SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

Balajee Sponge & Power Pvt. Ltd.

[Establishment of DRI Kilns (Sponge Iron - 2,10,000 TPA), Induction Furnace with LRF & CCM (Hot Billets / MS Billets / Ingots -1,80,000 TPA), Rolling Mill (TMT Bars / Structural Steel - 1,80,000 TPA), Ferro Alloys Unit (FeSi-7,000 TPA / FeMn-25,200 TPA / SiMn-14,400 TPA / FeCr-15,000 TPA), WHRB based Power Plant – 14 MW, CFBC based Power Plant - 15 MW, Briquetting plant -100 Kg/Hr & Brick Manufacturing unit (30,000 Bricks / Day)]

at

Chourenga Village, Simga Tehsil,
BalodabazarBhatapara District, Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD
Chhattisgarh

1.0 PROJECT DESCRIPTION

Balajee Sponge & Power Pvt. Ltd.is proposing to establish a Steel Plant, a Greenfield Project, comprising of Establishment ofDRI Kilns (Sponge Iron - 2,10,000 TPA), Induction Furnace with LRF & CCM (Hot Billets / MS Billets / Ingots -1,80,000 TPA), Rolling Mill (TMT Bars / Structural Steel - 1,80,000 TPA), Ferro Alloy Unit (FeSi-7,000 TPA / FeMn-25,200 TPA / SiMn-14,400 TPA / FeCr-15,000 TPA), WHRB based Power Plant – 14 MW, CFBCbased Power Plant - 15 MW,Briquetting plant -100 Kg/Hr&Brick Manufacturing unit (30,000 Bricks / Day) at Khasra nos. 3227/1, 3476/2, 3476/7, 3476/4, 3358/1 & 3359 at Chourenga Village, Simga Tehsil, BalodabazarBhatapara District, Chhattisgarh. Total land envisaged for the proposed project is 16.92 Ha. (41.8 Acres) and agreement have entered for total land with landowners.

The project cost envisaged for the proposed project is Rs. 235 Crores.

As per the Ministry of Environment, Forest& Climate Change, New Delhi notification, dated 14thSeptember, 2006 and its subsequent amendments, all Primary metallurgical processing industries are classified under Category 'A'. The Ministry of Environment, Forest& Climate Change (MoEF&CC), New Delhi has accorded Terms of Reference (TOR) for the proposed project vide letter no. J-11011 / 292 / 2021 – IA II (I), dated 18th October 2021.The EIA Report has been prepared by incorporating the TOR stipulated by MOEF&CC.

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 Units, have prepared Environmental Impact Assessment (EIA) report for the proposed projectby incorporating the TOR approved by Ministry of Environment, Forest & 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,etc.
- 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 Km. radius of the site

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Uncultivated Agriculture land
2.	Type of Land (Study Area)	Settlements (4.4%), Industrial Area (1.3%), Tank/River/Major Canal etc. (7.7%), Scrub Forest (4.1%), Single Crop (58.8%), Double Crop (9.4%), Plantation (3.8%), Land with scrub (6.3%), Land without scrub (2.5%), Sheet rock area (1.1%) & Stone Quarry (0.6%)
3.	National Park/ Wildlife sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	Nil
4.	Historical places / Places of Tourist importance / Archeological sites	Nil
5.	Critically polluted area as per MoEF&CC Office Memorandum dated 13th January 2010	None And also the Plant area does not fall in the areas given in Hon'ble NGT order issued vide dated 10th July 2019.
6.	Defence Installations	Nil
7.	Nearest village	Manohra Village (0.44Kms. – NE direction)
8.	No. of Villages in the Study Area	52 nos.
9.	Nearest Hospital	Hathband at 3.0Kms.
10.	Nearest School	ManohraVillageat 0.95Kms.
11.	Forests	BilariGhughua RF (6.5 Kms. – SSW direction) are present within 10 Km. radius of the project site
12.	Water body	Unnamed Govt. Canal (0.04 Kms. - South Direction), Bahatapara Branch Mahanadi Canal (2.7 Kms. - South Direction), Shivnath River (8.6Kms. – North Direction) exist within study area
13.	Nearest Highway	National Highway # 130 (5.2 Kms. – West Direction)
14.	Nearest Railway Station	Hathbandh Railway Station –5.3Kms. (Aerial)

