

# EXECUTIVE SUMMARY

For

PROPOSED EXPANSION BY ENHANCEMENT OF SPONGE IRON PLANT (FROM 29700 TPA TO 211200 TPA) WITH ADDITION OF NEW FACILITIES OF PELLET PLANT 0.6 MTPA & IRON ORE BENEFICIATION 0.8 MTPA; INDUCTION FURNACE WITH CCM 210000 TPA (HOT CHARGING); ROLLING MILL (AUTOMATED) 205800 TPA; FERRO ALLOYS 9 MVA × 3 (SILICO MANGANESE – 45000 TPA, FERRO MANGANESE- 45000 TPA & FERRO SILICON– 22000 TPA); AND CAPTIVE POWER 43 MW (FROM 0.5 MW TO 18 MW WHRB AND 25 MW AFBC)

LOCATED AT

VILLAGE: SARAIPALI, RNM TAMNAR TEHSIL, RAIGARH DISTRICT, CHHATTISGARH

Terms of Reference File No. IA-J-11011/541/2021-IA-II(IND-I) dated 27<sup>th</sup> January, 2022  
Category A, Schedule 3 (a) Metallurgical Industries (Ferrous & Non Ferrous),  
2(b) Mineral Beneficiation and 1(d) Thermal Power Plant

Baseline Monitoring Period: Winter Season (1<sup>st</sup> December 2021 to 28<sup>th</sup> February 2022)

## PROJECT PROPONENT



**M/s. SUNIL SPONGE PRIVATE LIMITED**  
(Raigarh Division)

## ENVIRONMENTAL CONSULTANT



**M/s. ANACON LABORATORIES PVT. LTD., NAGPUR**

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MoEF&CC (GOI) Recognized Laboratory  
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Report No. ANqr /PD/20A/2022/197

**SEPTEMBER 2022**

**EXECUTIVE SUMMARY****1.0 INTRODUCTION**

M/s. Sunil Sponge Pvt. Ltd. (hereafter called as SSPL) is a Private Limited Company belonging to Sunil Group of Industries, Raipur (C.G.) has goal to set up Rolling Mills and an integrated steel plant with captive power generation under the guidance of visionary leadership of Shri. Anil Nachrani, Chairman and Managing Director.

The Sunil Group started its business in 1985 and has grown to be an innovator, expanding and adapting with the new technologies in steel making to meet the ever changing consumer demands. Now, they can manufacture any size with length for MS Rounds, Beam, Channel, Angle, Flats and Squares.

The current proposal is for expansion of existing plant capacity for production of Sponge Iron, Pellet Plant & Mineral Beneficiation unit, Induction Furnace with CCM, Ferro Alloys, Rolling Mill (Automated) along with captive power generation plant comprising of Waste Heat Recovery Boilers (WHRB) and Atmospheric Fluidized Bed Combustion (AFBC) Boiler. Total project area is 28.14 Hectare (69.54 Acre).

The online application for prior Environmental Clearance (Form-1) was submitted to EAC, Delhi vide proposal no. IA/CG/IND/248137/2021 Dated 29/12/2021 for proposed expansion project. The proposal was considered in 51<sup>st</sup> meeting of Re-constituted EAC (industry-I) held on 11<sup>th</sup> -12<sup>th</sup> January, 2022. The Committee has granted Terms of References (ToR) for the proposed expansion project (Vide F.no. IA-J-11011/541/2021-IA-II (IND-I) dtd. 27<sup>th</sup> January 2022) for preparation of the EIA-EMP Report.

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 expansion project.

The Environmental Impact Assessment (EIA) and Environment Management Plan report is prepared for obtaining Environmental Clearance (EC) from MoEF&CC, New Delhi and the Consent for Establishment from the Chhattisgarh Environment Conservation Board (CECB) for the proposed expansion project.

This Draft EIA report is prepared based on the ToR conditions recommended by EAC (Industry – I), New Delhi and project related technical details provided by M/s. Sunil Sponge Private Limited. The report will be revised based on the public hearing outcomes.

**1.1 IDENTIFICATION OF PROJECT**

The proposal is Brownfield project for expansion of production facilities for Sponge Iron with installation of new facilities for Pellet Plant with Iron Ore Beneficiation, Induction furnace with CCM, Ferro Alloy, Automated Rolling Mill, production facility of WHRB & AFBC power plant. The details of existing and proposed configuration of the project are provided in **Table 1**.

**TABLE 1  
EXISTING AND PROPOSED CONFIGURATION**

Sr. No	Product	Existing (As per CTO dtd. 22/11/2019)		Proposed		Total after Expansion	
		Configuration	Capacity	Configuration	Capacity	Configuration	Capacity
1.	Sponge iron	Sponge iron kiln- 90 TPD x 1	29700 TPA	Sponge iron kiln- 200 TPD X 1	181500 TPA	Sponge iron kiln- (90 TPD x 1	211200 TPA



Sr. No	Product	Existing (As per CTO dtd. 22/11/2019)		Proposed		Total after Expansion	
		Configuration	Capacity	Configuration	Capacity	Configuration	Capacity
		No.		No. and 350 TPD x 1 No.		No., 200 TPD X 1 No. and 350 TPD x 1 No.)	
2.	MS billet/ MS ingot	Nil	Nil	Induction furnace with CCM- 15 Tons X 4 Nos plus 10 tons X 1 Nos	2,10,000 TPA	Induction furnace with CCM- 15 Tons X 4 Nos plus 10 tons X 1 Nos	2,10,000 TPA
3.	Re-rolled products (TMT or Wire Rod)	Nil	Nil	Automated Electrical driven Rolling Mill about 640 TPD	2,05,800 TPA	Automated Electrical driven Rolling Mill about 640 TPD	2,05,800 TPA
4.	Ferro alloys	Nil	Nil	9 MVA X 3 Nos. Ferro Alloys Plant	<ul style="list-style-type: none"> <li>• Silico Mn-45000 TPA</li> <li>• Ferro Manganese-45000 TPA</li> <li>• Ferro Silicon-22000 TPA</li> </ul>	9 MVA X 3 Nos. Ferro Alloys Plant	<ul style="list-style-type: none"> <li>• Silico Mn-45000 TPA</li> <li>• Ferro Manganese-45000 TPA</li> <li>• Ferro Silicon-22000 TPA</li> </ul>
5.	Pellet plant and mineral beneficiation	Nil	Nil	0.6 MTPA Pellet Plant;	0.6 MTPA	0.6 MTPA Pellet Plant;	0.6 MTPA
				0.8 MTPA Iron Ore Beneficiation	0.8 MTPA	0.8 MTPA Iron Ore Beneficiation	0.8 MTPA
6.	Power	WHRB-0.5 MW	0.5 MW	WHRB - 17.5 MW	17.5 MW	WHRB- 18 MW	18 MW
		Nil	Nil	AFBC based power plant- 25 MW	25 MW	AFBC based power plant- 25 MW	25 MW

## 1.2 LOCATION OF THE PROJECT

Plant is located at Khasra No. (Existing) 28, 29, 30, 31, 32/1, 32/2, 33, 34, 35, 36, 37, 38, 39 (Proposed) 16, 17, 18/1, 18/2, 19, 20, 22, 23, 24, 25/1, 27/1, 27/2, 27/3 and 48/1 at Village Saraipali, Tehsil Tamnar, District – Raigarh, Chhattisgarh.

