SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENTREPORT

OF

KUSUM SMELTERS PVT. LTD.

[Expansion of Steel Plant]

- New Iron Beneficiation Unit – 1 x 2.2 MTPA,
- New Pellet plant – 1 x 1.2 MTPA,
- New Coal Gasifier for Pellet Plant - 1 x 36000 NM^3/Hr.,
- Sponge Iron from 2,45,000 TPA to 3,67,500 TPA),
- WHRB based Power Plant from 16 MW to 30 MW,
- Hot Billets / MS Billets / Ingots from 1,79,550 TPA to 3,56,400 TPA,
- Rolling Mill from 1,31,970 TPA, to 2,63,940 TPA,
- Rolling Mill (through Reheating Furnace) - from 42,194, TPA to 84,388 TPA,
- New Coal Gasifier for Reheating Furnace – 3,000 NM^3/Hr.,
- Brick Manufacturing unit – 1,22,450 Bricks /day to 1,44,000 Bricks/ day

Category – A Project

***Schedule - 3(a) Metallurgical Industries (ferrous and nonferrous), 1(d) Thermal Power Plants,* 2(b) Mineral beneficiation**

AT

Villages – Dhamni & Rambod, Tehsil – Pathariya,
District – Mungeli, State – Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENTCONSERVATION BOARD

1. PROJECT DESCRIPTION

Kusum Smelters Pvt. Ltd. is operating a steel plant at Village Dhamni, Tehsil Pathariya, District Mungeli, Chhattisgarh.

Chronology of permission obtained:

- Environmental Clearance obtained from MoEF&CC vide order No. J-11011/197/2020-IA.II(I) dated **20/06/2022** for proposed **Steel Plant**, for production of Sponge Iron (2,45,000 TPA); Mild Steel billet (1,79,550 TPA) and/or Rerolled Steel Products through Hot Charging (1,31,970 TPA); Rerolled Steel Product through Reheating Furnace (42,194 TPA); Ferro alloys (75,000 TPA) or Pig iron (1,50,000 TPA), Captive Power 56.0 MW (16.0MW through WHRB and 40 MW through AFBC) and Fly Ash Brick (1,50,000 TPA).
- Environmental Clearance Granted by MoEF&CC vide order No. IA-J-11011/64/2021-IA-II(I) dated **02.09.2022** for proposed **Grain based Distillery plant** comprising of Bio Ethanol - 35000 KLA (100 KLD); Animal feed grade protein - 28000 TPA, Bio CNG 3000 - TPA, CO_2- 17500 TPA and 3.0 MW Co-generation Power Plant. Same is
- Consent to Establishment (CTE) has been obtained from Chhattisgarh Environment Conservation Board (CECB) vide No.4066/TS/CECB/2022 Raipur, dt. **13.09.2022** for Sponge Iron Plant (2 x 350 TPD DRI Kilns) capacity of – 2,45,000 TPA, WHRB Power Plant -16.0 MW, FBC Power Plant – 40.0 MW, Induction Furnaces (4 x 15 T with LRF 1 x 15 T) – 1,79,550 TPA, Rerolled Steel Products through Hot Charging (1,31,970 TPA); Rerolled Steel Product through Reheating Furnace (42,194 TPA); Ferro alloys (75,000 TPA) or Pig iron (1,50,000 TPA)**,** Fly Ash Brick (1,50,000 TPA)- 1,22,450 Bricks/day.
- Consent to Operate obtained from CECB Vide No. 10089/TS/CECB/2024 Raipur, dt **29.11.2024** and same is valid upto **28.02.2025** for Sponge Iron Plant (2 x 350 TPD DRI Kilns) capacity of – 2,45,000 TPA , WHRB Power Plant – 16.0 MW
- Amendment in Consent to Operate obtained from CECB Vide No. 10844/TS/CECB/2025 Raipur, dt **18.02.2025** and same is valid upto 28.02.2025 for Ferro Alloys – 37,500 MTPA Tonnes Per Year and/or Pig Iron - 75,000 MTPA.
- **EC Surrender** for Distillery plant proposed in **6.54 Ha.** of land has been obtained from State Environment Impact Assessment Authority (SEIAA), Chhattisgarh vide letter no**. IA-J- 11011/64/2021-IA.II (I) dt. 20.12.2025**
- Renewal Consent to Operate obtained from CECB Vide No. 11531/TS/CECB/2026 Raipur, dt **16.01.2026** for Sponge Iron Plant (2 x 350 TPD DRI Kilns) capacity of – 2,45,000 TPA ,

Submerged Electric arc Furnace (2x9 MVA) & WHRB Power Plant – 16.0 MW and same is valid upto **28.02.2029**.

