Executive Summary

ES. 1 Project Description

Based on the demand for steel & its allied products M/s. Surajgad Ispat Pvt. Ltd., has proposed for Establishment of 1.6 MTPA Beneficiation plant, 1.2 MTPA Pellet plant & Sponge Iron Plant of 8 X 350 TPD along with the installation of Induction Furnace of (0.75 MTPA), Rolling Mill (0.75 MTPA) and Captive Power Plant of capacity 120 MW on Sy. No's 11, 12, 32, 33, 37, 51, 52, 54, 69, 73/1, 73/2, 76/1, 76/2, 77, 78, 79, 80, 81, 82/1, 82/2, 82/3, 82/4, 82/5 of Wadlapeth village, Ahiri Taluk, Gadchiroli district, Maharashtra with a total area of 118.62 Ha.

The application was submitted to obtain ToR vide proposal No: IA/MH/IND1/495689/2024 on 07.10.2024 and accordingly, the ToR was issued on 20.12.2024 vide letter No.IA-J-11011/386/2024-IA-II (IND-I) by MoEF & CC, GoI. The Environmental Impact Assessment (EIA) report is based on ToR issued and the structure is as per EIA notification, 2006. The salient features of the project are as follows:

Sl. No.	Items	Particulars
1	Objective of the Project	Establishment of 1.6 MTPA Beneficiation plant, 1.2 MTPA Pellet plant & Sponge Iron Plant of 8x350 TPD along with the installation of Induction Furnace of (0.75 MTPA), Rolling Mill (0.75 MTPA) and Captive Power Plant of capacity 120 MW.
2	Promoters	M/s. Surjagad Ispat Pvt. Ltd
3	Latitude and Logitude	19°30'5.13"N, 79°58'33.35"E
4	Total Investment	Rs. 9230.25 Crores
5	Project location	Sy. No's 11, 12, 32, 33, 37, 51, 52, 54, 69, 73/1, 73/2, 76/1, 76/2, 77, 78, 79, 80,81,82/1, 82/2, 82/3, 82/4, 82/5 of Wadlpeth Village, Aheri Taluk, Gadchiroli District,
6	Category	3 (a) Metallurgical industry, 2 (b) Beneficiation Plant and 1 (d) Thermal Power Plant.
7	Extent of land	118.62 Ha
8	Manpower	During the construction phase – 1000 No's. During operation phase – 7000 No's
9	Water demand and Source	**Source of water: Pranhita River** Total water requirement : 10,000 KLD **For Domestic purpose :** Total water requirement for domestic activity is 450 KLD which will be sourced from Pranhita River. **Industrial Purpose:** Total water requirement for the industrial purpose is 9,550 KLD which will be sourced from Pranhita River.
10	Power supply & Backup DG	**During the construction phase: 4000 KVA** Source : MSDL Gadchiroli (Maharastra State Electricity Distribution Co. Ltd.,) and 5*630 KVA Tranformers D G sets 5*160 KVA are used as backup power during the

		power failure. **During the operational phase: 90 MW** Source: 120 MW internal captive power plant. D G sets of 5 x 1000 KVA & 3 x 500 KVA is used as backup power during the power failure.
11	Latitude & Longitude	19°30'9.31"N, 79°58'34.77"E
12	No working days	330 days
13	Time required for project implementation	24 Months after obtaining EC and CFE

ES. 1.1 Raw Material Requirement

Sl. No	Raw material	Quantity (TPA)	Source	Mode of Transportation	Distance
I	**For Iron ore Beneficiation plant (1.6 MTPA – throughput capacity)**				
1	Low grade Iron ore fines	16,00,000	Lloyds' Mine at Surjagad, Gadchiroli	By road in covered truck	40 Km
II	**For Pellet plant 1.2 MTPA**				
1	Beneficiated Iron ore fines	11,20,000	Own plant	Belt Conveyor	-
2	Bentonite	20,000	Lloyds' Mine at Surjagad, Gadchiroli	By road in covered truck	40 Km
3	Imported/Indian Coal	1,20,000	RB Mines, South Africa and Nearby port (Vishakapatnam Port)	By road in covered truck	400 Km
4	Limestone	20,000	Lloyds' Mine at Surjagad, Gadchiroli	By road in covered truck	40 Km
III	**For DRI Kilns (Sponge Iron) – (8x350 TPD)**				
1	Iron ore Pellets	13,12,080	Own plant	Belt Conveyor	-
2	Imported/Indian Coal	6,60,000	RB Mines, South Africa and Nearby port (Vishakapatnam Port)	By road in covered truck	400 Km
3	Dolamite	92,400	Lloyds' Mine at Surjagad, Gadchiroli	By road in covered truck	40 Km
IV	**Induction Furnace (7,50,000 TPA)**				
1	Sponge Iron	7,26,000	Own plant	Belt Conveyor	-
2	MS Scrap	1,52,842	M/s. Swastick Enterprises	By road in covered truck	109 Km
3	Ferro alloys	9,438	Lloyds' Mine at Surjagad, Gadchiroli	By road in covered truck	40 Km
V	**Rolling Mill (7,50, 000 TPA)**				