## 1.3 EIA- EMP REPORT

As per approved ToR obtained from EAC (Industry –I), MoEFCC, New Delhi, baseline environmental monitoring was conducted during Winter Season (1<sup>st</sup> December 2021 - 28<sup>th</sup> February 2022) to determine 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. Environmental Management Plan is suggested to implement the site specific pollution control in the project.



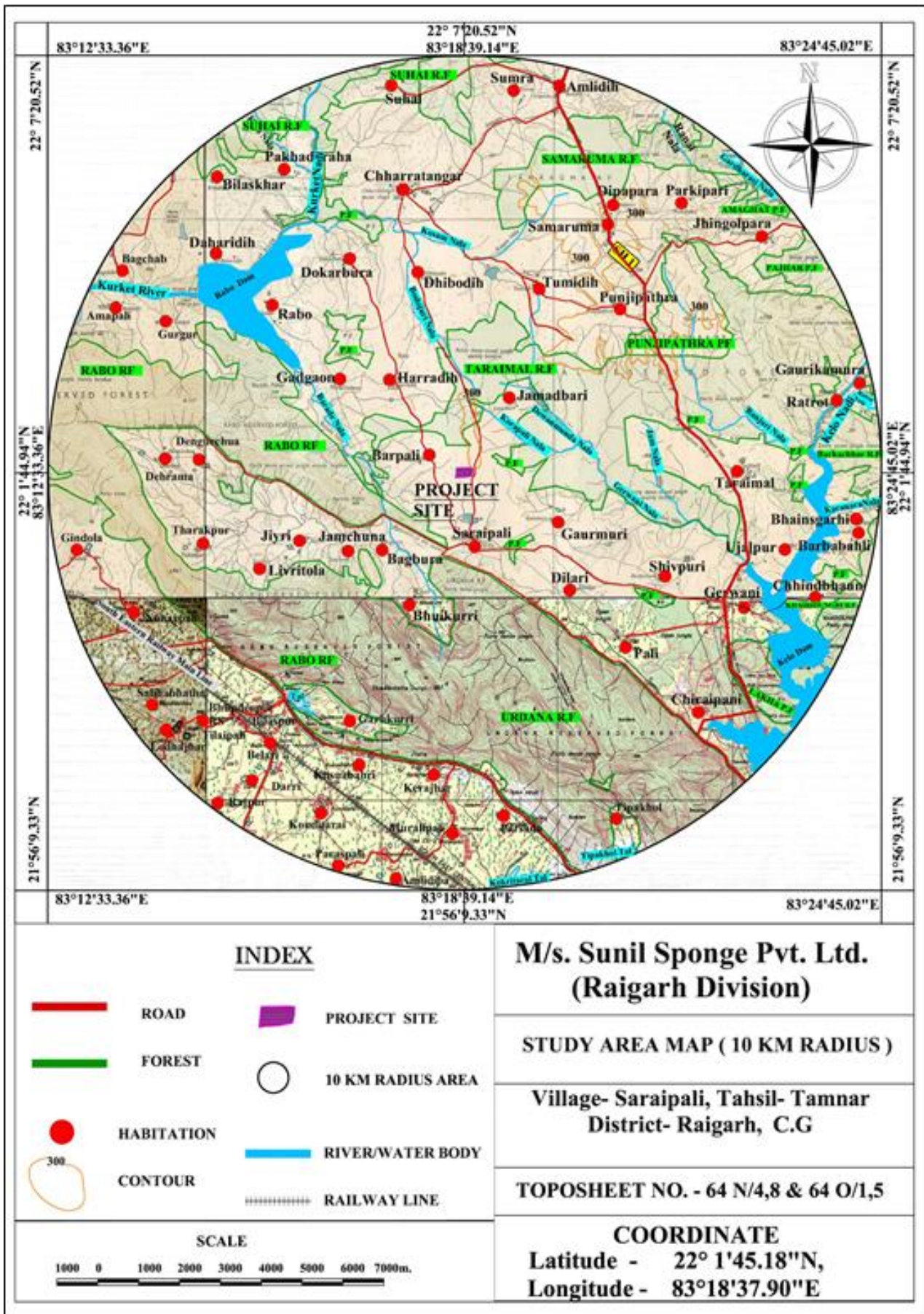


FIGURE 1 A: STUDY AREA (10 KM RADIAL DISTANCE)



**TABLE 2  
DETAILS OF ENVIRONMENTAL SETTINGS**

Sr. No.	Particulars	Name																											
1.	Project Location	Khasra No. (Existing) 28, 29, 30, 31, 32/1, 32/2, 33, 34, 35, 36, 37, 38, 39 (Proposed) 16, 17, 18/1, 18/2, 19, 20, 22, 23, 24, 25/1, 27/1, 27/2, 27/3 and 48/1, Village - Saraipali, Tahsil - Tanmar, District - Raigarh (C.G.)																											
2.	Co ordinates	<table border="1"> <thead> <tr> <th>S. No.</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>22°1'48.20"N</td> <td>83°18'45.69"E</td> </tr> <tr> <td>BP2</td> <td>22°1'42.14"N</td> <td>83°18'43.98"E</td> </tr> <tr> <td>BP3</td> <td>22°1'41.37"N</td> <td>83°18'37.17"E</td> </tr> <tr> <td>BP4</td> <td>22°1'42.35"N</td> <td>83°18'24.76"E</td> </tr> <tr> <td>BP5</td> <td>22°1'50.60"N</td> <td>83°18'24.07"E</td> </tr> <tr> <td>BP6</td> <td>22°1'50.63"N</td> <td>83°18'25.78"E</td> </tr> <tr> <td>BP7</td> <td>22° 1'57.05"N</td> <td>83°18'25.47"E</td> </tr> <tr> <td>BP8</td> <td>22° 1'56.03"N</td> <td>83°18'48.20"E</td> </tr> </tbody> </table>	S. No.	Latitude	Longitude	BP1	22°1'48.20"N	83°18'45.69"E	BP2	22°1'42.14"N	83°18'43.98"E	BP3	22°1'41.37"N	83°18'37.17"E	BP4	22°1'42.35"N	83°18'24.76"E	BP5	22°1'50.60"N	83°18'24.07"E	BP6	22°1'50.63"N	83°18'25.78"E	BP7	22° 1'57.05"N	83°18'25.47"E	BP8	22° 1'56.03"N	83°18'48.20"E
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3.	Toposheet No.	64 N/ 4,8, 64 O/ 1,5																											
4.	Climatic Conditions	Temperature - Min. 13.1 <sup>0</sup> C to Max.41.4 <sup>0</sup> C Humidity (%) - 26.0 to 85.0 Avg. Annual Rainfall- 1394.6 mm																											
5.	Nearest representative IMD station	IMD Raigarh -17.6km/ SSE																											
6.	Site elevation above Mean Sea Level	297- 303 m.																											
7.	Nearest River/ water Body	1. Kelo River- 8.2 km/ E 1. Jam Nala- 4.5 km/ E 2. Dewanmunda Nala- 2.6 km/ NE 3. Korapali Nala- 1.5 km/ NE 4. Barade Nala- 2.2 km/W 5. Bodojuri Nala- 1.9 km/N 6. Kosam Nala- 5.1 km/N 7. Ranai Nala- 9.2 km/NE 8. Gardharasi Nala- 9.8 km/NE 9. Ratrot Nala- 9.3 km/ENE 10. Banjari Nala- 7.0 km/ENE 11. Jindal Dam- 9.3 km/SSE 12. Rabo Dam- 5.0 km/NW 13. Gerwani Nala- 3.6 km/ESE 14. Kurket River- 15. Bilaspur Reservoir- 6.2 km/SW 16. Kelo Dam- 7.2 km/ESE																											
8.	Nearest state/ National Boundaries	Odissa-24.5km/E																											
9.	Distance for sea coast	Bay of Bengal- 344.7km/ SE																											
10.	Nearest Reserved/ Protected forests	1. Urdana RF- 2.2km/ S 2. Barkachhar RF- 8.9km/ E 3. Kharidungri RF- 9.3km/SE 4. Taraimal RF- 0.4km/N 5. PF (Near Vill. Jamadbhari)- 1.2km/N 6. Rabo RF- 1.4km/SW 7. Samaruma RF- 5.9km/N 8. PUNJIPATHRA PF- 4.8km/ENE 9. PAJHAR P.F- 8.6km/NE 10. PF near Saraipali- 2.0 km/SE 11. PF near Dokarbura- 6.0 km/NNW 12. PF near Shivpuri- 4.9 km/SSE 13. Lakha PF- 7.6 km/SE																											



