SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

Vazron Industries Private Limited

[Greenfield project comprising of Establishment of 2 x 95 TPD DRI Kilns to manufacture 62,700 TPA of Sponge Iron, 5 x 12 T Induction Furnace to manufacture 1,98,000 TPA of MS Billets/Ingots/Hot Billets, 2 x 300 TPD of Rolling Mill to manufacture 1,92,000 TPA TMT Bars / Structural Steels / Rolled Products, 5.0 MW of WHRB based power plant & 15.0 MW FBC based power plant]

at

Chiraipani & Pali Villages, Gharghoda Tehsil,
Raigarh District, Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD
Chhattisgarh

1.0 PROJECT DESCRIPTION

Vazron Industries Pvt. Ltd. have proposed to establish a Steel plant, a Greenfield Project comprising of Establishment of 2 x 95 TPD DRI Kilns to manufacture 62,700 TPA of Sponge Iron, 5 x 12 T Induction Furnace to manufacture 1,98,000 TPA of MS Billets/Ingots/Hot Billets, 2 x 300 TPD of Rolling Mill to manufacture 1,92,000 TPA TMT Bars / Structural Steels / Rolled Products, 5.0 MW of WHRB based power plant & 15.0 MW FBC based power plant at Khasra Nos. 17, 19, 20/1, 20/2, 27, 29, 31/2, 31/3, 49/2, 49/3, 49/4, 49/5, 49/6, 49/7 of Chiraipani Village & 85 of Pali Village, Gharghoda Tehsil, Raigarh District, Chhattisgarh. Total land envisaged for the proposed project is 15.327 Ha. (37.87 acres).

As per the Ministry of Environment, Forest & Climate Change, New Delhi, EIA notification dated 14thSeptember, 2006 & its subsequent amendments, all the Sponge Iron units (< 200 TPD) &non –toxic secondary metallurgical processing industries are falling under Sl. No. 3 (a), classified as Category 'B' for the grant of Environmental Clearance at State Level.The State Expert Appraisal Committee (SEAC), Chhattisgarh has accorded Terms of Reference (TOR) for the proposed project vide letter no. 1949/SEAC, CG/Industry/ Raigarh/1421 dt. 04.02.2021 and Amendment in TOR letter vide no. 697/SEAC-CG/Industry/Raigarh/1421 dt. 28.06.2021.

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India,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 10km 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 projectalong 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:

Table No. 1.1: ENVIRONMENTAL FEATURES WITHIN 10 KM. RADIUS OF PLANT

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Present land use is agricultural land and same will be converted for Industrial Purpose.
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements – 3.8 %; Industrial Area – 8.2 %; Tank / River / Reservoir etc. – 7.3 %; Scrub Forest / Dense Forest – 41.1 %; Single crop – 19.4 %; Double crop – 5.4 %; Land with scrub – 11.1 %; Land without scrub – 2.2 %; Mining area – 1.1 %, Ash Pond – 0.4 %.
3.	National Park/ Wild life 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 route for Birds with in 10 Km. radius of the plant. However, movement of Elephants is observed within 10 Kms. radius of the plant, as per the secondary source. Conservation plan has been prepared.
4.	Historical places / Places of Tourist importance / Archeological sites	Banjari Mata temple is situated at a distance of 5.6 Kms. from the plant.
5.	Industrial areas / cluster as per MoEF&CC Office Memorandum dated 13thJanuary 2010 and its subsequent amendments and NGT order vide dt. 10th July 2019	Nil
6.	Defence Installations	Nil
7.	Nearest village	Chiraipani Village – 0.7 Kms.
8.	No. of Villages in the Study Area	52
9.	Nearest Hospital	PHC is near to the Gerwani (0.7 Kms.)
10.	Reserved Forests & Protected Forests	*Reserve Forests:* Urdana RF (0.15 Kms.), Taraimal RF (3.0 Kms.), Rabo RF (5.2 Kms), Barkachhar RF (2.7 Kms.) *Protected Forests:* Lakha PF (1.5 Kms.), Dungapani PF (3.3 Kms.), Kharidungri PF (3.6 Kms.), Barila PF (5.6 Kms.), Junwani Pf (7.1 Kms.), Chirwani PF (6.6 Kms.), Keradungri PF (5.3 Kms.), Punjipathra PF (6.7 Kms.), Pajhar PF (9.5 Kms.) etc. are exists within the study area.

