SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

Shaurya Ispat Udyog Pvt.Ltd. (Tilda Division)

[Establishment of Greenfield steel plant comprising of DRI Kilns (2 x 500 TPD) – 3,30,000 TPA, WHRB based Power Plant –2 x 10 MW, FBC based Power Plant –2 x 10 MW, Ferro Alloys Unit (2 x 9 MVA) FeSi –14,000 TPA/ FeMn –25,200 TPA / SiMn – 28,800 TPA/FeCr –30,000 TPA, Pig Iron –50,400 TPA), Briquetting Plant (200 Kg/Hr.) & Brick Manufacturing unit (30,000 Bricks / Day) in Phased Manner]

Located at

Village Bahesar, Tehsil Tilda,
Raipur District, Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD
Chhattisgarh

1.0 PROJECT DESCRIPTION

Shaurya Ispat Udyog Pvt. Ltd. (Tilda Division)is proposing to establish a Steel Plant at Bahesar Village, Tilda Tehsil, Raipur District, Chhattisgarh, a Greenfield Project, comprising of establishment of Greenfield steel plant comprising of DRI Kilns (2 x 500 TPD) –3,30,000 TPA, WHRB based Power Plant – 2 x 10 MW, FBC based Power Plant –2 x 10 MW, Ferro Alloys Unit (2 x 9 MVA) FeSi – 14,000 TPA/ FeMn – 25,200 TPA/ SiMn – 28,800 TPA/FeCr – 30,000 TPA,Pig Iron – 50,400 TPA), Briquetting Plant (200 Kg/Hr.) & Brick Manufacturing unit (30,000 Bricks / Day) in Phased Manner.

Total land envisaged for the proposed project is **12.353 Ha.** Khasrano. 608/1, 608/2 ,608/9 612/1, 612/2, 613/1, 613/2, 613/3, 614, 615/1, 615/2, 615/3, 615/4, 615/5, 615/6, 616/1, 616/2, 616/3, 616/4, 616/5, 617, 618/1, 618/2, 619/4. Out of 12.353 Ha., 10.771 Ha. is registered in name of company and for remaining 1.582 Ha. of land agreement have been entered with land owners.

The estimated project cost for the proposed project is **Rs. 400 Crores.**

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

In order, to obtain Environmental Clearance for the proposed Steel plant, Form-I (Part A, B), proposed TOR along with Pre-Feasibility Report were submitted to the Honorable Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi on 27th May 2023 vide Proposal No. IA/CG/IND1/428155/2023. Presentation was made before the 35th meeting of the Expert Appraisal Committee (Industry - 1) held on 6th June 2023 for the approval of TOR (Terms of Reference) for EIA study. Subsequently TOR letter was issued vide letter File No. J-11011 /93/ 2023– IA II (IND-I), dated 9th July 2023. The EIA Report has been prepared by incorporating the TOR stipulated by the Hon'ble EAC.

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India, vide certificate No. NABET/ EIA/ 2225/RA 0282, for preparing EIA report for Metallurgical Unit, have prepared Environmental Impact Assessment (EIA) report for the proposed projectby incorporating the TOR approved by

Ministry of Environment, Forests& Climate Change, New Delhi. The report contains detailed description of the following:

- Characterization of status of environment with in an area of 10 km radius from the plant for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.
- Assessment of air emissions, liquid waste and solid waste from the proposed project along with the noise level assessment.
- Environmental Management Plan comprising of emission control measures proposed to be adopted in the proposed project, solid waste management, Greenbelt development.
- Post Project Environmental Monitoring & Budget for Environmental Protection Measures.

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

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

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

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Private Land
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements/Air Strip - 6.3%, Industrial Area - 5.0%, Tank/Major Canal etc. - 6.5%, Scrub Forest - 2.8%, Single Crop - 48.9%, Double Crop - 7.6%, Plantation - 2.3%, Land with scrub - 9.2%, Land without scrub - 6.2%, Mining area - 4.0%, Ash Pond - 1.2%
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 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	Bahesar Village – 0.58 Kms.(NW)
8.	No. of Villages in the Study Area	58 nos.