Sr. No.	Particulars	Name
		14. Keradongri PF- 8.8 km/ESE 15. Amaghat PF- 9.1 km/NE 16. PF nr Taraimal- 7.8 km/E 17. Suhai RF- 6.0 km/NW
11.	Nearest Industries	1. O.P. Jindal Industrial Park- 3.1km/ NE 2. M/s B.S. Sponge Pvt. Ltd.- 4.2 km/ ENE 3. Singhal Enterprises Pvt. Ltd.- 5.2 km/E 4. M/s NRVS Steels Limited- 5.6 km/E 5. Nalwa Steel and Power Ltd.- 6.9 km/ SE 6. Vazron Industries Pvt. Ltd.- 7.2 km/ SE 7. Salasar Steel And Power Ltd-6.3 km/ SE 8. Anjani Steel Pvt. Ltd.- 7.1 km/ ESE 9. Raigarh Ispat & Power Pvt. Ltd.- 2.1km/ SE 10. Nav Durga Fuel Pvt.- 0.6 km/ SW 11. Agroha TMT- 6.1 km/ SE 12. Monnet Ispat & Energy Ltd.- 8.8 km/ WSW 13. Shambhavi Ispat- 6.7 km/ SE 14. Chandrahasini Steel- 6.4 km/ SE 15. Gayatri Rolling Mill- 6.5 km/ SE 16. Shree Rupanadham Steel Pvt Ltd.- 0.3 km/ SSW
12.	Nearest Air Port	Veer Surendra Sai Airport, Jharsuguda- 76.1 km/ ESE Raigarh Airstrip- 23.0 km/ SE
13.	Nearest village/major town	Village - Barpali- 0.7 km/ WNW
14.	Nearest city	Raigarh- 16.0 km/ SSE
15.	Nearest major city with 2,00,000 population	Raigarh- 16.0 km/ SSE
16.	Hills/valleys	-
17.	Nearest tourist place	1. Singhanpur Cave- 7.0km/ WSW 2. Kelo Dam- 7.2 km/ ESE 3. Rabo Dam- 5.0 km/ NW
18.	Archaeologically important places	Singhanpur Cave- 7.0km/ WSW
19.	District Headquarters	Raigarh- 18.2 km/ SE
20.	Nearest Railway Station	Bhupdeopur Rly Station- 8.0 km/ SSW
21.	Nearest National/State Highway	SH1- 6.0 km/ E
22.	Defence Installations	-
23.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, Universities etc.)	1. Govt. School Jambadri- 1.5 km/ NE 2. Govt. high School Gadgaon- 1.7 km/ SSW 3. Govt. Primary School, Jinghol- 9.1 km/ NE 4. OP Jindal School- 11.8 km/ SSE 5. Govt. college Tamnar- 15.5 km/ NE 6. O.P Jindal University- 4.9 km/ NE 7. Fortis OP Jindal Hospital- 12.3 km/ SSE 8. ESIS Hospital Taraimal- 6.2 km/ ESE 9. ESIS Hospital Parsada- 7.4 km/S 10. Banjari Mandir- 5.3 km/ E 11. Govt. Middle School, Bhupdeopur- 7.7 km/ SW 12. Community Hall Gorhi- 11.8 km/ ENE 13. Higher Secondary School Kondatari- 8.3 km/ SW
24.	Notified ECO- Seismicity	Seismic zone II (Low Risk Zone)





## 2.0 PROJECT DESCRIPTION

### 2.1 PROCESS DESCRIPTION

#### Manufacturing Process of Sponge Iron (DRI)

- Iron ore, coal, dolomite/limestone is fed in the weighed quantity and the kiln is rotated. The kiln of suitable size generally inclined at 2.5 % slope rest on four support stations.
- The product (DRI) is discharged from the kiln at about 1000°C. Solids are discharged to the cooler through an enclosed chute are cooled to about 100°C without air contact.
- The flue gases from kiln are passed through an after burning chamber where un-burnt combustibles are burnt by blowing excess air. The temperature of the after burner chamber, at times, is controlled by water sprays.

#### Manufacturing process of Steel Melting Shop with CCM

- A well established and proven manufacturing process technology based on Induction Melting Furnaces; presently being followed by majority of similar manufacturing units; mostly in small or medium scale sector is proposed.
- The melting process involves taking sample of Sponge Iron & Pig Iron; Iron Powder and mild steel scrap, end cutting from rolling mills or scrap from user units is taken from raw material storage.
- Homogeneous molten mass is poured hydraulically into the ladle.
- **LRF (Ladle Refining Furnace):**  
The production of molten steel the production of quality requires refining of the same for which one Ladle Refining Furnace.
- **CCM:**  
The ladle containing liquid steel is placed on the Continuous Casting Machine platform and continuous casting of hot billet is carried out in the same.

#### Manufacturing process of Pellet Plant Unit

Pelletization unit consists of processes Drying & Preparation of Iron ore fines, Grinding, Mixing and Blending, Pellet Preparation, Screening, Travel Grate Furnace, Rotary Kiln, Cooler and Recovery of Dust and Spillage.

#### Iron Ore Beneficiation Process

Beneficiation process is a combination of crushing, screening, washing, grinding, classifying by gravity separation, magnetic separation and flotation processes. The final concentrate slurry is filter pressed 10 gel a dry enriched are quality with Fe >65% and moisture-10%. The water is recycled in the process. The tailings are settled in a thickener and a large amount of water is recovered and circulated in the process. The discharge from the thickener is of low value with Fe <45% and moisture content - 25%.

#### Manufacturing process of Ferro Alloy Unit

Standard High Carbon Ferro/Silico Manganese is smelted at about 1600-1700°C. A Submerged Arc Electric Furnace achieves this. The three carbon electrodes, partially submerged in the charge, are supported on hydraulic cylinders for upward and downward movements to maintain the desired electrical conditions in the furnace.



### WHRB based Power Generation

- The Waste heat Recovery boilers will be attached with DRI Kiln. The flue gases released from DRI Kilns will be passed through Waste Heat Recovery Boiler, where waste heat will be recovered and steam will be generated in required temperature and pressure. The source of energy is the heat content in waste flue gases released from DRI Kilns.

