

SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT
REPORT

OF

Bilaspur Mining (India) Pvt. Ltd.

[Establishment of Greenfield steel plant comprising of DRI Kilns – 2 x 250 TPD (Sponge Iron - 1,65,000 TPA), Ferro Alloy Unit - 3 x 9 MVA (FeSi – 21,000 TPA/ FeMn – 60,000 TPA/ SiMn – 42,000 TPA/FeCr – 45,000 TPA/ Pig Iron - 72,000 TPA), Briquetting Plant (300 Kg/Hr.), WHRB based Power Plant – 2 x 7 MW, FBC based Power Plant – 1 x 12 MW & Brick Manufacturing unit (16,000 Bricks/Day)]

Category – A Project

at

**Kharkena Village in Sakri Tehsil and Dhourbhatta Village in Bilha Tehsil,
Bilaspur District, Chhattisgarh**

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

1.0 PROJECT DESCRIPTION

Bilaspur Mining (India) Pvt. Ltd. is proposing to establish a Steel Plant, a Greenfield Project, comprising of Establishment of DRI Kilns – 2 x 250 TPD (Sponge Iron - 1,65,000 TPA), Ferro Alloy Unit - 3 x 9 MVA (FeSi – 21,000 TPA/ FeMn – 60,000 TPA/ SiMn – 42,000 TPA/FeCr – 45,000 TPA/ Pig Iron - 72,000 TPA), Briquetting Plant (300 Kg/Hr.), WHRB based Power Plant – 2 x 7 MW, FBC based Power Plant – 1 x 12 MW & Brick Manufacturing unit (16,000 Bricks / Day).

Total land identified for the proposed project is **8.384 Ha.** and same is registered in the name of M/s. Bilaspur Mining (India) Pvt. Ltd.

The estimated project cost for the proposed project is **Rs. 351.20 Crores.**

As per the Ministry of Environment, Forests & Climate Change, New Delhi, EIA notification 14th September 2006 & its subsequent amendments, all Primary metallurgical processing industries are listed under S.No. 3(a), under Category 'A'. The Ministry of Environment, Forests & Climate Change, New Delhi has accorded Standard Terms of Reference (TOR) for the proposed project vide letter no. **F.No. IA-J-11011/200/2024-IA-II (IND-I), dated 13th July 2024.** The EIA Report has been prepared by incorporating the Standard TOR stipulated by the Hon'ble EAC.

Pioneer Enviro Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India, vide certificate No. NABET/EIA/2225/RA 0282, for preparing EIA report for Metallurgical Unit, have prepared 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:

Table No. 1.1: Environment Setting within 10 Kms. radius of the site

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Private Land (Unirrigated Agriculture land)
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements/Air Strip – 9.6 %; Industrial area – 6.1 %; Tanks / River – 7.6 %; Single crop – 55.8 %; Double crop – 9.4 %; Land with scrub – 5.3 %; Land without scrub – 3.3 %; Mining area – 2.9%
3.	National Park/ Wildlife sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	There are no notified National Park /Wildlife sanctuary/ Biosphere reserve/ Tiger Reserve /migratory routes for Birds within 10Km. radius of the plant.
4.	Historical places / Places of Tourist importance / Archeological sites	Nil within 10 Km. Radius.
5.	Critically polluted area as per MoEF&CC Office Memorandum dated 13 th January 2010	None And also the Plant area does not fall in the areas given in Hon'ble NGT order issued vide dated 10 th July 2019.
6.	Defence Installations	None
7.	Nearest village	Hirri - 0.7 kms. (South East direction)
8.	No. of Villages in the Study Area	74
9.	Nearest Hospital	PHC, Hirri – 1.4 Kms. (East direction)
10.	Nearest School	Govt. High School Dhourabhatha – 1.4 Kms. (South direction) District Project Livelihood College, Nipaniya – 0.9 Kms. (SE direction)
11.	Forests	Nil
12.	Water body	Maniyari River- 1.5 Kms. (W direction)
13.	Nearest Highway	NH # 130 – 2.3 Kms. (by Road) (East direction)
14.	Nearest Railway Station	Bilha Railway Station 4.5 Kms. (East direction) (Aerial distance)
15.	Nearest Port facility	Nil within 10 Km. Radius.
16.	Nearest Airport	Nil within 10 Km. Radius
17.	Nearest Interstate Boundary	Nil within 10 Km. Radius.
18.	Seismic zone as per IS-1893	Seismic zone – II
19.	MSL of the Project area	97.8 MSL to 101.3 MSL