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
9.	Nearest Hospital	Nearest Hospital is at Baikunth at 2.21 Kms.
10.	Nearest School	Nearest School is Middle School Bahesar at Bahesar Village at 1.6 Kms.
11.	Forests	Bilari RF (9.2Kms.NW),BilariGhughua RF (9.5 Kms.NNW), Mohrenga PF (8.0 Kms. SE) are present within 10 Kms. radius of the project site.
12.	Water body	Jalso dam (Kirna Tank) (4.0 Kms. SSW),Bhatapara Branch (Mahanadi Canal) (0.3 KmsW), are present within 10 Kms. radius of the project site.
13.	Nearest Highway	Tilda to Sigma (Major District Road) - 3.2 Kms.(E) NH# 130 at 11.3 Kms.W (Aerial)
14.	Nearest Railway Station	Baikunth RS - 2.8 Kms (by Aerial)
15.	Nearest Port facility	Nil within 15 Km. Radius.
16.	Nearest Airport	Nil within 15 Kms. Radius [Raipur Airport - 34.6 (by Aerial)]
17.	Nearest Interstate Boundary	Nil within 15 Kms. Radius
18.	Seismic zone as 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)	Production Capacity (Plant Configuration)		
		Phase # 1	Phase # 2	Total
1.	DRI Kilns (Sponge Iron)	1,65,000 TPA (1 x 500 TPD)	1,65,000 TPA (1 x 500 TPD)	3,30,000 TPA (2 x 500 TPD)
2.	Ferro Alloys Unit (FeSi / FeMn / SiMn / FeCr/Pig Iron)	FeSi-7,000 TPA / FeMn-25,200 TPA / SiMn-14,400 TPA / FeCr-15,000TPA/Pig Iron - 25,200 TPA (1 x 9 MVA)	FeSi-7,000 TPA / FeMn-25,200 TPA / SiMn-14,400 TPA / FeCr-15,000TPA/Pig Iron - 25,200 TPA (1 x 9 MVA)	FeSi – 14,000TPA / FeMn – 50,400 TPA / SiMn – 28,800 TPA / FeCr-30,000 TPA/Pig Iron - 50,400 TPA (2 x 9 MVA)
3.	Brick Manufacturing Unit	15,000 Brick/ day	15,000 Brick/ day	30,000 Brick/ day
4.	Briquetting Plant	100 Kg/Hr.	100 Kg/Hr	200 Kg/Hr

5.	Power Plant	WHRB Power Plant	1 x 10 MW	1 x 10 MW	20 MW (2 x 10 MW)
		FBC Power Plant	1 x 10 MW	1 x 10 MW	20 MW (2 x 10 MW)

1.3 RAW MATERIAL REQUIRMENT

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

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

S.No.	Raw Material		Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
1.	**DRI Kilns (Sponge Iron) – 3,30,000 TPA**					
a)	Pellets (100 %)		4,78,500	Chhattisgarh / Orissa	~ 200 Kms.	Through covered conveyers & By road (through covered trucks)
	OR					
b)	Iron ore (100%)		5,28,000	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
c)	Coal	Indian	4,29,000	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
		Imported	2,74,560	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
d)	Dolomite		16,500	Chhattisgarh	~ 100 Kms.	By road (through covered trucks)
2.	**CFBC Boiler [Power Generation - 2 x 10 MW]**					
a)	Indian Coal (100 %)		1,18,800	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
	OR					
b)	Imported Coal (100 %)		76,032	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
	OR					
c)	Dolochar + Indian Coal	Dolochar	66,000	In plant generation	---	through covered conveyors
		Indian Coal	85,800	SECL	~ 500 Kms.	By rail & road

				Chhattisgarh / MCL Odisha		(through covered trucks)
	OR					
d)	Dolochar + Imported Coal	Dolochar	66,000	In plant generation	---	through covered conveyors
		Imported Coal	43,032	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
3.	**For Ferro Alloys (2 x 9 MVA)**					
3 (i)	*Ferro Silicon – 14,000 TPA*					
a)	Quartz		21,280	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
b)	LAM coke		7,840	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	MS Scrap		490	Chhattisgarh / Maharshtra	~ 500 Kms.	By road (through covered trucks)
d)	Mill scales		3,290	Chhattisgarh / Maharshtra	~ 500 Kms.	By road (through covered trucks)
e)	Electrode paste		280	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
f)	Briquetted Bag filter dust		532	Inhouse Generation	---	By road (through covered trucks)
3 (ii)	*Ferro Manganese – 50,400TPA*					
a)	Manganese Ore		1,14,660	MOIL / OMC	~ 500 Kms.	By Rail & Road (throughcovered trucks)
b)	LAM coke		18,396	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Dolomite		8,568	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	MS Scrap / Mill scales		7,560	Chhattisgarh / Maharshtra	~ 500 Kms.	By road (through covered trucks)
e)	Electrode Paste		655	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
f)	Briquetted Bag filter dust		2,520	Own generation	---	---