### AFBC based Power Generation

- Power generation by using Atmosphere Fluidized Bed Combustors (AFBC) boiler by use of Char Dolo Char and reject Coals will be set up based on Air Cooled condenser.

## 2.2 LAND REQUIREMENT

The proposed expansion is on existing sponge iron project. Total project area is 28.14 Hectare (69.54 Acre) of land out of which 13.17 Hectare land is already in possession whereas 14.97 Hectare land is under active process of acquisition. Total 9.510 Hect. (33.79 %) area is being developed as Greenbelt.

The detail of land use planning is provided as follows:

**TABLE 3  
AREA STATEMENT**

SI. No.	DESCRIPTION	AREA IN (HECTARES)	AREA IN (ACRES)	% PERCENTAGE
1	I/O Beneficiation & Pelletization Plant	2.132	5.268	7.58
2	DRI Kiln Along With WHRB (Existing & Proposed)	3.087	7.63	10.97
3	Induction Furnace	1.318	3.256	4.68
4	Rolling Mill	1.708	4.222	6.07
5	Power Plant (Existing & Proposed)	0.767	1.895	2.73
6	Ferro Alloys Plant	0.392	0.97	1.39
7	Material Storage Yard & Shed Area	0.161	0.399	0.57
8	ETP/STP/WTP Area	0.032	0.078	0.11
9	Admin & Other Non-Plant Buildings	0.165	0.409	0.59
10	Utilities Area	0.615	1.52	2.19
11	Internal Roads	2.731	6.749	9.71
12	Truck Parking & Car, Two Wheeler Parking	0.062	0.153	0.22
13	Open Area	5.459	13.49	19.40
14	Green Belt	9.510	23.5	33.79
	<b>Total</b>	<b>28.14</b>	<b>69.54</b>	<b>100 %</b>

## 2.3 RAW MATERIALS REQUIREMENT, SOURCE & MODE OF TRANSPORT

Raw materials required for the plant are Iron ore, Coal, Dolomite, Sponge Iron etc. All raw materials shall be stored in covered sheds, on impervious floors. Garland drains shall be provided, around storage yards to trap the run off / spillage of materials. Some of these raw materials are readily available within 100 km radius and these will be transported through covered trucks. But Bulk Material like Iron Ore; Coal etc are proposed to be brought by Rail upto nearest railway siding of Bhupdeopur from there it will be transported through covered truck by road to the plant.

### 2.3.1 Solid and Hazardous waste generation

The solid waste generation will be in the form of Tailings, Ash/ Dust generated from Pellet plant, Slag from SMS, Mill Scales from Rolling Mill, Slag from Ferro Silicon Manufacturing, Slag from Silica Manganese Manufacturing Process, Slag from Ferro Manganese manufacturing process, Ash





generated from Gasifier (Pellet plant), Tar generation from Gasifiers. The waste generated will be managed in scientific manner.

## 2.4 WATER REQUIREMENT & SOURCE

The total water requirement will be 5150 KLD. The water will be sourced from surface water (Rabo Dam) and rain water collected. Application to Water Resources Department submitted for Surface water allotment for plant operation.

## 2.5 POWER REQUIREMENT & SUPPLY

Total Power requirement will be 54 MW out of which 43 MW will be met from CPP and rest 9 MW will be drawn from CSPDCL supply network. To meet out the emergency backup on standby DG set (1500 kVA X 2 Nos.) shall be always kept in ready alert in order to have a higher safety level.

## 2.6 MANPOWER REQUIREMENT

SSPL will provide employment to 1020 peoples as direct employment which includes 50 (10 existing + 40 proposed) people as administrative staff and 970 (50 existing and 920 proposed) people will be production staff. Preference will be given to local people, depending upon their qualification and skill.

## 2.7 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.

## 2.8 PROJECT COST

The project cost of the project is estimated as Rs. 37500.00 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 winter season (1<sup>st</sup> December 2021 to 28<sup>th</sup> Feb 2022).

### 3.2 METEOROLOGY & AMBIENT AIR QUALITY

#### Summary of the Meteorological Data Generated At Site (1<sup>st</sup> Dec. 2021 – 28<sup>th</sup> Feb. 2022)

Predominant Wind Direction	Winter season
First Predominant Wind Direction	E (14.1)
Second Predominant Wind Direction	ENE (12.4%)
Calm conditions (%)	3.52
Avg. Wind Speed (m/s)	1.82

The status of ambient air quality within the study area was monitored at 8 locations covering project site. The levels of Respirable Particulate Matter (PM<sub>10</sub>), Fine Particulates (PM<sub>2.5</sub>), Sulphur Dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) 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 4**.



**TABLE 4**  
**SUMMARY OF AMBIENT AIR QUALITY MONITORING RESULTS**

Sr. No.	Location		PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	CO	Ozone	NH <sub>3</sub>
			µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
1	Project Site	1. Min	60.3	21.3	11.1	18.2	0.345	7.0	6.2
		2. Max	78.6	32.9	16.5	26.8	0.467	10.2	9.4
		3. Avg	69.5	26.2	13.2	21.8	0.395	8.4	7.9
		4. 98 <sup>th</sup>	78.0	32.2	15.9	26.0	0.461	10.1	9.3
2	Barpali	1. Min	56.1	18.4	8.3	15.3	0.254	6.7	5.7
		2. Max	70.8	34.2	14.5	21.6	0.531	12.6	10.9
		3. Avg	63.3	24.0	11.6	17.7	0.365	9.5	7.6
		4. 98 <sup>th</sup>	69.7	32.5	14.0	20.8	0.530	12.4	10.2
3	Bagbara	1. Min	66.4	26.3	14.5	16.7	0.395	7.3	5.9
		2. Max	86.4	40.5	20.7	26.1	0.569	12.6	12.4
		3. Avg	76.2	32.4	17.2	22.1	0.464	10.2	9.6
		4. 98 <sup>th</sup>	85.8	38.9	20.1	25.7	0.556	12.5	12.2
4	Bhuikurri	1. Min	63.7	23.8	12.5	19.8	0.348	7.7	6.7
		2. Max	86.6	35.5	20.1	26.8	0.471	11.6	9.6
		3. Avg	74.1	28.8	16.2	23.2	0.416	9.8	8.1
		4. 98 <sup>th</sup>	85.5	34.5	19.8	26.8	0.465	11.6	9.5
5	Saraipali	1. Min	60.2	22.6	12.7	15.8	0.323	6.8	6.2
		2. Max	83.3	34.2	19.3	24.3	0.421	10.7	9.6
		3. Avg	71.7	27.2	15.5	20.4	0.372	8.7	7.9
		4. 98 <sup>th</sup>	81.9	32.9	19.0	24.3	0.412	10.5	9.3
6	Gaurimuri	1. Min	56.8	20.4	9.4	16.5	0.297	7.3	5.9
		2. Max	72.2	28.8	14.5	23.4	0.391	10.9	8.9
		3. Avg	65.4	24.7	11.8	19.2	0.346	9.1	7.2
		4. 98 <sup>th</sup>	71.7	28.4	14.2	23.4	0.387	10.8	8.6
7	Jamadbari	1. Min	52.2	19.2	7.5	13.5	0.249	5.2	5.2
		2. Max	70.5	27.1	11.8	20.0	0.357	9.9	8.9
		3. Avg	60.8	22.8	9.2	16.5	0.307	7.6	6.8
		4. 98 <sup>th</sup>	69.5	26.7	11.6	19.5	0.351	9.8	8.8
8	Tumidih	1. Min	50.4	18.8	8.0	15.6	0.266	5.8	5.4
		2. Max	64.1	25.4	12.2	22.5	0.376	9.3	7.8
		3. Avg	56.5	21.8	10.1	18.5	0.321	7.3	6.5
		4. 98 <sup>th</sup>	63.2	25.1	12.0	22.1	0.365	8.8	7.8
<b>CPCB Standards</b>			<b>100</b> <b>(24hr)</b>	<b>60</b> <b>(24hr)</b>	<b>80</b> <b>(24hr)</b>	<b>80</b> <b>(24hr)</b>	<b>2</b> <b>(8hr)</b>	<b>100 (8hr)</b>	<b>400</b> <b>(24hr)</b>

### 3.3 AMBIENT NOISE LEVELS

Ambient noise level monitoring was carried out at the 08 monitoring locations; those were selected for ambient air quality monitoring. The monitoring results are summarized in **Table 5**.