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
20.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the site area.
21.	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.1.2: Proposed Plant Configuration & Production Capacities

S.No.	Units (Products)		Plant Configuration (Production Capacity)
1.	DRI Kilns (Sponge Iron)		2 x 250 TPD (1,65,000 TPA)
2.	Ferro Alloys Unit (FeSi / FeMn / SiMn / FeCr / Pig Iron)		3 x 9 MVA (FeSi-21,000 TPA / FeMn-60,000 TPA / SiMn-42,000 TPA / FeCr-45,000 TPA / Pig Iron-72,000 TPA)
3.	Brick Manufacturing Unit		16,000 Brick/ day
4.	Briquetting Plant		300 Kg./Hr.
5.	Power Plant (26 MW)	WHRB Power Plant (2 x 7 MW)	14 MW
		FBC Power Plant (1 x 12 MW)	12 MW

1.3 RAW MATERIAL REQUIRMENT

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

Table No.1.3: Raw Material Requirement, Source & Mode of Transport

S.No.	Raw Material		Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
1.	For DRI Kilns (Sponge Iron) – 1,65,000 TPA					
a)	Pellets		2,39,250	Odisha & Chhattisgarh	~ 500	By rail & road (through covered trucks)
	(or)					
b)	Iron Ore		2,64,000	Odisha & Chhattisgarh	~ 500	By rail & road (through covered trucks)
c)	Coal	Indian	2,14,500	SECL Chhattisgarh /	~ 500	By rail & road

Bilaspur Mining (India) Pvt. Ltd.
(Proposed Steel Plant)

Kharkena Village in Sakri Tehsil &
Dhourbhatta Village in Bilha Tehsil,
Bilaspur District Chhattisgarh

				MCL Odisha		(through covered trucks)
		Imported	1,37,280	Indonesia / South Africa / Australia	~ 600	Through vessel, rail & by road (Covered trucks)
d)	Dolomite		8,250	Chhattisgarh	~ 150	By road (through covered trucks)
2.	For FBC Boiler [Power Generation 12 MW]					
a)	Indian Coal (100 %)		71,280	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (through covered trucks)
OR						
b)	Imported Coal (100 %)		45,600	Indonesia / South Africa / Australia and other countries	~ 600 (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
OR						
c)	Dolochar + Indian Coal	Dolochar	33,000	In plant generation	---	through covered conveyors
		Indian Coal	54,780	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (through covered trucks)
OR						
d)	Dolochar + Imported Coal	Dolochar	33,000	In plant generation	---	through covered conveyors
		Imported Coal	29,200	Indonesia / South Africa / Australia and other countries	~ 600 (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
3.	For Ferro Alloys (3 x 9 MVA)					
3 (i)	For Ferro Silicon – 21,000 TPA					
a)	Quartz		46,200	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
b)	Coke		32,550	Andhra Pradesh	~ 500	By road (through covered trucks)
c)	Mill scales & MS Scrap		9,450	Inhouse Generation	---	By road (through covered trucks)
d)	Electrode paste		2,100	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
e)	Briquetted Bagfilter dust		1,470	Own generation	---	---
3 (ii)	For Ferro Manganese – 60,000 TPA					



