

**SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT
REPORT**

OF

SINGHAL ENTERPRISES PVT. LTD.

Expansion of Steel Plant
at
Taraimal Village, Tamnar Tehsil,
Raigarh District, Chhattisgarh.

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

1.0 PROJECT DESCRIPTION

SINGHAL ENTERPRISES PVT. LTD. Is operating Steel plant at Taraimal Village, Tamnar Tehsil, Raigarh District, Chhattisgarh. Existing plant has obtained Environment Clearance from MoEF&CC vide J-11011 / 195 / 2007 – IA II (I) dated 23rd July 2018 and subsequently amended on 6th March 2019. Accordingly obtained Consent to Establish and Consent to Operate from the Chhattisgarh Environment Conservation Board (CECB) for few units and same are under operation with valid consents.

Proposed Project

Now as part of expansion it is proposed to expand the Sponge Iron production capacity from 2,83,500 TPA to 4,93,500 TPA); Sinter plant capacity from 2,59,000 TPA to 5,18,400 TPA; Pig Iron through Blast Furnace capacity from 87,500 TPA to 3,12,500 TPA; Billets through IF from 2,16,000 TPA to 4,56,000 TPA, Rolled products through Rolling Mill from 90,000 TPA to 4,20,000 TPA, Power generation through WHRB of DRI Kilns -16 MW to 40 MW & Pelletization Plant of 2x 0.6 mtpa capacity (backward integration).

Total land available with the management is 137 Ha. The proposed unit will be taken up in the existing plant premises only. No land will be taken up for the proposed unit. The estimated project cost for the proposed expansion project is **Rs. 577 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 Standard Terms of Reference (TOR) for the proposed project vide letter no. **J-11011/195/2007- IA II (I) dated 19th September 2020**. The EIA Report has been prepared by incorporating the Standard ToR stipulated by the Hon'ble MoEF&CC, New Delhi.

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 expansion 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 expansion 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 Plant site:

Salient Features / Environmental features	Aerial Distance w.r.t. site / Remarks
Type of Land (for Expansion)	The existing land is Industrial. The expansion project will be taken up in the existing plant premises only.
National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	There are no notified National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve/ migratory routes for Birds with in 10 Km. radius of the plant. However as per secondary sources, movement of Elephants is observed within 10 Kms. radius of the plant. Conservation plan is prepared.
Historical places / Places of Tourist importance / Archeological sites	Banjari temple is situated at a distance of 0.2 Kms. from the plant.
Critically Polluted areas which are listed in MoEF&CC office memorandum dated 13th January 2010 & its subsequent amendments.	The plant area does not fall under the Critically Polluted areas which are listed in MoEF&CC office memorandum dated 13 th January 2010 & its subsequent amendments.
Defence Installations	Nil
Nearest village	Taraimal is the Nearest habitation - 1.0 Km.
Reserved forests	Taraimal RF (adjacent), Barkachaar RF (6.0 Kms.), Rabo RF (9.0 Kms), Maghat RF (6.5 Kms.), Samaruna RF (7.5 Kms), Paihar PF (5.0 Kms.) & Urdana RF (6.0 Kms.) exists within

Salient Features / Environmental features	Aerial Distance w.r.t. site / Remarks
	10 Km. radius of the plant site.
Water body	Kelo river (3.0 Kms.) & Gerwani Nallah (2.4 Kms.) are flowing within 10 Km. radius of the plant site. Few ponds exists with in 10 Km. Radius.
Crops in the Study Area	Major Crops - Paddy, Arhar, Mung, Groundnut Minor crops - Wheat, Maize, gram, Masur, Urad etc. Horticulture crops – Lemons, Papaya, Banana, Leechie, Potato, Mango, Tomato, Onion, Cabbage, Chilly, Ginger etc.
Nearest Railway station	Nil (Bhupdeopur R.S. –10.5 Kms.)
Nearest Port facility	Nil
Nearest Airport	Nil (Jindal Air strip – 10.2 Kms.)
Nearest Interstate Boundary	No interstate boundary within 10 Km radius of the plant site. (Nearest interstate boundary is Odisha at a distance of 19 kms. from the plant site).
Seismic zones per IS-1893	Seismic zone – II
R & R	There is no rehabilitation and resettlement issue, as the proposed expansion will be taken up in the existing plant premises only.
List of Industries	There are many industries are situated within 10 Km. radius of the plant. Jindal Industrial Park is also situated within 10 Km. radius of the project site.

