SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

of

MR Integrated Steels Pvt. Ltd.

[Establishment of Greenfield steel plant comprising of DRI Kilns (Sponge Iron - 1,75,200 TPA), Induction Furnaces with matching CCM (90 % Hot Billets remaining 10% Billets – 1,65,600 TPA), Rolling Mills (TMT bars / Structural Steel) (Hot charging with Hot Billets and Billets through RHF with Producer gas as fuel – 2,07,000 TPA), Coal Gasifier – 4000 Nm^3/hr, Ferro Alloy Unit 1 x 9 MVA& 1 x 7.5 MVA (FeSi – 12,800 TPA/ FeMn – 36,600 TPA/ SiMn – 25,600 TPA/FeCr – 27,000 TPA/ Pig Iron - 44,000 TPA), Briquetting Plant (200 Kg/Hr.), WHRB based Power Plant – 2 x 5 MW, FBC based Power Plant – 1 x 5 MW & Brick Manufacturing unit (20,000 Bricks / Day)]

Category – A Project
[Under Schedule S.No.-3(a) Metallurgical Industries (ferrous and non ferrous),1(d) Thermal Power Plants)]

at

Konka&Rounda Villages, Dhamdha Tehsil, Durg District, Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENTCONSERVATION BOARD

1.0 PROJECT DESCRIPTION

MR Integrated Steels Pvt. Ltd. is proposing to Establishment of Greenfield steel plant comprising of DRI Kilns (Sponge Iron - 1,75,200 TPA), Induction Furnaces with matching CCM (90 % Hot Billets remaining 10% Billets – 1,65,600 TPA), Rolling Mills (TMT bars / Structural Steel) (Hot charging with Hot Billets and Billets through RHF with Producer gas as fuel – 2,07,000 TPA), Coal Gasifier – 4000 Nm^3/Hr., Ferro Alloy Unit 1 x 9 MVA& 1 x 7.5 MVA (FeSi – 12,800 TPA/ FeMn – 36,600 TPA/ SiMn – 25,600 TPA/FeCr – 27,000 TPA/ Pig Iron - 44,000 TPA), Briquetting Plant (200 Kg/Hr.), WHRB based Power Plant – 2 x 5 MW, FBC based Power Plant – 1 x 5 MW & Brick Manufacturing unit (20,000 Bricks / Day)at Khasra no. 214, 215, 216, 217, 218, 219/1 of Konka village &Khasra no. 525, 526 of Rounda Village, Dhamdha Tehsil, Durg District, Chhattisgarh.

Total land identified for the proposed project is **15.36 Ha.** The land earmarked for the proposedprojectis PrivateLand(Agricultureland).

The estimated project cost for the proposed project is **Rs. 340Crores.**

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), under Category 'A'.The Ministry of Environment, Forests & Climate Change, New Delhi has accorded Terms of Reference (TOR) for the proposed projectvide letter no.**F.No.IA-J-11011/228/2024-IA-II(IND-I),** dated **10th August 2024**. The EIA report has been prepared incorporating the Terms of Reference stipulated by the Hon'bleEAC.

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 (Agricultural land)
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements / Solar plant – 5.6 %; Industrial area - 1.1 %; Tanks / River etc. – 7.1 %; Single crop – 67.3 %; Double crop – 7.8 %; Plantation - 2.8 %; Land with scrub – 4.3 %; Land without scrub - 2.6 %; Mining area –1.4%
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	Nil And also the Plant area does not fall in the areas given in Hon'bleNGT order issued vide dated 10thJuly 2019.
6.	Defence Installations	Nil
7.	Nearest village	Nawagoan- 0.9Kms.(Ndirection)
8.	No. of Villages in the Study Area	60
9.	Nearest Hospital	PHC,Nawagoan–0.85 Kms.(Ndirection)
10.	Nearest School	Govt.PrimarySchool,Nawagoan–0.85Kms.(N direction)
11.	Forests	No Forest in the 10 Kms Study area
12.	Water body	Konka Village Pond – 0.03 Kms. (SE direction)MotiNala -2.0(E) KulhuriNala -7.0Kms (S) AmnerRiver-7.10kms(S)
13.	Nearest Highway	Khairagarh–DhamdaMajorDistrictRoad(MDR)–0.7Kms.SouthDirection(ByRoad),whichconnectt oSH#7–16.0Kms.Easth Direction (ByRoad)
14.	Nearest Railway Station	DurgRailwayStation48.0Kms.SouthDirection (ByRoad)

