SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

of

RAIPUR POWER AND STEEL LIMITED

[Expansion of Steel Plant (Category –A Project)

[Expansion of Steel Plant –Iron Ore Beneficiation & Pelletizationplant from 3,00,000 TPA to 5,00,000 TPA, Sponge Iron From 90,000 TPA to2,40,000 TPA, Induction Furnace with LRF & CCM from 90,000 TPA to 1,80,000 TPA, Rolling Mill From 90,000 TPA to 1,80,000 TPA along with Power plant WHRB from 6 MW to 18 MW, AFBC From 6 MW to 24 MW, Fly ash Brick plant of 15 Million bricks /annum (50,000 Bricks/day) along with existing Ferro Alloy plant of2 x 9 MVA to manufacture FeSi – 12,650 TPA (or)SiMn – 28,500 TPA (or)FeMn – 37,000 TPA]

at

Plot nos. 75 & 76 of Borai Industrial Growth Centre,
RasmadaVillage,DurgTehsil& District, Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENTCONSERVATION BOARD

1.0 PROJECT DESCRIPTION

Raipur Power And Steel. Ltd. has been proposed to expand the existing steel plant atPlot nos. 75 & 76 ofBorai Industrial Growth Centre, Rasmada Village, Durg Tehsil & District, Chhattisgarh. Now they proposed to expand the existing plant as follows:

- Expansion of Sponge Iron capacity from 90,000TPA to 2,40,000TPA by establishing3 x 100 TPD + 1 x 500 TPDDRI Kilns.
- Expansion of Iron Ore Beneficiation &Pelletization plant capacity from 300000 TPA to 500000 TPA.
- Expansion of Induction Furnaces with Concast capacity from 90000 TPA to 180000 TPA.
- Expansion of Rolling Mill capacity from 90,000TPA to 180000 TPA
- Enhancement of Waste Heat Recovery Boiler Power Generation Plant Capacity from 6MW to 18MW.
- Enhancement of **AFBC**Power Generation Plant Capacity from 6 MW to 24 MW.
- Fly ash Brick plant of 15 Million bricks /annum (50,000 Bricks/day)

The estimated project cost for the proposed project is **Rs. 267.5 Crores.**
Existing plant is located in Plot nos. 75 & 76 ofBorai Industrial Growth Centre Rasmada (V), Durg (T& D),C.Gover an extent of **26.506 Ha. (65.498Acres)**of land& the proposed expansion will be taken up in the existing plant premises only.

As per the Ministry of Environment, Forests & Climate Change, New Delhi, EIA notification dated 14th September, 2006 & its subsequent amendments, all Primary metallurgical processing industries are listed under S. No. 3(a) Metallurgical industries (ferrous & non ferrous), 1(d) Thermal Power Plants under Category 'A'.

In order, to obtain Environmental Clearance for the proposed Steelplant,Form-I, proposed TOR along with Pre-Feasibility Report were submitted to the Honourable Ministry of Environment, Forests&Climate Change (MoEF&CC), New Delhi **18thAugust 2023** vide Proposal No**. IA/CG/IND1/438442/2023.** Accordingly, **TOR** has been issued for the proposed expansion of steel plant vide F.No.**IA-J-11011/545/2010-IA-II(IND-I),** dated**9thOctober 2023**. Subsequently, Draft EIA report has been prepared incorporating the Terms of

Reference&submitted to Chhattisgarh Environment Conservation Board (CECB)for conducting Public hearing/consultation.

***Pioneer Enviro Laboratories & 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 Draft Environmental Impact Assessment (EIA) report for the proposed expansion 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 expansion 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 Plant site:

Environment Setting Within 10 Kms. Radius of the Plant Site

S.No.	Salient Features / Environmental features	Aerial Distance w.r.t. site / Remarks
1.	Type of Land	Plant is situated in Borai Industrial Area
2.	National Park/ Wildlife sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	There are no notified National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve/ migratory routes for Birds with in 10 Km. radius of the plant.
3.	Historical places / Places of Tourist importance / Archeological sites	Nil
4.	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.