Proposed Expansion Project

Now company proposed to enhance the existing steel plant by installation of New Iron Beneficiation Unit – 1 x 2.2 MTPA, New Pellet plant – 1 x 1.2 MTPA, New Coal Gasifier for Pellet Plant - 1 x 36000 NM^3/Hr., expansion of DRI Kilns from 2 x 350 TPD to 3 x 350 TPD (Sponge Iron from 2,45,000 TPA to 3,67,500 TPA), WHRB based Power Plant from 16 MW to 30 MW, Upgradation of permitted Induction Furnaces from 4 x 15 T to 4 x 20 T and install the additional 2 x 20 T Induction Furnaces with 1 x 20 T LRF (Hot Billets / MS Billets / Ingots from 1,79,550 TPA to 3,56,400 TPA), Rolling Mill (through Hot Charging - Rerolled Steel Products) – from 1,31,970 TPA, to 2,63,940 TPA, Rolling Mill (through Reheating Furnace - Rerolled Steel Products) - from 42,194, TPA to 84,388 TPA, New Coal Gasifier for Reheating Furnace – 3,000 NM^3/Hr., Brick Manufacturing unit – 1,22,450 Bricks /day to 1,44,000 Bricks/ day

Land:

- Land as per the existing permitted ECs is **17.14 Ha.**, out of which **10.6 Ha.** of land is allocated for Steel plant and **6.54 Ha.** of land is allocated for Grain based Distillery plant.
- Now it is proposed to **Surrender the Environmental Clearance** obtained for Grain based Distillery plant **(proposed in 6.54 Ha. of land)** and accordingly **EC Surrender** for Distillery plant proposed in **6.54 Ha.** of land has been obtained from State Environment Impact Assessment Authority (SEIAA), Chhattisgarh vide letter no**. IA-J- 11011/64/2021-IA.II (I) dt. 20.12.2025**
- Now the proposed expansion of steel plant will be taken up in the existing EC permitted premises (i.e. **17.14 Ha.**) and in additional land of **25.353 Ha.** of land adjacent the existing land. Hence total land after proposed expansion of steel will be **42.493 Ha.**

The project cost envisaged for the proposed project is **Rs. 480 Crores.**

The proposed project activity is listed at schedule no. 3(a) Metallurgical Industries (ferrous & non-ferrous), 2(b) Mineral Beneficiation and 1(d) Thermal Power Plants under Category "A" of the schedule of the EIA Notification, 2006 and appraised at Central Level.

In order, to obtain Environmental Clearance for the proposed project, (CAF, Form – I Part A & B), copy of Pre-Feasibility report and proposed ToRs were submitted to the Honourable Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi on 25th December 2025 vide Proposal No. **IA/CG/IND1/525216/2025**.

Subsequently Standard TOR letter was issued vide letter File No. **IA-J-11011 / 197 / 2020 – IA-II (IND-I),** dated **29th December 2025**. Draft EIA report has been prepared incorporating the Terms of Reference & is being submitted to Chhattisgarh Environment Conservation 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 Km. 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 Additional land will be converted for Industrial purpose
2.	National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor	Nil, There are no National Park/ Wildlife sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor within 10 Km. radius of the project site.
3.	Historical places / Places of Tourist	Nil