a)	Manganese Ore	1,44,000	MOIL / OMC	~ 500	By Rail & Road (through covered trucks)
b)	Coke	18,000	Andhra Pradesh	~ 500	By road (through covered trucks)
c)	MS Scrap / Mill scales	12,000	Inhouse Generation	---	By road (through covered trucks)
d)	Electrode Paste	1,320	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
3 (iii)	For Silico Manganese –42,000 TPA				
a)	Manganese Ore	84,000	MOIL / OMC	~ 500	By Rail & Road (through covered trucks)
b)	FeMn Slag	18,900	Own generation	---	---
c)	Coke	12,600	Andhra Pradesh	~ 500	By road (through covered trucks)
d)	Dolomite	12,600	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
e)	Electrode paste	840	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
f)	Quartz	14,700	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
g)	Briquetted Bagfilter dust	630	Own generation	---	---
3(iv)	For Ferro Chrome – 45,000 TPA				
a)	Chrome Ore	1,08,000	Sukinda, Odisha Imported	~ 500 ~ 600 (from Vizag Port)	By road (through covered trucks) From Port By Road (through covered Trucks)
b)	Coke	22,500	Andhra Pradesh	~ 500	By road (through covered trucks)
c)	Quartz	2,745	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
d)	MS Scrap / Mill Scale	6,750	Inhouse Generation	---	By road (through covered trucks)

e)	Bauxite	6,750	Chhattisgarh / Maharashtra	~ 500	By road (through covered trucks)
f)	Electrode Paste	900	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
g)	Briquetted Bagfilter dust	900	Own generation	---	---
3 (v) For Pig Iron –72,000 TPA					
a)	Iron ore	78,840	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
b)	Coke	45,216	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Lime stone	10,800	Chhattisgarh	~ 100 Kms.	By road (through covered trucks)
d)	Dolomite	10,800	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
e)	Mill Scale	46,800	Inhouse Generation	---	By road (through covered trucks)
f)	Fluorspar	1,800	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)

1.4 MANUFACTURING PROCESS

1.4.1 Sponge Iron (DRI)

The proposal consists of 2 x 250 TPD to manufacture 1,65,000 TPA of Sponge Iron with 14.0 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°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. 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.

1.4.2 Submerged Electric Arc Furnace

It is proposed to install 3 x 9 MVA Submerged Electric Arc Furnace in the proposed project. The manufacturing process of a Submerged Electric Arc Furnace (EAF) for producing Ferro Alloys like FeSi (Ferro Silicon) or FeMn (Ferro Manganese) or SiMn (Silico Manganese) or FeCr (Ferro Chrome), or Pig Iron begins with the preparation of raw materials, including Manganese ores, Chrome ore, and fluxes like limestone or dolomite. The EAF, which features a refractory-lined steel shell and carbon or graphite electrodes, is loaded with these materials. Electrical current is then passed through the electrodes to create an electric arc that generates intense heat, melting the charge. As the materials melt, chemical reactions occur, forming a slag composed of impurities and fluxes, which is periodically removed. The molten ferroalloy or pig iron is then tapped from the furnace into ladles or other containers for further processing. After tapping, the furnace is cleaned of slag and residual materials, and new raw materials are added for the next batch. This cycle is repeated continuously to maintain efficient production. Flue gases will be extracted through 4th hole and then treated in bag filters.

1.4.3 Power Generation

Through WHRB Boiler

The hot flue gases from proposed 2 x 250 TPD DRI kilns will pass through waste heat recovery Boiler to recover the heat and to generate (2 x 7 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 FBC Boiler

Coal (Imported / Indian) along with dolochar will be used as fuel in FBC Boilers to generate 12 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.

1.4.4 Fly Ash Brick Manufacturing Unit

It is proposed to establish Fly Ash brick making unit of 16,000 bricks/day capacity. Fly ash (70%), Gypsum (5%), cement (10%) and Stone dust (15%) are manually feed into a pan mixer where water is added to the required proportion for homogeneous mixing. The proportion of raw material may vary depending upon quality of raw materials.