S.No.	Salient Features / Environmental features	Aerial Distance w.r.t. site / Remarks
5.	Defence Installations	Nil
6.	Nearest village	RasmadaVillage – 100 M(E)
7.	Forests	**Reserved Forests :** Mangata RF -3.2 Kms (W), are existing within study area.
8.	Water body	Seonath River – 2.1Kms. (E) PulgaonNala – 4.9Kms (SE) and other unnamed small ponds are existing within study area.
9.	Nearest Highway	National Highway # 53–0.6kms(E)
10.	Nearest Railway Station	RasmadaR.S. – 0.5Kms.(N)
11.	Nearest Port facility	Nil within 10 Km. Radius.
12.	Nearest Airport	Nil within 10 Kms. Radius
13.	Nearest Interstate Boundary	Nil within 10 Km. Radius.
14.	Seismic zoneas per IS-1893	Seismic zone – II
15.	MSL of the Project area	Project area falls in Seismicity zone – II MSL of the Project area – 324 m to 333 m
16.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the site area.
17.	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 plant configuration and production capacity proposed now

Plant Configuration and Production Capacity (Existing & Proposed)

S. No.	Unit (Product)	TotalPermited Capacity as per the EC dated 23.12.2011	Implementation status as per the current CTO dated 29/03/2021	Proposed Expansion	Total production capacity After Present Expansion
1.	I/O Beneficiation &pelletization plant	3,00,000 TPA	3,00,000 TPA*	2,00,000 TPA	5,00,000 TPA
2.	DRI Kiln (Sponge Iron)	1,80,000 TPA (6 x 100 TPD)	90,000 TPA (3 x 100 TPD)	1,50,000 TPA (1X500 TPD)	2,40,000 TPA (3x100 TPD + 1x500 TPD)
3.	Induction furnace with LRF & CCM (Hot Billets / MS	90,000 TPA (2 x 15 MT)	90,000 TPA (2 x 15 MT)	90,000 TPA (2 x 15 MT)	1,80,000 TPA (4 x 15 MT)

	billets)				
4.	Rolling Mill (Wire Rods / TMT bars/ Structural Steel)(85 % Hot charging with Hot Billets and r emaining 15% through RHF with LDO as fuel)	90,000 TPA (1 x 300 TPD)	90,000 TPA (1 X 300 TPD)	90,000 TPA (1 X 300 TPD)	1,80,000 TPA (2 X 300 TPD)
5.	Ferro Alloy unit (through SEAF) (FeSi/ SiMn / Fe Mn)	2x12 MVA & 2x9 MVA (FeSi-29,568 TPA / SiMn-66,486 TPA / FeMn- 86,333 TPA)	2 x 9 MVA FeSi – 12,650 TPA /SiMn – 28,500 TPA /FeMn – 37,000 TPA	-----	2 X 9 MVA FeSi – 12,650 TPA /SiMn – 28,500 TPA /FeMn – 37,000 TPA
6.	Power generation through WHRB of DRI	12 MW	6.0 MW	12 MW	18 MW
7.	Power Plant through AFBC Boiler	36 MW	6.0 MW	18 MW	24 MW
8.	Fly Ash brick plant	-----	----	15 Million bricks /annum (50,000 Bricks/day)	15 Million bricks /annum (50,000 Bricks/day)

1.3 RAW MATERIALS (FOR EXPANSION PROJECT)

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

RAW MATERIAL REQUIREMENT, SOURCE &MODE OF TRANSPORT

S.No.	Raw Material	Quantity (TPA)	Sources	Distance (inKms.)	Mode of Transport
1.	**For Iron Ore Beneficiation &Pelletization – 2,00,000 TPA**				
a)	Iron Ore Fines	3,00,000	Odisha, Jharkhand & Chhattisgarh	~ 500	By rail & road (covered trucks)
b)	Coal Fines	8,000	Jharkhand, Odisha, WB, Chhattisgarh	~ 500	By rail & road (covered trucks)
c)	Bentonite	1,600	Gujarat	~ 500	By rail & road (covered trucks)
d)	Limestone	3,000	Odisha & M.P.	~ 500	By rail & road (covered trucks)
e)	LDO / LSHS	500 KL	Nearby IOCL, BPCL & HPCL Depot	~ 100	By road (Through tankers)
2.	**For DRI Kilns (Sponge Iron) – 1,50,000 TPA**				