1	M. S Billet	8,33,684	Own plant	Belt Conveyor	-
VI	**For Power generation – 120 MW**				
1	Dolo-char	2,90,400	Own plant	Belt Conveyor	-
2	Imported/Indian Coal	49,500	RB Mines, South Africa and Nearby port (Vishakapatnam Port)	By road in covered truck	400 Km

ES. 1.2 Products and By-products

Sl. No.	Products/By-products	Capacity (TPA)	In-house Use	Outside Sale	MOU/Remark
A. Products					
1	Concentrated Iron ore	4848 TPD	4848 TPD	-	100% of the Concentrated Ore will be Utilized in pellet production within the Industries
2	Pellets	3636 TPD	3636 TPD	-	100% of the Pellet will be utilized in production of sponge iron within the plant
3	Sponge Iron	2800 TPD	2167 TPD	633 TPD	29 % of the Sponge Sold to nearby steel Industries
4	Power	120 MW	90 MW	30 MW	30 MW will be sold to power grid
5	MS billets	2273 TPD	2273 TPD	-	Utilized within the Industry
6	TMT bars/ other rerolled products	2273 TPD	-	2273 TPD	Sold in Market
B. By-products					
7	Char	500 TPD	500 TPD	-	Char will be utilized for CFBC boiler within the plant
8	Mill Scale	40 TPD	40 TPD	-	Mill scale will be reused in the pellet plant
9	End Cutting	150 PD	150 PD	-	Reused in the induction furnace
10	Bricks	40,000 No'S	-	40,000 No'S	Sold in Market

ES. 1.3 Criteria for Site Selection

The proposed site location is ideal because of adequate land for the plant, storage of raw material and products & disposal of waste material. Availability of raw material like low grade iron ore and limestone is close proximity to the proposed plant site. The project is well connected to NH 353 C (Gadchiroli – Sironcha Road) at distance 1.60 Km from project site. Hence easy accessibility & transportation of raw materials / finished products. Pranhita River is flowing 3.10 Km from project site in west direction. Hence availability of water for

the project. Road/rail (Sirpur Railway - 43.51 Km, W) connection so that raw materials and finished products can be easily and economically transported. No religious & Historic places or Archaeological Monuments present within 10 Km radius from project site. Availability of manpower from surrounding area. The proposed project site is located at 3.81 Km from Eco Sensitive Zone boundary and 7.49 Km from the protected area boundary. Further it is 67.65 Km away from Tadoba-Andheri Tiger Reserve.

ES. 2 Process Description

- **Iron Ore Beneficiation**

Beneficiation is a process, which removes the gangue particle like Alumina, Silica from the Iron Ore. Basically; it separates Fe_2O_3 or Fe_3O_4 from other impurities in the iron ore. In this process the Fe content is improve to maximum possible extent. The highest can be 70% i.e. purest form. The typical steps in the process are Classification of iron ore fines through Hydro-Cyclone, Spiral Separator, Magnetic Separator, Wet screening, Thickening, Dewatering through filter press, Grinding and Concentration section.

- **Pelletization**

The process of Pelletization involves in preparation of raw materials by grinding and mixing with adequate moisture content, balling of the prepared mixture and hardening of the pellets in a specially designed furnace. The pellet production line will adopt traveling grate-rotary kiln- cooler process.

- **Sponge Iron Manufacturing**

The process for the production of sponge iron consists of the reduction of iron ore with solid carbonaceous material i.e. coal in a rotary kiln at high temperature and then cooled to room temperature in the rotary cooler with indirect water cooling system. The products are then screened and magnetically separated. Sponge iron being magnetic gets attracted and gets separated from the non-magnetic char using DRI Technology. Waste heat generated from the Kilns will be recovered and used in Waste Heat Recovery Boiler (WHRB) for Captive Power Generation.

- **Induction Furnace**

Melting of the sponge iron, steel scrap, Ferro alloys will be carried out in induction furnaces using the intense heat generated by electricity. The finished products from the plant are bars and rods of construction grades and sizes rolled in a rolling mill. The feed to a rolling mill producing such products is MS-Ingots. The liquid steel will be poured into the moulds and allowed to cool. After that, the moulds will be separated from the metal and the ingots will be stored, for further processing in the rolling mill. The installation of induction furnaces will be taken-up in the second phase of the proposed project.

- **Rolling Mill**

The rolling mill process consists of reheating of the cooled / semi hot billets The heated billet material enter the gap between the rotating rolls and gets the shape and size of the opening made by the grooves cut in the pair of rolls. The process is purely a mechanical reduction and water is used for cooling the rolls as well as the work pieces. The rolled pieces are cut into required sizes and stacked in the storage area by means of overhead cranes.

- **Captive Power plant**

The CPP comprises of WHR Boiler (64 MW) and coal based CFBC boiler (56 MW), TG Sets and other power plant related auxiliaries such as cooling tower and boiler feed pumps. Steam requirement of the CPP is fulfilled from 8 x 45 TPH WHRB boilers and 2 x 120 TPH CFBC Boilers. The waste gases from the DR plant, kiln exhaust is passed through WHR Boiler that is top supported and is a three-pass natural circulation boiler. WHR Boiler utilizes heat for generating steam. CFBC boiler consumes as fuel the by-products of DR Plant such as DRI ash, ESP dust, coal fines coal, Dolo-char etc. The steam exhausted from the turbines is condensed in a air cooled steam condenser and thereafter taken through ejectors, vent steam and gland steam condensers for de-aeration and feed storage with the help of condensation extraction pumps.

