

# EXECUTIVE SUMMARY

(for Public Hearing)

for

Proposed DRI Plant (Sponge Iron 1,35,000 TPA), WHRB 10 MW, AFBC Power Plant 3.5 MW, Submerged Electric Arc Furnace 7 MVA (Ferro Manganese- 12,600 TPA) and Table top furnace (Brown Fused Alumina - 10,500 TPA)

at

Sy.No. 339/1, 339/3, 340, 341, 348/1, 348/2, 349/1, 349/2, 349/3, 349/4, 349/5, 350/1, 350/2, 350/3, 350/4, 351/1, 359/1, 351/2, 359/2, 351/3, 359/3, 352, 353, 354, 355/1, 355/2, 356, 360, 362 and 363/2 Gaitra & Raikheda Village, Tilda Tehsil, Raipur District, Chhattisgarh State

SUBMITTED BY

M/s. Shri Baba Baidnath Ispat Private Limited  
501, Wallfort Ozone Fafadih Chowk  
Raipur CG 492001 IN

Schedule: 3 (a), Category: A

ToR Letter No. IA-J-11011/503/2022-IA-II(IND-I) dated 29<sup>th</sup> March, 2023  
Baseline Period:- 1<sup>st</sup> October, 2022 to 31<sup>st</sup> December, 2022

PREPARED BY



**PARIVESH ENVIRONMENTAL ENGINEERING SERVICES**

**NABET Certificate No.:** NABET/EIA/2124/IA0092 (Rev.01)

**(A certified QCI/NABET Accredited EIA Consultancy Organization)**

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## SUMMARY

### 1.1 PROJECT DESCRIPTION

**SHRI BABA BAIDNATH ISPAT PRIVATE LIMITED (SBB IPL)** is proposing to install DRI Plant (Sponge Iron 1,35,000 TPA), WHRB 10 MW, AFBC Power Plant 3.5 MW, Submerged Electric Arc Furnace 7 MVA (Ferro Manganese- 12,600 TPA) and Table top furnace (Brown Fused Alumina - 10,500 TPA), at Sy.No. 339/1, 339/3, 340, 341, 348/1, 348/2, 349/1, 349/2, 349/3, 349/4, 349/5, 350/1, 350/2, 350/3, 350/4, 351/1, 359/1, 351/2, 359/2, 351/3, 359/3, 352, 353, 354, 355/1, 355/2, 356, 360, 362 and 363/2 Gaitra&Raikheda Village, Tilda Tehsil, Raipur District, Chhattisgarh State. Total area is 6.529 Ha.

As per Environmental Impact Assessment Notification dated 14th September, 2006 and subsequent amendment thereof, the proposed project fall under S. No. 3 (a) under category "A" and requires Environmental Clearance (EC) to be obtained from MoEF&CC, New Delhi.

Application was submitted to MoEF&CC for obtaining Terms of References (TOR) for conducting the EIA studies. Accordingly, the project proponents have submitted prescribed application along with Pre-Feasibility Report to the MOEF&CC, New Delhi on dated 16.12.2022 vide proposal No: -IA/CG/IND1/410582/2022 for seeking terms of references for conducting the EIA Study. Accordingly, proposal cited above was considered in 24th meeting of the EAC (Industry-I) held during 28th Feb & 1st March, 2023 and ToR was granted (vide. F. No. IA-J-11011/503/2022-IA-II(IND-I) on 29th March, 2023.

Parivesh Environmental Engineering Services, Lucknow, is QCI-NABET accredited in „Category A“ environment consultant organization has been assigned to undertake an Environmental Impact Assessment (EIA) study and preparation of Environment Management Plan (EMP) for various environmental components, which may be affected due to the impacts arising out of the proposed project.

The Environmental Impact Assessment (EIA) report is prepared for obtaining Environmental Clearance (EC) from Ministry of Environment, Forest and Climate Changes (MoEFCC), New Delhi for the proposed green-field project

#### 1.1.1 Plant Configuration and production capacity

**Table 11.1: Project Capacity**

S. No.	Name of the facility	Proposed Configuration of the plant	Name of the product	Capacity
1.	DRI Plant (Coal fired)	1 x 350 TPD Kiln	Sponge Iron	1,35,000 TPA

*Proposed DRI Plant (Sponge Iron 135000 TPA), WHRB 10MW, AFBC Power Plant 3.5MW, Submerged Electric Arc Furnace 7 MVA(Ferro Manganese 12600 TPA), Table top furnace (Brown Fused Alumina 10500 TPA)at Vill.-Gaitra&Raikheda, Teh.-Tilda, Dist.-Raipur, Chhattisgarh State by M/s Shri BabaBaidnathIspat Pvt. Ltd.*

