# EXECUTIVE SUMMARY

## OF

## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

## &

## ENVIRONMENTAL MANAGEMENT PLAN

## FOR

# Proposed Integrated Steel Plant

**[DRI Plant (627000 TPA), Steel Melting Shop (462000 TPA), Rolling Mill (350000 TPA), Captive Power Plant 70 MW (40 MW WHRB and 30 MW AFBC Boiler), Ferro Alloy Plant [Si-Mn (85800 TPA)/ Fe-Mn (76000 TPA) / Fe-Si (48000 TPA) / Pig Iron (40000 TPA)], HB Wire Drawing Unit (200000 TPA), Fabrication unit (120000 TPA), Galvanizing unit (120000 TPA) and Fly Ash Brick Manufacturing Unit (300000 TPA)]**

**At**
**Village Neonara, Tehsil Bhimbhauri,**
**District Bemetara, Chhattisgarh**

**PROJECT PROPONENT**

Arham

# M/s. Arham Ispat Private Limited


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## Content List

# *EXECUTIVE SUMMARY*

## 1. INTRODUCTION

M/s. Arham Ispat Private Limited, has proposed to setup "Proposed Integrated Steel Plant [DRI Plant (627000 TPA), Steel Melting Shop (462000 TPA), Rolling Mill (350000 TPA), Captive Power Plant 70 MW (40 MW WHRB and 30 MW AFBC Boiler), Ferro Alloy Plant [Si-Mn (85800 TPA)/ Fe-Mn (76000 TPA) / Fe-Si (48000 TPA) / Pig Iron (40000 TPA)], HB Wire Drawing Unit (200000 TPA), Fabrication unit (120000 TPA), Galvanizing unit (120000 TPA) and Fly Ash Brick Manufacturing Unit (300000 TPA)] at Village Neonara, Tehsil Bhimbhauri, District Bemetara, Chhattisgarh".

K.K. Agro Trade Ventures Pvt. Ltd., the flagship company of the KK group, entered the agro industry in 2008 and has steadily expanded its contribution since then. The company plans to invest in an Integrated Steel Plant, as the steel industry is crucial for India's economic development, and the integrated steel plant aims to capitalize on the growing demand for steel, especially in infrastructure and engineering sectors.

M/s. Arham Ispat Private Limited is a Private limited company duly incorporated by Registrar of Companies vide Corporate Identification Number (CIN): U24102CT2023PTC015448, date of incorporation 30.11.2023. The company is promoted by notable businessmen Mr. Kailash Bajaj, Mr. Keshav Kumar Bajaj, and Mrs. Rekha Devi Bajaj, who have a well-established reputation in the agri-commodity market. With a robust dealer and broker network across India, K.K. Agro Trade Ventures has grown its operations to supply agricultural products to multiple states and has established itself as a leader in government contracts.

M/s. Arham Ispat Private Limited is an emerging company to set up a Steel plant in the state of Chhattisgarh.

Total area for proposed plant is 42.949 ha. Out of the total project area, 23.35 ha land is under possession, 4.51 ha Private land (to be Purchased), 15.089 ha Govt. land (applied for allotment).

As per EIA Notification dated 14$^{th}$ Sept., 2006 and subsequent amendments, this project falls under category "A" Project Activity 3(a) Metallurgical Industries (ferrous & non-ferrous) and Minor Project or Activity 1(d) Thermal Power Plants.

ToR letter is issued by MoEF&CC, New Delhi Vide letter number IA-J-11011/41/2025-IA-II(IND-I) dated 28$^{th}$ January, 2025, for preparation of Draft EIA/ EMP Report for the proposed project.

### 1.1 DETAILS OF PROJECT PROPOSAL

M/s. Arham Ispat Private Limited is proposing "Proposed Integrated Steel Plant [DRI Plant (627000 TPA), Steel Melting Shop (462000 TPA), Rolling Mill (350000 TPA), Captive Power Plant 70 MW (40 MW WHRB and 30 MW AFBC Boiler), Ferro Alloy Plant [Si-Mn (85800 TPA)/ Fe-Mn (76000 TPA) / Fe-Si (48000 TPA) / Pig Iron (40000 TPA)], HB Wire Drawing Unit (200000 TPA), Fabrication unit (120000 TPA), Galvanizing unit (120000 TPA) and Fly Ash Brick Manufacturing Unit (300000 TPA)] at Village Neonara, Tehsil Bhimbhauri, District Bemetara, Chhattisgarh.

**Table - 1**
**Details of project proposal**

| Sl. No. | Name of the Unit proposed | | Configuration | Capacity | Name of the Product |
|---|---|---|---|---|---|
| 1. | DRI Plant | | 2 x 350 TPD<br>2 x 600 TPD | 627000 TPA | Sponge Iron |
| 2. | Steel Melting Shop (Induction Furnace) | | 6 x 20 TPH | 462000 TPA | MS Billets |
| 3. | Rolling Mill | | 2 x 500 TPD | 350000 TPA | Structural Steel & Rolled Products |
| 4. | Captive Power Plant | WHRB | 2x8 MW<br>2x12 MW | 40 MW | Power |
| | | AFBC | 1x9 MW<br>1x21 MW | 30 MW | |
| 5. | Ferro Alloys plant | Si-Mn | 4 x 12 MVA | 85800 TPA | Si-Mn |
| | | Fe-Mn | | 76000 TPA | Fe-Mn |
| | | Fe-Si | | 48000 TPA | Fe-Si |
| | | Pig Iron | | 40000 TPA | Pig Iron |
| 6. | HB wire Drawing unit | | 2 x 100000 TPA | 200000 TPA | HB wire |
| 7. | Fabrication unit | | 1x120000 TPA | 120000 TPA | Fabricated product |
| 8. | Galvanizing unit | | 1x120000 TPA | 120000 TPA | Galvanized Product |
| 9. | Fly Ash Brick Manufacturing Unit | | 2 x 150000 TPA | 300000 TPA | Fly Ash Brick |

## 2. DETAILS ABOUT THE PROJECT

### 2.1 Brief Description of the Project

Brief description about the proposed Project is given in Table - 2.

**Table - 2**
**Salient features of the Project**

| S. No. | Particulars | Details |
|---|---|---|
| **A.** | **Nature of the Project** | Greenfield Project |
| **B.** | **Size of the Project** | Proposed Integrated Steel Plant [DRI Plant (627000 TPA), Steel Melting Shop (462000 TPA), Rolling Mill (350000 TPA), Captive Power Plant 70 MW (40 MW WHRB and 30 MW AFBC Boiler), Ferro Alloy Plant [Si-Mn (85800 TPA)/ Fe-Mn (76000 TPA) / Fe-Si (48000 TPA) / Pig Iron (40000 TPA)], HB Wire Drawing Unit (200000 TPA), Fabrication unit (120000 TPA), Galvanizing unit (120000 TPA) and Fly Ash Brick Manufacturing Unit (300000 TPA)] |
| **C.** | **Category of the Project** | category "A" Project Activity 3(a) Metallurgical Industries (ferrous & non-ferrous) and Minor Project or Activity 1(d) Thermal Power Plants. |
| **D.** | **Location Details** | |
| | Survey No. | The project site is falling under the khasra numbers 1542, 1543, 1551, 1552/1, 1552/2, 1578, 1580, 1609, 1541, 1544, 1545, 1548, 1549, 1550, 1554, 1581/2, 1582, 1583, 1585, 1586/2,1590/2, 1591/2, 1592, 1593,1594, 1595/2, 1606/1, 1614, 1615,1616,1617,1618,1619, 1620, 1627, 1628, 1621, 1553/2, 1584, 1589, 1607, 1608, 1630, 1631, 1632, 1633, 1586/1, 1587, 1610/1, 1611, 1586/2, 1588, 1610/2, 1612, 1362, 1579, 1622(part), 1636(part). |
| | Villages | Neonara |
| | Tehsil | Bhimbhauri |
| | District | Bemetara |
| | State | Chhattisgarh |
| | Latitude & Longitude | Integrated Steel Plant [four corners]<br>**A** 21°25'53.82"N 81°33'45.49"E<br>**B** 21°25'52.31"N 81°33'59.41"E<br>**C** 21°25'11.98"N 81°33'37.76"E |

