

Executive Summary

ES- 1 Project Brief

M/s. Mahamanav Ispat Pvt. Ltd. already has their sophisticated sponge Iron plant of capacity 100 TPD and the same is running with all the necessary permits and consents from KSPCB & MoEF&CC. The present capacity of the plant is 100 TPD (2 X 50TPD). The company has total land area of 27.63 acres, out of which the existing plant is spread over an area of 13.14 acres and the remaining area of 14.49 acres will be used for expansion activities. Now, the management has decided to go for expansion of the existing industry from 100TPD (2X50TPD) to 300TPD (2X100 TPD) along with 3 MW Captive Power Plant (CPP) at Sy. No. 81/A, 82/A, 78/A & 78/B/2, 82/B/2a and 82/B/2b of Belagal Village, Ballari Taluk, Ballari District, Karnataka. The ToR documents were submitted for issue of ToR vide proposal No: IA/KA/IND/181730/2020 on 11.11.2020 and accordingly, the ToR was issued on 21.11.2020 vide letter No:J-11011/287/2020-IA.II(I) by MoEF&CC, GoI. The Environmental Impact Assessment (EIA) report is based on the TOR issued and the structure is as per the EIA notification, 2006. The salient features of the project are as follows:

Sl. No	Items	Particulars
1	Objective of the Project	Expansion of existing sponge Iron plant capacity from 100 TPD (2X 50 TPD) to 300 TPD by installing two new Kilns of capacity 200 TPD (2X 100 TPD) along with 2 Nos. of Preheaters and 3 MW Captive Power Plant.
2	Promoters	M/s. Mahamanav Ispat Pvt. Ltd.
3	Project Location	Sy. Nos. 81/A, 82/A, 78/A & 78/B/2, 82/B/2a and 82/B/2b of Belagal Village, Ballari Taluk & District, Karnataka.
4	Total Investment, Rs	Rs 33 crores
5	Latitude and Longitude	15°6'39.68"N and 76°48'23.90"E
6	Category	3(a) Metallurgical Industries – Cat A, General Conditions applicable due to presence of interstate boundary at a distance of 1.35 Km.
7	Water Demand and Source	Source: Ballari Municipal Corporation / KUWS & DB Existing unit water requirement is 60 KLD. For expansion, about 173.25 KLD. Hence Total Water requirement for project is 233.25 KLD.
8	Power Supply & Backup power details	Power supply will be from existing captive power plant of capacity 3 MW for proposed expansion. The Power required for DRI Plant operation & for power plant auxiliaries is 1.5MW. When the power plant is operated at 90% PLF, there is 1.5MW of excess power which will be sold to electricity board. Backup power: - Existing DG sets of capacity 1X500KVA & 1X380KVA, for proposed expansion new DG Sets of capacity 1X500 KVA & 1X380 KVA will be installed as backup power.

Sl. No	Items	Particulars
9	Technology Implemented	DRI Technology
10.	No. of working days	330 days
11.	Total manpower (during operation phase)	90 Nos. of people

ES.2 Raw Material Requirement and Product Details

Raw Materials	Per Ton of Sponge Iron	Quantity (TPD) for 200 TPD	66,000 Tons of Sponge Iron/ A	Mode of Transportation
Iron Ore	2.0 T	400	1,32,000 TPA	By road through covered trucks
Coal Imported	0.85 T	170	56,100 TPA	By road through covered trucks
Lime Stone	0.05 T	10	3300 TPA	By road through covered trucks

ES.3 Criteria for Site Selection and Resource Requirements

The location is ideal because of the easy availability of converted land for such industrial operations, there are many sponge iron manufacturing units in the surroundings, it may be noted that the raw material i.e. iron ore is also easily available in the surrounding mines, and there is heavy demand for the final products i.e. sponge iron, there are no ecologically sensitive areas, protected areas, wildlife sanctuaries etc., within 10 Km radius of the project site.

