

SUMMARY ON ENVIRONMENTAL IMPACT ASSESSMENT REPORT

OF

RAMA METALS AND ENERGY PVT. LTD.

(Proposed Steel Plant)

Greenfield Project comprising of establishment of I/O Beneficiation Plant-1.5 MTPA (throughput), Pellet Plant-0.8 MTPA, DRI Kilns-2 x 600 TPD (Sponge Iron- 3,96,000 TPA), Power generation- 60 MW (WHRB -(2 x 15MW), CFBC-1 x 30 MW), IFs (4x20 T) with CCM & LRF (Hot Billets /Billets/Ingots- 2,64,000 TPA), Billet Caster of 2,53,400 TPA, Rolling Mill with RHF (TMT bars / Wire rod / re-rolled products-2,50,000 TPA (through 85 % Hot charging with Hot Billets and remaining 15% through RHF) Oxygen Plant-17,000 TPA, SEAFs 2x9 MVA (FeSi – 14,000 TPA / FeMn-50,400 TPA/ SiMn-28,800 TPA / FeCr-30,000 TPA / Pig iron– 50,400 TPA), Briquetting plant – 200 Kg/hr, Coal Gasifier-3 x 5700 Nm³/Hr, Fly Ash Brick Manufacturing Unit – 18.15 Million Bricks/Year]

at

Mohbhata Village, Simga Tehsil,
Balodabajar-Bhatapara District, Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

1.0 PROJECT DESCRIPTION

RAMA METALS AND ENERGY PVT. LTD. (RMEPL) is proposing to establish a Steel Plant comprising of Establishment of I/O Beneficiation Plant-1.5 MTPA (throughput), Pellet Plant - 0.8 MTPA, DRI Kilns-2x600 TPD (Sponge Iron-3,96,000 TPA), Power generation- 60 MW (WHRB -(2 x 15MW), CFBC-1 x 30 MW),IFs (4x20 T) with CCM & LRF (Hot Billets /Billets/Ingots- 2,64,000 TPA), Billet Caster of 2,53,400 TPA, Rolling Mill with RHF (TMT bars / Wire rod / re-rolled products-2,50,000 TPA, Oxygen Plant-17,000 TPA, SEAFs 2x9 MVA (FeSi-14,000 TPA / FeMn-50,400 TPA/ SiMn-28,800 TPA / FeCr-30,000 TPA / Pig iron-50,400 TPA), Briquetting plant – 200 Kg/hr, Coal Gasifier-3 x 5700 Nm³/Hr, Fly Ash Brick Manufacturing Unit – 18.15 Million Bricks/Year. at Mohbhatta Village, Simga Tehsil, Balodabajar-Bhatapara District, Chhattisgarh.

Total land identified for the proposed project is **90.306 Ha. (223.15 Ac.)**. The khasra nos. are involved in the total land are 302/162, 302/163, 302/26/D, 302/26/Gh, 362/11, 362/13, 362/14, 362/5, 368/1, 368/2 (368/3), 368/4, 372/1, 372/10, 372/11, 372/12, 372/2, 372/4, 372/5, 372/7, 372/8, 372/9, 373/1, 373/10, 373/11, 373/12, 373/13, 373/14, 373/2, 373/3, 373/4/क, 373/4/ख, 373/5, 373/6, 373/6, 373/7, 373/9, 374/1, 374/2, 375/1, 375/2, 375/3, 375/4, 380/101, 380/102, 380/104, 380/105, 380/127, 380/128, 380/133, 380/28, 380/30, 380/32/क, 380/32/ख, 380/33, 380/36, 380/36, 380/37, 380/37, 380/38, 380/39, 380/82, 380/88, 380/89, 380/90, 380/91.

The estimated project cost for the proposed project is **Rs. 1133.10 Crores**.