ES. 3 Description of Environment

In order to assess the baseline environment of the project site & study area, monitoring of various environmental attributes were conducted by EHSCPL during Post-monsoon season (October 2023 – December 2023). In addition to the baseline monitoring, field inspection of study area within 10 Km radius, collection of secondary data and discussion with neighbourhood public, officials were done by the study team. The evaluated parameters are given below.

Land Use: In the study area of 10 Km radius most part of the land use pattern occupied with with forest land 14592 Ha (39.35%) and second highest land use in the study area is covered with crop land having an area of 11265 Ha (30.38%). Degraded forest covering area of 5200 Ha (14.02%) and water bodies like Dina River and Pranhita River, Lake near Wadlapeth etc are covered with an area of 7.91 % (2934 Ha) and followed by forest planation having area of 1795 Ha. Built Up area, Fallow land, land with scrub land and tree planation are occupied in the land use are 2.38%, 0.75%, 0.23% and 0.15%.

Meteorology: Meteorological monitoring was carried out at project site during October 2023 to December 2023. The mean temperature during the year ranges from 13.1°C to 34.6°C. The average annual rainfall is about 1438.43 mm.

Air Environment: Ambient Air Quality Monitoring (AAQM) was carried out at 10 locations. The 98 %tile AAQM results for PM_{10} (53.87 $\mu g/m^3$ to 70.08 $\mu g/m^3$) & $PM_{2.5}$ (19.32 $\mu g/m^3$ to 27.99 $\mu g/m^3$), Similarly SO_2 is observed in the range of (6.72 $\mu g/m^3$ to 9.97 $\mu g/m^3$) & NO_2 (15.05 $\mu g/m^3$ to 21.89 $\mu g/m^3$). The CO is found in the range of (0.60 mg/m^3 to 0.95 mg/m^3). All the analysed parameters are well within the standards stipulated by NAAQ standards, 2009. Lead & Nickel are found in trace quantities in the study area. AQI of the study area was calculated and found to be good for all the parameters.

Noise Levels: The ambient noise level monitoring was conducted at 10 locations in and around the project site. The noise levels were in the range of 45.93 to 60.08 dB(A) during day time and 35.36 to 52.85 dB(A) during night time. The results of noise levels during day and night were found to be within CPCB Standards.

Surface Water Quality: Surface water samples were selected at total 6 locations. Analysis results revealed that the pH values ranges from pH 7.57 (SW-2) to 8.08 (SW-4) were DO

levels were found to be 4.9 mg/l (SW-2) to 5.2 mg/l (SW-4). BOD levels were found to be 3.2 (SW-1) & 38 mg/L (SW-5) and COD level is found to be 16 mg/L (SW-1) & 104 mg/L (SW-5). The total coliform in the study was found to be 1600 MPN/100 ml (SW-2) & 2800 MPN/100 ml (SW-5 & 6) & E. coli was found to be in the range of 6 MPN/100ml (SW-2) and 70 MPN/100 ml (SW-6). The overall result of surface water for all the location is categorized as Class D, as the class D water is suitable for fish culture and Wildlife propagation.

Ground Water Quality: Ground water (Bore well) samples were collected at 8 locations and analysed to know the baseline water environment. The pH values ranges from 7.37 (GW-7) to 7.82 (GW-1 & 8) and the Electrical conductivity of the ground water samples are from 689 µs/cm (GW-6) to 738 µs/cm (GW-7). Total Hardness of the ground water samples ranges 108 mg/L (GW-2) to 252 mg/L (GW-1). Calcium and Magnesium values ranges from 22.4 mg/L (GW-2) to 51.2mg/L (GW-1) and 14.09 mg/L (GW-6) to 30.13 mg/L (GW-1). Chloride values were found from 48.56 mg/L (GW-6) to 110.0 mg/L (GW-7). Fluoride concentrations in ground water samples were observed from 0.17 mg/L (GW-3) to 0.79 mg/L (GW-6).

Out of 8 ground water samples collected, Lead, Cadmium, total chromium, Arsenic and Mercury were not detected in any of the sample. Copper was detected 0.006 mg/L in two sample (GW-7 & 8) and Iron values ranges from 0.094mg/L (GW-6) to 0.390 mg/L (GW4) and Zinc value ranges from 0.018 mg/L (GW-6) to 1.33 mg/L (GW-7) All the values are well within the IS 10500:2012 Drinking water standards (second Revision

Geology: The Study area and its environs is occupied with Granite & Granite Gneiss of Bengpal Group belonging to Archaean to Lower Proterozoic Age. Structurally the area is intruded by basic intrusive i.e. Dolerite Dykes and Quartz veins. Several lineaments striking NW-SE were observed in the core and buffer zone of the project area along the streams is marked.

Hydrogeology: The depth to water level varied between 4.0 to 13.0 m in general with exception of dry to 18m deepest water level recorded at Udduguda Temple, in bore wells while most of the dug wells recorded dry except one well observed to be 5.0 m. The annual water level fluctuation is reported to be varying between 2.0 to 5.0 m in the study area. The depth range of bore wells are 40 m to 60 m with a maximum depth of 135 m recorded at Udduguda village. The general flow direction of groundwater in the study area is towards southwest in the core zone.

