

**SUMMARY ON  
ENVIRONMENTAL IMPACT ASSESSMENT  
REPORT**

**OF**



(Proposed Mini Integrated Steel Plant)

at

Chapka Village, Bastar Tehsil & District, Chhattisgarh

Submitted to

**CHHATTISGARH ENVIRONMENT CONSERVATION BOARD**

## **1.0 PROJECT DESCRIPTION**

**Gopal Sponge & Power Private Limited (GSPPL)** is proposed to setup an Mini Integrated Steel plant consisting of Pelletization plant of 0.8 mTPA, 1x400 TPD & 1 x 600 TPD DRI Kilns to produce Sponge Iron of 3,35,000 TPA, Induction Furnaces of 5 x 20 T to produce Hot Billets / M.S.Billets of 3,00,000 TPA, Rolling Mill to produce TMT bars / Rolled products of 3,00,000 TPA through hot charging, Ferro Alloy plant of 1x12 MVA capacity to produce 40,000 TPA of Fe Mn (or) 30,000 TPA of Si Mn (or) 45,000 TPA of Pig Iron, Power generation through WHRB through DRI Kilns -25 MW & through CFBC of 15 MW at Khasra nos. 121/3, 121/4, 170, 253/2 & 253/3 of Chapka Village, Bastar Tehsil & District, Chhattisgarh. **Proposed project will be taken up in the 46 acres (18.62 Ha.).** The project cost envisaged for the proposed project is Rs. 490 Crores.

As per the Ministry of Environment, Forests & Climate Change, New Delhi notification, dated 14<sup>th</sup> September, 2006 and its subsequent amendments, all Primary metallurgical processing industries are classified under Category 'A'. The Ministry of Environment, Forests & Climate Change, New Delhi has accorded **Terms of Reference (TOR)** for the proposed project vide letter no. **J-11011 / 12 / 2021 – IA II (I), dated 8<sup>th</sup> February 2021.** The EIA Report has been prepared by incorporating the TOR stipulated by the Hon'ble EAC.

**Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad**, which is accredited by NABET, Quality Council of India, vide certificate No. NABET/ EIA/ 1922/ RA 0149, for preparing EIA report for Metallurgical Unit, have prepared Draft Environmental Impact Assessment (EIA) report for the proposed project by incorporating the TOR approved by Ministry of Environment, Forests & Climate Change, New Delhi. The report contains detailed description of the following:

- 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.
- Assessment of air emissions, liquid waste and solid waste from the proposed project along with the noise level assessment.

- Environmental Management Plan comprising of emission control measures proposed to be adopted in the proposed project, solid waste management, Greenbelt development.
- Post Project Environmental Monitoring & Budget for Environmental Protection Measures.

### 1.1 ENVIRONMENTAL SETTING WITHIN 10 Km. RADIUS OF THE PLANT SITE

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

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Partly Agricultural & partly uncultivated land
2.	National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	Nil
3.	Historical places / Places of Tourist importance / Archeological sites	Nil
4.	Critically polluted area as per MoEF&CC Office Memorandum dated 13 <sup>th</sup> January 2010	None And also the Plant area does not fall in the areas given in Hon'ble NGT order issued vide dated 10 <sup>th</sup> July 2019.
5.	Defence Installations	Nil
6.	Nearest village	Sivniguda - 0.75 kms. & Chapka – 1.2 Kms.
7.	Nearest Hospital	Sonarpal – 1.6 Kms.(NW)
8.	Nearest School	Sonarpal – 1.5 Kms.(NW)
9.	Forests	Amadula RF (7.4 Kms.) & Madhota PF (7.8 Kms.)
10.	Water body	Markandi river -0.25 Km Indravati River -7.5 Km Narangi River -8.1 Km Boria nala – 0.38 Km and Few other Seasonal Streams & ponds are present within 10 Km. radius of the proposed project site .
11.	Nearest Highway	NH # 43 (Jagdalpur to Kondagaon) adjacent to Site
12.	Nearest Railway Station	Nil with in 10 Km. Radius. . (Jagdalpur RS- 35 kms.)
13.	Nearest Port facility	Nil with in 10 Km. Radius.
14.	Nearest Airport	None within 10 Kms. [Bastar- Jagdalpur Airport (32 kms.)]
15.	Nearest Interstate Boundary	Nil (Nearest interstate boundary is Odisha at a distance of 28 kms. from the project site)
16.	Seismic zones per IS-1893	Seismic zone – II

