

EXECUTIVE SUMMARY

1.0 INTRODUCTION

M/s. Sambhv Steel Tubes Limited is a company incorporated under the Companies Act, 2013 on 25.04.2017, engaged in the steel and power sector. The promoters and directors possess extensive experience in steel, power, and allied industrial activities.

The present proposal is for establishment of a new independent Greenfield unit on newly purchased land, located adjacent to the company's existing unit at Village Sarora. The proposed project comprises manufacturing of Ferro Alloys along with a captive power plant based on Atmospheric Fluidized Bed Combustion (AFBC) boiler with steam turbine and generator. The total land requirement for the project is 9.20 hectares.

As per Environmental Impact Assessment Notification dated 14th September, 2006 and subsequent amendment thereof, the Ferro Alloys Plants falls under Sector 3 (a) and the AFBC based power plant falls under Sector 1 (d). The overall project activity is categorized as Category "A"; therefore, it will require Environmental Clearance (EC) to be obtained from EAC (Industry –I), MoEFCC, New Delhi.

The application for prior Environmental Clearance (Form-1) for proposed project was submitted to EAC, MoEFCC, New Delhi (Online Proposal No. IA/CG/IND1/551136/2025) on 15th September, 2025.

The proposal was considered by the Expert Appraisal Committee (EAC) and Standard ToR was granted on 02nd December 2025 (vide. file no.: IA-J-11011/357/2025-IA-II(Ind-I).

Anacon Laboratories Pvt. Ltd., Nagpur, is QCI-NABET accredited in 'Category A' environment consultant organization has been assigned to undertake an Environmental Impact Assessment (EIA) study and preparation of Environment Management Plan (EMP) for various environmental components, which may be affected due to the impacts arising out of the proposed project.

The Environmental Impact Assessment (EIA) report is prepared for obtaining Environmental Clearance (EC) from Ministry of Environment, Forest and Climate Change (MoEFCC), New Delhi and the Consent for Establishment from the Chhattisgarh Environment Conservation Board (CECB) for the proposed Greenfield project.

1.1 IDENTIFICATION OF PROJECT

M/s. Sambhv Steel Tubes Limited proposes to establish a Greenfield project for production of Ferro Alloys (SiMn/FeMn/FeSi) and/or Pig Iron, along with a captive power generation plant comprising Atmospheric Fluidized Bed Combustion (AFBC) boilers with steam turbine and generator.

The proposed project will be located at Village Sarora, Tahsil Tilda, District Raipur, Chhattisgarh – 493221.

The project proponent seeks prior Environmental Clearance (EC) for the proposed facilities, which will be based on energy-efficient and well-proven technologies.

TABLE 1: PROPOSED PLANT DETAILS WITH CAPACITY

S. No.	Product	Configuration	Capacity (in TPA)
1	Ferro Alloys- SiMn		137,000
	And/or		And/or

SSTL	M/s. SAMBHV STEEL TUBES LIMITED (UNIT-3)	
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S. No.	Product	Configuration	Capacity (in TPA)
	Ferro Alloys- FeMn	Submerged Arc Furnace 18 MVA X 4 Nos	170,000
	And/or		And/or
	Ferro Alloys- FeSi		74,000
	And/or		And/or
	Pig Iron		273,000
2	FBC based power	FBC based boiler 120 TPH X 2 Nos connected to 30 MW TG x 2 Nos	60 MW

1.2 LOCATION OF THE PROJECT

The proposed project located at Village - Sarora, Tahsil - Tilda District - Raipur (CG) Pin code - 493221. The nearest city is Raipur. Nearest airport is Swami Vivekananda Airport, Raipur which is around 42.15 km at South direction. The project site can be reached from nearest town Tilda through a connecting road to Simga Kharora Road, which is connected to national highway No.130. The project is well connected to all weather roads. Nearest Railway station Tilda about 6.30 KM in ESE direction from the project site.

1.3 EIA-EMP REPORT

As per approved ToR obtained from EAC (Industry –I), MoEFCC, New Delhi, baseline environmental monitoring was conducted during **pre-monsoon season (1st March, 2025 – 31st May 2025)** for determining the status of ambient air quality, ambient noise levels, surface and groundwater quality, soil quality, status of flora, fauna and eco-sensitive areas and socio-economic status of the villages within 10 km radius study area from the project site (**Figure 1**). The observations of the studies are incorporated in the EIA-EMP report. Impacts of the proposed project activities during construction and operation stages were identified and duly addressed in the EIA- EMP report.

EIA - EMP report along with the proposed management plan to control/ mitigate the impacts. Environmental Management Plan is suggested to implement the pollution control in the project.

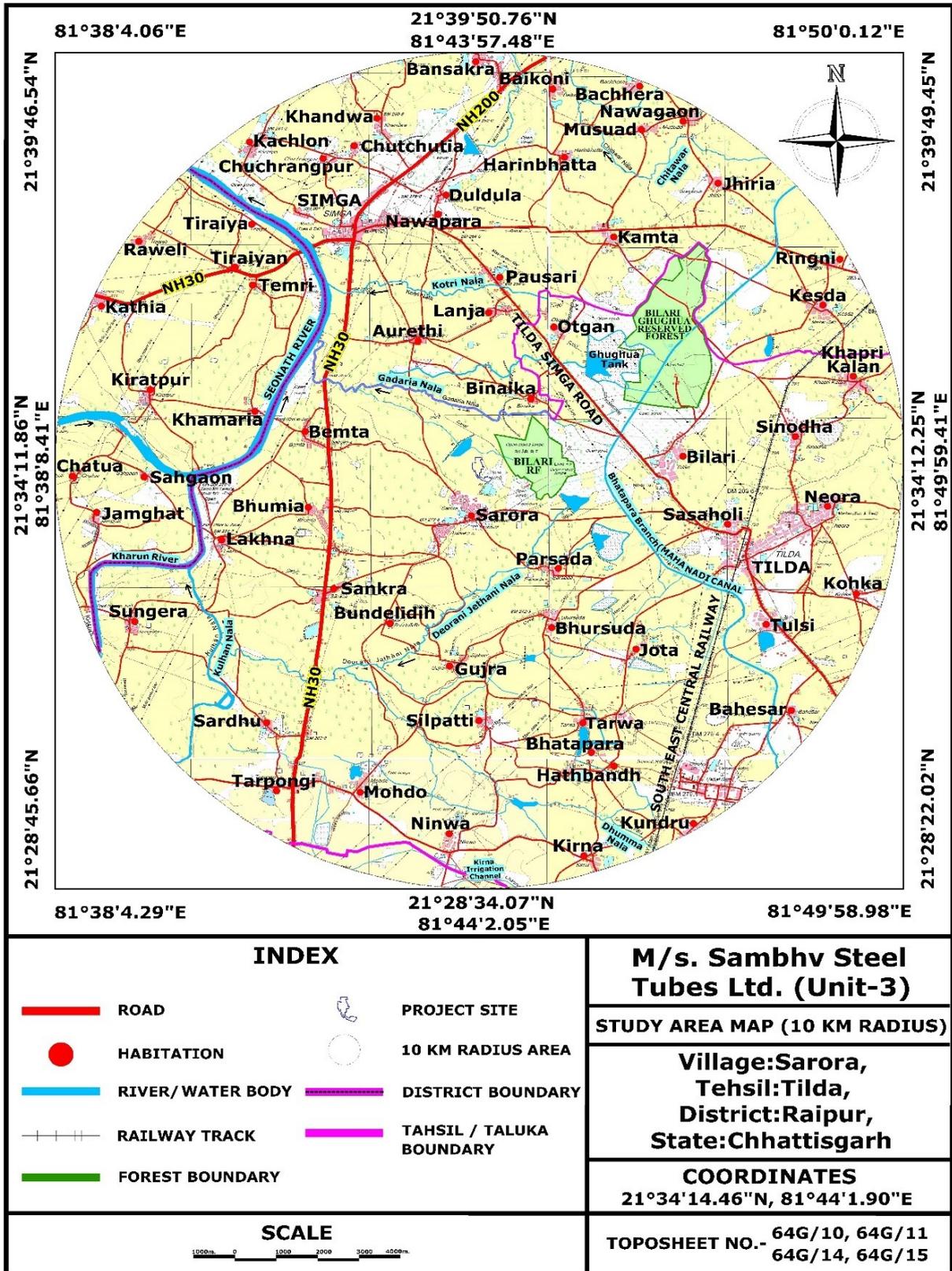


FIGURE 1: STUDY AREA (10 KM RADIAL DISTANCE)