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
15.	Nearest Port facility	Nilwithin10 Km. Radius.
16.	Nearest Airport	BhilaiAirport–28.0Kms.
17.	Nearest Interstate Boundary	Nil within 10 Km. 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)		PlantConfiguration	ProductionCapacity
1.	DRI Kilns(SpongeI ron)		2 x250 TPD	1,75,200TPA
2.	InductionFurnaceswithCCM (90%HotBilletsremaining10%Billets)		4 x12 T	1,65,600TPA
3.	Rolling mill (TMTbars/StructuralSteel) (HotchargingwithHotBilletsandBilletst hroughRHFwithGasifierasfuel)		1 x600 TPD	2,07,000TPA
4.	GasifierforReheatingFurnace		1 x4000NM^3/Hr.	1 x 4000NM^3/Hr.
5.	FerroAlloysUnit (FeSi/FeMn/SiMn/FeCr/ PigIron)		1 x9 MVA & 1x7.5MVA	FeSi– 12,800TPA/FeMn – 36,600 TPA /SiMn– 25,600 TPA/ FeCr - 27,000 TPA /PigIron-44,000TPA
6.	BrickManufacturingUnit		20,000 Brick/ day	20,000 Brick/ day
7.	BriquettingPlant		200Kg./Hr.	200Kg./Hr.
8.	PowerPlant (15 MW)	WHRBPowerPlant	2 x5 MW	10MW
		FBCPowerPlant	1 x5 MW	5MW

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

S.No.	Raw Material		Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
1.	**For DRI Kilns (Sponge Iron) – 1,75, 200 TPA**					
a)	Pellets		2,54,040	Odisha & Chhattisgarh	~ 500	By rail & road (through covered trucks)
	(or)					
b)	Iron Ore		2,80,320	Barbil, Orissa NMDC, Chhattisgarh	~ 500	By rail & road (through covered trucks)
c)	Coal	Indian	2,27,760	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (through covered trucks)
		Imported	1,45,766	Indonesia / South Africa / Australia	~ 600	Through vessel, rail & by road (Covered trucks)
d)	Dolomite		8,760	Chhattisgarh	~ 150	By road (through covered trucks)
2.	**For Steel Melting Shop (90% Hot Billets remaining 10 % Billets) – 1,65,600 TPA**					
a)	Sponge Iron		1,62,000	Own generation	---	Through covered conveyers
b)	MS Scrap / Pig Iron		35,000	Own generation & Purchased from outside	~ 100	By road (through covered trucks)
c)	Ferro alloys		3,000	Own generation	---	By road (through covered trucks)
3.	**For Rolling Mill through Hot charging (Rolled Products) – 2,07,000 TPA**					
a)	Hot Billets		1,49,040	Own generation	---	----
b)	Billets (for Reheating furnace)		71,170	Own generation & Purchased from outside	--- ~ 100 Kms.	By road (through covered trucks)
c)	LDO / LSHS		1880 Kl/annum	Nearby IOCL Depot	~ 100	By road (through Tankers)
d)	Gasifier (4000 Nm^3/hr)	Indian Coal	12,800	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)

S.No.	Raw Material		Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
		Imported Coal	8,200	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
4.	**For FBC Boiler [Power Generation 5.0 MW]**					
a)	Indian Coal (100 %)		29,700	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (through covered trucks)
	OR					
b)	Imported Coal (100 %)		20,000	Indonesia / South Africa / Australia	~ 600 (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
	OR					
c)	Dolochar + Indian Coal	Dolochar	35,040	In plant generation	---	through covered conveyors
		Indian Coal	12,180	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (through covered trucks)
	OR					
d)	Dolochar + Imported Coal	Dolochar	35,040	In plant generation	---	through covered conveyors
		Imported Coal	1,488	Indonesia / South Africa / Australia	~ 600 (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
5.	**For Ferro Alloys (1 x 9 MVA& 1 x 7.5 MVA)**					
5 (i)	For Ferro Silicon – 12,800 TPA					
a)	Quartz		28,160	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
b)	Coke		19,840	Andhra Pradesh	~ 500	By road (through covered trucks)
c)	Mill scales & MS Scrap		5,760	Inhouse Generation	---	By road (through covered trucks)
d)	Electrode paste		1,280	Maharashtra / West Bengal	~ 300	By road (through covered trucks)