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
17.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the site area.
18.	Litigation / court case is pending against the proposed project / proposed site and or any direction passed by the court of law against the project	Nil

## 1.2 PLANT CONFIGURATION AND PRODUCTION CAPACITY

Following is the proposed plant configuration and proposed production capacities

**TABLE NO. 11.1.1: PROPOSED PLANT CONFIGURATION & PRODUCTION CAPACITIES**

S. No.	unit (Product)	Unit Configuration	Production capacity
1.	Pelletization Plant (Pellets)	0.8 million TPA	0.8 million TPA
2.	DRI Kilns (Sponge Iron)	1 x 400 TPD & 1 x 600 TPD	3,35,000 TPA
3.	Induction furnaces with CCM & LRF (Hot Billets / M.S.Billets)	5 x 20 T	3,00,000 TPA
4.	Rolling Mill (with 85% Hot charging and 15 % Re-heating with LDO) Rolled products (TMT bars/Angles /Channels )	900 TPD	3,00,000 TPA
5.	Ferro Alloy Unit [Fe Mn (or) Si Mn (or) Pig Iron]	1 x 12 MVA	Fe Mn - 40,000 TPA/ Si Mn - 30,000 TPA/ Pig Iron- 45,000 TPA
6.	Power generation through WHRB	25 MW	25 MW
7.	Power generation through CFBC Boiler	15 MW	15 MW
<b>WHRB : Waste Heat Recovery Boiler; CFBC : Circulating Fluidized Bed Combustion</b>			

## 1.3 RAW MATERIAL REQUIRMENT

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

**TABLE NO. 11.1.2: RAW MATERIAL REQUIREMENT, SOURCE & MODE OF TRANSPORT**

S.No.	RAW MATERIAL	QUANTITY (TPA)	SOURCES	MODE OF TRANSPORT
<b>For manufacturing Pellets – 8,00,000 TPA</b>				
1	Iron ore fines	8,96,000	NMDC, CMDC	By rail & road (through covered trucks)
2	Bentonite	6,400	Raipur, Chhattisgarh	By Road (Covered Trucks)
3	Limestone	18,000	Raipur, Chhattisgarh	By Road (Covered Trucks)
4	Dolomoite	30,000	Raipur, Chhattisgarh	By Road (Covered Trucks)

S.No.	RAW MATERIAL		QUANTITY (TPA)	SOURCES	MODE OF TRANSPORT
5	Coal (Bituminous)		8,000	Raipur, Chhattisgarh	By Road (Covered Trucks)
6	Fuel (Anthracite Coal)		35,200	Raipur, Chhattisgarh	By Road (Covered Trucks)
	Or LDO / LSHS		10600 KL/year	Raipur, Chhattisgarh	By Road (in tankers)
<b>For manufacturing Sponge Iron – 3,35,000 TPA</b>					
1	Iron Ore		5,36,000	NMDC, CMDC	By rail & road (through covered trucks)
	(or) Iron ore Pellets		(or) 4,69,000	(or) In-house generation	By Covered Conveyor
2	Dolomite		16,750	Raipur, Chhattisgarh	By road (through covered trucks)
3	Coal	Indian	4,35,500	SECL Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)
		(or)			
	Imported	2,78,720	Indonesia / South Africa / Australia	Through sea route, rail route & by road	
<b>For manufacturing Hot Billets/ MS Billets – 3,00,000 TPA</b>					
1	Sponge Iron		3,35,000	In plant generation	By Conveyor
2	Pig iron / Scrap		45,000	In plant generation / Raipur, Chhattisgarh	By conveyor / By road (through covered trucks)
3	Ferro Alloys		18,000	In plant generation Raipur, Chhattisgarh	By Conveyor By road (through covered trucks)
<b>For manufacturing Rolled Products – 3,00,000 TPA</b>					
1	Hot Billets/ MS Billets		3,00,000	In house generation	Covered Conveyor
	MS Billets (purchased)		17,250	Raipur, Chhattisgarh	By road (through covered trucks)
2	LDO / LSHS*		9810 KL	Raipur, Chhattisgarh	By Road through tankers
* 100% consumption in worst-case scenario					