			1 x 100 TPD Kiln		
2.	Submerged Electric Arc Furnace		1 x 7 MVA	Fe-Mn	Fe-Mn – 12,600 TPA
3.	Table Top Furnace		35 TPD	Brown Fused Alumina	10,500 TPA
4.	Power Plant (13.5MW)	WHRB	1 x 10 MW	Captive Power	10 MW
		CPP (AFBC)	1 x 3.5 MW		3.5MW

### 1.1.2 Location of Project

M/s Shri Baba BaidnathIspat Private Limited is located at Sy. No.339/1, 339/3, 340, 341, 348/1, 348/2, 349/1, 349/2, 349/3, 349/4, 349/5, 350/1, 350/2, 350/3, 350/4, 351/1, 359/1, 351/2, 359/2, 351/3, 359/3, 352, 353, 354, 355/1, 355/2, 356, 360, 362 and 363/2Gaitra &Raikheda Village, Tilda Tehsil, Raipur District, Chhattisgarh State. The Co-ordinates of the project site are given below.

**Table 11.2 Pillar Co-ordinates**

Point	Latitude	Longitude
1	21°28'11.69"N	81°51'10.44"E
2	21°28'7.72"N	81°51'10.61"E
3	21°28'8.23"N	81°51'8.36"E
4	21°28'6.95"N	81°51'7.23"E
5	21°28'6.95"N	81°51'6.94"E
6	21°28'0.53"N	81°51'6.80"E
7	21°27'59.37"N	81°51'6.07"E
8	21°27'59.83"N	81°51'5.00"E
9	21°28'3.45"N	81°51'5.13"E
10	21°28'3.63"N	81°51'3.95"E
11	21°28'5.19"N	81°51'4.12"E
12	21°28'6.65"N	81°51'4.89"E
13	21°28'6.82"N	81°51'3.04"E
14	21°28'6.22"N	81°51'2.83"E
15	21°28'6.61"N	81°51'1.04"E
16	21°28'5.49"N	81°51'0.73"E
17	21°28'5.95"N	81°50'58.33"E
18	21°28'11.08"N	81°50'59.28"E
19	21°28'10.97"N	81°50'59.97"E
20	21°28'11.91"N	81°51'0.05"E
21	21°28'11.74"N	81°51'2.15"E
22	21°28'12.63"N	81°51'2.42"E
23	21°28'11.60"N	81°51'7.50"E

The following is the environmental setting within the 10 Km. radius of the plant site:

*Proposed DRI Plant (Sponge Iron 135000 TPA), WHRB 10MW, AFBC Power Plant 3.5MW, Submerged Electric Arc Furnace 7 MVA(Ferro Manganese 12600 TPA), Table top furnace (Brown Fused Alumina 10500 TPA)at Vill.-Gaitra&Raikheda, Teh.-Tilda, Dist.-Raipur, Chhattisgarh State by M/s Shri BabaBaidnathIspat Pvt. Ltd.*

**Table 11.3 Environmental features within 10 Km. radius of the plant site**

S. No.	Particulars	Details			
1.	Total Area	6.529 Ha. [Private:6.529 ha]			
2.	Land use	Industrial Use			
3.	Land acquisition details as per MoEF&CC O.M. dated 7/10/2014	Land completely acquired			
4.	Toposheet No.	F44P14			
5.	Elevation	MSL of Project Site <b>-307m to 310m</b> above meansealevel			
6.	Nearest Habitation	Gaitra-0.650 Km;SSW. The boundary of the village is started at a distance of 0.650 km but actual habitation (As per survey by Patwari) distance of village Gaitra is approx. 1.010 km from proposed project site			
7.	Nearest Highway	<b>S. No.</b>	<b>Particulars</b>	<b>Distance (Km) (From Project Boundary)</b>	<b>Direction</b>
		1	Tilda – Simga Road	0.45	East
		2	NH-130B	7.60	South
		<i>Source: All distances are taken with respect to Google Earth.</i>			
8.	Nearest Railway Station	Baikunth Railway Station – 7.83 km NW			
9.	Nearest Airport	Swami Vivekananda International Airport – Raipur – 33.03 km, SSW			
10.	Nearest Tourist Places	None within 10 Km radius			
11.	Defense Installations	None within 10 Km radius.			
12.	Archaeological Sites	None within 10 Km radius.			
13.	Eco-sensitive Zones	None within 10 Km radius.			
14.	Reserved/ Protected Forest	<b>S. No.</b>	<b>Particulars</b>	<b>Distance (Km) (From Project Boundary)</b>	<b>Direction</b>
		1	Mohrenga PF	2.21	SE
		2	Khaulidabri PF	5.36	SE
		No national park/wildlife sanctuary/biosphere reserve/tiger reserve/elephant reserve etc. are reported to be located in the core and buffer zone of the project <i>(Source: All distances are taken with respect to S.O.I. GT Sheet.)</i>			

