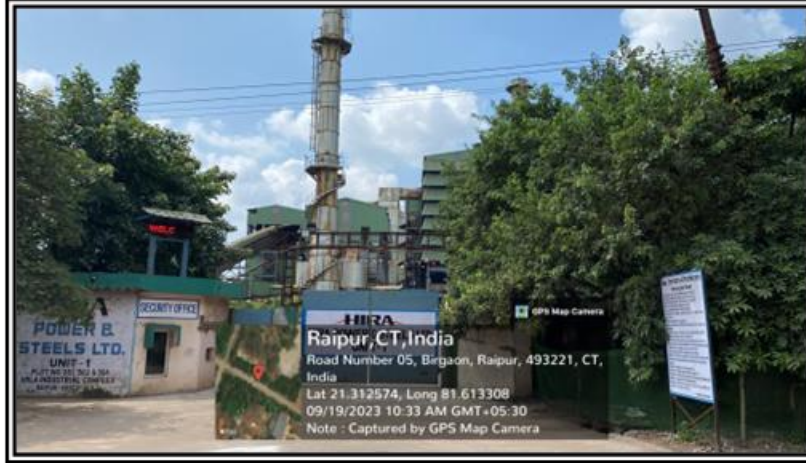


EXECUTIVE SUMMARY
for
**EXPANSION OF FERRO ALLOYS
PRODUCTION UNIT**



at

**P.H. No. 0028, Plot No. 557, 559, 563 and 564,
Urla Industrial Area, District- Raipur, Chhattisgarh- 492003
(Schedule 3(a)-Category A)**

PROJECT PROPONENT



HIRA POWER & STEELS

M/s HIRA POWER AND STEELS LIMITED

P.H. No. 0028, Plot No. 557, 559, 563 and 564, Urla Industrial Area,
District- Raipur, Chhattisgarh-492003

ENVIRONMENTAL CONSULTANT



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1.1. PROJECT DESCRIPTION

M/s Hira Power & Steels Limited (HPSL) is involved in the production of different types of Ferro Alloys. HPSL has an operational Ferro alloys Production plant located at P.H. No. 0028, Plot No. 557, 559, 563 and 564, Urla Industrial Area, District- Raipur, Chhattisgarh. The existing unit manufactures Ferro manganese (Fe-Mn) and Silico-manganese (Si-Mn).

The plant has one (1) Submerged Arc Furnace. Unit is spread over 12,919.806 sqm of Industrial area land, the site is self-sufficient with all the infrastructural facilities consisting of utilities, environment management, manufacturing area, OHC, full-fledged safety department, warehousing, and site technical management.

This facility was established in 1988 by M/s Jain Carbide & Chemicals Pvt. Ltd (now known as Hira Power & Steels Limited (Unit-I)) with prior approval from the pollution control board, vide letter no. 614/R.O/PNM/Raipur/88 21.03.1988. Subsequently, the company's name was changed to Hira Power & Steels Limited, and a fresh consent under the new name was obtained from the pollution control board, as per letter no. 08&09/RO/TS/CECB/2009 dated 03.01.2009. On November 30, 2015, the company ceased operations due to structural issues and the furnace reaching the end of its operational life. Following this, several rectifications were made in the plant to bring it back into production-ready condition, and renewal of consent to operate was obtained from the Pollution Control Board, vide letter no. 5093/RO/TS/CECB/2021 dated 08.03.2021. The unit is operating on same production capacity since year 1988 and has valid consent to operate issued by pollution control board vide letter no. 2664/RO/TS/CECB/2023 dated 06.09.2023 valid upto 31.10.2026 for Ferro alloys production (3,000 MT/Year/Shift or 9,000 MT/Year).

Considering the market demand for Ferro Alloys, HPSL has proposed to expand the production capacity from 9,000 MT/Year to 18,000 MT/Year. The planned augmentation in production capacity will be achieved primarily through debottlenecking and change in the raw material. No significant alterations to the existing plant machinery are envisaged except modification in air pollution control equipment's to reduce the air emissions.

The transition from domestic Manganese (Mn) to imported Mn and the shift from 65 FC (Fixed Carbon) coal to 80 FC coal will yield the following enhancements in production capacity through debottlenecking measures:

- **Increased Smelting Rate:** Utilization of high-grade Mn Ore, characterized by its dioxide composition and minimal gangue content, will result in an augmented smelting rate.
- **Enhanced Production on an Hourly Basis:** The incorporation of high-grade coke will lead to an elevated smelting rate, consequently increasing production on a per-hour basis.
- **Pre-Reduction of Ore:** The utilization of dioxide ore initiates a pre-reduction process directly atop the furnace. This process augments the overall reduction rate within the furnace.

