generation	---
6	Coal (Power Plant)	---	1,67,400	1,67,400	SECL	By Rail/road (in covered trucks)
FERRO ALLOYS UNIT						
9	Manganese Ore	---	82,500	82,500	Orissa	By road (in covered trucks)
10	Coke/Coal	---	44,500	44,500	SECL	By road (in covered trucks)
11	Dolomite	---	13,200	13,200	Local	By road (in covered trucks)
12	Quartz	---	13,200	13,200	Local	By road (in covered trucks)

3.2 MANUFACTURING PROCESS

3.2.1 SPONGE IRON (DRI)

Refractory lined rotary kilns will be used for reduction of iron ore in solid state.

A central Burner located at the discharge end will be used for initial heating of the kiln. Sized Iron ore will be continuously fed into the kiln along with coal which has dual role of fuel as well as reductant. Dolomite will be added to scavenge the sulphur from the coal. A number of air tubes will be provided along the length of the kiln. The desired temperature profile will be maintained by controlling the volume of the combustion air through these tubes. The

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Carbon monoxide generated due to the combustion of coal, reduces the Pellets and converts it into sponge iron.

The rotary kiln is primarily divided into two zones viz. the pre heating zone and the reduction zone. The preheating zone extends over 30 to 50 % of the length of the kiln and in this the moisture in the charge will be driven off and the volatile matter in the coal will be burnt with the combustion air supplied through the air tubes. Heat from the combustion raises the temperature of the lining and the bed surface. As the kiln rotates, the lining transfers the heat to the charge. Charge material, pre-heated to about 1000°C enters the reduction zone. Temperature of the order of 1050°C will be maintained in the reduction zone, which is the appropriate temperature for solid state reduction of iron oxide to metallic iron. This hot material will be transferred to Heat exchanger. In Heat exchanger the material will be cooled to 160°C. The cooler discharge material consists of sponge iron lumps, sponge iron fines and char. Magnetic and non-magnetic material will be separated through magnetic separators and stored in separate bins.

3.2.2 STEEL MELTING SHOP

Initially scrap & other metallics such as Sponge Iron will be charged into the induction furnace. After scrap & other metallics are fully melted, the temperature of the melt reaches above 1600°C, then DRI will be continuously charged into the furnace. As soon as the charge is melted, bath samples will be taken and temperature will be measured. There will be 4 nos. of induction furnaces in the SMS plant. Concast will be used to produce Billets/Ingots.

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3.2.3 ROLLING MILL:

A 350 TPD furnace is proposed for the heating of billets. Furnace will be heated with Furnace oil. A bar and round mill will be installed in the plant to produce 1,05,000 TPA of TMT bars/ Structural steel.

3.2.4 FERRO ALLOYS

In Ferro alloy plant Ferro Alloys will be produced by smelting of Manganese ore with coke, coal, quartz and dolomite.

3.2.5 POWER GENERATION

3.2.5.1 THROUGH WASTE HEAT RECOVERY BOILER (WHRB)

The hot flue gases from DRI kilns will pass through a waste heat recovery Boilers to recover the heat and to generate electricity of 12 MW. The gases after heat recovery will pass through ESP and then discharged through two nos. of common stacks (with twin flues) each of 60 m height. The outlet dust emission will be less than 50 mg/Nm³.

3.2.5.2 THROUGH AFBC BOILER

Coal and Dolochar will be used in 150 TPH AFBC Boiler to generate steam and then electricity of 36 MW. The flue-gases will be treated in high efficiency ESP and then discharged through stack of 72 m height. The outlet dust emission will be less than 50mg/Nm³.

3.3 WATER REQUIREMENT

The proposed expansion requires about 3700 cum/day of water. The water required for the expansion Plant will be met from Kelo River/ Chhuikansa Nallah and requisite amount of water will be drawn only after obtaining permission from Water Resources Department, Govt. of Chhattisgarh.

