SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

Max Steel & Power Pvt. Ltd.

[Establishment of Greenfield Steel Plant comprising of DRI Kilns (Sponge Iron - 3,63,000 TPA), Induction Furnaces with matching LRF & CCM (Hot Billets / Billets / Ingots – 3,46,500 TPA), Rolling Mill (TMT bars / Wire Rod) (85% Hot charging with Hot Billets and remaining 15% through RHF with Producer Gas as fuel – 1,65,000 TPA), Rolling Mill (Structural Mill) (85% Hot charging with Hot Billets and remaining 15% through RHF with Producer Gas as fuel – 1,65,000 TPA), Coal Gasifier – 2 x 1500 NM^3/Hr., Ferro Alloy Units - 2 x 9 MVA (FeSi – 14,000 TPA/ FeMn – 40,000 TPA/ SiMn – 28,000 TPA/FeCr – 30,000 TPA/ Pig Iron - 48,000 TPA), Briquetting Plant (200 Kg/Hr.), WHRB based Power Plant – 2 x 5 MW & 2 x 10 MW, FBC based Power Plant – 1 x 10 MW & Brick Manufacturing unit (30,000 Bricks / Day)]

Category – A Project

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

at

Mohbhatta & Kukrachunda Villages, Simga Tehsil,

Baloda Bazar-Bhatapara District, Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

1.0 PROJECT DESCRIPTION

Max Steel & Power Pvt. Ltd. is proposing to Establishment of Greenfield Steel Plant comprising of DRI Kilns (Sponge Iron - 3,63,000 TPA), Induction Furnaces with matching LRF & CCM (Hot Billets / Billets / Ingots – 3,46,500 TPA), Rolling Mill (TMT bars / Wire Rod) (85% Hot charging with Hot Billets and remaining 15% through RHF with Producer Gas as fuel – 1,65,000 TPA), Rolling Mill (Structural Mill) (85% Hot charging with Hot Billets and remaining 15% through RHF with Producer Gas as fuel – 1,65,000 TPA), Coal Gasifier – 2 x 1500 NM^3/Hr., Ferro Alloy Units - 2 x 9 MVA (FeSi – 14,000 TPA/ FeMn – 40,000 TPA/ SiMn – 28,000 TPA/FeCr – 30,000 TPA/ Pig Iron - 48,000 TPA), Briquetting Plant (200 Kg/Hr.), WHRB based Power Plant – 2 x 5 MW & 2 x 10 MW, FBC based Power Plant – 1 x 10 MW & Brick Manufacturing unit (30,000 Bricks / Day)].

Total land identified for the proposed project is **29.694 Ha.** Out of which 21.227 Ha. of land is registered on company name, for 3.105 Ha. of land agreement have been entered and for 5.362 Ha. of land application has been submitted to State Investment Promotion Board (SIPB), Chhattisgarh for acquisition of Private Land.

The estimated project cost for the proposed project is **Rs. 673.83 Crores.**

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 Honourable Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi on 2nd November 2024 vide **Proposal No. IA/CG/IND1/473791/2024.** Subsequently Standard TOR letter was issued vide **F.No. IA-J-11011/254/2024-IA-II(IND-I),** dated **8th November 2024**. Draft EIA report is prepared incorporating the Terms of Reference & being submitted to CECB for conducting Public hearing / consultation.

Pioneer Enviro Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India, vide certificate No. NABET/EIA/2225/RA 0282, for preparing EIA report for Metallurgical Unit, have prepared Environmental Impact Assessment (EIA) report for the proposed project by incorporating the TOR approved by Ministry of Environment, Forests & Climate Change, New Delhi. The report contains detailed description of the following:

- Characterization of status of environment with in an area of 10 km radius from the plant for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.

- Assessment of air emissions, liquid waste and solid waste from the proposed project along with the noise level assessment.
- Environmental Management Plan comprising of emission control measures proposed to be adopted in the proposed project, solid waste management, Greenbelt development.
- Post Project Environmental Monitoring & Budget for Environmental Protection Measures.