As per the Ministry of Environment, Forests & Climate Change, New Delhi notification, dated 14th September, 2006 and its subsequent amendments, all Primary metallurgical processing industries are classified under Category 'A'. The Ministry of Environment, Forests & Climate Change, New Delhi has accorded Terms of Reference (TOR) for the proposed project vide letter no. **J-11011/209/2023-IA.II (Ind1)** dated **04/08/2023**. The EIA Report has been prepared by incorporating the 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	Agricultural Land and same is converted for Industrial use.
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlement – 4.7 %; Industrial area – 2.1 %; Tank / River/ Major Canal etc. – 8.6 %; Scrub Forest – 1.9%; Single Crop – 55.3 %; Double crop-13.4%; Plantation – 3.6%; Land with scrub – 6.7 %; Land without scrub – 2.2 %, Stone Quarry – 1.5 %.
3.	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.
4.	Historical places / Places of Tourist importance / Archeological sites	Nil
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	Nil
7.	Nearest village	Moh Bhatha – 0.7 Km (North) & Khargadih – 0.7 Km (W).
8.	Nearest School	Primary school – Mohbhatta – 0.15 Kms. (N)
9.	Forests	Builari Ghughua RF – 8.6 (WSW)
10.	Water body	<ul style="list-style-type: none"> • Marrakohi Distributory canal (passing across the site which will be diverted) • Silari Nala – 1.8 km (W) • Mahanadi Canal – 2.2 km (E) • Jamuniya Nadi – 7.1 km (SE) • Sivnath River – 8.7 km (N) • Chitwar Nala – 9.1 km (SWW) • Few seasonal nalas within 10 km radius area
11.	Nearest Highway	NH # 130 (Simga to Bilaspur) – 8.9 km. (NWW) SH # 10 (Baloda Bazar to Mungeli) - 6.3 km (N)
12.	Nearest Railway Station	Hathbandh Rly Stn - 4.5km/S
13.	Nearest Port facility	Nil within 10 Km. Radius.
14.	Nearest Airport	Nil within 10 Kms. Radius [Raipur Airport- 55.0kms_ SSW (by Aerial)]
15.	Nearest Interstate Boundary	Nil
16.	Seismic zone as per IS-1893	Seismic zone – II, MSL of the Project area – 197 m to 203 m
17.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the site area.

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
18.	Litigation / court case is pending against the proposed project / proposed site and or any direction passed by the court of law against the project	Nil

1.2 PLANT CONFIGURATION AND PRODUCTION CAPACITY

Following is the proposed plant configuration and proposed production capacities:

Table No.1.2: Proposed Plant Configuration & Production Capacities

S.No.	Units (Products)	Plant configuration	Production Capacity
1.	Iron ore Beneficiation plant (I/O Concentrate)	1x1.5 MTPA	1.5 MTPA (1.0 MTPA I/O Concentrate)
2.	Pellet plant	1x0.8 MTPA	0.8 MTPA
3.	DRI Kilns (Sponge Iron)	2 x 600 TPD	3,96,000 TPA
4.	Power generation through WHRB (Electricity)	2x15MW	30 MW
5.	Power generation through CFBC (Electricity)	1x30.0 MW	30MW
6.	Induction Furnaces (Hot Billets / MS Billets / Ingots)	4 x 20 T	2,64,000 TPA
7.	Billet Caster	1x2 Strand	2,53,400 TPA
8.	Rolling Mill (TMT bars / Structural Steel) (85 % Hot charging with Hot Billets and remaining 15% through RHF with LDO as fuel)	0.25 MTPA	2,50,000 TPA
9.	Oxygen Plant	17,000 TPA	17,000 TPA
10.	Ferro Alloys	2 x 9 MVA	FeSi – 14,000 TPA (or) SiMn – 28,800 TPA (or) FeMn – 50,400 TPA (or) FeCr – 30,000 TPA (or) Pig iron – 50,400 TPA
11	Coal gasifier plant	3 x 5700 NM ³ /Hr	17,100 NM ³ /Hr
12	Briquetting Plant	1 x 200 Kg/Hr	200 Kg/Hr
13	Fly Ash Brick making unit	55,000 Bricks /day	18.15 Million Bricks/Annum

1.3 RAW MATERIAL REQUIREMENT

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

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

Plant	Raw Material	Quantity (TPA)	Source	Distance from site (Kms.)	Mode of Transportation
Beneficiation Plant (1.5 MTPA)	Iron ore	1,503,759	Chhattisgarh & Maharashtra & Odisha	350	By Rail / Road
	Iron ore conc.	872,000	Inhouse	0	----