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
11.	Water body	Kelo river (2.2 Kms.), Kokritarai Pond near Kirodimal (5.0 Kms.) & Gerwani Nala (3.0 Kms.) & Few seasonal nalas, ponds exists within the study area. No River / Stream passes through the proposed project site.
12.	Nearest Highway	Raigarh – Ambikapur State Highway – 1.3 Kms.
13.	Nearest Railway Station	Nil (Kirodimal RS – 20.0 Kms. By Road)
14.	Nearest Port facility	Nil
15.	Nearest Airport	Nil Jindal Air strip – 5.0 Kms. (Aerial)
16.	Nearest Interstate Boundary	No interstate boundary within 10 Km radius of the plant site.
17.	Seismic zone as per IS-1893	Seismic zone – II
18.	R & R	Not applicable, as no habitation exists in the project site.
19.	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

Following is list of industries (Major) presently located (outside O.P. Jindal Industrial Park) within 10 Km radius of the site:

Table No.1.2 – List of Industries within 10 Kms. radius of the project site

S.No.	Name of Industry	Type of Industry
1.	M/s. Salasar Steel & Power Ltd.	Steel Plant
2.	M/s. Sunil Sponge Iron Ltd.	Steel Plant
3.	M/s. Maa Kali Alloys Udyog Pvt. Ltd.	Steel Plant
4.	M/s. B.S. Sponge Pvt. Ltd.	Steel Plant
5.	M/s. Shree Ambika Sponge Pvt. Ltd.	Steel Plant
6.	M/s. Singhal Energy Ltd.	Steel Plant
7.	M/s. Singhal Enterprises Pvt. Ltd.	Steel Plant
8.	M/s. Scania Steels & Powers Ltd.	Steel Plant
9.	M/s. Raigarh Ispat & Power Pvt. Ltd.	Steel Plant
10.	M/s. Nav Durga Fuel Pvt Ltd	Steel Plant
11.	M/s. Seleno Steels	Steel Plant
12.	M/s. N R Ispat Pvt. Ltd.	Steel Plant
13.	M/s. Nalwa Steel and Power Ltd.	Steel Plant
14.	M/s. Anjali Steels Ltd.	Steel Plant
15.	M/s. Jindal Steel and Power Ltd.	Steel Plant
16.	M/s. Agroha Iron & Steel	Steel Plant
17.	M/s. Shambhavi Ispat	Steel Plant

18.	O.P. Jindal Industrial Park, Punjipathra	Industrial Park

1.2 Plant Configuration and Production Capacity

Following is plant configuration and production capacity proposed now

Table No.1.3 – Plant Configuration& Production Capacity

S.No.	Unit & Product		Plant Configuration (Production Capacity)
1.	DRI plants (Sponge Iron)		2 x 95 TPD (62,700 TPA)
2.	Induction Furnaces (MS Billets / MS Ingots)		5 x 12 T (1,98,000 TPA)
3.	Rolling Mill (TMT Bars / Structural Steels / Rolled Products)		2 x 300 TPD (1,92,000 TPA)
4.	Power plant (20 MW)	WHRB based (2 x 12 TPH)	5.0 MW
		FBC based (1 x 72 TPH)	5.0 MW

1.3 Raw Materials

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

Table No.1.4 – Raw Material requirement

S.No.	Raw Material		Quantity (in TPA)	Sources	Distance (w.r.t. to Project Site)	Mode of Transport
1.	**For DRI Kilns (Sponge Iron)– 62,700 TPA**					
a)	Iron ore		100320	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
b)	Coal	Indian	81510	SECL, Chhattisgarh /MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
		Imported	56430	Indonesia / South Africa / Australia	600 Kms. (from Vizag Port)	Through sea route, rail route & by road
c)	Dolomite		3135	Raigarh	~ 50 Kms.	By road (through covered trucks)
2.	**For Induction Furnace (MS Billets) - 1,98,000 TPA**					
a)	Sponge Iron		1,65,000	Own generation & Purchased from Raigarh	~ 50 Kms.	----- By Road (through covered trucks)

