

**SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT
REPORT**

OF

Shambhavi Ispat Private Limited

(Earlier Shambhavi Ispat)

[Expansion of Steel Plant by Backward Integration of steel plant comprising of establishment of 2 x 350 TPD DRI Kilns to manufacture 2,31,000 TPA of Sponge Iron along with 2 x 10 MW WHRB Power Plant, 1 x 10 MW FBC Power Plant, 1 x 9 MVA Ferro Alloys Unit to manufacture FeSi - 7,000 TPA / FeMn - 25,200 TPA/ SiMn - 14,000 TPA / FeCr - 15,000 TPA / Pig Iron - 25,200 TPA, Briquetting Plant - 100 Kg/Hr., Brick Manufacturing unit (25,000 Bricks/day) & Slag Crushing Unit (40,000 TPA)]

Category – A Project

Schedule -3(a) Metallurgical Industries (ferrous and non-ferrous) and 1(d) Thermal Power Plants

at

Village: Gerwani, Tehsil & District: Raigarh, Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

1.0 PROJECT DESCRIPTION

Shambhavi Ispat Private Limited is an existing plant located at Gerwani Village, Raigarh Tehsil & District, Chhattisgarh.

Chronology of permission obtained & Implementation Status:

- Consent was obtained from Regional Office, Raigarh, Chhattisgarh Environment Conservation Board (CECB) vide 1072/RO/TS/CECB/2019 dt. **23.10.2019** for establishment of 30,000 TPA Rolling Mill to manufacture MS Bars and Rods (TMT Bar).
- Consent to Operate was issued by CECB vide no. 1509/RO/TS/CECB/2021 dt. **16/11/2021** for 30,000 TPA Rolling Mill to manufacture MS Bars and Rods (TMT Bar).
- Subsequently, Environmental Clearance was obtained from SEIAA, Chhattisgarh vide OL/EC/IND/RAIGARH/1167 dated **21/10/2022** for establishment of Induction Furnace - 3,96,000 TPA, Expansion of Rolling Mill from 30,000 TPA to 3,60,000 TPA and Coal Gasifier – 2 x 9900 Nm³/Hr.
- Consent to Establishment was issued by CECB vide no. 5103/TS/CECB/2022 Naya Raipur dt. **31/10/2022** for establishment of Induction Furnace - 3,96,000 TPA, expansion of Rolling Mill from 30,000 TPA to 3,60,000 TPA and Coal Gasifier – 2 x 9900 Nm³/Hr.
- Consent to Operate was issued by CECB vide no. 9965/TS/CECB/2024 Naya Raipur dt. **12/03/2024** for Induction Furnaces - 1,98,000 TPA (4 x 15 T) and Rolling Mill – 1,95,000 TPA valid till 31/01/2027.

Proposed Project

Now it has been proposed for backward integration of existing steel plant comprising of establishment of 2 x 350 TPD DRI Kilns to manufacture 2,31,000 TPA of Sponge Iron along with 2 x 10 MW WHRB Power Plant, 1 x 10 MW FBC Power Plant, 1 x 9 MVA Ferro Alloys Unit to manufacture FeSi - 7,000 TPA / FeMn - 25,200 TPA/ SiMn - 14,000 TPA / FeCr - 15,000 TPA / Pig Iron - 25,200 TPA, Briquetting Plant - 100 Kg/Hr., Brick Manufacturing unit (25,000 Bricks/day) & Slag Crushing Unit (40,000 TPA).

Existing plant is located in **8.223 Ha.** of land. Proposed expansion will be taken up in partly in the existing land and partly in the **2.194 Ha.** of land adjacent to the existing plant. Total land after proposed expansion will be **10.417 Ha.**

As per the Ministry of Environment, Forests & Climate Change, New Delhi, EIA notification dated 14th September, 2006 & its subsequent amendments, all Primary metallurgical processing industries are listed under S.No. 3(a) Metallurgical industries (ferrous & non-ferrous), 1(d) Thermal Power Plants under Category 'A'.

In order to obtain Environmental Clearance for the proposed backward integration of existing 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 vide proposal No. IA/CG/IND1/478592/2024.

