SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

RISEN INDUSTRIES PVT. LTD.

(Proposed Mini Integrated Steel Plant)

at

Sarda (V), Berla (T), Bemetara (D), Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

Risen Industries Private Limited (GSPPL) is proposed to setup an Mini Integrated Steel plant consisting of DRI Kilns (1,98,000 TPA), Induction Furnaces with LRF & CCM (Billets / Ingots / Hot Billets) (1,98,000 TPA), Rolling Mill (TMT Bars / Structural Steel) 1,98,000 TPA, Ferro Alloy Unit 2 x 9 MVA (FeSi-14,000 TPA / FeMn-50,400 TPA / SiMn-28,800 TPA / FeCr-30,000 TPA / Pig Iron- 50,400 TPA, WHRB based Power Plant - 15 MW & CFBC based Power Plant - 16 MW) at Khasra No. 171, 172, 174, 178, 179, 173/1, 173/2, 175/1, 175/2 & 183/1 of Sarda (V), Berla (T), Bemetara (D), Chhattisgarh.

Proposed project will be taken up in the **17.27 Ha. (42.68 Acres).** The project cost envisaged for the proposed project is **Rs. 370 Crores.**

As per the Ministry of Environment, Forests & Climate Change, New Delhi notification, dated 14th September, 2006 and its subsequent amendments, all Primary metallurgical processing industries are classified under Category 'A'. The Ministry of Environment, Forests & Climate Change, New Delhi has accorded **Terms of Reference (TOR)** for the proposed project vide letter no. **J-11011 / 16 / 2021 – IA II (I), dated 8th February 2021**. The EIA Report has been prepared by incorporating the TOR stipulated by the Hon'ble EAC.

Pioneer Enviro Laboratories & Consultants Private Limited, *Hyderabad*, which is accredited by NABET, Quality Council of India, vide certificate No. NABET/ EIA/ 1922/ RA 0149, for preparing EIA report for Metallurgical Unit, have prepared Draft 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:

S.No.	Salient Features / Environmental features	Aerial Distance w.r.t. site / Remarks
1.	Type of Land	Un-irrigated Agricultural Land
2.	National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	Nil
3.	Historical places / Places of Tourist importance / Archeological sites	Nil
4.	Critically polluted area as per MoEF&CC Office Memorandum dated 13th January 2010	None And also the Plant area does not fall in the areas given in Hon'ble NGT order issued vide dated 10th July 2019.
5.	Defence Installations	Nil
6.	Nearest village	Andu - 0.9 Kms.
7.	Forests	Nil with in 10 Km. Radius.
8.	Water body	Seonath river (1.8 Kms.), Sarar Nallah (Seasonal Nallah adjacent to the site) & Few seasonal nalas, ponds exist within study area.
9.	Nearest Highway	NH # 12 A (Simga –Kawardha Road) - 9.6 Kms.
10.	Nearest Railway Station	Nil with in 10 Km. Radius. . (Tilda R.S.- 26 kms.)
11.	Nearest Port facility	Nil with in 10 Km. Radius.
12.	Nearest Airport	None within 10 Kms. [Raipur Airport – 50.0 Kms.]
13.	Nearest Interstate Boundary	Nil (Nearest interstate boundary is Madhya Pradesh at a distance of 78 kms. from the project site)
14.	Seismic zoneas per IS-1893	Seismic zone – II
15.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the site area.
16.	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. 11.1.1: PROPOSED PLANT CONFIGURATION & PRODUCTION CAPACITIES

S. No.	Details	Products	Unit Configuration	Production capacity
1.	DRI Kiln	Sponge Iron	2 x 200 TPD & 2 x 100 TPD	1,98,000 TPA
2.	Induction furnace with CCM & LRF	Hot Billets / M.S.Billets	4 x 15 T	1,98,000 TPA
3.	Rolling Mill through Hot charging	(TMT bars / Structural Steel)	1 x 600 TPD	1,98,000 TPA
4.	Power generation through WHRB	Electricity	15 MW	15 MW
5.	Power generation through **CFBC Boiler**	Electricity	16 MW	16 MW
6.	Ferro Alloy Unit	Fe-Si, Fe Mn, Si Mn, FeCr & Pig Iron	2 x 9 MVA	(FeSi-14,000 TPA / FeMn-50,400 TPA / SiMn-28,800 TPA / FeCr-30,000 TPA/ Pig Iron- 50,400 TPA)