**TABLE 5**  
**SUMMARY OF AMBIENT NOISE LEVEL MONITORING RESULTS**

Sr. No.	Monitoring Locations	Equivalent Noise Level	
		Leq <sub>Day</sub>	Leq <sub>Night</sub>
<b>Residential Area</b>			
1.	Bagbara	54.2	42.8



Sr. No.	Monitoring Locations	Equivalent Noise Level	
2.	Harradih	52.6	41.7
3.	Jamchuna	53.8	42.5
<b>CPCB Standards dB(A)</b>		<b>55.0</b>	<b>45.0</b>
<b>Commercial Area</b>			
4.	Saraipali	62.7	48.2
5.	Gaurimuri	53.1	43.7
<b>CPCB Standards dB(A)</b>		<b>65.0</b>	<b>55.0</b>
<b>Silence Zone</b>			
6.	Barpali	48.5	38.6
7.	Jamadbari	47.7	36.9
<b>CPCB Standards dB(A)</b>		<b>50.0</b>	<b>40.0</b>
<b>Industrial Area</b>			
8.	Project site- Near main gate	69.1	57.8
<b>CPCB Standards dB(A)</b>		<b>75.0</b>	<b>70.0</b>

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

##### Regional Geology

10 km radius study area is mainly comprised of sedimentary rock formations, like sandstones, arenites, conglomerates, shale, tillites, boulder beds etc. All these formations are of Proterozoic age and of Gondwana age. There are no major geological structure present in study area as far as concern with construction of buildings and other structure. Study area falls in seismic zone-II i.e. low damage risk zone.

##### Site specific Geology

Project area is mostly covered by soil cover which is having thickness of around 0.5-1.0m. Outcrops are very rare in project site.

##### Hydrogeology

Most of the study area is covered by sedimentary formations. Sandstones are good aquifer as it holds and transmit very good amount of water. The ground water occurs in both phreatic and semi-confined to confined condition. One distinct perennial auto flow zone has been demarcated in Tamnar block in the Mand river sub-basin.

Depth to water level scenario in the study area:

Pre-monsoon Water levels- 4.5 to 7 m bgl

Post-monsoon water levels: 0.3 to 3.5 m bgl

##### Geomorphology:

Study area is comprises of gently sloping plains on Proterozoic age and on Gondwana rocks. Pediment/ pediplain zone is observed in SE part of the study area. Flood plains are observed along River courses. There are no major geomorphological structures present in study area.

#### 3.4.2 Water Quality

Groundwater and surface water quality was assessed by identifying 8 groundwater (Borewell/ handpump) locations in different villages and 5 surface water samples.



### A. Groundwater Quality

The analysis results indicate that the pH ranged 6.85 - 7.82. The TDS was ranging from 340-467 mg/l. Total hardness was found to be in the range of 206.98 – 292.81 mg/l. The fluoride concentration was found in the range of 0.21 – 0.81 mg/l. The nitrate and sulphate were found in the range of 7.32 – 17.01 mg/l and 21.85 – 53.21 mg/l respectively. The chloride concentration was found in the range of 47.19 to 90.84 mg/l. The Total suspended solid concentration was found below detection limit (DL -10mg/l) at all sampling location. Heavy metals like As, Pb, Ni were found below detection limit i.e. BDL (DL-0.01), BDL (DL-0.001), BDL (DL-0.1) respectively.

**TABLE 6**  
**LOCATION WISE WATER QUALITY ASSESSMENT**

Sr. No.	Locations	WQI	Quality	Remark
1	Project site-	57.85	Good	<b>Water quality assessed based upon above physico-chemical parameters and samples were found to be physico-chemically good.</b>
2	Barpali	58.24	Good	
3	Bagbara	62.66	Good	
4	Dilari	60.68	Good	
5	Saraipali	66.26	Good	
6	Gaurimuri	58.03	Good	
7	Jamadbari	54.18	Good	
8	Harradih	52.63	Good	

### B. Surface Water Quality

The analysis results indicate that the pH was ranged between 6.85 - 7.89 which is well within the specified standard of 6.5 to 8.5. The pH of water indicates whether the water is acid or alkaline. The TDS was observed to be 259 - 335 mg/l which is within the permissible limit of 2000 mg/l. The total hardness recorded was in the range of 151.20 – 223.41 mg/l as CaCO<sub>3</sub> which is also within the permissible limit of 600 mg/l. The levels of chloride and sulphate were found to be in the range of 17.19 – 34.95 mg/l and 13.72 – 32.98 mg/l respectively.

Dissolved oxygen (DO) refers to the amount of oxygen (O<sub>2</sub>) dissolved in water. Because fish and other aquatic organisms cannot survive without oxygen, DO is one of the most important water quality parameters. The reported value of range of 5.4-6.0 mg/l. Phosphorus (as PO<sub>4</sub>) is an important nutrient for plants and algae. Because phosphorus is in short supply in most fresh waters, even a modest increase in phosphorus can cause excessive growth of plants and algae that deplete dissolved oxygen (DO) as they decompose. PO<sub>4</sub> ranges from 0.28-0.51 mg/l. COD ranges from 16.0 - 28.0 mg/l and BOD ranges from 6.04 - 10.65 mg/l.

### 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 12<sup>th</sup> November 2021 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° 56'18.27"N to 22° 07'02.90"N latitude and 83°12'42.17"E to 83°24'21.06"E longitude and elevation 223 to 606 meters are used as per the project site confined within that area.

The Land Cover classes and their coverage are summarized in **Table 7**.

**TABLE 7**  
**LU/LC CLASSIFICATION SYSTEM**

LU/LC Classification System				
SR. No.	Level-I	Level-II	Area (Sq. Km)	Percentage (%)
1	Built-up land	Settlement	11.51	3.43
		Industrial Settlement	6.85	2.04
		Road Infrastructure	2.68	0.80
		Railway Line	0.32	0.10
2	Agricultural Land/ Crop Land	Single Crop	114.99	34.25
		Double Crop	28.46	8.48
3	Forest Area	Reserved Forest	120.56	35.91
		Protected Forest	21.48	6.40
		Dense Mixed Jungle	3.76	1.12
		Open Jungle	8.18	2.44
4	Scrubs/Wastelands	Open Scrub	11.37	3.39
5	Water bodies	River/Nala/Stream	2.39	0.71
		Dam	1.07	0.32
		Pond/Lake	2.13	0.63
		<b>Total</b>	<b>335.75</b>	<b>100</b>

### 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 land use 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

From the analysis results of the soil samples, it was observed, the bulk density of the soil in the study area ranged between 1.291 - 1.673 g/cc which indicates favorable physical condition for plant growth. The water holding capacity is between 21.94 - 32.94%. Infiltration rate, in the soil is in the range of 21.58 – 23.76mm/hr.