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
15.	Nearest Port facility	Nil within 10 Km. Radius.
16.	Nearest Airport	Nil within 10 Kms. Radius [Raipur Airport – 55.0Kms. (Aerial)]
17.	Nearest Interstate Boundary	Nil
18.	Seismic zoneas per IS-1893	Seismic zone – II
19.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the site area.
20.	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 200 TPD &3 x 100 TPD (2,10,000 TPA)
2.	Induction Furnaces (Hot Billets / MS Billets / Ingots)	5 x 12 T (1,80,000TPA)
3.	Rolling Mills (TMT bars / Structural Steel) (85 % Hot charging with Hot Billets and remaining 15% through RHF with LDO as fuel)	2 x 300 TPD (1,80,000 TPA)
4.	Ferro Alloys Unit (FeSi / FeMn / SiMn / FeCr)	1 x 9 MVA (FeSi-7,000 TPA / FeMn-25,200 TPA / SiMn-14,400 TPA / FeCr-15,000 TPA)
5.	Power Plant (Electricity)	29 MW (14 MW WHRB + 15 MW CFBC)
6.	Briquetting plant	100 Kg/Hr
7.	Brick Manufacturing Unit	30,000 Bricks / Day

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
.	**For DRI Kilns (Sponge Iron) – 2,10,000 TPA**					
a)	Iron ore		3,36,000	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
b)	Coal	Indian	2,73,000	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
		(OR)				
		Imported	1,74,720	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
c)	Dolomite		10,500	Chhattisgarh	~ 100 Kms.	By road (through covered trucks)
.	**For Steel Melting Shop (Billets/ Ingots/Hot Billets) – 1,80,000 TPA**					
a)	Sponge Iron		1,82,000	Own generation	---	Through covered conveyers
b)	MS Scrap / Pig Iron		27,000	Chhattisgarh	~ 100 Kms.	By road (through covered trucks)
c)	Ferro alloys		9,000	Own generation	---	By road (through covered trucks)
.	**For Rolling Mill through Hot charging (TMT bars / Structural Steel) – 1,80,000 TPA**					
a)	Hot Billets (85% Hot Charging)		1,53,000	Own generation	---	----
b)	MS Billets / Ingots		28,000	Own generation & Purchased from Outside	--- ~ 100 Kms.	---- By road (through covered trucks)
c)	LDO / LSHS		1800 Kl/annum	Nearby IOCL Depot	~ 100 Kms.	By road (through Tankers)
.	**For CFBC Boiler [Power Generation - 1 x 15 MW]**					
a)	Indian Coal (100 %)		96,300	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
	OR					
b)	Imported Coal		62,000	Indonesia /	~ 600 Kms.	Through sea route,

S.No.	Raw Material		Quantity (TPA)	Sources	Distance from site (in Kms.	Mode of Transport
	(100 %)			South Africa / Australia	(from Vizag Port)	rail route & by road (through covered trucks)
			OR			
c)	Dolochar + Indian Coal	Dolochar	42,000	In plant generation	---	through covered conveyors
		Indian Coal	75,200	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
			OR			
d)	Dolochar + Imported Coal	Dolochar	42,000	In plant generation	---	through covered conveyors
		Imported coal	41,000	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
.	**For Ferro Alloys (1 x 9 MVA)**					
6 (i)	*For Ferro Silicon – 7000 TPA*					
a)	Quartz		12,150	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
b)	LAM coke		9,450	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	MS Scrap / Mill scales		2,115	Inhouse Generation	---	By road (through covered trucks)
d)	Electrode paste		180	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
e)	Bagfilter dust		100	Own generation	---	---
6 (ii)	*For Ferro Manganese – 25,200TPA*					
a)	Manganese Ore		34,200	MOIL / OMC	~ 500 Kms.	By Rail & Road (through covered trucks)
b)	LAM coke		9,900	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Dolomite		4,050	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	MS Scrap / Mill scales		3,600	Inhouse Generation	---	By road (through covered trucks)
e)	Electrode Paste		315	Maharashtra /	~ 300 Kms.	By road