Presentation was made before the 64th meeting of the Expert Appraisal Committee (Industry - 1) held on 21st August 2024 for the approval of TOR (Terms of Reference) for EIA study. Subsequently **TOR letter** was issued vide letter No. IA-J-11011/386/2023– IA II (IND-I), dated **29th September 2024**. Later obtained **Transfer of TOR letter** from Shambhavi Ispat to Shambhavi Ispat Pvt. Ltd. vide File No.: J-11011/386/2023-IA-II(IND-I) dt. **13th August 2025**.

Draft EIA report is prepared incorporating the Terms of Reference & being submitted to Chhattisgarh Environment Conversation Board (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/25-28/RA 0456, for preparing Environmental Impact Assessment (EIA) report for Metallurgical Unit, has prepared EIA report for the proposed expansion project.

This report furnishes the details of location of Site, Description of the project, prevailing baseline status w.r.t Air Environment, Water Environment, Noise Environment, Land Environment, Flora & Fauna and Socio-economic environment. This report also helps in identification of environmental impacts and suggesting mitigation measures to be followed during Construction and Operation of the proposed project as a part of Environmental Management Plan. This report also acts as guidance manual for the proponent for following the Environmental Management Plan (EMP) and for adopting post project Environmental Monitoring Program as per statutory norms.

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

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

Table No.1.1: Environment Setting Within 10 Kms. Radius of the Plant Site

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Existing land is Industrial land and proposed additional land is Un-irrigated Agricultural Land.
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements –5.8%; Industrial Area - 8.5%; Tank / River/ Major Canal / Reservoir etc. - 11.6%; Dense Forest/Scrub Forest – 39.9 %; Single crop land – 12.4 %; Double crop land – 5.8 %, Land with scrub – 8.3%; Land without scrub – 2.2%, Mining Area – 1.1%, Ash storage area – 4.4%
3.	National Park/ Wild life 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. However, movement of Elephants is observed within 10 Kms. radius of the plant, as per the secondary source. Conservation plan is prepared.
4.	Historical places / Places of Tourist importance / Archeological sites	Banjari Mata temple - 4.8 Kms. Ram Jharna & Singhanpur Caves – 9.2 Kms.
5.	Critically polluted area as per MoEF&CC Office Memorandum dated 13 th January 2010	None And also the Plant area does not fall in the areas given in Hon'ble NGT order issued vide dated 10 th July 2019.
6.	Defense Installations	Nil
7.	Nearest village	Nearest habitation is at Gerwani Village at 0.5 Kms. (NE Direction)
8.	No. of Villages in the Study Area	51 nos.
9.	Nearest Hospital	PHC at Gerwani Village (0.7 Kms. - E Direction)
10.	Nearest School	Govt. Higher Secondary School, Gerwani Village (0.4 Kms. – North Direction)
11.	Forests	Taraimal RF (2.2 Kms.), Rabo RF (6.2 Kms), Urdana RF (1.7 Kms.) Pajhar PF (8.4 Kms.), Kharidungri PF (2.6 Kms.), Keradungri PF (4.4 Kms.), Dungapani PF (3.2 Kms.), Lakha PF (0.5 Kms.), Barkachhar RF (2.0 Kms.), Punjipathra PF (6.7 Kms.) exists within the study area.
12.	Water body	Kelo river (1.5 Kms.), Gerwani Nala (1.9 Kms.) Kokritarai Pond near Kirodimal (6.5 Kms.) exists within the study area.
13.	Nearest Highway	Raigarh – Ambikapur State Highway – 0.4 Kms. By Road
14.	Nearest Railway Station	Nil within 10 Km. radius

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
		Kirodimal Railway Station – 20.0 Kms. (By Road)
15.	Nearest Port facility	Nil within 10 Km. radius
16.	Nearest Airport	O.P Jindal Airport – 6.4 Kms. (by Aerial)
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 in the additional land adjoining to the existing plant. The expansion will be taken up partly in the existing plant & partly in adjoining land.
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 plant configuration and production capacity proposed now