S.No.	RAW MATERIAL		QUANTITY (TPA)	SOURCES	MODE OF TRANSPORT
<b>For Ferro Alloys : 1 x 12 MVA (SiMn (or)FeMn (or) Pig Iron)</b>					
<b>(i) For manufacturing Silico Manganese - 30,000 TPA</b>					
1	Manganese Ore		48,900	MOIL / OMC	By Rail & Road through covered trucks
2	FeMn Slag		18,540	In house generation	Covered Conveyor
3	LAM Coke		11,550	Dhanbad, jharkand Imported (from Vizag port)	By Road through covered trucks Through sea route, rail route & by road
4	Quartz		6,000	Chhattisgarh/ Andra Pradesh	By Rail & Road through covered trucks
5	Bag filter dust		3,000	In house generation	Pipeline
			OR		
<b>(ii) For manufacturing Ferro Manganese – 40,000 TPA</b>					

S.No.	RAW MATERIAL	QUANTITY (TPA)	SOURCES	MODE OF TRANSPORT	
1	Manganese Ore	91,000	MOIL / OMC	By Rail & Road through covered trucks	
2	LAM Coke	14,600	Dhanbad, jharkand Imported (from Vizag port)	By Road through covered trucks Through sea route, rail route & by road	
3	Quartz	1,200	Chhattisgarh/ Andra Pradesh	By Rail & Road through covered trucks	
4	Bag filter dust	6,400	In house generation	Pipeline	
		OR			
<b>(iii) For manufacturing Pig Iron – 45,000 TPA</b>					
1	HG Iron ore	66,375	Chhattisgarh/ Orissa	By Rail & Road through covered trucks	
2	LAM Coke	22,050	Dhanbad, jharkand Imported (from Vizag port)	By Road through covered trucks Through sea route, rail route & by road	
3	Limestone	18,450	Chhattisgarh/ MP	By Rail & Road through covered trucks	
<b>7. For Power Generation –CFBC power plant of 15 MW</b>					
1	Coal	Indian	72,600	SECL Chhattisgarh / MCL Odisha	By Rail & Road through covered trucks
		(or)			
		Imported	46,500	Indonesia / South Africa (vizag port)	Through sea route, rail route & by road
2	Dolochar	67,000	In plant generation /	Covered Conveyor	

## 1.4 MANUFACTURING PROCESS

### 1.4.1 Pelletization

Iron ore fines will be grinded in Ball mills. The concentrate will be fed to thickener and subsequently to filtering unit. The filter cake will be sent to pellet plant comprising of Travelling grate kiln. Green pellets will be produced from this process. The flue gases from grate kiln will be treated in ESP and discharged through a stack.

### 1.4.2 Manufacturing of Sponge Iron (DRI)

The proposal consists of 1x600 TPD & 1x400 TPD of DRI kilns to produce 3,35,000 TPA of Sponge iron with 1x15 MW & 1x10 MW WHRB facility. Refractory lined rotary kilns will be used for reduction of iron ore in solid state.

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 160<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.