a)	Pellets (100 %)		2,17,500	Own generation	---	Through covered conveyers
			or			
	Iron ore (100%)		2,40,000	Odisha, MP, Chhattisgarh,Jharkhand	~ 500	By rail & road (covered trucks)
b)	Coal	Indian	1,95,000	Jharkhand, Odisha, WB, Chhattisgarh	~ 500	By rail & road (covered trucks)
		(or)				
		Imported	1,24,800	Indonesia / South Africa / Australia	~ 600 (from Vizag Port)	Through sea route, rail route & by road (covered trucks)
c)	Dolomite		7,500	Chhattisgarh, MP, Maharashtra	~ 100	By road (covered trucks)
3.	**For Steel Melting Shop (Billets/ Ingots/Hot Billets) – 90,000 TPA**					
a)	Sponge Iron		91,000	Own generation	---	Through covered conveyers
b)	Pig Iron / MS scrap / end cuttings		14,000	Own generation	~ 100	By road (covered trucks)
c)	Ferro alloys		5,000	Own generation	---	By road (covered trucks)
4.	**For Rolling Mill through Hot charging (Rolled Products) – 90,000TPA**					
a)	Hot Billets / MS Billets MS Billets / ingots		90,000 4,410	Inhouse Generation External purchase	--- ~ 50	--- By rail & road (covered trucks)
b)	LDO / LSHS		765 KL/annum	Nearby IOCL Depot	~ 100	By road (through Tankers)
5.	**For AFBC Boiler [Power Generation 18 MW]**					
a)	Dolochar + Indian Coal	Dolochar	27,000	Own generation	---	through covered conveyors
		Indian Coal	83,700	Odisha, Jharkhand & WB	~ 500	By rail & road (covered trucks)
	OR					
b)	Dolochar + Imported Coal	Dolochar	27,000	Inhouse Generation	---	through covered conveyors
		Imported Coal	53,568	Indonesia / South Africa / Australia	~ 600 (from Vizag Port)	Through sea route, rail route & by road (covered trucks)

1.4 MANUFACTURING PROCESS

1.4.1 Iron Ore Beneficiation

Beneficiation is a process which removes the gang particle like Alumina, Silica from the Iron Ore. Basically, it separates Fe_2O_3 or Fe_3O_4 from other impurities in the iron ore. In this

process the Fe content is improve to maximum possible extent. The highest can be 70% i.e. purest form.

1.4.2 Palletization

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.

1.4.3 Sponge Iron (DRI)

The proposal consists of 1 x 500 TPD to manufacture 1,50,000 TPAof Sponge Iron with 12 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 1000^0C 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.

1.4.4 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 consistofInduction furnace, Ladles, Cranes & Continuous Casting Machine (CCM). There will be 2x15 MT Induction furnaces to manufacture Hot Billets / MS Billets / MS Slab of 90,000TPA. 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 TMT Bars, Structural Steel - Angle, Channels, Gutters, Coils, Flat Bars, Strips, MS Pipes, MS Tubes, Galvanized Pipes and angles. The flue gases will be treated in fume extraction system with bagfilters.

1.4.5 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 either LDO / Producer Gas. A Rolling mill (will be installed in the present proposal to produce 90,000 TPA of TMT Bars, Structural Steel - Angle, Channels, etc.

1.4.6 Power Generation

Through WHRB Boiler

The hot flue gases from proposed 1 x 500 TPDDRI kilns will pass through waste heat recovery Boiler to recover the heat and to generate (1 x 12 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 atmospherethroughstacks of adequate height.

Through FBC Boiler

Coal (Imported / Indian) along withdolochar will be used as fuel in FBC Boilers to generate 18MWofelectricity. The flue-gases will be treated in high efficiency ESP and then discharged through a stack of adequate height into the atmosphere.

11.1.4.8 Fly Ash Brick Manufacturing Unit

It is proposed to establish Fly Ash brick making unit of 55,000 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 in the operating plant & CTE permitted unitis **800 KLD** and same being sourced from CSIDC.
- Water required for the proposed expansion project will be **1094 KLD** and same will be sourced from CSIDC.
- Air cooled condensers will be provided for Power plant.
- Total water requirement after the proposed expansion will be **1894 KLD.**
- Water drawl permission for 1000 KLD was already obtained from CSIDC, Govt. of Chhattisgarh for existing plant. Water permission for remaining water quantity will also be obtained after receipt of TOR letter for proposed expansion project.