1.3 RAW MATERIAL REQUIRMENT

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

TABLE NO. 11.1.2: RAW MATERIAL REQUIREMENT, SOURCE & MODE OF TRANSPORT

S.No.	Raw Material		Quantity (TPA)	Sources	Distance w.r.t. Site (in Kms.)	Mode of Transport
1.	**For DRI Kilns (Sponge Iron) – 1,98,000 TPA**					
a)	Pellets (100 %)		2,77,200	Orissa & Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
	or					
b)	Iron ore (100%)		3,16,800	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
c)	Coal	Indian	2,57,400	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
		Imported	1,64,700	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
d)	Dolomite		9,900	Chhattisgarh	~ 100 Kms.	By road (through covered trucks)
2.	**For Steel Melting Shop (MS Billets/ Ingots/Hot Billets) – 1,98,000 TPA**					

S.No.	Raw Material		Quantity (TPA)	Sources	Distance w.r.t. Site (in Kms.)	Mode of Transport
a)	Sponge Iron		1,98,000	Own generation	----	By Covered Conveyers
b)	MS Scrap / Pig Iron		30,000	Chhattisgarh	~ 100 Kms.	By road (through covered trucks)
c)	Ferro alloys		10,000	Own generation	---	By road (through covered trucks)
3.	**For Rolling Mill through Hot charging (Rolled Products) – 1,98,000 TPA**					
a)	Hot Billets / MS Billets / Ingots		2,06,000	Own generation & Purchased from outside	--- ~ 100 Kms.	By Covered Conveyers By road (through covered trucks)
b)	LDO / LSHS		10,000 Kl/annum	Nearby IOCL Depot	~ 100 Kms.	By road (through Tankers)
4.	**For CFBC Boiler [Power Generation 16 MW]**					
a)	Indian Coal (100 %)		86,400	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
	OR					
b)	Imported Coal (100 %)		55,000	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
	OR					
c)	Dolochar + Indian Coal	Dolochar	39,600	In plant generation	---	through covered conveyors
		Indian Coal	75,240	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
	OR					
d)	Dolochar + Imported Coal	Dolochar	39,600	In plant generation	---	through covered conveyors
		Imported Coal	48,154	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
5.	**For Ferro Alloys (2 x 9 MVA) (FeSi / FeMn / SiMn / FeCr / Pig Iron)**					
6 (i)	***For Ferro Silicon – 14,000 TPA***					
a)	Quartz		24300	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
b)	LAM coke		18900	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	MS Scrap / Mill scales		4230	Inhouse Generation	---	By road (through covered trucks)
d)	Electrode paste		360	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
6 (ii)	***For Ferro Manganese – 50,400 TPA***					
a)	Manganese Ore		68400	MOIL / OMC	~ 500 Kms.	By Rail & Road (through covered trucks)
b)	LAM coke		19800	Andhra Pradesh	~ 500 Kms.	By road