Plant	Raw Material	Quantity (TPA)	Source	Distance from site (Kms.)	Mode of Transportation
Pellet Plant (0.8 MTPA)	Pellet feed				
	Lime	40,000	Chhattisgarh	110	By Road
	Dolomite	8,000	Kachchh, Gujarat	1300	By Road
	Bentonite	7,200	Chhattisgarh	350	Rail / Road
	Coal	36,000	Imported, Domestic & Govt. Linkage	600 350	By Ship/Rail/Road By Rail / Road
DRI Plant (3,96,000 TPA)	Pellet	5,94,000	Inhouse	0	
	Coal	5,94,000	Imported, Domestic & Govt. Linkage	600 350	By Ship/Rail /Road By Rail / Road
	Dolomite	27,700	Kachchh, Gujarat	1300	By Road
Induction Furnace (2,64,000 TPA)	DRI	257,100	Inhouse	0	
	Pig Iron	15,700	Inhouse / Chhattisgarh	225	By Road
	Purchased Scrap	28,300	Chhattisgarh	225	By Road
	Return Scrap	12,500	Inhouse	0	
Submerged Arc Furnace (2x9 MVA)	Mn Ore	124,975	MOIL / OMC	350	By Road
	Coke Breeze	94,025	Imported, Domestic & Govt. Linkage	~ 600 ~ 500	From Port By Road (covered Trucks) By road (covered trucks)
	Chrome ore	80,000	Sukinda (Odisha)	225	By Road
	Quartz	24,700	Chhattisgarh / Andhra Pradesh	1300	By Road
	Electrode Paste	11,340	Maharashtra / West Bengal	200	By Road
	Slag	18,000	Inhouse	200	By Road
Tapping Ladle	Liquid Steel	2,64,000	Inhouse	0	----
	Ferro alloys for TL	3,000	Inhouse	0	----
	Oxygen Plant	17000	Inhouse	0	----
Ladle Furnace	Liquid Steel	2,66,850	Inhouse	0	----
	Ferro Alloys for LF	700	Inhouse	0	----
	Lime	2,700	Chhattisgarh	230	By Road
Billet caster (2,53,400 TPA)	Liquid Steel	2,67,515	Inhouse	0	----

Plant	Raw Material	Quantity (TPA)	Source	Distance from site (Kms.)	Mode of Transportation
Rolling Mill (2,50,000 TPA)	Billets	2,57,732	Inhouse	0	----
	LDO/LSHS	5,600	IOCL, C.G	100	By Road
Power Plant (1x30 MW)	Indian Coal (or) Imported coal	146,400	Domestic & Govt. Linkage	350	By Rail / Road
		63,726	Imported	600	By Ship/Rail /Road
	Char to CFBC	101,000	Inhouse	0	----
Producer Gas Plant (3x5700 NM ³ /Hrs.)	Indian Coal (or) Imported coal	51,800	Domestic & Govt. Linkage	350	By Rail / Road
		33,152	Imported	600	By Ship/Rail / Road

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 Fe₂O₃ or Fe₃O₄ 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 2 x 600 TPD to manufacture 3,96,000 TPA of Sponge Iron with 2x15 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.

1.4.4 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 consist of Induction furnace, Ladles, Cranes & Continuous Casting Machine (CCM). There will be 4x 20 Induction furnaces to manufacture Hot Billets / MS Billets / MS Slab of 2,64,000 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 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 Billets will be cooled and stored will be sent to reheating furnaces for the heating and will be sent to Rolling Mill. Furnace will be heated with either LDO / Producer Gas. A Rolling mill (will be installed in the present proposal to produce 2,50,000 TPA of TMT Bars, Structural Steel - Angle, Channels, etc..

1.4.6 Submerged Electric Arc Furnace

Submerged Electric Arc Furnace (2 x 9 MVA) will be setup in the proposed project. 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 a sub-merged arc furnace using reducer (Coke) under high voltage. Flue gases will be extracted through 4th hole and then treated in bag filters.

1.4.7 Power Generation

Through WHRB Boiler

The hot flue gases from proposed 2 x 600 TPD DRI kilns will pass through waste heat recovery Boiler to recover the heat and to generate (2 x 15 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 30 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.