#### Chemical Characteristics of Soil

pH is an important parameter indicative of alkaline or acidic nature of soil. It is found to be neutral (6.71 – 7.36) in reaction. Electrical conductivity, a measure of soluble salts in the soil is in the range of 147 - 780  $\mu$ S/cm. The important soluble cations in the soil are calcium and magnesium whose concentration levels ranged from 120 – 800 mg/Kg and 97.5 – 1071.4 mg/Kg respectively. Chloride is





in the range of 199.9 – 399.8 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 2.15% – 6.89% and 1.25% – 4.07%. The major nutrients fertility status of soil with respect to NPK value is found to be in the range of 68.63 – 325.28 kg/ha (quality less to sufficient), 9.2 – 42.3 kg/ha (quality very less to medium) and 208.2 – 407.4 kg/ha (medium to more than sufficient) respectively.

### 3.7 BIOLOGICAL ENVIRONMENT

#### Floral composition in Study Area

The baseline study for existing biological environment was carried out during winter season 2022. Total 143 plant species were enlisted within the study site out of which habit wise details are given below:

- a. **Trees:** Total 94 species were found in the study area.
- b. **Shrubs (small trees):** Total 16 species were enumerated from the study area.
- c. **Herbs:** In the study area 05 species were observed.
- d. **Bamboo & Grasses:** 12 species were enlisted from the study area.
- e. **Climbers and Twiners:** Total 12 species of climbers/ twiners were recorded in the study area.
- f. **Parasite Plant :** 1 species enlisted in the area.

#### RET (Rare, Endangered and Threatened species) STATUS

According to IUCN Status report 2013 out of total 143 plant species identified within study area among the observed species *Chloroxylon swietenia* which is Vulnerable (VU) species as per IUCN Ret list. The other identified plant species in the study area belongs to least concern (LC), Data Deficient (DD) and Data not available (NA), as per IUCN status. Thus, none of reported species in study area belongs to Rare, Endangered or Threatened category.

#### Fauna Details:

##### As per IUCN RED (2013) list

Among the reported animals, the categorization of species as per IUCN is as follows:

**Mammals:** *Elephas maximus* – Asiatic Elephant (Endangered) *Melursus ursinus*– Sloth Bear (Vulnerable), *Hyaena hyaena* – Hyena (Near Threatened)

**Reptiles:** *Python molurus* – Indian Python (Threatened)

**Avifauna:** Nil as per IUCN

##### As per Indian Wild Life (Protection) Act, 1972

Wild Life (Protection) Act, 1972, as amended on 17<sup>th</sup> January 2003, is an Act to provide for the protection of wild animals, birds and plants and for matters connected therewith or ancillary or incidental thereto with a view to ensuring the ecological and environmental security of the country.

Some of the sighted fauna was given protection by the Indian Wild Life (Protection) Act, 1972 by including them in different schedules. Among the birds in the study area, Pea fowl (*Pavo cristatus*), is included in schedule I of Wild life protection Act (1972), while many other birds are included in schedule IV.



Among the reptiles, *Python molurus* (Indian Python) and *Varanus bengalensis* (Bengal Monitor Lizard) categorized as Schedule –I Whereas, Indian Cobra (*Naja naja*), Common rat snakes (*Ptyas mucosus*), are provided protection as per Schedule-II of Wild life protection act, (1972).

Among mammals; *Elephas maximus* – Asiatic Elephant and *Melursus ursinus* – Sloth Bear Categorised under Schedule – I. Whereas, Mongoose (*Herpestes edwardsi*), *Macaca mulata* (Rhesus macaque), Jungle cat (*Felis chaus*), Indian Fox (*Vulpes bengalensis*) are schedule –II animals. Wild boar (*Sus sucrofa*) and *Hyaena hyaena* (Hyena) is protected as Schedule-III animal and Hares & Five striped squirrel are included in schedule IV of Wild Life Protection act 1972. Fruit bat & Rats protected in Schedule V of Wild Life Protection act 1972.

### 3.8 SOCIO-ECONOMIC ENVIRONMENT

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data collection from census 2011 & District Census hand book 2011. Summary of the socio-economic status of the study area is given in **Table 8**. Details regarding education and infrastructure facilities 2011 are presented in **Table 8** and **Table 9** respectively.

**TABLE 8**  
**SUMMARY OF SOCIO-ECONOMIC ENVIRONMENT OF VILLAGES WITHIN 10 KM RADIUS AREA**

No. of villages	36
Total households	7848
Total population	32563
Male Population	16329
Female population	16234
SC Population	2469
ST Population	15474
Total literates	20794
Total Illiterates	11769
Total workers	15282
Total main workers	10394
Total marginal workers	4888
Total non-workers	17281

Source: Primary census abstract 2011, State Chhattisgarh.

**TABLE 9**  
**INFRASTRUCTURE FACILITIES AVAILABLE IN THE STUDY AREA**

Yr. 2011	In percentage (%)								
	Educa tion	Drinki ng water	Road	Power	Communicatio n	Transportati on	Govt. PHC & SC	Drainage	Recreation
Availa bility (%)	100	100	97.22	100	25	61.64	27.78	41.67	30.56

Source: Primary census abstract 2011, State Chhattisgarh.

### SALIENT OBSERVATION OF THE SOCIO-ECONOMIC SURVEY

- **Employment:** The Raigarh district has huge economical importance due to availability of the resources (Natural and man-made). The Main occupation in the study area was agriculture and Labor Work its allied activities eg. Cattle rearing, dairy farming, agro-horticulture, bamboo-agricultural crop patterns, floriculture, bee-keepings etc. Other income generation sources of the area, small business; private jobs etc. The labors were getting daily wages in the range of 300-



350 Rs, depending on type of work they set. It is observed that the Raigarh District is having huge scope for employment as industrialization is more in this area. But due to lack of Vocational training centers in the area the Industries are outsourcing some of the key employees from other areas.