S.No.	Raw Material	Quantity (TPA)	Sources	Distance w.r.t. Site (in Kms.)	Mode of Transport
					(through covered trucks)
c)	Dolomite	8100	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	MS Scrap / Mill scales	7200	Inhouse Generation	---	By road (through covered trucks)
e)	Electrode Paste	630	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
6 (iii)	***For Silico Manganese – 28,800 TPA***				
a)	Manganese Ore	48600	MOIL / OMC	~ 500 Kms.	By Rail & Road (through covered trucks)
b)	LAM Coke	16200	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	FeMn. Slag	30294	In house generation	---	----
d)	Dolomite	7380	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
e)	Electrode paste	630	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
f)	Quartz	7740	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
6 (iv)	***For Ferro Chrome – 30,000 TPA***				
a)	Chrome Ore	56700	Sukinda, Odisha Import, South Africa	~ 500 Kms. ~ 600 Kms. (from Vizag Port)	By road (through covered trucks) Through sea route, rail route & by road (through covered trucks)
b)	LAM Coke	19800	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Quartz	8100	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	MS Scrap / Mill Scale	2700	Inhouse Generation	---	By road (through covered trucks)
e)	Magnetite / Bauxite	5400	Chhattisgarh / Maharashtra	~ 500 Kms.	By road (through covered trucks)
f)	Electrode Paste	540	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
6 (iv)	*For Pig Iron – 50,400 TPA*				
a)	Iron ore / Sinter	91800	Barbil, Odisha NMDC, Chhattisgarh	~ 500 Kms.	By road (through covered trucks)
b)	LAM Coke	43200	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Dolomite	5940	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	Quartz	3060	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)

1.4 MANUFACTURING PROCESS

1.4.1 Manufacturing of Sponge Iron (DRI)

The proposal consists of 1x600 TPD & 1x400 TPD of DRI kilns to produce 3,35,000 TPA of Sponge iron with 1x15 MW & 1x10 MW WHRB facility. Refractory lined rotary kilns will be used for reduction of iron ore in solid state.

Refractory lined rotary kilns will be used for reduction of iron ore in solid state. A central Burner located at the discharge end will be used for initial heating of the kiln.

Iron ore will be continuously fed into the kiln along with coal which has dual role of fuel as well as reductant. Dolomite will be added to scavenge the sulphur from the coal. A number of air tubes will be provided along the length of the kiln. The desired temperature profile will be maintained by controlling the volume of the combustion air through these tubes. The Carbon monoxide generated due to the combustion of coal, reduces the iron ore and converts it into sponge iron. The rotary kiln is primarily divided into two zones viz. the pre heating zone and the reduction zone. The preheating zone extends over 30 to 50 % of the length of the kiln and in this the moisture in the charge will be driven off and the volatile matter in the coal will be burnt with the combustion air supplied through the air tubes. Heat from the combustion raises the temperature of the lining and the bed surface. As the kiln rotates, the lining transfers the heat to the charge. Charge material, pre-heated to about 1000^0C 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 4 x 15 T Induction furnaces to manufacture Hot Billets/ M.S. Billets of 1,98,000 TPA. Either the Hot Billets produced from LRF will be directly sent to Rolling Mill without using Re-heating Furnace through Hot charging method (or) M.S. Billets / M.s. Ingots will be sent to Re-heating Furnace to reheat the Billets and then sent to Rolling Mill to manufacture Rolled Products.

1.4.3 Manufacturing of Rolled products through Rolling Mill

The Hot Billets produced from Induction Furnaces will be directly sent to Rolling Mill to produce Rolled Products (OR) Hot Billets will be cooled and stored will be sent to reheating furnaces for the heating and will be sent to Rolling Mill. Furnace will be heated with LDO / LSHS. A Rolling mill will be installed in the plant to produce 1,98,000 TPA of Rolled Products /TMT Bars / Structural Steels.

1.4.4 Manufacturing of Ferro Alloys through SEAF

2 nos. of Submerged Electric Arc Furnaces each of 9 MVA will be setup in the proposed plant. Ferro alloys will be manufactured in a sub-merged arc furnace using reducer (Coke) under high voltage. 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. Pig Iron will be produced in SEAF using HG Iron Ore, Limestone & Coke as Raw Materials. Once pig iron is produced, it is teemed or poured into Induction Furnace either to produce an ingot or into a continuous caster to produce a slab, billet or bloom.

1.4.5 Power Generation

Through WHRB Boiler

The hot flue gases from proposed 2 x 200 TPD & 2 x 100 TPD of DRI kilns will pass through waste heat recovery Boiler to recover the heat and to generate 15 MW (2 x 5 MW & 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 through stacks of adequate height.

Through CFBC Boiler

Coal (Imported / Indian) along with dolochar will be used as fuel in CFBC Boiler to generate 16 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.