1.4.8 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 for the proposed project will be **3974 KLD**. This includes make up water for DRI Kilns, Induction Furnaces, Rolling Mills, Ferro Alloys, Brick Manufacturing unit & Domestic purposes.
- Water required for proposed project will be sourced from Shivnath River (which is at a distance of 8.9 Kms. from the project site).
- Water drawl permission from Water Resource Department, Chhattisgarh is under process.
- Air cooled condensers will be provided to FBC Power plant.
- The details of total water consumption& it's breakup are shown in below Table.

Table No.1.4: Water Requirement Breakup

S.No.	Unit	Quantity in KLD
1.	Beneficiation Plant	1058
2.	Pellet Plant	984
3.	DRI Kilns	100
4.	Induction Furnaces	80
5.	Caster	40
6.	Rolling Mills	50
7.	Coal Gasifier	16
8.	Ferro Alloys	50
9.	Power Plant (CFBC + WHRB)	1540
	• Cooling tower makeup	692
	• Boiler make up	598
	• DM plant Regeneration	150
10.	Domestic	46
11.	Brick Making Unit	10
	Total	3974

1.6 Wastewater Generation

- Total wastewater generation from the proposed plant will be **1025 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.
- Phenolic discharge of PGP will be utilized in After Burning Chamber (ABC) of DRI kilns.
- Sanitary wastewater generated (32 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.

Table No.1.5: Breakup of Wastewater Generation

S. No.	POINT OF GENERATION	Qty (KLD)
1	Iron Ore Beneficiation	382
2	Pellet Plant	---
3	DRI Kiln Cooling	---
4	Induction Furnace	40
5	Caster	20
6	Rolling Mill	25
7	Coal Gasifier	4
8	SEAF	12
9	Power plant (WHRB + CFBC)	510
	• Cooling tower blowdown	140
	• Boiler blowdown	220
	• DM plant rejects	150
10	Sanitary wastewater	32
	TOTAL	1025

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 2022 to 31st May 2022**. The following are the concentrations of various parameters at the monitoring stations:

Table No.2.1 : AAQ Data Summary

S.No.	Parameter	Concentration range (in µg/m ³)	Standard as per NAAQS
1.	PM _{2.5}	25.3 to 38.6	60
2.	PM ₁₀	36.2 to 66.4	100
3.	SO ₂	6.7 to 14.5	80
4.	NO _x	6.9 to 20.8	80
5.	CO	365 to 955	2000

2.2 Water Quality

2.2.1 Surface Water Quality

4 nos. of samples i.e. 60m Upstream & 60 m Downstream from Shivnath River (8.6 Kms. – North Direction) and 2 nos. of samples from Mohbhatta Village Pond & Khilora 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 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 **46.68 dBA to 51.83 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.2.2: NET RESULTANT MAXIMUM CONCENTRATIONS DURING THE OPERATION OF THE PROPOSED PROJECT (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	38.6	66.4	14.5	20.8	955

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 predicted incremental rise in concentration due to proposed project (Point Sources)	0.65	1.1	6.85	4.90	3.77
Maximum predicted incremental rise in concentration due to proposed project (Vehicular emissions)	0.46	0.78	---	5.83	---
Net resultant concentrations during operation of the proposed project	39.71	68.28	21.35	31.53	958.77
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 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. **30.35 Ha. (75.0 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

- Total wastewater generation from the proposed plant will be **1025 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.
- Phenolic discharge of PGP will be utilized in After Burning Chamber (ABC) of DRI kilns.
- Sanitary wastewater generated (32 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 **30.35 Ha. (75.0 Acres)** 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 ₂ & NO _x PM, SO ₂ & NO _x
B.	Ambient Air quality	CAAQMS Quarterly Once	continuously 24 Hourly	PM _{2.5} , PM ₁₀ , SO ₂ , NO _x 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				
A.	Ambient Noise levels	Once in a month (Hourly)	Continuous for 24 hours with 1-hour interval	Noise levels

5.0 ADDITIONAL STUDIES

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

6.0 PROJECT BENEFITS

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

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Environment

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

Table No.7.1: Air Emission Control Systems Proposed

S.No.	Source	Control Equipment	Emission at the outlet
1.	Iron Ore Beneficiation	Bag Filters	PM<30mg/Nm ³
2.	Pellet Plant	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.	Submerged Electric Arc Furnace	4 th Hole Fume Extraction system With bag filters	PM<30mg/Nm ³
6.	Re-heating furnaces attached to Rolling Mill	Stack	PM<30mg/Nm ³
9.	CFBC Boiler	Electro Static Precipitator	PM < 30mg/Nm ³
		Automatic Lime dosing system	SOx < 100mg/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 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