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

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

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

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Private Land (Agricultural land)
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements – 7.1 %; Industrial area - 1.8 %; Tanks / River / Major Canal – 5.2 %; Single crop – 66.4 %; Double crop – 7.9 %; Plantation - 3.7 %; Land with scrub – 4.2 %; Land without scrub – 2.3 %; Stone Quarry – 1.4
3.	National Park/ Wildlife sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor	There are no notified National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve within 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'ble NGT order issued vide dated 10thJuly 2019.
6.	Defence Installations	Nil
7.	Nearest village	Mohabhatta - 0.45 kms. (W direction)
8.	No. of Villages in the Study Area	63
9.	Nearest Hospital	PHC at Hathband Village at 6.0 Kms. (SW direction)
10.	Nearest School	Government Higher Secondary School, Mohabhatta Village – 0.95 Kms. (W direction)
11.	Forests	No Forest in the 10 Kms. Study area
12.	Water body	Marrakohi Distributary (0.3 Kms. – W direction), Mahanadi Bhatapara Branch Canal (0.5 Kms. – SE directoin), Shivnath River – (8.7 Kms. – NW direction)
13.	Nearest Highway	SH # 10 – 6.0 Kms. (N direction)
14.	Nearest Railway Station	Hathband RS (6.0 Kms. – SW direction)
15.	Nearest Port facility	Nil within 10 Km. Radius.
16.	Nearest Airport	Raipur Airport – 57.0 Kms.

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
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)		Plant Configuration (Production Capacity)
1.	DRI Kilns (Sponge Iron)		2 x 200 TPD & 2 x 350 TPD (3,63,000 TPA)
2.	Induction Furnaces with LRF & CCM (Hot Billets / Billets / Ingots)		7 x 15 T (3,46,500 TPA)
3.	Rolling Mill # 1 (TMT bars / Wire rod) (85% Hot charging with Hot Billets and remaining 15% through RHF with Gasifier as fuel)		1 x 500 TPD (1,65,000 TPA)
4.	Rolling Mill # 2 (Structural Steel) (85% Hot charging with Hot Billets and remaining 15% through RHF with Gasifier as fuel)		1 x 500 TPD (1,65,000 TPA)
5.	Gasifier for Reheating Furnaces		2 x 1500 NM^3/Hr.
6.	Ferro Alloys Unit (FeSi / FeMn / SiMn / FeCr / Pig Iron)		2 x 9 MVA (FeSi – 14,000 TPA/ FeMn – 40,000 TPA/ SiMn – 28,000 TPA/ FeCr – 30,000 TPA/ Pig Iron - 48,000 TPA)
7.	Brick Manufacturing Unit		30,000 Brick/ day
8.	Briquetting Plant		200 Kg./Hr.
9.	Power Plant (40 MW)	WHRB Power Plant (2 x 5 MW & 2 x 10 MW)	30 MW
		FBC Power Plant (1 x 10 MW)	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.	**For DRI Kilns (Sponge Iron) – 3,63,000 TPA**					
a)	Pellets		5,26,350	Odisha & Chhattisgarh	~ 500	By rail & road (through covered trucks)
	(or)					
b)	Iron Ore		5,80,800	Odisha & Chhattisgarh	~ 500	By rail & road (through covered trucks)
c)	Coal	Indian	4,71,900	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (through covered trucks)
		Imported	3,02,016	Indonesia / South Africa / Australia and any other foreign country	~ 600	Through vessel, rail & by road (Covered trucks)
d)	Dolomite		18,150	Chhattisgarh	~ 150	By road (through covered trucks)
2.	**For Steel Melting Shop (Hot Billets/Billets/ Ingots) – 3,46,500 TPA**					
a)	Sponge Iron		3,50,000	Own generation	---	Internal transfer through covered trucks
b)	MS Scrap / Pig Iron		52,000	Chhattisgarh	~ 150	By road (through covered trucks)
c)	Ferro alloys		17,000	Own generation	---	Internal transfer through covered trucks
3.	**For Rolling Mill # 1 through Hot charging (TMT bars / Wire rod) – 1,65,000 TPA**					
a)	Hot Billets / Billets / Ingots		1,45,860	Own generation	---	Internal transfer through covered trucks
b)	Billets (for Reheating furnace)		27,225	Own generation	---	Internal transfer through covered trucks
c)	LDO / LSHS		800 Kl/annum	Nearby IOCL Depot	~ 100	By road (through Tankers)
d)	Gasifer (1500 $Nm^3/Hr.$)	Indian Coal	4,455	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By road (through covered trucks)
		Imported Coal	2,851	Indonesia / South Africa / Australia and	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)