Break Up of Water Consumption (Existing & Proposed)

S.No.	Unit	Quantity in KLD		
		Existing Plant (under operation)	Proposed Expansion	Total after Proposed Expansion
1.	DRI Kilns	70	116	186
2.	Induction Furnace	40	40	80
3.	I/O Benificiation	230	153	383
4.	Pellet Plant	92	61	153
5.	Rolling Mill	60	60	120

6.	SEAF	40	---	40
7.	Power Plant (WHRB&FBC)	256	640	896
8.	Brick Manufacturing plant	---	10	10
9.	Domestic	12	14	26
	Total	**800**	**1094**	**1894**

1.6 Waste Water Generation

- Total wastewater generation from existing & the proposed expansion project will be **383 KLD** (inclusive of Sanitary wastewater).
- Effluent from I/O Beneficiation plant will be sent to Settling tank and the recycled back to the process.
- Effluent from SMS, Rolling mill, Ferro Alloy and power plant will be treated in ETP.
- The wastewater generated will be treated in ETP followed by RO plant. Treated effluent will be utilized for Dust suppression in CHP, for Ash Conditioning, for Greenbelt development.
- Sanitary wastewater generated (21 KLD) from proposed project will be treated in proposed STP and after treatment the treated sewage will be used for greenbelt development.
- There will not be any effluent discharge outside the premises.
- Air Cooled condensers will be provided in the power plant, which will reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- During monsoon period, the treated wastewater will be utilized as makeup water for Rolling Mill.
- Garland drains will be provided around all the raw material stacking areas.
- No effluent will be let out of the plant premises. Zero effluent discharge will be implemented.

BREAKUP OF WASTE WATER GENERATION

S.No.	Source	Generation (KLD)		
		Existing Plant (under operation)	Proposed Expansion	After Proposed Expansion
1.	DRI Kilns	---	---	---
2.	I/O Beneficiation	12.0	8.0	20.0
3.	Induction Furnaces	3.0	2.0	5.0
4.	Rolling Mill	4.0	4.0	8.0
5.	Ferro Alloys Unit	4.0	---	4.0

6.	Brick manufacturing plant	---	---	---
7.	Power Plant			
	a) Cooling Towerblowdown	26.0	77.0	103.0
	b) Boilers blowdown	22.0	65.0	87.0
	c) D.M. plant regeneration water	34.0	101.0	135.0
8.	Sanitary Wastewater	10.0	11.0	21.0
	Total	**115.0**	**268.0**	**383.0**

1.7 Wastewater Characteristics

The following are the Characteristics of waste water

CHARACTERISTICS OF WASTEWATER

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

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 March 2023 To 31st May 2023.** The following are the concentrations of various parameters at the monitoring stations:

AAQ DATA SUMMARY

S.No.	Parameter	Concentration range	Standard as per NAAQS
1.	$PM_{2.5}$	27.2 to 48.8 µg/m^3	60
2.	PM_{10}	44.5 to 79.2 µg/m^3	100
3.	SO_2	8.9 to 17.8 µg/m^3	80
4.	NO_X	10.2 to 19.8 µg/m^3	80
5.	CO	556 to 1360µg/m^3	2000

2.2 Water Quality

2.2.1 Surface Water Quality

6 no. of samples i.e. 60m Upstream & 60 m Downstream from Seonath River (2.1 Kms. – East Direction), Khapri Nala, Pond (Rasmada), Pond (Ganjari), Pond (Khapri) 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 **47.12 dBA to 70.29 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.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO PROPOSED EXPANSION

Item	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_X ($\mu g/m^3$)	CO ($\mu g/m^3$)
Maximum baseline conc. in the study area	48.2	79.2	17.8	19.8	1360
Maximum predicted incremental rise in concentration due to proposed Expansion project (Point Sources)	0.59	0.98	3.9	5.92	---
Maximum predicted incremental rise in concentration due to proposed Expansion project (Vehicular emissions)	0.13	0.21	----	1.6	1.03
Net resultant concentrations during operation of the proposed project	48.92	80.39	21.7	27.32	1361.03
National Ambient Air Quality Standards	**100**	**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 expansion project will be Turbines, Furnace, Rolling Mills, DG set, etc. 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.**8.90 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