S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
e)	Briquetted Bagfilter dust	896	Own generation	---	---
5 (ii)	For Ferro Manganese – 36,600 TPA				
a)	Manganese Ore	87,840	MOIL / OMC	~ 500	By Rail & Road (throughcovered trucks)
b)	Coke	10,980	Andhra Pradesh	~ 500	By road (through covered trucks)
c)	MS Scrap / Mill scales	7,320	Inhouse Generation	---	By road (through covered trucks)
d)	Electrode Paste	805	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
5 (iii)	For Silico Manganese –25,600 TPA				
a)	Manganese Ore	51,200	MOIL / OMC	~ 500	By Rail & Road (throughcovered trucks)
b)	FeMn Slag	11,520	Own generation	---	---
c)	Coke	7,680	Andhra Pradesh	~ 500	By road (through covered trucks)
d)	Dolomite	7,680	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
e)	Electrode paste	512	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
f)	Quartz	8,960	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
g)	Briquetted Bagfilter dust	384	Own generation	---	---
5(iv)	For Ferro Chrome – 27,000 TPA				
a)	Chrome Ore	64,800	Sukinda, Odisha Imported	~ 500 ~ 600 (from Vizag Port)	By road (through covered trucks) From Port By Road (through covered Trucks)
b)	Coke	13,500	Andhra Pradesh	~ 500	By road (through covered

S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
					trucks)
c)	Quartz	1,647	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
d)	MS Scrap / Mill Scale	4,050	InhouseGeneration	---	By road (through covered trucks)
e)	Bauxite	4,050	Chhattisgarh / Maharashtra	~ 500	By road (through covered trucks)
f)	Electrode Paste	540	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
g)	Briquetted Bagfilter dust	540	Own generation	---	---
5 (v) For Pig Iron –44,000 TPA					
a)	Iron ore	48,180	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
b)	Coke	27,632	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Lime stone	6,600	Chhattisgarh	~ 100 Kms.	By road (through covered trucks)
d)	Dolomite	6,600	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
e)	Mill Scale	28,600	Inhouse Generation	---	By road (through covered trucks)
f)	Fluorspar	1,100	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)

1.4 MANUFACTURING PROCESS

1.4.1Sponge Iron (DRI)

The Direct Reduced Iron (DRI) plant will comprise of 2 x 250 TPDto manufacture 1,75,200TPAof Sponge Iron with 2 x 5 MW (10 MW) Waste Heat Recovery power generating unit.

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 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 be4 x 12 Induction Furnaces with matching CCM (90 % Hot Billets remaining 10% Billets – 1,65,600TPA).

Electric Steel Making through Melting in Induction Furnace (IF), secondary refining in a Ladle Furnace (LF) in a Continuous Casting Machine has been selected as the process route of converting the charge mix of Sponge Iron and Scrap to Slabs required for the Rolling Mill by Hot charging method.

Provision shall be made in the Caster to produce billets also in case of market demand. The proposed process is well established and is most environment friendly and energy efficient. The Slabs from the Caster shall be hot charged to the Rolling Mill without reheating furnace to reduce fuel consumption. Provision has been made for reheating furnace with furnace oil which shall be used in case of emergency.

The flue gases will be treated in fume extraction system with bag filters.

1.4.3 Rolling Mill (Strip Mill)

The Hot Billets produced from Induction Furnaces will be directly sent to Rolling Mill to produce Rolled Products (OR) Hot Billetswill be cooled and stored will be sent to reheating furnaces for the heating and will be sent to Rolling Mill.Furnace will be heated with either LDO / Producer Gas. Reheating furnace to produce of1 x 600 TPDof TMT bars / Structural Steel (Hot charging with Hot Billets and Billets through RHF with Gasifier as fuel – 2,07,000 TPA), Coal Gasifier – 4000 NM^3 /Hr.