- **Major crops of study area, production & yield:** The farmers in the area cultivate wide variety of crops. About half of the study area, as per site survey, belongs to the agricultural land category. Both (Rabi and Kharif) type of cropping practice is prevailing in this area. The main crops includes paddy, ragi, green gram and black gram. Til, groundnut, mustard, jute, sugar cane etc are the major commercial crops grown in the study area. Banana and mango are the major fruits grown in this area.
- **Migration from other states:** The area is industrially developed and main industries found here are coal washery, power plant, steel industry, etc. Migration from other states eg. UP, Bihar & Odisha for employment purpose found in the study area.
- **Education facilities:** The literacy level in all the villages is varying from 60 to 80 % which needs to be improved for the improving quality of life and overall development of the area. Most of the students in Villages in the study area are going to Raigarh town for their studies which is around 20 kms away. Very few schools are having proper infrastructure facilities. College facility is available in Traimal and Raigarh in the study area.
- **Transportation facility:** For transportation purpose auto, jeep and private bus services were available in the study area; however villagers reported that transportation facilities were not frequently available. Private vehicles like bicycles & motor cycles were also used by villagers for transportation purpose.
- **Medical facilities:** The Primary & secondary data reveals that there are only 01nos. of Sub Health Centers & 1 nos. of PHC's in the Study area. • During FGD villagers made various issues in health care facilities, such as health facilities available at PHCs, Laboratory testing and Delivery facilities at Government Health Centers, availability of clean toilet and drinking water at PHCs, and distance of the nearest health center from the Village. • To control the spread of diseases (Malaria & Dengue cases) and reduce the growing rates of mortality due to lack of adequate health facilities, special attention needs to be given to the health care in rural areas. The key challenges in the healthcare sector are low quality of care, poor accountability, lack of awareness, and limited access to facilities. • It is also observed that Malnutrition is the common in most of the villages.
- **Drinking water, sanitation & infrastructure:** It is observed that the source of water for Drinking & Agriculture in most of the Villages is groundwater. And the remaining villages which are proximate to the River use that as source of drinking water & for Agriculture. • It was observed that most of the Houses in the villages are not having sanitation facilities including in several schools. • It was observed that now a day's Internet is playing major role in society, but in the study area only one Internet shop is available. Need to go to Raigarh.
- **Banking facility:** The study area has almost all the schedule commercial banks with ATM facility at urban areas and the district HQ.
- **Sports & social ailment issues:**
  - Social ailment issues like child marriage, alcoholism among tribes.



- It is observed during FGD that there are only a few people got the benefit of Self employment scheme and needs substantial improvement.
- It is observed that there is no encouragement for sports as there are less Schools & Colleges in the Study area. Raigarh is the only place where Sports training facilities are available in entire District.

### 3.8.1 Awareness and opinion of the respondents about the project

Public opinion is the aggregate of individual attitudes or beliefs. It is very important to take opinion of the villagers about the project. The awareness will not only promote community participation but also enable them to understand the importance of the project and encourage them to express their view. To know the awareness and opinion of the villagers about the project, group discussion, meeting with school teachers/ village leaders were carried out in the study area.

- ❖ In core zone villages, majority of the respondents were aware about the project site but they were unaware about the project activity.
- ❖ The respondents were happy to know about the project and they opined positively because the activity would definitely contribute development in the study area
- ❖ Village leaders asked to give employment opportunities to local people
- ❖ Main demands of villagers in study area were for medical facility and employment opportunity.

#### ▪ Interpretation

The study area is rich with agricultural land and there is industrial development also and hence the district shows good source of economic growth of the country. The people in the area are earning enough money to cater to their basic needs of food, cloth and shelter but to improve the lifestyle social and infrastructural development is necessary in terms of education, modernization of agriculture activities etc. Vocational training centers, trainings related to modern agricultural techniques and women empowerment programs should be arranged for the people in the area.

The main problem heard from the public is that, the environment in the area is polluted and causing health problems in the people. Development of more and more greenbelt will be beneficial for the improvement of Environment. Health camps and Medical Camps should be arranged for people to get good life.

The people in the study area were happy to know about the proposed expansion of Sunil Sponge private Limited and creation of opportunities for employment.

## 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 predicted 24-hourly maximum contribution of particulate matter are  $1.21 \mu\text{g}/\text{m}^3$  and  $6.65 \mu\text{g}/\text{m}^3$  for existing and proposed scenarios respectively and exiting emissions already reported in current baseline scenario.

The following air pollution control equipment will be installed:

SR. No.	Facilities	Air Pollution Control Equipment	Emission Level
1.	DRI Kiln with WHRB	a. Dust extraction system, ESP with Chimney b. Bag Filters for Product house; Kiln discharge end and transfer points.	PM - $30 \text{ mg}/\text{Nm}^3$
2	Steel Melting Shop with hot charging rolling mill	Bag Filters with Chimney	PM - $30 \text{ mg}/\text{Nm}^3$
3	Pellet Plant with mineral beneficiation unit	a. Raw material Handling- Bag Filter in close circuit. b. Coal grinding - Bag Filter in close circuit. c. Flux grinding- Bag Filter in close circuit. d. Proportionating section- Bag Filter e. Ball Mill- Wet Scrubber f. Travelling grate, multi cyclone in close circuit and rotary kiln- ESP g. Hearth Layer Separation - Wet Scrubber	PM - $30 \text{ mg}/\text{Nm}^3$ SO <sub>2</sub> - $100 \text{ mg}/\text{Nm}^3$ NO <sub>x</sub> - $100 \text{ mg}/\text{Nm}^3$
4	Ferro Alloy Plant	Bag Filters with Chimney	PM - $30 \text{ mg}/\text{Nm}^3$
5	AFBC based power plant	ESP with Chimney And 2 Bag Filters at Coal conveyors	PM - $30 \text{ mg}/\text{Nm}^3$ SO <sub>2</sub> - $100 \text{ mg}/\text{Nm}^3$ NO <sub>x</sub> - $100 \text{ mg}/\text{Nm}^3$ Mercury (Hg) – $0.03 \text{ mg}/\text{Nm}^3$

## 4.2 NOISE ENVIRONMENT

During the normal operation of manufacturing process noise will be generated due to Induction Furnaces, Sponge Iron Plant, Rolling Mill, Captive Power Plant, Ferro Alloys Plant, Pellet Plant, Mineral beneficiation Unit 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. Day and night sound pressure levels are often used to describe the community exposure. The nearest human settlement Barpali is 600 m away from project site and resultant noise level at this village are 51.5 dB(A) & 48.8 dB(A) at day night respectively. The preventive measures are given below:

- Equipment should be standard and equipped with silencer. The equipment should be in good working conditions, properly lubricated and maintained to keep noise within permissible limits.
- High noise zone should be marked and earplugs shall be provided to the workmen near high noise producing equipment. The workmen should be made aware of noise and vibration impacts on their health and mandatory use earplugs.
- Proper shifting arrangement shall be made to prevent over exposure to noise and vibration.
- Tall trees with heavy foliage shall be planted along the boundary / project site / plantation area, which will act as a natural barrier to propagating noise.
- Silent DG sets shall be used at project site.
- Speed limits shall be enforced on vehicle.





- Use of horns/ sirens shall be prohibited.
- Use of loud speakers shall comply with the regulations set forth by CPCB.
- Regular noise monitoring shall be carried at construction camp / project site to check compliance with prevailing rules.

#### **Vehicular Movement**

Thus, overall **2996167 TPA** materials will be transported through road (considering 330 working days) for the plant. Thus, around **447 trucks per day i.e. 894 trips per day** will be required to transport the materials by road with the capacity of each truck 21 Tons is being considered.

#### **4.3 WATER ENVIRONMENT**

The proposed expansion 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. Total water requirement will be 5150 KLD (1699500 KLA). Total water required for domestic purposes will be 67 KLD. There will be no industrial effluent discharged outside the plant premises due to existing as well as proposed units. Domestic wastewater will be generated treated in STP and treated water will be used for green belt and dust suppression purposes. M/s. Sunil Sponge Pvt. Ltd. will maintain zero discharge condition from the plant all the time throughout the year.

#### **Mitigating Measures for Water Environment:**

1. Closed circuit circulation system will be followed.
2. Rain water charged to ground water.
3. All stock piles will be on pucca flooring to prevent for any ground water contamination.

