

EXECUTIVE SUMMARY

For

PROPOSED EXPANSION OF PRODUCTION CAPACITY OF SPONGE IRON FROM (2X100 TPD DRI) - 60,000 TPA TO SPONGE IRON (6 X 100 TPD DRI) - 200,000 TPA ALONG WITH NEW SET UP OF MS BILLET 300,000 TPA AND/OR REROLLED STEEL PRODUCTS THROUGH HOT CHARGING 150,000 TPA AND THROUGH REHEARING FURNACE 150,000 TPA; MS BLACK PIPE MILL 140,000 TPA, GALVANIZING PLANT 100,000 TPA, CAPTIVE POWER PLANT 20 MW (12 MW THROUGH WHRB AND 8 MW THROUGH AFBC) AND FLY ASH BRICK 69,300 TPA

At

VILLAGE - BELPAN, TAHSIL- MASTURI,
DISTRICT - BILASPUR, CHHATTISGARH

Terms of Reference File No. IA-J-11011/126/2021-IA-II(I) dated 1st July, 2021
Category A, Schedule 3 (a) Metallurgical Industries & 1(d) Thermal Power Plant
Baseline Monitoring Period: Post Monsoon Season (15th October 2021 to 15th January 2022)

PROJECT PROPONENT

M/s. KALINDI ISPAT PVT. LTD.

ENVIRONMENTAL CONSULTANT



M/s Anacon Laboratories Pvt. Ltd., Nagpur

QCI - NABET Accredited EIA Consultant for
Metallurgical Industries (Sector 8) & Thermal Power Plant (Sector 4)

MoEF&CC (GOI) Recognized Laboratory
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Report No. ANqr /PD/20A/2022/189

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EXECUTIVE SUMMARY**1.0 INTRODUCTION**

M/s. Kalindi Ispat Pvt. Ltd. (here after referred as KIPL) has proposed to expand its existing manufacturing facilities for production of Sponge Iron, and setting up down-stream integration by way of producing MS Billet, Steel Rerolled products, MS Black pipe, Galvanizing facility in the unit along with captive power generation plant comprising of Waste Heat Recovery Boilers (WHRB) and Atmospheric Fluidized Bed Combustion (AFBC) Boiler and Steam Turbine & Generator and expansion of Fly Ash Bricks unit at Village Belpan, Tehsil Masturi, District Bilaspur, Chhattisgarh.

This is brownfield project for which expansion proposed within 25.619 Ha. of existing plant premises. The capacity expansion of existing manufacturing facilities for production is proposed for the capacity of Sponge Iron 200,000 TPA (which includes existing 60000 TPA capacity + Proposed Additional capacity 140000 TPA) and other are new facilities proposed viz.: Mild Steel Billet 300,000 TPA and/or Rerolled Steel Products through Hot Charging 150,000 TPA; Rerolled Steel Product through Reheating Furnace 150,000 TPA; MS Black Pipe Mill 140,000 TPA, Galvanizing plant 140,000 TPA, Captive Power 20MW (12MW through WHRB and 8MW through AFBC) and Fly Ash Bricks 69,300 TPA.

As per Environmental Impact Assessment Notification dated 14th September, 2006 and subsequent amendment thereof the overall project falls under Category "A"; Project Activity '3(a)' Metallurgical Industries and '1(d)' Thermal Power Plant and requires Environmental Clearance (EC) to be obtained from EAC(Industry -I), MoEF&CC, New Delhi.

TOR was granted to the proposed expansion project from EAC (Industry – I), MoEFCC, New Delhi, Vide letter No J-11011/126/2021-IA.II(I) on dated 1st July 2021. ToR compliance with cross referencing is provided in the beginning of the chapter scheme.

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

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

This EIA report is prepared based on the ToR conditions recommended by EAC (Industry – I), New Delhi and project related technical details provided by M/s. Kalindi Ispat Pvt. Ltd.

1.1 IDENTIFICATION OF PROJECT

The proposal is for expansion of production capacities at Village Belpan, Tehsil Masturi, District: Bilaspur, Chhattisgarh – 495 551 by M/s. Kalindi Ispat Pvt. Ltd. in the following manner:

**TABLE 1
EXISTING AND PROPOSED CAPACITY DETAILS (IN TPA)**

Sl.	Name	Existing Units (in TPA)		Proposed Additional Units (in TPA)		Total (Existing + Proposed) (in TPA)	
		Configuration	Production	Configuration	Production	Configuration	Production
1	Sponge Iron	DRI Kilns, (2 x 100 TPD)	60,000	DRI Kilns, (4x100 TPD)	140,000	DRI Kilns, (6x100 TPD)	200,000
2	Mild Steel Billet	-	-	Induction Furnace, 15 MT X 6 Nos. along with LRF and CCM	300,000	Induction Furnace, 15 MT X 6 Nos. along with LRF and CCM	300,000
3	Re Rolled Steel Products	-	-	Billet Reheating Furnace based Rolling Mill will be about 455 TPD	300,000	Billet Reheating Furnace based Rolling Mill will be about 455 TPD	300,000
4	MS Black pipes	-	-	ERW pipe mill will be about 425 TPD	140,000	ERW pipe mill will be about 425 TPD	140,000
5	Galvanized Steel products Steel products	-	-	Galvanizing unit will be about 304 TPD	100,000	Galvanizing unit will be about 304 TPD	100,000
6	WHRB Power Plant	-	-	WHRB from Sponge Iron	12 MW	WHRB from Sponge Iron	12 MW
7	AFBC Power plant	-	-	AFBC boiler	8 MW	AFBC boiler power generation from Char/ Dolochar & Coal	8 MW
8	Fly Ash brick	-	-	Fly Ash brick manufacturing facility	69300	Fly Ash brick manufacturing facility	69300

1.2 LOCATION OF THE PROJECT

The proposed expansion plant is located at Khasra No. 34/9, 34/10 & 34/11 (Part), Village- Belpan, Tehsil- Masturi, District- Bilaspur, State- Chhattisgarh, Pincode- 495 551. The nearest city is Bilaspur which is around 33.4 km in North North West direction. Nearest airport is Bilaspur Domestic Airport which is around 24.5 km at North West direction. The nearest habitation is Belpan Village which is 0.6 km at East South East direction from the project site. The nearest roadway is SH 10 – 16.6 km in South of South West Direction, NH 200, 18.9 km in North East direction. The nearest railway station is Nipania Railway Station which is 19.9 km in the West North West direction.

The study area of 10 km radial distance from the project site is shown in **Figure 1**.