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15.	Nearest Streams/ Rivers/ Water Bodies	<b>S. No.</b>	<b>Particulars</b>	<b>Distance (Km) (From Project Boundary)</b>		<b>Directio n</b>
		1	Pond	adjacent to project site		East
		2	Pond near Tarashiv	1.55		North
		3	Pond near Bhatapara	1.61		South
		4	Pond near Chataud	2.8		North
		5	Unnamed Pond near Keotara	3.64		NE
		6	Kumhari Tank	4.77		East
		7	Pond near mohrenga	4.85		SSE
		8	Kirna Tank	5.38		West
		9	Pindraon Tank	5.53		South
		10	Pond near Marhi	5.59		SW
		11	Pond near Rajia	5.69		North
		12	Pond near, Bharuwadih Kalan	5.97		ESE
		13	Pond near Deori	6.70		North
		14	Pond near Chhapora	6.88		NNE
		15	Pikridih Tank	8.03		Souh
		16	Pond near Bhatagaon	8.37		SW
		17	Pond near Manpur	8.85		NNE
		18	Pond near Bepantola	8.87		SSE
<i>(Source: All distances are taken with respect to S.O.I. GT Sheet).</i>						
16.	Seismic Zone	IV				
17.	Interstate boundary	None within 10 Km radius.				
18.	Nearest Educational institute /Hospital/ Temple	<b>S. No</b>	<b>Location</b>	<b>Directio n</b>	<b>Distance (KM)</b>	
		1	Govt. high School Tarashiv	ENE	0.9	
		2	Govt. Middle	SE	1.7	

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			School, Paraswani			
		3	Shiv Mandir, Gaitara	SSW	1.00	
		4	Banjari Mata Mandir GSP	NE	2.7	
		5	Primary Health Sub Centrer Mura	SW	3.7	
		6	Primary Health Center Mura	South	7.08	

### 1.1.3 Raw Material Requirement

The following will be the raw material requirement for the proposed project:

**Table11.4: Raw Material Details**

Sr. No.	Raw material	Quantity (TPA)	Source	Distance from site (km)	Mode of Transportation
<b>Raw Material for Sponge Iron Production (DRI Plant)</b>					
1	Iron Ore/Pellet	2,16,000/1,92,825	Barbil, Orissa NMDC, Chhattisgarh	416	By Rail/ Road Through Covered Trucks
2	Coal Indian	1,98,450	SECL Chhattisgarh	193	By rail & road (through covered trucks)
	Coal Imported	1,21,500	South Africa	8250	Through sea route, rail route & by road
3	Dolomite	7,650	Open Market		By road
<b>Raw Material for Brown Fused Alumina</b>					
1	Calcined Bauxite	21,000	Sister industry	193	by road
<b>Raw Material for Power Plant (AFBC)</b>					
1	Dolochar	43598	Own Project	-	-
2	Coal	45,000	E- auction/open market	193	By Road
<b>Raw Material for Ferro Alloys Plant(ferro manganese)</b>					
1	Manganese ore	25,200	Open Market	300	By Road
2	Coke	4725	Open Market	604	By Road
3	Coal	2772	SECL mine/Open Market	193	By Road
4	Flux (Dolomite)	2520	Open Market	94	By Road

#### **1.1.4 Manufacturing Process**

##### **A. Manufacturing process of 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.

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 Carbon monoxide generated due to the combustion of coal, reduces the iron ore 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<sup>0</sup>C enters the reduction zone. Temperature of the order of 1050<sup>0</sup>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 100<sup>0</sup>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. The hot flue gases will be taken to a Waste Heat Recovery Boilers and after heat recovery they will be treated in high efficiency ESP and discharged into the atmosphere through stack whose height will be in accordance with CPCB norms.

##### **B. Ferro Manganese Manufacturing Process**

Ferro Manganese is produced from manganese ore, which have the principle constituents of manganese in the form of oxides balance usually being Iron, Aluminium, Magnesium oxides & silica. For making Ferro Manganese, coke is used as reductant & flux like limestone or dolomite are added to the reaction mixture the electrodes in SAF are immersed into the solid charge The Furnace is recharged as the solid is being smelted & the alloy & slag are periodically removed.

##### **C. Power Generation**

###### **Waste Heat Recovery Boiler**

The hot flue gases from DRI kilns will pass through waste heat recovery Boilers to recover the heat and to generate 10 MW from proposed 350 TPD & 100 TPD DRI Kilns. The gases after heat recovery will passthrough ESPs and then discharged through chimneys into the atmosphere for effective dispersion of emissions into the atmosphere through stacks of adequate height.

###### **AFBC Power Plant**

Coal (Imported / Indian) along with dolochar will be used as fuel in AFBC Boilers to generate 3.5 MW (1 x 3.5 MW) of electricity. The flue-gases will be treated in high efficiency ESP and then discharged through a stack of adequate height into the atmosphere.