1.2 Plant Configuration and Production Capacity

Following is plant configuration and production capacity proposed now

S.No.	Unit (Products)	Existing Plant (in Operation)	EC issued on 23 rd July 2018 & 6 th March 2019	Present Expansion Proposal	Production capacities after Proposed Expansion
1.	Pellet Plants	---	---	2 x 0.6 MTPA	2 x 0.6 MTPA
2.	DRI Kilns [Sponge Iron]	2,53,500 TPA (in operation)	30,000 TPA (Under implementation)	2,10,000 TPA (2x350TPD)	4,93,500 TPA
3.	Induction furnace with CCM & LRF [Hot Metal / MS Billets / Ingots]	96,000 TPA (in operation)	1,20,000 TPA (in operation)	2,40,000 TPA (4x20 MT)	4,56,000 TPA
4.	Rolling Mills (with Hot charging) [Rolled products]	---	90,000 TPA* (300 TPD) (Under implementation)	3,30,000 TPA (1,20,000 TPA* + 2,10,000 TPA) (the existing 300 TPD will be	4,20,000 TPA

S.No.	Unit (Products)	Existing Plant	EC issued on 23 rd July	Present	Production
				upgraded to 1x700 TPD & New 1x700 TPD unit)	
5.	Ferro Alloy [Si-Mn]	10,800 TPA (in operation)	---	---	10,800 TPA
6.	Sinter Plants [Sinter]	---	2,59,200 TPA (1 x 50 M ²) (Yet to implement)	2,59,200 TPA (1 x 50 M ²)	5,18,400
7.	Blast Furnaces [Pig Iron]	---	87,500 TPA (1 x 125 M ³) (Yet to implement)	2,25,000 TPA (1 x 300 M ³)	3,12,500 TPA
8.	Coal Washery [Washed Coal]	---	1,50,000 TPA (applied for CTO & kept on Hold due to sluggish market)	---	1,50,000 TPA
9.	Power Plant through WHRB	8 MW (in operation)	6 MW (in operation) (2 MW Yet to implement)	2x8 MW from DRI + 8.0 MW from MBF (from Existing & proposed)	40 MW
10.	Power Plant through FBC Boiler	1 x 8 MW & 1 x 18 MW (in operation)	7 MW (in operation) (1x15 MW Yet to implement)	---	48 MW

Note:

* The CTO of 90,000 TPA* (300 TPD) Rolling mill has been obtained and commissioning activities is going on. After Obtaining E.C. for present expansion proposal this 300 TPD Rolling mill will be upgraded to 700 TPD (2,10,000 TPA) capacity.

1.3 Raw Materials (For Expansion project)

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

Raw Material	Quantity (TPA)	Sources	Mode of Transport	
For manufacturing Pellets – 2x 0.6 mTPA				
Beneficiated Iron Ore	13,44,000	Odisha & NMDC Chhattisgarh	By rail & road (through covered trucks)	
Bentonite	9,600	Local area	By road (through covered trucks)	
Limestone	72,000	Janjgir Champa, CG	By road (through covered trucks)	
Coal (Bituminous)	12,000	Chhattisgarh	By rail & road (through covered trucks)	
Fuel (Anthracite Coal)	52,800	Chhattisgarh	By rail & road (through covered trucks)	
For manufacturing Sponge Iron – 2,10,000 TPA				
Iron ore / Pellets	3,36,000	Oraghat Mines, Sanindpur Mines, Odisha	By rail & road (through covered trucks)	
Coal	Indian	2,73,000	SECL Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)