1.3 EIA/EMP REPORT

In line with the approved ToR obtained from EAC (Industry-I), MoEFCC, New Delhi, baseline environmental monitoring was already conducted during Post monsoon season (15th October, 2021 to 15th January, 2021) has been considered for determining the status of ambient air quality, ambient noise levels, surface and groundwater quality, soil quality, status of flora, fauna and eco-sensitive areas and socio- economic status of the villages within 10 km radius study area from the project site (**Figure 1**). The observations of the studies are incorporated in the EIA/EMP report. Impacts of the

proposed project activities during construction and operation stages were identified and duly addressed in the EIA- EMP report.

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

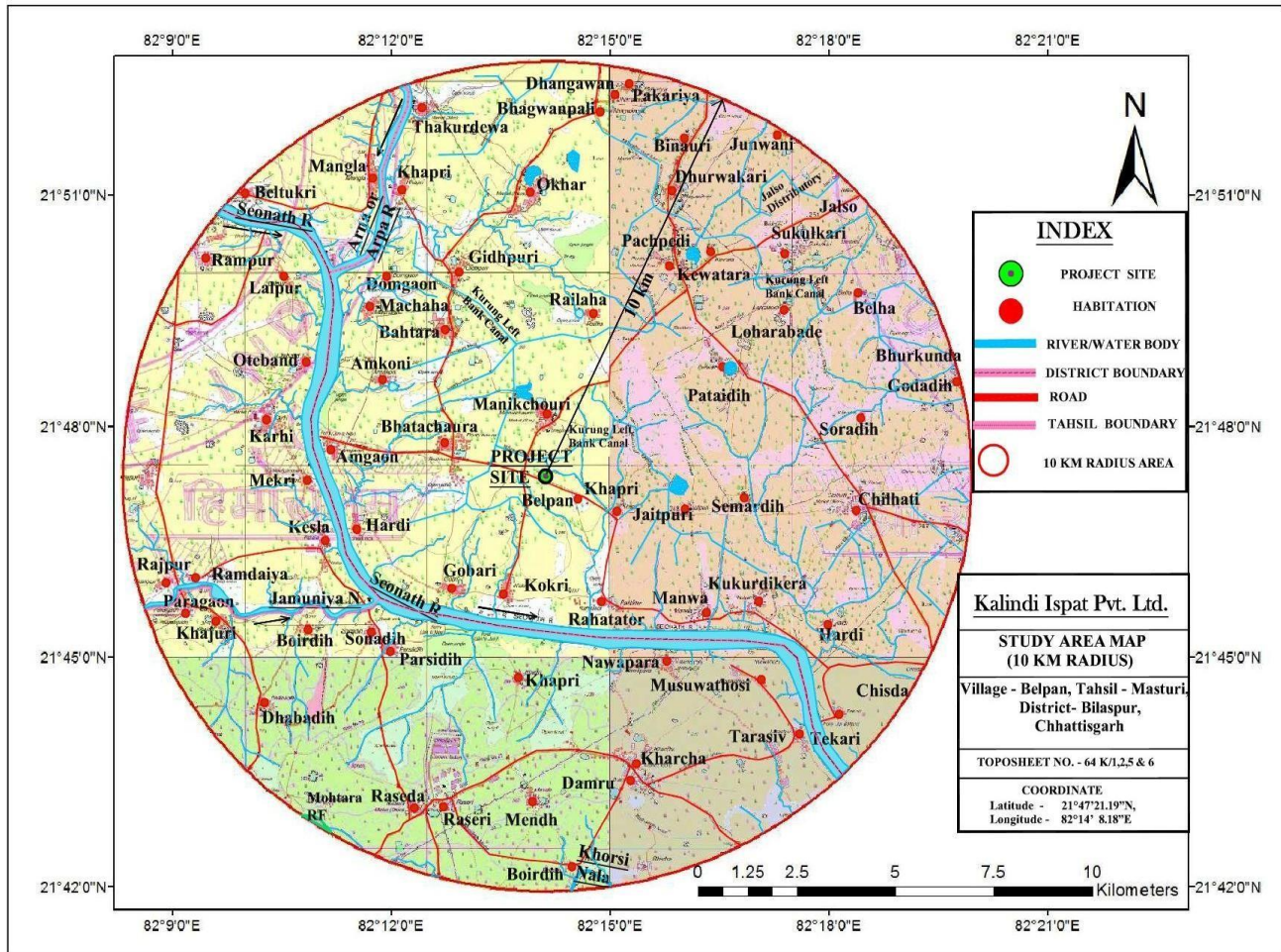


FIGURE 1: STUDY AREA (10 KM RADIAL DISTANCE)

TABLE 2
DETAILS OF ENVIRONMENTAL SETTINGS

Sl.	Particulars	Details	
1.	Project Location	Khasra No. 34/9, 34/10 & 34/11 (Part), Village- Belpur, Tehsil- Masturi, District- Bilaspur, State- Chhattisgarh, Pincode- 495551	
2.	Geographical Locations	Point	Co-ordinates
		A	21°47'21.20"N, 82°13'57.62"E
		B	21°47'10.88"N, 82°14'26.08"E
		C	21°47'27.84"N, 82°14'3.36"E
		D	21°47'22.12"N, 82°14'20.76"E
3.	Toposheet No.	64 K/1 and partly in 64K/2, 64 K/5 & 64 K/6	
		64 K/1, 2, 5 & 6	
4.	Climatic Conditions	Mean annual rainfall is 1252.8 mm Temperature: Pre monsoon 20.60 C (Min.) 41.70 C (Max.) : Winter 13.30 C (Min.) 31.00 C (Max) : Post monsoon 17.30 C (Min.) 31.80 C (Max.) Source: IMD, Raipur	
5.	Nearest IMD station	IMD Raipur – 87.24 km, SW	
6.	Land Form, land Use and	Total involved land after expansion will be 25.619 Hectare.	