- Effluent from I/O Beneficiation plant will be sent to Settling tank and the recycled back to the process.
- Effluent from SMS, Rolling mill, Ferro Alloy and power plant will be treated in ETP.
- The wastewater generated will be treated in ETP followed by RO plant. Treated effluent will be utilized for Dust suppression in CHP, for Ash Conditioning, for Greenbelt development.
- Sanitary wastewater generated (21 KLD) from proposed project will be treated in proposed STP and after treatment the treated sewage will be used for greenbelt development.
- There will not be any effluent discharge outside the premises.
- Air Cooled condensers will be provided in the power plant, which will reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- During monsoon period, the treated wastewater will be utilized as makeup water for Rolling Mill.
- Garland drains will be provided around all the raw material stacking areas.
- No effluent will be let out of the plant premises. Zero effluent discharge will be implemented.

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 **8.90 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 expansion project.

3.5 Socio - Economic Environment

There will be further upliftment in Socio Economic status of the people in the area. Hence, there will be further development of the area due to the proposed expansion 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
1. Water & Wastewater quality				
A.	Water quality in the area	Once in a month except for heavy metals which will be monitored on quarterly basis	Grab sampling (24 hourly)	As per IS: 10500
B.	Effluent at the outlet of the ETP	Once in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Once in a month	Composite sampling (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors Quarterly Once		PM PM, SO_2 & NOx
B.	Ambient Air quality (CAAQMS)	Continuous	Continuous	PM_{10}, SO_2& NOx

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
		Quarterly Once	24 hours	$PM_{2.5}$, PM_{10}, SO_2, NOx & CO
C.	Fugitive emissions	Quarterly Once	8 hours	PM
3. Meteorological Data				
	Meteorological data to be monitored	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
	Ambient Noise levels	Once in a month	Continuous for 24 hours with 1 hour interval	Noise levels

5.0 ADDITIONAL STUDIES

There is no displacement of people due to the proposed project. No Rehabilitation and Resettlement is required as the site is located in Industrial Growth Centre Borai. Thus R & R issues are not applicable.

PUBLIC CONSULTATION

After completing the public consultation process, the points raised and commitment of project proponent during the public hearing will be incorporated in the final EIA-EMP report for final submission to Environmental Clearance.

RISK ASSESSMENT

Risk analysis deals with the identification and quantification of risks, the plant equipment 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 expansion 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 SYSTEM PROPOSED

S.No.	Source	Control Equipment	Emission at the outlet
1.	Iron Ore Beneficiation	Upgradation of Bag Filters	PM<30mg/Nm^3
2.	Pellet Plant	Upgradation of Electro Static Precipitators(ESP)	PM<30mg/Nm^3
3.	DRI kilns with WHRB's	Electro Static Precipitators(ESP)	PM<30mg/Nm^3
4.	IF	Fume Extraction system with bag Filters	PM<30mg/Nm^3
5.	Re-heating furnaces attached to Rolling Mill	Stack	PM<30mg/Nm^3
6.	AFBC Boiler	Electro Static Precipitator	PM < 30mg/Nm^3
		Automatic Lime dosing system	SOx < 100mg/Nm^3
		Combustion temperature will be around 800-850^{o}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 Fume extraction system with bagfilters, dry fog system, dust suppression system, covered conveyers, water cannon spray, Rain guns, etc. will also be installed.			

7.2 Water Environment

- Effluent from I/O Beneficiation plant will be sent to Settling tank and the recycled back to the process.
- Effluent from SMS, Rolling mill, Ferro Alloy and power plant will be treated in ETP.
- The wastewater generated will be treated in ETP followed by RO plant. Treated effluent will be utilized for Dust suppression in CHP, for Ash Conditioning, for Greenbelt development.
- Phenolic discharge of PGP will be utilized in After Burning Chamber (ABC) of DRI kilns.
- Sanitary wastewater generated (21 KLD) from proposed project will be treated in proposed STP and after treatment the treated sewage will be used for greenbelt development.

- There will not be any effluent discharge outside the premises.
- Air Cooled condensers will be provided in the power plant, which will reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- During monsoon period, the treated wastewater will be utilized as makeup water for Rolling Mill.
- Garland drains will be provided around all the raw material stacking areas.
- No effluent will be let out of the plant premises. Zero effluent discharge will be implemented.