1.4.4 Submerged Electric Arc Furnace

Submerged Electric Arc Furnace(1 x 9 MVA&1x 7.5 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 4^{th}hole and then treated in bag filters.

1.4.5 Power Generation

Through WHRB Boiler

The hot flue gases from proposed **2 x 250 TPD**DRI kilns will pass through waste heat recovery Boiler to recover the heat and to generate (**2 x 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 through stacks of adequate height.

Through FBC Boiler

Coal (Imported / Indian) along with dolochar will be used as fuel in FBC Boilers to generate 1x 5MWofelectricity. The flue-gases will be treated in high efficiency ESP and then discharged through a stack of adequate height into the atmosphere.

1.4.6 Fly Ash Brick Manufacturing Unit

It is proposed to establish Fly Ash brick making unit of 20,000 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 **650 KLD**. This includes make up water for DRI Kilns, Induction Furnaces, Rolling Mill, Ferro Alloys Unit, Brick manufacturing unit & for Domestic requirement.
- Water required for proposed project (for process and domestic) will sourced from Ground water source (490KLD) and Water Reservoir proposed within the site premises (160KLD).
- NOC for drawl of ground water will be obtained from CGWA.
- Air cooled condensers will be provided to FBC Power plant instead of water cooled condenser storeduce the water consumption significantly.

Table No.1.4: Water Requirement Breakup

S.No.	Unit	Quantity in KLD
1.	DRI plant	120
2.	SMS plant	90
3.	Rolling Mill	120
4.	Gasifier	10
5.	Ferro Alloy plant	50
6.	Captive Power Plant	220
	• Cooling Tower Make-up	106
	• Boiler make-up	79
	• D.M. plant regeneration water	35
7.	Bricks manufacturing Unit	10
8.	Briquetting plant	10

S.No.	Unit	Quantity in KLD
9.	Domestic	20
	Total	**650**

1.6 Wastewater Generation

- Total wastewater generated from the proposed project will be 126KLD.
- There will be no wastewater discharge in DRI Kilns as closed circuit cooling system will be adopted.
- Wastewater from Induction Furnace, Rolling Mill, 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.
- Effluent from Gasifier will be reused ABC chamber in DRI Kiln.
- Wastewater from Rolling Mill will be treated in oil separator followed by settling tank and will be recycled through closed circuit cooling system.
- 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.
- RO rejects will be utilised for Flushing in Toilets, Cleaning of Toilets, Floor washings, etc.
- Sanitary waste water will be treated in STP and will be utilized for greenbelt development.
- Garland drains will be provided around all the raw material stacking areas
- During monsoon the treated effluent will be utilized as makeup water in Rolling Mill. Accordingly, the makeup water for Rolling mill also reduces during the rainy period.
- Zero Liquid Discharge (ZLD) will be maintained in the proposed project.

TableNo.1.5: BreakupofWastewater Generation

S.No.	Source	Generation(KLD)
1.	DRI	---
2.	InductionFurnace	9
3.	RollingMill	6
4.	Gasifier	8
5.	FerroAlloys	4
6.	PowerPlant	83
	a)CoolingTower blowdown	26
	b)Boilersblowdown	22
	c)D.M.plantregenerationwater	35
7.	SanitaryWastewater	16
	Total	**126**

1.7 Wastewater Characteristics

The following are the Characteristics of wastewater.

TableNo.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 March 2024 to 31st May 2024**. 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.	$PM_{2.5}$	25.3 to 36.8	60
2.	PM_{10}	41.9 to 62.4	100
3.	SO_2	7.2 to 14.1	80
4.	NO_X	10.5 to 21.4	80
5.	CO	449 to 1070	2000

2.2 Water Quality

2.2.1 Surface Water Quality

Konka Village Pond – 0.03 Kms. (SE direction) Moti Nala - 2.0 (E), KulhuriNala - 7.0 Kms (S), Amner River - 7.10 kms(S) are present within study area.