Sl.	Particulars	Details
	Ownership	Out of total proposed land of 25.619 Ha. land use of 9.72Ha. is diverted for Industrial purposes which will be used for implementation of industrial activity and 35% (i.e. 8.96 Ha.) of the total land will be taken into use for development of green belt area, remaining area will be diverted for industrial purposes.
7.	Site topography	Project site located at 250 - 257m (above MSL). The topography of the land is more or less flat without undulations.
8.	Nearest roadway	1. NH 200 – 18.9 km, NE ; 2. SH 10 – 16.6 km, SSW 3. NH 130 & SH2 – 27.6 km, WNW
9.	Nearest Railway Station	Nipania Railway Station – 19.9 km – WNW
10.	Nearest Air Port	Bilaspur Domestic Airport - 24.5 km – NW
11.	Nearest Port	NA
12.	Nearest lake	NA
13.	Nearest State/National Boundaries	Madhya Pradesh - 105 km – NW ; Odisha – 95 km – SW
14.	Nearest major city with 2,00,000 population	Bilaspur – 33.4 km – NNW
15.	Nearest village/major town	Belpan (Village) – 0.6 km – ESE
16.	Distance for sea coast	Bay of Bengal– 485 km, E.
17.	Hills/valleys	Amarkantak Hill range– 89.45 km – NE
18.	Nearest tourist place	Pataleshwar Temple - 12. 4 km – NE Bhim Kichak Temple -12.0 km – NE
19.	Archaeologically important places	Malhar Fort 12.2 km - NE
20.	Nearest Reserved/ Protected forests	Mohtara RF – 9.7 km – SSW
21.	Nearest water bodies	Seonath River – 4.8 km – W 2.Khorsia Nala – 9.2 km - S 3.Jamuniya Nala – 4.8 km - WSW 4.Arna or Arpa River – 6.5 km - NW 5.Kurung Left Bank Canal – 0.2 km - N 6.Jalso Distributary – 7.1 km – NE
22.	Nearest Industries	Sonadih Cement Plant NUVOCO VISTAS – 5.9 km – SW
23.	Areas already subjected to pollution or environmental damage	Project site is not classified or notified as severally or critically polluted area.
24.	Seismic zone	The proposed project site falls in zone-II as per IS 1893 (Part-I): 2002. Hence, seismically it is a stable zone.

2.0 PROJECT DESCRIPTION

2.1 PROCESS DESCRIPTION

2.1.1 Manufacturing Process of Sponge Iron (DRI)

- Iron ore, coal, dolomite/limestone is fed in the weighed quantity and the kiln is rotated at a speed of about 0.5 RPM. A temperature between 1000°C to 1050°C is maintained in about 70% of the kiln length towards discharge end side for required reaction.
- After the reaction, the product is taken into an indirect cooling drum cooler. The product is cooled to 100°C and taken for product separation. The product is separated from the coal ash and coal char and then taken for final use.
- The waste gas is taken to an after-burner chamber and the Combustibles are burnt is cooled to about 160°C and taken to ESP for final dust separation, before going to stack via ID Fans.
- The kiln has three functions; heat exchange, chemical reaction in vessel and conveying solids.

2.1.2 Manufacturing process of Steel Melting Shop with CCM

- The manufacturing process installed in the unit is one which is well established and proven technology presently being followed by majority of similar manufacturing units mostly in small or medium scale sector.
- In order to achieve high energy efficiency 6 numbers of Induction Furnaces (each 15 MT capacity) with medium power input capacity of 7.5 to 8.5 MVA each will be setup with automatic charging facility. Electronic software will be installed to monitor the input power and maintaining power factor to almost unity level.
- The melting process involves taking sample of Sponge Iron & Pig Iron; Iron Powder and mild steel scrap, end cutting from rolling mills or scrap from user units is taken from raw material storage.
- Homogeneous molten mass is poured hydraulically into the ladle.
- **LRF (Ladle Refining Furnace):**

Subsequent to the production of molten steel the production of quality requires refining of the same for which one Ladle Refining Furnace will be set up. The liquid steel containing in the ladle will be brought to LRF and after due processing of the liquid steel the ladle will be transferred to CCM.

- **CCM:**

The ladle containing liquid steel is placed on the Continuous Casting Machine platform and continuous casting of hot billet is carried out in the same.

2.1.3 Manufacturing process of Rerolled Steel Through Billet Reheating Furnace Fired Rolling Mill

Raw Material i.e. Cold Steel Billets received in the mill are cut to size; either by Gas Cutting. The sized billets are then pushed into Billet reheating furnace fired with Coal Hot Producer Gas. After the Billet is Red Hot then these are pushed out to rolling stands for re-rolling. A portion of red hot Billets are directly received from CCM through ho Billet conveyor for Hot Charging in Rolling mill. Hot Steel Pieces are rolled through several stands in order to get required shape of finished goods i.e. Rods; TMT; Strips or Flats; MS Channel, Structures; and other rerolled product are produced.

Hot Producer Gas plant based on Coal: In Order to provide required thermal energy to Billet reheating furnace in Rolling Mill Two stage coal producer gas plant would be used for which a coal producer gas plant to gasifier about 2 to 2.5 ton per hour C grade coal would be used which would produce about 7000 NM³ to 8500 NM³ producer Gas per hour.

2.1.4 Manufacturing process of MS Black pipe plant

Steel Pipes Tubes are manufactured from mild steel strips sliced from Hot Rolled Low Carbon Steel coils. The strip passes through a series of drive forming and fin rolls and takes the required circular shape and is welded continuously by passage of an electric current of high frequency across the abutting edges.

The steel pipes tubes thus formed and welded pass through the sizing sections where dimensional deviations if any are corrected before the tubes are cut into required length by automatic cutting machines.

2.1.5 Manufacturing process of Galvanising MS strips/pipes

Hot-dip galvanizing is a form of galvanization. It is the process of coating iron or steel with a thin zinc layer, by passing the steel through a molten bath of zinc at a temperature of around 860°F (460 °C).

2.1.6 Power Generation

2.1.6.1 WHRB based Power Generation

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

2.1.6.2 AFBC based Power Generation

Power generation by using Atmosphere Fluidized Bed Combustors (AFBC) boiler.

2.1.7 Process and Process flow diagram of Brick making from waste

Fly ash, Lime sand and Gypsum are manually fed into a pan mixer, where water is added in the required proportion for intimate mixing. It is proposed to mix Fly Ash, Granulated Ferro Alloy Slag, Grounded Slag from Induction Furnace; Lime; Gypsum and Cement and if required River Sand in small portion.

After mixing; the Mortar mixture is shifted to hydraulic/ mechanical presses for brick moulding. Then molded bricks are carried on wooded pellets to the open area where they are dried and cured by autoclave machine.

2.2 LAND REQUIREMENT

The total proposed expansion project area is 25.619 Ha. Existing land area utilized by the unit is 14.089 Ha. Post expansion proposed area will increase by 11.530 Ha. Out of total proposed Land of 25.619 Ha., land use of 9.72 Ha. is diverted for Industrial purposes which will be used for implementation of industrial activity. Sufficient flat land, free from major undulations and sparse vegetation is available at expansion site within the plant premises. The land details are provided as follows:

**TABLE 3
AREA STATEMENT**

Land Use	Existing Area (in Ha.)	Proposed Change (in Ha.)	Proposed Area after expansion (in Ha.)	Area in % after expansion
Built Up	2.713	+8.406	11.119	43.40%
Road and Paved	0.828	+0.207	1.035	4.04%
Green Belt	4.696	+4.270	8.966	35.00%
Open Area	5.852	-1.353	4.499	17.56%
Total Land Area	14.089		25.619	100.00%

2.3 RAW MATERIALS REQUIREMENT, SOURCE & MODE OF TRANSPORT

The raw material required for the project is Iron Ore; Mn Ore; Coal; Lime stone/Dolomite/ Refractory sponge iron, CI/ Pig Iron Heavy Scrap; Ferro Alloys, etc. Some of these raw materials are readily available within 100 km radius and these will be transported through covered trucks. But Bulk Material like Iron Ore; Coal etc are proposed to be brought by Rail upto nearest station/railway siding at Nipania Railway Station from there will be transported by covered trucks through road to the plant. All raw materials shall be stored in covered sheds, on impervious floors. Garland drains shall be provided, around storage yards to trap the run off / spillage of materials.