1.5 Water Requirement

Water required for the proposed project will be 1210 KLD. This includes make up water for DRI Kilns, Induction Furnaces, Rolling Mill, Ferro Alloys, power plant & Domestic.

Water required for proposed project will be sourced from Seonath River (which is at a distance of 1.8 Kms. from the project site). Water drawl permission from Water Resource Department, Chhattisgarh will be obtained.

Air cooled condensers will be provided in captive Power plant, which reduces water consumption significantly

BREAK-UP OF WATER REQUIREMENT

S.No.	Unit	Quantity in KLD
1	DRI Kilns	200
2	Induction Furnaces	140
3	Rolling Mills	180
4	Submerged Electric Arc Furnaces	60
5	Power Plant (CFBC)	620
	• Cooling tower makeup	298
	• Boiler make up	224
	• DM plant Regeneration	98
6	Domestic	10
	Total	**1210**

1.6 Waste Water Generation

- Total wastewater generation will be 244 KLD

- There will be no effluent discharge in the Sponge Iron, Induction Furnaces, Ferro Alloys unit 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 oil separator followed by settling tank & will be recycled through closed circuit cooling system.
- 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.
- During monsoon period, the treated wastewater will be utilized as makeup water for Rolling Mill
- Sanitary waste water will be treated in STP and the treated sewage will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Garland drains will be provided around all the raw material stacking areas.
- Zero effluent discharge will be maintained. The following will be the total wastewater & it's break-up.

BREAKUP OF WASTE WATER GENERATION

S.No.	Source	Generation (in KLD)
1.	Power Plant	236
	a) Cooling Tower blowdown	75
	b) Boilers blowdown	63
	c) D.M. plant regeneration water	98
2.	Sanitary Wastewater	8
	Total	**244**

1.7 Wastewater Characteristics

The following are the Characteristics of waste water

TABLE NO. 11.1.5: CHARACTERISTICS OF EFFLUENT

PARAMETER	CONCENTRATION			
	Cooling Tower blowdown	DM Plant Regeneration	Boiler Blowdown	Sanitary waste water
pH	7.0 – 8.0	5.0 – 10.0	9.5 – 10.5	7.0 – 8.5
BOD (mg/l)	--	--	--	200 – 250
COD (mg/l)	--	--	--	300 – 400
TDS (mg/l)	1000	5000 – 6000	1000 mg/l	800 – 900

Oil & Grease (mg/l)	--	10	--	5 - 10
TSS (mg/l)	--	--	--	150-200

2.0 DESCRIPTION OF ENVIRONMENT

Base line data has been collected on ambient air quality, water quality, noise levels, flora and fauna and socio economic details of people within 10 km radius of the plant.

2.1 Ambient air quality

Ambient air quality was monitored for $PM_{2.5}$, PM_{10}, SO_2, NOx & CO at 8 stations including project site during **1st December 2020 to 28th February 2021.** The following are the concentrations of various parameters at the monitoring stations:

Parameter		Concentration
$PM_{2.5}$	:	18.7 to 26.5 µg/m^3
PM_{10}	:	33.1 to 46.4 µg/m^3
SO_2	:	5.2 to 7.7 µg/m^3
NO_X	:	6.9 to 11.1 µg/m^3
CO	:	305 to 692 µg/m^3

2.2 Water Quality

2.2.1 Surface Water Quality

The Seonath River (1.8 Kms.), Sarar Nallah (Seasonal Nallah adjacent to the site) are present within 10 Kms. of the project site. 2 no. of Samples from Seonath River i.e. 60m Upstream & 60 m Downstream have been collected and analyzed for various parameters. The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

2.2.2 Ground Water Quality

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

2.3 Noise Levels

Noise levels were measured at 8 locations during day time & Night time. The noise levels at the monitoring stations are ranging from **42.71 dBA to 53.95 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 **0.89 μg/m³** at a distance of 1300 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 **0.42 μg/m³**.

The predicted max incremental SO_2 concentrations (24 hourly) due to the emissions from operation of proposed project will be **4.0 μg/m³** at a distance of 1300 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 **5.4 μg/m³** at a distance of 1300 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 **3.25 μg/m³**.