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#### **D. Brown Fused Alumina Table Top Arc Furnace**

Brown Fused Alumina also called Brown Fused Aluminium Oxide, Brown Aluminium Oxide or Brown Corundum.

It is a material produced by fusion process of abrasive Grade calcined bauxite along with anthracite or Met coke & Iron Fillings in electric arc furnace for 2200 degree solidified cooled crushed and screened into grits of different sieving distribution. It is a brown, dense, tough, hard, heat resistant, abrasion resistant material widely used as a raw material in refractories, ceramics shapes, grinding wheels, sandpaper, blasting media, metal preparation, laminates, coatings, lapping, polishing, grinding and hundreds of other applications

##### **1.1.5 Power Requirement & Supply**

Power required for the proposed project will be 13.5 MW. Power will be sourced from captive power Plant. The power will be sourced from the CPP.

**Table: 11.5: Power Requirement**

<b>Sr. No</b>	<b>Particulars</b>	<b>Power Requirement (MW)</b>
1	DRI	2.0
2	SEAF	7.0
3	Table Top Arc Furnace	3.5
4	others	1.0
<b>Total</b>		<b>13.5</b>

##### **1.1.6 Water Requirement & Waste water generation**

The total one time water requirement will be 748 KLD. Daily fresh water requirement will be 600 KLD and recycled water 148 KLD. The water will be sourced from ground water. The water requirement in the project will be for cooling purpose, domestic consumption, dust management and greenbelt development. The details of water requirement for different purposes are presented in **Table 11.6**.

**Table 11.6: Water Requirement (KLD)**

<b>Item</b>	<b>Total Water Requirement (KLD)</b>	<b>Waste Water generation (KLD)</b>
DRI Plant	250	78
Power Plant	324	33
Table top Furnace	100	27
Ferro Alloys Plant	54	16
Domestic	20	16
Greenbelt/Dust suppression	14#	-
Ash Quenching	5 #	-
<b>Total</b>	<b>748 (Fresh water 600 and 148 Recycle)</b>	<b>170</b>

#Treated water

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### 1.1.7 Project cost

The project cost of the project is estimated as Rs. 45.0 Crores

### 1.1.8 Land Requirement

Total land 6.529 Ha. is required for the proposed project. Current Land use is Industrial use. Land is under the possession of company. The land use and breakup details are presented in **Table 11.7**.

**Table 11.7: Land Area Breakup**

S. No.	Description	Area (in Ha.)	%
1	Main Plant Area	3.164	48.46
2	Admin & Utility	0.085	1.31
3	Green Belt Area	2.156	33.02
4	Open/Parking Area	0.476	7.29
5	Road Area	0.648	9.92
	<b>Total</b>	<b>6.529</b>	<b>100</b>

### 1.1.8 Employment Generation (Direct & Indirect) Due to the Project.

A well-structured manpower is essential for uninterrupted operation and proper maintenance of plant facilities. Employment will be generated during implementation of the project. Total manpower required for the project is approx. 300 persons direct and additional 100 indirect employments. Besides the production staff some more manpower shall be needed for administrative purposes

## 1.2 DESCRIPTION OF BASELINE ENVIRONMENT

Baseline data was generated during post monsoon season from 1st October 2022 to 31st December 2022. Baseline environmental studies were conducted at project site along with 10 km radial distance from the project site. Baseline environmental quality data for various environmental component like Air, Noise, Water, Land, Biological Environment and Socio-Economic.

### A. Air Quality

Ambient air quality was monitored for PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>& CO at 8 stations including project site. The following are the concentrations of various parameters at the monitoring stations:

**Table 11.8 Results during study period**

Parameter	Concentration
PM10	46.5 to 74.0 µg/m <sup>3</sup>
PM2.5	27.7 to 40.9 µg/m <sup>3</sup>
SO <sub>2</sub>	6.8 to 14.5 µg/m <sup>3</sup>
NO <sub>2</sub>	9.2 to 28.2 µg/m <sup>3</sup>
CO	0.33 to 0.95 mg/m <sup>3</sup>

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## **B. Surface Quality**

Water samples from 8 surface water bodies have been collected and analysed as per IS standards. There are no major rivers present within 10 Km radius of the site. Few streams & ponds are present within 10 Km. radius. Based on test result data comparison study, the analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

- pH of the surface water samples collected was in the range of 6.90 – 7.84
- Total dissolved solids in the samples were in the range of 330.7 – 513.3 mg/l.
- Total Hardness was found to vary between 135.3 – 253.2 mg/l.
- Chlorides concentration was found to vary between 88.8 – 121.2 mg/l.
- Heavy metal concentrations in all the samples were found to be well within the limits.

## **Ground Water**

8 Nos. of ground water samples from open wells / bore wells were collected from the nearby villages to assess ground water quality impacts and analyzed for various Physico-Chemical parameters. The analysis of samples shows that all the parameters are in accordance with BIS: 10500 specifications.