2.3.1 Solid and Hazardous waste generation

The details Solid and Hazardous waste generation are given in **Table 3**.

**TABLE 4
SOLID WASTE GENERATION**

Name of Waste generated	Qty (TPA)	Proposed Disposal Plan
Char Dolochar	60,000	Used in own captive power plant.
Bottom Flue Dust Ash	40,000	Used in Brick making.
Kiln Accretion and Refractory waste	1,800	Used in Brick making and low-lying areas.
Mill Scale	3,062	Sold to Ferro Alloys / Pellet Plants.
Slag from Induction Furnace	54,375	Given/ Sold to metal recovery units. And also used in own plant to make Bricks.
Refractory and Ramming Mass waste	375	Given to refractory recycling units / used in Fly ash brick making unit / landfill.
Defective and Miss Roll	3,000	Reused in own Induction furnace.
Coal Ash	23,751	To be given to Cement Plants and to Fly Ash Brick making unit.
Fly Ash from AFBC	62,451	To be given to Cement Plants and Partially Used in own Fly Ash Brick making unit and remaining will be given to outside Fly Ash bricking units.
Fluidized Bed Material	150	Used in own Fly Ash Brick making unit.
MS Scrap Generated	14,000	Reused in own Induction furnace.
Mill Scale Generated in Pickling etc.	1,000	Sold to Ferro Alloys / Pellet Plants.
STP Sludge	34	Used for Composting and then applied for Green Belt
Total	2,63,998	

**TABLE 5
HAZARDOUS WASTE GENERATION**

Type of Hazardous Waste	H. W. Category	Quantity	Disposal
Waste Oil/Used Oil	Sch. I, 5.1	4 KL	Partly used for lubrication and will be stored in covered HDPE Drums & will be given to CECB approved vendors/authorized recycler.
Zinc dross Generated*	Sch. IV, Sl.11	250.00	Sold to registered recyclers.
Acid Neutralization Lime Sludge Generated	Sch. I, 35.3	7,000.00	Sold to registered recyclers.
Lead Dross generation*	Sch. I, 9.1	12.50	Sold to registered recyclers.
Total		7262.5	

* Effluent treatment plant is proposed to be set up for neutralization of Acidic waste water from pickling and galvanizing unit. The capacity of ETP will be 300 m³/day. It will be independent unit. This will also treat other waste water from DM plants etc. The sludge generated would be sold to cement plants. The treated water will be recycled. Zero discharge will be maintained. Acid fumes would be collected through fume extraction system proposed. Acid recovery unit will be setup a pickling unit. Zinc dross 250 TPA would be collected and sold to authorized dealers. ETP will also deal with waste water generated from cooling tower blow down and RO and Ionic Exchange surplus back wash.

2.4 WATER REQUIREMENT & SOURCE

Total Yearly water requirement will be 1680 KLD (553,185 KLA). Company will be using ground water for its existing use and construction activities.

For the proposed expansion company has applied to CG Water Resources department for allotment of surface water from the nearby river for its expansion purposes from its nearest sources. Company will be able to secure the allotment of Surface Water from its nearest source.

2.5 POWER REQUIREMENT & SUPPLY

Total power requirement – 37 MW. Source: 20 MW will be met through captive power plant and 17 MW will be sourced through State Grid (CSPDCL). In addition to these, total 2 X 3300 kVA DG sets are proposed for emergency backup.

2.6 MANPOWER REQUIREMENT

M/s. KIPL will provide employment to about 945 (130 existing + 815 additional) peoples which includes total 45 administrative staff (5 existing + 40 proposed) and 900 Production staff (125 existing + 775 proposed). Preference will be given to local people, depending upon their qualification and skill.

2.7 FIRE FIGHTING FACILITIES

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

2.8 PROJECT COST

The proposed cost of expansion is estimated as Rs. 20000.00 Lakhs

3.0 EXISTING ENVIRONMENTAL SCENARIO

3.1 BASELINE ENVIRONMENTAL STUDIES

Baseline environmental studies were conducted at project site along with 10 km radial distance from the project site. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land were monitored during **post-monsoon season (15th October 2021 – 14th January 2022)** along with secondary data.

3.2 METEOROLOGY & AMBIENT AIR QUALITY

Summary of the Meteorological Data Generated at Site post-monsoon season (15th October 2021 – 15th January 2022)

Predominant Wind Direction		Post Monsoon Season
First Predominant Wind Direction		NNE (20.1%)
Second Predominant Wind Direction		NE (15.8%)
Calm conditions (%)		3.26
Avg. Wind Speed (m/s)		1.85

The status of ambient air quality within the study area was monitored at 8 locations covering project site. The levels of Respirable Particulate Matter (PM₁₀), Fine Particulates (PM_{2.5}), Sulphur Dioxide (SO₂), Oxides of Nitrogen (NO_x) and carbon monoxide (CO), Ammonia, Ozone, Benzene and BAP were monitored. The details of Ambient Air Quality Monitoring Results are summarized and given in **Table 6**.

**TABLE 6
SUMMARY OF AMBIENT AIR QUALITY MONITORING RESULTS**

Sr. No.	Location		PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO	Ozone	NH ₃
			µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	µg/m ³
1	Project Site	1. Min	50.4	19.9	8.4	12.6	0.375	6.5	7.9
		2. Max	75.8	31.7	13.1	23.3	0.467	12.7	12.6
		3. Avg	64.2	25.5	11.4	18.1	0.426	9.6	10.3
		4. 98 th	75.4	31.7	13.0	23.1	0.458	12.5	12.4
2	Belpan	1. Min	52.6	18.8	5.4	14.4	0.323	5.7	5.8