- **Expanded Product Range:** Previously, the plant exclusively produced Ferro-Manganese at a rate of 9000 TPA. However, with the potential inclusion of Ferro Manganese in the production repertoire, overall quantity output is projected to rise.

These changes and productivity & efficiency of SAF collectively contribute to the anticipated increase in production capacity with existing SAF. Details of Products and Production Capacity after expansion are given below in **Table 1**.

Table 1: Existing Production Capacity of Plant

Particular	No. of Furnaces	Product (MTPA)		Total Quantity
		Fe-Mn	Si-Mn	
Existing	01	9000	Nil	9000
		3000	6000	9000
		9000		9000
After Expansion	01	18000	Nil	18000
		6000	12000	18000
		18000		18000

Note: Both products will be manufactured in the combination or individual product as mentioned above subject to approved quantity and pollution load.

As per the Government of India (Ministry of Environment, Forests & Climate Change (MoEF&CC),) EIA Notification 2006 and further amendments, the proposed expansion of Ferro Alloys Manufacturing unit has to obtain prior environmental clearance. The proposed project is covered under **Schedule 3(a), Category 'A'** as per the Schedule-I of EIA Notification 2006 and its amendment thereof.

Consolidated Details of Project have been given below in **Table 2**:

Table 2: Consolidated Details of Project (Total after Expansion)

S. No.	Particulars	Unit	Existing	After Expansion	Remarks
1.	Total Project Cost	Rs. (In Cr)	27.58	34.57	Increase
2.	Total Plot Area	Sqm	12919.806	12919.806	No Change
3.	Green Area	m ²	Within premises: 3127.886 Outside premises: 2084	Within premises: 3805.486 Outside premises: 2084	Increase
4.	Workers/Staff	No.	71	71	No Change
5.	Total Water Requirement	KLD	136	103	Decrease
6.	Fresh Water Requirement	KLD	120	100	Decrease
7.	Wastewater Generation	KLD	20	17	Decrease

S. No.	Particulars	Unit	Existing	After Expansion	Remarks
	(Including Domestic Sewage & Industrial Effluent)				
8.	Wastewater Discharge outside premises	KLD	0	0	No Change
9.	Power Requirement	MW	6	7.5	Increase
10.	Power Backup	KVA	200	200	No Change
11.	Number of Furnaces	No.	01	01	No Change

1.2. DESCRIPTION OF THE ENVIRONMENT

1. Site Characteristics

The existing Ferro Alloys Production Unit of M/s Hira Power & Steels Limited (HPSL) is located at P.H. No. 0028, Plot No. 557, 559, 563 and 564, Urla Industrial Area, District- Raipur, Chhattisgarh. The coordinates of the center of site are Latitude: 21°18'42.73"N & Longitude: 81°36'46.59"E. The nearest habitation from the project is Urla located 0.12 km in west direction. The site is well connected via NH-30 located 2.4 km in east direction of project site. The nearest railway station from the project is Urkura Railway Train Station located 4.1 km towards SE direction. The nearest airport from project is Raipur Airport located 19 km away from site towards SE direction. There are no environmentally sensitive components such as National Park, Wildlife Sanctuary, Elephant / Tiger Reserve, migratory routes of fauna and wetland present within 10 Km radius of plant site. Kharun River is located 3.7 Km away from the project in NW direction.

2. Topography and Meteorology

Topography of District: Physiographically the area in Raipur district having plains belonging to Chhattisgarh basinal area with an elevation of 278 feet (298.16 meters) above m.s.i. and the general slop is towards the north-east.

Topography of Project Site: The terrain is plain. The elevation is observed between 309-310. The elevation is relatively high in the SW direction.

3. Climate and Meteorology

Temperature–The mean daily minimum temperature of 16°C (January) while mean daily maximum temperature of 41° C (May).

Relative Humidity–During the monsoon season highest relative humidity was observed to be 75%.

Rainfall–The total annual rainfall is 1801.3 mm. The maximum total monthly rainfall is 567.95 mm which occurred in July and minimum monthly rainfall during monsoon is 0 mm which occurred in February.

4. Seismicity

According to the seismic-zoning map of India, the project area falls in Zone-II (Low Risk Zone) of seismicity.