- pH of the ground water samples collected was in the range of 7.13 – 7.68
- Total Dissolved Solids in the samples was in the range of 236.5 – 512.7 mg/l
- Total Hardness was found to vary between 187 – 242.7 mg/l.
- Chlorides concentration was found to vary between 88.2 – 118.6 mg/l.
- Fluoride concentration was found to vary between 0.21 – 0.31 mg/l.
- Sulphates concentration was found to vary between 31.95 – 40.77 mg/l.
- Heavy metal concentrations in all the samples were found to be well within the limits.

## **C. Noise Quality**

Noise levels were measured at 8 locations during day time & Night time. Assessment of day noise levels around the study area are ranging between 48.2 to 64.7 dB (A) during study period. Whereas the night equivalents were in the range of 34.2 to 52.5 dB (A).

Flora and Fauna: No national park or wildlife sanctuary or biosphere reserve is present in the study area. No endangered species of flora and fauna is found in the study area.

## **D. Biological Environment**

There are no Schedule- I mammals, birds and reptiles in the study area, rest of species are duly confined in the following Schedules i.e II, III, IV and V of The Indian Wildlife (Protection) Act, 1972. Also, there is no presence of endangered flora as per Botanical Survey India records in the study area.

## **E. Socio Economy**

- Total Population of the villages in the Study area is 82293
- The total no of household in the study area is 17333

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- Sex Ratio (No. of females per 1000 Males) is 997
- The literacy rate in study area is 64.0%
- The percentage of schedule caste in the study area is 20.3% while the 5.11%only population is of Scheduled tribe
- The occupational districbtion in the study area points to be predominance of Cultivators followed by Agriculture Labourers than Household Industry Workers, (29.3%) are main workers, marginal workers (14.4%) and Other Workers (56.3%)

#### F. Land Use Land Cover Classification

The Land Cover classes and their coverage are summarized below:

S. No.	Particulars	Area (Ha.)	Percentage
1	Settlement	1186.24	3.64
2	Industry	65.23	0.20
3	Barren Land	2311.8	7.09
4	Forest	489.85	1.50
5	Water Bodies	576.68	1.77
6	Stone Quarry	986.39	3.02
7	Open Scrub	1527.42	4.68
8	Agricultural Land	25471.61	78.10
	<b>Total Buffer Area</b>	<b>32615.22</b>	<b>100</b>

### 1.3 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

#### A. Prediction of impacts on air quality

The likely emissions from the proposed project are PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>. In the present case, predictions of Ground level concentrations have been carried out using Aermid View dispersion model for different stability state Gaussian plume dispersion, designed for multiple point sources for short term and developed by United States Environmental Protection Agency [USEPA] has been used for simulations from point sources.

The incremental GLC values of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> around the project site are presented as isopleths in the **Chapter-4**. The maximum incremental GLC of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub> from the project will be 1.185µg/m<sup>3</sup>, 0.476µg/m<sup>3</sup>, 3.88µg/m<sup>3</sup> and 2.62µg/m<sup>3</sup> respectively. The ambient air quality will remain within the prescribed standards.

Item	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	SO <sub>x</sub> (µg/m <sup>3</sup> )	NO <sub>x</sub> (µg/m <sup>3</sup> )
Maximum baseline conc. in the study area.	74.0	40.9	14.5	28.2
Maximum predicted incremental rise in concentration due to proposed project.	1.185	0.476	3.88	2.62
Net resultant concentrations during operation of the plant	75.185	41.376	15.38	30.82
<b>National Ambient Air Quality Standards</b>	<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>

### **B. Prediction of impacts on Noise quality**

The major sources of noise generation in the proposed project will be Turbines, Boilers, Compressors, DG set, etc. Acoustic enclosures will be provided to the Turbines. Silencers will be provided to the DG Set. All machinery will be manufactured keeping in view of the MOEF&CC/OSHA standards on Noise levels. The ambient noise levels will be within the standards prescribed by MoEF&CC i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. Greenbelt of 2.156 Ha. will be developed for green area. Hence, there will not be any adverse impact due to noise on population in surrounding areas due to the proposed project.

### **C. Prediction of impacts on Water Environment**

The implementation of proposed project may have some impact on the water environment. The impact may be on the source of water in the form of depletion of water resources of the area and in the form of deterioration of quality of natural water resources due to discharge of plant effluent.