3 (iii)	*Silico Manganese –28,800 TPA*				
a)	Manganese Ore	46,944	MOIL / OMC	~ 500 Kms.	By Rail & Road (throughcovered trucks)
b)	LAM Coke	10,800	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	FeMn. Slag	30,472	In house generation	---	----
d)	Dolomite	6,480	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
e)	Electrode paste	576	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
f)	Quartz	6,912	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
g)	BriquettedBagfilter dust	432	Own generation	---	---
3 (iv)	*For Ferro Chrome – 30,000 TPA*				
a)	Chrome Ore	60,000	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	5,250	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	MS Scrap / Mill Scale	4,500	Chhattisgarh / Maharshtra	~ 500 Kms.	By road (through covered trucks)
e)	Magnetite / Bauxite	5,070	Chhattisgarh / Maharashtra	~ 500 Kms.	By road (through covered trucks)
f)	Electrode Paste	900	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
g)	Bagfilter dust	1,920	Own generation	---	---
3 (v)	*For Pig Iron – 50,400 TPA*				
a)	HG Iron ore	74,340	Barbil, Orissa NMDC,	~ 500 Kms.	By rail & road (through covered

			Chhattisgarh		trucks)
b)	LAM Coke	24,444	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Lime stone	6,300			
	Quartz	3,024	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	Electrode Paste	1,008	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
e)	Briquetted Bag filter dust	1,512	Own generation	---	---

1.4 MANUFACTURING PROCESS

1.4.1 Sponge Iron (DRI)

The proposal consists of 2 x 500 TPD to manufacture 3,30,000 TPAof Sponge Iron with 2x10MW 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.

1.4.2 Power Generation

Through WHRB Boiler

The hot flue gases from proposed 2 x 500 TPDDRI kilns will pass through waste heat recovery Boiler to recover the heat and to generate (2x10 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 2x10 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.

1.4.3 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. HG Iron ore will be used for manufacturing of Pig Iron.

1.4.4 Ferro Chrome Briquette Manufacturing Plant

Chromites ore Fines and concentrates cannot be charged directly into the smelting furnace, especially closed top submerged arc furnace for reason of safety and bad performances. The fines are therefore agglomerated for improving the smelting condition Various processes are available for agglomeration- sinter pellet, briquettes and chrome ore sinter, the first two process being most widely used. As explained in Figure below, the chrome ore fines received from mines are first dried in dryer. The dry ore is mixed with molasses, and the green mix is

then fed to the briquetting presses. The presses compact the mixture at high pressure to form green briquettes. The green briquettes are stored in the storage yard for curing. After curing at ambient temperature for 24- 48 hrs, the briquettes become stronger and are fed into Submerged Arc Furnaces.

1.4.5 Fly Ash Brick Manufacturing Unit

It is proposed to establish Fly Ash brick making unit of 30,000 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 1,230 KLD. This includes make up water for DRI Kilns, Ferro Alloys Unit, Power plant, Briquette unit, Brick manufacturing unit & for Domestic requirement.
- Water required for proposed project (for process and domestic) will be met from partly from Ground Water and partly from Kumhari Jalasay Jal Aawardhan Yojna (Samoda Barrage Mahanadi). A dedicated pipeline will be laid from the river to the project site.
- Application has been submitted to Water Resource Department, Govt. of Chhattisgarh for drawl of water from Kumhari Jalasay Jal Aawardhan Yojna (Samoda Barrage Mahanadi).
- Water drawl permission from Water Resource Department, Govt. of Chhattisgarh and NOC from CGWA will be obtained for proposed project.
- Air cooled condensers will be provided to FBC Power plant instead of water-cooledcondensers to reduce the water consumption significantly.