| S. No. | Particulars | Details |
|---|---|---|
| | | **D** 21°25'15.10"N 81°33'25.24"E |
| | Toposheet No. | Core Zone: F44P11(64G/11)<br>Buffer Zone: F44P11(64G/11), F44P10(64G/10), F44P7(64G/11) |
| **E.** | **Area Details** | |
| | Total Plant Area | 42.949 Ha. |
| | Greenbelt/ Plantation Area | 14.411 ha (33.55% of the project area) will be developed under greenbelt & Plantation. |
| **F.** | **Environmental Setting Details** *(Approx. distance from boundary and direction from center of the project site)* | |
| 1. | Nearest City | Raipur city (~20 km in SSE direction) |
| 2. | Nearest National / State Highway | No National Highway or State Highway is there within 10 km radius of the project site. The project site is connected to the NH – 30 (12 km away in East Direction from the project site) via metaled Road [Berla to Raipur Road (Adjacent in S boundary)] |
| 3. | Nearest RS | There is no Railway Station within 10 km radius of the project site. |
| 4. | Nearest Airport | Swami Vivekananda Airport, Raipur (~32 km, SE direction) |
| 5. | National Parks, Wildlife Sanctuaries, Biosphere Reserves, Reserve/ Protected Forests within 10 km radius | There is no National Park, Wildlife Sanctuary, Biosphere Reserve, Reserve / Protected Forest falls within the 10 km radius area of the project site. |
| 6. | River/Water Body within 10 km radius | Water Bodies within 10 km radius:<br>• Lor Nadi (Adjacent in East Direction)<br>• Ghuri Nala (near Akoli village) (~0.3 km in N direction)<br>• Canal Near Village Siphon (~2.5 km in SE direction)<br>• Ghuri Nala (near Khamtarai village) (~3.5 km in WSW direction)<br>• Mowa Nala (~4.0 km in NNE direction)<br>• Gorhi Distributary (~5.0 km in South direction)<br>• kharun river (~6.5 km in East direction)<br>• Distributary No. 17 (~9.0 km in East direction)<br>• Khara Distributary (~8 km in West direction)<br>One small seasonal stream is passing through the project site and joining the Lor Nadi towards North Eastern boundary of the project site. Apart from the above, various small seasonal nallahs, villages, ponds and network of major and minor canal are also existing within the 10 km radius study area of project site. |
| 7. | Seismic Zone | Zone – II as per IS: 1893 (Part-1) 2002 i.e., Low Damage Risk Zone and no major event is reported so far. |
| **G.** | **Basic Requirements of the Project** | |
| | Water Requirement (KLD) | Total water requirement for the project is 3845 KLD.<br>**Source:** Surface water (Kharun River) & Ground Water (Domestic Use Only).<br>**Status of Approval:** Acknowledgement for Surface Water Permission vide application no. WA00570 dated 21.04.2025 has been enclosed ***Annexure 7a*** and Acknowledgement of NOC for Ground water from CGWA dated 15.02.2025 has been enclosed ***Annexure 7b*** along with EIA/EMP report. |
| | Power Requirement (MW) | Total Power required for the proposed project is 70 MW.<br>**Source:** 30 MW AFBC, 40 MW WHRB (Captive power generation). |
| | Manpower Requirement (Number) | The manpower of the proposed plant during operation phase is 550 (450 regular & 100 contractual)<br>**Source:** Unskilled/ semi-skilled manpower from local area and skilled from outside/ local. |
| **H.** | **Cost Details** | |
| | Total Cost for the Project | Rs. 495 Cr./- |
| | Cost for EMP | Capital Cost: Rs. 34.65 Cr./- Recurring Cost: Rs. 2.43 Cr./annum |

*Source: Pre-feasibility Report*

## 2.2 LOCATION MAP

Location map of the proposed project is given as Figure No.: 1.

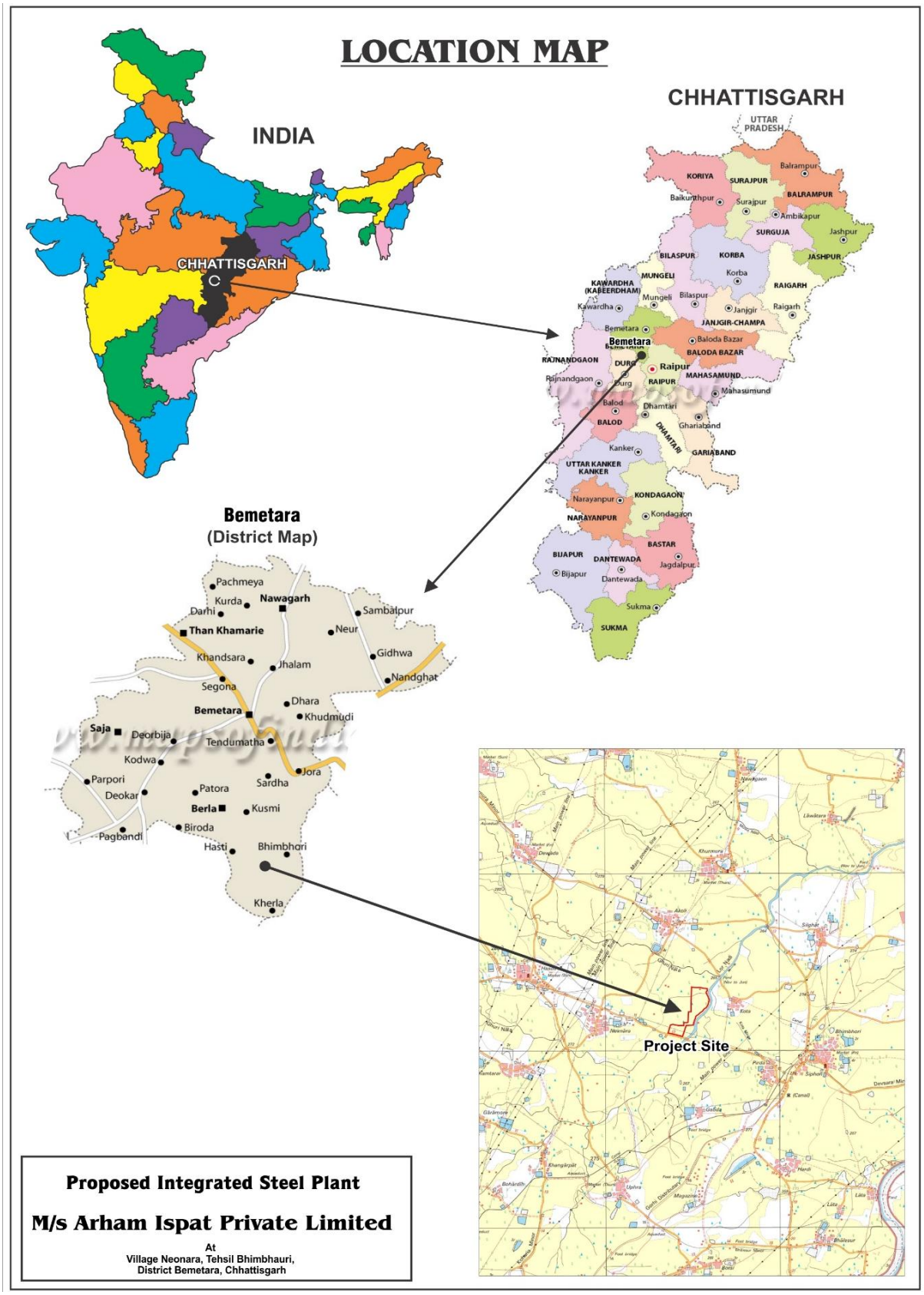


**Figure 1: Location Map**

## 2.3 Major Requirements for proposed project

### 2.3.1 Raw Material Requirement

Details regarding quantity of raw materials, their source along with mode of transportation are given in Table - 3.