Raw Material		Quantity (TPA)	Sources	Mode of Transport
	Imported	1,74,720	Indonesia / South Africa / Australia	Through sea route, rail route & by road
Dolomite		10,500	Local area	By road (through covered trucks)
For manufacturing Sinters – 2,59,200 TPA				
Iron ore fines		2,30,688	Oraghat Mines, Odisha Sanindpur Mines, Odisha	By rail & road (through covered trucks)
Limestone		18,144	Janjgir champa, CG	By rail & road (through covered trucks)
Dolomite		20,736	Local area /Janjgir champa, CG	By rail & road (through covered trucks)
Coke breeze		15,552	Chhattisgarh	By road (through covered trucks)
Burnt Lime Powder		6,480	Raigarh / Durg	By road (through covered trucks)
Mill scale		6,600	Near by Industries.	By road (through covered trucks)
Flue dust		31,032	In house gen.	through covered conveyors
Sinter plant return		25,920	In house gen.	through covered conveyors
Return fines from BF		23,328	In house gen.	through covered conveyors
GCP sludge		72	In house gen.	through covered conveyors
For manufacturing Pig Iron –2,25,000 TPA				
Sinter		2,97,000	In house gen.	through covered conveyors
Iron ore lump		2,02,500	Oraghat Mines, Sanindpur Mines, Odisha	By rail & road (through covered trucks)
LAM coke		78,750	Vizag.	By rail & road (through covered trucks)
Quartzite		5,625	CG / MP region	By rail & road (through covered trucks)
Manganese ore		3,375	MOIL, Maharashtra/ Odisha	By rail & road (through covered trucks)
For manufacturing Hot Billets/ MS Billets – 2,40,000 TPA				
Sponge Iron		2,42,000	In plant generation	By Conveyor
Pig iron / Scrap		36,000	In plant generation / Raigarh	By conveyor / By road (through covered trucks)
Ferro Alloys		12,000	In plant generation/ Raigarh	By road (through covered trucks)
For manufacturing Rolled Products – 3,30,000 TPA				
Hot Billets/ MS Billets		3,63,000	In house generation	Conveyor
LDO / LSHS		10,800 KL	Local	By Road through tanker

1.4 Manufacturing Process

1.4.1 Manufacturing Process of Pellets

Iron ore fines will be grinded in Ball mills. The concentrate will be fed to thickener and subsequently to filtering unit. The filter cake will be sent to pellet plant comprising of Travelling grate kiln. Green pellets will be produced from this process. The flue gases from grate kiln will be treated in ESP and discharged through a stack.

1.4.1 Manufacturing of Sponge Iron (DRI)

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

Iron ore will be continuously fed into the kiln along with coal which has dual role of fuel as well as reductant. Dolomite will be added to scavenge the sulphur from the coal. A number of air tubes will be provided along the length of the kiln. The desired temperature profile will be maintained by controlling the volume of the combustion air through these tubes. The Carbon monoxide generated due to the combustion of coal, reduces the iron ore and converts it into sponge iron. The rotary kiln is primarily divided into two zones viz. the pre heating zone and the reduction zone. The preheating zone extends over 30 to 50 % of the length of the kiln and in this the moisture in the charge will be driven off and the volatile matter in the coal will be burnt with the combustion air supplied through the air tubes. Heat from the combustion raises the temperature of the lining and the bed surface. As the kiln rotates, the lining transfers the heat to the charge. Charge material, pre-heated to about 1000⁰C enters the reduction zone. Temperature of the order of 1050⁰C 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 160⁰C. 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.

1.4.3 Manufacturing Process of Sinters

The proposed sinter plant complex will consist of one sinter Machine of 50 m² grate area along with associated services facilities. The sinter plant is rated for a total production of 432000 Tonnes of BF Sinter at a rated productivity of 1.2 t/m²/hr.

1.4.4 Manufacturing Process of Pig Iron through Blast Furnace

The blast furnace shop will comprise of one furnace of 300 m³ working volume. The blast furnace is envisaged to operate with sized lump iron ore, coke, fluxes and additives. The hot metal produced will be cast at pig casting machines to produce cold pigs. The liquid slag will be granulated at cast house granulation unit. The BF top gas will be cleaned in dust catcher and gas cleaning system and distributed to the stoves, burners for runner drying, boilers for process and process steam supply. The excess gas will be supplied to power plant.

1.4.5 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 8 nos. of Induction Furnaces in the SMS plant, each of 15 T capacity to produce M.S. Billets / M.s. Ingots / Hot Metal. The Hot Metal produced from LRF will be directly sent to Rolling Mill without using Re-heating Furnace through Hot charging method (OR) Hot metal will be sent to CCM and thereby M.S. Billets / M.s. Ingots will be produced.

1.4.6 Manufacturing of Rolled products through Rolling Mill

The Hot Metal produced in Induction Furnace will be directly sent to Rolling Mill to produce Rolled Products (OR) if M.S. Billets / M.s. Ingots produced in Induction Furnace will be sent to reheating furnace for the heating and will be sent to Rolling Mill. Furnace will be heated with Pulverized Coal / Furnace oil. A bar and round mill will be installed in the plant to produce 1,53,000 TPA of TMT Bars / Structural Steels / Rolled Products.

1.4.7 Power Generation

Through WHRB Boiler

The hot flue gases from proposed DRI kiln (2x350 TPD) & existing 1x125 m³ MBF & proposed 1x300 m³ will pass through waste heat recovery Boiler to recover the heat and to generate 2 x 8 MW, 1x2 MW & 1x6 MW of electricity. The gases after heat recovery will pass through ESP and then discharged through chimneys into the atmosphere for effective dispersion of emissions into the atmosphere.