#### **1.4.3 Steel Melting Shop**

In Steel Melting Shop (SMS), Sponge Iron will be melted along with melting scrap and fluxes to make pure liquid steel and then to mould it in required size billets. The SMS will consist of Induction furnace, Ladles, Cranes & Continuous Casting Machine (CCM). There will be 5 x20 T Induction furnaces to manufacture Hot Billets/ M.S. Billets of 3,00,000 TPA. Either the Hot Billets produced from LRF will be directly sent to Rolling Mill without using

Re-heating Furnace through Hot charging method (or) M.S. Billets / M.s. Ingots will be sent to Re-heating Furnace to reheat the Billets and then sent to Rolling Mill to manufacture Rolled Products.

#### **1.4.4 Manufacturing of Rolled products through Rolling Mill**

The Hot Billets produced from Induction Furnaces will be directly sent to Rolling Mill to produce Rolled Products (OR) Hot Billets will be cooled and stored will be sent to reheating furnaces for the heating and will be sent to Rolling Mill. Furnace will be heated with LDO / LSHS. A Rolling mill will be installed in the plant to produce 3,00,000 TPA of Rolled Products /TMT Bars / Structural Steels.

#### **1.4.5 Manufacturing of Ferro Alloys through SEAF**

1 no. of Submerged Electric Arc Furnace each of 12 MVA will be setup in the proposed plant. Ferro manganese, silicon-manganese will be produced using manganese ore as main raw material. Pig Iron will be produced in SEAF using HG Iron Ore, Limestone & Coke as Raw Materials. Once pig iron is produced, it is teemed or poured into Induction Furnace either to produce an ingot or into a continuous caster to produce a slab, billet or bloom.

#### **1.4.6 Power Generation**

##### **Through WHRB Boiler**

The hot flue gases from proposed 1 x 600 TPD & 1x400 TPD of DRI kilns will pass through waste heat recovery Boiler to recover the heat and to generate 25 MW (1x15 MW & 1x10 MW) electricity. The gases after heat recovery will pass through ESP and then discharged through chimneys into the atmosphere for effective dispersion of emissions into the atmosphere through stacks of adequate height.

##### **Through CFBC Boiler**

Coal (Imported / Indian) along with dolochar will be used as fuel in CFBC Boiler to generate 15 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.

### 1.5 Water Requirement

The water requirement for the proposed project will be **1600 KLD**. This includes Make-up water for Pellet Plant, DRI Kiln, Induction Furnace, Rolling Mill, Ferro Alloy Plant, Power Plant & for Domestic purpose.

**Air cooled condensers will be provided in Captive power plant. Hence the net water requirement will be substantially reduced.** The water required for the proposed project will be sourced from nearby River. **State Investment Promotion Board (SIPB), Govt. of C.G.** has issued assurance letter for recommendation of Water withdrawal permission.

**TABLE NO. 11.1.3: BREAK-UP OF WATER REQUIREMENT**

S.No.	Description	Quantity (KLD)
1	Make-up water for Pellet Plant	380
2	Make-up water for DRI plant	125
3	Make-up water for SMS plant	150
4	Make-up water for Rolling mill	115
5	Make-up water for Ferro Alloy plant	35
6	Captive Power Plant	
	• Cooling Tower Make-up	245
	• Boiler make-up	480
	• D.M. plant regeneration water	45
7	Domestic	25
	<b>Total</b>	<b>1600</b>

### 1.6 Waste Water Generation

- The total net wastewater generation from the proposed project will be **271 KLD**.
- There will be no effluent discharge from the Pellet Plant, DRI plant, SMS, Ferro Alloy unit & Rolling Mill as closed-circuit cooling system will be adopted.
- 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.
- Effluent from power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary waste water will be treated in STP and the treated sewage will be utilized for dust suppression, ash conditioning and for greenbelt development.

- Zero effluent discharge will be maintained. The following will be the total wastewater & it's break-up.