- Total wastewater generation from the proposed plant will be **1025 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.
- Phenolic discharge of PGP will be utilized in After Burning Chamber (ABC) of DRI kilns.
- Sanitary wastewater generated (32 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 the proposed plant (inclusive of Sanitary wastewater)	: 1025 KLD
Treated wastewater quantity to be recycled to I/O beneficiation process	: 382 KLD
Treated wastewater quantity to be used for ABC chamber of DRI Kiln	: 4 KLD
Treated wastewater quantity to be used for dust suppression in CHP	: 179 KLD
Treated wastewater quantity to be used for Ash conditioning	: 150 KLD
Vehicle Washing	: 10 KLD
Treated wastewater to be used for Greenbelt development	: 300 KLD

30.5 Ha. (75 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. 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. **30.5 Ha. (75 Acres)** of greenbelt will be developed 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 SOURCE	WASTE DESCRIPTION	QUANTITY (TPA)	Mitigation Measures
1	Iron Ore Beneficiation	Tailing Filter Cake	5,03,759	Tailings 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 .
2	Pellet Plant	Dust & Broken pellet	24,000	Will be utilized in the Pellet Plant.
3	DRI Cooling Kiln	Dolochar	1,01,000	Will be used in proposed CFBC power plant as fuel.
		Fly Ash	57,200	Will be utilized in the proposed Brick Manufacturing Unit
		Wet Scr. Sludge	18,216	Will be utilized in the proposed Brick Manufacturing Unit
		Kiln Acc. Slag	3,564	Will be utilized in the proposed Brick Manufacturing Unit
4	Induction Furnace	Slag	43,904	Slag from IF will be crushed and iron will be recovered & then remaining non-magnetic material inert by nature will be utilized in the proposed Brick Manufacturing Unit.
5	Caster	Scale	3,200	Will be reused in the Ferro alloy plant
		Steel Scrap	7,400	Will be reused in the SMS
6	Rolling Mill	Steel Scrap	5,100	Will be reused in the SMS
		Mill Scales	2,500	Will be reused in the Ferro alloy plant
7	Coal Gasifier	Tar	634	Tar will be given to Road Contractors
8	SEAF	Slag from FeMn	30,470	Will be reused in manufacture of SiMn as it contains high SiO ₂ and Silicon.
		or		
		Slag from SiMn	25,655	Will be used for Road construction/will be given to slag cement manufacturing.
		or		
		Slag from FeCr	17,425	Will be processed in jigging plant for Chrome recovery. After Chrome recovery, the left-over slag will be analyzed 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.
		or		
		Slag from FeSi	3,370	Will be given to Cast iron foundries

S. No	WASTE SOURCE	WASTE DESCRIPTION	QUANTITY (TPA)	Mitigation Measures
10	CFBC	Fly Ash	51,200	Will be utilized in the proposed Brick Manufacturing Unit
11	APCS	Dust from APCS	1,650	Will be utilized in the proposed Brick Manufacturing Unit

7.5 Greenbelt Development

- Out of total **90.306 Ha. (223.15 Ac.)** of land **30.35 Ha. (75 Acres)** i.e. 33.6% of land is envisaged for greenbelt development.
- 100 m to 350 m wide green belt will be developed inside the project area towards the Primary school, Mohbhatta (0.15 Km- North). **Moreover, no Industrial activity is proposed in 500 m on the side of the School and same will be utilized for greenbelt & other non-process activity.**
- Canal will be diverted peripherally just inside the plant area.
- Lawns with shrubs will be developed in the 10 m width on either side of the canal to prevent soil erosion. This ensures no adverse impact on canal due to the proposed project.
- Total number of Trees present in the site are **450 Nos.**
- All the plants will be retained, no tree cutting is involved.
- 2500 nos. of plants will be planted per ha. as per CPCB norms.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 114 Crores
 Recurring Cost per annum for Environmental protection : Rs. 19 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 are being constructed in consultation with CGWB.