Biological Environment: The study area was carried out at the 10 location considering project site, Core zone (0-0.5 Km) and Buffer Zone (0.5-2.0 Km)
The total of 24 tree species (n=4455) belonging to 12 families which are retainable and 21

tree species (n=912) belonging to 12 families which are removable recorded in the project site. 14 species of herbs belonging to 7 families, 5 species shrubs belonging to 5 families, no RET species recorded, No notified keystone species were recorded and total 10 tree species (n=438) belonging to 6 families were recorded in the study area.

The total 34 avifaunal species (n= 334) belonging to 27 families were recorded in the project site, Dominant Species: Median egret (n=103), Rose ringed parakeet (n= 25) & Spotted dove (n= 19) and Dominant species: Common Pheasant (n=52) House swift (n=25) and Red wattled lapwing (n=21) were recorded in the study area.
The total butterfly 15 species (n=39) belongs to 4 families were recorded due to presence of many water bodies like Dina River Lake, Wadlapeth lake adjacent to the project site and total butterfly 34 species (n=108) belongs to 5 families were recorded in the study area.
As per the wildlife (Protection) Act, 1972, there are no Schedule- I species are recorded during the studies.

Socio Economic Studies: A micro level assessment was conducted in 10 sample villages selected on random basis from the total 51 villages in the study area. The output of the assessment are summarized as most of the people opined positive responses towards the proposed project, People expressed concern for the poor road network, Sanitation and hygiene, Lack of health infrastructures, Enhanced educational facilities in their respective villages, expecting employment opportunities from the proposed project.

ES. 4 Anticipated Impacts & Mitigation Measures

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
A. Construction Phase			
1.	Air Pollution	Increase in Particulate matter due to movement of vehicles and use of DG sets for construction activities. Exhaust emission from vehicles	• Water sprinkling will be done in all the dust generating activities like site clearing, leveling, excavation, material handling etc. to suppress the dust. • Ensure Vehicle movement only during day time. • The vehicle speed limit will be restricted to 15 kmph within the construction site. • The DG set will be used during Backup power failure. Sufficient stack height of 10 m AGL will be provided to DG set. Regular stack monitoring will be carried out to ensure that the emissions are well within the norms.
2.	Noise Levels	Increased noise level affects the health of the labourers & tranquility of surrounding.	• Noise generating equipment will be provided with proper sound proofs. Periodic maintenance will be carried out for all high noise generating machinery / equipment. It will be also ensured that all such machineries / equipment are of recent vintage and installed on anti-vibrating mountings & with acoustic enclosures. • Internal speed limit for vehicles carrying construction materials will be maintained with 15 kmph. • The workers in the plant premises will be provided

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
			with proper PPEs which include ear muff, ear plugs and mask.
3.	Water quality	Disposal of sewage resulting soil contamination/groundwater contamination, stagnation of water leading to mosquito breeding sites and affecting on health, storm water run-off resulting flooding	• Construction equipment requiring minimum water for cooling and operation for optimum effectiveness will be chosen. • Water harvesting measures would be taken. • Appropriate sanitation facilities, mobile STP will be provided for the workers onsite and offsite to reduce impact on water resources. • Temporary garland structures will be constructed around the construction area and around the labour camps to avoid stagnation of water. The channelized water will be used for dust suppression within the construction site.
4.	Soil	Impacts on soil nutrients and Dust generation	• The excavated top soil will be removed in advance and reused for greenery development. • Garland drains shall be constructed to arrest the surface runoff and soil erosion. The drains shall be frequently desilted for free flow of water.
5.	Ecology and Biodiversity	Loss of vegetative cover such as herbs and shrubs	• Green belt will be developed along with periphery of the project site and it planned to compensate the impact on EB. • Native species of trees will be proposed to be planted all along the periphery.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
6.	Hydrology & geology	No Impacts	• Rainwater harvesting will be done to reduce fresh water demand and Groundwater recharge.
7.	Traffic Management	Increase in dust due to fast movement of vehicles, also due to rise in dust chances of low visibility may result in accidents	• Speed restriction on vehicles <15 KMPH same will be ensured by trained securities, • Vehicular movement will be in a staggered manner. • Water sprinkling will be carried out to mitigate dust pollution. • Asphalting of internal roads within the project site will further minimize the dust emission.
8.	Solid & Hazardous Waste Management	The solid waste generated during construction will be debris, metal scrap, empty paint cans, etc. The municipal solid waste generated from labours creates unhygienic conditions in the vicinity, improper storage will generate leachate, and in turn this would affect surface water quality.	• The solid waste generated during construction will be debris, metal scrap, empty paint cans, etc., this will be segregated, construction debris will be utilized for leveling of land formation of roads etc., metal scrap will be stored separately & used as raw material, empty cans will be handed over to authorized recyclers. The municipal solid waste will be segregated in to organic & inorganic, organic will be composted & in-organic will be handed over to MSPCB authorized recyclers.
B. Operation Phase			
1.	Air Pollution	• Emissions from Travelling grate kiln, Rotary Kiln and the vehicular emission add to the air pollution.	• Travelling Grate Kiln, Rotary Kiln will be connected to 11 No's of ESP and Product separation unit & other emission source will be connected with the 26 No's of Bag Filters to mitigate the air pollution.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
		• Fugitive emissions from raw material handling area, crushing area, raw material feed and product processing area adds to the air pollution. Air pollution causes breathing discomforts, lung infections and other health disorders in the vicinity.	• The efficiency of the Bag filters is 99% & ESP is 99.8 % clean air will be let out from the chimney of height 6*60 m AGL. • Fume extraction system will be connected to induction furnace to mitigate the emission. • Water sprinkling will be carried out twice a day to reduce dust. • About 45.51 Ha (38.35%) green belt will be developed all along the periphery of the industry to mitigate air/Noise pollution. • All the internal roads will be asphalted to control particulate emissions. • Regular maintenance of air pollution control equipment will be carried out to ensure proper & effective performance. • Complete barricades will be installed all around the periphery.
2.	Noise Levels	Prolonged exposure will lead to hearing difficulty, sleep deprivation, fatigue, stress, poor concentration, performance losses in the workplace	• The workers in the plant premises will be provided with proper PPEs which include earmuffs / earplug and mask. • Noise generated equipment will be installed on anti-vibrating mountings & with acoustic enclosures. • Vehicle maintenance, proper lubrication to machinery & traffic management measures will be carried out