Sl.No.	Particulars	Details
1.	Land (Acre)	M/s. Mahamanav Ispat Pvt. Ltd. has already acquired total land area of 27.63 Acres, out of which the existing plant is spread over an area of 13.14 acres and area reserved for the proposed expansion is 14.49 Acres.
2.	Power Supply & Backup power details	At present the supply is from grid & in future power supply will be from proposed captive power plant of capacity 3 MW for proposed expansion. The power required for DRI plant operation & for power plant auxiliaries is 1.5MW. When the power plant is operated at 90% PLF, there is 1.5MW of excess power which will be sold to electricity board. Backup power: - Existing DG sets of capacity 1X500 KVA & 1X380 KVA, for proposed expansion new DG Sets of capacity 1X500 KVA & 1X380 KVA will be installed as backup power. With stack as per KSPCB Norms.
3.	Rotary Kiln Nos. & Capacities	Existing 2 of 50 TPD & New 2 of 100TPD
4.	Rotary Cooler Discharge Unit	2 Nos.
5.	Atmospheric Fluidized bed	1 No.

Sl.No.	Particulars	Details
	Combustion (AFBC) Boiler	
6.	Waste Heat Recovery Boiler (WHRB)	4 Nos.
7.	Bag Filters with chimney	4 Nos. Height of chimney 30 meters.
8.	ESP	3 Nos. attached to Rotary Kiln with stack as per KSPCB norms

ES.4 Process Description

The process for the production of sponge iron consists of the reduction of iron ore with solid carbonaceous material i.e. coal in a rotary kiln at high temperature and then cooled to room temperature in the rotary cooler with indirect water cooling system. The products are then screened and magnetically separated. Sponge iron being magnetic gets attracted and gets separated from the non-magnetic char.

- **DRI Technology**

In the process for the production of sponge iron, the raw materials i.e. iron ore, feed coal and lime stone are feed to the rotary kiln through feed tube in a pre-determined ratio by electronic weighing equipment. Rotary kiln is inclined at an angle and is internally lined with refractory. An AC variable speed motor at a steeples variable speed rotates it. The fine coal is blown from the discharge end of the kiln to maintain the required temperature and the carbon concentration in the bed. The kiln has five shell air fans mounted on the top, which blow air in the respective zones to maintain the required temperature profile. The material and the hot gasses move in the counter current direction as a result the iron ore gets pre-heated and gradually reduced by the time it reaches the discharge end.

- **Rotary Cooler**

The hot material after the reduction is complete is then transferred to the rotary cooler via the transfer chute. The rotary cooler is made up of Mild Steel shell. It is also inclined and rotates driven by an AC motor. Complete shell is covered by thin layer of water. By this the material gets cooled to 80°C and is discharged on the belt conveyor by the double pendulum valve. The kiln has to be always operated on positive pressure as any leakage into the system will cause the re-oxidation of the sponge iron thereby causing the drop in the quality of the product.

- **Magnetic separators**

The material after the discharge from the cooler is dropped on to the cooler discharge conveyor. The material is then sent to the product separation system. In product separation system consisting of double deck screen, the material is screened to 0-3mm and 3-20 mm size fractions. The oversize i.e. +20 mm obtained is small quantity so it is taken on the floor or diverted to the sponge iron bin. The 0- 3 mm size fraction is called the fines are fed to a drum type magnetic separator where the magnetic sponge iron fines and the non-magnetic dolochar separated and fed to the respective bins through the chutes and conveyor. The coarser fraction is similarly separated by another magnetic separator and fed to respective bins.

- **Captive Power Generation – Waste Heat Recovery Boiler**

There will be 4 Nos. of WHR Boilers & 1 no of AFBC boiler to the existing kiln & proposed new Kiln. All the Kilns are provided with Iron ore preheater Kilns. During the counter current flow of flue gases from the Kiln, the iron ore will be dried and preheated in the preheater Kiln and all washable dust and ore fines will be separated at preheater outlet and + 3 mm ore will be fed into the kiln. To increase the flue gas temperature to have required steam quality, the char will be fired in the AFBC boiler which will increase the gas temperatures to around 600-650°C.

ES.5 Present status of the Environment

In order to assess the baseline environment of the project site, monitoring of various environmental attributes were conducted by EHSCPL during December 2020 to February 2021. In addition to the baseline monitoring, field inspection of study area within 10 Km radius, collection of secondary data and discussion with neighbourhood public, officials were done by the study team.