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WATER REQUIREMENT

Sr. No	SOURCE	QUANTITY (cum/day)		
		Existing	Expansion	Total
1.	Cooling water make-up for DRI Plant	90	192	282
2.	Cooling water make-up for SMS plant	--	120	120
3.	Cooling water make-up for Rolling mill	--	75	75
4.	Cooling water make-up for Ferro alloys plant	--	30	30
5.	For Power Plant			
a.	Cooling Tower Make-up	--	2880	2880
b.	Boiler make-up	--	320	320
c.	D.M. plant regeneration water	--	15	15
d.	Service water	--	48	48
6.	Domestic	10	20	30
	Total	100	3700	3800

3.4 Waste Water Generation

The total effluent quantity expected from the expansion will be 383 cum/day and including existing plant will be 391 cum/day. Closed circuit cooling system will be implemented in DRI, steel Melting shop, Rolling Mill and Ferro Alloys unit. Hence there will not be any effluent generation from the process & cooling from steel plant. The effluent generated will be from power plant consisting of Boiler blow down, cooling tower blow down, DM plant regeneration & service water and sanitary waste water.

WASTE WATER GENERATION AFTER EXPANSION

SOURCE	QUANTITY (cum/day)
Cooling tower blow down	280
Boilers blow down	24
DM plant regeneration	15
Service water	48
Sanitary waste water	24
Total	391

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3.5 Waste water Characteristics

The following are the Characteristics of the effluents generated from different sources.

CHARACTERISTICS OF EFFLUENT

PARAMETER	CONCENTRATION			
	DM Plant regeneration	Boiler blowdown	Cooling Tower blowdown	Sanitary waste water
pH	4 – 10	9.5 – 10.5	7.0 – 8.0	7.0 – 8.5
TDS (mg/l)	5000 – 6000	1000	800 - 1000	800 - 900
COD (mg/l)	--	--	--	300 – 400
BOD (mg/l)	--	--	--	200 - 250

4.0 DESCRIPTION OF ENVIRONMENT

Base line data has been collected on ambient air quality, water quality, noise levels, flora and fauna and socio economic details of people within 10 km radius of the proposed site.

4.1 Ambient air quality

Ambient air quality was monitored for RSPM, SPM, SO₂ & NO_x at 8 stations including project site for one season as per MOEF guidelines. The following are the concentrations of various parameters at the monitoring stations.

Parameter		Concentration
RSPM	:	23.7 to 44.9
SPM *	:	84 to 141.4
SO ₂	:	7.6 to 12.0
NO _x	:	8.9 to 14.2

* PAH in SPM was analysed and the concentrations at all monitoring stations are below Detectable level.

4.2 Water quality

Ground water samples were collected at 8 stations along with surface water samples and analysed for various Physico-Chemical parameters. The ground water samples show that they are complying with potable water standards.

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4.3 Noise levels

Noise levels were measured at 8 locations during day time & Night time. The noise levels at the monitoring stations are ranging 44.10 dBA to 51.65 dBA.

5.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 PREDICTION OF IMPACTS ON AIR QUALITY

The emissions from the proposed Plant are SPM, SO₂, NO_x. The predictions of Ground level concentrations have been carried out using All Terrain Dispersion Model. Meteorological data such as wind direction, wind speed, max. and min. temperatures collected at the site have been used as input data to run the model. The emissions from the other industries in the study area are also considered in the modeling for prediction of Ground Level concentrations.

It is observed from the computation results that the maximum predicted incremental rise in 24 hourly ground level concentrations of SPM, SO₂ and NO_x during operation of plant are 0.6 µg/m³, 8.9 µg/m³ and 4.7 µg/m³ respectively at a distance 1100 m in the down wind direction.

The predicted results shows that the net resultant concentrations (max. baseline conc. + max. incremental rise in conc.) of SPM, SO₂ and NO_x will be well within the National Ambient Air Quality Standards after commissioning of the expansion project. Hence there will not be any adverse impact on air environment due to the proposed expansion project.