TABLE 2: DETAILS OF ENVIRONMENTAL SETTINGS

Sl.	Particulars	Details					
1.	Project Location	Village-Sarora, Tehsil-Tilda, District-Raipur, State-Chhattisgarh					
2.	Latitude/Longitude	PTS.	LATITUDE	LONGITUDE	PTS.	LATITUDE	LONGITUDE
		BP1	21°34'23.03"N	81°44'0.25"E	BP 15	21°34'6.34"N	81°44'13.28"E
		BP2	21°34'22.74"N	81°44'5.26"E	BP 16	21°34'3.17"N	81°44'10.94"E
		BP3	21°34'21.56"N	81°44'5.60"E	BP 17	21°34'5.33"N	81°44'4.81"E
		BP4	21°34'21.44"N	81°44'3.95"E	BP 18	21°34'9.51"N	81°44'1.80"E
		BP5	21°34'16.56"N	81°44'6.15"E	BP 19	21°34'9.07"N	81°44'1.16"E
		BP6	21°34'15.19"N	81°44'5.65"E	BP 20	21°34'6.89"N	81°44'2.74"E
		BP7	21°34'15.29"N	81°44'6.80"E	BP 21	21°34'6.47"N	81°44'2.28"E
		BP8	21°34'13.95"N	81°44'6.59"E	BP 22	21°34'9.36"N	81°44'0.37"E
		BP9	21°34'14.11"N	81°44'4.73"E	BP 23	21°34'10.03"N	81°44'1.00"E
		BP10	21°34'10.98"N	81°44'4.57"E	BP 24	21°34'13.15"N	81°43'59.95"E
		BP11	21°34'10.90"N	81°44'3.52"E	BP 25	21°34'11.69"N	81°43'59.42"E
		BP12	21°34'7.76"N	81°44'3.43"E	BP 26	21°34'13.85"N	81°43'57.83"E
		BP13	21°34'5.44"N	81°44'7.70"E	BP 27	21°34'19.16"N	81°43'57.88"E
BP14	21°34'7.24"N	81°44'8.20"E	BP 28	21°34'18.95"N	81°44'0.71"E		
3.	Location covered in Toposheet No	Toposheet No.: 64G/10, 64G /11, 64G /14 and 64G /15					
4.	Nearest representative IMD Station	IMD Raipur - 40.18 km / SSW					
5.	Site elevation above Mean Sea Level	282m to 297m					
6.	Nearest roadway	1.NH30 -3.46 km / W 2.NH200 - 6.05 km / NW 3.Tilda Simga Road - 3.10 km / NE					
7.	Nearest Railway Station	1.Tilda Neora Railway Station - 6.30 km / ESE 2.Baikunth Railway Station - 9.0km / SE					
8.	Nearest Air Port	Swami Vivekananda Airport, Raipur - 42.15 km / S					
9.	Nearest village	1.Sarora - 0.53km / SW 2.Binaika -1.73 km / NE					
10.	Nearest Port	Gopalpur Port - 419.50 km / SE					
11.	Distance from Sea Coast	Bay of Bengal - 417.33 km / SE					
12.	Nearest major city with 2,00,000 population	Raipur-27.73km / SW					
13.	Nearest State/National Boundaries	Madhya Pradesh - 92.69 km / NW Odisha-98.52km / SE					
14.	Hills/Valleys	None within study area					
15.	Ecologically sensitive zone	None within study area					
16.	National Parks, Wildlife Sanctuaries, etc.	None within study area The nearest wildlife sanctuary is Barnawapara Wildlife Sanctuary is about 60.22 Km in South East direction					
17.	Nearest Reserved / Protected forests	1.Bilari RF-0.5 km / NE 2.Bilari Ghughua Reserved Forest - 3.8 km / NE					

Sl.	Particulars	Details			
18.	Historical/Tourist places	Sr. No.	Name	Distance (Km)	Direction
		1	Somnath Temple, Kiritpur, Chhattisgarh	6.64	W
19.	Nearest Industries	Sr. No.	Name	Distance (Km)	Direction
		1	Sambhv Steel Tubes Limited (Tilda Division), Sarora	Adjoining	E
		2	Central Cement Industries, Sarora	0.28	E
		3	Hitech Power & Steel Limited, Sarora	1.77	ESE
		4	Indus Best Mega Food Park, Aurethi	2.36	WNW
		5	Nandan Smelters Pvt. Ltd.	2.66	SE
		6	Raipur Refrathern Pvt. Ltd., Parsada	2.93	ESE
		7	Nikita Metallurgicals Pvt. Ltd. Unit-III, Raipur	4.25	SW
		8	Agrasen Rice Industries, Road Sasaholi, Parsada	4.3	SE
		9	Ananya Paper Industries Pvt Ltd, Sardhu	6.23	SW
		10	Raipur Minerals Pvt. Ltd., Bhumia Sankara	6.62	SW
		11	K.K. Industries, Tilda	7.06	E
		12	Sagar Industries	7.20	E
		13	Viraansh Industries Pvt. Ltd., Mohada	7.22	SW
		14	Amit Chawal Udyog, Main Rd, Tilda Newra	7.22	E
		15	Earthstahl And Alloys Limited, Duldula, Simga	8.09	N
		16	Neeraj Power Pvt. Ltd., Simga	8.56	N
		17	Agrawal Oil Extractions Ltd., Neora, Tulsi	8.9	SE
		18	Ultratech Cement Limited, Baikunth Cement Works, Baikunth	8.95	SE
		19	Tirupati Balaji Foods Pvt. Ltd., Kohka	9.09	SE
		20	Century Cement Limestone Mine	9.12	SE
21	Apollo Building Products Pvt Ltd, Kesda	9.25	NE		
20.	Nearest Water Bodies	Sr. No.	Name	Distance (Km)	Direction
		1	Pond nr. Project Site	0.1	NW
		2	Pond nr. Project Site	0.10	S
		3	Gadaria Nala	1.09	N
		4	Deorani Jethani Nala	2.32	SE
		5	Bhatapara Branch (Mahanadi Canal)	2.67	E
		6	Ghughua Tank	3.4	NE
		7	Kotri Nala	4.52	NW
		8	Seonath River	4.95	WNW
		9	Kharun River	6.9	WSW
		10	Kulhan Nala	7.45	SW
		11	Chitawar Nala	8.6	NE
		12	Dhumma Nala	8.76	SE
13	Kirna Irrigation Channel	9.99	SSW		
21.	Archaeological Sites	None within study area			
22.	Religious Places	Sr. No.	Name	Distance (Km)	Direction
		1	Shitla Mandir, Sarora	1.21	S
		2	St. Thoma Church, Tilda Newra	5.78	ESE