TABLE NO.1.2: Plant Configuration and Production Capacity (Existing & Proposed)

S.No.	Unit (Product)	EC obtained (2022)	In Operation	Proposed Expansion	After Proposed Expansion
1.	DRI Kiln (Sponge Iron)	---	---	2,31,000 TPA (2 x 350 TPD)	2,31,000 TPA (2 x 350 TPD)
2.	Induction Furnace (Hot Billets / MS Billets / Steel Ingots)	3,96,000 TPA (8 x 15 T)	1,98,000 TPA (4 x 15 T)	---	3,96,000 TPA
3.	Rolling Mill (MS Bars / Rods / TMT bars/ Wire Rod / Angle / Channel / Steel Structures)	3,60,000 TPA (2 x 500 TPD)	1,95,000 TPA (1,65,000 TPA i.e. 1 x 500 TPD from EC + *30,000 TPA from Consent)	---	3,60,000 TPA
4.	Coal Gasifier (Producer Gas)	2 x 9,900 NM ³ /Hr	---	---	19,800 NM ³ /Hr
5.	Ferro Alloys (FeSi/ FeMn/ SiMn/ FeCr/Pig Iron)	---	---	1 x 9 MVA (FeSi - 7,000 TPA / FeMn - 25,200 TPA/ SiMn - 14,000 TPA / FeCr - 15,000 TPA / Pig	1 x 9 MVA (FeSi - 7,000 TPA / FeMn - 25,200 TPA/ SiMn - 14,000 TPA / FeCr - 15,000 TPA / Pig

S.No.	Unit (Product)	EC obtained (2022)	In Operation	Proposed Expansion	After Proposed Expansion
				Iron - 25,200 TPA)	Iron - 25,200 TPA)
6.	Power Plant (WHRB)	---	---	2 x 10 MW	2 x 10 MW
7.	Power Plant (FBC)	---	---	1 x 10 MW	1 x 10 MW
8.	Brick Manufacturing Unit			25,000 Brick/Day	25,000 Brick/Day
9.	Briquette Plant			100 Kg./Hr.	100 Kg./Hr.
10.	Slag Crushing Unit	---	---	40,000 TPA	40,000 TPA
*Obtained Consent for 30,000 TPA Rolling Mill from Chhattisgarh Environment Conservation Board (CECB) prior to EC in 2022					

1.3 RAW MATERIALS (FOR EXPANSION PROJECT)

The following will be the raw material requirement for the proposed expansion 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) 2,31,000 TPA (2 x 350 TPD)				
a)	Iron ore	3,69,600	Barbil, Odisha	~ 500 Kms	By rail & road (through covered trucks)
b)	Coal	Indian(100%)	SECL Chhattisgarh / MCL Odisha	~ 500 Kms	By rail & road (through covered trucks)
		Imported(100%)	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
c)	Dolomite	11,550	Chhattisgarh	~ 100 Kms.	By road (through covered trucks)
2.	For FBC Boiler [Power Generation 1 x 10MW]				
a)	Indian Coal	59,400	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
OR					
b)	Imported Coal	38,000	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road

Shambhavi Ispat Pvt. Ltd.

(Expansion of Steel Plant)

Village: Gerwani, Tehsil Raigarh,
District: Raigarh, Chhattisgarh

S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport	
					(through covered trucks)	
OR						
c)	Dolochar + Indian Coal	Dolochar	46,200	In plant generation	---	through covered conveyors
		Indian Coal	36,300	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
OR						
d)	Dolochar + Imported Coal	Dolochar	46,200	In plant generation	---	---
		Imported Coal	23,232	Indonesia / South Africa / Australia	~ 600 Kms. (from Vizag Port)	Through sea route, rail route & by road (through covered trucks)
3.	For Ferro Alloys (1 x 9 MVA)					
3 (i)	For Ferro Silicon – 7,000 TPA					
a)	Quartz	15,400	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)	
b)	Mill Scale & M.S. Scrap	3,150	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)	
c)	Char Coal / Coke	10,850	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)	
d)	Electrode paste	700	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)	
e)	Briquetted Bag filter dust	490	In house generation	---	----	
3 (ii)	For Ferro Manganese – 25,200 TPA					
a)	Manganese Ore	60,480	MOIL / OMC	~ 500 Kms.	By Rail & Road (through covered trucks)	
b)	Coke	7,560	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)	
c)	MS scrap / Mill scales	5,040	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)	
d)	Electrode paste	554	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered	