S.No.	Raw Material		Quantity (in TPA)	Sources	Distance (w.r.t. to Project Site)	Mode of Transport
b)	Scrap		70,000	Raigarh	~ 50 Kms.	By road (through covered trucks)
c)	Ferro Alloys		3,000	Raigarh	~ 50 Kms.	By road (through covered trucks)
3.	**For Rolling Mill (TMT bars & Structural Steel) – 1,92,000 TPA**					
a)	Hot Billets/MS Billets / Ingots		2,03,500	Own generation & Purchased from Raigarh	~ 50 Kms.	----- By Road (through covered trucks)
b)	LDO		9600 KL	Nearby HPCL / IOCL depots	~ 50 Kms.	Tankers
c)	Coal for Gasifier (Producer Gas – 11500 NM^3/Hr)	Indian	38400	SECL, Chhattisgarh /MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
		Imported	24600	Indonesia / South Africa / Australia	500 Kms. (from Vizag Port)	Through sea route, rail route & by road
4.	**For FBC Boiler [Power Generation 15.0 MW]**					
a)	Indian Coal (100 %)		1,06,920	SECL, Chhattisgarh /MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
	OR					
b)	Imported Coal (100%)		68,536	Indonesia / South Africa / Australia	600 Kms. (from Vizag Port)	Through sea route / rail route / by road
	OR					
c)	Dolochar + Indian Coal	Dolochar	18,180	In plant generation	---	through covered conveyors
		Indian Coal	97,515	SECL, Chhattisgarh /MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
	OR					
d)	Dolochar + Imported Coal	Dolochar	18,180	In plant generation	---	through covered conveyors
		Imported	59,131	Indonesia / South Africa / Australia	600 Kms. (from Vizag Port)	Through sea route / rail route / by road

1.4 Manufacturing Process

1.4.1Sponge Iron (DRI)

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 Steel Melting Shop

In Steel Melting Shop (SMS), Sponge Iron will be melted along with melting scrap and fluxes to make pure liquid steel and then to mould it in required size billets. The SMS will consist ofInduction furnace, Ladles, Cranes & Continuous Casting Machine (CCM).There will be 5 nos. of Induction Furnaces in the SMS plant, each of 12T capacity. HotBillets will be produced in Continuous Casting Machine.

1.4.3 Rolling Mill

In the proposed project, there will 2 x300 TPD reheating furnaces is proposed for the heating of billets. Furnace will be heated with Producer Gas / LDO. A bar and round mill will be installed in the plant to produce 2 x 300 TPD of TMT bars/ Structural steel.

1.4.4 Power Generation

1.4.4.1 Through WHRB Boiler

The hot flue gases from DRI kiln will pass through waste heat recovery Boiler to recover the heat and to generate 2 x 2.5 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.

1.4.4.2 THROUGH FBC BOILER

Coal (Imported / Indian) and dolochar will be used in FBC Boilers to generate 15.0 MW electricity. The flue-gases will be treated in high efficiency ESP and then discharged through stack into the atmosphere.

1.5 Water Requirement

Water required for the proposed project will be 655 KLD and will be sourced through Ground water resources. This includes Make-up water for DRI Kilns, Induction Furnaces, Rolling Mill & Power Plant. Air cooled condensers will be provided for power plant to reduce the water requirement. Application has been submitted to CGWA for NOC for drawl of Ground water.

The following is the break-up of the water requirement for proposed project.

Table 1.5 – Water requirement break up

S.No.	Unit	Water Requirement (in KLD)
1.	DRI Kilns	50
2.	Induction Furnaces	72
3.	Rolling Mill	115
4.	Coal Gasifier	10
5.	Power Plant	400
	• Cooling tower makeup	192
	• Boiler makeup	144

	• DM plant regeneration	64
6.	Domestic	10
	Total	**655**

1.6 Waste Water Generation and its management

- There will be no effluent discharge from the DRI plant, SMS, Binding wire unit &Wire drawing mill as closed-circuit cooling system will be adopted.
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Effluent from Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system.
- Effluent from Gasifier will have mainly phenolic compounds and will be used in After Burning Chamber of DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery boiler.
- Effluent from power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary waste water will be treated in STP.

The following will be the total wastewater & it's break-up.

Table No.1.6 – Breakup of Wastewater Generation

S.No.	Wastewater Source	Generation (KLD)
1.	From DRI kiln	---
2.	From Steel melting shop	---
3.	From Rolling mill	---
4.	From Gasifier	2.0
5.	From Power Plant	153.0
	a) Cooling Tower blowdown	48.0
	b) Boilers blowdown	41.0
	c) D.M plantregeneration water	64.0
6.	Sanitary Wastewater	8.0
	Total	**163.0**

1.7 Wastewater Characteristics

Table No.1.7 - Characteristics of Waste Water

S.No.	PARAMETER	CONCENTRATION		
		R O Rejects	DM Plant Regeneration	Sanitary waste water

1.	pH	7.5 – 8.0	5.0 – 10.0	7.0 – 8.5
2.	BOD (mg/l)	--	--	200 – 250
3.	COD (mg/l)	--	--	300 – 400
4.	TDS (mg/l)	600	5000 – 6000	800 – 900
5.	Oil & Grease (mg/l)	--	10	--
6.	SS (mg/l)	350	--	--