Land Use: In the study area of 10 Km radius majority of the project buffer area (Outside the proposed industrial premises) is fallow land occupying an area of 1222.8 ha representing about 38.91 %, open scrub occupying 30.32 % and fallow land occupying 38.91%.

Meteorology: Meteorological monitoring was carried out at project site during Dec 2020 to Feb 2021. Temperature during the study period was in the range of 12.6 °C to 34.2°C. Wind speed was 3.6 m/s and prominent wind direction was towards East and South East.

Air Environment: Ambient air quality monitoring was carried out at 8 different locations including two downwind and two upwind directions. The AAQM results for PM₁₀ (51.28 µg/m³ to 84.23 µg/m³), PM_{2.5} (15.03 µg/m³ to 27.98 µg/m³), SO₂ (5.55 µg/m³ to 10.08 µg/m³), NO₂ (13.06 µg/m³ to 26.07 µg/m³) and CO (0.54 mg/m³ to 1.13 mg/m³) were well within the standards stipulated by NAAQ Standards 2009. Lead & Nickel are found in trace quantities in the study area. The rest of the parameters as per NAAQ, 2009 are found to be below detectable limit. AQI of the study area was calculated and found to be good for all the parameters.

Noise Levels: The ambient noise level monitoring was conducted at 8 locations in and around the project site. The noise levels were in the range of 43.79 to 75 dB (A) during day time and 36 to 70 dB(A) during night time. The results of noise levels during day and night were found to be within CPCB standards.

Surface Water Quality: Surface Water sampling & analysis is carried out at 5 locations in the study area. Analysis reports reveal that, the surface water quality in the study area is of excellent quality (SW-3 & SW-5), Good quality (SW-1), Very Poor quality (SW-2) & not fit for Drinking (SW-4). However, it has to be noted that no wastewater will be generated from the process as the water will be used only for cooling purpose & subjected to continuous recirculation.

Ground Water Quality: Ground water (Bore well) samples were collected at 7 locations and analysed to know the baseline water environment. Potassium values ranges from 0.92 mg/L (GW-4) to 11.37 mg/L (GW-6) with mean value of 4.32 mg/L, Sodium values ranges from 19.20

mg/L (GW-7) to 392.0 mg/L (GW-6) with mean value of 100.29 mg/L. trace amount of Arsenic was detected in two samples collected at GW-1 & GW-2 with 0.006 mg/L. Very small amount of Copper was detected in sample collected near Honnehalli Tanda (GW-5), Iron values ranges from 0.04 mg/L (GW-3) to 0.28 mg/L (GW-2), Zinc values ranges from 0.01 mg/L (GW-7) to 0.18 mg/L (GW-4). All the values are well within the standards (IS 10500:12 second Revision).

Geology: The Study area and its environs comprise Dharwar Super Group of rocks consisting Acid Volcanics, Banded Ferruginous iron ore Quartzite & Greywacke-Argillite belonging to Lower Proterozoic as the major litho units. Pink and Gray Granites intruded by Basic Dykes occurring within the study area.

Hydrogeology: The general flow direction of ground water in the study area is towards the east. The depth to water level varied between 14.0 to 35.0 m. The annual water level fluctuation is reported to be varying between 3.0 to 8.0 m in the study area.

Biological Environment: The project site is surrounded by Reserve Forests namely Honnahalli RF , Chikkantapur RF, Metriki RF , Mincheri RF, Marutla extension RF with fairly mixed jungle. According to Champion and Seth's classification of forest types (1968), the forest types surrounding the project site is predominantly Tropical Dry Deciduous Forests and Tropical Thorn forests.

During the studies, 49 tree species belonging to 5 families were recorded. Among them *Millettia pinnata* (n=25) is the most dominant tree species recorded followed by *Terminalia arjuna* (n=9) and *Leucaena leucocephala* (n=5). The Fabaceae family consist of 5 No. of individuals followed by Amaranthaceae consisting of 2 No. of individuals. The recorded species possess Ornamental, medicinal, Edible, Fodder & fuel wood values.