**TABLE NO. 11.1.4: BREAKUP OF WASTE WATER GENERATION**

S.No.	Source	Quantity (KLD)
1.	Power Plant	
	a) Cooling tower blowdown	62
	b) Boilers blowdown	144
	c) D.M. plant regeneration water	45
2.	Sanitary Wastewater	20
	<b>Total</b>	<b>271</b>

### 1.7 Wastewater Characteristics

The following are the Characteristics of waste water

**TABLE NO. 11.1.5: CHARACTERISTICS OF EFFLUENT**

PARAMETER	CONCENTRATION			
	Cooling Tower blowdown	DM Plant Regeneration	Boiler Blowdown	Sanitary waste water
pH	7.0 – 8.0	5.0 – 10.0	9.5 – 10.5	7.0 – 8.5
BOD (mg/l)	--	--	--	200 – 250
COD (mg/l)	--	--	--	300 – 400
TDS (mg/l)	1000	5000 – 6000	1000 mg/l	800 – 900
Oil & Grease (mg/l)	--	10	--	5 - 10
TSS (mg/l)	--	--	--	150-200

### 2.0 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 plant.

#### 2.1 Ambient 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 during **1<sup>st</sup> October 2020 to 31<sup>st</sup> December 2020 (for 8 nos. of stations) & 20<sup>th</sup> January 2021 to 10<sup>th</sup> February 2021 (for 1 no. of station)**. The following are the concentrations of various parameters at the monitoring stations:

Parameter		Concentration
PM <sub>2.5</sub>	:	20.7 to 37.6 µg/m <sup>3</sup>
PM <sub>10</sub>	:	35.5 to 64.6 µg/m <sup>3</sup>
SO <sub>2</sub>	:	6.0 to 11.4 µg/m <sup>3</sup>

Parameter		Concentration
NO <sub>x</sub>	:	6.5 to 17.8 µg/m <sup>3</sup>
CO	:	365 to 977 µg/m <sup>3</sup>

## 2.2 Water Quality

### 2.2.1 Surface Water Quality

The Markandi river (0.25 Kms.), Indravati River (7.5 Kms.), Narangi River (8.1 Kms.), Boria nala (0.38 Kms.) are flowing within 10 Kms. of the project site. 2 no. of Samples from Markandi River i.e. 60m Upstream & 60 m Downstream, 1 no. of Sample from Indravati River, 1 no. of sample from Narangi river, Boria nala, & Pond near Balenga Village have been collected and analyzed for various parameters. The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

### 2.2.2 Ground Water Quality

8 No. 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.

## 2.3 Noise Levels

Noise levels were measured at 8 locations during day time & Night time. The noise levels at the monitoring stations are ranging from **45.72 dBA to 59.95 dBA**.

## 3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

### 3.1 Prediction of impacts on air quality

The likely emissions from the proposed project are PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub> & CO. The predictions of Ground level concentrations have been carried out using Industrial Source Complex (ISC-3) 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 predicted max. Incremental PM<sub>10</sub> concentrations (24 hourly) due to the emissions from operation of proposed project will be **1.69 µg/m<sup>3</sup>** at a distance of 1500 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in PM concentration due to the Vehicular emission will be **0.99  $\mu\text{g}/\text{m}^3$** .

The predicted max incremental SO<sub>2</sub> concentrations (24 hourly) due to the emissions from operation of proposed project will be **19.38  $\mu\text{g}/\text{m}^3$**  at a distance of 1500 m from the stack in the down wind direction over the baseline concentrations.

The predicted max incremental NO<sub>x</sub> concentrations (24 hourly) due to the emissions from operation of proposed project will be **8.5  $\mu\text{g}/\text{m}^3$**  at a distance of 1500 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in NO<sub>x</sub> concentration due to the Vehicular emission will be **6.9  $\mu\text{g}/\text{m}^3$** .