#### **4.4 BIOLOGICAL ENVIRONMENT**

No National Park, Wildlife Sanctuary, Biosphere Reserve, Tiger Reserve, defined migratory corridors, etc. is present within 10 km radial distance from the project site. Nearest Debrigarh Wildlife Sanctuary is 45.0 km in SSE direction and Gomarda Wildlife Sanctuary is 51.4 KM in SSW direction from the project site.

The total plant area is 28.14 Ha. After expansion, the total plantation after expansion will be 23775 nos. within 9.510 Ha. (33.79 %) considering @ 2500 trees/ha, some trees shall be planted along approach road side in proposed project area. It is proposed to developed 3 - tier green belt will be planned within the plant premises.

#### **4.5 SOCIO-ECONOMIC IMPACTS**

The Impacts arising from the proposed expansion project depends on the extent of production and the distance of the impact area from the project site. The project would create impacts which could be beneficial as well as adverse. The nearest habitation present is Barpali which is around 0.7 kms from the existing project site and may get impacted due to the plant activity.

It is necessary to identify the extent of these impacts for further planning of control measures leading to mitigation of the adverse impact. The impacts due to existing project on parameters of human interest are assessed and given below.



#### 4.4.5.2 Positive impacts

- There would be multiplier effect on the creation of indirect employment through the local community establishing small shops like tea stalls, supply of intermediate raw materials, repair outlets, hardware stores garages etc.
- Economic growth due to development of area and increase in quality of life.
- Improvement in green cover due to the plantation of trees in the Study area, also are leading to a decrease in environmental pollution.
- Improvement in social and infrastructural development by the industries as a part of CER and EMP.

#### 4.4.5.3 Negative impacts.

- Production of Sponge Iron and operation of Induction furnace can cause release of pollutants in the Air Environment. Environmental pollution due to emission of pollutants may affect the health of the people.
- There may be increase in vehicles due to the expansion leading to extra pressure on the traffic.
- During operation phase heavy vehicle movement lead to dispersed dust particles which affects the health of the workers and Local Peoples. Trucks, tankers and other vehicles may cause additional air pollution to the surrounding areas. The effects may be more prominent in nearby villages.
- Possibilities of Hazards and accident which may cause harm to the workers working or loss of life of the workers.
- Generation of Solid and Hazardous waste will be there, if the waste is not managed properly, it may cause contamination of the area, environment and health of the nearby population.
- If influx of workers from outside areas then there may an increased pressure on residential accommodation the neighborhood.

#### 4.4.5.4 Mitigation Measures

In order to mitigate the adverse impact likely to arise in social, cultural and economic aspects in the surrounding region due to the existing project and improvement in quality of life following mitigation measures should be adopted:

- Adequate pollution control Equipment as per the CPCB Guidelines should be adopted and proper maintenance of industrial and pollution control equipment should be done to ensure minimum pollution.
- The efficiency of the pollution control equipment should be checked periodically to comply with the emission standards provided by CPCB and minimise the pollution levels.
- Ensure that roads are properly signed, vehicles are well maintained and drivers are well trained and safety conscious.
- A Safety climate should be prepared and every worker should be trained with all safety equipment. All health and safety measures should be adopted by the company to ensure the safety of the workers and the surrounding society.
- Project proponent should take appropriate steps to keep environment clean and Green belts development/ Plantation along with the internal Road.



- Transportation of hazardous waste should be done as per CPCB Guidelines. The heavy trucks are covered to prevent spillage or dusting. The drivers should be imparted training.
- Priority is given to local people in employment.
- Social infrastructure development activities should be proposed by the company.

## 5.0 ENVIRONMENTAL MONITORING PROGRAM

Environmental monitoring shall be done as per the guidelines provided by CPCB/SPCB. The methods conducted or applied shall be approved or accepted by the any recognized body or authority i.e. MoEFCC/CPCB/SPCB. The suggested monitoring shall be done to ensure that Environmental management practices/technologies are adequate to meet the requirement of the prescribed norms as prescribed by state pollution control board.

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 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

The assessment of risk in the proposed expansion 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.

## 7.0 PUBLIC CONSULTATION

The Draft EIA- EMP report for expansion of project facilities at Village- Saraipali, RNM Tamnar, District- Raigarh, is prepared as per the TOR and the report is submitted for public consultation process as per the provisions of EIA Notification 2006 and amendments thereof.

After completing the public consultation process, the points raised and commitment of project proponent during the public hearing will be incorporated in the final EIA-EMP report for final submission to Environmental Clearance.

## 8.0 PROJECT BENEFITS

### Proposed Social Welfare Arrangement

The Social welfare/ CSR activities will aim at strengthening the bond between the project authorities and the local population in the vicinity of project area. In line with CSR policy, SSPL will carry community welfare 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 CER budget and Physical items to be implemented would be based on Public Hearing outcome and as per the commitments made by project promoters during the Public hearing. The CER budget along with capital expenses with different heads will be finalized after PH and as per decision of EAC.

The cost for expansion of the project is **Rs. 37,500.00 Lakhs**. The amount of **Rs. 281.3 lakhs** will be spent towards the Socio- Economic and Infrastructural development.

## 9.0 ENVIRONMENTAL MANAGEMENT PLAN

The major objective and benefit of utilizing Environmental Impact Assessment in project planning stage itself, is to prevent avoidable losses of environmental resources and values as a result of Environmental Management. Environmental Management includes protection/mitigation/enhancement measures as well as suggesting post project monitoring program. Environmental management may suggest revision of project site or operation to avoid adverse impacts. The industrial development in the study area needs to be intertwined with judicious utilization of nonrenewable resources of the study area and within the limits of permissible assimilative capacity. The Environment Management Plan (EMP) is required to ensure sustainable development in the study area of the proposed project site, hence it needs to be an all comprehensive plan for which the proposed industry, Government, Regulating agencies like Pollution Control Board working in the region and more importantly the affected population of the study area need to extend their cooperation and contribution.

Judicious use of the environmental management will be implemented with addressing of components of environment, which will be likely affected during construction and operation of the proposed project. The budgetary provision for EMP for proposed project towards Capital cost of **Rs. 42.25 Crores** and Recurring Cost of **Rs. 2.33 Crores**.

## 10.0 CONCLUSION

The proposed project of M/s. Sunil Sponge Pvt. Ltd. will be beneficial for the overall development of the nearby villages. Some environmental aspects like dust emission, noise, wastewater, traffic density, etc. will have to be controlled better than the permissible norms to avoid impacts on the surrounding environment. Necessary pollution control equipment like bag house, water sprinklers, enclosures, etc. form integral part of the plant infrastructure. Additional pollution control measures and environmental conservation measures will be adopted to control/minimize impacts on the environment and socio-economic environment of the area. Measures like development of green belt and plantation in nearby village and along transport road, adoption of rainwater harvesting/recharging in the plant and in nearby villages will be carried out. The proposed CER activities to be initiated by the industry will be helpful to improve the social, economic and infrastructure availability status of the nearby villages.

Thus, it can be concluded that with the judicious and proper implementation of the pollution control and mitigation measures, the proposed project will not add adverse pollution levels to the environment. As per employment point of view, it will be beneficial to the society and will help to reduce the demand-supply gap of steel to some extent and will contribute to the economic development of the region and thereby the country.

## 11.0 DISCLOSURE OF CONSULTANTS

The Environmental studies for proposed project of M/s. SSPL are 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. M/s ALPL is a group of experienced former Scientists from the



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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/2023/SA0160 dtd. 13 April, 2022 Valid till March 29, 2023.