**Table - 3**

**Raw Material Requirement**

| S. No. | Name of Raw Material | | Quantity (TPA) Total | Source | Mode of Transportation / Distance (km) |
|---|---|---|---|---|---|
| | **For DRI Plant (Sponge Iron)** | | | | |
| 1. | Iron Ore/Pellets | | 940000 | Barbil, Orissa NMDC, Raipur Chhattisgarh | By rail & road (Through covered trucks) (400 km) |
| 2. | Coal | Indian | 771600 | SECL Chhattisgarh / MCL Orissa | By rail & road (Through covered trucks) (500 km) |
| | | Imported | 168400 | South Africa / Australia | Through sea route, rail route & by road (600 km) |
| 3. | Dolomite | | 26600 | Local area | By road (Through covered trucks) (50 km) |
| | **For Steel Melting Shop (MS Billets/ Hot billets)** | | | | |
| 4. | Sponge Iron | | 400000 | Own generation | -- |
| 5. | Scrap | | 40000 | Purchased from outside | By & road (50 km) |
| 6. | Ferro alloys | | 20000 | Own generation / Local area | By road (Through covered trucks) (50 km) |
| | **For Rolling Mills** | | | | |
| 7. | Steel billets | | 370000 | Own generation | -- |
| | **For Ferro Alloy Plant** | | | | |
| | **Silico Manganese – SiMn** | | | | |
| 8. | Manganese Ore | | 128040 | Mines at Orissa and Madhya Pradesh and Vidarbha region | By Road through covered vehicles (600 km) |
| 9. | High Manganese Ore Slag | | 25220 | Open Market | By Road through covered vehicles (250 km) |
| 10. | Quartz | | 2600 | Mines in Raigarh | By Road through covered vehicles (300 km) |
| 11. | Coke/Coal/Charcoal | | 38840 | Open Market | By Road through covered vehicles (500 km) |
| 12. | Dolomite | | 1850 | Mines in Bilaspur | By Road through covered vehicles (250 km) |
| 13. | Electrode Paste | | 1850 | Local Market | By Road through covered vehicles (100 km) |
| 14. | M.S. Item. | | 724 | Local Market | By Road through covered vehicles (100 km) |
| 15. | Lancing Pipe and Canister Sheet | | 960 | Local Industries | By Road through covered vehicles (100 km) |
| 16. | Oxygen Gas | | 260 | Local Industries | By Road through covered vehicles (100 km) |
| | **And/Or Ferro Manganese – FeMn** | | | | |
| 17. | Manganese Ore | | 128040 | Mines at Orissa and Madhya Pradesh and Vidarbha region | By Road through covered vehicles (600 km) |

| S. No. | Name of Raw Material | Quantity (TPA) Total | Source | Mode of Transportation / Distance (km) |
|---|---|---|---|---|
| 18. | Coke | 57600 | Open Market | By Road through covered vehicles (250 km) |
| 19. | Dolomite | 28800 | Mines in Bilaspur | By Road through covered vehicles (250 km) |
| 20. | E.C Paste | 1240 | Open Market | By Road through covered vehicles (100 km) |
| 21. | M.S Item. | 860 | Local | Internal Transfer (100 km) |
| 22. | Lancing Pipe and Canister Sheet | 960 | Local Industries | By Road through covered vehicles (100 km) |
| 23. | Oxygen Gas | 380 | Local Industries | By Road through covered vehicles (100 km) |
| **And/Or Ferro Alloys Plant (Ferro Silicon - FeSi)** | | | | |
| 24. | Quartz | 75600 | Mines in Raigarh | By Road through covered vehicles (300 km) |
| 25. | COKE | 44600 | Open Market | By Road through covered vehicles (250 km) |
| 26. | Mill Scale/ Iron ORE | 16800 | Internal transfer / NMDC Iron Ore Mines | By Road through covered vehicles (500 km) |
| 27. | E.C Paste | 1240 | Open Market | By Road through covered vehicles (100 km) |
| 28. | M.S. Item. | 460 | Local | Internal Transfer (100 km) |
| 29. | Lancing Pipe and Canister Sheet | 630 | Local Industries | By Road through covered vehicles (100 km) |
| 30. | Oxygen Gas | 128 | Local Industries | By Road through tankers vehicles (100 km) |
| **And/Or Pig Iron from SAF** | | | | |
| 31. | Iron Ore & Mill Scale | 114020 | NMDC Iron Ore Mines/ Odisha Mines | By Rail to nearest sidings and then by Road through covered vehicles (600 km) |
| 32. | Coke/Coal/Charcoal | 45610 | Open Market | By Road through Covered vehicles (250 km) |
| 33. | Dolomite/Lime/Limestone | 7600 | Internal transfer / NMDC Iron Ore Mines | By Road through covered vehicles (300 km) |
| 34. | Electrode Paste | 1140 | Local | Local (100 km) |
| 35. | M.S. Item. | 832 | Local | Internal transfer (100 km) |
| 36. | Lancing Pipe and Canister Sheet | 230 | Local Industries | By Road through covered vehicles (100 km) |
| 37. | Oxygen Gas | 180 | Local Industries | By Road through Tankers (100 km) |
| **H.B wire Drawing Unit** | | | | |
| 38. | Steel Wire Rod | 200000 | Own generation | -- |
| **Galvanization Unit** | | | | |
| 39. | Zinc | 980 | Local Traders / Udaipur, Rajasthan | By road (Through covered trucks) (600 km) |
| 40. | Structural Steel / Strip / Nut Bolts & other Hardware items | 124409 | Own Generation / Local Market | -- |
| 41. | Acid-HCL | 10 | Manufacturers in Madhya Pradesh | By road (500 km) |
| **Fly Ash Brick Manufacturing Unit** | | | | |
| 42. | Fly Ash | 180000 | Own generation | -- |
| 43. | Slag Grinding Dust | 60000 | Own generation | |

| S. No. | Name of Raw Material | Quantity (TPA) | Source | Mode of Transportation / Distance (km) |
|---|---|---|---|---|
| | | Total | | |
| 44. | Cement/Lime | 45000 | Manufacturers, Raipur | By road (Through covered trucks) (800 km) |
| 45. | Gypsum | 15000 | Maharashtra/Gujarat | |

*Source: Pre-feasibility Report*

### 2.3.2 Fuel Requirement

Details regarding quantity of fuel required, their source along with distance & mode of transportation for proposed project are given in Table – 4.

**Table – 4**
**Fuel Requirement**

| S. No. | Name of Raw Material | Quantity | Unit | Source | Mode of Transportation |
|---|---|---|---|---|---|
| | | Total | | | |
| **For AFBC Boiler (Power Generation)** | | | | | |
| 1. | Indian Coal (100%) | 178200 | TPA | Nearby coal mines | By rail & road (Through covered trucks) (500 km) |
| OR | | | | | |
| 2. | Imported Coal (100%) | 79100 | TPA | Indonesia / South Africa / Australia | Through sea route / rail route / by road (600 km) |

*Note: Dolochar (285990 TPA) will be used in AFBC power plant as fuel.*

### 2.3.3 Other Basic Requirement

Other basic requirements for the expansion project are given below:

**Table – 5**
**Basic Requirements for the Project**

| S. No. | Particular | Total Quantity | Source |
|---|---|---|---|
| 1. | Water (KLD) | 3845 KLD | Surface water (Kharun River) & Ground Water (Domestic Use Only). |
| 2. | Power (MW) | 70 MW | 40 MW from WHRB and 30 MW from AFBC based power plant during operation |
| 3. | Manpower (No. of Persons) | 550 | (450 Permanent and 100 contractual). Unskilled/ semi-skilled manpower from local area and skilled from outside/ local |

*Source: Pre-feasibility Report*

## 2.4 PROCESS DESCRIPTION

The plant will consist of the following units viz.