The predicted incremental rise in CO concentration due to the Vehicular emission will be **4.7  $\mu\text{g}/\text{m}^3$** .

**NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO PROPOSED PROJECT**

Item	PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ )	CO ( $\mu\text{g}/\text{m}^3$ )
Maximum baseline conc. in the study area	64.6	11.4	17.8	977
Maximum predicted incremental rise in concentration due to proposed project of <b>GSPPL</b>	1.69	19.38	8.5	--
Maximum predicted incremental rise in concentration due to <b>Vehicular Emissions from the proposed project</b>	0.99	--	6.9	4.7
<b>Net resultant concentrations during operation of the plant</b>	<b>67.28</b>	<b>30.78</b>	<b>33.2</b>	<b>981.7</b>
<b>National Ambient Air Quality Standards</b>	<b>100</b>	<b>80</b>	<b>80</b>	<b>2000</b>

The net resultant Ground level concentrations during operation of the proposed project are within the NAAQS. Hence there will not be any adverse impact on air environment due to the proposed project.

### **3.2 Prediction of impacts on Noise quality**

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosures will be provided to the STG. The ambient noise levels will be within the standards prescribed by MoEF 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 less than 70 dBA during night time. **15.4 acres (6.23 Ha.)** of extensive greenbelt will be developed 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 project.

### **3.3 Prediction of impacts on Water Environment**

Closed loop cooling water system will be adopted in Pellet Plant, DRI, SMS, and Rolling Mill units. Effluent from power plant will be treated and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development. Sanitary waste water 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.

### **3.4 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. **15.4 acres (6.23 Ha.)** of extensive greenbelt will be developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed project.

### **3.5 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.

#### 4.0 ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of SPCB and MoEF&CC are tabulated below:

##### MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
<b>1. Water &amp; Waste water quality</b>				
A.	Water quality in the area	Once in a month except for heavy metals which will be monitored on quarterly basis.	Composite sampling (24 hourly)	As per IS: 10500
B.	Effluent at the outlet of the ETP	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules 1996
<b>2. Air Quality</b>				
A.	Stack Monitoring	Online monitors (all stacks) Once in a month		PM PM, SO <sub>2</sub> & NO <sub>x</sub>
B.	Ambient Air quality (CAAQMS)	Continuous Quarterly Once	Continuous 24 hours	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
C.	Fugitive emissions	Quarterly Once	8 hours	PM
<b>3. Meteorological Data</b>				
A.	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
<b>4. Noise level monitoring</b>				
A.	Ambient Noise levels	Quarterly Once	Continuous for 24 hours with 1 hour interval	Noise levels

#### 5.0 ADDITIONAL STUDIES

No Rehabilitation and Resettlement is involved in the proposed project as there are no habitations in the project site. Hence no R & R study has been carried out.

## 6.0 PROJECT BENEFITS

With the establishment of the proposed project employment potential will increase. Land prices in the area will increase. The economic status of the people in the area will improve due to the proposed project. Periodic medical checkups will be carried out. Top priority will be given to locals in employment.

## 7.0 ENVIRONMENT MANAGEMENT PLAN

### 7.1 Air Environment

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

S.No.	Source	Control Equipment	Outlet PM emission
1	Pellet Plant	Electro Static Precipitator (1 no.)	PM < 30 mg/Nm <sup>3</sup>
2	DRI kilns with WHRB's	Electro Static Precipitators (2 nos.)	PM < 30 mg/Nm <sup>3</sup>
3	Induction Furnaces with CCM	Fume Extraction system with bag filters (5 nos.)	PM < 30 mg/Nm <sup>3</sup>
5	Reheating furnace of Rolling Mill	Stack	PM < 30 mg/Nm <sup>3</sup>
6	SEAF	4 <sup>th</sup> Hole Extraction system with bag filters (1 no.)	PM < 30 mg/Nm <sup>3</sup>
7	CFBC Boiler	Electro Static Precipitator (1 no.)	PM - 30 mg/Nm <sup>3</sup> SOx - 100 mg/Nm <sup>3</sup> NOx - 100 mg/Nm <sup>3</sup>

**Note :**

**Apart from the above, Fume extraction system with bag filters, dust suppression system, covered conveyers will also be installed.**

Apart from the above the following air emission control systems/ measures are proposed in the Plant:

- All conveyors will be completely covered with G.I. sheets 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.