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S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
					trucks)
3 (iii)	For Silico Manganese – 14,400 TPA				
a)	Manganese Ore	28,800	MOIL / OMC	~ 500 Kms.	By Rail & Road (through covered trucks)
b)	FeMn Slag	6,480	In house generation	---	----
c)	Coke	4,320	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	Dolomite	4,320	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
e)	Electrode paste	288	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
f)	Quartz	5,040	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
g)	Briquetted Bag filter dust	216	In house generation	---	----
3 (iv)	For Ferro Chrome – 15,000 TPA				
a)	Chrome Ore	36,000	Sukinda, Odisha Imported	~ 500 Kms. ~ 600 Kms. (from Vizag Port)	By road (through covered trucks) From Port By Road (through covered Trucks)
b)	LAM Coke	7,500	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
c)	Quartz	915	Chhattisgarh / Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	MS Scrap / Mill Scale	2,250	Inhouse Generation	---	By road (through covered trucks)
e)	Bauxite	2,250	Chhattisgarh / Maharashtra	~ 500 Kms.	By road (through covered trucks)
f)	Electrode Paste	300	Maharashtra / West Bengal	~ 300 Kms.	By road (through covered trucks)
g)	Briquetted Bagfilter dust	300	In house	---	----



S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
			generation		
3(v)	For Pig Iron (25,200 TPA)				
a)	Iron ore	27,594	Barbil, Odisha NMDC, Chhattisgarh	~ 500 Kms.	By Road (Covered trucks)
b)	Mill Scale	16,380	In house generation	---	----
c)	Coke	15,826	Andhra Pradesh	~ 500 Kms.	By road (through covered trucks)
d)	Lime stone	3,780	Chhattisgarh	~ 300 Kms.	By Road (Covered trucks)
e)	Fluorspar	630	Chhattisgarh / Andhra Pradesh	100 – 300 Kms.	By Road (Covered trucks)
f)	Dolomite	3,780	Chhattisgarh / Andhra Pradesh	~ 500 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 350 TPD** kilns and related accessories including Waste Heat Recovery power generating unit. 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°C enters the reduction zone. Temperature of the order of 1050°C 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°C. 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 Power Generation

Through WHRB Boiler

The hot flue gases from proposed 2 x 350 TPDDR kilns will pass through waste heat recovery Boiler to recover the heat and to generate (2 x 10 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 Boiler to generate 10.0 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.

1.4.3 Submerged Electric Arc Furnace

Submerged Electric Arc Furnace of 1 x 9 MVA will be setup in the proposed plant. 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 as main raw material in sub-merged arc furnaces using reducer (Coke) under high voltage. Pig Iron will be also produced from SEAF using iron ore, dolomite as raw material. Flue gases will be extracted through 4th hole and then treated in bag filters.

1.5 Water Requirement

- Water required for EC permitted capacity is 435 KLD, however only few units are in operation for which water requirement is 95 KLD and same is being sourced from Ground water source.
- NOC from CGWA for withdrawing of ground water for operating unit is obtained vide NOC no. CGWA/NOC/IND/REN/1/2025/10473 dated 09.01.2025 and same is valid till 29/08/2027.
- Water required for the proposed expansion project will be 870 KLD and same will be sourced from Ground Water and Delari Pali Nallah (Kharkhari Nallah).
- Total water requirement after the proposed expansion will be 1,305 KLD.
- An application has been submitted to Water Resource Department, Chhattisgarh for withdrawal of water from Delari Pali Nallah (Kharkhari Nallah) vide application no. WA00604.
- Air cooled condensers will be provided for proposed Power Plant.