1.5 Water Requirement

- Water required for the proposed project will be 820 KLD. This includes make up water for DRI Kilns, Ferro Alloys Unit, Power Plant, Brick manufacturing unit, Briquetting Plant & for Domestic requirement.
- Water required for proposed project (for process and domestic) will be sourced from Maniyari river (which is at a distance of 1.5 Kms. from the project site). A dedicated pipeline will be laid from the river to the project site.
- An application has also been submitted to Water Resource Department, Govt. of Chhattisgarh for drawl of water from Maniyari river.
- Air cooled condensers will be provided to FBC Power plant instead of water-cooled condensers to reduce the water consumption significantly.

Table No.1.4: Water Requirement Breakup

S.No.	Unit	Quantity in KLD
1.	DRI Kilns	170
2.	Ferro Alloys	90

S.No.	Unit	Quantity in KLD
3.	Power Plant (WHRB & FBC)	520
	• Cooling tower makeup	250
	• Boilers make up	188
	• DM plant Regeneration	82
4.	Brick Manufacturing unit	10
5.	Briquetting Plant	10
6.	Domestic	20
	Total	820

1.6 Wastewater Generation

- Total wastewater generated from the proposed project will be 219 KLD.
- There will be no wastewater discharge from the Sponge Iron unit as closed-circuit cooling system will be adopted.
- Wastewater from Ferro Alloys, 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.
- Air Cooled condensers will be provided in the power plant, which will reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- RO rejects will be utilised for Flushing in Toilets, Cleaning of Toilets, Floor washings, etc.
- Sanitary waste water will be treated in STP and will be utilized for greenbelt development.
- Garland drains will be provided around all the raw material stacking areas.
- Zero Liquid effluent Discharge (ZLD) practice will be maintained in the proposed project.

Table No.1.5: Breakup of Wastewater Generation

S.No.	Source	Generation (KLD)
1.	DRI	---
2.	Ferro Alloys	6
3.	Power Plant	197
	a) Cooling Tower blowdown	63
	b) Boilers blowdown	52
	c) D.M. plant regeneration water	82
4.	Sanitary Wastewater	16
	Total	219

1.7 Wastewater Characteristics

The following are the Characteristics of wastewater.

Table No.1.6: 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_{2.5}, PM₁₀, SO₂, NO_x & CO at 8 stations including project site during **1st March, 2024 to 31st May, 2024**. The following are the concentrations of various parameters at the monitoring stations:

Table No.2.1: AAQ Data Summary

S.No.	Parameter	Concentration range (µg/m ³)	Standard as per NAAQS (µg/m ³)
1.	PM _{2.5}	25.3 to 40.1	60
2.	PM ₁₀	42.2 to 66.8	100
3.	SO ₂	10.2 to 18.5	80
4.	NO _x	15.3 to 23.2	80
5.	CO	575 to 1175	2000

2.2 Water Quality

2.2.1 Surface Water Quality

2 no. of samples i.e. from Maniyari River, flowing at a distance of 1.5 Kms. from the project site respectively, 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 daytime & Nighttime. The equivalent day-night noise levels in the study zone are ranging from **48.66 dBA to 61.60 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 PM₁₀, SO₂, NO_x & 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.

Table No.3.1: NET RESULTANT MAXIMUM CONCENTRATIONS DURING THE OPERATION OF THE PROPOSEDPROJECT (APCS WORKING SCENARIO)

Item	PM _{2.5} (µg/m ³)	PM ₁₀ (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	CO (µg/m ³)
Maximum baseline conc. in the study area	40.10	66.80	18.50	23.20	1175.00
Maximum predicted incremental rise in concentration due to proposed project (Point Sources)	0.12	0.21	3.12	1.05	0.16
Maximum predicted incremental rise in concentration due to proposed project (Vehicular emissions)	0.18	0.30	---	2.18	1.41

Item	PM _{2.5} (µg/m ³)	PM ₁₀ (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	CO (µg/m ³)
Net resultant concentrations during operation of the proposed project	40.40	67.31	21.62	26.43	1176.57
National Ambient Air Quality Standards	60	100	80	80	2000