**7.2 Water Environment**

- There will be no effluent discharge from the Pellet Plant, DRI plant, SMS, Ferro Alloy unit & Rolling Mill as closed-circuit cooling system will be adopted.
- 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.
- Effluent from **power plant** will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary waste water will be treated in STP and the treated sewage will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Zero effluent discharge will be maintained.

**EFFLUENT TREATMENT PLANT**

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 will be neutralized in a neutralization tank. After neutralization, these two effluent streams will be mixed with Cooling Tower blowdown in a Central Monitoring Basin (CMB). Service water will be treated in an oil separator and after treatment it will be taken to CMB. The treated effluent will be utilized for dust suppression, ash conditioning and for Green belt development. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented.

**TREATED EFFLUENT DISPOSAL**

<b>Total Net effluent generation from project</b>	<b>:</b>	<b>271 KLD</b>
Effluent quantity to be used for ash conditioning	:	85 KLD
Effluent to be used for dust suppression	:	94 KLD
Balance effluent to be used for Greenbelt development	:	92 KLD

**15.4 Acres (6.23 Ha.)** of greenbelt will be developed within the plant premises by using the treated effluent. A dedicated pipe distribution network will be provided for using the treated effluent for greenbelt development.

### 7.3 Noise Environment

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosure will be provided. All the machinery will be manufactured in accordance with MoEF&CC norms on Noise levels. The employees working near the noise generating sources will be provided with earplugs. 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.

### 7.4 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

S.No	Waste / By product	Quantity (in TPA)	Method of disposal
1	Ash from Pellet Plant	7200	Will be utilized in our proposed brick making unit.
2	Ash from Bituminous coal	400	Will be utilized in our proposed brick making unit.
3	Ash from DRI	60,300	Will be utilized in our proposed brick making unit.
4	DoloChar	67,000	Used as fuel in captive CFBC boiler
5	Wet scrapper sludge	16,750	Will be given to nearby Brick manufacturing
6	Kiln Accretion Slag	3,350	Will be utilized in road construction / given to road contractors
7	FES & Bag filter dust	6,200	Will be utilized in our proposed brick making unit.
8	Slag from SMS	30,150	Slag will be crushed and after recovery of iron, it will be utilized in road construction / given to road contractors
9	Mill Scale from Rolling Mill	780	Will be utilized in proposed Ferro Alloy unit
10	End Cuttings from Rolling Mill	9,000	Will be reused in Induction Furnaces.
11	Slag from SiMn	22,000	Will be given to Contractors for Road Construction.

S.No	Waste / By product	Quantity (in TPA)	Method of disposal
	Manufacturing (or)		
12	Slag from FeMn Manufacturing (or)	22,640	Will be used in manufacture of Silico manganese as it contains high MnO <sub>2</sub> .
13	Slag from Pig Iron Manufacturing	19,350	Will be used in manufacture of slag cement
14	Ash from Power Plant (with Dolochar & Indian coal)	72,860	Will be utilized in our proposed brick making unit.

### 7.5 Greenbelt Development

Greenbelt of **15.4 Acres (6.23 Ha.)** of extensive greenbelt will be developed in the plant premises. **10 to 76 m** wide greenbelt will be developed all around the plant.

### 7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 23.5 Crores  
 Recurring Cost per annum for Environmental protection : Rs. 1.34 Crores

### 7.7 Implementation of CREP Recommendations

All the CREP recommendations will be strictly followed.

\*\*\*\*\*