The various control measures that will be adopted are:

- 100% of waste water will be recycled and Zero discharge condition will be maintained. 154 KLD trade effluents treated in ETP (ETP Capacity 180 KLD). 153 KLD Treated water generated from ETP Plant out of which 5 KLD will be utilized for Ash Quenching and remaining 148 KLD will be recycled in the system through RO and MEE.
- Sanitary wastewater will be treated in STP. Treated sewage will be used for Greenbelt development. There will not be any effluent discharge outside the premises. ZLD will be followed. Hence there will not be any adverse impact on environment due to the proposed project.
- Closed circuit circulation system will be followed
- Air Cooled condensers will be provided in the power plant, which will reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Rain water charged to ground water.
- All stock piles will be on pucca flooring to prevent for any ground water contamination.
- Effluent from DRI, Ferro Alloys, Brown Fused alumina & power plant will be treated in ETP followed by R.O plant & MEE. After ensuring compliance with SPCB norms, it will be utilized within the plant and ash quenching.
- Rejects from MEE plant will be utilized for Ash quenching
- Garland drains will be provided around all the raw material stacking areas.

### **D. Prediction of impacts Socio - Economic Environment**

There will be certain upliftment in Socio Economic status of the people in the area & development of the area due to the proposed project. Due to this the economic conditions, the educational and medical standards of the people living in the study area will certainly move upwards which will result in overall economic development, improvement in general aesthetic environment and increase in business opportunities.

### **E. Prediction of Impacts on Land Environment**

The effluent will be treated to achieve SPCB standards. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / SPCB norms. All solid wastes will be disposed / utilized as per CPCB / SPCB norms. 2.156 Ha. will be developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed project.

### **F. Biological Environment**

There is no ecological sensitive area like national park, sanctuary, biosphere reserve, within 10 km radial distance from the project site. No land involved in the project activities. Thus, no significant impact envisaged on biological environment. The total plant area is 6.529 Ha. Greenbelt of 33.02% (i.e., 2.156 Ha.) will be maintained. Thus, the total plantation about 5290 will be planted within two years in coming Monsoon (after receipt of EC) whereas survival rate shall be maintained in subsequent years. Indigenous and broad leaf species for greenbelt development.

## **1.4 ENVIRONMENTAL MONITORING PROGRAM**

Environmental Management Cell (EMC) will be set up to undertake routine environmental monitoring. Monitoring will be done to ensure compliance with the prescribed laws and standards. The Head of EMC will report to the Plant Head. Qualified staff will be recruited in EMC. Environmental monitoring of ambient air, stack emission, fugitive dust emission, noise levels, groundwater quality, surface water quality and soils will be carried out as per norms.

**Table 11.9 ENVIRONMENTAL Monitoring Programme**

<b>S.No</b>	<b>Particulars</b>	<b>Frequency of monitoring</b>	<b>Duration</b>	<b>Parameters required to be monitored</b>
1	Ambient Air quality	CAAQMS Quarterly Once	Continuously 24 Hourly	PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> & CO
2	Stack Monitoring	CEMS (all Stacks) Once in a month	-- --	PM, SO <sub>2</sub> & NO <sub>x</sub> PM, SO <sub>2</sub> & NO <sub>x</sub>
3	Fugitive emissions	Once in a Month	8 hours	PM
4	Meteorology	daily	Continuously	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
5	Noise	Once in a month	Continuous for 24	Equivalent noise

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		(Hourly)	hours with 1-hour interval	level- dB (A)
6	Water quality in the area	Quarterly Once	Grab sampling	As per IS: 10500
7	Effluent at the inlet & outlet of the ETP	Once in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
8	Sanitary Wastewater (inlet & outlet of STP)	Once in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
9	Greenbelt	-	-	Number of plantation (Units), Number of Survived plants/trees, Number of poor plants/ Trees
10	Environmental Audit	Once in year	-	With Respect to Environment Clearance, Consent conditions and ISO 140001.

### 1.5 ADDITIONAL STUDIES

Total available land is 6.529 Ha. No Rehabilitation and Resettlement is not involved in the proposed project. Hence, no R & R study has been carried out.

#### **Risk Assessment:**

The assessment of risk in the proposed project has been estimated for fire, explosion and toxicity and corresponding mitigation measures are suggested in the EIA/EMP report.

Hazard analysis involves the identification and quantification of the various hazards (unsafe conditions) that exist in the project site. On the other hand, risk analysis deals with the identification and quantification of risks occurring due to the plant equipment and personnel exposed, due to accident resulting from the hazards in the plant. The occupational and safety hazards and preventive measures, process hazards and their preventive measures, and storage hazards and preventing measures are provided in details in Chapter 7 of the EIA report.

The main objective of the risk assessment study is to determine damage due to major hazards having damage potential to life and property and provide a scientific basis to assess safety level of the facility. The secondary objective is to identify major risk in manufacturing process, operation, occupation and provide control through assessment and also to prepare on-site, off site plans to control hazards.

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The assessment of risk in the proposed project has been estimated for material handling, movement of Trucks/Tippers, Dust hazards, Hazards, shock hazards, etc. and corresponding mitigation measures are suggested in the EIA/EMP report.