S.No.	Raw Material		Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
				any other foreign country		
4.	**For Rolling Mill # 2 through Hot charging (Structural Steel) – 1,65,000 TPA**					
a)	Hot Billets / Billets / Ingots		1,45,860	Own generation	---	Internal transfer through covered trucks
b)	Billets (for Reheating furnace)		27,225	Own generation	---	Internal transfer through covered trucks
c)	LDO / LSHS		800 Kl/annum	Nearby IOCL Depot	~ 100	By road (through Tankers)
d)	Gasifer (1500 Nm^3/Hr.)	Indian Coal	4,455	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
		Imported Coal	2,851	Indonesia / South Africa / Australia and any other foreign country	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
5.	**For FBC Boiler [Power Generation 10 MW]**					
a)	Indian Coal		54,000	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (through covered trucks)
	OR					
b)	Imported coal		34,560	Indonesia / South Africa / Australia and any other foreign country	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
	OR					
c)	Dolochar + Indian Coal	Dolochar	72,600	In plant generation	---	through covered conveyors
		Indian Coal	17,700	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (through covered trucks)
	OR					
d)	Dolochar + Imported Coal	Dolochar	72,600	In plant generation	---	through covered conveyors
		Imported Coal	11,328	Indonesia / South Africa / Australia and any other foreign country	~ 600 (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
6.	**For Ferro Alloys (2 x 9 MVA)**					
6 (i)	**For Ferro Silicon – 14,000 TPA**					

S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
a)	Quartz	30,800	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
b)	Coke	21,700	Andhra Pradesh	~ 500	By road (through covered trucks)
c)	Mill scales & MS Scrap	6,300	Inhouse Generation	---	Internal transfer through covered trucks
d)	Electrode paste	1,400	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
e)	Briquetted Bagfilter dust	980	Own generation	---	---
6(ii)	**For Ferro Manganese – 40,000 TPA**				
a)	Manganese Ore	96,000	MOIL / OMC	~ 500	By Rail & Road (through covered trucks)
b)	Coke	12,000	Andhra Pradesh	~ 500	By road (through covered trucks)
c)	MS Scrap / Mill scales	8,000	Inhouse Generation	---	By road (through covered trucks)
d)	Electrode Paste	880	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
6 (iii)	**For Silico Manganese –28,000 TPA**				
a)	Manganese Ore	56,000	MOIL / OMC	~ 500	By Rail & Road (throughcovered trucks)
b)	FeMn Slag	12,600	Own generation	---	---
c)	Coke	8,400	Andhra Pradesh	~ 500	By road (through covered trucks)
d)	Dolomite	8,400	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
e)	Electrode paste	560	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
f)	Quartz	9,800	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)

S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
g)	Briquetted Bagfilter dust	420	Own generation	---	---
6(iv)	**For Ferro Chrome – 30,000 TPA**				
a)	Chrome Ore	72,000	Odisha Imported	~ 500 ~ 600 (from Vizag Port)	By road (through covered trucks) From Port By Road (through covered Trucks)
b)	Coke	15,000	Andhra Pradesh	~ 500	By road (through covered trucks)
c)	Quartz	1,830	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
d)	MS Scrap / Mill Scale	4,500	Inhouse Generation	---	Internal transfer through covered trucks
e)	Bauxite	4,500	Chhattisgarh / Maharashtra	~ 500	By road (through covered trucks)
f)	Electrode Paste	600	Maharashtra / West Bengal	~ 300	By road (through covered trucks)
g)	Briquetted Bagfilter dust	600	Own generation	---	---
6 (v) For Pig Iron –48,000 TPA					
a)	Iron ore	52,560	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
b)	Coke	30,144	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Lime stone	7,200	Chhattisgarh	~ 100 Kms.	By road (through covered trucks)
d)	Dolomite	7,200	Chhattisgarh / Andhra Pradesh	~ 500	By road (through covered trucks)
e)	Mill Scale	31,200	Inhouse Generation	---	Internal transfer through covered trucks
f)	Fluorspar	1,200	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)

1.4 MANUFACTURING PROCESS

1.4.1 Sponge Iron (DRI)

The Direct Reduced Iron (DRI) plant will comprise of 2 x 200 TPD & 2 x 350 TPD DRI kilns and related accessories including 2 x 5 MW & 2 x 10 MW (30 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 be 7 x 15 T of Induction Furnaces along with CCM to produce 3,46,500 TPA of Hot Billets / MS Billets / Ingots. 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 bagfilters.