S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.	Mode of Transport
			West Bengal		(through covered trucks)
f)	Bagfilter dust	500	Own generation	---	---
6 (iii)	*For Silico Manganese –14,400TPA*				
a)	Manganese Ore	24,300	MOIL / OMC	~ 500 Kms.	By Rail & Road (through covered trucks)
b)	LAM Coke	8,100	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	FeMn. Slag	15,147	In house generation	---	----
d)	Dolomite	3,690	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
e)	Electrode paste	315	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
f)	Quartz	3,870	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
g)	Bagfilter dust	100	Own generation	---	---
6 (iv)	*For Ferro Chrome – 15,000 TPA*				
a)	Chrome Ore	28,350	Sukinda, Odisha Import, South Africa	~ 500 Kms. ~ 600 Kms. (from Vizag Port)	By road (through covered trucks) From Port By Road (through covered Trucks)
b)	LAM Coke	9,900	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Quartz	4,050	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	MS Scrap / Mill Scale	1,350	Inhouse Generation	---	By road (through covered trucks)
e)	Magnetite / Bauxite	2,700	Chhattisgarh / Maharashtra	~ 500 Kms.	By road (through covered trucks)
f)	Electrode Paste	270	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
g)	Bagfilter dust	600	Own generation	---	---

1.4 MANUFACTURING PROCESS

1.4.1 Sponge Iron (DRI)

The proposal consists of 2 x 200 TPD &3 x 100 TPD of DRI kilns to produce 2,10,000 TPA of Sponge Iron with 14 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 Pellets/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 1000^0C enters the reduction zone. Temperature of the order of 1050^0C 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 160^0C. 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 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 ofInduction furnaces, Ladles, Cranes & Continuous Casting Machine (CCM). There will be5 x 12 T Induction furnaces to manufacture Hot Billets/ Billets of 1,80,000 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) Billets / Ingots will be sent to Re-heating Furnace to reheat the Billets and then sent to Rolling Mill to manufacture Rolled Products.The flue gases will be treated in fume extraction system with bagfilters.

1.4.3 Rolling Mill

The Hot Billets produced from Induction Furnaces will be directly sent to Rolling Mill to produce Rolled Products (OR) Hot Billetswill 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. The proposed Rolling mill will produce 1,80,000 TPA of TMT Bars / Structural Steels.

1.4.4 Submerged Electric Arc Furnaces

Submerged Electric Arc Furnace9 MVA will be setup in the proposed plant. Ferro manganese, silicon-manganese will be produced using manganese ore as main raw material, Ferro silicon will be produced using Quartz as main raw material & Ferro Chrome will be produced using Chrome Ore as main raw material in sub-merged arc furnaces using reducer (Coke) under high voltage. Flue gases will be extracted through 4th hole and then treated in bagfilters.

1.4.5 Power Generation

Through WHRB Boiler

The hot flue gases from proposed 2 x 200 TPD &3 x 100 TPD capacity DRI kilns will pass through waste heat recovery Boilers to recover the heat and to generate 14 MW(i.e 2 x 4 MW & 3 x 2 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 atmospherethrough stacks of adequate height.

Through FBC Boiler

Coal (Imported / Indian) along withdolochar will be used as fuel in AFBC Boilers 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

- Water required for the proposed project will be 1140 KLD. This includes make up water forDRI Kilns, Induction Furnaces, Rolling Mills, Ferro Alloys Unit, Brick Manufacturing unit& Domestic.
- Water required for proposed project will be sourced from Shivnath River (which is at a distance of 8.6Kms. from the project site).
- Application has been submitted to Water Resourced Department, Chhattisgarh for water drawl permission from Shivnath river and same is under process
- Air cooled condensers will be provided to FBC Power plant.Hence the net water requirement will be substantially reduced.

Table No.1.4: Water Requirement Breakup

S.No.	Unit	Quantity in KLD
1.	DRI Kilns	210
2.	Induction Furnaces	130
3.	Rolling Mills	160
4.	Ferro Alloys	30
5.	Power Plant	580
	• Cooling tower makeup	279
	• Boiler make up	209
	• DM plant Regeneration	92
6.	Domestic	20
7.	Brick Manufacturing Unit	10
	Total	**1140**

1.6 Wastewater Generation

- Total wastewater generation will be 236 KLD.
- There will be no effluent discharge in the Sponge Iron, Induction Furnaces, Ferro Alloys unit 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 Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system.
- 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.
- Garland drains will be provided around all the raw material stacking areas.