4 no. of samples i.e. from (60 m upstream & downstream of Amner River) and Konka Village Pond & Moti Nala, 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 **44.97 dBA to 53.72 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

Item	$PM_{2.5}$($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_X ($\mu g/m^3$)	CO ($\mu g/m^3$)
Maximum baseline conc. in the study area	36.8	62.4	14.1	21.4	1070
Maximum predicted incremental rise in concentration due to proposed project **(Point Sources)**	0.73	1.29	5.08	7.9	0.29
Maximum predicted incremental rise in concentration due to proposed project **(Vehicular emissions)**	0.16	0.26	---	1.97	1.28
Net resultant concentrations during operation of the proposed project	**37.69**	**63.95**	**19.18**	**31.27**	**1071.57**
National Ambient Air Quality Standards	**60**	**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.					

The net resultant Ground level concentrations during operation of the proposed project are within the NAAQS. Hence, there will not be any adverse impact on air environment due to the proposed project.

3.2 Prediction of impacts on Noise quality

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosures will be provided to the STG. The ambient noise levels will be within the standards prescribed by MoEF vide notification dated 14-02-2000 under the Noise Pollution (Regulation & Control), Rules 2000 i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time.**5.07 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

- Total wastewater generated from the proposed project will be 126KLD.
- There will be no wastewater discharge in DRI Kilns as closed circuit cooling system will be adopted.
- Wastewater from Induction Furnace, Rolling Mill, 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.
- Effluent from Gasifier will be reused in ABC chamber in DRI Kiln.
- Wastewater from Rolling Mill will be treated in oil separator followed by settling tank and will be recycled through closed circuit cooling system.
- 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.
- RO rejects will be utilised for Flushing in Toilets, Cleaning of Toilets, Floor washings, etc.
- Sanitary waste water will be treated in STP and will be utilized for greenbelt development.
- Garland drains will be provided around all the raw material stacking areas
- During monsoon the treated effluent will be utilized as makeup water in Rolling Mill. Accordingly, the makeup water for Rolling mill also reduces during the rainy period.
- Zero Liquid Discharge (ZLD) will be maintained in the proposed project.

3.4 Prediction of Impacts on Land Environment

The effluent will be treated to achieve SPCB standards. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / SPCB norms. All solid wastes will be disposed / utilized as per CPCB / SPCB norms**5.07 Ha.** of extensive greenbelt will be developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed 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:

TABLENO.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	Grab sampling	As per IS: 10500
B.	Effluent at the outlet of the ETP	Twice in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Twice in a month	Composite sampling (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (all stacks) Once in a month		PM, SO_2, NOx& CO PM, SO_2 &NOx& CO

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
B.	Ambient Air quality (CAAQMS)	Continuous Quarterly Once	Continuous 24 hours	$PM_{2.5}$, PM_{10}, SO_2, NOx& CO $PM_{2.5}$, 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. Soil Quality monitoring				
	Soil Quality	Half yearly once	Core drilling sample	pH, SAR, texture, N,P,K, etc

Note: $PM_{2.5}$, PM_{10}, SO_2, NO_X and CO are monitored as per Ministry notification vide G.S.R. No. 826(E) dated 16th November, 2009.

5.0 ADDITIONAL STUDIES

Draft EIA report is being submitted for Public Hearing.

Risk analysis deals with the identification and quantification of risks, the plant equipments and personnel are exposed to, due to accidents resulting from the hazards present in the factory. Hazard analysis involves the identification and quantification of the various hazards that are likely to occur in the industry.

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.

The local areas will be benefited by way of generation of employment opportunities, increased demand for local products and services.

There will be an overall improvement in the income level of the local people.

The proposed project will generate direct employment 250 nos. which will be employed officials, staff, skilled, semi -skilled labour& 500 nos. indirectly employed in contract works & transport.

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.	Induction Furnaces	Fume Extraction system with PTFE bag filters	PM < 30 mg/Nm^3
3.	Re-heating furnaces attached to Rolling Mill	Stack	PM < 30 mg/Nm^3
4.	Submerged Electric Arc Furnaces	4th Hole Fume Extraction system with bag filters	PM < 30 mg/Nm^3
5.	FBC Boiler	Electro Static Precipitators (ESP)	PM < 30 mg/Nm^3
		Automated Lime dosing	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, wheel washing facility at entry and exit gates etc. will also be provided.			