TABLE NO.1.4: Break Up of Water Consumption (Existing & Proposed)

S.No.	Unit	Quantity in KLD		
		Existing plant & permitted capacity	Proposed Expansion	After Proposed Expansion
1.	DRI Kilns	---	230	230
2.	Induction furnaces	160	---	160
3.	Rolling Mill	248	---	248
4.	Makeup water for scrubber	12	---	12
5.	Ferro Alloys Unit	---	30	30
6.	Power Plant	---	570	570
	• Cooling tower makeup	---	274	274
	• Boiler make up	---	206	206
	• DM plant Regeneration	---	90	90
7.	Brick Manufacturing	--	10	10
8.	Briquetting unit	--	10	10
9.	Domestic purpose	15	20	35
	Total	435	870	1305

1.6 Waste Water Generation

Existing

- The wastewater generated from Induction Furnaces, Rolling Mill units will be sent to CMB followed by RO and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary wastewater, which is being treated in Septic tank followed by Soak pit.
- Zero liquid effluent discharge is being maintained in the existing plant.

Proposed

- Wastewater from DRI Kilns unit, Submerged Electric Arc Furnace & Power Plant will be sent to Effluent Treatment Plant (ETP) for treatment and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- 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.
- Sanitary waste water after proposed expansion will be treated in STP and after ensuring compliance with SPCB norms, it will be utilized for greenbelt development.
- Zero liquid effluent discharge practice will be maintained in the proposed project.
- 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.
- Garland drains will be provided around all the raw material stacking areas.

TABLE NO.1.5: BREAKUP OF WASTE WATER GENERATION

S.No.	Source	Generation (KLD)		
		Existing plant	Proposed Expansion	After Proposed Expansion
1.	DRI Kilns	---	10	10
2.	Induction furnaces	16	---	16
3.	Rolling Mill	12	---	12
4.	Make up water for scrubber	7	---	7
5.	Ferro Alloy Plant	---	2	2
6.	Power Plant	---	217	217
	a) Cooling Tower blowdown	---	69	69
	b) Boilers blowdown	---	58	58
	c) D.M. plant regeneration water	---	90	90
7.	Briquetting unit	---	---	---

8.	Brick Manufacturing unit	---	---	---
9.	Sanitary Wastewater	12	16	28
	Total	47	245	292

1.7 Wastewater Characteristics

The following are the Characteristics of waste water

TABLE NO.1.6: CHARACTERISTICS OF WASTEWATER

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, NO₂ & CO at 8 stations including project site during **1st December 2023 to 29th February 2024**. The following are the concentrations of various parameters at the monitoring stations:

TABLE NO.2.1: AAQ DATA SUMMARY

S.No.	Parameter	Concentration (inµg/m ³)	Standard as per NAAQS (inµg/m ³)
1.	PM _{2.5}	24.6 to 47.3	60
2.	PM ₁₀	41.0 to 78.9	100
3.	SO ₂	9.4 to 22.5	80
4.	NO _x	11.7 to 28.7	80
5.	CO	550 to 1350	2000

2.2 Water Quality

2.2.1 Surface Water Quality

Two samples (Upstream and Downstream) from Kelo River (1.5 Kms. –East Direction) & One Sample from Gerwani Nala (1.9 Kms – North Direction) 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 equivalent day-night noise levels in the study zone are ranging from **49.73 dBA to 66.19 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}, 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.

TABLE NO.3.1: NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO PROPOSED EXPANSION

Item	PM _{2.5} (µg/m ³)	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	47.30	78.90	22.50	28.70	1350.00
Maximum predicted incremental rise in concentration due to proposed project (Point Sources)	0.29	0.53	6.51	2.80	0.54
Maximum predicted incremental rise in concentration due to proposed project (Vehicular emissions)	0.11	0.19	----	1.43	0.92
Net resultant concentrations during operation of the proposed project	47.7	79.62	29.01	32.93	1351.46
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.

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. **3.50 Ha.** of extensive greenbelt will be developed (inclusive of existing) 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

Existing

- The wastewater generated from Induction Furnaces, Rolling Mill units will be sent to CMB followed by RO and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary wastewater, which is being treated in Septic tank followed by Soak pit.
- Zero liquid effluent discharge is being maintained in the existing plant.