Sl.	Particulars	Details			
		3	Shri Laxmi Narayan Temple Tilda	7.28	SE
		4	Chitawar Dev Ardhanareshwar, Baloda Bazaar, Jhiriya	8.09	NE
23.	Hospitals and Education Institutions (Sensitive Manmade Land use)	HOSPITALS			
		Sr. No.	Name	Distance (Km)	Direction
		1	Primary Health Sub Centre Biladi, Biladi	4.45	E
		2	Evangelical Mission Hospital, Sasaholi, Tilda	5.70	ESE
		3	Shri Ram Multi Speciality Hospital	6.71	NW
		4	Suna Hospital, Tilda Newra, Tilda	6.73	ESE
		5	Shri Vinayak Hospital Simga	6.84	NW
		6	Khushi Hospital, Tilda	7	ESE
		7	Jyoti Hospital, Tilda Newra	7.6	ESE
		8	Govt. HSS Khaprikala, Khapri Kalan	8.4	ENE
		9	Govt. Middle School, Jhiriya	9.22	NE
		10	Ayushman Bharath Health and Wellness Centre	9.46	SE
		11	Government School, Ringni	9.85	NE
		12	Bansankara Higher Secondary School, Bansankara	9.90	N
		EDUCATIONAL INSTITUTIONS			
		Sr. No.	Name	Distance (Km)	Direction
		1	Govt. Primary School Binaika, Binaika	2.04	NE
		2	Higher Secondary School Bhumiya, Sankara	3.71	SW
		3	Govt. Middle School Biladi, Biladi	4.15	E
		4	Sunshine Public School, Sankara	4.46	SW
		5	Primary School Paunsari, Lanja	4.7	N
		6	Govt. High School Gujra, Tilda	4.9	SSW
		7	Govt H.S.S Kamta, Kamta	6.47	NE
		8	R.K.S Public School, Tilda	6.72	ESE
		9	Kerala Public School, Tilda Newra	7.37	ESE
		10	Priyadarshani Girls Higher Secondary School	7.71	ESE
		11	Rajeev Gandhi Government College Simga	7.98	NNW
		12	Holy Christ Convent, Neora	8.20	SE
		13	Govt ITI Kohka, Tilda	8.58	ESE
		14	Govt. Industrial Training Institute Simga	8.6	NNW
		15	Govt. Middle School Jhiriya	9.22	NE
		16	Century Cement College, Baikunth Tilda	9.85	SE
24.	Community Places	1.Mahesh Sanskritik Bhawana, Neora-7.78km/ESE 2. Sanskritik Bhawan, Simga-6.71km/NW			
25.	Seismic zone	Zone II (Least Active Zone)			
26.	Area is subjected to environmental pollution, if any.	No. As per CPCB – 2018, no CPA or SPA present within 10 KM radius.			

2.0 PROJECT DESCRIPTION

2.1 PROCESS DESCRIPTION (OPERATIONAL ACITIVITIES)

2.1.1 Manufacturing process of Ferro Alloys Plant

- High Carbon Ferro/ Silico Manganese as a finished product produced through a conventional submerged arc electric furnace.
- Pig Iron is also proposed to produce alternately from the same submerged arc furnace by using lower grades Iron ore and Magnetite Iron ores.

2.1.2 AFBC Based Power Generation

- In an AFBC boiler, the fluidized bed media, which consists of ash, sand, limestone and other such materials is heated to the ignition temperature of the fuel.
- Fuel, such as char, is continuously supplied to the bed as it burns very quickly in the high bed temperatures of almost 1000°C.
- The heat generated from this combustion is used to produce steam which, like in WHRB systems, will produce power through a steam generator.

2.2 LAND REQUIREMENT

The project is proposed on the land of 9.200 Hectares, out of 7.72 Ha. Land is under the ownership of the company, 1.075 Ha. Land is private land under agreement with the company, and 0.405 Ha. land is Government revenue land. Application for allotment/transfer of possession of Government land has been submitted to the competent authority. Land will be permanently diverted to industrial purpose.

The proposed land is located at Kh. No. 764, 773/1, 770/2, 768/1, 720/1, 771/2, 771/4, 772/2, 772/3, 772/4, 772/5, 772/6, 772/7, 772/8, 772/9, 772/10, 774/1, 784/1, 784/3, 784/5, 789/3, 799/4, 800/1 and 800/3 (Total 7.720 Ha.- Companies own land), 768/7, 768/6, 774/2 (1.075 Ha.- Land under Agreement) and 769 (0.405 Ha. - Govt land) at Village - Sarora, Tehsil - Tilda, District- Raipur, Chhattisgarh Pin code - 493221. Total land will be 9.20 Hectares.

The detail of land use planning in the project area is provided as follows:

TABLE 3: AREA STATEMENT

Land Use		Area (In Ha.)	In %
Built Up Area		3.220	35.00%
Main Shed and Building	2.24		
Storage	0.98		
Road and Paved including Parking		1.150	12.50%
Road and Paved	0.80		
Parking	0.35		
Green Belt area		3.09	33.59%
Open Area including Reservoir		1.740	18.91%
Reservoir	0.47		
Open area	1.27		
Total		9.200	100%

2.3 RAW MATERIALS REQUIREMENT, SOURCE & MODE OF TRANSPORT

The availability of raw materials is adequate within a radial distance of approximately 50 km to 500 km from the project site. Fuel requirements will be primarily met through coal sourced from SECL and local markets, along with char and dolochar procured from nearby sponge iron plants or authorized trade sources.

Major raw materials, including coal, iron ore, and manganese ore, will be transported through a combination of rail and road networks. Coal will be sourced from SECL and local markets, iron ore from NMDC iron ore mines and mines located in Odisha, and manganese ore from mines located in Odisha, Madhya Pradesh, and the Vidarbha region.

Bulk raw materials will be transported by rail up to the nearest railway siding, followed by onward movement to the project site through covered trucks, minimizing material loss and fugitive dust emissions.

2.4 SOLID AND HAZARDOUS WASTE GENERATION

The total estimated solid waste generation will be 3,90,793 TPA and 1.5 KLA Haz. Waste in the form of oil/ spent oil and 250 TPA ETP sludge. It will be disposed by scientific manner or be given to authorized recycler having authorization from competent authority. The generated Slag from SAF- FeMn Slag will be used for making Silico Manganese and other Slag & Fluidized Bed Material from Power plant will Used for Road making and Land filing. Fly Ash generated will be sold to Cement plant.

2.5 WATER REQUIREMENT & SOURCE

Total Yearly water requirement will be $1450 \text{ KLD} * 350 \text{ days} = 507,500 \text{ KLA}$. which will be sourced thru Surface water.

Further, the management had decided to implement a 10,000 KL Rain water collection Tank which will be able to collect sufficient rain water during rainy days which would continuously be collecting rain water during the rainy days. Which extends to almost 75 days. Thus, water requirement will be met through rain water collections from it for 75 days. The balance water after the rain days will be sufficient to cater water requirement of 18 days. Therefore, it is considered that about 93 days (134,850 KL) water requirement will be met through rain water and rain water collection. Therefore, the net requirement of fresh ground water will be about 372,650 KLA.

2.6 POWER REQUIREMENT & SUPPLY

Total power requirement will be 69 MW out of which 60 MW will be met through captive power plant and remaining 9 MW will be sourced through CSPDCL Grid in addition to this total 1500 kVA DG sets are proposed for emergency backup.

2.7 MANPOWER REQUIREMENT

M/s. Sambhv Steel Tubes Limited will provide employment to 450 peoples as direct employment which includes 50 people as administrative staff and 400 people will be production staff. Preference will be given to local people, depending upon their qualification and skill.

2.8 FIRE FIGHTING FACILITIES

In order to combat any occurrence of fire in plant premises, a central firefighting facility is proposed which will have access to various units of the plant. In addition to this, all plant units, office buildings, laboratories, etc. will be provided with adequate number of portable fire extinguishers to

be used as first aid fire appliances.

2.9 KEY POLLUTION CONCERNS

The proposed Ferro Alloys plant comprising SAFs (18 MVA × 4) along with a 60 MW FBC-based CPP is associated with potential environmental concerns related to air emissions, solid waste generation, wastewater discharge, noise, and increased traffic. Air emissions are expected from furnace operations, material handling, and CPP stacks, while solid wastes such as slag, furnace dust, fly ash, and bottom ash will be generated. Wastewater from process, cooling, and domestic sources and noise from plant machinery also require appropriate management through adequate pollution control measures.

2.10 PROJECT COST

The Estimated cost of the project (excluding CER) is **Rs. 35,500.00 Lakhs**. Estimated CER expenses is **Rs. 533.00 Lakhs**. Total Cost of Project (Including CER) is **36,033.00 Lakhs**.

3.0 EXISTING ENVIRONMENTAL SCENARIO

3.1 BASELINE ENVIRONMENTAL STUDIES

Baseline environmental studies were conducted at project site along with 10 km radial distance from the project site. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land were monitored during **pre-monsoon season (1st March, 2025 – 31st May 2025)**.