Sr. No.	Location		PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO	Ozone	NH ₃
			µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	µg/m ³
		2. Max	76.7	35.5	15.2	26.5	0.470	10.2	10.4
		3. Avg	62.7	26.1	10.3	19.4	0.404	7.7	8.3
		4. 98 th	76.1	33.5	15.0	26.0	0.456	10.1	10.3
		1. Min	48.1	17.5	6.5	13.3	0.295	4.3	5.3
3	Kokri	2. Max	77.0	34.6	13.9	24.6	0.438	8.8	9.4
		3. Avg	61.5	23.9	9.7	17.9	0.372	6.2	6.9
		4. 98 th	76.7	32.8	13.9	23.1	0.433	8.6	9.2
		1. Min	52.4	18.8	7.0	13.5	0.293	3.3	4.1
4	Khapri	2. Max	76.2	27.1	10.7	18.8	0.378	8.7	9.8
		3. Avg	59.6	22.4	8.6	16.5	0.336	5.8	6.5
		4. 98 th	74.9	27.1	10.4	18.7	0.376	8.5	9.6
		1. Min	42.1	17.6	6.3	13.0	0.270	3.2	4.7
5	Gobari	2. Max	65.9	32.7	12.5	22.1	0.437	10.2	12.1
		3. Avg	57.3	23.8	8.7	16.5	0.354	7.2	7.9
		4. 98 th	65.2	32.6	12.3	21.1	0.434	10.2	11.9
		1. Min	41.0	17.6	5.1	12.2	0.247	2.8	5.6
6	Bhatachaura	2. Max	64.1	24.9	11.3	19.9	0.412	10.9	9.8
		3. Avg	54.6	21.1	7.9	15.4	0.328	7.0	7.5
		4. 98 th	63.9	24.5	11.1	19.3	0.407	10.1	9.7
		1. Min	54.8	19.3	7.1	15.0	0.348	5.2	4.8
7	Manikchouri	2. Max	80.3	38.5	12.2	20.7	0.413	10.8	12.7
		3. Avg	60.9	24.6	9.1	18.4	0.370	7.9	8.6
		4. 98 th	79.5	37.7	12.0	20.4	0.411	10.8	12.7
		1. Min	41.3	15.1	7.4	9.2	0.284	6.2	4.2
8	Jaitpuri	2. Max	64.3	29.8	12.8	24.8	0.451	12.1	8.2
		3. Avg	57.9	21.2	9.6	16.5	0.372	8.4	5.7
		4. 98 th	64.2	29.7	12.7	24.4	0.449	12.0	8.1
		CPCB Standards			100 (24hr)	60 (24hr)	80 (24hr)	80 (24hr)	2 (8hr)

From the above results, it is observed that the ambient air quality at all the monitoring locations was within the permissible limits specified by CPCB.

3.3 AMBIENT NOISE LEVELS

Ambient noise level monitoring was carried out at the 08 monitoring locations; The monitoring results are summarized in **Table 7**.

**TABLE 7
SUMMARY OF AMBIENT NOISE LEVEL MONITORING RESULTS**

Sr. No.	Monitoring Locations	Equivalent Noise Level	
		Leq _{Day}	Leq _{Night}
Residential Area			
1.	Gobari	52.8	43.2
2.	Bhatachaura	53.6	41.5
3.	Khapri Nr. Belpan	51.2	40.8
CPCB Standards dB(A)		55.0	45.0
Commercial Area			
4.	Belpan	58.3	46.6
5.	Manikchouri	57.7	45.1
CPCB Standards dB(A)		65.0	55.0
Silence Zone			

Sr. No.	Monitoring Locations	Equivalent Noise Level	
6.	Kokri	46.2	37.8
7.	Khapri	47.5	38.3
CPCB Standards dB(A)		50.0	40.0
Industrial Area			
8.	Project site	63.8	52.6
CPCB Standards dB(A)		75.0	70.0

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

3.4 SURFACE AND GROUND WATER RESOURCES & QUALITY

3.4.1 Regional Geology

10 km radius study area is mainly comprised of sedimentary rock formations, like stromatolitic limestones, Shales, Conglomerates and Dolomites. All these formations are of Proterozoic age. There are no major geological structure present in study area as far as concern with construction of buildings and other structure. Study area falls in seismic zone-III i.e. low damage risk zone.

Site specific Geology:

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

3.4.2 Regional Hydrogeology

All of the study area is covered by sedimentary formations. Groundwater occurs in water table, semi-confined and confined conditions. Primary porosity of these formations is very poor. The weathered and cavernous part of the formations and fractured zones constitute the aquifer in the study area.

Depth to water level scenario in the study area:

Pre-monsoon Water levels- 6 to 8 m bgl

Post-monsoon water levels: 1.5 to 3 m bgl

3.4.3 Geomorphology

Study area is comprises of gently sloping plains on Proterozoic age. Flood plains are observed along River courses. There are no major geomorphological structures present in study area.

3.4.4 Water Quality

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

A. Groundwater Quality

The physico-chemical characteristics of groundwater are compared with the IS-10500 standards. The analysis results indicate that the pH ranged 7.27 – 7.63. The TDS was ranging from 272 – 442 mg/l. Total hardness was found to be in the range of 81.32 – 185.17 mg/l. The fluoride concentration was found to be in the range of 0.14 – 0.27 mg/l. The nitrate and sulphate were found in the range of 5.08 – 15.68 mg/l and 16.09 – 29.03 mg/l respectively. The chloride concentration was found in the range of 45.28 to 93.21 mg/l. Heavy metals content (i.e., As, Al, Cd, Cr, Cu, Pb, Mn, Zn and Hg) were found to be below detection limit and within specified standards.

Sr. No.	Locations	WQI	Quality	Remark
1	Project Site	41.94	Excellent	Water quality assessed based upon above physico-chemical parameters and samples were found to be physico-chemically good and excellent.
2	Belpan	38.09	Excellent	
3	Manikchouri	40.78	Excellent	
4	Kokri	41.80	Excellent	
5	Khapri	45.53	Excellent	

Sr. No.	Locations	WQI	Quality	Remark
6	Gobari	56.62	Good	
7	Bhatachaura	54.21	Good	
8	Jaitpuri	53.06	Good	

B. Surface Water Quality

The analysis results indicate that the pH ranged between 6.84 – 7.16 which is well within the specified standard of 6.5 to 8.5. The pH of water indicates whether the water is acid or alkaline. The TDS was observed to be 254 – 412 mg/l which is within the permissible limit of 2000 mg/l. The total hardness recorded was in the range of 132 – 224.54 mg/l as CaCO₃ which is also within the permissible limit of 600 mg/l. The levels of chloride and sulphate were found to be in the range of 65.35 – 91.54 mg/l and 10.37 – 69.32 mg/l respectively.

Dissolved oxygen (DO) refers to the amount of oxygen (O₂) dissolved in water. Because fish and other aquatic organisms cannot survive without oxygen, DO is one of the most important water quality parameters. The reported value of range of 5.8 – 6.3 mg/l. Phosphorus (as PO₄) is an important nutrient for plants and algae. Because phosphorus is in short supply in most fresh waters, even a modest increase in phosphorus can cause excessive growth of plants and algae that deplete dissolved oxygen (DO) as they decompose. PO₄ concentration was found to be in the range of 0.21 – 0.54 mg/l. COD ranges from 15.68 – 90.16 mg/l and BOD ranges from 4.85 – 25.14 mg/l.