Table No.1.5: BreakupofWastewater Generation

S.No.	Source	Generation (KLD)
1.	Power Plant	220
	a) Cooling Tower blowdown	70
	b) Boilers blowdown	59
	c) D.M. plant regeneration water	92
2.	Sanitary Wastewater	16
	Total	**236**

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 wastewater
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 $PM_{2.5}$, PM_{10}, SO_2, NOx & CO at 8 stations including project site during ***1st October 2021 to 31st December 2021***. The following are the concentrations of various parameters at the monitoring stations:

Table No.2.1 : Ambient Air Quality Summary

S.No.	Parameter		Concentration
1.	$PM_{2.5}$	:	20.6 to 30.9 µg/m^3
2.	PM_{10}	:	34.4 to 52.5 µg/m^3
3.	SO_2	:	7.1 to 12.5 µg/m^3
4.	NO_X	:	7.5 to 15.7 µg/m^3
5.	CO	:	385 to 885 µg/m^3

2.2 Water Quality

2.2.1 Surface Water Quality

Shivnath River (8.6 Kms. – North Direction), Bhatapara Branch Mahanadi Canal (2.7 Kms. – South Direction) and few ponds are present within 10 Km. radius of the project site. 2 no. of samples i.e. 60 m Upstream & 60 m Downstream from Shivnath River and one sample each from Bhatapara Branch Mahanadi Canal, Otgaon Village Pond, Hathbandh Village Pond, Khilora Village Pond, Darchura Village Pond &Kolhia Village Pond 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 Nos. of ground water samples from open wells / bore wells have been 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 noise levels at the monitoring stations are ranging from **46.3 dBA to 49.9 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_{10}, SO_2, NOx& 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_{10} concentrations (24 hourly) due to the proposed project will be 1.17 µg/M^3 at a distance of 1800 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in Particulate Matter concentration due to the Vehicular emission will be 0.44 µg/m^3.

Hence the total predicted incremental rise in Particulate Matter concentration due to the emission from proposed project and due the vehicular emissions will be 1.17 µg/m^3 + 0.44µg/m^3 = 1.61 µg/m^3.

The predicted max incremental SO_2 concentrations (24 hourly) due to the emissions from operation of proposed project will be 15.15 µg/m^3 at a distance of 1600 m from the stack in the down wind direction over the baseline concentrations.

The predicted max incremental NOx concentrations (24 hourly) due to the proposed project will be 7.44 µg/m^3 at a distance of 1700 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in NOx concentration due to the Vehicular emission will be 2.99µg/m^3.

Hence the total predicted incremental rise in NOx concentration due to the emission from project and due the vehicular emission will be 7.44 µg/m^3 + 2.99µg/m^3 = 10.43µg/m^3

The predicted incremental rise in CO concentration due to the Vehicular emissions will be 2.50 µg/m^3.

Table No.3.1: NET RESULTANT MAXIMUM CONCENTRATIONS DURING THE OPERATION OF THE PROPOSEDPROJECT

Item	PM_{10} («g/m^3)	SO_2 («g/m^3)	NO_X («g/m^3)	CO («g/m^3)
Maximum baseline conc. in the study area	52.5	12.5	15.7	885
Maximum predicted incremental rise in concentration due to proposed project (Point Sources)	1.17	15.15	7.44	Nil
Maximum predicted incremental rise in	0.44	Nil	2.99	2.50

concentration due to proposed project (Vehicular emissions)				
Net resultant concentrations during operation of the proposed project	**54.11**	**27.65**	**26.13**	**887.5**
National Ambient Air Quality Standards	**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.5.58 Ha. (13.80 Acres)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 inDRI, SMS, and Ferro Alloy units. Effluent from Rolling mill will be treated in oil separator followed by settling tank & will be recycled back. Effluent from power plant will be treated in Effluent Treatment Plant and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development. Sanitary wastewater will be treated in Sewage Treatment Plant. 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. 5.58 Ha.

(13.80 Acres)of extensive greenbelt will be developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposedproject.