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
	importance / Archeological sites	
4.	Critically polluted area as per MoEF&CC Office Memorandum dated 13th January 2010	Nil And also the Plant area does not fall in the areas given in Hon'ble NGT order issued vide dated 10thJuly 2019.
5.	Defence Installations	Nil
6.	Nearest Village	Rambod Village - 0.55 Kms. (N) Dhamni Village -0.70 Kms. (S)
7.	No. of Villages in the study area	80 nos.
8.	Nearest Hospital	Government Hospital Sargaon - 4.2 Kms. (S)
9.	Nearest School	Govt. Primary School, Bhakuridih- 1.8 Kms. (SE)
10.	Forests	Nil
11.	Water body	Two water bodies i.e. an unnamed stream and unnamed canal is passing through the project site. Maniyari river - 0.63 Kms.(E), Turturia Nala – 0.50 Kms.(NE), Tesua Nadi – 1.40 Kms(S), Maniyari river Disrtibutary Canal – 2.66 (N) Ghongha nadi - 6.00 Kms.(N) Linjua Nala – 8.70 kms (SW) Agar Nadi – 7.90 kms (NW) & Few seasonal nalas, ponds exists within the study area.
12.	Nearest Highway	NH # 200 – 3.90 Kms.
13.	Nearest Railway Station	Dagori RS – 14.0 Kms. – By Road
14.	Nearest Port facility	Nil within 10 Km. Radius.
15.	Nearest Airport	Bilaspur Airport– 14.80 ms. (by Aerial)
16.	Nearest Interstate Boundary	Nil within 10 Km. Radius.
17.	Seismic zone as per IS-1893	Seismic zone – II
18.	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.
19.	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 permitted & in operation Capacity	Proposed Configuration	After Expansion
1.	I/O Beneficiation (I/O Concentrate)	---	1 x 2.2 MTPA	22,00,000 TPA
2.	Pellet Plant (Pellet)	---	1 x 1.2 MTPA	12,00,000 TPA
3.	Producer Gas Plant for Pellet plant	---	1 x 36,000 NM^3/Hr	1 x 36,000 NM^3/Hr
4.	DRI Kilns (Sponge Iron)	2,45,000 TPA (2 x 350 TPD) **(In operation)**	1,22,500 TPA (1 x 350 TPD)	3,67,500 TPA (3 x 350 TPD)
5.	Induction Furnaces (Hot Billets / MS Billets / Ingots)	1,79,550 TPA (4 x 15 T) with LRF 1 x 15 T **(Yet to install)**	3,56,400 TPA (Upgradation of permitted Induction Furnaces from 4 x 15 T to 4 x 20 T with 1 x 20 LRF and install additional 2 x 20 T IFs)	3,56,400 TPA (6 x 20 T with LRF 1 x 20 T)
6.	Rolling Mill (*Hot Charging*) (Rerolled Steel Products)	1,31,970 TPA (Yet to install)	1,31,970 TPA	2,63,940 TPA
7.	Rolling Mill (*Reheating*) (Rerolled Steel Products)	42,194 TPA **(Yet to install)**	42,194 TPA	84,388 TPA
8.	Gasifier for Reheating Furnace	---	1 x 3000 NM^3/Hr	1 x 3000 NM^3/Hr
9.	Submerged Electric Arc Furnace (Ferro Alloys or Pig Iron)	4x9 MVA 75,000 TPA (Ferro Alloys) and / or 1,50,000 TPA (Pig Iron) **(2x9 MVA in operation)**	---	75,000 TPA (Ferro Alloys) and / or 1,50,000 TPA (Pig Iron)
10.	WHRB Power Plant	16 MW (2 x 8 MW) **(In operation)**	14 MW (Upgradation of existing 2 x 8 MW to 2 x 10 MW) & New 1 x 10 MW	30 MW (3 x 10 MW)
11.	AFBC Power Plant	1 x 40 MW (Yet to install)	----	40 MW
12.	Fly Ash bricks	1,50,000 TPA (1,22,450 Nos. Bricks/day) **(Yet to install)**	21,550 Nos. Bricks/day	1,75,000 TPA (1,44,000 Nos. Bricks/day)

1.3 RAW MATERIALS (FOR EXPANSION PROJECT)

Iron Ore fines, Bentonite, Lime Stone, Anthracite Coal, Coal (indian/Imported), Dolomite, LDO / LSHS, Coal for gasifier will be sourced from Local areas of Chhattisgarh & Kachchh, Gujarat, SECL, Chhattisgarh, MCL Odisha, Maharashtra & from Jharkhand through covered trucks.