3.2 METEOROLOGY & AMBIENT AIR QUALITY

Summary of the Meteorological Data Generated at Site (1st March, 2025 – 31st May 2025)

Predominant Wind Direction	1 st March, 2025 – 31 st May, 2025
First Predominant Wind Direction	W (13.22%)
Second Predominant Wind Direction	WSW (12.32%)
Calm conditions (%)	1.13
Avg. Wind Speed (m/s)	2.55

The status of ambient air quality within the study area was monitored for Pre-Monsoon Season of the year 2025 at 8 locations covering project site. The levels of Respirable Particulate Matter (PM₁₀), Fine Particulates (PM_{2.5}), Sulphur Dioxide (SO₂), Oxides of Nitrogen (NO_x) and carbon monoxide (CO), Ammonia, Ozone, Benzene and BAP were monitored. The details of Ambient Air Quality Monitoring Results are summarized and given in **Table 3**.

**TABLE 3: SUMMARY OF AMBIENT AIR QUALITY RESULTS
(PERIOD – 1st March, 2025 – 31st May 2025)**

Sr. No.	Location		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	Ozone µg/m ³	NH ₃ µg/m ³
1.	Project Site	Min	67.7	28.7	15.8	19.1	0.611	10.2	9.1
		Max	82.4	41.5	20.7	28.1	0.779	15.2	14.8
		Avg	76.2	34.5	18.5	23.1	0.686	12.4	11.4
		98 th	82.0	40.4	20.7	27.5	0.767	15.0	14.3
2.	Sarora	Min	62.4	25.3	13.3	18.2	0.425	7.4	7.8
		Max	81.4	39.5	21.2	28.1	0.824	13.5	10.9
		Avg	72.4	31.2	16.8	22.4	0.624	10.2	9.5
		98 th	80.8	37.6	20.4	27.5	0.799	12.9	10.8
3.	Bemta	Min	58.6	22.5	12.1	15.1	0.501	6.8	6.1

Sr. No.	Location		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	Ozone µg/m ³	NH ₃ µg/m ³
		Max	75.3	32.5	18.5	21.4	0.685	12.3	10.5
		Avg	67.1	27.4	14.7	18.2	0.561	9.8	8.2
		98 th	74.7	32.1	17.9	21.2	0.671	12.1	10.1
4.	Bhumia	Min	57.6	21.7	13.7	16.8	0.501	7.5	6.4
		Max	74.5	31.5	19.0	22.6	0.802	11.2	9.0
		Avg	65.8	26.2	15.6	19.5	0.607	9.5	7.8
		98 th	74.3	31.3	18.8	22.4	0.798	11.1	8.9
5.	Biladi	Min	64.1	27.8	14.0	18.1	0.382	8.8	7.4
		Max	80.4	38.5	19.3	24.5	0.756	13.2	11.1
		Avg	73.1	32.5	16.5	20.7	0.591	10.6	9.7
		98 th	80.3	37.9	18.9	24.0	0.756	12.7	11.1
6.	Binaika	Min	62.4	24.9	15.1	16.9	0.491	9.2	8.4
		Max	78.1	37.2	20.5	25.0	0.817	13.5	11.9
		Avg	71.6	30.1	17.2	21.7	0.635	11.3	10.3
		98 th	78.0	36.1	20.3	24.9	0.812	13.5	11.8
7.	Parsada	Min	61.2	22.8	11.6	14.3	0.432	7.0	7.1
		Max	75.2	33.1	16.7	20.9	0.682	10.5	10.2
		Avg	68.5	28.6	13.8	17.5	0.526	9.1	8.6
		98 th	74.8	33.0	16.1	20.5	0.668	10.5	10.0
8.	Aurethi	Min	58.2	20.5	10.5	14.3	0.402	5.9	5.6
		Max	73.5	30.4	14.8	18.9	0.713	11.3	9.6
		Avg	64.5	25.2	12.6	16.8	0.514	8.7	7.5
		98 th	72.4	29.9	14.7	18.9	0.701	11.2	9.5
CPCB Standards			100 (24hr)	60 (24hr)	80 (24hr)	80 (24hr)	2 (8hrs)	100 (8hr)	400 (24hr)

3.3 AMBIENT NOISE LEVELS

Ambient noise level monitoring was carried out at the 8 monitoring locations; those were selected for ambient air quality monitoring. The monitoring results are summarized in **Table 4**.

TABLE 4: AVERAGE NOISE LEVELS IN THE STUDY AREA

Sr. No.	Monitoring Locations	Equivalent Noise Level	
		Leq _{Day}	Leq _{Night}
Residential Area			
1	Bhumia	52.3	41.8
2	Biladi	53.1	42.5
3	Parsada	52.8	43.2
CPCB Standards dB(A)		55.0	45.0
Commercial Area			
4	Sarora	61.2	51.6
CPCB Standards dB(A)		65.0	55.0
Silence Zone			
5	Binaika (School)	47.8	38.1
6	Bemta	48.3	38.9
CPCB Standards dB(A)		50.0	40.0
Industrial Area			
7	Project Site	58.5	49.6
8	Sambhav Plant Main Gate	69.3	58.5
CPCB Standards dB(A)		75.0	70.0

Source: Field monitoring and analysis by Anacon Laboratories Pvt. Ltd., Nagpur

3.4 SURFACE AND GROUND WATER RESOURCES & QUALITY

3.4.1 Geology and Hydrogeology

Geological field survey methodology:

1. Secondary data collection for the study with the help of satellite imageries, GSI reports and research paper if available, it is very helpful for planning of field survey in 10 km radius.
2. During field survey, ground truth verification of geological features is done. During field survey GPS, toposheet map and Google imagery plays very important role.
3. Geological sequence is observed along sites such as Nallah cutting, Exposures along Road/Highway construction sites and nearby opencast mining areas.
4. Geological maps are prepared with the help of District Resource Map of GSI and data collected through field survey.

Hydrogeological Survey methodology:

1. Secondary data collection for the study area with the help of CGWB brochures and data available with state ground water departments like long term water levels data, groundwater usage, etc.
2. During field survey well inventory is critically done to assess water level scenario in particular season to verify the secondary data.
3. In case of mining projects pumping test are carried out to assess the aquifer parameters.
4. Groundwater level maps are prepared as per water level data of Govt. agencies and data collected through field survey.
5. Groundwater recharge and harvesting techniques are suggested as per CGWA guidelines.

Regional Geology:

The study area mainly underlain by Meso to Neo-Proterozoic rocks. The geology is represented by the Chhattisgarh Supergroup, which overlies the granitoids and Sonakhan Group rocks. Raipur Group includes Chandi Formation – Predominantly calcareous facies found in Dharsiwa and Tilda blocks. It consists of stromatolitic limestone/dolomite with shale and arenite intercalations. Rocks are pink to grey, hard, and bedded; arenite is coarse to fine, cross-bedded with shale partings.

The lithological composition of the study area is primarily dominated by stromatolitic dolomitic limestone which forms the majority of the surface cover across the region. In certain parts of the area, there are additional layers of shale. Furthermore, there are smaller, isolated portions of the study area where laterite and chert are present.

3.4.2 Water Quality

Groundwater and surface water quality was assessed by identifying 8 groundwater (Borewell/handpump) locations in different villages and 6 surface water samples.

A. Groundwater Quality

The analysis results indicate that the pH ranged from 7.24 to 8.11, falling within the permissible limit of 6.5 to 8.5. Total Dissolved Solids (TDS) were measured between 341 and 486 mg/L, well

below the permissible limit of 2000 mg/L. Total hardness was found to range from 171.62 to 294.71 mg/L, which is also below the permissible limit of 600 mg/L. Chloride concentrations varied from 84.59 to 164.10 mg/L, remaining within the acceptable range of 1000 mg/L. Sulfate levels were recorded between 23.38 and 64.56 mg/L, significantly below the permissible limit of 400 mg/L. Nitrate concentrations ranged from 5.14 to 9.17 mg/L, well under the no relaxation threshold of 45 mg/L. Fluoride levels were found to be between 0.16 and 0.32 mg/L, which is acceptable as it is below the limit of 1.5 mg/L. Iron concentrations ranged from 0.11 to 0.30 mg/L, remaining under the no relaxation limit of 1.0 mg/L. Heavy metals such as cadmium and arsenic were below detection limits (BDL), with permissible limits of 0.003 mg/L and 0.01 mg/L respectively. Zinc concentrations were found detection limits (BDL), with permissible limits of 0.02 mg/L, well within the permissible limit of 15 mg/L. Lead and chromium were also detected below their respective limits, with no relaxation thresholds of 0.01 mg/L and 0.05 mg/L. Overall, the water quality parameters indicate compliance with health and safety standards.