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 December 2020 to February 2021. The following are the concentrations of various parameters at the monitoring stations:

Table No.2.1 - Range of Concentration of various parameters

Parameter		Concentration
$PM_{2.5}$	:	25.9 to 45.7 mg/m^3
PM_{10}	:	44.6 to 77.4 mg/m^3
SO_2	:	10.1 to 19.7 mg/m^3
NO_X	:	11.2 to 38.8 mg/m^3
CO	:	428 to 1438 mg/m^3

2.2 Water Quality

2.2.1 Surface Water Quality

Kelo river (2.2 Kms.), Kokritarai Pond near Kirodimal (5.0 Kms.) & Gerwani Nala (3.0 Kms.) are present within the study area. 2 no. of surface water samples from Kelo River i.e. 60 m Uptream (SW1) & 60 m Down Stream& 1 no. of Sample fromGerwani Nala, 1 no. of Sample from Kokritarai Pond near Kirodimal have been collected and analyzed for various parameters. No other surface water samples have been collected as the study period. 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 impactsand analyzed for various Physico-Chemical

parameters. The analysis of samples shows that all the parameters are in accordance withBIS: 10500specifications.

2.3 Noise Levels

Noise levels were measured at 8 locations during day time & Night time. The noise levels at the monitoring stations are ranging from **46.38 dBA to 53.82 dBA.**

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Prediction of impacts on air quality

The likely emissions from the proposed project are PM_{10}, SO_2, NOx& CO. The predictions of Ground level concentrations have been carried out using Industrial Source Complex (ISC-3) model. Meteorological data such as wind direction, wind speed, max. and min. temperatures collected at the site have been used as input data to run the model.

The predicted max. Incremental PM_{10} concentrations (24 hourly) due to the emissions from operation of proposed project will be **0.97µg/m^3** at a distance of 900 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in PM concentration due to the Vehicular emission will be **0.18µg/m^3**.

Hence the total predicted incremental rise due to the emissions from operation of proposed project and due the vehicular emission will be **0.97µg/m^3 + 0.18µg/m^3 = 1.15µg/m^3.**

The predicted max incremental SO_2 concentrations (24 hourly) due to the emissions from operation of proposed project will be **3.58µg/m^3** at a distance of 900 m from the stack in the down wind direction over the baseline concentrations.

The predicted max incremental NOx concentrations (24 hourly) due to the emissions from operation of proposed project will be **5.34µg/m^3** at a distance of 900 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in NOx concentration due to the Vehicular emission will be **1.49 µg/m^3**.

Hence the total predicted incremental rise due to the emissions from operation of proposed project and due the vehicular emission will be**5.34µg/m^3 + 1.49µg/m^3 = 6.83µg/m^3**

The predicted incremental rise in CO concentration due to the Vehicular emission will be **1.03µg/m^3**.

Table No.3.1 : NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO PROPOSED PROJECT

Item	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	77.4	19.7	38.8	1438
Maximum predicted incremental rise in concentration due to **VIPL**	0.97	3.58	5.34	--
Maximum predicted incremental rise in concentration due to **Vehicular Emissions from the proposed project**	0.18	--	1.49	1.03
Net resultant concentrations during operation of the plant	**78.55**	**23.28**	**45.63**	**1,439.03**
National Ambient Air Quality Standards	**100**	**80**	**80**	**2000**

3.2 Prediction of impacts on Noise quality

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosures will be provided to the STG. The ambient noise levels will be within the standards prescribed by MoEF vide notification dated 14-02-2000 under the Noise Pollution (Regulation & Control), Rules 2000 i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. **5.058 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

There will be no effluent discharge from theDRI plant&Induction Furnaceas closed circuit cooling system will be adopted. Effluent from power plant will be treated and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development. Effluent from Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system. Mill scales will be reused in SMS.Effluent from Gasifier will have mainly phenolic compounds and will be used in After Burning Chamber of proposed DRI kilns for quenching and to regulate the temperature of the hot

flue gas in accordance with inlet requirement of waste heat recovery Boiler Sanitary waste water will be treated in STP. Hence there will not be any adverse impact on environment due to the proposed project.