The proposed project site falls under Northern Dry Zone of agro-climatic region. *Albizia lebbeck* (L.) Benth., *Azadirachta indica* A. Juss, *Leucaena leucocephala* (Lam.) de Wit, *Peltophorum pterocarpum* (DC.) K. Heyne, *Millettia pinnata*, *Terminalia arjuna*, *Cocos nucifera* L. and *Delonix regia* (Hook.) Raf. are some of the common species recorded in the exciting project site and study area. There is no Protected area and wildlife corridor in the study area. A wide variant bird species recorded in study area, where as Black-Shouldered Kite, Indian Peafowl and Shikra belongs to Schedule I Species as per WL(P)A, 1972 Schedule were recorded in the study area. A wide variant butterfly's species recorded in study area, where as Common Pierrot belongs to Schedule I Species as per WL(P)A, 1972.

Socio Economic Studies: Socio-economic survey was carried out at 7 villages and the perceptions of the respondents in the surrounding areas are summarized as follows:

- Industrial growth in the region has significantly supported the sustainable livelihoods in the area especially for skilled and semi-skilled persons.
- Development of the secondary sector in the area has positively contributed to induced development leading to creation of multiplier self and wage employment opportunities.
- It would help further strengthen infrastructure development in the area.
- The groundwater resources in the area have been decreasing due to mining and other

industrial activities.

- It may aggravate air pollution through release of obnoxious gases and odours.
- Agricultural crop yields are decreasing due to continuous land degradation and aberrations in rainfall, it also causes cough, skin irritations and other health problems.

ES.6 Anticipated Environmental Impacts and Mitigation Measures

ES. 6.1 Land Environment

During Construction Phase: Top soil will be disturbed during the expansion activity. Temporary loss of soil may be envisaged during the construction phase. There is no impact on land use since the proposed capacity expansion of the industry is within the existing industrial premises.

Excavated earth shall be stored separately and fully utilized for green belt development. Garland drains and surface ponds shall be constructed to arrest the surface run off and soil erosion. The drains shall be frequently desilted for free flow of water.

During Operational Phase: Iron ore fines, Char and Ash are the primary solid waste generated in the process. Out of which, Iron ore fines will be sold to cement plant / pallette plants and Char will be reused in the process and whereas the ash will be sold to brick manufacturing units. While transportation of this ash, there are chances of dust settling on nearby crops. The leakage of Used Oil and oil soaked cotton waste may result in soil contamination.

Fly ash will be collected in silos and regular water sprinkling will be done near storage area. While transportation and handling of the ash, the truck shall be covered with tarpaulins and loading shall be within the capacity of the truck. Used oil and Oil soaked cotton waste will be stored separately with impervious layer and handed over to KSPCB authorized recyclers.

ES.6.2 Air Environment

During Construction Phase: The existing industrial premises are adequate for the proposed expansion. Additional sheds will be constructed for installation of Captive power plant. The major source of air pollution during construction phase will be fugitive emissions due to transportation activity. Dust may arise due to movement of dump trucks, construction equipment and other vehicles on unpaved roads and mixing and batching of aggregate for concrete preparation.

The vehicles used for transportation of construction material will be certified valid PUC. Temporary shed will be developed in order to store the construction material inside the project premises. The machinery used for construction purpose will be properly maintained and serviced. It will be ensured that diesel powered vehicles and construction machinery are properly maintained to minimize the exhaust emissions as well as noise generation.

During Operational Phase: The sources of air pollution sources are:

- New Rotary Kilns – 2 x 100 TPD & existing Rotary Kilns – 2 x 50 TPD

- Waste Heat Recovery based Boiler – 4 TPH x 2 Nos (Existing Kilns) and 6 TPH x 2 Nos (Proposed Kilns)
- Atmospheric Fluidized Bed Combustion (AFBC) Boiler – 1 x 5TPH
- DG Set – Existing 1 of 500 KVA & 1 of 380 KVA & New 1 of 500 & 1 of 380 KVA

The mitigation measures suggested in order to prevent air pollution are as follows:

- The Raw material such as iron ore and coal will be stored in the designated closed storage yard to avoid dust entraining to wind.
- The Raw material handling area will be provided with closed conveyor system. Dust extraction and fume extraction system will be provided to control the emissions and these units will be connected with stacks of 15m height.
- The Crushing of the raw materials such as iron ore and coal will be carried out in the closed area using GI sheets.
- The Rotary kilns will be connected with Dust collecting chamber, ABC and ESP to mitigate the pollution. The efficiency of the ESP will be 99.6%. After the emissions pass through the air pollution control equipment the clean air will be let out through the chimney of 50 meter height.