The predicted incremental rise in CO concentration due to the Vehicular emission will be **2.0 μg/m³**.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO PROPOSED PROJECT

Item	PM_{10} (μg/m³)	SO_2 (μg/m³)	NO_X (μg/m³)	CO (μg/m³)
Maximum baseline conc. in the study area	46.5	7.7	11.1	692
Maximum predicted incremental rise in concentration due to proposed project of **RIPL**	0.89	4.0	5.4	Nil

Item	PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_X ($\mu g/m^3$)	CO ($\mu g/m^3$)
Maximum predicted incremental rise in concentration due to **Vehicular Emissions from the proposed project**	0.42	Nil	3.25	2.0
Net resultant concentrations during operation of the plant	47.81	11.7	19.75	694
National Ambient Air Quality Standards	**100**	**80**	**80**	**2000**

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

3.2 Prediction of impacts on Noise quality

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosures will be provided to the STG. The ambient noise levels will be within the standards prescribed by MoEF vide notification dated 14-02-2000 under the Noise Pollution (Regulation & Control), Rules 2000 i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. **14.1 acres (5.71 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

Closed loop cooling water system will be adopted in DRI, SMS, and Rolling Mill units. 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. Sanitary waste water will be treated in STP. Treated sewage will be used for Greenbelt development. There will not be any effluent discharge outside the premises. ZLD will be followed. 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.

14.1 acres (5.71 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:

MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. Water & Waste water quality				
A.	Water quality in the area	Quarterly Once	Composite sampling (24 hourly)	As per IS: 10500
B.	Effluent at the outlet of the ETP	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (all stacks) Once in a month		PM PM, SO_2 & NOx
B.	Ambient Air quality (CAAQMS)	Continuous Quarterly Once	Continuous 24 hours	PM_{10}, SO_2 & NOx $PM_{2.5}$, PM_{10}, SO_2, NOx & CO
C.	Fugitive emissions	Quarterly Once	8 hours	PM
3. Meteorological Data				
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	Noise levels

			interval	

5.0 ADDITIONAL STUDIES

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

6.0 PROJECT BENEFITS

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

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Environment

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

S.No.	Source	Stack Height (in M)	Control Equipment	Outlet PM emission
1	DRI kilns with WHRB's (2 x 200 TPD)	87 m (1 no.)	Electro Static Precipitators (2 nos.)	PM < 30 mg/Nm^3
2	DRI kilns with WHRB's (2 x 100 TPD)	62 m (1 no.)	Electro Static Precipitators (2 nos.)	PM < 30 mg/Nm^3
3	Induction Furnaces with CCM (4 x 15 T)	30 m (2 nos.)	Fume Extraction system with bag filters (4 nos.)	PM < 30 mg/Nm^3
5	Reheating furnace of Rolling Mill	30 m (1 no.)	Stack	PM < 30 mg/Nm^3
6	SEAF (1 x 12 MVA)	30 m (1 no.)	4th Hole Extraction system with bag filters (2 nos.)	PM < 30 mg/Nm^3
7	CFBC Boiler (1x15 MW)	73 m (1 no.)	Electro Static Precipitator (1 no.)	PM - 30 mg/Nm^3 SOx - 100 mg/Nm^3 NOx - 100 mg/Nm^3
Note : **Apart from the above, Fume extraction system with bag filters, dust suppression system, covered conveyers will also be installed.**				

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

- All conveyors will be completely covered with G.I. sheets to control fugitive dust.

- All bins will be totally packed and covered so that there will not be any chance for dust leakage.
- All the dust prone points material handling systems will be connected with de-dusting system with bag filters.
- All discharge points and feed points, wherever the possibility of dust generation is there a de-dusting suction point will be provided to collect the dust.

7.2 Water Environment

- There will be no effluent discharge in the Sponge Iron, Induction Furnaces, Ferro Alloys unit 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 oil separator followed by settling tank & will be recycled through closed circuit cooling system.
- 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.
- During monsoon period, the treated wastewater will be utilized as makeup water for Rolling Mill
- Sanitary waste water will be treated in STP and the treated sewage will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Garland drains will be provided around all the raw material stacking areas.
- Zero effluent discharge will be maintained.