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. Developmental activities will be taken up in consultation with village panchayat.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	Once in a month except for heavy metals which will be monitored on quarterly basis.	Grab sample	As per IS: 10500
B.	Effluent at the outlet of the ETP	Twice in a month	compositesample (24 hourly)	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Twice in a month	Composite sample (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (all stacks) Once in a month		PM PM,SO_2& NOx
B.	Ambient Air quality (CAAQMS)	Continuous	Continuous	$PM_{2.5}$, PM_{10}, SO_2,NOx& CO
C.	Fugitive emissions	Monthly Once	8 hours	PM
3. Meteorological Data				
	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
	Ambient Noise levels	Monthly once	Continuous for 24 hours with 1 hour	Noise levels

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
			interval	

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:

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) (High Performance rigid electrodes)	PM < 30 mg/Nm^3
2.	Induction Furnaces with CCM	Fume Extraction system with PTFE bag filters	PM < 30 mg/Nm^3
3.	Submerged Electric Arc Furnace	4th Hole Fume Extraction system with bag filters	PM < 30 mg/Nm^3
4.	Re-heating furnaces attached to Rolling Mill	Stack	PM < 30 mg/Nm^3
5.	FBC Boiler	Electro Static Precipitators (High Performance rigid electrodes)	PM < 30 mg/Nm^3
		Limestone will be used as bed material and act as sulphur absorbent. Lime dosing will also be done	SOx< 100 mg/Nm^3
		Combustion temperature will be around 800-850^{0}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

S.No.	Source	Control Equipment	Emission at the outlet
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 generation will be 236 KLD.
- There will be no effluent discharge in the Sponge Iron, Induction Furnaces, Ferro Alloys unit 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 Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system.
- 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.
- Garland drains will be provided around all the raw material stacking areas.

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.

The following will be treated combined effluent characteristics.

- pH - 6.5 - 8.5
- TSS - < 100 mg/l
- Oil & Grease - < 10 mg/l
- Free available chlorine - < 1.0 mg/l
- Copper - <1.0 mg/l
- Iron - < 1.0 mg/l
- Zinc - < 1.0 mg/l
- Chromium - < 0.2 mg/l
- Phosphates - < 5.0 mg/l

Treated Sewage Characteristics

S.No.	Parameters	Parameters limit
1.	pH	6.5 – 8.0
2.	BOD (mg/ L)	Not more than 10
3.	COD (mg/ L)	Not more than 50
4.	TSS (mg/ L)	Not more than 20
5.	NH_4-N (mg/ L)	Not more than 5
6.	N-Total (mg/ L)	Not more than 10
7.	Fecal Coliform (MPN/100 ml)	Less than 100

TREATED EFFLUENT DISPOSAL

Effluent quantity to be used for ash conditioning : 50 m^3/day

Effluent to be used for dust suppression in CHP : 46 m^3/day

Effluent to be used for Greenbelt development : 140 m^3/day

5.58 Ha. (13.80 Acres) 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 to STG & DG sets. 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 proposedproject.

Table No.7.2: Solid Waste Generation and Disposal

S.No.	Waste / By product	Quantity (TPA)	Proposed method of disposal
1.	Ash from DRI	37,800	Will be utilised in the proposed Brick Manufacturing Unit
2.	Dolochar	42,000	Will be used in proposed FBC power plant as fuel.
3.	Kiln Accretion Slag	1,890	Will be used in road construction &utilised in the proposed brick manufacturers.
4.	Wet scrapper sludge	9,660	Will be used in road construction &utilised in the proposed brick manufacturers.
5.	SMS Slag	18,000	Slag from SMS will be crushed and iron will be recovered & then remaining non -magnetic material being inert by nature will be used as sub base material in road construction.
6.	End Cuttings from Rolling Mill	3,600	Will be reused in the SMS
7.	Mill scales from Rolling Mill	1,800	Mill scales will be utilized proposed Ferro alloys manufacturing units.
8.	Ash from Power Plant (with Indian Coal + dolochar)	59,052	Will be utilized in the proposed brick manufacturing unit
9.	Slag from FeMn	15,147	Will be reused in manufacture of SiMn as it contains high SiO_2 and Silicon.
10.	Slag from FeSi	506	Will be given to Cast iron foundries
11.	Slag from SiMn	15,444	will be used for Road construction / will be given toslag cement manufacturing

S.No.	Waste / By product	Quantity (TPA)	Proposed method of disposal
12.	Slag from FeCr	13,959	Will be processed in Jigging 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. If Chrome content exceeds the permissible limits, it will be sent to nearest TSDF.

7.5 Greenbelt Development

Greenbelt of 13.8 Acresof extensive greenbelt will be developed in the plant premises. Width of proposed greenbelt will be 15 m.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 37.65 Crores

Recurring Cost per annum for Environmental protection : Rs.6.9Crores