5. Soil

The monitoring was carried out at eight locations in the study area. The soil texture is Sandy Loam. The soil pH ranges were observed from 7.11 to 7.64 during study season, thereby indicating the soil ranges from “Neutral to Slightly Alkaline”. The Organic Carbon content of sampled soil during study varied from 0.34% to 1.51%, thereby implying that soils range from “Low to Medium” in organic carbon content. Available nitrogen content in the surface soils ranges between 110.6 kg/ha to 154.1 kg/ha thereby indicating that soils are “Low” in available nitrogen content. Available phosphorus content ranges between 32.1 kg/ha to 32.4 kg/ha thereby indicating that soils vary from “High” in available phosphorus. Available potassium content in these soils’ ranges between 145.6 kg/ha to 179.2 kg/ha thereby indicating that the soils are Medium in potassium content. Overall fertility of the soils in study area ranges from Low to High Fertility.

6. Water

The ground water and surface water monitoring were carried out at eight locations each in the study area.

Surface Water: The pH values of all analyzed samples ranged between 6.84 to 8.2. The TDS levels were observed to be 195 – 540 mg/l. Total hardness levels were observed to be ranging from 98-178 mg/l. Dissolved Oxygen were observed between 3.2 mg/l to 7.2 mg/l. Chloride levels were observed between 18-66 mg/l. Total Coliform levels were observed from 3220 to 5620 mg/l. Comparing the values of pH, DO, BOD and Total Coliforms with ‘Use based classification of surface waters’ published by Central Pollution Control Board; the analyzed river and canal surface waters are classified as “Class ‘B’” and can be used for Outdoor bathing (Organized) and Class “C” that will be used for Drinking water source after conventional treatment and disinfection.

Ground Water: The analysis results indicate that the pH ranged between 7.1 to 7.62, which is well within the specified standard of 6.5 to 8.5 limit. Total hardness was recorded to range from 185 to 435 mg/l, which is within the permissible limit 600 mg/l at all locations. Total Dissolved Solids (TDS) concentration recorded ranged between 326 to 793 mg/l and was within the permissible limits (2000 mg/l) at all locations. Chlorides was recorded in the range from 57 to 167 mg/l, which is within the permissible limit 1000 mg/l at all locations. Sulphates at all the locations were within the permissible limits (400 mg/l) as it ranged between 15-101 mg/l. Bacteriological studies reveal that no coliform bacteria present in the samples. The heavy metal contents were observed to be below detectable limits. All physical and general parameters were observed within the permissible limit as per IS10500:2012 (Second Revision).

7. Air Quality

Nine locations were monitored for air sampling within the study area. The monitoring results of ambient air quality were compared with the National Ambient Air Quality Standards

(NAAQS) prescribed by MoEF; GoI Notification dated 16.11.2009. The maximum concentration of PM₁₀, PM_{2.5}, SO₂ & NO_x was 98 µg/m³, 54 µg/m³, 12.4 µg/m³ & 24.3 µg/m³ respectively. Overall, the ambient air quality of the study area is found within the national ambient air quality standard. The AQI Category for each of monitoring station has been found to be satisfactory

8. Noise

Nine noise sampling locations were monitored and assessed. The noise levels during daytime range from 51.2 to 63.4 dB(A) while noise levels during nighttime ranges from 42.2 to 60.3 dB(A). At all locations, the noise level is within the prescribed National Ambient Noise Quality Standards prescribed except Urla Industrial Complex due to Industrial activities and Heavy vehicular movement in the area.

9. Biological Environment

10 Km radius study areas was assessed via physical survey and secondary study sources. There were approx. 46 types of trees, 23 types of shrubs, 16 types of herbs & several type sof epiphytes, climbers, grasses and bamboos. For fauna, 3 types of mammals, 1 type of amphibian, 1 type of reptile & 11 type of birds have been observed in the core zone. In study area, 10 types of mammals, 1 types of amphibians, 6 types of reptiles have been observed. 53 types of bird species were also observed in the study area. No Schedule-I species were observed.

10. Demography

As per Census of India 2011, the total population of the study area is 194864 in which 101295 (51.98%) are males and 93569 (48.02%) are females. An average gender ratio of the study area is 924, which shows that there is almost equality among the composition of male and female. 16.27% of the population belongs to 0-6 age group. An average gender ratio of the 0-6 age group of the study area is 962 females' children per 1000 male children. The entire population of the study area has been grouped into 41102 households and the average size of the household is approx. 4.74 people/ household. an average literacy rate of the study area is 65.19% out of which male literacy is 72.35% with respect to the male population and female literacy is 57.44% with respect to the female population, creating a gender gap of 14.91%. In respect to the core and buffer zone an average literacy rate is 66.59% and 63.83% & creating a gender gap of 13.77% and 15.95% respectively.