ES 6.3 Noise Environment

During Construction Phase: The source of noise during construction period will be due to movement of vehicles, movement of construction equipment like crane, bulldozer, Pumps, concrete mixers etc. The construction equipment which will be operating during the construction phase shall produce the sound ranges from 76-96 dB (A). The excess noise will create annoyance to the labors working at the industry.

- The workers exposed to the high noise area will be provided with PPEs like ear muff/plugs to the workers.
- Selection of low noise generating machinery/equipment.
- The high noise zones at site will be demarcated and provided with enclosures & barriers.
- Installation of barricades all around the periphery will further minimize the noise levels.

During Operation Phase: The operation of industry will produce noise levels during day and night time. Various equipment will create vibration along with noise as noise is generated due to vibration also. Hence, the impact of vibration is mainly on health of workers who are exposed to machine vibrations.

Noise level can be reduced by stopping leakages from various steam lines, compressed air lines and other high pressure equipment. Noise generating equipment will be provided with proper sound proof enclosures. The air compressor, process air blower, pneumatic valves will be provided with acoustic enclosure. Design control measures will be adhering to reduce the noise levels.

ES 6.4 Water Environment

During Construction Phase: Impact on water quality during construction phase will be mainly due to sewage generated from the labor camp for construction workers. Oil spillages from vehicle and machines like DG sets used during construction phase. Stagnated water in construction premises will result in creation of mosquito's breeding ground and its anticipated impact on health of the workers affecting their performance due to infections spread by disease vectors.

Construction workers involved in construction activities for such industries are comparatively less than that of any other construction projects. Nearly 60 workers will be provided with labour camp facility which will have sufficient toilets, bathrooms, canteen facility etc., they will be provided good quality drinking water facility with onsite WTP with RO plant. Nearly 4.5 KLD is the water consumption, after deducting consumptive losses & evaporation losses remaining wastewater generation is nearly 3.6 KLD which will be treated in proposed 10 KLD STP.

During Operation Phase: There is no wastewater generation from the process. Water requirement is for cooling purpose only, water used for cooling is collected in a tank & same is recycled again & again for cooling only which results in minimizing the fresh water demand. Slight quantity of water may be required for top-up purpose. During operation phase major consumption is for the cooling purpose only, which will continuously recycled for the same purpose.

Garland drains will be provided all along the periphery to collect Surface run off to drain out into a pit to settle the suspended solids. This pit also acts as a rainwater harvesting pit to recharge the ground water. Rainwater harvesting will be implemented and the collected water will be used for gardening and dust suppression activities.

ES 6.5 Hydrology and Geology

The formation of pits and excavation of top soil and weathered portion for formation of pits for foundation. There will be excavation for foot prints, the civil work involved is very less and therefore excavation work is comparatively less. Collapse of top soil and weathered portion and fly rock due to blasting anticipated. Five Recharge pits at favourable places to be constructed with dimensions 6 m X 5 m X 3m depth to recharge the aquifer as part of social responsibility.

ES 6.6 Biological Environment

During Construction Phase: Proposed project does not include removal of trees. Whereas Trees (49 Nos.) recorded within the periphery of the industry will be retained during construction phase. The Birds, small sized mammals and reptiles will be disturbed in their natural activity and movement due to production of Noise, Air pollution and Water pollution from the proposed industry.

Complete barricades will be installed to avoid the dust dispersal to surrounding area during excavation and construction activity. The trucks carrying construction material will be covered in order to prevent the fugitive emissions. There are no trees proposed for removal however Green belt development will further increase greenery within the project premises. Green belt development activities will be carried out as per CPCB guidelines.

During Operation Phase: Deposition of dust on vegetation by industrial activity around the industrial area is anticipated due to movement of vehicles and emission of particulate matter. The vegetation will suffer due to reduced transpiration and may drastically come down. The avifauna may experience disturbance due to the noise generated from various industrial activities. It may be noted that no wastewater will be generated from the process as the water will be used only for cooling purpose & subjected to continuous recirculation.