Table No.1.4: Water Requirement Breakup

S.No.	Unit	Quantity in KLD
1.	Make-up water for DRI plant	330
2.	Make-up water for Ferro Alloy plant	60
3.	Bricks manufacturing Unit	10
4.	Briquetting plant	10
5.	Captive Power Plant	800
	• Cooling Tower Make-up	385
	• Boiler make-up	289
	• D.M. plant regeneration water	126
6.	Domestic	20

S.No.	Unit	Quantity in KLD
	Total	**1230**

1.6 Wastewater Generation

- Total wastewater generated from the proposed project will be 323 KLD.
- There will be no wastewater discharge in DRI Kilns as closed-circuit cooling system will be adopted.
- Wastewater from Ferro Alloys, Power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Sanitary waste water will be treated in STP.
- Garland drains will be provided around all the raw material stacking areas
- Zero Liquid Discharge (ZLD) will be maintained in the proposed project.

Table No.1.5: BreakupofWastewater Generation

S.No.	Source	Generation (KLD)
1.	Ferro Alloys	4
2.	Power Plant	303
	a) Cooling Towerblowdown	96
	b) Boilers blowdown	81
	c) D.M. plant regeneration water	126
3.	Sanitary Wastewater	16
	Total	**323**

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 $PM_{2.5}$, PM_{10}, SO_2, NOx & CO at 8 stations including project site during ***1st December 2022 to 28th February 2023***. The following are the concentrations of various parameters at the monitoring stations:

Table No.2.1: AAQ Data Summary

S.No.	Parameter	Concentration range ($\mu g/m^3$)	Standard as per NAAQS ($\mu g/m^3$)
1.	$PM_{2.5}$	21.5 to 45.1	60
2.	PM_{10}	34.9 to 68.4	100
3.	SO_2	9.2 to 14.2	80
4.	NO_X	10.8 to 18.8	80
5.	CO	425 to 1350	2000

1.2.2 Water Quality

2.2.1 Surface Water Quality

4 no. of samples i.e. Jamuniya Nadi (60m Upstream & 60m Downstream), Mahanadi Batapara Branch Canal & Kirna Tank (Jalso Dam) have been collected and analyzed for various parameters. The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

2.2.2 Ground Water Quality

8 No. of ground water samples from open wells / bore wells were collected from the nearby villages to assess ground water quality impacts and analyzed for various Physico-Chemical parameters. The analysis of samples shows that all the parameters are in accordance with BIS: 10500 specifications.

2.3 Noise Levels

Noise levels were measured at 8 locations during day time&Night time. The equivalent **day-night** noise levels in the study zone are ranging from **46.1 dBA to 62.6 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.

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

Item	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	68.4	14.2	18.8	1350
Maximum predicted incremental rise in concentration due to proposed project (Point Sources)	0.16	1.57	0.85	---
Maximum predicted incremental rise in concentration due to proposed project (Vehicular emissions)	0.38	---	2.80	1.79
Net resultant concentrations during operation of the proposed project	**68.94**	**15.77**	**22.45**	**1351.79**
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.**4.19 Ha. (10.30 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

- There will be no wastewater discharge in DRI Kilns as closed-circuit cooling system will be adopted.
- Wastewater from Ferro Alloys, Power Plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Sanitary waste water will be treated in STP.
- Garland drains will be provided around all the raw material stacking areas
- Zero Liquid Discharge (ZLD) will be maintained in the proposed project.
- Garland drains will be constructed around the storage yards to prevent any run off from the storage yards entering into the water bodies.
- Rain water harvesting pits have been proposed to recharge the precious ground water in consultation with SGWB. The depth of ground water table will certainly increase due to Rain water harvesting measures.

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 **4.19 Ha. (10.30 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. 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 & Wastewater quality				
A.	Water quality in the area	Once in a month except for heavy metals which will be monitored on quarterly basis	Composite sampling (24 hourly)	As per IS: 10500
B.	Effluent at the outlet of the ETP	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Twice in a month	Grab sampling (24 hourly)	As per EPA 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 Quarterly Once	Continuous 24 hours	PM_{10}, SO_2& NOx $PM_{2.5}$, PM_{10}, SO_2, NOx & CO
C.	Fugitive emissions	Quarterly Once	8 hours	PM
3. Meteorological Data				
	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
	Ambient Noise levels	Quarterly Once	Continuous for 24 hours with 1 hour interval	Noise levels

5.0 ADDITIONAL STUDIES

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

6.0 PROJECT BENEFITS

With the establishment of the proposed project employment potential will increase. Land prices in the area will increase. The economic status of the people in the area will improve

due to the proposed project. Periodic medical checkups will be carried out. Top priority will be given to locals in employment.