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
3.	Water quality	• Unscientific disposal of domestic sewage leads to leachate generation & surface and Ground water contamination. • Groundwater potential will be impacted due to extraction of water. • There is no wastewater generation from industrial activity. • Unscientific handling of tailing waste will leads to percolation into groundwater and causes contamination and erosion leads to surface water bodies contamination.	• There is no wastewater generation from the process; water is being used for cooling purpose same water will be collected in a sump and is subjected to recirculation, there may be slight water requirement for top up. Thus minimizes the fresh water demands. • Domestic Sewage will be treated in STP of capacities 4x100 KLD. • The tailing stock pile will be done with impervious layer to avoid leaching into ground and garland drains and catch pits will be constructed around the tailing waste area to collect runoff from tailing pond & to avoid escape of the tailing fines. • Retaining wall shall be constructed around the tailing stack, it help in arresting movement of waste materials along with water
4.	Ecology and Biodiversity	• Noise Generation may disturb to flora & fauna movement. • Deposition of dust on crops & tress in the surrounding area • Positive impact on Ecology & Biodiversity.	• Vehicular movements are avoided in the night time. • About 45.51 Ha (38.35%) of Green belt will be developed around the periphery of the industry. • APCES such as ESP, bag Filters, Fume extraction system will be provided to reduce the dust emission.
5.	Solid waste	• Tailing waste from beneficiation plant • Unscientific disposal of tailing will leads to potentially toxic to humans,	• The Tailing stock pile will be lined with Polycline sheets for making the bottom impervious. • Tailing stock of 1454 TPD will be dewatered by using filter press and dewatered tailing stock will be sold

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
		animals or plants. • Char will leads to air contaminate & human health effect • Unscientific handling of Ash/ESP dust/, Bag filter dust will leads to air contaminate. • The leakage of used Oil and Oil Soaked Cotton Waste leads to ground water contamination. • Disposal of Municipal Solid wastes will leads to leachate generation & ground water contamination.	to cement industries. The water will be reused back to process. • The Char (800 TPD) will be used in the CFBC boiler. • The ESP/Bag filter dust/Ash (600 TPD) will be within the brick manufacturing unit. • Used oil (1200 L/A) & Oil soaked cotton waste (100 Kgs/A) will be stored separately in a leak proof containers & handed over to MSPCB authorized recyclers. • Municipal Solid waste (1.2 TPD) will be segregated into organic & in-organic. The organic waste will be compost by using vermi-composting method & used as fertilizer for greenbelt & inorganic waste will be handed over to authorized vendors.
6.	Risk & hazards	Impact like hit with moving stock, burns, slip & fall, exposure to dust, noise, heat. Health impacts on employees workers and surrounding villagers	• Medical examinations periodically as per the Factories act 1948 and Karnataka Factory rules 1969 • Personnel Protection equipment (safety shoes, goggles, respirators/ masks, Aprons etc.) • Maintenance of Occupational Health center and First aid kits • Training to workers on firefighting, use of PPE's, emergency preparedness and first aid • Visual signage and posters display to create awareness on health and safety topics
7.	Hydrology & geology	• Unscientific handling of tailing waste	• Domestic Sewage will be treated in STP of capacities 4x100 KLD.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
		& domestic sewage may pollute the Nala present inside the project site. • Positive Impact	• Rainwater harvesting plan will be implemented to reduce fresh water demand and Groundwater recharge. Roof runoff & surface runoff will be segregated & collected in separate sumps. Roof runoff will be used for non-potable purposes & surface runoff will be connected to groundwater recharge pits. • About 2 mt height protection earthen bund will be built all along the drain on both the sides of drain. The planation will be done on bunds. • There are 3 Nalas are passing inside the project site out of which 2 Nalas will be diverted to boundary and buffer of 10 m will be maintained on both side and greenbelt will be developed in the buffer area.
8.	Socio-economic Environment	• Health impacts due to air pollution to the workers & nearby villagers • Possible of accidents & traffic in the region due to transportation of trucks • Employment generation, Improvement in quality of life, development of infrastructure facilities, increase in housing accommodation.	• APCES such as ESP, bag Filters, Fume extraction system will be provided to reduce the dust emission • Due to project local area will get permanent jobs. • The process of development will have maximum impact on the lifestyle of the local area. • Business opportunity for small vendors will further improve the economic status • Conducting health camps for the employees & their dependents, improvement of school infrastructure and provisions of water purifiers for drinking to surrounding schools.
9.	Energy	Positive impact due to use of solar energy	Provision of Solar lighting will be made at project site.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
	Conservation measures		