Vehicular emission will lead to increase in SO₂ and NO_x in the area. The vehicles used for transportation should have valid Pollution Under Control (PUC) certificate. Noise generation due to friction from the machineries / equipment shall be avoided by regular maintenance.

ES 6.7 Socio Economic Environment

During Construction Phase: There is no impact on natural resource sustainability, land, human settlement, livelihoods, economic development. Employment generation will be about 100 to 120 unskilled & semi-skilled workers during construction phase.

During Operation Phase: The skill sets of the local residents are expected to improve in keeping with the emerging employment opportunities.

- Installing appropriate Air Pollution Control Equipment (APCE) to check air pollution.
- Organizing periodic health camps in the area to check the occurrence of any respiratory and other related disorders.
- Adopting Government schools and PHCs in the impact zone to reinforce and improve education and healthcare infrastructure.
- Basic amenities need to be improved and social, physical infrastructure to be developed.
- Proper care should be taken to minimize the traffic congestion both during construction and Operation phases.

ES.7 Environmental Monitoring Program

The environmental monitoring program will be strictly implemented during construction and operation phases which will cost Rs. 18,060 /month during construction phase (Rs. 2,16,720 for 12 months) & Rs. 59,700 /month (Rs. 7,16,400 for 12 months) during operation phase.

Six monthly compliance reports for the EC conditions will be submitted to RO, MoEF&CC, Bengaluru. Further, monthly environmental monitoring reports will be submitted to Regional office, KSPCB, Ballari and Environment statement will be submitted every year to Regional office, KSPCB, Ballari.

ES. 8 Environment Management Plan (EMP)

The EMP consists of summary of impacts, mitigation measures, and allocation of resources, responsibility and time frame for implementation. The EMP for the project is given below. The responsibility of implementation of EMP lies with M/s. Mahamanav Ispat Pvt. Ltd.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures	Cost for Implementation in Lakhs	Time Frame
A. Construction Phase (Capital Cost)					
1.	Air Pollution	Increase in Particulate matter due to movement of vehicles and use of DG sets for construction activities.	<ul style="list-style-type: none"> Regular water sprinkling will be carried out to suppress the dust. The DG set will be used only during power failure. Sufficient stack height of 10 m AGL will be provided to DG set. Regular stack monitoring will be carried out to ensure that the emissions are well within the norms 	1.25	During construction phase
2.	Noise Levels	Increased noise level will have impact on the health of the labourers & tranquillity of surrounding.	<ul style="list-style-type: none"> Periodic maintenance will be carried out for all high noise generating machinery / equipment. It will be also ensured that all such machineries / equipment are of recent vintage and installed on anti-vibrating mountings & with acoustic enclosures. The workers operating on all such machineries will be provided with PPEs like 	2.0	During construction Phase

Sl. No	Environmental Attributes	Impacts	Mitigation Measures	Cost for Implementation in Lakhs	Time Frame
			earmuffs/ earplugs etc.,		
3.	Water quality	Stagnated water in construction sites & labour camp will result in creation of mosquitoes breeding ground and impact is anticipated on health of the workers affecting their performance due to infections spread by disease vectors and also causes unhygienic environment	<ul style="list-style-type: none"> Temporary garland drainage arrangements will be made around construction site & in Labour camp to avoid stagnation of water. The channelized water will be collected in catch pit & will be used for dust suppression within the construction site. 	6.5	During construction Phase
4.	Soil	There is no impact on land use since the establishment of the industry is within the existing industrial premises. However, temporary displacement of soil may be envisaged.	<ul style="list-style-type: none"> Excavated earth shall be stored separately and fully utilized for green belt development. Garland drains shall be constructed to arrest the surface run off and soil erosion. The drains shall be frequently desilted for free flow of water. 	1.0	During construction Phase
5.	Ecology and Biodiversity	Slight impact on EB due to construction activity, displacement of habitat, tree cutting or	<ul style="list-style-type: none"> Green belt development is scientifically planned to compensate the impact on EB. Native species of trees will be 	5.0	During construction Phase