## 1.6 PROJECT BENEFITS

During Construction Phase there would be direct job generation for at least 80-100 peoples and many more indirect jobs would be generated automatically. Total manpower required for the project is approx. 200persons direct and additional 300 indirect employments. Besides the production staff some more manpower shall be needed for administrative purposes. All the labour/manpower will be hired from the local places.CSR activities will be done as per rules of Government of India. The Budgetary provision will be made as per norms.

## 1.7 ENVIRONMENTAL MANAGEMENT PLAN

### A. Air Environment

The following are air emission control systems proposed in the proposed project:

S. No.	Source	Control Equipment	Maximum Particulate Emission at the Outlet
1	DRI kiln with WHRB	Electro Static Precipitators (ESP)(high performance rigid electrodes with transformer)	PM<30 mg/Nm <sup>3</sup>
2	Submerged Electric Arc Furnace	4th Hole Fume Extraction system with PTFE membrane bag filters	PM <30 mg/Nm <sup>3</sup>
3	CPP	Electro Static Precipitator (ESP) (high performance rigid electrodes with transformer); with a Chimney 45m. Lime Dosing Low NO <sub>x</sub> burners with 3-stage combustion, flue gas recirculation and auto combustion control system will be provided.	PM <30 mg/Nm <sup>3</sup>  SO <sub>2</sub> <100 mg/Nm <sup>3</sup>  NO <sub>x</sub> <100 mg/Nm <sup>3</sup>
4	Table top Furnace	Fume Extraction system with bag filters	PM <30 mg/Nm <sup>3</sup>

Note: Apart from the above Fume Extraction System with bag filters, dust suppression system, covered Conveyers, mechanical dust sweepers, Wheel washing at entry and exit gates etc. will also be provided

### Dust Suppression System

Water sprinklers will be provided at the unloading areas of the raw materials for dust suppression. Dust suppression system will be provided with plain water - comprising of piping network, valves, pumps, instrumentation & control, water tank etc.



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### **Internal Roads**

All internal roads will be asphalted to prevent the fugitive dust emission due to vehicular movement.

### **Interlocking System**

All ESPs will have interlocking system. Whenever the ESP fails, there will be no production in the unit till the ESP is rectified.

### **Transportation:**

- The raw material like sponge iron, pig iron and heavy scrap are readily available in the market as plant located in the proximity of industrial area and transported upto the plant through truck.
- In case of storage of sponge iron/ carbon powder coal in open, it will be covered by tarpaulins to prevent spread of dust from it during transportation.
- There will not be substantial addition in the existing transportation load. Since the area is already having enough industrial infrastructure.
- Transportation of materials will be limited to day hours only

### **B. Water Environment**

**Table 11.10: Waste water Generation (KLD)**

<b>Item</b>	<b>Waste Water generation (KLD)</b>	<b>Management</b>
<b>A. Industrial</b>		
DRI Plant	78	154 KLD trade effluents treated in ETP (ETP Capacity 180 KLD). 153 KLD Treated water generated from ETP Plant out of which 5 KLD will be utilized Ash Quenching and remaining 148 KLD will be recycled in the system through RO and MEE.
Power Plant	33	
Table top Furnace	27	
Ferro Alloys Plant	16	
<b>Sub-Total</b>	<b>154</b>	
<b>B. Domestic</b>		
Domestic	16	The domestic wastewater will be treated in STP and treated water will be used in green belt and dust suppression
<b>Grand Total</b>	<b>170</b>	

- 100% of waste water will be recycled and Zero discharge condition will be maintained. 154 KLD trade effluents treated in ETP (ETP Capacity 180 KLD). 153 KLD Treated water generated from ETP Plant out of which 5 KLD will be utilized Ash Quenching and remaining 148 KLD will be recycled in the system through RO and MEE. 14 KLD treated domestic water through STP (Cap. 20 KLD) will be used in green belt development.

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- Closed circuit circulation system will be followed
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Rain water charged to ground water.
- All stock piles will be on pucca flooring to prevent for any ground water contamination.
- Effluent from DRI, Ferro Alloys, Brown Fused alumina & power plant will be treated in ETP followed by R.O plant & MEE. After ensuring compliance with SPCB norms, it will be utilized within the plant and ash quenching.
- Rejects from MEE plant will be utilized for Ash quenching
- Sanitary waste water will be treated in STP and treated sewage will be used for greenbelt development
- Garland drains will be provided around all the raw material stacking areas.

### **C. Noise Environment**

Major noise-generating source will be machinery and equipment. The proposed equipment of the proposed plant would be designed for noise levels not exceeding 75 dB (A). In general, the following methods will be adopted to control the noise pollution.