Proposed

- Wastewater from DRI Kilns unit, Submerged Electric Arc Furnace & Power Plant will be sent to Effluent Treatment Plant (ETP) for treatment and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Air Cooled condensers will be provided in the power plant, which will reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Sanitary waste water after proposed expansion will be treated in STP and after ensuring compliance with SPCB norms, it will be utilized for greenbelt development.
- Zero liquid effluent discharge practice will be maintained in the proposed project.

- 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.
- Garland drains will be provided around all the raw material stacking areas.

Hence there will not be any adverse impact on water environment due to the proposed expansion 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. **3.50 Ha.** of extensive greenbelt will be developed (inclusive of existing) 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:

Table no. 4.1: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. Water & Waste water quality				
A.	Water quality in the area	Quarterly Once	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				

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
A.	Stack Monitoring	CEMS (all Stacks) Once in a month	-- --	PM, SO _x , NO _x & CO PM, SO ₂ & NO _x
B.	Ambient Air quality	CAAQMS Quarterly Once	continuously 24 Hourly	PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ & CO PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ & 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	Once in a month (Hourly)	Continuous for 24 hours with 1-hour interval	Noise levels
5. Soil Quality Monitoring				
	Soil Quality	Half Yearly	Core drilling samples	pH, SAR, texture, N,K,P etc.
Note: PM _{2.5} , PM ₁₀ , SO ₂ , NO _x and CO are monitored as per Ministry notification vide G.S.R. No. 826(E) dated 16 th November, 2009				

5.0 ADDITIONAL STUDIES

Draft EIA report is being submitted for Public Hearing.

Risk analysis deals with the identification and quantification of risks, the plant 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 required as the additional land shown is not having any habitations.

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 present proposal will generate direct employment to 250 nos. which comprises of officials, staff, skilled, semi -skilled labour & 500 nos. indirectly employed in contract works & transport.

As per MoEF&CC Office Memorandum vide F.No.22-65/2017-IA.III dt. 30th September 2020, the budgetary allocation for commitment made by Project Proponent to address the concern raised during public hearing & based on Social Impact Assessment (SIA). Hence A separate budget will be allocated for Social welfare measures after completion of Public Hearing.

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Environment

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

TABLE NO. 7.1: AIR EMISSION CONTROL SYSTEM 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.	Submerged Electric Arc Furnace	4 th Hole Fume Extraction system with bag filters	PM < 30 mg/Nm ³
3.	FBC Boiler	Electro Static Precipitators	PM < 30 mg/Nm ³
		Lime dosing will also be done	SOx < 100 mg/Nm ³
		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, 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

Existing

- The wastewater generated from Induction Furnaces, Rolling Mill units will be sent to CMB followed by RO and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary wastewater, which is being treated in Septic tank followed by Soak pit.
- Zero liquid effluent discharge is being maintained in the existing plant.

Proposed

- Wastewater from DRI Kilns unit, Submerged Electric Arc Furnace & Power Plant will be sent to Effluent Treatment Plant (ETP) for treatment and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- 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.
- Sanitary waste water after proposed expansion will be treated in STP and after ensuring compliance with SPCB norms, it will be utilized for greenbelt development.
- Zero liquid effluent discharge practice will be maintained in the proposed project.
- 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.
- Garland drains will be provided around all the raw material stacking areas.
- Hence there will not be any adverse impact on water environment due to the proposed expansion project

TREATED EFFLUENT DISPOSAL

Total treated effluent generation	292 KLD
Effluent quantity to be used for ash conditioning	52 KLD
Effluent to be used for dust suppression in CHP	98 KLD
Effluent to be used for Greenbelt development	90 KLD
RO Rejects to be used for Floor washing, Toiler cleaning & Flushing	52 KLD

3.5 Ha. of greenbelt will be maintained 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.

The characteristics of the treated effluent will comply with the SPCB Standards for onland irrigation. Hence there will not be any adverse impact on ground water / surface water due to the proposed project.

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 expansion project.