Sl. No	Environmental Attributes	Impacts	Mitigation Measures	Cost for Implementation in Lakhs	Time Frame
		transplantation etc.,	proposed to be planted all along the periphery.		
6.	Hydrology & geology	No Impacts	<ul style="list-style-type: none"> Rain water harvesting plan will be implemented scientifically. 	20	During construction Phase
7.	Traffic Management	Increase in dust due to fast movement of vehicles, also due to rise in dust chances of low visibility may result in accidents	<ul style="list-style-type: none"> Speed restriction on vehicles <15 KMPH same will be ensured by trained securities, Vehicular movement will be in a staggered manner. Periodic sprinkling will be carried out to suppress the dust. Asphalting of internal roads within the project site will further minimize the dust emission. 	18.0	During construction Phase
8.	Solid & Hazardous Waste Management	The solid waste generated during construction will be debris, metal scrap, empty paint cans, etc. The municipal solid waste generated from labours colony creates unhygienic conditions in	<ul style="list-style-type: none"> The solid waste generated during construction will be debris, metal scrap, empty paint cans, etc., this will be segregated – debris will be utilized for levelling of land formation of roads etc., metal scrap will be stored separately & used as raw material, empty 	0.5	During construction Phase

Sl. No	Environmental Attributes	Impacts	Mitigation Measures	Cost for Implementation in Lakhs	Time Frame
		the vicinity and improper storage will generate leachate and in turn this would affect surface water quality.	cans will be handed over to authorized recyclers. The municipal solid waste will be segregated in to organic & inorganic, organic will be composted in a small earth pit & in-organic will be handed over to KSPCB approved authorized recyclers.		
B. Operation Phase (Capital Cost)					
1.	Air Pollution	<ul style="list-style-type: none"> Emissions from Rotary kiln and the vehicular emission add to the air pollution. Fugitive emissions from handling of sponge iron & other raw materials etc., adds to air pollution & causes breathing discomforts, lung infections and other health disorders in the vicinity 	<ul style="list-style-type: none"> Sources of air pollution such as Rotary Kiln will be connected to ESP and the cooler discharge unit, coal crushing unit, Iron ore crushing and screening unit, Product separation unit will be connected with the Bag Filters to mitigate the air pollution. The efficiency of the Bag filters is 99% & ESP is 99.6%. Clean air will be let out from the chimney of height 50 M AGL. Water sprinkling will be carried out thrice a day for suppression of dust. Green belt will be developed all along the periphery of the 	200.0	During Operation Phase

Sl. No	Environmental Attributes	Impacts	Mitigation Measures	Cost for Implementation in Lakhs	Time Frame
			<p>industry to mitigate air/Noise pollution.</p> <ul style="list-style-type: none"> All the internal roads will be asphalted to control particulate emissions. Regular maintenance of air pollution control equipment will be carried out to ensure proper & effective performance. Complete barricades will be installed all around the periphery 		
2.	Noise Levels	Prolonged exposure will lead to hearing difficulty, sleep deprivation, fatigue, stress, poor concentration, performance losses in the workplace	<ul style="list-style-type: none"> The workers in the plant premises will be provided with proper PPEs which include earmuffs / earplugs. Noise generating equipment will be installed on anti-vibrating mountings & with acoustic enclosures. 	9.0	During Operation Phase
3.	Water quality	Total water requirement for the project is 173.25 KL. Use of water is for cooling purpose and for domestic purpose.	<ul style="list-style-type: none"> There is no wastewater generation from the process; water usage is only for cooling purpose same water will be collected in a sump and recycled again & again for the same cooling purpose, there 	14	During Operation Phase

Sl. No	Environmental Attributes	Impacts	Mitigation Measures	Cost for Implementation in Lakhs	Time Frame
			<p>may be slight water requirement for top up. Thus minimizes the fresh water demands.</p> <ul style="list-style-type: none"> • Sewage will be treated in 10KLD STP 		
4.	Ecology and Biodiversity	Positive Impact	<ul style="list-style-type: none"> • Green belt development & its maintenance 	3.0	During Operation Phase
5.	Solid waste	<ul style="list-style-type: none"> • Iron Ore Fines • Char • Ash / ESP dust/ Bag filter dust • Used batteries, • Used Oil, • Oil Soaked Cotton Waste • Empty Barrels/Containers 	<ul style="list-style-type: none"> • The Iron ore fines will be sold to the local pellet plant. • The char will be used in the AFBC boiler. • The Ash will be sold to brick manufacturing unit / cement plants / Agarbatti industries. • Batteries will be given back to battery manufacturers. • Used oil & Oil soaked cotton waste will be stored at an identified place in a leak proof containers & will be disposed to KSPCB authorised dealers. • Municipal Solid waste will be segregated into organic & inorganic, organic waste will be composted in earth pits using wormy composting method and inorganic waste will be handed 	3.0	During Operation Phase