1.3. **ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Air Quality: The plant is maintaining all emission norms prescribed by MoEF&CC/SPCB/CPCB. Regular monitoring of emissions is done via third party laboratory to keep in check with the emissions. Online Continuous Emission Monitoring system (OCEMS) has already been installed to Submerged Arc furnace and connected to CPCB server. Also, Continuous Ambient Air Quality Monitoring Station (CAAQMS) is installed and connected to CECB Server. No additional stack is proposed under expansion. Cumulative and continuous emissions from existing and proposed industries in an area may increase the pollutant level in the air. Increased pollutant levels may cause respiratory problems or carcinogenic dieases to the workers and other people in the area. Thus, use of efficient mitigation measures and air pollution control system is required. As part of the proposed

expansion, it is proposed to augment the bag filter system by incorporating an additional 25% capacity through the addition of extra bags. Furthermore, it is proposed to integrate 17 new water sprinklers into the raw material handling system, ground hopper, and conveyors to further enhance dust control measures. Hence, plant will not impact the ambient air quality within the site and surroundings in a negative extent.

Noise: Noise may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure of the human. The plant has various machines which generates noise. These machines are already inbuilt with appropriate control measures to maintain the noise levels within limits. The equipments are provided with Acoustic pad insulation / Acoustic enclosures to limit the noise level as per the standard. Noise level at Boundary Fence is controlled by providing green belt throughout the boundary wall of plant. The noise level at the boundary of the existing plant is 60.4 dB(A) during daytime and 58.9 dB(A) during nighttime. The noise level at all monitored locations are within the prescribed limited. The noise generated from the project activities will not be escalated significantly due to atmospheric attenuation. Thus, no major impact is anticipated due to the proposed addition of machineries. The equipments are already designed with enclosures and mufflers which ultimately reduce the noise level around the machinery.

Water Quality: The freshwater consumption of the existing unit was 120 KLD which is primarily used for cooling purposes. Now, in proposed expansion unit has proposed to modify the cooling tower to reduce drift/evaporation loss from 4% to 0.35% of total circulating cooling water. After proposed modification, the total freshwater consumption will be reduced to 100 KLD. Freshwater is being met through CSIDC (Chhattisgarh State Industrial Development Corporation) supply and ground water. Wastewater generation will reduce from plant after proposed expansion due to modification in cooling tower. The total wastewater generation will reduce from 20 KLD (Effluent: 16 KLD & Domestic: 4 KLD) to 17 KLD (Effluent: 13 KLD & Domestic: 4 KLD). Cooling tower blowdown from unit will be recycled for dust suppression and water sprinkling. Domestic sewage is being disposed through soak pits. Plant is Zero liquid discharge project. Thus, there is no direct impact on water quality.

Waste: There are generation of Slags from manufacturing process and Bag filter dust from APCS. This slag is a hard mass and usable for road embankment applications. The slag generated from the furnaces contains 3% of saleable metal (ferro alloys). The entrapped metal is recovered from the slag in the Metal Recovery Plant (MRP). Toxic Chemical Leachability Potential (TCLP) test is regularly done by unit to check the metal concentrations in the slag.

Soil Quality: Spillage of material like effluent, used oil and fuel may contaminate the soil. Due to improper disposal of solid waste & liquid waste includes the leaching and effect on flora from spillage of waste on soil. Improper disposal of Effluent during shutdown may encounter soil and contamination. However, the unit does not discharge neither liquid effluent nor solid waste directly into the soil. Soil quality of project site as well as nearby places with Low to High fertility status validate the same. Toxic Chemical Leachability

Potential (TCLP) test is regularly done by unit to check the metal concentrations in the slag. The unit abides by various protection measures that avoid soil pollution.

Ecology & Biodiversity: The impact on the surrounding ecology during the operation of the project will mainly occur from the deposition of air pollutants, discharge of untreated wastewater and sold waste generated from the proposed expansion project. Air pollution affects the biotic and abiotic components of the ecosystem individually and synergistically with other pollutants. Chronic and acute effects on plants and animals may be induced when the concentration of air pollutants exceeds threshold limits. The incremental emission of air pollutants will not likely to induce any significant changes in the ecology because the national ambient air quality standards will remain within the limits. Approx. 3127.886 sqm i.e., 24.21% of the area is developed as a green area within the premises. Additionally, 2084 sqm i.e., 16.13% of the total plot area along the boundary wall (outside premises) of unit is developed. In proposed expansion, it is proposed to increase the green belt area to 3805.486 Sqm (29.45%). Industry has put in serious effort to create greenery and the number of trees, plants, shrubs, and herbs has increased considerably. Approx. 279 nos. of trees within premises and 1005 nos. of trees outside premises have been planted. In proposed expansion, it is proposed to plant additional 500 nos. of trees within the premises to increase the tree density.