TABLE NO. 7.2: SOLID WASTE GENERATION & ITS DISPOSAL

S.No.	Waste / By product	Quantity (TPA)			Proposed method of disposal
		Existing / Permitted capacity	Proposed Expansion	After Proposed Expansion	
1.	Ash from DRI	---	41,580	41,580	It will be utilised in proposed brick manufacturing unit.
2.	Dolochar	---	46,200	46,200	It will be utilized in the proposed FBC based power plant.

Shambhavi Ispat Pvt. Ltd.

(Expansion of Steel Plant)

Village: Gerwani, Tehsil Raigarh,
District: Raigarh, Chhattisgarh

S.No.	Waste / By product	Quantity (TPA)			Proposed method of disposal
		Existing / Permitted capacity	Proposed Expansion	After Proposed Expansion	
3.	Kiln Accretion Slag	---	2,079	2,079	It will be utilised in proposed brick manufacturing unit.
4.	Wet Scrapper Sludge	---	9,240	9,240	It will be utilised in proposed brick manufacturing unit.
5.	SMS Slag	39,600	---	39,600	Slag from SMS is being crushed and iron will be recovered & then remaining non -magnetic material being inert by nature will be used given to road contractor for road laying.
6.	End Cuttings	10,800	---	10,800	Recycled back as raw material in own induction furnaces.
7.	Mill scales	1,080	---	4,680	Is being given to nearby Ferro alloys manufacturing units or casting units.
8.	Cinder from gasifier	29,700	---	29,700	Is being given to Brick Manufacturing Unit/ Will be utilised in the proposed brick manufacturing unit.
9.	Tar from Gasifier	1,386	---	1,386	Is being given to coal tar recyclers/agencies engaged in construction activities/given to nearby pellet plant units.
10.	Ash from Power Plant (with Indian Coal + dolochar)	---	44,055	44,055	Will be utilised in the proposed brick manufacturing unit.
11.	Slag From FeMn	---	25,200	25,200	Will be reused in manufacture of SiMn as it contains high SiO ₂ and Silicon.
12.	Slag from FeSi	---	980	980	Will be given to Cast iron foundries
13.	Slag from SiMn	--	14,400	14,400	will be used for Road construction / will be given to slag cement manufacturing.
14.	Slag from FeCr	---	13,500	13,500	Will be processed in Zigging plant for Chrome recovery. After Chrome recovery, the left-over slag will be analyzed 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.



S.No.	Waste / By product	Quantity (TPA)			Proposed method of disposal
		Existing / Permitted capacity	Proposed Expansion	After Proposed Expansion	
					If Chrome content exceeds the permissible limits, it will be sent to nearest TSDF.
15.	Slag from Pig Iron	---	15,120	15,120	Will be given to Slag based Cement manufacturing unit
16.	Dust from Bagfilters of SEAF & during tapping	---	7046	7046	will be used in Briquetting Plant.

7.5 Greenbelt Development

- 3.50 Ha. of land (inclusive of existing) will be maintained with greenbelt as a part of expansion (i.e. 33.4% of the total area).
- Proposed to develop minimum 15m wide green belt along the periphery, inside the plant premises.
- The tree species to be selected for the plantation are pollutant tolerant, fast growing, wind firm, deep rooted. A three-tier plantation is proposed comprising of an outer most belt of taller trees which will act as barrier, middle core acting as air cleaner and the innermost core which may be termed as absorptive layer consisting of trees which are known to be particularly tolerant to pollutants.
- 3- tier plantation will be taken up all around the periphery of the plant premises.
- Greenbelt will be maintained as per CPCB guidelines (i.e. 2500 plants/ Ha.).
- Local DFO will be consulted in developing the additional greenbelt.

Total number of plants required after expansion @2500 nos. per Ha. will be 8750 nos.

7.6 Cost for Environment Protection

Budget allocated for Environment Management Plan : Rs. 32.50 Crores

Recurring Cost per annum for Environmental protection : Rs. 6.68 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 WHR Boiler.

- 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.
- Additional Rain water harvesting pits will be constructed outside the plant premises in consultation with CGWB.