ES. 4.1 Reuse, Recirculation and Waste Minimization

- The generated dolo char of 800 TPD will be reused completely to CFBC boilers as a fuel for generation of captive power.
- The generated mill scales of 40 TPD from rolling mill will be reused back to pellet plant and end cuttings of 220 TPD from rolling mill will be reused back to induction furnace for re-melting.
- Tailing waste of 1454 TPD from beneficiation plant will be dewatered and the dewatered tailing waste will be dried and sold to cement industries. The water will be reused back to process by storing in settling tanks.
- The water used for cooling purpose in the sponge iron making process will be collected in tank and the same will be recycled to process.
- The ESP dust/ bag filter dust/ ash will be used for manufacturing of bricks within the brick manufacturing unit of the industry.
- Waste heat from the process will be used for generation of Captive power by installing 8 x 45 TPH boilers for 8 x 350 TPD kilns.
- The treated water from in-house STP of capacities 4x100 KLD will be used for greenbelt development within the plant.
- The total rainfall available from the project site 488050 m^3/Annum. Out of which 354517 m^3/Annum water will be connected to 53 No's of recharge pits
- The available roof water of capacity 133533 m^3/Annum will be connected to 4 No's of storm water harvesting tanks of capacity 100 m x 80 m x 5.0 m depth, further this water will be used for industrial usage after treatment to minimize the fresh water

ES. 4.2 Mitigation measures for Environmental Sensitive Areas

Sl. No.	Particulars	Distance in Km
1	Nearest water body	• Dina river Adjacent to project site • Wadlpeth Lake adjacent to project site • Lake near Bori – 2.40 Km, W • Pranitha River – 3.10 Km, SW
2	Nearest Village / Habitation	• Wadlpeth adjacent to project site • Cherpalle Dinda – 470 mt • Chintalpeth – 520 mt
3	Nearest School	Z. P. P School Wadlapeth – Adjacent to project site
4	Nearest Reserve forest	• Ahiri Reserve Forest – Adjacent to project site • Khogaon Reserve Forest - 2.9 Km, N
5	Nearest Protected / Ecologically sensitive Area	• Chaprala Wildlife Sanctuary • From ESZ boundary – 3.50 Km, NW • From PA boundary – 7.12 Km, NW

Following mitigation measures will be adopted;

Sl. No	Environmental Aspects	Mitigation Measures
1	Air Pollution	To reduce fly ash emissions settlement on water bodies APCEs such as 1 No's of ESPs for pellet plant with a stack height of 60 m, 8 No's of ESPs for sponge iron plant with a stack height of 60 m, 2 No of ESPs to CFBC boilers with an stack height of 60 m, 26 No of bag filters with a stack height of 30 m each, Dry fogging system, fume extraction system & wet scrubbers, etc will be adopted and clean air will be let out from stacks and regular maintenance and monitoring will be carried to check emission limits. • Unloading of Raw materials will be done at low level to reduce dust emissions. • Coal, ash and other raw materials will be stored in closed sheds to avoid dust emissions. • Raw materials will be carried out in closed conveyors to stock house. • All the internal roads will be asphalted and water sprinklers will be provided along the internal roads and in the plant area. • Fume extraction system will be provided to induction furnace and dry fogging system will be provided. • Truck mounted mist system will be provided to reduce dust emissions. • Raw materials and finished products and ash will be transported in tarpaulin sheet covered trucks.

Sl. No	Environmental Aspects	Mitigation Measures
		• Vaccum cleaners will be purchased to clean internal roads. • All the vehicles used for transportation of raw materials and finished products with PUC certification. • Regular Monitoring of APCEs will be carried out to ensure emission standards and if exceeds immediate action will be taken and operation will be stopped. • 3 tier greenbelt will be developed around the plant to act as a barrier. • Closed loop system will be provided for handling of ESP dust.
2	Water Pollution	• The entire industrial plant is designed to be located in the downstream of the water body to avoid settlement of emissions. • There are three Nalas are passing inside the project site, out of which 2 nalas will be divered to boundary and 1 Nala will be as per the existing condition and buffer of 10 m will be maintained on both side & green belt will be developed on buffer area. • 50 m buffer will be maintained from adjacent lake and 110 m buffer will be maintained from Dina River and greenbelt will be developed in buffer area. • There is no waste water generated from industrial activities, the water is subjected to recirculation and the generated sewage from domestic activities and labours will be treated in 4 x 100 KLD of capacity STP and treated water will be used for Greenbelt development within the project area. Hence no waste water / treated water will be discharged to water bodies and plant will be maintained with Zero Liquid Discharge System. • The adjacent Lake will be adopted and development, desiltation and plantation around the lake will be carried out. • Garland drain will be provided to collect runoff from the tailing stock. • Retaining wall shall be constructed around the tailing stack, it help in arresting movement of waste materials along with water • The tailing stock pile will be constructed with