- DRI Kiln Based Sponge Iron Plant
- Steel Melting Shop
- Rolling Mill
- Captive Power Plant (WHRB & AFBC Boiler),
- Ferro Alloy Plant [Si-Mn/Fe-Mn/Fe-Si/Pig Iron]
- HB Wire Drawing Unit
- Fabrication Unit
- Galvanizing Unit

- Fly Ash Brick Manufacturing Unit
- Other Associated Facilities (STP, ETP)

Detailed Process Description are given in chapter 2, Section 2.8 of EIA/EMP Report

## 2.5 DESCRIPTION OF ENVIRONMENT

### 2.5.1 Presentation of Results (Air, Noise, Water & Soil) Post-monsoon Season (Oct., 2024 to Dec., 2024)

➢ **Ambient Air Quality Monitoring Results**

Ambient air quality monitoring has been carried out at 8 monitoring locations within the 10 km radius of the study area on 24 hourly bases.

Ambient air quality monitoring has been carried out at 8 monitoring locations within the 10 km radius of the study area on 24 hourly bases. The concentration of PM2.5 ranges between 17.4 to 39.7 µg/m3, PM10 ranges between 37.1 to 72.2 µg/m3. SO2 ranges between 4.1 to 13.2 µg/m3 and NO2 ranges between 8.2 to 22.6 µg/m3. The CO concentration ranges between BDL (DL 0.5) to 0.69 mg/m$^3$. The concentration of Mercury was found to be in BDL at all locations. The concentration of Hydrocarbon was found to be in range of BDL (DL 1.0) to 5.6 µg/m$^3$ respectively. Maximum concentration of PM10 and PM2.5 were found to be 72.2 µg/ m3 and 39.7 µg/ m3 at Hasda village due to vehicular movements, densely populated area etc. The minimum concentration of PM10 and PM2.5 were found at project site, as there is no major source of pollution. Maximum concentration of SO2 & NO2 were found at Hasda village as there is vehicular movements, commercial activities whereas, minimum concentration of SO2 & NO2 were found at Project site, as there is no major source of pollution. Major contributors of air pollutants in the study area are, transportation, traffic movement, commercial activities, industrial activities and other human activities.

➢ **Ambient Noise Level Monitoring Results**

Ambient noise levels were measured at 8 locations in and around the proposed plant site during the day and night time. Noise level varies from 47.8 to 53.4 Leq dB (A) during day time and from 37.9 to 42.5 Leq dB (A) during night time.

➢ **Water Quality Environment**

- **Surface Water Quality**

The chemical analysis of surface water samples reveals that there is a variation in a chemical composition of water samples from the nearby water bodies. The pH of the water bodies ranges from 7.11 to 7.63 indicating slightly alkaline in nature. Total hardness (107.9 to 235.4 mg/l), Total Dissolved Solids (174 to 405 mg/l), Alkalinity (90.9 to 212.2 mg/l) and Conductivity (281 to 638 µS/cm), all location indicating low mineral enrichment of the water sample. The maximum value of COD and BOD found at Ghuri nala (Near Akoli Village) sampling location i.e. 31.0 and 8.6 mg/l. And the Dissolved Oxygen found between 6.6 to 7.0 mg/l. The nutrients level was also found low viz. Sulphate (13.71 to 41.02 mg/l), Nitrate (0.47 to 1.22 mg/l), and Calcium (24.64 to 76.48 mg/l), Magnesium (8.80 to 21.30 mg/l). It can be concluded that surface water quality values in the study area are within the acceptable limits as per BIS 1982 standards for drinking water. However, as per CPCB water quality criteria, the Kharun River

sample qualifies as Class B (outdoor bathing), while all other locations fall under Class C, indicating the water is suitable for drinking after conventional treatment and disinfection due to relatively higher BOD and/or coliform levels. Thus, it can be inferred from the above data that water quality of the monitoring stations seems good.

- **Ground Water Quality**

The pH of the water samples ranged from 7.02 to 7.40 indicating slightly alkaline nature; and maximum pH was recorded at Lawatara village. The values of Total Hardness (215.8 to 421.3 mg/l), Alkalinity (200.3 to 297.4 mg/l) and Total Dissolved Solids (324 to 572 mg/l) were found and the maximum Total Hardness was found at Akoli village, alkalinity was found at Bhimbhori village & Total Dissolved Solid was found at Akoli village. The analysis of all groundwater samples shows that the concentration of Chloride (42.01 to 110.5 mg/l) and Sulphate (15.92 to 47.61 mg/l). The concentrations of other micro and macro nutrients were also analyzed i.e., Nitrate (1.34 to 7.49 mg/l), Calcium (56.95 to 119.4 mg/l), Magnesium (17.84 to 36.38 mg/l), and Iron (0.07 to 0.25 mg/l). The Fluoride (0.18 to 0.49 mg/l) concentration is at optimum level drinking water & is desirable for dental microbial protection and delay tooth decay and also help in maintaining bones strength. Thus, it can be concluded from the sampling results for groundwater that all the samples were observed to be within the permissible limits and complies to the drinking water standard (IS: 10500-2012).

- **Soil Environment**

The soil samples majorly exhibit different color of soil viz. Dull Yellowish Brown, Dull Orange, Light Gray & the textures of the soil samples majorly was Silt, Silty clay, Silty Loam.

The organic matter present in the soil observed to be appropriate (0.87% to 1.25%) for the plant growth. The pH ranges from 6.14 to 7.04, which is an optimal range for most of the plants to thrive and grow. Water holding capacity (30.18% to 35.28%) and bulk density (1.46 to 1.53 g/cc) were ideal for the crops. Physical quality of soil samples is good for the plantation. Six essential nutrients required for an ideal plant growth are Nitrogen, Phosphorus, Potassium, Magnesium, Sulfur and Calcium.

All the major nutrients namely Organic Carbon (0.50% to 0.72%), Nitrogen (236.49 to 298.56 kg/ha), Phosphorus (18.03 to 29.42 kg/ha), Potassium (455.66 to 874 kg/ha), Magnesium (338.01 to 725.61 mg/kg), Calcium (1795.79 to 4018.16 mg/kg).

### 2.5.2 Biological Environment

A primary field survey was carried out within 10 km radius impact zone in and around the project area to study the floral and faunal diversity of the terrestrial environment of the study area.

- No National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, Eco-sensitive Zone and Eco-sensitive areas exists within 10 km radius study area.
- There is total 122 species of floral diversity have been found in the 10 km radius of the study area including 54 trees, 56 shrubs, 19 herbs, 2 climbers and 9 grasses have been found.
- 8 mammals, 9 reptiles, 8 butterflies and 11 fishes have been found in the 10 km radius of the study area. There are 45 Avi - faunal species have been found in the 10 km radius of the study area.
- Based on the primary field survey & secondary data collected and approved list of flora & fauna, 9

schedule - I species *Accipiter gentilis* (Eurasian goshawk), *Daboia russelii* (Russell's viper), *Gyps indicus* (Vulture), *Herpestes edwardsi* (Common Mong), *Pavo cristatus (*Peacock), *Python molurus* (Pyton), *Naja naja (*India Cobra), *Tyto alba (*Owl), *Vulpes bengalensi (*Indian fox) were recorded in the study area during field survey which comes in (IWPA) Indian Wildlife Protection (Amended) Act,2022.

- The Wildlife Conservation Plan for Schedule - I species as per the Wildlife (Protection) Amendment Act, 2022 has been prepared and submitted to Divisional Forest officer, Durg for authentication for further approval. Copy of the submission receipt vide letter no. AIPL/ENV/FOREST2025-26/002 dated 17.02.2023, along with wildlife conservation plan is enclosed as Annexure – 2a & 2b along with this EIA/EMP report.

### 2.5.3 Traffic Survey

Traffic survey has been conducted for 24 hours on the Berla to Raipur Road.

A total of about 1237 vehicles pass at location (Berla to Raipur Road) per 24 Hours.