Apart from the above the following air emission control systems/ measures are proposed in the Plant:

- All conveyors will be completely covered with G.I. sheets to control fugitive dust.
- All bins will be totally packed and covered so that there will not be any chance for dust leakage.
- All the dust prone points material handling systems will be connected with de-dusting system with bag filters.

- All discharge points and feed points, wherever the possibility of dust generation is there a de-dusting suction point will be provided to collect the dust.

7.2 Water Environment

- Total wastewater generated from the proposed project will be 126KLD.
- There will be no wastewater discharge in DRI Kilns as closed circuit cooling system will be adopted.
- Wastewater from Induction Furnace, Rolling Mill, 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.
- Effluent from Gasifier will be reused ABC chamber in DRI Kiln.
- Wastewater from Rolling Mill will be treated in oil separator followed by settling tank and will be recycled through closed circuit cooling system.
- 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.
- RO rejects will be utilised for Flushing in Toilets, Cleaning of Toilets, Floor washings, etc.
- Sanitary waste water will be treated in STP and will be utilized for greenbelt development.
- Garland drains will be provided around all the raw material stacking areas
- During monsoon the treated effluent will be utilized as makeup water in Rolling Mill. Accordingly, the makeup water for Rolling mill also reduces during the rainy period.
- Zero Liquid Discharge (ZLD) will be maintained in the proposed project.

EFFLUENT TREATMENT PLANT

pH of the boiler blow down 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.

TREATED EFFLUENT DISPOSAL

Total treated effluent generation	**126KLD**
Effluent to be used for dust suppression	13 KLD
Effluent quantity to be used for ash conditioning in CHP	10 KLD
Effluent to be used for Greenbelt development	75 KLD
RO Rejects to be used for Floor washing, Toiler cleaning & Flushing	20 KLD
Effluent from Gasifier to be used in ABC Chamber	8 KLD

5.07 Ha. ofgreenbelt 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 proposedproject.

Table No.7.2: Solid Waste Generation and Disposal

S.No.	Waste	Quantity(TPA)	Proposed method of disposal
1.	Ash from DRI	31,536	Will be utilized in the proposed Brick Manufacturing Unit
2.	Dolochar	35,040	Will be used in proposed FBC power plant as fuel.
3.	Kiln Accretion Slag	1,577	Will be utilized in the proposed Brick Manufacturing Unit
4.	Wet scrapper sludge	7,008	Will be utilized in the proposed Brick Manufacturing Unit
5.	SMS Slag	33,400	Will be given to road contractor for road laying
6.	End Cuttings from Rolling Mill	6,605	Will be reused in the SMS
7.	Mill scales from Rolling Mill	4,403	Mill scales will be utilized in the proposed Ferro alloys manufacturing units.
8.	Ash from Power Plant (IndianCoal+Dolochar)	26,505	Will be utilized in the proposed Brick Manufacturing Unit
9.	Slag from FeMn	36,600	Will be reused in manufacture of SiMn as it contains High SiO_2 and Silicon.
	(or)		
10.	Slag from FeSi	1,792	Will be given to Cast iron foundries
	(or)		
11.	Slag from SiMn	25,600	Will be used for Road construction / will be given to Slag cement manufacturing
	(or)		
12.	Slag from FeCr	24,300	Will be processed in Zigging 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 utilized for Road laying /brick manufacturing. If Chrome content exceeds the permissible limits, it will be sent to nearest TSDF.
13.	Slag from Pig Iron	26,400	Will be given to slag based cement manufacturing unit

Hazardous waste generation, storage & disposal

1. Waste oil: 1.0 KL / Annum
2. Used batteries will be given back to the supplier under buy back agreement with supplier.
3. E-waste generated from the plant will be given to authorized recycler.

7.5 Greenbelt Development

- Greenbelt of **5.07 Ha.** of extensive greenbelt will be developed in the plant premises.
- 15m (minimum) wide greenbelt will be maintained all around the project site.
- 2500 plants will be planted per Hectare as per CPCB norms.
- Total no. of plants will be 13,000 nos. The following will be the greenbelt development plan.
- 1st year - 5,500 nos. , 2nd year -4,500 nos., 3rd year - 3,000 nos.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 34.37Crores

Recurring Cost per annum for Environmental protection : Rs. 6.61Crores

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 will be constructed in consultation with CGWB.