Sl. No	Environmental Aspects	Mitigation Measures
		impervious layer to avoid leaching into ground. • Proper internal drainage system will be provided in the plant. • The entire surface run off from the plant area will be connected to recharge pits and surface tank. • Tall boundary wall will be provided around the industrial plant with proper drainage system to avoid over flows during rainy seasons.
3	Solid waste	• Dewatered tailing waste will be sold to cement industry. • Ash will be collected in silos and stored in closed areas. • Water sprinklers will be provided around the ash handling area. • The municipal and other solid wastes will collected separately and handling will be done in an impervious layer. • Segregated into Organic and Inorganic solid waste. The organic waste will be composted using bio compost and inorganic solid waste will be handed over to authorized vendors.
4	Socio-economics	• The industry will reserved 90.0 Crore as part of Corporate Environmental Responsibility (CER) • Industry will adopt nearby villages like Wadlpeth, Chintalpeth & Cherpalle Dinda Villages will be adopted & social infrastructure development will be carried out. • Employment opportunities of 7000 No's will be provided to surrounding villagers. • Due to establishment of industry indirect job opportunities to skilled, semi-skilled workers will be improved & raw material suppliers, etc. • No Objection Certificate has been obtained from Gram Panchayat Khamancheru on 10.10.2023 for Establishment of the project in the village.
5	Green belt Development	• Thick 3 tire greenbelt will be developed around the plant & parking area. • Greenbelt will be provided all along the internal roads and total 45.49 Ha of the area have been reserved for greenbelt development.

Sl. No	Environmental Aspects	Mitigation Measures
6	Noise and Traffic management	• Acoustic Enclosures will be provided to turbine and DG sets. • Silencers will be provided for major noise generated equipment/ machinery. • Greasing will be done regularly to the rotating parts of the equipment's / machineries to reduce noise and vibrations. • PPEs such as ear mufflers/ plugs will be provided to workers • Trained security will be appointed to maintain smooth traffic. • Speed limit will be restricted near to villages and project area. • Development of road from NH to Project site.

ES. 5 Environmental Monitoring Program

The Environmental Monitoring Programme will be strictly implemented during construction and operational phases which will cost Rs. 31,500/ month (Rs.3,78,000/Annum) during construction phase and Rs. 1,54,000/month (Rs.18,48,000/ Annum) during operational phase. Six monthly compliance reports for the EC conditions will be submitted to RO, MoEF & CC, Nagpur. Further, the monthly Environmental Monitoring reports will be submitted to Regional office, MSPCB, Chandrapura

ES. 6.0 Additional Studies

Hazard Identification and Risk Analysis is carried out for the various steps involved in the manufacturing of Sponge unit at M/s. Surjagad Ispat Pvt. Ltd., is shown in below table

Sl. No	Activities	Risk	Hazards	Control measures
1	Movement of heavy transport vehicles for raw material transport	Generation of dust	Respiratory illness	Asphalting of roads shall be maintained. Transporting goods shall be covered by the tarpaulin Water sprinkling shall be done
		Accidents in blind spots observed at plant entrance	Injury to body parts	Speed limit shall be ensured. Convex mirror shall be provided at the plant entrance Licensed drivers shall allow driving vehicles inside.
2	Transportation of raw materials using belt conveyors	Fall of materials on the personnel present under the conveyor	Injury to head	Ensure to use to Personal protective equipment's safety helmets, safety shoes. Display of signage's at appropriate location having material fall hazard
3	Storage of materials in silos/charging bins hoppers	Noise generation at the time of material charging	Hearing loss	Use of ear protection equipment's like ear plugs.
		Fall from height during the maintenance	Injury to body parts	Fall arrest measures shall be provided on access areas and proper platform provision shall be made.
		Collapse of silos causing material spillage	Injury to body parts	Non-destructive test shall be conducted annually
		Work in confined space	Asphyxiation hazard causing difficult to breath	Work permit system considering all safety measures shall be implemented.
		Exposure to dust	Respiratory illness	Mask and respirators suitable for dust environment shall be provided
4	Storage of coal	Fire hazard due to exothermic reaction	Severe Body injury due to burns	No hot works releasing heavy radiation, heat surface. Dedicated storage area. Standard housekeeping practice.