B. Surface Water Quality

The pH levels ranged from 7.32 to 8.12, well within the permissible range of 6.0 to 9.0. Electrical conductivity (EC) was measured between 420 and 765 $\mu\text{S}/\text{cm}$. Total Dissolved Solids (TDS) ranged from 268 to 437 mg/L, below the permissible limit of 1500 mg/L. Total hardness levels varied from 164 to 237 mg/L as CaCO_3 , also below the permissible limit of 600 mg/L. Dissolved oxygen (DO) concentrations ranged from 5.6 to 6.4 mg/L indicating healthy oxygen levels. Biological Oxygen Demand (BOD) levels were found to be between 2.36 and 3.70 mg/L and Chemical Oxygen Demand (COD) ranged from 18.47 to 46.80 mg/L. Heavy metals such as cadmium, arsenic, zinc, lead, and chromium were found below detection limits (BDL), indicating minimal contamination. Overall, the water quality during this monitoring period appears to comply with relevant standards for drinking water sources

C. Bacteriological Characteristics

Coliform group of organisms are indicators of faecal contamination in water. All surface water samples were found to be bacteriologically contaminated. Presence of total coliforms in surface water indicates that a contamination pathway exists between any source of bacteria (septic system, animal waste, etc.) and the surface water stream. A defective well can often be the cause when coliform bacteria are found in well water. For surface water, treatment followed by chlorination or disinfection treatment is needed before use for domestic purpose. Groundwater samples were not found to be bacteriologically contaminated.

3.5 LAND USE LAND COVER CLASSIFICATION

The land-use & land cover map of the 10 km radial study area from the periphery of project site has been prepared using Resource SAT-1 (IRS-P6), sensor-LISS-3 having 23.5m spatial resolution and date of pass 15th March 2024 satellite image with reference to Google Earth data. In order to strengthen the baseline information on existing land use pattern, the following data covering 10 km radius is approximate about 21°28'34.07"N to 21°39'50.76"N latitude and 81°38'8.41"E to 81°49'59.41"E longitude and elevation 275 to 316 meters are used as per the project site confined within that area.

The Land Cover classes and their coverage are summarized in **Table 5**.

TABLE 5: LU/LC CLASSIFICATION SYSTEM

LU/LC Classification System				
Sr. No.	Level-I	Level-II	Area (Sq. Km ²)	Percentage (%)
1	Built-up land	Settlement	4.11	1.22
		Industrial Settlement	1.91	0.53
		Road Infrastructure	1.12	0.33
		Railway Line	1.09	0.32
2	Agricultural Land/ Crop Land	Single Crop	194.36	57.92
		Double Crop	72.83	21.70
3	Forest Area	Reserved Forest	5.31	1.58
		Open Jungle	2.23	0.66
4	Scrubs/Wastelands	Open Scrub	37.75	11.24
		Wasteland	7.11	2.11
5	Waterbodies	River/Nala/Stream/Canal	3.35	1.0
		Dam/Pond/Lake/Tank	4.26	1.27
6	Mines Area	Limestone Mines	0.16	0.05
		Total	335.59	100

3.6 SOIL QUALITY

For studying soil profile of the region, sampling locations were selected to assess the existing soil conditions in and around the project site representing various landuse conditions. The physical, chemical and heavy metal concentrations were determined. The samples were collected by ramming a core-cutter into the soil from 15 cm up to a depth of 60 cm. Total 8 representative samples were collected from different locations within the study area and analyzed.

Physical Characteristics of Soil

Physical characteristics of soils were determined through specific parameters viz. particle size distribution, bulk density, porosity, water holding capacity, texture.

Regular cultivation practices increase the bulk density of soils thus inducing compaction. This results in reduction in water percolation rate and penetration of roots through soils. The soils with low bulk density have favorable physical conditions whereas those with high bulk density exhibit poor physical conditions for agriculture crops. The bulk density of the soil in the study area ranged between 1.43 - 1.67 g/cm³ which indicates favorable physical condition for plant growth. The water holding capacity is between 38.61 - 51.45%. Infiltration rate, in the soil is in the range of 7.78 – 24.36 mm/hr.

Chemical Characteristics of Soil

pH is an important parameter indicative of alkaline or acidic nature of soil. It greatly affects the microbial population as well as solubility of metal ions and regulates nutrient availability. Variation in the pH of the soil in the study area is found to be neutral (7.57 – 8.36) in reaction. Electrical conductivity, a measure of soluble salts in the soil is in the range of 122.8 – 192.8 μ S/cm

The important soluble cations in the soil are calcium and magnesium whose concentration levels ranged from 292.43– 431.12 mg/Kg and 105.28– 143.41 mg/Kg respectively. Chloride is in the range of 312.26– 451.26 mg/Kg. Organic matter and organic carbon present in the soil influences its physical and chemical conditions and is responsible for stability of soil aggregates. Organic matter and organic carbon were found in the range of 0.98% – 1.39% and 0.57% – 0.81%.

3.7 BIOLOGICAL ENVIRONMENT

Flora

A total of 195 species were reported from buffer zone of the proposed site, out of which maximum species of trees (77) followed by shrubs (42), herbs (37), climbers (20), grasses & bamboos (17) and parasites (01).

RET (Rare, Endangered and Threatened species) STATUS

Among the recorded species, *Dalbergia latifolia*, and *Santalum album* are classified as Vulnerable (VU), while *Tectona grandis* (Teak) is listed as Endangered (EN). *Aegle marmelos* (Bel), and *Saraca asoca* (Sita Ashok) fall under Near Threatened (NT) status, as per the IUCN Red List 2025-2. Of the remaining species, 105 are categorized as Least Concern (LC), 4 as Data Deficient (DD), and 82 as Not Evaluated (NE), as per latest IUCN status report 2025-2.

Fauna Details:

As per IUCN RED (2025-2) list

Python molurus (Indian python) and *Varanus bengalensis* (Indian Monitor Lizard) are categorized as *Near Threatened* (NT). Remaining, all the species are categorized as least concern as per IUCN 2025-2 list (<https://www.iucnredlist.org/>).

As per Indian Wild Life (Protection) Amendment Act, 2022

10 Nos. of Schedule-I fauna observed in the study area. Biological conservation and management plan is prepared.

Among the Avifauna; all birds observed in the study area are protected in Schedule II as per Wild Life Protection Amendment Act (2022) and subsequent amendments thereof.

Among mammals; Jackal (*Canis aureus*), Common Mongoose (*Herpestes edwardsi*), Indian fox (*Vulpes bengalensis*), Jungle Cat (*Felis chaus*) and Indian Porcupine (*Hystrix indica*) are protected in Schedule –I. Whereas, other are protected as Schedule –II animals of Wild Life Protection Amendment Act 2022.

Among the Herpetofauna; Indian Cobra (*Naja naja*), Indian python (*Python molurus*) and Common Rat Snake (*Ptyas mucosa*), Russell's Viper (*Daboia russelii*) and Bengal monitor lizard (*Varanus bengalensis*) were provided protection as per Schedule-I.

3.8 SOCIO-ECONOMIC ENVIRONMENT

The total household within study area are 21134 Nos. and population is 143702 (Calculated till 2021). According to Primary census abstract, 62.10% peoples are literate while the remaining 37.90% people are illiterate. Total workers are 69,582 and non- workers are 72,038.

Summary of the socio-economic status of the study area is given in **Table 6**. Details regarding education and infrastructure facilities 2011 are presented in **Table 6** and **Table 7** respectively.