5.2 PREDICTION OF IMPACTS ON NOISE QUALITY

The major sources of noise generation in the proposed Plant will be STG, compressors, etc. The ambient noise levels will be with in the standards prescribed by MOE&F vide notification dated 14-02-2000 under the noise pollution (Regulation & Control), rules 2000 i.e. the noise levels will be less than 75 dBA during day time and 70 dBA during

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night time. 30 acres of extensive greenbelt is proposed to be developed (including existing) in the Plant premises to further attenuate the noise levels. Hence there will not be any adverse impact due to noise on population in surrounding areas due to the proposed expansion project.

5.3 PREDICTION OF IMPACTS ON WATER ENVIRONMENT

Closed circuit cooling system will be implemented in DRI, steel melting shop, Rolling Mill and Ferro Alloy units. Hence there will not be any effluent generation from the process & cooling from these units. The effluent generated will be from power plant activities which include Boiler blow down, cooling tower blow down, service water & DM plant regeneration will be treated in Effluent treatment plant. This treated effluent after ensuring compliance with norms of CECB/CPCB will be utilized for dust suppression, ash conditioning and for on land for irrigation.

Sanitary waste water will be treated in septic tank followed by soak pit. Rain water harvesting will be implemented in consultation with Central Ground Water Board. This will help in improvement of ground water table in the area. More over no ground water is proposed to be used in the expansion. Hence there will not be any adverse impact on water quality in the study area due to the proposed expansion project.

5.4 PREDICTION OF IMPACTS ON LAND ENVIRONMENT

The effluent will be treated to achieve CECB standards for on land for irrigation. All the required air pollution control systems will be provided to meet CPCB/CECB norms. All solid wastes will be disposed / utilized as per CPCB/CECB norms. Hence there will not be any adverse impact on land environment due to the proposed Plant.

5.5 SOCIO - ECONOMIC ENVIRONMENT

There will be lot of opportunities in employment to local people during construction as well as in operation phase. There will be an upliftment in Socio Economic status of the

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people in the area. Hence there will be further development of the area due to the proposed expansion.

6.0 ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of CECB and MoEF are tabulated below.

MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S. No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. Water & Waste water quality				
A.	Water quality in the plant	Once in a month	Composite sampling (24 hourly)	As per IS: 10500
2. Air Quality				
A.	Stack Monitoring	Online monitors (WHRB, FBC Boiler) Once in a month		SPM SO ₂ & NO _x
B.	Ambient Air quality	Twice a week	24 hrs. continuously	RSPM, SPM, CO, SO ₂ & NO _x
C.	Fugitive emissions	Once in a month	8 hourly	Particulate matter
3. Meteorological Data				
	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, RH, rainfall, wind direction & speed.
4. Noise level monitoring				
A.	Ambient Noise levels	Twice in a year	Continuous for 24 hours with 1 hour interval	

7.0 PROJECT BENEFITS

The local areas will be benefited by way of generation of employment opportunities, increased demand for local products and services. There will be an overall improvement in the income level of the local people. The project creates employment to about 250 persons once the expansion project is commissioned and for 500 persons during construction stage. Priority will be given to locals for Semi-Skilled and Unskilled

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workers. With the development of this plant there will be lot of scope for more industrial investments which in turn will benefit the nation.

8.0 ENVIRONMENT MANAGEMENT PLAN

8.1 AIR ENVIRONMENT

Following control Systems are proposed to installed in the expansion Project

S. No.	Stack attached to	Control Equipment	Particulate emission at the outlet
1.	Kilns(4 x 100 TPD) with WHRB	Electrostatic Precipitators (4 nos.)	< 50 mg/Nm ³
2.	Induction Furnace & LF (common Stack)	Fume Extraction system with Bag filters	< 100 mg/Nm ³
3.	AFBC Boiler	Electro Static Precipitator	< 50 mg/Nm ³
4.	Rolling Mill	---	< 50 mg/Nm ³
5.	SEAF	Fume Extraction system with Bag filters	< 50 mg/Nm ³

The following air pollution control systems/ measures are proposed in the Plant

- All conveyors will be completely covered with G.I. sheets hoods to control fugitive dust.
- All bins will be totally packed and covered so that there will not be any chance for dust leakage.
- All the dust prone points material handling systems will be connected with de-dusting system with bag filters.
- All discharge points and feed points, wherever the possibility of dust generation is there a de-dusting suction point will be provided to collect the dust.
- The collected dust from the Bag house of Steel Melting will be taken to a dust storage bin through a pneumatic conveying system.