1.4 MANUFACTURING PROCESS

1.4.1 Iron Ore Beneficiation Plant

Beneficiation process is a combination of crushing, screening, washing, grinding, classifying by gravity separation, magnetic separation, floatation processes. The final concentrate slurry is filter pressed to get a dry enriched ore quality with Fe > 65% and moisture ~10%. The water is recycled in the process. The tailings are processed in a thickener & Filter pressed and the excess water will be recovered and circulated in the process. The tailings filter cake is of low value with Fe <45% and moisture content ~10%. This Filter cake will be stored in storage yard earmarked within the plant premises.

- The Beneficiation plant would produce concentrate to the tune of 2.2 MTPA (throughput capacity) for feeding the Pellet Plant.

1.4.2 Pelletization

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.

1.4.3 Sponge Iron (DRI)

The Direct Reduced Iron (DRI) plant will comprise of 1 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 rises 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^{o}C enters the reduction zone. Temperature of the order of 1050^{o}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 rotary cooler. In rotary cooler the material will cool from 1000^{o}C to 100^{o}C in cooler by spraying water. 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.

1.4.4 Steel Melting Shop (Induction Furnaces –Hot Billets/Ms Billets / Ingots)

Production of Hot Metal

Sponge Iron will be melted along with melting scrap and fluxes to make pure liquid steel / Hot Billets. The Hot metal produced will be directly sent to Rolling Mill through Hot Charging method.

In this method of Steel Melting Shop consists of following units

1. Induction Furnaces
2. Ladles
3. Ladle Refining Furnace

***Induction Furnaces*:** Induction Furnaces is a device to melt the charge material using electrical power. It consists of Crucible lined with water cooled induction coils, Electrical system to give controlled power to induction coil, Hydraulic tilting system, Heat exchanger to cool the circulating water, water softener for generating soft water, furnace transformer, Power Factor improvement system and surge suppressor.

There will be 4 x 20 T & 2 x 20 T Induction Furnaces. Ingot/Billet/Hot Billets will be produced in Continuous Casting Machine.

1.4.5 ROLLING MILL

The Rolled products will be manufactured using the following methods:

i. Direct Hot Rolling / Hot Charging

ii. Rolling Mill With Re-Heating Furnace / Conventional Rolling Mill

Direct Hot Rolling / Hot Charging

Raw Material i.e. Hot Billets from Ladle in red hot condition is cut by automatic hot metal Shearing Machine. In the proposed plant automatic hot metal shear machines are going to be installed with each strand. The gas cutting facility will be maintained as a backup to the hot metal shearing machine.

After the Hot Metal is cut into required length, then pushed out to rolling stands for re-rolling. Steel Pieces are rolled through all stands in order to get required shape of finished goods i.e.Rolled products.

1.4.6 Power Generation

Through WHRB Boiler

Its is proposed to install 1 x 10 MW & upgradation of Existing 2 x 8 MW to 2 x 10 MW WHRB power plant in the proposed expansion project to meet the power requirement for various processes of steel plant including auxiliaries of power plant.

Through FBC Boiler

Coal (Imported / Indian) along with dolochar will be used as fuel in FBC Boilers to generate 1 x 40 MW (Yet to install) of electricity. The flue-gases will be treated in high efficiency ESP and then discharged through a stack of adequate height into the atmosphere.

1.4.7 Brick Manufacturing Plant

It is proposed to establish Fly Ash brick making unit from 34,600 bricks/day to 1,24,600 bricks /day capacity. Fly ash (70%), Gypsum (5%), cement (10%) and Stone dust (15%) are manually feed into a pan mixer where water is added to the required proportion for homogeneous mixing. The proportion of raw material may vary depending upon quality of raw materials

1.5 Water Requirement

- Water required for EC permitted plant is **2,400 KLD** and same is proposed to sourced from Maniyari river.