1.5 Water Requirement

The water required for the expansion project will be **2968 KLD**. Water required for process of manufacturing, cooling and domestic purpose which will be met from Chuikansa Nallah (a tributary of Kelo river). Total water requirement as per the earlier E.C. is **6,735 KLD**. Permission for drawl of water from Water Resources Department of Government of Chhattisgarh has allocated for a quantity of **5.42 MCM (14,850 KLD)** per year vide letter dt.23rd June 2008. **Air Cooled condensers are proposed for Power Plant to minimize the water consumption.**

Water drawl permission from Water Resource Department, Chhattisgarh will be obtained for proposed expansion

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

BREAK-UP OF WATER REQUIREMENT

S.No.	Water requirement for each unit	for units under Operation & for E.C. permitted capacities (in KLD)	For proposed units (in KLD)	After expansion (in KLD)
1	Make-up water for Pellet plant	----	560	560
2	Make-up water for DRI plant	275	205	480
3	Make-up water for SMS plant	400	445	845
4	Make-up water for Rolling mill	75	275	350
5	Make-up water for Sinter Plant	100	100	200
6	Make-up water for Blast Furnace	450	1080	1530
7	Make-up water Coal Washery	275	---	---
8	Make-up water for Ferro Alloy unit	25	---	---
8	Captive Power Plant			
	• Cooling Tower Make-up	4770	165	4935
	• Boiler make-up	260	98	358

	• D.M. plant regeneration water	75	25	100
9	Domestic	30	15	45
	Total	6,735	2968	9703

Total water requirement after the expansion will be 6,735 KLD (for E.C. permitted capacities) + 2968 KLD (For proposed units) = **9,703 KLD**.

1.6 Waste Water Generation from Proposed Expansion project

- There will be no effluent generation in the Pellet plant, DRI plant, Sinter Plant & SMS Plant as closed circuit cooling system will be adopted.
- Closed loop water system will be implemented in Rolling mill. Hence there will not be any waste water discharge from process and cooling, in which water after cooling will be recycled back.
- Effluent from Gas cleaning plant of Blast Furnace will be treated in a settling tank and after treatment it will be recycled.
- Effluent from WHRB power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning, slag granulation and for greenbelt development.
- Domestic sewage generated will be treated in proposed STP.
- There will not be any effluent discharge outside the premises. Zero discharge is being /will be followed.

BREAKUP OF WASTE WATER GENERATION

S.No.	Source	For Existing & E.C. permitted capacities	For Proposed units	After Further Expansion
1.	GCP effluent from Blast Furnace	80 (recycled)	190 (recycled)	270 (recycled)
2.	Power Plant			
	a) Cooling tower blowdown	1014	27	1041
	b) Boilers blowdown	76	30	106
	c) D.M. plant regeneration water	75	25	100
3.	Sanitary Wastewater	24	12	36
	Total	1269	284	1553

1.7 Wastewater Characteristics

PARAMETER	CONCENTRATION			
	DM plant regeneration	Boiler blowdown	Cooling Tower blowdown	Sanitary waste water
pH	4 – 10	9.5 – 10.5	7.0 – 8.0	7.0 – 8.5
BOD (mg/l)	--	--	--	200 – 250
COD (mg/l)	--	--	--	300 – 400
TDS (mg/l)	5000 -6000	1000	1000	800 – 900
Oil & Grease (mg/l)	--	10	--	--

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}, PM₁₀, SO₂, NO_x & CO at 8 stations including project site during 1st October 2020 to 31st December 2020. The following are the concentrations of various parameters at the monitoring stations:

Parameter		Concentration
PM _{2.5}	:	21.7 to 51.2 µg/m ³
PM ₁₀	:	36.8 to 88.2 µg/m ³
SO ₂	:	7.5 to 22.8 µg/m ³
NO _x	:	8.3 to 35.1 µg/m ³
CO	:	425 to 1495 µg/m ³
PAH in PM ₁₀ was BDL		

2.2 Water Quality

2.2.1 Surface Water Quality

Kelo River (3.0 Kms.), Dewanmunda Nallah (1.2 Kms.) & Gerwani nala (2.4 Kms.) are exists within 10 Km. radius of the plant site. Two samples (Upstream and Downstream) from Kelo River & one sample from Gerwani 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 day time & Night time. The noise levels at the monitoring stations are ranging from **42.86 dBA to 64.38 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 PM₁₀, SO₂, NO_x & 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 PM₁₀ concentrations (24 hourly) due to the proposed expansion project will be 1.5 µg/M³ at a distance of 1550 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 from proposed expansion project will be 0.98 µg/m³.