TABLE 6: SUMMARY OF SOCIO-ECONOMIC ENVIRONMENT OF VILLAGES WITHIN STUDY AREA

Zones	Total household	Total Population	Total Male	Total Female	Total 0-6 child	Total SC	Total ST	Population Literate	Population Illiterate	Total worker	Total Non worker
0-2 km	1087	5508	2783	2725	812	941	633	3355	2153	1087	5508
2-5km	3698	18347	9213	9134	2809	3182	890	10826	7521	3698	18347

Zones	Total household	Total Population	Total Male	Total Female	Total 0-6 child	Total SC	Total ST	Population Literate	Population Illiterate	Total worker	Total Non-worker
5-10km	16349	81050	40787	40263	12348	15764	5747	50962	30088	16349	81050
10km	21134	104905	52783	52122	15969	19887	7270	65143	39762	21134	104905
In %	4.96		50.32	49.68	15.22	18.96	6.93	62.10	37.90	4.96	-

Source: Primary census abstract 2001 & 2011, District Raipur, state Chhattisgarh.

TABLE 7: INFRASTRUCTURE FACILITIES AVAILABLE IN THE STUDY AREA

Infrastructure facilities	Availability (In percentage) As per year 2011, Census Dist. Raipur Chhattisgarh
Educational Facilities	100
Drinking water	100
Road	70.51
Power	100
Communication	97.00
Transportation	85.35
Govt. PHC & SC	48.00
Bank & Society	33.33
Drainage	48.00
Recreation	93.02

Source: Primary census abstract 2001 & 2011, District Raipur, state Chhattisgarh.

SALIENT OBSERVATION OF THE SOCIO-ECONOMIC SURVEY

A number of aspects were studied in the villages surveyed for socio-economic studies. Following are the observations found during interviews, focused group discussions and as per the Questionnaire.

- **Major Crops of the Study Area:**

The predominant crops in the study area include paddy, maize, and pulses during the Kharif season, while wheat, gram, and mustard are grown during the Rabi season. Additionally, the region cultivates vegetables such as tomatoes, brinjal, and ladyfinger, and fruits like mangoes and bananas, contributing to the local agrarian economy.

- **Agriculture Labor and Wage Rates:**

Agricultural labor in the region primarily comprises local villagers. Wage rates for unskilled labor range from Rs. 150 to Rs. 200 per day, while skilled labor earns between Rs. 300 and Rs. 400 per day. These rates reflect the standard economic conditions and labor availability in the rural setting.

- **Skilled and Unskilled Labor:**

The villages around the project area have a workforce that is deeply connected with nearby industries. As per field observations, the people here are engaged in both skilled and unskilled jobs, depending on the type of industries and their individual experience levels.

Several steel, cement, and power industries like Sambhv Steel Tubes, Central Cement, Hitech Power & Steel, Nandan Smelters, Raipur Refrathern, and Ultratech Cement are located within a radius of 10 km, some of which are adjoining the project boundary. These industries typically hire

skilled manpower for technical operations such as machine handling, maintenance, and quality checking. Locals who have completed ITI or have hands-on experience in these industries are employed as machine operators, welders, electricians, and fitters.

On the other hand, industries like Agrasen Rice Industries, Ananya Paper Industries, Tirupati Balaji Foods, and Agrawal Oil Extractions generate regular demand for unskilled labour. These units require manpower for material handling, packaging, cleaning, and support activities, which is largely met by villagers from Sarora, Parsada, Sardhu, and nearby hamlets. In many cases, women are also engaged in sorting and packaging work, especially in food processing units, thereby contributing to household earnings.

- **Agricultural Production & Marketing:**

Agricultural production in the area is moderate, with paddy and wheat being the major crops. Marketing of agricultural produce is facilitated through local markets and cooperatives, which play a crucial role in ensuring that farmers can sell their produce efficiently. Additionally, some of the produce is transported to nearby urban centers for broader market access.

- **Livestock:**

Livestock rearing is an integral part of the rural economy, with common livestock including cows, buffaloes, goats, and poultry. These animals provide essential products such as milk, meat, and eggs, contributing to the nutritional and economic well-being of the local population.

- **Culture:**

The primary languages spoken, Hindi and Chhattisgarhi, reflect the region's cultural heritage and linguistic diversity, with a rich and vibrant local culture that celebrates traditional festivals like Diwali, Holi, and local harvest festivals with great enthusiasm.

- **Health Care:**

The project area lacks adequate healthcare infrastructure. Although some health facilities are available in the surrounding regions, they are not sufficient to meet the community's needs. A Primary Health Centre (PHC) was observed; however, medical staff, especially doctors, were largely unavailable, and the facility was not functioning effectively. For serious health concerns, residents are often required to travel to nearby urban centres or towns, as no well-equipped government or private hospital exists within the villages. The road connectivity, such as the route linking Village the Tilda-Simga Road (approximately 3.12km away towards the NE), facilitates access to these external medical facilities, albeit with difficulty for the elderly and those without private transport.

- **Social Well-being:**

The social well-being of the community is closely tied to economic stability and access to basic services. The project has the potential to enhance social well-being by creating jobs, improving infrastructure, and providing better educational and healthcare facilities. However, it is essential to manage the social changes carefully to ensure that the benefits are equitably distributed and that any adverse impacts are mitigated.

- **Education:**

In the study area, access to basic education is available, with primary and middle schools located within or near the villages. However, the overall interest in education among the local youth

appears to be mixed while some are well-educated and aware of future career opportunities, others show limited interest in pursuing studies due to various socio-economic and infrastructural challenges. Although foundational education is accessible, the condition of existing schools reveals gaps in essential facilities. Many schools lack a reliable water supply, proper sanitation (especially toilets for girls), functional computers, a sufficient number of textbooks, and other learning aids. The absence of a well-maintained boundary wall also raises safety concerns. Moreover, while the town of Tilda located approximately 5 km from the project site offers higher education and private schooling options, regular transportation remains a barrier for many students. These constraints not only affect the quality of education but also limit the overall motivation of children and youth to continue their studies. Enhancing the quality of educational infrastructure and promoting awareness about the importance of education would be key to fostering long-term socio-economic development in the study area.

- **Infrastructure Building:**

The proposed Greenfield project project will necessitate significant infrastructure development, including roads, bridges, and utilities. Improved infrastructure will facilitate better connectivity and access to markets, healthcare, and education. The development will not only support the project but also benefit the local community by improving overall living conditions.

- **Afforestation:**

The current green cover in the area is limited due to extensive agricultural practices. Afforestation initiatives, driven by government and non-governmental organizations, are in place to increase tree plantation and improve the region's green cover, contributing to environmental sustainability.

- **Rural Water Supply:**

During the site visit, Ghughua Tank (3.42 km NE) was observed to have a good water level. The tank is an important water source for nearby villages, especially during summers when hand pumps stop working due to low groundwater levels. The water was clean, and villagers were using it for domestic needs and cattle.

A small pond near the project site (0.1 km NW) was also seen, which serves nearby residents and animals. However, its water level depends on seasonal rains and may reduce in the dry season.

Other nearby rivers and nalas like Seonath River (4.95 km WNW) and Kharun River (6.72 km WSW) are key for irrigation and groundwater recharge, but their flow reduces in summer.

Despite having several water bodies, the area faces water shortages in summer due to dependency on seasonal sources and low groundwater levels.

- **Migration from Other States:**

There is a notable influx of labor migrating seasonally from other states for agricultural and industrial work. This migration brings cultural diversity and increases labor availability but also poses challenges related to the strain on local resources and infrastructure.

- **Sanitation:**

Sanitation facilities in the area vary, with ongoing improvements driven by government schemes such as Swachh Bharat Abhiyan. These initiatives are focused on enhancing the sanitation infrastructure to ensure better hygiene and health standards for the local population.

- **Road Connectivity:**

The road connectivity around villages such as Sarora, Tilda, and nearby areas is being rapidly developed, with major national and state projects like the 4-laning of the Raipur-Bilaspur road (NH-130) improving access to nearby towns and cities. This enhancement in road infrastructure is considered crucial for boosting local economic development, facilitating the movement of goods for nearby industries, and improving daily life for residents.