- Water drawl permission for drawl of **2963 KLD** has been obtained from Water Resource Department, Chhattisgarh vide letter no. **ALLTDN20230001** dated **02.02.2023.**
- Water required for the proposed expansion project will be **3,130 KLD** and same will be sourced from Maniyari River. Water drawl permission for expansion proposal will be obtained from Water Resource Department, Chhattisgarh.
- Total water requirement after the proposed expansion will be **5,530 KLD.**
- Air cooled condensers will be provided to Power plant instead of water-cooled condensers to reduce the water consumption significantly.

Table No. 1.4: WATER REQUIREMENT BREAKUP

S.No.	Unit	Quantity in KLD		
		Existing Plant	Proposed Expansion	Total after Proposed Expansion
1.	Iron Ore Benefication Unit	--	1830	1830
2.	Pellet Plant	---	495	495
3.	DRI Kilns	350	175	525
4.	Induction Furnaces	162	135	297
5.	Rolling Mill	99	130	229
6.	Gasifier	---	10	10
7.	Ferro alloys unit	208	---	208
8.	Power Plant (WHRB & FBC)	1478	335	1813
	a) Cooling Towerblowdown	711	161	872
	b) Boilers blowdown	533	121	654
	c) D.M. plant regeneration water	233	53	286
9.	Brick Manufacturing plant	67	10	77
10.	Domestic	36	10	46
	Total	**2,400**	**3,130**	**5,530**

1.6 Waste Water Generation

Existing

- No wastewater will be discharged from the existing DRI Unit & Bricks Manufacturing unit as Closed circuit cooling system adopted.
- The wastewater generated from SMS Unit, Rolling Mill, Ferro alloys & Power plant will be treated in ETP and will be utilized for Dust suppression in CHP, for Ash Conditioning, for Greenbelt development.
- Sanitary wastewater is treated in STP.
- Zero liquid effluent is being maintained in the existing plant.

Proposed

- Total waste water generation after proposed expansion 887 KLD (Exiting 619 KLD + Proposed 268 KLD)
- There will be no wastewater discharge from the DRI Unit, as closed-circuit cooling system will be adopted.
- Effluent from Coal gasifier (phenolic effluent) will be used in ABC chamber for quenching in DRI Units.
- Effluent from Rolling mills will be sent to oil separator followed settling tank and will be recycled through closed circuit cooling system.
- Effluent from Iron Ore Beneficiation , Pellet Plant, Induction Furnaces, & Power Plant will be treated in ETP and after ensuring compliance with SPCB norms, the treated effluent will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Air cooled condenser will be provided in the Power Plant, which will reduce the water consumption significantly. Hence wastewater generation will be also be minimized.
- Sanitary waste water will be treated in STP and after treatment it will be utilized for greenbelt development.
- Zero liquid effluent discharge practice will be continued in the proposed expansion also.
- 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.

Table No. 1.5: BREAKUP OF WASTEWATER GENERATION

S.No.	Source	Generation (KLD)		
		Existing Plant	Proposed Expansion	Total after Proposed Expansion
1.	Iron Ore Benefication Unit	---	92.0	92.0
2.	Pellet Plant	---	24.0	24.0
3.	DRI Kilns	---	---	---
4.	Induction Furnaces	8.0	7.0	15.0
5.	Rolling Mill	6.0	8.0	14.0
6.	Gasifier	----	2.0	2.0
7.	Ferro Alloys Unit	15.0	---	15.0
8.	Brick manufacturing plant	---	---	---
9.	Power Plant	561	127	688

	a) Cooling Tower blowdown	178	40	218
	b) Boiler blowdown	150	34	184
	c) DM Plant regeneration water	233	53	286
10.	Sanitary Wastewater	29.0	8.0	37.0
	Total	**619.0**	**268.0**	**887**

1.7 Wastewater Characteristics

The following are the Characteristics of waste water

TABLE NO.1.6: CHARACTERISTICS OF WASTEWATER

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. DESCRIPTION OF ENVIRONMENT