The predicted max incremental SO₂ concentrations (24 hourly) due to the proposed expansion project will be 14.9 µg/m³ at a distance of 1550 m from the stack in the down wind direction over the baseline concentrations.

The predicted max incremental NO_x concentrations (24 hourly) due to the proposed expansion project will be 5.9 µg/m³ at a distance of 1550 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in NO_x concentration due to the Vehicular emission from proposed expansion project will be 7.45 µg/m³.

The predicted incremental rise in CO concentration due to the Vehicular emission from proposed expansion project will be 4.9 µg/m³.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO PROPOSED PROJECT

Item	PM ₁₀ (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	CO (µg/m ³)
Maximum baseline conc. in the study area	88.2	22.8	35.1	1495
Maximum predicted incremental rise in concentration due to proposed expansion project of SEPL	1.5	14.9	5.9	Nil
Maximum predicted incremental rise in concentration due to Vehicular Emissions from the proposed expansion project.	0.98	Nil	7.45	4.9
Maximum predicted incremental rise in concentration due to unimplemented units in the earlier expansion of SEPL	1.7	2.6	4.1	Nil
Maximum predicted incremental rise in concentration due to Vehicular Emissions from the unimplemented units in the earlier expansion of SEPL	0.6	Nil	4.0	3.8
Net resultant concentrations during operation of the plant	93.0	40.3	56.55	1503.7
National Ambient Air Quality Standards	100	80	80	2000

The net resultant Ground level concentrations during operation of the expansion project are within the NAAQS. Hence there will not be any adverse impact on air environment due to the proposed expansion 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. **51 Ha.** of extensive greenbelt has already been 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 expansion project.

3.3 Prediction of impacts on Water Environment

There will be no effluent discharge from the manufacturing process of Pellets, Sponge Iron, Billets through Induction Furnace & Sinter Plant as closed-circuit cooling system will be adopted. Effluent from Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system. Effluent from Gas cleaning plant of Blast Furnace will be treated in a settling tank and after treatment it will be recycled. Effluent from power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development. Sanitary waste water will be treated in STP. 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. **51 Ha.** of extensive greenbelt has already been developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed expansion project.

3.5 Socio - Economic Environment

There will be further upliftment in Socio Economic status of the people in the area. Hence, there will be further development of the area due to the proposed expansion 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	Once in a month	Grab sampling	As per IS: 10500
B.	Effluent at the inlet & outlet of the ETP	Once in a month	composite sampling	As per EPA Rules, 1996
C.	Sanitary Wastewater (inlet & outlet of STP)	Once in a month	composite sampling	As per EPA Rules, 1996
2. Air Quality				
A.	Stack Monitoring	CEMS (all Stacks) Once in a month	--	PM PM, SO ₂ & NO _x
B.	Ambient Air quality	CAAQMS	continuously	PM _{2.5} , PM ₁₀ , SO ₂ , NO _x & CO
C.	Fugitive emissions	Once in a Month	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	Once in a month (Hourly)	Continuous for 24 hours with 1-hour interval	Noise levels

5.0 ADDITIONAL STUDIES

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

6.0 PROJECT BENEFITS

With the proposed expansion 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	Height of Stack (in M)	Control Equipment	Particulate emission at the outlet
1.	Pellet Plant	44 (2 nos.)	Electro Static Precipitator (ESP) – 2 nos.	< 30 mg/Nm ³
2.	DRI kiln with WHRB	103 (1 no.)	Electro Static Precipitator (ESP) -2 nos.	< 30 mg/Nm ³
3.	Induction Furnaces with CCM	35 (2 nos.)	Fume Extraction system with bag filters – 4 nos.	< 30 mg/Nm ³
4.	Blast furnace	61(1 no.)	Dust catcher followed by Venturi scrubber -1 no.	< 10 mg/Nm
5.	Sinter plant	50 (1 no.)	Electro Static Precipitator (ESP) – 1 no.	< 30 mg/Nm ³
6.	Rolling mill attached to RHF	39 (2 nos.)	Stacks	< 30 mg/Nm ³

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

The following air pollution control systems/ measures are proposed in the Plant:

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

7.2 Water Environment

- There will be no effluent generation in the Pellet plant, DRI plant, Sinter Plant & SMS Plant as closed circuit cooling system will be adopted.
- Closed loop water system will be implemented in Rolling mill. Hence there will not be any waste water discharge from process and cooling, in which water after cooling will be recycled back.