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 Green belt development. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented.

The following will be treated combined effluent characteristics.

- pH - 6.5 - 8.5
- TSS - < 100 mg/l
- Oil & Grease - < 10 mg/l
- Free available chlorine - < 1.0 mg/l
- Copper - <1.0 mg/l
- Iron - < 1.0 mg/l
- Zinc - < 1.0 mg/l
- Chromium - < 0.2 mg/l
- Phosphates - < 5.0 mg/l

Treated Sewage Characteristics

S.No.	Parameters	Parameters limit
1.	pH	6.5 – 8.0
2.	BOD (mg/ L)	Not more than 10
3.	COD (mg/ L)	Not more than 50
4.	TSS (mg/ L)	Not more than 20
5.	NH_4-N (mg/ L)	Not more than 5
6.	N-Total (mg/ L)	Not more than 10
7.	Fecal Coliform (MPN/100 ml)	Less than 100

TREATED EFFLUENT DISPOSAL

Total Net effluent generation from project	**:**	**244 KLD**
Effluent quantity to be used for ash conditioning	:	54 m^3/day
Effluent to be used for dust suppression in CHP	:	120 m^3/day
Effluent to be used for Greenbelt development	:	70 m^3/day

5.71 Ha. (14.1 Acres) of greenbelt will be developed within the plant premises by using the treated effluent. A dedicated pipe distribution network will be provided for using the treated effluent for greenbelt development.

7.3 Noise Environment

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosure will be provided. All the machinery will be

manufactured in accordance with MoEF&CC norms on Noise levels. The employees working near the noise generating sources will be provided with earplugs. The extensive greenbelt development proposed within the plant premises will help in attenuating the noise levels further. Noise barriers in the form of trees are recommended to be grown around administrative block and other utility units.

7.4 Land Environment

The 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 proposed project.

Solid waste generation and disposal

S.No.	Waste	Quantity (TPA)	Proposed method of disposal
1.	Ash from DRI	35,640	Will be given to Cement Plants & Brick manufacturers.
2.	Dolochar	39,600	Will be used in FBC power plant as fuel.
3.	Kiln Accretion Slag	1,782	Will be used in road construction & given to brick manufacturers.
4.	Wet scrapper sludge	9,108	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	5,940	Will be reused in the SMS
7.	Mill scales from Rolling Mill	594	Mill scales will be given to nearby Ferro alloys manufacturing units or casting units.
8.	Ash from Power Plant (with Indian Coal + dolochar)	57,618	Ash generated is being given to Cement Plants / Brick Manufacturers.
9.	Ash from Power Plant (with imported Coal + dolochar)	33,872	Ash generated is being given to Cement Plants / Brick Manufacturers.
10.	Slag from FeMn	30,294	Will be reused in manufacture of SiMn as it contains high

S.No.	Waste	Quantity (TPA)	Proposed method of disposal
			SiO_2 and Silicon.
11.	Slag from FeSi	1,000	Will be given to Cast iron foundries
12.	Slag from SiMn	30888	will be used for Road construction / will be given to slag cement manufacturing
13.	Slag from FeCr	27,918	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 utilised for Road laying /brick manufacturing. If Chrome content exceeds the permissible limits, it will be sent to nearest TSDF.
14.	Slag from Pig Iron	34,452	Will be given to slag cement manufacturing
Note: Solid wastes such as Dolochar, accretion slag will be stored in designated storage yard. Ash generated will be stored in silos only. There will not be any open storage of fly ash.			

7.5 Greenbelt Development

Greenbelt of **14.1 Acres (5.71 Ha.)** of extensive greenbelt will be developed in the plant premises. **12 to 75 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. 22 Crores

Recurring Cost per annum for Environmental protection : Rs.1.24 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.
- Fugitive emission monitoring will be carried out as per CPCB norms.
- Energy meters will be installed for all the pollution control systems

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