- **Electricity:**

The region has access to electricity, although the supply can be inconsistent. Efforts are being made to ensure a more reliable power supply to support both residential and industrial needs, which is vital for the area's development.

- **Banking Facilities:**

Banking facilities are available, with several banks and cooperative societies providing financial services to the local population. Access to banking services is essential for economic activities, savings, and access to credit for both agricultural and non-agricultural purposes.

- **Transportation:**

Transportation infrastructure is developing in areas surrounding Sarora village, with ongoing improvements to key road and public transport facilities that link the region to major industrial hubs like Tilda and Raipur city. Efficient transportation is necessary for the seamless movement of agricultural produce (especially rice from local mills), industrial goods from the nearby cement and steel plants, and the daily commute of the area's residents, thereby contributing significantly to the overall economic growth of the region.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 AIR ENVIRONMENT

The mathematical Model AERMOD was used for predicting the GLCs, which is entirely in line with the requirement of Central Pollution Control Board, New Delhi. In 1991, the U.S. Environmental Protection Agency (EPA) in conjunction with the American Meteorological Society (AMS) formed the AERMOD. AERMOD is a steady-state plume model aimed at short-range (up to 50 km) dispersion from stationary industrial-type sources.

The impact of a source or group of sources on air quality is evaluated using mathematical models. The widely accepted interpretation models simulate the relationships between air pollutant emissions and its impact on air quality. For the present study, this model is used for the prediction of maximum ground level concentrations.

The maximum incremental ground level concentrations (GLCs) for particulate matter (PM₁₀ & PM_{2.5}) and gaseous concentration SO₂, NO_x due to proposed project are superimposed on the maximum baseline concentrations of the respective pollutants recorded during the study period to arrive at the likely resultant concentrations after implementation of the proposed project. The predicted resultant ground level concentrations (baseline + incremental) of above parameters are as follows:

TABLE 8: RESULTANT CONCENTRATIONS DUE TO PROPOSED PROJECT

Pollutant	Max Baseline Concentration at Project Site ($\mu\text{g}/\text{m}^3$)	Incremental Concentration ($\mu\text{g}/\text{m}^3$)	Resultant Concentration ($\mu\text{g}/\text{m}^3$)	NAAQ Standards ($\mu\text{g}/\text{m}^3$)
PM ₁₀	82.4	2.84	85.24	100
PM _{2.5}	41.5	0.93	42.43	60
SO ₂	20.7	5.00	25.70	80
NO _x	28.1	7.11	35.21	80

TABLE 9: DETAILS OF AIR POLLUTION CONTROL SYSTEM/ MITIGATION MEASURES

Sl. No.	Facilities	Air Pollution Control equipment	Emission Level
1	Submerged Arc Furnace	Fume Extraction system with bag filters (Stack Height 33 m)	PM <30 mg/Nm ³
2	AFBC Boiler	Electro Static Precipitators (ESP) with a Chimney and Bag Filters at Coal conveyors	PM <30 mg/Nm ³
		Lime Dosing	SO ₂ <100 mg/Nm ³
		Low NO _x burners with 3-stage combustion, flue gas recirculation and auto combustion control system will be provided	NO _x <100 mg/Nm ³

Additional Measures to reduce/control pollution control:

- Roads will be frequently sprinkled with water.
- Most of the materials like Coal, Dolochar, Mn ore, and Iron ore will be stored under covered shed.
- In case of storage of Coal, Dolochar, Mn ore, and Iron ore in open, it will be covered by tarpaulins to prevent spread of dust from it during transportation.
- Regular sweeping of road by using vacuum cleaner will be carried out
- Regular maintenance of vehicles and machineries will be carried out in order to control emissions.
- Green belt development will be taken up all along the roads, plant premises etc.
- Protective appliances will be provided to all the workers exposed in dusty atmosphere.
- Avoiding overloading of the trucks.
- Workers will be equipped with all personal protective devices like Gum Boot; hand gloves; Safety helmet; Safety goggles, earplugs at work place.
- By controlling the speed of the truck.
- Proper gradient of roads to reduce cumulative noise.
- Transportation of materials will be limited to day hours only.
- Periodical maintenance of process machinery.

4.2 NOISE ENVIRONMENT

During the normal operation of manufacturing process noise will be generated due to operational activities of ID Fan, Blower/air Fan, Cutting/Shearing Machine and DG Set, etc. the ambient noise levels are expected to increase significantly with the attributes of the respective equipment, but this noise will be restricted close to the concerned equipment. The preventive measures are given below:

- Equipment will be standard and equipped with silencer. The equipment will be in good working conditions, properly lubricated and maintained to keep noise within permissible limits.
- Most of the equipment's will be placed in closed room.
- Equipment's will be placed on acoustic floor to reduce vibration and noise.
- High noise zone will be marked, and earplugs will be provided to the workmen near high noise producing equipment.
- Use of PPE's awareness program will be provided to all workers.
- Proper shifting arrangement will be made to prevent over exposure to noise and vibration.
- Tall trees with heavy foliage will be planted along the boundary / project site / plantation area, which will act as a natural barrier to propagating noise.
- Silent DG sets will be used site.
- Speed limits will be enforced on vehicle.

Regular noise & vibration monitoring will be carried for all equipment's to check compliance with prevailing rules.

Vehicular Movement

The LoS value from the proposed greenfield project the level of service on – Approach Road & Simga Kharora Road will be “**B (0.2 to 0.4)**” i.e. **Very Good** and Raipur Bilaspur Road will be “**C (0.4 to 0.6)**” i.e. **Good/Average/Fair**. The inclusion of additional vehicle carrying raw material and finished products to the existing traffic will not having much change in the traffic.

So, the additional load of (344 trips/day) will add insignificant contribution on the carrying capacity of the concerned road. Hence it is concluded that it is not likely to have any significant adverse effect.

4.3 WATER ENVIRONMENT

The proposed implementation of the project may have some impact on the water environment. The impact may be on the source of water in the form of depletion of water resources of the area and in the form of deterioration of quality of natural water resources due to discharge of plant effluent. It is proposed that no effluent will be discharged outside the plant.

The various control measures that will be adopted are:

- Raw material from the proposed project will be stored on concrete layer thus no seepage from the raw material piles anticipated.
- The material will be stored under adequate shed in order to prevent the leachate through runoff.
- Separate stockyards for storage of Raw materials, finish products and solid waste will be maintained.
- All stockyards will be designed with the impervious flooring to prevent leachate percolation.
- Garland drain will be provided to all stockyards area to prevent run-off containing suspended solids by routing the storm water drains through catch pits/sediment traps.

- Any spillage of hazardous waste (used oil/spent oil, ETP Slag, etc.) or contamination will be immediately removed.
- Periodic ground water monitoring at project site as well as nearby villages will be carried out.
- Rain water charged to ground water
- Closed circuit circulation system will be followed.
- Effluent from power plant will be treated in ETP (135 KLD) and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, slag quenching.
- The domestic sewage outflow from toilets will be treated in Sewage Treatment Plant (Cap. 25 KLD). The treated domestic waste water will be used in greenbelt

4.4 BIOLOGICAL ENVIRONMENT

The proposed greenfield project may cause localized dust and noise due to material handling and vehicular movement, with moderate impacts (3/5) on nearby habitations, particularly Sarora Village (0.53 km SW). These impacts will be mitigated through the development of a 20 m wide greenbelt along the southern and western boundaries.

Air dispersion modelling indicates that PM, SO₂, and NO_x concentrations will remain within prescribed limits, and no significant impact on surrounding agricultural land is anticipated. A greenbelt covering 3.09 ha (33.59%) with 7,725 indigenous saplings will further enhance ecological buffering.

Additional measures such as covered transport, water sprinkling, road maintenance, dust monitoring, and green nets will be implemented. No eco-sensitive areas exist within 10 km; however, Bilari RF (0.5 km) and Bilari Ghughua RF (3.8 km) lie to the north-east. A Biological Conservation Plan for Schedule-I species is recommended, and no significant ecological impacts are expected.