TREATED EFFLUENT DISPOSAL

Total wastewater generation from existing & the proposed expansion project : **383 KLD**

Effluent quantity to be used for ash conditioning	:	56 KLD
Effluent to be used for dust suppression in CHP	:	75 KLD
Effluent to be used for Floor washing, Vehicle washing, etc	:	32 KLD
Effluent to be used for Greenbelt development	:	220 KLD

8.90 Ha. (22 Acres) of greenbelt (inclusive of existing) will be developed by using the treated effluent. Treated effluent which is proposed to be utilized for greenbelt during non-monsoon period, will be used as make up water for Rolling Mill, during monsoon.

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. **8.90 Ha.**of 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 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 **8.90 Ha.** of extensive greenbelt will be developed as per guidelines. Desirable beautification and landscaping practices will be followed. Hence, there will not be any adverse impact on land environment due to the proposed project.

SOLID WASTE GENERATION & ITS DISPOSAL

S.No.	Waste	Quantity (TPA)			Proposed method of disposal
		Existing	Expansion	Total	
1	Tailings	90,000	60,000	1,50,000	Tailings is being / will be taken to a thickener and then dewatered in filter press. Dewatered tailings will be stacked and given to brick manufacturers, cement plants, road contractors, can be used as replacement of fine aggregate in concrete blocks , etc. Norms and guidelines of MOEF& CC will be followed.
2.	Ash from pellet Plant	9,000	6,000	15,000	Is being given to nearby Brick Manufacturing plant. Now it is proposed to be utilized in the proposed Brick Manufacturing Unit.
3.	Ash from DRI	11,700	19,500	31,200	Is being given to nearby Brick Manufacturing plant. Now it is proposed to be utilized in the proposed Brick Manufacturing Unit.
4.	Dolochar	16,200	27,000	43,200	Will be used in proposes AFBC power plant as fuel.
5.	Kiln Accretion Slag	810	1350	2,160	Is being given to nearby Brick Manufacturing plant. Now it is proposed to be utilized in the proposed Brick Manufacturing Unit.
6.	Wet scrapper sludge	3,600	6,000	9,600	Will be utilized in the proposed Brick Manufacturing Unit.
7.	SMS Slag	9,000	9,000	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 in proposed Brick Manufacturing Unit
8.	End Cuttings from Rolling Mill	2,700	2,700	5,400	Will be reused in the SMS
9.	Mill scales from Rolling Mill	1,800	270	2,070	Mill scales will be recycled to Ferro alloys unit.

S.No.	Waste	Quantity (TPA)			Proposed method of disposal
		Existing	Expansion	Total	
10.	Ash from Power Plant (Indian Coal + Dolochar)	20,655	53,865	74,520	Is being given to nearby Brick Manufacturing plant. Now it is proposed to be utilized in the proposed Brick Manufacturing Unit.
11.	Slag from FeMn	22,370	---	22,370	Will be reused in manufacture of SiMn as it contains high SiO_2 and Silicon.
	(or)				
12.	Slag from FeSi	3,046	---	3,046	Will be given to Cast iron foundries
	(or)				
13.	Slag from SiMn	23,441	---	23,441	will be used for Road construction / will be given toslag cement manufacturing
14.	Dust from APCS	600	450	1050	Is being given to nearby Brick Manufacturing plant. Now it is proposed to be utilized in the proposed Brick Manufacturing Unit.

7.5 Greenbelt Development

- Out of total **26.50 6Ha. (65.498 Ac.)** of land, **8.90 Ha. (22 Ac.**) i.e. **33.6%** of land is envisaged for greenbelt.
- 12,150 nos. of plants are exists till date.
- Another 12,000 nos. of saplings havealso been planted recently.
- Local DFO will be consulted in developing the green belt.
- 2500 plants will be planted per hectare as per CPCB norms.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs.26.4 Crores

Recurring Cost per annum for Environmental protection : Rs. 5.3 Crores

7.7 Implementation of CREP Recommendations

All the CREP recommendations will be implemented & followed strictly.

- Continuous stack monitoring system is proposed for stack attached to WHR Boiler.
- 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.
- Additional Rain water harvesting pits will be constructed outside the plant premises in consultation with CGWB.