Sl. No	Activities	Risk	Hazards	Control measures
				Periodic temperature monitoring
5	Operation of Kiln	Exposing to rotating parts of the machines	Injury to body of parts	Guarding of all rotating parts.
		Increase in temperature in the kiln	Fire hazard	Constant monitoring of shell temperature, thermocouples are provided to control the temperature
		Generation of noise	Hearing loss	Ear protection device is used
		Dust generation	Respiratory illness	Mask and respirators suitable for dust environment shall be ensured. Electrostatic precipitator, Bag filter, etc shall be employed for handling the dust. Water Sprinkling system shall be done.
		Exposure to higher temperature and Presence of Hot surface	Heat stress, injury to body parts	Shielding hot surfaces where workers in close proximity, Minimizing the work temperature Use of heat resistant gloves and protective suits shall be used. Minimizing the duration of workers exposed to heat areas.
6	Magnetic Separators	Exposed to rotating machineries – shafts, coupling and drum	Injury to body parts	Machine guarding shall be made for all rotating parts of the machine
		Generation of noise	Hearing loss	Use of ear protection equipment's.
		Dust generation	Respiratory illness	Mask and respirators suitable for dust environment shall be ensured.
7	DRI Storage	Fire Hazards	Damage to property and environment, Severe Body injury due	Sponge iron shall be stored in dry condition and shall be stored below a temperature of 65°C. Temperature of storage area shall be monitored regularly (at least once

Sl. No	Activities	Risk	Hazards	Control measures
			to burns	every day).
8	Operation of electro static precipitators	Exposure to dust due to fugitive emissions	Respiratory illness	Periodic maintenance is carried out to control fugitive emissions. Use of respirators shall be made available
		Fall from height from stack during its monitoring or maintenance	Injury to body parts	Ladder with fall prevention measures and standing platform arrangement shall be made
		Explosion in electrostatic precipitators	burn injuries, fatal accidents	Automatic interlock system shall be provided to turn off the precipitator. Continuous monitoring of inlet and outlet temperatures of the precipitator gas stream shall be done
Beneficiation and Pellet Plant				
1	Indurating machine	Handling of hot pellets	Burn injuries	Use of PPE's
		Exposure to gases	Respiratory illness	Use of respirators
		Contact with hot surface	Burn injuries	Use of PPE's
		Spillage of pellets	Slip hazard	Proper housekeeping practice shall be in place
Process of rolling mill and induction furnace operation				
1	Charging of raw materials	Metal splash due to wet charge of materials. Dropping heavy charge into molten bath Sealed scrap addition to molten bath	Severe burn injuries, explosion	Scrap drying and preheating systems shall be incorporated in design. Remote charging system shall be used. Use of PPE's. Protective barriers.
		Explosion due to the developing of bridging condition	Severe burn injuries	Using proper charge material with different sized material is added correctly. Deployment of trained operator. Power shall be turned off immediately if bridging occurs

Sl. No	Activities	Risk	Hazards	Control measures
		Emission of noise	Hearing Impairment interference in communication fatigue.	Audiometric examination, Noise monitoring, Issue of PPE, like ear plug, muff isolation,
2	Operation of induction furnace/ladle/CCM	Heat Stress	High temperature Humidity	Clothing against the hazardous substance, rotation of job or worker, cold drinking water, salt to worker, safety distance of 4 m from the delivery spout are suggest to work near molten metal
		Exposure to radiation	Burn hazard	Face mask / shield, heat resistant body suit shall be provided.
		Molten metal may leak causing splash of hot metal in case of crack in furnace	Severe burn injuries	Continuous monitoring of furnace shell is done to maintain and observe proper temperature. Heat zone signage shall display near the furnace. Safety shoes, safety goggles, hand gloves, apron and safety helmet provided to the workers.
		Exposed to hot flames and hot billets/ingots	Burn injury hazards	Use personal protection equipment's such as heat resistant clothing, gloves, face shield.
3	Rolling mill operation	Emission of gas	Respiratory illness	Gas detectors (CO) shall be installed with buzzer alarm to detect gas leakage
		Expose to hot flames and hot billets	Burn injury hazards,	Use of appropriate PPE hand gloves, gum boots, Face shield, dust mask, goggles by persons working on stands and handling hot materials. Proper pathways shall be provided for safe movement Proper guards to be provided to avoid material coming in the way of workmen.

ES. 7.0 Project Benefits

- During operational phase total 7000 No's (Permanent – 3000 No's & Temporary – 4000 No's) of skilled, semi-skilled and unskilled workers will get employment opportunities.
- Gadchiroli district is identified as very backward as per Tribal development census 2001, in the area of their literacy, proportion of urbanization, work participation rates are very low. Establishment of this industry will helps to providing the employment opportunities to tribal/local people, hence this will improve their socio-economic status, financial status.
- Infrastructure development will help in improving the standard of living of the local population as this will lead to better education, health and sanitation facilities, increase in local business like hiring vehicle for transportation, transportation facilities to employees, etc. With overall development there will be urging of education to the local people to get better job opportunities and improve the socio-economic status.
- The raw materials such as Iron ore, dolamite and coal for the industry will be brought through local suppliers so that the suppliers will get directly job opportunities from the project.
- The industry will support & develop the Govt. schools & hospitals in the region under CER activities in nearby villages/ study area.
- Improvement of surrounding lakes & plantation around the lake.
- Green belt will be developed within the plant premises covering a total area of about 45.49 Ha (38.35 % of the total area of 118.62 Ha). This will not only help to create healthy environment in the area but also acts as pollution sink. Further avi-fauna population of the area will increase.

ES. 8.0 Environmental Management Plan

M/s. Surjagad Ispat Pvt. Ltd., is the responsible for the implantation & responsibility for taking care of Environmental Management Plan. The capital cost for implementation of EMP is worked out to be 12,960 Lakhs (2.0 % of the total project cost) and Recurring cost of EMP is worked out to be 1140 Lakhs.