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. **2.9 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

- Total wastewater generated from the proposed project will be 219 KLD.
- There will be no wastewater discharge from the Sponge Iron unit as closed-circuit cooling system will be adopted.
- Wastewater from Ferro Alloys, 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.
- 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.
- RO rejects will be utilised for Flushing in Toilets, Cleaning of Toilets, Floor washings, etc.
- Sanitary waste water will be treated in STP and will be utilized for greenbelt development.
- Garland drains will be provided around all the raw material stacking areas.
- Zero Liquid effluent Discharge (ZLD) practice will be maintained in 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. **2.9 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:

TABLE NO.4.1: 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 area	Quarterly Once	Grab sampling	As per IS: 10500
B.	Effluent at the inlet & outlet of the ETP	Once in a month	Composite Sampling	As per EPA Rules, 1996
C.	Sanitary Wastewater (inlet & outlet of STP)	Once -in a month	Composite Sampling	As per EPA Rules, 1996
2. Air Quality				
A.	Stack Monitoring	CEMS (all Stacks) Once in a month	-- --	PM, SO _x , NO _x & CO PM, SO ₂ & NO _x
B.	Ambient Air quality	CAAQMS Quarterly Once	continuously 24 Hourly	PM _{2.5} , PM ₁₀ , SO ₂ , NO _x & CO PM _{2.5} , PM ₁₀ , SO ₂ , NO _x & CO
C.	Fugitive emissions	Quarterly Once	8 hours	PM
3. Meteorological Data				
A.	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
A.	Ambient Noise levels	Once in a month (Hourly)	Continuous for 24 hours with 1-hour interval	Noise levels
5. Soil Quality Monitoring				
	Soil Quality	Half Yearly	Core drilling samples	pH, SAR, texture, N,K,P etc.
Note: PM _{2.5} , PM ₁₀ , SO ₂ , NO _x and CO are monitored as per Ministry notification vide G.S.R. No. 826(E) dated 16 th November, 2009				

5.0 ADDITIONAL STUDIES

Draft EIA report is being submitted for Public Hearing.

Risk analysis deals with the identification and quantification of risks, the plant equipment's and personnel are exposed to, due to accidents resulting from the hazards present in the factory. Hazard analysis involves the identification and quantification of the various hazards that are likely to occur in the industry.

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.

The local areas will be benefited by way of generation of employment opportunities, increased demand for local products and services.

The proposed project will generate direct employment 150 nos. which will be employed officials, staff, skilled, semi -skilled labour & 300 nos. indirectly employed in contract works & transport.

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Environment

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

Table No.7.1: Air Emission Control Systems Proposed

S.No.	Source	Control Equipment	Emission at the outlet
1.	DRI kilns with WHRB's	Electro Static Precipitators (ESP)	PM <30 mg/Nm ³
2.	Submerged Electric Arc Furnaces	4 th Hole Fume Extraction system with bag filters	PM < 30 mg/Nm ³
3.	FBC Boiler	Electro Static Precipitators (ESP) (High Performance rigid electrodes)	PM < 30 mg/Nm ³
		Lime dosing will also be done	SOx <100 mg/Nm ³
		Combustion temperature will be around 800-850°C, which is not conducive for thermal NOx formation. Low NOx burners with 3-stage combustion, flue gas recirculation and auto combustion control system will be provided.	NOx <100 mg/Nm ³

Note: Apart from the above Dry fog system with dust suppression at transfer points, crushing plant, dust extraction system with bagfilters at other dust emanating areas, covered conveyers, mechanical dust sweepers, etc. will also be provided.

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

- Total wastewater generated from the proposed project will be 219 KLD.
- There will be no wastewater discharge from the Sponge Iron unit as closed-circuit cooling system will be adopted.

- Wastewater from Ferro Alloys, 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.
- Air Cooled condensers will be provided in the power plant, which will reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- RO rejects will be utilised for Flushing in Toilets, Cleaning of Toilets, Floor washings, etc.
- Sanitary waste water will be treated in STP and will be utilized for greenbelt development.
- Garland drains will be provided around all the raw material stacking areas.
- Zero Liquid effluent Discharge (ZLD) practice will be maintained in the proposed project.