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- All the required Air pollution control measures will be strictly implemented so that the ambient air quality will be with in the National Ambient Air Quality standards during the operation of the expansion project.
- Extensive greenbelt proposed to be developed will help in further mitigating the air emissions.

8.2 WATER ENVIRONMENT

Waste water generated from the proposed power Plant will be treated in Effluent Treatment Plant and fully reused within the plants/premises. Zero discharge system will be adopted.

EFFLUENT TREATMENT PLANT

The effluent generated from the proposed power Plant will be treated in the following manner. pH of the boiler blowdown will be between 9.5 to 10.5. Hence a neutralization tank will be constructed for neutralizing the boiler blow down & DM plant regeneration water. Service water will be treated in an oil separator and will join the Central Monitoring Basin (CMB). After neutralization these two effluent streams will be mixed with Cooling Tower blowdown in a Central Monitoring Basin (CMB). Part of this treated effluent will be utilised for dust suppression, ash conditioning & the remaining for green belt development. A dedicated pipe distribution network will be provided for using the treated effluent for onland for irrigation. Sanitary waste water will be treated in Septic tank followed by soak pit. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented even after the expansion.

8.3 Noise environment

The major sources of noise in the proposed Plant will be STG, DG set & compressors. The employees working near the noise generating sources will be provided with earplugs. Noise absorbing materials will be used in the construction of roofs, walls and

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floors. The extensive greenbelt development proposed within the plant premises will help in attenuating the noise levels further. Noise barriers in the form of trees are recommended to be grown around administrative block and other utility units. Training will be imparted to plant personnel to generate awareness about the damaging effects of noise.

8.4 Land Environment

The waste water generated from the Plant will be treated in the Effluent Treatment plant to comply with the CECB standards and will be used for dust suppression, ash conditioning and for greenbelt development. All the required Air pollution control systems will be installed and operated to comply with CECB norms. Solid wastes will be disposed off as per norms. Extensive greenbelt will be developed in the plant premises. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposed Plant.

Solid waste generation and disposal

Sr. No.	Type of Solid waste	Existing Quantity (in TPD)	Expansion Quantity (in TPD)	After expansion Quantity (in TPD)	Disposal Proposed
1.	Ash	60	434	494	Cement plants/Fly ash product manufacturers/brick manufacturers.
2	Slag (from SMS)	-	54	54	Used in Road construction
3	Wet scraper sludge	9.2	18.4	27.6	Given to brick manufacturers
4	Dolochar	60	120	180	Completely utilized in FBC Boiler as fuel
5	Accretion slag	1.8	3.6	5.4	Used as sub base material in road construction
6.	Ferro Manganese	-	55	55	To be reused in manufacture of Silico Manganese as it contains high MnO ₂ and Silicon
7.	Ferro Silicon	-	4.7	4.7	To be used in cast iron foundries.
8.	Silico Manganese	-	27.5	27.5	To be used for road construction.

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8.5 GREENBELT DEVELOPMENT

Greenbelt of 30 acres will be developed in the plant premises. Greenbelt will be developed as per CPCB guidelines.

8.6 IMPLEMENTATION OF CREP RECOMMENDATIONS

All the CREP recommendations will be strictly followed in the proposed expansion.

8.7 POST PROJECT ENVIRONMENTAL MONITORING

Ambient Air Quality, Stack monitoring & effluent analysis will be carried out regularly as per CPCB norms and the analysis reports will be submitted to MoEF & CECB regularly.