3.4 Prediction of Impacts on Land Environment

The effluent will be treated to achieve SPCB standards. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB/SPCB norms. All solid wastes will be disposed / utilized as per CPCB/SPCB norms. 9.106 Ha.of 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 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 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	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.	Sanitary waste water	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (WHRB &FBC boiler stacks)	---	PM

		Once in a month		PM,SO_2& NOx
B.	Ambient Air quality (CAAQMS)	Continuous	Continuous	$PM_{2.5}$, PM_{10}, SO_2& NOx
C.	Fugitive emissions	Once in a Month	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	Twice in a year	Continuous for 24 hours with 1-hour interval	Noise levels

5.0 ADDITIONAL STUDIES

No Rehabilitation and Resettlement is involved in the proposed project. 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 System

S.No.	Source	Stack Height	Control Equipment	Particulate emission at the outlet
1.	DRI kilns with WHRB's	57 (1 no.)	Electro Static Precipitators (ESP)	<30 mg/Nm^3
2.	Induction Furnaces with CCM	30 (combined stack with twin flues)	Fume Extraction system with bag filters	<30 mg/Nm^3
3.	FBC Boiler	61 (1 no.)	Electro Static Precipitator (ESP)	< 30 mg/Nm^3
4.	Rolling Mill	44 (1 no.)	---	<30 mg/Nm^3

Note : Apart from the above Fume extraction system with bagfilters, dust suppression system, covered conveyers etc. will also be installed

The following air pollution 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.
- The flue gases from the DRI kiln will pass through Waste Heat Recovery Boiler and after heat recovery the gases will be treated in High efficiency ESP to bring down the particulate emission in the exhaust gases to below 30 mg/Nm^3 and then discharged into the atmosphere througha stack of 57 m height.
- The Fugitive emissions from the Induction furnaces will be sucked through hoods and will pass through a fume extraction system with bag filters and then the treated gases will be discharged into the atmosphere through a combined stack with twin flues, each of 30 m height will be provided to 2 x 12 T Induction Furnaces and a stack of 30 m height will provided to 1 x 12 T Induction Furnace for effective dispersion of emissions from Induction Furnaces. The outlet dust emission in the exhaust gases will be less than 30 mg/Nm^3. The dust will be pneumatically carried to covered bins.
- The flue gases will be discharged into the atmosphere through a stack of 44 m height for effective dispersion of emissions from Rolling Mill.
- The flue gases from the FBC boiler will be treated in a high efficiency Electrostatic Precipitator to bring down the particulate emission to less than 30 mg/Nm^3 and will be discharged through a stack of 61 m height for effective dispersion of emissions into the atmosphere.

7.2 Water Environment

- There will be no effluent discharge from the DRI plant&SMSas closed-circuit cooling system will be adopted.

- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Effluent from Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system.
- Effluent from Gasifier will have mainly phenolic compounds and will be used in After Burning Chamber of DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery boiler.
- Effluent from power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary waste water will be treated in STP.

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).The treated effluent will be utilized for dust suppression, ash conditioning and for Green belt development. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented. Sanitary waste water will be treated inSTP.

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 waste water generated from the proposed project will be treated in the Effluent Treatment Plant to comply with the SPCB standards and will be used for dust

suppression,ash conditioning and for greenbelt development. All the required Air emission control systems will be installed and operated to comply with SPCB norms. Solid wastes will be disposed off as per norms. Extensive greenbelt will be developed in the plant premises. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposedproject.

Table 7.2 - Solid waste generation and its management

S.No.	Waste	Quantity (TPA)	Proposed method of disposal
1.	Ash from DRI	11,286	Will be given to Cement Plants & Brick manufacturers.
2.	Dolochar	18,810	Will be used in FBC power plant as fuel.
3.	Kiln Accretion Slag	564	Will be used in road construction & given to brick manufacturers.
4.	Wet scrapper sludge	2,884	Will be used in road construction & given to brick manufacturer.
5.	SMS Slag	19,800	Slag from SMS will be crushed and iron will be recovered & then remaining non -magnetic material being inert by nature will be used as sub base material in road construction.
6.	End Cuttings from Rolling Mill	7296	Will be reused in the SMS
7.	Mill scales from Rolling Mill	2304	Mill scales will be given to nearby Ferro alloys manufacturing units or casting units.
8.	Ash from Power Plant (with Indian Coal + dolochar)	55,168	Ash generated is being given to Cement Plants / Brick Manufacturers.
9.	Ash from Power Plant (with imported Coal + dolochar)	17,199	Ash generated is being given to Cement Plants / Brick Manufacturers.

7.5 Greenbelt Development

5.058 Ha. of land is earmarked for greenbelt development in the proposed project. 15 m wide greenbelt will be developed all around the plant.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 7.0 Crores

Recurring Cost per annum for Environmental protection : Rs.1.2 Crores

7.7 Implementation of CREP Recommendations

All the CREP recommendations will be strictly followed.