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

2.1 Ambient air quality

Ambient air quality was monitored for $PM_{2.5}$, PM_{10}, SO_2, NOx & CO at 8 stations including project site during ***1st March 2025 to 31st May 2025.*** The following are the concentrations of various parameters at the monitoring stations:

TABLE NO. 2.1: AAQ DATA SUMMARY

S.No.	Parameter	Concentration range (in µg/m^3)	Standard as per NAAQS (in µg/m^3)
1.	$PM_{2.5}$	29.2 to 42.3	60
2.	PM_{10}	48.4 to 71.5	100
3.	SO_2	9.0 to 15.8	80
4.	NO_X	13.2 to 24.5	80
5.	CO	455 to 1100	2000

2.2 Water Quality

2.2.1 Surface Water Quality

Two samples (60 m Upstream and 60 m Downstream) from Maniyari River and One sample from Unnamed Canal Passing through the site & one sample from Unnamed Stream Passing

through the site 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 **46.83 dBA to 65.61 dBA.**

3. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Prediction of impacts on air quality

The likely emissions from the proposed project are $PM_{2.5}$, PM_{10}, SO_2, Nox & CO. The predictions of Ground level concentrations have been carried out using Industrial Source Complex (ISC-3) model. Meteorological data such as wind direction, wind speed, max. and min. temperatures collected at the site have been used as input data to run the model.

The net resultant concentrations (Maximum baseline conc. + predicted incremental rise in conc.) of PM, SO_2 and NO_X shown in Table No. 3.1, by considering the emissions from other industries in the area will be well within the National Ambient Air Quality Standards (NAAQS) when the plant will commence the operation. Hence there will not be any adverse impact on air environment due to the proposed activities.

TABLE NO. 3.1

NET RESULTANT MAXIMUM CONCENTRATIONS DURING THE OPERATION OF THE PROPOSED EXPANSION PROJECT

Item	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_X ($\mu g/m^3$)	CO ($\mu g/m^3$)
Maximum baseline conc. in the study area	42.3	71.5	15.8	24.5	1100
Maximum predicted incremental rise in concentration due to proposed expansion of **KSPL** (Point Source)	0.74	1.28	6.44	4.81	0.62
Maximum predicted incremental rise in	0.28	0.48	Nil	3.57	2.33

Item	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_X ($\mu g/m^3$)	CO ($\mu g/m^3$)
concentration due to proposed expansion project (Vehicular Emissions)					
Net resultant concentrations during operation of the proposed expansion project	43.32	73.26	22.24	32.88	1102.95
National Ambient Air Quality Standards	**60**	**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. **14.88 Ha.(36.76 acres) (inclusive of existing)** 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

Existing

- No wastewater will be discharged from the existing DRI Unit & Bricks Manufacturing unit as Closed circuit cooling system adopted.
- The wastewater generated from SMS Unit, Rolling Mill, Ferro alloys & Power plant will be treated in ETP and will be utilized for Dust suppression in CHP, for Ash Conditioning, for Greenbelt development.
- Sanitary wastewater is treated in STP.
- Zero liquid effluent is being maintained in the existing plant.

Proposed

- Total waste water generation after proposed expansion 887 KLD (Exiting 619 KLD + Proposed 268 KLD)

- There will be no wastewater discharge from the DRI Unit, as closed-circuit cooling system will be adopted.
- Effluent from Coal gasifier (phenolic effluent) will be used in ABC chamber for quenching in DRI Units.
- Effluent from Rolling mills will be sent to oil separator followed settling tank and will be recycled through closed circuit cooling system.
- Effluent from Iron Ore Beneficiation , Pellet Plant, Induction Furnaces, & Power Plant will be treated in ETP and after ensuring compliance with SPCB norms, the treated effluent will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Air cooled condenser will be provided in the Power Plant, which will reduce the water consumption significantly. Hence wastewater generation will be also be minimized.
- Sanitary waste water will be treated in STP and after treatment it will be utilized for greenbelt development.
- Zero liquid effluent discharge practice will be continued in the proposed expansion also.
- 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.