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 Billets will be cooled and stored will be sent to reheating furnaces for the heating and will be sent to Rolling Mill. Furnace will be heated with either LDO / Producer Gas. Rolling Mill # 1 along with reheating furnace to produce of 1 x 500 TPD (1,65,000 TPA) of TMT bars /Wire Rod (through 85% Hot charging with Hot Billets and remaining 15% through RHF with Producer Gas as fuel).
- Rolling Mill # 2 along with reheating furnace to produce of 1 x 500 TPD (1,65,000 TPA) of (Structural Steel) (through 85% Hot charging with Hot Billets and remaining 15% through RHF with Producer Gas as fuel).

1.4.4 Submerged Electric Arc Furnace

Submerged Electric Arc Furnace 2 x 9 MVA Submerged Electric Arc Furnaces to manufacture FeSi – 14,000 TPA/ FeMn – 40,000 TPA/ SiMn – 28,000 TPA/FeCr – 30,000 TPA/ Pig Iron - 48,000 TPA 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.

1.4.5 Power Generation

Through WHRB Boiler

The hot flue gases from proposed 2 x 200 TPD & 2 x 350 TPD DRI kilns will pass through waste heat recovery Boiler to recover the heat and to generate [2 x 5 MW & 2 x 10 MW (30 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 1 x 10 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.

1.4.6 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 1,780 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 be met from partly from Water Reservoir at the site and partly from Shivnath river (which is at a distance of 8.7 Kms. from the project site). A dedicated pipeline will be laid from the river to the project site.
- An application has been submitted to Water Resources Department, Govt. of Chhattisgarh for withdrawal of water from Shivnath River vide application no. WA00544.
- Air cooled condensers will be provided to FBC Power plant instead of water-cooled condensers 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	360

S.No.	Unit	Quantity in KLD
2.	Make-up water for SMS plant	240
3.	Rolling Mill #1	150
4.	Rolling Mill #2	150
5.	Gasifier	5
6.	Make-up water for Ferro Alloy plant	60
7.	Bricks manufacturing Unit	5
8.	Briquetting plant	10
9.	Captive Power Plant	800
	• Cooling Tower Make-up	385
	• Boiler make-up	289
	• D.M. plant regeneration water	126
10.	Domestic	20
	Total	**1,780**

1.6 Wastewater Generation

- Total wastewater generated from the proposed project will be **366 KLD.**
- There will be no wastewater discharge in DRI Kilns as closed-circuit cooling system will be adopted.
- Wastewater from Induction Furnaces, 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.
- Wastewater from Rolling Mills will be treated in oil separator followed by settling tank and will be recycled through closed circuit cooling system.
- Wastewater from Gasifier will be used in ABC chamber of DRI Kilns.
- 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.

Table No.1.5: Breakup of Wastewater Generation

S.No.	Source	Generation (KLD)
1.	Sponge Iron	---
2.	Induction Furnace	24
3.	Rolling Mill #1	7.5
4.	Rolling Mill #2	7.5
5.	Ferro Alloys	4
6.	Gasifier	4
7.	Power Plant	303
	a) Cooling Tower blowdown	96
	b) Boilers blowdown	81
	c) D.M. plant regeneration water	126
8.	Sanitary Wastewater	16
	Total	**366**

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 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 (µg/m³)	Standard as per NAAQS (µg/m³)
1.	$PM_{2.5}$	22.5 to 39.6	60
2.	PM_{10}	38.2 to 67.1	100

S.No.	Parameter	Concentration range ($\mu g/m^3$)	Standard as per NAAQS ($\mu g/m^3$)
3.	SO_2	7.4 to 15.1	80
4.	NO_X	7.8 to 19.4	80
5.	CO	380 to 940	2000