Among the passenger vehicles Trucks & Buses, two wheelers and cars & Cycle/ cycle rickshaw are the dominant ones constituting about 30 %, 16 % and 18 %. Whereas Trollers, Buses and trucks and Tractors are at 13%, 10%, & 13% respectively

Due to the proposed project, there will be an addition of Heavy and Light motor vehicles in the existing traffic. The LOS value will remain same A "Excellent" for Berla to Raipur Road. Thus, it can be concluded that the present road network is good enough to bear the increased traffic load.

### 2.5.4 Socio-Economic Environment

The project site of M/s. Arham Ispat Pvt. Ltd is located at Village Neonara, Tehsil Bhimbhauri, District Bemetara, Chhattisgarh. The study area comprises of 54 villages that covers a total area of ~364.87 sq.km. giving approximately 104670 people residents. Bemetara district is a newly constituted district of the state of Chhattisgarh, formed on January 1, 2012, after the partition of the Durg district. The total no. of household is 21391. Sex ratio 980, 997 and 984 (females per 1000 males) observed in primary, secondary and outer zone respectively. SC population distribution is 1284, 4731 and 10289 respectively in primary, secondary, tertiary and outer zone. ST population distribution is 223, 895, 3768 respectively in primary, secondary, tertiary and outer zone respectively. Socio-economic profile and demographic profile of the study area along with this details of basic amenities are given Chapter 3 in section 3.6 of the EIA/ EMP report.

## 2.6 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Anticipated environmental impacts due to operation of the proposed project along with mitigation measures are given in the table below.

**Table – 6**
**Anticipated Environmental Impacts And Mitigation Measures**

| Discipline | Anticipated Impact | Mitigation Measures |
|---|---|---|
| **Air** | **Construction Phase:**<br>• Increase in dust (Particulate Matter) concentration due to Levelling activity and Heavy vehicular movement.<br>• The main sources of dust emission are the movement of equipment at site, levelling, grading, earthwork and foundation works.<br>• Fugitive dust emissions from vehicles and equipment to be deployed during the construction phase is also likely to result in marginal increase in the levels of SO2, NOx, PM, CO.<br>• Unloading of construction material will also contribute in deterioration of air quality.<br>• The impact due to construction activities is mainly the health effects such as respiratory diseases however, the impact due to the construction activities will be for short duration. This will be confined within the project boundary and is expected to be negligible outside the project boundary. | • Barricading will be done all around the project site to control dust emissions due to construction works.<br>• Covered storage facilities will be provided to avoid dispersion of dust.<br>• Water spraying on roads and construction site will be done in order to supress fugitive dust.<br>• Construction equipment having PUC Certificate will be deployed during the activity to ensure the vehicular pollution within the standards.<br>• Proper maintenance of vehicle and construction equipment will help in controlling the emissions.<br>• Vehicles carrying construction materials will be covered with tarpaulin.<br>• Proper training will be provided to the drivers to ensure adherence to speed limit.<br>• A separate covered storage area will be demarcated for construction material to confine the dust dispersion.<br>• PPEs will be provided to workers to avoid accumulation of dust in respiratory tracts and prevent air borne diseases.<br>• Greenbelt development and plantation will help in supressing air and noise pollution.<br>• Paved roads/concrete roads will be developed within the plant to control dust emissions from transportation. |
| | **Operation Phase:**<br>**a) Fugitive Emissions**<br>Fugitive emissions will be mainly due to material handling, transportation or material transfer.<br>**b) Stack Emissions:**<br>The major pollutants that will be released via stacks due to the | • Efficient Air Pollution Control Equipment (APCE) like ESP has will be installed to control particulate emissions from the AFBC boiler and WHRB connected with DRI and emissions will be disbursed through stack of adequate height.<br>• Dust settling chambers for settling of coarse particles at the DRI kilns have will be installed.<br>• Bag filter will be provided in the SMS, Rolling mill & in transfer points, 4th Hole fume extraction system will be provided in the Ferro Alloys / Pig Iron plant. |

| Discipline | Anticipated Impact | Mitigation Measures |
|---|---|---|
| | proposed project will be PM, SOx, NOx , CO, Hg. | • Dry Fog system & Water sprinkling will be provided in the raw material handling areas.<br>• Welding Fume Extractors, Dust Collectors will be provided in the Fabrication unit and Fume Extraction System will be provided in the Galvanizing unit<br>• Stack of adequate height as per norms will be installed for $SO_2$ emissions and Necessary temperature profile will be maintained for NOx emissions.<br>• OCEMS will be installed with all major stacks. Primary & secondary emissions from Induction Furnaces, Stack emissions from Sponge Iron Plant. Emissions from the stacks shall be limited to 30 mg/$Nm^3$<br>• APCEs will be connected to meters and the records will be maintained for run hours, failure time and efficiency.<br>• All the internal and connecting roads will be paved to control fugitive emissions.<br>• Water sprinkling will be carried out at suitable intervals to control dust generation. Dust suppression system (mist beam/water spray stream) will be adopted to control the fugitive dust.<br>• All the trucks carrying raw material and finished products will be covered.<br>• Vehicles and machineries will be regularly maintained. Proper upkeep and maintenance of vehicles will be done.<br>• Adequate greenbelt will be developed in the 33% of the plant area i.e., 14.411 hectare. Greenbelt acts as a surface for settling of dust particles and thus reduces the concentration of particulate matter in the air.<br>• CAAQMS will be installed inside the plant premises to keep a check on the Ambient Air Quality status in addition to this manual air monitoring will be included in the post project monitoring plan.<br>• CEMS and CEQMS will be installed for monitoring of emission from stacks and Effluent. All the continuous |

| Discipline | Anticipated Impact | Mitigation Measures |
|---|---|---|
| | | monitoring systems will be connected to CPCB/ SPCB servers. |
| **Noise** | **Construction Phase:**<br>• Movement /Operation of transport and construction vehicles.<br>• Transportation of equipment, materials and people.<br>• Loading and unloading of construction material.<br>• Other important activities involved in construction stage such as drill, hammering, Cement mixing, heavy vehicle transportation, welding during construction. | • Barricading will be done at all sides of the project premises to limit noise levels outside the unit.<br>• Equipment will be kept in good condition to keep the noise level within 90 dB (A).<br>• Workers will be provided necessary protective equipment e.g. ear plugs, earmuffs.<br>• Continuous exposure of workers will be avoided by alternating the duties on daily basis.<br>• The high noise zones at site will be demarcated and provided with enclosures & barriers. |
| | **Operation Phase:**<br>• The sources of Noise generation in the project are due to main plant operation (viz. DRI Plant, Steel Melting Shop (Induction Furnace), Rolling Mill, Captive Power Plant, Ferro Alloys plant, HB wire Drawing unit, Fabrication unit, Galvanizing unit and Fly Ash Brick Manufacturing Unit).<br>• The noise generated may cause a significant impact on workers and surrounding residents and if exceeds the permissible levels for a continuous period of time, this may lead to loss of attention/concentration resulting in accidents also reducing the efficiency of working staff.<br>• However, noise level at the plant boundary will be maintained below 75 dB (A) in day time and below 70 dB | • Static and dynamic balancing of equipment will be insisted upon and will be verified during inspection and installation; For DG sets, acoustic enclosures will be provided.<br>• Noise generating items such as fans, blowers, compressors, pumps, motors etc. are so specified as to limit their speeds and reduce noise levels.<br>• Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.<br>• Machine operators and Persons working just close to machine will be provided with personal protective equipment viz. Ear plugs / Ear muffs etc.<br>• Greenbelt along the plant boundary will be developed.<br>• Regular monitoring of noise level will be carried out and corrective measures in concerned machinery will be adopted accordingly.<br>• Extensive vibration monitoring system is provided to check and reduce vibrations. Vibration isolators are being provided to reduce vibration and noise wherever possible. |