Socio-economic Environment: Proposed project will affect positively the welfare of local people through direct and indirect employment opportunities as employees will be hired from nearby city & towns, which will improve the Socio-economic environment of the area. The project will be beneficial to nearby people. Through CER activity company management is committed to improve infrastructural facilities for the local people. Due to operation & maintenance there may be various risks for the staff and other nearby people. The risks associated are accident of people, collapse of structures, fall/slip while working, electrical shocks, electrical fire, fire in DG sets & fuel tanks, health impact due to air & noise pollution etc. Various safety measures are to be followed which should be taken to prevent the accidents and near miss. At the extent all possible measures are already adopted by the HPSL to reduce impact on staff and nearby area. Further, same will be strengthen during expansion.

Conclusion: From above analysis, it is found that the impacts anticipated vary from Medium to low significance and magnitude. No impact is anticipated during the preconstruction and construction phase as limited installation/construction is proposed. However, during operation phase, impact is anticipated due to increased polluted air quality. The project also has various positive impacts like indirect employment generation, increase in the indigenous production and ease of the availability of proposed product. It is believed that the anticipated negative impacts can be normalized by taking the proposed mitigation measures. Proper environment and social management plans are to be prepared for ensuring implementation of the proposed mitigation measures.

1.4. ENVIRONMENTAL MONITORING PROGRAMME

Environmental monitoring plan will be implemented as per regulatory requirement to comply the necessary compliances. As per the MoEF&CC guideline, Environment monitoring report and compliance of conditions mentioned in the environment clearance will be submitted to the IRO-MoEF&CC, SPCB, MoEF&CC online portal i.e., parivesh and shall be uploaded on company's website. Compliances will be submitted in month of June and December for the period of October to March and April to September respectively. Third party laboratory (approved MoEF&NABL laboratory) shall be appointed for carrying out the monitoring. Also, self-environmental audit, Health & safety audit and Energy audit shall be conducted annually.

1.5. ADDITIONAL STUDIES

Site has onsite emergency plan in place. All the measures are adopted in plant to avoid risk or fight with any kind of disaster. Employees are trained regarding their specific role incase of emergency. The emergency response topic is incorporated as a part of safety training program. If any person/worker who gets affected during Emergency incidence in factory will immediately provided First aid and then taken to company's Doctor/Hospital where he will be treated as per the instruction of Doctor or shall be shifted to better medical center. The company has kept a vehicle in the factory to meet any emergency if arise during operations. Further a qualified Doctor has been deputed whose clinic is near the industrial Area and his services are available round the clock. Production Manager, Shift In-charge, Supervisors are well aware of emergencies, they are living /staying in near by area and are able to reach site at any moment. Company has appointed a Doctor and trained person are employed to give the First Aid/ Medical assistance to the victim at site and to carry him for the further treatment (if required and refer by doctor/First Aid person) to Hospital/ Medical Center inside/off side the Factory.

1.6. PROJECT BENEFITS

The company is adopting many technologies and innovations to improve the production and achieving Environmental sustainability. Its greater efficiencies allow to produce the highest quality at a competitive price while minimizing footprint on the environment. 3R method shall be adopted in the plant. The proposed project will be a Zero liquid discharge project. Wide green belt is provided all around the boundary wall of project site. The industry has put in serious effort to create greenery and the number of trees, plants, shrubs and herbs has increased considerably. It is proposed to spend Rs. 0.25 Crores of project cost on CER activities. Through CER activity company management will be committed to improve infrastructural facilities for the local people in the field of Environmental, and Medical. Operation of the proposed project will contribute significantly to the revenue of the state and

central governments in the form of different types of taxes including GST and earning of foreign currency due to export.

1.7. ENVIRONMENT MANAGEMENT PLAN

HPSL has created a team consisting of officers to co-ordinate the activities concerned with management and implementation of environmental control measures. This team undertakes the activity of monitoring stack emissions, ambient air quality, noise level etc. either departmentally or by appointing external agencies assistance wherever necessary. Regular monitoring of environmental parameters is being carried out to find out any deterioration in environmental quality and also to take corrective steps are taken, if required, through respective departments. The Environmental Management Cell also collects data about health of workers, green belt development etc., EMC is headed by Executive Director of the company which reports to the Board of Directors.

The cost for the proposed expansion is Rs 6.99 Crores. Construction and installation of machinery will be completed in 3 months. HPSL will spend approx. Rs. 6.99 Crores as Capital Cost & Rs. 1.17 Crores per annum as Recurring cost on EMP.