2.2 Water Quality

2.2.1 Surface Water Quality

Bhatapara Branch Mahanadi Canal – 0.5 Kms. (SE direction), Pond in Mohbhata Village- 0.45 (W direction), Shivnath River – 8.7 Kms (NW direction), are present within study area. 3 no. of samples 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 & Night time. The equivalent **day-night** noise levels in the study zone are ranging from **46.86 dBA to 51.69 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 $PM_{2.5}$, 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	$PM_{2.5}$ ($\mu g/m^3$)	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	39.60	67.10	15.10	19.40	940.00
Maximum predicted incremental rise in concentration due to proposed project (Point Sources)	0.99	1.81	6.61	10.33	0.58

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 predicted incremental rise in concentration due to proposed project (Vehicular emissions)	0.20	0.33	--	2.50	1.61
Net resultant concentrations during operation of the proposed project	**40.79**	**69.24**	**21.61**	**32.23**	**924.19**
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. **10.0 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 **366 KLD.**
- There will be no wastewater discharge in DRI Kilns as closed-circuit cooling system will be adopted.
- Wastewater from Induction Furnaces, 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.
- Wastewater from Rolling Mills will be treated in oil separator followed by settling tank and will be recycled through closed circuit cooling system.
- Wastewater from Gasifier will be used in ABC chamber of DRI Kilns.
- 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 **10.0 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:

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	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	As per EPA Rules1996

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
			(24 hourly)	
2. Air Quality				
A.	Stack Monitoring	Online monitors (all stacks) Once in a month		PM, SO_2, NOx & CO PM, SO_2 & NOx & CO
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				
A	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
A	Ambient Noise levels	Quarterly Once	Continuous for 24 hours with 1 hour interval	Noise levels
5. Soil Quality monitoring				
A	Soil Quality	Half yearly once	Core drilling sample	pH, SAR, texture, N,P,K, etc.

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 equipment's 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 1050 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 **366 KLD.**
- There will be no wastewater discharge in DRI Kilns as closed-circuit cooling system will be adopted.
- Wastewater from Induction Furnaces, 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.
- Wastewater from Rolling Mills will be treated in oil separator followed by settling tank and will be recycled through closed circuit cooling system.
- Wastewater from Gasifier will be used in ABC chamber of DRI Kilns.
- 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 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.

TREATED EFFLUENT DISPOSAL

Total treated effluent generation	**366 KLD**
Effluent to be used for dust suppression	34 KLD
Effluent quantity to be used for ash conditioning in CHP	28 KLD
Effluent to be used for Greenbelt development	230 KLD
RO Rejects to be used for Floor washing, Toiler cleaning & Flushing	70 KLD
Effluent from Gasifier to be used in ABC Chamber	4 KLD

10.0 Ha. 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	65,340	Will be utilized in the proposed Brick Manufacturing Unit
2.	Dolochar	72,600	Will be used in proposed FBC power plant as fuel.
3.	Kiln Accretion Slag	3,267	Will be given to road contractor for road laying & utilized in the proposed brick manufacturing unit.

S.No.	Waste / By product	Quantity (TPA)	Proposed method of disposal
4.	Wet scrapper sludge	14,520	Will be given to road contractor for road laying & utilized in the proposed brick manufacturing unit.
5.	SMS Slag	34,650	Will be given to road contractor for road laying
6.	End Cuttings from Rolling Mill	8,415	Will be reused in the SMS
7.	Mill scales from Rolling Mill	990	Mill scales will be utilized in the proposed Ferro alloys manufacturing units.
8.	Ash from Power Plant (with Indian Coal + dolochar)	53,955	Will be utilized in the proposed brick manufacturing unit within the premises.
9.	Slag from FeMn	40,000	Will be reused in manufacture of SiMn as it contains high SiO_2 and Silicon.
10.	Slag from FeSi	1,960	Will be given to Cast iron foundries
11.	Slag from SiMn	28,000	will be used for Road construction / will be given to slag cement manufacturing
12.	Slag from FeCr	27,000	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 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	28,800	Will be given to slag cement manufacturing

Hazardous waste generation, storage & disposal

1. Waste oil: 1.5 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 **10.0 Ha. (24.7 acres)** 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 25,000 nos. The following will be the greenbelt development plan.

  1st year - 10,500 nos.

  2nd year - 8,500 nos.

  3rd year - 6,000 nos.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 67.03 Crores

Recurring Cost per annum for Environmental protection : Rs. 12.81 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 will be constructed in consultation with CGWB.