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 Greenbelt development. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented.

TREATED EFFLUENT DISPOSAL

Total treated effluent generation	:	219 KLD
Effluent quantity to be used for ash conditioning	:	65 KLD
Effluent to be used for dust suppression in CHP	:	30 KLD
Effluent to be used for Greenbelt development	:	85 KLD
RO rejects used for Floor washing Toilet cleaning & Flushing	:	39 KLD

2.90 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 wastewater 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.

Table No.7.2: Solid Waste Generation and Disposal

S.No.	Waste	Quantity (TPA)	Proposed method of disposal
1.	Ash from DRI	29,700	Will be utilized in the proposed Brick Manufacturing Unit
2.	Dolochar	33,000	Will be used in proposes FBC power plant as fuel.
3.	Kiln Accretion Slag	1,485	Will be utilized in the proposed Brick Manufacturing Unit
4.	Wet scrapper sludge	6,600	Will be utilized in the proposed Brick Manufacturing Unit
5.	Ash from Power Plant (Indian Coal + Dolochar)	44,451	Will be utilized in the proposed Brick Manufacturing Unit
6.	Slag from FeMn	60,000	Will be reused in manufacture of SiMn as it contains high SiO ₂ and Silicon.
(or)			
7.	Slag from FeSi	2,940	Will be given to Cast iron foundries
(or)			
8.	Slag from SiMn	42,000	will be used for Road construction / will be given to slag cement manufacturing
(or)			
9.	Slag from FeCr	40,500	Will be processed in Zigging plant for Chrome recovery. After Chrome recovery, the left-over slag will be analysed for Chrome content through TCLP test, if the Chrome content in the slag is within the permissible limits, then it will be utilised for Road laying /brick manufacturing.

S.No.	Waste	Quantity (TPA)	Proposed method of disposal
			If Chrome content exceeds the permissible limits, it will be sent to nearest TSDF.
10.	Slag from Pig Iron	43,200	Will be given to slag based cement manufacturing unit

Hazardous waste generation, storage & disposal

1. Waste oil: 2.0 KL / Annum
2. Used batteries will be given back to the supplier under buy back agreement with supplier.
3. E-waste generated from the plant will be given to authorized recycler.

7.5 Greenbelt Development

- **2.90 Ha.** (34% of total project area) of area is earmarked for Greenbelt will be developed within the project site.
- Proposed to develop 10m to 18 m wide green belt along the periphery, inside the plant premises.
- The tree species to be selected for the plantation are pollutant tolerant, fast growing, wind firm, deep rooted. A three-tier plantation is proposed comprising of an outer most belt of taller trees which will act as barrier, middle core acting as air cleaner and the innermost core which may be termed as absorptive layer consisting of trees which are known to be particularly tolerant to pollutants.
- 3- tier plantation will be taken up all around the periphery of the plant premises.
- Greenbelt will be developed as per CPCB guidelines (i.e. 2500 plants/ Ha.)
- Local DFO will be consulted in developing the green belt.
- Total no. of plants will be 27,800 nos. The following will be the greenbelt development plan.

1 st year	-	3,250 nos.
2 nd year	-	2,000 nos.
3 rd year	-	2,000 nos.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant	: Rs. 23.17 Crores
Recurring Cost per annum for Environmental protection	: Rs. 4.354 Crores

7.7 Implementation of CREP Recommendations

All the CREP recommendations will be strictly followed.

- Continuous stack monitoring system is proposed for stack attached to all the Stacks.
- Online Ambient Air Quality Monitoring Stations will be established in consultation with SPCB during operation of the plant.
- Fugitive emission monitoring will be carried out as per CPCB norms.
- Energy meters will be installed for all the pollution control systems.
- Rain water harvesting pits will be constructed in consultation with CGWB.