C. Bacteriological Characteristics

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

3.5 LAND USE LAND COVER CLASSIFICATION

The land-use & land cover map of the 10 km radial study area from the periphery of project site has been prepared using Resource SAT-1 (IRS-P6), sensor-LISS-3 having 23.5m spatial resolution and date of pass 15th April 2021 satellite image with reference to Google Earth data.

The Land Cover classes and their coverage are summarized in **Table 8**.

TABLE 8
LANDUSE DETAILS IN STUDY AREA

LU/LC Classification System				
Sl.	Level-I	Level-II	Area (Sq. Km ²)	Percentage (%)
1	Built-up land	Settlement	23.88	7.61
		Industrial Settlement	3.56	1.13
		Road Infrastructure	2.98	0.95
2	Agricultural Land	Single Cropping	160.59	51.14
		Double Cropping	37.6	11.97
3	Forest	Forest	0.89	0.28
4	Scrubs/Wastelands	Barren Land	8.66	2.76
		Land with scrub/Open Scrub	60.18	19.17
5	Water bodies	River/Nala/Stream	14.68	4.68
		Pond/Tank	0.98	0.31
6	Others	Mining/Stone Quarry	Nil	Nil
Total			314	100

3.6 SOIL QUALITY

For studying soil quality of the region, sampling locations were selected to assess the existing soil conditions in and around the proposed project site representing various land use conditions. The physical, chemical properties and heavy metals concentrations were determined. The samples were collected by ramming a core-cutter into the soil up to a depth of 30 cm. Total 8 samples within the study area were collected and analyzed.

Physical Characteristics of Soil

From the analysis results of the soil samples, it was observed, the bulk density of the soil in the study area ranged between 1.428 - 1.709 g/cc which indicates favorable physical condition for plant growth. The water holding capacity is between 26.43 - 32.68%. Infiltration rate, in the soil is in the range of 21.56 – 23.96 mm/hr.

Chemical Characteristics of Soil

pH is an important parameter indicative of alkaline or acidic nature of soil. It greatly affects the microbial population as well as solubility of metal ions and regulates nutrient availability. Variation in the pH of the soil in the study is found to be neutral (6.81 – 7.84) in reaction. Electrical conductivity, a measure of soluble salts in the soil is in the range of 148.70 – 269.80 μ S/cm

The important soluble cations in the soil are calcium and magnesium whose concentration levels ranged from 210.75 – 237.33 mg/Kg and 87.42 – 144.44 mg/Kg respectively. Chloride is in the range of 174.60 – 192.58 mg/Kg. Organic matter and organic carbon present in the soil influences its physical and chemical conditions and is responsible for stability of soil aggregates. Organic matter and organic carbon were found in the range of 2.28% – 2.88% and 1.32% – 1.67%.

3.7 BIOLOGICAL ENVIRONMENT

Floral composition in Study Area

Floral characteristics within project site and surrounding areas including various villages were studied during post-monsoon season. Total 131 floral species were observed in the study area. The details about the floral composition are as follows.

- a. **Trees:** Total 59 species were found in the study area
- b. **Shrubs (small trees):** Total 24 species were enumerated from the study area.
- c. **Herbs:** In the study area 12 species were observed.
- d. **Bamboo & Grasses:** 21 species were enlisted from the study area
- e. **Climbers and Twiners:** Total 13 species of climbers/ twiners were recorded in the study area.
- f. **Parasite/epiphytic plant :** Each 2 species enlisted in the area

RET (Rare, Endangered and Threatened species) STATUS

None of reported species in study area belongs to Rare, Endangered or Threatened category.

Fauna Details:

As per IUCN RED (2013) list

Among the reported animals, all are categorized under least concern category as per IUCN list.

As per Indian Wild Life (Protection) Act, 1972

Among mammals; *Vulpes bengalensis* (Indian Fox), Common Langur, *Herpestes edwardsi* (Common Mongoose), are protected in schedule –II. Whereas, *Lepus nigricollis* (Black-naped hare), *Funambulus pinnati* (Palm squirrel) protected in Schedule IV and Rats protected in Schedule V.

Among the Herpetofauna, Indian Cobra (*Naja naja*), and Common Rat Snake (*Ptyas mucosa*) were provided protection as per Schedule-II of Wild life protection act, (1972) and Common Indian Krait (*Bungarus caeruleus*), Indian Toad (*Bufo parietalis*) were provided as per Schedule – IV of Wildlife protection act 1972 and as amended.

Among the Avifauna: All birds were observed in the study are included in schedule IV as per wildlife protection act.

3.8 SOCIO-ECONOMIC ENVIRONMENT

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

TABLE 9
SUMMARY OF SOCIO-ECONOMIC ENVIRONMENT OF VILLAGES WITHIN 10 KM RADIUS AREA

No. of villages	65
Total households	20010
Total population	93102
Male Population	46059
Female population	47043
SC Population	22660
ST Population	13253
Total literates	47739
Total Illiterates	45363
Total workers	43472
Total main workers	23888
Total marginal workers	19584
Total non-workers	49630

Source: Primary census abstract 2011, District Bilaspur, State Chhattisgarh.

TABLE 10
INFRASTRUCTURE FACILITIES AVAILABLE IN THE STUDY AREA

Yr. 2011	Education	Drinking water	Road	Power	Transportation	Govt. PHC & SC	Drainage	Recreation
Availability	100	100	100	100	60	26	34	82

Source: Primary census abstract 2011, District Bilaspur, State Chhattisgarh.

SALIENT OBSERVATION OF THE SOCIO-ECONOMIC SURVEY

- **Employment:** Main occupations in the study area were agriculture and its allied activities eg. Cattle rearing, dairy farming etc. Agricultural activity was mainly depending on monsoon season. Other income generation sources of the area were labour work, small business; private jobs etc. The labours were getting daily in the range of 300-400 Rs, depending on type of work they set. It is observed that the Bilaspur District is having huge scope for employment as industrialization is more in this area. But due to lack of Vocational training centers in the area the Industries are outsourcing some of the key employees from other areas.
- **Major crops of study area, production & yield:** About 55% of the study area, as per site survey, belongs to the agricultural land category. Both (Rabi and Kharif) type of cropping practice is prevailing in this area and the type of crops includes paddy, wheat, Tiwra (PULSE) and black gram. The principal crop grown in agricultural farm was Paddy, while discussion with villagers it was revealed that per acre paddy production was 10-12 quintal.