Hence there will not be any adverse impact on 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. **14.88 Ha. of extensive greenbelt (inclusive of existing)** will be 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. ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of SPCB and MoEF&CC are tabulated below:

Table no. 4.1: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. Water & Wastewater quality				
A.	Water quality in the area	Once in a month except for heavy metals which will be monitored on quarterly basis	Grab sampling	As per IS: 10500
B.	Effluent at the outlet of the ETP	Once in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Once in a month	Composite sampling (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (all stacks) Quarterly Once	Continuous ----	PM, SO_2, NOx & CO PM, SO_2, NOx & CO
B.	Ambient Air quality (CAAQMS)	Continuous Quarterly Once	Continuous 24 hours	$PM_{2.5}$, PM_{10}, SO_2, NOx CO $PM_{2.5}$, PM_{10}, SO_2, NOx CO
C.	Fugitive emissions	Quarterly Once	8 hours	PM
3. Meteorological Data				
A.	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
A.	Ambient Noise levels	Once in a month (hourly)	Continuous for 24 hours with 1 hour interval	Noise levels
5. Soil Quality monitoring				
A.	Soil Quality	Half yearly once	Core drilling sample	pH, SAR, texture, N,P,K, etc.

5.0 ADDITIONAL STUDIES

Draft EIA report has been prepared incorporating the Terms of Reference & submitted to Chhattisgarh Environment conservation board for conducting Public hearing / consultation.

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

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

6.0 PROJECT BENEFITS

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

The expansion project creates direct employment to about 500 persons (skilled, semiskilled & unskilled) once the expansion comes to the operational stage and indirect employment of about 750 persons.

As per MoEF&CC Office Memorandum vide F.No.22-65/2017-IA.III dt. 30th September 2020. As per this, the budgetary allocation for commitment made by Project Proponent to address the concern raised during public hearing & based on Social Impact Assessment (SIA). Budget will be allocated for social welfare activities based on Social Impact Assessment (SIA) & 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 expansion project:

TABLE NO. 7.1: AIR EMISSION CONTROL SYSTEM PROPOSED

S.No.	Source	Control Equipment	Emission at the outlet
1.	Iron Ore Beneficiation	Bag Filters	PM<30mg/Nm^3
2.	Pellet Plant	Electro Static Precipitators(ESP)	PM<30mg/Nm^3
3.	DRI kilns with WHRB's	Electro Static Precipitators(ESP)	PM<30mg/Nm^3

4.	IFs (upgradation of existing)	**Upgradation** of Fume Extraction system with bag Filters	PM<30mg/Nm^3
5.	IFs (proposed)	Fume Extraction system with bag Filters	PM<30mg/Nm^3
6.	Submerged Electric Arc Furnace	4th Hole Fume Extraction system With bag filters	PM<30mg/Nm^3
7.	Re-heating furnaces attached to Rolling Mill	Stack	PM<30mg/Nm^3
8.	CFBC Boiler	Electro Static Precipitator	PM < 30mg/Nm^3
		Automatic Lime dosing system	SOx < 100mg/Nm^3
		Combustion temperature will be around 800-850 ^{o}C, which is not conducive for thermal NOx formation. Low NOx burners with 3-stage combustion, flue gas recirculation and auto combustion control system will be provided.	NOx< 100 mg/Nm^3
Note : Apart from the above Fume extraction system with bagfilters, dry fog system, dust suppression system, covered conveyers, water cannon spray, Rain guns, etc. 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

Existing

- No wastewater will be discharged from the existing DRI Unit & Bricks Manufacturing unit as Closed circuit cooling system adopted.

- The wastewater generated from SMS Unit, Rolling Mill, Ferro alloys & Power plant will be treated in ETP and will be utilized for Dust suppression in CHP, for Ash Conditioning, for Greenbelt development.
- Sanitary wastewater is treated in STP.
- Zero liquid effluent is being maintained in the existing plant.