4.5 SOCIO-ECONOMIC IMPACT

There is likely to be growth in the revenue generation and economy at local /regional. There will certainly be improvement in standard of living due to required facilities provided by management under CER. During operation phase heavy vehicular movements will lead to dispersed dust particles which will affect the health of the workers and Local Peoples. If influx of workers from outside areas then there will be an increased pressure on residential accommodation the neighborhood during construction phase.

The existing land use pattern of proposed site is agriculture without significant natural vegetation. The Increase in direct/indirect job opportunity shall take place. Services in the locality shall be used and accordingly growth in economic structure of the area will take place.

For the Greenfield Project to be successful and gain local acceptance in the Sarora villages, careful planning and community engagement are crucial. The project presents a significant opportunity for economic growth and infrastructure development, but these benefits must be realized while prioritizing environmental protection, health, and social well-being to minimize adverse impacts.

5.0 ENVIRONMENTAL MONITORING PROGRAM

Environmental monitoring of ambient air quality, surface and ground water quality, ambient noise levels, etc. will be carried out through NABL/MoEFCC accredited agencies regularly and reports will be submitted to CECB/ MoEF&CC. The company has proposed to Capital Cost of Rs. 50 Lakhs and Recurring Cost of Rs. 10 Lakhs towards Environmental Monitoring Program.

Environment Management Department with suitably qualified and experienced staff and environmental laboratory to cater the routine monitoring requirement will be implemented in the plant.

As part of the Board structure, Audit & Compliance reporting team shall also oversee the environmental status inclusive of the conditions prescribed under various environmental consents and clearances, as and when obtained from various State and Central Govt. authorities, as well as the corporate norms, standards and targets that exceed the legal compliance requirements.

6.0 ADDITIONAL STUDIES

6.1. RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

The assessment of risk in the proposed project has been estimated for fire, explosion and toxicity and corresponding mitigation measures are suggested in the EIA/EMP report.

A detailed Disaster Management Plan for facing disasters due to natural effects and human reasons is prepared and incorporated in the EIA/EMP report for ensuring safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. For effective implementation of Disaster Management Plan, it will be widely circulated and personnel training through rehearsals. Site facilities, procedures, duties and responsibilities, communications, etc. are considered in details in the Disaster Management Plan.

6.2 PUBLIC CONSULTATION

The Draft EIA-EMP report for the greenfield project has been prepared in accordance with the Standard ToR issued by the Expert Appraisal Committee (EAC Industry-I), MoEF&CC, New Delhi. This report is submitted for the public consultation process as stipulated in the EIA Notification of 2006 and its subsequent amendments.

Following the completion of the public consultation process, the concerns raised and commitments made by the project proponent during the public hearing will be incorporated into the final EIA-EMP report, which will then be submitted for Environmental Clearance

8.0 PROJECT BENEFITS

The proposed project is expected to generate substantial **economic, social, infrastructural, and environmental benefits** at the local, regional, and national levels result in improvement in the quality of life of people in the central region. M/s. SSTL will implement social welfare programs as part of its Corporate Social Responsibility (CSR) obligations under the Companies Act. These CSR initiatives will prioritize building positive relationships with local communities near the project site. Following its CSR policy, M/s. SSTL will focus on community development activities in the following areas:

- Community development
- Health & medical care
- Roads
- Education
- Drainage and sanitation
- Drinking water supply occasionally in the event of water scarcity through tankers, etc.

The project proponent will comply with its obligation for CSR as per Company's Act too.

A budget allocation of Rs. 533 Lakhs has been earmarked under the Corporate Environmental Responsibility (CER) initiative for social and infrastructure development. A detailed action plan, including specific physical targets, will be formulated and shared following the public hearing.

9.0 ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) has been formulated to minimize adverse environmental impacts arising from the proposed project through effective pollution control, resource conservation, and regulatory compliance. The EMP outlines mitigation measures, monitoring programs, and budgetary provisions to ensure environmentally sustainable project implementation and operation. The details are as under:

Air Quality Management: Air emissions from Submerged Arc Furnaces will be controlled through high-efficiency PTFE bag filters (4 sets) during hot metal tapping, with 33 m high stacks ensuring particulate matter emissions within 30 mg/Nm³. Emissions from the 60 MW AFBC-based CPP will be controlled using a 4-field ESP, with treated flue gases discharged through a 79 m high stack, complying with PM ≤30 mg/Nm³, SO₂ ≤100 mg/Nm³, NO_x ≤100 mg/Nm³, and Hg ≤0.03 mg/Nm³. Fugitive emissions will be controlled by providing bag filters at coal conveyor transfer points.

Solid and Hazardous Waste Management: Solid wastes including SAF slag, fly ash, bottom ash, and furnace dust will be scientifically managed. SAF slag will be utilized for construction and road making, while fly ash and bottom ash will be utilized brick manufacturing units or sold to cement plants. Hazardous wastes such as used oil will be disposed of through authorized recyclers as per applicable rules.

Effluent Management: A closed-circuit cooling system will be adopted. Industrial wastewater of 111 KLD will be treated in an ETP of 135 KLD capacity, while domestic wastewater of 21 KLD will be treated in an STP of 25 KLD capacity. Treated water will be reused for green belt development, ensuring zero liquid discharge.

Storm Water Management and Rainwater Harvesting: A separate storm water drainage system will be provided to prevent contamination and waterlogging. The total annual rainfall accumulation is estimated at 53,700 m³/year. Rainwater harvesting measures include seven recharge pits (1.0 m dia × 3.0 m depth) with a combined recharge capacity of about 8,712 m³ and one rainwater collection tank of 10,000 m³ capacity.

Occupational Health and Safety: Occupational health and safety measures will include provision of PPE, regular health surveillance, safety training, dust and noise control measures, and emergency preparedness systems for safe plant operation.

Green Belt Development: Out of the total project area of 9.20 ha, a green belt will be developed over 3.09 ha (33.59%). About 7,725 saplings will be planted at a density of 2,500 trees per hectare using native and pollution-tolerant species.

Socio-Economic Development: The project will provide direct and indirect employment and undertake CSR activities focusing on education, healthcare, infrastructure, and skill development in nearby villages.

Project Cost and EMP Budget: An EMP budget of **Rs. 2282 lakhs** (capital) and **Rs. 80 lakhs** (recurring) has been earmarked for effective environmental management.

10.0 CONCLUSION

The proposed greenfield project by M/s. Sambhv Steel Tubes Ltd. is expected to contribute positively to the socio-economic development of nearby villages and the region. Potential environmental impacts related to dust, noise, wastewater generation, and increased traffic will be effectively managed through the installation of robust pollution control systems, including bag filters, electrostatic precipitators (ESP), water sprinkling systems, wheel washing facilities, industrial sweeping and vacuum systems, and enclosed material handling arrangements.

Additional environmental safeguards such as greenbelt development, plantation along transport routes and in nearby villages, and rainwater harvesting and groundwater recharge measures will also be implemented to further minimize environmental impacts.

With the effective and judicious implementation of these site-specific measures, the project is not expected to cause any adverse impact on the surrounding environment or agricultural activities.

From an employment and economic perspective, the project will generate local job opportunities, support regional industrial growth, and contribute to bridging the demand–supply gap of steel, thereby supporting the overall economic development of the region and the country.

11.0 DISCLOSURE OF CONSULTANTS

The Environmental studies for proposed Greenfield project of M/s. SSTL has been carried out by M/s. Anacon Laboratories Pvt. Ltd., Nagpur (M/s. ALPL). Anacon established in 1993 as an analytical testing laboratory and now a leading Environmental Consultancy firm backed by testing lab for environment and food in Central India region, approved by MoEFCC/CPCB as EPA approved lab with NABL. M/s. ALPL is a group of experienced former Scientists from the Government Institutions and excellent young scientist of brilliant career with subject expertise. It is recognized by Ministry of Environment & Forests, New Delhi for carrying out environmental Studies & accredited by Quality Council of India (QCI) for conducting Environmental studies having Accreditation Certificate No.: **NABET/EIA/23-26/RA 0304_Rev.01** dtd. 13 March, 2024 valid till Sept 29, 2026