- **Migration from other states:** Main industries were power plant, steel industry etc. in the study area Migration from other states eg. UP, Bihar & Odisha for employment purpose found in the study area.
- **Education facilities:** The Primary & secondary data reveals that literacy levels in all the villages is varying from 60 to 80 %. Most of the students in Villages in the study area are going to Baloda Bazaar for their studies which are about 17 Kms. from the plant. The schools are also not having proper infrastructure facilities. College facility is available in Karhi and Baloda Bazar in the study area.
- **Transportation facility:** For transportation purpose auto, jeep and private bus services were available in the study area; however villagers reported that transportation facilities were not frequently available. Private vehicles like bicycles & motor cycles were also used by villagers for transportation purpose. The main problem found that in the Study area gravel roads is that they often deteriorate rapidly, especially in the wet season, disrupting transport services.
- **Medical facilities:** The Primary & secondary data reveals that there are only 16 nos. of Sub Health Centers & 02 nos. of PHC's in the Study area. During FGD villagers made various issues in health care facilities, such as health facilities available at PHCs, Laboratory testing and Delivery facilities at Government Health Centers, availability of clean toilet and drinking water at PHCs, and distance of the nearest health center from the Village. To control the spread of diseases (Malaria & Dengue cases) and reduce the growing rates of mortality due to lack of adequate health facilities, special attention needs to be given to the health care in rural areas. The key challenges in the healthcare sector are low quality of care, poor accountability, lack of awareness, and limited access to facilities. The other problem is the long distances that ambulances and patients must travel.
- **Drinking water, sanitation & infrastructure:** It was observed that only 52 villages have Pucca Road facilities. It means nearly 75.60 % of the villages have road facility. It was observed that there is good improvement in Power Supply. As the study area comprises of few Power Plants. This ultimately solved the Power cuts & Power Fluctuations in the villages of entire Baloda Bazaar District. It is observed that the source of water for Drinking & Agriculture in most of the Villages is groundwater. And the remaining villages which are proximate to the River use that as source of drinking water & for Agriculture. It was observed that most of the Houses in the villages are not having sanitation facilities including in several schools. It was observed that now a day's Internet is playing major role in society, but in the study area only one Internet shop is available. Need to go to Baloda Bazaar.
- **Banking facility:** The study area has almost all the schedule commercial banks with ATM facility at urban areas and the district HQ.
- **Sports & social ailment issues:**
 - It is observed during FGD that there are only a few people got the benefit of Self-employment scheme and needs substantial improvement.
 - It is observed that there is no encouragement for sports as there are less Schools & Colleges in the Study area. Baloda Bazaar & Bilaspur is the only place where Sports training facilities are available in entire District.

3.8.1 Awareness and opinion of the respondents about the project

Public opinion is a set of individual views or beliefs. It is very important to get the opinion of the villagers about the project. The awareness will not only promote community participation but also encourage them to understand the importance of the project and express their views there. To know

the awareness and opinion of the villagers about the project, group discussions, meeting with school teachers/village leaders were conducted in the study area.

- In core zone villages, majority of the respondents were aware about the project site but were unaware about the project activity.
- Respondents expressed happiness to know about the project and they gave positive opinion as the activity will definitely contribute to the development of the study area.
- Rural leaders asked to give employment opportunities to the local people.
- The main demand of villagers of the study area was for medical facilities and employment opportunities.

3.8.2 Interpretation

Literacy rate of the study region is from 51.28%. On the basis of survey for literacy rate data it is interpreted that there is a need to promote educate among the people. More than 53.31% people as non-workers in almost all villages. This indicates that the problem of unemployment can be solved by providing proper training and education. There is also a need to establish more and more industries so that more and more jobs can be created. Most of the villages have basic amenities like water supply; electric supply, mode of transportation etc.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 Air Environment

The implementation of proposed expansion project will have impact on the air quality parameters like PM₁₀, PM_{2.5}, SO₂, NO_x and CO. Apart from the above, there will be fugitive dust emissions due to transportation, storage and processing of raw materials.

The maximum ground level concentrations (GLCs) for particulate matter and gaseous emission of SO₂, NO₂ due to proposed expansion plant with new installations were carried out. The predicted 24 hourly maximum contribution in AAQ concentrations from main process unit facilities for particulate matter, SO₂ and NO₂ are found to be 0.17 µg/m³, 1.0 µg/m³ and 0.34 µg/m³ (existing granted scenario), 0.75 µg/m³, 5.8 µg/m³ and 3.8 µg/m³ (total after expansion) occurring at a distance of about 2.2 km, respectively in SSW, S & SW direction and emissions from standby DG sets for particulate matter, SO₂ and NO₂ are found to be 0.15 µg/m³, 0.15 µg/m³ and 2.6 µg/m³ occurring at a distance of about 2.2 km, respectively in SSW, S & SW direction. No significant incremental concentration was found due to proposed installation activities. The mitigation measures adopted are:

- The main pollutants discharged from the Induction Furnace, Sponge Iron Plant, captive power plant, BRF, Galvanizing Plants will be particulate matter, SO₂. In case of power failure DG sets will be used and emissions generated from DG set operation will be PM, SO₂ and NO_x.
- The emission mainly carried out through Induction furnaces. To control air pollution will be installed Bag Filters with 33 meter stack and ID/FD fan capacity to cater the future requirement to control emission less than 30 mg/Nm³.
- The emission level within 30 mg/Nm³ from Galvanizing unit will be controlled with 30 m height stack. Galvanizing unit will be installed dust extraction system, Bag filter with Chimney.
- AFBC based power plant ESP with Chimney of 45m height and 2 Bag Filters at Coal conveyors
- The existing facilities are all well equipped with proper Air Pollution control equipment such as ESP in sponge iron and Bag Filters at various locations as per the chart given below in Table 4.6.

- Water spraying will be carried out in order to control fugitive emissions in the internal open storage yards.
- Adequate dust suppression system in the form of water sprinklers shall be provided at raw material yard, temporary solid waste dump site and along the vehicular roads.
- There will be dedicated roads for vehicles carrying raw materials and products.
- Stacks will be provided with porthole and working platform so that stack monitoring can be done as per norms of statutory authority.

4.2 Noise Environment:

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

- Equipment should be standard and equipped with silencer. The equipment should be in good working conditions, properly lubricated and maintained to keep noise within permissible limits.
- High noise zone should be marked and earplugs shall be provided to the workmen near high noise producing equipment. The workmen should be made aware of noise and vibration impacts on their health and mandatory use earplugs.
- Proper shifting arrangement shall be made to prevent over exposure to noise and vibration.
- Tall trees with heavy foliage shall be planted along the boundary / project site / plantation area, which will act as a natural barrier to propagating noise.
- Silent DG sets shall be used at project site.
- Speed limits shall be enforced on vehicle.
- Use of horns / sirens shall be prohibited.
- Use of loud speakers shall comply with the regulations set forth by CPCB.
- Regular noise monitoring shall be carried at construction camp / project site to check compliance with prevailing rules.