Proposed

- Total waste water generation after proposed expansion 887 KLD (Exiting 619 KLD + Proposed 268 KLD)
- There will be no wastewater discharge from the DRI Unit, as closed-circuit cooling system will be adopted.
- Effluent from Coal gasifier (phenolic effluent) will be used in ABC chamber for quenching in DRI Units.
- Effluent from Rolling mills will be sent to oil separator followed settling tank and will be recycled through closed circuit cooling system.
- Effluent from Iron Ore Beneficiation , Pellet Plant, Induction Furnaces, & Power Plant will be treated in ETP and after ensuring compliance with SPCB norms, the treated effluent will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Air cooled condenser will be provided in the Power Plant, which will reduce the water consumption significantly. Hence wastewater generation will be also be minimized.
- Sanitary waste water will be treated in STP and after treatment it will be utilized for greenbelt development.
- Zero liquid effluent discharge practice will be continued in the proposed expansion also.
- 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.

TREATED EFFLUENT DISPOSAL

Effluent recycled back to I/O beneficiation process	:	92 KLD
Effluent quantity to be used for ash conditioning	:	70 KLD
Effluent to be used for dust suppression in CHP	:	150 KLD
Effluent to be used for Floor washing, Toilet cleaning & Flushing	:	20 KLD
Effluent to be used for Cooling tower makeup in CPP	:	255 KLD

Effluent to be used for Greenbelt development : 298 KLD

Phenolic effluent will be used in ABC chamber of DRI kiln : 2 KLD

14.88 Ha.(36.76 acres) (inclusive of existing) 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 of 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	Quantity (TPA)			Proposed method of disposal
		Existing	Expansion	Total	
1.	Tallings From Iron Benefiaction Unit	---	4,40,000	4,40,000	Will be taken to filter press & recovered the water. Cake of tailing will be stored in tailing yard & it will given to nearby Ceramic Units / Cement plants.
2.	Ash from Pellet Plant	---	36,000	36,000	Will be utilized in the Existing Brick Manufacturing Unit
3.	Ash from DRI	44,100	22,050	66,150	Will be utilized in the Existing Brick Manufacturing Unit
4.	Dolochar	49,000	24,500	73,500	Is being used in existing FBC Power Plant

S.No.	Waste	Quantity (TPA)			Proposed method of disposal
		Existing	Expansion	Total	
					as fuel and same practice will be followed after expansion also.
5.	Kiln Accretion Slag	2,205	1,103	3,308	Is being used in existing brick manufacturing unit and same practice will be followed after expansion also.
6.	Wet scrapper sludge	9,800	4,900	14,700	Is being used in existing brick manufacturing unit and same practice will be followed after expansion also.
7.	SMS Slag	17,955	35,640	53,595	Slag from SMS will be crushed and iron will be recovered & then remaining non - magnetic material being inert by nature will be given to road contractors for road laying.
8.	End Cuttings from Rolling Mill	5,225	5,225	10,450	Will be reused in the SMS
9.	Mill scales from Rolling Mill	844	844	1,688	Mill scales will be recycled to Ferro alloys unit.
10.	Slag from Ferro Alloys Plant/ Pig Iron (Higher value)	1,50,000	----	1,50,000	Will be utilized in the Existing Brick Manufacturing Unit.
11.	Ash from Power Plant (Indian Coal + Dolochar)	1,16,108	---	1,16,108	Will be utilized in the Existing Brick Manufacturing Unit.

7.5 Greenbelt Development

- As per earlier E.C. Out of total **17.14 Ha.** of land, **5.66 Ha.** i.e. **33 %** of land is envisaged for greenbelt in the existing plant premises.
- As part of expansion **25.353 Ha.** of land has been acquired. Hence the total land after expansion will be **42.493 Ha.**
- Additional Greenbelt proposed is **9.22 Ha.**
- The total Greenbelt area will become **14.88 Ha.** i.e. **35** % of Total land area .
- Total no. of plants will be planted after expansion will be 37,200 nos.
- Greenbelt will be developed as per CPCB guidelines.
- 2500 plants will be planted per hectare as per CPCB norms.
- Local DFO will be consulted in developing the green belt.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed expansion : Rs. 40.5 Crores

Recurring Cost per annum for Environmental protection : Rs. 6.7 Crores/annum

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 WHRB & FBC 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.