Sl. No	Environmental Attributes	Impacts	Mitigation Measures	Cost for Implementation in Lakhs	Time Frame
			over to Ballari Municipal Corporation.		
6.	Risk & hazards	Health impacts on employees workers and surrounding villagers	<ul style="list-style-type: none"> • Medical examinations periodically as per the Factories act 1948 and Karnataka Factory rules 1969 • Personnel Protection equipment (safety shoes, goggles, respirators/ masks, Aprons etc.) • Maintenance of Occupational Health Centre and First aid kits • Training to workers on firefighting, use of PPE's, emergency preparedness and first aid • Visual signage and posters display to create awareness on health and safety topics • Environment monitoring in the workplace (Indoor air monitoring, Particulate matter, VOCs etc.) 	10.0	During Operation Phase
7.	Hydrology & geology	Positive Impact	<ul style="list-style-type: none"> • Rainwater harvesting plan will be implemented scientifically. Roof run off & surface runoff will be segregated & collected in separate sumps. Roof runoff will be used for non-potable 	10.0	

Sl. No	Environmental Attributes	Impacts	Mitigation Measures	Cost for Implementation in Lakhs	Time Frame
			<p>purposes & surface runoff will be connected to ground water recharge pits.</p> <ul style="list-style-type: none"> Garland drainage arrangements will be made around Project site to avoid stagnation of water. The channelized water will be collected in catch pit & will be used for dust suppression within the construction site 		
8.	Socio-economic Environment	<ul style="list-style-type: none"> Positive impact 	<p>Due to expansion project local people will get permanent jobs,</p> <ul style="list-style-type: none"> Socio-economic statue of the surrounding people will improve. Business opportunity for small vendors will further improve the economical status Conducting health camps for the employees & their dependents, improvement of school infrastructure and provisions of water purifiers for drinking to surrounding schools. 	5.0	During Operation Phase

Sl. No	Environmental Attributes	Impacts	Mitigation Measures	Cost for Implementation in Lakhs	Time Frame
9.	Energy Conservation measures	Positive impact due to use of solar energy	<ul style="list-style-type: none">Provision of Solar lighting will be made at project site.	3.0	During Operation Phase

ES. 9 Project Benefits

M/s. Mahamanav Ispat Pvt. Ltd., (MIPL) proposes to go for capacity expansion of Sponge Iron manufacturing after understanding the market potential & easily availability of raw material in the surroundings & also considering the heavy demand of Sponge Iron for various steel products. Project benefits are given below: -

- ✓ The project helps in improving the local economy and contribution to Iron and steel sector.
- ✓ The project will contribute Revenue to state and central ex-chequers.
- ✓ Socio-economic status of the surrounding people will improve.
- ✓ Other benefits are like as per M/s. MIPL's Environment Policy regular awareness programmes will be conducted, similarly as per social commitment periodic health camps will also be conducted for the employees & their dependents.

ES.10 Conclusion

M/s. Mahamanav Ispat Pvt. Ltd. is proposing to go for capacity expansion to increase the production of sponge iron from 100 TPD to 300 TPD by installing additional 2Nos of Rotary Kilns of capacity 100 TPD. Adequate land is available within the existing premises to take-up this expansion activity. The project site is meeting CREP guidelines. The proposed expansion project will be installing the Air Pollution Control Equipment (APCE) such as Bag filters and ESP. Rainwater harvesting is planned within the project premises. The industry is proposing to use the Pre heating technique to increase the efficiency of the process. The baseline data of present environmental status in and around the industry is found to be satisfactory. There are no protected areas, ecologically sensitive areas, wildlife sanctuaries, Eco sensitive zones within 10 Km radius of the industry. It is proposed to develop 33% of the total plot area as green belt area within the industry to improve biological environment. Hence the project may therefore be considered favourably for issue of Environmental Clearance from the environmental angle.