| Discipline | Anticipated Impact | Mitigation Measures |
|---|---|---|
| | (A) in night time but noise level near to the machineries may be comparatively high which may likely to have impact on the ear drums of the persons working in high noise area. | |
| **Water** | **Construction Phase:**<br>• During construction activity, there are several kinds of wastes generated within the premises. Inappropriate disposal of wastes could lead to damage to water & soil environment, ecology & biodiversity and discomfort to workers and nearby people around the project site.<br>• Mismanagement of wastes can cause degradation of soil quality, water pollution, damage to local biodiversity, it would also cause uneasiness & illness to local workers and nearby people as it could lead to vector-borne diseases. Such practices should not be encouraged and the premises must be kept devoid of waste<br>• Increase in suspended solids due to soil run-off during heavy precipitation due to loosen soil at construction site.<br>• Domestic waste water will be generated during construction activities and stagnant water or water logging for a long time may leads to various water borne diseases & unpleasant smell in nearby area. | • The drains will be properly aligned in conformity with the site drainage pattern so that the alteration is kept to the minimum and flooding or soil erosion does not occur.<br>• Provision of separate storm water system to collect and store run-off water during rainy season and utilization of the same in the process to reduce the water requirement.<br>• Drinking water facility will be provided to the construction workers and domestic waste water will be treated in septic tanks followed by soak pit/ Portable Bio-toilet. The treated water will be reused for plantation purpose within the project premises. There will not be any discharge from the project site during the construction stage which can have any impact on the water quality of the surrounding area.<br>• Construction workers will be employed from nearby villages so that domestic water is saved in many ways due to temporary requirements only.<br>• Non-biodegradable wastes and construction debris will be sent to authorized recyclers and C&D collection site respectively. |
| | **Operation Phase:** | • The proposed project will be completely based on Zero effluent discharge Facility. No waste water will |

| Discipline | Anticipated Impact | Mitigation Measures |
|---|---|---|
| | • The total water requirement of the project during operation phase will be 3845 KLD which will be sourced from water reservoir of Kharun River. Hence, groundwater will be abstracted (Domestic Use only) and there will be no impact on groundwater level.<br>• The effluents, cooling water generated during steel process, if not treated properly and discharged carelessly on ground, soil or water bodies can enter ground water through leaching. Surface water bodies are affected as it causes harm the biota to a lethal extent as the pollutants will have the tendency to increase TSS, TDS, silting due to suspended solids, taste and odor problems, temperature rise affecting DO, formation of oil slicks etc. It will result in loss of aquatic fauna and long-term change in characteristics of water bodies present in the vicinity. The discharge will also harm the soil flora and fauna and result in reduction of fertility of soil.<br>• 389 KLD waste water will be generated from the proposed project including 252 KLD from power plant, 55 KLD from ferro alloy plant, 3 KLD from HB wire drawing unit, 2 KLD from fabrications unit 25 KLD from Galvanization Unit, 12 KLD from Rolling Mill, 19 KLD from SMS and 21 KLD from DRI Plant. | be discharged and 100% water will be utilized after suitable treatment.<br>• Effluent Treatment Plant (2 x 200 KLD capacity) will be installed to for treatment of industrial effluent and its further reuse within the plant premises.<br>• The waste water will be treated in the ETP (2 x 200 KLD capacity). Treated water (364 KLD) will be utilized for dust suppression & ash conditioning.<br>• Sewage (20 KLD) generated from the plant, will be treated in STP of 25 KLD capacity. The treated water (18 KLD) will be used for Greenbelt development/plantation.<br>• Storm water/Garland drains will be provided around all the raw material stacking areas. Rain water harvesting will be practiced.<br>• Mitigation measures like Stockpiles of all raw materials and coal will be made on pucca platform (preferably concrete/ clay compacted) and will be provided with garland drains and sedimentation pit, Stockpiles preferably will be covered under covered shed and temporarily using tarpaulin, etc., Wind breakers in the form of tin sheds will be installed around open stock yard are followed to avoid any groundwater contamination.<br>• Oil and grease trap will be provided in plant drainage lines to prevent contamination by accidental oil spillage.<br>• For inspection, cleaning and maintenance of sewer lines, manholes of reinforced concrete construction shall be provided at every bend, junction point of change in slope or diameter and on straight sections of pipes.<br>• Regular monitoring of water quality will be carried out. |

| Discipline | Anticipated Impact | Mitigation Measures |
|---|---|---|
| | • Sewage (20 KLD) will be generated from the plant. | |
| **Soil** | **Construction Phase:**<br>• During construction activity, the impact on soil will be limited to the construction site only and will be mainly due to the left-out of construction material used resulting in soil deterioration.<br>• If construction material is disposed of on land, then it can alter the soil quality to some extent and top soil will get affected. Due to the accumulation of cement used for construction purpose on the top soil results in the lack of oxygen and hence, reducing the soil porosity which will result in loss of fertility.<br>• Compaction is a common problem during the construction activity due to the movement of large number of heavy machineries over the soil. | • Careful design, planning and good site management will minimize wastage of materials such as concrete, mortars and cement grouts.<br>• Construction waste will be segregated as much as possible at project site itself to increase the feasibility of recycling concrete and masonry as filling material and will be managed as per Construction and Demolition Waste Management Rules, 2016 as amended from time to time.<br>• Litter disposal and collection points will be established around the work sites.<br>• The construction spoils will be temporarily stored at designated dumpsite located inside the premises.<br>• To reduce the soil compaction, movement of heavy vehicles on the wet soil will be avoided.<br>• Empty packaging materials, drums, glass, tin, paper, plastic, pet bottles, wood, thermocol and other packaging materials, etc. will be disposed through local authorized recyclers.<br>• Discharge of any kind of pollutant will be strictly prohibited during construction period. |
| | **Operation Phase:**<br>• The soil of the area may get affected due to operational activities, if proper care is not taken.<br>• Changes in soil texture due to settling of air borne dust or due to wash off of solid particulates by surface or ground water. This will lead to change in porosity, permeability & other such physical characteristics of soil of the area.<br>• Degradation of soil quality may take place due to the settling of air borne | • Efficient Air Pollution Control Equipment (APCE) will be installed at all major stacks to keep the emissions within prescribed limits. Adequate stack height helps to control dust emissions and safe discharge of hot gases.<br>• Solid and hazardous waste will be stored and disposed of as per prevailing rules.<br>• A horticulturist will be engaged to ensure soil quality improvement in the plant area, by adequate manuring and fertilizing. Therefore, no adverse impact on the soil quality of the area will be anticipated. |

| Discipline | Anticipated Impact | Mitigation Measures |
|---|---|---|
| | dust, contamination due to the effluent discharge, material spillage, unscientific disposal of solid and hazardous waste, if any.<br>• During operation phase, soil may get contaminated due to improper handling, loading/ unloading, storage and disposal of raw materials.<br>• This may lead to change in physico-chemical characteristics of soil of the area | • Out of the total project area of 42.949 ha, 14.411 Ha (33.55 %) will be developed under greenbelt & plantation along the plant boundary & inside the plant premises, which will improve the overall quality and fertility of soil and will also help in reducing soil erosion.<br>• Besides, soil samples will be collected and tested from one location inside the study area on yearly basis. This will help in mitigation of any harmful impact on soil due to the project activity, if any.<br>• During operation phase, soil fertility can be improved and maintained by adding manure.<br>• Solid waste handling, storage and disposal will be carried out as per relevant rule and guidelines to avoid contamination of soil through spillage.<br>• Empty packaging materials, drums, glass, tin, paper, plastic, pet bottles, wood, thermocol and other packaging materials, etc. will be disposed through recyclers (locally called kabadis) from time to time |
| **Biological Environment** | • Particulate matter and gaseous emissions from stack and fugitive emissions due to transportation activity & material handling may degrade the soil quality of surrounding environment that may affect the biodiversity of surrounding environment.<br>• Air and Noise Pollution may threaten and cause migration of wild animals and birds.<br>• Fugitive emissions may impact the terrestrial flora. The settlement of dust on the laminar surface of plants can impede the efficiency of photo-transduction and thereby, affect the productivity of plants. In some of the | • Wildlife Conservation Plan for Schedule - I species i.e., *Accipiter gentilis (Eurasian goshawk), Daboia russelii (Russell's viper), Gyps indicus (Vulture), Herpestes edwardsi (Common Mong), Pavo cristatus* (Peacock), *Python molurus (Pyton), Naja naja* (India Cobra), *Tyto alba* (Owl), *Vulpes bengalensi* (Indian fox) with a budget allocation of Rs. 70 Lakhs for 05 years has been allocated for Wildlife Conservation Plan.<br>• Manure will be utilized instead of chemical fertilizers to promote sustainable and eco-friendly practices.<br>• Regular awareness programs will be organized to educate workers and the local community about environmental conservation and wildlife protection.<br>• Comprehensive measures will be implemented as part of the Environment Management Plan (EMP) to minimize air, water, land, and noise pollution. |