- Effluent from Gas cleaning plant of Blast Furnace will be treated in a settling tank and after treatment it will be recycled.
- Effluent from WHRB power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning, slag granulation and for greenbelt development.
- Domestic sewage generated will be treated in proposed STP.
- There will not be any effluent discharge outside the premises. Zero discharge is being /will be followed.

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 in Holding Tank. Service water will be treated in an oil separator and after treatment it will also be taken to Holding Tank. The treated effluent will be utilized for dust suppression, ash conditioning and for Green belt development. Sanitary waste water will be treated in STP.

TREATED EFFLUENT DISPOSAL

Total effluent generation from units permitted as per earlier E.C : 1269 KLD
(Including sanitary waste)

Total effluent generation from proposed expansion project : 284 KLD
(Including sanitary waste)

Effluent quantity to be used for ash conditioning	:	350 m ³ /day
Effluent to be used for dust suppression in CHP	:	300 m ³ /day
Effluent to be used for slag granulation	:	138 m ³ /day
Balance effluent to be used for Greenbelt development	:	765 m ³ /day

51 Ha. of greenbelt is already been 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 developed 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 has been developed in the plant premises. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposed expansion project.

Solid waste generation and disposal

S.No.	Waste / By product	Quantity (TPA)		Method of disposal
		From Existing & E.C. permitted capacities	From Proposed units	
1	Ash from Pellet Plant	----	11,400 (38 TPD)	Will be given to other brick manufacturers.
2	Ash from DRI	51,030 (170 TPD)	37,800 (126 TPD)	used in own brick manufacturing unit and remaining quantity will be given to other brick manufacturers.
3	DoloChar	85,050 (284 TPD)	42,000 (140 TPD)	is being utilized in FBC boiler as fuel. Similar practice in expansion also.
4	Wet scrapper sludge	14,075 (47 TPD)	10,500 (35 TPD)	Brick manufacturing.
5	Kiln Accretion Slag	2,835 (9.5 TPD)	2,100 (7.0 TPD)	in road construction
6	FES & Bag filter dust	6,470	24,562	will be utilized in the sinter plant.

S.No.	Waste / By product	Quantity (TPA)		Method of disposal
		From Existing & E.C. permitted capacities	From Proposed units	
		(22 TPD)	(82 TPD)	
7	Sinter returns	23,860 (80 TPD)	23,860 (80 TPD)	Will be recycled to process again
8	Granulated slag	26250 (87.5 TPD)	67,500 (225 TPD)	Will be given to near by Cement Plant, & will be used for road construction.
9	GCP sludge	30 (0.1 TPD)	72 (0.24 TPD)	will be used in Sinter Plant
10	Slag from SMS	21,600 (72 TPD)	24,000 (80 TPD)	Slag will be crushed and after recovery of iron, it will be used for road construction.
11	Mill Scale from Rolling Mill	1,800 (6 TPD)	6,600 (22 TPD)	Will be reused in Ferro Alloy plant / Sinter Plant
12	End Cuttings from Rolling Mill	2,700 (9 TPD)	9,900 (33 TPD)	Will be reused in Induction Furnace.
13	Ash from Power Plant (with Indian coal)	1,64,749 (470 TPD)	----	Will be given to Cement Plant of M/s. Ultratech Cement Ltd. Hirmi (D), Raipur & local Fly Ash Bricks Manufacturer.
14	Ash from Power Plant (with Imported coal)	1,12,048 (374 TPD)	----	Will be given to Cement Plant of M/s. Ultratech Cement Ltd. Hirmi (D), Raipur & local Fly Ash Bricks Manufacturer.
15	Washery rejects	42,000 (140 TPD)	----	Will be utilized in FBC boiler.

7.5 Greenbelt Development

Greenbelt of 51 Ha. is already been developed in the plant premises. 10m (minimum) wide greenbelt has been developed all around the plant. 1,23,500 nos. of plants have been planted & It is proposed to plant another 3000 nos. during upcoming monsoon.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant: Rs. 24.1 Crores

Recurring Cost per annum for Environmental protection: Rs.3.16 Crores

7.7 Implementation of CREP Recommendations

All the CREP recommendations will be implemented & followed strictly.

- 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