4.3 Water Environment:

The implementation of proposed expansion project may have some impact on the water environment. The impact may be on the source of water in the form of depletion of water resources of the area and in the form of deterioration of quality of natural water resources due to discharge of plant effluent.

The various control measures that will be adopted are:

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

Vehicular Movement

All the major raw materials and finished products will be transported through trucks by road. All the dry powdery material like Sponge Iron; Ore and Coke/Coal/Charcoal, etc will be transported in covered trucks.

4.4 Biological Environment

The nearest habitation is Belpan Village which is 0.6 km at East South East direction from the project site. Kurung bank Canal is 0.2 KM in North Direction. No any ecological sensitive receptor was observed in the vicinity of project site. Project site is surrounded with patches of agriculture land. The major predominant crop is *Oryza sativa* (Rice). Natural vegetation mainly confined to hedges of agriculture land, River Arpa and Seonath and reserve forest in the study area. Various birds like Indian Roller, Pond Heron, Sunbird, Magpie Robin, Open billed stork, Kingfisher, Egret and Red Wattled Lanpwing Heron were commonly observed in and around the reservoir. Seonath River is Major River passing crossing the study area. No major wildfauna were observed in the vicinity of project site and nearby area within 1 km radius.

The total plant area is 25.619 Ha whereas greenbelt area of 8.96 Ha. (35.00 %) will be provided for the proposed expansion project with local species with broad leaves and higher canopy and fast growing tree species. Thus, total 22400 nos. (@2500 sapling/ Ha.) of local native species will be maintained. Some trees shall be planted along approach road side in project area.

4.5 Socio-economic Impacts:

The land use is not going to be significantly changed as the proposed expansion will be carried out within existing plant premises, thus there will be no issue of involvement of any agriculture land or settlement on the contrary there will be positive impact on the socio economic environment of the area. Increase in direct/indirect job opportunity shall take place. Services in the locality shall be used and accordingly growth in economic structure of the area will take place.

5.0 ENVIRONMENTAL MONITORING PROGRAM

An Environmental Management Cell (EMC) will be established for the proposed expansion project under the control of Board of Directors followed by General Manager. The EMC will be headed by an Environmental Manager having adequate qualification and experience in the field of environmental management. Environmental monitoring of ambient air quality, surface and ground water quality, ambient noise levels, etc. will be carried out through MoEF&CC accredited agencies regularly and reports will be submitted to CECB/ MoEF&CC.

6.0 ADDITIONAL STUDIES

6.1 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

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

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

7.0 PROJECT BENEFITS

Proposed Social Welfare Arrangement

The proposed expansion project would provide development of area and consequent indirect and direct job opportunities which would finally result in improvement in the quality of life of people in the central region. M/s. KIPL will carry community welfare activities in the following areas:

- Community development
- Education
- Health& medical care
- Drainage and sanitation
- Roads

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

The Additional cost for expansion of the project is Rs. 20000.00 Lakhs. As per MoEFCC, New Delhi vide its OM dtd. 30th September 2020 a budgetary provision of Rs. 301 Lakhs is provided towards EMP for Socio economic Development. Moreover, the detailed EMP for Socio economic development in terms of activities, physical target and timeline will be based on PH proceedings and / or from SIA and thus it will be compiled and incorporated after Public Hearing. Moreover, based on SIA Studies following proposal towards EMP SE development are proposed which may be partially or completely change after outcome of public hearing and commitment of Project proponent. The following budget provisions are provisional.

The action plan along with budgetary provision towards EMP for Social and Infrastructure development is provided in **Table 11**.

**TABLE 11
ACTION PLAN WITH BUDGETARY PROVISIONS TOWARDS CORPORATE ENVIRONMENT
RESPONSIBILITY**

General Head of expense	Year 1	Year 2	Year 3	Amount
				(in Rs. (Lac))
Education	18	16	10	44
a) Donation of computers, books, furniture to village schools				
b) Maintenance / Repair of village school buildings				
c) Donation of stationary, books, scholarships to needy students.				
Medical	39	33	21	93
a) Donation of Sanitary Napkin Vending Machines , furniture, necessary equipment to nearby Public Health Centers				
b) b) Medical Camps in nearby villages				
Drinking water facilities	8.5	8	6	22.5
Solar Drinking water structure (Bore well with Motor fitting) including Soak Pit for Water Recharging in villages/schools				
Plantation Tree plantations nearby villages	8.5	8	8	24.5
Agricultural	18	12	7	37
a) Donation of seeds, fertilizers, manure to needy farmers				
b) Financial assistance for Irrigation facilities				
Infrastructure	35	30	15	80
a) Strengthening/maintenance of village roads.				
b) Rain water harvesting projects at village Belpan under Rural Infrastructure Development.				
c) Provision of solar street lights.				
Total	127	107	67	301

9.0 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan comprising following set of mitigation, management, monitoring and institutional measures to be taken during implementation and operation of the project, to eliminate adverse environmental impacts or reduce them to acceptable levels.

- Overall conservation of environment.
- Minimization of natural resources and water.
- Ensure effective operation of all control measures.
- Monitoring of cumulative and longtime impacts.
- Ensure effective operation of all control measures.
- Control of waste generation and pollution.

Judicious use of the environmental management will be implemented with addressing of components of environment, which will be likely affected during construction and operation of the proposed expansion project. The capital cost required to implement the EMP for proposed expansion project is estimated to be Rs. 2305 Lakhs. The annual recurring expenses will be Rs. 46 Lakhs has been allocated for implementation of the Environmental Management Plan for proposed project.

10.0 CONCLUSION

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

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

11.0 DISCLOSURE OF CONSULTANTS

The Environmental studies for proposed expansion project of M/s. Kalindi Ispat Pvt. Ltd. are carried out by M/s Anacon Laboratories Pvt. Ltd., Nagpur (M/s ALPL). Anacon established in 1993 as an analytical testing laboratory and now a leading Environmental Consultancy firm backed by testing lab for environment and food in Central India region. M/s ALPL is a group of experienced former Scientists from the Government Institutions and excellent young scientist of brilliant career with subject expertise. It is recognized by Ministry of Environment & Forests, New Delhi for carrying out environmental Studies & accredited by Quality Council of India (QCI) for conducting Environmental studies having Accreditation Certificate No.: NABET/EIA/1922/RA 0150 dtd. 03 Feb 2020 Valid till September 30, 2022.