- The major noise generating sources in the plant will be STG, boiler, feed pumps, steam blowing from boiler.
- Acoustic enclosures will be provided to STG
- Quench water Silencer will be provided to prevent the noise during steam blowing.
- All machinery will be manufactured as per MoEF&CC/OSHA & other international standards on noise levels.
- The noise levels will be confined to the working zones of the plant.
- Ear plugs will be provided to all employees who will enter into the noise prone areas.
- Community noise levels are not likely to be affected due to the proposed thick green belt and attenuation due to the physical barriers.
- The ambient noise levels will be in accordance with MoEF&CC norms i.e. ambient noise levels will be < 75 dBA during daytime and < 70 dBA during night time.

### **D. Land Environment**

The waste water generated from the proposed project will be treated in the Effluent Treatment Plant to comply with the SPCB standards and will be used for dust suppression, ash conditioning and for greenbelt development. All the required Air emission control systems will be installed and operated to comply with SPCB 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 project.

#### **Solid waste generation and disposal**

<b>S. No</b>	<b>Waste</b>	<b>Process where the waste generated</b>	<b>Quantity (TPA)</b>	<b>Management</b>
1.	Kiln accretion &	DRI Kiln	1344	Kiln accretion material will

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	Refractory waste			be used for filling of low laying area and road construction
2	Ash from DRI	DRI Kiln	28745	Will be sent to Brick manufacturing unit nearby the proposed plant.
3.	Dolochar	DRI Kiln	43598	Captive use in Captive Power plant
4	Fly Ash Power Plant	Power Plant	44359	Will be sent to Brick manufacturing unit nearby the proposed plant
5.	Fe-Mn Slag	Ferro Alloy Plant	11340	Will be used in manufacture of Silico manganese as it contains high MnO <sub>2</sub> and sold
6	Dust from Bag filters of SEAF and during tapping	Ferro Alloy Plant	794	Will be sold to sinter plant
7	Slag	Table Top Furnace	9000	will be used for Land Filing/Road Construction

Type of Hazardous Waste	H. W. Category	Quantity	Disposal
Waste Oil/Used Oi	5.1(as per HWM Schedule I)	0.5 KL/Annum	Will be given to authorized recycler having authorization from competent authority
ETP Sludge	34.3(as per HWM Schedule I)	0.4 TPA	TSDf site
Used Lead acid batteries	Haz. Waste Management Rule 2016, Sch. IV, Sr No.17	25 Batterie3s /Annum	The lead acid battery or dry battery will be given to authorized recycler having authorization from competent authority

### **E. Green Belt Development**

2.156 Ha of greenbelt will be developed in the plant premises.

The following points will be considered for selection of plants species:

- Greenbelt absorbs both gaseous as well as particulate pollutants to a great extent. For absorbance of gases, the duration of the foliage should be longer.
- Characteristics of tree/plants including shapes of crowns considered necessary for effective removal of dust particles.

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- Greenbelt/Plant species having good root system will be selected, so that soil erosion rates can be controlled significantly.

Proposed green belt area will comprise of rows of varying height of trees of native species with thick foliage, along the periphery of the unit. Approx. 5390 Nos. of trees and varieties of local shrubs (@2500 species/Ha) will be planted within next three years.

#### F. Cost for Environment Protection

S. No	Item	Capital Cost (Rs. Lakhs)	Recurring Cost per annum (Rs. Lakhs)	Time Frame
1	Air Pollution Control <ul style="list-style-type: none"> <li>• ESP &amp; Bag Filters</li> <li>• Dust Management System</li> <li>• Online Monitoring System (AAQMS &amp; CEMS)</li> <li>• Stacks (3 Nos)</li> </ul>	250 30 50 50	20.0	Within 1 Year
2	Water Pollution Control <ul style="list-style-type: none"> <li>• STP</li> <li>• Rain Water Harvesting</li> <li>• Drainage</li> </ul>	10 20 20	10.0	Within 6 Months
3	Noise Pollution Control	20	5.0	Within 1 Year
4	Solid waste Management	30	10.0	Within 1 Year
5	Environment Monitoring and Management	20	15.0	Within 6 Months
6	Occupational Health	20	7.0	Ongoing
7	Greenbelt	20	3.0	Within 1 Year
	<b>Total</b>	<b>540</b>	<b>70.0</b>	

#### 1.8 Conclusion

The operation of plant has significant positive impact on the socio-economic environment of the area which helps for development of this area including further development of physical infrastructure facilities. In the interest of mineral development and improve the social conditions of the local habitants this project should be allowed after considering all the environment aspects.

The technology involved in the project is well proven and reliable. Many plants are operating all over the country in this pattern are successful. All equipment purchased shall be brand new & latest in model and will be purchased from reputed suppliers. For O&M of the plant, experienced Engineers/Technicians are available in the region. The region shall also be benefited from the project as there will be direct employment of people in the Steel plant. Preference will be given to the people of the state possessing requisite skill and

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qualification criteria. Also there will be lot of scope for indirect employment of the people of the state in and around the project site like in transportation sector.

In view of the above the proposed Project of **M/s. Shri Baba BaidnathIspat Private Limited**, is technically feasible and financially viable

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