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Environment

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

Table No.7.1: Air Emission Control Systems Proposed

S.No.	Source	Control Equipment	Emission at the outlet
1.	DRI Kilns with WHRB's	Electro Static Precipitators (ESP)	PM <30 mg/Nm^3
2.	Submerged Electric Arc Furnaces	4th Hole Fume Extraction system with bag filters	PM < 30 mg/Nm^3
3.	FBC Boiler	Electro Static Precipitators (ESP)	PM < 30 mg/Nm^3
		Lime dosing will 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
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

- There will be no wastewater discharge in DRI Kilns as closed-circuit cooling system will be adopted.
- Wastewater from Ferro Alloys, Power Plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Sanitary waste water will be treated in STP.
- Garland drains will be provided around all the raw material stacking areas
- Zero Liquid Discharge (ZLD) will be maintained in the proposed project.
- Garland drains will be constructed around the storage yards to prevent any run off from the storage yards entering into the water bodies.
- Rain water harvesting pits have been proposed to recharge the precious ground water in consultation with SGWB. The depth of ground water table will certainly increase due to Rain water harvesting measures.

EFFLUENT TREATMENT PLANT

pH of the boiler blowdown will be between 9.5 to 10.5. Hence a neutralization tank will be constructed for neutralizing the boiler blow down. DM plant regeneration water will be neutralized in a neutralization tank. After neutralization, these two effluent streams will be mixed with Cooling Tower blowdown in a Central Monitoring Basin (CMB). Service water will be treated in an oil separator and after treatment it will be taken to CMB. The treated effluent will be utilized for dust suppression, ash conditioning and for Greenbelt development. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented.

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 : 60 m^3/day

Effluent to be used for dust suppression in CHP : 42 m^3/day

Effluent to be used for Greenbelt development : 161 m^3/day

Effluent to be used for Floor Washing, Toilet cleaning & Flushing : 60 m^3/day

4.19 Ha. (10.30 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. The extensive greenbelt development proposed within the plant premises will help in attenuating the noise levels further. Noise barriers in the form of trees are recommended to be grown around administrative block and other utility units.

7.4 Land Environment

The wastewater generated from the proposed project will be treated in the Effluent Treatment Plant to comply with the SPCB standards and will be used for dust suppression, ash conditioning and for greenbelt development. All the required Air emission control

systems will be installed and operated to comply with SPCB norms. Solid wastes will be disposed off as per norms. Extensive greenbelt will be developed in the plant premises. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposed project.

Table No.7.2: Solid Waste Generation and Disposal

S.No.	Waste / By product	Quantity (TPA)	Proposed method of disposal
1.	Ash from DRI	59,400	Will be utilised in the proposed Brick Manufacturing Unit
2.	Dolochar	66,000	Will be used in proposed FBC power plant as fuel.
3.	Kiln Accretion Slag	2,970	Will be used in road construction & utilised in the proposed brick manufacturing unit.
4.	Wet scrapper sludge	13,200	Will be used in road construction & utilised in the proposed brick manufacturing unit within the premises.
5.	Ash from Power Plant (With Indian Coal + dolochar)	78,210	Will be utilized in the proposed brick manufacturing unit within the premises.
6.	Slag from FeMn	30,472	Will be reused in manufacture of SiMn as it contains high SiO_2 and Silicon.
7.	Slag from FeSi	3,371	Will be given to Cast iron foundries
8.	Slag from SiMn	25,654	will be used for Road construction / will be given to slag cement manufacturing
9.	Slag from FeCr	17,424	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.
10.	Slag from Pig Iron	21,672	will be given toslag cement manufacturing

7.5 Greenbelt Development

Greenbelt of **4.19 Ha. (10.30 Acres)** of extensive greenbelt will be developed in the plant premises. Width of proposed greenbelt ranges from 20m.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 40.08 Crores

Recurring Cost per annum for Environmental protection : Rs. 8.149 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.