| Discipline | Anticipated Impact | Mitigation Measures |
|---|---|---|
| | plant, it may also smother the leaf surface blocking stomata, resulting in reduced transpiration.<br>• Based on the primary field survey & secondary data collected, Nine schedule - I species i.e., *Accipiter gentilis (Eurasian goshawk), Daboia russelii (Russell's viper), Gyps indicus (Vulture), Herpestes edwardsi (Common Mong), Pavo cristatus* (Peacock), *Python molurus (Pyton), Naja naja* (India Cobra), *Tyto alba* (Owl), *Vulpes bengalensi* (Indian fox), species were recorded in the study area; which are categorized as Schedule - I fauna according to Indian Wildlife Protection (Amendment) Act (IWPAA), 2022 conservation status. | • The development of greenbelts and plantations will support local wildlife habitats and improve the overall environmental quality, benefiting various fauna in the region.<br>• 09 Schedule I species have been identified in 10 km radius of the study area. Conservation measures will prioritize the protection of these critical habitats and species. |
| **Socio-economic Environment** | **Construction Phase:**<br>• About 200 no. of people will get employment during the construction stage resulting in the ancillary development and growth. Nearby Local people will be given preference for employment on the basis of their skill and experience.<br>• Further due to proposed project, influx of working community will also generate an indirect employment through development of nearby market/ shops, trade centers, activities, transportation etc.<br>• Impacts on the health of nearby villagers can be envisaged due to the transportation activities leading to short term exposure of fugitive dust, | • Potable drinking water will be available.<br>• Mobile toilets will be provided.<br>• Crèche facility for children of laborers will be provided.<br>• Provide first-aid facility for the laborers will be provided.<br>• Liaison with local hospitals for emergencies will be available.<br>• Measures for first aid, fire-fighting and premises evacuation will be provided.<br>• Necessary contacts with appropriate emergency services (first aid, emergency medical care, rescue work and fire-fighting) will be provided.<br>• Safety helmets, belts and slings, nets will be provided.<br>• Properly laid electrical cables and connections will be provided.<br>• Fire extinguishers will be available. |

| Discipline | Anticipated Impact | Mitigation Measures |
|---|---|---|
| | resulting in various acute diseases such as increased eye irritation, nausea, headache etc. | |
| | **Operation Phase:**<br>• Long term exposure to the pollutants such as PM, $SO_2$ and $NO_2$ can have a potential to create health impacts such as risk of cardiovascular and respiratory disease, eye irritation, bronchitis, lung damage, increased heart ailments, etc.<br>• Other impacts, associated with the proposed Project will create a positive impact as it will result in the overall development of the area in respect to the infrastructure development, educational growth, health facilities etc. as a part of the CSR activity.<br>• A minor shift in livelihood will be observed due to the proposed project, as the project will attract the more able-bodied persons from the community which in turn will lead to low labor availability in other sectors of the economy including agricultural, shop keepers etc. This impact will not be significant due to low level of education and skills in the area which will result in sourcing skilled workforce from outside the immediate area. But the magnitude of this impact will be high due to high number of household dependency. | • As per MoEFCC OM dated 30th Sept., 2020 & OM dated 20th Oct., 2020; Socio-Economic Developmental activities will be formulated on the basis of the issues raised during public hearing. The public hearing for the project is yet to be conducted.<br>• Total 550 no. of people get employed during operation phase, out of which 450 no. of people will be permanent and 100 no. of people will be contractual.<br>• In order to mitigate the long-term health impacts, efficient Air Pollution Control Equipment (APCE) at all major stacks to keep the emissions within the permissible limits. To reduce fugitive emission machineries and vehicles will be regularly monitored and maintained.<br>• Awareness Programme will be conducted before the monsoon season regarding the spread of water borne/ vector diseases.<br>• To overcome behavioral impact, supervision will be done by site in charge. In advance, emergency cell will be formed with fully equipped communication system, medical and safety services to take control over the incident/ violence caused. |

## 2.7 ALTERNATIVE ANALYSIS

### 2.7.1 Analysis with respect to Technology

M/s. Arham Ispat Pvt. Ltd. is a greenfield project will be based on proven technology for the units. No technology failure is envisaged as proper maintenance and servicing of equipment and machineries will be carried out with proper risk and hazard assessment in order to handle failure of any machinery.

### 2.7.2 Analysis with respect to site selection

Three alternative sites were selected for the proposed project at following locations:

- Site 1: Village Neonara, Tehsil Bhimbhauri, District Bemetara (Chhattisgarh)
- Site 2: Village Kareli, Tehsil Bhimbhauri, District Bemetara (Chhattisgarh)
- Site 3: Village Bhand, Tehsil Berla, District Bemetara (Chhattisgarh)

Detailed analysis of alternative site is given in chapter 5, Section 5.3 of EIA/EMP Report

## 2.8 ENVIRONMENTAL MONITORING PROGRAMME

The frequency of monitoring will be different for different components. The monitoring frequency and locations are decided as per conditions of EC & CTO and in consultation with SPCB are given below in Table - 7.

**Table - 7**
**Frequency for Post Project Monitoring**

| S. No. | Aspect | Monitoring parameters | Location | Schedule and frequency of monitoring | Responsibility |
|---|---|---|---|---|---|
| **A.** | **CONSTRUCTION PHASE** | | | | |
| 1. | Ambient Air Quality Monitoring | $PM_{10}$, $PM_{2.5}$, $SO_2$, $NO_2$ | 4-6 location in and around the project site including 1 location downwind & 1 location in upwind of predominant wind direction. | Manual - As per EC/ CTO conditions | Environment engineer (in-house Environment team) |
| 2. | Noise Level Monitoring | Equivalent noise levels in Leq in dB (A) | Work zone- construction site and Project Boundary | Manual - As per EC/ CTO conditions | Environment engineer |
| 3. | Medical Checkup | Spirometry, Audiometry, Biochemical Parameter (Sugar, Blood), ECG, Vision Test and Chest X-ray | Pre - Placement Medical Checkup | Pre - Placement Checkup and Yearly as per Factories Act | Environment engineer, Plant Unit Head and HR Department |
| **B.** | **OPERATION PHASE** | | | | |
| 4. | Micro - Meteorological Monitoring | Wind speed, Wind direction, Dry bulb temperature, Wet bulb temperature, Relative humidity, Rainfall, Solar Radiation, Cloud Cover, Environmental Lapse Rate | Location inside the plant boundary will be selected in consultation with SPCB. | 01 Online Continuous Weather Monitoring Station | Environment engineer (in-house Environment team) |

| S. No. | Aspect | Monitoring parameters | Location | Schedule and frequency of monitoring | Responsibility |
|---|---|---|---|---|---|
| 5. | Ambient Air Quality | $PM_{10}$, $PM_{2.5}$, $SO_2$, NOx CO, HC and Hg (As per NAAQS 2009), and other parameters as per EC and CTO | Location will be selected in consultation with SPCB (at an angle of 120° each). | 02 Continuous ambient air quality monitoring stations (CAAQMS) | Environmental Engineer in collaboration with MoEFCC recognized/ NABL accredited third party laboratory. |
| | | | 04 Locations (01 upwind, 02 downwind and 01 crosswind of the dominant wind direction) in consultation with SPCB. | Manual and Frequency as per CPCB Guidelines. | |
| 6. | Stack Emission Monitoring | PM | At all major combustion-based stacks. | Online continuous Emission monitoring system (OCEMS) & Manual Monitoring - Frequency Quarterly | Environmental Engineer (in-house Environment team) |
| | | $SO_2$ | | | |
| | | $NO_X$ | | | |
| | | CO | | | |
| | | Hg & its compound | | Manual Monitoring Monthly | |
| 7. | Performance Evaluation of pollution control equipment | All Pollution Control Equipment | All pollution control equipment | Annually | Environmental Engineer (in-house Environment team) |
| 8. | Fugitive Emission | SPM | Locations across Raw Material Handling area, Storage area, transfer points and truck yard. | Quarterly | Environmental Engineer (in-house Environment team) in collaboration with MoEFCC recognized/ NABL accredited third party laboratory. |
| 9. | Ambient and work zone Noise Level Monitoring | Day & Night dB (A) | 04 locations at the periphery of the plant. | Once in every month for each location by NABL accredited laboratory. | Environmental Engineer (in-house Environment team) & MoEFCC recognized/ NABL accredited third party laboratory. |
| 10. | Water Quality/ Effluent | Water quality of surface and ground as per IS: 10500-2012 except radioactivity | As per EC/ CTO | As per EC/ CTO | NABL accredited lab |
| | | pH, TSS, TDS, BOD, COD, Oil and Grease, Total residual chlorine, Total Coliform (MPN) | STP - Outlet | Online Effluent monitoring system & Online water flow meter and web camera as per CPCB guideline will be installed. | Environmental Engineer (in-house Environment team) & MoEFCC recognized/ NABL accredited third party laboratory. |
| | | pH, Temperature, Color, TSS, TDS, Oil & Grease, Phenolic compounds, Total Residual Chlorine, Ammonical | ETP - Outlet | | |

| S. No. | Aspect | Monitoring parameters | Location | Schedule and frequency of monitoring | Responsibility |
|---|---|---|---|---|---|
| | | Nitrogen, BOD, COD, Pb, Cu, Fe, Zn, As and Ni. | | | |
| 11. | Soil quality for fertility | N, P, K, organic matter, water holding capacity, density, texture, etc. | One location inside the Project area | Yearly | MoEFCC recognized/ NABL accredited third party laboratory. |
| 12. | Inventory of hazardous waste | - | Plant Site | Yearly or as directed by SPCB | Environment Engineer |
| 13. | Medical check-up of employees | Spirometry, Audiometry, Biochemical Parameter (Sugar, Blood), ECG, Vision Test and Chest X-ray, etc. | Nearby hospitals/ Health Centre/On-site Occupational health Centre | Yearly | Environment engineer, Plant Unit Head and HR Department |
| 14. | Water Consumption | - | At all consumer points through water meter | Continuous through water meter | Environment Engineer |
| 15. | Environmental Audit | Compliance of conditions given in EC/ CTO | Plant site | Yearly | Third Party |
| 16. | Social Audit | As per ToR Point no. 7.5 | Study area | Yearly | Nearest Gov. Institute |

## 2.9 ADDITIONAL STUDIES

As per EIA Notification dated 14th Sept. 2006, and its subsequent amendments this EIA/ EMP Report has been prepared as per the ToR issued by MoEFCC; New Delhi vide letter no. J IA-J-11011/41/2025-IA-II(IND-I) dated 28th January, 2025.

This chapter covers the additional studies which are required to be carried out for the proposed project. The additional studies have been done based on ToR Letter issued by MoEFCC, New Delhi. Details of which are given below:

1. Public Consultation
2. Hydro-geological Study and Rainwater Harvesting Plan
3. Risk Assessment and Disaster Management Plan

The detail information regarding additional studies is given in chapter 7 of this EIA/EMP report.

## 2.10 PROJECT BENEFITS

The proposed project will provide various benefits across the nearby areas which are attributed below:

- *Environment benefits*
- *Employment benefits*
- *Social benefits*
- *Other Tangible Benefits*

***Environmental Benefits:***

Out of the total plant area i.e., 42.949 Ha, 14.411 Ha (i.e.33.55% of the total project area) area will be developed under greenbelt & Plantation within project premises with plantation density @ 2500/ha. Approx. 36028 number of saplings will be planted. The Species will be planted are *Acacia catechu* (Khair), *Azadirachta indicia* (Neem), *Bauhinia retusa ham* (Shehara), *Cassia fistula* (Amaltash), *Dolbergia sissoo* (Shisham), *Ficus religiosa* (Pipal) etc. 15 m wide greenbelt will be maintained all around the plant boundary.

***Rain water Harvesting***

The company will use surface water (3820 KLD) instead of ground water for plant operations. Ground water (25 KLD) will be only use for domestic purpose. For rainwater harvesting, the plant has proposed to implement rainwater harvesting practices inside the plant premises to harvest rainwater from different sections of plant which will be collected in the rain water harvesting pond & tanks, which will be reused in plant activities. The rainwater will be collected and reused as fresh water in plant activities.

***Employment Opportunities:***

The man power of plants includes manager, Engineer, skilled and unskilled Labours and medical officers etc. During operation phase, 550 persons (450 Permanent employment and 100 Contractual employment) will get employment and during construction phase 200 persons (40 Permanent employment and 160 Contractual employment) will get employment.

***Social Benefits:***

Arham Ispat Private Limited proposes to develop a dedicated CSR department, led by qualified and experienced professionals. The company intends to undertake and continue various community development activities for the social upliftment of the community, as outlined below:

1. Education
2. Health & Sanitation
3. Women empowerment
4. Infrastructure Development
5. Sustainable Livelihoods
6. Social Development

Apart from this, Socio-economic developmental activities will be formulated on the basis of the issues raised during Public Hearing. The Public Hearing for the project is yet to be conducted. The detail information regarding project benefits is given in chapter 8, section 8.2 of this EIA/EMP report.

## 2.11 ENVIRONMENT MANAGEMENT PLAN

This is a proposed project of M/s. Arham Ispat Pvt. Ltd. The anticipated environmental impacts of the Plant will be mainly due to the constructional and operational activities. The Impact on environmental factors and their mitigation/ management measures have been given in section 11.5.

The total project cost is Rs. 495 Crores. The budget proposed by M/s. Arham Ispat Pvt. Ltd. for the project and for the environmental protection measures is given:

- ✓ **Capital Cost: Rs. 34.65 Crores /-**
- ✓ **Recurring Cost: Rs. 2.43 Crores /annum**

## 2.12 OCCUPATIONAL HEALTH AND SAFETY

Following Occupational Health and safety Hazards will be there in the Plant:

- Dust
- Noise
- Heat stress
- Electrical Hazards
- Fire and Explosion
- Others Hazards

To control and minimize the risks at workplace, M/s. Arham Ispat Pvt. Ltd. Ltd. will implement OHS standards as per OSHAS/USEPA with the following objectives:

- To prevent hazards
- To provide safe and healthy environment to all the employees

The overall objective of the company is to provide a system that is capable of delivering healthy and safe workplace. Following measures will be adopted for implementation of OHS standards.

- Well-equipped Occupational Health Centre with adequate paramedical staff
- Routine and special investigation related to occupational health
- Health surveillance and maintenance of health record
- Rules and procedure for effective implementation of Safety Health and Environment policy and made to know all employees

The detail information regarding Occupational & Safety Hazards is given in chapter 10, section 10.10 of this EIA/EMP report.

## 2.13 CONCLUSION

It is appropriate to say that the proposed project will not cause any significant negative impact in the area, as adequate pollution control measures and preventive measures will be adopted to maintain the range of various pollutants within the permissible limits. Regular monitoring of the relevant components of environment will be done. Increased social welfare measures will be taken by the company that will bring development and progress in the nearby villages. Maintenance of Greenbelt around the plant area will also be taken up to restrict pollutants released within the plant premises. Therefore, the project will not degrade the environmental quality of surrounding environment. It would contribute towards the improvement of the socio-economic conditions and aesthetics of the surrounding areas.